

The City of Warwick
Rhode Island

Harbor Management Plan

1996 - 2001

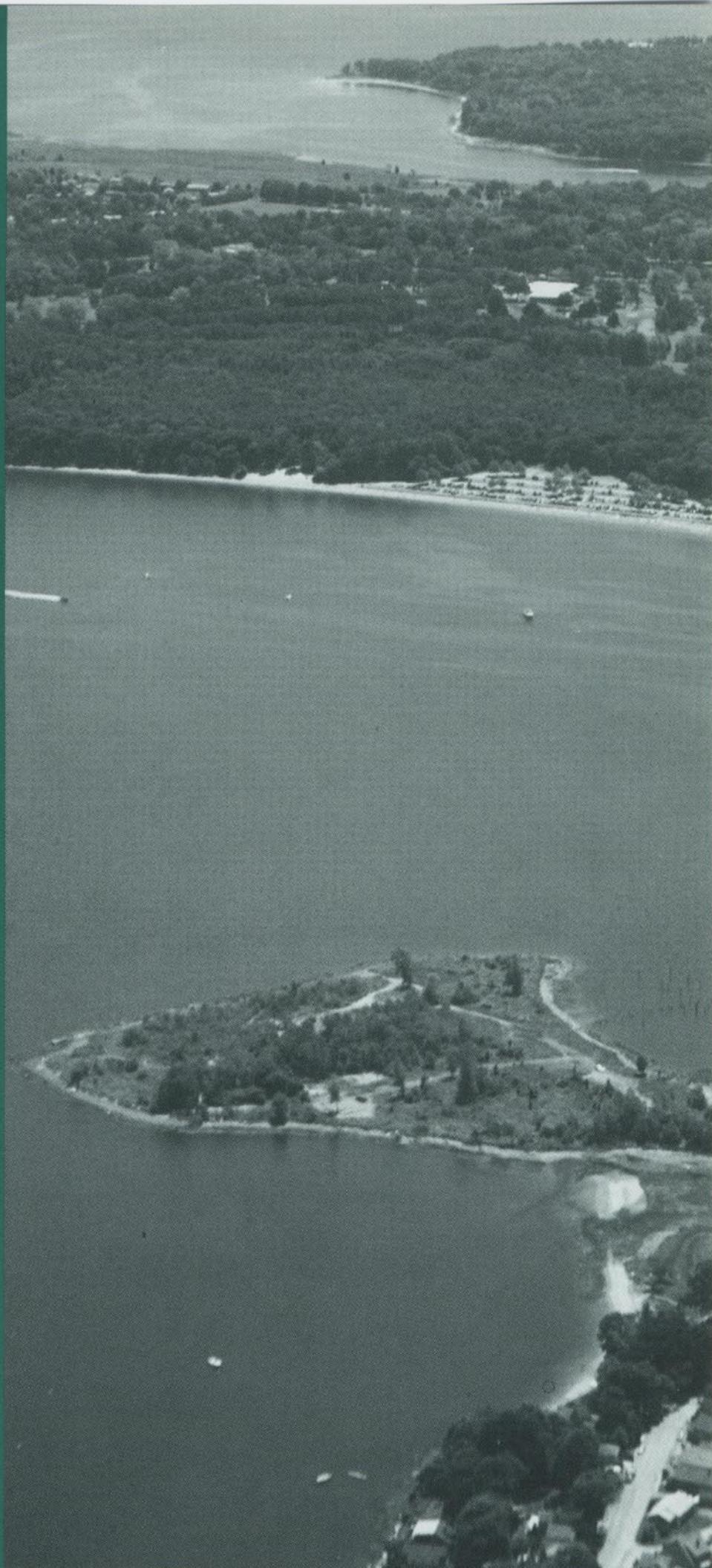


Lincoln Chafee
Mayor

Prepared by:

**Warwick Planning Department
Warwick Department of Parks & Recreation
Warwick Harbor Management Commission**

3275 Post Road
Warwick, Rhode Island 02886
Tel. (401) 738-2000



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Lincoln Chafee, Mayor

Prepared by:

Warwick Planning Department
Jonathan Stevens, Director
Margaret Pilaro, Project Coordinator
Daniel Geagan, Staff Assistant

Warwick Department of Parks & Recreation
Michael Rooney, Director

Warwick Harbor Management Commission
Matthew Prendergast, Chair;
Trudee Trudell, Vice-Chair
Nancy Dickerman, Secretary
Mark Amaral
John Dickerson
Andrew Gold
Michael Marino.

Acknowledgments

We are grateful to the many people who contributed their time and expertise to the creation of this document. We are especially thankful to the members of the Warwick Harbor Commission for giving a great deal of their personal time to attend weekly meetings, review drafts of the document, and conduct research, all of which were critical to the production of this document.

*We also gratefully acknowledge:
Senior Planner William DePasquale, Staff Assistant Ron Wolanski, City Archivist John Currier, Production Manager Kate McCauley, Jeff Willis of the Rhode Island Coastal Resources Management Council, Harbormaster Stephen Archer, Director of Parks and Recreation Michael Rooney, Public Safety Commissioner Stephen Castiglioni, Building Director Jim Marcello, Fire Chief Noble, Assistant Harbormasters Jim Borden, Bob Carr, and Bob Rayhill, and the Maguire Group, Inc.*

Finally, we extend our thanks to the residents of Warwick who attended the two public meetings which provided us with valuable input.



Mayor Lincoln Chafee at the 1995 dedication of Chepiwanoxet Park. This parcel of land, which extends into Greenwich Bay, will be preserved in its natural state.

EXECUTIVE CHAMBER

CITY OF WARWICK



RHODE ISLAND

LINCOLN CHAFEE
MAYOR

Dear Warwick Residents,

With 39 miles of coastline, the people of Warwick are able to enjoy diverse recreational activities such as swimming, boating, fishing and beach combing.

Our harbors and bays also provide a critical economic base in the City. The Greenwich Bay shellfishing industry alone has until recently produced over \$5 million per year to the Warwick economy. We are fortunate to have such natural resources in our city. We need to protect them for future generations.

In order to insure the orderly and intelligent use of our coastal waters, both for the economy and for our personal enjoyment, we have revised the 1989 Harbor Management Plan. The new Plan is a product of over a year of hard work and consensus-building on the part of the Harbor Management Commission and the Planning Department. This document details a strategy to create a balance for everyone and establishes management procedures for the safe, efficient, and environmentally-sound use of our harbors and coastal areas.

The Planning Department, the Harbormaster and the Harbor Commission are available to provide you with assistance in any matter relating to the use of our coastal waters.

The 1996 Harbor Management Plan charts a careful course for the proper management of our harbors into the next century. I truly hope you find these efforts worthwhile.

Sincerely,

Lincoln Chafee
Mayor

Publication Notes

The Warwick Planning Department received written comments from the U. S. Army Corps of Engineers, Rhode Island Coastal Resources Management Council, Division of Statewide Planning and the Department of Environmental Management. The City has addressed all of these comments and incorporated them into this Harbor Management Plan.

On October 22, 1996, the Rhode Island Coastal Resources Management Council approved this document for five years, until the year 2001.

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I. Executive Summary

The City of Warwick has a vision to improve its harbors and bays. In recent years, steps have already been taken. The first Harbor Management Plan in the City's history, written in 1989, has been a first step. Further, the City has taken a lead role in cleaning up Greenwich Bay, closed to shellfishing in 1992, through the nationally-recognized Greenwich Bay Initiative, and through the implementation of Warwick's Strategic Plan for the Reclamation of Greenwich Bay. The City has already committed over \$6 million for this effort.

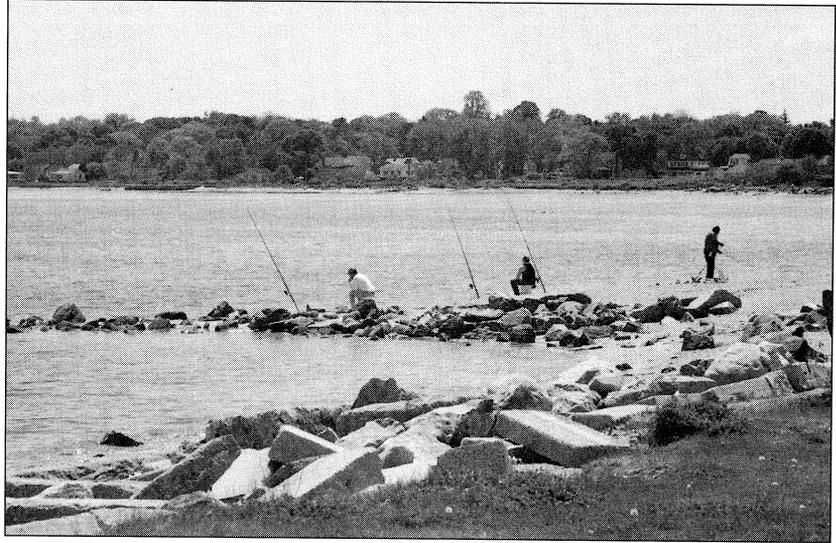
On the other hand, there is recognition that much more must be done. The City's vision of its harbors and bays in the future includes improvements to public facilities, public safety and public access, better harbormaster services, a cleaner environment, equity in the distribution of moorings and a secure and enhanced dedicated revenue stream for the purpose of implementing such improvements. The 1996 Harbor Management Plan includes implementation strategies which are practical and realistic. They provide detailed benchmarks to measure progress toward the City's harbor management goals and objectives. These strategies are listed in each section of the plan, and are summarized in Table 1 in the next section.

In some cases, these strategies are intended to simply enable informed and intelligent decision-making within a year of the adoption of this Plan. In these cases, responsibility has been assigned to various bodies to inventory and research issues, and to mandate communication and consensus-building between agencies responsible for carrying out initiatives. The Harbor Management Commission will then follow up with proposed amendments to the Plan.

The Coastal Resources Management Council (CRMC) was given jurisdiction by the Rhode Island General Assembly in 1971 (RIGL 46-23) over all activities taking place in tidal waters of the state and along the coastline. The enabling legislation that created CRMC established the regulatory authority under which the CRMC operates. The regulations, procedures, and policies of the CRMC are laid out in the Coastal Resources Management Program (CRMP). The approval of municipal harbor regulations and plans is regulated under Section 300.15 of the CRMP. Additionally, the CRMC has developed a guidance document for municipalities titled Guidelines for the Development of Municipal Harbor Management Plans. The guidance indicates that all Final Harbor Management Plans shall be reviewed by CRMC every five years. This update is motivated by the CRMC guidance recommendation.

Rhode Island General Law 46-4 empowers municipalities to locally regulate the public waters and waterfront within their boundaries. Upon taking office in 1993, Mayor Lincoln Chafee initiated the Greenwich Bay Initiative with the goal of protecting and restoring the environmental quality of Greenwich Bay. Among other recommendations, the Greenwich Bay Initiative directs that the Harbor Management Plan be updated with an increased focus on protecting the water quality of Greenwich Bay.

It took almost one year to rewrite the Harbor Management Plan. The Harbor Management Commission and the Warwick Planning Department were principally responsible for the project, with assistance from the Department of Parks and Recreation, Office of the Harbormaster, Commissioner of Public Safety, Building Director, the Maguire Group, Inc., and the input of many Warwick residents who participated in the two public forums which were held.



II. Implementation Strategy Summary

The following table includes the implementation items listed and discussed in Section IV. The table identifies the party or agency responsible for ensuring implementation of the specific items, plus a recommended time-frame for the completion of each item.

The year that an item is scheduled to be completed is indicated by a dot in the appropriate column. Several of the implementation items are recurring or on-going projects. These are indicated in the table by gray shading.

Table 1 — Implementation Summary

Implementation Items	Responsible Party/Agency	1996	1997	1998	1999	2000
A.) MOORING MANAGEMENT						
A-1 Develop & maintain GPS coordinates of all mooring fields	DPR, WPD, HM	—	—	•	•	•
A-2 HM will develop procedures & remove illegal moorings by 1999	HM	—	—	•	•	—
A-3 HMC will review the proposal for aquaculture & provide recommendations to the Warwick City Council & CRMC	HMC	•	—	—	—	—
A-4 Conduct study to establish maximum density of mooring fields	DPR	•	•	•	—	—
A-5 HMC subcommittee shall review alternative mooring systems	HMC					
A-6 HM will submit annual mooring counts to DEM & CRMC	HM					
B.) DREDGING						
B-1 Develop cost estimates & feasibility statements for Pawtuxet Cove, Apponaug Cove & Warwick Cove	HMC, WPD, DPR	—	•	•	•	—
C.) PUBLIC ACCESS						
C-1 Inventory Rights-of-Way (ROW's)	WPD	—	•	•	•	•
C-2 Select ROW's for improvement	WPD, HMC, DPW	—	—	•	•	•
C-3 Develop & implement long-term maintenance plan for ROW's	DPW, HMC	—	•	•	•	•
D.) HARBOR FACILITIES & BOAT RAMPS						
D-1 Inventory boat ramp conditions	WPD	•	—	•	—	•
D-2 Select boat ramps for immediate improvement	WPD, HMC, DPW	—	•	—	•	—
D-3 Administer design & construction of boat ramp projects	WPD, DPR, HMC	—	—	•	•	—
D-4 Develop long-term maintenance plan for boat ramps	DPR, HMC	—	•	—	—	—
E.) EMERGENCY RESPONSE						
E-1 Appropriate roles for Harbormaster & Assistant Harbormasters	DPR, HMC, HM, BD, CPS	•	—	—	—	—
E-2 Review & revise City's Emergency Preparedness Plan to include responsibilities for Harbormaster	DEM, CPS, DPR, HM, HMC	—	•	—	—	—
E-3 Review Harbormaster's training, staff & equipment	DPR, HM, HMC	•	—	•	—	•
F.) ENVIRONMENTAL QUALITY & SHELLFISHING						
F-1 Provide comments on CRMC permits	HMC					
F-2 Require implementation of CRMC BMP's at marinas	HMC	•	•	•	•	•
F-3 Support No-Discharge Zone for Warwick's waters	WPD, HMC	•	•	•	•	•
F-4 Continue implementation of the Strategic Plan for the Reclamation of Greenwich Bay	WPD					
F-5 Develop promotional program for pump-outs	WPD, DPR, HMC	—	—	•	—	—
F-6 Amend Harbor Ordinance to reflect no-discharge of sewage as directed under RIGL 46-12-39	WPD, WCC, HMC	—	—	•	—	—
F-7 Amend Harbor Ordinance to reflect RIGL 46-12-41	WPD, WCC, HMC	—	—	•	—	—

Implementation Items		Responsible Party/Agency					1996	1997	1998	1999	2000
G.) COORDINATION OF HARBOR MANAGEMENT JURISDICTIONS											
G-1	Review implementation of the Harbor Management Plan	DPR									
G-2	Organize inter-municipality meeting	WPD									
G-3	Support creation of an association of West Bay Harbor Commission	HMC, DPR, WPD									
G-4	Develop appeals mechanism	DPR, HMC									
H.) WATER USE COMPATIBILITY											
H-1	Promote boating safety standards through Harbormaster patrols	DPR, HM									
H-2	Provide support to volunteer organization for boating safety courses	DPR									
H-3	Review proposals for single use designations	HMC									
H-4	Designate potential aquaculture sites	WPD, DPR, HMC									
H-5	Partition off swimming areas at Oakland Beach & City Park	DPR									
I.) DERELICT VESSELS & DEBRIS											
I-1	Appoint Commissioner of Wrecks	WCC									
I-2	Consider tagging individual docks	HMC									
J.) MANAGEMENT OF HARBORMASTER ACTIVITIES											
J-1	Provide job description for Harbormaster & Assistants	DPR, HMC									
J-2	Consider extending Harbormaster working schedule	DPR									
J-3	Harbormaster report monthly to Harbor Management Commission	HM									
J-4	Annual training for Harbormaster & Assistants	HM									
J-5	Assign Police Officers to periodically accompany Harbormaster	WPD									
K.) HARBOR MANAGEMENT BUDGET											
K-1	Develop annual harbor management budget	DPR, HMC									
K-2	Establish budgetary subcommittee	HMC									
K-3	Annual meeting between DPR & HMC	DPR, HMC									
K-4	Include listing of proposed expenditures	DPR, HMC									
K-5	Recommend ten-year capital improvement budget	DPR, HMC, WPD									
K-6	Eliminate all DPR administration back-charges	DPR, HMC									
K-7	Submit monthly statement of income & expenses	DPR									

LEGEND:

BP = Building Director; CPS = Commissioner of Public Safety; DEM = Director of Emergency Management; DPR = Director of Parks & Recreation; HMC = Harbor Management Commission; HM = Harbormaster; WCC = Warwick City Council; WPD = Warwick Planning Department; Shaded Areas = Ongoing; • = to be implemented.

III. Vision Statement

The City of Warwick recognizes that the City's coastal resources serve residents in many different ways. Recreational boating, picnicking, waterskiing, windsurfing, and commercial shellfishing are just a few of the many uses Warwick residents make of its waterways and coastal lands. Historically, Warwick's waterways have provided residents with sustenance, transportation, economic opportunities, and pure enjoyment.

Warwick has a rich maritime history. The first armed conflict of the American Revolution occurred on the evening of June 9, 1772. A party of Rhode Island patriots in eight longboats boarded and burned the British revenue ship H.M.S. Gaspee, which had grounded on Namquit Point, south of Pawtuxet Cove. Before the War of 1812, Apponaug Cove was an active port, trading in large shipments of lumber and coal. During World War I, the Gallaudet Aircraft Corporation built seaplanes at Chepiwanoxet. During World War II, US Navy patrol boats (submarine chasers) were built at Greenwich Cove. In addition, shellfishing has long been an important cultural and economic element of harbor use.

The City of Warwick recognizes the recreational, commercial, economic, cultural and historical significance of its coastal resources. Intelligent management of these coastal resources will help to protect their long-term value and economic viability for future generations of Warwick's residents.

It is the policy of the City to continue to provide for equitable use of Warwick's coastal resources, while maintaining environmental quality and promoting economic development. The City has prepared this vision statement to "chart a course" that will allow it to provide a necessary balance of uses.

All users of the City's coastal resources, whether they be recreational boaters, shellfishermen or waterfront business owners, should be allowed access with minimal conflict. In order to work toward this ideal, the Harbor Commission intends:

- **To maximize the compatibility of harbor uses in a manner which provides for the safe, orderly, and efficient use of the water and the waterfront.**

For many, Warwick's waters provide a scenic place for outdoor activities. To this end, the Commission intends:

- **To improve, expand, and maintain public access and opportunities for people's use and enjoyment of coastal and marine resources.**

This vision goes beyond simply marking existing rights of way to the shore, it also includes park lands, public restrooms and garbage receptacles for existing facilities and improved access for trailered boats.

For others, the City's waters represent a place for boating. The Commission realizes the importance of boating, both for the enjoyment of Warwick citizens but also for the local economy. To address this valuable resource, the Harbor Management Commission intends:

- **To provide for the efficient and equitable distribution and management of commercial, transient, and private moorings; and**
- **To improve navigation by encouraging and supporting appropriate dredging projects.**

These goals would allow an increased opportunity for boating, safe passage, and fair mooring distribution. By providing navigable channels, transient moorings, resident and non-resident moorings, Warwick's waters may be safely utilized by all boaters.



The waterfront also provides economic benefits for the City. Realizing this, the Harbor Commission intends:

- **To promote and encourage the prudent use of coastal and marine resources in a manner that stimulates economic development and protects the coastal environment.**

The Harbor Management Commission realizes that environmental protection must be balanced with economic development. By promoting economic growth along the waterfront, Warwick residents will be supplied with additional opportunities for public access to the shorefront.

Fishermen and water-dependent business owners depend on a clean aquatic environment. To this end, the Harbor Commission intends:

- **To work to improve natural resources and habitats within the City's waters by supporting policies and programs which reduce pollution.**

The City believes a healthy coastal environment is necessary to maintain maximum benefit of the harbor resources for all users. Therefore, this vision stresses the need for a healthy, productive environment, which is essential for the recreational, commercial, and ecological value of our coastal resources.

Taken together, these statements provide a vision for the future of Warwick's harbor resources. The strategies presented in this plan are both the products of this vision and the means by which the Harbor Management Commission and the City will proceed to bring the vision to fruition.

The Harbor Management Plan has been developed and prepared by the Harbor Management Commission and the Warwick Planning Department. Additional assistance has been provided by the Maguire Group, Inc.

IV. Issues, Findings, Policies, Objectives & Implementation Strategy

A. Mooring Management

1. FINDINGS

The City's 1989 Harbor Management Plan and "the Harbor Ordinance" Chapter 24 of the Warwick City Code established harbor management elements. While the Ordinance will continue to be in effect, current practices and boating trends may warrant a re-examination of the policies adopted at that time.

The City delineated moorings within Warwick's waters in the 1989 Harbor Management Plan. These areas are designated as single use areas (See Section H) for commercial and private moorings. In addition, anchorage areas were delineated for transient vessels, as required. However, to date, neither the City mooring areas nor the anchorage areas have been described with coordinates. Table 2 indicates the approximate size and depth of each of these fields.

Mooring permits in Warwick are given on a first come, first served basis. No moorings are allowed in City waters without a permit. Fees for permits were originally set in 1989 by the City Council and remain one of the lowest in the state at \$25 for residents, \$50 for nonresidents and \$100 for commercial use. Commercial operators typically charge their customers annual mooring fees of \$20-\$30 per foot of boat length, or as much as \$900 for a thirty (30) foot boat.

Applications are sent to mooring holders in February of each year. Individuals who fail to return the application forfeit the mooring. Permits may be held for one year in which the permit holder does not use the mooring. After that one year period, if the mooring is not used, the permit is forfeited and reassigned to a person on the waiting list, in accordance with the Harbormaster's waiting list procedures. The use of City moorings is not transferable, as described in Section 7 of the Warwick Harbor Ordinance.

In order to reduce the number of people waiting for moorings, more efficient allocation should be achieved. Once information is available by mooring field, rather than by cove, the Harbormaster can better manage valuable mooring space. This would allow for better placement of moorings based upon vessel size and depth, reduce haphazard mooring placement, and allow for the appropriate density of boats without degrading water quality or current safety levels.

Riparian property owners can, at the discretion of the City, be permitted to place a mooring within reasonable proximity to their property. All riparian moorings must be registered and must comply with Section Seven (7) of the Warwick Harbor Ordinance.

The City requires that all moorings be inspected every three years. Section Seven (7) of the Warwick Harbor Ordinance establishes the inspection process and describes a schedule by which all moorings must be inspected. A list of mooring inspectors designated by the City is available from the Harbormaster by request. The City of Warwick does not endorse or promote any particular mooring inspector. Mooring inspectors are private contractors and therefore set their own fee schedule. The range of fees charged may vary greatly, and it is suggested that mooring owners solicit proposals from several mooring inspectors for their mooring inspection needs.

A proposal has been put forth by Warwick Cove Marina to utilize Mooring Area #2 in Warwick Cove for aquaculture. The petitioner and the City are currently considering options to accommodate both the public good and economic benefit. Any changes to the division, size and/or location of any mooring field needs CRMC review and approval.

Table 2 — Mooring & Anchorage Areas in the City of Warwick

LOCATION	SIZE (acres)	APPROXIMATE DEPTH (feet)	FEDERALLY MAINTAINED
Apponaug Cove			
Mooring Area 2	11	2-3	No
Mooring Area 3	26	2-3	No
Mooring Area 4	14	1-2	No
Mooring Area 5	10	6	Yes
Pawtuxet Cove			
Mooring Area 1	16	6	Yes
Warwick Cove			
Mooring Area 1	5	6-9	Yes
Mooring Area 2	0.5	3-7	No
Mooring Area 3	5	6	Yes
Mooring Area 4	3	1-3	No
Mooring Area 5	1	1-2	No
Transient Anchorage	2	—	Yes
Greenwich Cove			
Mooring Area 1	9	5-8	No
Mooring Area 2	4	6-7	No
Transient Anchorage	—	—	No
Greenwich Bay			
Mooring Area 1	10	6	No
Transient Anchorage	—	—	No

Source: Size (acres) City of Warwick, 1995; Approx. Depth (ft) NOAA Charts, February, 1994

The City's mooring capacity is finite, and is managed by the Warwick Harbormaster. However, the current demand is greater than the existing number of mooring spaces. Some mooring fields seem to be underutilized, either due to issues relating to depth or location. Conversely, the City maintains a waiting list for moorings, which in 1996 had approximately 200 applications pending. During the 1995-1996 boating season, the City made 12 moorings available to private individuals.

As the number of moorings increase, they move closer to channels and fairways to the point where, in some cases, they may encroach upon these areas, creating unnecessary navigational hazards.

The Army Corps of Engineers has three Federal Anchorages within the City's waters, Apponaug Cove, Pawtuxet Cove and Warwick Cove. These areas are managed by the City in the interest of the general public. Federal Anchorages must be accessible and available to all on equal terms.

At the present time, there are 664 legally registered moorings in the City (Table 3), 244 of those permitted to commercial operators, thus maintaining a 6-4 ratio of private to commercial moorings in the City. Of the 434 private moorings, 318, or 64% are held by Warwick residents, thus maintaining 3:1 resident to non-resident ratio required by CRMC.

Table 3 — Number of Boats by Location & Draft

LOCATION	DRAFT IN FEET						UNKNOWN	PRIVATE TOTAL	# OF MOORINGS (w/commercial)
	<4	4-5	5-6	6-7	7-8	>8			
Apponaug Cove	49	11	5	—	1	—	10	76	108
Brush Neck Cove	31	1	1	—	—	—	4	37	37
Greenwich Cove	34	17	24	5	3	1	21	105	299
Pawtuxet Cove	21	6	3	—	—	—	4	34	34
Warwick Cove	36	4	7	1	—	—	8	56	60
Open Water	69	14	5	3	—	—	35	126	126
TOTAL	240	53	45	9	4	1	82	434	664

Source: Warwick Department of Parks & Recreation, 1996.

The City Harbormaster has created and maintains a database of legally registered moorings. This includes: current mooring owner, type of boat (power or sail), type of marine sanitation device, length and draft of the vessel, type and size of ground tackle, date of last mooring inspection. The data so far are not sorted by mooring area, only by cove. To better determine the capacity of each mooring area, and characterize each of the mooring fields, it will be necessary to locate each of the mooring fields, moorings and boats.

2. POLICIES

There shall be no unregistered moorings in city waters.

City mooring fields will be used for public moorings to the maximum extent, consistent with safety and environmental protection.

Moorings and structures found to encroach upon any federal navigation project/channels shall be removed by the Harbormaster.

Moorings will be equitably and efficiently allocated and should be equally available to all applicants.

Moorings should be kept in active use. Any non-riparian mooring which is not being actively used over a one year period should be reallocated.

Mooring fees should be consistent with market conditions and commensurate with services provided or anticipated in the future, based on harbor management improvements funded by mooring fees.

3. OBJECTIVES

The Director of Parks and Recreation will create a written mooring allocation procedure. This should provide for an efficient process, and ensure that all applicants have an equal opportunity to apply for and obtain a city mooring.

The Harbor Management Commission should establish written criteria relative to evaluating alternative mooring systems. The Commission should consider without prejudice alternative mooring technologies

which are consistent with the accepted standards. The burden of proof remains with the petitioner, who should, as a condition of approval, agree to accept any liability associated with the use of alternative mooring systems and also agree to indemnify the City in the event of failure of alternative mooring systems.

The Harbor Management Commission will appoint a Mooring Management Subcommittee to assess the process of allocating moorings and make recommendations to the Director of Parks and Recreation and the Harbormaster. The mission of the Subcommittee will be to try to define how best to augment the Harbormaster's resources and ease the burden of mooring management. Additionally, the subcommittee shall provide a review board for alternative mooring systems and appeal of disputes related to mooring management and mooring allocation. The Harbor Commission by-laws should be amended to reflect the duties, responsibilities and composition of the Subcommittee.

The Mooring Management Subcommittee should work with the appropriate City departments to obtain locations for and map all moorings within the City's jurisdiction. This information should be added to the mooring management database.

The Director of Parks and Recreation with the assistance of the Harbor Management Commission should conduct an annual assessment of mooring field density. Such an analysis should consider information from the Harbormaster database, water quality, number and use of pumpouts in order to determine mooring capacity and saturation point for each cove.

Once the inventory and assessment are completed the Mooring Management Subcommittee and the Harbor Management Commission should review mooring fees and consider such adjustments to these fees as may be appropriate given their findings.

4. ISSUES

CRMC guidelines require that corner points of mooring areas and federally maintained areas be recorded using RI State Plane Coordinate System. Currently, neither City moorings nor federally maintained areas have been described by coordinates which have been surveyed by a registered engineer or land surveyor.

Expansion of moorings, legal and illegal into channels and / or federally maintained areas creates navigational hazards.

The City has a proposal from Warwick Cove Marina to move mooring area #2 in Warwick Cove and use the space for aquaculture.

Mooring locations are presently sorted only by cove and not by mooring area, which is a necessary task to more efficiently manage allocation of space and reduce the waiting list.

Current mooring standards are for mushroom anchors only. There exists alternate methods which may prove to have equivalent or superior capacity. The Department of Parks and Recreation has the authority to approve such moorings. Presently, there is no formal mechanism for such review and approval.

5. IMPLEMENTATION STRATEGIES

A-1 The City will develop and maintain GPS coordinates of all moorings and boats.

A-2 The Harbormaster will develop procedure for the removal of illegal moorings and remove such moorings by 1999.

A-3 Harbor Commission will review the proposal for aquaculture and provide recommendations to the Warwick City Council and CRMC regarding this and any future matter regarding the alteration of any designated mooring area.

A-4 A study will begin in 1996 which will establish the maximum density of moorings within approved mooring fields in a manner which is consistent with existing water quality classifications. The plan will determine the need and location for new mooring areas. The City's ultimate goal is to allocate up to 50 new moorings, thus reducing the current moorings waiting list by 25% by the year 1998.

A-5 The mooring subcommittee shall provide a review of alternative mooring systems and identify those which are acceptable for use in City waters, and develop a procedure for approval.

A-6 The Harbormaster will submit annual mooring counts, by location, to DEM and CRMC.



B. Dredging

1. FINDINGS

The most recent dredging within Warwick's waters occurred in the mid-1960s. Since that time, dredging has been considered many times by individuals who equate water depth with increased opportunity for economic development.

Pawtuxet Cove was last dredged by the Army Corps in 1966 to provide a depth of 6 feet in the channel and mooring area at mean low water. Accumulation of sediment in the Cove has restricted navigation in the channel and limited the usefulness of the mooring area. Channel depth is as little as 1 foot and mooring area depths are only 4 feet at mean low water in some locations.

In 1982, the Department of Environmental Management (DEM) sought permission from the Coastal Resources Management Council (CRMC) to dredge Pawtuxet Cove to a depth of 6 feet below mean water. The project was to be funded by the Army Corps of Engineers at an estimated cost (1982) of \$500,000. An estimated 35,000-45,000 yards of dredge material (mud) was to be removed. DEM wanted to place the dredge material in the cove adjacent to Salters Grove to create a new salt marsh. Proponents claimed that this project would eliminate bad odors in Pawtuxet Cove at low tide and allow boats maneuverability. Ultimately the project was defeated because of public opposition.

Warwick Cove was last dredged in 1966 to provide a channel depth of 6 feet at mean low water. Since that time, sand and sediment have accumulated near the Cove entrance, making it very narrow and limiting depths to only about 3 feet along the western edge at mean low water.

Apponaug Cove was last dredged by the Army Corps in 1963 to provide a depth of 6' in the channel and in mooring area #5. Mooring areas 1 through 4 and the inner basin (above the railroad bridge) have not been dredged in recent history. Depths in mooring areas 2, 3 and 4 range in depth from 1 foot to 3 feet, rendering them unsuitable for mooring anything other than shallow draft vessels. These mooring areas are therefore currently underutilized. Accumulated sediments in the Apponaug inner basin preclude its use for navigation and have virtually eliminated productive economic and recreational use of the basin.

Brush Neck Cove during the summer of 1987, was the subject of a City of Warwick petition to CRMC for a dredging permit. The City believed that this would allow boaters and quahoggers better access to the Cove. The plan was to dump the dredge material in a wooded area in nearby City Park. The total cost of the project was to be an estimated \$150,000-\$200,000 (1987). The City abandoned the plan to dredge Brush Neck Cove in April of 1988 due to complaints from environmentalists and state officials who feared the waterway would be harmed.

The Army Corps of Engineers has a program to provide maintenance dredging of public channels and mooring areas at the request of local and state governments. There is currently a state commission appointed by the governor which is trying to identify strategies to facilitate the Army Corp's dredging of the Providence River shipping channel. This major project has the same characteristics and problems as local dredging projects in Warwick. This state initiative, if successful, may expedite local projects.

2. POLICY

The City supports actions to restore water depths in navigation channels and mooring areas which provide for safe navigation and efficient use of mooring areas in City waters.

3. OBJECTIVES

The City should actively promote environmentally-sound dredging projects which will provide for safe navigation, efficient use of mooring areas, and productive economic and recreational use of the City's waters.

4. ISSUE

Periodic maintenance dredging of channels and mooring areas in Warwick is necessary to ensure continued safe navigation and productive use of the City's waters.

5. IMPLEMENTATION STRATEGIES

- B-1** The Harbor Management Commission will work with the Planning Department, Parks and Recreation Department and neighborhood associations, to develop cost estimates and feasibility statements for Pawtuxet Cove, Apponaug Cove and Warwick Cove dredging projects. Subsequently, a recommended hierarchical ranking of project priority should be established. The Harbor Management Commission shall then advise the Planning Department on a course of action relative to obtaining desired action from the Army Corps of Engineers. Possible financial resources for such projects should also be identified.



C. Public Access: Rights-of-Way to the Shore

1. FINDINGS

The Rhode Island Constitution specifically protects citizens' rights to fish from the shore, to gather seaweed, to leave the shore to swim in the sea, and to walk along the shore at or below the high water mark. Access along the shore has been a common expectation and legal right for generations of Rhode Islanders (Coastal Resources Center, 1993). Trespassing across private property to reach the shore, however, is illegal. Since most waterfront property in Rhode Island is privately owned, those other than private property owners seeking to reach the shore without trespassing must rely on public lands and access ways.

Rights-of-way (ROW) represent just one form of shoreline access opportunities that exist in Rhode Island. Others include the various state-owned boat ramps, recreation areas, beaches, and parks, as well as the various town-owned access sites.

In the City of Warwick there are many platted streets that end at the shoreline which serve as access points. The City may wish to increase the opportunity for shoreline access through use of these platted streets. The City of Warwick Comprehensive Plan sets five policy recommendations for access to the shore. These recommendations call for the locating, marking and maintaining rights of way to the shoreline along with a public education and awareness program on the availability and use of the access areas.

RIGL 46-23-6(E) gives CRMC authority to document, designate, mark, acquire, and improve existing public rights of way to tidal waters. CRMC may convey state designation upon such accessways. While the sites listed by CRMC are all public in nature, they vary considerably in terms of the degree to which they afford safe, convenient access to the shore.

The Warwick Planning Department, responding to a 1993 request by CRMC, nominated 17 ROWs in Warwick for state designation. Of these, 15 have achieved such status; one was withdrawn, and one application is still pending.

A complete listing of all public rights-of-way to the shore is provided in Appendices E, F, & G of this Plan.

The Harbor Management Commission initiated a coastal ROW "Adopt-a-Spot" program in 1995. Four waterfront access points in Warwick have been established at: Sandy Point at the end of Ives Road, adopted by Rocky Hill School; Mill Cove Road, adopted by students at Samuel Gorton Jr. High; and Gaspee Point Drive and Samuel Gorton Boat Ramp, both adopted by West Bay Anglers.

2. POLICIES

It shall be the policy of the City of Warwick to identify important public ROW's, and provide access to the waterfront via public rights-of-way.

The City should adequately maintain as many public rights-of-way as possible.

3. OBJECTIVES

The City should ensure that there are usable rights-of-way in each area of the City.

4. ISSUE

There are many rights-of-way in Warwick which have not yet been documented, designated or marked. In addition, many are littered, overgrown, or obstructed.

5. IMPLEMENTATION STRATEGIES

- C-1** The Planning Department should inventory ROW's listed in the plan in order to determine: present physical condition, availability of on-site parking, current usage level, and feasibility of upgrade.
- C-2** The Planning Department, in consultation with the Harbor Management Commission, neighborhood associations and Director of Public Works should select those ROW's that are best suited for immediate improvement.
- C-3** The Harbor Management Commission, in consultation with the Director of Public Works, should develop and implement a plan for long term maintenance and improvements for rights-of-way which addresses the following:

Reconstruction-

Some of the City's ROW's may require physical improvements in order to provide safe access to the shore. In addition, improvements for handicap access should also be considered for appropriate locations.

Maintenance-

Continued maintenance of the City's ROW's is an important element of providing access to the shore. Therefore all ROW's should receive regular trash removal and landscaping, such as periodic mowing and annual brush removal. Also, where appropriate, signs to identify each ROW should be considered. Illegal "no parking" signs should be removed.

Such a plan shall be adopted and implemented only after property owners within a 200 foot radius of each ROW have been notified of contemplated improvements and have been given an adequate opportunity to comment.

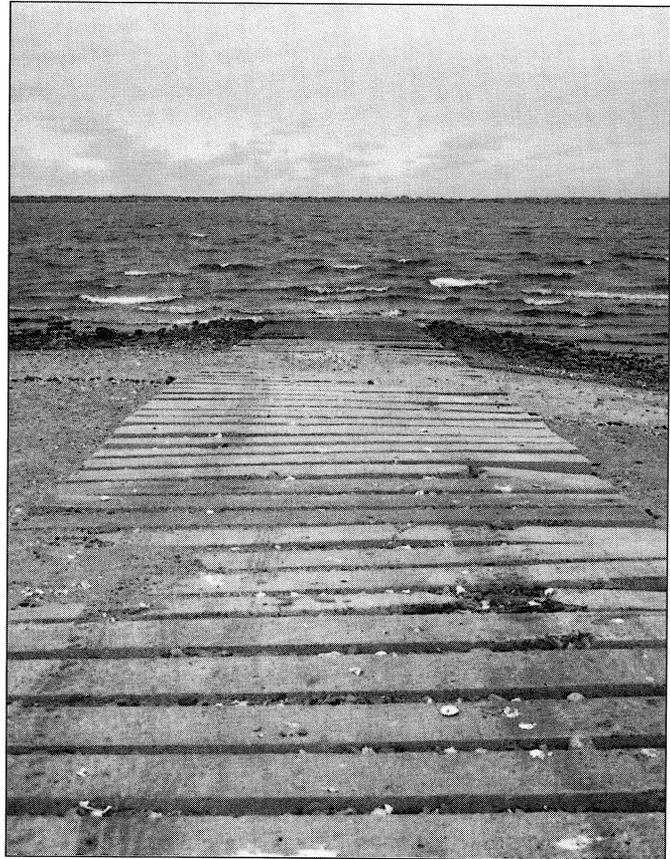
D. Harbor Facilities & Boat Ramps

1. FINDINGS

Harbor Facilities

Harbor facilities consist of public, private and commercial marinas, yacht clubs, boatyards, docks, and boat ramps. There are nineteen marinas, boatyards and yacht clubs operating in the City of Warwick. These marinas contain over two-thousand-five-hundred (2,500) slips (see Table 4). There are several docks in the various coves for commercial fisherman and, there are City docks in both Apponaug and Warwick Coves. There are also numerous private docks throughout the City's waters.

The commercial marinas provide various services. Table 4 indicates each of the marinas by cove, the number of slips, and whether or not the marina provides marine sewage pump-out facilities and restrooms. The US Environmental Protection Agency (USEPA) and RIDEM Division of Water Resources/ Narragansett Bay Estuary Program recently funded the installation of eight pump-out facilities within Greenwich Bay.



Public Boat Ramps:

Not all boat owners in Warwick and in surrounding communities have moorings or dock space. Residents and non-residents with small portable craft and with larger boats on trailers rely on public access ways and boat ramps for access to the water. There are a number of launching ramps in the City (Table 5). Table 5 indicates the condition of ramps as **Good** - suitable for immediate use, **Fair** - useable but in need of repair or improvement or **Poor** - not recommended for use. However, many structures originally meant for launching boats in Warwick are no longer feasible for public use.

- Many small boat ramps are located in densely developed neighborhoods with inadequate parking. Improving these ramps would result in traffic and noise impacts on surrounding neighborhoods.
- Deteriorated conditions and siltation have rendered many neighborhood ramps difficult or impossible to use.
- Costs and permitting complexity makes boat ramp redevelopment extremely difficult.
- Parking must be adequate and circulation must be tolerable.
- Water depth has been decreased.

Table 4 — Inventory of Commercial Marinas

LOCATION	PUMP-OUT	RESTROOMS	FUEL	SLIPS
Potowomut River	—	—	—	—
Greenwich Cove				
East Greenwich Yacht Club	X	X	X	50
Norton's Shipyard & Marina	—	X	X	100
Apponaug Cove	—	—	—	—
Apponaug Harbor Marina	X	X	—	218
Ponaug Marina	—	X	X	130
Brush Neck/ Buttonwoods Cove	—	—	—	—
Little Rhody Yacht Club	—	X	—	—
Warwick Cove	—	—	—	—
Angel Marina	—	X	—	80
Harbor Light Marina	X	X	X	170
Nick's Dock	—	X	—	10
Warwick Cove Marina	—	X	X	100
Sound Marina	—	X	—	50
Winstead's Dock	—	X	—	200
C-Lark Marina	X	X	X	350
Breezie Point Dock	—	—	—	40
Carlson's Marina	X	X	—	182
Wharf Marina	X	X	—	80
Bay Marina	X	X	—	200
Occupessatuxet Cove	—	—	—	—
Passeonkquis Cove	—	—	—	—
Pawtuxet Cove	—	—	—	—
Pettis Marine Boat Yard	—	X	—	27
Greenwich Bay	—	—	—	—
Brewer Yacht Yard	X	X	—	240
Greenwich Bay Marina Club	X	X	X	300
Narragansett Bay	—	—	—	—
Providence River	—	—	—	—

Total Slips - 2527

Source: City of Warwick, March 1996

The Chafee administration has achieved significant breakthroughs on the boat ramp issue. After securing an Army Corps of Engineers permit in 1993, the City has just signed an agreement with the US Fish and Wildlife Service and RIDEM to construct a two-bay handicapped-accessible boat ramp at Oakland Beach on Warwick Cove. The estimated cost is \$260,000, including approximately \$195,000 in Federal grant funding. This ramp will also feature a 29-space parking lot. The Oakland Beach Improvement Association was consulted and approved the project, incorporating it into their neighborhood master plan. The engineering work for the Oakland Beach boat ramp commences in July 1996, and the facility is expected to be completed in 18 months.

2. POLICY

The City should maintain as many boat ramps as possible.

3. OBJECTIVE

The City should ensure that there are useable boat ramps in each area of the City.

Table 5 — Public Boat Ramps & City Docks

LOCATION	RATING	TYPE	ACCESS	PARKING	OTHER COMMENTS
Passeonquis Cove Gaspee Pt. Drive	Good	overlook, cement boat ramp	direct, paved road, broken asphalt approach	10 spaces, lot needs grading	Adopt-a-Spot Site
Conimicut Pt/ Shawomet Ave.	Poor	cement ramp, overrun by tide	direct, paved road	10-15 spaces lot, needs grading	poor signage, covered in deep sand
Bayside Beach, Longmeadow- Sam. Gorton Hwy.	Good - Fair	cement ramp	direct, paved road	10 spaces, lot severely potholed	Adopt-a-Spot Site, poor signage
Arnold's Neck & Harrop Ave.	Good - Fair	asphalt ramp, crumbling	direct, paved road	10 spaces, severely potholed	poor signage
Goddard Park	Good	cement ramp	crushed rock approach, paved road	15-20 spaces	shallow at low tide, sparse signage
Apponaug Cove	Good	dock, moorings	direct paved	10-15 spaces	— —
Pawtuxet Park/ Asprey Boathouse	Poor	cement ramp, dock	paved approach	5 spaces, lot needs grading	very shallow at low tide
Salter Grove - Narr. Pkwy.	Poor	rock ledge below water surface	direct, hill needs grading	5 spaces	shallow at low tide
Edgewater Beach - Oaktree Ave.	Fair	2 gravel & sand ramps	sand road, severely potholed	10 spaces on street	— —
Robert Ave./ Potowomut	Poor	asphalt deteriorated	asphalt approach severely undermined	None	no signage, use only at high tide
Waterfront St. / Second Pt. Ave.	Poor	cement	gravel approach	None	sparse signage, low tide access

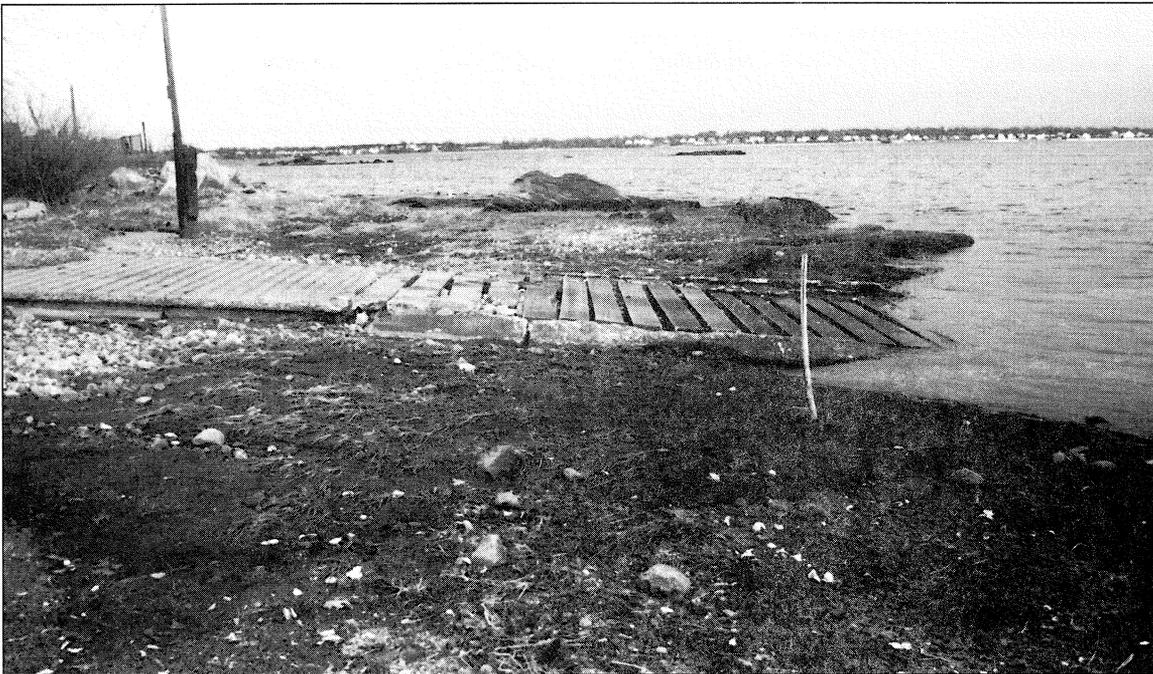
Source: Warwick Harbor Management Commission, 1996

4. ISSUE

These ramps are in various states of repair and may not be useable at this time for a variety of reasons. The majority of existing ramps lack adequate parking for car and trailers and other necessary facilities.

5. IMPLEMENTATION

- D-1 The Planning Department should inventory boat ramps listed in the plan in order to determine: present physical condition, availability of on-site parking, current usage level, and feasibility of upgrade
- D-2 The Planning Department, in consultation with the Harbor Management Commission, and Director of Parks and Recreation should select those boat ramps that are best suited for improvement.
- D-3 The Planning Department, in consultation with the Director of Parks and Recreation and the Harbor Management Commission shall proceed to administer the design and construction of such projects.
- D-4 The Director of Parks and Recreation, in consultation with the Harbor Management Commission, should develop a plan for long term maintenance for boat ramps.



E. Emergency Response

1. FINDINGS

Emergency preparedness relates to both manmade and natural disasters. Coastal and low lying areas in Warwick are subject to damage from tropical storms and hurricanes. Since the National Weather Service began tracking major weather events in 1936, thirty-one storms classified as either tropical storms or hurricanes have hit the state. August and September are the most active months for tropical storm activity, but damaging storms can occur nearly any time during the year. The City relies on agencies such as Federal Emergency Management Agency (FEMA) and the US Coast Guard to conduct damage assessment.

Potential man-made disasters may include oil and chemical spills, boating accidents, and plane crashes. In response to these situations, the City deploys a boom which is on loan from the US Coast Guard. The City may dispatch the boom on its own or upon the request of RIDEM or the Coast Guard.

The US Coast Guard has the principle responsibility for emergencies on Warwick's open waters. However, Warwick's Fire and Police Departments are notified due to the quicker response time. The City is equipped with four emergency response vessels. Marine One is fully equipped for fire fighting. The vessel is currently located at Ponaug Marina in Apponaug Cove and can respond to emergencies throughout the year. In addition, the City maintains three Zodiacs located at Engine One (Apponaug), Engine Four (near Bayside) and at Engine Six (Cole Farm) for emergency response on the City's coastal and fresh waters.



2. POLICIES

The City supports actions to improve opportunities for shellfishing through management of water quality and control of potential sources of pollution.

The City endorses current CRMC designations of coastal wetlands and other such marine habitats.

Discharges of pollutants to the City's waters should be minimized.

3. OBJECTIVES

Protect coastal wetlands and other critical marine habitats in Type 1 and 2 waters as defined by the RI CRMP.

Encourage the installation and use of BMPs and pump-out stations in marinas.

Restore, preserve and protect shellfishing in Warwick coastal waters without compromising public health.

Promote designation of Greenwich Bay as a "no discharge" zone.

4. ISSUE

Human activity within the watershed is degrading the City's coastal environment.

5. IMPLEMENTATION STRATEGIES

- F-1** The Harbor Management Commission may review and comment on CRMC permits regarding the impact of proposed development on coastal lands and environments.
- F-2** Require the implementation of best management practices at marinas in accordance with CRMC regulations and the document titled, *Environmental Guide for Marinas*.
- F-3** The City Planning Department and the Harbor Management Commission shall support RIDEM in establishing the designation of No Discharge Zone for the City's waters as part of the program to eliminate discharges of Marine Sanitation Devices (MSDs) into Narragansett Bay.
- F-4** The City shall continue development and implementation of the programs and recommendations of the Strategic Plan for the Reclamation of Greenwich Bay.
- F-5** The City will develop an education program for boaters to encourage the use of pumpouts.
- F-6** The City shall amend the Harbor Ordinance to reflect any future designation of a no-discharge zone.
- F-7** The City shall amend the Harbor Ordinance to reflect RIGL 46-12-39 through RIGL 46-12-41.

Table 6 — Greenwich Bay Funding 1993-96
Total Financial Investment in the Clean-Up of Greenwich Bay

SOURCE	PROJECTS	AMOUNT OF FUND	% OF TOTAL
Warwick Bay Bond	Post Rd. Sewer Line Extension Hook-up 900 units w/sub-standard systems	\$2,500,000	34%
Warwick Bay Bond	Sewer Authority ISDS Grant/Loan Program	\$1,000,000	14%
Warwick Bay Bond	Municipal BMP Installation	\$1,000,000	14%
Warwick Bay Bond	Stormwater Research	\$500,000	7%
NOAA Seagrant/URI	Computer Modeling & Public Outreach	\$500,000	7%
City of Warwick	Purchase of Chepiwanoxet Island	\$420,000	6%
RIDEM- Aquafund	Install & Monitor Innovative Septic System	\$206,605	3%
RIDEM- Aquafund	Large Scale GIS Database Development	\$196,750	3%
Champlin Nature Conservancy	Purchase of Chepiwanoxet Island	\$175,000	2%
RIDEM/EPA 319 Grant/Warwick	Oakland Beach Sewer Tie-Ins	\$165,000	2%
RIDEM/EPA	Marina Pump-Out Stations	\$140,000	2%
RIDEM- Aquafund	Map Eelgrass Beds & Fringe marshes	\$103,000	1%
RIDEM/EPA	Greenwich Bay Tributary Pollution	\$100,000	1%
City of Warwick	Open Space Purchase	\$83,000	1%
RIDEM	Open Space Purchase	\$83,000	1%
RIDEM/EPA 319 Grant	Stormwater BMP/Hardig Brook	\$79,000	1%
RIDEM-EPA	Innovative ISDS Demonstration Project	\$65,000	1%
RIDEM-Aquafund	GIS Needs Analysis	\$9000	—
RIDEM/EPA 319 Grant	Education	\$4000	—
RIDEM/NRCS	Farm BMP Installation	\$3000	—
City of Warwick	Farm BMP Installation	\$2000	—
Sub-Total		\$7,334,355	100%

City of Warwick Wastewater Bond— a significant proportion
will be invested in the Greenwich Bay
Watershed for Sewer Extensions & ISDS Upgrades. **\$130,000,000**

*ISDS = Individual Septic Disposal Systems. BMP = Best Management Practices. RIDEM = RI Dept. of Environmental Management.
EPA = Environmental Protection Agency. Source: Warwick City Planning Department, 6-1-96.*

G. Coordination of Harbor Management Juristictions

1. FINDINGS

Harbor Management requires activities by numerous jurisdictions within the City including Parks and Recreation Department, the Harbormaster, Harbor Management Commission, Police and Fire Departments, Planning Department, and Department of Public Works.

Coordination between these various departments may be improved to eliminate overlaps, avoid duplication of effort, provide services more efficiently and better protect public safety. In order to efficiently coordinate the uses and activities within the City's tidal waters, the provisions of the Harbor Management Ordinance shall be interpreted as follows:

A. Department of Parks and Recreation

The Department of Parks and Recreation shall be the local regulatory body for the waters of the City of Warwick. The Department is authorized and empowered (City of Warwick Harbor Management Plan, 1989) to develop, operate and administer shoreline recreational facilities; waterfront business facilities; harbors and coves; to carry on a general beach and bath-house business; to purchase, construct, maintain and operate or lease thereon buildings, wharves, piers, walks, parking facilities and swimming pools; to furnish business buildings and accommodations on or near the waterfront for lease or hire; to furnish bathing accommodations and facilities to the public and to make reasonable rules and regulations for the use of the same; and to charge suitable fees and/or rents therefore, as may be adopted from time to time by the City Council.

Harbormaster

The Harbormaster shall report to the Director of Parks and Recreation and shall have the power and duties delegated to him/her by the Director.

Assistant Harbormasters

The Assistant Harbormasters shall work for the Harbormaster and shall have the power and duties delegated to them by the Director.

B. Harbor Management Commission

The Commission shall be the primary advisory group for the management of the waters of the City of Warwick. The Commission is authorized to :

- 1) Recommend to the Department of Parks and Recreation the adoption of rules, fees and penalties for activities which may be necessary to fulfill the goals of the Warwick Harbor Management Plan and the Ordinance.
- 2) Sit as a board of appeals to make recommendations on harbor issues.
- 3) Review and revise, as necessary, the Harbor Management Plan for the City Council's and CRMC approval. The Plan shall be reviewed and revised at least once every five (5) years.
- 4) Assist in preparing an annual budget and Capital Improvement Program in coordination with the Department and in accordance with the provisions of the City to expend monies in the Harbor Management Fund.

C. Planning Department

The Planning Department shall serve as the secretariat and technical advisor to the Harbor Management Commission. The Planning Department, in its capacity as the lead City agency on environmental protection, land use management, Geographic Information System development, capital budget formulation, securing of State and Federal grants, and recreational development, as well as the City's primary contact with US EPA, Army Corps of Engineers, CRMC and RI DEM, shall play an integral role in harbor management planning in Warwick.

D. Police and Fire Departments

As they relate to public safety on the water (see Emergency Response).

E. Adjoining Municipalities

The City of Warwick shares water boundaries with North Kingstown, Portsmouth, East Providence, East Greenwich, and Cranston. At present, each community has different regulations and enforcement procedures. Communication between the communities takes place only on an infrequent basis. While the need occurs only rarely, there is no clear mechanism to resolve disputes between municipalities.

2. POLICY

All City Departments and Officials shall work together to further the objectives and implement the recommendations of the Harbor Management Plan.

The City of Warwick shall endeavor to cooperate with adjoining municipalities to further mutual Harbor Management goals and objectives.

3. OBJECTIVES

Facilitate communications and maximize cooperation between City agencies within Warwick in Harbor Management activities.

Encourage communication and coordination with adjacent municipalities and increase uniformity of operations in common waterways.

4. ISSUE

There is a need for improvement in communication between departments relating to harbor management.

5. IMPLEMENTATION STRATEGIES

- G-1** Semi-annual meetings should be organized by the Director of the Department of Parks and Recreation in November and March of each year, beginning in November of 1996, between all City jurisdictions involved in harbor management, to review the implementation of the Harbor Management Plan, and set priorities for the next season.
- G-2** The Planning Department will help organize annual inter-municipality meetings for the discussion and resolution of administration issues related to harbor management. The Department will develop cooperative agreements as needed to improve coordination and attain short and long term management goals.
- G-3** The City will actively support the creation and participate in an Association of West Bay Harbor Commissions.
- G-4]** The City will develop a mechanism by which appeals regarding harbor management will be heard.

H. Water Use Compatibility

1. FINDINGS

Warwick's waters are used for a wide range of activities such as sail and power boating, fishing, shellfishing, jet skiing, and swimming. There are occasional conflicts between these uses.

Conflicts between incompatible uses can lead to social tension, detract from public enjoyment of harbor resources and threaten public safety. Some vessels create a nuisance, in terms of noise, speed, and access to sensitive areas.

The City of Warwick does not presently have a policy regarding use of City waters for aquaculture. The Harbor Management Commission has been approached with at least one proposal for aquaculture use in a City-designated mooring area. Renewed interest in aquaculture in Rhode Island has also led to proposed legislation at the State level, which may stimulate additional proposals for aquaculture projects in Warwick's waters. Aquaculture projects have the potential to contribute significantly to the local economy, but also have the potential to conflict with other uses within the City's waters. All aquaculture proposals must receive CRMC approval. The City has made a major investment in cleaning up Greenwich Bay for the resumption of commercial shellfishing. Warwick, therefore, has a direct interest in making sure that shellfish in Greenwich Bay are managed as a renewable resource very carefully.

2. POLICY

All citizens should have the opportunity to enjoy, within reasonable limits, the use of the City's coastal resources for the full range of recreational and commercial uses. Single use designations (e.g. swimming areas, mooring fields) should be granted only for those uses which further the aims of this plan and which do not conflict significantly with other existing and proposed uses of the City's waters.



3. OBJECTIVE

To maximize compatibility between various uses within the City's waters providing for safe and equitable use.

Clarify designation of single use areas, particularly mooring fields and swimming areas.

To encourage aquaculture activities which will contribute to the local economy without conflicting with other existing and planned uses of the City's waters.

4. ISSUE

The variety of uses create occasional conflict and safety issues.

5. IMPLEMENTATION STRATEGIES

H-1 The Director of Parks and Recreation shall promote boating safety standards pursuant to RIDEM 46-22 by scheduling Harbormaster patrols at peak usage periods.

H-2 The Director of Parks and Recreation shall provide City support (e.g. meeting places, audio-visual equipment, publicity assistance, and participation by municipal officials) to volunteer and non-profit organizations such as the Greenwich Bay Power Squadron and the US Coast Guard Auxiliary for conducting boating safety training courses.

H-3 The Harbor Management Commission should review all new proposals for single use designation, aquaculture sites and mooring fields in City waters, making recommendations to the appropriate City and State decision-making bodies. The Harbor Management Commission should make recommendations to the Harbormaster in order to resolve conflicts over uses of harbor resources.

H-4 The City will work with the State to designate potential sites for the development of aquaculture.

H-5 The Director of Parks and recreation should, for public safety purposes partition off swimming areas at Oakland Beach, Conimicut Point, and City Park.

I. Derelict Vessels & Debris

1. FINDINGS

RIGL Chapter 6, 46-6 assigns to the Director of RIDEM responsibility for removal of shipwrecks and obstructions to navigation. Municipal Commissioners of Wrecks and/or Harbormasters are required to notify the RIDEM of all such wrecks and obstructions. This law specifies that Commissioners of Wrecks are not liable for the cost of removal of such wrecks and obstructions but authorizes them to hold property appertaining to a wrecked vessel to provide for its removal.

2. POLICY

Wrecks, free floating docks, and loose debris are to be removed from Warwick's Harbors as soon as practical.

3. OBJECTIVE

To provide for safe navigation and protection of the shoreline resources and environment.

4. ISSUE

Derelict vessels, free floating docks and loose debris may present hazards to navigation while afloat and produce unsafe, unsightly, and environmentally-unsound conditions when grounded.

5. IMPLEMENTATION STRATEGIES

- I-1** On the recommendation of the Harbor Management Commission, The Warwick City Council shall appoint a Commissioner of Wrecks in accordance with RIGL 46-10. The Commissioner of Wrecks would be responsible for identification of abandoned vessels, loose floating docks and debris, notification of owners, initiation of wreck removal, notification and scheduling of DPW and RIDEM to assist in removal as needed, and initiating efforts to recover from property owners the costs expended for the purpose of debris and wreck removal.

- I-2** The Harbor Management Commission should consider recommendations to CRMC that requires the tagging, for the purpose of identification, of all sections of each dock within its jurisdiction in order to determine ownership and to facilitate cleaning up of marine debris and limiting the City and State's liability.

J. Management of Harbormaster Activities

1. FINDINGS

The role of the Harbormaster is crucial to the implementation of the Harbor Management Plan. The Harbormaster and the Assistant Harbormasters play an important role in harbor management activities, including: enforcing the City's Harbor Ordinance, mooring management, contributing to public safety, and emergency response, and control of wrecks and debris. Taken together, these duties exceed what can be reasonably accomplished on a part-time schedule, especially during the boating season.

The Harbormaster reports to the Director of the Department of Parks and Recreation. The Harbormaster has only periodically provided the Harbor Management Commission with information necessary for the Commission to fulfill its responsibilities.

2. POLICIES

The Harbormaster shall implement the Harbor Management Plan and enforce the Warwick City Ordinance as it relates to Harbors and applicable State of Rhode Island legislation.

3. OBJECTIVE

Clearly define the responsibilities of the Harbormaster, ensure that staffing is adequate to fulfill the responsibilities of the harbormaster and improve reporting procedures.

Improve enforcement of the Harbor Management Ordinance ensure adequate contributions for the protection of public safety, implement strategies of the Harbor Management Plan, and provide appropriate training for all personnel engaged in Harbor Management activities.



4. ISSUE

The role and responsibilities of the Harbormaster needs to be reviewed with respect to staffing, procedures, training and reporting.

5. IMPLEMENTATION STRATEGIES

- J-1** The Director of Parks and Recreation shall, after consulting the Harbor Management Commission, forward to the Personnel Director a position description for the Harbormaster and Assistant Harbormasters, for codification.
- J-2** The Director of Parks and Recreation should consider extending the working schedule of the Harbormaster to provide full-time status during the boating season, from May to September. In addition, the Director of Parks and Recreation should ensure that there is adequate administrative support for harbor management.
- J-3** The Harbormaster should report monthly to the Harbor Management Commission on the following issues: the hours of patrol provided, number of warnings and citations issued, mooring transactions (placement of new moorings, allocation of existing moorings, removals of unauthorized moorings, etc.), and status of wrecks and debris for the previous month. He/She should also indicate proposed activities for the coming month and highlight any other matters which should be brought to the attention of the Harbor Management Commission.
- J-4** The Harbormaster and Assistant Harbormasters should participate in annual training and certification appropriate to their positions in cooperation with Fire, Police, and Emergency Management Offices. This will serve both to ensure that Harbormasters are adequately trained and to establish and improve informal lines of communications between the Harbormaster and the other Departments.
- J-5** At random times during the boating season, the Police Department should assign a police officer familiar with Rhode Island boating regulations to accompany the Harbormaster on scheduled patrols to assist with enforcing the municipal code.

K. Harbor Management Budget

1. FINDINGS

The revenue for harbor management is derived from mooring fees, State reimbursement of boat registration fees, and fines levied in response to citations. Before 1993, there was no formal budgeting process for Harbor Management. The clear linkage between revenues, services and capital investment needs to be consistent.

Over the past four years, mooring fees have generated an average of about \$37,200 per year in revenues and the City has received about \$9,000 in state reimbursement for boat registration fees annually. Together these monies have provided the revenues for personnel, waterfront safety, and administration.

At present, fines resulting from citations issued by the Harbormaster accrue to the City but are not earmarked for a Department of Parks and Recreation account for harbor management activities. In addition, the fines generated from these violations have not been recorded or tracked for payment.

At present, the Department of Parks and Recreation back-charges the mooring fee fund approximately \$4,000 annually for administrative services over and above that of the Harbormaster and Assistant Harbormasters.

At present, there is no separate capital improvement plan for harbor management related expenditures (e.g. patrol boats, boat ramps, docks, dredging, public access improvements, etc.). These items are dealt with case by case as part of capital budget requests by the Parks and Recreation Department, Police, Fire and Safety and/or the Department of Public Works.

2. POLICIES

Revenues derived from harbor management activities (moorings, boat registrations, and fines) should be devoted to provision of services and capital improvements directly related to harbor management.

Harbor management will have sufficient funds to carry out the responsibilities assigned.

3. OBJECTIVES

Ensure that the harbor program is self-supporting. Plan ahead for future capital expenditures. Improve harbor management services and provide greater accountability in the budgeting process.

The Harbor Management Commission shall advise the Director of Parks and Recreation in the annual budget development process and should periodically track revenues and expenses related to harbor management and eliminate overhead back-charges to the mooring fee account in order to maximize harbor management capital and service improvements.

The Harbor Management Commission will review the mooring fee structure by 1997 and each year thereafter, ensuring that mooring fees are commensurate with the value of City services provided or to be implemented based on mooring revenues.

4. ISSUE

Funds are inadequate to carry-out the actions identified in this plan.

5. IMPLEMENTATION STRATEGIES

- K-1** The Harbor Management Commission shall take an active role to assist the Director of the Department of Parks and Recreation in developing the annual operating budget for harbor management as specified in the existing Harbor Management Ordinance.
- K-2** The Harbor Management Commission should establish a budgetary subcommittee which will develop five (5) year projections of expenditures and income as related to harbors and aid in all other budgetary issues.
- K-3** The Harbor Management Commission should meet annually with the Director of Parks and Recreation to develop a recommended budget at a time appropriate to the City's budget process that allows for timely input from Harbormaster, Director of Parks and Recreation, and Planning Department.
- K-4** The recommended operating budget should include a detailed listing of proposed expenditures as well as an income fee structure for the following fiscal year.
- K-5** For Fiscal Year 1998 the Director of Parks and Recreation, in consultation with the Harbor Management Commission, should recommend to the Planning Director and Finance Director a ten-year capital improvement budget plan based on an analysis of projected funds available from Treasurer's Agent Account for Mooring Fees and additional funding sources. This is to be linked to other issues including public access, boat ramps and docks, Harbormaster boat replacement and dredging.
- K-6** For Fiscal Year 1998, all Department of Parks and Recreation back-charges for administration and overhead shall be eliminated, except as it directly relates to the services provided by the Harbormaster and Assistant Harbormasters.
- K-7** The Harbor Management Commission will receive a monthly statement of income and expenses related to harbor facilities generated from the Department of Parks and Recreation.

APPENDIX A

City of Warwick Harbor Ordinance

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Chapter 24 HARBORS*

*Cross reference(s)– Use of waterways by model power boats, 40-23; police officers' duty to assist harbor masters, 52-3.

State law reference(s)– Authority of city with regard to harbor masters, G.L. 1956, 46-4-2; duty of harbor masters to give notice of obstructions, G.L. 1956, 46-6-15; authority of waterfront development and park commission to regulate anchorages and moorings in public waters, and authority of harbor master in pursuance thereof, P.L. 1965, ch. 219.

Sec. 24-1. Purpose and applicability.

Sec. 24-2. Policy.

Sec. 24-3. Definitions.

Sec. 24-4. Area of jurisdiction.

Sec. 24-5. Administration and enforcement; harbor management commission.

Sec. 24-6. Regulated activities.

Sec. 24-7. Mooring permit.

Sec. 24-8. Fees; harbor management fund.

Sec. 24-9. Penalty.

Sec. 24-10. Disclaimer of liability.

Sec. 24-1. Purpose and applicability.

(a) **Purpose.** The regulations set forth in this chapter are made in accordance with the city harbor management plan for the purpose of promoting the public health, safety and general welfare of the citizens of the city and the general public at large that uses the city's waterfront. These regulations are designed to implement the harbor management plan, to provide for the safe harbor and use of boats, and to provide for the proper disposal of waste. These regulations are made with reasonable consideration given to the fragile nature of the city's waterfront and with a view to conserving the waterfront while permitting its use and enjoyment.

(b) **Applicability.** The provisions of this chapter, and any rules and regulations adopted pursuant thereto, shall be applicable to and shall govern the use of harbor lands, waters, facilities and activities under the jurisdiction of the city. This chapter shall be subordinate to all existing federal and state statutes and regulations and is not intended to preempt or conflict with any other valid laws.

(c) **Scope.** It is not the intent of this chapter to have the city supersede the powers and duties of the state coastal resources management council or the state department of environmental management. This chapter only sets forth rules and regulations for the use of the waters of the city and the issuance of mooring permits.

(Code 1971, 9-1)

Sec. 24-2. Policy.

It shall be the policy of the city that:

- (1) The public has the right to use the city's waters and that the city has the right to regulate the waters' use;
- (2) All the citizens of the city shall have the right of access to the shoreline;
- (3) Riparian landowners shall be given due consideration in the establishment of new moorings, docks or slip placements;
- (4) Moorings in the city's waters require a permit issued by the city;
- (5) Moorings shall be distributed on a fair and equitable basis between residents and nonresidents and individual and commercial users with priority given to residents;
- (6) In order to achieve an equitable balance between private and public use of the water resource within type 3 waters, the city promotes a balance of private and public access. The city recognizes the role of marinas as providing public access through private enterprise while reserving for public use federally maintained anchorages;
- (7) Moorings shall not be sold or transferred by an individual;
- (8) Pleasure boating and commercial fishing are a valuable resource for the city;
- (9) The maintenance or upgrading of present water quality designations is essential for the continuation of the commercial fishing and pleasure boating industries;
- (10) Every effort will be made to maintain or upgrade the present water quality designations assigned by the state;
- (11) No discharge of sanitary waste into the coves of the city shall be permitted;
- (12) The use of the water shall be balanced so that its environmental quality is protected;
- (13) The enjoyment of the waters of the city through all types of recreational activity is encouraged;
- (14) The various recreational activities shall be managed by the department of parks and recreation so as to minimize their impact on each other;
- (15) A balance between the demands of the fishing industry and the boating industry must be developed;
- (16) Commercial fishing and shellfishing is a valuable component of the city economy and must be protected and encouraged to grow; and
- (17) Activities of mutual concern will be coordinated with the towns of North Kingstown and East Greenwich and the City of Cranston.

(Code 1971, 9-2)

Sec. 24-3. Definitions.

For the purpose of this chapter, the following terms shall have the meanings designated in this section. The word "used" includes "designed, intended or arranged to be used."

Abode means the principal, nonwater-dependent use of a structure or vessel as a dwelling or home.

Anchoring means to secure a vessel temporarily to the bottom of a water body by dropping an anchor or anchors or other ground tackle from a vessel.

Channel means any water areas that are federally maintained and reserved for unobstructed movement of vessels.

Commercial mooring means the rental, lease, management, maintenance and/or operation of a mooring for an amount in excess of or in addition to the municipal mooring permit fee or for purposes other than private use.

Commission means the harbor management commission.

Department means the department of parks and recreation.

Director means the director of parks and recreation.

Fairway means any locally designated and/or maintained water areas reserved for unobstructed movement of vessels.

Harbor management commission means the commission established or designated in accordance with this chapter to carry out responsibilities associated with the development, oversight and administration of municipal harbor programs.

Harbormaster means an official appointed in accordance with this chapter to carry out the provisions of this chapter. There shall be a chief harbormaster who is responsible for the supervision and direction of all other harbormasters.

Houseboat and floating home mean a building constructed on a raft, barge or hull that is used primarily for single-family habitation. Houseboats may only be anchored in a permitted marina. Discharge of sanitary waste from houseboats into the waters of the city is prohibited.

Immediate family means husband, wife, father, mother, son, daughter, brother, sister, grandparent, grandchild or stepchild.

Moor means to permanently secure a vessel to the bottom of a water body by the use of mooring tackle.

Mooring means a place where buoyant vessels are secured to the bottom of a water body by mooring tackle in accordance with this chapter and which has received a permit from the municipality.

Mooring area means any area designated by the 1989 harbor management plan for the location of moorings.

Mooring tackle means the hardware used to secure a vessel at a mooring and which is kept in place seasonally.

Private mooring means any mooring registered to an individual and used exclusively for his/her recreational purposes.

Resident means any person whose legal residence or place of principal operation is the city.

Transient anchorage means any area reserved and designated on the 1989 harbor management plan, as amended from time to time, for the exclusive shortterm use of commercial and recreational vessels and any vessels seeking emergency shelter.

Transient mooring (commercial) means a mooring reserved and designated by a commercial mooring operator for shortterm use by a person who does not typically lease from the commercial mooring operator.

Vessel means every description of watercraft, other than a seaplane on water, used or capable of being used as a means of transportation on water. Specifically excluded by this definition are floating homes or houseboats.

Wake means a wave generated by a vessel.

(Code 1971, 9-3)

Cross reference(s)– Definitions generally, 1-2.

Sec. 24-4. Area of jurisdiction.

(a) All waterfront areas, as detailed in the Harbor Management Plan: 1989-1993, for the city, shall fall under the jurisdiction of the city and shall be governed by this chapter and any rules and regulations adopted by the city. More specifically, it is that area of the waters of the city encompassed by the following description: beginning at the line between the City of Warwick and the Town of North Kingstown at a point on Forge Bridge; then proceeding down the centerline of the Potowomut River to a location halfway between Marsh Point and Pojac Point; from this point easterly to Round Rock Buoy "1"; then northeasterly to R "8" bell; thence northerly to the G "19" buoy on the channel to Providence; then along the south-westerly edge of the channel known as the Conimicut Point Reach to buoy "23"; then along the westerly edge of the channel known as the Bullock Point Reach to buoy "33"; then westerly to buoy RN "2" at the beginning of the channel to Pawtuxet Cove; then westerly to buoy N "6," N "8" and then to RN "10"; then running northerly and westerly through the center of the channel and the Pawtuxet River to the bridge on Route 1A.

(b) Excluded from the waters of the city is that portion of Greenwich Cove south and west of the municipal boundary line established by the P.L. 1986, ch. 354, that is located in the Town of East Greenwich.

(Code 1971, 9-4)

Sec. 24-5. Administration and enforcement; harbor management commission.

The city may regulate uses and activities within the tidal waters of the state that are within the corporate boundaries of the city consistent with the authorities granted the city by G.L. 1956, 46-4-1 et seq., to minimize user conflicts and to maximize the efficient use of both the water space and the city-owned waterfront. In order to regulate the uses and activities within the city's tidal waters, enforcement of the provisions of this chapter shall be completed as follows:

(1) *Department of parks and recreation.* The department of parks and recreation shall be the local regulatory body for the waters of the city. The department shall enforce this chapter promulgated by the city council and may adopt any rules and regulations, subject to CRMC approval, for the implementation of this chapter and perform all acts necessary and consistent with the purpose of this chapter. The department shall operate the harbor management fund in accordance with this chapter. In addition to the duties and responsibilities delegated to the department by this chapter, the department is hereby authorized and empowered to develop, operate and administer parks and shoreline recreational facilities, waterfront business facilities, harbors and coves; to carry on a general beach and bathhouse business; to purchase, construct, maintain and operate or lease thereon buildings, wharves, piers, walks, parking facilities and swimming pools; to furnish business buildings and accommodations on or near the waterfront for lease or hire; to furnish bathing accommodations and facilities to the public and to make reasonable rules and regulations for the use of same; and to charge suitable fees and/or rents therefor, as may be adopted from time to time by the city council.

(2) *Harbormasters.*

a. *Chief harbormaster.* There shall be a chief harbormaster for the city, who shall be appointed by the mayor and who shall serve at the pleasure of the mayor. The chief harbormaster shall report to the director of parks and recreation and shall have the power and duties delegated to him/her by the director.

b. *Other harbormasters.* There shall be a harbormaster for each cove or harbor within the city and other harbormasters as needed, who shall be appointed by the mayor and who shall serve at the pleasure of the mayor. The harbormaster(s) shall work for the chief harbormaster and shall have the power and duties delegated to them by the director.

c. *Compensation.* The chief harbormaster and the harbormaster(s) shall receive an annual stipend and shall be compensated for expenses incurred in the performance of their duties. All compensation shall be included in the department's budget, and acted upon by the city council.

(3) *Harbor management commission.* There is hereby created a harbor management commission, which shall consist of seven members. The commission shall consist of one representative from each of the following groups: the recreational boating community, the commercial fishing industry, the commercial mooring operators and the environmental community. In addition, there shall be on the commission three citizens at large who are not affiliated with any of the above groups.

a. *Term of office.* Members shall be appointed by the mayor for five-year terms.

b. *Vacancies.* All members shall serve until their successors are duly appointed. If a vacancy occurs, the mayor shall appoint a member to fill the remainder of the unexpired term.

c. *Chairperson.* The chairperson, vice-chairperson and secretary shall be elected by the members of the commission. Meetings shall be called by the director or at the request of three members of the commission. The chairperson shall conduct the meetings of the commission. In the absence of the chairperson, the vice-chairperson shall assume those responsibilities. The secretary shall keep minutes of all meetings.

d. *Powers and duties.* The commission shall be the primary advisory group for the management of the waters of the city. The commission shall adopt rules of procedure and operation for its meetings and is authorized to:

1. Recommend to the department of parks and recreation for adoption rules, fees and penalties for activities which may be necessary to fulfill the goals of the city harbor management plan and the requirements of this chapter;
2. Assist in preparing an annual budget and capital improvement program in cooperation with the department and in accordance with the provisions of the city to expend monies in the harbor management fund;
3. Sit as a board of appeals to hear any person aggrieved by any decision, act or failure to act by the department of parks and recreation or the chief harbormaster in the enforcement of this chapter and any rules and regulations adopted by the city pursuant to this chapter; and
4. Review and revise as necessary the harbor management plan for city council and CRMC approval. The plan shall be reviewed and revised at least once every five years.

e. *Ex officio members.* There may be one nonvoting ex officio member from the Cranston, East Greenwich and North Kingstown harbor commissions on the Warwick commission, enabling the commission to coordinate issues of mutual concern.

f. *Compensation of members.* Commission members may be compensated for their time and for expenses incurred in the performance of their duties.

(Code 1971, 9-5; Ord. No. O-94-27, I, 11-14-94)

Cross reference(s)– Boards and commissions, ch. 6.

Sec. 24-6. Regulated activities.

(a) *Moorings.* The size, type, location and use of all anchorages and moorings within and on the public water within the city are hereby regulated. A permit from the department of parks and recreation is required for all moorings within and on the public waters within the city except those installed by the city. No permit for a mooring shall be issued unless the mooring shall conform to the requirements of this chapter and the mooring is set in the place assigned by the department. The department of parks and recreation shall determine whether the applicant has complied with the requirements of this section.

(1) *Mooring standards.*

a. *General standards.*

1. All moorings installed after the effective date of this chapter and any existing mooring that must be replaced for any reason shall conform to the requirements of the following table:

MOORING SIZES BASED ON 20-FOOT WATER DEPTH					
Registered Boat Length (ft)	Mushroom Anchor Size (pounds)	Heavy Chain Size (inches)	Light Chain Size (inches)	Pennant Size (inches)	(Nylon) Length to Eye
Up to 20	200	3/4	3/8	3/4	2.5 times
21 to 25	250	3/4	3/8	3/4	bow height
26 to 30	300	3/4	7/16	3/4	above water
31 to 35	400	3/4	7/16	3/4	
36 to 40	500	3/4	7/16	7/8	
41 to 45	550	3/4	1/2	1	

2. Any boat with a registered length over 45 feet shall comply with the standards set when the permit is issued.

3. The total scope of the chain shall be 2 1/2 times the depth of the water at high tide. The heavy chain shall be 1 1/2 times the water depth.

4. As a minimum, commercial moorings shall be capable of handling a registered boat length of 25 feet.

b. All transient rental moorings shall consist of a 500-pound mushroom anchor and one-inch heavy chain and one-half-inch light chain. The weight of the anchor shall be clearly painted on the mooring ball. All commercial moorings shall have specially designated mooring buoys.

c. The maximum length of the pennant shall be 2 1/2 times the distance from the bow chock to the water plus the distance from the bow chock to the mooring cleat or post.

d. All pennant lines running through a chock or any other object where chafing may occur shall have adequate chafe guards. A second pennant shall be fastened to moorings made of cable or chain and used in case of heavy weather. All pennant lines shall be the responsibility of the boat owner.

- e. All shackles, swivels and other hardware used in the mooring hookup shall be proportional in size to the chain used.
- f. All shackles shall be properly seized.
- g. It is recommended that the pennant be spliced or shackled into the bitter end of the top chain below the buoy so the strain is not carried by the buoy.
- h. The department may approve installation of other types of moorings if they are deemed equivalent to these standards.
- i. The chief harbormaster shall have full authority and discretion to specify one-inch size heavy chain for moorings in locations deemed by him to be in nonsheltered waters under his jurisdiction.
- (2) *Numbering and description of moorings.* Each mooring shall be issued a registration number. The mooring buoy or float must be white and legibly marked in black block letters at least four inches in height with its assigned number.
- (3) *Winter mooring spars.* Winter mooring spars shall be readily visible in a vertical position above the water at all times and shall be removed not later than June 1 of the next succeeding year. Winter spars shall not be set until, on, or after October 1 of each calendar year.
- (4) *Occupation of mooring areas.* No vessel shall occupy a mooring other than the one for which it is registered. The chief harbormaster shall have authority to move any vessel violating the provisions of this chapter, and such movement shall be at the owner's expense and risk. At no time shall any vessel be tied to a mooring inconsistent with the mooring tackle standards attached hereto.
- (5) *Illegal moorings.* Any mooring located on or maintained in the public waters within the city which does not have a valid permit or does not comply with the provisions of this chapter shall be deemed an illegal mooring and shall be removed at the owner's expense.
- a. *Notice to remove; removal by city.* The director or his/her agents shall cause illegal moorings to be removed by notifying, in writing, and by certified mail, the person who has built, deposited, owns, maintains or uses the illegal mooring to remove such mooring within 30 days. If the illegal mooring is not removed within 30 days of the notice, or if no such person is known to the director upon whom notice can be served, the director may remove the illegal mooring, or cause the same to be done, in such manner and to such place as the director shall deem best.
- b. *Liability for payment of costs.* The owner (or such other person) of the illegal mooring removed by the director, in accordance with this chapter, shall be liable to pay the cost and expense of such removal and storage, or to repay the same when paid out by the city. This expense may be recovered in an action brought by the city solicitor against such persons. The city may sell unclaimed moorings and tackle. The proceeds from the sales shall be used to defray the cost the city incurred in the removal and storage of the mooring and in the administration of this chapter.
- (6) *Guest anchorage.* A boat may anchor on its own anchor up to 48 hours in the public waters of the city. Written consent of the chief harbormaster is necessary for extended visits of more than 48 hours. No vessel will be allowed to anchor in the city waters utilizing his/her own ground tackle and be left unattended. The owner or operator and party may go ashore, but shall not leave the area. They shall be available to tend to the vessel in the event of heavy weather. When anchoring in a combination mooring and anchoring area, it shall be the anchored vessel's responsibility to remain clear of all moored vessels, including a change of wind or tide situation.

(7) *Emergency anchorages.* Within close proximity to all fueling stations within the coves of the city, there shall be an emergency mooring. This mooring shall be supplied and maintained by the proprietor of said fueling station. The mooring shall meet the requirements of transient rental moorings and shall consist of an 18-inch white cylindrical float with red lettering to read "Emergency Use Only." The exact location of such emergency mooring shall be determined and approved by the chief harbormaster. It shall be a violation of this chapter for anyone to use such emergency moorings other than in a genuine emergency situation.

(8) *Mooring setback.* All moorings shall be set back a minimum of 25 feet from a channel, fairway or existing structure, and the boat shall swing clear of the channel, fairway or existing structure.

(9) *Hazardous mooring.* Any mooring determined by the department to interfere with the safe movement of boats within waters of the city may be removed in accordance with subsection (a) (5) of this section.

(b) *Transient berthing space.* Berthing space for transient boats may be designated by the city. Such transient berthing space shall not be occupied for more than a one-hour interval without the written consent of the department. The department shall mark such areas with signs which shall designate the area shortterm berthing and shall contain the warning "TOW ZONE: HOUR LIMIT." Any vessel violating the conditions of said berthing shall be subject to removal at the owner's expense and shall be subject to the issuance of a notice to move. Said notice shall include the time issued, the time at which the vessel was first observed at the berth, the state registration number of the vessel, and the name and signature of the chief harbormaster issuing the notice. Said notice shall give the owner or operator of the vessel one hour from the time of issuance to move said vessel and shall advise the owner that he/she has violated an ordinance of the city and is subject to the penalties of that ordinance.

(c) *Boat speed.* A speed maximum limit of five miles per hour and no wake zones are established for boats operating within the areas designated on the cove maps (figures 5 and 9) which are part of the Harbor Management Plan: 1989-1993, as amended by the department.

(d) *Littering and dumping.* No person shall throw, dispose or deposit, or cause to be thrown, disposed or deposited, bottles, glass, crockery, cans, scrap metal, junk, paper, garbage, refuse or debris of any nature, or any noxious substance, in or upon any of the waters within the city.

(e) *Operation on the waters.*

(1) No person shall operate any motorboat or vessel or manipulate any water skis, surfboard, sailboard, or similar device in a reckless manner so as to endanger the life, limb or property of another.

(2) No person shall operate any motorboat or vessel or manipulate any water skis or similar device while intoxicated or under the influence of any narcotic drug, barbiturate or marijuana. A person arrested and charged with operating any motorboat or vessel, or manipulating any water skis, surfboard or similar device, while under the influence of intoxicating liquor or narcotic or habit-forming drugs shall have the right to be examined at his/her own expense immediately after his/her arrest by a physician selected by him/her, and the officer so arresting or so charging such person shall immediately inform such person of his/her right and afford him/her a reasonable opportunity to exercise the same, and at the trial of such person the prosecution must prove that he/she was so informed and was afforded such opportunity.

(3) Waterskiing, surfboarding, sailboarding or similar activities are prohibited in Greenwich Cove, Apponaug Cove, Warwick Cove and Pawtuxet Cove, in any designated mooring areas and within 100 feet of any marked swimming areas.

(4) Waterskiing, surfboarding, sailboarding or similar activities are prohibited from one hour after sunset to one hour before sunrise.

(5) When towing a person or persons on water skis, surfboards, sailboards or similar devices, there must be one person, in addition to the operator of the boat, who is at least 12 years of age to observe the progress of the person(s) being towed. In addition, there shall be one life preserver, life belt, or ring buoy for each person on the boat and for each person being towed. The provisions of this section do not apply to a performer engaged in a professional exhibition or a person or persons engaged in any activity authorized under G.L. 1956, 46-22-13, as amended.

(6) No person shall operate or manipulate any vessel, tow rope or other device by which the direction or location of water skis or a surfboard, sailboard, or similar device may be affected or controlled in such a way as to cause the water skis, surfboard or similar device, or any person thereon, to collide with or strike against any object or person.

(f) *Abandoned vessels or harbor structures.* No person shall deposit or abandon a vessel or structure upon a beach, upon a public right-of-way or in the waters of the city. Any person violating this section shall be subject to punishment in accordance with the provisions in section 24-9. When any vessel or structure is deposited or abandoned in the waters of the city, the director is authorized and empowered to remove the same or cause the same to be removed.

(1) *Notice to remove.* If the person who owns, has an interest in, or exercises any control over the vessel or structure is known, the director shall give written notice by certified mail to said person to remove the vessel or structure within a specified time.

(2) *Removal by city.* If the vessel or structure is not removed within the time specified in the notice and in a manner and to a place satisfactory to the director, or if no such person is known to the director upon whom the notice can be served, the director may proceed to remove or cause the vessel or structure to be removed in a manner and to a place the director shall deem best.

(3) *Liability for payment of costs.* The owner (or such other person notified) of a vessel or structure removed by the director in accordance with this chapter shall be liable to pay the cost and expenses of the removal and storage, or to repay the same when paid by the city. The expenses may be recovered in an action brought by the city solicitor against the owner(s). If the owner(s) are unknown or the vessel or structure is unclaimed within 90 days of the removal, the city may sell the vessel or structure. The proceeds from the sale shall be used to defray the cost the city incurred in the removal and storage of the vessel or structure and in the administration of this chapter.

(g) *Pump-out facilities.* No person shall operate a marine toilet at any time so as to cause or permit to pass or to be discharged any sewage into the waters of the city, excluding Greenwich Bay, Narragansett Bay and the Providence River.

(h) *Towing.* Any time the chief harbormaster or the director directs that a vessel be towed pursuant to this chapter or any rules and regulations of the commission, there shall be a fee for said towing. Said fee shall be set annually by the director of parks and recreation.

(i) *Operation of unnumbered motorboats prohibited.* Every motorboat on, in, or within the waters of the city shall be numbered. No person shall operate or give permission for the operation of any motorboat on such waters unless the motorboat is numbered in accordance with state law, or in accordance with applicable federal law, or in accordance with a federally approved numbering system of another state, and unless the certificate of number awarded to such motorboat is in full force and effect and the identifying number set forth in the certificate of number is displayed on each side of the bow of such motorboat.

(j) *Obedience to orders of enforcement officers.* It shall be a violation of this chapter for any person to refuse to move or stop on oral command or order of the chief harbormaster, harbormaster(s) or police officer operating from a patrol boat identified as such and exercising the duties lawfully assigned to him/her.

(k) *Boat standards.* Every vessel entering the waters of the city shall be equipped as required by G.L. 1956, 46-22-5, as amended.

(l) *Rafting.* Rafting on a single mooring will only be allowed if it does not interfere with adjacent single moorings or anchorages. Boats in a raft shall be manned at all times.

(m) *Rights-of-way to the waters.*

(1) No person or persons shall block, barricade or in any way impede the public use of or access to designated public rights-of-way to the waters of the city.

(2) No person or persons shall store a vessel, vehicle or structure upon a designated public right-of-way to the waters of the city.

(3) Any person violating this section shall be subject to punishment in accordance with section 24-9.

(Code 1971, 9-6; Ord. No. O-94-8, I, II, 4-18-94)

Sec. 24-7. Mooring permit.

(a) *Required.* No mooring shall be located in the waters of the city until a permit has been received from the department. No mooring shall be located and no mooring shall be maintained unless the owner of the mooring has a valid permit for the mooring and the mooring conforms to the specifications set forth in this chapter and in the permit.

(b) *Application for renewal.* Applications for renewal of a valid mooring permit shall be submitted to the department, on the forms provided, by March 31 of each year. An application shall be accompanied by the required fee and shall be received by March 31 in the offices of the department. Failure to submit a complete and accurate application by March 31 shall result in loss of mooring space. The department shall mail application forms during the month of February to all persons who held valid permits at the end of the prior calendar year to the address listed on their last permit. It shall be the burden of the permit holder to notify the department of any change of address. The department shall approve or reject the permit within ten days of receipt of the complete application.

(c) *Application for new mooring or relocation.*

(1) All requests for new or relocated moorings shall be made on the forms supplied by the director and meet the application requirements of this chapter. To be eligible for any new mooring permit, the applicant must own a boat or be a commercial mooring operator. To apply for relocation of a mooring, the applicant must hold a permit from the preceding year and, as part of the application, shall specify the reasons for the relocation request along with the existing mooring space registration number and size and type of boat. Based on availability of spaces and the requirements of this chapter, action will be taken on the application. Any application received by the department that is incomplete shall be returned to the applicant and no action shall be taken on the application.

(2) The department shall perform an evaluation of all coves and harbors within the city to determine the appropriate number of boats. This determination shall be based on water quality certification formulas and regulations of the department of environmental management, division of water resources, as may be established from time to time. If any cove or harbor is determined to have more boats moored or docked than justified by the water quality certification regulations, no new

moorings shall be issued unless appropriate remedial action is taken by the permit applicant or the city to ensure water quality certification compliance.

(3) The application process for a new or relocated mooring is as follows:

a. *Preapplication to department.* An application in accordance with subsection (d) of this section shall be filed with the department. The department, upon determining that there is space for the mooring, shall issue a preliminary permit advising the applicant that a space is available and that, upon receipt of any necessary state and federal approval, a full permit may be issued.

b. *Federal/state approval.* Once a preliminary permit is issued, the applicant shall seek appropriate federal and state permits.

c. *Final application.* Upon receipt of any necessary state and/or federal approvals, if necessary, a final application shall be filed with the department.

d. *Issuance of permit.* The department shall approve or deny the final application within ten days of receipt. If within said ten-day period a permit is not issued, then the application shall be deemed denied.

(d) *Application requirements.* The following requirements are set for applications for mooring permits:

(1) *Private moorings.* Private moorings shall be permitted only in approved mooring areas designated as part of the Harbor Management Plan: 1989-1993, with the exception of those permitted riparian landowners which at the discretion of the city may be permitted within reasonable proximity to their property. An application for private moorings permit shall be made on the form supplied by the department and shall contain the following:

- a. Name, address and telephone number (work and home) of owner;
- b. Vessel name, length in feet, breadth in feet, draft in feet, type, registration or documentation number, color, and type of sanitary facility;
- c. Mooring classification and actual mooring weight;
- d. Appropriate registration fee; and
- e. Area where applicant would like to locate the mooring.

(2) *Commercial moorings.* Commercial moorings shall be permitted in approved mooring areas designated as part of the Harbor Management Plan: 1989-1993, as amended. An application for a commercial mooring permit shall be made on the form supplied by the department and shall contain the following:

- a. Name, address and telephone number of applicant;
- b. Name, address and telephone number of manager, if different from applicant;
- c. The number of moorings requested, a breakdown of the moorings requested by size and a listing of moorings by their assigned number and size; and
- d. A plan, stamped by an engineer or land surveyor registered in the state, showing the boundaries of the mooring field, the location of each mooring, the mooring's number, size and type of sanitary facility, and all moorings located within a 200-foot radius of the boundaries of the mooring field.

(e) *Waiting list.* The chief harbormaster shall maintain waiting lists of applications for private and commercial mooring spaces. The waiting lists shall consist of the existing waiting lists, minus all applicants who fail to file a new application and fee by April 1, 1989. Thereafter, the waiting list shall be added to as completed applications are received. The waiting list shall be available for public review.

(f) *Permit ratio for private and commercial moorings.* For every six permitted private moorings, there may be no more than four permitted commercial moorings.

(g) *Appeal of denial.* Upon denial of a permit by the department of parks and recreation, the applicant may, within ten days of such denial, appeal the denial to the commission by filing in the office of the director a written notice of his/her claim of appeal.

(h) *Mooring placement.*

- (1) No mooring shall be placed in the waters of the city without inspection and approval of the chief harbormaster. The chief harbormaster must direct the placement of the mooring.
- (2) No vessel so moored or anchored shall extend beyond the mooring and anchorage areas into designated channels.
- (3) The chief harbormaster shall keep a detailed record of all moorings, their location and the owner's name, telephone number, home and business address, the date the mooring was set, and the name, length and type of boat to be attached thereto. Registration numbers will also be required if applicable.
- (4) All assignments of mooring space shall be made by the chief harbormaster in cooperation with the director. Moorings shall be assigned in chronological order of receipt of completed applications.

(i) *Maintenance of moorings; inspections.*

- (1) *Responsibility for maintenance.* Every permit holder shall be required to maintain his/her mooring in safe condition. Any chain, shackle, swivel or other tackle which has become warped or worn by one-third its normal diameter shall be replaced. Failure to maintain a safe mooring shall be cause for revocation of the permit and shall be deemed a violation of this chapter. The chief harbormaster or the harbormaster(s) may inspect any mooring at any time to determine compliance with this section.
- (2) *Inspections generally; correction of violations.* All moorings in the waters of the city shall be inspected at least once every three years by a qualified inspector. Any mooring washed ashore during a storm shall be inspected by the chief harbormaster and harbormaster(s) before it is reset. The cost of any inspection required by this chapter shall be borne by the mooring owner. The inspection shall be made by raising the mooring or by an underwater inspection. The purpose of the inspection is to determine compliance with the mooring standards of this chapter. Any mooring or component of a mooring that violates the requirements of this chapter shall be replaced within 30 days. Within 45 days after a mooring has been found to violate the requirements of this chapter, a second inspection by a qualified inspector must be completed to determine if the violation has been corrected. Failure to correct the violation shall cause the mooring to be deemed an illegal mooring. The director may remove the mooring in accordance with the provisions of section 24-6 and the owner shall forfeit the mooring permit.
- (3) *Inspection schedule.* Moorings shall be inspected every three years. The report of the qualified inspector on the condition of the mooring shall be filed with the application for a permit renewal. New moorings permitted after April 1, 1990, shall be inspected every three years from the date the permit was first issued.

- (4) *Qualified inspectors.* Any person certified by the YMCA or similar organization as a qualified diver or any person who is an operator or employee of a boatyard and is familiar with the requirements of this chapter and the rules and regulations of the commission may apply to the commission to be designated as an inspector. Application shall be made on the form provided by the department of parks and recreation and must be accompanied by the annual application fee. A qualified inspector must reapply by July 1 of each year. The commission may designate as many inspectors as it feels are necessary, shall set standards for the inspectors to follow, and shall establish criteria for qualifying as an inspector. Any inspector who does not possess the necessary qualifications or who has failed to exercise diligence in the exercise of his/her duty shall have his/her inspector's license revoked.
- (5) *List of inspectors.* The director shall keep a list of all qualified inspectors and shall make this list available to holders of mooring permits.
- (j) *Forfeiture of mooring space.* Any owner shall be deemed to have forfeited his/her mooring permit by reason of the following:
- (1) Removal of tackle and notification to the chief harbormaster that the space is available.
 - (2) Failure to reapply for the mooring permit by April 1 of any season or failure to replace any piece of mooring tackle not complying with the mooring tackle standards hereinafter set forth.
 - (3) Failure to resurface or replace mooring within 60 days after being advised by the chief harbormaster that the mooring is down.
 - (4) Failure to comply with any of the requirements of this chapter.
- (k) *Abandoned moorings.* Failure to renew an existing permitted mooring by April 1 of any given year shall result in the registered owner's abandonment of all his/her rights and interest in said mooring. The director may remove the abandoned moorings at the registered owner's expense, which may be recovered in an action brought by the city solicitor against such person, or the director may assign the mooring to a new permit holder. If the mooring is assigned, the permit holder shall have the mooring inspected in accordance with this chapter.
- (l) *Determination of number of available spaces.* As of April 1 of each year, the chief harbormaster shall determine the number of moorings available for new mooring space as the sum of all authorized mooring spaces for which acceptable applications for renewal were not received. These spaces shall be allocated to those on the waiting list.
- (m) *Transfer of moorings.* A mooring shall not be transferred from person to person, other than to a member of the immediate family as the same is hereinbefore defined.

(Code 1971, 9-7)

Sec. 24-8. Fees; harbor management fund.

(a) *Fees.*

- (1) *Mooring permit.* All applications for mooring permits shall be accompanied by the appropriate fee as provided in chapter 18. All such fees shall be nonrefundable. These fees shall be set annually by the department of parks and recreation in cooperation with the harbor management commission and shall be approved as part of the department's budget submittal to the city council.

(2) *Application to become inspector.* All applications to become a qualified inspector shall be accompanied by a filing fee as provided in chapter 18.

(b) *Harbor management fund.* A harbor management fund is hereby created to receive and expend monies for harbor management purposes determined by the city. All revenues generated by boat launch ramp fees, mooring permits, and fines levied under the provisions of the harbor management ordinance shall be deposited into this fund. Funds shall be disbursed for purposes directly associated with the management and implementation of the harbor management plan. Monies from this fund may be allocated to the chief harbormaster or his/her designee for the purpose of enforcing the provisions of the harbor management plan and/or the harbor management ordinance. The harbor management fund shall be established, budgeted and administered in a manner consistent with the procedure contained within the city Charter and funded through the department's annual budget as a line item.

(Code 1971, 9-8)

Cross reference(s)– Mooring permit fee, 18-7.

Sec. 24-9. Penalty.

Any violation of this chapter or of the rules and regulations of the department of parks and recreation shall be punishable as provided in section 1-4. Each day the violation exists shall be deemed a new violation.

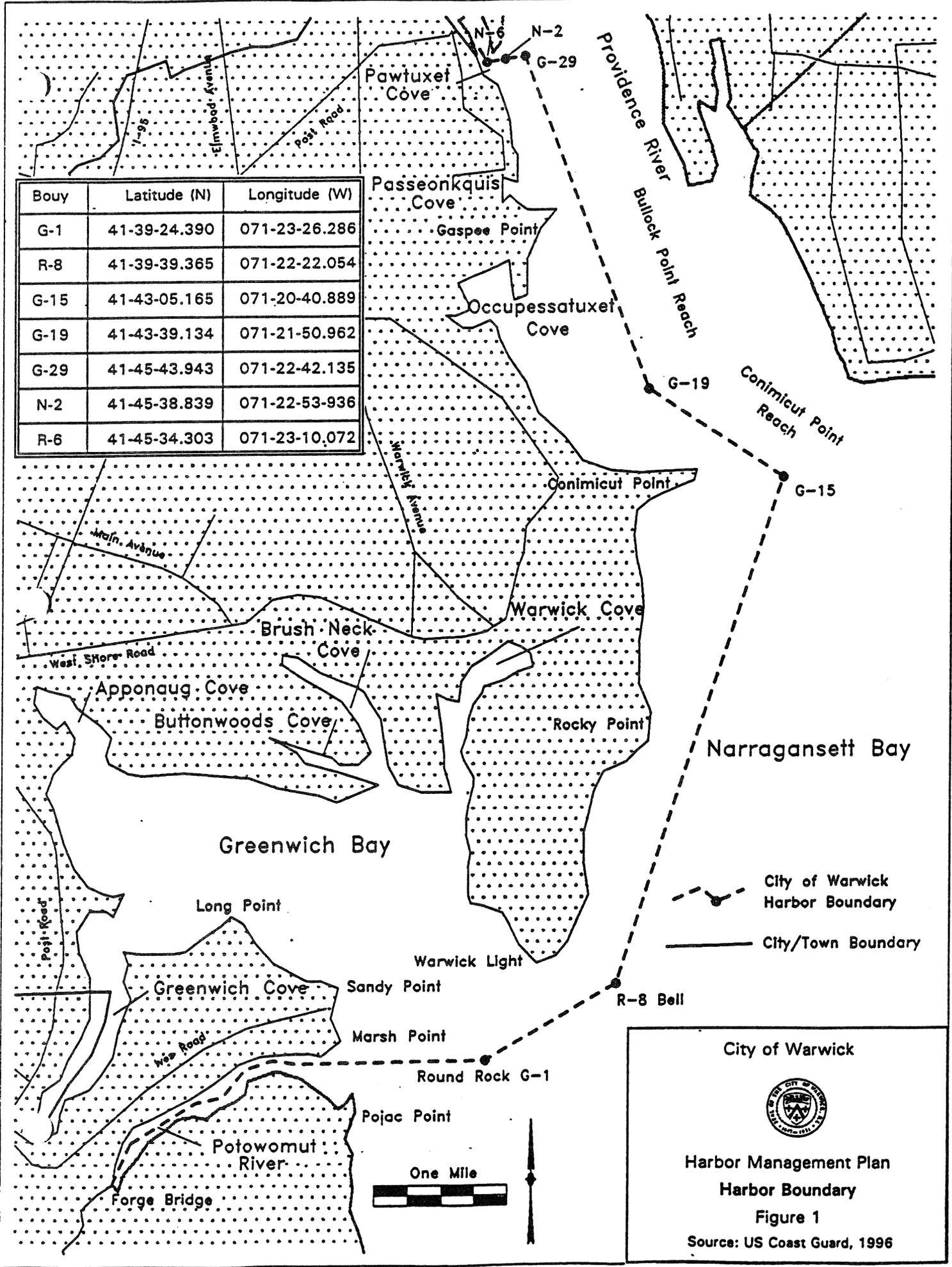
(Code 1971, 9-9)

Sec. 24-10. Disclaimer of liability.

Persons using the waters of the city shall assume all risk of personal injury and damage or loss to their property. The city assumes no risk on account of accident, fire, theft, vandalism or acts of God.

(Code 1971, 9-10)

Bouy	Latitude (N)	Longitude (W)
G-1	41-39-24.390	071-23-26.286
R-8	41-39-39.365	071-22-22.054
G-15	41-43-05.165	071-20-40.889
G-19	41-43-39.134	071-21-50.962
G-29	41-45-43.943	071-22-42.135
N-2	41-45-38.839	071-22-53-936
R-6	41-45-34.303	071-23-10.072

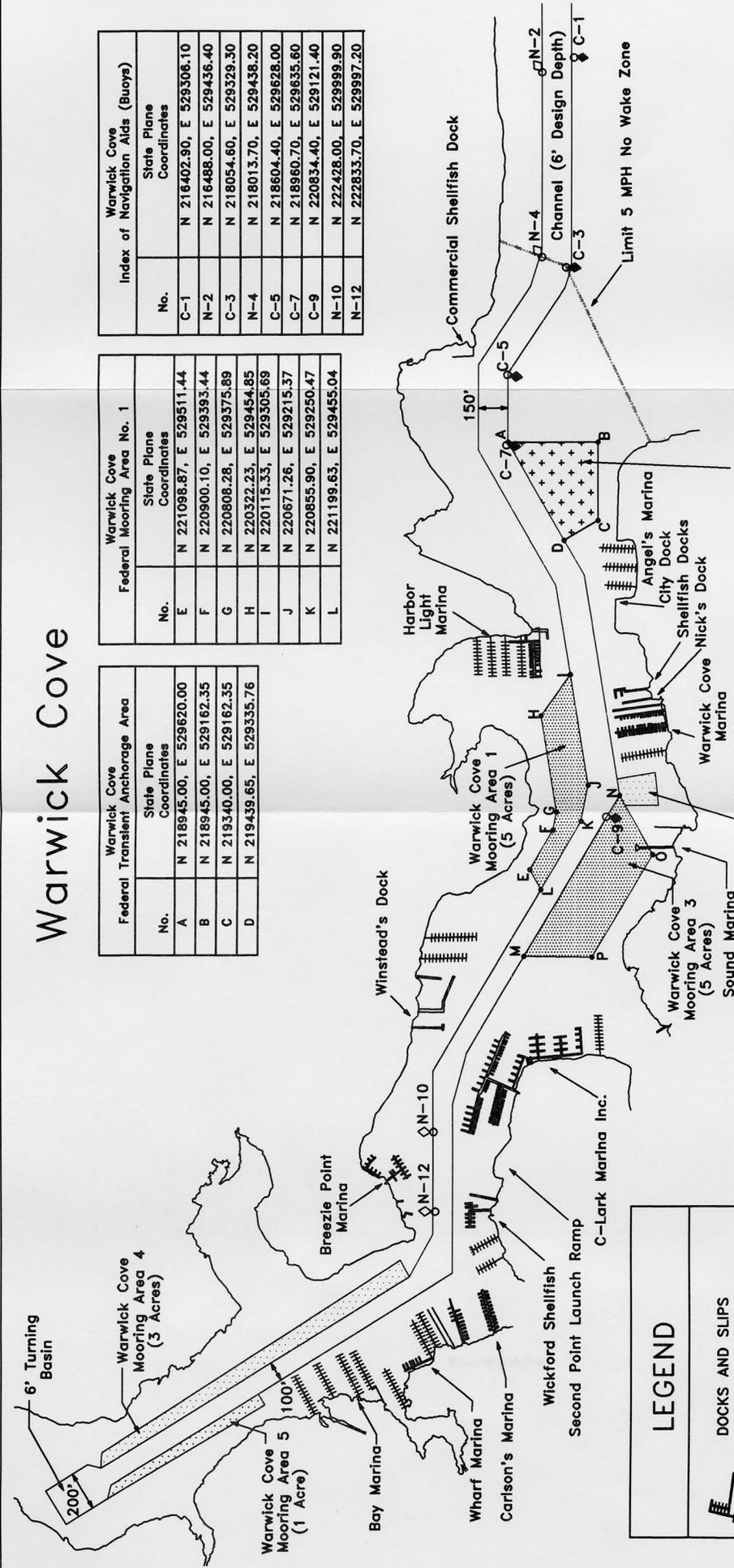


City of Warwick



Harbor Management Plan
Harbor Boundary
Figure 1
Source: US Coast Guard, 1996

Warwick Cove



Warwick Cove Federal Transient Anchorage Area	
No.	State Plane Coordinates
A	N 218945.00, E 529620.00
B	N 218945.00, E 529162.35
C	N 219340.00, E 529162.35
D	N 219439.65, E 529335.76

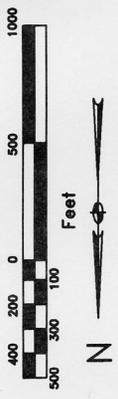
Warwick Cove Federal Mooring Area No. 1	
No.	State Plane Coordinates
E	N 221096.87, E 529511.44
F	N 220900.10, E 529393.44
G	N 220808.28, E 529375.89
H	N 220322.23, E 529454.85
I	N 220115.33, E 529305.69
J	N 220671.26, E 529215.37
K	N 220855.90, E 529250.47
L	N 221199.63, E 529455.04

Warwick Cove Index of Navigation Aids (Buoys)	
No.	State Plane Coordinates
C-1	N 216402.90, E 529306.10
N-2	N 216488.00, E 529436.40
C-3	N 218054.60, E 529329.30
N-4	N 218013.70, E 529438.20
C-5	N 218604.40, E 529628.00
C-7	N 218960.70, E 529635.60
C-9	N 220834.40, E 529121.40
N-10	N 222428.00, E 529999.90
N-12	N 222833.70, E 529997.20

LEGEND

- DOCKS AND SLIPS
- MOORING AREA NOT FEDERALLY MAINTAINED
- MOORING AREA FEDERALLY MAINTAINED
- TRANSIENT ANCHORAGE FEDERALLY MAINTAINED
- NAVIGATIONAL BUOY
- LIMIT 5 MPH NO WAKE ZONE

Warwick Cove Federal Mooring Area No. 3	
No.	State Plane Coordinates
M	N 221536.28, E 529539.02
N	N 220723.00, E 529055.00
O	N 221025.27, E 528885.78
P	N 221540.87, E 529192.64



City of Warwick

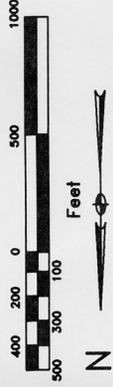
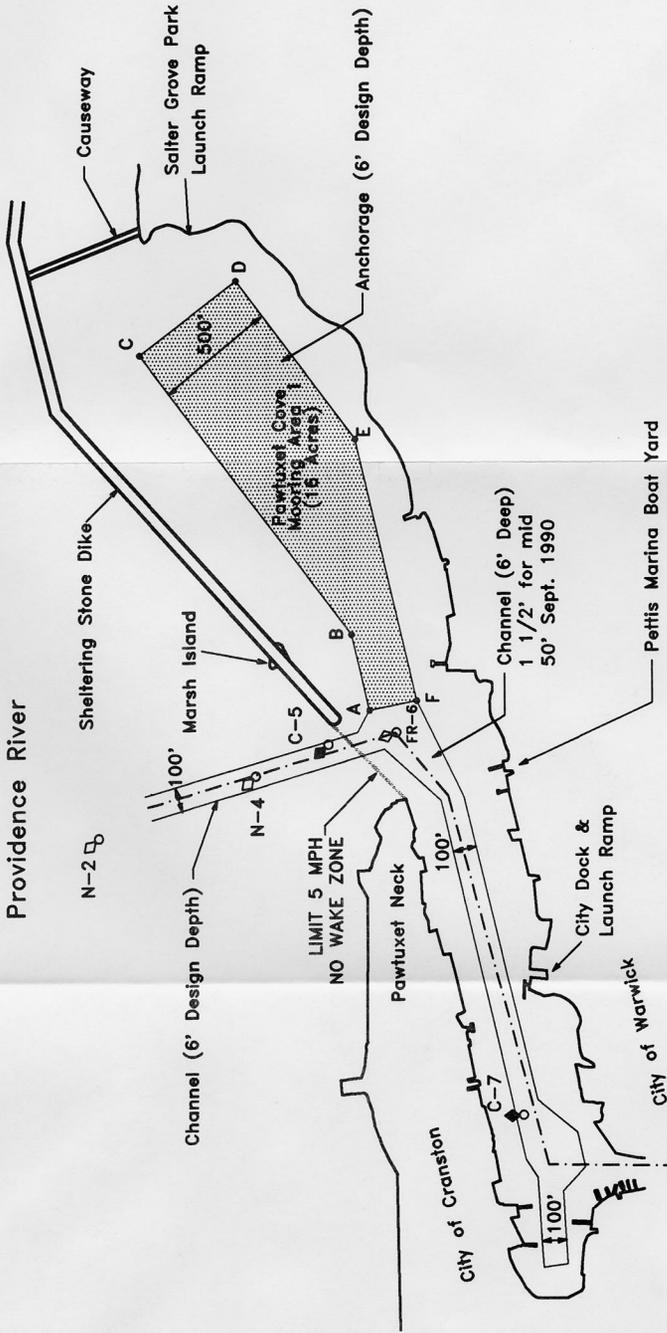
 Harbor Management Plan
 Figure 4 - Warwick Cove
 May 1996

Pawtuxet Cove

Pawtuxet Cove Index of Navigation Aids (Buoys)	
No.	State Plane Coordinates
N-2	N 246780.00, E 532141.00
N-4	N 246533.00, E 531485.00
C-5	N 246396.00, E 531197.00
FR-6	N 246354.00, E 530919.00
C-7	N 247918.00, E 530392.00

Pawtuxet Cove Federal Mooring Area No. 1	
No.	State Plane Coordinates
A	N 246261.61, E 531025.08
B	N 245952.06, E 531097.11
C	N 244805.56, E 531968.88
D	N 244501.51, E 531571.86
E	N 245150.06, E 531080.14
F	N 246222.00, E 530830.00

LEGEND	
	DOCKS AND SLIPS
	MOORING AREA FEDERALLY MAINTAINED
	NAVIGATION BUOY
	LIMIT 5 MPH NO WAKE ZONE
	CITY BOUNDARY



City of Warwick



Harbor Management Plan

Figure 3 - Pawtuxet Cove

May 1996

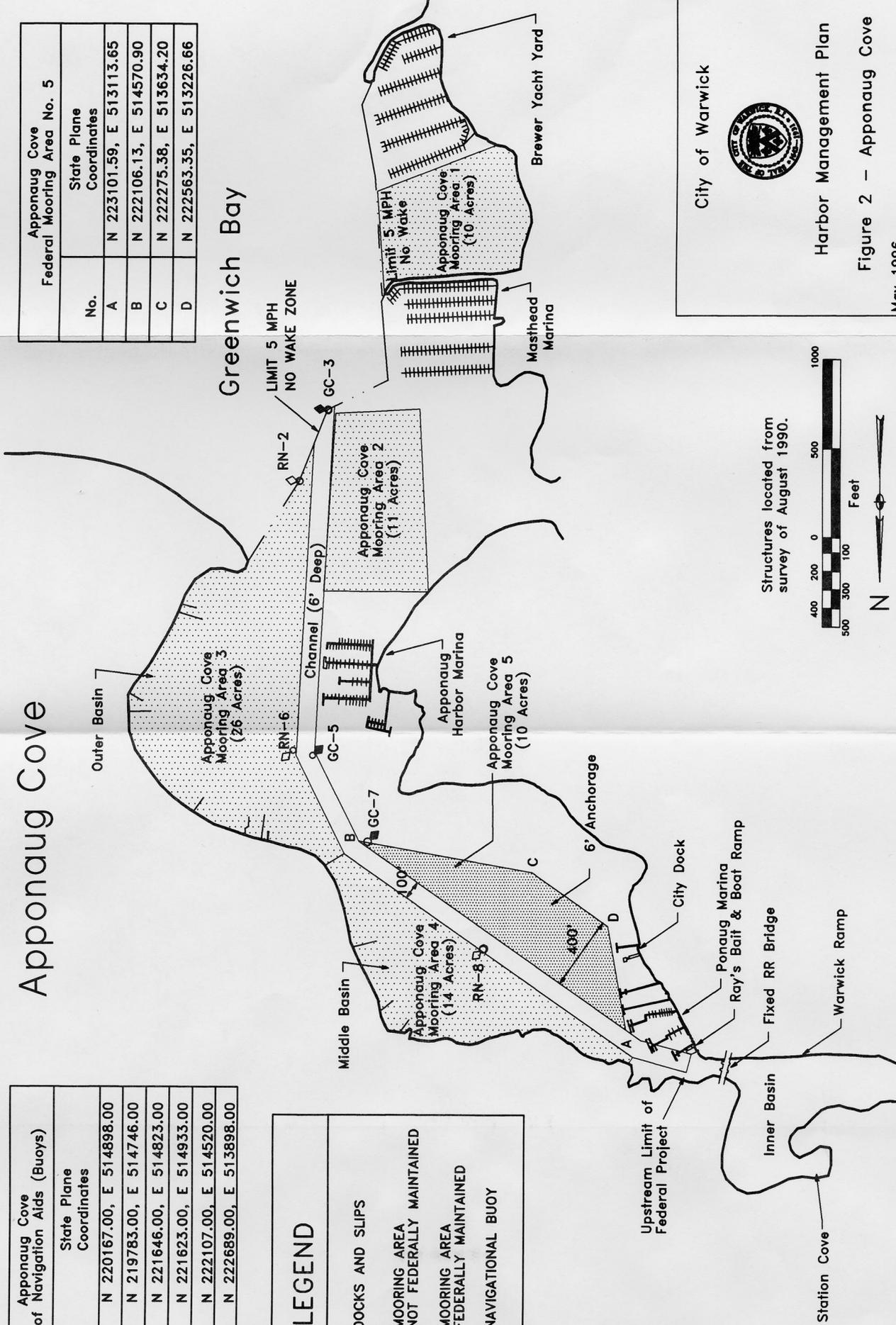
Apponaug Cove

Apponaug Cove Index of Navigation Aids (Buoys)	
No.	State Plane Coordinates
RN-2	N 220167.00, E 514898.00
GC-3	N 219783.00, E 514746.00
GC-5	N 221646.00, E 514823.00
RN-6	N 221623.00, E 514933.00
GC-7	N 222107.00, E 514520.00
RN-8	N 222689.00, E 513898.00

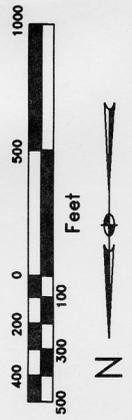
LEGEND	
	DOCKS AND SLIPS
	MOORING AREA NOT FEDERALLY MAINTAINED
	MOORING AREA FEDERALLY MAINTAINED
	NAVIGATIONAL BUOY

Apponaug Cove Federal Mooring Area No. 5	
No.	State Plane Coordinates
A	N 223101.59, E 513113.65
B	N 222106.13, E 514570.90
C	N 222275.38, E 513634.20
D	N 222563.35, E 513226.66

Greenwich Bay



Structures located from survey of August 1990.



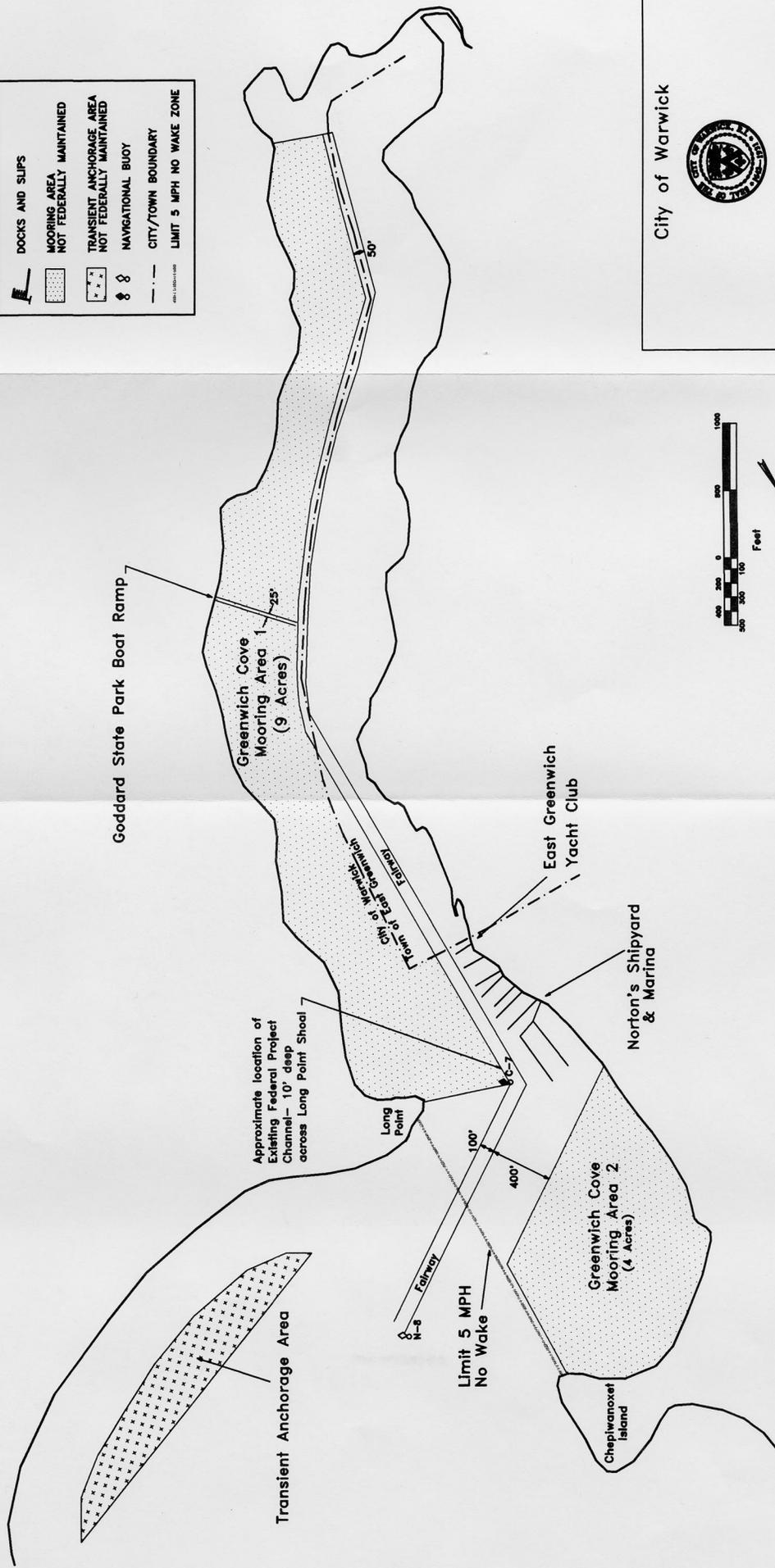
City of Warwick



Harbor Management Plan
Figure 2 - Apponaug Cove
May 1996

Greenwich Cove

LEGEND	
	DOCKS AND SLIPS
	MOORING AREA NOT FEDERALLY MAINTAINED
	TRANSIENT ANCHORAGE AREA NOT FEDERALLY MAINTAINED
	NAVIGATIONAL BUOY
	CITY/TOWN BOUNDARY
	LIMIT 5 MPH NO WAKE ZONE



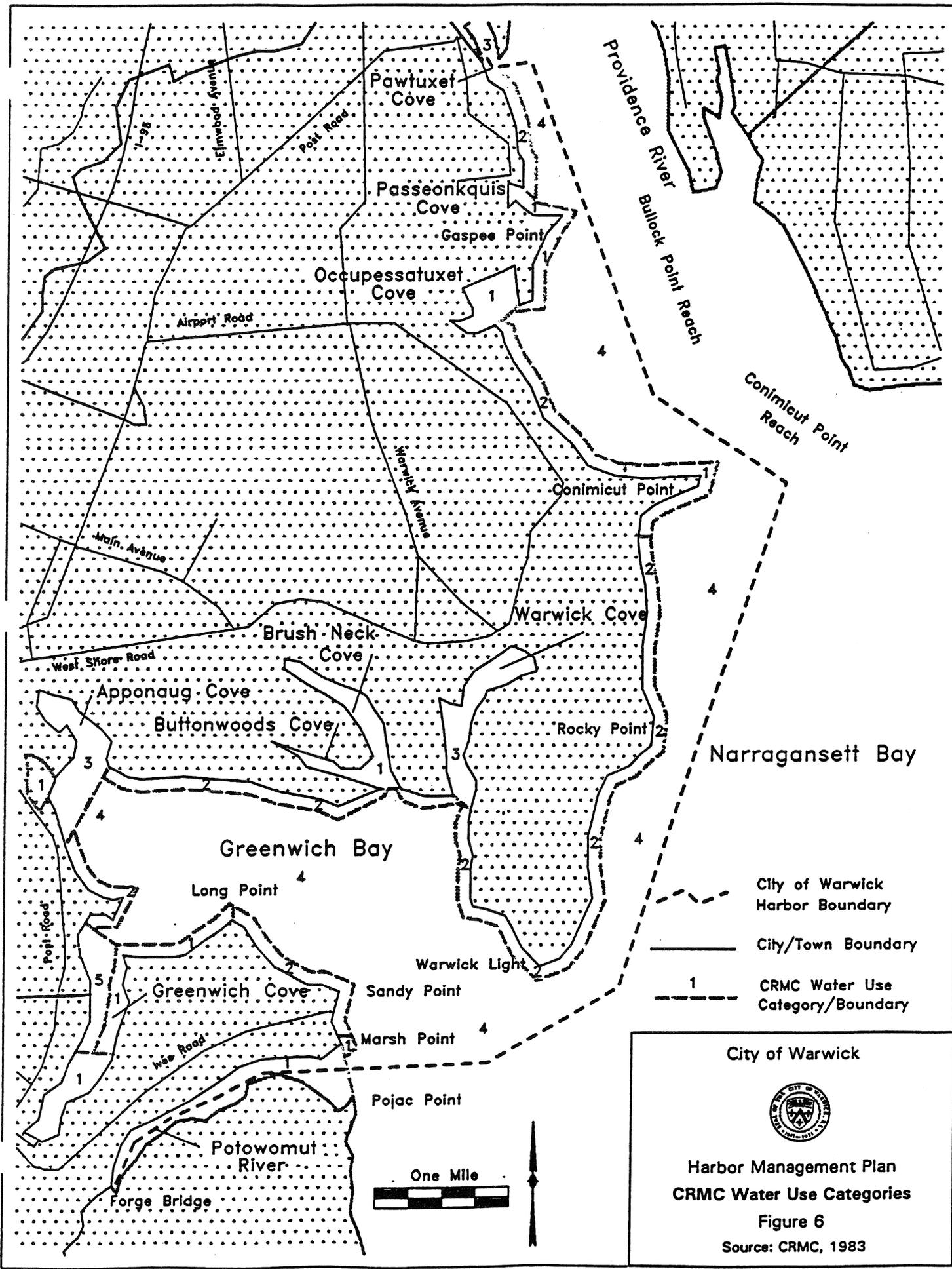
City of Warwick



Harbor Management Plan

Figure 5 - Greenwich Cove

May 1996



- - - - - City of Warwick Harbor Boundary
 _____ City/Town Boundary
 1 - - - - - CRMC Water Use Category/Boundary

City of Warwick



Harbor Management Plan
 CRMC Water Use Categories
 Figure 6
 Source: CRMC, 1983

APPENDIX B

Background & Jurisdictional Elements

Warwick's original Harbor Management Plan was enacted in 1989 and amended in 1991. It has helped guide harbor management in the City since that time. The purpose of this update is to provide a comprehensive evaluation of current conditions and a long-term guide for activities on and alongside the tidal waters of the City. This plan update does not include any revisions to the existing harbor ordinance. Instead it spells out a series of recommended changes for the Harbor Management Commission, Planning Department, and Department of Parks and Recreation to consider and implement over time, including some minor revisions to the harbor ordinance.

The Harbor Management Plan is a comprehensive planning document providing guidance for the future management of Warwick's waters. It is intended to serve as a functional element of Warwick's Comprehensive Plan. The overall goal of the plan is to manage the coastal waters and harbor areas under the jurisdiction of the City, by establishing policies, goals, and regulations that balance and manage the diverse uses of the waters, harbor areas, and waterfront, and which minimize conflicts between water uses. This plan includes:

1. the identification of harbor management issues;
2. objectives, policies and implementation strategies which address the identified issues;
3. an inventory of coastal resources; and
4. a detailed implementation program for a five-year planning horizon.

By adopting this revision to the Harbor Management Plan, the City of Warwick affirms and declares its vision for the use of the City's harbor areas. The approved document establishes a work plan for the Harbormaster, Harbor Management Commission, and other related persons and agencies, to attain the plan's stated vision. The plan provides a policy document for City agencies, commissions, and boards and for State and Federal agencies to refer to in the development of related plans and projects to coordinate programs and coastal development projects.

A. Planning Process/Methodology

The Coastal Resources Management Council (CRMC) was given jurisdiction by the Rhode Island General Assembly in 1971 (RIGL 46-23) over all activities taking place in tidal waters of the state and along the coastline. The enabling legislation that created CRMC established the regulatory authority under which the CRMC operates. The regulations, procedures, and policies of the CRMC are laid out in the Coastal Resources Management Program (CRMP). The approval of municipal harbor regulations and plans is regulated under Section 300.15 of the CRMP. Additionally, the CRMC has developed a guidance document for municipalities titled Guidelines for the Development of Municipal Harbor Management Plans. The guidance indicates that all Final Harbor Management Plans shall be reviewed by CRMC every five years. This update is motivated by the CRMC guidance recommendation.

Rhode Island General Law 46-4 empowers municipalities to locally regulate the public waters and waterfront within their boundaries. Upon taking office in 1993, Mayor Lincoln Chafee initiated the Greenwich Bay Initiative with the goal of protecting and restoring the environmental quality of Greenwich Bay. Among other recommendations, the Greenwich Bay Initiative directs that the Harbor Management Plan be updated with an increased focus on protecting the water quality of Greenwich Bay.

In 1995, in accordance with the Greenwich Bay Initiative's recommendations and the Coastal Resources Management Council's regulations, the Harbor Management Commission undertook the task of reviewing and updating the existing Harbor Management Plan. In December 1995, the Commission retained the services of Maguire Group Inc., Architects, Engineers, and Planners to assist in completing the plan.

In developing the revisions to the Harbor Management Plan, the Harbor Management Commission met biweekly to review and update the existing plan. The Commission focused primarily on identifying goals, issues, policies, and implementation strategies, since these elements form the main thrust of the plan's influence.

The Commission solicited public input and comment from the public on the draft issues and implementations strategies, and upon publication of the draft document. The plan revisions were discussed and developed at scheduled meetings of the Harbor Management Commission through May of 1996. A Public Forum was held on March 12, 1996 to solicit public input on the issues and proposed implementation strategies. Public notice of the forum was advertised prior to the meeting through local advertising and by way of the annual mooring renewal cover letter, which was mailed in February 1996. As a result, the forum was attended by over 50 members of the public, and the Commission received substantial public input to guide the development of the plan revisions.

The draft Plan was made available to the public for review, and was adopted by the Harbor Management Commission in June 1996. The Plan was subject of a public hearing held by the Warwick Planning Board in July 1996. The Plan was then favorably recommended by the Planning Board and forwarded to the City Council for formal approval.

B. Physical Jurisdiction of the Plan

There are over 39 miles of coastline in the City of Warwick, which includes eight major coves, Greenwich Bay, Narragansett Bay and the Providence River. The City waters are adjacent to three communities: North Kingstown, East Greenwich and Cranston. For the purpose of the Harbor Management Plan and to establish the limits of the jurisdiction of this Plan, the following harbor boundaries are set:

"Beginning at the line between the City of Warwick and the Town of North Kingstown at a point on Forge Bridge; then proceeding down the centerline of the Potowomut River to a location halfway between Marsh Point and Pojac Point; from this point easterly to Round Rock Buoy G-1 then northeasterly to R-8 bell; then northerly to the G-15 buoy on the channel to Providence; then along the southwesterly edge of the channel known as the Conimicut Point Reach to buoy G-19; then along the westerly edge of the channel known as the Bullock Point Reach to buoy G-29; then westerly to buoy N-2 at the beginning of the channel to Pawtuxet Cove; then westerly to buoy N-6; then running northerly and westerly through the center of the channel and the Pawtuxet River to the bridge on Route 1A.

Excluded from the waters of the City of Warwick is that portion of Greenwich Cove south and west of the municipal boundary line established by the RIGL of 1986, Chapter 354, that is located in the Town of East Greenwich (see Figure 1, Harbor Boundary).

Because of the diverse nature of the waters of the City of Warwick, the project area was subdivided into eleven study areas. For this plan, the harbor waters are divided into eight (8) coves, two (2) bay areas, and the waters of the Providence River. These areas are as follows:

1. The Coves

(1) Potowomut River

The Potowomut River is split between North Kingstown and Warwick. The river is that area upstream of a line between Marsh Point and Pojac Point to the Forge Bridge.

(2) Greenwich Cove

Greenwich Cove is located in the communities of East Greenwich and Warwick. The municipal boundary was agreed upon and set by RIGL of 1986, Chapter 354. The City of Warwick Harbor Boundary for Greenwich Cove is the line that establishes the municipal Boundary. For this Plan, the cove includes waters west and south of a line between Chepiwanoxet Island and Long Point.

(3) Apponaug Cove

Apponaug Cove is that area northwest of a line that runs from an RIDEM Range Marker at Cedar Tree Point to buoy R-2 to buoy C-3 to the end of the breakwater at Masthead Marina.

(4) Brush Neck/Buttonwoods Cove

Brush Neck/Buttonwoods Cove is that area northwest of a line that extends from the tip of Buttonwoods to Strand Avenue.

(5) Warwick Cove

Warwick Cove is that area northerly of a line that runs from the end of Bay Avenue to buoy C-3 then easterly in a straight line from buoy C-3 through buoy R-4 to the Warwick Neck shore.

(6) Occupestatuxet Cove

Occupestatuxet Cove is that area west of a line that runs from the southerly point of Gaspee Point to Greene Island and then westerly to a point on the shore where Dudley Avenue ends.

(7) Passeonkquis Cove

Passeonkquis Cove is that area westerly of a line that runs from Bay Shore Boulevard to Gaspee Point.

(8) Pawtuxet Cove

Pawtuxet Cove is that area west of a line that runs from Pawtuxet Neck to the tip of the sheltering dike and is enclosed by the dike and causeway on the east and south.

(9) The Bays**(10) Greenwich Bay**

Greenwich Bay is that area of the City of Warwick's water that is west of a line that runs from the flag pole at the Warwick Country Club to Sandy Point. The Bay does not include Greenwich, Apponaug, Brush Neck, Buttonwoods and Warwick Coves.

(11) Narragansett Bay

The City waters from the Potowomut River to Conimicut Point, excluding Greenwich Bay, are part of Narragansett Bay.

(12) The River**(13) Providence River**

The City waters from Conimicut Point to Pawtuxet Cove are part of the Providence River. Part of the channel to Providence is located within the municipal boundaries. However, the channel is not located within the boundaries established for this Plan.

C. Administrative Jurisdiction of the Plan

This section provides an overview of the various legislative authorities with jurisdiction over the harbor planning process. Various agencies on the Federal, State and municipal levels review and regulate activities in Rhode Island's tidal waters and harbor areas.

1. The Federal Role

The Federal government, through the Army Corps of Engineers (ACE) regulates the placement of structures and obstructions in the navigable waters of the nation. The ACE regulatory program focuses primarily on navigation. However, it considers the environmental consequences of development proposals and their impact in light of the "public interest". Through its permitting programs, the ACE reviews certain projects located in navigable waters, including dredging, filling, and the placement of structures such as moorings.

A permit from the Corps of Engineers is required for all work beyond mean high water in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 403). In Rhode Island, for purposes of Section 10, navigable waters of the U.S. are those subject to ebb and flow of tide. Permits are also required under section 404 of the Clean Water Act (33 U.S.C. 1344) for those activities involving the discharge of dredged or fill material into all waters of the U.S., including not only navigable waters of the U.S., but also inland rivers, lakes, streams, and wetlands.

Under the provisions of the Corps program, moorings and their availability for use are considered integral parts of the ability to navigate. As such, they are subject to the ACE's regulatory program also seeks to insure that unobstructed access to harbor channels is maintained, and that areas that have benefited from federal navigation projects are open to all. Future availability of Federal assistance for maintaining these projects is often predicated on these requirements.

On the coastline, the Corps jurisdiction under the Clean Water Act extends landward to the high tide line (i.e., the highest predictable tide) or to the landward limit of any wetlands, whichever is more extensive. In interior waters, the Corps jurisdiction under the Clean Water Act extends landward to the ordinary high water mark; in addition, the Corps has jurisdiction over all wetlands, including those wetlands not directly associated with a body of open water. Any work done in waters of the U.S., including wetlands, without the necessary Federal authorization is in violation of Federal laws; further, such work could result in prosecution by the U.S. Government.

2. The State Role

The submerged lands, coastal resources and tidal waters and shoreline of the State are all subject to the State of Rhode Island's jurisdiction. These areas are owned by the State and held in trust for the public. The State carries out several different management and regulatory programs to protect the rights and interests of the public in these areas.

Coastal Resources Management Council

The Coastal Resources Management Council (CRMC) is the State's primary agency for planning and management of coastal resources and the uses made of tidal waters and shore. The CRMC carries out this responsibility through three primary methods: planning and management, coordinating functions, and regulatory programs. Planning and management programs of the CRMC are formulated in terms of the characteristics and needs of each coastal resource, or group of related resources. The Coastal Resources Management Program (CRMP) is the primary management plan for the State. The CRMP provides plans for activities occurring on or within coastal areas. The Plan identifies six categories of water use "types" and designates stretches of the tidal waters and coastline of the State accordingly (see Figure 6). The water type categories and other regulations set forth what uses may be made of an area and how these uses may be carried out. All departments and agencies of state government are required to cooperate with the Council in discharging its responsibilities. The CRMC also employs a regulatory, or permit program, to implement its management plans. This program includes two integrated phases: assessment of conformance of proposed projects with applicable local, State and Federal environmental requirements (such as Harbor Management Plans) and review of projects for consistency with the specific policies and standards of the CRMP.

Department of Environmental Management

The Department of Environmental Management (DEM) has primary responsibility within the State for implementing the requirements of the Federal Clean Water Act, for managing the living resources of the State's waters, and for overseeing Federal and State land acquisition and open space programs.

The DEM has promulgated specific regulations and water quality standards to implement its authority under the Clean Water Act, through its Division of Water Resources. Water quality classifications and standards are designed to protect and improve the quality of the State's waters where these may be threatened or impaired by discharges of pollutants. The regulations are generally more restrictive the more pure the water, thereby preventing degradation. The regulations also contain an anti-degradation clause which establishes that there can be no degradation of classified high-quality water their assigned classification due to a proposed activity. DEM has the authority to designate "no discharge zones" within which boats may not discharge wastewater and also has authority over wrecks and abandoned vessels. The DEM Division of Parks and Recreation manages state parklands and public recreational facilities such as boat ramps, bathing beaches and picnic areas.

The DEM Division of Fish and Wildlife, in conjunction with the Marine Fisheries Council, manages the fin and shellfish fisheries within the State. Current programs include the regulations of commercial fisheries, shellfish propagation and transplanting, and establishing and protecting shellfish management areas. The Division also provides comment to the CRMC on proposals which may impact resources under their jurisdiction.

3. Warwick's Role

Chapter 4 of Title 46 of the General Laws of Rhode Island (Waters and Navigation) confers upon the coastal communities of the State powers to regulate the public waters within their boundaries. Generally, these powers can be segregated into three types: 1) Management of vessel operation within harbors; 2) Management of anchorages and moorings; and 3) Regulation of such activities as water skiing and skin diving, regattas and marine parades.

While the State law grants considerable authority to the municipalities in managing certain uses of harbor areas, a community is specifically empowered to consider environmental impacts of activities, prevention of conflicts with other water dependant uses, or to decide resource allocation questions. However, a community can only exercise this power after approval is received from the CRMC and the Harbor Management Plan provides the mechanism for CRMC review and approval of the local harbor management authority.

Harbor Management Plans and Ordinances are regulated through Section 300.15 of the CRMP. This section established that "all rules or management functions that apply to the use of tidal waters adjacent to a municipality" are to be considered Municipal Harbor Regulations, and are subject to review and approval by the CRMC. While the primary responsibility for harbor management remains on the local level, the CRMP insures that the actions taken by the municipalities are consistent with the overriding management programs of the state and federal authorities.

D. Coordination

The CRMP provides a framework for coordinating the management responsibilities of the various agencies involved in permitting coastal uses. Federal and state statutory requirements are integrated through the review provisions in the plan. Permits or certifications necessary approvals which must be obtained prior to the granting of a coastal permit, or in order to make the assent valid.

While the State agencies bring the expertise to evaluate environmental impacts to the harbor management process, the municipalities provide the necessary "hands on" familiarity with the functioning of the harbor, a knowledge of the various levels and types of demands, and the ability to provide for the well functioning management of day-to-day operations. An important challenge in meeting and managing the increasing pressures in Rhode Island's harbor areas is to integrate the programs of federal, state and local levels of government effectively.

APPENDIX C Resource Inventory

The Harbor's Characteristics and Resources

Ten parameters were used to describe the characteristics and resources of Warwick's harbor. They include: water depth, water quality, coastal flood hazard areas with wave action, navigational hazards, dredged areas, federally maintained areas, CRMC water use category, conservation areas, recreational and commercial fishing areas, and coastal features.

Water Depth- Water depth information for the coastal waters of the City of Warwick has been obtained from Nautical Chart 13224, "Providence River and Head of Narragansett Bay" prepared by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service (NOS), 1994. The principal nautical feature of concern to boaters is depth, although NOS charts contain other information, including natural features of the water and land areas (such as submerged rocks, islands, coves and streams), and various manmade objects and features, like buoys and bells, dredged channels, and roadways.

The depths, as shown on NOS charts, are referenced in feet at mean low water. Although a good source for water depth information, the charts contain cautions to mariners that they should note the date on the chart, and that the channels at Apponaug Cove, Warwick Cove, and Pawtuxet Cove are subject to tidal fluctuations and shoaling, particularly at the edges.

In addition, Condition Survey Maps prepared by the U.S. Army Corps of Engineers (ACE) were consulted to provide water depth data. The Federally maintained channels in the coves of Warwick are typically 6 feet deep and 100 to 150 feet wide. Condition Survey Maps prepared by the Army Corps are available for Pawtuxet Cove (1993), Warwick Cove (1984), and Apponaug Cove (1990).

Water Quality- Water quality standards for the waters of the City are set by the Water Resources Division of RIDEM. A water quality standard defines the water quality goals of a water body, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. Therefore, the designated water quality standards do not necessarily reflect the current water quality conditions.

Table 7— Seawater Classifications

Classification	Uses
Class SA —	bathing and contact recreation, shellfish harvesting for direct human consumption, fish and wildlife habitat
Class SB —	shellfishing harvesting for human consumption after depuration bathing, other primary contact recreational activities fish and wildlife habitat
Class SC —	boating, other secondary contact recreational activities, fish and wildlife habitat, industrial cooling, good aesthetic value

Source: State of Rhode Island, Department of Environmental Management, Division of Water Resources, "Water Quality Regulations for Water Pollution Control", 1988.

Water quality standards are intended to protect public health and welfare, enhance the quality of water and serve the purposes of the Federal Clean Water Act, and the General Laws of Rhode Island, (Chapter 46-12). To serve the purposes of the Clean Water Act means that whenever attainable, water quality standards should: provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water; take into consideration their use and value as public water supplies; and take into consideration their use for aquacultural, industrial, and other purposes including navigation.

The seawater of Rhode Island have been assigned to one of three classes. Each class is defined by the most sensitive use which it is intended to protect. General and specific physical, chemical and biological criteria are parameters of minimum water quality necessary to support the water use classifications, and are applicable to all waters of the State. These water quality criteria are listed in detail in RIDEM Division of Water Resources' "Water Quality Regulations for Water Pollution Control".

Coastal Flood Hazard Areas with Wave Action- The "Flood Insurance Study, City of Warwick, Kent County, Rhode Island", prepared by the Federal Emergency Management Agency (FEMA) presents the data and analyses used in producing the Flood Insurance Rate Maps (FIRM) for the City. The FIRM delineates the 100-year storm flood boundaries and includes the water surface elevation associated with sources of riverine and coastal flooding. Of particular note are coastal floodplain areas that have additional hazards associated with storm waves. These areas, also referred to as velocity, or "V" zones are defined by the Army Corps of Engineers as coastal high hazard zones, subject to significant wave attack – greater than 3-foot breaking waves. The 3 foot breaking wave has been determined as the minimum size wave capable of causing major damage to conventional wood frame or brick veneer structures. The April 16, 1991 Flood Insurance Study for the City of Warwick has identified substantial areas of Warwick's shoreline that are subject to significant wave attack.

Areas of Marsh Point have been designated as undeveloped coastal barriers, as established under the Coastal Barrier Resources Act (PL 97-348). Flood insurance is not available for structures newly built or substantially improved after October 1, 1983 in designated undeveloped coastal barriers.

Navigational Hazards- Significant hazards to navigation were listed for each waterbody using the information provided on NOS charts. These hazards include rocks, submerged cables and shoals and others noted on the charts.

Dredged Areas- Included in this category are dredging project areas under the jurisdiction of the Army Corps of Engineers and any project, presently ongoing, that was issued a CRMC permit.

Federal Maintenance- Federally maintained areas within the waters of Warwick are areas dredged by the ACE for navigational channels and anchorage areas. These areas were identified using ACE Condition Survey Maps and Project Maps.

CRMC Water Use Designations- The Coastal Resources Management Council (CRMC) has designated coastal areas and waters within the State according to use suitability under six (6) water use type categories, (Table 2). The purpose of these classifications is to insure the maintenance of water quality in the waters of the state.

Table 8 — CRMC Water Use Categories

TYPE 1Conservation Areas
TYPE 2Low Intensity Use
TYPE 3High Intensity Boating
TYPE 4Multi-Purpose Waters
TYPE 5Commercial and Recreational Harbors
TYPE 6Industrial Waterfronts and Commercial Navigational Channels

Source: RICRMC

The maps provided in "The State of Rhode Island Coastal Resources Management Program" (CRMP) as amended, delineate the coastal areas of Warwick and designate the water use type categories.

The six (6) categories of waters defined in the CRMP are directly linked to the characteristics of the shoreline, since the activities on the adjacent mainland are the primary determinant of the uses and qualities of any specific water site.

Type 1 waters abut shorelines in a natural undisturbed condition, where alterations, including the construction of docks and any dredging, are considered by the CRMC as unsuitable.

Type 2 waters are adjacent to predominantly residential areas where docks are acceptable, but more intense forms of development, including more marinas and new dredging projects (but not maintenance dredging) would change the area's character and alter the established balance among uses. Alterations such as these would bring more intensive uses and are therefore prohibited in Type 2 waters.

Type 3 waters are dominated by commercial facilities that support recreational boating. Here, marinas, boatyards and associated businesses take priority over other uses, and dredging and shoreline alterations are to be expected.

Type 4 waters include the open waters of the Bay and the Sounds where a balance must be maintained among fishing, recreational boating and commercial traffic. Here, high water quality and a healthy ecosystem are primary concerns.

The last two water use categories are assigned to areas adjacent to ports and industrial waterfronts. In these waters, maintenance of adequate water depths is essential, high water quality is seldom achievable, and some filling may be desirable. Within Type 5 waters, a mix of commercial and recreational activities must coexist, while in Type 6 waters, water-dependent industrial and commercial activities take precedence over all other activities.

The water use categories are complemented by policies for shoreline types defined in the CRMP, and the two must be combined to identify the Program's policies for a specific coastal site. The shoreline types include coastal beaches and dunes; barrier beaches; coastal wetlands; coastal cliffs, bluffs, and banks; rocky shores; and manmade shorelines.

Conservation Areas- In this portion of the Plan, conservation areas within the harbor areas of Warwick are identified. There are no Federal or State wildlife management areas or refuges within the City. Major wildlife habitats which have been identified in the City of Warwick Comprehensive Plan (1992) and are listed in Table 3. The properties located within the coastal areas of Warwick that are owned by the Audubon Society of Rhode Island also are identified. The Audubon Society holds title to or controls more than five thousand (5,000) acres of open space in Rhode Island. This land has been accepted for its diversity, provision of critical habitat, or special natural features.

Recreational and Commercial Fishing Areas- The following information pertaining to the finfish and shellfish resources of the City of Warwick and the descriptions of shellfish areas which are included in the listings of each subarea of the Warwick harbor have been provided by Arthur R. Ganz, Senior Marine Biologist, Coastal Fisheries Laboratory, RI Division of Fish and Wildlife.

Table 9 — Major Wildlife Habitats Located in Warwick's Coves

LOCATION	WILDLIFE
Apponaug Cove	
• Gorton's Pond	various fish, snapping turtles
• Hardig Brook	
Potowomut River	herring run
Passeonkquis Cove	ducks, scaup, widgeon
Occupessatuxet Cove	
• Marsh Point	waterfowl, shell and fin fish, upland birds
• Baker's Creek	
• Mary's Creek	
Narragansett Bay	
• Conimicut Point	shellfish, fin fish
• Buckeye Brook/Old Mill Cove	herring run, aquatic life, wood and black ducks
• Rock Island	fossil site, birds
Brush Neck/Buttonwoods Coves	
• Warwick City Park	water fowl, freshwater fish
• Tuscatucket Brook & Pond	

Source: City of Warwick Comprehensive Plan, 1991

The waters of the City of Warwick contain abundant finfish resources. The sheltered waterways of Warwick provide food and habitat for spawning and nursery for many species. The most significant of which is the winter flounder. Anadromous fish runs occur at the Potowomut River, Apponaug Cove, and Buckeye Brook.

Finfish species of economic significance found seasonally in Warwick waters are: winter flounder, weakfish, striped bass, menhaden, bluefish, American eel, whiting, tautog, scup, butterfish, alewife, and others.

Because of its natural productivity, sheltered waterways, and access to marina areas, Warwick provides an ideal climate for recreational rod and reel fishing. Estimates of the magnitude of the sportfishery are varied but, when considering recreational equipment, boats and related services, it can be considered to be one of the State's major industries.

Although there is the resource and potential for a commercial finfishery, the waters of Warwick have been off limits for twenty years or more. The State has enacted prohibitions against otter trawling, seining, and fish traps. User conflicts have inhibited expansion of the fyke fishery and pot fishery in Warwick. The commercial finfishery in Warwick is limited to a restricted seasonal trawl fishery in the "Upper Bay" (Narragansett Bay between Warwick Neck and Conimicut Point) and a seasonal baitfishery for menhaden. Warwick waters serve as a dockage and mooring areas for commercial vessels.

Two of the State's most important shellfishing areas, the "Upper Bay" and Greenwich Bay are within the waters of the City of Warwick. Narragansett Bay produces approximately forty percent (40%) of the quahogs harvested in the nation.

The "Upper Bay" and Greenwich Bay are designed as shellfish management areas by the Rhode Island Marine Fisheries Council. Seasonal and daily catch limits are regulated in an effort to avoid overfishing these areas, as fishing pressures upon these resources increase with the pollution closure of other shellfishing areas.

The shellfish areas within the waters of Warwick, as designated by RIDEM, May 1995, are shown in Figure 6. The areas have been classified by the RIDEM as polluted, conditional or seasonal closure areas, or as approved shellfishing areas. Water areas overlying shellfish grounds that are classed as polluted have been found to be in an unsatisfactory sanitary condition for the taking of shellfish for human consumption. Conditional closure areas are those areas that from time-to-time are found to be in an unsatisfactory sanitary condition for the taking of shellfish for human consumption.

Seasonal closure areas are deemed to be polluted from May 23 to September 30. This time period may be modified by the State. Finally, approved shellfishing areas are those that the State has determined to be in satisfactory sanitary condition for the taking of shellfish for human consumption.

Coastal Features- Warwick's 1992 Comprehensive Plan identified the coastal features along the approximately 39 miles of City coastline. This coastline is varied in its character and includes eight (8) major cove areas, barrier beaches, sandy and rocky beaches, beach bluffs and saltmarsh areas. Sandy beaches and marsh areas are the most common shoreline types in the City. Saltmarshes are generally located along the various coves of the City, with sandy and rocky beaches more typical of the exposed shorelines.

Barrier beaches are narrow, unconsolidated strips of land, usually extending parallel to the coast and separated from the mainland by a coastal pond, tidal waterbody or coastal wetlands. These beaches serve as buffers against storms and offer a unique and valuable coastal environment. Undeveloped barrier beaches serve as buffers against storms and offer a unique and valuable coastal environment. FEMA's Flood Insurance Rate Maps identify Marsh Point on the south east corner of Potowomut as an undeveloped barrier beach. Barrier beaches are particularly sensitive to development. Building on barrier beaches can cause them to lose their natural function as storm barriers and as a public recreational resource. In addition, sandy and rocky beach areas are found along the unprotected shoreline areas in the City. These areas in the City are valued for their scenic, recreation, storm control and aesthetic character. For these reasons, policy should be geared to preserving these areas for use by residents, especially for recreational uses.

Bluff areas are those shorelines which are significantly elevated above the water. These areas are fragile because of their slope characteristics. They are valuable for the scenic vistas they provide, for flood protection, as a source of sediment for beach areas and as a wildlife habitat. The slope of these areas is often greater than fifteen (15) percent. Beach bluffs can be found at various points along Warwick's shoreline: Passeonkquis Cove, Gaspee Plateau, the south side of Gaspee Point, Rocky Point, parts of Warwick Neck and the north side of Potowomut Neck.

The coastal wetlands in Warwick were identified using the Rhode Island Geographic System (RIGIS) mapping and database for Warwick's Comprehensive Plan. The RIGIS mapping indicates that there are nearly two hundred eighty (280) acres of estuarine emergent wetlands (also referred to as salt marshes) in Warwick. These wetlands are important for a variety of reasons. They provide food and shelter for a variety of juvenile fish, shellfish habitats, shorebird and waterfowl habitat, as well as erosion and flood control. The following table from the Comprehensive Plan indicates the acres of coastal wetlands in Warwick by general wetland type.

A. The Harbor's Uses and Facilities

Harbor management planning requires a working knowledge of how the waters of the City are being utilized. In general, everyone knows that the waters are used for pleasure boating and fishing. However, these are not the only uses of the water that are important. Shoreline access and waterfront recreational areas are also significant uses.

1. Recreational Areas

Recreational areas along the shore offer a variety of opportunities to enjoy the water. In the City of Warwick there are a number of shoreline recreational areas, both State and local facilities. The recreation facilities vary from Goddard Park, a major state facility, to the municipal playlot at Warwick City Park.

B. The Harbor's Land Use

Landside uses can have a major impact on the water quality, accessibility, and use. The City of Warwick's Comprehensive Plan notes five major coastal land use issues: density and use, pollution and water quality, shoreline access, marine commerce and historic preservation. The Comprehensive Plan section on Land Use includes a detailed description and recommendations for Warwick's shoreline.

Table 10 — Coastal Wetlands in Warwick

WETLAND TYPE	ACRES
Riverine Tidal Open Water	1,319
Estuarine Open Water	395
Marine/Estuarine Rocky Shore	6
Marine/Estuarine Unconsolidated Shore	148
Estuarine Emergent Wetland	277
Estuarine Scrub-shrub Wetland	<u>1</u>
TOTAL AREA	2,146

Sources: City of Warwick Comprehensive Plan, 1991 RIGIS, 1990

Table 11 — City of Warwick Coastal Land Use

LAND USE	AREA (acres)	% OF TOTAL*
Single Family	819.6	27.6
Two plus Family*	182.0	6.1
Commercial	188.8	6.4
Industrial	10.0	0.3
Utility and Railroad	6.0	0.2
Seasonal and Beach	169.0	5.7
Other Uses	244.1	8.2
Vacant	1346.2	45.4
TOTAL	2965.7	100.0%

* Two plus family includes apartments and condominiums. ** Percentages rounded.
Source: City of Warwick Comprehensive Plan, 1991

Approximately three thousand acres in Warwick have been identified as coastal land. Table 10 shows that there are a variety of land uses on the City's waterfront. More significantly is that given the amount of vacant land on the waterfront, there is great potential to direct future growth and change.

Warwick's Zoning Ordinance, consistent with the City of Warwick Comprehensive Plan, provides for the protection of coastal areas through a number of regulations. First, the ordinance includes a Waterfront Businesses zoning district along type three waters; this designation is intended exclusively for uses catering to marine activities. The regulations also include a minimum fifty (50) foot setback from any coastal feature as defined by the Rhode Island Coastal Resources Management Council (CRMC). This provision is intended to complement the CRMC regulations governing coastal setbacks. The ordinance also requires lot area calculations to exclude any portion under water or containing coastal wetlands. Finally, the ordinance maintains medium to low density residential land uses within two hundred (200) feet of the coastline. These latter regulations result in reduced densities within environmentally sensitive coastal areas.

The new Zoning Ordinance was developed around two major components for the coastal areas: the capacity of the land to support development and the recognition of existing water related uses. As a result, the present zoning classifications that are used along the coastal area of the City of Warwick are as follows:

Open Space District (OS)- Properties mapped for the purposes of maintaining open space, recreation, agriculture, conservation of natural resources, or other environmental conditions.

Residence A-40 District (A-40)- Properties mapped and used for very low density residential use, comprising not more than one (1) single family dwelling unit per lot area measuring a minimum of 40,000 square feet.

Residence A-15 District (A-15)- Properties mapped and used for low density residential use, comprising not more than one (1) single family dwelling unit per lot area measuring a minimum of 15,000 square feet.

Waterfront Business District (WB)- Properties mapped and used primarily for businesses catering to marine activities.

The Comprehensive Plan includes specific recommendations for each of the identified coastal shoreline analysis areas to manage and improve land use patterns adjacent to Warwick's coastline. Additionally, the Plan includes general recommendations for public sewerage and drainage systems, implementation of which will serve to better manage storm water runoff and pollution.

These recommendations include:

1. encouraging on-site storm drainage disposal;
2. requiring storm drainage management planning for all new or expanded commercial, industrial, or large scale residential developments;
3. development of a municipal storm drainage management plan;
4. assignment of a high priority for expansion of municipal sewerage systems or tie-in to existing systems for high density or other sensitive areas; and,
5. development of a municipal policy to address and prioritize the issue of private expansion of the sewerage systems.

The recommendations of the Comprehensive Plan are incorporated into the Harbor Management Plan by reference and should be implemented as soon as practicable.

APPENDIX D Recreational Facilities

	LOCATION	OWNERSHIP	AREA (AC)
PLAYLOTS			
Kerri Lyn Road	East of Mystic	Municipal	1.25
Warwick City Park	Brushneck Cove	Municipal	.45
PLAYGROUNDS			
Warwick City Park	Brushneck Cove	Municipal	22
MAJOR PARKS			
Chepiwanoxet Park	Cowesett	Municipal	10
Salter Memorial Grove	East of Narragansett Pkwy.	State/Municipal	9.5
Warwick City Park	Brushneck Cove Municipal 165		
Goddard Park	North side Ives Rd, east side Greenwich Cove	State	473
Pawtuxet Park	Pawtuxet	Municipal	2.5
PASSIVE RECREATIONAL USE			
Passeonkquis Cove Waterfront	Passeonkquis Cove North shore, south end Edgeknoll Ave.	Municipal	.18
Audubon Society Waterfront	Northwest of Occupessatuxet Cove Plat 314, Lot 19 (part of)	Private	3.14
Oakland Beach Conservation Area	South Shore Oakland Beach	Municipal	9.14
Baker's Creek	West Side	—	5.7
PUBLIC BEACHES			
Conimicut Pt. Beach	Conimicut Beach	Municipal	14.37
Oakland Beach	South Shore Waterfront	Municipal Oakland Beach	16.53
Bayside Beach	West of Narrag., Bay at Park Ave. Sam Gorton Ave., Dorr St.	State	.62
Warwick City Park Beach	Brush Neck Cove	Municipal	1.72
Goddard Park Beach	North side Ives Road east side Greenwich Cove	State	—
PRIVATE - PROFIT			
	LOCATION		AREA (AC)
Rocky Point Amusement Park	From South end of Palmer Ave. to Narrag. Bay		76
Warwick Country Club	West side Warwick Neck Ave. to Greenwich Bay		112.3/.55
Warwick Neck Country Club	Warwick Neck south side Gray St Area		48/1.35

PRIVATE - PROFIT	LOCATION	AREA (AC)
Rocky Point Amusement Park	From South end of Palmer Ave. to Narrag. Bay	76
Warwick Country Club	West side Warwick Neck Ave. to Greenwich Bay	112.3/.55
Warwick Neck Country Club	Warwick Neck south side Gray St Area	48/1.35

PRIVATE NON-PROFIT	LOCATION	AREA (AC)
Our Lady of Prov. Seminary	East side Warwick Neck Ave. to Narrag. Bay	70
Floating Hospital	South side Long St. to Greenwich Bay	65/5.3
Rocky Hill Country Day School	South side Ives Road north shore Potowomut River	66.6/61.2

UNDEVELOPED AREAS

LOCATION	OWNERSHIP	AREA (AC)
North Side Economy/Edgemere Ave.	Municipal	.10
East side Economy Ave. South of Terrace Ave.	Municipal	.07
North shores Passeonquis Cove South end of Howeau	Municipal	1.38
North end of Dudley Ave.	Municipal	.17

COMMUNITY BEACHES

LOCATION	TYPE OF COMMUNITY
Gaspee Point	Seasonal
Conimicut, Northern exposure southern exposure from Conimicut Pt. Beach-Mill Cove	Permanent
South of Mill Cove - Rocky Pt., including Bayside Beach (see Public Beaches)	Permanent
South of Rocky Pt. - Warwick Light - Warwick Country Club	Permanent
Buttonwoods, east of Andrew Comstock Rd. to point	Permanent
Buttonwoods, west of Andrew Comstock Rd. to Claypool Dr.	Seasonal
Beachwood Drive (private, adjacent to developed communities)	Permanent
Nausauket, Cedar Tree Pt.	Permanent
Potowomut, Sally Pt, to Sandy Pt.	Permanent

NOTE: Numerous lots are adjacent to the beach areas in these communities, with the exception of the Gaspee Point area.

APPENDIX E

Designated Public-Rights-of-Way to the Shore

Coastal Resources Management Council (listed south to north)

Bradford Ave. (J-1) -

A small area of sand and marsh grass that extends east from the south end of Bradford Avenue to a cobble beach bordering Narragansett Bay, at pole #7, just north of the mouth of the Potowomut River between Marsh Point and Sandy Point (Potowomut) L:39'/W:10'

Elkins Ave. (J-2) -

A grass path that extends east from Bradford Avenue to a sandy beach bordering Narragansett Bay, between poles #3 and #4, just north of the mouth of the Potowomut River, between Marsh Point and Sandy Point (Potowomut) L:105'/W:10'

Charlotte Dr. I (J-3) -

A grass path, leading to a concrete ramp and a set of concrete steps, that extends northeast from the intersection of Charlotte Drive and Sidney Avenue to a cobble beach bordering Greenwich Bay, at pole #2, just west of Sandy Point (Potowomut) L:137'/W:10'

Charlotte Dr, 2 (J-4) -

A grass path, leading to a dilapidated stone wall and wooden stairway, that extends northeast from the intersection of Charlotte Drive and Hale Avenue to a cobble beach bordering Greenwich Bay, at pole #10, just west of Sandy Point (Potowomut) L:107'/W:10'

Charlotte Dr, 3 (J-5) -

A grass path, leading to a dilapidated wooden stairway, that extends northeast from the intersection of Charlotte Drive and Collins Avenue to a cobble beach bordering Greenwich Bay, between poles #4 and #5, just west of Sandy Point (Potowomut) L:130'/W:10'

Charlotte Dr, 4 (J-6) -

A grass path, leading to a small wooden stairway, that extends northeast from the intersection of Charlotte Drive and Hopkins Avenue to a cobble beach bordering Greenwich Bay, at pole #2 just west of Sandy Point (Potowomut) L:167'/W:10'

Beachwood Dr. 1 (J-7) -

A grass path, leading to a wooden stairway, that extends northeast from the intersection of Beachwood Drive and Lakedell Drive to a cobble beach bordering Greenwich Bay, between poles #23 and #24, just east of Sally Rock Point (Potowomut) L:130'/W:10'

Beachwood Dr, 2 (J-8) -

A pathway of dirt and grass, leading to a wooden stairway, that extends northeast from Beachwood Drive (between Baycliff Drive and Overlook Drive) to a cobble beach bordering Greenwich Bay, between poles #30 and #31, just east of Sally Rock Point (Potowomut) L:150'/W:10'

Sylvia Dr. (J-9) -

A dirt path that extends south from the south end of Sylvia Drive to a sandy beach bordering Greenwich Bay, between Nausauket and Buttonwoods, L:201'/W:10'

Sheffield St. (J-10) -

A strip of dirt and grass that extends east from the intersection of Sheffield Street and Coburn Street to an area of marsh grass bordering Warwick Cove, at pole #10, (Oakland Beach) L:145'/W:32'



Reynolds Ave. (J-11) -

A grass strip that extends south from Reynolds Avenue to an area of marsh grass bordering Brush Neck Cove, between poles #19 and #20 L:115'/W:6'

North Shore St. (J-12) -

A gravel drive, leading to a grass strip, that extends east from the intersection of North Shore Street and crown Street to an area of marsh grass bordering Warwick Cove (Oakland Beach) L:128'/W:12'

Waterfront Dr. (J-13) -

A gravel drive, leading to a gravel ramp, that extends east from Waterfront Drive to Warwick Cove, adjacent to, and north of, the Sea Horse Grill (Second Point) L:117'/W:20'

Cooney St. (J-14) -

A parcel of land, covered with thick brush and marsh grass, that extends West from the west end of Lilac street to Warwick Cove (Warwick Neck) L:128'/W:30'

Progress St. (J-15) -

A portion of a gravel parking lot that extends west from the intersection of Progress Street and Westview Street to a seawall and floating dock facility on Warwick Cove at Winstead's Boat Yard (Warwick Neck) L:118'/W:15'

Burnett Rd. 1 (J-16) -

A paved roadway, leading to a concrete ramp, that extends east from the intersection of Burnett Road and Ogden Avenue to Narragansett Bay just north of Rocky Point (Highland Beach) L:141'/W:21'

Burnett Rd, 2 (J-17) -

A grass path that extends east from the intersection of Burnett Road and Brinton Avenue to a cobble beach bordering Narragansett Bay, just north of Rocky Point (Highland Beach) L:140'/W:31'

Burnett Rd. 3 (J-18) -

A paved walkway, leading through an area of grass and brush, that extends east from the intersection of Burnett Road and Chapin Avenue to a cobble beach bordering Narragansett Bay, just north of Rocky Point (Highland Beach) L:120'/W:20'

Shawomet Ave. 1 (J-19) -

A portion of a paved drive, leading to a grass strip and a concrete seawall, that extends northeast from Shawomet Avenue (just east of the Ellery Street intersection) to a sandy beach bordering the mouth of the Providence River, at pole #28, just west of Conimicut Point (Shawomet) L:115'/W:6'

Shawomet Ave. 2 (J-20) -

A strip of dirt and grass that extends northeast from Shawomet Avenue (between Ellery Street and Talcott Street) to a sandy beach bordering the mouth of the Providence River, between poles #18 and #19, just west of Conimicut Point (Shawomet) L:126'/W10'

Bellman Ave. (J-21) -

A concrete walkway, leading to a concrete stairway, that extends northeast from Bellman Avenue (between Francis Street and Fulton Street) to the Providence River, between Conimicut Point and Occupessatuxet Cove (Conimicut) L:182'/W:41'

Gaspee Point Dr. (J-22) -

A gravel drive, leading to an area of grass and brush, that extends east from the north end of Gaspee Point Drive to an area of marsh grass bordering the Providence River, just north of Passeonkquis Cove (Gaspee) L:208'/W:21'

Butler Ct. (J-23) -

A concrete, terminating at a large brick house, that extends east from the south end of Butler Court, heading toward the Providence River, just south of Pawtuxet Cove (Gaspee) L:125'/W6'

APPENDIX F

Rights-of-Way to the Shore

(Designed by the City of Warwick)

No.	Plat/ Lot	Record Card	Title	Date
44	202 34-35	285	Potowomut Plat Annex #2 10' beachway	June 1921
45	202 27-28	285	Potowomut Plat Annex #2 10' beachway	June 1921
46	201 135-149	278	Potowomut Plat 10' beachway	July 1920
47	201 114-132	278	Potowomut Plat 10' beachway	July 1920
48	201 57-85	278	Potowomut Plat Annex 10' beachway	—
49	201 24-54	279	Potowomut Plat Annex 10' beachway	August 1920
50	203 21-22	283	Bayridge 10' R.O.W.	March 1921
51	203 6-7	283	Bayridge 10' ROW	March 1921
51A	365 209-204 210-208	385	Bayview Drive 10' first beachway (no frontage)	April 1929
51B	365 200-201	385	Bayview Drive 10' second beachway (no frontage)	April 1929
52	367 27-275	—	Not on record card, 8' width	—
53	369/ 26-42	402	Capron Farm Estates #1, 10' ROW	September 1944
53A	362/ 544-545	540	Pilgrim Terrace (owned by City; no frontage)	August 1956
54	376 8-9	292	Extension of Coburn Street (see App. B No. 55)	November 9, 1926

No.	Plat/ Lot	Record Card	Title	Date
55	376 154-155-157	—	Not on Record Card (8' & 10' width)	—
56	361 35-819	229	MacFarlane Plat #2 6' passageway	December 1911
57	359 57-58	260	MacFarlane Plat 12' passageway	June 1917
57A	359 44	260	MacFarlane Plat 6' ROW	June 1917
57B	359 124-125	321	Second Point Plat (Ship St.) 20' ROW	May 19..
58	359 271-272	263	Shorefront Plat 20' landing	April 1921
58A	358 257-261	323	Waterview Plat 10' ROW	1924
59	377 2-3	189	Ida E. Wright Plat 20' ROW	January 1907
60	377 ..-37	374	Pumham Fort Plat 20' R.O.W. to shore	September 1933
61	385 26-38	303	Warwick Neck Plateau 25' passageway for use of lot owners	September 1927
62	380 108-151	157	Sea View Plat 20' R.O.W.,	February 1903
63	380 184-229	157	Sea View Plat 20' R.O.W.,	February 1903
64	380 229-269	167	Highland Beach 20' R.O.W.,	May 1904
64A	356 210-255	330	Longmeadow Shores Plat 10' ROW's	May 1925
64B	356 117-206	330	—	May 1925
64C	356 51-113	330	—	May 1925

No.	Plat/ Lot	Record Card	Title	Date
65	334 278-279	275	Conimicut Farm 6' ROW	August 1919
66	334 12-13	273	Not on record card 10' width	—
67	333 375-376	102	Shawomet Ave, Plat "Sec. A" 4' walk to shore	May 1889
68	304 145-187	232	Gaspee Plateau 20' drive to Bay Shore Blvd,	June 1912
69	292 229-230	238	No. 2 Bay Lawn Plat 9' passageway	July 1924
70	292 397-400	91	Map of land at Pawtuxet 20.06 gangway	March 1887
71	292 394-397	91	Map of land at Pawtuxet 20.06 gangway	March 1887

APPENDIX G

Public Rights-of-Way to the Shore

(Dedicated Highways)

NO.	Plat/	Lot	Street Name	Ocean Frontage (width)	Date
1	292: :	392-398	Peck Lane	25'	11-23-7
2	292: :	391-396	Emmons Avenue	20'	3-21-63
3	292 :	361-328	Remington Street	28'	4-5-1893
4	292 :	327-316	Spring Garden Street	20'	11-12-24
5	292 :	295-502	Bayside Avenue	40'	7-6-15
6	292 :	215-202	Canonchet Avenue	40'	10-31-28
7	292 :	189	Naushon Avenue	50'	—
	304 :	189			
8	317 :	206-229	Dudley Avenue	40'	9-26-23
9	317 :	258-285	Grace Avenue	40'	9-9-24
10	317 :	289-332	Beach Avenue	50'	10-14-24
11	317 :	336-367	Woodbury Street	40'	1-31-29
12	333 :	374-366	Fulton Street	50'	N
13	333 :	365-352	Troy Avenue	40'	N
14	333 :	335-314	Blake Street	0'	4-8-24
15	333 :	312-283	Stokes Street	40'	4-28-28
16	133 :	280-235	Waverly street	40'	7-14-20
17	333 :	232-231	Mason Street	30'	7-14-20
18	333 :	225-99	Symonds Avenue	40'	7-14-20
19	333 :	96	Talcott Avenue	30'	11-11-19
	334 :	1			
20	334 :	22-268	Ellery street	40'	9-19-19
21	334 :	431-430	Foster Street	30'	9-19-19
22	334 :	267-245	Spadina Avenue	40'	7-13-20
23	334 :	232-153	Bloor Street	40'	7-13-20
24	334 :	145-101	Higney Avenue	40'	7-13-20
25	336 :	328-261	Economy Avenue	40'	7-12-27
26	335 :	94-101	Possner Avenue	30'	12-17-07
27	135 :	174-192	River Vue Avenue	50'	11-28-1874
28	335 :	207-297	Mill Cove Road	50'	11-28-1874
29	335 :	303-265	Lippitt Avenue	50'	11-28-1874
30	335 :	291	Whipple Avenue	50'	4-18-1884
	335 :	302			
31	355 :	330-676	Cady Avenue	50'	5-7-29
32	355 :	380-425	Pender Avenue	50'	9-19-1881
33	355 :	437-471	Van Zandt Avenue	50'	9-19-1884
34	355 :	487-513	Longmeadow Avenue	40'	1-8-51
35	355 :	550-605	Riverside Avenue	20'	8-1915
36	355 :	670	Samuel Gorton Avenue	50'	10-28-24
	356				
37	356 :	344	Priscilla Avenue	41'	4-21-04
	380 :	270			

NO.	Plat/	Lot	Street Name	Ocean Frontage (width)	Date
38	382 :	113-314	Kirby Avenue	50'	1870
39	177 :	17-371	Tiffany Avenue	40'	11-9-33
40	358 :	11-7	Mars Avenue	12	—'
41	358 :	409-30	Sayles Avenue	12'	—
42	358 :	125-126	Ernest Avenue	40'	1-24-07
43	358 :	187-188	Harris Avenue	40'	2-10-31
44	358 :	214-244	Charlestown Avenue	50'	4-7-1896
45	358 :	260-271	Capon Street	30'	10-13-20
46	358 :	327-370	Vanstone Avenue	40'	9-9-30
47	359 :	436-427	Rita Street	40'	9-12-23
45	359 :	435-407	Marblehead Street	40'	1-21-1876
49	359 :			45'	
50	359 :	290-285	Henzie Street	40'	5-11-21
51	359 :	250-258	Waterfront Drive (R.O.W. there)	40'	5-11-21
52	359 :	179-227	Briggs Street	40'	5-11-21
53	359 :	88-98	Bennett Street	40'	5-12-02
54	359 :	84-85	Ray Street	40'	9-4-12
55	376 :	8-9	Coburn Street	30'	11-9-26
56	376 :	539-540	Quonset Avenue	32'	10-7-49
57	376 :	87-152	Ottawa Avenue	50'	6-6-1873
58	376 :	162-244	Mohawk Avenue	50'	2-10-31
59	376 :	253-374	Suburban Parkway	100'	2-15-1895
60	376 :	375-439	Burr Avenue	40'	2-16-1895
61	375 :	303-205	Ottawa Avenue	50'	5-6-1873
62	375 :	202-108	Wilson Avenue	50'	2-10-31
63	361 :	328-362	Canfield Avenue	25'	1,2,-9.7-11
64	361 :	129-302	Haswill Street	40'	7-29-1872
65	362 :	434-316	Shand Avenue	40'	1-13-26
66	362 :	316-269	Pine Grove Avenue	40'	7-21-14
67	362 :	264-171	Cottage Grove Avenue	40'	7-21-14
68	362 :	116-74	Spring Grove Avenue	70'	4-23-1873
69	363 :	588-611	Sunny Cove Drive	50'	5-26-48
70	366 :	1	Masthead Drive	60'	7-11-1836
71	221 :	51-RR	Oakgrove Street	40'	2-12-19
72	201 :	189	Ives Road	45'	8-10-20
73	201 :	164-187	Charlotte Drive	50'	B-10-20
74	201 :	87-109	Robert Avenue	40'	8-10-20
75	201 :	-1-19	Sawyer Avenue	50'	11-30-07
76	203 :	128-1	Overlook Drive	15'	3-8-21
77	222 :	107-108 \	Louise Street	40'	4-9-09
78	222 :	96-98	Harbor Lane	16'	7-18-40
79	222 :	34-86	Neptune Street	41'	5-25-1836

Public Rights-of-Way to the Shore

(Unaccepted Highways)

No.	Plat/	Lot	Street Name	Ocean Frontage (width)	Date Filed
2A	292 :	385-366	East View Street	33'	
4A	292 :	315-504	Lawn Avenue	30'	
5A	292 :	218-216	Bolton Street	12'	
7A	304 :	124-29	Bay Shore Blvd.	50'	
7B	304		Parkside Drive	66'	
	303 :	112			
7C	303 :	4-567	Benson Avenue	50'	
7D	317 :	21-204	Bluff Avenue	15'	
7E	304 :	20-26	Gaspee Point Drive	50'	
7F	317		Bromle Avenue	820'	
8A	317 :	230-256	Royal Avenue	50'	
IIA	317 :	370	Acme Street	10'	
	333 :	376			
13A	333 :	351-339	Winter Avenue	40'	
24A	336 :	327-331	Edgemere Avenue	30'	
34A	355 :	537-550	Shore Avenue	36'	
36A	355 :		Dorr Street	400'	
365	356 :	297-320	Alden Avenue	40'	
37A	380 :	181-161	Surf Avenue	40'	
37B	381 :	17	Narragansett Bay Ave,	50'	
37C	385 :	60-42	Agawam Avenue	50'	
37D	383 :	45	Narragansett Bay Ave.	50'	
38A	382 :	50-94	Blackstone Avenue	50'	
38B	382 :	3-47	Homestead Avenue	50'	
38C	382 :	2-1	Russell Avenue	50'	
38D	378 :	16-90-91	Randall Avenue	460'	
41A	358 :	33-29	Mitchell Court	30'	
45A	358 :	377-373	Garden Road	47'	
46A	359 :	512-461	Holden Street	40'	
46B	359 :	461-450	Searle Street	270'	
62A	375 :	106-94	Wilcox Street	50'	
62B	360 :	174-268	Northup Street	40'	
62C	360 :	436	Langley Street	40'	
69A	245 :	7-6	Colonial Avenue	160'	
69B	244 :	165-147	Harrop Avenue	50'	
69C	367 :	1-201	Nausauket Road	50'	
70A	221 :	28	Arch Road	0'	

APPENDIX-H Greenwich Bay Initiative



"Bring Back the Bay" The Greenwich Bay Initiative

(Prepared by the City of Warwick Planning Department and Rhode Island Sea Grant, May, 1996)

The Greenwich Bay Initiative was launched in early 1993 by a group of concerned agencies, municipalities and interest groups. Participants include:

City of Warwick

Town of East Greenwich

Town of West Warwick

RIDEM Narragansett Bay Estuary Program

Rhode Island Department of Environmental Management

Rhode Island Sea Grant

Rhode Island Department of Transportation

Rhode Island Coastal Resources Management Council

Rhode Island Shellfishermen's Association

Save The Bay

Southern Rhode Island Conservation District

USEPA

US Natural Resources Conservation Service

US Geological Survey

University of Rhode Island School of Engineering

University of Rhode Island School of Oceanography

University of Rhode Island School of Community Planning

University of Rhode Island School of Natural Resource Sciences

Efforts of the Greenwich Bay Initiative fall under several categories:

- I. Planning and Financing: Maximizing Institutional Cooperation**
- II. Research: Science on Greenwich Bay**
- III. Remediation: Projects That Eliminate or Reduce Pollution**
- IV. Coastal Management: Planning and Regulation to Prevent Future Pollution**
- V. Education: Learning About Our Resource**

I. Planning and Financing: Maximizing Institutional Cooperation

The day of reckoning for Greenwich Bay came in December 1992, when it was closed to shellfishing due to bacterial pollution primarily from failed septic systems and stormwater runoff. The closure was an economic disaster for the local shellfishing industry which annually generated up to \$4 million in commercial revenues from the Bay

In response, Warwick Mayor Lincoln Chafee directed the Warwick Planning Department to chart a course for the reclamation of Greenwich Bay. The Planning Department, working cooperatively with several City Departments, enlisted local, state and federal government agencies, as well as non-profit interest groups to organize the Greenwich Bay Initiative.

In just three years, the level of cooperation between individuals, groups, and municipal, state and federal agencies is remarkable. This award-winning partnership is making tremendous progress in restoring water quality and shellfishing to Greenwich Bay.

Strategic Plan for the Reclamation of Greenwich Bay
 Spring 1994
 City of Warwick

Written in cooperation with RIDEM, RIDOT, RI Shellfishermen's Association, Save The Bay and others, the Plan has served as a framework for cooperation between partners, including a commitment to a decision-making framework, commitment of resources and timetable.

\$5 million Warwick "Bay Bond" Referendum
 Spring, 1994
 City of Warwick

Initiated by Mayor Chafee and endorsed by advocacy group Save the Bay, this measure passed with 70% of the vote. This funds the following: \$2.5 million for a sewer line extension in concert with a \$3 million RIDOT local highway reconstruction project, which will connect 900 units presently on substandard ISDS systems; \$1 million for Best Management Practice (BMP) drainage infrastructure improvements; \$1 million for Warwick's existing grant/loan program for homeowners with failing septic systems, and \$.5 million for storm water research in the Greenwich Bay Watershed.

\$130 million Warwick Wastewater Management Bond Referendum
 Fall, 1994
 City of Warwick

This measure is providing resources for sewer extensions in critical coastal areas, as well as developing Warwick's Municipal Innovative/Alternative Septic System Program for areas within the Greenwich Bay Watershed beyond the point where the extension of sewer service is anticipated in the long term.

Greenwich Bay Task Force Quarterly Meetings
 Spring, 1994 — Ongoing
 City of Warwick,
 Save the Bay,
 RIDEM,
 RIDOT,
 URI,
 CRMC,
 RI Shellfishermen's Association,
 RI Sea Grant,
 Town of East Greenwich,
 Town of West Warwick,
 US NRCS,
 Southern RI Conservation District
 On-Site Wastewater Treatment Center

The Task Force, comprised of professional staff representatives of the above institutions, meets on a quarterly to monitor progress in implementing the Strategic Plan for the Reclamation of Greenwich Bay.

II. Research: Science on Greenwich Bay

Studies are being conducted by local, state, and federal researchers to learn about the pollutants that enter Greenwich Bay, and about the Bay ecosystem in general. With a better understanding of the forces at work in the Bay, decision-makers can take action toward improving the Bay's health.

Greenwich Bay Water Quality Study

Fall, 1993
U.S. Food and Drug Administration
RIDEM- Water Resources

This research sampled the waters of Greenwich Bay at stations in the open water of the Bay and along its shores. It identified the worst sources of pollution and made a series of recommendations related to shellfishing in Greenwich Bay, including the development of a "conditionally approved" management plan for shellfishing in the Bay.

Tributaries/Hardig Brook Nonpoint Source Pollution

Fall, 1993-Spring, 1996
City of Warwick
RIDEM Narragansett Bay Estuary Program
URI School of Civil Engineering
EPA

Two major sources of pollution -the manure pile at the Perra dairy farm and an illegal sewage discharge, both on Hardig Brook, a tributary to Greenwich Bay-were identified in this \$200,000 study. The sewage discharge has been eliminated by connecting the mill complex to the local sewer system, and management solutions are being developed for the farm.

Large-scale Watershed Geographical Information System (GIS) Database Development

Spring, 1996 — Summer, 1997
City of Warwick
URI Environmental Data Center
RIDEM Aquafund

This \$196,000 project will provide a comprehensive source of data on the Greenwich Bay watershed, tied into a Geographical Information System that will link the data to maps of the region.

Rhode Island Sea Grant Collaborative

Fall, 1996 — Summer, 1998
City of Warwick
URI School of Ocean Engineering,
URI Graduate School of Oceanography
URI School of Civil Engineering

An \$800,000 grant package from the National Sea Grant College Program is enabling university researchers and outreach specialists to carrying out several projects on Greenwich Bay:

COASTMAPS

Development of computer software to store and analyze data on Greenwich Bay. Models will be created to help determine where pollutants will go once they enter the Bay.

Storm Drain Discharges-

Inventory of storm drains emptying into Greenwich Bay, and measuring the amount of pollutants, such as nutrients and bacteria that the drains discharge. This information will then be plugged into COASTMAPS to create a model to predict when and where the greatest amount of pollution will enter the Bay.

• Nutrient Enrichment and Oxygen

Identification of places in where eutrophication (nutrient enrichment) is occurring. This research will also look at related oxygen levels in the Bay, and use COASTMAPS to help predict eutrophication.

**Northern Watershed and Groundwater
Nonpoint Source Pollution**

Fall, 1995 — Ongoing
City of Warwick
URI School of Civil Engineering

This \$100,000 project is using aerial photography and water sampling to determine the location and quantity of the major groundwater flows into Narragansett Bay. This will help determine where the biggest threats are from leaking septic systems.

Eelgrass Restoration

Summer, 1994 — Ongoing
RIDEM Narragansett Bay Estuary
Program
URI Graduate School of Oceanography

Eelgrass, an important marine plant that provides shelter and habitat for animals, helps clean water, reduces erosion, and whose seeds are eaten

by some animals, has been declining throughout Narragansett Bay. This project is currently working to replant eelgrass in three locations: the Potowomut River and Green Point in North Kingstown, and Hope Island in Narragansett Bay. Several sites in Greenwich Bay have been targeted for future restoration.

Estuarine Habitat Mapping

Spring, 1996 — Summer, 1997
City of Warwick
RIDEM Narragansett Bay Estuary
Program
Save The Bay

This project will survey and map the habitats found in Greenwich Bay, noting physical characteristics, plant species, and animals present.

III. Remediation: Projects That Eliminate or Reduce Sources of Pollution

While many sources of pollution are difficult to trace and control, much is known about others, and measures are being taken to ensure that their threat to Greenwich Bay is reduced.

Municipal Sewer Extensions

Summer — 1993-Ongoing
Warwick Sewer Authority

The City of Warwick is extending city sewers to several critical coastal areas. The City has authorized \$130 million in spending on wastewater management. The Warwick Sewer Authority has approximately \$8 million in construction projects slated for completion by the end of 1997.

Septic Grant Loan Program

1984 — Ongoing
Warwick Sewer Authority

The Warwick Sewer Authority's On-site Rehabilitation Program can provide a grant of up to \$1600 and a loan of up to \$2400 for upgrading or replacing a failing cesspool or septic system. To date, over 450 systems have been rehabilitated.

**Implementation of Agricultural Best
Management Practices**

Winter, 1995
City of Warwick
US Natural Resources Conservation
Service
RIDEM

This involved the installation of systems to reduce agricultural runoff, which can result in the flow of nutrients and bacteria into Greenwich Bay (see Pollution).

**Oakland Beach Sewer Tie-In Demonstration
Project**

Summer, 1995 — Ongoing

Warwick Planning Department
Warwick Sewer Authority
RIDEM- Office of Environmental
Coordination
USEPA

While the densely-populated Oakland Beach section of Warwick was sewerred in the 1980's, it was discovered in 1994 that only 58% of residential

units were actually connected to the system. This \$165,000 program is providing qualified low and moderate homeowners with financial assistance to get hooked up, to date, 55 connections have been completed.

Post Road Sewer Extension

Construction Summer, 1997
City of Warwick
RIDOT

As part of the reconstruction of Post Road, south of Apponaug, the Warwick City sewers will be extended to connect approximately 900 condominiums and apartments, that currently utilize substandard septic systems.

Implementation of Road Drainage Best Management Practices

Summer, 1993-Ongoing
City of Warwick
RIDOT

This will involve designing and installing systems to reduce Bay pollution caused by road drainage. The City purchased a \$200,000 catch basin "Vacuall" cleaning machine in the Spring of 1996.

Innovative/Alternative Septic Systems

Fall, 1995- — Ongoing
Warwick Planning Department
Warwick Sewer Authority
RIDEM Narragansett Bay Estuary Program
USEPA

This project will install innovative septic system designs, which have been shown in initial studies to be very efficient at reducing total pounds of pollutants.

Septic System Inspections in Greenwich Bay Watershed

Summer, 1994 — Ongoing
RIDEM-Division of Groundwater and ISDS

Because many of the septic systems in the Greenwich Bay watershed are outdated and inefficient, this project provides for inspection to help homeowners determine whether their system needs repair. If repair is needed, homeowners may apply for a loan from the Warwick Sewer Authority (see below).

Marine Pumpout Stations

Spring, 1994-Summer, 1995
RIDEM-Department of Water Resources
USEPA

To date, seven stations have been installed in Greenwich Bay to pump waste from boat holding tanks.

IV. Coastal Management: Planning and Regulation to Help Prevent Future Pollution

Many pollution problems can be controlled through proper planning and management. A number of plans have been developed in Warwick that focus on improving water quality in Greenwich Bay.

City of Warwick Stormwater Regulations

Enacted January, 1996
Warwick Planning Board

As an element of the City's new Development Regulations, any subdivision over 5 units and any site development over a certain size has to engineer for zero net runoff. Developers are encouraged to use BMP's designed for ease of maintenance.

City of Warwick Zoning Ordinance: Watershed Overlay District

Enacted Fall, 1994
Warwick Planning Department

A reserved section of the City's newly-revised Zoning Ordinance will allow for the enactment of additional environmental protection measures within Greenwich Bay.

Shellfish Management Plan

Summer, 1994
RIDEM Narragansett Bay Estuary Program
RIDEM- Division of Fish, Wildlife, and Estuarine Resources

Based on a quahog population assessment in Greenwich Bay, an interim management plan was established. The plan set a harvest quota for 1,003,300 pounds, with up to 75 percent of this quota to be harvested in the summer and the remaining 25 percent in the winter.

City of Warwick Shellfish Protection Districts

Winter, 1995-1996 — Ongoing
Warwick Planning Department
Warwick Sewer Authority

The Warwick Planning Department has prepared a white paper proposal for the establishment of Shellfish Protection Districts within the Greenwich Bay Watershed by the Warwick Sewer Authority. Where there existed a scientific database which demonstrated that an area beyond the Authority's anticipated service area was a significant source of Bay pollution, a district could be enacted. The purpose of this initiative would be to replace dated and substandard ISDS systems with high performance alternative/innovative systems. The Authority would create a greater financial incentives for homeowners to upgrade, or perform installations itself, amortizing costs in a manner identical to that of conventional sewerage.

City of Warwick Harbor Management Plan

Fall, 1995 — Summer, 1996
Warwick Planning Department
Warwick Harbor Management Commission

The Warwick City Harbor Management Plan has been revised to take into consideration water quality concerns and actions.

Open Space Acquisition: Chepiwanoxet Island

Spring, 1994
City of Warwick
The Nature Conservancy
The Champlin Foundations

The City purchased 10 acre parcel for \$475,000, the Champlin Foundation donated \$175,000 toward the acquisition. The site was once approved for 52 condominiums and a 50 slip marina.

V. Education: Learning About Our Resource

Learning more about Greenwich Bay can help everyone who lives and works within the Bay watershed become an active participant in water quality protection.

Annual "Bring Back the Bay" Day

Summer, 1994-Ongoing
City of Warwick
RIDEM National Estuary Program
Save The Bay

This celebration began in 1994 to raise awareness of Greenwich Bay. Held on the Warwick shore, it uses hands on activities, exhibits, and beach walks to highlight the importance of the Bay.

Watershed Training for Municipal Officials

Spring, 1996
URI Coastal Resources Center
Rhode Island Sea Grant

Decision makers in Warwick and East Greenwich participated in a seven-week short course in April and May, 1996. The course was designed to improve understanding of scientific research in Greenwich Bay, and to use science, along with a variety of important management tools, to ultimately improve water quality in the Bay.

Watershed Education Teacher Workshops

Spring, 1995-Ongoing
Southern RI Conservation District
RIDEM National Estuary Program
City of Warwick

The Southern Rhode Island Conservation District has tailored its award-winning Active Watershed Education curriculum guide specifically to Greenwich Bay. The curriculum focuses on the concept of a watershed and how activities there affect the quality in the body of water to which the watershed drains. The guide includes background information, hands-on activities, and field trips. To date, 60 teachers in the Greenwich Bay watershed have completed the program.

Marina Operator Training

Summer, 1995-Ongoing
RIDEM National Estuary Program
& Office of Environmental Coordination

Marinas and related activities have the potential to contribute to nonpoint source pollution in a number of ways (see Pollution). The marina operator workshops, which began in the Fall of 1995, provide information on how to control this pollution and meet environmental regulations.

Explore the Bay Program

Summer, 1994-Ongoing
Save The Bay

This on-the-water program provided an opportunity for high school students to participate in a research cruise on Greenwich Bay, then plan a program to share their experiences with younger students.

APPENDIX I

Warwick's Maritime History

A History of Shellfishing on Narragansett Bay

For the Narragansett Indians, the Bay's ample bounty of shellfish provided more than mere sustenance. The Narragansett's used the shells of the Periwinkle and the Quahog to manufacture belts of Wampumpeague. These belts, commonly referred to as "Wampum" had more than just a monetary value to the Indians, for they also held spiritual value as records of important events. The value of these wampum belts extended beyond the lands of the Narragansett into the lands of other tribes throughout New England.

The Narragansett word "Apponaug" means "pile of quahaug shells" as this was the location of most of the processing of shellfish into food and shells into wampum. What became the village of Apponaug was, for the Narragansetts, their "Fort Knox". While the Bay provided the Narragansett's with an abundant supply of shells, the individual beads were shaped by hand using stone tools. This labor intensive process provided the basis for the belts' monetary value. As a result of the availability of the shells used in the manufacture of wampum as well as the skills and tools necessary, the Narragansetts were one of the wealthiest tribes long before the arrival of European settlers. Unfortunately for the tribe, the arrival of the white man with his iron tools and advanced technology, foreshadowed the decline of the Narragansetts wealth and power. The English settlers saw the wampum simply as money, and using their iron tools were able to produce belts at a much faster rate than could be done using the Indians stone tools. This increased ease of production caused the devaluation of wampum and a corresponding decrease in the power of the Narragansetts.

The shellfish harvest from the Bay included not only the quahaugs and periwinkles, but also hard and soft shell clams, scallops and oysters. The Narragansetts called the Bay "The Great Salt River" from which they also made use of the vast stocks of crab, lobster and fish to provide food for the tribe. The Narragansetts shared their knowledge of the Bay's bounty with the English settlers, insuring the survival of the colonists while planting the seeds of their own demise.

Over time the abundant supply of shellfish and other food products from the Bay spawned the development of the shellfishing industry as settlers in inland areas developed a taste for these fruits of the bay. Rhode Island families have for generations depended on this resource to provide their livelihood.

The Indian method of cooking these delicacies has become known as the "New England Clambake", when in reality this was first a "Narragansett Clambake", and then a "Warwick Clambake" before being embraced by European settlers throughout the region.

With improvements in transportation and the advent of refrigeration the tastes of the bay have been introduced into areas far removed from the waters of the Narragansett so that today throughout America people can enjoy what was once a uniquely Rhode Island dining experience.

Since the time of the first European settlers however, the bay has suffered the burden of man's presence and suffered from this progress. The once rich oyster and scallop beds have been exhausted, and Greenwich Bay, one of the richest shellfishing beds on the East Coast, has been severely impacted by mans pollution. Families, who for generations, earned their livelihood harvesting the riches of the Bay, have been forced to seek other means of employment. Where once the coves' of Narragansett Bay were covered with the dories and work skiffs of watermen working the beds, today many of these coves are off-limits to shellfishing, and those areas open are being fished by increasingly smaller numbers of full time shellfishermen.

Apponaug Cove

Apponaug, Narragansett for "pile of quahaug shells", was a center of shellfishing activities long before the arrival of the European settlers of the 17th century. The native inhabitants not only made use of the abundant shellfish as a food source, but also produced wampumpeague belts from the shells of the quahaug and the periwinkle. The Narragansetts introduced the colonists to the natural bounty of the bay which provided an essential food supply that enabled the settlers to survive while land was cleared for planting and crops matured. Thus the new inhabitants contributed to the growing apponaug.

While the Narragansetts erected temporary lodging along the cove, the English settlers favored more permanent buildings. It was not long before the first shellfisherman's shanty's began to appear along the shore. These shanties were memorialized in the mural painted by the WPA inside of the Apponaug Post Office. One of the last remaining shanties' still stands at the end of Station Street. These shanties' provided shelter to those hearty individuals who made their living harvesting the Bay.

It was not long before industry came to Apponaug with the construction of the fulling mill at Kekamewit Brook. Textile manufacturing soon became a major part of life in Apponaug continuing until the end the 1950's.

Apponaug also became a transportation and communications center due to its' location on the Pequot Trail, later Post Road. Stagecoaches traveling between New York and Boston regularly stopped in Apponaug. The cove provided a safe haven for shipping and Apponaug became the home port of many ships engaged in the "Triangular Trade" and later for clipper ships sailing to China and the East. The records of the Warwick Town Council indicate that constables had to be posted at the Apponaug bridge at night with lanterns to warn coaches away from the bowsprits of ships moored in the cove.

Shipbuilding also became a part of life in Apponaug with boatyards sharing space with wharfs, chandleries and taverns. The arrival of the railroad brought new wealth to the village but unfortunately the construction of the bridge across the cove spelled the end of Apponaug as a seaport. The bridge did not allow the passage of commercial vessels, and the restricted water flow under the bridge has caused siltation to the extent that today the upper cove is no longer boater friendly.

Pawtuxet Cove

The "land at the falls" was settled in 1638 by the "Pawtuxet men" and was the first permanent European settlement in Warwick. With a plentiful supply of fresh water and a well protected cove, Pawtuxet become a prosperous seaport. Ships engaged in the "Triangular trade" called Pawtuxet their home port. Stillhouses for the production of rum dotted the shoreline. Ships were built, fitted out, supplied and manned out of the village.

With the passage of the "intolerable acts" tensions increased between the colonists and the crown. Merchants engaged in maritime trade faced the choice of paying heavy taxes or smuggling. Many chose the latter, among them prominent businessman John Brown. Actions by the crown to enforce the acts and collect the tariffs reached a climax with the boarding and burning of the revenue cutter "H.M.S. Gaspee" on the evening of June 9th, 1772. This demonstration of American Independence has become known today as "America's first blow for freedom".

After the revolution, the village continued to thrive with local ships and crews sailing off to the orient to take part in the "China trade". The village also briefly entered the "Industrial age" when the power of the falls was harnessed to run a textile mill. Unfortunately, the mill burned down and thus ended Pawtuxet's textile era.

The coming of the age of steam signaled a change in the village's direction. Steam railroads and steam ships began transporting passengers and goods up and down the coast quicker and cheaper than could be done by sail. The advent of the steam age did have a positive effect upon the village, Upper's Coal Dock and Yard stood at the foot of Canonchet Avenue from 1900 - 1919.

Village life shifted again with the arrival of trolley cars and Pawtuxet became a summer resort. A ferry service ran from the cove down the coast to "Warwick Downs" known in part today as "Salter's Grove. Many of the homes built as summer rental cottages still remain today.

This change from commercial water usage to recreational has continued to this day. Pleasure craft of all types can be seen entering and leaving Pawtuxet Cove each day, making full use of every available slip and mooring.

The "Great New England Hurricane of 1938" wreaked havoc to all of Narragansett Bay. Hard hit were the coastal communities of Warwick, summer homes were washed away, beaches eroded, and coves polluted.

Once fertile shellfishing beds were now off limits, bathers shunned beaches fronting "polluted" waters. The summer communities of Warwick, which once hosted more millionaires than Newport, became low income rental properties occupied year round.

Buttonwoods Cove

Buttonwoods was established as a Baptist summer resort community in 1871. There are those that claim that what is today referred to as a "New England Clambake" actually originated on the shore of Buttonwoods Cove. The Narragansetts had been enjoying clambakes long before the arrival of the Europeans. They shared this coastal feast with first settlers and thus started the tradition of the bake as a celebration. President Harrison was treated to a bake at the home of Senator Nelson Aldrich. This was one of the first "political bakes" to be held in Warwick.

Warwick City Park

Warwick City Park created in the early 1960's on the site of the former "Town Poor Farm" is flanked by Brushneck and Buttonwoods Coves.

Conimicut

This area was the home of the "Shawomets" of the Greater Narragansett Tribe and was the landing point for Samuel Gorton and his followers after they left Providence.

Conimicut, named for Canonicus's daughter, became a popular summer resort with the arrival of the electric trolley lines from Providence. Prior to the Hurricane of '38, Bellman Avenue was home to some of the finest summer "cottages" of the rich and famous. In addition, oysters of excellent quality were found in great numbers in Conimicut as well as the surrounding waters.

After the hurricane, the Point became part of the pollution demarcation line drawn across the Bay. Thus, pollution and the end of the trollies brought significant change to Conimicut. Nonetheless, while the shores of Conimicut no longer provide shellfish direct to market, the views of the Bay remain fantastically breathtaking.

Warwick Cove

The site of Samuel Gorton's first settlement, the head of the cove became known as "Old Warwick". Overlooking the cove from Warwick Neck was Pomham's Fort, built for the local Sachem, which was a constant cause of concern to the English settlers. Recognized from the founding of Warwick as a safe haven for ships, the cove continues today to be home to numerous pleasure and commercial craft.

Oakland Beach

With Brushneck and Buttonwoods Coves to the west, and Warwick Cove to the east lies the Oakland Beach. This once and future playground has the most spectacular view of Narragansett Bay to be found in the State. Long gone are the amusement rides which feed a steady stream of customers by the trolley line that crossed from Warwick Neck and ended at the Buttonwoods Hotel. A former Governor's summer home has become a favored dining spot with its' incredible vista.

Chepiwanoxet

Where the first European settlers gathered seaweed for fertilizer, and generations had gathered clams and quahaugs, stations for both the electric trolley and the steam railroad stopped until the late 1930's. This made the Island another of Warwick's popular summer communities.

Chepiwanoxet became home, from 1915 until 1922, to the Gallaudet Aircraft Company, manufacturers of seaplanes for the U.S. Government. Prior to 1960, the site was home to a marina and an industrial area which continued to endanger the waters and sensitive fish breeding grounds of Greenwich Bay. Developers took an interest in the Island in the 1980's, envisioning condominiums and marinas on Greenwich Bay.

The City of Warwick took affirmative action in 1994 and purchased Chepiwanoxet for use as a public park.

Warwick and Smuggling

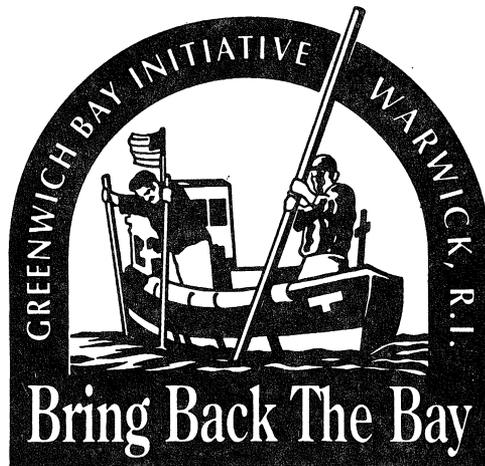
Prior to the Revolution, merchants were forced to choose between engaging in "legal" trade or smuggling. To be "legal" the merchant would have to pay tariffs and taxes on all of his goods to the point that his prices were raised beyond the reach of most pocketbooks. In order to make a profit and to meet the consumers demands, the merchants became "smugglers". The shoreline of Narragansett Bay in general, and Warwick in particular, is a smugglers dream. During Prohibition, the thirst of the population, the lure of quick money, and Warwick's shoreline combined to make "rum running" another local "secret" that everyone knew.

Public Rights-of-Way to the Shore

(Unaccepted Highways)

No.	Plat/	Lot	Street Name	Ocean Frontage (width)	Date Filed
2A	292 :	385-366	East View Street	33'	
4A	292 :	315-504	Lawn Avenue	30'	
5A	292 :	218-216	Bolton Street	12'	
7A	304 :	124-29	Bay Shore Blvd.	50'	
7B	304		Parkside Drive	66'	
	303 :	112			
7C	303 :	4-567	Benson Avenue	50'	
7D	317 :	21-204	Bluff Avenue	15'	
7E	304 :	20-26	Gaspee Point Drive	50'	
7F	317		Bromle Avenue	820'	
8A	317 :	230-256	Royal Avenue	50'	
IIA	317 :	370	Acme Street	10'	
	333 :	376			
13A	333 :	351-339	Winter Avenue	40'	
24A	336 :	327-331	Edgemere Avenue	30'	
34A	355 :	537-550	Shore Avenue	36'	
36A	355 :		Dorr Street	400'	
365	356 :	297-320	Alden Avenue	40'	
37A	380 :	181-161	Surf Avenue	40'	
37B	381 :	17	Narragansett Bay Ave,	50'	
37C	385 :	60-42	Agawam Avenue	50'	
37D	383 :	45	Narragansett Bay Ave.	50'	
38A	382 :	50-94	Blackstone Avenue	50'	
38B	382 :	3-47	Homestead Avenue	50'	
38C	382 :	2-1	Russell Avenue	50'	
38D	378 :	16-90-91	Randall Avenue	460'	
41A	358 :	33-29	Mitchell Court	30'	
45A	358 :	377-373	Garden Road	47'	
46A	359 :	512-461	Holden Street	40'	
46B	359 :	461-450	Searle Street	270'	
62A	375 :	106-94	Wilcox Street	50'	
62B	360 :	174-268	Northup Street	40'	
62C	360 :	436	Langley Street	40'	
69A	245 :	7-6	Colonial Avenue	160'	
69B	244 :	165-147	Harrop Avenue	50'	
69C	367 :	1-201	Nausauket Road	50'	
70A	221 :	28	Arch Road	0'	

APPENDIX-H Greenwich Bay Initiative



"Bring Back the Bay" The Greenwich Bay Initiative

(Prepared by the City of Warwick Planning Department and Rhode Island Sea Grant, May, 1996)

The Greenwich Bay Initiative was launched in early 1993 by a group of concerned agencies, municipalities and interest groups. Participants include:

City of Warwick

Town of East Greenwich

Town of West Warwick

RIDEM Narragansett Bay Estuary Program

Rhode Island Department of Environmental Management

Rhode Island Sea Grant

Rhode Island Department of Transportation

Rhode Island Coastal Resources Management Council

Rhode Island Shellfishermen's Association

Save The Bay

Southern Rhode Island Conservation District

USEPA

US Natural Resources Conservation Service

US Geological Survey

University of Rhode Island School of Engineering

University of Rhode Island School of Oceanography

University of Rhode Island School of Community Planning

University of Rhode Island School of Natural Resource Sciences

Efforts of the Greenwich Bay Initiative fall under several categories:

- I. Planning and Financing: Maximizing Institutional Cooperation**
- II. Research: Science on Greenwich Bay**
- III. Remediation: Projects That Eliminate or Reduce Pollution**
- IV. Coastal Management: Planning and Regulation to Prevent Future Pollution**
- V. Education: Learning About Our Resource**

I. Planning and Financing: Maximizing Institutional Cooperation

The day of reckoning for Greenwich Bay came in December 1992, when it was closed to shellfishing due to bacterial pollution primarily from failed septic systems and stormwater runoff. The closure was an economic disaster for the local shellfishing industry which annually generated up to \$4 million in commercial revenues from the Bay

In response, Warwick Mayor Lincoln Chafee directed the Warwick Planning Department to chart a course for the reclamation of Greenwich Bay. The Planning Department, working cooperatively with several City Departments, enlisted local, state and federal government agencies, as well as non-profit interest groups to organize the Greenwich Bay Initiative.

In just three years, the level of cooperation between individuals, groups, and municipal, state and federal agencies is remarkable. This award-winning partnership is making tremendous progress in restoring water quality and shellfishing to Greenwich Bay.

**Strategic Plan for the
Reclamation of Greenwich Bay**
Spring 1994
City of Warwick

Written in cooperation with RIDEM, RIDOT, RI Shellfishermen's Association, Save The Bay and others, the Plan has served as a framework for cooperation between partners, including a commitment to a decision-making framework, commitment of resources and timetable.

\$5 million Warwick "Bay Bond" Referendum
Spring, 1994
City of Warwick

Initiated by Mayor Chafee and endorsed by advocacy group Save the Bay, this measure passed with 70% of the vote. This funds the following: \$2.5 million for a sewer line extension in concert with a \$3 million RIDOT local highway reconstruction project, which will connect 900 units presently on substandard ISDS systems; \$1 million for Best Management Practice (BMP) drainage infrastructure improvements; \$1 million for Warwick's existing grant/loan program for homeowners with failing septic systems, and \$.5 million for storm water research in the Greenwich Bay Watershed.

**\$130 million Warwick Wastewater
Management Bond Referendum**
Fall, 1994
City of Warwick

This measure is providing resources for sewer extensions in critical coastal areas, as well as developing Warwick's Municipal Innovative/Alternative Septic System Program for areas within the Greenwich Bay Watershed beyond the point where the extension of sewer service is anticipated in the long term.

Greenwich Bay Task Force Quarterly Meetings
Spring, 1994 — Ongoing
City of Warwick,
Save the Bay,
RIDEM,
RIDOT,
URI,
CRMC,
RI Shellfishermen's Association,
RI Sea Grant,
Town of East Greenwich,
Town of West Warwick,
US NRCS,
Southern RI Conservation District
On-Site Wastewater Treatment Center

The Task Force, comprised of professional staff representatives of the above institutions, meets on a quarterly to monitor progress in implementing the Strategic Plan for the Reclamation of Greenwich Bay.

II. Research: Science on Greenwich Bay

Studies are being conducted by local, state, and federal researchers to learn about the pollutants that enter Greenwich Bay, and about the Bay ecosystem in general. With a better understanding of the forces at work in the Bay, decision-makers can take action toward improving the Bay's health.

Greenwich Bay Water Quality Study

Fall, 1993
U.S. Food and Drug Administration
RIDEM- Water Resources

This research sampled the waters of Greenwich Bay at stations in the open water of the Bay and along its shores. It identified the worst sources of pollution and made a series of recommendations related to shellfishing in Greenwich Bay, including the development of a "conditionally approved" management plan for shellfishing in the Bay.

Tributaries/Hardig Brook Nonpoint Source Pollution

Fall, 1993-Spring, 1996
City of Warwick
RIDEM Narragansett Bay Estuary Program
URI School of Civil Engineering
EPA

Two major sources of pollution -the manure pile at the Perra dairy farm and an illegal sewage discharge, both on Hardig Brook, a tributary to Greenwich Bay-were identified in this \$200,000 study. The sewage discharge has been eliminated by connecting the mill complex to the local sewer system, and management solutions are being developed for the farm.

Large-scale Watershed Geographical Information System (GIS) Database Development

Spring, 1996 — Summer, 1997
City of Warwick
URI Environmental Data Center
RIDEM Aquafund

This \$196,000 project will provide a comprehensive source of data on the Greenwich Bay watershed, tied into a Geographical Information System that will link the data to maps of the region.

Rhode Island Sea Grant Collaborative

Fall, 1996 — Summer, 1998
City of Warwick
URI School of Ocean Engineering,
URI Graduate School of Oceanography
URI School of Civil Engineering

An \$800,000 grant package from the National Sea Grant College Program is enabling university researchers and outreach specialists to carrying out several projects on Greenwich Bay:

COASTMAPS

Development of computer software to store and analyze data on Greenwich Bay. Models will be created to help determine where pollutants will go once they enter the Bay.

Storm Drain Discharges-

Inventory of storm drains emptying into Greenwich Bay, and measuring the amount of pollutants, such as nutrients and bacteria that the drains discharge. This information will then be plugged into COASTMAPS to create a model to predict when and where the greatest amount of pollution will enter the Bay.

• Nutrient Enrichment and Oxygen

Identification of places in where eutrophication (nutrient enrichment) is occurring. This research will also look at related oxygen levels in the Bay, and use COASTMAPS to help predict eutrophication.

Northern Watershed and Groundwater Nonpoint Source Pollution

Fall, 1995 — Ongoing
City of Warwick
URI School of Civil Engineering

This \$100,000 project is using aerial photography and water sampling to determine the location and quantity of the major groundwater flows into Narragansett Bay. This will help determine where the biggest threats are from leaking septic systems.

Eelgrass Restoration

Summer, 1994 — Ongoing
RIDEM Narragansett Bay Estuary
Program
URI Graduate School of Oceanography

Eelgrass, an important marine plant that provides shelter and habitat for animals, helps clean water, reduces erosion, and whose seeds are eaten

by some animals, has been declining throughout Narragansett Bay. This project is currently working to replant eelgrass in three locations: the Potowomut River and Green Point in North Kingstown, and Hope Island in Narragansett Bay. Several sites in Greenwich Bay have been targeted for future restoration.

Estuarine Habitat Mapping

Spring, 1996 — Summer, 1997
City of Warwick
RIDEM Narragansett Bay Estuary
Program
Save The Bay

This project will survey and map the habitats found in Greenwich Bay, noting physical characteristics, plant species, and animals present.

III. Remediation: Projects That Eliminate or Reduce Sources of Pollution

While many sources of pollution are difficult to trace and control, much is known about others, and measures are being taken to ensure that their threat to Greenwich Bay is reduced.

Municipal Sewer Extensions

Summer — 1993-Ongoing
Warwick Sewer Authority

The City of Warwick is extending city sewers to several critical coastal areas. The City has authorized \$130 million in spending on wastewater management. The Warwick Sewer Authority has approximately \$8 million in construction projects slated for completion by the end of 1997.

Septic Grant Loan Program

1984 — Ongoing
Warwick Sewer Authority

The Warwick Sewer Authority's On-site Rehabilitation Program can provide a grant of up to \$1600 and a loan of up to \$2400 for upgrading or replacing a failing cesspool or septic system. To date, over 450 systems have been rehabilitated.

Implementation of Agricultural Best Management Practices

Winter, 1995
City of Warwick
US Natural Resources Conservation
Service
RIDEM

This involved the installation of systems to reduce agricultural runoff, which can result in the flow of nutrients and bacteria into Greenwich Bay (see Pollution).

Oakland Beach Sewer Tie-In Demonstration Project

Summer, 1995 — Ongoing
Warwick Planning Department
Warwick Sewer Authority
RIDEM- Office of Environmental
Coordination
USEPA

While the densely-populated Oakland Beach section of Warwick was sewered in the 1980's, it was discovered in 1994 that only 58% of residential

units were actually connected to the system. This \$165,000 program is providing qualified low and moderate homeowners with financial assistance to get hooked up, to date, 55 connections have been completed.

Post Road Sewer Extension

Construction Summer, 1997
City of Warwick
RIDOT

As part of the reconstruction of Post Road, south of Apponaug, the Warwick City sewers will be extended to connect approximately 900 condominiums and apartments, that currently utilize substandard septic systems.

Implementation of Road Drainage Best Management Practices

Summer, 1993-Ongoing
City of Warwick
RIDOT

This will involve designing and installing systems to reduce Bay pollution caused by road drainage. The City purchased a \$200,000 catch basin "Vacuall" cleaning machine in the Spring of 1996.

Innovative/Alternative Septic Systems

Fall, 1995- — Ongoing
Warwick Planning Department
Warwick Sewer Authority
RIDEM Narragansett Bay Estuary Program
USEPA

This project will install innovative septic system designs, which have been shown in initial studies to be very efficient at reducing total pounds of pollutants.

Septic System Inspections in Greenwich Bay Watershed

Summer, 1994 — Ongoing
RIDEM-Division of Groundwater and ISDS

Because many of the septic systems in the Greenwich Bay watershed are outdated and inefficient, this project provides for inspection to help homeowners determine whether their system needs repair. If repair is needed, homeowners may apply for a loan from the Warwick Sewer Authority (see below).

Marine Pumpout Stations

Spring, 1994-Summer, 1995
RIDEM-Department of Water Resources
USEPA

To date, seven stations have been installed in Greenwich Bay to pump waste from boat holding tanks.

IV. Coastal Management: Planning and Regulation to Help Prevent Future Pollution

Many pollution problems can be controlled through proper planning and management. A number of plans have been developed in Warwick that focus on improving water quality in Greenwich Bay.

City of Warwick Stormwater Regulations
 Enacted January, 1996
 Warwick Planning Board

As an element of the City's new Development Regulations, any subdivision over 5 units and any site development over a certain size has to engineer for zero net runoff. Developers are encouraged to use BMP's designed for ease of maintenance.

City of Warwick Zoning Ordinance: Watershed Overlay District
 Enacted Fall, 1994
 Warwick Planning Department

A reserved section of the City's newly-revised Zoning Ordinance will allow for the enactment of additional environmental protection measures within Greenwich Bay.

Shellfish Management Plan
 Summer, 1994
 RIDEM Narragansett Bay Estuary Program
 RIDEM- Division of Fish, Wildlife, and Estuarine Resources

Based on a quahog population assessment in Greenwich Bay, an interim management plan was established. The plan set a harvest quota for 1,003,300 pounds, with up to 75 percent of this quota to be harvested in the summer and the remaining 25 percent in the winter.

City of Warwick Shellfish Protection Districts
 Winter, 1995-1996 — Ongoing
 Warwick Planning Department
 Warwick Sewer Authority

The Warwick Planning Department has prepared a white paper proposal for the establishment of Shellfish Protection Districts within the Greenwich Bay Watershed by the Warwick Sewer Authority. Where there existed a scientific database which demonstrated that an area beyond the Authority's anticipated service area was a significant source of Bay pollution, a district could be enacted. The purpose of this initiative would be to replace dated and substandard ISDS systems with high performance alternative/innovative systems. The Authority would create a greater financial incentives for homeowners to upgrade, or perform installations itself, amortizing costs in a manner identical to that of conventional sewerage.

City of Warwick Harbor Management Plan
 Fall, 1995 — Summer, 1996
 Warwick Planning Department
 Warwick Harbor Management Commission

The Warwick City Harbor Management Plan has been revised to take into consideration water quality concerns and actions.

Open Space Acquisition: Chepiwanoxet Island
 Spring, 1994
 City of Warwick
 The Nature Conservancy
 The Champlin Foundations

The City purchased 10 acre parcel for \$475,000, the Champlin Foundation donated \$175,000 toward the acquisition. The site was once approved for 52 condominiums and a 50 slip marina.

V. Education: Learning About Our Resource

Learning more about Greenwich Bay can help everyone who lives and works within the Bay watershed become an active participant in water quality protection.

Annual "Bring Back the Bay" Day

Summer, 1994-Ongoing
City of Warwick
RIDEM National Estuary Program
Save The Bay

This celebration began in 1994 to raise awareness of Greenwich Bay. Held on the Warwick shore, it uses hands on activities, exhibits, and beach walks to highlight the importance of the Bay.

Watershed Training for Municipal Officials

Spring, 1996
URI Coastal Resources Center
Rhode Island Sea Grant

Decision makers in Warwick and East Greenwich participated in a seven-week short course in April and May, 1996. The course was designed to improve understanding of scientific research in Greenwich Bay, and to use science, along with a variety of important management tools, to ultimately improve water quality in the Bay.

Watershed Education Teacher Workshops

Spring, 1995-Ongoing
Southern RI Conservation District
RIDEM National Estuary Program
City of Warwick

The Southern Rhode Island Conservation District has tailored its award-winning Active Watershed Education curriculum guide specifically to Greenwich Bay. The curriculum focuses on the concept of a watershed and how activities there affect the quality in the body of water to which the watershed drains. The guide includes background information, hands-on activities, and field trips. To date, 60 teachers in the Greenwich Bay watershed have completed the program.

Marina Operator Training

Summer, 1995-Ongoing
RIDEM National Estuary Program
& Office of Environmental Coordination

Marinas and related activities have the potential to contribute to nonpoint source pollution in a number of ways (see Pollution). The marina operator workshops, which began in the Fall of 1995, provide information on how to control this pollution and meet environmental regulations.

Explore the Bay Program

Summer, 1994-Ongoing
Save The Bay

This on-the-water program provided an opportunity for high school students to participate in a research cruise on Greenwich Bay, then plan a program to share their experiences with younger students.

APPENDIX I

Warwick's Maritime History

A History of Shellfishing on Narragansett Bay

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The Indian method of cooking these delicacies has become known as the "New England Clambake", when in reality this was first a "Narragansett Clambake", and then a "Warwick Clambake" before being embraced by European settlers throughout the region.

With improvements in transportation and the advent of refrigeration the tastes of the bay have been introduced into areas far removed from the waters of the Narragansett so that today throughout America people can enjoy what was once a uniquely Rhode Island dining experience.

Since the time of the first European settlers however, the bay has suffered the burden of man's presence and suffered from this progress. The once rich oyster and scallop beds have been exhausted, and Greenwich Bay, one of the richest shellfishing beds on the East Coast, has been severely impacted by mans pollution. Families, who for generations, earned their livelihood harvesting the riches of the Bay, have been forced to seek other means of employment. Where once the coves' of Narragansett Bay were covered with the dories and work skiffs of watermen working the beds, today many of these coves are off-limits to shellfishing, and those areas open are being fished by increasingly smaller numbers of full time shellfishermen.

Apponaug Cove

Apponaug, Narragansett for "pile of quahaug shells", was a center of shellfishing activities long before the arrival of the European settlers of the 17th century. The native inhabitants not only made use of the abundant shellfish as a food source, but also produced wampumpeague belts from the shells of the quahaug and the periwinkle. The Narragansetts introduced the colonists to the natural bounty of the bay which provided an essential food supply that enabled the settlers to survive while land was cleared for planting and crops matured. Thus the new inhabitants contributed to the growing apponaug.

While the Narragansetts erected temporary lodging along the cove, the English settlers favored more permanent buildings. It was not long before the first shellfisherman's shanty's began to appear along the shore. These shanties were memorialized in the mural painted by the WPA inside of the Apponaug Post Office. One of the last remaining shanties' still stands at the end of Station Street. These shanties' provided shelter to those hearty individuals who made their living harvesting the Bay.

It was not long before industry came to Apponaug with the construction of the fulling mill at Kekamewit Brook. Textile manufacturing soon became a major part of life in Apponaug continuing until the end the 1950's.

Apponaug also became a transportation and communications center due to its' location on the Pequot Trail, later Post Road. Stagecoaches traveling between New York and Boston regularly stopped in Apponaug. The cove provided a safe haven for shipping and Apponaug became the home port of many ships engaged in the "Triangular Trade" and later for clipper ships sailing to China and the East. The records of the Warwick Town Council indicate that constables had to be posted at the Apponaug bridge at night with lanterns to warn coaches away from the bowsprits of ships moored in the cove.

Shipbuilding also became a part of life in Apponaug with boatyards sharing space with wharfs, chandleries and taverns. The arrival of the railroad brought new wealth to the village but unfortunately the construction of the bridge across the cove spelled the end of Apponaug as a seaport. The bridge did not allow the passage of commercial vessels, and the restricted water flow under the bridge has caused siltation to the extent that today the upper cove is no longer boater friendly.

Pawtuxet Cove

The "land at the falls" was settled in 1638 by the "Pawtuxet men" and was the first permanent European settlement in Warwick. With a plentiful supply of fresh water and a well protected cove, Pawtuxet become a prosperous seaport. Ships engaged in the "Triangular trade" called Pawtuxet their home port. Stillhouses for the production of rum dotted the shoreline. Ships were built, fitted out, supplied and manned out of the village.

With the passage of the "intolerable acts" tensions increased between the colonists and the crown. Merchants engaged in maritime trade faced the choice of paying heavy taxes or smuggling. Many chose the latter, among them prominent businessman John Brown. Actions by the crown to enforce the acts and collect the tariffs reached a climax with the boarding and burning of the revenue cutter "H.M.S. Gaspee" on the evening of June 9th, 1772. This demonstration of American Independence has become known today as "America's first blow for freedom".

After the revolution, the village continued to thrive with local ships and crews sailing off to the orient to take part in the "China trade". The village also briefly entered the "Industrial age" when the power of the falls was harnessed to run a textile mill. Unfortunately, the mill burned down and thus ended Pawtuxet's textile era.

The coming of the age of steam signaled a change in the village's direction. Steam railroads and steam ships began transporting passengers and goods up and down the coast quicker and cheaper than could be done by sail. The advent of the steam age did have a positive effect upon the village, Upper's Coal Dock and Yard stood at the foot of Canonchet Avenue from 1900 - 1919.

Village life shifted again with the arrival of trolley cars and Pawtuxet became a summer resort. A ferry service ran from the cove down the coast to "Warwick Downs" known in part today as "Salter's Grove. Many of the homes built as summer rental cottages still remain today.

This change from commercial water usage to recreational has continued to this day. Pleasure craft of all types can be seen entering and leaving Pawtuxet Cove each day, making full use of every available slip and mooring.

The "Great New England Hurricane of 1938" wreaked havoc to all of Narragansett Bay. Hard hit were the coastal communities of Warwick, summer homes were washed away, beaches eroded, and coves polluted.

Once fertile shellfishing beds were now off limits, bathers shunned beaches fronting "polluted" waters. The summer communities of Warwick, which once hosted more millionaires than Newport, became low income rental properties occupied year round.

Buttonwoods Cove

Buttonwoods was established as a Baptist summer resort community in 1871. There are those that claim that what is today referred to as a "New England Clambake" actually originated on the shore of Buttonwoods Cove. The Narragansetts had been enjoying clambakes long before the arrival of the Europeans. They shared this coastal feast with first settlers and thus started the tradition of the bake as a celebration. President Harrison was treated to a bake at the home of Senator Nelson Aldrich. This was one of the first "political bakes" to be held in Warwick.

Warwick City Park

Warwick City Park created in the early 1960's on the site of the former "Town Poor Farm" is flanked by Brushneck and Buttonwoods Coves.

Conimicut

This area was the home of the "Shawomets" of the Greater Narragansett Tribe and was the landing point for Samuel Gorton and his followers after they left Providence.

Conimicut, named for Canonicus's daughter, became a popular summer resort with the arrival of the electric trolley lines from Providence. Prior to the Hurricane of '38, Bellman Avenue was home to some of the finest summer "cottages" of the rich and famous. In addition, oysters of excellent quality were found in great numbers in Conimicut as well as the surrounding waters.

After the hurricane, the Point became part of the pollution demarcation line drawn across the Bay. Thus, pollution and the end of the trollies brought significant change to Conimicut. Nonetheless, while the shores of Conimicut no longer provide shellfish direct to market, the views of the Bay remain fantastically breathtaking.

Warwick Cove

The site of Samuel Gorton's first settlement, the head of the cove became known as "Old Warwick". Overlooking the cove from Warwick Neck was Pomham's Fort, built for the local Sachem, which was a constant cause of concern to the English settlers. Recognized from the founding of Warwick as a safe haven for ships, the cove continues today to be home to numerous pleasure and commercial craft.

Oakland Beach

With Brushneck and Buttonwoods Coves to the west, and Warwick Cove to the east lies the Oakland Beach. This once and future playground has the most spectacular view of Narragansett Bay to be found in the State. Long gone are the amusement rides which feed a steady stream of customers by the trolley line that crossed from Warwick Neck and ended at the Buttonwoods Hotel. A former Governor's summer home has become a favored dining spot with its' incredible vista.

Chepiwanoxet

Where the first European settlers gathered seaweed for fertilizer, and generations had gathered clams and quahaugs, stations for both the electric trolley and the steam railroad stopped until the late 1930's. This made the Island another of Warwick's popular summer communities.

Chepiwanoxet became home, from 1915 until 1922, to the Gallaudet Aircraft Company, manufacturers of seaplanes for the U.S. Government. Prior to 1960, the site was home to a marina and an industrial area which continued to endanger the waters and sensitive fish breeding grounds of Greenwich Bay. Developers took an interest in the Island in the 1980's, envisioning condominiums and marinas on Greenwich Bay.

The City of Warwick took affirmative action in 1994 and purchased Chepiwanoxet for use as a public park.

Warwick and Smuggling

Prior to the Revolution, merchants were forced to choose between engaging in "legal" trade or smuggling. To be "legal" the merchant would have to pay tariffs and taxes on all of his goods to the point that his prices were raised beyond the reach of most pocketbooks. In order to make a profit and to meet the consumers demands, the merchants became "smugglers". The shoreline of Narragansett Bay in general, and Warwick in particular, is a smugglers dream. During Prohibition, the thirst of the population, the lure of quick money, and Warwick's shoreline combined to make "rum running" another local "secret" that everyone knew.