Rhode Island Coastal Resources Management Council: Over 30 Years of Accomplishments in Coastal Management

1971

CRMC created by General Assembly

1971–1977

CRMC prohibits construction and sand and gravel mining on barrier beaches

1977

CRMC adopts first comprehensive regulatory program to protect coastal resources, qualifying state for $1.2 million annually in federal implementation funds

1978

General Assembly assigns CRMC responsibility for investigating and designating rights-of-way to the shore

1980

CRMC assigned authority for aquaculture permitting

1983

CRMC institutes water types classification, determining what types of development will be allowed in which waters.

CRMC adopts special area management plan (SAMP) for Providence Harbor

1983–1986

CRMC revises statewide coastal management plan, focuses on coastal ecosystems

1984

CRMC adopts SAMP for salt pond region

1986

CRMC adopts SAMP for Narrow River

CRMC relocates from Providence to Wakefield, hires full-time executive director

CRMC transfers from RIDEM, consolidated under new director

1987–1990

CRMC establishes review teams focusing on specific geographic areas of the state, simplifies and standardizes review processes

CRMC initiates Harbor Management Project to survey state harbors and develop guidelines for communities to establish harbor management plans

1991–1995

NOAA evaluates CRMC, recognizes accomplishments in protecting coastal wetlands, improving enforcement and monitoring, streamlining permitting, and initiating an interstate management plan for the Pawcatuck River and Little Narragansett Bay

CRMC initiates nonpoint source pollution control program

1992

State authorizes Providence River dredging

1993

CRMC sponsors publication of first *Public Access to the Rhode Island Coast* guide

1996

CRMC requires businesses located along shore that seek permits for expansion to provide public access to coast on their properties

RIDEM and CRMC delineate wetlands jurisdiction, eliminating overlap. CRMC has jurisdiction over freshwater wetlands in the vicinity of the coast

1997

CRMC regulates walkover structures to protect wetlands

1998

CRMC establishes regulations to protect and restore freshwater wetlands

2000

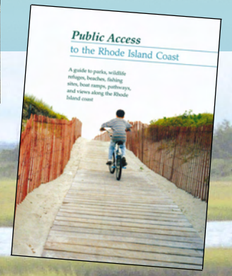
CRMC establishes regulations to protect submerged aquatic vegetation

2002

In partnership with the Narragansett Bay Estuary Program and Save The Bay, CRMC creates Rhode Island Habitat Restoration Web Portal, a searchable database of Rhode Island restoration projects

2002–2004

CRMC establishes Habitat Restoration Trust Fund



2004

CRMC supervises eelgrass restoration along south coast and in Allin's Cove as well as dune restoration at Napatree Point

CRMC supervises Providence River dredging

CRMC begins updating Providence Harbor SAMP

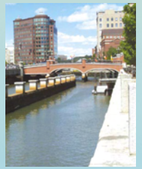
CRMC sponsors publication of updated *Public Access to the Rhode Island Coast* guide

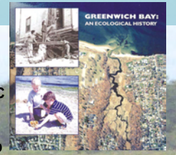
By 2004, CRMC had reviewed 340 potential rights-of-way to the shore, designating 220 as public rights-of-way

2005

CRMC adopts Greenwich Bay SAMP

CRMC supervises maintenance dredging at Bullock's and Pawtuxet coves





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Rhode Island Coastal Resources Management Council: Over 30 Years of Accomplishments in Coastal Management

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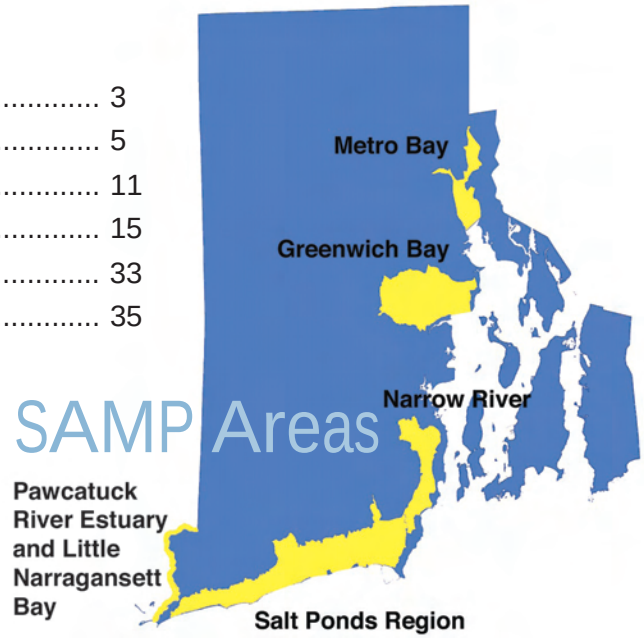


Message from the Chairman

The Coastal Resources Management Council (CRMC) is charged with managing 420 miles of beautiful Rhode Island coastline for all of our citizens to enhance the high quality of life that we expect from our coastal resources. Whether walking the shoreline or catching fish, we are all affected by the quality and purity of Rhode Island's great coastal resources. Whether that means preserving access to the shore, maintaining our waterways for both recreational and commercial uses, finding opportunities for economic growth such as aquaculture, or developing programs that protect and manage ecosystem values, the CRMC has come to be recognized as a national leader in sound coastal resources management.

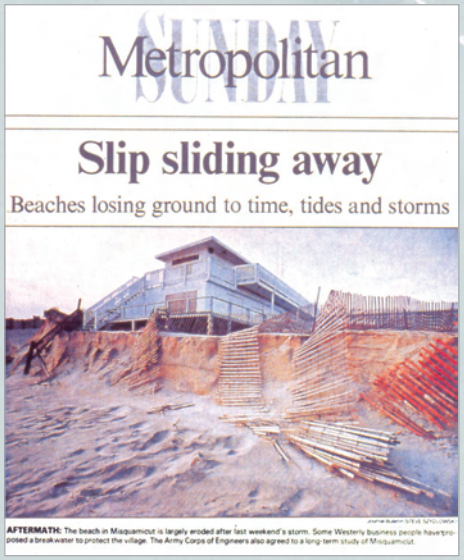
Rhode Island was one of the first states in the nation to create a coastal resources management program; in fact it pre-dated national coastal zone legislation. As each year passes, the CRMC realizes new achievements and accomplishments in coastal zone management. We continually strive to be one of the best coastal programs in the nation. We look forward to maintaining the high expectations that you as citizens demand.

This booklet is a synopsis of our many accomplishments over more than 30 years. I hope you find the information insightful, and that it helps you understand the importance of our state's coastal resources and the ways in which the CRMC accomplishes its mandates of protection and management. Visit us on the web: http://www.crmc.state.ri.us/. And please let us know how we can do better.

—Michael M. Tikoian, Chairman

preserve, protect, restore...

...“preservation and restoration of ecological systems shall be the guiding principle upon which environmental alteration of coastal resources will be measured, judged, and regulated.”

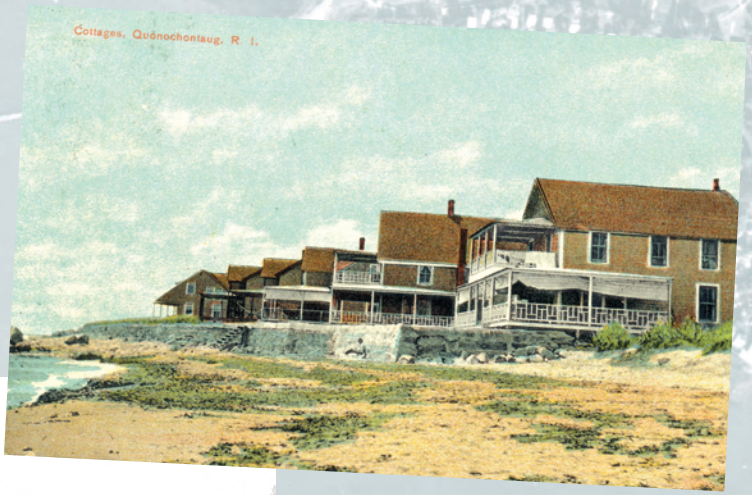


SUNDAY Metropolitan

Slip sliding away

Beaches losing ground to time, tides and storms

AFTERMATH: The beach in Misquamicut is largely eroded after last weekend's storm. Some Westerly business people have proposed a breakwater to protect the village. The Army Corps of Engineers also agreed to a long-term study of Misquamicut.



Quonochontaug then and now

History

Preserve, protect, develop, and restore coastal resources for all Rhode Islanders

On July 16, 1971, the Rhode Island General Assembly passed a bill creating a Coastal Resources Management Council (CRMC). The Council was to consist of 17 members, representing different interests and areas of the state, and was charged with the responsibility to "preserve, protect, develop, and, where possible, restore the coastal resources of the state, for this and succeeding generations, through comprehensive and coordinated long-term planning and management designed to produce the maximum benefit for society from such coastal resources."

The primary aim of the legislation was to create a specific unit of government that would develop and implement coastal resource management policies. The list of concerns was quite general, so it was up to the CRMC to develop specific policies for water pollution, living resources management, marine development, and use conflicts, consistent with the legislative policy that "preservation and restoration of ecological systems shall be the guiding principle upon which environmental alteration of coastal resources will be measured, judged, and regulated."

The General Assembly required the CRMC to employ a resource planning process and to formulate plans for the management of each resource. A key part of this mandate was the need to undertake an ambitious program to generate consensus on goals, conduct research on problems, analyze alternative policies, and produce plans that the CRMC could implement directly or through coordination with other governmental units.

Upon the enactment of the Federal Coastal Zone Management Act (CZMA) in 1972, Rhode Island and other coastal states became eligible for planning and, following federal approval of a state's program, implementation funding. The challenge for the CRMC was to integrate federal program approval criteria with management problems faced in Rhode Island.

1971–1977: Formulating Plans and Regulations

In its early years, the CRMC gradually expanded its regulatory program, but due to budget limitations, adopted specific policies in only a few areas, such as prohibiting construction and the mining of sand and gravel on barrier beaches. Each policy was established after extensive research and debate.

Federal funds enabled the CRMC to speed the process of identifying issues and developing the broad range of policies required by the General Assembly. At the same time, federal laws such as the 1972 Clean Water Act and the National Environmental Policy Act provided additional financial and procedural resources for pollution control and environmentally sensitive decision making for the coastal zone.

1978–1982: Implementing a New Regulatory Program Document

In 1977 the CRMC adopted its first comprehensive regulatory program, which was approved by the Federal Office of Coastal Management, qualifying the state for $1.2 million annually in implementation funds. The program stressed evaluating an individual development proposal, whether a residence, commercial wharf, or wastewater treatment facility, in terms of its probable impact on the coastal zone. This environmental impact focus emphasized the CRMC's unique authority to regulate coastal development based on resource protection criteria.

The additional federal funds made it possible to expand regulatory activities as well as to take on new tasks, such as studies of energy siting, fish port development, and marine recreation. In 1978, the General Assembly assigned the CRMC with responsibility for the investigation and designation of rights-of-way to the shore, and the Council initiated its rights-of-way program.

1983–1986: Revising the Regulatory Program and Creating Special Area Management Plans

During the 1980s, the Council was faced with dramatic increases in coastal development activities. Construction of single-family homes tripled between 1982 and 1985. In the same period, the number of assents issued by the Council nearly doubled. This pace and intensity of development brought into focus not only the direct impacts of development along the coast but also related issues such as public access to the shore, the future of recreational boating, water pollution control, flood and storm hazards, and urban waterfront revitalization.

By 1983, the time was ripe to combine the wealth of new information and experience in coastal management accumulated by the CRMC and its staff with extensive public involvement to prepare statewide management policies tailored to specific types of resources and uses in Narragansett Bay and the south shore. The revised statewide plan reflected major progress by the CRMC in fulfilling its legislative mandate to develop new policies and decision-making criteria for managing coastal resources.

In the workshops held prior to adopting the 1977 statewide program document, citizens, public officials, and the business community turned out in large numbers to express concern over the south shore coastal ponds, threatened by development, and Providence Harbor, suffering from deterioration. New research and broad-based participation and cooperation by state and local public officials and citizens formed the basis for special area management plans (SAMPs) for these troubled regions. By combining information, participation, and a commitment to establish new policies, the SAMPs adopted in 1983 for Providence Harbor, in 1984 for the salt pond region, and later, in 1986 for the Narrow River began to fulfill the CRMC's legislative mandate to focus on coastal ecosystems and to identify appropriate uses for the state's coastal zone.

1987–1990: Refining Coastal Management Tools

A revamping of the administration of the CRMC began in early 1986 with the relocation of the Council's central office from Providence to Wakefield and the hiring of a full-time executive director. Following this, CRMC staff support was transferred from the R.I. Department of Environmental Management (RIDEM) and consolidated under the new executive director. In 1987, the CRMC workforce doubled with the addition of nine new staff members, and a computerized database was put into operation. In addition, a number of other procedural and administrative modifications were enacted during this period, including the implementation of a maintenance certification process, the establishment of review teams focusing on specific geographic areas of the state, and the simplification and standardization of review processes.

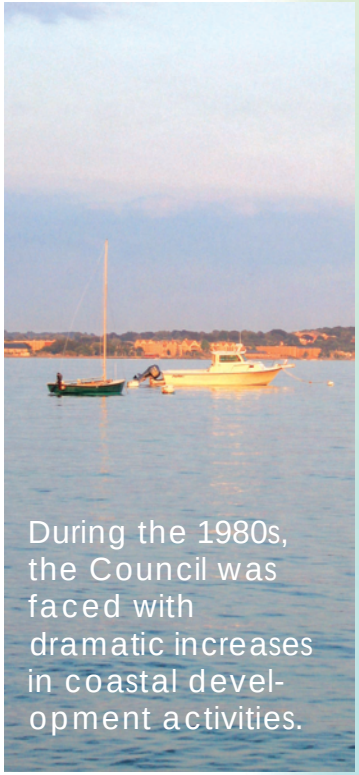
During this time, in response to threats to commercial and recreational uses of Rhode Island's harbors resulting from increased coastal development and recreational boating activity, the Council initiated the Harbor Management Project. To better understand the existing situation, the project first involved a statewide survey of vessel concentrations and use patterns in all of Rhode Island's 29 harbor areas. The development and implementation of harbor management plans followed this phase by providing technical and planning assistance to Rhode Island's coastal communities.

1991–1995: Assessment and Enhancement, Coastal Zone Act Reauthorization Amendments

Two reports produced in accordance with the federal CZMA had a significant impact on the Council's activities. The first of these was an evaluation of Rhode Island's program by the National Oceanic and Atmospheric Administration (NOAA) in which major accomplishments and recommended actions were identified. Among the accomplishments identified in this report were the protection of coastal wetlands, improvements in enforcement and monitoring, the implementation of a more streamlined permit process, and the initiation of an interstate management plan for the Pawcatuck River-Little Narragansett Bay estuary. Identified actions to improve the program included developing educational materials for the public, updating the "Red Book" (the Rhode Island Coastal Resources Management Program (RICRMP)), improving interagency coordination, and developing a statewide public access program.

The second report was developed as part of the Coastal Enhancement Program contained in Section 309 of the Coastal Zone Act Reauthorization Amendments (CZARA). The purpose of the assessment was to identify priority areas of concern where competition grants could be targeted. Based on the assessment, a strategy to improve Rhode Island's coastal program was developed to address public access, wetlands, special area management, and cumulative and secondary impacts to the coastal zone. Federal support for enhancement activities was based on Rhode Island's strategy, which received the highest possible rating.

The Council has focused on addressing those areas identified in the program evaluation and Section 309 assessment. Significant achievements to this end included a reprinting of the Red Book, new wetlands mitigation policies, the initiation of revisions to the Narrow River and Salt Ponds SAMPs, the completion and adoption of the Pawcatuck River-Little Narragansett Bay interstate management plan, and the continued implementation of the Preexisting Residential Boating Facilities Program.



During the 1980s, the Council was faced with dramatic increases in coastal development activities.

The Council also began to work on two additional projects during this time as a result of new language contained in the CZARA. The first of these was Rhode Island's Coastal Nonpoint Pollution Control Program (CNP). In accordance with Section 6217 of CZARA, the Council initiated a major effort to control nonpoint source pollution to coastal waters through a coordinated approach. The second project undertaken was revisions to the Council's requirements under the federal consistency provisions contained in Section 307, which had been amended to clarify the type and location of activities subject to the federal consistency requirements.

1996–2001

The five years following the Council's silver anniversary saw the completion of a number of major projects. Several regulatory and policy documents were revised based on new data and experience. The Council also took on the task of reviewing revised guidelines for the development of harbor management plans and new federal consistency requirements, revision of the Salt Ponds and Narrow River SAMPs, and initiation of a SAMP for Greenwich Bay.

During this period, the CRMC made great strides in the areas of habitat restoration and wetlands. In 1996, under legislative direction, the CRMC and RIDEM worked together to establish a clear delineation of jurisdiction for freshwater wetlands, thereby greatly simplifying the permitting process for coastal homeowners. In 1997, the CRMC began working with the U.S. Army Corps of Engineers (COE) on the South Coast Habitat Restoration Project. One aspect of this project is to restore 40 acres of eelgrass habitat to Ninigret Pond by dredging the flood tidal shoals to an optimum depth for eelgrass growth. Eelgrass plants are vital components of coastal ecosystems, providing food and shelter to numerous aquatic species, cycling nutrients from the water column, and stabilizing marine sediments.

Council Organization

The CRMC is designated as the state's lead agency for coastal management, and, since 1992, has been the direct recipient of CZMA financial assistance awards. Other state agencies and organizations, such as RIDEM, the Office of Administration Division of Planning, University of Rhode Island Coastal Resources Center (CRC), Rhode Island Sea Grant, and the Historic Preservation Commission, cooperate with the CRMC in various aspects of coastal management. Rhode Island's 21 coastal municipalities also participate in the coastal management process through planning, zoning, and permitting.

As created by the state legislature, the CRMC is an autonomous agency. The Council, composed of 16 members, operates with an executive director and staff of approximately 20. Members are appointed by the governor, lieutenant governor, and the speaker of the house for terms of three years and cannot serve more than two consecutive terms. A key to the founding legislation's success was that it ensured the representation of a wide range of interests and viewpoints. Representatives include two state senators, both representing coastal municipalities; two state representatives, one representing a coastal municipality; four appointed or elected officials from local government; seven private citizens, five of them from coastal municipalities; and one ex officio member, the director of RIDEM. Others may be invited to serve in a nonvoting, advisory capacity as needs warrant. In addition, during contested cases when coastal cities and towns are not represented on the Council, a Council member for that community is appointed to hear that particular case.

Recognizing the ecosystem value of eelgrass, the Council took on a new project to provide resource managers and the public with an interactive way to access data that had been collected to map eelgrass beds in Rhode Island. With this information, users of a new Geographical Information System (GIS)–based website gain a better understanding of potential impacts their activities may have on these vulnerable habitats.

The Council also maintained an active role in the development of the aquaculture industry, management of submerged lands, and the resolution of the dredging problem in Rhode Island. During this time, the CRMC implemented the CNP, developed in accordance with federal requirements, to reduce the impacts of nonpoint pollution to Rhode Island's coastal waters.

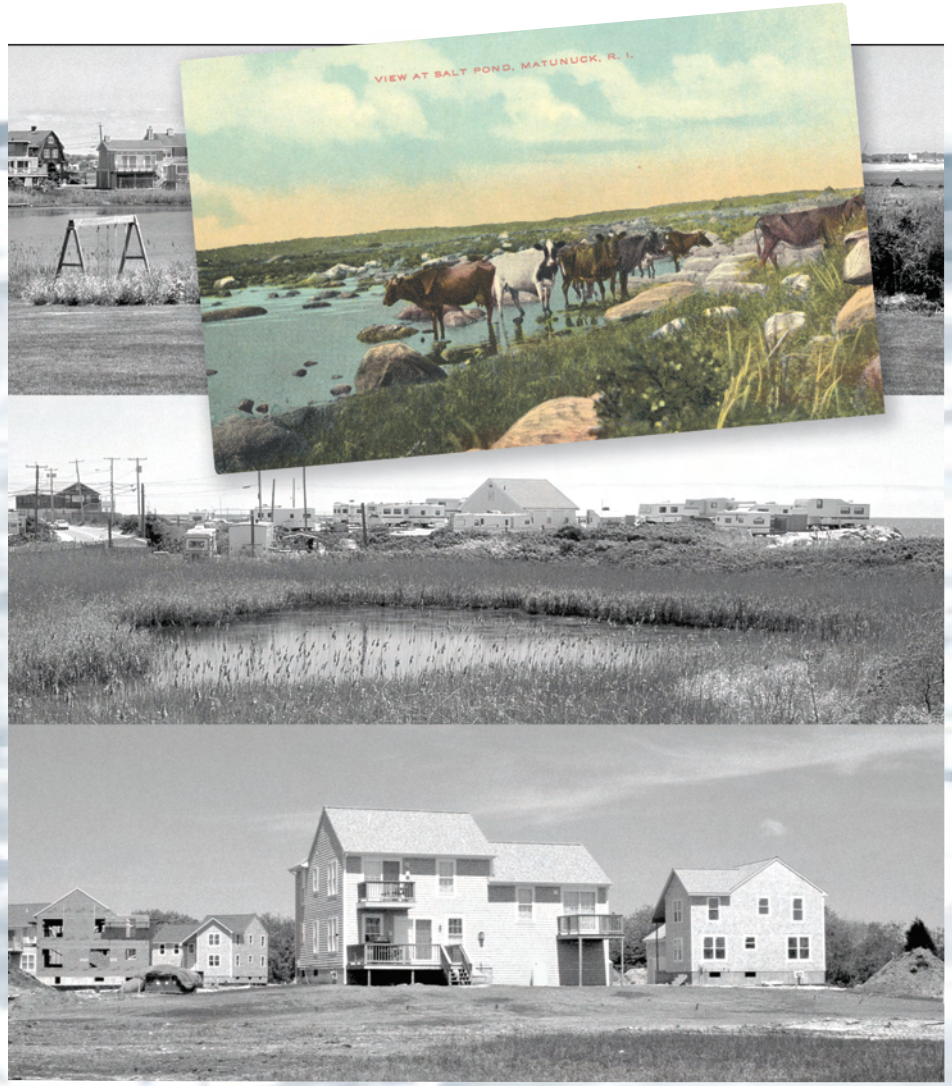
2001 and Beyond

The future is sure to see the CRMC build on its past successes, especially in the area of SAMP planning. The Greenwich Bay SAMP was officially adopted in 2005—a culmination of scientific research, planning, and public input into the process. Following closely on that milestone is the creation of a SAMP for the Metro Bay region. Narragansett Bay's largest urban waterfront, roughly 200 miles of shoreline bordering the cities of Cranston, East Providence, Providence, and Pawtucket, is a largely untapped natural resource and economic engine. It was the site of industrialization and progress but over the years has become outdated and underutilized. The cities are now acting to make this region of Narragansett Bay a more appealing place to live and work by improving the economic, social, and environmental resources of the working waterfront; attracting major developers with more predictable and efficient permitting; and providing recreation and access to the water.

The Metro Bay SAMP aims to accomplish these goals and provide a functional framework for future environmentally and economically sensitive redevelopment of the SAMP boundary encompassing most of the waterfront in the four cities. This plan updates and replaces the Providence Harbor SAMP that the CRMC developed more than 20 years ago.

As the Council celebrates more than three decades of successes in coastal management protection, conservation, and restoration in Rhode Island, the state has undergone dramatic changes. Rhode Island's economy has shifted from a manufacturing-based to a service-based economy. Wastewater treatment plants have been built and upgraded and water quality has improved. The Navy has largely departed, while marine and military research have flourished. And population migration has continued into suburban and rural towns.

As we move ahead in the 21st century, the state has made a commitment to bolster its policies and programs to ensure that the environmental, economic, and recreational assets of the state are well managed. The Marine Resources Development Plan (MRDP) was enacted by the General Assembly in 2004 as part of a comprehensive package of legislation to update and harmonize the planning responsibilities of the state's environmental agencies. Consistent with the legislation, the CRMC formed a working group to prepare the MRDP in cooperation with RIDEM, the Statewide Planning Program, the Economic Development Corporation, and with the involvement of other agencies as appropriate. The hope is that the MRDP will be a strategic document—a guide to action—in bringing resource policy in line with the major changes in the state's coastal environment, and that the CRMC will be leading the charge.


VIEW AT SALT POND, MATUNUCK, R. I.

CRMC as a Regulatory Agency

The CRMC is probably best known as a regulatory agency. In accordance with the Council's enabling legislation, the CRMC is authorized to approve, modify, set conditions for, or reject the design, location, construction, alteration, and operation of specified activities under the Council's jurisdiction. The Council evaluates proposed activities that have the potential to affect coastal resources by using the policies, standards, and prohibitions contained in the RICRMP, which is the state's coastal zone management plan approved by the federal government under the CZMA of 1972.

Activities proposed within the area extending from the seaward limit of the state's territorial sea (three miles offshore) to 200 feet inland of any coastal feature require Council approval in the form of a permit. There are specified policies designed to protect each coastal feature and manage upland development. Coastal features include coastal beaches, barrier beaches and spits, coastal wetlands, coastal headlands, bluffs and cliffs, rocky shores, manmade shorelines, and dunes.

In the Narrow River and salt ponds watersheds, permits are required for any subdivision of six units or more, activities requiring 40,000 square feet or more of impervious surface, and structures serviced by large septic systems (2,500 gallons per day or more). Additionally, the Council requires permits for certain activities regardless of their location within the state if the activity has the potential to impact coastal resources. These activities include solid waste disposal facilities; minerals extraction; chemical transfer, processing, and storage facilities; power generation facilities; petroleum transfer, processing, and storage facilities; and sewage treatment and disposal facilities.

The Council also relies on water type designations to manage coastal resources and the activities affecting them. Water areas of the state have been assigned one of six water type designations and, based on the water type, certain policies and prohibitions apply to activities in or adjacent to the water. The six water types are:

- Type 1—Conservation areas
- Type 2—Low-intensity recreational and residential uses
- Type 3—High-intensity boating
- Type 4—Multipurpose waters
- Type 5—Commercial and recreational harbors
- Type 6—Industrial waterfronts and commercial navigation channels

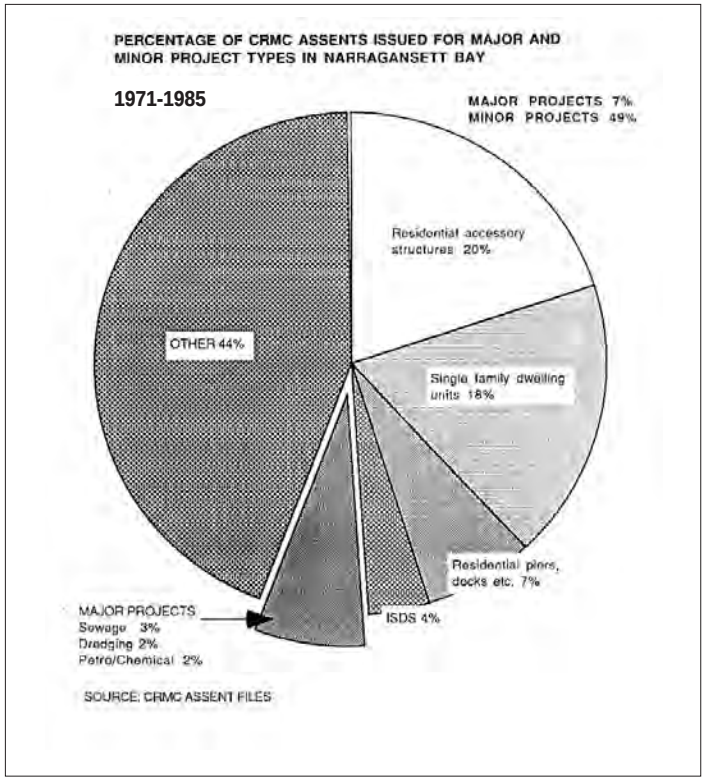
Applicants proposing any activity within the Council's jurisdiction must apply for a CRMC assent (permit). Depending on the activity proposed, applicants must obtain a Finding of No Significant Impact (FONSI), Certification of Maintenance, Category A Assent, or Category B Assent.

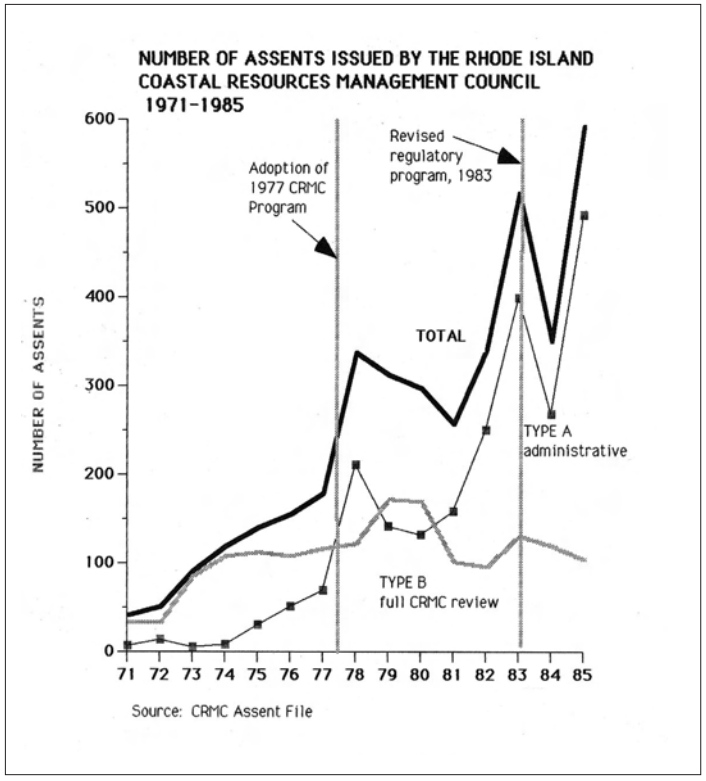
In general terms, FONSIs are issued for minor activities that pose little or no threat to coastal resources. Certifications of Maintenance are issued for activities that do not significantly alter the assented design, purpose, and size of a structure. Category A activities include routine matters and categories of construction and maintenance work that normally do not require review by the full Council. Category B activities generally include large, complex, or contentious projects.

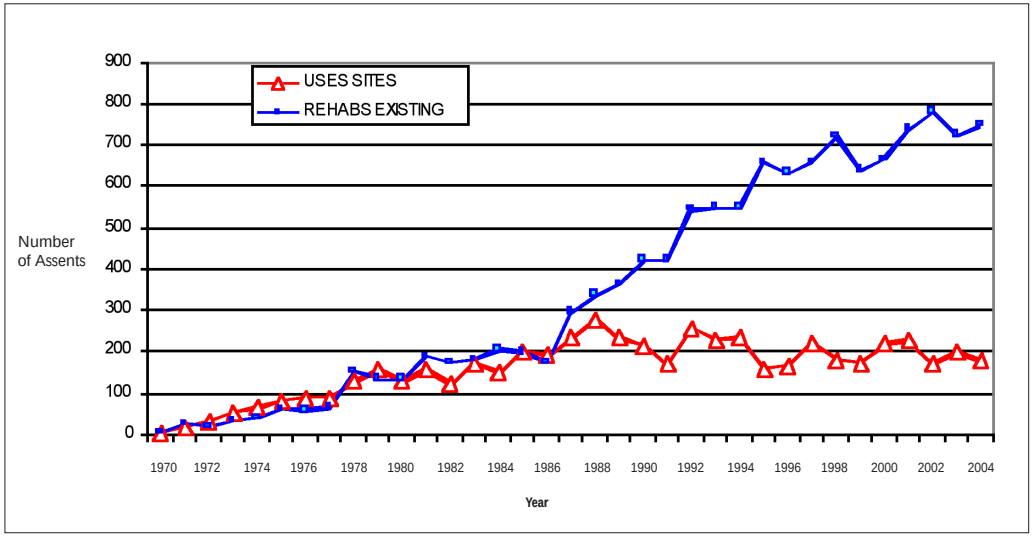
With the exception of Category B and certain Category A applications, all assents are processed administratively by the CRMC staff. Category B applications and Category A applications that cannot be approved at the staff level, either because a substantive objection to the proposed activity has been received or the proposed activity does not meet the applicable policies and standards contained in the RICRMP, require a public hearing before the full Council. The full Council makes determinations on these assents and on other matters referred to it by subcommittees or staff. Subcommittees of the CRMC that meet regularly include Rights of Way, Docks, and Policy and Planning.

In order to facilitate the application and review process, the Council provides for a Preliminary Determination process where applicants can obtain information on applicable policies and standards as well as potential areas of concern early in the planning phase of a project.

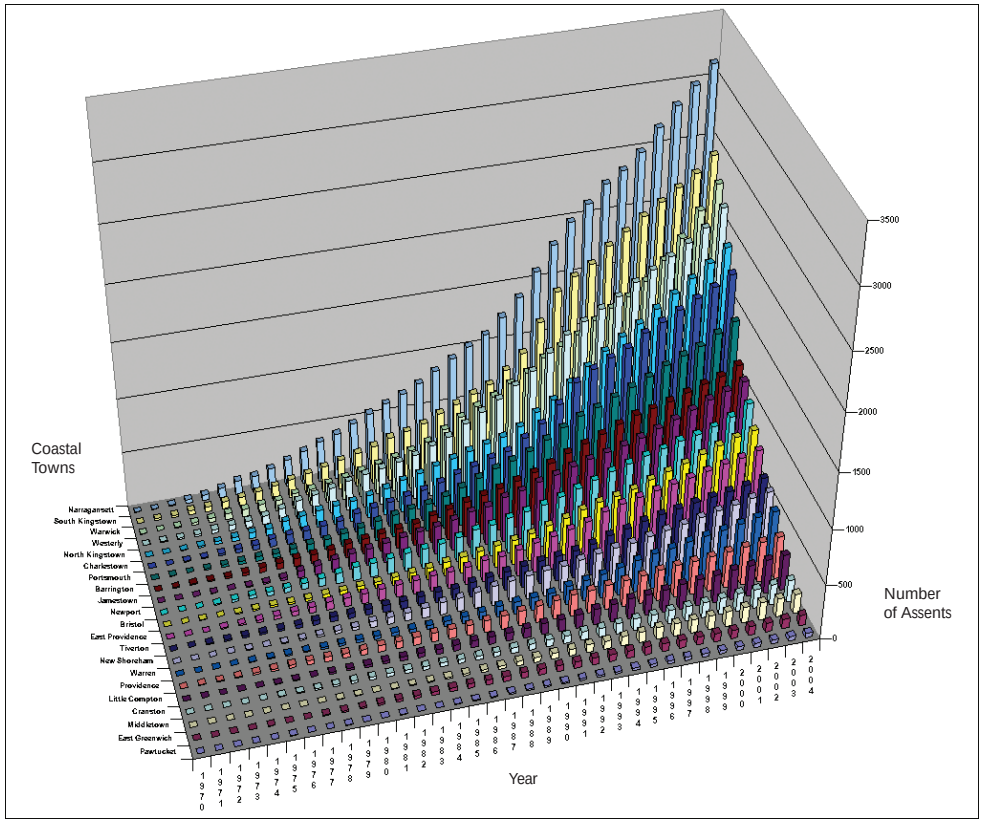
The CRMC also reviews federal activities and federal approvals that have the potential to affect coastal resources for consistency with the RICRMP pursuant to Section 307 of the CZMA. Although no permit is issued for these types of federal activities, the federal consistency review process is nonetheless a regulatory function of the Council.







A preliminary analysis over the period 1970–2004 showing a comparison—for all types of assents (permits)—between those that seek to utilize or newly develop a site versus those asking to modify or rehab an existing site.



A 3-D representation, by coastal town, of the cumulative number of CRMC permits and determinations of all types from 1970 to 2004.

....responsive to the needs of the state for the protection of its coastal resources.

Executive Director's Message

The Council is probably best known as a regulatory agency, but to credit the agency with that task alone is to oversimplify its importance and role in coastal environmental management. Since the CRMC was established more than 30 years ago, the Council has been responsible for and/or played a major role in creating landmark management programs, legislation, and regulations to expand on CRMC initiatives and authority.

For example, the CRMC is a recognized national leader in developing comprehensive Special Area Management Plans (SAMPs). Many other programs, such as the Coastal Buffer Program, are used as models at the national and international level. The Rhode Island Coastal Program is used as an example for many developing coastal programs in the international arena. CRMC has hosted many representatives of foreign countries enabling them to learn first-hand about the Rhode Island program.

These are only highlights of the work the CRMC has accomplished since 1971, and with numerous projects and other initiatives being developed, the next 30 years promise to be even more exciting as the Council continues on its primary mission of preserving, protecting, developing, and restoring the state's coastal resources.

The CRMC is much more than a permit-granting body and a complication for the waterfront developer. Working with its federal partner, NOAA, the Council prides itself on striking a balance between environmental stewardship and management and smart economic development where it is appropriate.

—Grover J. Fugate, Executive Director

Areas of Involvment

In addition to its regulatory functions, the CRMC has been involved in a number of planning and management initiatives over its history. In many cases, these efforts have attempted to address issues before they become truly problematic. In other cases, the activities sought to address concerns expressed to the Council by community groups, recreational organizations, trade groups, other state agencies, or federal agencies. In all cases, however, these initiatives were, and are, an effort to be responsive to the needs of the state for the protection of its coastal resources.

This booklet is a celebration of the CRMC's accomplishments, focusing on the success stories of the past and looking ahead to areas of future impact for the Council.

Special Area Management Plans

Each one is unique, the way states approach them varies, the reasons for doing them are wide ranging, and even their names may be different. But SAMPs share one thing in common: They are a powerful strategic planning tool for the nation's coastal resource managers, according to a recent issue of *Coastal Services* magazine.

The CRMC is recognized as a national leader in SAMP development. In developing SAMPs, the Council has brought about specific management strategies rooted in the Council's legislative mandate which states that "...the preservation and restoration of ecological ecosystems shall be the primary guiding principle upon which environmental alteration of coastal resources will be measured, judged, and regulated" for a variety of areas within the state. Each selected coastal ecosystem has its own unique set of characteristics and problems.

The strategy behind the development of the SAMPs was, and still is, to recognize how water quality, land use, habitats, storm hazards, and geology all interact on an ecosytem level to impact the health of an area. Coastal managers use SAMPs when the problems in a distinct area go beyond what can be addressed by existing local, state, and federal policies.

In 1983 the Council adopted its first SAMP for Providence Harbor. Some of the issues addressed by the plan were water quality, port development, urban waterfront revitalization, public access, and improved coordination among state and local officials.

The following year, after more than eight years of work and, as a result of concerns expressed during public hearings on the statewide coastal management program then under development, a SAMP was adopted for the salt pond region of the state.

Unique program allowed coastal residents to register their preexisting docks

The CRMC classifies Rhode Island's coastal waters by the characteristics and uses of adjacent lands from Type 1—pristine—to Type 6—heavy commercial/industrial—and regulates various activities in the coastal zone accordingly. For example, to preserve the natural resource values of Type 1 waters, the CRMC prohibits the construction of recreational docks in areas classified as Type 1. However, to address residential docks that pre-dated the creation of the CRMC in 1971 in a fair and equitable manner, the CRMC instituted the Preexisting Residential Boating Facilities Program, which allowed applicants to register their preexisting docks with the CRMC, provided those docks existed in the same configuration prior to 1985, were presently intact and functional, and presented no significant threat to coastal resources or human safety. These permits carry a 50-year term, after which time the docks must be removed. The CRMC discontinued the dock registration program on January 31, 1999, having successfully addressed this issue.

SAMP

Through an extensive public process, goals for the Salt Pond SAMP were identified. Included in these goals were the maintenance of scenic qualities, mixture of activities, and diversity and abundance of fish and shellfish; the restoration of areas and habitats damaged by past construction and existing uses; the preservation of drinking water supplies and Point Judith as a viable commercial fishing port; storm preparedness; and the creation of a decision-making process appropriate to the management of the region as an ecosystem. A key tool for accomplishing these goals was the land-use classifications, their associated policies, and density restrictions.

In 1986, the Council adopted a third SAMP for the Narrow River watershed, which faced many of the same land-use and water quality problems as those found in the salt pond region. In addition to density restrictions similar to those contained in the Salt Pond SAMP, the Narrow River SAMP also addressed the growing problem of pollution resulting from storm-water runoff.

In 1992, the Council adopted *The Pawcatuck River Estuary and Little Narragansett Bay: An Interstate Management Plan*, the first interstate SAMP. Like the SAMPs that came before, this SAMP addressed many of the same issues, but this plan had to involve interstate coordination. It was through the Pawcatuck River-Little Narragansett Bay SAMP that a cooperative process for ensuring consistent approaches to the protection of an estuary was established.

Recognizing Rhode Island's leadership in the field of SAMPs, NOAA provided the CRMC with funds to host a workshop on the subject for all North Atlantic coastal programs in 1993. The workshop generated a great deal of discussion on the problems and approaches associated with SAMPs in a variety of different geographical and political settings, and Rhode Island clearly stood out as the model for other states.

In 1996, the CRMC led an effort to technically update and revise the Salt Pond and Narrow River SAMPs. Revisions were based on the results of a CRMC-funded study on cumulative and secondary impacts in the watersheds carried out by the CRC. Under the leadership of Rhode Island Sea Grant/CRC's Virginia Lee, a principal author of the original Salt Pond SAMP, the study provided new groundwater and nutrient-loading data as well as a build-out analysis, all of which will be used as a basis for revising existing land-use classifications and their associated policies and for zoning recommendations to municipalities. Updates to the two SAMPs were finalized in 1999.

Following its successes with previous SAMPs, the CRMC embarked on SAMP planning for Greenwich Bay and its watershed. Greenwich Bay provides vital shellfish habitat, shoreline access, boating opportunities, scenic views, and historic significance to the citizens of Rhode Island. Pollution from storm-water runoff, failing septic systems, and over-development threatens the water quality needed to support those uses. Research done as part of the Greenwich Bay Initiative, a collaborative effort among Rhode Island Sea Grant, the city of Warwick, and RIDEM, identified sources of pollution and analyzed physical processes taking place in the bay. Continued water quality issues and a desire to expand on the Greenwich Bay Initiative led to a call for a Greenwich Bay SAMP.

The CRMC coordinated with Warwick, East Greenwich, government agencies, and community organizations to prepare the SAMP—a plan built on government cooperation and community participation and adopted into state and local law. The SAMP recommends policies and actions that government can undertake to protect a complex natural resource that is part of a larger watershed ecosystem. This latest SAMP describes the present status of the bay, characterizes its watershed, identifies sources of pollution, and recommends steps to help government work with communities to restore, protect, and balance uses of Greenwich Bay.

Harbor Management

The CRMC's Municipal Harbor Management Program (MHMP) began in 1988 to address many of the growing problems facing Rhode Island's unique harbor and coastal areas. Among those problems were overcrowded mooring fields, conflicts between various user groups, lack of public access, deteriorating water quality, and the loss of traditional water-dependent uses. Since many of these problems required local as well as state action and leadership, the MHMP was considered to be the most appropriate mechanism for managing municipal waterfront and harbor areas.

Harbor management plans (HMPs) are required to be consistent with a number of federal, state, and local regulatory and planning programs and, as a result, provide an additional level of protection for Rhode Island's coast. Most notably, at the state level, HMPs must be consistent with the RICRMP and water quality regulations. At the federal level, the COE reviews all HMPs to ensure consistency with federal regulations. The plan should also be closely coordinated with a community's comprehensive plan.

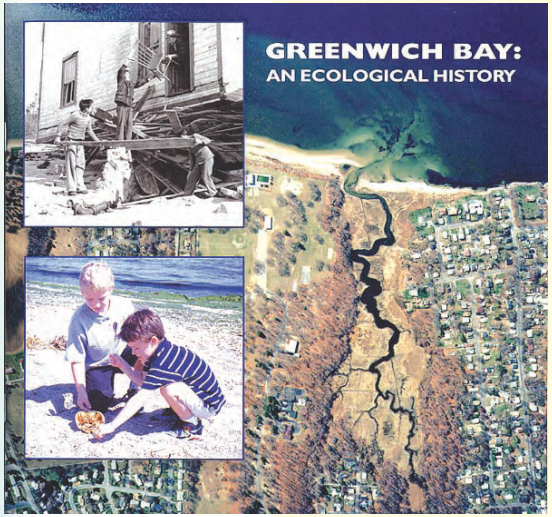
The initial goal of the MHMP was to get each of Rhode Island's 21 coastal communities to develop and implement an HMP and ordinance, the two essential elements of each community's program. To date, 17 communities have developed plans, three communities are in the process of plan development, and one community has not expressed a need to implement a harbor ordinance and is, therefore, not obligated to develop an HMP.

In 1997, the Council completed revisions to its *Guidelines for the Development of Harbor Management Plans*. The revised guidelines incorporated the requirements of the local comprehensive planning program and contained new guidance on issues such as public access and hazard mitigation. As towns revise their original HMPs or develop HMPs, these guidelines will assist them throughout all phases of plan development and implementation.

The CRMC credits the success of the MHMP process with consistent harbor management between state and local authorities as well as among the municipalities of the Bay.

Managing a special area: Greenwich Bay planning a "joint effort"

Sand in Greenwich Bay is on the move, being scoured off beaches and swept into coves. Beach-goers, marina owners, quahoggers, and environmentalists alike watch the process with dismay. Bacteria from failing septic systems and animal waste, combined with heavy rainfall, are closing beaches in Warwick.



Since 1992, pollution has caused closures of Greenwich Bay shellfish beds and swimming beaches, and shoreline development has brought with it user conflicts and loss of fish and wildlife habitat. User groups complain that conflicting regulations and competing uses hinder business operations and recreational uses and maybe even harm the environment in the process.

These user groups got their chance to be heard through the process of developing a SAMP for Greenwich Bay. Adopted in May 2005, the Greenwich Bay SAMP focuses on improving management of the bay's habitat, water quality, recreational uses, economic assets, cultural and historical resources, and natural hazard risks.

The SAMP was developed by the CRMC in cooperation with Rhode Island Sea Grant/CRC, other state and federal agencies, the affected municipalities, technical experts, and concerned citizens. Building on existing laws, the SAMP details the current state of the bay and its watershed and includes regulations and recommendations to restore and preserve vital elements of the bay and watershed, guide future development, and balance water, shoreline, and resource uses.

While he often bears the brunt of people's ire with regulations, Grover Fugate, CRMC executive director, wanted to build public support into the planning process. "The SAMP was truly a joint effort," he says, and hopes that the plan has "broadened interest in the bay." Though he heads up the body responsible for coastal permitting, he also has a personal interest in the SAMP as a resident of Warwick Neck. He mentions that one of CRMC's goals is to eliminate the need to close beaches due to contamination. And he understands the importance of Greenwich Bay to those who make their living there.

The final Greenwich Bay SAMP sets five main goals:

- *Develop leaders and stewards to coordinate and implement actions that protect the unique resources of Greenwich Bay*
- *Improve Greenwich Bay's water quality so that it is a safe place to fish and swim*
- *Maintain high quality fish and wildlife habitat in the Greenwich Bay watershed*
- *Improve recreational opportunities on Greenwich Bay and its shoreline*
- *Enhance water-dependent economic development on Greenwich Bay and its shoreline to maintain the area's unique sense of place*

So what's next? The time has come to put the Greenwich Bay SAMP into action. Citizens have formed a Greenwich Bay watershed group to carry out SAMP activities such as volunteer monitoring and habitat restoration. An annual meeting for local and state government, citizens, and businesses will take place to review the SAMP, assess progress, and plan future activities.

Public Access to the Coast

Since its creation, the CRMC has sought a balanced approach for ensuring that all Rhode Islanders have the opportunity to access and enjoy the coastal resources of the state. The Council has relied on a number of methods for maintaining and improving public access to the shore.

First, the Council requires applicants to demonstrate that proposed activities neither interfere with nor adversely affect existing public access. In cases where a proposed project would impact existing access to, or use of, the coastal resources of the state, the Council has required applicants to mitigate for these impacts. Through the permitting process, the CRMC has been able to secure numerous public access improvements.

A second method the Council uses to secure public access to the shore is through its rights-of-way (ROW) program. Since 1978, when the General Assembly assigned it the task, the Council has carried on, through a standing committee, a continuous process of discovery and designation of all public ROWs to the tidal waters of the state. Thus far, the Council has investigated over 300 sites. As a result of this process, 220 sites have been designated as public ROWs to the shore—this represents a ratio of one ROW for each two miles of shoreline. The Council's ultimate goal is a 1:1 ratio. Additionally, since taking over the Shoreline Access Marking Program from RIDEM in 1996, the CRMC has provided marker posts and signs to eight municipalities committed to marking and maintaining public ROWs to the shore and is pursuing funding for an enhanced shoreline management program.

Another vehicle used for ensuring access opportunities has been the MHMP. Since the harbor management planning process addresses access issues such as site identification, development, and maintenance, the Council has been able to assist in improving access on the community level. All Council-approved HMPs are required to include an access element that not only identifies potential access sites, but also incorporates, where appropriate, site development and maintenance options as well as responsibilities for these activities.

The Council also has sought to ensure access by supporting a number of legislative efforts over the years. Among these was the enactment of an amendment to the Landowner Liability Act to limit the liability of property owners when a CRMC-designated ROW exists on their land.

Lastly, in 1997, the Council adopted a new public access section of the RICRMP. The section recognized that certain large development projects and water-dependent activities required the private use of public trust resources to the exclusion of other public uses. Further, the section recognized the importance of adequate public access to the shore for activities, such as tourism and recreational fishing and boating, that contribute significantly to the Rhode Island economy. Based on these findings, the Council adopted policies requiring applications for the following activities that include a public access component: commercial and industrial development and redevelopment projects, new and significant expansions to marinas, and activities that involve filling in tidal waters. This public access section provides developers with consistent, up-front requirements for public access and further ensures that public access to the shore is protected, maintained, and where possible, enhanced.

Rhode Island's public shoreline privileges are determined to be seaward of the mean high-tide line.

What it all means: High tide and the public trust

Applying scientific evidence to legal theories

Rhode Island has over 400 miles of shoreline, so people living in the Ocean State know a high tide when they see one. Or so they think.

Determining the high-tide line is important, because Rhode Island's public shoreline privileges are determined to be seaward of the mean high-tide line.

You might think the high-tide line is as clear as the detritus that marks the last high tide—known as the swash line. But unfortunately, it's not that simple. One court decision interpreted mean high tide as an average of high-water heights over an 18.6-year cycle. Not only can a lot of shoreline changes occur in 18.6 years, with erosion and accretion, but the measurement considers only water elevation above sea level, not how far the water actually rushes up the beach. Rhode Island law does not take into account the wave action that, on an ocean shoreline, pushes the water farther up the beach than the actual tidal plane of mean high water. What this means for people trying to access the public shore, says Janet Freedman, a coastal geologist at the CRMC, is that "using those criteria, anyone not in the water is probably trespassing for a good part of the day." Since the Rhode Island Constitution guarantees shoreline privileges including, but not limited to, fishing from the shore, collecting seaweed, leaving the shore to swim in the ocean, and passing along the shore, this seems absurd. Nevertheless, private property owners have had their property surveyed and planted markers at the seaward edges of their properties—under water. And, Freedman says there is a legal question as to the public's rights.

The ruling using the mean high-tide line, in addition to limiting constitutionally protected public access in practice, also leaves the CRMC and municipalities in a difficult situation, as it gives the public the benefit of the doubt in cases that involve determining whether someone has been trespassing on private waterfront property or legally using the public shore. "When someone is arrested for trespassing, the burden of proof is on the state or the municipality to prove that the person knew where the mean high-tide line was and intentionally crossed it," Freedman says. Freedman says that the ruling was vague, and thinks the R.I. Supreme Court Justices in Rhode Island's case (State v. Ibbison, 448 A.2d 728 (1982)) thought the mean high-tide line would be landward of the surf at least half the time, perhaps confusing the mean high-tide line with the swash line, since people use them synonymously.

Freedman analyzed long-term beach profile data collected by the URI geosciences department to determine the relationship between the mean high-tide line and the last high-tide swash line. She found that not only is the mean high-tide always seaward of the last high-tide swash line on wave-dominated shorelines, but that, over the 18.6 year tidal epoch from 1983 to 2001, the mean high-tide line was seaward of the swash line by an average of 19 to 20 meters (about 65 feet), significantly increasing the probability that anyone exercising public shoreline privileges would be trespassing.

Megan Higgins, CRMC coastal policy analyst, says that other states have taken wave action into consideration to determine public trust lands using a more common sense approach. For instance, New Hampshire has easements allowing the public to pass from private property to the public shoreline, and Massachusetts, though it determines public trust lands to begin at the low-water mark, offers more leeway to people using the shoreline for constitutionally protected rights such as fishing. The CRMC hopes that Rhode Island will follow suit by more clearly defining public trust lands as seaward of the high-tide swash line.

Public trust lands in Rhode Island are defined by Article I, Section 17, of the Rhode Island Constitution, which states in pertinent part:

"The people [of Rhode Island] shall continue to enjoy and freely exercise all rights of fishery, and privileges of the shore, to which they have been heretofore entitled under the charter and usages of the state…"

Council continues its commitment to public access

Public trust lands along the shore are defined in Rhode Island as being seaward of the mean high-tide line. In order for the public to actually use those lands, they have to be able to access them, and that is where the CRMC's responsibility to designate ROWs to the shore comes in.

CRMC does not create new ROWs to the shore, but rather "discovers," or designates, already-existing ROWs through an exhaustive investigation. After this process, if a ROW is approved and any appeals have been resolved in favor of CRMC, the decision is recorded in land evidence records and filed with the secretary of state's office.

Kevin Cute, CRMC marine resources specialist, handles inquiries regarding the designation of public ROWs to the shore.

"In Rhode Island there is strong interest in traditional uses of public trust areas for fishing, kayaking, canoeing, bird-watching, spending a day picnicking at the beach, or just taking in the beauty of the coastline. The CRMC designation confers a high degree of legal protection for public access, as designated ROWs cannot be abandoned without the agency's approval, which can only be granted after extensive public hearings are concluded.

As coastal development increases, existing ROWs to the shoreline become more valuable, and new sites become more difficult to acquire," Cute says. "CRMC remains committed to designating new ROWs," but ensuring that they remain open to the public is also a concern. As such, the CRMC is working with the R.I. Saltwater Anglers Association (RISAA) on an "Adopt-an-Access" program in which CRMC will provide multilanguage public access signage and any necessary permitting (such as for parking) while RISAA provides Adopt-an-Access signage and will monitor the sites monthly to ensure they remain accessible. The CRMC is very interested in partnering with other groups or individuals to promote the Adopt-an-Access program.

A major goal of this effort is to simultaneously address the public's right to access while respecting the rights of private property owners. "We're really trying to get at conflict resolution," Cute says. While the responsible public often complains about the lack of parking at ROWs, private property owners complain about trash, noise, and other problems that irresponsible users of ROWs bring with them. In acknowledging private property owners' concerns, the CRMC has published a multilanguage pamphlet, "A Code of Conduct While Using Public Rights-of-Ways to the Shore in Rhode Island," the contents of which will be posted at the "Adopt-an-Access" sites.

In addition to its ROW responsibilities, the CRMC has partnered with Rhode Island Sea Grant to develop a program for the state to compete for grant funding to improve public access to the shore via NOAA's Coastal and Estuarine Land Conservation Program.

Walk this way: Guide to shoreline access hits the streets

Is that dirt path to the shore a public access point or is it someone's yard? Where in Warwick can I bring my kayak? Can I take my kids quahogging in Barrington? What about beaches …?

In 1993, CRMC worked with Rhode Island Sea Grant/CRC to publish the first Public Access to the Rhode Island Coast *guide. This best-selling guide catalogued selected sites that offered public access to the shore, indicating the best uses for each site and the facilities that each site offered. A lot changed in 11 years, and the CRMC funded Rhode Island Sea Grant to update the guide and assisted in its preparation. The guide includes not only officially designated ROWs, but also parks, public beaches, wildlife refuges, historical sites, boat ramps, and the like to let people know where in the state they can cast a line, take a dip, launch a boat, or just get a good look at Rhode Island's coastal beauty.*

"Public access to the shore has remained an area of concern to the CRMC ever since it was given that responsibility in 1978," says Grover Fugate, CRMC executive director. "We see it growing in importance as coastal development continues at its rapid pace. The access guide is one of the more popular and visible aspects of this work and is important to us, to keep this issue in the forefront of our coastal management endeavors."

The guide includes descriptions of sites from Westerly to Pawtucket along with maps to help readers discover some of the hidden and not-so-hidden treasures that dot Rhode Island's shoreline. Brief articles feature topics such as coastal birding in Rhode Island and the revitalization of the Providence waterfront.

Coastal Nonpoint Pollution

In April 2000, Rhode Island became the first New England state, and the second state overall, to receive full approval from NOAA and the U.S. Environmental Protection Agency (EPA) for its Coastal Nonpoint Program (CNP). The CNP was developed by the CRMC, the R.I. Department of Administration Division of Planning, and RIDEM, with assistance from representatives of numerous environmental and trade organizations, local governments, the academic community, and other state agencies.

Based on federal program requirements, each state implementing a federally approved coastal zone management program was required to formulate a strategy to address five types of activities associated with nonpoint source pollution impacts through the implementation of specified management measures. The five land-use types were agriculture; forestry; marinas and recreational boating; urban land uses, including new development, septic systems, and roads, bridges, and highways; and hydromodifications. States were also required to develop measures for the protection and restoration of wetlands and to promote the use of vegetative treatment systems (buffers) to control and minimize the impacts of nonpoint pollution on coastal waters.

Rhode Island has set the standard in addressing CNP conditions. In order to implement applicable agriculture management measures, the state prepared a legal opinion certifying that the Rhode Island Water Quality Act could be applied by the state to require farmers to implement management measures to prevent nonpoint source pollution. NOAA and the EPA found this legal opinion to be exemplary and have subsequently provided it to several other states as a prototype.

Rhode Island's approach to meeting the new management measure for existing onsite sewage disposal systems (OSDS) has also been provided as guidance for other states. This management measure has been particularly difficult for states to meet because it often requires the adoption of new regulations or laws. However, Rhode Island demonstrated resolve and initiative by combining revisions to the state regulations requiring regular inspections by working with 13 municipalities to develop wastewater management plans that included strategies for OSDS maintenance, repair, and upgrades of failing systems. These actions were funded by a Community Septic System Loan Program that tapped state revolving funds.

NOAA and the EPA have since proposed administrative changes to the CNP that allowed states greater flexibility in meeting program requirements and time frames. In addition, unlike the past few years, state coastal programs are likely to receive federal funding in the coming fiscal year for program activities. One such program establishes nitrogen removal trenches parallel to the shoreline of the salt ponds. This innovative approach is designed to mitigate nonpoint source pollution currently entering the salt ponds via groundwater from septic systems. The trenches are filled with wood chips that provide a carbon source for specialized bacteria that convert nitrate in the groundwater to harmless nitrogen gas before it enters the salt pond.

Other CRMC activities include revising regulatory language to reflect that contained in the federal program guidance, adopting nitrogen reduction requirements for septic systems in certain areas in the Narrow River and salt ponds watersheds, addressing best management practice (BMP) implementation for nutrient and bacterial pollution in the salt ponds, and continuing public education and outreach efforts.

Marinas enhance their resources, reputations with nonpoint source pollution control efforts

Enlightened self-interest is reason enough for some marina owners and operators to comply with clean water directives aimed at controlling nonpoint source pollution. "A dirty marina is not attractive to clients," observes Kevin Cute, CRMC marine resources specialist, so implementing pollution prevention measures "serves a clear business purpose."

The public face of a marina—the picturesque collection of glimmering boats lining the dock—often screens the facility's rougher working side. The oils and fuels and mechanical fluids that keep the boats running and the paint, turpentine, and metal-flecked sandings that keep them looking sharp, create a potent stew of potential pollutants.

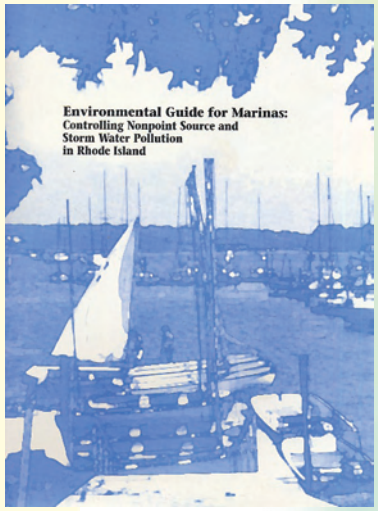
In addition to toxic substances common to routine facility operations, marinas contend with trash, sewage discharge, fish-cleaning remnants, and other waste generated in day-to-day activities.

These substances seep into docks and paved surfaces, ultimately flowing into coastal waters through runoff and groundwater transport.

Designated nonpoint source pollution because they aren't readily identified with a discrete source once they mix with groundwater, contaminants of this type became a specific target of EPA and NOAA coastal zone management regulations in the early 1990s. Marina and recreational boating activities represent one of five categories singled out by the EPA for development of management practices aimed at nonpoint source pollution abatement.

As the agency responsible for administering the state's coastal zone management program, the CRMC "took the initiative to institute operations programs for marinas," Cute says. Working with RIDEM, the CRMC developed a CNP to implement pollution control measures in accordance with the Clean Water Act.

The agencies built their program around two major projects. The first, an operations and management plan identifying BMPs, provided a concrete framework for mitigating nonpoint pollution from particular activities. For this effort, the CRMC brought in Rhode Island Sea Grant/CRC to compile BMPs in a guidance document that would serve as a template for individual marina management plans. The document spelled out actions that marina owners could take to reduce pollution—some as simple as recycling oil filters and recommending the use of biodegradable detergents for washing boats, others as complex as maintaining plans and equipment for handling hazardous materials spills.

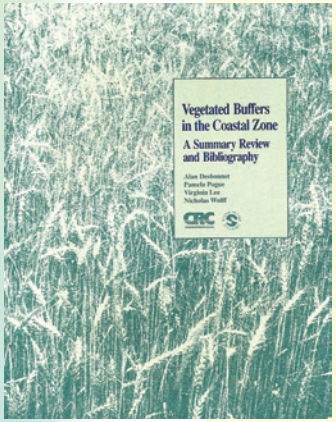


The second project "relied on all the research and work creating this document" to put its recommendations to the test, Cute says. The BMPs got a real-life workout through demonstration projects at two local marinas. To assure broad applicability of the practices, the CRMC selected one small, privately owned marina and one large commercial facility. Evaluating the experiences of these facilities, the CRMC incorporated effective BMPs into a formal operations and management plan for Rhode Island marinas.

"We operate the program on a volunteer basis now," Cute reports, noting that a number of the state's marinas already are working under approved operations and management plans. New marinas, he emphasizes, are required to have such plans. For new marina owners and others interested in minimizing pollution from their operations, the CRMC is available to help with development of operations and management programs. Cute points out that not only do conscientious marina owners demonstrate good citizenship by protecting the state's resources, but they serve their own interests as well, "enhancing the value of private marinas by maintaining a clean, safe operation."

Coastal Buffer Zone Program

Managing the vegetative cover along the shoreline is an important element of CRMC's effort to protect and restore Rhode Island's coastal resources. Natural vegetation has proven superior to lawn and landscaped areas in helping control shoreline erosion and for the absorption of pollutants, fertilizers, and septic system leachate. Additional benefits of naturally vegetated buffer zones include protection of water quality, protection of plant and wildlife habitat, preservation of the aesthetic qualities of the shoreline, erosion control, flood control, and protection of historic and archaeological resources.



Vegetated buffers historically were applied in the fields of forestry and agriculture to moderate nonpoint source degradation of water courses, in wildlife management to improve and provide habitat, and in landscape architecture to improve visual appeal. While great emphasis was placed on the use of vegetative buffers to abate nonpoint source degradation of waterways, none of the above uses was exclusive of the others. It made both good sense and good economics to pursue a multiple-use application of the vegetative buffer concept in coastal ecosystems. A 1994 report, Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography, *compiled by Rhode Island Sea Grant/CRC, synthesized the spectrum of buffer benefits, their effectiveness, and the variables that determined effectiveness and offered a review of the scientific literature on vegetated buffers. This report laid the foundation for regulations that created Rhode Island's Coastal Buffer Zone Program. The coastal buffer regulations require that applicants for new coastal construction or significant alterations to existing structures establish "... a natural area adjacent to a shoreline feature that must be retained in, or restored to, a natural vegetative condition."*

CRMC's Coastal Buffer Zone Program has been held up as a national model and a good example of science-based management. The program was created under the auspices of the Coastal Zone Enhancement Grant Program, funded through NOAA. The buffer program was also a significant element of Rhode Island's federally approved CNP.

Freshwater Wetlands

During the 1996 legislative session, amendments were made to the CRMC's enabling legislation that required the CRMC and RIDEM to divide authority over the management and protection of freshwater wetlands in the state through the cooperative development of a jurisdictional line. Freshwater wetlands seaward of the jurisdictional line were to be considered "in the vicinity of the coast" and, in accordance with the legislation, fell under the exclusive jurisdiction of the CRMC. Freshwater wetlands inland of the jurisdictional line remained under the auspices of RIDEM except where the wetlands were affected by an aquaculture project. Following agreement on the jurisdictional line, the CRMC was required to develop a regulatory program for the management of freshwater wetlands under its jurisdiction.

In early 1997, the CRMC and RIDEM agreed upon a jurisdictional line for the management and protection of freshwater wetlands in the state. GIS-based maps depicting the line statewide, by town, were developed by the URI Environmental Data Center.

Simultaneous to the mapping efforts, the Council developed draft regulations for managing and protecting freshwater wetlands in the vicinity of the coast, and developed, with RIDEM, proposed procedures for regulating activities affecting freshwater wetlands associated with inland aquaculture and agricultural operations. In addition, CRMC staff met with several stakeholder groups soliciting input on the draft regulations and participated in field and classroom training in hydric soils identification.

In 1999, the Council promulgated its regulations for managing and protecting freshwater wetlands in the vicinity of the coast, and has since regulated all activities that may affect freshwater wetlands located seaward of the jurisdictional line.

Of course there have been activities that straddle this jurisdictional line, including bike paths, utility easements, and others. In these instances, the Council and RIDEM developed clear and concise guidelines where only one agency handles the review of the application. These instances have been published in an available handout.

Coastal Habitat Restoration

Habitats are the places where plants and animals live, breed, and grow. Habitats can be easily identified as rivers, estuaries, and wetlands, but some habitats are more obscure, such as underwater seagrass meadows and kelp beds. Habitats are critical for survival of species.

Rhode Island has unique and highly productive habitats, including salt marshes, freshwater wetlands, seagrass beds, and anadromous fish runs, to name a few. These resources are beneficial for a healthy ecosystem and strong economy. Coastal habitats support economically valuable fish and shellfish resources, protect against shoreline erosion, and create the base of the estuarine and marine food chain. The loss of coastal habitats has impacted Rhode Islanders in many ways: filling coastal wetlands has reduced both fish and shellfish and reduced flood protection to coastal property owners, shrinking eelgrass beds has led to the extinction of a once profitable Narragansett Bay scallop fishery, and damming rivers has led to the total destruction of an Atlantic salmon fishery. Recently, however, advances in restoration science have demonstrated that even damaged or destroyed habitats can be repaired or reconstructed, and investing in ecological restoration results in tangible benefits to coastal resources and our state's economy.

A Unified Approach

In 1998, the CRMC joined forces with RIDEM's Narragansett Bay Estuary Program and Save The Bay to take a unified approach to establishing a coordinated, coherent program for coastal habitat restoration. The program focuses on freshwater wetlands, submerged aquatic vegetation (SAV), and historical anadromous fish runs. The absence of a dedicated source of state funding has remained the primary stumbling block, but the CRMC has maintained a commitment to work with a variety of partners to continue coastal habitat restoration and has made notable progress. Advances have included forming a working team—the Rhode Island Habitat Restoration Team—to set direction and coordinate activities, adopting a set of organizing principles, developing an inventory of potential restoration sites, and facilitating and providing oversight for several restoration projects. In particular, the CRMC took the lead on two ongoing federal restoration projects—the South Coast Habitat Restoration Project and the Allin's Cove Habitat Restoration Project.

Restoring Productive Habitats

The South Coast Habitat Restoration Project is working to restore once productive, but now damaged, habitats in the breachway tidal deltas of Ninigret, Cross Mills, Quonochontaug, and Winnapaug ponds. The final feasibility study and environmental assessment was completed in June 2002. Restoration involves dredging the breachways and tidal deltas to restore eelgrass and salt marsh habitats and to restore fish passage in the salt pond tributaries leading to two ponds. Currently, the CRMC is working with private property owners in Charlestown and South Kingstown who will be affected by dredging activities in Ninigret Pond and construction of the fish passage at Cross Mills Pond. Property owners have been cooperative, and by construction began in fall 2004.

The Allin's Cove project is also a study in restoring damaged habitats. In 1959, the COE filled 11 acres of salt marsh in Allin's Cove, as well as several mudflats on the south shore of the cove, with dredged material from a nearby navigation project. This affected the velocity and daily tidal exchange of Bay water and ultimately resulted in the replacement of native salt-marsh vegetation, such as *Spartina* spp., by the invasive common reed, *Phragmites australis*, and led to an increase in erosion of the remaining marsh. This project will ultimately restore the degraded coastal wetlands and habitat with a healthy salt-marsh ecosystem by regrading some of the area to an elevation suitable to encourage the growth of salt-marsh vegetation, by potentially restoring some of the open waters that existed prior to the filling, and by addressing erosion caused by the use of excavated material from the fill area to widen and stabilize the eroding coastal shoreline. The CRMC continues to serve as the lead nonfederal sponsor and provides a portion of the nonfederal funding.

Establishing a Restoration Portal

In the virtual world, the Rhode Island Habitat Restoration Portal has "gone live." The portal is a result of the efforts of the Rhode Island Habitat Restoration Team and NOAA's Coastal Services Center (CSC). The CRMC has contracted with the URI Environmental Data Center to maintain the website for a period of two years. The project is funded through the CSC. The portal is a web-based source of restoration information, management and educational resources, and spatial data for Rhode Island's coastal habitats, with a focus on seagrass, riverine, and salt-marsh habitats. The objective is to create an information system that can be used to apply for grants, select potential projects, educate the public, and assist the state in restoration planning. The website includes an on-line database of almost 200 restoration projects, an internet map server, GIS resources, educational resources, and links to funding resources, permitting information, and agency contacts. Other features are the anadromous fish run site selection tool and the salt marsh and seagrass site selection tools. The tools integrate environmental and socioeconomic information in a GIS-based modeling framework so users may identify areas for potential restoration based on that information. The portal and site selection tools are accessible at www.edc.uri.edu/restoration/.

RI Habitat Restoration

Providing data, information, and tools to coastal managers, educators, and the public to restore Rhode Island's coastal habitats

Trust Fund to Support Restoration

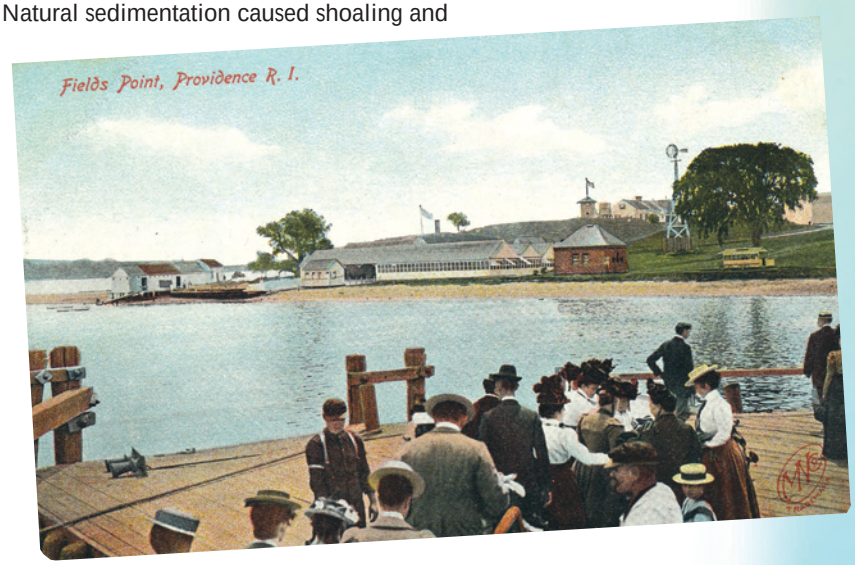
In response to the growing need for adequate funding of habitat restoration projects in Rhode Island, state legislation was passed in June 2002 that created a Coastal and Estuarine Habitat Restoration Program and Trust Fund restricted solely to funding coastal and estuarine habitat restoration projects via the Oil Spill Prevention, Administration and Response (OSPAR) Fund. The fund was established by the OSPAR Act in response to the *North Cape* oil spill through a 5-cent fee on each barrel of petroleum products shipped into the state, along with any civil and criminal fines assessed. Under the law, the fund cannot exceed $10 million. By amending OSPAR, the trust fund received a legislative appropriation in fiscal year 2003 of $250,000 of the monies generated through the tax. As envisioned, the fund is also eligible to accept private donations and federal matching grants.

The money has been made available through a competitive grant application process administered by the CRMC for projects aimed at improving coastal and estuarine habitats. These projects have been submitted to the CRMC after careful review by a technical advisory committee charged with evaluating them under a newly developed Statewide Coastal and Estuarine Habitat Restoration Strategy and have, in turn, been prioritized to receive funding. A total of eight habitat restoration projects have been allocated funding under the trust fund.

The program, under CRMC's direction, again has been introduced to the General Assembly for an annual appropriation. During the last session of the General Assembly, efforts to secure funding for projects on an annual basis passed, and funding for habitat restoration was made available to the CRMC.

Dredging and Dredged Material Disposal

Most dredging has been curtailed in Rhode Island for over 25 years. In the early 1970s environmental protection programs made dredging and disposal of dredged materials difficult. Natural sedimentation caused shoaling and now restricts navigation in Providence Harbor. Other areas with severe shoaling include Pawtuxet Cove, Bullocks Cove, Point Judith channel, Apponaug Cove, and the Seekonk River. As a result of several dredging permit requests and the grounding of the oil-carrying *North Cape* in 1996, the dredging issue has gained considerable steam.



The Marine Infrastructure Maintenance Act was enacted in 1996, designating the CRMC as the lead agency for coordinating the interests of dredging and dredged disposal issues in the state. The legislation called for the development and implementation of a state dredging policy, regulatory framework, and statewide dredging and disposal plan. The CRMC subsequently established the Coastal Resources Advisory Committee (CRAC) in 1997. Members of this technical body were appointed to provide advice to the Council on environmental issues related to dredging and the regulation of dredged material disposal. An overall strategy was adopted—

coupled with concurrent efforts by the state working with the COE—to gain approval for a disposal site to allow maintenance dredging of the Providence River and Harbor shipping channel to its authorized depth. The CRMC worked closely with the EPA and COE to designate a long-term offshore dredge material disposal site. An environmental impact statement that incorporated a significant public input process along with substantial data collection was made available for public review and comment.

The Council also devised a means to identify and establish one or more in-water disposal sites to accommodate the disposal of dredged materials from smaller sources such as marinas and yacht clubs. The CRMC received funding from the state legislature in 1997 to contract for a technical study characterizing six in-water disposal sites narrowed down by the CRAC. The study report, "Study and Analysis of Potential In-water Dredged Material Disposal Sites in Narragansett Bay," completed in 1999, contained recommendations for the use of each study site. The CRMC supplemented the report with information, such as the results of chemical testing of sediments at both the disposal site and a reference site, which would be useful to future permit applicants. The report and baseline sediment assessments are available to applicants who want to utilize Site C. Site C is available to anyone who applies for a suitable dredge material disposal permit.

The Council has been recognized for its efforts in developing an open process for listening to stakeholder concerns, encouraging communication and education on the dredging issue, using the CRAC as a forum for conveying scientific data and results with the public, and developing a strategic process for meeting dredging needs. There is also significant coordination between the CRMC and RIDEM in joint review of dredge applications. In most cases, this coordination speeds the review, provides the applicant with one coordinated list of issues and deficiencies, and coordinates permit stipulations so that they complement each other rather than conflict.

Dredging project navigates controversy, averts disaster

Dredging the Providence River, something that hadn't been done in 30 years, "is great for the economy. It's great for the consumers," said then-Governor Lincoln Almond when he authorized the project in 1992. That year, shoaling had caused the U.S. Coast Guard to drastically restrict shipping traffic in the channel, requiring oil and gas tankers to offload their cargo to barges in order to transport it up the river to the Port of Providence.

Environmentalists and fishermen were concerned that dredging would reintroduce industrial contaminants—which had lain dormant for 150 years—back into the water. However, the Providence Journal *pointed out in an editorial that transporting hazardous materials by barge was riskier than by tanker, pointing to the* North Cape *oil spill—where an oil-bearing barge ran aground, spilling more than 800,000 gallons of heating oil into Block Island Sound—as an example.*

The CRMC, which was one of the representatives of the state's interests in the dredging project, helped to guide the process through the controversies to enable dredging to happen while protecting the environment and addressing critics' concerns. The CRMC worked with the COE, which has contracted with a private company to do the dredging. As the lead state agency for dredging, the CRMC has acted as a facilitator and was able to listen to the various Bay user groups, understand their concerns, and help the COE address these concerns. Public input in determining dredge disposal locations for clean and contaminated sediment helped shape the preparation of the environmental impact statement required before dredging could begin.

Since no significant dredging had taken place in Rhode Island in many years, the group also hosted visits to dredging and disposal operations in Boston Harbor to help agency staff better understand the consequences and issues. Several workshops were conducted to address technical matters, such as a CRMC-led workshop on alternative technologies for dredged material management, to provide knowledge and increase trust among constituents.

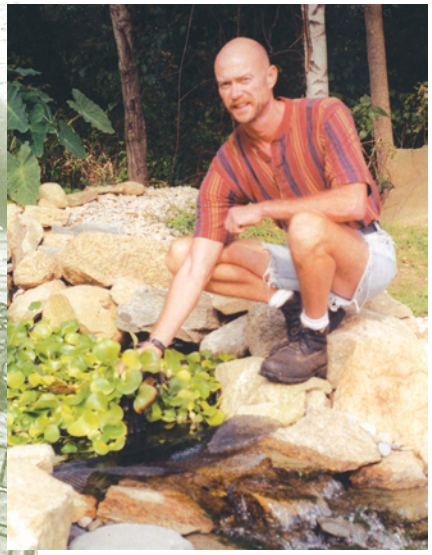
As part of the work to ensure that dredging would have minimal negative environmental impacts, the COE ran models of the dredge and disposal sites to make sure that contaminated sediments would not be released into the water column. Additionally, CRMC project staff monitored and tested the models and found that, in the location of the confined aquatic disposal (CAD) cells, the models were very conservative. "We never even came close to the water quality thresholds," says Dan Goulet, CRMC dredging coordinator. The CAD cells are storing contaminated sediment in the riverbed, while clean dredge materials are being disposed offshore, a site that is also being monitored. "The material is not leaving the site," Goulet says of the offshore disposal site. The CRMC is also monitoring the scows that transport the dredge materials. "Every scow is measured so we know if a leak starts, and when and where," Goulet says, and adds that fishermen who were concerned about the project were able to observe the monitoring first-hand.

Continued management includes not only monitoring the dredging itself, but working around the myriad activities taking place in the Bay while dredging is occurring. With the increased use of the Bay for recreation during warmer months, Goulet says that the CRMC has to make sure the dredging schedule doesn't interfere with Bay events and, therefore, must arrange to dredge in different areas or use different disposal sites to avoid conflicts.

Another management task has been to verify that gas and water lines buried beneath the riverbed are located in their specified sites. For example, gas lines are supposed to be buried 10 feet below the riverbed, but in some areas, geographic features made that depth impossible. When project personnel made this discovery, they alerted the pipeline owners that the gas lines would have to be replaced, a project that will take two to three years. Meanwhile, the CRMC and the COE have arranged dredging to avoid the shallow pipes, averting a potential disaster if the pipes were pulled up by the dredge, leaving homes and businesses without gas or worse, if an explosion occurred.

Stepping back from the day-to-day business of the work, Goulet says that the CRMC has learned a lot that will help them manage future dredging projects—such as at Point Judith, Little Narragansett Bay, and Block Island—especially about working with fishermen and other user groups. "Be proactive and be inclusive," Goulet says, "Really talk to these groups."

With a relatively modest financial contribution from CZMA monies each year, the CRMC has contributed its staff talent, expertise, and knowledge and has provided leadership in the state's efforts to expand Rhode Island's aquaculture infrastructure and industry.



Aquaculture

In 1996, the Rhode Island General Assembly proposed the stimulation and regulation of aquaculture in response to negative responses to proposals to conduct aquaculture activities. Initial reactions were varied and quite vocal and included opposition from a wide range of Rhode Island user groups. The final legislation designated the CRMC as the lead agency for aquaculture in the state and required the Council to regulate all in-water and land-based fish-farming activities and to develop a plan that takes into account the competing uses of the waters.

In the past there had been strong feelings, mainly negative, about aquaculture's place in the Rhode Island economy. In 1999, the CRMC Working Group on Aquaculture and Fisheries was formed. It was composed of representatives from the traditional fishing industry, the aquaculture industry, university researchers, and state regulators. This group met regularly to increase communication regarding both aquaculture and fisheries regulation. What came from those meetings was the realization that all of the players in the seafood industry had many of the same concerns regarding water quality, shoreline access, and others. Today, these various aspects of the industry feel comfortable communicating their concerns to each other.

In 2000, the CRMC formed a bio-security board in an effort to bring together the important parts of managing the health of aquacultured products. To date the board has addressed shellfish importation regulations that have been implemented. The board is an important step in managing a diverse and complicated aspect of aquaculture.

Historically aquaculture in Rhode Island has been limited to shellfish, and even in 2003, a "good" year, the farm gate value of the shellfish was $556,000, miniscule in comparison to some other New England states whose farm gate value was almost $200 million for both shellfish and finfish. The total value of the aquaculture industry in Rhode Island (including associated industries that distribute gear to farmers and distributors of the harvested product, as well as university grants) totaled $8 million dollars in 2003. In 2002, a Congressional appropriation sought to boost the state's standing: The grant, generated through the efforts of U.S. Senator Jack Reed, directs $1.42 million toward development, promotion, and management of a viable aquaculture presence in the Ocean State.

The Rhode Island Aquaculture Initiative (RIAI) is a unique collaboration that unites federal and state interests as well as academic, regulatory, and industry resources. Funding from NOAA was awarded to the CRMC as the state's lead regulatory agency for aquaculture. The CRMC, in turn, enlisted Rhode Island Sea Grant, URI, and Roger Williams University (RWU) to administer the project, with the CRMC aquaculture coordinator managing the project and serving as the chair of the Aquaculture Initiative Executive Committee, which is composed of state, university, industry, and other leaders and was established to determine priorities for projects to be funded.

The aquaculture initiative addresses CZMA recommendations that call for aquaculture planning as part of a comprehensive coastal zone management program. Until now, there has been no funding source attached to the recommendations. Reed's procurement of the NOAA grant, and subsequent awarding of the grant to the CRMC, assures that aquaculture is integrated into coastal planning, which may be the most important thing that has happened to aquaculture in Rhode Island in 40 years.

The major components of the initiative reflect both a university focus on research and technological development and an industry emphasis on application. A key element is support for applied research to address industry priorities, including cultivation of alternative species, development of monitoring and marketing

"We may never catch up to Connecticut's $70 million aquaculture industry, but I do see us having a viable, healthy industry that can contribute to the state's bottom line."

—David Alves, CRMC aquaculture coordinator

innovations, evaluation of environmental and economic impacts, and enhancement of comprehensive ocean mapping efforts.

Funds have been awarded for both multiyear research grants and mini-grants through a competitive process. One such three-year grant partners the CRMC, academic interests, and commercial fishing interests to test the economic feasibility of public-benefit aquaculture—a relatively common practice for replenishing natural shellfish resources in which towns operate small seasonal hatcheries to produce shellfish seed for planting in adjacent coastal waters.

With a relatively modest financial contribution from CZMA monies each year, the CRMC has contributed its staff talent, expertise, and knowledge and has provided leadership in the state's efforts to expand Rhode Island's aquaculture infrastructure and industry.

Building a niche for aquaculture

The experiment could go one of two ways: One million seed clams planted in managed areas of Narragansett Bay could take root and grow, eventually yielding a bonanza for local shellfishermen, or they could disappear down the gullets of predators cashing in on a free lunch.

The expectation is that the former outcome will prevail. In fact, upwellers, purchased to shelter and nourish the seed over the harsh winter, help ensure this result. Grown to predator-proof size in upwellers, the hatchery-produced clams then will be transplanted to the wild to grow until they are big enough to harvest. A three-year, $100,000 effort, this enhancement experiment is a publicly financed project designed partly to inspire commitment to a woefully underdeveloped Rhode Island aquaculture industry.

"We're doing this now on a small scale to prove that it works," says Mike McGiveney, president of the Rhode Island Shellfishermen's Association (RISA). McGiveney and other association members, attuned to the potential for large-scale enhancement initiatives evolving from this experiment, are contributing to the project as volunteers. Their knowledge and their infrastructure—boats, equipment, established markets—are distinct assets. At the same time, their stake in the project's success is indisputable: What they sow today, they will reap tomorrow.

A better commercial harvest, supported by a stronger aquaculture contribution, is the bottom-line goal of this project, says David Alves, CRMC aquaculture coordinator. "This project is specifically meant to enhance the population of critters for shellfishermen." As a public aquaculture project, he elaborates, the enhancement undertaking nurtures an industry that stands to earn a solid niche in the Rhode Island economy.

The clam enhancement experiment is one of several endeavors funded through the RIAI.

For the shellfish enhancement work, RWU adds hands-on participation. Tim Scott, director of the university's Center for Economic and Environmental Development, is the grant recipient and principal investigator for the project. And Dale Leavitt, the university's shellfish aquaculture extension agent, is the RIAI outreach presence on the project.

Because outreach is an integral part of the RIAI, the shellfish enhancement project incorporates this element through a cooperative arrangement between RISA and Save The Bay. By financing an upweller at Save The Bay's Providence facility, the shellfishermen's association adds an educational component to its work, at the same time tapping the enthusiasm of the "thousands of kids that Save The Bay brings into its programs each summer," says McGiveney. While shellfishermen are growing seed clams in an upweller in East Greenwich, Save The Bay participants are growing clams in their own upweller, learning about aquaculture as they do so. When the seed clams are the appropriate size, the youngsters turn their animals over to the shellfishermen for planting.

Public aquaculture of this kind "is the round peg in the round hole" for Rhode Island, McGiveney believes. With a relatively large fishing population and limited space, the state cannot accommodate "the private aquaculture model" as readily as states with more territory. ("Florida has swamps bigger than Rhode Island!" McGiveney offers by way of example.)

And even though conventional wisdom holds that aquaculture kicks in when commercial fisheries fail, "That's not true here," McGiveney asserts. "Commercial shellfish fisheries are still doing well. But there's no reason we can't improve on what we have."

Science for Better Management

The CRMC has drawn on the expertise of Rhode Island's academic institutions, other state and federal agencies, and private organizations to provide it with objective, science-based information to make sound policy decisions regarding Rhode Island's coastal resources.

In the early days of the Council, the staff at the Rhode Island Statewide Planning Program, with its longstanding experience in land-use planning for the state, provided background and research material and a wide range of technical support. RIDEM made available its staff biologist and held responsibility for enforcing Council regulations. And the marine research–oriented CRC, established at the URI in 1971, had a primary responsibility to determine the current condition of every coastal resource included in the management plan. The CRC also had access to the considerable amount of marine research going on at the URI.

Over the years, URI faculty and staff have provided assistance to the CRMC in many areas of scientific research. In particular, the URI and CRC have provided the expertise necessary to update the SAMPs and include cumulative and secondary impacts in the planning efforts. They have analyzed water quality data; prepared marina and mooring, watershed coverage, and water type GIS data overlays; developed nutrient loading models; participated in drafting regulations and policies; and provided recommendations to the CRMC for new SAMPs. URI scientists have also researched barrier beach erosion and protection for the salt ponds. This work developed strategies for addressing beach erosion, analyzed the adequacy of CRMC policies regarding structural shoreline protection, recommended strategies for immediate stabilization of structures to prevent further damage from erosion due to storm events, and provided recommendations for dealing with erosion events that included beach nourishment, breachway maintenance dredging, and overwash removal.

In the future, the CRMC will continue to nurture its successful partnerships and foster new collaborations so that the best available scientific information is brought to bear on coastal management decisions.

Sediment sources and beach replenishment

Problems faced by shorefront property owners, as well as Hurricane Bob '91, the Halloween Nor'easter '91, and the intense blizzard of early December 1992 focused attention on the erosional shoreline of Rhode Island and the problems of sediment supply. Due to the sediment-starved nature of the coast, and the damage associated with the use of structural shoreline protection, beach replenishment is one of the few options still available for maintaining beaches and protecting existing development.

The CRMC supported an investigation by Jon Boothroyd, URI geology professor, to identify potential sources of sand on the shoreface (seaward of the intertidal zone) for beach replenishment, quantify the movement of sand on the shoreface, and design beach replenishment technical guidelines.

Project study locations included the beach and shoreface of the Charlestown barrier and the Misquamicut barrier/headland. The results were applicable to the entire Rhode Island coastline and elsewhere.

In the study, Boothroyd speculated that sand on the upper shoreface (less than 12 meters (40 feet) water depth) is in transit back to the beach over a period of years, but this shoreward movement is interrupted by periods of storminess. It is the volume of sand deeper than 12 meters that provides a potential beach replenishment source.

Based on the results of this study, several CRMC program changes occurred. They included a framework for developing a sustainable beach and dune replenishment strategy, new beach replenishment policies for the RICRMP, and regulations and recommendations for municipalities and other state agencies involved in beach replenishment issues. Further, the project included the development of GIS techniques that incorporated information on beach, dune, and shoreface dynamics in a way that was useful for revising and implementing regulations and managing the shoreline.

Outreach and Education

The CRMC staff have always maintained a high level of technical assistance and training for Council members, local officials, and the concerned public. CRMC staff developed a training session to assist new Council members in getting their feet wet that has proven quite useful. In the early 1990s, CRMC developed several training programs cooperatively with Rhode Island Sea Grant/CRC, including harbormaster training and watershed management training for municipal officials. These training programs were well received; in fact, many jurisdictions require their harbormasters to participate in the harbormaster training programs, and many have followed up with a subsequently developed advanced training program.

In the area of permitting, the CRMC made changes to the permit application process to streamline it. The *Handbook for Permit Applications* and the *Quick Reference Guide to the Hearing Process* continue to be useful tools for applicants, and the hands-on technical assistance provided by CRMC permit staff makes the permitting process less daunting.

Over the years, the CRMC has strived to increase public awareness of its activities and services. To that end, the CRMC recently hired a public educator and information coordinator. A new position within the CRMC, the public educator and information coordinator handles media relations, public education and outreach, and agency events, as well as develops the Council's quarterly newsletter, *Coastal Features.* Each issue of *Coastal Features* covers recent program developments of the CRMC, legislative updates, and news. The CRMC has also developed a series of issue-based fact sheets and handouts that address a variety of topics of interest to coastal residents. The Council has partnered with other groups, such as Rhode Island Sea Grant and CRC, to produce publications of mutual interest, including the best-selling guidebook, *Public Access to the Rhode Island Coast*, the award-winning Coastweeks Calendar, *Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography*, and, most recently, *Greenwich Bay: An Ecological History.*

Probably one of CRMC's most important outreach tools is its website. Launched in 2002, and accessible at www.crmc.state.ri.us, the website provides information about the Council, lists meeting agendas, offers information about projects and initiatives, provides downloadable publications, and lists links to numerous other Rhode Island and federal agency websites.

The website also provides permit application forms and a searchable application and permit database. The CRMC hopes to soon include information about, and accessibility to, deed restrictions and easements that have been granted by the Council and about the public access/ROW sites that have been designated by the CRMC. Making this information, particularly regulatory information, accessible to the public is an important step in communicating the actions and activities of the CRMC.

The technical assistance, publications, website, and other outreach and education efforts are vital to increasing public awareness, support, and participation for coastal management decision making and policy development and implementation.

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