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ADAPTIVE IMPLEMENTATION AND COASTAL ECOSYSTEM  
MANAGEMENT

The Rhode Island Coastal Resources Management Council,  
1971-1986

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NOVEMBER, 1986

GC  
97.8  
.R4  
R6  
1986

Presented at the American Political Science Association Annual Meeting, Washington, D.C.,  
November 1986.

Portion of this paper was funded in part by the NOAA Office of Sea Grant, U.S. Department  
of Commerce, under grant \*NA 85 AA-D-00094, and in part by the NOAA Office of Ocean  
and Coastal Resources Management, under the provisions of the Coastal Zone Management Act of 1972  
(Public Law 92-583), grant \*NA 85 AA-D-CZ026.

GC 97.8 .R4 R6 1986

ADAPTIVE IMPLEMENTATION AND COASTAL ECOSYSTEM MANAGEMENT  
THE RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL 1971-1986

I. INTRODUCTION

Estuaries have long been a focus for public concern, resource management efforts and scientific research. In the early 1960s a number of initiatives were debated in Congress that would have provided for a national program for the protection of estuaries. At the time, estuaries were viewed as the most critically endangered coastal habitats (Zile, 1974). In 1966, The Clean Water Restoration Act launched a comprehensive study of the effects of pollution on estuaries. This resulted in the National Estuarine Pollution Study (U.S. Department of Interior, 1970) which concluded that the management problems of estuaries were inseparably related to the surrounding coastal zone and that a sound management system should encompass the coastal zone in its entirety. The study set forth a detailed blueprint of how this could be accomplished. Other studies and investigations of this period came to similar conclusions. These included the Commission on Marine Science, Engineering and Resources 1969 report, the Workshop on Critical Problems of the Coastal Zone (Ketchum, 1972) and studies such as those of the National Academy of Sciences (1970) on waste disposal in the coastal zone.

Nevertheless, a comprehensive approach to estuary policy as suggested by these studies was not achieved. Indeed, the Coastal Zone Management Act of 1972 produced state programs that have generally avoided the issues of water pollution and management of fishery resources, two of the principal issues in all estuaries. Furthermore, the Clean Water Act of 1972 consciously abandoned the examination of water quality in individual water bodies as the basis for regulation in favor of an across-the-board application of the "best practicable," and later, "best available", pollution control technology.

In recommending an integrated, comprehensive approach to environmental decision making, analysts have failed to take into account several characteristics of ecosystems:

The components or ecosystems are connected in a selected way. Everything is not closely tied to everything else.

The impact of ecological events is not uniform. Different areas react in different ways.

Dramatic changes in behavior are natural to many ecosystems, and many of these changes are beyond man's means to predict. It is always necessary to expect the unexpected.

Variability, not consistency is the characteristic of ecosystems that enables them to adjust and therefore to persist.  
(International Institute for Applied Systems Analysis, 1979)

In addition, estuaries are highly valued, multiple-use resources. Diverse and often conflicting activities such as fisheries, recreation and commercial shipping must co-exist with industrial development and waste disposal. Because of this interdependence of uses and users, the management of estuaries must consist of more than passing data from scientists to decision makers. Estuary management must take place within an institutional setting and policy process which attempts to reconcile the differing values and objectives of a variety of user groups and general public and then provides the means for implementing chosen objectives. We shall term this framework the governance system. Governance includes not only the laws, regulations, and programs for environmental control and the various uses of the estuary but also the key actors and organizations that determine and implement such laws, regulations and programs (Sproule-Jones, 1980).

Focusing on systems of governance is essential to the study of estuary management because there is no single clearly defined policy or government agency charged with the task. The jurisdictional and legal environment of the various estuaries is characterized by many issues, policies, and government agencies at the local, state, and federal level. Thus, it is critical to study the individuals, groups, and organizations that adopt and implement decisions that impact on what, when, and how estuary management is actually carried out.

Governance occurs in relation to a policy process which is composed of a cycle of six stages:

- (1) Initiation (a problem is identified)
- (2) Estimation (the scope and size of the problem is determined)
- (3) Selection (a policy is chosen)
- (4) Implementation
- (5) Evaluation
- (6) Termination

(Brewer and deLeon, 1983)

Implementation refers to the set of activities that follow statements of intent about program goals and desired results by government officials (Ripley and Franklin, 1982). Implementation encompasses actions and non-actions by a variety of actors, especially bureaucrats, charged to put programs into effect, ostensibly in such a way as to achieve the program's goals (Sproule-Jones, 1977).

In Rhode Island a new governance institution was established to address coastal resource management problems. However, a major part of the work of the new agency was to develop the specific policies to be implemented. The traditional model of implementation assumes that compliance follows directly from the creation of a hierarchical, centrally controlled government institution. The following assumptions underlie the hierarchical, planning-compliance model of policy implementation:

1. Policy making and policy implementation are bounded, separate, and sequential.

2. These boundaries exist between policy makers and policy implementers because:
  - a. There is a clear division of labor between policy makers, who set goals, and policy implementers, who carry out these goals.
  - b. Policy makers are capable of stating policies definitively because they can agree on a priority among different goals.
  - c. Policy implementers possess the technical capability, the obedience, and the will to carry out the policies specified by the policy makers.
3. Since both policy makers and implementers accept the boundaries between their tasks, the process of implementation unfolds in a chronological, sequential fashion in which policy making precedes policy implementation.
4. The decisions that are involved in the implementation of policies are nonpolitical and technical in nature. It is the responsibility of the implementer to carry out policies in a neutral, "objective," "rational," and "scientific" fashion. (Nakamura and Smallwood, 1980)

This perspective is unable to explain much of the behavior which has taken place in the governance of estuaries and coastal resources. As a result, we employ an adaptive implementation approach. In this model implementation is seen as shaping policy through a series of interactions in which agency resources and objectives are altered. Policy is made by those who implement it. This approach explicitly recognizes the importance of bargaining and dynamic interaction among implementers.

Instead of forcing compliance via hierarchical systems of authority, the adaptive implementation perspective sees successful implementation coming about through processes of mutual adaptation in terms of which implementers can be influenced to accept and cooperate in the program. (McLaughlin, 1975) This model is informed by the following observations of Pressman and Wildavsky (1979):

In most policies of interest objectives are characteristically multiple (because we want many things, not one), conflicting (because we want different things), and vague (because that is how we can agree to proceed without having to agree exactly on what to do). So if the objectives are not uniquely determined, neither are the modes of implementing them.

In this model implementation shapes policy, by continuously transforming it by actions which alter resources and objectives. (Wildavsky, 1979) Policy is effectively "made" by the people who implement it. As Lipsky (1978) notes:

Where considerable discretion characterizes the jobs of people who implement public agency activities, people 'make' policy in hidden concert with others in similar positions through their patterned responses to the situations and circumstances in which they find themselves.

This approach explicitly recognizes the importance of "effective bargaining arenas." As Elmore (1980) notes:

Unless the initiators of a policy can galvanize the energy, attention and skills of those affected by it, thereby bringing these resources into a loosely structured bargaining arena, the effects of a policy are unlikely to be anything but weak and diffuse. Once bargaining is recognized as a key element of implementation, certain other conditions follow. Bargaining, for example, requires real stakes. Local actors have no incentive for participation in a bargaining arrangement unless the possible pay-off is tangible and valuable. The terms of the deal cannot be fixed in advance by law and regulation; sufficient flexibility must exist in the outlines of a policy to allow the local bargaining process to work. Carefully specified, hierarchically controlled, policies limit incentives to form strong local bargaining coalitions.

These interactive dynamics contribute modification, specification and revision in policy as it interacts with its institutional setting. Outcomes are neither automatic nor assured. Effective governance looks more like a disorderly learning process than a predictable procedure (Berman, 1980). Successful implementation most likely involves employing a mixed strategy. When the governance process does create a clear problem definition, makes a specific policy choice, adopts detailed decision criteria and establishes an adequately funded program, the compliance model of implementation can be successfully employed. In many other areas of responsibility, and for other problems, institutions must continue the search for consensus and viable policy options.

Using the adaptive implementation model as a point of departure, this paper investigates how the major statute implementation process shapes coastal resource governance in Rhode Island from 1971-1986. We focus on the creation and operation of the Coastal Resources Management Council (CRMC), the principle institution charged with safeguarding and managing coastal resources. We examine the process by which the CRMC initially got on the governmental agenda, and then trace the evolution of two levels of behavior (1) the planning process which yields prohibitions and restrictions, and (2) specific regulatory decisions made by the CRMC.

## II. THE REDISCOVERY OF NARRAGANSETT BAY AND THE CREATION OF THE RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL

### A. Estuary Governance on the Rhode Island Public Agenda

Despite what advocates may prefer, a "problem" which is not on the public policy agenda is not perceived by policy makers as a problem at all but rather one "situation" among many which vie for their attention. The agenda is "The list of subjects or problems to which government officials, and people outside closely associated with those officials, are paying some serious attention at any given time." (Kingdon 1984) Policy and regulations appropriate to deal with issues related to an estuary will not be forthcoming unless they can reach the governmental agenda and be acted upon by policy makers. In this sense, understanding the process of agenda building is fundamental to our understanding of estuary governance.

According to Kingdon, agenda building behavior consist of four processes: (1) The setting of an agenda; (2) The specification of alternatives from which a choice is made; (3) An authoritative choice among the specified alternatives; and, (4) The implementation of the decision. Kingdon sees these processes as largely independent of one another with each developing according to its own dynamics and rules. But if the problems identified are to get on the agenda, Kingdon argues, these processes must be joined at some critical juncture. The greatest policy changes are associated with the coupling of problems, policy proposals and politics.

This coupling is most likely to occur when policy windows--opportunities for advancing particular views--are open. As Kingdon observes, "Thus agendas are set by problems or politics and alternatives are generated in the policy stream." And, "While governmental agendas are set in the problems on political streams, the chances of items rising on the decision agenda--a list of items up for actual action--are enhanced if all of the streams are coupled together. Significant movement, in other words, is more likely if problems, policy proposals and politics are coupled into a package."

In 1971 the Rhode Island General Assembly created a new governance institution for Narragansett Bay and the state's coastal resources. The issue of coastal zone management took several years to attain a place on the agenda of Governor Frank Licht in the late 1960s, a time when a renewed local interest in marine resources protection converged with the nationwide environmental movement to create a climate ripe for bold legislative actions.

The concept for a state level governing institution to manage the tidally influenced water and shore areas of the state did not emerge as a demand formulated out of grass roots citizen activism, but rather had its origin and impetus in the academic and planning communities of the state. In the early 1960s the U.S. Office of Naval Research awarded a contract to Dr. Lewis Alexander, a geographer at the University of Rhode Island, to prepare a study of Narragansett Bay and its uses. At the time, the Navy was the largest employer in the state as well as the most significant user

of the state's shore and coastal waters. The study, released in 1966, received considerable publicity because it contained the first comprehensive summary of environmental conditions and economic uses of the estuary. Alexander proposed that the estuary be zoned by the state for the various uses to which it was suited, much as coastal municipalities were doing to regulate land use. He also proposed creating an administrative mechanism for enforcing the plan.

During the next three years, additional studies of the value of Narragansett Bay were published, most notably the somewhat controversial study by Dr. Niels Rorholm of URI's Department of Resource Economics which included a calculation of the economic value of disposing only partially treated wastewater to the estuary. Commissioned by Congress in 1966, Rorholm's work was an element of the national study of pollution in estuaries. The final report of the National Estuarine Pollution Study in 1969 called for the establishment of a new program for pollution control focused on cleaning up polluted water bodies such as estuaries. That same year the National Commission on Marine Science, Engineering and Resources placed a national spotlight on the future of marine resources in the United States. The Commission included prominent URI scientists including Dr. John Knauss, Dean of the Graduate School of Oceanography, with Dr. Alexander serving as deputy staff director. Finally, the university community and public officials such as Dan Varin, chief of the Statewide Planning Program, were aware of new initiatives throughout the United States to exert regional control over estuaries, especially the decade-old movement to stop the filling of San Francisco Bay which led to the permanent establishment of the Bay Conservation and Development Commission in 1969.

The result of this intense interest in estuaries and marine resources was the preparation of a report by the Natural Resources Group, a private organization composed of researchers, business and civic leaders on the administration of Narragansett Bay. Governor Frank Licht responded to the proposal by establishing a Committee on the Coastal Zone to identify the state's resource problems and recommend a course of action.

This commitment by prominent leaders was accompanied by another development which would prove crucial for generating the political support needed to obtain legislative approval for any major new environmental policy. Beginning in the early 1960's, a series of new uses had been proposed for Narragansett Bay which had the potential for introducing major environmental changes. The U.S. Army Corps of Engineers was aggressively pursuing the idea of creating a massive hurricane barrier at the mouth of the bay, stimulated by the widespread destruction caused by Hurricane Carol in 1954. In addition several companies were acquiring sites and preparing proposals to construct oil refineries and nuclear power plants in the estuary.

The Governor's Committee on the Coastal Zone was originally composed of nine members, chaired by Calvin Dunwoody, chief of the planning and development division of the Department of Natural Resources, seven other

TABLE 1. Members of 1970 Governor's Technical Committee on the Coastal Zone

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Calvin B. Dunwoody, Chief, Division of Planning and Development, R.I.  
Department of Natural Resources, Chairman

Walter Shea, Assistant Director, R.I. Department of Health, Vice Chairman

Daniel O. Cargill, Chief Engineer (Retired), R.I. Department of Public  
Works

Ernest Friday, Planning and Program Coordinator, R.I. Department of  
Community Affairs

John C. Murray, Budget Officer, R.I. Department of Administration

Jack M. Thompson, Federal Coordinator, Governor's Office

Daniel W. Varin, Chief, R.I. Statewide Planning Program, Secretary

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state officials and Dr. Nelson Marshall of the Graduate School of Oceanography. (Table 1) This committee guided the preparation of a 135-page report, released in March 1970, discussing coastal environmental resources, uses and problems, and proposed the creation of an 11 member coastal zone council. This new agency was to include four state agency heads and seven public members representing environmental, business, research and local government perspectives. This concept for how to carry out coastal resources management was submitted to the General Assembly but was so controversial that it never was reported out of committee for debate.

The major issue raised in the legislature was that the creation of a new state authority which would preempt traditional local control over land use decisions (Cole, 1975). A new governor's committee was formed in November 1970, composed of 68 members representing every municipality, numerous federal and state agencies, and a dozen invited private organizations. This expanded committee debated the basic approach to be taken and recommended increasing the representation of local communities on the new agency.

The idea of creating a new mechanism for 'administering' coastal resources did not have much political salience in itself. However the proposal to construct an oil refinery in Tiverton, Rhode Island in the early 1970s, provided the critical focusing event which gained the attention of citizens, public officials and legislators. The most disturbing aspect of the refinery proposal was the realization that the town council of Tiverton, a rural community, would on its own make the final decision on whether the refinery was built. The town's only regulatory tool was a zoning ordinance that gave it no authority to control environmental impacts.



In 1971 a new citizen group, Save the Bay, was formed by Dr. William Miner of Jamestown to fight the refinery. A state representative from Tiverton, John Lyons, emerged to lead the successful fight in the General Assembly to create a new state agency which could effectively regulate such large industrial projects and serve as the key institution in managing coastal resources. In July 1971 the General Assembly approved the Coastal Resources Management Act, which created the Coastal Resources Management Council to govern the state's coastal resources.

#### B. Legislative Mandate of the Coastal Resources Management Council

The primary concern of both the 1970 Governor's Advisory Committee and the legislation adopted in 1971 was to create a specific unit of government that would be charged with developing and implementing coastal resource management policies. The CRMC was not provided with much specific guidance on the substance of the policies it should adopt. The legislative findings declared that "preservation and restoration of ecological systems shall be the primary guiding principle upon which environmental alteration of coastal resources will be measured, judged and regulated." The basic policy was "to preserve, protect, develop and, where possible, restore the coastal resources of the state--to produce the maximum benefit for society from such coastal resources." (General Laws of Rhode Island 46-23-7)

The legislative standards set for CRMC plans and programs requires the CRMC to perform a balancing act, much like a jury, instructing the CRMC to consider, for example:

- a. The need and demand for various activities and their impact upon ecological systems.
- b. The degree of compatibility of various activities.
- c. The capability of coastal resources to support various activities.

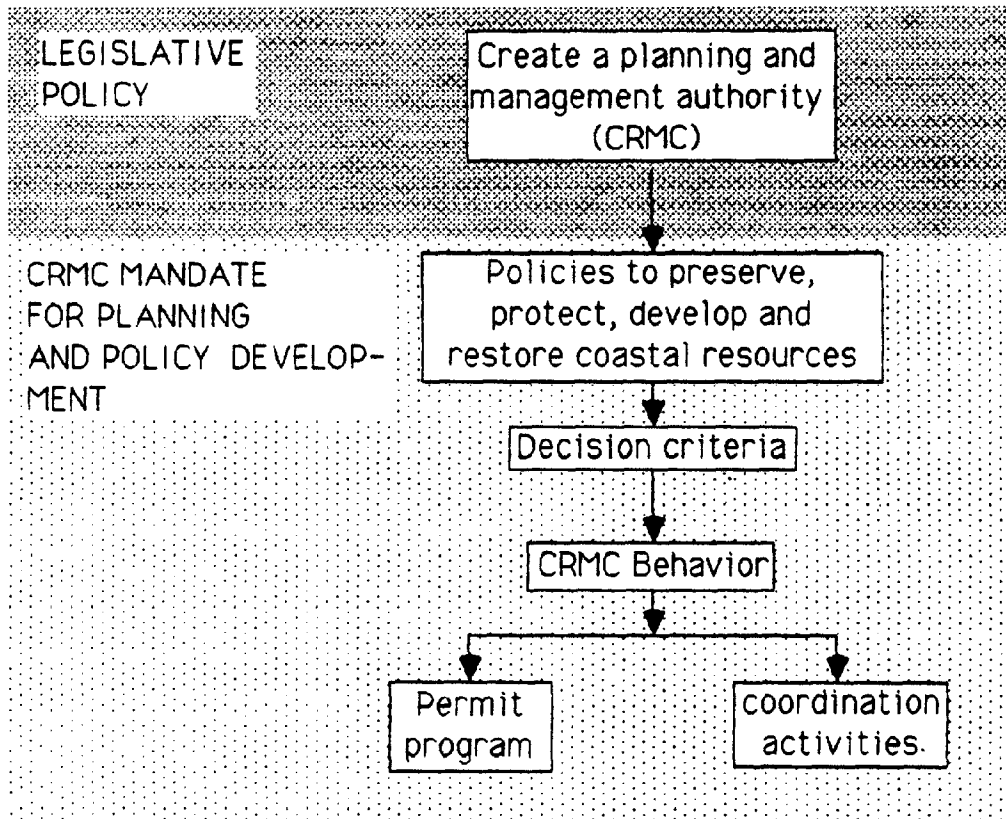
The General Assembly required the CRMC to develop its judgment capability with the mandate to "formulate plans and programs for the management of each resource, identifying permitted uses, location, protection measures, etc." The statute directs the CRMC to focus its attention on a specific list of activities and areas for which it was given jurisdiction:

- a. Power generation and desalination plants.
- b. Chemical or petroleum processing, transfer or storage.
- c. Minerals extraction.
- d. Shoreline protection facilities and physiographic features.
- e. Intertidal salt marshes.
- f. Sewage treatment and disposal and solid waste disposal facilities.

The CRMC's enabling legislation specified the use of a resource management process in which studies and plans were to provide decision making criteria for the CRMC to employ in exercising its implementing authority (permit process) and its coordination responsibilities. This strategy is shown as a diagram in Figure 1.

Figure 1

## Legislative Design of the CRMC's Planning and Management Behavior



Implied in this strategy is the belief that planning methods could be employed to generate consensus on goals, conduct research on problems, analyze alternative policies and produce a plan that the CRMC would implement through regulation and coordination. However, the General Assembly did not establish a time deadline for carrying out this planning process nor did it instruct the CRMC on how to carry out the multiple roles of regulator, policy maker and enforcer.

### C. Institutional Design for Coastal Resources Management

The Rhode Island General Assembly did not wish to create a new state bureaucracy, particularly in view of intense local concern over this bold encroachment by the state into a decision-making arena formerly dominated by local communities. As a result, the CRMC was required to rely upon existing state agency departments for most of the services it needed to conduct its regulatory operations (Figure 2). The former Division of Rivers and Harbors was simply renamed the Division of Coastal Resources, which is located in the Department of Environmental Management (created in 1977 to consolidate resource management and protection agencies), provided administrative, engineering and clerical assistance. The CRMC was composed of 17 members selected using a complex formula to assure local representation:

#### Governor's Appointees

- 2 local officials from towns less than 25,000 in size
- 2 local officials from towns more than 25,000 in size
- 3 at large public members, approved by the Senate
- Director of the Department of Environmental Management
- Director of the Department of Health

#### General Assembly Appointees

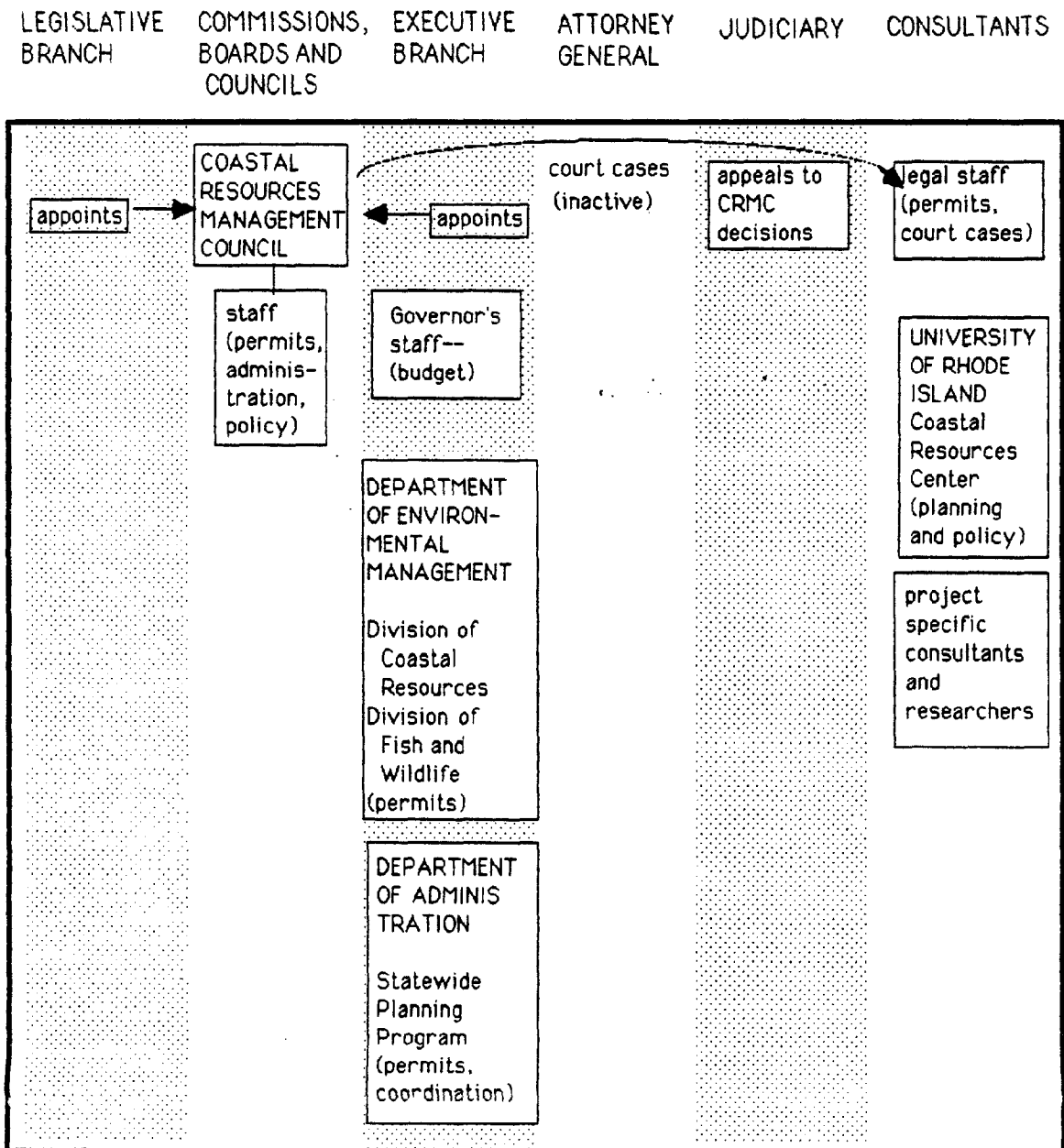
- 2 representatives, one from a coastal town
- 2 senators, both from coastal towns
- 2 at large public members
- 2 at large public members from coastal towns

This formula was quite different from the one originally proposed by the 1970 Governor's Task Force and reflects the result of bargaining during the 1971 legislative session. The CRMC's own staff remained small through the mid 1970s, consisting only of the executive director, an administrative assistant and the staff biologists, who were transferred to the Division of Fish and Wildlife during the creation of the Department of Environmental Management in 1978.

Research and planning tasks were handled on a contractual basis by the newly created Coastal Resources Center at the University of Rhode Island. The Center rarely became involved in individual regulatory decisions. Legal assistance was obtained primarily from the firm of Goldman, Biafore and Hines, although in theory the Attorney General's Office was required to represent the CRMC in court cases. The federally mandated project

Figure 2

# ORGANIZATIONAL ENVIRONMENT OF THE COASTAL RESOURCES MANAGEMENT PROGRAM IN RHODE ISLAND 1971-1985



review coordination and federal consistency determinations, as well as numerous planning tasks, were carried out by the Statewide Planning Program. Control over the federal funds received by the state shifted several times. Until 1978, the federal funds which the program was so dependent upon were administered by the Statewide Planning Program, which also handled interagency and federal consistency reviews. After the state became eligible for Section 306 funds, administration was shifted to a new Governor's Office of Coastal Zone Management. This office was subsequently abolished in 1981 due to its high cost and the sharp decline in federal funds. Grant administration then was placed directly in the Governor's Office.

The CRMC chose to deal with the problem of interagency coordination of permit decision making by placing itself last in line (Figure 3), declaring that an applicant must first pass all other local and state approvals. The CRMC saw itself at the end of an orderly decision making mechanism reserving the final, most important decision for itself. This self perception was further reinforced in the design of the permit procedures, determined in part by the stringent Rhode Island Administrative Procedures Act, which placed the CRMC squarely as the focal point for a series of preliminary decision making activities by numerous agencies, with only the State Superior Court to supervise its decisions.

#### D. Prospects for Implementation Based on Statutory Design

Successful implementation of a new policy depends in part on the strength of the legislation setting it into motion. Mazmanian and Sabatier (1983) have identified six variables contributing to the probability of success or failure in the implementation process:

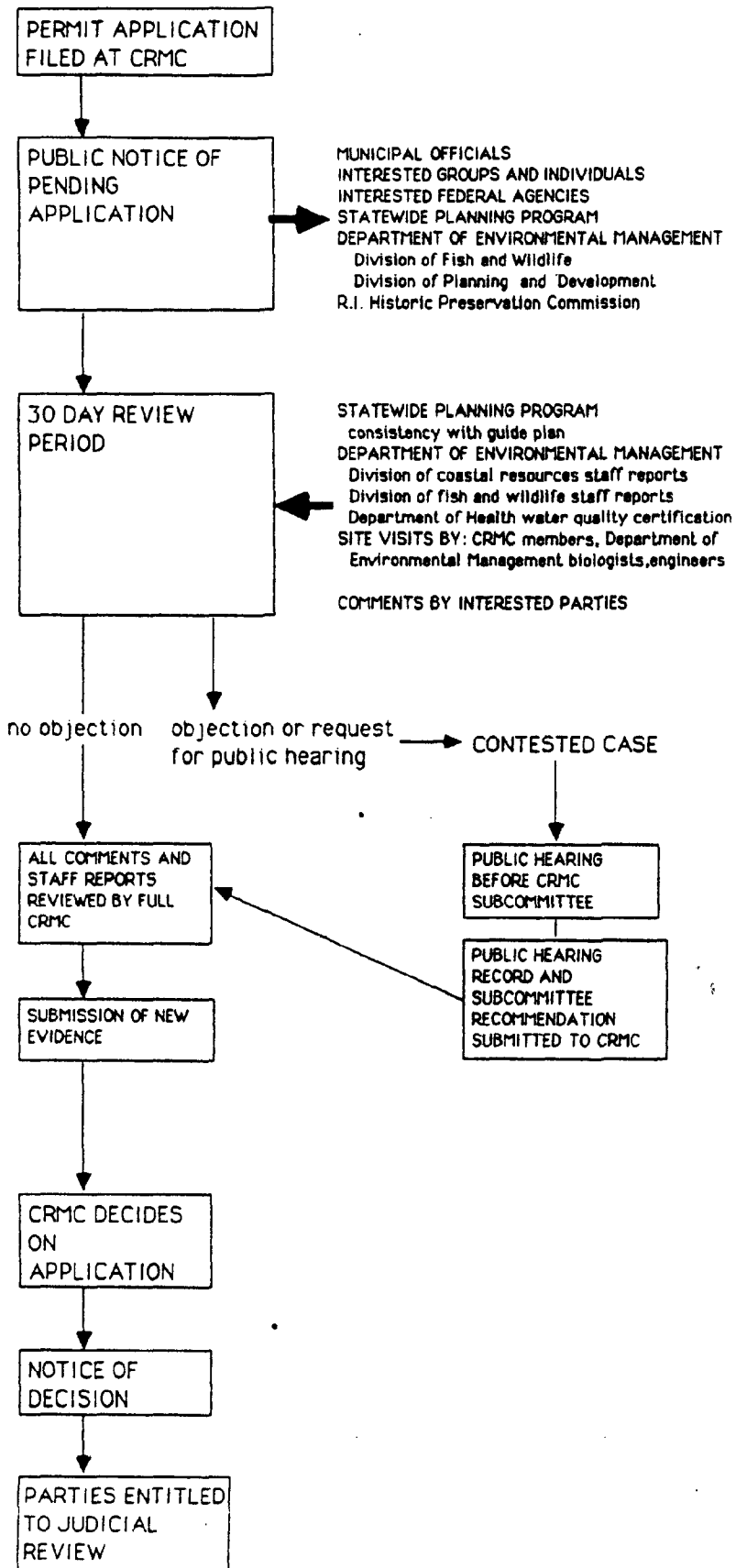
- (1) A sound causal theory linking actions to outcomes.
- (2) Clarity of statutory objectives
- (3) Specific decision making rules
- (4) Hierarchical integration of the implementation process.
- (5) Assignment to a sympathetic agency.
- (6) Adequate financial support.

Although these criteria reflect a bias toward the hierarchical planning-compliance model of implementation, they are useful for identifying some of the limitations built into the 1971 Rhode Island Coastal Resources Management Act.

To begin with, the nature of the CRMC's mandate as a ecosystem management agency precluded the General Assembly from being overly specific about objectives and decision rules. The CRMC was expected to engage in an adaptive implementation process. The causal theory was that conventional land use planning technique could be applied to the coastal environment, and that a regulatory program similar to municipal zoning and subdivision review could be put in place over time to carry out the multiple objectives of preserving, protecting, developing and restoring the state's coastal resources. It proved much easier to establish a regulatory program than to complete the planning process which could set policies in the allocation of uses of coastal resources and decision criteria.

Figure 3

# CRMC PERMIT APPLICATION PROCEDURE, 1977



Although the legislation specifies the activities over which the CRMC has jurisdiction, it provided no guidance on which policies needed to be developed. In fact, this lack of specificity, which Mazmanian and Sabatier would associate with program failure, was a necessary condition if the CRMC was to carry out its basic mission of managing coastal ecosystems using the best available information and choosing policies which were sensitive to the complex interactions of human activity and environmental conditions. The Governor's Coastal Zone Task Force and debate on the floor of the House and Senate could not have been expected to resolve all these policy questions in advance.

CRMC's enabling legislation provides it with some guidance on how to make decisions. However, the most important decision rules are contained in the Rhode Island Administrative Procedures Act, which clearly establishes the steps the CRMC must follow in case by case decision making. These procedures provide numerous opportunities for individuals opposed to a project to participate in building the legal record which the CRMC was bound to utilize on making its decision. Fairness and due process are the major objectives of these procedural requirements.

Mazmanian and Sabatier hypothesize that hierarchical integration of the implementing agencies favors success. On this measure, Rhode Island Coastal Program scores low. The Rhode Island legislature gambled that a loosely coupled network of implementing agencies would establish a good working relationship over time. Indeed to carry out the broad ecosystem management mandate, the CRMC was required to obtain the involvement and cooperation of several agencies, the public, the scientific community and the private sector. In this context, a hierarchical planning compliance emphasis scarcely seems relevant. The loose arrangement also permitted a more open planning process since no single party could veto the proposals of another agency.

However, the need for good working relationships among these parties which involved some delegation of responsibility was essential. Since the CRMC, the Division of Coastal Resources, and the Coastal Resources Center were essentially new, there were few pre-existing behavior patterns against which to judge the probability of their success in working together. Several factors did contribute to differences over time in the climate of cooperation and support. First of all, none of the individuals originally involved in the 1970 Governor's Task Force which developed the concept and rationale for coastal zone management were appointed to serve the CRMC, and only two members engaged in the subsequently expanded committee received appointments, including two of the four individuals who have remained on the CRMC between 1971 and 1985. As a result, there was no continuity in the vision of the original purpose of the new administrative structure. Secondly, the make up of the CRMC strongly favored a local perspective rather than a centralized state bureaucracy approach. Finally, the scattering of regulatory, planning and administrative responsibilities among several agencies set the stage for conflicts and discontinuities in leadership (Laverty, 1980). Examples of this include the continual shifting of responsibility for grant supervision among agencies and the dispersal of permit processing staff among various divisions of the Department of Environmental Management.

The final criteria for successful implementation is adequate financial resources. On this count the CRMC appeared doomed to failure. Without the massive influx of federal funds throughout the 1970s, the vital planning work would not have been carried out, nor would adequate regulatory staff exist. In fact, during its early years, the Coastal Resources Center at the University of Rhode Island had to rely upon Sea Grant funds and direct support from the Graduate School of Oceanography to carry out its responsibilities to the CRMC. Financial resources declined steadily during the implementation phase after 1976, at a time when development activity in the coastal region was expanding, and the CRMC was adopting many new policies and plans which required implementation efforts.

In summary, the CRMC's statute contained numerous weaknesses and questionable assumptions which threatened to undermine the ability of the agency to carry out its mandate. However, the criteria proposed by Mazmanian and Sabatier which are used here to make this assessment are to some extent inappropriate given the specific legislative mandate of the CRMC. In governing the use of coastal resources from an ecosystem perspective, the burden of developing policy is placed on the implementing agency. Agency actions to carry out this mission more closely resemble an unstructured agenda setting process than the standard routines of a bureaucracy. In the fifteen years of implementation which followed passage of the Rhode Island law, adaptability and change figure prominently, although the pace of progress and the source of events has been by no means easy sailing.



### III. IMPLEMENTATION OF THE MANDATE TO PLAN AND MANAGE RHODE ISLAND'S COASTAL ECOSYSTEMS

#### A. Introduction

The fifteen year effort by the State of Rhode Island to implement its Coastal Resources Management Act consists of three stages of adaptive behavior as the CRMC and its staff attempted to overcome statutory weaknesses and to carry out the broadly conceived, and consequently inherently vague legislative mandate to implement an ecosystem focused approach to coastal resources management (Figure 4). The first stage took place between 1971 and 1976. The CRMC began the process of formulating policies and obtaining legislation for its regulatory program. After 1977, in the second stage, the CRMC's jurisdiction was more clearly defined and expanded as a result of attempting to comply with federal requirements under Section 305 of the Coastal Zone Management Act. However, the CRMC adopted very few of the decision criteria or water use designations required under its legislation. In the third stage, which began in 1983, the CRMC adopted a substantially revised, site specific regulatory program as well as special area plans for key regions of the coastal zone, the deteriorating Providence Harbor, and the rural south shore coastal lagoons threatened by rapid development. The CRMC is currently faced with the serious challenge of implementing these new policies and rules through its regulatory and coordinating function during a period of dramatically reduced financial resources.

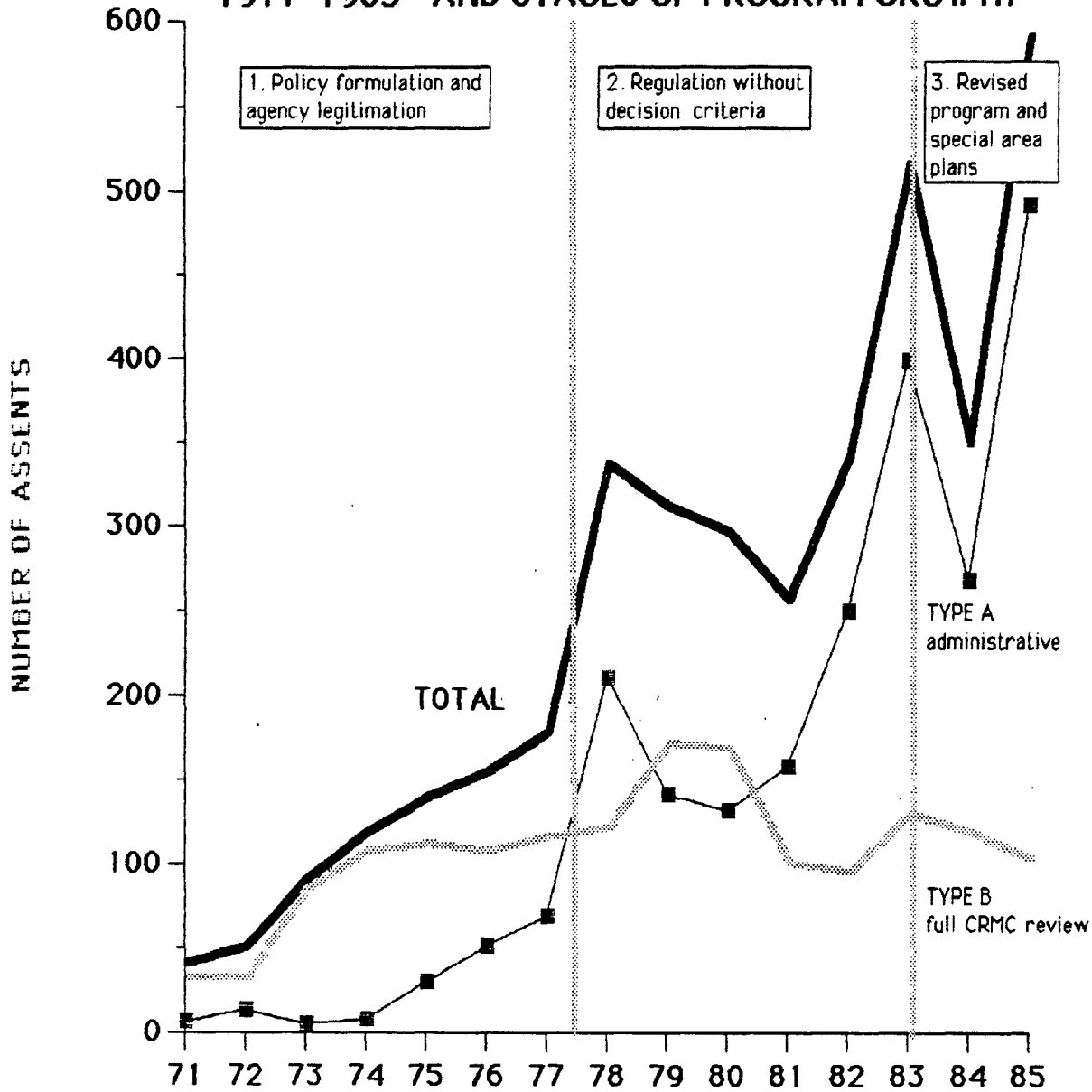
#### B. Agency Legitimation and Policy Formulation 1971-1976

The seventeen members of the newly appointed CRMC, none of whom had participated in the initial formulation of the concept of coastal resources management for Narragansett Bay and the Rhode Island south shore, found themselves facing a considerable challenge at the end of 1971. They were charged with simultaneously regulating the use of the coastal region while developing resource management policies and decision criteria without any legislative policy guidance or budget. Early on the CRMC decided not to declare a moratorium on coastal development, but to commence the regulatory process while searching for funds to conduct the mandated planning process. The CRMC steadily increased the number of assents (permits) it issued per year, from less than 50 in 1971 to nearly 200 in 1977 (Figure 5a). Building activity remained high during this period as indicated by the number of building permits for single family housing units in coastal municipalities (Figure 5b). By 1977 the CRMC was issuing 6-7 permits of various types for every 100 housing units. The two other basic themes of CRMC's regulatory activity were the increasing percentage of permits involving one aspect or another of residential housing development, which reached 60 percent by 1977 and the high proportion of permits issued in the south shore area outside of Narragansett Bay (42 percent in 1977). As late as 1977, the CRMC itself was directly approving more than 65 percent of all assents.

The Rhode Island General Assembly did not provide the CRMC with any financial support to carry out its essential planning and policy

Figure 4

# NUMBER OF ASSENTS ISSUED BY THE RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL 1971-1985 AND STAGES OF PROGRAM GROWTH



Source: CRMC Assent File

Figure 5a

DEVELOPMENT ACTIVITY, CRMC ASSENTS AND COASTAL PROGRAM BUDGET (1967 DOLLARS)

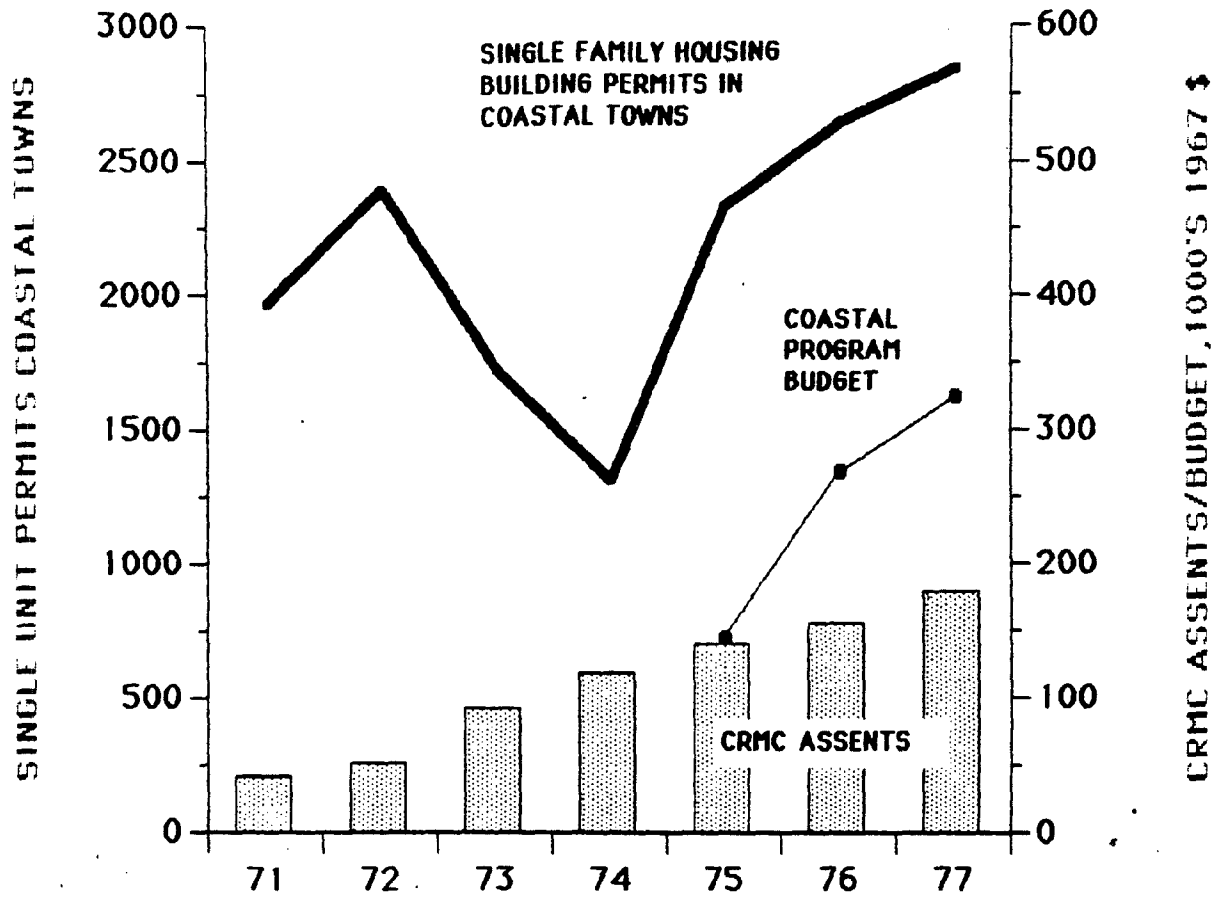
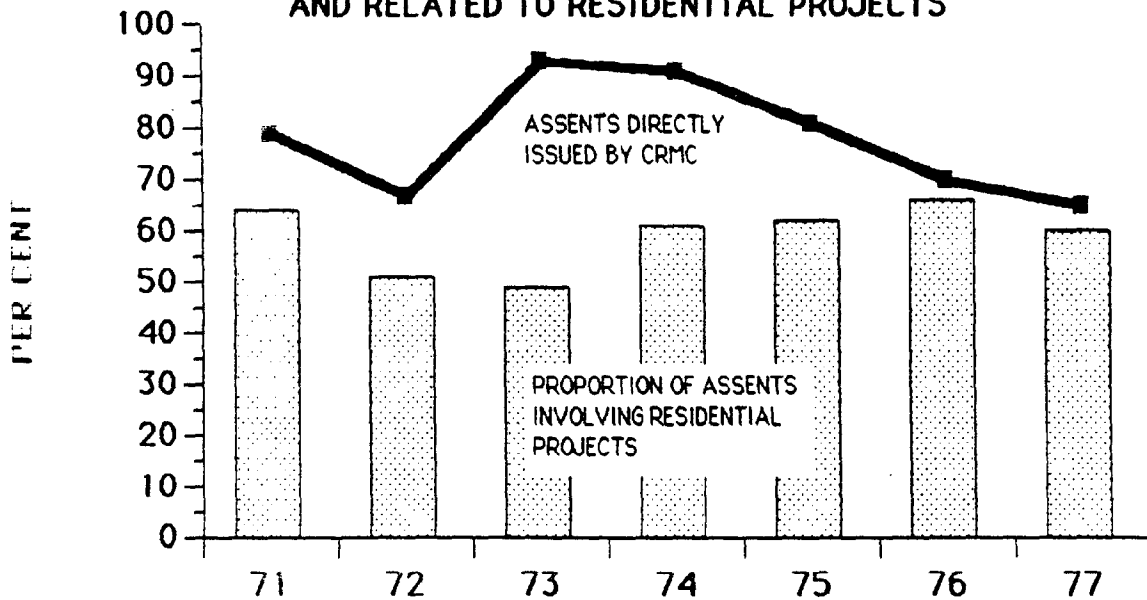


Figure 5b

PERCENT OF ASSENTS DIRECTLY ISSUED BY CRMC AND RELATED TO RESIDENTIAL PROJECTS



development functions. In 1971 Governor Licht requested Dean John Knauss of the Graduate School of Oceanography at the University of Rhode Island to create the Coastal Resources Center to assist the CRMC in developing plans and policies. However, Knauss did not receive any state funding for this group, and was required to utilize Sea Grant and other external funding sources to establish and maintain it.

The major issue tackled by the CRMC in its early years did not pertain to Narragansett Bay or the siting of major energy facilities, but to requests for construction of housing on the state's south shore barrier beaches. After a detailed study by the Coastal Resources Center and considerable debate, the CRMC adopted a policy in 1975 which prohibited construction on beaches designated as "undeveloped" and permitted construction on those barriers which already possessed considerable development. After another study, the CRMC also issued an outright ban on mining below mean high water and in coastal features, established rules for vessel to vessel transfer of petroleum, and restricted the expansion of petroleum storage.

Rhode Island received \$880,000 in federal funds between 1975 and 1977 to begin preparing a federally acceptable coastal resource management program. On an annual basis, the total budget doubled from \$143,000 to \$323,000. Outside funding was crucial in order for the CRMC to develop specific policies for most of the resources under its jurisdiction. However, the frequent changes in the policy at the federal Office of Coastal Zone Management regarding the requirements for federal approval and funding of a state coastal program resulted in considerable difficulty during the preparation of a comprehensive program document. During 1975, under President Ford's administration, the CRMC and the Coastal Resources Center prepared a program document which emphasized an environmental impact assessment approach to individual decisions rather than area or resource specific policies as required by the state's enabling legislation. When a draft of this document was released for public review in 1976, Rhode Island became the subject of considerable national scrutiny as one of the first programs in the country. This attention not only came from the Office of Coastal Zone Management, now under newly elected President Carter, but environmental groups such as the Natural Resources Defense Council, which criticized the lack of specific policies, and the American Petroleum Institute, which sought to limit the coastal program's effect on offshore oil development. The CRMC decided to abandon the first draft and requested the Coastal Resources Center to prepare a completely new document focused on resources and issues. The adoption of this plan in 1977 marked the beginning of the second stage of implementing the Rhode Island Coastal Resources Management Act.

#### C. The Quest for Federal Funds: Jurisdiction Expansion Without Decision Criteria

The primary achievement of the 1977 Coastal Program Document was to expand the CRMC's jurisdiction, in response to federal concerns over the extent to which the CRMC could control upland activities affecting the coastal environment. Table 2 summarizes this change in "capture" of development

TABLE 2. Rhode Island Coastal Resources Management Council Change in  
Categories of Coastal Development in the Permit Process.

<u>Pre 1977 Categories</u>	<u>Post 1977 Categories</u>
Transfer of Petroleum	Same
Power Generation	Same (Comprehensive Regulations, 1978)
Cables and Pipelines	Same
Harbors, Port Facilities, Marine Transport	Marinas Private Residential Transport Facilities Houseboats, Floating Businesses
Harbor Lines	Harbor Management Plans
Dredging and Filling	Dredging Dredged Material Disposal
Minerals Extraction	Anywhere in State, Notified
Aquaculture	Same
Debris	Same
Shoreline Protection	Erosion Prone Areas of Concern, Listed
Barrier Beaches	Now Listed
Tidal Marshes, Filling	Shoreline Systems, Contiguous Cliffs, Bluffs, Ledges, Listed Sand Dunes Tidal Waters and Coastal Ponds, Listed
Wastewater Disposal	Domestic Private Industrial Municipal Sludge Hazardous Solid Waste Individual Sewage Disposal Systems ISDS in Coastal Stormwater Industrial Pretreatment Tributaries Notification
<u>Ocean Dumping</u>	Same

activity over pre-1977 policies. The first important change was the definition of development activities under CRMC jurisdiction. A good example is wastewater and solid waste disposal. The 1977 program document declared that within a one mile band along the shore the CRMC would review eight specific pollution sources: industrial, domestic, wastewater disposal, private, industrial, municipal, stormwater sludge disposal and hazardous wastes and solid wastes. Inland of the one mile "coastal region" the CRMC would still review most of those activities except individual domestic wastewater disposal.

The CRMC was to review and prepare a written statement on every proposal within the one mile zone, including individual subsurface wastewater disposal systems, determining on a case by case basis whether a permit was required. For actions within 200 feet of tidal waters or specific coastal features such as wetlands a permit was always required.

The second major change which the 1977 program introduced was listing specific coastal areas under CRMC jurisdiction such as developed and undeveloped barrier beaches, shoreline features including cliffs, bluffs, ledges, coastal ponds, and erosion prone areas. This made it possible for individual applicants to more easily discover whether their proposal fell under CRMC jurisdiction.

This expanded jurisdiction, combined with federal funding to implement the program under Section 306, resulted in a dramatic increase in the number of permits issued by the CRMC beginning in 1978 (Figure 6a).

Although capture increased dramatically, there were few additional specific policies on coastal development activities. As Table 3 indicates, only three additional prohibited uses were added and these dealt largely with construction of buildings on beaches. In addition, the program document contained a requirement that for a list of 45 areas designated for conservation and 'low intensity use', a number of activities were prohibited unless a public benefit and no alternative existed. For multiple use areas, which included the less urbanized portions of Narragansett Bay and certain recreational harbors, a shorter list of prohibited uses was adopted.

For most development activities, however, the CRMC retained the same decision making criteria it had employed before 1977, which was drawn directly from the CRMC enabling legislation:

Any person, firm, or governmental agency proposing any development or operation within, above, or beneath the tidal water below the mean high water mark, extending out to the extent of the state's jurisdiction in the territorial sea shall be required to demonstrate that its proposal would not (1) conflict with any resources management plan or program; (2) make any area unsuitable for any uses or activities to which it is allocated by a resources management plan or program; or (3) significantly damage the environment of the coastal region.

TABLE 3. Rhode Island Coastal Resources Management Council Prohibited Uses

<u>Pre 1977</u>	<u>Post 1977</u>
1. Undeveloped Barrier Beaches	1. Same
2. Minerals Extraction	2. Same
3. Debris	3. Same
4. Abandoned Vessels	4. Same
5. Oil Tank Expansion	5. Same
	6. Beach Face Construction
	7. Sand Dune Construction
	8. No Structures on High Erosion Zone
	9. Show Public Benefit and no Alternative
	a. Conservation, Low Intensity Use List
	Conservation and low intensity use list
	Sewage Disposal
	Filling
	Grading
	Cables
	Hazardous Materials
	Dredging
	Structures in Water
	b. Multi-Use Estuary List:
	Industry
	Filling
	Sewage Disposal
	Grading
	Hazardous Materials
	Disruption of Recreation

Figure 6a

DEVELOPMENT ACTIVITY, CRMC ASSENTS AND COASTAL PROGRAM BUDGET (1967 DOLLARS)

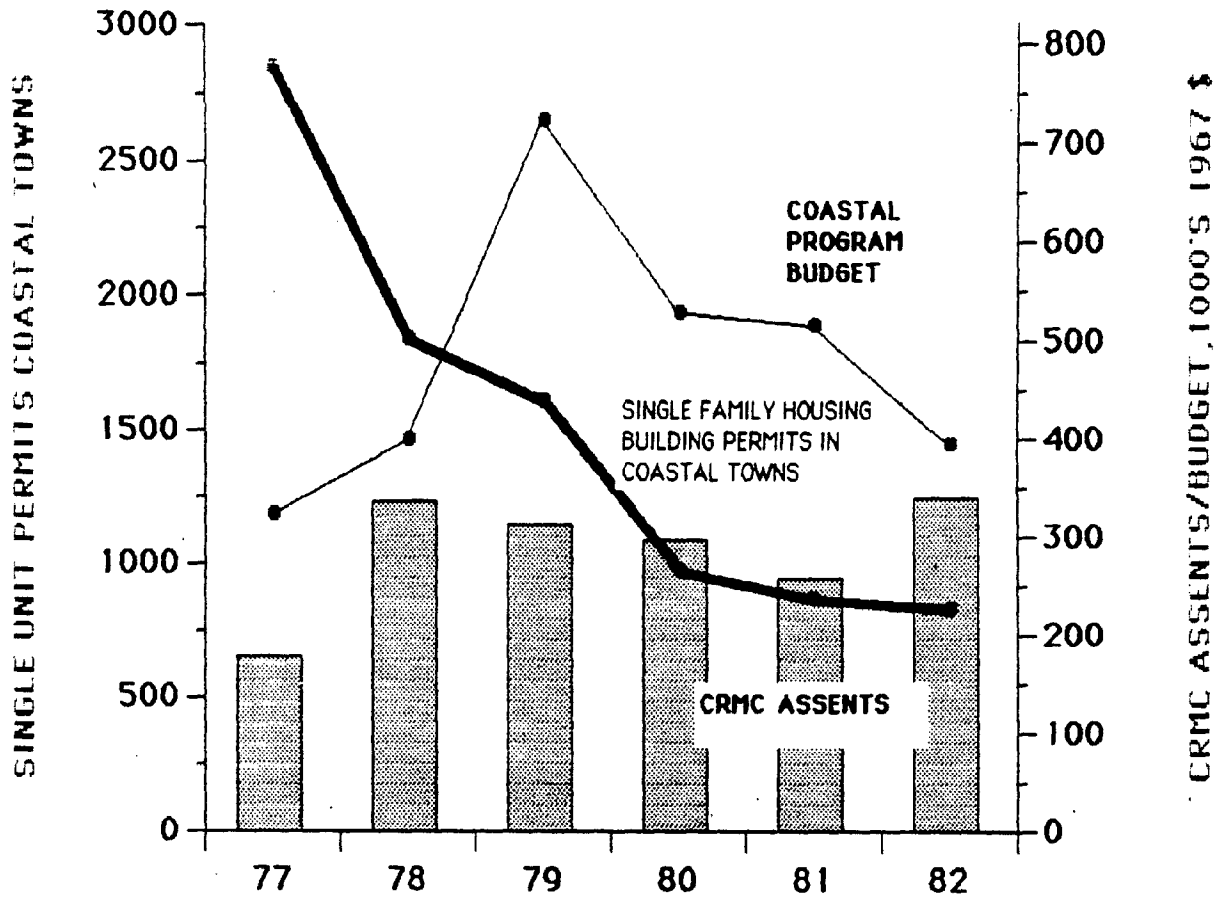
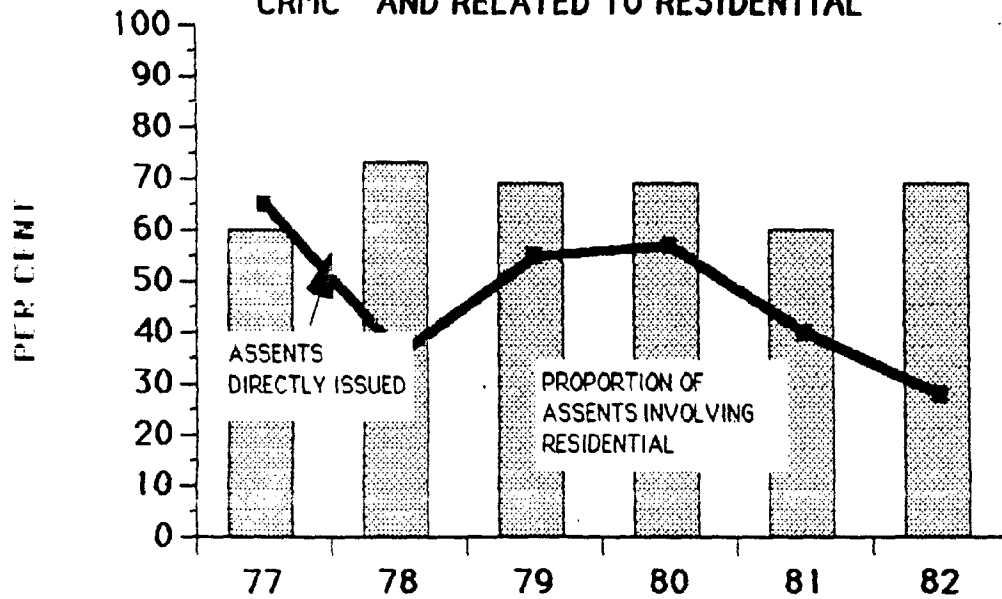


Figure 6b

PERCENT OF ASSENTS DIRECTLY ISSUED BY CRMC AND RELATED TO RESIDENTIAL





In addition, the program document added a second list of decision criteria for the fifteen areas and activities: A typical example is the set of criteria for shoreline systems:

Shoreline Systems  
Cliffs, Ledges, and Bluffs  
Coastal Wetlands  
Erosion Prone Areas  
Aquaculture Projects  
Upland Mineral Extractions  
Sewage Treatment and Disposal  
Ocean Dumping  
Beaches and Coastal Ponds  
Conservation Areas  
Docks, Piers and Floats  
Research  
Dredging and Material Disposal  
Commerce and Industry  
Liquified Gas Storage Facilities

It shall be further demonstrated by reliable and probative evidence that the coastal resources are capable of supporting the proposed activity including the impacts and/or effects upon:

- a. Circulation and flushing patterns;
- b. Sediment deposition patterns;
- c. Biological communities, including vegetation, shellfish and finfish resources and wildlife habitat;
- d. Aesthetic and/or recreational value;
- e. Water quality;
- f. Public access to and along the shore;
- g. Erosion and flood hazards;
- h. Runoff patterns.

The burden was placed on each applicant to discover which of the decision criteria applied to which aspect of the development being proposed as well as how the criteria would be applied in the specific environmental conditions of the project site. The 1977 program document did not distinguish between major projects such as a residential dock, nor did it provide for administratively issued assents. No restriction existed on the level of detail of the CRMC review or which applications were treated as "contested" cases and subject to public hearing.

The impact of adopting the 1977 program document upon the regulatory program was dramatic. As Figure 6a shows, the number of assents nearly doubled in one year from 179 issued in 1977 to 338 even though coastal development activity dropped by 35 percent due to rising interest rates and unemployment, while development activity in coastal municipalities declined 54 percent (Figure 6b). Projects involving individual residences increased from 60 to 73 percent of the regulatory workload between 1977 and 1978 and over the next three years the CRMC substantially increased its direct involvement in the permit program, which had reached a low of 36 percent of permits in 1977.

The increase in regulatory activity levels after 1977 was made possible not only by the clarification and expansion of jurisdiction lent by the real increase in federal funding, which was 24 percent higher in 1978 and 124 percent greater in 1979 than the 1977 level (Figure 6a). Despite the slump in housing development in the early 1980s, the CRMC was issuing 40 permits for every 100 single family building permits in coastal municipalities, an increase of 4 times the 1977 rate. Housing construction dropped 54 percent between 1977 and 1981, while the CRMC activity levels were only 24 percent lower.

#### D. The Revised Program and Special Area Plans, 1983-1985

##### 1. The Changing Governance Environment

Up to 1983, CRMC's policies placed upon the applicant the 'burden of proof' that the proposed project met all CRMC policies and regulations. With the exception of a few specific prohibited uses, the CRMC remained bound only to procedural requirements in making its decisions. The underlying premise of the 1971 enabling legislation was that a planning methodology could be employed to manage the use of the coastal environment. In urban or regional planning practice a community or area plan is prepared that can be translated into zoning and subdivision ordinances, capital improvement and social welfare programs which are then implemented on a case project or client basis. The expectation was that a similar planning process could be carried out for the coastal environment, whose condition can exhibit tremendous temporal and spatial variability and for which the knowledge base was quite limited. The need to work with the University of Rhode Island's Graduate School of Oceanography was recognized early on. As a result, the CRMC had to become involved in creating a new form of environmental planning, hoping to benefit from the results of basic and applied research about coastal resources as quickly as they became available. The CRMC's dependency on new knowledge to carry out the basic purposes of its legislation led to an unusually productive collaboration with the research community.

However, an emphasis on the presence of uncertainty over the relationship between human uses and activities in the coastal ecosystem, coupled with the increasing number of applications for CRMC assents meant that procedural requirements and a judgemental 'balancing act' dominated CRMC's behavior during its formative years. The preoccupation of the federal government simply with the scope of CRMC's jurisdiction in 1977 and 1978 rather than its substantive policies resulted in a federally approved program document which did not go very far in identifying permitted uses, their appropriate locations, and protective measures for coastal development as called for in 1971 by the Rhode Island General Assembly.

As a result, the primary activity of the CRMC and its staff was the review of individual permit applicants. This took place largely without the benefit of adopted policies which could have made explicit the decision criteria employed by the CRMC in evaluating a particular proposed activity

in a specific location. Notable exceptions included the prohibitions on marine and coastal mining as well as construction on undeveloped barrier beaches.

Even so, the first decade of coastal management in Rhode Island appeared to more than meet the expectations of the early 1970s. The planning and development activities of the Rhode Island Coastal Program up to 1983, when combined with the CRMC's procedures, covered most of the problem areas identified in 1970 by the Governor's Committee on the Coastal Zone. Table 4 shows the original problem areas and the eventual response of the coastal program to those problems. The 1970 report did not propose specific policies to solve any of those problems with the exception of creating a new entity to exert state control and fill the 'policy vacuum.' As a result, the CRMC exercised considerable freedom in deciding whether and to what extent it would address specific issues.

The 1970 Governor's Committee report also did not anticipate the passage two years later of the Federal Clean Water Act, which had a dramatic impact on pollution control planning and regulation in Rhode Island. The Environmental Protection Agency was unsuccessful in delegating federal pollution control powers to Rhode Island until 1985, making EPA another new actor in decisions affecting coastal resources. Rhode Island's pollution control program was one of the last in the nation to exercise direct control over municipal and industrial wastewater discharges. As a result, the CRMC was the only state agency with this direct control during the 1970s, enabling it to set environmentally based discharge limits for large and small pollution sources including storm waters. However, with a few exceptions, it did not become actively involved in major wastewater discharge issues.

Another unanticipated change was the energy crisis precipitated by the oil embargo of 1973 and the numerous proposals for the construction of energy related industrial facilities. In 1978 the CRMC adopted a comprehensive set of energy facility siting regulations aimed at large facilities such as oil refineries, nuclear power plants, liquified natural gas storage, and other large facilities associated with offshore oil development. However, the CRMC has never received an application for such a project.

Several important events took place in the early 1980s as the CRMC entered its second decade, which made it increasingly necessary for the agency to re-examine its policies and regulatory program. Federal funding began to erode dramatically after 1979. In real terms, the total financial resources available to conduct the Rhode Island Coastal Program in 1982 had fallen to the level of 1978 (Figure 7a). At the same time, the level of development activity was increasing. The number of CRMC permits increased 32 percent between 1981 and 1982, the coastal housing construction rate increased 86 percent between 1980 and 1983.

Out of necessity, the staff developed decision criteria to handle the hundreds of small, routine applications it received each year. Executive Director and CRMC Chairman John Lyons began issuing an increasing number of administrative assents, a practice which had not yet been incorporated into the CRMC's adopted rules. However, the CRMC continued to resist the

Table 4

PROBLEM AREA IDENTIFIED IN 1970	1977 COASTAL PROGRAM DOCUMENT POLICY	OTHER COASTAL PROGRAM RESPONSES 1971-1973
I. WATER POLLUTION		
Municipal and industrial wastewater Floating debris Boating	<ol style="list-style-type: none"> <li>1. Federal Clean Water Act cited</li> <li>2. Review criteria and capture</li> <li>3. Special committee on Upper Bay pollution</li> </ol> Coast Guard Clean Water Act and marine sanitation pumpout facilities	
II. MANAGEMENT OF RESOURCES		
Fish and shellfish Minerals No coastal development alteration criteria Salt marsh Abandoned docks	<ol style="list-style-type: none"> <li>1. Habitat protection Mining prohibited Area designation, criteria for shoreline system protection; erosion prevention; specific protection from filling, use shoreline debris prohibited</li> </ol>	Creation of R.I. Fisheries Management Council, 197
III. MARINE DEVELOPMENT		
Public access	Right of ways authority obtained 197	SAP Providence Harbor Clean-up Plan, 1983
Shore facilities recreation commercial fishing	Legal studies and designations  Bay Island Park Plan endorsed Policies to protect existing facilities	Recreational boating study, 197 Commercial fishing facility study, 197
shore protection Boating Control Harbors and Channels		Fundings and policies on commercial, fishing, recreational harbors Special Area Plan, Providence Harbor

Table 4 (continued)

PROBLEM AREA IDENTIFIED IN 1970	1977 COASTAL PROGRAM DOCUMENT POLICY	OTHER COASTAL PROGRAM RESPONSES 1971-1983
IV. RELATED DEVELOPMENT		
Industry and commerce	Former Navy Base at Quonset Pt./	Port Industry Economic Study
Marine, Port of Providence	Davisville designated for devel-	Special Area Plan, Providence
Commercial fishing	opment	Harbor
Tourism	Policies on ports and dredging	Dredged Material Disposal
Housing		1978 Energy Facilities Regulations
Transportation	Policies on bridge	
V. USE CONFLICTS		
Boating, shipping, fishing		
mixed recreation, Navy, waste		
disposal		
Land use - military, open space		
residential development		
VI. JURISDICTIONAL CONFLICT		
Levels of government	Tiered permit procedure	
Policy vacuum	Program document	
Out of data laws		
Coordination, especially with	Networked administrative	Permit program procedures
forthcoming grants	structures	

Figure 7a

### DEVELOPMENT ACTIVITY, CRMC ASSENTS AND COASTAL PROGRAM BUDGET (1967 DOLLARS)

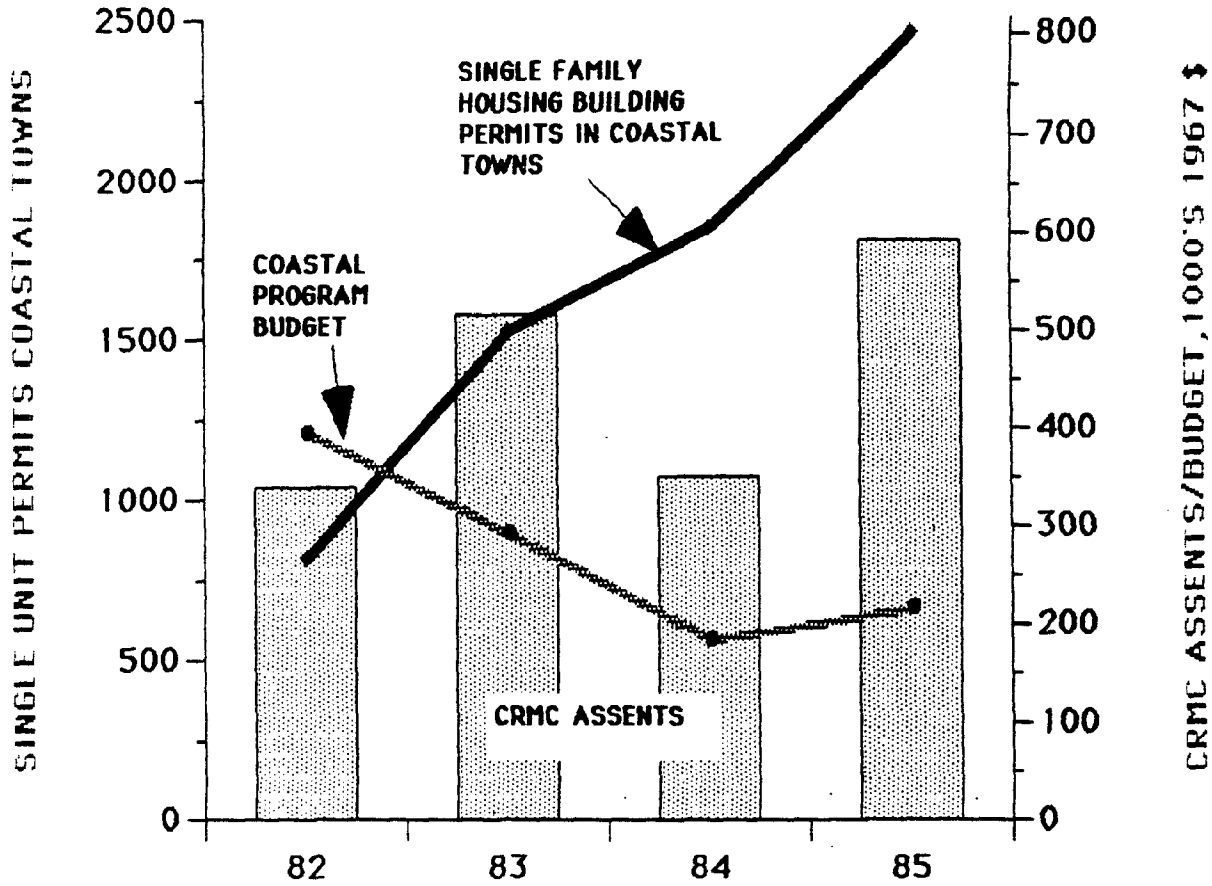
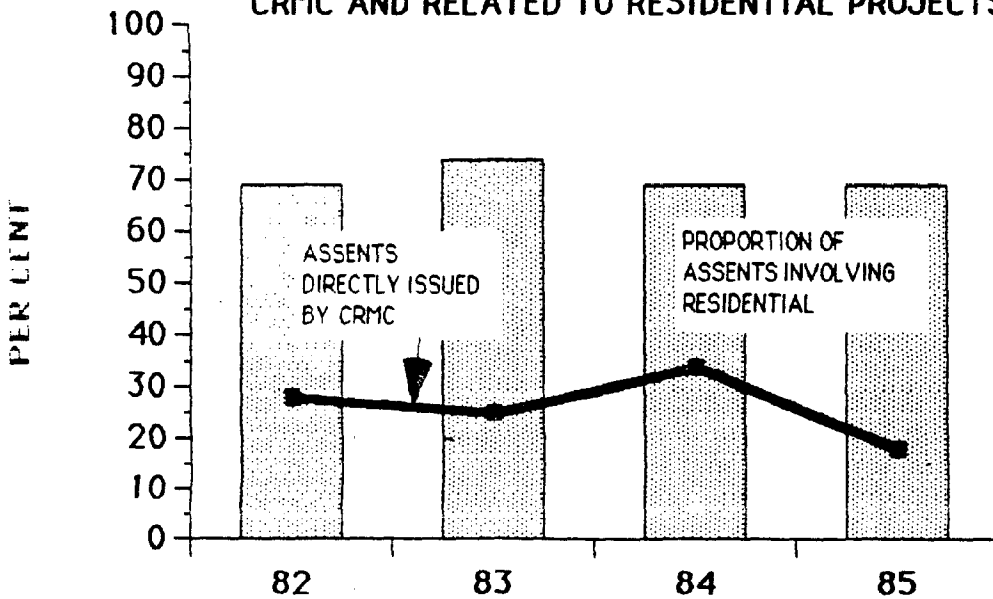


Figure 7b

### PERCENT OF ASSENTS DIRECTLY ISSUED BY CRMC AND RELATED TO RESIDENTIAL PROJECTS



idea that staff should make recommendations or judgements on individual applications, preferring to reserve this function for itself. But the sheer size of the regulatory program workload and the fact that nearly 70 percent of applications were for small scale projects proposed by small property owners, moved them to acknowledge, albeit reluctantly, the need to establish standardized decision making criteria. The decline in funding levels also forced a realization that standardized procedures could allow the staff to handle routine applications thus freeing both the CRMC and its professional staff to concentrate their efforts on the few major applications received each year. Finally, a decade of experience in regulatory and planning efforts had led a majority of CRMC members and staff to the conclusion that specific policies for many of the states coastal areas could be proposed and receive public support, particularly since local environmentalists had been calling for such specific policies since the first comprehensive coastal program document had been circulated for review in 1976.

## 2. The Establishment of Decision-Criteria

In 1981 the CRMC began to develop a new program document designed to meet the criteria of the CRMC's legislative mandate. After extensive internal debate and public discussion, the new program document was adopted and published in 1983. The revised program contains several dramatic changes over the 1977 program. First of all, coastal development activities were divided into two categories; Type A, administrative review, and Type B, full CRMC review. Tables in the first section of the document tell applicants which level of review is required for 27 activities in 10 resource types for the six use types which the CRMC used to classify coastal water areas. The document includes detailed maps of the use classifications, and the second section provides findings, policies and regulations for each of the different uses:

Type 1	Conservation
Type 2	Low Intensity
Type 3	High Intensity
Type 4	Multipurpose
Type 5	Commercial Waterfronts
Type 6	Industrial and Ports

The third section of the document provides detailed findings, policies and regulations for each of the 27 activities under CRMC jurisdiction. Applicants can utilize this information to obtain a good understanding of how a specific activity proposed in a specific location will be treated under the CRMC regulatory program. Requests for exemption from certain routine administrative requirements are brought to the CRMC. Permission to conduct a prohibited activity requires a demonstration of public benefit.

Table 5 illustrates that the 1983 program focused on providing better guidance to both the CRMC applicants for what areas and activities were to be captured by the regulatory process. Maps and specific boundary notations replaced the lists found in the 1977 program. The more important change was in the specificity of the policies and decision

criteria. As Table 6 shows, not only were earlier prohibitions retained, but a total of 466 specific activity prohibitions in the six water area types were adopted. The emphasis on adopted decision criteria marked a significant departure from the traditional CRMC approach to individual cases. For example, after 1983 a marina was completely prohibited in Types 1 and 2 waters. In Type 3 waters, it became a permissible, in fact encouraged, use. Existing marinas were now urged "to seek innovative solutions to increased demands for moorings, dockage and storage space," and may "increase their facilities and capacity up to 25 percent without applying for a new assent." New marinas, however, must meet numerous design and construction standards depending on the extent of observation to the coastal environment it proposed. For routine installations such as residential docks, piers and floats, 19 specific design standards were adopted, enabling this category to be handled administratively except when an applicant sought a variance to one or more standards. These standards were based on the decision criteria developed by the permit staff over several previous years.

The water use designations evolved from earlier policies, and reflect a strong emphasis on retaining development in existing areas. The original use designation proposals were reviewed extensively by staff, state agencies and the public in workshops and hearings held throughout the state, and consequently reflect in large measure a consensus on carefully restricting the pace and direction of change in shoreline development and use.

### 3. A New Implementation Phase

As Figure 7a illustrates, the 1983 revised program document was followed two years later by a small drop of CRMC involvement in regulatory activities, from 25 to 18 percent. At the same time, the number of permits issued reached a new high of 591, as the state witnessed a return of coastal development activity at the levels of 1976 and 1977. The share of residential type projects in the total program workload remained high at 70 percent. In fact, 56 percent of the category B applications directly handled by the CRMC in 1985 pertained to this group of projects, due in part to the fact that the CRMC retained its power to approve variances to adopted standards such as the length or width of recreational boat docks. The financial resources available to carry out the regulatory program continued to drop dramatically, reaching a low in fiscal year 1984. The federal grant did increase in fiscal years 1985 and 1986. However, only a small part of this increase was allocated to the regulatory program (Figure 8) even though construction activity in coastal municipalities was expanding rapidly.

In fact, the real spending on the regulatory staff per assent issued by the CRMC had dropped perceptuously since the first full year of federal implementation funding in 1979 from \$969 per assent (1967 dollars) to \$154 in 1985 (Figure 9). Most of this reduction occurred prior to adoption of the new program during the low point in coastal construction activity. However, as coastal development and the issuance of assents increased after 1982, financial resources were stretched even further. In addition,



TABLE 5. Rhode Island Coastal Resources Management Council Changes in Capture of Coastal Development.

<u>Post 1977 Categories</u>	<u>Additional Categories Post 1983</u>
Transfer of Petroleum	
Power Generation	
Cables and Pipelines	
Marinas	Launching Ramps
Private Residential Docks	Maintenance of Docks
Marine Transport Facilities	
Houseboats, Floating Businesses	
Harbor Management Plans	
Dredging	Improvement Dredging
Dredged Material Disposal	Maintenance Dredging
Mineral Extraction Anywhere in State, Notified	
Aquaculture	
Debris	
Erosion Prone Areas of Concern, Listed	Erosion Areas Mapped
Barrier Beaches, Listed	Now Mapped
Shoreline Systems, Contiguous Cliffs, Bluffs, Ledges, Listed	Now Mapped
Sand Dunes	Now Mapped
Tidal Waters and Coastal Ponds, Listed	Mosquito Ditching Permitted
Wastewater	Now Mapped
Domestic	
Private	
Industrial	
Municipal	
Sludge	
Hazardous	

TABLE 6. Rhode Island Coastal Resources Management Council Prohibited Uses.

<u>Post 1977</u>		<u>Post 1983</u>
Construction on Beach Face	Same	
Construction on Sand Dune	Same	
No Structures on High Erosion Zone	Same	
	<u>Use Designation</u>	<u>Number of Prohibitions</u>
Show Public Benefit and No Alternative Conservation and Low Intensity Use Area List:	Type 1 Conservation	129
	Type 2 Low Intensity Use	101
Industrial		
Sewage Disposal		
Filling		
Grading		
Cables		
Hazardous Materials		
Dredging		
Structures in Water		
Multi-Use Estuary List:	Type 3 Recreation	68
Industry	Type 4 Multipurpose	59
Filling	Type 5 Urban Waterfront	56
Sewage Disposal	Type 6 Industrial	53
Grading		
Hazardous Materials		
Disruption of Recreation		

Figure 8

FUNDING LEVEL OF COASTAL PERMIT HANDLING,  
FISCAL YEARS 1979-1986 (1967 dollars),  
COMPARED TO PERMIT WORKLOAD, 1979-1985

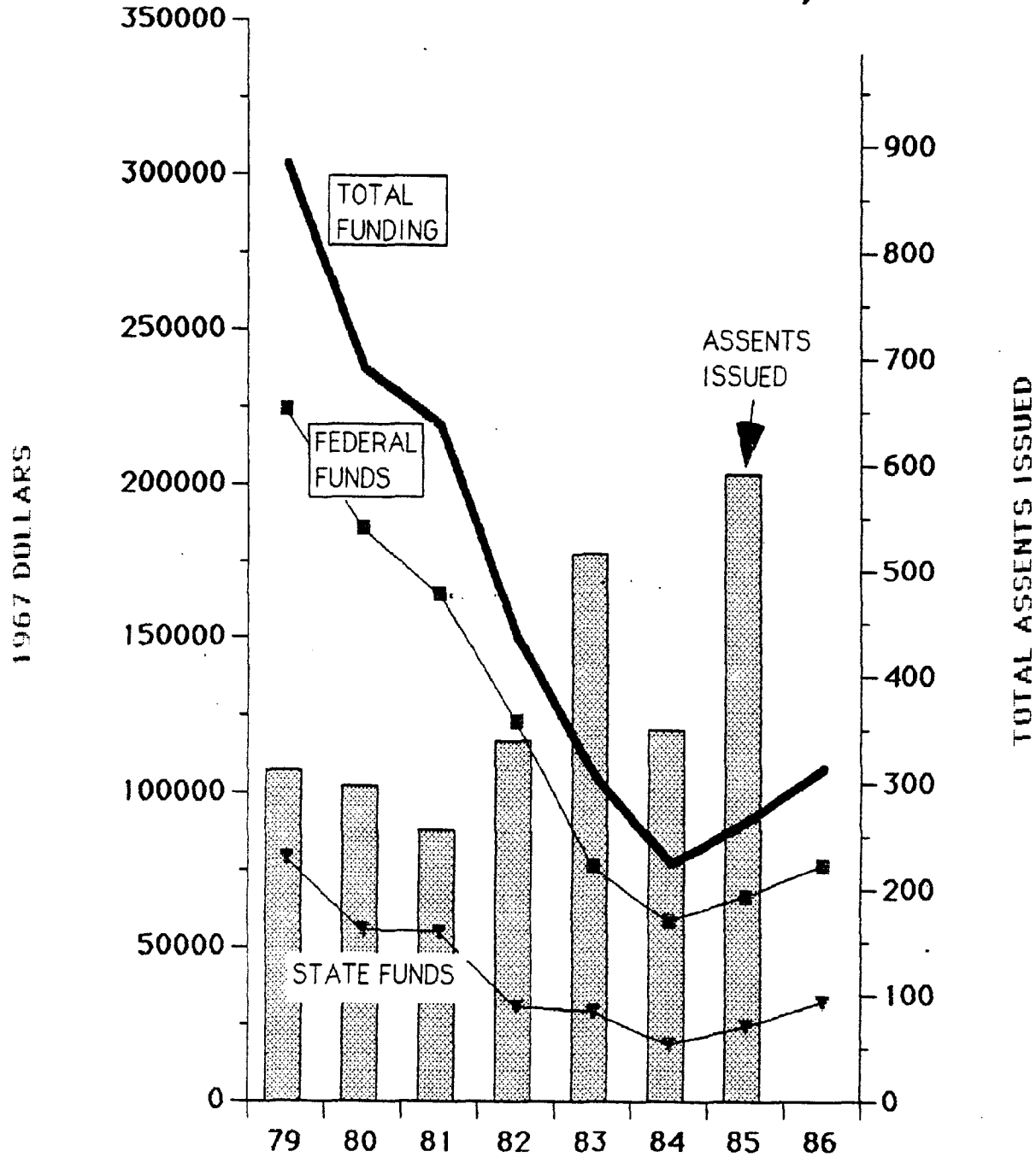
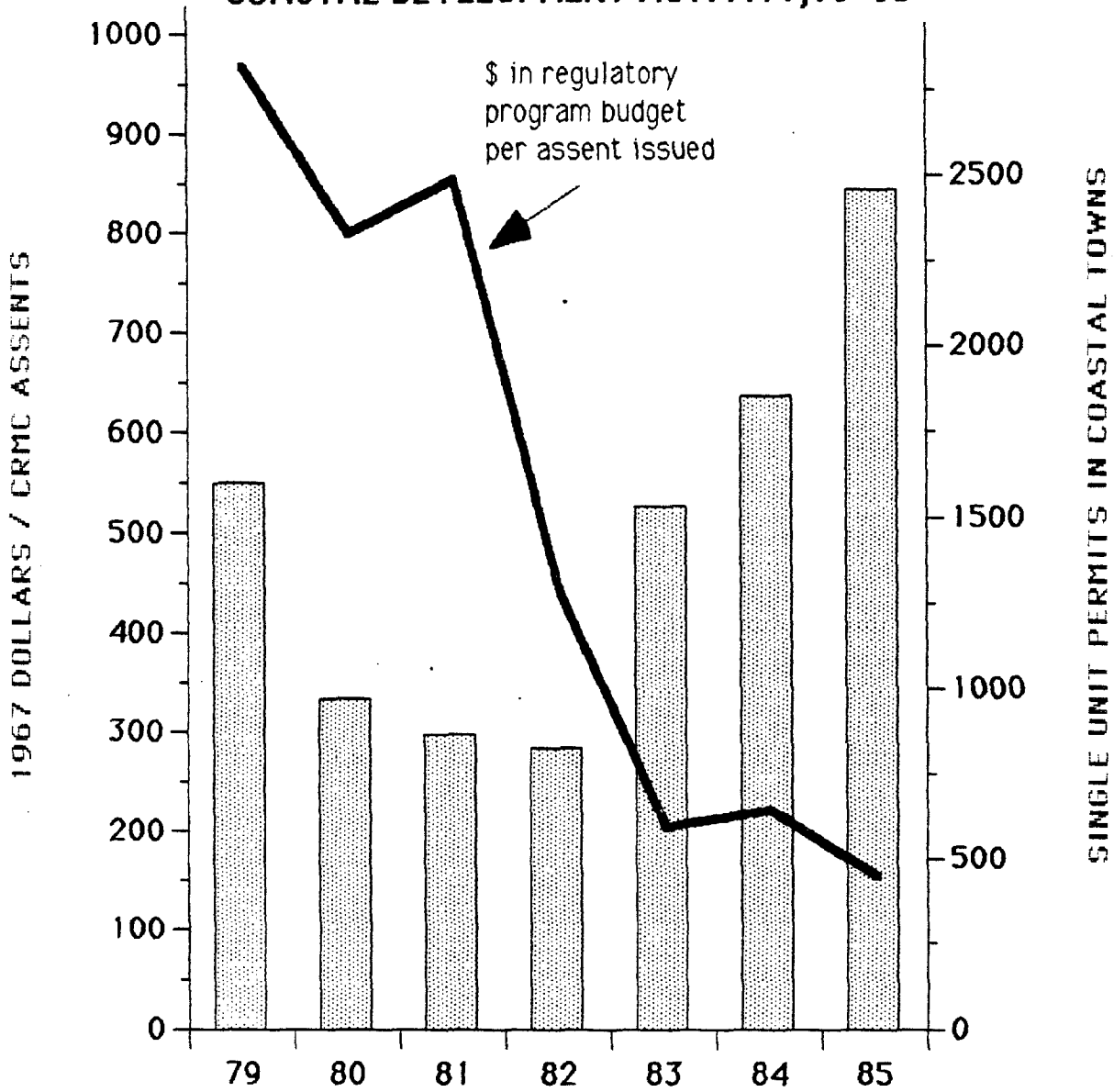


Figure 9

### FINANCIAL RESOURCES AVAILABLE PER ASSENT ISSUED (1967 dollars) AND COASTAL DEVELOPMENT ACTIVITY, 79-85



Source: Rhode Island Coastal Program 306 grant applications and CRMC Assent List

no changes had been made in the administrative structure of the Coastal Program, with the result that no mechanism existed to achieve the successful delegation of administrative permit activities or to assure the consistency in use of the substantially increased decision criteria adopted in 1983 by both the staff and the CRMC.

The efficiency of the CRMC regulatory process was repeatedly raised during the reviews of the program conducted by the Office of Coastal Zone Management under Section 312 of the Federal Act. Concern existed over the long delays encountered by applicants for minor and major permits. The revised regulations adopted in 1983 were designed to enable routine staff review for a majority of applications, and to increase the specificity of policies to be applied by both the staff and the CRMC. This additional level of regulatory detail was intended to routinize procedure and enable the staff to improve its efficiency in dealing with minor applications. However, by 1985, minor applications still took 30 days or more to process, with several months delay typical for major applications. The delays have been attributed to several factors, including failure of applicants to properly file or promptly complete applications, and for major applications, the Rhode Island Administrative Procedures Act, which entitles virtually any person to request a public hearing and trigger a costly quasi-judicial procedure called the 'contested case.' The severe erosion of the budget and increased reliance upon staff to handle the burgeoning workload emerged as major implementation problems by the end of 1985.

E. Special Area Planning: The Convergence of Planning, Politics and Participation.

- . The gradual development of standard decision criteria for most of the development activities under its jurisdiction was recognized by the CRMC, its staff, and the public as not sufficient to address the problems of coastal development and waterfront deterioration which the state faced. This inadequacy was variously expressed as the need to address the "cumulative impacts" of thousands of small decisions, the desire to plan and manage ecosystems as a whole rather than piece meal, and the public demand to solve problems of degradation in both natural and urban environments. These problems could not be addressed in a regulatory process which handled each case as a unique situation. During the public meetings held to prepare the federally approved program document, public attendance and participation was particularly strong in two completely different areas of the state, the beautiful and largely undeveloped coastal pond region of the south shore, and the deteriorated Providence Harbor area at the head of Narragansett Bay. The CRMC utilized some of the federal Section 306 implementation funds to finance studies and plans of these two 'special areas.'

The Coastal Resources Center, which prepared 'special area management plans' for these two locations, adopted traditional land use planning methods to an entirely new geographic entity, the coastal ecosystem. The focus on managing environmental conditions posed tremendous challenges. First, agreement on policy goals had to be achieved, which posed difficulties because of conflicting perspectives on environmental quality held by user groups and the problem of knowing what in fact were the natural versus human caused changes in ecosystem conditions. Secondly,

the planning and policy development was needed to result in the identification 'alternative policies' which had relatively clear tradeoffs in terms of costs and consequences. The desire for scientific knowledge and good judgment to reduce the uncertainties surrounding these impact estimates remained greater than could be supplied even with major ongoing research projects in both areas. Third, the public and private sector behaviors which had to be guided or restricted to produce the agreed upon environmental quality involved unprecedented levels of coordination and cooperation. Among state agencies and between state and local government as well as the private sector. The development of special area plans was a deliberate effort to make substantial progress in building consensus on goals, reducing uncertainties about the causal relationships between human activities and environmental conditions, and attempting to ensure that enough of the relevant different public and private actors adjusted their decision making behavior to carry out the actions needed to achieve goals for the special area.

Table 7 summarizes the elements of the first two special area plans adopted by the CRMC. Unlike the statewide regulatory program documents adopted in 1977 and dramatically revised in 1983, the special area plans were developed over a much longer period of time (Eight years for the Salt Ponds Plan, five years for the Providence Harbor Plan) and were developed step by step with large advisory committees rather than released to the public as chapters of a completed draft. Basic information about each place was presented first, followed by structured discussions of problems and goals. Both plans addressed several different issues facing the special area, and devoted considerable effort to addressing the role of other agencies and levels of government on implementing elements of the plan.

By letting the advisory committee do the work of agreeing upon goals and policies, the CRMC was able to obtain a document which possessed a high degree of public salience due to the publicity and openness of the planning process in the regions for which the plan was being prepared. In addition the plans gained political feasibility because they were developed by the agencies, municipalities and private sector at the local level who would subsequently have to implement and abide by it. Finally, the smaller scale of the resource planning area, for example the south shore coastal lagoons of three adjacent municipalities, made it practical to persuade university researchers to search for funding to conduct several new studies funded by the Sea Grant program as well as federal Clean Water and Coastal Zone Management programs. In fact approximately one million dollars was spent by these agencies for scientific research in the coastal ponds. Crucial knowledge needed to identify and make credible judgements on "permitted uses, locations, protection measures, etc." was available by the time the planning process was underway. In contrast, the statewide regulatory program adopted in 1983 did not attempt to determine water pollution control policies for the entire Narragansett Bay.

Special area planning marks the return of the complex task of state coastal policy development to the local level. The local orientation which had been a hallmark of the Rhode Island coastal program from its inception in 1971 had been expressed largely in CRMC's quasi-judicial

TABLE 7

<u>Salt Pond Region</u>	<u>Providence Harbor</u>
<u>Characteristics of Environment</u>	
Productive, beautiful barrier spit coastal lagoon ecosystem. Traditional site of intense artisanal fisheries, summer recreation.	Large metropolitan area surrounding head of estuary—large partially treated wastewater inputs, deteriorated shoreline, declining port.
<u>Goals</u>	
Prevent further deterioration, especially water quality. threat of continued urbanization, preserve unique natural systems, improve productivity, accommodate multiple uses.	Provide region with an image optimistic for reversal, encourage redevelopment, alternative uses, improvements to water quality port development.
<u>Controls and Key Causal Linkages</u>	
Prevent further pollution, rehabilitate existing wastewater discharge sources, improve fisheries management, flood and hurricane damage planning, selective dredging, pond salinity management.	Change image, improve awareness and understanding, promote water quality oriented pollution control policies, permit developments and shoreline modifications, assist in coordinating regulatory activities, enforce debris removal policies.
<u>Control Agents Behavior</u>	
Broad based committee formulated plan, including state and local agencies and private sector, policies for direct implementation by CRMC recommended policies for other state agencies and municipal governments, recommended non-regulatory 'action initiatives'.	Broad based committee formulated plan, including policies for direct implementation by CRM recommended policies for other state agencies, encouragement to municipalities to undertake redevelopment, port management, recommended non-regulatory 'action initiatives'.

decision process which produced thousands of small, fragmented decisions occasionally involving an intense local controversy with opposing local groups presenting their views and evidences in a tension filled conflict. With special area planning, however, local officials, citizens and developers voiced their opinions on the broader policies which would guide development in their area. The CRMC served as a sounding board for these local views--a posture they found more comfortable than attempting to resolve local problems through the statewide regulatory process. Scientists were able to bring the special area planning committee considerable expertise on specific topics of concern. This served to raise the credibility of planning efforts because both the general issues and the specific research were salient to the local citizenry. Planning, politics and public participation meshed in a way favorable to the development of area specific policies which approximated more closely the ecosystem management approach mandated by the CRMC's enabling legislation.



#### IV. ADAPTIVE IMPLEMENTATION AND ECOSYSTEM MANAGEMENT

The implementation of Rhode Island's 1971 coastal resources management act has been an adaptive process. The unique mandate to manage ecosystems rather than specific resources, and structural weaknesses in the law formed the basis for a policy development process which was considerably influenced by implementation problems such as changing financial resources, coastal development patterns and regulatory workload, a loosely coupled administrative structure and resistance by the implementing agency to the establishment of decision criteria.

The three stages of implementation of the Coastal Resources Management Program were caused by distinct external forces, primarily fluctuating financial resources, and development activity and internal factors including the specificity of decision rules, the partition of workload between administrative staff and CRMC and the capability to capture all of the development activity under state jurisdiction.

In the first stage (1971-1976) the CRMC attempted to gain legitimacy as it sought to add content to its broad mandate. Sophisticated planning backed by sound scientific information was lacking during this period. The CRMC was created because of the legal limitations faced by local governments as they attempted to regulate environmentally damaging activities. Since Rhode Island politics has a strong element of localism, a statewide institution was created to do ecosystem management, but a struggle continued with respect to the representation of local interests and the CRMC. The final product was a hybrid--a state agency with a broad mandate for statewide ecosystem management but whose dominant orientation was local.

In stage two (1977-82) the mandate to plan was given a large boost by federal funding and the promise of implementation grants. In the process, however, the emphasis upon expanded jurisdiction and employing an environmental impact assessment approach to decision making required by the Office of Coastal Zone Management as a condition of funding, drove out issues and substantive decision criteria from the regulatory process. This is particularly ironic since it was federal funding which made it possible for the CRMC to fulfill its legislative mandate to conduct a resource oriented planning and policy development process.

Stage three (1983-present) emerged as a response to a series of important changes to the governance environment. Budgetary famine occurred as the federal allocation was reduced drastically and state funding remained constant or slightly declined. At the same time the regulatory workload increased due to a boom in housing development. The CRMC chose to alter its operations in light of these resource constraints. The CRMC accepted the notion of adopting specific decision-rules which would permit the staff to issue administrative assents on a variety of routine applications. The decision to implement this part of the legislative mandate was seen largely as a way to be more efficient with fewer resources. The improvements to the policy and decision process were a by-product of this adaptive response rather than its primary goal.

Practical implementation considerations then were largely responsible for achieving specific decision rules.

The special area planning efforts in the Providence River and the Coastal Ponds represent a convergence of the statutory mandate to carry out ecosystem management with the strong local orientation of the CRMC's regulatory decision making. In the case of the coastal ponds, a small portion of the coast became the focus of a planning process which made it possible to utilize the expertise of the scientific research community at the University of Rhode Island to provide information on the ecosystem. Moreover, the special area approach was eventually seen as politically feasible as a result of its salience to local citizens, officials and developers. These groups actively participated during the planning meetings. The CRMC members present generally remained above the specifics of particular policy debates and served to mediate disputes between contending parties. The new policies and decision rules incorporated into the coastal ponds plan were based upon better information and stronger local support as a consequence of the open process which encouraged the revelation of local preferences.

The evolution of coastal resource management policy in Rhode Island has been driven by responses to implementation opportunities and constraints. It did not correspond to the programmed implementation model, nor can its performance be evaluated primarily in those terms. Indeed, had the CRMC adopted such an approach, its capacity for learning would have been low and the probability of discovery of the need for decision criteria and the benefits of special area management planning remote.

The form of governance of human activities which affects coastal ecosystems must be interactive, able to perceive and respond to undesired changes in an effective manner. This requires a continuing process which is guided by goals, and makes continuous adjustments to obtain a particular state of environmental quality. Choices must be made in the face of imperfect knowledge about problems, causal linkages and the effectiveness of the regulating mechanisms. Control or governance is possible at all only if continuous learning takes place over an extended period as the trial and error process takes place. The challenge for improving estuary and coastal resource management lies in reducing the period of time and amount of effort required to make such changes and adjustments in the self-correcting behavior of government institutions.

The CRMC was provided with the statutory basis to become such a governing body, required to seek continuous information and refine policies, provided the power to regulate a number of human activities with the potential for causing unwanted changes to Narragansett Bay and south shore coastal lagoons, to coordinate the activities of other agencies and was also given the flexibility to adapt and change its policies over time. However, like many programs, it was provided with little financing, an experimental administrative structure and no legislative benchmarks for evaluating the progress of the experiment. As a result, the CRMC was forced to simplify its task by focusing on procedural issues and took longer to learn from its regulatory activity about the need for decision rules and criteria. The openness of its planning and regulatory programs

provided crucial feedback on this problem, even though the CRMC was not keeping track of development or its own activities.

During its first fifteen years the CRMC has had to grapple with the problem of reconstructing its wide range of planning activities and ecosystem-oriented regulatory powers into a form that would be understandable to the public. In revising its regulations in 1983 to include water area use designations, and in preparing special area plans the CRMC completed a learning process that relied heavily upon public involvement and the cooperation of state and local agencies to develop specific policies. In the terms of Mazmanian and Sabatier (1983) these swings of success and failure in implementation represents a rejuvenation scenario. Unfortunately, the CRMC is now in a downward swing, threatened by inadequate funding to carry out its regulatory and planning functions.

During the remainder of the 1980s, the CRMC and its staff will be required to mount a new campaign to rejuvenate its implementation effort. Coastal resources management will have to once again attain a place on the public agenda in order for the CRMC to build the constituency it needs to obtain resources to carry out its regulatory program and special area plans as well as address unresolved coastal management problems. In the past, the process of adopting major regulatory programs and special area plans has been the focal point for the CRMC's agenda setting efforts. These have largely been aimed at building a regional or statewide consensus in order to convince itself to adopt new policies. The special area plans and the 1983 statewide program revisions are based on a lengthy public review and revision process. However, these constituencies are primarily local, while funding and administrative support must be won from the state and federal levels.

The challenge for the CRMC will be to reinterpret the large body of policies and regulations, area specific planning and problem solving activities and thousands of individual regulatory decisions into a coherent statement about its contribution to the broader question of wise governance of Narragansett Bay and the state's coastal ecosystem.

The fact that implementation is an adaptive process demands that governing agencies make a continuous effort to keep their programs strong by remaining relevant to the ever-changing situations and issues within their specific arena of public policy. If implementation were automatic, then the governance of coastal ecosystems would be easy. The case of the Rhode Island Coastal Resources Management Council dramatically illustrates the opposite is true.

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