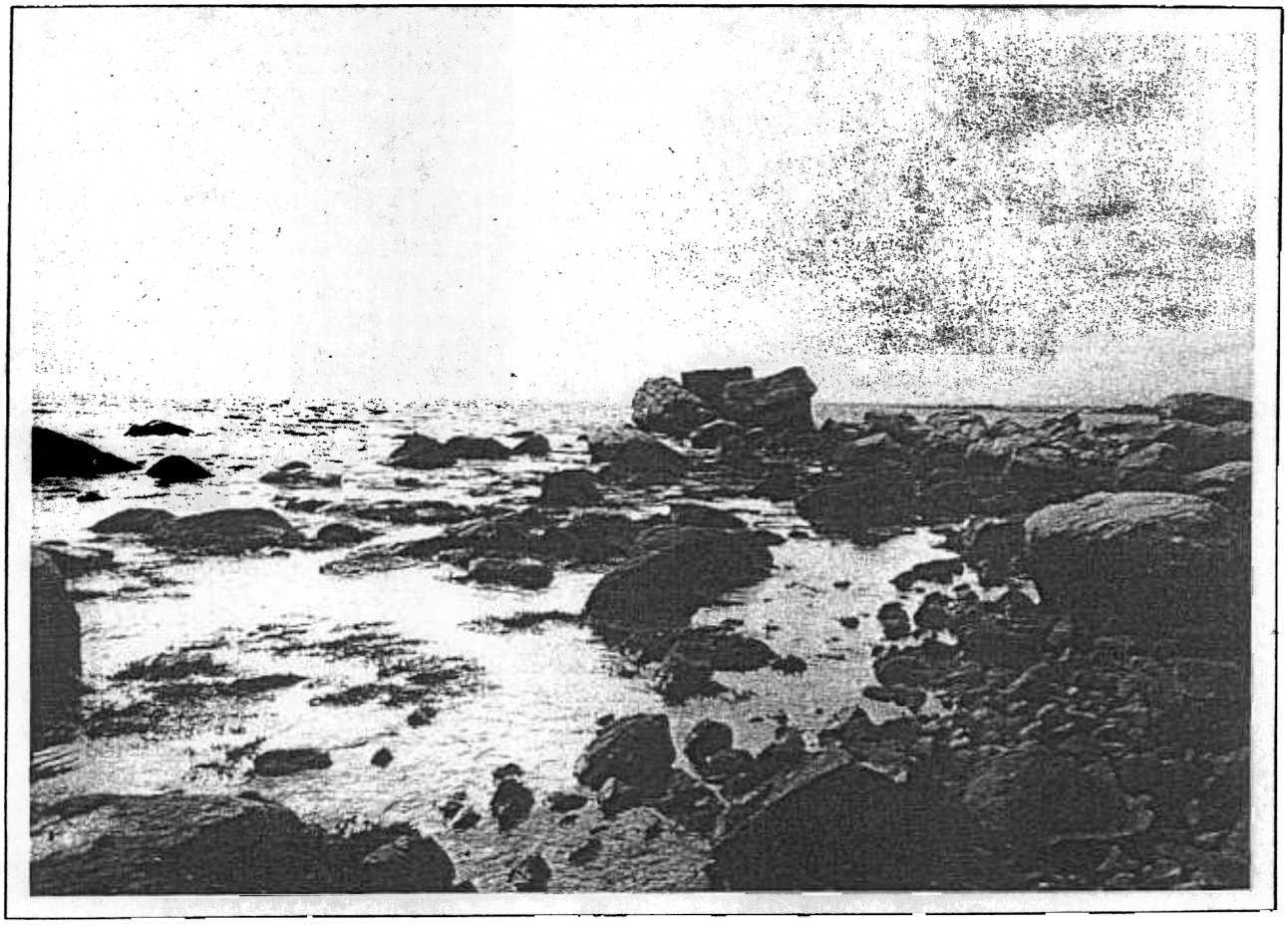
State Of Connecticut Coastal Management Program and Final Environmental Impact Statement

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of Coastal Zone Management



SUMMARY

A. CONNECTICUT COASTAL MANAGEMENT PROGRAM

The Connecticut Coastal Management Act (CCMA) of 1978 (P.A. 78-152 as amended by P.A. 79-535) establishes a comprehensive coastal resource management program in Connecticut that is based on a combination of new and existing authorities. Under the provisions of the Act, responsibility for implementing Connecticut's program will be shared among agencies at both the state and municipal levels of government. The Department of Environmental Protection, which is the primary state permitting agency for both public and private coastal development activities, is designated as the lead agency to receive and administer CZM funds, to monitor, evaluate, and coordinate the overall implementation of the program, and to represent the state in all matters related to the federal consistency provisions of the Coastal Zone Management Act of 1972. In addition to creating the basic structure for Connecticut's program, the Coastal Management Act delineates a coastal management boundary, establishes specific coastal policies, standards, and procedures to direct the implementation of the program, and defines management responsibilities for agencies at both the state and local levels of government.

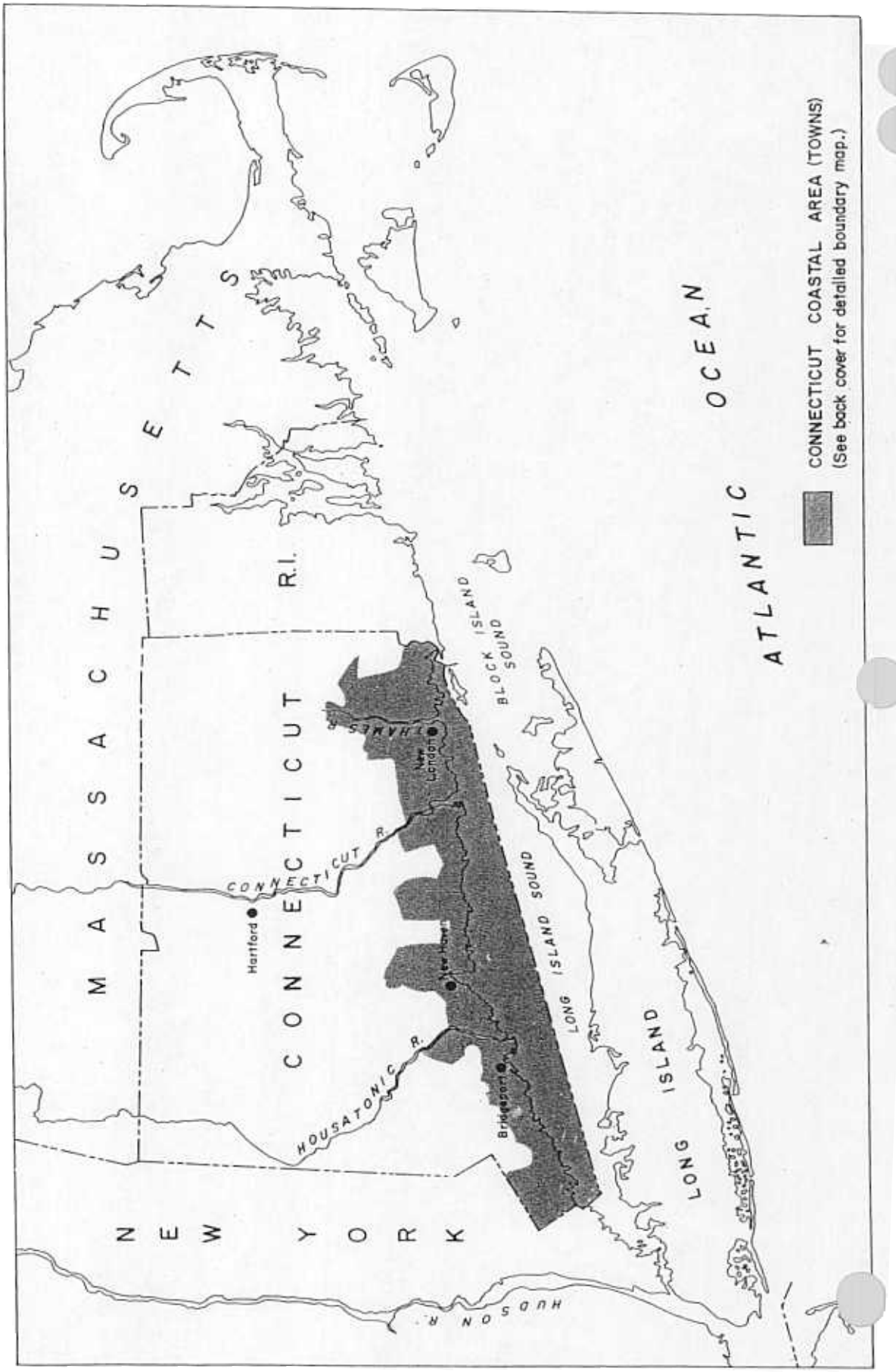
Under the CCMA authority, the Department of Environmental Protection (DEP) will directly administer, supervise, or certify for consistency all state and federal actions subject to the management program. In addition, DEP will oversee and assure compliance of local implementation of CCMA coastal site plan review requirements for all activities subject to local zoning. Both the state and local components of the management program are based on a resource zoning concept with all land and water areas within the coastal boundary defined by statute and depicted on 1:24000 scale resource maps. The policies and standards in the CCMA are organized around these statutorily defined coastal resources and major coastal development activities; they will be implemented by the existing state and local agencies with primary jurisdiction over the land and water uses subject to the management program.

Coastal Boundary

Connecticut has established a two-tiered management boundary. The primary nearshore tier is bounded on the seaward side by the limit of the state's jurisdiction in Long Island Sound. On the landward side, this tier is bounded by a continuous line delineated by a one-thousand foot linear setback measured from the mean high water mark in coastal waters, or a one-thousand foot linear setback measured from the inland boundary of state regulated tidal wetlands, or the continuous interior contour elevation of the one hundred year frequency coastal flood zone, whichever is farthest inland. This line is referred to in the CCMA as the "coastal boundary." Within this first tier, all major uses, activities and resources could have a direct and significant impact on coastal waters and thus will be managed by the Connecticut program using a combination of state and municipal authorities. The primary focus of the program is on this nearshore boundary since it encompasses all coastal resources, the coastal flood hazard zone, and the majority of uses and activities of direct and significant impact.

The secondary, inland tier, includes the area that is landward of the nearshore or coastal boundary and that is bounded by the inland boundary of the thirty-six coastal municipalities. Within this tier, only certain major uses or activities have been identified as potentially having a direct and significant impact on coastal waters. These major uses and activities will be managed by the state and federal governments under existing statutory authorities referenced in the CCMA.

FIGURE Long Island Sound and its Environs.



Connecticut has excluded from its total "coastal area" all lands which are under the sole jurisdiction of the federal government or which are held in trust by the federal government, its officers or agents.

B. CHANGES THE PROGRAM WILL MAKE

The Connecticut Coastal Management Program will make two major changes both of which directly affect the institutional environment as it pertains to the Connecticut coastal area. First, the program will change the criteria upon which public decisions are made regarding the use and management of Connecticut's coastal land and water resources. Second, in order to insure that these new criteria are applied, the program will modify the process and procedures by which these public decisions are made. Both of these changes are specifically enumerated in the Connecticut Coastal Management Act of 1978, as amended, and will be carried out under the authority established by this legislation. These changes to the institutional environment have been designed to achieve the following two major coastal management objectives: 1) better coordination of coastal regulatory, planning, and management authorities at all levels of government: local, state and federal, and 2) thorough consideration of coastal resource capacities and their limitations in all coastal regulatory planning and management programs.

The new standards and criteria for the use and management of Connecticut's coastal resources are embodied in a set of comprehensive coastal policies that are established in the Coastal Management Act. These detailed criteria provide specific guidance for 1) management of coastal land and water resources, 2) management of coastal uses, and 3) management of governmental programs that effect the coastal area.

In addition to making these major improvements to the overall management structure, the Connecticut Coastal Management Program will also make a number of significant but less sweeping improvements to the management system. These improvements include the following:

1) Identification of those geographic areas within the coastal boundary that are of particular concern to the state, and implementation of special management techniques for these areas.

2) Implementation of special planning procedures to work toward the resolution of specific problems in the following four areas:

   - shoreline erosion
   - shorefront access and protection
   - energy facilities
   - dredging and the disposal of dredged materials

3) Definition of uses and resources that are in the national interest and implementation of a specific statutory policy to evaluate such uses and resources.

4) Implementation of measures to improve public awareness of coastal issues and increase public participation in coastal decision making processes.

5) Implementation of measures to simplify coastal regulatory procedures and improve inter-governmental coordination in the management of coastal resources.

6) Implementation of a procedure to insure the consistency of federal actions with Connecticut's Coastal Management Program.

7) Implementation of special measures to improve the data base for Coastal Management and conduct special management studies as necessary

C. WHAT THE PROGRAM WILL NOT DO

The Connecticut Coastal Management Program is not designed to provide immediate and complete solutions to all coastal problems and issues; rather, it is designed to provide the governmental framework and standards by which such solutions may be achieved. Specifically, the Program will not accomplish the following:

1. The Program will not substantially alter the existing governmental regulatory jurisdictions over coastal resources, activities or land uses. Agencies currently having responsibility for management of these resources and activities will continue to exercise their authorities in accordance with the policies, standards and evaluation procedures established by the Connecticut Coastal Management Act (CCMA).

2. The Program will not stop all development in or near coastal resources as defined by the CCMA. Rather, development activities will be evaluated on the basis of their impact on coastal resources with permits and the capability of the affected coastal resources to withstand development related impacts.

3. In general, the Program does not require the regulation of individual single family homes or minor activities incidental to their use unless they are located within 100 feet of tidal wetlands, beaches and dunes or bluffs and escarpments as defined by the CCMA. However, such uses are subject to regulation under the Program if local zoning commissions do not act to specifically exempt them by regulation.

4. The Program will not change the existing patterns of public and private shorefront ownership except that additional public recreational access will be provided through state acquisition of suitable properties when they are available.

5. The Program does not propose direct state administrative control over local zoning activities. However, local zoning activities subject to coastal site plan review requirements of the CCMA will be reviewed by the state for consistency with the policies, procedures and standards of the CCMA with judicial enforcement sought when necessary or warranted to insure compliance.

6. The Program is not specifically designed as a growth management program. Rather, it is a resource management program which includes specific, enforceable statutory policies and standards which will direct development away from fragile coastal resources.

7. The Program does not require that all shorefront uses and activities be water dependent as defined by the CCMA. It does, however, require that water dependent uses be given highest priority in both planning and regulatory decisions and, in cases of direct conflict between proposed uses of substantially similar impacts on coastal resources, preference be given to any water dependent use.

D. AREAS OF CONTROVERSY

There were three principle areas of public controversy surrounding the development of the Connecticut Coastal Management Program. These areas of controversy were 1) the basic management approach to be employed by the program, 2) the inland management boundary to be employed by the program, and 3) the starting date for implementation of the development review and control mechanisms established by the legislation.

Management Approach

The basic management approach to be employed by the coastal management program was one major area of controversy at the numerous public meetings, hearings, and workshops that were held throughout the development phase of the program. While there seemed to be widespread agreement on the need for better management of coastal resources and better coordination between state and municipal programs there was considerable public debate concerning the issue of how this improved management and coordination should be accomplished and by whom. Fear about loss of local initiative in the decision making process to the state and federal government was the concern most frequently raised about implementation of a coastal management program in Connecticut. There was general agreement that a strong and central role for municipalities in the management program was necessary 1) if the program was to adequately address and resolve coastal problems and 2) if the program was to gain acceptance in the state. There was some concern at the local level about state and federal intervention and national interest requirements in the federal Coastal Zone Management Act. A few people suggested that coastal management be implemented using only state funds, thus freeing the state from all possibility of federal intervention.

This major program controversy regarding the basic management approach to be employed in Connecticut has been resolved through full public dialogue on the development of the CCMA over a two year period (over twenty public hearings, one year of legislative study, and over 300 public meetings). The Connecticut Coastal Management Act of 1978 establishes a shared state-local management program with municipalities playing a central role in the management process. Local initiative in the overall management program is maintained with state intervention based on demonstrated inconsistency with statutory policies in the CCMA. This approach was endorsed by all but one of the coastal municipalities commenting on the final version of the CCMA amendments of 1979. Similarly, national interest

uses and resources and the policies pertaining to them were specifically stated in the CCMA to assure consistent, non arbitrary application. State, local and federal roles in the coastal management program were carefully designed to ensure that Connecticut's two major management issues, intergovernmental coordination, and consideration of the coastal resources, were addressed and are likely to be resolved by the management program.

Management Boundary

There was some concern expressed during public hearings, meetings, and workshops about the inland coastal management boundary. Many people felt that Connecticut should employ a two-tiered management boundary with intensive management of all resources and uses in the first tier and management of certain key uses or resources in the second-tier. Such an approach, it was argued, would give Connecticut an added measure of control over uses which might potentially have a minor or indirect impact on coastal resources. Other people felt that the proposed management boundary was too inclusive, as proposed, and should at most include only a 500 foot or 250 foot setback from mean high water or tidal wetlands.

The two-tiered management boundary, as defined and established in the Connecticut Coastal Management Act, is a reasonable boundary for Connecticut's coastal management program. The inland zone includes a sufficiently broad area to provide for effective management of all major uses that are likely to have a direct and significant impact on coastal waters, yet it is not too large for efficient program administration. This zone will be managed by state and federal authorities as described earlier.

The nearshore zone includes all of the specific coastal resources which are required to be included within a state's coastal zone under section 305(b)(1) of the CZMA. In addition, it reasonably incorporates all shorelands strongly affected by or affecting coastal waters based on scientific criteria such as the geographic extent of flood and erosion hazard areas, proximity of the land to coastal waters, and bio-physical factors such as microclimatic variation and salt-spray influence. This zone will be managed by municipal, state and federal agencies under a combination of local and state authorities as described earlier.

Program Implementation Date

The date for the initial implementation of Connecticut's coastal program proved to be a minor area of controversy during public hearings, meetings, and workshops on Connecticut's proposed management legislation and management program. Many people felt that Connecticut could not afford to postpone implementation of the CCMA until after the program has been through the lengthy federal review process and had received formal federal approval. They felt that a long delay in the implementation of the Act could lead to a "land-grab" or an acceleration of development proposals as developers rushed to begin construction of poorly planned projects prior to the implementation of the management program in order to avoid the new requirements of the Act.

The Program began implementation on January 1, 1980 and has operated with state funds since that date.

E. COASTAL ISSUES AND PROBLEMS

Connecticut has identified the following two fundamental coastal management related issues and problems: 1) lack of overall coordination among the existing array of management authorities (municipal, state, and federal) affecting the coastal area and 2) inadequate consideration of adverse impacts on natural resources in the process of reviewing and permitting coastal uses. The Connecticut coastal management program has been specifically tailored to correct these deficiencies.

Under the existing management structure in Connecticut, many agencies at all levels of government influence the conservation and development of the coastal area. Coastal towns, the state, and the federal government have all, over the years, become involved in coastal problems through a variety of activities such as planning and zoning, wetlands regulation, road construction, fish management, flood and erosion control, channel dredging and harbor development. The result is that scores of individual administrative and regulatory agencies make independent decisions affecting the coast: some addressing one specific coastal issue; others applying only to a limited geographic area.

Counting agencies at the state and federal level and relevant commissions and boards in each of Connecticut's thirty-six coastal municipalities, literally hundreds of independent decision making bodies are involved in some manner in the management of the coast. However, there is no notable coordination, uniform guidance or common long range direction among these agencies regarding coastal development and protection. Individual authorities that deal with one geographic area or one-specific issue are often not in a position to adequately address coastal problems that cross town lines or involve a large number of interrelated issues.

A major consequence of this lack of coordination among management authorities has been historical inattention among decision-makers to the fate of coastal resources and their capacity and limits in supporting development activity. For example, nearly 15,000 acres of Connecticut's original tidal wetlands have been destroyed by encroaching development, most of them during the 30 years immediately after World War II.

Connecticut now leases out only ¼ of the shellfish beds that it once did as a result of degraded water quality due to inadequately treated domestic and industrial effluent and other non-point water pollution sources. The closing of shellfish beds has meant the loss of a 3 to 6 million dollar industry annually. Many houses have been constructed in hazardous coastal flood and erosion prone areas, exposing

the buildings to the possibility of considerable damage in the event of severe storms and costing the state of Connecticut millions of dollars in bond funds spent for the protection.

The CAM Program has been designed to address these basic management deficiencies of inadequate coordination and inadequate consideration of coastal resources. Correction of these short comings should, in turn, greatly facilitate the solution of many specific problems and issues which have been perpetuated or caused by these major management problems.

PART I

CONNECTICUT'S COASTAL MANAGEMENT PROGRAM

A. Introduction

Long Island Sound has been frequently characterized and described as an "Urban Sea." The image raised by this description is appropriate for Connecticut's coastal area which has historically been the center of intense industrial, commercial and residential activity. While residential usage of the Connecticut shoreline in other than the vicinity of the ports of Stamford, Norwalk, Bridgeport, New Haven, New London and Norwich began as seasonal dwellings, changes in land use patterns following World War II and the corresponding residential and corporate exodus from the New York metropolitan area have changed the residential mix from seasonal to permanent. Vacant shorefront land and open space in Connecticut's heavily developed coastal area is at a premium. Recent studies of population growth and corresponding industrial, commercial and residential activity along Connecticut's coast completed under contract to the Coastal Area Management (CAM) Program indicate that this trend will continue for the forseeable future.

Because of historical growth patterns along the coast, a significant number of traditional public safety and welfare oriented police power regulatory programs have been implemented at both the state and municipal level for coastal lands. For example, planning and zoning began in Connecticut in the early 1930's and the state's regulatory program for coastal structures was underway by 1940. Today all of Connecticut's coastal municipalities exercise full planning and zoning authorities with most communities retaining professional support staff. The notable exception is in the lower Connecticut River estuary which remains largely undeveloped. Municipalities in this region generally rely on the capabilities of the Connecticut River Estuary Regional Planning Agency which also provides staff support to the Connecticut River Gateway Commission, established as part of the lower Connecticut River Conservation Zone.

While land use regulatory programs at the state and municipal level,complimented by a variety of federal coastal regulatory programs, have provided complete regulatory coverage of development activities in the coastal area, it was not until passage of Connecticut's tidal wetlands act in 1969 and creation of the Department of Environmental Protection in 1971 that the management of coastal resources became part of the statutory mandate. Using the initiative established during the early 1970's by the Committee on Coastal Management headed by State Senator George Gunther and the U.S. Senator Abraham Ribicoff sponsored New England River Basins Commission's Long Island Sound Regional Study, the CAM Program of the Department of Environmental Protection has developed a comprehensive coastal management program for statewide implementation at both the state and municipal level of government.

The recommended program utilizes the significant array of existing state and municipal regulatory programs as its foundation and has two central purposes; first, to assure that adequate consideration of the impacts of development on coastal resources is given by both the state and coastal municipalities and, second, to increase the level of intergovernmental coordination through planning and regulatory programs affecting the coast by providing common, statewide policies to guide federal, state and municipal agencies. To achieve these purposes, Connecticut is not proposing additional regulatory programs nor are existing regulatory jurisdictions being significantly altered. Rather coastal management will be implemented through a coastal site plan review as part of municipal planning and zoning programs and through statewide coastal policies to guide federal, state and municipal planning and investment programs. Coastal municipalities are also encouraged to develop municipal coastal programs by revising existing town plans of development for their coastal areas. Existing state regulatory programs will be required to be consistent with the same coastal resource definitions, policies and impact criteria proposed for the municipal coastal site plan review,and coastal municipalities are given a formal role in state regulatory actions.

Because of the highly developed nature of Connecticut's coast and the resultant loss and degradation of critical coastal resources, the focus of the management program is first, the resources at the land-water interface significantly affecting or affected by natural coastal processes and second, adjacent land and water resources. This focus is critical if Connecticut is to protect, restore and enhance remaining coastal resources. For example, CAM surveys indicate that, except for urbanized port areas, over 50% of the remaining undeveloped shorefront property is classified as tidal wetland. In addition, much of the remainder is in flood or erosion hazard areas. To assure a concentrated effort in protecting those endangered resource areas, critical resources and the natural processes that they support have been identified as in the "national interest." Further, tidal wetlands and shellfish concentration areas have been nominated as "areas of particular concern" along with the activities that most significantly affect them, dredging and spoil disposal. To assist in better regulatory decisions at all levels of government, coastal resources and adverse impacts have been defined by statute in Connecticut's Coastal Management Act and a comprehensive set of coastal resource maps have been prepared for the entire coastal area. Funding through the federal Coastal Zone Management Act will be used to provide a continuing state overview through the Department of Environmental Protection's CAM Program and to provide needed technical and financial support to state and municipal coastal regulatory programs.

B. Description of Connecticut's Coastal Environment

Natural Environment

The coastal seaboard and waters of the Long Island Sound estuary and their resource systems form an integrated coastal ecosystem that is unique and fragile. Long Island Sound occupies a basin, 113 miles long and 21 miles wide, located between Long Island and the Connecticut-Westchester County, New York region. The Connecticut coast bordering the Sound is 98 miles long, but total shoreline frontage, including tidal rivers and embayments, is 583 miles.

Forty percent of Connecticut's population lives in the 36 coastal towns; however, seventy-five percent of that population, or nearly 910,000 residents, lives in the 17 southwestern towns (west of Guilford). This population pattern reflects the proximity of these towns to New York city and its markets. This pattern of development and the dense urban areas surrounding many harbors have significantly affected the quality of nearshore water and its ability to support both recreational interests and healthy marine resources. Although most of the Sound's offshore waters are of acceptable quality, the westernmost waters show deteriorated characteristics. These characteristics are a result of the cultural effluents and urban runoff from the western Long Island, Westchester County, and southwestern Connecticut urban environments. The most notable cause is the East River, which is joined to New York Harbor and runs through sections of New York city.

Connecticut's coastal seaboard, which is the coastal part of the New England Uplands, is a glaciated zone underlain by crystalline bedrock which slopes southward at 50 feet per mile. In contrast the Connecticut Lowland Valley at New Haven is comprised of shales, sandstones, and limited exposures of trap rock. Elevations vary from sea level to a maximum of 400-500 feet inland, but shoreline relief is maximal where the rocky uplands intersect with the coast. Low, rolling hills and occasional rocky lands interposed by level to undulatory sand and gravel plains characterize the coastal landscape.

Biophysical Zone V, depicted in Figure 2 , embodies two ecoregions that are virtually coextensive to the seaboard. The moderating effect of seabreezes, penetrating 5-10 miles inland, produces a cooling trend in spring and summer and a warming one in fall and winter. The mean annual temperature is 51 degrees F, and precipitation averages 44-48 inches a year. The coast experiences one of the longest frost free seasons in the state, 180 days in duration. The maritime climate, and the recurrent pattern of landforms and glacial inceptsolic soils, create a vegetation zone called the coastal hardwoods zone.

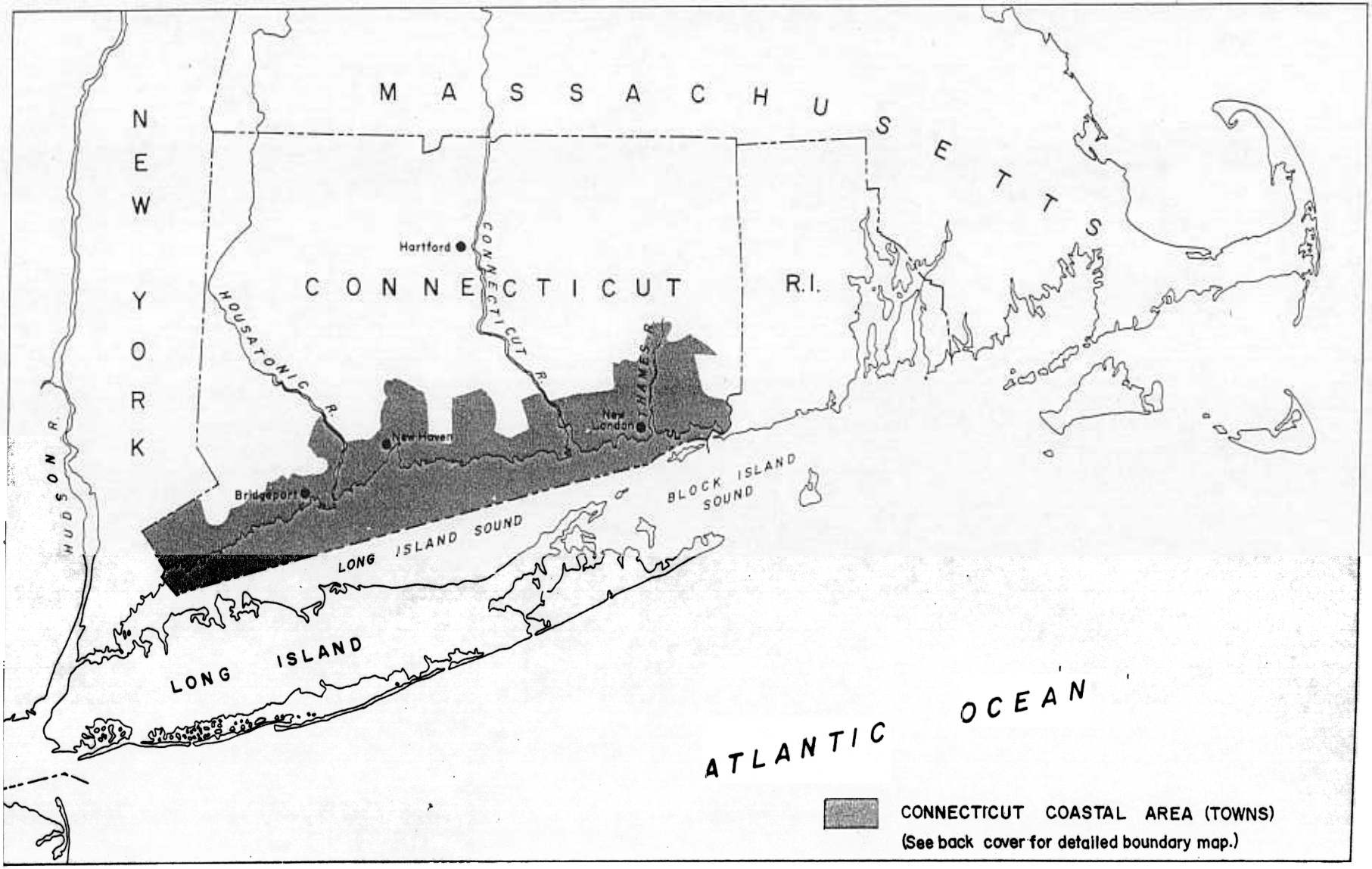


FIGURE I. Long Island Sound and its Environs

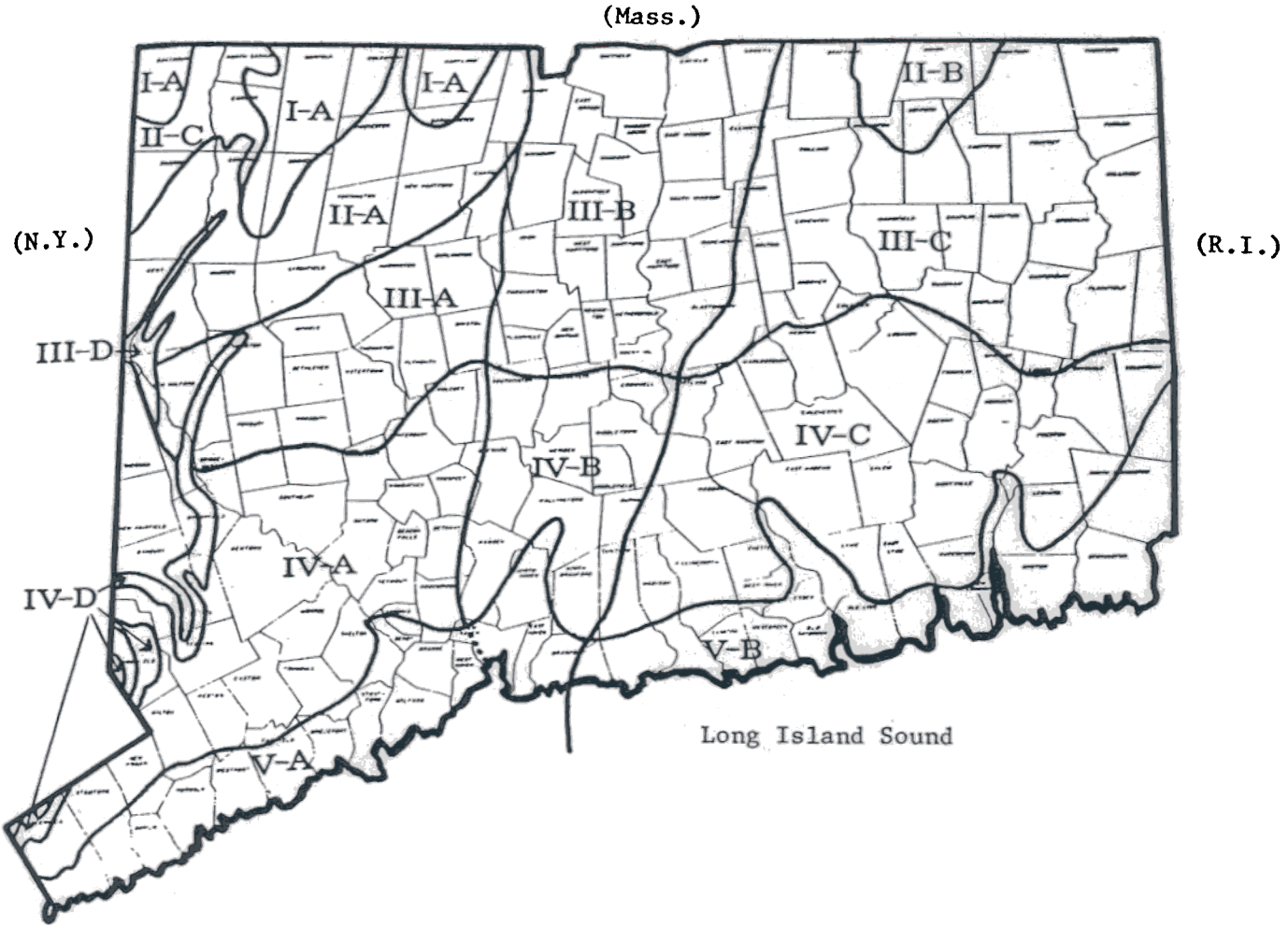


Fig. 2. Ecoregions of Connecticut

I. Northwest Highlands-Northern Hardwoods zone
   A. Northwest Highlands ecoregion

II. Northern Uplands-Transitional Hardwoods zone
   A. Northwest Uplands ecoregion
   B. Northeast Uplands ecoregion
   C. Northern Marble Valley

III. Northern Hills-Central Hardwoods-White Pine zone
   A. Northwest Hills ecoregion
   B. North-Central Lowlands ecoregion
   C. Northeast Hills ecoregion
   D. Central Marble Valley

IV. Southern Hills-Central Hardwoods zone
   A. Southwest Hills ecoregion
   B. South-Central Lowlands ecoregion
   C. Southeast Hills ecoregion
   D. Southern Marble Valley

V. Coastal Hardwoods zone
   A. Western Coastal ecoregion
   B. Eastern Coastal ecoregion

The Connecticut shoreline is subject to the forces of wave action, and sea level rise presently averaging approximately one to one and one-half feet per century. These forces act in concert on Connecticut's shore (85% of which is composed of potentially erodible materials) and the result is a retreating and submerging shoreline. This shoreline has an irregular geometry with many headlands, embayments, and islands. The following composition statistics illustrate the diversity of resources along the shore interface: sandy beach - 14.2%; glacial drift - 11.3% artificial fill - 8.2%; bedrock - 7.2%; and combined tidal wetland and undifferentiated tidal river shores - 59.1%. The variety of coastal landforms, and the variable marine processes affecting them, preclude a simplistic management treatment of the coast. In addition, seven complex districts, each representing a recurrent pattern of coastal landforms that are mixed or uniform in nature, can be discerned along the coast. The following district composition statistics in Table 1 together with the descriptions below show the characteristics of each district (see Figure 3).

TABLE 1

Shoreline Statistics

DISTRICT	SANDY BEACH	GLACIAL DRIFT	BEDROCK	ARTIFICIAL FILL	TIDAL WETLANDS (Acres)	TOTAL MILES	LINEAR MILES
A	25.7%	28.8%	19.3%	19.1%	7.1%(911)	79.9	15
B	37.0%	20.1%	0.7%	28.4%	13.7%(3424)	59.8	20
C	50.4%	15.2%	4.0%	30.4%	0.8%(400)	12.5	8
D	13.2%	10.2%	56.3%	9.0%	11.1%(2326)	33.2	12
E	54.9%	18.8%	1.7%	10.1%	14.5%(5290)	34.6	22
F	27.9%	36.0%	12.7%	12.9%	10.2%(827)	39.4	13
G	16.0%	40.8%	16.6%	9.9%	16.6%(865)	18.2	8

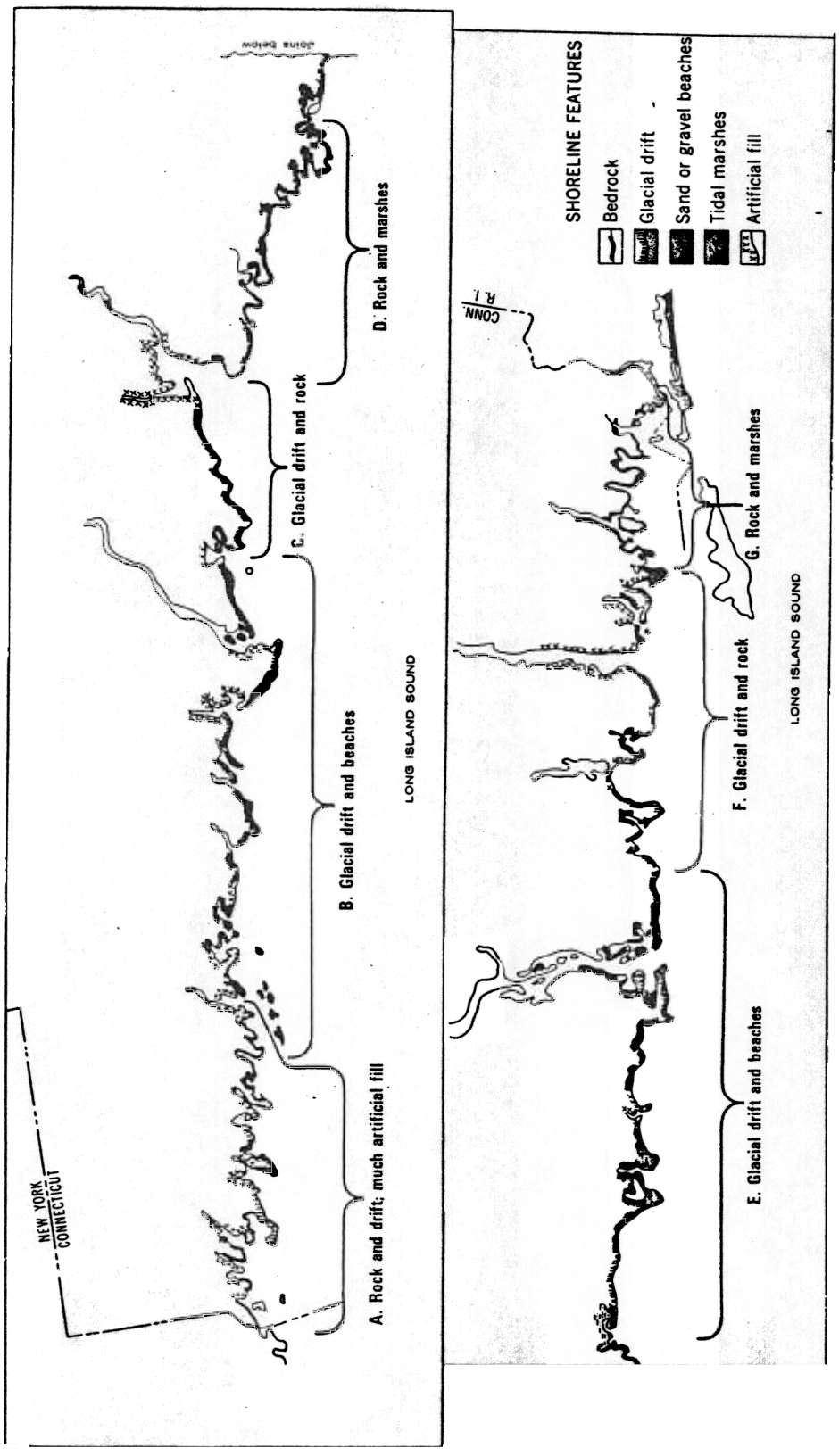
Source: CAM Planning Report No. 29, Shoreline Erosion Analysis and Recommended Planning Process

(1) Mixed Districts (A, F, G) are embayed and have an irregular geometry controlled by the preponderance and distribution of the least erodible materials: bedrock and till. Surficial resources are mixed, but central to district F are the three tombolos: Black Point Spit, Bushy Point Beach, and Groton Long Point.

(2) Outwash Districts (B,E). Salient features in these wave-straightened, linear to arcuate districts, are the extensive stretches of sandy (predominantly fringing) beaches fronting two broad zones of sandy outwash.

FIGURE 3

DISTRIBUTION OF SHORELINE FEATURES AND DISTRICTS



(3) Mixed Drift District (C) has a scalloped shoreline controlled by recurrent but limited outcrops of bedrock. Conspicuous in this district of mixed till and outwash are the largest sea cliffs in Connecticut ranging upwards to 40 feet.

(4) Bedrock District (D). Rocky headlands that have been stripped of their veneer of drift and residuum by wave erosion essentially account for this irregular district of rocky headlands shorefront, limited pocket beaches, and tidal wetlands. The many small rocky islands and reefs in the Thimble Island system are a unique characteristic of this district.

(Note: The preponderance of artificial fill in districts A through C reflect the intense urbanization of southwestern Connecticut.)

The Long Island Sound basin is an asymetric, preglacial valley situated between the bedrock of southern New England and the coastal plain sediments of Long Island. The estuary is unusual in that two independent and restricted passages to the ocean exist at opposite ends of the Sound. There are multiple passages at the eastern end which link the Sound with Block Island Sound. The East River, a tidal strait connected with New York Harbor is the passage at the western end of the Sound. The Mattituck sill and the Hempstead sill are submarine ridges with minimum elevations of 10 and 20 meters respectively, which delimit the eastern and western boundaries of the main central basin (averaging 26 meters) and its water mass. West of the Hempstead sill to the Throgs Neck lies the westernmost basin. Its waters are a mixing zone with an estuarine circulation that shunts lower density East River water into the western basin. The chain of morainal islands between Orient Point, Long Island and southwestern Rhode Island demarcate the eastern boundary of the Sound and the irregular eastern basin. Its waters are connected with the Block Island Sound. These cold, saline waters, dominated by an estuarine circulation pattern coupled to the ocean tides entering the Race, influence the overall water and salt budget of the central basin. Volume exchange rates at the Race are 60 times that of the western passage.

Tides and currents are dominated by semi-diurnal lunar tides. Basin geometry amplifies the ocean tides such that they increase progressively from east (2.5') to west (7.8'). The scouring effect of the turbulent tidal exchange at the Race has sculptured the irregular bathymetry in the eastern basin, and caused sediments predominantly of medium sands to collect in sheltered regions, and coarse sands, gravel, and cobble to settle in the main channels. Concurrent with the net westward motion of the bottom waters in the eastern basin is the conveyance of medium and fine sands to the Mattituck sill. The sediments in the central basin and western basin, regions of low tidal currents, are characterized by a non-uniform veneer of marine silts and fine sands over deposits of glacial sands and gravels. Extraction of these valuable glacial sediments in the main is economically unfeasible and not without severe environmental impacts.

Coastal waters are defined by the Connecticut Coastal Management Act as those waters containing a measurable quantity of seawater, (waters with a salinity at or above 0.5 parts per thousand). Freshwater drainage from the five major drainage basins fronting on the Sound and its estuaries contain countless small streams and creeks. Principal to the chemical properties of the Sound are the three tidal rivers: the Housatonic, the Connecticut, and the Thames. Secondary are the Saugutuck and Quinnipiac Rivers. In fact, the Connecticut River, discharging into the eastern basin, accounts for more than seventy percent of the Sound-wide runoff. The low salinity plumes at the mouths of the Housatonic and Connecticut Rivers are frequently visible from the air. The net transport of low salinity surface waters eastward, and dense, saline bottom waters westward in the eastern basin, has the propensity to conserve essential nutrients in the central basin, particularly when surface waters are depleted of nutrients by phytoplankton. Reputedly, nitrogen limits phytoplankton blooms. Average salinities in the western and central basins are 26 parts per thousand and 27-28 parts per thousand respectively. Waters in the central basin are highly mixed, except during prolonged periods of calm that promote vertical stratification. Residence time of water in the eastern basin is on the order of one week, but the renewal rate increases westward to the point that the westernmost waters have limited capacities to assimilate cultural pollutants.

The enriched estuarine waters of Long Island Sound support a variety of marine finfish and shellfish. More than 100 species of fish inhabit Connecticut's coastal waters, although significant commercial and recreational species number fewer than one dozen. The otter trawl commercial fishing industry harvests blackback and yellowtail flounders, porgy, butterfish, and to a lesser extent mackerel and herring. The anadromous American Shad supports the most valuable commercial industry in the lower reaches of the Connecticut River. Principal commercial shellfish species are hardclams, scallops, and mussels, but especially important are the oyster and American lobster. The western region of the Sound supports the largest populations of both oyster and lobster. Bluefish is the most important recreational fish, followed by striped bass, flounder, blackfish, porgy, mackerel, and weakfish.

The Sound functions as an important resting and feeding area for migratory waterfowl and shorebirds in the Atlantic Flyway. Numerous bay-marsh complexes function as critical waterfowl staging areas. The intertidal flats at New Haven Harbor and the Great Meadows also concentrate large numbers of shorebirds. Large rafts of waterfowl frequent the Sound in winter, particularly Black Duck, Greater Scaup, Canada Geese, Red-breasted Mergansers, Scoters, and Goldeneye. A few onshore beaches and offshore islands support small localized breeding colonies of terns. These habitats are more important than ever because many suitable habitats have been destroyed along the entire eastern seaboard. Rare and declining coastal avifauna include American bittern, Common Egret, Little Blue Heron, Yellow-Crowned Night Heron, Black Rail, Piping Plover, Willet, and the endangered Osprey. The recreational value of coastal wildlife, save the hunting aspect, is predominantly an aesthetic one.

COASTAL RESOURCES

The area within the coastal boundary as defined by the Connecticut Coastal Management Act and each of its component resources form an integrated but fragile ecosystem. The coastal management boundary encompasses (1) all coastal waters, (2) all nearshore lands with the potential to significantly impact coastal waters, (3) lands prone to coastal flooding, and (4) unique resources found nowhere else in the state. In principle, these are composite resources, each with their own distinct abilities to assimilate impacts or their own unique intrinsic properties with respect to the welfare of the larger coastal ecosystem. A detailed treatise of the 14 coastal resources defined by the Act is beyond the scope of this document but the cursory treatment below will suffice to delimit their physical attributes and to function as a foundation for discussion of the issues. Definitions of each resource are contained in the Connecticut Coastal Management Act and accompany the coastal policies (see Part IV).

Coastal Waters

Long Island Sound is composed of discrete water masses and substrates including countless tidal estuarine streams and creeks which collectively form an integrated, continuous, and composite water system. Each component differs in chemical and physical properties and overall significance to the coastal water ecosystem or specific biota. Most notably they contain different capacities to assimilate anthropogenic impacts and cultural pollutants. Offshore waters, nearshore waters, and estuarine embayments, are the principal resource elements in this system. The texture and pattern of benthonic sediments in addition to offshore topography(below the 10 meter bathymetric contour), in the main, are not influenced by wind-waves occurring during either normal conditions or storms. The nearshore zone is distinguished by coarse sediments, predominantly coarse to fine sands, and a well-mixed water column. Turbulence at the shore and upper shoreface creates typically unstable substrate conditions which preclude all but the most active marine organisms. This zone varies considerably in width from 0.5 miles contiguous to rocky shorelines, to a maximum of 4 miles where the broad, sandy outwash plains intersect with the shore. The average southward slope is 1:200'. The offshore, however, slopes more gently southward, and its waters are moderately stratified to well-mixed by tidal currents and waves. The role of the turbulent tidal exchange at the race is an important one for both the coarse nature of the sediments, and the rapid flushing rate in the eastern basin.

Estuarine embayments are small, confined waters encircled by land that are semi-enclosed with a restricted tidal passage to the Sound. Fringed by vital tidal wetlands and flats, embayments represent a highly productive resource. Basin geometry varies, and depths average 6 feet but range to over 20 feet in the principal tidal rivers. Turbidity is generally higher than in nearshore waters and salinity ranges from 0.5 to 28 parts per thousand. Sediments are predominantly fine-textured. An important characteristic of these sheltered environments is the submerged flats of eelgrass (*Zostera marina*)which enhance pro-

ductivity, transfer essential nutrients from the sediments to the water column, mitigate the impact of wave energy on the shoreline, trap and stabilize sediments, and are an essential substrate to the life cycle of the scallop for brief periods of time. It is, therefore, not unusual that the preponderance of scallops coincides with the distribution of eelgrass which is essentially restricted to the easternmost embayments, and to the protected Fishers Island Sound. Embayments are particularly susceptible, more so than nearshore waters, to pollutants because of their small water volume, fine-textured sediments, and limited circulation.

Intertidal Resources

Tidal Wetlands -- Tidal wetlands have a significant rôle in the estuarine environment. Notably, these grassy coastal floodplains are highly productive. Salt and brackish marshes are the two primary tidal wetland systems that occur in the coastal area. In southern New England, tidal marsh soils are predominantly organic. However, suspended riverine silts are essential to marsh maintenance and growth.

There are four vegetation zones in the salt marsh. These zones run in progression from the low to high marsh: (1) the lower slope marsh comprised of a belt of salt marsh cordgrass, (Spartina alterniflora) (2) the upper slope dominated by either salt marsh hay (Spartina patens) or Spike grass (Distichlis spicata) or an intricate mosaic of both, (3) the lower border of the rush, Black Grass (Juncus gerardi), and (4) upper border transition between the marsh and upland which is inundated by extreme annual storms and supports a grassy belt of switchgrass (Panicum virgatum). Historically, impacts, such as dredging and filling, have irreversibly destroyed up to 50% of Connecticut's marshes. In addition, certain activities, particularly the construction of tidal gates that significantly alter hydrology, flood frequency and salinity of the upstream estuary, have culminated in the conversion of acres of salt marsh to brackish reed (Phragmites communis) marshes. Only a small percentage of Connecticut's salt marshes are in a natural state. Most contain a complex network of mosquito ditches that have altered drainage and vegetation patterns.

Progressing upstream, as salinities diminish, salt marsh species are replaced by a plethora of brackish water taxa, predominantly the brackish water reed and the brackish water cattail (Typha angustifolia). Lesser in importance are the bulrushes (Scirpus americana, Scirpus olneyi, S. validus and S. fluviatilis).

Intertidal Flats -- Intertidal flats are level to gently seaward sloping areas, restricted to protected, low wave energy embayments, that are subjected to alternating tidal inundation and dessication incidental to exposure. Substrate characteristics range from mud to sand in the more exposed cases. These flats generally average less than 1,000-2,000 feet in width. They function as temporary nutrient traps, act as limited sinks for pollutants, are specialized habitats for certain marine invertebrates, and are particularly important feeding and resting areas for migratory shorebirds.

Coastal Land Resources

Beach Systems (Beaches and Dunes) -- The beach composed of unconsolidated sands and gravels, in addition to landforms of wind deposited sands, constitutes an integrated but complex resource system. Along Connecticut's shore these systems develop under conditions of low wave energy and are therefore narrow features, generally less than 200 feet in width. The generic classes of beach systems are interspersed between a multitude of headland and rocky shoreline which preclude lateral continuity of the littoral transport system creating "pocket" beaches, the most common type of beach system in Connecticut. Such beaches are characterized by their short, narrow topography. Fringing beaches fronting glacial drift uplands, and barrier beaches surrounded by water are the two classes of beach systems on the coast although their coastwide distribution is limited. Fringing beaches generally lack aeolian landforms and border escarpments or seacliffs (bluffs). Aeolian landforms, however, are conspicuous on Connecticut's few barrier beach systems.

Generally, in Connecticut, aeolian dunes are rare landforms. A single dune ridge, averaging less than 1-2 meters in relief, and level to undulatory sand flats leeward, typify the nature of aeolian systems at the coast. Sufficient breadth and elevation of these deposits to support a freshwater table and marshes do not exist. Ridges and flats support a one-layered coastal grassland dominated by Beach Grass (Ammophila breviligulata) and Poison Ivy (Rhus radicans), the two most important sand dune and ridge stabilizers. Limited in occurrence are dunes which provide sufficient protection from the rigors of salt spray to permit development of a coastal scrub woodland of Wild Black Cherry (Prunus serotina) and Shadbush (Amelanchier species).

Beach systems are valuable coastal resources in Connecticut. However, because of the encroachment of development, notwithstanding the above noted natural limitations, most are only of local importance from either a natural or a recreational perspective. Few beaches are devoid of structural devices built to mitigate the impacts of erosion, particularly groins and seawalls. Aeolian landforms and their biotic communities have all but been obliterated by low to moderate residential development and concurrent pedestrian traffic. Notable exceptions are Griswold Point, Bushy Point Beach, Black Point Spit, Milford Point and Long Beach, representing virtually the only significant and unaltered beach systems in the state. It should be noted that because of the fetch limits on wave energy imposed by physiography of Long Island Sound, Connecticut has no true "barrier beaches" or "barrier islands."

Coastal Bluffs and Escarpments -- Bluffs and escarpments are steep, seaward sloping coastal cliffs etched into glacial drift headlands. Nearshore bathymetry is also steep, permitting the maximum expenditure of wave energy on these shorelines. These shorelines have dynamic slopes that adjust to the rate of erosion of the lower slope as mediated by waves, substrate composition, drainage and degree of plant cover. Seacliffs range from small marine escarpments with a relief of 0.5 to 1 meter upwards to a maximum of 40 feet fronting the most prominent headlands. Concurrent with slope failure and wave action is the formation of narrow headland beaches of cobble mixed with boulder. Like rocky shorefronts, these landforms are less than 100 feet in width. Today, most bluffs and escarpments have been modified by seawalls and riprap.

Because of these attempts to stabilize bluffs and escarpments, an invaluable sediment source to the contiguous beaches is lost, causing accelerated downdrift erosion. Inevitably, the stabilization influence of structures is a temporary one, and if fetch limitations were not imposed on wave energy by the physiography of the Sound, many of these structures would have been undermined and destroyed long ago. The few remaining natural bluffs support a diverse variety of herbaceous vegetation and scattered shrubs. This vegetation provides natural stability but does not interfere with the function of these sea cliffs to nourish beaches with sand.

Coastal Islands -- The former seaward extent of Connecticut's coast is marked by the distribution of coastal islands, representing upland hills with sufficient elevation to preclude inundation which have not yet succumbed to wave erosion. These islands are chiefly composed of bedrock, mantled with a thin veneer of droughty soils, and have rocky shorelines (e.g., the Thimble Islands). In addition, abutting the shore are numerous islands of till. The Norwalk Islands and the two islands south of Guilford, Falkners and Goose, which are reputedly morainal in origin, are less common. The shorelines on both till and morainal islands are replete with a variety of resource types, including boulder shorefront, seacliffs, salt marshes on sheltered shores, and stony or cobble beaches. Sandy beaches, dune ridges and sand flats are rare elements. Less than 20% of these islands exceed 10 acres with the average areal extent of 7 acres.

Physical parameters such as salt spray, habitat diversity and acreage affect the structure and floristic composition of island vegetation. Small islands often support scant vegetation consisting of herbs and salt pruned shrubs. Dry coastal woodlands of oak and, locally, pitch pine (Pinus rigida) occur on the larger islands.

Certain islands support wildlife not found on the mainland coast because of the limited development commonplace to islands. Two islands merit mention. The first, Chimon Island in the Norwalk group, contains one of the few Northern heron rookeries of Black Crowned Night Herons, Snowy Egrets, and state rare taxa, the Little Blue Heron, Cattle Egrets, and Great Egret. Although Chimon Island is the largest heron rookery in Connecticut, it represents an extreme Northern habitat for the rare species (which are more common to the South) that nest there. The second, and of regional and perhaps national importance, is the Roseate tern breeding population on Falkner's Island which is owned by the U.S. Coast Guard. Not only does the island contain the largest Connecticut Common and Roseate tern colony, but it also contains one of the largest of the few remaining Roseate tern colonies on the eastern seaboard. In 1978, 160-180 pairs nested on this island. Historically, this island served as a refuge for terns during periods of disturbances at the main regional colonies such as Great Gull Island, New York. In fact, at one time, Falkners and the nearby island, Goose, supported 1,600 pairs of Roseate Terns.

Rocky Shorefront -- This category entails both intertidal and supralittoral shorefront of gently to steep sloping rockland, and dense aggregations of boulder armoring the shore. Rocky shorefront constitutes a relatively erosion stable shoreline, and is an insignificant sediment source to downdrift landforms like beaches. Beyond the reach of the tides, the rock is exposed, devoid of vegetation, and rarely exceeds 100-200 feet in width. Intertidal rocky shorefront functions to provide a stable substrate for a plethora of specialized marine plant and animal communities. Barnacles, mussels, snails and rockweed are prevalent here.

Shorelands -- Shorelands together with Rocky Shorefronts, as defined by the Connecticut Coastal Management Act, comprise the most dominant features of Connecticut shoreline. Shorelands are defined as those areas with elevations that exceed the still water flood level of the 100 year coastal event, thereby precluding coastal flooding. Activities initiated on shorelands may not significantly impact coastal waters. These lands are replete with a variety of upland landforms including drumlins, rocky lands, glacially rounded till hills and plains, each with their own conspicuous and characteristic sequences of soils. Coastal vegetation in both the shorelands and coastal hazard areas are differentiated by the preponderance of oaks, particularly scarlet, black and white, and the absence of northern species. Rich silty loams and lower concave slopes support a rich, fast growing forest dominated by oaks.

Coastal Hazard Area -- These nearshore lands as defined by the Connecticut Coastal Management Act are subject to coastal flooding and concurrent erosion incidental to normal or extreme coastal events (upward to the 100 year event as identified by FEMA-FIA mapping). This zone embodies beach systems, rocky shorefront, bluffs and escarpments, tidal wetlands, occasionally freshwater wetlands, and uplands of low elevation. The biotic communities here are markedly similar to those inhabitating shorelands. However, plant communities contiguous to the shore can be markedly pruned by the dessicating action of salt spray.

Freshwater Wetlands and Watercourses -- The definition of this compound category conforms to the Wetlands and Watercourses definition in the Connecticut General Statutes which defines wetlands on the basis of certain soils that are poorly drained, very poorly drained, alluvial, or flood plain types as designated by the soil conservation service. At least 20 different wetland soils exist in the coastal area reflecting these categories, not all of which meet the statutory definition for tidal wetlands. Watercourses include rivers, streams, brooks, waterways, lakes, and ponds. Flood mitigation, recharge, filtration of pollutants and important wildlife habitat are included in the functional role of these indispensible and fragile resources.

Wetland vegetation on both mineral and organic soils is primarily a swamp type, dominated by Red Maple. There are, however, local occurrences of Atlantic White Cedar. Floodplains and alluvial deposits are scarce.

Urban Shorefront -- These nearshore lands are defined by the Connecticut Coastal Management Act as those areas that have been highly engineered and developed so that the relationship of the natural landscape and systems to contiguous resources is functionally impaired and irreversibly altered. In principle, these lands are major coastal economic centers. Their land use ranges from light to heavy industry,

commercial, institutional to high density residential uses. The former natural structure and function of the soils have been substantially altered by grading and capping with artificial fill and impervious surfaces. The shoreline is generally rectilinear with a host of seawalls, wharves and docks to accommodate shipping activities. As a result of urban runoff, groundwater contamination, oil spills, discharges from municipal treatment plants, and certain industrial uses, water quality in these harbor areas may be significantly degraded or altered.

PART II. BOUNDARY

Inland and Seaward Boundaries

The Connecticut Coastal Management Act (Appendix B) establishes a two-tiered management boundary for Connecticut. As defined in the Act (C.G.S. Sec. 22a-94 as amended by P.A. 79-535), the nearshore tier is bounded on the seaward side by the limit of the state's jurisdiction in Long Island Sound. On the landward side, this tier is bounded by a continuous line delineated by a one-thousand foot linear setback measured from the mean high water mark in coastal waters, or a one-thousand foot linear setback measured from the inland boundary of state regulated tidal wetlands, or the continuous interior contour elevation of the one hundred year frequency coastal flood zone, whichever is farthest inland. This line is referred to in the CCMA as the "coastal boundary." Within this first tier, all major uses, activities and resources could have a direct and significant impact on coastal waters and thus will be managed by the Connecticut program using a combination of local and state authorities (see Part V, "Legal Authorities").

The primary focus of the Connecticut coastal program is on this nearshore boundary since it encompasses all coastal resources, the coastal flood hazard zone, and uses and activities with direct and significant impact on coastal waters. This first tier includes all of the following areas that are specifically required to be included in a state's coastal management program pursuant to federal regulations (15CFR Sec. 923.31): (1) Those areas the management of which is necessary to control uses which have a direct and significant impact on coastal waters, (2) areas of particular concern, (3) waters containing a significant quantity of seawater, (4) salt marshes and wetlands, (5) beaches, (6) intertidal areas, areas subject to coastal storm surge, and areas containing vegetation that is salt tolerant and survives because of conditions associated with proximity to coastal waters, and (7) islands.

The secondary, inland tier, includes the area that is landward of the nearshore or coastal boundary and that is bounded by the inland boundary of the following thirty-six coastal municipalities: Greenwich, Stamford, Darien, Norwalk, Westport, Fairfield, Bridgeport, Stratford, Shelton, Milford, Orange, West Haven, New Haven, Hamden, North Haven, East Haven, Branford, Guilford, Madison, Clinton, Westbrook, Deep River, Chester, Essex, Old Saybrook Lyme, Old Lyme, East Lyme, Waterford, New London, Montville, Norwich, Preston, Ledyard, Groton and Stonington. Within this second tier, only certain major uses or activities have a "potential" to impact coastal waters. These major uses and activities will be managed by the state and federal governments under existing authorities (see Part V , "Legal Authorities"). Together, the two management tiers make up what is referred to in the CCMA as the total "coastal area" of Connecticut. A map of Connecticut's two-tiered coastal boundary is presented in the back cover of this document.

Connecticut's coastal boundary was selected from a number of boundary options that were considered during the development of the coastal management program. Planning Report No. 20, published in May, 1977 outlined these boundary

options and assessed the relative advantages and disadvantages of each major option. The inland boundary options considered were classified as one or a combination of the following basic approaches:

1) Fixed Linear Distance Boundaries
2) Political Boundaries
3) Natural Features Boundaries
4) Transportation Corridor Boundaries
5) Aesthetic Distance Boundaries
6) Long Island Sound Study Recommended Boundary
7) Multiple Zone Boundaries

The chosen option combines elements of a natural features boundary (based on the 100 year frequency flood elevation), fixed linear distance boundary (based on a 1,000 foot linear setback), and a political boundary (based on the jurisdiction of the thirty-six coastal towns). In addition it is a close variation of the boundary recommended by the Long Island Sound Study.*

As defined, the selected two-tiered management boundary is reasonable for Connecticut's shared state-local program. It includes a sufficiently broad area to provide for effective management of all significant coastal resources and all uses subject to management, yet it is not too large for efficient program administration by either level of government. The area within the coastal boundary includes all coastal resources, coastal hazard areas, and uses which have a direct and significant impact on coastal waters. In addition, the coastal boundary reasonably incorporates all shorelands strongly affected by or affecting coastal waters based on scientific criteria such as the geographic extent of flood and erosion hazard areas, proximity of the land to coastal waters, and bio-physical factors such as microclimatic variation and salt-spray influence.

Excluded Lands

In accordance with the Coastal Zone Management Act of 1972, Connecticut has excluded from its coastal boundary all land the use of which is by law subject solely to the discretion of or which is held in trust by the federal government, its officers or agents. A list of the major such excluded federal land is contained in Table A-1 of Appendix A. This list was compiled from information provided by federal agencies in response to an extensive CAM survey.

Interstate Boundaries

Connecticut has consulted with and coordinated the development of its coastal management program with the adjoining states of Rhode Island and New York. This consultation and coordination has occurred through direct program contact with the adjoining states as appropriate, and through the regular forum provided by the New England River Basins Commission's New York-New England Coastal Zone Task Force. While Connecticut's coastal boundary is not precisely coterminous with either Rhode Island's adopted boundary or

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* The Long Island Sound Study, completed in 1975, was a federal level B water resources planning study prepared by the New England River Basins Commission. Among numerous other recommendations, it called for Connecticut to establish a coastal management program with a management boundary which would be defined as the area from the state's territorial limits in Long Island Sound to 500 feet inland of mean high water or to the ten foot elevation whichever was larger.

New York's proposed boundary, the boundaries are reasonably close and should not present any particular management difficulties or incompatibilities that cannot be handled through the existing interstate and regional coordinating mechanisms.

Note: See Figure 1 on page II-4 for a locational map of Connecticut's coastal area. A map delineating the coastal boundary is included in the back cover of this document.

PART IV: COASTAL POLICIES AND USE GUIDELINES

A. INTRODUCTION

This part of the management plan presents Connecticut's coastal policies and use guidelines. Taken from the Connecticut Coastal Management Act and relevant sections of the existing statutes, the coastal policies provide the foundation for the management program. Their purpose is to guide all federal and state planning, development, acquisition and regulatory activities that are subject to the management program within the coastal area. Further, they are to guide all municipal planning, development, acquisition and regulatory activities that are subject to the management program within the coastal boundary. In short, the coastal policies provide uniform standards and criteria for all public agencies that conduct or regulate activities subject to the management program.

The policies contained in the Connecticut Coastal Management Act have been developed specifically for the purpose of coastal management. They are based on draft policies originally published in CAM Planning Report No. 26 (August, 1978) and commentary received during a six month public review period. Together with policies from existing statutes for coastal planning and regulatory programs which are incorporated in the Act by reference, the coastal policies refocus existing state and municipal planning and regulatory programs to adequately address the two fundamental management issues identified in Part III - lack of coordination and inadequate consideration of coastal resources. The policies have been adopted as an integral part of the Act and are directly enforceable through implementation of the management program.

Connecticut's coastal management program incorporates a resource management/impact zoning concept to be used by both state and municipal agencies. Uses and activities subject to the management program are evaluated, through all applicable state and municipal permit programs, for their consistency with the coastal policies and for their adverse impacts on coastal resources. To provide the necessary guidance to implement this resource-based approach to coastal management, the policies are divided into three broad categories - coastal land and water resource policies, coastal use policies, and governmental process policies. The Connecticut Coastal Management Act specifically defines all coastal resources within the land and water areas of the coastal boundary. Such resource definitions range from natural resources (e.g. tidal wetlands, beaches and dunes) to man-made resources (e.g. developed shorefront). Each defined resource category has a set of specific statutory policies pertaining to it. The Act further requires that all defined coastal resources be mapped (resource factor maps - see Appendix D of Draft EIS) and that copies of such maps be available through the state CAM Program and each coastal municipality prior to its effective date.

To assist in the evaluation of the impacts on coastal resources associated with activities in the coastal area, the Act specifically defines the adverse impacts (see box on page II-39) which must be considered in conjunction with all applicable coastal policies. Use guidelines have been provided for each defined resource category in order to provide further guidance in interpreting the technical aspects of the coastal land and water resource policies and in evaluating adverse impacts on coastal resources. The purpose of the use guidelines is two-fold. First, they provide specific technical detail to be used in both the state and municipal regulatory programs as uses or activities are evaluated in light of the coastal policies in the Act and the statutorily defined adverse impacts. Second, they will be used by the state as guidance in determining whether individual regulatory decisions are consistent with the relevant statutory policies, as required by the Connecticut Coastal Management Act.

In addition to the coastal land and water resource policies which apply to all uses occurring in or affecting any defined resource category, the Act also contains specific "coastal use" policies for major uses and activities subject to the management program. These policies pertain to certain major uses and activities independent of their location within the coastal area. They must be considered in addition to and in conjunction with all applicable coastal land and water resource policies and potential adverse impacts. The third broad category of policies, "governmental process" policies, pertain to intergovernmental coordination, permit simplification, planning programs, national interest and related topics. Their purpose is to provide direction and standards for program implementation, coordination and long-range planning.

USING THE COASTAL POLICIES

The most important function of the coastal policies, of course, is to guide program implementation through the state and municipal regulatory programs that issue permits for uses or activities subject to the management program. (For a full discussion of these regulatory programs and the interrelationships between them, see Part V, Legal Authorities, Part VI, Management of the Coastal Program.) The following is a brief discussion describing the use of the coastal policies through the regulatory programs, notably the state coastal permit programs and the coastal site plan review procedures established by the Connecticut Coastal Management Act for municipal zoning programs.

At the outset it should be noted that the Act establishes the burden of demonstrating consistency with the coastal policies and adverse impact standards on the applicant. (The level of detailed information that will be necessary directly correlates with the magnitude of the project and the fragility of the resources affected by it.) Agencies, in reviewing permit applications, may require modifications or establish conditions to assure consistency and must state their findings as to consistency in writing. Further, consistency with all applicable policies and standards in the Act must be certified before a valid permit may be issued. That is, a permit issued without such certification for a use or activity subject to the

management program does not constitute a legal permit.

The initial step in assuring consistency with the coastal policies for any use or activity subject to the management program is to determine the coastal resources on or near the site that may be affected. To aid potential applicants (and decision-makers) in making this determination, coastal resources are defined in the Connecticut Coastal Management Act and mapped on resource factor maps available either through the state or each of the coastal municipalities. Determining the resources to be affected will indicate which of the coastal land and water resource policies are applicable to the project.

The second step is to review the coastal use policies to determine if there are specific policies regarding the use or activity under consideration. The applicable coastal land and water resource policies together with any applicable coastal use policies will indicate the criteria and standards with which the proposed activity or use must be consistent. At this point, a review of the use guidelines for the applicable policies will provide specific technical guidance as to whether the proposed use or activity is consistent or may be altered or redesigned so as to be consistent with the coastal policies. Given the restrictive nature of the policies for sensitive resource areas together with the technical guidance pertaining to construction and design practices in the use guidelines, it is anticipated that the majority of uses and activities inconsistent with the coastal policies will be terminated at this stage.

Review of applicable coastal policies constitutes the resource management component of the resource management/impact zoning system established by th Connecticut Coastal Management Act. Assuming consistency with all applicable coastal resource and use policies, the remaining step in the evaluation process assess the adverse impacts on the affected coastal resources. The adverse impacts to be considered (see box, page II-39) are defined by the Act. Obviously, the magnitude of the impacts is dependent upon the nature of the project (e.g. its size, available infrastructure such as sewers, water service, method and time of construction) and the project's location (i.e. the fragility of the affected resources). While the coastal land and water resources and the coastal use policies are designed to provide specific locational and siting criteria for major uses or facilities, the adverse impacts are designed to prevent significant long-term degradation of the coastal resources.

Once an applicant has determined consistency with applicable coastal policies and has evaluated the adverse impacts associated with the use or activity, he seeks the required permits through municipal zoning and state regulatory programs. The review of the application by the permitting agency or agencies includes determination of consistency with the coastal policies and assessment of the adverse impacts, upon which permit certification is based. Further, any federal permits required must be issued consistent with the coastal policies under the federal consistency provisions of coastal management.

The goal of the resource management/impact zoning system established by the Connecticut Coastal Management Act is to incorporate coastal resource management considerations into the decision-making process on development at all levels of government. The system has been designed with sufficient standards and criteria through the coastal policies and adverse impact definition to give landowners and developers guidance as to the approvability of a proposal through the evaluation process outlined above. In general, uses and activities subject to the management program are not prohibited outright. Rather, the system encourages developers to modify proposals to eliminate or minimize long-term adverse effects on coastal resources, assuring preservation of their natural form and function and to abandon proposals not meeting the standards of the Act. Because the coastal policies, use guidelines and adverse impacts are less stringent or easier to comply with in resource areas most suitable for development, development is encouraged in those areas and discouraged in sensitive resource areas. By giving existing municipal and state regulatory programs the authority and responsibility to assure compliance with the standards contained in the Act, the potential of conflicting decisions is substantially reduced. That is, regardless of the nature of other criteria applicable to municipal zoning or state regulatory permits, certification of compliance with the standards contained in the coastal policies and adverse impacts definitions in the Connecticut Coastal Management Act is required prior to issuance of a valid permit for uses and activities subject to the management program with the evidential findings on consistency stated in writing.

ADVERSE IMPACTS

Degrading water quality through the significant introduction into either coastal waters or groundwater supplies of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity.

(Source: P.A. 79-535, sec. 3(15)(A))

Degrading existing circulation patterns of coastal waters through the * significant patterns of tidal exchange or flushing rates, freshwater input, or existing basin characteristics and channel contours.

(Source: P.A. 79-535, sec. 3(15)(B))

Degrading natural erosion patterns through the significant alteration of littoral transport of sediments in terms of deposition or source reduction.

(Source: P.A. 79-535, sec. 3(15)(C))

* Should read, "significant alteration of patterns of tidal exchange...

Degrading natural or existing drainage patterns through the significant alteration of groundwater flow and recharge and volume of runoff.

(Source: P.A. 79-535, sec. 3(15)(D))

Increasing the hazard of coastal flooding through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones.

(Source: P.A. 79-535, sec. 3(15)(E))

Degrading visual quality through significant alteration of the natural features of vistas and view points.

(Source: P.A. 79-535, sec. 3(15)(F))

Degrading or destroying essential wildlife, finfish or shellfish habitat through significant alteration of the composition, migration patterns, distribution, breeding or other population characteristics of the natural species or significant alterations of the natural components of the habitat.

(Source: P.A. 79-535, sec. 3(15)(G))

Degrading tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments through significant alteration of their natural characteristics or function.

(Source: P.A. 79-535, sec. 3(15)(H))

The remainder of this part presents the coastal policies, grouped in the three basic categories - coastal land and water resource policies, coastal use policies, and government process policies. Under each subcategory, relevant definitions, use guidelines, technical resources (e.g., maps) and brief descriptions of uses or activities subject to the policies and implementation authorities are included. Other statutory policies that are indirectly applicable or applicable only under certain circumstances are cross-referenced. Relevant policies from the Conservation and Development Policies Plan (Plan of Conservation and Development) are identified but not reproduced in the text. Copies of the Plan are available from the state's Office of Policy and Management. For a more complete discussion of implementation authorities, see Part V, Legal Authorities.

An index to the policies contained in this part is included below as a guide to the reader.

B. INDEX TO POLICIES