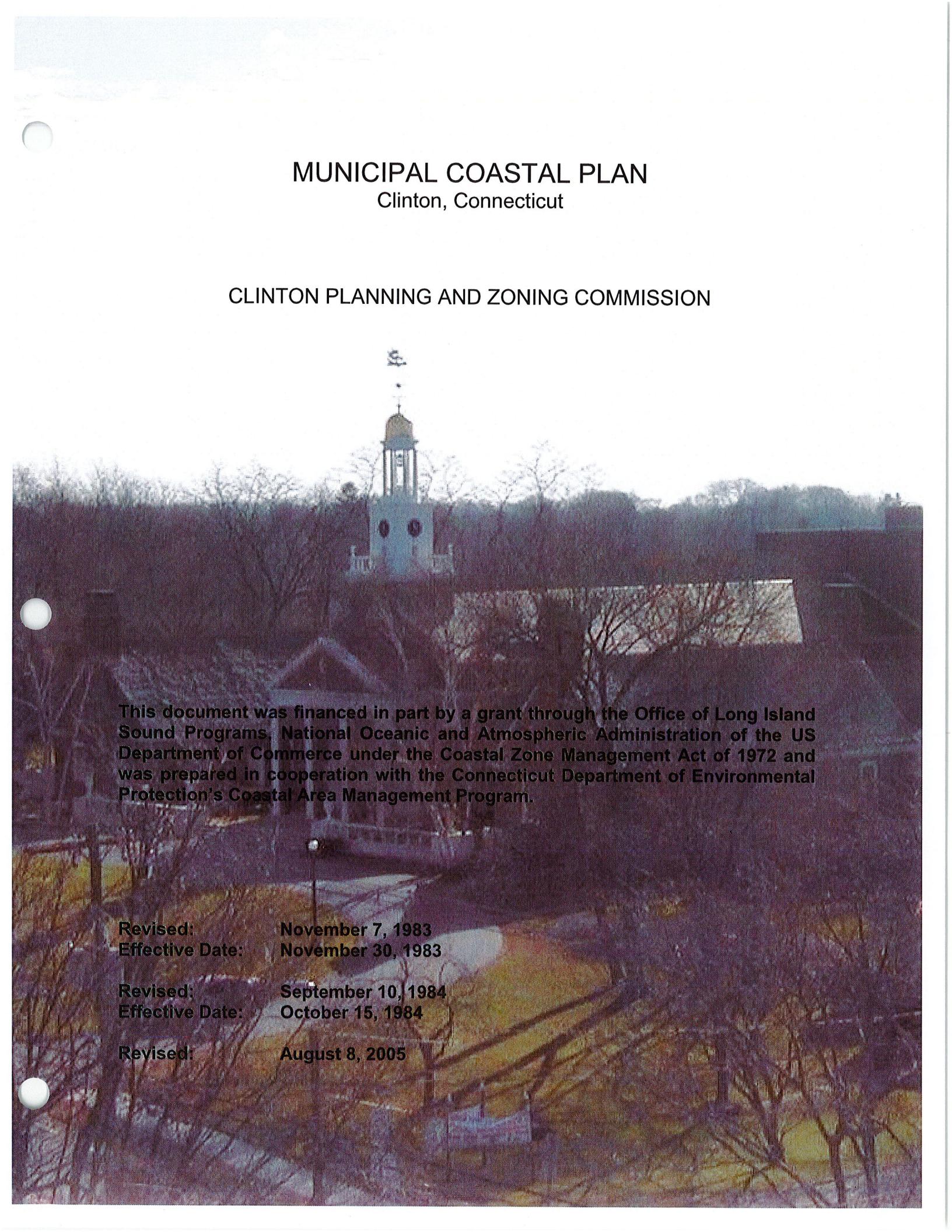


# MUNICIPAL COASTAL PLAN

Clinton, Connecticut

## CLINTON PLANNING AND ZONING COMMISSION



This document was financed in part by a grant through the Office of Long Island Sound Programs, National Oceanic and Atmospheric Administration of the US Department of Commerce under the Coastal Zone Management Act of 1972 and was prepared in cooperation with the Connecticut Department of Environmental Protection's Coastal Area Management Program.

Revised: November 7, 1983  
Effective Date: November 30, 1983

Revised: September 10, 1984  
Effective Date: October 15, 1984

Revised: August 8, 2005

○

○

○

Town of Clinton  
Municipal Coastal Plan

## Contents

Section 1: Introduction .....	1-1
Section 2: Summary of Issues and Recommendations .....	2-1
<i>Coastal Issues</i> .....	2-1
<i>Proposed Revisions to the Clinton Plan of Conservation and Development</i> .....	2-2
<i>Proposed Changes to Zoning Regulations</i> .....	2-4
<i>Non-Regulatory Recommendations</i> .....	2-4
Section 3: Coastal Area and Resources .....	3-1
<i>Coastal Area</i> .....	3-1
<i>Coastal Resources</i> .....	3-4
Section 4: Municipal Authorities Affecting the Coastal Area .....	4-1
<i>Plan of Conservation and Development Summary</i> .....	4-1
<i>Summary of Zoning Regulations</i> .....	4-4
Section 5: Coastal Issues .....	5-1
Section 6: Proposed Revisions to the Clinton Plan of Conservation and Development .....	6-1
<i>Proposed Coastal Goals and Policies</i> .....	6-1
<i>Proposed Land Use Changes</i> .....	6-10
Section 7: Proposed Changes to Zoning Regulations .....	7-1
Section 8: Non-Regulatory Recommendations .....	8-1
Section 9: References .....	9-1

## List of Figures

<i>Figure 1: Coastal Boundary, Clinton, Connecticut</i>
<i>Figure 2: Coastal Resources</i>
<i>Figure 3: Shellfish Concentration Areas</i>
<i>Figure 4: Future Land Use Plan</i>
<i>Figure 5: Open Space and Public Facilities Plan</i>
<i>Figure 6: Zoning Map, Clinton, Connecticut</i>
<i>Figure 7: FEMA Map</i>
<i>Figure 8: Tidal Restoration Map</i>
<i>Figure 9: Existing and Potential Public Access</i>
<i>Figure 10: Wastewater Facilities Plan</i>



Town of Clinton  
Municipal Coastal Plan

## **Section 1: Introduction**

The Connecticut Coastal Management Act (CCMA), which became effective January 1, 1980, is intended to protect the State's coastal resources while providing for continued economic growth. The Act defined coastal resources, established a coastal boundary within which those resources would be regulated, and established goals and policies to guide coastal development. The CCMA is implemented through existing regulatory authorities of State and local government. Local government implementation occurs through coastal site plan review and a municipal coastal program.

Coastal site plan reviews are mandated by the Act. All subdivisions and development proposals brought before the Planning and Zoning Commission and all variance requests brought before the Zoning Board of Appeals must receive a coastal site plan review if the proposed activity is within the coastal boundary. There are limited exemptions from this requirement, which is provided by the CCMA. The coastal site plan review required the applicant to: identify coastal resources on and adjacent to the site; assess the capability of those resources to accommodate the proposed use and the suitability of the project for the site; evaluate the impacts of the project; and describe proposed methods to mitigate any adverse impacts.

The municipal coastal program provides a municipality with an opportunity to develop long-term coastal resource management objectives, and to make municipal zoning and related ordinances consistent with those objectives.

The Town of Clinton elected to update its municipal coastal program, and received a financial assistance grant from the Connecticut Department of Environmental Protection's Office of Long Island Sound Programs. The Clinton Municipal Coastal Program, as presented in this document, describes Clinton's coastal area and resources, the major regulatory authorities affecting development within the coastal area, and coastal issues that were identified during the review of this program. The program also proposed changes to the Town Plan of Conservation and Development and Zoning Regulations, and recommends several non-regulatory actions for coastal resource management.

(

(

(

Town of Clinton  
Municipal Coastal Plan

## **Section 2: Summary of Issues and Recommendations**

### Coastal Issues

1. Encroachment of man-made uses into environmentally sensitive coastal resource areas.
2. Degraded water quality of the Hammonasset, Indian and Hammock Rivers and the Inner Harbor.
3. Small shellfish populations.
4. Degraded tidal wetlands.
5. Degraded groundwater quality in regards to the impacts of septic systems and non-point sources.
6. Poor physical access to the coast through State or Municipally owned properties and through the coastal site plan review process.
7. Poor visual access to the coast.
8. Over-development of the harbor area while needing to provide for continued economic growth.
9. Lack of maintenance of historic and architecturally significant buildings.
10. Poor economic vitality of the Central Business District.
11. Lack of a balanced, developed storefront.
12. Lack of strict regulations that result in the loss of property from natural disasters.
13. Lack of public awareness that results in the loss of property from natural disasters.
14. Lack of maintenance plans that result in the loss of property from natural disasters.
15. Impassible roadways during 100-year storm events.
16. Lack of an open space plan that provides for the acquisition of specific parcels for open space.
17. Encroachment into the 50' Tidal Wetlands Buffer.

Town of Clinton  
Municipal Coastal Plan

Proposed Revisions to the Clinton Plan of Conservation and Development

Coastal Goals and Policies

The coastal goals and policies established by the Connecticut Coastal Management Act are included by reference and municipal coastal policies are as follows:

Municipal Goals and Policies

1. Avoid and discourage non-essential encroachment of man-made uses into environmentally sensitive coastal resource areas.
  - a. Encourage owners of sensitive resource areas to donate land in fee-simple or to dedicate conservation easements to the Town of Clinton.
  - b. Discourage development immediately adjacent to tidal wetlands and other sensitive coastal resources through the development of buffers.
  - c. Encourage the use of tax abatement provisions to lessen economic pressures on property owners for development of sensitive lands.
2. Improve water quality in the Town's rivers and harbors.
  - a. Upgrade water quality in the Indian and Hammock Rivers to SA classification.
  - b. Establish a sewer minimization program that will discourage or prohibit development in wetlands and other areas where on-site sewage disposal is inappropriate. The program should require upgrading existing inadequate systems to current standards and address the impacts of septic systems and non-point sources to improve groundwater quality.
  - c. Reduce erosion and sedimentation through appropriate regulatory controls such as the establishment of vegetative buffers between development and wetlands and watercourses, provision of adequate erosion and sedimentation control measures as part of any development, and monitoring of construction activities.
  - d. Require appropriate disposal of all waters from boats using Clinton Harbor.
  - e. Require the incorporation of Best Management Practices (BMP's) for stormwater treatment in all development proposals.
3. Renew the shellfish population and concentration areas.
4. Maintain and improve the quality of existing tidal wetlands and provide rehabilitation and restoration of degraded tidal wetlands.
5. Increase physical access to the coast.
  - a. Identify areas appropriate for public access.
  - b. Encourage development of a long-term program of public acquisition of selected waterfront and wetland areas.
  - c. Develop public walkways along portions of the Hammonasset, Indian and Hammock Rivers.
  - d. Improve vehicular traffic flow to and from the harbor by improving street conditions on existing access roads.

Town of Clinton  
Municipal Coastal Plan

6. Increase visual access to the coast.
7. Continue periodic maintenance dredging of the existing Federal Navigation Channel.
8. Restrict, through appropriate regulatory measures, the expansion of marinas and boats using the harbor to a level that will not overtax land support facilities, including existing transportation routes.
9. Discourage new, non-water dependent uses along the Hammonasset, Indian and Hammock Rivers and Clinton Harbor.
10. Reduce the density of new developments within the Coastal Area.

*Land Use Changes*

1. Indicate undeveloped portions of Cedar Island as proposed open space on the Future Land Use Plan and the Open Space and Public Facilities Plan.
2. Areas identified in the Sewer Minimization Program as potentially requiring development of a community sewer system shown on the Open Space and Public Facilities Plan.
3. A long-term plan to acquire the additional beach and park areas shown on the Open Space and Public Facilities Plan should be prepared. This plan should indicate priorities and method of acquisition.
4. The two town-owned beaches should be retained in their present use.
5. Coastal high hazard areas (V-zones) as determined by the Federal Emergency Management Agency and shown on Flood Insurance Rate Maps for Clinton, should be maintained as open space and developed areas should be monitored and/or controlled to reduce losses of personal property and to ensure the safety of all occupants in this area.
6. The number of permitted slips/moorings in the harbor should be limited to between 1,400 and 1,700 provided that water quality in the harbor is maintained or improved.
7. Traffic movement on Main Street through the Central Business District should be improved by coordinating signal lights, eliminating or restricting on-street parking and providing addition exclusive turning lanes.
8. Undeveloped parcels greater than ten acres should be zoned to reduce the density of development.

Town of Clinton  
Municipal Coastal Plan

Proposed Changes to Zoning Regulations

1. Establish provisions that permit flexibility in setback and area coverage requirements for all waterfront properties to allow the construction and reconstruction of permitted structures in such an orientation and position that they will have the least adverse impact on visual access to the waterfront while also not adversely impacting sensitive coastal resources.
2. Require that all slips and moorings for boats in Clinton Harbor must have adequate pump-out facilities available for waste discharge.
3. Revise the Flood Hazard Zone section of the Regulations to remove non-applicable portions and add new provisions reflecting current State and Federal requirements. Strengthen minimum requirements to reduce potential risks, promote the health and welfare of the Town's people and reduce losses to property.
4. Revise Regulations to discourage development within 100' of tidal wetlands similar to the language existing for Conservation Subdivisions.
5. Revise zoning designations for any tracts of undeveloped land within the Coastal Boundary Area greater than ten acres.
6. Revise Regulations to discourage the construction of jetties/groins and fences that prevent pedestrian passage below the mean high tide line, and encourage the construction of stairs over existing jetties/groins.
7. Revise Regulations to discourage the construction of fences and/or walls that block the view from the public way of marshes and open water.
8. Develop stricter regulations for construction standards in high hazard areas that enhance the current codes through the Zoning Regulations.

Non-Regulatory Recommendations

1. The Planning and Zoning Commission should prepare an existing land use map (for the entire town). This should be updated at least every two years, and annually if feasible.
2. The Planning and Zoning Commission and the Harbor Management Commission should jointly maintain an up-to-date inventory of slips and moorings and on-shore storage capacity for boats as an aid in future planning efforts.
3. The Town should undertake a program aimed at long-term restoration of all degraded tidal marshes.

Town of Clinton  
Municipal Coastal Plan

4. The Water Pollution Control Commission should proceed with a Sewer Minimization Program.
5. The Harbor Management Commission should update the Harbor Management Plan.
6. Any future dredging of the channel in Clinton Harbor or the Hammonasset River should be coordinated with the Shellfish Commission at least two years in advance of the time of the proposed dredging.
7. The Shellfish Commission should create a management program for improving the shellfish production in the rivers and harbor.
8. The general public should be made aware of the Regulations pertaining to the areas that are subject to potential natural disasters.
9. The town's infrastructure, especially Beach Park Road, Hammock Road, Shore Road, Causeway, and Meadow Road, should be carefully looked at or improved to ensure that they are passable during a major storm event.
10. Construction and Development Standards should be updated to include criteria for construction in the high hazard areas.
11. The Board of Selectmen and the Public Works Commission should develop a plan for periodic inspections of infrastructures within high hazard areas, recommend repairs or upgrades and set a time table for such repairs or upgrades.

(

(

(

Town of Clinton  
Municipal Coastal Plan

### Section 3: Coastal Area and Resources

Clinton encompasses 10,752 acres (16.8 square miles), and had a 2000 population of 13,094. Dramatic population increases during the 1950's and 1960's changed Clinton from a rural/seasonal community to a suburban community with an urban center. However, seasonal recreation along the coast is still important, and during the summer months population increases to around 14,000. Projections of future population indicate continued but slower growth to a 2010 year-round population of 13,224 or 1% over 2000.

#### Coastal Area

Clinton's coastal boundary is shown in *Figure 1: Coastal Boundary, Clinton, Connecticut*, located at the end of this document. The coastal boundary was delineated by determining the farthest inland of 1,000 feet from mean high water; 1,000 feet from tidal wetlands or the 100-year coastal flood zone and then adjusting the boundary to coincide with property lines.

The coastal area includes about 4,350 acres (6.8 square miles) or 40.5% of the total area of Clinton. Although there is no up-to-date map of existing land use in Clinton, about 1,936 acres of the coastal area are developed or in protected open space, distributed as follows:

<u>Acres</u>	<u>Use</u>
1,000	Residential
80	Industrial
29	Public and Institutional
146	Commercial
66	Active public open space (Parks and Beaches)
464	Protected passive open space
26	Marine Commercial
125	Agriculture
1,936	<b>Total</b>

About 2,414 acres are undeveloped, including large areas of inland and tidal wetlands.

Approximately 3,900 people (30% of the Town's year-round residents) live within the coastal boundary, and 1,575 year-round dwellings (31%) and 473 seasonal dwellings are within the coastal area. The number of seasonal dwellings has increased by 92 dwellings from 381 in 1980 as a result of stricter criteria being proposed and enacted by ordinance in September 2004, therefore making it more difficult for homeowners to convert seasonal dwellings for year-round use.

#### **Background**

Clinton Harbor has played a major role in the historical development of the Town. The harbor was once a seaport for lumber, shipbuilding and fishing. Three shipyards were

Town of Clinton  
Municipal Coastal Plan

active along the Indian River until the late 1800's. The Connecticut State Historic Commission has identified sixteen sites of historic or architectural importance in the harbor area.

Today, the harbor supports a large recreational boating industry. There are nine private marinas and the Town Dock facility in Clinton Harbor and along the Hammonasset and Indian Rivers provide slip moorings for about 1,450 boats. On-shore summer and winter boat storage and boat repair is also provided by many of the marinas. The Town operates a marina and public dock for launching boats.

The marinas provide access to Long Island Sound for both Town residents and non-residents. Visual access to the Sound and the marsh areas of the Hammonasset, Indian and Hammock Rivers is also provided at points along the harbor-front, as well as from the water. This view is a major attraction for many Clinton residents.

Access to Clinton Harbor from Long Island Sound is provided by a Federal Navigation Channel that begins approximately at Wheeler Rock and extends to Esposito Beach. This Federal Channel was completed in 1951 and was last dredged in 1981. The authorized size of the channel is 100 feet wide, 8 feet deep and about 1,500 feet long. From the end of the Federal Navigation Channel as determined by the Army Corps of Engineers through the remainder of the inner harbor and up the Hammonasset River, is a narrow and very shallow natural channel.

Water depth in this channel is approximately four feet deep at low tide. In addition, this channel is approximately 60 feet wide. Many boats berthed at the marinas on the Hammonasset River must wait until high tide to enter or leave the river.



Clinton Harbor towards the Indian River

To improve existing boating conditions and provide for future expansion, proposals have been made to widen and extend the existing Federal Navigation Channel. However, no action has been taken on previous proposals to expand or extend the Channel. Disposal of dredged material is one of the biggest obstacles to any dredging program because of the high cost involved. In the past, spoil material from maintenance dredging of the Federal Channel has been disposed of in open water disposal sites in Long Island Sound. If the channel were widened and deepened, it would provide for safer passage of the boats that presently use the harbor. It would also make it possible for larger boats to safely enter the harbor and create an opportunity for new or expanded marinas to handle additional boats.

Town of Clinton  
Municipal Coastal Plan

Within the past few years, it has become apparent that the bulkheads located at the launch ramp, the Town Marina, and at the intersection of Commerce and Grove Streets are in need of repair or rebuilding to prevent the continued collapse of the bulkheads into the harbor.



Bulkhead at the end of Commerce & Grove Streets

buildable land in areas adjacent to coastal resources is developed, the most significant risk comes from redevelopment – knock downs within residential areas. Where seasonal cottages are eliminated, it is common for the new homes to become year-round in nature – “winterized”. Because of issues, including sewer minimization, such conversions cannot occur until an on-site waste disposal system is either maintained or replaced in order to bring it up to current health codes.

Conversion to year-round use is prohibited if the lot size and site conditions will not provide adequate on-site waste disposal. On September 11, 2004, the Board of Selectmen enacted an ordinance, “Winterization of Seasonal Use Structures”, to assist in the Water Pollution Control Commission’s effort to decrease groundwater contamination from septic systems. This ordinance requires a homeowner to upgrade their subsurface sewage disposal systems to current standards before converting a seasonal use structure for year-round use. In addition, the ordinance gives specific time frames for the completion of the work needed for winterization.

Several areas in Clinton have been identified as having groundwater contamination and wastewater disposal problems, identified as Needs Area 1 and Needs Area 2 in *Figure 10: Wastewater Facilities Plan*. As a result, the Town of Clinton is currently under order from the Connecticut DEP to abate the identified water pollution sources. The Water Pollution Control Commission is presently studying the problem areas, possible problem areas and alternative solutions to minimize the need for sewers. Several areas in the coastal area have been identified that may need related issues addressed at some time in the future if water quality problems should continue. The Commission is also enforcing the requirements set forth in the “Septage Disposal Ordinance”.

Town of Clinton  
Municipal Coastal Plan

The significant issue of sewer minimization, or eliminating existing and potential groundwater pollution and the despoliation of coastal resources including tidal wetlands, is currently of high priority in the Town of Clinton. Policies in both the 2000 Plan of Conservation and Development and this Municipal Coastal Plan are directed at minimizing or eliminating the potential for this type of pollution.

Coastal Resources

The Town of Clinton is endowed with significant coastal resources along its entire shoreline. Although the waterfront has been colonized and utilized by humans for well over three hundred years, the Town enjoys resources of high quality. Indeed, all thirteen of the identified coastal resource categories are represented and extend from the Hammonasset River on the western border to Groveway Beach on the eastern border. Like most Connecticut shoreline communities, those resources are under increasing pressure as more and more people discover and enjoy the public amenities that exist on the waterfront.

The Connecticut Coastal Management Act (§22a-90 through 22a-113j CGS) defines and sets forth policies for coastal resources management in the State of Connecticut.

The following Section of the Municipal Coastal Plan is designed to identify and define Clinton's coastal resources and to present policies that guide local, state and federal land use decisions. Further, concerns, issues and parcels specific to Clinton are discussed so as to clearly delineate opportunities to further preserve, protect and enhance the coastal resources for all the competing users of the resources. This document provides the basis for the balancing of uses and needs of coastal resources that is prescribed by the Connecticut Coastal Management Act.

**1. Beaches and Dunes**

- a. Definition: Beaches and dunes are beach systems, including barrier beach spits and tombolos, barrier beaches, land contact beaches and related dunes and sand flats (CGS §22a-93(7)(C)). In general, beaches are dynamic areas abutting coastal waters that are characterized by sand, gravel or cobbles. Often, in the winter the beach profile is steeper and narrower than in the summer.
- b. Policies: To **preserve** the dynamic form and integrity of natural beach systems in order to provide critical wildlife habitats, a reservoir for sand supply, a buffer for coastal flooding and erosion, and valuable recreational opportunities; to **insure** that coastal uses are compatible with the capabilities of the system and do not unreasonable interfere with natural processes of erosion and sedimentation; and to **encourage** the restoration and enhancement of disturbed or modified beach systems (CGS §22a-92(b)(1)(K)).

To **require** as a condition in permitting new coastal structures, including but not limited to groins, jetties or breakwaters, that access to, or along, the public

Town of Clinton  
Municipal Coastal Plan

beach below mean high water must not be unreasonable impaired by such structures (CGS §22a-92(b)(1)(K)).

To **disapprove** extension of sewer and water services into developed and undeveloped beaches, barrier beaches and tidal wetlands except that, when necessary to abate existing sources of pollution, sewers that will accommodate existing uses with limited excess capacity may be used (excerpt from CGS §22a-93(15)(H)).

- c. **Adverse Impacts**: Degrading **tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments** through significant alteration of their natural characteristics or functions (CGS §22a-93(15)(H)).

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 (CGS §22a-93(15)(A)).

Degrading **natural erosion patterns** through significant alteration of littoral transport of sediments in terms of deposition or source reduction (CGS §22a-93(15)(C)).

Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations of bathymetry, particularly within high velocity flood zones (CGS §22a-93(15)(E)).

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(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 alteration of the natural components (CGS §22a-93(15)(G)).

- d. **Significant Issues and Parcels**: Like all shoreline communities in Connecticut, Clinton's beaches are one of its primary coastal resource assets. Along with the numerous private association beaches, Clinton has two public beaches, the Clinton Beach and Esposito Beach.

Clinton Town Beach, the Town's primary public beach, is located on the eastern flank of the harbor at the terminus of Waterside Lane and Waterside Lane Extension. The developed area of the beach is 1.3 acres and has 550 feet of water frontage. The beach is maintained by the Public Works Department, which has recently added an additional children's play area, funded in part by the fundraising efforts of the Town Beach Playground Committee, and a DEP-funded viewing pavilion south of the beach

Town of Clinton  
Municipal Coastal Plan

overlooking the Harbor and tidal marsh. Parking is available for about 75 cars. During the summer months access to the beach is by permit. Residents may obtain a seasonal pass for a nominal cost, and non-residents may obtain a daily permit for only a small charge. At low tide swimming is not possible because mud flats extend almost to the Navigation Channel.

Esposito Beach, a very small area located between marinas at the foot of Maplewood Drive, provides only limited opportunities for swimming with the large number of boats using the area. However, it does provide a convenient open space within a heavily developed marine commercial area.

The Town also owns land on the western end of Cedar Island. Although not developed as a beach area, it is used by the residents of Cedar Island and by others who have access to the island by boat.

The most significant issue facing Clinton's beaches likely involves continued protection and enhancement of these recreational assets. Clinton Town Beach is located at the end of a northward-oriented spit of upland that separates Clinton Harbor from Hammock River tidal wetlands complex in an area devoid of significant development other than the beach facilities themselves. The beach has always been a popular summer spot for many townspeople. The Town has successfully enhanced this recreational resource and has included an educational component as well.

Due to its smaller size and location within Clinton's marina area, Esposito Beach has not been a significant point of interest for most people outside the immediate neighborhood in which it exists. As a result, the Town has not focused on it as a significant public resource. Future efforts to enhance this small public resource, including making efforts to improve water quality deficiencies, should be encouraged in the future.

Private beaches owned and maintained by beach associations exist in the areas of Harbor View, Grove Beach, Blake Avenue and Indian Drive. In the Clinton Beach area, 10-foot right-of-ways between lots (about ever 100 feet) on the south side of Shore Road provide beach access for owners of lots across from them on the north side of Shore Road.

As the Town continues to grow, it is expected that use of the beach facilities, both public and private, will necessitate further effort to preserve, protect and enhance them.

**2. Bluffs and Escarpments:**

- a. Definitions: Bluffs and escarpments are naturally eroding shorelands marked by dynamic escarpments or sea cliffs which have slope angles that constitute an intricate and dynamic balance between erosion, substrate, drainage and degree of plant cover (CGS §22a-93(7)(A)).

Town of Clinton  
Municipal Coastal Plan

Bluffs and escarpments are a significant sediment source for other features such as beaches and dunes. They provide valuable wildlife habitat and support unique plant communities and species. They reduce the impact of coastal flooding by opportunities and scenic vistas if such uses can be designed to protect the resource from disturbance.

- b. **Policies:** To **manage** bluffs and escarpments so as to preserve their slope and toe; to **discourage** uses which do not permit continued natural rates of erosion; and to **disapprove** uses that accelerate slope erosion and alter essential patterns and supply of sediments to the littoral transport system (CGS §22a-92(b)(2)(A)).
- c. **Adverse Impacts:** Degrading **tidal wetlands, beaches and dunes, rock shorefronts, and bluffs and escarpments** through significant alteration of their natural characteristics or functions (CGS §22a-93(15)(H)).

Degrading **natural erosion patterns** through the significant alteration of littoral transport of sediments in terms of deposition or source reduction (CGS §22a-93(15)(C)).

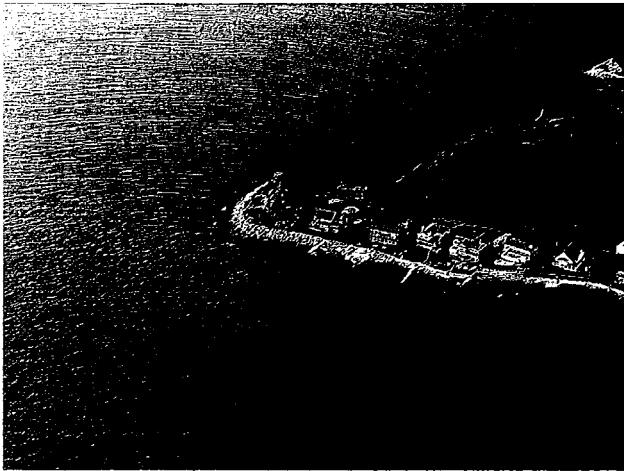
Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones.

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(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 alteration of the natural components (CGS §22a-93(15)(G)).

- d. **Significant Issues and Parcels:** From the perspective of coastal systems, natural bluffs and escarpments serve several important purposes including acting as a sediment source for beach systems while at the same time serving as a buffer to the erosive effects of coastal storms. The slopes also act as critical wildlife habitat as well. When viewed in terms of development, however, those natural functions can run *counter* to the need to minimize or eliminate erosion of these bluffs in order to preserve the homes that are often built atop such bluffs and escarpments. It is the balance of these natural and human needs that we seek in our land use decisions. Further, when such bluff and escarpments are protected or armored or otherwise manipulated through development, they are defined as "modified" bluffs and escarpments.

Town of Clinton  
Municipal Coastal Plan



Kelsey Point

In Clinton, the Hammock and Kelsey Point area of the shoreline is identified as "modified" bluffs and escarpments, this is because of the fact that the majority of the shorefront has been stabilized over the years through the construction of seawalls. Elevations of the bluffs and escarpments range from approximately 15 to 25 feet above sea level and are a result of remnant glacial deposits, likely recessional moraines. As such, the slopes are composed of undifferentiated sand, gravel and larger material and are particularly prone to the erosive forces of Long Island Sound. Although the structures have stabilized

the slopes and homes on top of the slopes (development needs), the bluffs and escarpments no longer provide source material to adjacent beaches (coastal system needs). As a result of the diminishment of natural source materials to the coastal system here and elsewhere, Connecticut beaches, in general, are receding, or at least, not growing. This is especially true in the areas of headlands.

In that "bluff-front" (waterfront) properties located in the Hammock and Kelsey Point areas of Clinton have waterside property lines located at the Mean High Water line (usually at the base of the bluffs and escarpments), and setbacks from property lines, including the Mean High Water line, do not usually impact development at the top of the slope, or as close as safe construction practices allow. In an effort to further protect bluffs and escarpments, the Town should encourage preservation by establishing a setback from the break in slope. Adopting this type of preservation tool would accomplish several goals including protecting the fragile top of the slope as well as buffer the vegetated slope, a wildlife habitat, from more intensive human activities.

There are few properties located on Hammock and Kelsey Points which have not been armored using either seawalls or rip rap. Areas that have not been stabilized using such structural means are located along the eastern and western most flanks of the promontory where the increased elevations drop back down to lower topographic areas. In those elevation transition areas, the Town should make every effort to discourage further armoring of the bluffs and escarpments as they transition to the lower beach resource areas. At the very least, vertical "hard" structures such as seawalls should be discouraged in favor of "softer" irregular features including rip rap, where necessary to protect an existing structure that may be prone to damage – the structure instead should be set back a sufficient distance from the slope.

Town of Clinton  
Municipal Coastal Plan

3. Coastal Hazard Areas:

- a. Definition: Coastal hazard areas are defined as those areas inundated during coastal storm events or subject to erosion induced by such events, including flood hazard areas as defined and determined by the National Flood Insurance Act and all erosion hazard areas as determined by the Commissioner (CGS §22a-93(7)(H)). Generally, coastal flood hazard areas include all areas designated as within A-zones and V-zones by the Federal Emergency Management Agency (FEMA). A-zones are those areas subject to still-water flooding during the so called “100-year” flood events while V-zones are those areas subject, in addition, to direct action by waves three feet or more in height.
- b. Policies: To **manage** coastal hazard areas so as to insure that development proceeds in such a manner that hazards to life and property are minimized and to promote nonstructural solutions to flood and erosion problems except in those instances where structural alternatives prove unavoidable and necessary to protect existing inhabited structures, infrastructural facilities or water-dependent uses (CGS §22a-92(b)(2)(F)). An “existing inhabited structure” is a building, which was constructed and inhabited, prior to authorization of the CCMA on January 1, 1980 and is still in residential use.

To **maintain** the natural relationship between eroding and depositional coastal landforms; to minimize the adverse impacts of erosion and sedimentation on coastal land uses through the promotion of nonstructural mitigation measures. Structural solutions are permissible when necessary and unavoidable for the protection of infrastructural facilities, water-dependent uses, or existing inhabited structures, and where there is no feasible, less environmentally damaging alternative and where all reasonable mitigation measures and techniques have been provided to minimize adverse environmental impacts (CGS §22a-92(b)(2)(J)). To **maintain, enhance, or where feasible, restore** natural patterns of water circulation and fresh and saltwater exchange in the placement or replacement of culverts, tide gates or other drainage or flood control structures (CGS §22a-92(c)(2)(B)).

- c. Adverse Impacts: Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones (CGS §22a-3(15)(b) & §22a-93(15)(E)).

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 (CGS §22a-93(15)(B)).

Degraded **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(15)(F)).

Town of Clinton  
Municipal Coastal Plan

Degrading **tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments** through significant alteration of their natural characteristics or function (CGS §22a-93(15)(H)).

d. Significant Issues and Parcels: Clinton and all of its Long Island Sound and Connecticut River neighbors are subject to the adverse impacts of coastal flooding. Of all the natural hazards that may potentially impact the area, flooding resulting from coastal storms is the most prevalent. In an effort to take advantage of Federally-subsidized flood insurance rate opportunities, Clinton and other coastal municipalities adopted minimum flood standard ordinances and, later, zoning standards (flood ordinances were originally developed for states with county-level zoning authorities – Connecticut zoning authority rests at the municipal level which has required the standards be placed with zoning regulations instead.) Those standards are considered *minimum* standards that must be met by property owners – any additional elevation above those minimum elevation standards can further reduce an individual's flood insurance rates. The standards are primarily designed to lift flood prone structures up and out of most typical flood events so as to minimize destruction to life and property. Not only does this minimize potential damage to individual structures, but it lessens the possibility of structures being swept into *other* structures where they can act as battering rams.

Minimum flood standards have been part of the Clinton Zoning Regulations for over twenty years. As a result, new construction (including substantial renovation) has been built to those standards. Construction that pre-dated the standards, however, remain vulnerable to damage and destruction caused by coastal storms. In addition, the last significant "inland" flood event in the area occurred in 1982. Structures damaged or destroyed by this event have been reconstructed to the new minimum standards. The last significant coastal storm, however, occurred in 1938 (the Great New England Hurricane of 1938). As a result, a tremendous amount of rebuilding has occurred between the '38 hurricane and the implementation of the minimum standards in the early 1980's. Thus, almost 45 years worth of construction remains vulnerable to the next significant coastal storm event. As a result, low-lying beach communities are seen as the sector of development that is most vulnerable to impacts from future coastal flooding. Those communities include Grove Beach, Harbor View, Blake Avenue, Indian Drive and the low-lying portions of both Hammock and Kelsey Points.

Another significant impact of coastal flooding occurs as a result of the low-lying elevation of access roads to many of the town's beach communities. Coastal flooding of low-lying roads occurs at the western end of Hammock Road on Kelsey Point, Shore Road along Clinton Beach leading to Kelsey Point, and the Beach Park Road and Causeway entrances to the Clinton Beach and Kelsey Point areas. Beach Park Road and Causeway exist at an

Town of Clinton  
Municipal Coastal Plan

elevation near 8 feet above sea level and are prone to flooding even during lesser rain events. Flooding of these access roads alone can completely cut off the Kelsey Point area from emergency access, making the area particularly vulnerable. Other areas prone to coastal flooding include the southern ends of Commerce and Grove Streets near the Town Dock, and the western end of Pratt Road near the Hammonasset River. Outside the beach communities but within the designated Coastal Boundary, Clinton also experiences roadway flooding in numerous locations along Route 1 as a result of both culver and bridge restrictions and low-lying elevations. In particular, high tidal levels cause flooding difficulties where the Indian River flows south underneath Route 1 and where a small drainage pond flows underneath Nod Road near Sunnybrook Lane.

The Town should continue to strive to raise the elevation of town roads that are prone to flooding in an effort to enhance emergency access during coastal flooding events. Efforts should continue to stringently monitor new construction and renovations in order to insure compliance with minimum flood standards and to insure overall compliance with the National Insurance Flood Program. Consideration of strengthening standards beyond "minimal" should also be considered as well. The Town has already adopted an improvement measure to further minimize abuses of the "substantial improvement" clause in flood regulations by review such proposals over a five-year period as opposed to the less stringent one-year time period. Previously, up to 50% improvement to a structure could be accomplished during a twelve-month period, leading to the possibility of abuse of requirements to "flood proof" such structure – a short-term gain at the expense of potential long-term loss.

In an effort to plan beyond the current minimum flood standards, the Town should consider the use of SLOSH data and maps (hurricane inundation data) available through the Connecticut Department of Environmental Protection in planning for revisions to both the Zoning Regulations and the Plan of Conservation and Development. Such data highlights low-lying areas that are prone to flooding during Category 1 through 5 hurricanes – areas that don't show as being prone on current FEMA maps.

#### 4. Coastal Waters/Estuarine Embayments

- a. Definition: Coastal waters and estuarine embayments are those waters of Long Island Sound and its harbors, embayments, tidal rivers, streams and creeks, which contain a salinity concentration of at least five hundred parts per million under the low flow stream conditions as established by the commissioner (CGS §22a-93(5)). Coastal waters are areas of high primary and secondary productivity, providing habitat for a variety of marine organisms, supporting many diverse floral and faunal species, providing spawning and breeding areas for many ocean waters. In addition, those waters are frequently used by the many Connecticut residents that enjoy the

Town of Clinton  
Municipal Coastal Plan

coastal environment for their recreational activities, including boating, fishing, and swimming.

Coastal water can be separated into "nearshore waters", "offshore waters" and "estuarine embayments":

- Nearshore Waters are those waters and their substrates lying between mean high water and a depth approximated by the ten-meter contour (CGS §22a-93(7)(K)).
- Offshore Waters means the area comprised of those waters and their substrates lying seaward of a depth approximated by the ten-meter contour (CGS §22a-93(7)(L)).
- Estuarine Embayments are a protected coastal body of water with an open connection to the sea in which saline sea water is measurably diluted by fresh water including tidal rivers, bays, lagoons and coves (CGS §22a-93(7)(G)).

b. Policies: To **manage** estuarine embayments so as to insure that coastal uses proceed in a manner that assures sustained biological productivity, the maintenance of healthy marine populations and the maintenance of essential patterns of circulation, drainage and basin configuration; to **protect**, enhance and allow natural restoration of eelgrass flats except in special limited cases, notably shellfish management, where the benefits accrued through alternation of the flat may outweigh the long-term benefits to marine biota, waterfowl and commercial and recreational fin fisheries.

It is found and declared that the pollution of the waters of the state is inimical to the public health, safety and welfare of the inhabitants of the state, is a public nuisance and is harmful to wildlife, fish and aquatic life and impairs domestic, agricultural, industrial and that the use of public funds recreational and other legitimate beneficial uses of water, and the granting of tax exemptions for the purpose of controlling and eliminating such pollution is a public use and purpose for which moneys may be expended and tax exemptions granted, and the necessity and public interest for the enactment of this chapter and the elimination of pollution is hereby declared as a matter of legislative determination (CGS §22a-422, as referenced by CGS §22a-92(a)(2)).

c. 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 (CGS §22a-93(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 (CGS §22a-93(15)(B)).

Town of Clinton  
Municipal Coastal Plan

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(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 alteration of the natural components (CGS §22a-93(15)(G)).

d. **Significant Issues and Parcels:** Coastal waters and estuarine embayments or, for the most, Long Island Sound itself, serves many important natural functions that degraded water quality could potentially impair. As a result, many of the identified adverse impacts and policies have been designed to maintain the health of such water bodies for the purposes of habitat and wildlife are more attractive to the many recreational users that flock to the Connecticut shore each year.

An important component of these preservation/protection and enhancement efforts have most recently been directed at non-point source pollution – pollution sources that are not associated with discharge pipes or other localized sources of pollution. Such sources include runoff from uplands including fertilizers from lawns and runoff from impervious surfaces that include contaminants such as oil and grease from vehicles as well as particulate matter in the form of sand and finer sediments. Heavy metals from impervious surfaces also contribute to the overall level of non-point pollution as well.



Hammonasset River showing Hayden's Creek and tidal marsh.

For communities on the shoreline, another factor includes the non-point pollution contribution by deficient and failing septic systems in densely developed beach areas. Along with Clinton, the nearby communities of Westbrook, Old Saybrook and Old Lyme have been under scrutiny by State officials to remedy conditions that could potentially lead to ground water contamination from septic sources. A number of communities have responded by bolstering "sewer avoidance" policies including strengthening septic pump-out ordinances. Clinton has adopted such policies in their land

Town of Clinton  
Municipal Coastal Plan

use program, but still faces close scrutiny by DEP officials who seek to remedy and prevent what they describe as ground water contamination.

From the stand point of contamination of coastal waters and estuarine embayments, private marinas in Clinton have participated at the regional level in a DEP/CRERPA-sponsored "Clean Marina" program. This program has endeavored to educate boaters on the merits of recycling marina hazardous waste including oils and by-products of boat sanding such as hazardous, anti-fouling paints. The Clinton town government has indirectly participated through their association with CRERPA.

The Town should continue actively pursuing its sewer minimization efforts by maintaining and enhancing its septic inspection program. In addition, efforts should be made to consider lessening the potential density of development, especially in beach areas. Although most of those areas are currently developed, the current economic environment has led to the knockdown of existing older, sometimes seasonal structures and replacing them with larger year-round structures. This practice invariably puts more pressure on resources and should be planned for accordingly. Allowing a decreased density would help reduce ground water contamination potential to a great degree.

As a note, as recent as January of 2005, the Town adopted a clearer and more stringent zoning regulation regarding what is and is not permitted to occur within the 50 foot area immediately adjacent to tidal wetlands. Where many towns only require structures to adhere to such a setback, Clinton has gone so far as to preclude any number of uses including the establishment of new lawn areas within that 50 foot buffer area. Although prohibiting new septic system construction in the buffer, the regulation does not prohibit the *"continuation use, reconstruction or renovation of any septic disposal system"* existing on the effective date of the regulations (1/1/2005).

## 5. Developed Shorefront

- a. Definition: Developed shorefronts are those harbor areas which have been highly engineered and developed resulting in the functional impairment or substantial alteration of their natural physiographic features or systems (CGS §22a-93(7)(I)). They are areas that are intensely developed, generally with bulkheads, seawalls, revetments, or other hard structures that were usually constructed many years ago.
- b. Policies: To **promote**, through existing state and local planning, development, promotional and regulatory programs, the use of existing developed shorefront areas for marine-related uses, including but not limited to commercial and recreational fishing, boating and other water-dependent commercial, industrial and recreational (CGS §22a-92(b)(2)(G)).

Town of Clinton  
Municipal Coastal Plan

c. Adverse Impacts: Degrading **water quality** through the significant introduction into either coastal waters or ground water supplies of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity (CGS §22a-93(15)(A)).

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(15)(F)).

d. Significant Issues and Parcels: Like nearby communities, Clinton's developed harbor is limited mainly to areas occupied by local marinas and limited municipal property. In addition, Clinton's harborfront area is zoned as Marine Commercial, with the exception of the developed portion of Cedar Island and the Clinton Town Beach property. Both of these areas are currently zones as R-10 residential. As such, the issued of redevelopment for uses other than marine-related uses is unlikely. Whether or not marinas could be expanded significantly, however, is another question. In that a significant portion of the harbor waterfront is colonized by tidal wetlands, expansion of private marine uses that could only be accomplished by removal of existing tidal wetlands would be unlikely and inconsistent with the Tidal Wetlands Act. Through this updated Municipal Coastal Plan, however, the Town goes on record indicating that all efforts to expand marinas should be avoided as is reasonably possible. Rather, redevelopment and/or reuse of existing harbor development areas should be considered for enhancement instead.



Inner Harbor with Cedar Island in the foreground.

## 6. Intertidal Flats

a. Definition: Intertidal flats are very gently sloping or flat areas located between high and low tides composed of muddy, silty and fine sandy sediments and generally devoid of vegetation (CGS §22a-93(15)(G)). Intertidal flats serve as rich sources of and reservoirs for nutrients. Intertidal flats provide valuable feeding areas for invertebrates, fish and shorebirds and significant shellfish habitat. Intertidal flats are sinks for toxic materials where they are generally sequestered in the finer sediments, thereby contributing to improved water quality. Intertidal flats also provide: recreational opportunities including shellfishing, fishing and wildlife observation; buffers for storm energy; and are areas of scientific and educational value.

Town of Clinton  
Municipal Coastal Plan

- b. **Policies:** To **manage** intertidal flats so as to preserve their value as a nutrient source and reservoir, a healthy shellfish habitat and a valuable feeding area for the invertebrates, fish and shorebirds; to **encourage** the restoration and enhancement of degraded intertidal flats; to **allow** coastal uses that minimize change in the natural current flows, depth, slope, sedimentation and nutrient storage functions; and to **disallow** uses that subsequently accelerate erosion or lead to significant despoliation of tidal flats (CGS §22a-92(b)(2)(C)).
- c. **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 (CGS §2293(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 (CGS §22a-93(15)(B)).

Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones (CGS §22a-93(15)(E)).

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 alteration of the natural components (CGS §22a-93(15)(G)).

- d. **Significant Issues and Parcels:** Clinton is endowed with substantial intertidal flats in and around the mouths of the Indian and Hammock Rivers, the Hammonasset River and in the area of the Clinton Town Beach. Destruction of intertidal can occur as a result of several factors including direct removal (intentional dredging) and erosion through stream flow increases that can impact the flats through high velocity erosion. In the former case, harbor channel maintenance and expansion can potentially impact intertidal flats in the vicinity of the Town Beach. In the area of the marinas, basin maintenance and expansion should result in removal of intertidal flats to allow for expansion of the marinas or within existing marinas that are desirous of accommodating deeper-draft boats. Efforts to expand basins at the expense of important intertidal flat environments should be discouraged as much as practical. In that there are several smaller marinas upstream on the Hammonasset River and one upstream in the Indian River, pressures may be brought to bear to keep the channels open so that the boats can pass from the harbor upstream to the marinas. Maintenance dredging of existing channels should be encouraged but not expanded in a way that will adversely impact or destroy intertidal flats.

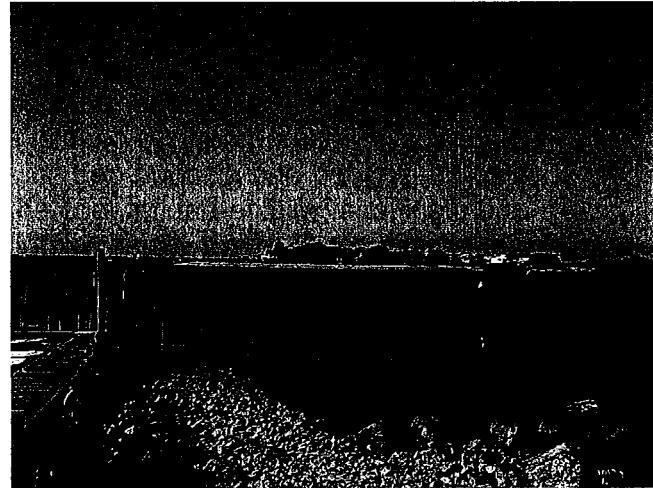
Town of Clinton  
Municipal Coastal Plan

At the mouth of the Hammock River, limited navigability of this waterway makes intentional dredging less likely. There is the possibility, however, of the alteration of stream flow dynamics in a way that would increase velocities of river flow and promotion erosion of intertidal flats. Such alterations could potentially occur through increasing stormwater runoff from upland drainage areas adjacent to the river or modification of road crossings (bridges) in a way that would produce constrictions and higher velocity water flow. Both types of stream modifications should be minimized and avoided to the greatest extent possible. In the case of the Hammock River crossing to the Town Beach, the bridge was designed to specifically reduce flow velocities so as to avoid exacerbating erosion of the riverbed and adjacent banks. Such design practices should be further encouraged any time a similar crossing is designed and built.

## 7. Islands

- a. Definition: Islands are surrounded on all sides by water. Islands, undeveloped in particular, provide isolated nesting areas and critical habitat for shorebirds, support many floral and faunal species which have all but disappeared from the mainland, constitute a large percent of undeveloped shoreline, constitute unique geologic and wildlife observation, contain large amounts of open space, are areas of scientific and educational value, and provide a storm buffer for adjacent mainland areas.
- b. Policies: To **manage** undeveloped islands in order to promote their use as critical habitats for those bird, plant and animal species which are indigenous to such island or are increasingly rare on the mainland; to **maintain** the value of undeveloped islands as a major source of recreational open space; and to **disallow** uses which will have significant adverse impacts on islands or their resource components (CGS §22a-92(b)(2)(H)).
- c. Adverse Impacts: Degrading **natural erosion patterns** through the significant alteration of littoral transport of sediments in terms of deposition or source reduction (CGS §22a-93(15)(C)).

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(15)(F)).



Cedar Island

Town of Clinton  
Municipal Coastal Plan

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 alteration of the natural components (CGS §22a-93(15)(G)).

- d. Significant Issues and Parcels: Cedar Island, Clinton's only island of significant size, separates Clinton Harbor from Long Island Sound. Although the developed, higher elevation eastern portion of the island can sometimes be surrounded by the harbor, Cedar Island is actually a peninsula interconnected with Hammonasset Beach in Madison to the west. As a result, many of the policies that govern islands apply less to Cedar Island than to undeveloped islands.

Expansion of development further west on the peninsula in areas that will encroach into and near tidal wetlands is discouraged as a result of that areas being defined on FEMA flood maps as "coastal barriers" – areas where flood insurance is not and has not been available for new construction or substantial improvements after November 16, 1990. Clinton's new regulations concerning substantial improvements and the increased five-year time period minimize the potential for significant improvements that circumvent the intent of flood standards.

The Town should continue to make efforts to disallow significant improvements for structures on Cedar Island, this because of the area's proneness to damage during coastal storms. Any lateral improvement should also be avoided and discouraged so as not to encroach on the tidal wetlands and significant wildlife habitat located to the west of the developed portion of Cedar Island. Avoiding expansion of development of the current "envelope" will also serve to minimize further visual impacts associated with bringing a developed environment into the undeveloped fringes of the area.

8. Rocky Shorefronts:

- a. Definition: Rocky shorefront areas are those composed of bedrock, boulders, and cobbles that are highly erosion-resistant and are an insignificant source of sediments for other coastal landforms (CGS §22a-93(7)(B)). In general, rocky shorefronts are naturally occurring rocky outcrops that are the interface between the land and water. Rocky shorefronts provide hard substrate and habitat for rocky intertidal organisms such as barnacles, blue mussels, rockweed, starfish and oyster drills, serve as feeding grounds and refuge areas for shorebirds and finfish, dissipate and absorb storm and wave energy without significant changes in shoreline configuration, and provide scenic vistas and recreational opportunities for climbing and wildlife observation.
- b. Policies: To **manage** rocky shorefronts so as to insure that development proceeds in a manner which does not irreparably reduce the capability of the

Town of Clinton  
Municipal Coastal Plan

system to support a healthy intertidal biological community; to provide feeding grounds and refuge for shorebirds and finfish, and to dissipate and absorb storm and wave energies. (CGS §22a-92(b)(2)(B)).

c. Adverse Impacts: Degrading **tidal wetlands, beaches and dunes, rock shorefronts, and bluffs and escarpments** through significant alteration of their natural characteristics or functions (CGS §22a-93(15)(H)).

Degrading **natural erosion patterns** through the significant alteration of littoral transport of sediments in terms of deposition or source reduction (CGS §22a-93(15)(C)).

Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones (CGS §22a-93(15)(E)).

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(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 alteration of the natural components (CGS §22a-93(15)(G)).

d. Significant Issues and Parcels: The Hammock Point area of the Clinton shoreline is the only section identified on Coastal Resource Maps (See *Figure 1: Coastal Boundary, Clinton, Connecticut*) as “rocky shorefront”, this along with interspersed areas of “modified bluffs and escarpments”. In this case, the rocky headland portion of the shoreline is a result of the presence of larger glacial boulders and rocks that have been left behind as the finer gravels, sands and finer materials have been winnowed away by thousands of years of wave action. The portions identified as “modified bluffs and escarpments” are those areas where the winnowing process wasn’t as pronounced, leaving more of the smaller-sized sediments. As a result of the natural armoring of those sections of the shoreline, rocky shorefront areas are somewhat more resistant to erosion than the glacial bluffs that are still composed of the entire range of undifferentiated glacial sediment.

One of the values of rocky shorefronts is said to be the habitat value associated with a hard substrate that intertidal organisms such as barnacles, blue mussels, rockweed, starfish and oyster drills prefer. This is less of a value for Clinton’s shorefront in that the intertidal area fronting the rocky shorefront is primarily beach environment. The winnowed glacial deposit does, however, provide feeding grounds and refuge for shorebirds and dissipates and absorbs storm and wave energy without significant changes in

Town of Clinton  
Municipal Coastal Plan

shoreline configuration. There is no question that Clinton's rocky shoreline provides scenic vistas.

As in the case with modified bluffs and escarpments, the Town should consider developing a setback from the break in slope at the top of the area defined as "rocky shoreline". Currently, there are no provisions that disallow or discourage development as close to the edge of a rocky shoreline slope as a property owner cares to get. Like tidal wetland setbacks, such "rocky shoreline" and "bluff and escarpment" setbacks can be identified based upon the break in slope or some related topographic identification.

## 9. Shellfish Concentration Areas

- a. Definition: Shellfish concentration areas are actual, potential or historic areas in coastal waters, in which one or more species of shellfish aggregate (CGS §22a-93(7)(N)). Many shellfish concentration areas provide harvest opportunities for personal consumption or by aquaculture industry. Shellfish concentration areas provide habitat for several species of shellfish, contribute to the diversity of benthic life and provide sources of food for shorebirds, lobsters and other marine life. Shellfish concentration areas support an important source of food, provide recreational shellfishing opportunities, provide economic opportunities, provide economic opportunities for the shellfish industry, and provide employment through the shellfish industry.
- b. Policies: To **insure** that the state and the coastal municipalities provide adequate planning for ...[the restoration and enhancement of Connecticut's shellfish industry]...and to insure that any restrictions or exclusion of such ...[use]... are reasonable (CGS §22a-92(a)(10)). To **manage** intertidal flats so as to preserve their value as a nutrient source and reservoir, a healthy shellfish habitat and a valuable feeding area for invertebrate, fish and shorebirds (CGS §22a-92(b)(2)(D)). Where feasible and environmentally acceptable, to **encourage** the creation of wetlands for the purposes of shellfish and finfish management, habitat creation and dredge spoil disposal (CGS §22a-92(b)(2)(E)). To **give** high priority and preference to uses and facilities which are dependent upon proximity to the water or the shorelands immediately adjacent to marine and tidal waters (CGS §22a-92(a)(3)). To **protect**, and where feasible, **upgrade** facilities serving the commercial fishing and recreational boating industries (CGS §22a-92(b)(1)(I)).
- c. Adverse Impacts: Degrading or destroying **essential wildlife, finfish or shellfish habitat** through significant alteration of the composition, migration patterns, distribution, breeding or other population characteristics of natural species or significant alteration of natural components of the habitat (CGS §22a-93(15)(G)).

Degrading **water quality** through the significant introduction into either coastal waters or groundwater supplies of suspended solids, nutrients, toxics,

Town of Clinton  
Municipal Coastal Plan

heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity (CGS §22a-93(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 (CGS §22a-93(15)(B)).

Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones (CGS §22a-93(15)(E)).

- d. **Significant Issues and Parcels:** Many of the issues connected to preserving, protecting and enhancing shellfish habitat are similar to the issues that face protection of coastal waters and estuarine embayments – water quality and related issues. Up until recently, the Clinton Shellfish Commission has been relatively inactive for a number of years. As a result, policies regarding shellfish have been overseen primarily at the state level through the Department of Agriculture, Aquaculture Division. That oversight, however diligent, cannot replace the location protections and guidance that area is afforded at the municipal level.

The most significant shellfish concentration areas in Clinton are located near the mouth of the Hammonasset River, near the mouth of the Indian River and around the eastern end of Cedar Island. Water quality issues impact all three of these areas. In addition, it is possible that proposed dredging activities could impact shellfish areas as well. Although the likelihood of this is small, channel dredging at the entrance to Clinton Harbor and the potential for channel deepening and enlargement in the Hammonasset and Indian Rivers could possibly impact those shellfish beds. These impacts could include both directed impacts of sedimentation from nearby dredging activities or the direct physical removal of beds by adjacent dredging. Again, based upon DEP scrutiny of dredging activities, precautions are taken in permit conditions to lessen the likelihood of such occurrences. The Town goes on record in this Municipal Coastal Plan by indicating its support for efforts to preserve, protect and enhance shellfish beds in Clinton waters by avoiding impacts through dredging and other development activities.

## 10. Shorelands

- a. **Definition:** Those areas within the coastal boundary exclusive of coastal hazard areas, which are not subject to dynamic coastal processes and which are comprised of typical upland features such as bedrock hills, till hills and drumlin (CGS §22a-93(7)(M)). In general, shorelands are not located within coastal flood or erosion hazard areas (V-zones and A-zones as defined by the Federal Emergency Management Agency) and contain no tidal wetlands, beaches and dunes or other sensitive resources. Shorelands function as

Town of Clinton  
Municipal Coastal Plan

immediate sources of upland sediments, provided scenic vistas, and have high development and redevelopment potential.

- b. Policies: To **regulate** shoreland use and development in a manner which minimizes adverse impacts upon adjacent coastal systems and resources (CGS §22a-92(b)(2)(I)).
- c. 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 (CGS §22a-93(15)(A)).

Degrading **natural or existing drainage patterns** through the significant alteration of groundwater flow and recharge and volume runoff (CGS §22a-93(15)(A)).

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(15)(F)).

- d. Significant Issues and Parcels: As defined in the Coastal Management Act, shorelands resources are those areas within the Coastal Boundary other than the specific resources identified in this Plan (i.e. tidal wetlands, rocky shoreline, intertidal flats, etc.). Shoreland resources encompass much of the land within the Coastal Boundary that is not located immediately on the waterfront. This means that most of the land parcels between the rail line and the immediate coast are subject to the preservation policies associated with shoreland resources.

For practical purposes, this usually translates to discussions of stormwater runoff from a site and how that non-source point pollution source could potentially impact nearby (or not so nearby) coastal resources. Soil Erosion & Sediment Control Plans are important tools for evaluating just how effective the construction plans of a particular development will be in minimizing adverse impacts to coastal resources to the greatest extent possible. In certain high water use proposals, it is conceivable that issues of degradation of natural or existing drainage patterns of groundwater flow and recharge can be raised as well. This may be particularly true as the Town moves forward to deal with groundwater contamination issues related to the existence of septic systems and not sewer lines. In shoreland areas in closer proximity to the immediate coast, issues of degradation of visual quality may be raised as well.

Through the Coastal Site Plan Review process, the Town should continue to closely review applications for development within the Coastal Boundary even though such parcels may not be immediate waterfront with immediately

Town of Clinton  
Municipal Coastal Plan

evident adverse impacts. The land use boards should continue to be vigilant to insure that stormwater and associated contaminates be designed to be discharged off-site and into or close to identified coastal resources.

#### 11. Submerged Aquatic Vegetation

- a. Definition: Submerged aquatic vegetation (SAV) includes those rooted, vascular, flowering plants that live permanently submerged below the water in coastal, tidal and navigable waters. The primary species in Long Island Sound and Fisher's Island Sound are eelgrass and widgeon grass. In the brackish and fresh tidal areas of Connecticut, there are seventeen other species of SAV's, the dominant one being tapegrass.

SAV beds are some of the most protective shallow water habitats on earth. They provide critical shelter for finfish and essential habitat for shellfish, especially scallops, and improve water quality by taking up nutrients, removing sediment from the water column, and reducing wave energy, thereby minimizing shoreline erosion rates. Thus, recreational and commercial fishing operations in Connecticut are critically dependent upon the preservation of SAV's. They are also an important food source for many waterfowl species.

- b. Policies: To **protect, enhance and allow** natural restoration of eelgrass flats except in special limited cases, notably shellfish management, where the benefits accrued through alteration of the flat may outweigh the long-term benefits to marine biota, waterfowl and commercial and recreational fisheries (CGS §22a-92(c)(2)(A)).
- c. 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 (CGS §22a-93(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 (CGS §22a-93(15)(B)).

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 alteration of the natural components (CGS §22a-93(15)(A)).

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 alteration of the natural components (CGS §22a-93(15)(G)).

Town of Clinton  
Municipal Coastal Plan

d. **Significant Issues and Parcels:** As indicated above, one of the most prevalent SAV's in Connecticut waters is eelgrass. Actually, eelgrass populations are more prevalent in the eastern Sound toward the Rhode Island border, but populations do exist as one moves westerly along the Connecticut coast. In Clinton waters, a population of eelgrass exists along the eastern border of Clinton Harbor in the area extending from just inside Hammock Point to the area of the Clinton Town Beach. This area tends to be somewhat protected, likely a contributor to the existence of the eelgrass bed.

Eelgrass is generally known to be somewhat ephemeral – the beds will exist for a time and then disappear. In the area of Clinton Harbor, activities that could impact the health of the eelgrass include the impacts of dredging that periodically occurs at the entrance of the harbor. Short-term sedimentation from the dredging could create adverse impacts on the eelgrass beds and should be minimized to the greatest extent possible. Although there are no current plans, the installation of groins along the eastern flank of the harbor could modify existing circulation patterns in a way that would likely be detrimental to any SAV beds. Again, the ephemeral nature of the eelgrass would suggest that a thorough investigation of such structures, if ever considered, should occur.

## 12. Tidal Wetlands

a. **Definition:** Tidal wetlands are those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marshes, swamps, meadows, flats or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below the elevation of one foot above local extreme high water; and upon which may grow or be capable of growing some, but not necessarily all, of a list of specific plant species listed at the Department of Environmental Protection. In general, tidal wetlands in "low energy" environments are protected from direct wave action. They are flooded by tidal waters twice a day and support a diverse ecosystem of vegetation and wildlife.

b. **Policies:** It is **declared** that much of the wetlands of this state have been lost or despoiled by unregulated dredging, dumping, filling and like activities and despoiled by these and other activities, that such loss or despoliation will adversely affect, if not entirely eliminate, the value of such wetlands as sources of nutrients to finfish, crustacean and shellfish of significant economic value; that such loss or despoliation will destroy such wetlands as habitats for plants and animals of significant economic value and will eliminate or substantially reduce marine commerce, recreation and aesthetic enjoyment and that such loss of despoliation will, in most cases, disturb the natural ability of tidal wetlands to reduce flood damage and adversely affect the public health and welfare; and such loss or despoliation will substantially reduce the capacity of such wetlands to absorb silt and will thus result in the

Town of Clinton  
Municipal Coastal Plan

increase silting of channels and harbor areas to the detriment of free navigation. Therefore, it is declared to be the public policy of this state to preserve the wetlands and to prevent the despoliation and destruction thereof (CGS §22a-28 as reference by §22a-92(a)(2)).

To **preserve** tidal wetlands and to **prevent** the despoliation and destruction thereof in order to maintain their vital natural functions; to **encourage** the rehabilitation and restoration of degraded tidal wetlands; and where feasible and environmentally acceptable, to **encourage** the creation of wetlands for the purpose of shellfish and finfish management, habitat creation and dredge spoil disposals (CGS §22a-92(b)(2)(E)).

To **disallow** any filling of tidal wetlands and nearshore, offshore, and intertidal waters for the purpose of creating new land from existing wetlands and coastal waters which would otherwise be undevelopable, unless it is found that the adverse impacts on coastal resources are minimal (CGS §22a-92(c)(1)(B)).

To **disapprove** extension of sewer and water services into developed and undeveloped beaches and tidal wetlands except that, when necessary to abate existing sources of pollution, sewers that will accommodate existing issues with limited excess capacity may be used (excerpt from CGS §22a-92(b)(1)(B)).

- c. **Adverse Impacts:** Degrading **tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments** through significant alteration of their natural characteristics or functions (CGS §22a-93(15)(H)).

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 (CGS §22a-93(15)(G)).

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 (CGS §22a-93(15)(F)).

Degrading **visual quality** through significant alteration of the natural features of vistas and view points (CGS §22a-93(15)(A)).

- d. **Significant Issues and Parcels:** Clinton Harbor is surrounded by a significant quantity of tidal wetlands, including the Hammonasset area on the western flank of the Harbor and the shoreline area east of the Hammonasset River. East of the Clinton Town Beach, the Hammock River wetlands system is

Town of Clinton  
Municipal Coastal Plan

extensive. In addition, upstream areas of both the Indian and Hammock Rivers are experiencing stress and degradation due to ongoing sedimentation. The encroaching invasive Phragmites will, at some point, likely be targeted for removal through tidal wetlands restoration efforts.

With the past several decades, proposals have come forth to expand existing marinas. Such efforts included components that require the removal and destruction of adjacent tidal wetlands. Such efforts were eliminated in the face of opposition and concern from numerous sources. This document establishes that destruction or modification of tidal wetlands for the purposes of marina expansion or other water-related development should be avoided and minimized at all costs, and should only occur if no other option exists and the development is clearly a benefit to the public at large.

Restoration and enhancement of tidal wetlands, including upstream areas of the Indian River and the Hammock River wetlands system should be actively promoted. The Hammock River wetland system should be actively promoted. The Hammock River wetlands system is of particular interest for education purposes as a result of its close proximity to the Clinton Town Beach. Further educational opportunities connected with the existing DEP-funded viewing pavilion should be pursued, including the design and installation of educational signage that is easily accessed and overlooks the extensive wetlands resources.



Hammock River west of Beach Park Road

Town of Clinton  
Municipal Coastal Plan

## Section 5: Coastal Issues

As a result of questions posed to several Town organizations, Town Officials and representatives of interested groups, and investigation of existing coastal uses and resources, several issues regarding the future of Clinton's coastal area emerged. General and specific issues are stated below.

### Issue 1: The Need to Maintain and Enhance Clinton's Coastal Resources.

#### *Issue 1a: Encroachment of man-made uses into environmentally sensitive coastal resource areas*

- Intrusion into tidal and inland wetlands.
- Loss of the remaining barrier beach areas to development, especially undeveloped portions of Cedar Island.
- Loss of the limited bluffs overlooking the Hammonasset River.

#### *Issue 1b: Degraded water quality of the Hammonasset, Indian and Hammock Rivers and the Inner Harbor*

- Biological quality of the rivers and inner harbor such that shellfish cannot be taken from these areas for direct human consumption.
- Possible decrease in water quality in the future as a result of inadequate wastewater disposal from homes and businesses located on sites unsuitable for wastewater disposal or from poorly maintained systems.
- Amount of sediment entering the rivers and harbor, especially the Hammonasset River.
- Possible degradation of water quality in the harbor because of oil and other wastes discharged from boats.
- Water quality degradation due to lack of or improper treatment of stormwater runoff.

#### *Issue 1c: Small shellfish populations*

- Apparent lack of desirable quantities and types of shellfish within the rivers and harbor.
- Loss of public and commercial shellfishing due to expanded recreational boating and especially dredging to widen and extend the Federal Navigation Channel.
- Lack of maintenance of existing shellfish beds.

#### *Issue 1d: Degraded tidal wetlands*

- Damage to the tidal wetlands, such as the large tidal wetlands to the east of Beach Park Road, from invasive species such as *Phragmites australis*.
- Small tidal wetland areas have been disturbed by various activities, such as historic dredging and filling.

Town of Clinton  
Municipal Coastal Plan

- Damage to healthy tidal wetlands from excessive sediment.
- Damage to tidal wetlands from stormwater runoff from both contaminants and quantities of fresh water.

Issue 2: Minimal Public Access to the Coast

*Issue 2a: Poor physical access to the coast through State or Municipally owned properties and through the coastal site plan review process*

- Insufficient public beach areas.
- Lack of open space and walkways along the shoreline and riverfronts.
- The height of jetties/groins, and the lack of stairs over same, impedes the public's ability to walk along the shoreline.
- Residents have erected fences or walls that extend below the mean high tide line preventing passage along the shoreline.

*Issue 2b: Poor visual access to the coast*

- Existing views may be lost as additional development occurs.
- Views of marshes and open water are blocked in certain locations as a result of the growth of Phragmites.
- Residents have constructed fences and/or walls that block the view from the public way of marshes and open water.

Issue 3: The Need to Maintain the Current Character and Mix of Development

*Issue 3a: Over-development of the harbor area while needed to provide continued economic growth*

- Number and size of additional boats that should be allowed to use the harbor has not been limited.
- The narrow and shallow channel of the Hammonasset River prevents passage of vessels during low tide.
- Forcing out other harbor uses such as swimming, water-skiing and shellfishing by increasing the number of boats using the harbor.



*Issue 3b: Lack of maintenance of historic and architecturally significant buildings*

- Buildings may be torn down to make way for more modern buildings.

*Issue 3c: Lack of a balanced, developed shoreline*

Cannon located at the foot of Waterside Lane used to defend Clinton during the War of 1812.

Town of Clinton  
Municipal Coastal Plan

Issue 4: The Need to Improve Construction Standards and Town's Infrastructure to Reduce Loss of Property from Natural Disasters

*Issue 4a: Lack of strict regulations*

- Building codes do not provide protection from natural disasters.
- Zoning Regulations contain the minimum standards required by FEMA.

*Issue 4b: Lack of public awareness*

- Public unaware of dangers caused by natural disasters.
- Public unaware of how their actions may reduce loss of property.

*Issue 4c: Lack of maintenance plans*

- There are insufficient plans for the maintenance of shoreline protection structures.

*Issue 4d: Impassible roadways during 100-year storm events*

Issue 5: Lack of Open Space within Coastal Boundary for Conservation Purposes

*Issue 5a: Lack of an Open Space Plan that provides for the acquisition of specific parcels for open space*

Issue 6: Encroachment into 50' Tidal Wetlands Buffer

*Issue 6a: Agencies granting variances to encroach into 50' tidal wetland buffer area*

*Issue 6b: Existing structures within the 50' tidal wetlands buffer area*



Town of Clinton  
Municipal Coastal Plan

## **Section 6: Proposed Revisions to the Clinton Plan of Conservation and Development**

It is proposed that, following appropriate public hearings, the following changes to the Town Plan of Conservation and Development be adopted by the Planning and Zoning Commission as a supplement to the 2000 Plan of Conservation and Development. These proposed revisions identify changes needed to resolve inconsistencies between the Plan and existing conditions, and changes needed to help resolve the coastal issues identified in the preceding section.

### Proposed Coastal Goals and Policies

Because of growing recognition of the special significance of the coastal area and the importance of coastal resources, additional policies are needed concerning future development within Clinton's coastal area and the use and maintenance of Clinton's coastal resources.

#### Connecticut Coastal Management Act Policies

The Connecticut Coastal Management Act (CCMA) establishes numerous policies concerning coastal land and water resources, coastal uses, and government processes. Because of their general applicability to coastal resources and uses, three of the general policies established by the CCMA are restated below:

- To preserve and enhance coastal resources in accordance with the policies established (in other Connecticut General Statutes).
- To insure that the development, preservation or use of the land and water resources of the coastal area proceeds in a manner consistent with the capability of the land and water resources to support development, preservation or use without significantly disrupting either the natural environment or sound economic growth.
- To resolve conflicts between conflicting uses on the shorelands adjacent to marine and tidal waters by giving preference to uses that minimize adverse impacts on natural coastal resources while providing long term and stable economic benefits.

Because of their number, the other State Coastal Policies are not quoted, but are included by reference. Readers should refer to the CCMA or to the Connecticut Coastal Management Manual (Developed September 2000).

#### Municipal Goals and Policies

In addition to these State policies, several goals and policies that respond to the special concerns of Clinton's coastal area have been developed and included in this supplement to the Clinton Plan of Conservation and Development. Future development in the coastal area should respond to both State and municipal policies.

Town of Clinton  
Municipal Coastal Plan

Coastal Resource Protection:

1. Avoid and discourage non-essential encroachment of man-made uses into environmentally sensitive coastal resource areas.
  - a. Encourage owners of sensitive resource areas to donate land in fee-simple or to dedicated conservation easements to the Town of Clinton or a land trust.
  - b. Discourage development immediately adjacent to tidal wetlands and other sensitive coastal resources through the development of buffers.
  - c. Encourage the use of tax abatement provisions to lessen economic pressures on property owners for development of sensitive lands.
2. Improve water quality in the Town's rivers and harbor.
  - a. Upgrade water quality in the Indian and Hammock Rivers to SA classification.
  - b. Establish a sewer minimization program that will discourage or prohibit development in wetlands and other areas where on-site sewage disposal is inappropriate, and will upgrade existing inadequate systems.

The Town of Clinton, along with the neighboring towns of Old Saybrook and Westbrook, has long been involved in the issue of groundwater protection. In an effort to correct what the Connecticut Department of Environmental Protection has identified as groundwater pollution resulting primarily from non-functioning or non-code septic systems, an effort was made during the late 1980's to establish a regional sewer line originating in Clinton and terminating at a waste treatment plant on the Connecticut River in Old Saybrook. Although the voters of Clinton and Westbrook gave their towns the go ahead to participate in the consortium, the voters of the Town of Old Saybrook voted against the plan, likely because of the location of the treatment plant within their borders. As a result of the failure of this effort, Clinton, Westbrook and Old Saybrook have pursued wastewater management on their own.

The Town of Clinton continues to solve its wastewater disposal through the use of on-site septic systems. Under most circumstances, properly sited, designed, constructed and maintained subsurface septic systems are a viable long-term solution for wastewater disposal. The benefits of properly installed and maintained septic systems include protection of water quality and the public health, preservation of local control of sewage issues, protection of residential property values, and safeguarding of water resources as recreational, aesthetic, and economic assets. A septic system that is not functioning properly, however, threatens the public health by inadequately treating sewage and/or creating a potential for direct or indirect contact between sewage and the public. Improperly treated effluent from malfunctioning septic systems, or systems with poor performance can also present a threat to water quality. In the southern portion of Clinton, site conditions, including density, soil type and high water table contribute to poor performance of septic systems, which then may contribute to non-point pollution discharges into Long Island Sound.

Town of Clinton  
Municipal Coastal Plan

As in neighboring towns, the Town of Clinton continues to investigate potential off-site opportunities for wastewater management, but the main policy is to ensure that septic systems continue to be the primary method of sewage disposal as is feasibly possible while still protecting the environment, public health and general wellbeing of its citizens. This sewer minimization policy has been adopted in the 2000 Plan of Conservation and Development and is being further reinforced here in the updated Municipal Coastal Plan.

High Density Residential Development: The most significant challenge to ensuring that groundwater contamination is minimized or eliminated is found in the higher density shorefront beach developments. The reason for the challenge is threefold:

1. The higher density of such developments;
2. The exceedingly well drained sandy soils upon which the developments exist; and
3. The close proximity of sensitive coastal resources including **Tidal Wetlands, Intertidal Flats, Shellfish Concentration Areas, Clinton Harbor (Open Waters) and Long Island Sound** itself.

Recommendations: The issue of groundwater contamination has become a high priority issue in Clinton of late. Heightened efforts have been made to find a suitable site for the potential construction of a wastewater treatment facility. As recent as early 2005, the CTDEP has stepped up efforts to move Clinton forward to solve groundwater contamination that is said to exist in the southern areas of town. The following recommendations are designed to further reinforce guiding policies, goals and recommendations found in the 2000 Plan of Conservation and Development:

- On-site septic systems are and shall continue to be considered the primary means of wastewater disposal in the Town of Clinton;
- Where on-site septic systems are not feasible, only then should the Town consider off-site structural solutions to wastewater problems;
- In the event that it becomes necessary to implement off-site structural solutions to groundwater contamination in selected areas, abatement of identified pollution shall be for the purpose of correction of specific contamination only. Planning and Zoning policies regarding the limiting of development density shall not be relaxed or altered so as to allow sewer-initiated density increases;
- Clinton has a significant number of residential dwellings in high-density beach areas. Although many are season in nature, that number is declining based upon the “winterization” of cottages – the transition of seasonal cottages to year-round occupation. The Town shall continue to strictly monitor and enforce provisions allowing for “winterization” of seasonal cottages, including increased monitoring of septic systems and

Town of Clinton  
Municipal Coastal Plan

aggressively pursuing and correcting health code violations and septic system failures. More stringent standards for inspection may become a necessity if off-site structural solutions, including sewers, are to be avoided.

- Due to the nonconforming nature of many of the lots and structures located within the dense beachfront areas where the potential for groundwater contamination is greatest, the Town of Clinton, through the Zoning Board of Appeals, shall adopt a policy of strict adherence to sewer minimization when reviewing applications for variances of Zoning Regulations.
- The Town shall reinforce existing, and develop new, educational efforts in order to better inform the public regarding the care and maintenance of septic systems, including instructions and guidelines for pumping of their systems. An informed citizenry is seen as a key to the success of any sewer avoidance program relying on on-site wastewater management.
- Reduce erosion and sedimentation through appropriate regulatory controls such as the establishment of vegetative buffers between development and wetlands and watercourses, provision of adequate erosion and sedimentation control measures as part of any development, and monitoring of construction activities.
- Require appropriate disposal of all waters from boats using Clinton Harbor.
- Discharge from impervious surfaces as driveways, roofs, patios should be directed into such things as rain gardens and infiltration systems.
- Upgrade existing discharge structures by adding treatment structures and vegetative swales.
- Roadside embankments should be upgraded to provide gentler slopes and dense vegetation to help filter the sheet flow, especially along Beach Park Road, Hammock Road, Causeway, Meadow Road and the embankment of the Route 1 Fire Station, Town Hall and municipal parking lot.
- Indian River: Improvement of drainage systems from municipal parking lots, provide erosion control structures or measures to stabilize the banks along the river, especially in the area of Route 1. Provide treatment of all stormwater runoff through mechanical or vegetative methods.
- Beach Park Road: Upgrade the tidal gates at the Hammock River so that normal tidal flows are maintained and reducing flooding during major

Town of Clinton  
Municipal Coastal Plan

storm events. The embankment along the tidal marsh areas should be improved to provide a vegetative cover that is capable of reducing the contaminants from the stormwater sheet flow off the roadway.

- Causeway & Meadow Road: The reconstruction of the road to provide safe passage during flooding events, drainage analysis to improve tidal and storm event passage under the roadway and shoulder/embankment improvements to provide a vegetative filter for sheet flow off of the roadway and improve drainage systems that incorporate both mechanical and natural filters for pollutant removal.
- Route 1: A comprehensive drainage plan should be developed to improve flows under the roadway and to establish guidelines and timelines for the upgrading of stormwater runoff quality through Best Management Practices (BMP's) and modifications to the systems that bring them into compliance with the Connecticut Stormwater Quality Manual.
- Require the incorporation of Best Management Practices (BMP's) for stormwater treatment in all development proposals.

The Town should strive to improve the water quality by implementing the BMP's as prescribed by the 2004 Connecticut Stormwater Quality Manual and the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control by implementing stronger regulations through Zoning and Subdivision Regulations and Ordinances in conjunction with the Phase II Stormwater permitting of the Town. The BMP's should reduce or eliminate pollutants from stormwater runoff. Stormwater runoff is the vehicle that transports pollutants from impervious surfaces, such as roofs, patios, roads, driveways, parking lots, and from vegetative areas such as lawns, hillsides and sloping land. The pollutants are from many sources, including animal wastes, failing septic systems, fertilizers, construction sites, leaves, grass clippings, brush, fluid leaks, oil, gasoline, automotive emissions, metal roofs, herbicides, insecticides, road salt, snow melt and litter. Some of the pollutants are excess nutrients, sediments, pathogens, organic materials, hydrocarbons, metals, synthetic organic chemicals, deicing chemicals, trash and debris, freshwater impacts diluting salinity of marshes and thermal impacts changing temperature of water affecting aquatic organisms. Organic materials through decay can lower the dissolved oxygen level of water creating fish kills, algal growth and odors.

In general, all of the above pollutants can reach Long Island Sound from all areas of the Town, not only from the land adjacent to the Sound, but also from areas well inland from the coast. The Town's topography directs all stormwater and surface water towards the Sound.

Town of Clinton  
Municipal Coastal Plan

Stricter enforcement of the Regulations will improve the water quality if applied to new development and re-development in the Coastal Management Area as well as throughout the town. This can be accomplished by a coordinated effort of Planning and Zoning, Public Works, the Selectmen and the Inland Wetland Agencies.

Best Management Practices

- Biannual cleaning of all structures.
- Require that all discharge be routed through treatment structures such as oil/water separators in conjunction with swirl separators for debris. Each discharge should be through vegetative swales of sufficient dimension that will filter the stormwater prior to entering wetlands or streams.
- Limit the amount of impervious surface and to retain the first inch of rainfall from those surfaces.
- New and improvement projects should be required to provide as much infiltration of stormwater as feasible and within standard engineering practices.
- New residential construction should be required to employ the latest technology for pollutant remediation of stormwater runoff and BMP's.

The Town, through its Phase II Stormwater Permit required from the Federal Environmental Protection Agency, should establish a plan to upgrade all the drainage structures and systems that would take into account future development needs and employ technology to reduce the pollutants by at least 80% or more prior to discharge into wetlands and tributaries of Long Island Sound.

Coastal Resource Protection (Continued)

3. Renew the shellfish population and concentration areas.

The oyster population of Clinton was virtually decimated by two viruses in 1996 and 1997. In an effort to renew the shellfish population and concentration areas, the Shellfish Commission should develop a Maintenance Plan and procedures for implementation that would ensure compliance and provisions for adjustment as needed in the future.

The Shellfish Commission should re-develop an active program for managing the shellfish and improving their number and quality. This program should include obtaining oysters and clams from other areas for seeding the rivers and harbor, prohibiting the taking of shellfish until the new stock is fully developed.

The Shellfish Commission should establish procedures and a permitting process for the taking of shellfish from the Hammonasset and Indian Rivers and from the Inner Harbor. The surviving shellfish west and south of the natural channel of the

Town of Clinton  
Municipal Coastal Plan

Hammonasset River officially belong to the Town of Madison and the Shellfish Commissions from both towns should cooperate in the management of these areas.

4. Maintain and improve the quality of existing tidal wetlands and provide rehabilitation and restoration of degraded tidal wetlands.

In the Town of Clinton there are approximately 600 acres of tidal wetlands. These wetland areas extend along the inner harbor of the town and the Hammonasset, Indian and Hammock Rivers. The majority of these tidal wetlands are Grid Ditched Marshes and Drained Marshes.

All of the tidal wetlands experience some form of degradation, primarily from past development practices and lack of maintenance, allowing invasive plants to take hold. The development areas adjacent to the wetlands was prior to regulations controlling construction, stormwater runoff and density development. Accumulation of sediment in the marshes, increased fresh runoff and restriction of tidal flows from undersized structures for transportation corridors resulting from the unregulated development, caused the eventual take over of the marshes by invasive plant species such as *common reed* (*Phragmites australis*), *multiflora rose* (*Rosa multiflora*), *oriental bittersweet* (*Celastrus orbiculata*), *honeysuckle* (*Lonicera morowii*) and *autumn olive* (*Elaeagnus umbellata*), which have replaced the *saltwater cordgrass* (*Spartina patens*).

Currently, a small population of wildlife uses the marsh areas. The species of wildlife includes foxes, deer, wild turkeys, Canadian geese, glossy ibis, muskrats, egrets, great blue herons, great white egrets, kingfishers, bitterns, small green herons, yellow-crowned night herons, turkey vultures, small brown marsh hawks, marsh sparrows, great horned owls, raccoons, skunks, opossums, and numerous types of ducks, cormorants, and ospreys.



Indian River, looking towards Route 1

The Town should perform studies to analyze and develop a long-term plan to restore approximately 225 acres of tidal wetland marshes to establish a viable ecosystem. The areas along the Indian River from Route 1 to the Interstate 95 corridor and along the Hammock River, from just west of the Causeway to the Westbrook Town Line and an area north of Shore Road and Grove Way to south of the New Haven Railroad

Town of Clinton  
Municipal Coastal Plan

right-of-way, as shown in *Figure 10: Tidal Restoration Map*. If restored, these areas would provide a larger and more productive wildlife habitat and enhance the views of the area.

The plan should include the best methods of restoration that would reduce or eliminate invasive plant species and provide for the correct water salinity and upgrade the existing drainage system to control the flow of water through the area. The plan should also include a long-term maintenance program to ensure the continued health of the tidal wetlands areas.

The Town, through various agencies and regulations, should develop a coordinated effort to ensure compliance with the plan. In addition, development in the area of the tidal wetlands should be carefully reviewed and scrutinized to be compatible with the plan.

**Public Access to the Coast:**

1. Increase physical access to the coast.
  - a. Identify areas appropriate for public access.

Currently there are two public beaches, which are shown on *Figure 9: Existing and Potential Public Access Plan*. The Town Beach, located at the end of Waterside Lane, has undergone several improvements in recent years. These include the construction of a viewing platform and reconstruction of the playground area.

Esposito Beach, which the town received from Louis Esposito during a harbor improvement project in the early 1950's, is located next to the Town Dock Facility. This area is to remain as a beach or the land reverts back to the Esposito family. Although this area is not utilized for swimming, it is good visual access and provides opportunities for the public to feed the wildlife, e.g. ducks and swans, without creating issues with boaters.



Launch Ramp at Waterside Lane

There are several areas of the shoreline that are private beaches. There are numerous beach and homeowner associations that maintain these beaches. However, they are not appropriate for public access at this time.

In addition, the Commission has identified on *Figure 9: Existing and Potential Public Access Plan* existing and potential public access areas. There are several town-owned parcels which should have

Town of Clinton  
Municipal Coastal Plan

appropriate signage added to identify public access to waterways. These include a launch ramp on the Hammonasset River on Route 1, a launch ramp near the Town Beach on Waterside Lane and two parcels that abut the Menunketesuck River. The Town should look into obtaining grant monies to increase the public awareness of these parcels as access to coastal resources.

The Town obtained a grant for the preliminary work on "Clinton Landings". This is going to include a viewing platform and small craft launch area on the Indian River, at the former Police Station building.

- b. Encourage development of a long-term program of public acquisition of selected waterfront and wetland areas.

The Town should develop a long-term plan, to be utilized by the Open Space Advisory Committee, for the acquisition of open space along waterfront and wetland areas by the Town.

There is approximately 104 acres located at the end of Highland Drive along the Hammonasset River that the Town should study as potential open space. Currently it is zoned for industrial use, however, it is mostly salt marsh that cannot be utilized as such.

- c. Develop public walkways along portions of the Hammonasset, Indian and Hammock Rivers.

The Clinton Land Conservation Trust recently obtained a large parcel of open space located on the Hammock River. The donor of this land is in the process of constructing a public walkway that will extend from Beach Park Road to Waterside Lane, with access to Stanton Road.

Identified on *Figure 5: Open Space and Public Facilities Plan* are potential open space areas that the Town should study and try to obtain. While a large percentage of this potential open space is salt marsh, walkways might be able to be constructed for public access.

- d. Improve vehicular traffic flow to and from the harbor by improving street conditions on existing access roads.

2. Increase visual access to the coast.



Future site of "Clinton Landings"

Town of Clinton  
Municipal Coastal Plan

- a. Provide flexibility and/or restrictions in Zoning Regulations so that new development can be designed to have the least impact on visual access to the waterfront.

Development Patterns within the Coastal Area

1. Continue periodic maintenance dredging of the existing Federal Navigation Channel.

The dimensions of the Federal Channel were long ago established by the United States Congress who authorized the Army Corps of Engineers (USACE) to maintain this project. In recent years, due to funding constraints, the USACE has put a higher priority in performing maintenance dredging projects on harbors that support greater levels of commercial and fishing activity over those harbors where recreational boating is the primary activity. Unfortunately, Clinton Harbor is considered by the USACE as more a recreational harbor than a center of commercial activity. This means that the Town must be proactive and persistent in making the need for maintenance dredging known to the USACE. Interaction with our congressional representatives to assist the Town in pursuing its dredging request is necessary to be successful in this endeavor as well as the active support of the public, both boaters and marina operators alike to make our needs known.

2. Restrict, through appropriate regulatory measures, the expansion of marinas and boats using the harbor to a level that will not overtax land support facilities, including existing transportation routes.
3. Discourage new, non-water dependent uses along the Hammonasset, Indian and Hammock Rivers and Clinton Harbor.
4. Reduce the density of new developments within the Coastal Area.

Proposed Land Use Changes

1. Indicate undeveloped portions of Cedar Island as proposed open space on the Future Land Use Plan and the Open Space and Public Facilities Plan.
2. Areas identified in the Sewer Minimization Program as potentially requiring development of a community sewer system should be shown on the Open Space and Public Facilities Plan.

Since the Plan of Conservation and Development was revised in 2000, the Town has moved from a sewer avoidance program to a sewer minimization program. This program identifies two areas within the coastal boundary, as shown in *Figure 10: Wastewater Facilities Plan*, as potential problem areas that must be closely monitored and, if necessary, placed on a community sewer system.

Town of Clinton  
Municipal Coastal Plan

3. A long-term plan to acquire the additional public beach and park areas shown in *Figure 5: Open Space and Public Facilities Plan* should be prepared. This plan should indicate priorities and method of acquisition.
4. The two town-owned beaches should be retained in their present use.

The need for open space and public beach area is greater than the need for additional public boating facilities.

5. Coastal high hazard areas (V-zones) as determined by the Federal Emergency Management Agency and shown on Flood Insurance Rate Maps for Clinton, should be maintained as open space and developed areas should be monitored and/or controlled to reduce losses of personal property and to ensure the safety of all occupants in this area.
6. The number of permitted slips/moorings in the harbor should be limited to between 1,400 and 1,700 provided that water quality in the harbor is maintained or improved.

The number of boat slips in all of Clinton Harbor in all of the marinas was counted at 1,450 in 2001 with another 20 private moorings located to the east of the channel off of Harbor View Beach Associations. Additionally, there are approximately 75 boats stored in vertical land rack storage structures within Clinton. Further boating activity is generated by the popularity of the Town owned launch ramp, which gets heavy usage in the summer months.

Currently there are no large scale plans to expand the facilities in town as the available space to do that is prohibitive.

7. Traffic movement on Main Street through the Central Business District should be improved by coordinating signal lights, eliminating or restricting on-street parking and providing additional exclusive turning lanes.
8. Undeveloped parcels greater than 10 acres should be zones to reduce the density of development.

(

(

(

## Section 7: Proposed Changes to Zoning Regulations

Zoning Regulations should be modified as needed to be consistent with the proposed supplement to the Town Plan of Conservation and Development and to address the coastal issues that were identified. The Zoning Regulations are already consistent with many of the goals and policies established in the proposed supplement to the Plan of Conservation and Development. Further, several of the issues that were raised – especially those dealing with encroachment into tidal wetlands and erosion and sedimentation – can be resolved, in large measure, through continued rigorous application of existing provisions of the Zoning Regulations and improved enforcement of permit conditions. Still, additional improvements can be made, and the following changes to the Zoning Regulations are suggested.

1. Establish provisions that permit flexibility in setback and area coverage requirements for all waterfront properties to allow the construction and reconstruction of permitted structures in such an orientation and position that they will have the least adverse impact on visual access to the waterfront while also not adversely impacting sensitive coastal resources.

Existing setback and area coverage requirements may result in a structure being located in a manner that reduces visual access to the waterfront more than necessary. By providing flexibility in the Regulations, the Commission can ensure that the greatest possible visual access is maintained.

2. Require that all slips and moorings for boats in Clinton Harbor must have adequate pump-out facilities available for waste discharge.

No expansion of slips/moorings should be permitted unless there is adequate means of properly servicing existing and additional boats and elimination of non-point sources of pollution with establishment of Best Management Practices (BMP's) for stormwater management that will significantly improve the water quality. Participation is strongly recommended for the marinas and Marine District uses to participate in various Department of Environmental Protection programs such as the "Clean Marina Program".

3. Revise the Flood Hazard Zone section of the Regulations to remove non-applicable portions and add new provisions reflecting current State and Federal requirements. Strengthen minimum requirements to reduce potential risks, promote the health and welfare of the Town's people and reduce losses to property.
4. Revise Regulations to discourage development within 100' of tidal wetlands.

While the Office of Long Island Sound Programs (OLISP) would prefer that the Regulations would provide for a 100-foot wide vegetative buffer, this is not feasible given the historic development patterns along our coast. Strictly enforcing the currently 50-foot buffer while requiring the applications to look for alternatives to any

Town of Clinton  
Municipal Coastal Plan

development within 100 feet of the tidal wetlands will improve the health of the tidal wetlands. Review and revise the prohibited and permitted uses within the tidal wetlands buffer.

5. Revise zoning designations for any tracts of undeveloped land within the coastal boundary area greater than ten acres.

Lot standards in this area for new development should be consistent with the R-40 District. These changes would serve to both protect abutting tidal wetlands and to reduce the likelihood of sewage discharge into Long Island Sound.

6. Revise Regulations to discourage the construction of jetties/groins and fences that prevent pedestrian passage below the mean high tide line, and encourage the construction of stairs over existing jetties/groins.
7. Revise Regulations to discourage the construction of fences and/or walls that block the view from the public way of marshes and open water.
8. The Town should develop stricter regulations for construction standards in high hazard areas that enhance the current codes through the Zoning Regulations.

The requirements set by FEMA should be strictly enforced and in some instances, increased to provide for more protection from the loss of property. Such increases include:

- Establishing a minimum of one foot of freeboard above the established base flood elevations;
- Require all new or substantially improved structures be certified by a Professional Engineer; and
- Elevation Certificates be provided prior to the issuance of a Certificate of Occupancy.

Town of Clinton  
Municipal Coastal Plan

## **Section 8: Non-Regulatory Recommendations**

In addition to the changes in the Plan of Conservation and Development and Zoning Regulations, additional actions can be taken by various Town bodies to address the coastal issues that were identified.

1. The Planning and Zoning Commission should prepare an existing land use map (for the entire town). This should be updated at least every two years, and annually if feasible.
2. The Planning and Zoning Commission and the Harbor Management Commission should jointly develop and maintain an up-to-date inventory of slips and moorings and on-shore storage capacity for boats as an aid in future planning efforts.
3. The Town should undertake a program aimed at long-term restoration of all degraded tidal marshes.
4. The Water Pollution Control Commission should proceed with a Sewer Minimization Program.
5. The Harbor Management Commission should update the Harbor Management Plan, created in 1992.
6. Any future dredging of the channel in Clinton Harbor or the Hammonasset River should be coordinated with the Shellfish Commission at least two years in advance of the time of the proposed dredging.
7. The Shellfish Commission should create a management program for improving shellfish production in the rivers and harbors.
8. The general public should be made aware of the Regulations pertaining to the areas that are subject to potential natural disasters.

The Town should implement a public awareness program that includes pamphlets, mass mailing and public workshops that would be spearheaded by the Board of Selectmen and the Director of Emergency Management, with the help of the Planning and Zoning Commission.

9. The town's infrastructure, especially Beach Park Road, Hammock Road, Shore Road, Causeway, Meadow Road, should be carefully looked at or improved to ensure they are passable during a major storm event. The roads should be improved so that they are at a minimum, at or above the base flood elevation.
10. Construction and Development Standards should be updated to include criteria for construction within the high hazard areas. The Public Works Commission should research the above and implement as soon as feasible and when opportunity avails.

Town of Clinton  
Municipal Coastal Plan

11. The Board of Selectmen and the Public Works Commission should develop a plan for periodic inspections of infrastructure within high hazard areas, recommend repairs or upgrades and set a time table for such repairs or upgrades.



Sol's Point showing existing control structures

Town of Clinton  
Municipal Coastal Plan

## Section 9: References

Clinton Central Business District, Southeast Quadrant Conceptual Plan. Flaherty Giavara Associates, Inc., April 1978.

Clinton Harbor Plan, Proposed as a Supplement to the Clinton Municipal Coastal Plan, (not approved). Connecticut River Estuary Regional Planning Agency, June 1982.

Coastal Policies and Use Guidelines, Planning Report No. 25. Connecticut Coastal Area Management Program, March 1978.

Coastal Recreation, Planning Report No. 25. Connecticut Coastal Area Management Program, March 1978.

Coastal Resources, Clinton Quadrangle and Essex Quadrangle. Connecticut Coastal Area Management Program, 1979.

Comprehensive Plan of Development, Clinton, Connecticut. Clinton Planning and Zoning Commission, 1978.

Connecticut Coastal Management Act, as amended. Connecticut General Statutes, Chapter 444, Section 22a-90 through 22a-112, inclusive.

Connecticut Water Quality Standards & Criteria. Connecticut DEP, Water Compliance Unit, September 1980.

Detailed Project Report, Clinton Harbor, Clinton and Madison Connecticut. New England Division, Corps of Engineers, March 1978.

Economic Impact Evaluation; Clinton Harbor Improvements. Flaherty Giavara Associates, Inc., Map 1978.

Flood Insurance Study, Town of Clinton, Connecticut. Federal Emergency Management Agency, March 1980.

Harbor Resource Management for Clinton, Connecticut. David P. Argyros, et al., January 1979.

Inland Wetlands and Water Courses Regulations of the Town of Clinton. Clinton Inland Wetlands Commission, June 1980.

Long Island Sound Dredge Material Containment Study Prototype Report. New England Division, Corps of Engineers, April 1982.

A Model Plan for the Hammonasset River Basin, Water Quality Preservation. L.A. Rouley, February 1979.

Town of Clinton  
Municipal Coastal Plan

Municipal Coast Program, Clinton, Connecticut, Preliminary Draft. Connecticut River Estuary Regional Planning Agency, undated.

Natural Drainage Basins in Connecticut (map). Connecticut DEP, Natural Resources Center, 1981.

Oil Spill Contingency Plan. Lower Connecticut Valley Selectman's Association, January 1981.

Shellfish Concentration Areas, Clinton Quadrangle. Connecticut Coastal Area Management Program, 1979.

Social and Economic Impacts of Selected Potential Dredged Material Containment Facilities in Long Island Sound. New England Division, Corps of Engineers, September 1981.

State of Connecticut Coastal Management Program and Final Environmental Impact Statement. NOAA, OCZM and Connecticut Coastal Management Program, 1980.

Subdivision Regulations of the Town of Clinton, Connecticut. Clinton Planning and Zoning Commission, July 2004.

Tidal Restriction: Its Impact on the Vegetation of Six Connecticut Coastal Marshes. Charles Roman, Connecticut College Thesis, July 1978.

Wastewater Facilities Plan for a Sewer Avoidance Program for the Town of Clinton, Connecticut. Malcolm Pirnie, Inc., September 1982.

Water Quality Classifications for the Central Coastal Basin (map), Connecticut DEP, Water Compliance Unit, undated.

Zoning Regulations of the Town of Clinton, Connecticut. Clinton Planning and Zoning Commission, October 2004.

Connecticut Coastal Management Manual. State of Connecticut, Department of Environmental Protection, September 2000.