

CONNECTICUT COASTAL MANAGEMENT MANUAL

SECTION 2

COASTAL RESOURCES

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Office of Long Island Sound Programs

Fact Sheet






for

ADVERSE IMPACTS

In order for projects proposed in the coastal boundary to be consistent with the Connecticut Coastal Management Act (CCMA), they must be designed to avoid, or if unavoidable, minimize adverse impacts to coastal resources and future water-dependent development opportunities and activities.

What are Adverse Impacts to Coastal Resources?

Eight adverse impacts to coastal resources are specifically defined in the Connecticut Coastal Management Act (CCMA). These include:

-  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 [Connecticut General Statutes (CGS) section 22a-93(15)(A)]. {EXAMPLE: the discharge of significant amounts of freshwater in the form of stormwater can alter the salinity and temperature in the vicinity of the outfall and, depending upon the upland source of the stormwater, it can introduce suspended solids, nutrients, toxics, heavy metals or pathogens.}
-  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 section 22a-93(15)(B)]. {EXAMPLE: the installation or alteration of a tide gate on a culvert that connects a tidal wetland to open coastal waters can change the patterns of tidal exchange and flushing rates.}
-  Degrading **natural erosion patterns** through the significant alteration of littoral transport of sediments in terms of deposition or source reduction [CGS section 22a-93(15)(C)]. {EXAMPLE: construction of a new groin on a beach will alter the pattern of deposition.}
-  Degrading **natural or existing drainage patterns** through the significant alteration of groundwater flow and recharge and volume of runoff [CGS section 22a-93(15)(D)]. {EXAMPLE: establishment of a new large impervious surface (e.g., a new shopping center) without on-site retention of stormwater will alter the volume of runoff.}
-  Increasing the hazard of **coastal flooding** through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones [CGS section 22a-93(15)(E)]. {NOTE: alterations of shorelines and bathymetry generally occur waterward of mean high water and thus consideration of this adverse impact is rarely required for municipal actions.}

- ☞ Degrading **visual quality** through significant alteration of the natural features of vistas and view points [CGS section 22a-93(15)(F)]. {EXAMPLE: new construction that significantly obstructs coastal views from a scenic overlook or public park.}
- ☞ 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 of the habitat [CGS section 22a-93(15)(G)]. {EXAMPLE: disturbance of piping plover nesting areas during the nesting season (mid-April to mid-August.)}
- ☞ Degrading **tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments** through significant alteration of their natural characteristics or function [CGS section 22a-93(15)(H)]. {EXAMPLE: stabilizing a bluff or escarpment with riprap or other armor will eliminate its natural function as a source of sand for the adjacent beach.}

The CCMA also includes definitions of **adverse impacts on future water-dependent development opportunities and activities** which include:

- ☞ Locating a non-water-dependent use at a site that (i) is physically suited for a water-dependent use for which there is a reasonable demand, or (ii) has been identified for a water-dependent use in the plan of development of the municipality or the zoning regulations [CGS section 22a-93(17)(A)]. {EXAMPLE: a waterfront site suitable for marina development is instead used for condominium or restaurant use.}
- ☞ Replacement of a water-dependent use with a non-water-dependent use [CGS section 22a-93(17)(B)]. {EXAMPLE: an existing marina is replaced by a retail development.}
- ☞ Siting of a non-water-dependent use which would substantially reduce or inhibit existing public access to marine or tidal waters [CGS section 22a-93(17)(C)]. {EXAMPLE: new waterfront residential condominium development with fencing and signage designed to discourage access to the public trust area.}

Why is it important to consider adverse impacts?

Avoiding and reducing adverse impacts will aid in preserving and protecting sensitive coastal resources and ensure that suitable waterfront sites are reserved for uses that require direct access to, or location in, marine or tidal waters.

Is a municipality required to consider adverse impacts?

Yes. In accordance with CGS section 22a-106, a municipal board or commission reviewing a coastal site plan must determine whether or not the potential adverse impacts of the proposed activity on both coastal resources and future water-dependent uses are acceptable.

In determining the acceptability of potential adverse impacts of the proposed activity described in the coastal site plan on both coastal resources and future water-dependent development opportunities, a municipal board or commission is required to:

- ▶ consider the characteristics of the site, including the location and condition of any coastal resources;
- ▶ consider the potential effects, both beneficial and adverse, of the proposed activity on coastal resources and future water-dependent development opportunities; and
- ▶ follow all applicable coastal resource and use goals and policies stated in CGS section 22a-92 and identify conflicts between the proposed activity and any CCMA goal or policy.

What can the municipality do to ensure adverse impacts to coastal resources and future water-dependent development opportunities are avoided or minimized?

- ▶ Incorporate as conditions or modifications of coastal site plan approval all reasonable measures which would mitigate the adverse impacts of the proposed activity on both coastal resources and future water-dependent development activities. For example, require as a condition of coastal site plan approval the provision of a permanent, deed-restricted public access easement and site amenities including parking, seating, and signage to offset the non-water-dependent nature of an upland residential development.
- ▶ Update zoning and subdivision regulations to better address minimizing statutorily defined adverse impacts. Ensure that sensitive resources are protected from development through the use of buffer areas and decreased impervious coverage.
- ▶ Adopt a stormwater management ordinance to ensure that stormwater is retained on-site and/or properly treated prior to its discharge to receiving waters.
- ▶ Update the municipal plan of conservation and development and municipal coastal program, if applicable, to better address minimizing statutorily defined adverse impacts. Strongly encourage resource setbacks to protect against development impacts, and identify sites that are suitable for the development of water-dependent uses, including public access. Promote the installation and use of best management practices to minimize impacts from already-developed areas. Prohibit the placement of shoreline flood and erosion control structures except in limited circumstances to protect infrastructure, water-dependent uses, and inhabited structures that pre-date January 1, 1980.
- ▶ Review development projects to control or mitigate (lessen) on-site and off-site impacts resulting from soil erosion, sedimentation, and stormwater runoff through the use of appropriate construction, siting, and design practices such as timing and staging of earthmoving, grading, and vegetating to minimize soil exposure
 - ✓ use of vegetative control techniques such as sod, temporary vegetation, or vegetation buffers,
 - ✓ use of non-vegetative control techniques such as mulches, nettings, and chemical binders,
 - ✓ use of structural control techniques such as filters, traps, basins, ponds and diversion

structures

- ✓ avoiding excavation on steep slopes (greater than 25%), and
 - ✓ utilizing terracing for slope control rather than retaining walls.
- ▶ Incorporate site planning and design features which limit or avoid negative visual and aesthetic impacts or which create positive visual and aesthetic impacts on the site and on the surrounding area. For example:
- ✓ alleviate blighted or deteriorated conditions on-site;
 - ✓ blend the architecture, size, materials, color, and texture of new structures with the existing qualities and characteristics of the man-made and natural environment;
 - ✓ provide visual setbacks from the water based on consideration of structure, height, and mass for all structures which do not functionally require a shorefront location;
 - ✓ make extensive use of landscaping, plantings, and natural ground coverings;
 - ✓ maintain, improve, or enhance visual access to the coast.
- ▶ Avoid any use or activity that would significantly increase floodwater elevations, or otherwise increase flood or erosion hazards.
- ▶ Revise zoning regulations to disallow the development of multi-family residential-type uses, including condominiums, hotels, motels, elderly housing, and assisted living facilities, in flood hazard areas (especially V-zones) unless it can be demonstrated that evacuation routes are not flood-prone and that other hazards to life and property have been minimized.
- ▶ Maintain or enhance public access to and along the shorefront when compatible with the proposed use, and design facilities so as to take advantage of their waterfront location in order to provide an area for public enjoyment.
- ▶ Maintain or improve access to and along publicly owned shorefront, including public trust lands below the mean high water mark.
- ▶ Ensure that all activities and uses are consistent with the capacity of the soil and subsoil to support such use or activity.
- ▶ Maintain or enhance cultural features through measures such as 1) protection of historic sites and districts from incompatible land uses and 2) prevention of harmful alteration of significant archaeological or geologic sites.



Office of Long Island Sound Programs Fact Sheet for ***BEACHES AND DUNES***¹

What are Beaches and Dunes?

Beaches and dunes are beach systems including barrier beach spits and tombolos, barrier beaches, pocket beaches, land contact beaches and related dunes and sandflats [Connecticut General Statutes (CGS) section 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 more narrow than in the summer.

Why are they valuable?

Beaches and dunes provide critical nesting habitat for some shore birds and unique habitats for plant species and communities. They act as a buffer to coastal flooding and erosion and dissipate wave energy. Beaches and dunes provide recreational opportunities, including fishing, swimming, sunning, hiking and sight-seeing. They are areas of scientific and educational value. Dunes and dune ridges act as reservoirs for sand supply to beaches.

What are the statutory policies that apply?

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 unreasonably interfere with natural processes of erosion and sedimentation; and to encourage the restoration and enhancement of disturbed or modified beach systems [CGS section 22a-92(b)(2)(C)]; and

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 beach below mean high water must not be unreasonably impaired by such structures [CGS section 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 section 22a-92(b)(1)(B)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

Degrading tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments through significant alteration of their natural characteristics or functions [CGS section 22a-93(15)(H)]

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in

order to lawfully approve the application. See the coastal site plan review and adverse impacts fact sheets for additional information.

What can a municipality do to minimize adverse impacts to these sensitive coastal resources?

- Preserve or enhance the natural form, volume and stability of beach systems during development reviews through: 1) the maintenance, restoration and enhancement of natural beach and dune vegetation; 2) the control of pedestrian access so as to prevent the trampling or destruction of beach system vegetation (through proper traffic design, control, construction methods); and 3) the utilization of non-structural erosion control techniques such as the planting of native dune grass and placement of sand fill for beach nourishment.
- Protect the nesting and breeding habitats of terns, plovers, and other shorebirds which occupy beach areas through the control of pedestrian and pet access, proper trash control and temporary restrictions of access to nesting and feeding areas during breeding season.
- Employ low impact pile and timber construction for the siting of necessary and unavoidable structures on beach systems. Require mitigation of impacts of such structures through the planting of native beach vegetation and minimizing encroachments into the beach and dune areas.
- Prohibit the extension of sewer or water lines to undeveloped beach and dune areas.
- Minimize seasonal conversions in beach areas allowing only those where: 1) the septic systems or existing sanitary sewers can accommodate year-round use; 2) the entire structure is located outside (landward) of any V-zone area; and the entire structure is located landward of the high tide line as defined in CGS section 22a-359(c).
- Employ construction techniques which minimize the necessary alteration of a beach system and its form, volume and vegetation. Such techniques include, but are not limited to: 1) placement of construction materials on elevated ramps so as to prevent soil compaction and destruction of beach vegetation; 2) storage of construction materials and equipment at a non-beach location; 3) scheduling of construction so as to avoid shorebird and shellfish breeding seasons; 5) restricting equipment movement to non-vegetated areas; and 6) restoring and revegetating areas disturbed by construction to predevelopment conditions.
- Update zoning regulations to better protect sensitive beach and dune areas by establishing or increasing setbacks or buffers between development (not only buildings, but also decks, parking lots, etc.) and for land disturbances which must occur on or in areas abutting beach and dune systems. Development setbacks should be wide enough to allow for predictable shoreline recession and/or dune migration which may occur during the useful life of the structure. Since January 1, 1980, it has been unlawful to approve structural flood and erosion control measures

to protect new development.

- Revise zoning and subdivision regulations to reduce development densities on and adjacent to beach resources. Prohibit high density residential-type development such as condominiums, assisted living facilities, hospitals, hotels/motels and similar uses in flood zones designated by the Federal Emergency Management Agency as V-zones where damage from direct wave action is likely during a so-called “100-year” storm event.
- Update the municipal Plan of Conservation and Development and Municipal Coastal Program, if applicable, to specifically include beach protection and preservation as a municipal goal in accordance with the guidelines found below. Include identification of appropriate beach areas for possible open space acquisition and encouragement of beach planting projects and the installation of appropriate educational signage.
- Adopt a stormwater management ordinance or make other regulatory changes to improve stormwater management (see *Water Quality* fact sheet for more information).
- Preserve the natural dynamic relationships between littoral sediment sources and depositional areas of beach systems by avoiding structures and uses which divert or otherwise alter littoral drift volumes, patterns and directions.
- Preserve public access to or along beaches below the mean high water mark by requiring that consistent development not obstruct passage along that public portion of the beach.
- Preserve the physical and spatial relationship between beach systems and related intertidal flats through the prohibition of excavation, grading and dredging of intertidal flats when they abut or are related to beach systems.

Does the DEP regulate activities on beaches and dunes?

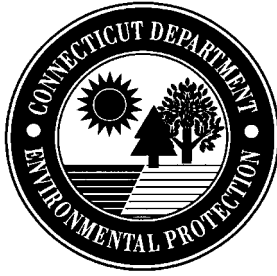
Maybe, depending on the location and specifics of the proposed activity. The Department of Environmental Protection (DEP) has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction or structure(s) is proposed at or waterward of the high tide line or in tidal wetlands, authorization from the DEP’s Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

What’s the difference between DEP and municipal regulatory areas?

As mentioned above, the DEP has direct regulatory jurisdiction over activities occurring in tidal

wetlands and/or waterward of the high tide line. The municipality regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the *Fact Sheet for State and Municipal Regulatory Jurisdictions*).

1. This fact sheet is one of 13, which detail coastal resources. Fact sheets are available for the following coastal resources: beaches and dunes, bluffs and escarpments, coastal hazard areas, coastal waters, developed shorefront, estuarine embayments, intertidal flats, islands, rocky shorefronts, shellfish beds, shorelands, submerged aquatic vegetation, and tidal wetlands.



Office of Long Island Sound Programs

Fact Sheet

for

BLUFFS AND ESCARPMENTS¹

What are Bluffs and Escarpments?

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 [Connecticut General Statutes (CGS) section 22a-93(7)(A)]. In general, they are dynamic, erosion-prone areas.

Why are they valuable?

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 dissipating wave energy. In some instances they can provide recreational opportunities and scenic vistas if such uses can be designed to protect the resource from disturbance.

What are the statutory policies that apply to projects where bluffs and escarpments are on or adjacent to the site?

To manage coastal 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 section 22a-92(b)(2)(A)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

Degrading tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments through significant alteration of their natural characteristics or functions [CGS section 22a-93(15)(H)]

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. See the coastal site plan review and adverse impacts fact sheets for additional information.

What can a municipality do to minimize impacts to bluffs and escarpments?

- G** Maintain coastal bluffs and escarpments in their natural state as vertical buffers to storms and flooding.
- G** Preserve bluff and escarpment slopes through the maintenance, enhancement and restoration of natural vegetative cover. Discourage disturbance of the face of the slope.
- G** Employ non-structural erosion control techniques such as erosion setbacks and buffers, locate vulnerable uses out of hazard areas, and stabilize with vegetation. See *Fact Sheet for Coastal Hazard Areas* for more information regarding erosion control techniques.
- G** Preserve the natural patterns and volumes of littoral transport between bluffs and escarpments and the related beaches and dunes by minimizing disturbance of the face of the bluff or escarpment. Provide an adequate buffer between the top of the slope and proposed development or use to allow for the continuing natural erosion of this resource.
- G** Update the municipal Plan of Conservation and Development and Municipal Coastal Program, if applicable, to specifically include as a goal the protection and preservation of bluffs and escarpments.
- G** Establish or increase development setbacks in zoning and subdivision regulations for the siting of structures and other work that occurs on lands adjacent to bluffs and escarpments. Setbacks should allow for predictable bluff and escarpment recession or erosion that may occur during the useful life of the structure or use of the property.
- G** Employ temporary, non-structural erosion control techniques such as mulch, hay bales, fabric nets and short term drainage controls during the development of any necessary and unavoidable structures on or adjacent to bluffs and escarpments.
- G** Maintain or enhance public access when compatible with the upland proposed use. Design proposed development to take advantage of waterfront location by providing an area for public enjoyment. Such area could include: 1) access to and along the top of the bluff or escarpment to afford coastal views; and/or 2) access to and along the toe of the bluff or escarpment, including the public trust lands below the mean high water mark.

Does the DEP regulate activities on bluffs and escarpments?

Maybe, depending on the location and specifics of the proposed activity. The Department of Environmental Protection (DEP) has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction or structure(s) is proposed at or waterward of the high tide line or in tidal wetlands, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

What's the difference between DEP and municipal regulatory areas?

As mentioned above, the DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. The Town regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the *Fact Sheet for State and Municipal Regulatory Jurisdictions*).

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Office of Long Island Sound Programs

Fact Sheet

for

COASTAL HAZARD AREAS¹

What are Coastal Hazard Areas?

Coastal hazard areas are statutorily defined as those land 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 [Connecticut General Statutes (CGS) section 22a-93(7)(H)]. In general, coastal flood hazard areas include all areas designated as within A-zone and V-zones by the Federal Emergency Management Agency (FEMA). A-zones are subject to still-water flooding during so called “100-year” flood events. During 100-year flood events, V-zones are subject to direct action by waves three feet or more in height.

Why are they valuable?

Coastal hazard areas encompass most other important coastal resources, can serve as flood storage areas, and provide numerous open space and recreational opportunities. They are, by their nature, hazardous areas for structural development, especially residential-type uses.

What are the statutory policies that apply?

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 section 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 section 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 section 22a-92(c)(2)(B)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

Increasing the hazard of coastal flooding through significant alteration of shoreline configurations or bathymetry, particularly within high velocity flood zones [CGS section 22a-3(15)(B)].

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. See the coastal site plan review and adverse impacts fact sheets for further information.

What can a municipality do to minimize impacts to these sensitive coastal resources?

- N** Update municipal Plan of Conservation and Development, Municipal Coastal Program, if applicable, and zoning regulations and subdivision regulations to better manage development in coastal hazard areas by incorporating language that reflects the following guidance.
- N** Apply the National Flood Insurance Program flood plain management requirements [24 Code of Federal Regulations (CFR) 60.3] to: 1) all activities in designated A-zones and floodways; and 2) to all new construction or substantial improvements in designated coastal high hazard zones (V-zones).
- N** Prevent development of high-density residential-type uses (e.g., condominium complexes, elderly housing, hospitals, assisted living facilities, hotels/motels, etc.) in V-zones. Allow such uses in A-zones only if access to the site is not flood prone and the applicant can demonstrate the project has been designed so that risks to life and property are not increased.
- N** Site all facilities that have the potential to cause pollution or hazardous conditions as a result of flooding or erosion, such as energy or oil and chemical handling facilities, outside of coastal hazard areas (A and V zones). If a facility, because of its water-dependent nature, cannot be located outside of a coastal flood hazard area, incorporate flood-proofing measures in the design of the facility to protect against flooding including extreme conditions (generally a 500-year frequency flood event or greater).
- N** Site all new or substantially improved buildings, dwellings and non-water-dependent structures out of the designated coastal high hazard area (V-Zone).

- N Elevate sufficiently above the base flood level the lowest floor of a new or substantially improved water-dependent building and habitable structure which cannot functionally be sited outside the V-Zone to minimize the impacts of wave action generated by 100 year frequency storm events.
- N Where applicable, require that all new development in erosion-prone areas, particularly in any erosion hazard areas designated by the Commissioner of the Department of Environmental Protection, be set back from the water to create a safety buffer strip consisting of natural vegetative cover. The width of this buffer should be based on the predicted erosion rate in conjunction with the anticipated "useful life" of the proposed structure.
- N Employ non-structural flood and erosion control techniques such as erosion setbacks and buffers, location of vulnerable uses out of hazard areas, vegetative stabilization, and construction of artificial dunes, as the primary means of controlling flood and erosion hazards except in instances where such non-structural techniques would be inadequate to protect infrastructural facilities (such as sewer and water lines), water dependent uses, or existing inhabited structures that were in place prior to January 1, 1980. Structural flood and erosion control methods cannot be approved for residential structures approved after January 1, 1980.
- N Utilize structural flood and erosion control techniques such as groins, seawalls, and revetments only when: 1) the structures are being placed to provide protection to infrastructural facilities, water dependent uses, or existing inhabited structures that were in place prior to January 1, 1980; 2) non-structural techniques have been explored and are found to be infeasible; 3) there is no other less environmentally damaging alternative; and 4) all reasonable mitigation measures and techniques are employed to minimize adverse environmental impacts.
- N Maintain or restore natural vegetation in coastal high hazard areas (V-Zones) to serve as buffers against storm, wind, and wave energy.
- N Maintain or restore natural landforms within or adjacent to coastal hazards areas that serve as buffers to flood and erosion such as beaches, dunes and wetlands.
- N Avoid any use or activity which would significantly increase floodwater elevations, or otherwise increase flood or erosion hazards.
- N Maintain or restore natural patterns of littoral transport and avoid uses and activities which interrupt or alter natural sediment transport from eroding source areas to depositional receiving areas.
- N Apply all coastal policies and use guidelines for other coastal resources where they occur within coastal hazard areas (see individual fact sheets for general coastal resources, beaches and dunes, bluffs and escarpments, coastal hazard areas, coastal waters,

developed shorefront, estuarine embayments, intertidal flats, islands, rocky shorefronts, shellfish beds, shorelands, submerged aquatic vegetation, and tidal wetlands).

Does the DEP regulate activities in coastal flood hazard areas?

Maybe, depending on the location and specifics of the proposed activity. The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in hole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35 and/or the statutes governing the placement of structures, dredging, or filling in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

While each municipality implements its own flood management regulations, the DEP Bureau of Water Management, Inland Water Resources Division, provides training, technical and planning assistance to municipalities using guidelines developed under the National Flood Insurance Program. However, each municipality maintains its regulatory jurisdiction over its flood management regulations.

What's the difference between DEP and municipal regulatory areas?

As mentioned above, the DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. The Town regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the *Fact Sheet for State and Municipal Regulatory Jurisdictions*).

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Office of Long Island Sound Programs

Fact Sheet

for

COASTAL WATERS AND ESTUARINE EMBAYMENTS

What are Coastal Waters and Estuarine Embayments?

Coastal waters 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 [Connecticut General Statutes (CGS) section 22a-93(5)].

Coastal waters 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 section 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 section 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 section 22a-93(7)(G)].

Why are they valuable?

Coastal waters are areas of high primary and secondary productivity. Coastal waters provide habitat for a variety of marine organisms (shellfish, finfish, crustaceans and benthic organisms); support many diverse floral and faunal species; provide spawning and breeding areas for many species; and are an important contributor to the productivity of contiguous ocean waters. Coastal waters are critical to the assimilation of industrial, commercial and residential wastes; support commercial and recreational fisheries; are important to marine transportation and navigation; and provide recreational opportunities for boating, swimming, fishing, diving and vistas.

Estuarine embayments are semi-enclosed bodies of coastal waters, such as tidal rivers or coves, which are measurably diluted by freshwater inputs. As such they have high biological productivity; provide significant habitat for shellfish, finfish and waterfowl; serve as spawning and feeding grounds for commercially important finfish; are essential biological corridors for spawning anadromous and catadromous fish; exhibit unique circulation patterns (estuarine circulation) which influence nutrient distribution, control salinity, mix the water column and work and redistribute sediments; supply sheltered areas for the development of eelgrass flats or beds of other submerged aquatic vegetation which are highly productive; provide nursery grounds, shelter and refuge for various aquatic species; are a vital food source for marine organisms, support an important biomass of epiphytic plants (plants that grow on other plants or objects upon which they depend for mechanical support but not as sources of nutrients); and transfer nutrients from sediments into

the water column. Estuarine embayments also provide protected locations for activities such as boating, swimming, fishing and other passive recreational activities and protected areas for deep water access and navigational corridors for commercial and industrial waterfront uses; are areas of unique scientific and educational value, and some embayments contain eelgrass flats which reduce current velocities, control erosion by trapping and binding sediments and provide essential aquatic habitat.

What are the statutory policies that apply?

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 alteration of the flat may outweigh the long-term benefits to marine biota, waterfowl, and commercial and recreational finfisheries [CGS section 22a-92(c)(2)(A)].

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 recreational and other legitimate beneficial uses of water, and that the use of public funds 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 section 22a-422, as referenced by CGS section 22a-92(a)(2)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

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 section 22a-93(15)(A)].

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. (See the *Coastal Site Plan Review* and *Adverse Impacts* fact sheets for additional information.)

Finally, the state statutes regarding planning and zoning contain specific requirements for zoning regulations and Plans of Development that relate to the restoration and protection of coastal resources. These are:

In any municipality that is contiguous to Long Island Sound the regulations adopted under this section shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound. Such regulations shall provide that the commission consider the environmental impact on Long Island Sound of any proposal for development [CGS section 8-2(b)].

The plan adopted under this section for any municipality that is contiguous to Long Island Sound shall be made with reasonable consideration for restoration and protection of the

ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound [excerpt from CGS section 8-23].

What can a municipality do to minimize impacts to these sensitive coastal resources?

- ★ Maintain the continued biological productivity and viability of Long Island Sound as a resource capable of supporting: 1) healthy marine and finfish resources; 2) a broad spectrum of safe and healthy recreational opportunities; and 3) an efficient system of marine transportation and navigation through the protection of coastal water quality. The most direct approach is to adopt and implement a stormwater management ordinance, either as an amendment to the municipal zoning regulations or as a “stand-alone” ordinance. In either case, it should require that the volume of runoff generated by the first one-inch of rainfall is retained on-site and the post-development runoff rates and volumes should not exceed the pre-development runoff rates and volumes. (See *Stormwater Management* fact sheet for additional information.)
- ★ Review the existing zoning regulations regarding the maximum impervious cover allowed. Reduce this wherever possible, especially adjacent to coastal waters and other sensitive coastal resources. This will aid in protecting coastal water quality by minimizing stormwater discharges.
- ★ Require regularly scheduled street sweeping and catch basin clean-outs to minimize the amount of sediment, contaminants and floatable debris entering coastal waters through the municipal stormwater management system.
- ★ Identify outfalls from the municipal stormwater systems and opportunities for retrofits to treat stormwater, especially from roads, prior to discharge.
- ★ Prohibit the dumping of sand, snow and demolition debris into any waterbodies.
- ★ Consider coordination with neighboring municipalities on watershed management planning.
- ★ Update the municipal Plan of Conservation and Development, Municipal Coastal Program, if applicable, and zoning and subdivision regulations to better protect coastal waters and estuarine embayments by increasing buffers between development and these coastal resources, with the possible exception of developed shorefront where water-dependent development is suitable and to improve stormwater management. (See fact sheets regarding *Vegetated Buffers*, *Stormwater Management* and *Adverse Impacts* for more information).
- ★ Maintain and improve water quality in accordance with the highest standards set by federal, state or local authorities by: 1) preserving and maintaining those waters with existing quality better than established standards; 2) restoring the surface waters of the municipality to a quality consistent with its use for the protection and propagation of fish, shellfish and wildlife including breeding, feeding and nursery grounds and with its use for recreation in and on the water; and 3) restoring all water to the maximum extent possible, at least to a

quality consistent with Class B or SB. Class B waters for the following recreational uses: fish and wildlife habitat; agricultural and industrial supply and other legitimate uses including navigation. Class SB waters allow for the following uses: fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation.

Does the DEP regulate activities in coastal waters and estuarine embayments?

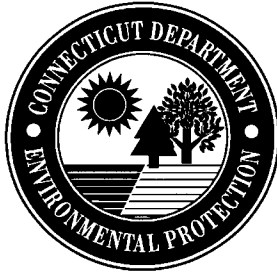
Yes. The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, or filling in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

Further, the DEP's Water Bureau administers programs regulating the discharges of nonpoint (e.g., urban stormwater runoff) and point sources (e.g., sewage outfalls) of pollution into coastal waters and estuarine embayments. Contact the DEP's Water Bureau (860-424-3705) for additional information on how to better control or report such discharges if you believe they are not being properly managed or are unauthorized.

What's the difference between DEP and municipal regulatory areas?

As mentioned above, the DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. The Town regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the fact sheet for *State and Municipal Regulatory Jurisdictions*).

1. This fact sheet is one of 13, which detail coastal resources. Fact sheets are available for the following coastal resources: beaches and dunes, bluffs and escarpments, coastal hazard areas, coastal waters, developed shorefront, estuarine embayments, intertidal flats, islands, rocky shorefronts, shellfish beds, shorelands, submerged aquatic vegetation, and tidal wetlands.



Office of Long Island Sound Programs Fact Sheet for ***DEVELOPED SHOREFRONTS***¹

What are Developed Shorefronts?

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 [Connecticut General Statutes (CGS) section 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.

Why are they valuable?

Developed Shorefronts have limited natural value; however, they provide other significant benefits. They are economically valuable; they serve as major transportation and commercial centers; they support significant recreational boating opportunities; and they provide substantial cultural and historic value.

What are the statutory policies that apply?

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 uses [CGS section 22a-92(b)(2)(G)].

What can a municipality do to best utilize these resources?

- 1 Where feasible, reserve developed shorefront areas for intensive water-dependent uses, including but not limited to commercial and recreational fishing, boating, and other water-dependent commercial, industrial and recreational uses. If a particular site is not physically suited to intensive water-dependent use, the provision of uses providing public access should be required as a critical component of any development or redevelopment effort. Please see the *Water-Dependent Use* fact sheet for additional information. During redevelopment efforts, proper stormwater management measures should be implemented to control on-site and off-site impacts. During construction, of particular concern are impacts resulting from soil erosion, sedimentation and stormwater runoff. Control and mitigation can occur through the use of appropriate construction, siting, and design practices such as: 1) timing and staging of earthmoving, grading and the establishment of vegetation to minimize soil exposure; 2) use of vegetative control techniques such as sod, temporary vegetation, or vegetated buffers; 3) use of non-vegetative control techniques, such as mulches, netting, and chemical binders; 4) use of structural control techniques such as filters, traps, basins, ponds, and diversion structures; 5) avoiding development on steep slopes (greater than 25%); and 6) terracing. Also, redevelopment provides opportunities to retrofit stormwater management systems to minimize adverse impacts to water quality by adding retention systems, and oil, grease, and sediment traps on existing and proposed stormwater collection systems.
- 1 Update the municipal plan of conservation and development and zoning regulations to identify and designate appropriate developed shorefront areas as commercial/industrial water-dependent zones.

- / Avoid any use or activity, which would significantly increase flood or erosion hazards.
- / Maintain or enhance public access to and along developed shorefront areas where compatible with the nature of the existing or proposed use. Design waterfront commercial, industrial, utility, residential and institutional facilities to provide an attractive area along the water for public enjoyment of the shorefront.
- / Reuse and redevelop built-up or vacant shorefront in preference to development of previously undeveloped shorefront.
- / Ensure that shorefront development is compatible with municipally and state approved municipal harbor management plans.
- / All activities and uses should be consistent with the capacity of the soil and subsoil to support such uses or activities. This is especially important for stormwater retention/infiltration and treatment systems. Please see the stormwater fact sheet for more information.

Does the DEP regulate activities on developed shorefronts?

Maybe, depending to the specifics of the proposed activities. The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, or filling in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

What's the difference between DEP and municipal regulatory areas?

As mentioned above, the DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. The municipality regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the fact sheet for *State and Municipal Regulatory Jurisdictions*).

¹ This fact sheet is one of 14, which detail coastal resources. Fact sheets are available for the following coastal resources: general coastal resources, beaches and dunes, bluffs and escarpments, coastal hazard areas, coastal waters, developed shorefront, estuarine embayments, intertidal flats, islands, rocky shorefronts, shellfish beds, shorelands, submerged aquatic vegetation, and tidal wetlands.



Office of Long Island Sound Programs

Fact Sheet

for

*INTERTIDAL FLATS*¹

What are Intertidal Flats?

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 [Connecticut General Statutes (CGS) section 22a-93(7)(D)].

Why are they valuable?

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.

What are the statutory policies that apply?

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 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 substantially accelerate erosion or lead to significant despoliation of tidal flats [CGS Sec. 22a-92(b)(2)(C)].

What can a municipality do to minimize impacts to these sensitive coastal resources?

W Utilize all reasonable siting and construction practices that avoid or substantially reduce the potential negative impacts of development in or on intertidal flats. These practices may include, but are not limited to, minimizing and controlling both soil erosion and sedimentation, and stormwater impacts. See the fact sheets regarding *Coastal Waters*, *Stormwater Management*, and *Vegetated Buffers* for additional information.

- W** Update municipal Plan of Conservation and Development and zoning and subdivision regulations to better protect intertidal flats by increasing buffers between development and these coastal resources and improve stormwater management (see fact sheets regarding *Vegetated Buffers*, *Stormwater Management*, and *water quality* for more information).
- W** Maintain the natural patterns of sedimentation and littoral transport which determine the character and quality of intertidal flats.
- W** Avoid or minimize activities that interrupt or alter the nature, chemistry or tidal pattern of estuarine waters that inundate and permeate intertidal flats.
- W** Protect and, when practicable, restore shellfish species diversity and the capacity of intertidal flats to support shellfish, invertebrates, fish and shorebirds.

Does the DEP regulate activities on intertidal flats?

Yes. The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. By definition, intertidal flats areas are waterward of the high tide line. Thus, any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) that is proposed on intertidal flats requires prior authorization from the DEP's Office of Long Island Sound Programs in accordance with the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

1. This fact sheet is one of 13, which detail coastal resources. Fact sheets are available for the following coastal resources: beaches and dunes, bluffs and escarpments, coastal hazard areas, coastal waters, developed shorefront, estuarine embayments, intertidal flats, islands, rocky shorefronts, shellfish beds, shorelands, submerged aquatic vegetation, and tidal wetlands.



Office of Long Island Sound Programs

Fact Sheet

for

ISLANDS¹

What are Islands?

Islands are lands surrounded on all sides by water [Connecticut General Statutes (CGS) section 22a-93(7)(J)].

Why are they valuable?

Islands, undeveloped islands 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 features, provide unique recreational opportunities for fishing, swimming, boating, 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.

What are the statutory policies that apply?

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 islands or which 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 section 22a-92(b)(2)(H)].

What can a municipality do to minimize impacts to these sensitive coastal resources?

- Limit development to low-density, low-impact residential or recreational uses.
- Where limited development is proposed on islands, control or mitigate on-site and off-site impacts resulting from soil erosion, sedimentation, and stormwater runoff through the use of appropriate construction, siting, and design practices such as: 1) timing and staging of earthmoving, grading, and establishing vegetation to minimize soil exposure; and 2) use of vegetative control techniques such as filters, traps, basins, ponds, and diversion structures.
- Prohibit extension of fixed access routes (such as roads or bridges) and infrastructural facilities (such as sewer and water lines) that would induce or support high intensity urban or suburban use of islands. Allow and encourage the use of shared docks for access to and from developed islands.
- Incorporate site planning and design features that limit or avoid negative visual impacts from the water. This can be accomplished by: 1) providing visual setbacks from the

water based on considerations of building height and mass for all structures which do not functionally require a shorefront location; and 2) making extensive use of landscaping, plantings, and natural ground coverings. See the fact sheet on *Adverse Impacts* for additional information regarding visual impacts.

- Maintain, restore, or enhance critical habitats for terns, herons, shorebirds, and other valuable, unique, rare or endangered flora and fauna.
- Avoid any use or activity that would significantly increase flood or erosion hazards.
- Maintain or enhance public access to and along the shorefront areas that are publicly owned, including public land below the mean high water mark.
- Apply all coastal policies and use guidelines for all other coastal resources where they occur on islands.
- Update the municipal Plan of Conservation and Development and Municipal Coastal Program, if applicable, to specifically include island protection and preservation as a municipal goal. The unique constraints to development of undeveloped islands must be recognized in the planning process, including difficulties with access for construction equipment and machinery.

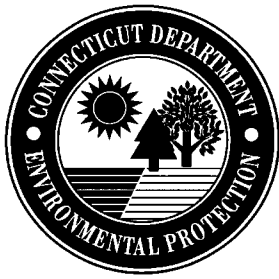
Does the DEP regulate activities on islands?

Maybe, depending on the location and specifics of the proposed activity. The Department of Environmental Protection (DEP) has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line or in tidal wetlands, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

What's the difference between DEP and municipal regulatory areas?

The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. The Town regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the fact sheet for *State and Municipal Regulatory Jurisdictions*).

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Office of Long Island Sound Programs

Fact Sheet

for

ROCKY SHOREFRONTS

What are Rocky Shorefronts?

Rocky shorefronts are shorefront areas composed of bedrock, boulders, and cobbles that are highly erosion resistant and are an insignificant source of sediments for other coastal landforms [Connecticut General Statutes (CGS) section 22a-93(7)(B)]. In general, rocky shorefronts are naturally occurring rocky outcrops that are the interface between the land and water.

Why are they valuable?

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.

What are the statutory policies that apply?

To manage rocky shorefronts so as to insure that development proceeds in a manner which does not irreparably reduce the capability of the 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 section 22a-92(b)(2)(B)].

In addition, the Connecticut Coastal Management Act defines as adverse impacts:

Degrading tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments through significant alteration of their natural characteristics or functions [CGS section 22a-93(15)(H)]

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. See the *Coastal Site Plan Review* and *Adverse Impacts* fact sheets for additional information.

What can a municipality do to minimize impacts to these sensitive coastal resources?

- D** Preserve rocky shorefront slope and composition in order to provide a natural buffer to wave attack, storms, and erosion.

- D Maintain the natural features of rocky shorefronts which provide habitat for intertidal shellfish and molluscs and feeding grounds and refuge areas for shorebirds, finfish and shellfish.
- D Update the municipal Plan of Conservation and Development and Municipal Coastal Program, if applicable, to specifically include the identification, protection and preservation of rocky shorefronts as a municipal goal. Include identification of rocky shorefront areas where public access is suitable and desirable.
- D Update zoning regulations to better protect sensitive resources by establishing or increasing setbacks or buffers between development (not only buildings, but also decks, parking lots, etc.) and for land disturbances which must occur on or in areas abutting rocky shorefronts. Development setbacks should be wide enough to allow for reasonable upland use in order to discourage disturbance of the rocky shorefront.

Does the DEP regulate activities on rocky shorefronts?

Maybe, depending on the location and specifics of the proposed activity. The Department of Environmental Protection (DEP) has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line or in tidal wetlands, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

What's the difference between DEP and municipal regulatory areas?

The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. The Town regulates the upland waterward to the mean high water mark. In general, the mean high water mark is lower than the high tide line. Therefore, on gently sloping shorelines, there will be an area of overlapping jurisdictions (because the high tide line will be further landward than mean high water). Along steep shorefronts, for instance along a seawall, the high tide line and mean high water mark will be more closely aligned, or even coincide as the same line. The area of overlapping jurisdictions will be minimal in that case. Regardless of whether the DEP and/or the municipality have jurisdiction, the statutory policies and standards apply equally to both jurisdictions (see, also, the fact sheet for *State and Municipal Regulatory Jurisdictions*).

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Office of Long Island Sound Programs
Fact Sheet
for
SHELLFISH CONCENTRATION
AREAS

What are Shellfish Concentration Areas?

Shellfish concentration areas are actual, potential or historic areas in coastal waters, in which one or more species of shellfish aggregate [Connecticut General Statutes (CGS) section 22a-93(7)(N)]. Many shellfish concentration areas provide harvest opportunities for personal consumption or by Connecticut's aquaculture industry.

Why are they valuable?

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 for the shellfish industry, and provide employment through the shellfish industry.

What are the statutory policies that apply to shellfish concentration areas?

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 section 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 section 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 section 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 section 22a-92(a)(3)].

To protect and where feasible, upgrade facilities serving the commercial fishing and recreational boating industries [CGS section 22a-92(b)(1)(I)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

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 the natural components of the habitat [CGS section 22a-93(15)(G)].

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. See the coastal site plan review and adverse impacts fact sheets for additional information.

Finally, the statutes regarding planning and zoning contain specific requirements for zoning regulations and plans of development that relate to the restoration and protection of coastal resources. These are:

In any municipality that is contiguous to Long Island Sound the regulations adopted under this section shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound. Such regulations shall provide that the commission consider the environmental impact on Long Island Sound of any proposal for development [CGS section 8-2(b)].

The plan adopted under this section for any municipality that is contiguous to Long Island Sound shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound [excerpt from CGS section 8-23].

What can a municipality do to minimize impacts to these sensitive coastal resources?

- C** Update the Plan of Conservation and Development, the Municipal Coastal Program, if applicable, and zoning and subdivision regulations to better protect shellfish concentration areas by increasing buffers between development and these coastal resources, and to improve stormwater management (see fact sheets regarding *Vegetated Buffers*, *Stormwater Management* and *Water Quality* for more information).
- C** Maintain and ensure the continued viability and productivity of shellfish concentration areas by: 1) revitalizing and increasing the number and extent of productive shellfish beds; and 2) restoring and maintaining healthy and productive bottom conditions.
- C** Maintain and restore water quality to a condition that permits direct harvesting of shellfish for human consumption.

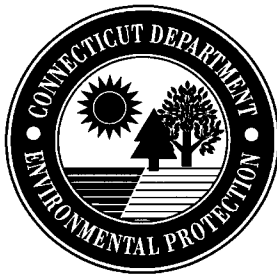
- C Avoid activities that may have an adverse impact on water column characteristics, sedimentation, and substrates in shellfish concentration areas during critical spawning periods.
- C Avoid uses and activities that might restrict the harvesting of shellfish of a quality suitable for human consumption.
- C Avoid the placement of structures associated with upland development which would restrict access to or prevent the harvesting of shellfish.
- C Apply guidelines for coastal waters and estuarine embayments for shellfish concentration areas (see *Coastal Waters and Estuarine Embayments* fact sheet).

Does the DEP regulate activities in shellfish concentration areas?

Yes. The Department of Environmental Protection (DEP) has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. By their nature, shellfish concentration areas are waterward of the high tide line. Thus, any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) that is proposed in shellfish concentration areas requires prior authorization from the DEP's Office of Long Island Sound Programs in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

Other agencies or local commissions may have regulatory jurisdiction over shellfish concentration areas. Local shellfish commissions or harbor management commissions may have policies and regulations regarding shellfish concentration areas that are within their municipality's jurisdiction. The State of Connecticut Department of Agriculture is the lead state agency with control over all shellfisheries within state jurisdiction. The Department of Agriculture Bureau of Aquaculture also has exclusive authority for regulating aquaculture structures and operations, except for water discharges, in the waters of the State pursuant to Public Act 99-93.

1. This fact sheet is one of 13, which detail coastal resources. Fact sheets are available for the following coastal resources: beaches and dunes, bluffs and escarpments, coastal hazard areas, coastal waters, developed shorefront, estuarine embayments, intertidal flats, islands, rocky shorefronts, shellfish beds, shorelands, submerged aquatic vegetation, and tidal wetlands.



Office of Long Island Sound Programs

Fact Sheet

for

SHORELANDS

What are Shorelands?

Shorelands are those land 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 drumlins [Connecticut General Statutes (CGS) section 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.

Why are they important?

Shorelands function as immediate sources of upland runoff contributing to coastal drainage, serve as immediate sources of upland sediments, provide scenic vistas, and have high development and redevelopment potential.

What are the statutory policies that apply?

To regulate shoreland use and development in a manner which minimizes adverse impacts upon adjacent coastal systems and resources [CGS section 22a-92(b)(2)(I)].

The statutes regarding planning and zoning also contain specific requirements for zoning regulations and Plans of Conservation and Development that relate to the restoration and protection of coastal resources. These are:

In any municipality that is contiguous to Long Island Sound the regulations adopted under this section shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound. Such regulations shall provide that the commission consider the environmental impact on Long Island Sound of any proposal for development [CGS section 8-2(b)].

The plan adopted under this section for any municipality that is contiguous to Long Island Sound shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound [excerpt from CGS section 8-23].

What can a municipality do to minimize impacts to adjacent coastal resources and promote appropriate development and use of shorelands?

-) Revise municipal Plan of Conservation and Development, where appropriate, to guide coastal development to shorelands and to require setbacks for new structures from bluffs and escarpments, tidal wetlands, and beaches or dunes in order to minimize potential impacts to sensitive coastal resources. Setbacks should be designed to protect resources from both direct development impacts and secondary impacts associated with stormwater runoff. See fact sheets for individual resources for additional protection and preservation measures.
-) Update municipal zoning regulations to require maintenance of vegetative buffer areas on the perimeter of shorelands as necessary to: 1) protect adjacent coastal wetlands, beaches, and watercourses from the impacts of accelerated velocities or increased volumes of upland runoff and associated sedimentation and erosion; 2) preserve coastal water quality; 3) provide visual buffers; and 4) protect important habitat areas.
-) Adopt a stormwater management ordinance, either as an amendment to the zoning regulations or a stand-alone ordinance. It should prohibit increases in volumes and rates of upland runoff to coastal waters by: 1) limiting the amount of impervious surface area created by construction, even on sites removed from the waterfront; 2) requiring installation of stormwater detention facilities such as ponds, holding basins, or infiltration galleries capable of preventing increases in pre-existing natural runoff rates for all intensities and durations of rainfall; 3) requiring the installation of temporary drainage controls during construction; 4) limiting site clearing to the minimum necessary for construction and location of facilities; and 5) requiring the maintenance of vegetative buffers adjacent to wetlands and watercourses. See fact sheet on *Stormwater Management* for more information.
-) Include in the Plan of Conservation and Development provisions to maintain or enhance public access to and along the shoreline by: 1) maintaining or improving access to and along publicly owned waterfront including public trust lands below the mean high water mark; and 2) discouraging development which reduces or eliminates existing public access to the shoreline.
-) In reviewing coastal site plan review applications, prevent erosion by requiring that plans be designed to: 1) minimize the area of disturbed soil and duration of its exposure by limiting site clearing and devegetation and phasing construction activities; 2) require that vegetative buffers be maintained in an undisturbed condition (see fact sheet on *Vegetated Buffers*); 3) require replanting and revegetation of areas disturbed during construction; 4) employ temporary erosion

control techniques such as hay bales, mulching, sod, netting, diversion structures and filters; 5) avoid development on steep slopes (25% or greater); 6) limit development on moderately steep slopes (15% to 25%) to low intensity uses; and 7) avoid alteration of natural drainage channels which would accelerate stream flow and/or bank erosion.

-) Protect rare and endangered species and preserve their critical habitats.
-) Preserve groundwater quality in recharge and aquifer areas by preventing the discharge, disposal, or storage of toxic or hazardous materials on or near such areas.
-) Insure that all activities and uses, including stormwater retention and infiltration systems, are consistent with the capacity of the soil or subsoil to support such activities.
-) Maintain cultural characteristics of shorelands by 1) protecting historic sites and districts against incompatible land uses, and 2) preventing the alteration of significant archaeological or geologic sites.

Does DEP regulate activities on shorelands?

Maybe, depending on the location and specifics of the proposed activity. The Office of Long Island Sound Programs at DEP does not have direct regulatory jurisdiction over activities within shorelands; however other regulatory programs is the Air, Waste or Water Bureaus may apply to shoreland uses. Additional information regarding departmental permitting programs is available on the DEP website which is located at <http://dep.state.ct.us/>.

Additional information regarding the areal extent of OLISP's permitting authority is available on the fact sheet on *State And Municipal Regulatory Jurisdictions*.

Regardless of whether a project is directly subject to departmental permitting, any development activities on or in shorelands must be consistent with the Connecticut Coastal Management Act (CGS sections 22a-90 through 22a-112), as these activities could have direct impacts on other coastal resources.

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Office of Long Island Sound Programs

Fact Sheet

for

*SUBMERGED AQUATIC VEGETATION (SAV)*¹

What is Submerged Aquatic Vegetation (SAV)?

Submerged aquatic vegetation 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 and Fishers Island Sounds 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.

Why is it valuable?

SAV beds are some of the most productive 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 also are an important food source for many waterfowl species.

What are the statutory policies that apply?

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 [Connecticut General Statutes (CGS) section 22a-92(c)(2)(A)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

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 the natural components of the habitat [CGS section 22a-93(15)(G)].

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. See the *Coastal Site Plan Review* and *Adverse Impacts* fact sheets for additional information.

Since SAV's are essential habitat for wildlife, finfish and shellfish, the destruction or degradation of SAV's constitutes an unacceptable adverse impact. This applies not only to eelgrass beds, but to all SAV's.

Finally, the statutes regarding planning and zoning contain specific requirements for zoning regulations and Plans of Development that relate to the restoration and protection of coastal resources. These are:

In any municipality that is contiguous to Long Island Sound the regulations adopted under this section shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound. Such regulations shall provide that the commission consider the environmental impact on Long Island Sound of any proposal for development [CGS section 8-2(b)].

The plan adopted under this section for any municipality that is contiguous to Long Island Sound shall be made with reasonable consideration for restoration and protection of the ecosystem and habitat of Long Island Sound and shall be designed to reduce hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound [excerpt from CGS section 8-23].

What can a municipality do to minimize impacts to these sensitive coastal resources?

- R** Update the municipal Plan of Conservation and Development, zoning regulations and subdivision regulations to: 1) better protect sensitive resources by establishing or increasing protective buffers between development and coastal waters; 2) reduce development densities; and 3) require proper stormwater management in new development and the retrofitting of existing stormwater systems during redevelopment to minimize potential adverse impacts to coastal water quality. See fact sheets regarding *Vegetated Buffers*, *Coastal Waters* and *Stormwater Management* for additional information.
- R** Update the Harbor Management Plan, if applicable, to include municipal goals and policies designed to protect SAV beds.
- R** Amend zoning regulations to require on-site, upland retention of the runoff associated with the first one-inch of rainfall and to direct additional runoff, after appropriate treatment, away from coastal waters, especially where SAV beds are present. Freshwater inputs such as those associated with stormwater runoff adversely impact the brackish and saline ecosystems that characterize most SAV beds in Connecticut. See fact sheets regarding *Water Quality* and *Stormwater Management* for additional information.
- R** Review the existing zoning regulations regarding the maximum impervious cover

allowed. Reduce this wherever possible, especially adjacent to coastal waters and other sensitive coastal resources.

R Avoid or minimize activities that interrupt or alter the essential character of SAV beds, including the chemistry or tidal pattern of estuarine waters that inundate and permeate submerged aquatic vegetation beds and the bathymetry of the substrate.

Does the DEP regulate activities in SAV beds?

Yes. The DEP has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive). Since all SAV beds occur waterward of the high tide line, most activities proposed within SAV beds are regulated by DEP.

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Office of Long Island Sound Programs

Fact Sheet

for

*TIDAL WETLANDS*¹

What are Tidal Wetlands?

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 an 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 - see Connecticut General Statutes (CGS) section 22a-29(2) for complete list of species]” [CGS section 22a-29, as referenced by CGS section 22a-93(7)(E)]. In general, tidal wetlands form in “low energy” environments protected from direct wave action. They are flooded by tidal waters twice a day and support a diverse ecosystem of vegetation and wildlife.

Why are they valuable?

Tidal wetlands are areas of high nutrient and biological productivity that provide detrital products forming the base of the food web in Long Island Sound. Tidal wetlands provide habitat, nesting, feeding, and refuge areas for shorebirds; serve as a nursery ground for larval and juvenile forms of many of the organisms of Long Island Sound and of many estuarine-dependent oceanic species; and provide significant habitat for shellfish. Tidal wetlands also improve water quality by trapping sediments, reducing turbidity, restricting the passage of toxics and heavy metals, decreasing biological oxygen demand (BOD), trapping nutrients, and buffering storm and wave energy. Tidal wetland vegetation stabilizes shorelines and buffers erosion. Tidal wetlands provide recreational opportunities for fishing, wildlife observation and hunting; are important to commercial and recreational shell- and finfisheries; and are areas of scientific and educational value. Tidal wetlands are a major source of coastal open space.

What are the statutory policies that apply?

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, crustacea 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; that

such loss or despoliation will substantially reduce the capacity of such wetlands to absorb silt and will thus result in the increased 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 section 22a-28 as referenced by CGS section 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 disposal [CGS section 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 section 22a-92(c)(1)(B)].

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 section 22a-92(b)(1)(B)].

In addition, the Connecticut Coastal Management Act defines as an adverse impact:

Degrading tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments through significant alteration of their natural characteristics or functions [CGS section 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 section 22a-93(15)(G)].

During the coastal site plan review process, a determination must be made that adverse impacts have been avoided and unavoidable adverse impacts have been minimized in order to lawfully approve the application. See the *Coastal Site Plan Review* and *Adverse Impacts* fact sheets for additional information.

What can a municipality do to minimize impacts to these sensitive coastal resources?

M Update the municipal Plan of Conservation and Development, Municipal Coastal Program, if applicable, and zoning and subdivision regulations to better protect tidal wetlands by providing development setbacks and vegetated buffers from the upland edge of tidal wetlands which are adequate to protect the wetlands from

runoff, erosion, construction, and other negative impacts that might result from development on adjacent upland resources. See fact sheets regarding *Vegetated Buffers*, *Stormwater Management* and *Water Quality* for more information.

- M** Amend zoning regulations to require on-site, upland retention of the runoff associated with the first one-inch of rainfall and to direct additional runoff, after appropriate treatment, away from tidal wetlands. Freshwater inputs such as those associated with stormwater runoff adversely impact the brackish and saline ecosystems that characterize most tidal wetlands in Connecticut. See fact sheets regarding *Water Quality* and *Stormwater Management* for additional information.
- M** Review the existing zoning regulations regarding the maximum impervious cover allowed. Reduce this wherever possible, especially adjacent to coastal waters and other sensitive coastal resources.
- M** Include in the municipal Plan of Conservation and Development or Municipal Coastal Program, if applicable, an inventory of tidal wetland areas and adjacent upland for possible open space acquisition.
- M** Preserve or restore the structure, function, and integrity of the physical and biological components of tidal wetlands by encouraging projects that would: 1) maintain or restore the natural tidal flushing, circulation, and chemical characteristics of tidal wetlands and adjacent estuarine waters; 2) maintain or restore the natural plant and animal species that inhabit tidal wetlands; and, 3) avoid adverse impacts to U.S. and state listed threatened and endangered species.
- M** Disallow extensions of water and sewer lines into tidal wetlands except sewers that will accommodate existing uses with limited excess capacity may be used when necessary to abate existing sources of pollution.
- M** Employ siting alternatives which will avoid or substantially limit negative impacts, such as the following: 1) siting inconsistent uses out of tidal wetlands on adjacent upland areas, or 2) siting consistent uses in such a manner as to avoid or minimize the tidal wetland area affected. When siting consistent uses, consider requiring construction techniques which will avoid or substantially limit impacts such as: 1) elevation of consistent uses on low impact pile foundations at a height sufficient to prevent or minimize the effects of shading on the wetland vegetation; 2) storage of construction materials and equipment in non-wetland areas; 3) provision of waterborne access to the construction site, or use of temporary elevated construction accessways; 4) schedule construction activities during late fall, winter or early spring months when impacts to wetland systems are generally the least harmful; 5) schedule construction activities so as to avoid shorebird, shellfish and finfish breeding seasons; and 6) restore all disturbed marsh surfaces as nearly as possible to their natural topographic condition following construction activities and re-establishing a natural vegetation cover.
- M** Where applicable, as a component of permitted activities, rehabilitate and restore

degraded tidal wetlands through such means as 1) restoration of natural tidal range or circulation patterns 2) restoration of tidal flushing and circulation to wetlands which were formerly connected to tidal waters, and 3) re-establishment of marsh vegetation.

What is tidal wetland restoration?

The Connecticut DEP is a national leader in efforts to restore degraded tidal wetlands to healthy, productive conditions. Historically, many tidal wetlands were diked and drained, filled, or otherwise cut off from tidal waters in an effort to control mosquitoes and create dry land for development. Restoration efforts generally involve the removal of obstacles that prevent tidal waters from reaching the degraded areas. Once tidal flushing is re-established, the natural fish predators of mosquitoes can enter the wetlands and feed on mosquito larvae which helps minimize the need for chemical controls. Connecticut is the first state in the nation to establish a unit dedicated to wetland restoration and mosquito management. Through the efforts of the Wildlife Division's Wetlands Habitat and Mosquito Management (WHAMM) Program of the DEP, many of the state's tidal wetlands will be restored and enhanced for the benefit of waterfowl, shorebirds, and other wetland dependent wildlife.

Does the DEP regulate activities on tidal wetlands?

Yes. The Department of Environmental Protection (DEP) has direct regulatory jurisdiction over activities occurring in tidal wetlands and/or waterward of the high tide line. If any construction activities or structure(s), in part or in whole, or any incidental work proposed in conjunction with the construction of structure(s) is proposed at or waterward of the high tide line, authorization from the DEP's Office of Long Island Sound Programs would be required prior to construction in accordance with the Tidal Wetlands Act (CGS sections 22a-28 through 22a-35) and/or the statutes governing the placement of structures, dredging, and fill in tidal, coastal or navigable waters (CGS sections 22a-359 through 22a-363f, inclusive).

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Office of Long Island Sound Programs Fact Sheet for ***LANDSCAPE PROTECTION AND VISUAL IMPACTS***

Why do we need to protect landscapes?

The face of coastal Connecticut is often pictured in terms of historic New England fishing villages, beach communities, and quaint villages. However, ongoing development pressures such as skyrocketing real estate values, tear-downs of summer cottages, and rebuilds of much larger permanent residences tend to result in a much different visual landscape. The visual quality of the landscape, in turn, plays a large role in maintaining community identity and quality of life in coastal areas. Though visual resources are statutorily protected, regulators at state and local levels have had difficulty in interpreting and implementing these existing standards in specific cases. This guidance is intended to equip coastal managers and municipalities with tools to discuss, prevent, and mitigate negative impacts to scenic resources.

What are the statutory policies and authorities that apply?

The **Connecticut Coastal Management Act (CCMA)**, the foundation upon which the coastal management program is based, contains a general statement in §22a-91(5) that the coast is rich in “aesthetic resources,” and §22a-93(15)(F) defines as an “adverse impact-on coastal resources” the “degrading [of] visual quality through significant alteration of the natural features of vistas and view points.”

The **Connecticut River Gateway Commission** is a state-local compact charged with protecting the scenic and ecological integrity of the lower Connecticut River. The Commission is organized within the Connecticut General Statutes chapter 477a §25-102a through §25-1021. The statutes declare that the “...lower Connecticut River and the towns abutting the river possess “unique scenic, ecological, scientific and historic value contributing to public enjoyment, inspiration and scientific study,...” and charge the Commission with “...prevent[ing] deterioration of the natural and traditional river way scene for the enjoyment of present and future generations of Connecticut citizens...” The Commission accomplishes this through land protection and zoning standards to be enforced by the participating towns in the Gateway Zone.








What are Visual Impacts?

Visual impacts include changes in appearance of the landscape as a result of developments. They can be positive or negative, direct or indirect, temporary or permanent, single or cumulative, and can vary in magnitude and significance. Factors to consider include extent of potential visibility of the proposed development, views and viewers affected, quality of views, and magnitude of

visual impact as determined by duration, nature, scale and other criteria.* Significant negative impacts occur when character, quality, or public enjoyment of a visual resource is diminished or impaired.

Which views does Coastal Management Act policy protect?


At the state level, DEP coastal programs focus on protecting public views of statewide scenic significance. This may include natural views as well as built views that typify a cultural landscape. The policy is intended to protect views generally accessible to the public, even if they are on private lands, but not private individual views. The types of visual resources this policy protects are:

-  National Wildlife Refuges, and state Wildlife Management Areas, Sanctuaries and Natural Area Preserves (e.g., Stewart B. McKinney National Wildlife Refuge Units, Barn Island Wildlife Management Area, Hammonasset Natural Area Preserve);
-  Trails of National or State significance (e.g., East Coast Greenway, Branford Trolley Trail);
-  Sites of cultural or historical significance including sites on or eligible for inclusion on the National Register of Historic Places (e.g., Avery Point Lighthouse, Mystic Seaport);
-  National, State, or Municipal Parks or Forests (e.g., Harkness Memorial State Park, Cockaponset State Forest, Lighthouse Point Park);
-  Coastal public access sites (most are included in the *Connecticut Coastal Access Guide* available online at <http://www.lisrc.uconn.edu/coastalaccess/index.asp>);
-  All other resources identified as “outstanding scenic assets” in the Long Island Sound Study’s *Shoreline Appearance and Design: A Planning Handbook*, produced by the New England River Basins Commission in April 1975.
-  Public natural resources or public landscapes visited by the general public, in part for the use, observation, enjoyment and appreciation of natural or cultural visual qualities (e.g., Gateway Region of Lower Connecticut River, Long Island Sound).


What can a municipality do to minimize visual impacts?

Actions at the municipal level may hold the most potential power in determining the visual quality of coastal landscapes in Connecticut. There may be views that are important to local communities that do not necessarily constitute *views of statewide significance*. Local entities, including harbor management commissions and planning and zoning boards, should work together to identify local scenic resources and create protections for those resources.

* Institute of Environmental Assessment and The Landscape Institute. *Guidelines for Landscape and Visual Impact Assessment*. 1995

 **Step One** is to identify through a public process the scenic views that a town wishes to protect. This task requires the identification of what *about* those views is worth protecting. Is it the natural landscape? The lack of visible built structures? No structures at all, whether visible or not? If there are dilapidated structures, are they adding scenic character? Consider also the potential threats to the view. For example, what stands out most often is development that is out of character with the surrounding environment.

If community meetings have recently been conducted to create comprehensive planning documents, it may be possible to glean this information from that process. Towns may want to preserve views from or of local public access points or historic structures. They may want to protect views that are "pristine," or alternatively, areas that are more appropriate for development, e.g views that encompass structures similar to the proposed development. As a particular example, towns in the Lower Connecticut River Gateway Region will probably want to protect the views from ridgeline to ridgeline as best as possible along the river. From these evaluative processes, towns may create visual zones to preserve characteristic views.



 **Step Two** is to write into local management plans and municipal zoning regulations measures to protect views identified in Step One. Harbor Management Commissions have a particular responsibility to consider potential upland development that may impact shoreline views. For suggested language for Harbor Management Plans, please see the publication *Old Riverport Harbor Management Plan*, available from OLISP by calling 860-424-3034.



It is essential for local boards and commissions that have overlapping authorities to work together to ensure implementation of a consistent visual resource policy in accordance with the community's overall planning process and goals. Cumulative impacts should be considered in areas suggested for development. Keep in mind that visual impacts are only one factor for consideration and must be balanced with navigational, ecological, and economic considerations in implementing CCMA policies.

How can municipalities evaluate visual impacts in Coastal Site Plan Reviews?

Based on CCMA visual impact policies, municipal agencies may require applicants to submit, through the Coastal Site Plan Review process, information detailing visual resources, visual public access points and suitable options for mitigation of any adverse impacts on those resources. Views of statewide significance as well as any scenic areas identified in local plans should be considered for inclusion in this analysis.

Factors for considerations during agency review of Coastal Site Plans include:

-  the visual characteristics of the site and surrounding location;
-  the potential effects, both beneficial and adverse, of the proposed activity on the scenic landscape;

-  conflicts between the proposed activity and policies stated in CGS §22a-91(5), §22a-93(15)(F), municipal Plans of Conservation and Development, harbor management plans; or other scenic preservation goals.
-  available alternatives for prevention, minimization, and mitigation of adverse visual impacts.

If the proposed activity impacts a view of statewide significance, a Coastal Site Plan should be forwarded to DEP, if such has not already occurred for other reasons. OLISP staff may request that the applicant demonstrate that the proposed activity does not diminish the quality and public appreciation of the scenic resource. Similarly, local agencies can request such demonstration for views of local significance. An applicant's assertion that the design is in harmony with or does not diminish the values of the listed resource may not be sufficient for the purposes of determining visual impacts. In some cases, an applicant may need to provide a professional assessment of the visual impact of the proposed activity, including viewshed analyses or simulations conducted by a licensed landscape architect or a professional in a related field. A viewshed is an area of land, water and/or other environmental elements that is visible from a fixed vantage point.

Are there tools that applicants and municipalities can use for visual simulation of project proposals?

CanVis software, available free of charge through the National Oceanic and Atmospheric Administration's Coastal Services Center (NOAA-CSC), can be used to depict both two-dimensional and three-dimensional coastal development scenarios. Advanced users may create scale-accurate depictions of docks and other coastal development. This software is not intended for the creation of legal evidence but rather as a tool for discussing alternative scenarios. Visual simulations may assist developers, applicants, and decision-makers in deliberations. Tutorials and downloadable files of docks, boats, vegetation, houses, and other structures designed to assist with coastal development simulation are available from NOAA-CSC at <http://www.csc.noaa.gov/canvis>. For more information, please contact the Coastal Services Center at (843) 740-1200.

OLISP has available a sample list of methods for minimizing or mitigating visual impacts. To obtain a copy, call 860-424-3034.