

Model Coastal Resilience Article

June 2021 (Revised June 2024)



Model regulations developed by the Urban Harbors Institute at UMass Boston; Noble, Wickersham and Heart, LLP; and Woods Hole Group in fulfillment of a contract with the Cape Cod Commission on behalf of coastal communities.

This model was revised to align with the model Coastal Resilience Zone regulations and Floodplain Overlay District Zoning Bylaw – Optional Higher Standards, both developed in 2024.

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Model Coastal Resilience Article Chart of Options

The following chart of options serves as a guide to the different elements of the Model Article. The chart displays the recommended baseline and also identifies the options for municipalities seeking more or less-restrictive options.

RECOMMENDED BASELINE	
Define CRZ Target Year as MC-FRM 2050	Section 2
LSCSF and CRZ – general performance standards	Section 4.1
V Zone – additional performance standards	Section 4.2
MoWA – additional performance standards	Section 4.3
MiWA – additional performance standards	Section 4.4
Redevelopment Sites – alternative performance standards	Section 4.5
Special Transitional Areas – additional performance standards	Section 4.6
Other Coastal Wetland Resource Areas – underlying performance standards	Section 4.7
Exempted Projects	Section 5
Limited Projects	Section 6
MORE RESTRICTIVE OPTIONS	
Define CRZ Target Year as MC-FRM 2070	Section 2 [comment]
Elevate buildings above SLR-BFE throughout CRZ	Section 4.1(d) [ALT]
Elevate buildings above SLR-BFE within V Zone	Section 4.2(c) [ALT]
Elevate buildings above SLR-BFE within MoWA	Section 4.3(c) [ALT]
Elevate buildings above SLR-BFE within Special Transitional Areas	Section 4.6(d) [ALT]
Ban new or expanded buildings within MoWA	Section 4.3(a) [ALT]
Limit categories of Exempted Projects within LSCSF and CRZ	Section 5 [comment]
Limit categories of Limited Projects within LSCSF and CRZ	Section 6 [comment]
LESS RESTRICTIVE OPTIONS	
Define CRZ Target Year as MC-FRM 2030	Section 2 [comment]
Expand categories of Exempted Projects within CRZ (not LSCSF)	Section 5 [comment]
Expand categories of Limited Projects within CRZ (not LSCSF)	Section 6 [comment]

Model Coastal Resilience Article – for Local Wetlands Bylaw

General comment: The Model Article has been drafted to be inserted, on a stand-alone basis, into an existing local wetlands bylaw. It is presumed that the existing bylaw will already address such issues as:

- *Purpose of the local bylaw;*
- *Authority under Town's home rule powers;*
- *Relationship between local bylaw and state Wetlands Act;*
- *Definitions, including for other wetland resources and buffer zones;*
- *Procedures for submission and review of Notice of Intent and issuance of Order of Conditions;*
- *Presumptions of significance and performance standards for other wetland resources;*
- *Exemptions and exclusions;*
- *Limited projects;*
- *Authority of Conservation Commission to adopt local regulations;*
- *Variance, enforcement, and appeals.*

Although the Model Article has been drafted on a stand-alone basis, the Town may decide to move certain sections of text, such as definitions, into other existing articles and/or sections of the existing bylaw, or for the Conservation Commission to adopt certain elements (such as performance standards) as Local Regulations, rather than as part of the Bylaw.

1. Purpose.

The purpose of this article of the Bylaw is to protect the wetlands and adjoining upland areas of the Town of [NAME] located within the coastal resilience zone, as defined herein, by controlling activities deemed by the Conservation Commission likely to have a significant individual or cumulative effect on resource area values, including but not limited to flood control and storm damage prevention.

Storm surge, flooding, and sea level rise are key challenges facing the natural, built, and

community systems of the Town of [NAME], which has [NUMBER] miles of vulnerable tidal shoreline. Even under existing conditions, according to the most current historical data of the Federal Emergency Management Agency (FEMA), coastal flooding threatens more than [NUMBER]% of the Town's land area, with a combined asset value of millions of dollars of private property, businesses, and critical public infrastructure. Sea-levels in the Town have already risen one foot over the past century. Projected levels of continuing sea-level rise will increase coastal flooding, both elevating the height of storm and non-storm surges and flood levels, and exacerbating inundation and storm surge by sending floodwaters further inland. According to the projections of the Massachusetts Coast Flood Risk Model (MC-FRM) [IF USING A DIFFERENT MODEL, SUBSTITUTE THE NAME OF THAT MODEL], by the year [YEAR], coastal flooding is highly likely to threaten a total of [NUMBER]% of the Town's land area, with housing for [NUMBER] residents. This will result in substantial risk of damage and loss to natural resources, property, and human life. In velocity zones and moderate wave action areas, storm waves increase the level of risk of erosion, damage to coastal wetland resources (including damage from pollution and building debris), and repetitive loss to buildings and structures. As sea-levels rise, beaches, dunes, salt marshes, and other critical wetland resources will be reduced or destroyed if natural cycles of inland migration are not able to continue. The impacts of coastal flooding will be heightened by the cumulative impacts of precipitation and inland flooding. The goal of this article of the Bylaw is to avoid, minimize, and mitigate the risk of environmental damage, loss of natural resources, and the resulting human suffering, and the loss of life and property resulting from storms, flooding, erosion, and continuing sea-level rise, by promoting greater resiliency within areas subject to coastal flooding currently and as sea levels rise.

This article of the Bylaw is intended to utilize the Home Rule authority of this municipality so as to protect land subject to coastal storm flowage, as defined under the Wetlands Protection Act (G.L. Ch.131 §40; the Act) to a greater degree, to protect additional coastal resiliency resource areas beyond the Act recognized by the Town as significant, to protect all such coastal resiliency resource areas for their additional values beyond those recognized in the Act, and to impose in local regulations and permits additional standards and procedures stricter than those of the Act and the DEP Regulations thereunder (310 CMR 10.00), subject, however, to the rights and benefits accorded to agricultural uses and structures of all kinds under the laws of the Commonwealth and other relevant bylaws of the Town of [NAME].

General comment: The Model Article has been drafted in anticipation that DEP will soon finalize its proposed draft regulations issued for review on November 16, 2023, (the DEP Regulations), providing for the first time performance standards for LSCSF, and that DEP will then move expeditiously to adopt those regulations. The Model Article has been

structured to be consistent with the draft DEP Regulations, while expanding the Town's jurisdiction beyond the limits of DEP jurisdiction. It should be understood that within LSCSF and other state-protected wetland resources, the Town cannot use the Bylaw to reduce regulatory standards below those defined in the DEP Regulations; however, it may impose more restrictive standards than in the DEP Regulations. See also comments on Sect. 5 and Sect. 6.

Because the purpose of this article of the Bylaw is to protect the function of wetland resources within the coastal resiliency zone, any requirements for the siting and elevation of buildings and other structures included in the performance standards are intended to protect the wetland resource values of the coastal resiliency zone and are not provided for the purpose of regulating construction materials and methods, since those requirements are governed by the Massachusetts State Building Code (MSBC).

General comment: Section 3 of the State Zoning Act, G.L. c. 40A, states that local zoning cannot "regulate or restrict the use of materials, or methods of construction of structures regulated by the state building code." The Zoning Act does not expressly address local wetlands bylaws. However, requirements to elevate structures above coastal flood elevations are regulations of dimension and use, not of construction materials and methods. Such matters may be addressed by local wetlands and zoning bylaws without impinging on the State Building Code.

2. Definitions.

General comment: Refer to the attached map (Figure 1) and cross-section diagram (Figure 2) for graphic illustrations of the different geographic subareas contained within the CRZ.

The following terms shall have the meaning set forth below for purposes of the Bylaw. All terms not otherwise defined in this Article shall have the meaning set forth in the Bylaw, the Act, or the DEP Regulations.

General Comment: Within LSCSF (the current limit of state jurisdiction under the Act), the provisions of the soon-to-be-issued DEP Regulations for that coastal resource will provide a baseline for the authority of the Conservation Commission. The Model Article imposes additional performance standards within LSCSF, and it extends performance standards to areas within the CRZ that are outside of the LSCSF.

Act – The Massachusetts Wetlands Protection Act, G.L. Ch. 131, Section 40.

Anticipated useful life – As defined by a reliable industry standard adopted by the Conservation Commission.

Comment: This definition relates to Limited Projects within the CRZ; see Sect. 6. We recommend that the initial reliable industry standard would be the Resilient MA Action Team (RMAT) "Climate Resilience Design Standards and Guidelines" at: https://resilientma.org/rmat_home/.

Base Flood Elevation (BFE) – As defined in the DEP Regulations, or if not defined there, as defined in the State Building Code.

Comment: The definition of BFE can be omitted if the Town is using MC-FRM as its Best Available Flooding Model or another model that is based on a design flood elevation that includes freeboard.

Comment: If including the definition of BFE, that term is effectively defined under the State Building Code as the elevation of surface water resulting from the 1% annual storm as currently defined by the applicable FEMA map for the Town.

Best Available Coastal Flooding Model – A model adopted by the Commonwealth and applicable to the Town with flood projections for the Target Year, or if the Commonwealth has not adopted an applicable model, then the Best Available Coastal Flooding model shall be the model adopted by the Conservation Commission. As the applicable model is modified from time to time, the Conservation Commission may adopt its modified projections by Local Regulation, each time identifying the specific model and date of the model. The Conservation Commission also may, by Local Regulation, define the CRZ according to an alternative best available coastal flooding model of equal or greater scientific reliability.

Comment: Because the modeling of coastal flooding risks caused by climate change and sea-level rise continues to advance, the Model Article has been drafted to grant flexibility to the Conservation Commission, enabling the Commission to reflect the best available coastal flooding model, as it may be developed and/or modified in the future, through the adoption of a Local Regulation. Among the advances that may be available in the near future are models that take into account coastal erosion and the cumulative impacts of precipitation and freshwater flooding. We recommend that the Conservation Commission should adopt, as its initial Best Available Coastal Flooding Model under the Model Article, the Massachusetts Coast Flood Risk Model (MC-FRM) dated 2021, with a Target

Year of 2050. It should be noted that under certain circumstances, particularly in areas subject to the cumulative impacts of coastal and freshwater flooding, the LSCSF indicated by current FEMA maps can indicate a wider extent of flooding than the Coastal Flood Risk Areas projected by MC-FRM (particularly if 2030 were selected as the Target Year). For this reason, the CRZ is defined to include the broadest extent of both LSCSF and Coastal Flood Risk Areas. If 2070 were selected as the Target Year, the CRZ would be expanded still further.

MC-FRM is currently available for all Cape Cod towns. There are probability and depth (1%, 0.5%, 0.1%) projections for Present Day, 2030, 2050, and 2070. An information sheet for MC-FRM is available at:

https://www.mvcommission.org/sites/default/files/docs/MC-FRM_FAQ_Sheet_Final.pdf.

The full MC-FRM report is expected to be completed by the end of summer 2021. The reference for this full report is: Bosma, K., E. Douglas, P. Kirshen, K. McArthur, S. Miller and C. Watson. 2021 (in progress) Assessing the vulnerability of MassDOT's coastal transportation systems to future sea level rise and coastal storms, and developing conceptual adaptation strategies.

If towns would like to request MC-FRM data, they can contact MassDOT or Woods Hole Group directly (Joseph Famely, Climate & Sustainability Team Lead, Woods Hole Group, jfamely@woodsholegroup.com). The data will also be available on the Resilient MA website (<https://resilientma.org/>) for direct download. MassDOT is working on an online viewer which will also be accessible to municipalities.

Buffer Zone - As defined in the Act, the DEP Regulations, and the Bylaw for any Other Coastal Wetland Resource, with the largest dimension to apply.

Comment: Under the DEP Regulations, all Other Coastal Wetland Resource Areas, other than rivers, are subject to a 100-foot buffer zone. If the buffer zone for any of those resource areas has been enlarged by the Bylaw, the larger dimension of the local buffer zone will apply.

Bylaw – The Wetland Protection Bylaw of the Town of [NAME].

Coastal Flood Risk Area – Any land which is subject to any inundation caused by coastal storms and sea level rise including that predicted to be caused by the 1% annual storm for the Target Year, as defined by the Best Available Coastal Flooding Model.

Coastal Resilience Zone (CRZ) – Shall include the following resources areas: (a) any Land Subject to Coastal Storm Flowage; (b) any Coastal Flood Risk Area; and (c) the buffer zone of any Other Coastal Wetland Resource located in whole or in part within (a) or (b). The CRZ may include within its boundaries one or more of the following subareas: Velocity (V) Zone; Zone A, (including the Zone A subareas: Moderate Wave Action Area and Minimal Wave Action Zone) and Special Transitional Area.

DEP Regulations – The Wetlands Protection Regulations adopted by the Department of Environmental Protection, 310 CMR 10.00, pursuant to the Act.

Design Flood Elevation (“DFE”) – The elevation of surface water resulting from inundation caused by sea level rise and coastal storms up to and including that predicted to be caused by the 1% annual storm for the Target Year, as defined by the Best Available Coastal Flooding Model, or the State Building Code, whichever is higher.

Comment: For towns electing to use MC-FRM maps to define the CRZ, the definition of DFE should be used in place of SLR-BFE. DFE incorporates an adequate estimate of future flood elevation and eliminates the need for additional freeboard above the DFE. For towns using other models, the definition of DFE can be omitted and the definition of SLR-BFE can be retained if it is necessary to add freeboard requirements to achieve adequate flood protections.

Land Subject to Coastal Storm Flowage (LSCSF) – As defined in the Act and the DEP Regulations at 310 CMR 10.04. LSCSF shall mean land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater.

Comment: As of the date of this Model Bylaw, DEP’s definition relies on current FIRMs. If DEP updates this definition to include future conditions or otherwise changes this definition, the definition in this Bylaw should also be updated.

Limited Project – As defined in the Act and the DEP Regulations at 310 CMR 10.24(7) for any Other Coastal Wetland Resource.

Local Regulation – A regulation adopted by the Conservation Commission, pursuant to the Bylaw.

Minimal Wave Action Zone (MiWA) – A subarea of Zone A, as identified on the FIRM for the town and defined in the [draft] DEP Regulations at 310 CMR 10.36. The MiWA is the area where base flood wave heights are less than 1.5 feet.

Moderate Wave Action Area (MoWA) – A subarea of Zone A, as identified on the FIRM for the town,

and defined in the [draft] DEP Regulations at 310 CMR 10.36(2). The MoWA is the area where base flood heights are equal to or greater than 1.5 but less than 3 feet. If the Best Available Coastal Flooding Model projects a broader extent of the MoWA than that defined in the DEP Regulations, the Conservation Commission may adopt such modified projection by Local Regulation.

Other Coastal Wetland Resource Areas – Land under the ocean, designated port areas, coastal beaches, coastal dunes, barrier beaches, coastal banks, rocky intertidal shores, salt marshes, land under salt ponds, land containing shellfish, estimated habitats of rare wildlife, or tidal rivers, in each case as defined in the Act and the DEP Regulations.

Comment: Although rivers are categorized as inland wetland resources under the DEP Regulations, for the purposes of the Bylaw tidal rivers are included in the category of Other Coastal Wetland Resource Areas.

Predicted path of wetland migration – That portion of a Special Transitional Area, located adjacent to an existing salt marsh, beach, dune, or Other Coastal Wetland Resource, where the wetland resource is predicted to migrate due to rising sea-levels, based upon wetland migration identified in the best available wetland migration information. for the Target Year. At a minimum, the predicted path of wetlands migration shall be presumed to include the adjacent buffer zone of the wetland resource, unless topography or other factors predict a differing pattern of wetland migration.

Comment: This definition relates to the performance standards for Special Transitional Areas, set forth in Sect. 4.6. For information on wetland migration, see the Sea Level Affecting Marshes Model (SLAMM) developed by the Massachusetts Office of Coastal Zone Management (MCZM), at: <https://www.mass.gov/service-details/sea-level-affecting-marshes-model-slam>. The SLAMM viewer shows predicted wetland migration patterns for coastal towns throughout the state.

Redevelopment Site – The area of a project that involves replacement, renovation, restoration or expansion of an existing structure, improvement of existing roads, repairs to existing drainage systems or utilities and as it may be further defined in the DEP Regulations definition of “*redevelopment*” as applied to a project within the CRZ.

Sea-Level Rise Base Flood Elevation (SLR-BFE) – The elevation of surface water resulting from any inundation caused by coastal storms up to and including that predicted to be caused by the 1% annual storm for the Target Year, as defined by the Best Available Coastal Flooding Model.

Comment: This definition to be inserted if the alternative additional clause(s) for the elevation of buildings relative to the SLR-BFE in Sect. 4.1, 4.2, and/or 4.3 is selected.

Comment: The MC-FRM maps identify a Design Flood Elevation with an adequate estimate of future flood elevation and eliminates the need for additional freeboard above the DFE. If the town elects to use MC-FRM as its Best Available Coastal Flooding Model, the Town can delete the term “SLR-BFE” and delete the freeboard requirements in this Model Bylaw and, instead, use the term “DFE.”.

Special Transitional Area – Subareas within the CRZ that are located adjacent to existing salt marshes, coastal beaches, coastal dunes, barrier beaches, or coastal banks, where the wetland resource is commencing to or predicted to migrate due to rising sea levels. This area extends from the nearest adjoining land under water to the interior boundary of the CRZ.

State Building Code – The Massachusetts State Building Code (MSBC), 780 CMR.

Substantial Damage – As defined in the State Building Code, with the term “market value” clarified to mean the building’s assessed value.

Comment: The State Building Code defines Substantial Damage as damage that is greater than 50% of the market value of the structure. We have elected to interpret “market value: to mean assessed value because the assessed value is more likely to provide a consistent basis for valuing properties throughout the Town.

Substantial Improvement – As defined in the State Building Code, with the term “market value” clarified to mean the building’s assessed value.

Substantial Repair of a Foundation – As defined in the State Building Code.

Target Year – The year specified by the Conservation Commission for projections of sea level rise and flood risk. If the Best Available Coastal Flooding Model is based on a single target year, then the Conservation Commission shall adopt that year as the Target Year. If the model includes multiple target years, then the Conservation Commission shall adopt, by Local Regulation, the Target Year for the Best Available Coastal Flooding Model.

Velocity (V) Zone – A subarea of LSCSF, with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage, and with wave heights above 3 feet, as further defined in the DEP Regulations. If the Best Available Coastal Flooding Model projects a broader extent of the V Zone than that defined in the DEP Regulations, the Conservation Commission

may adopt such modified projection by Local Regulation.

Zone A – A subarea of LSCSF subject to inundation by a 1% annual chance of flooding and 26% chance of flooding over the life of a 30-year mortgage. The MoWA and MiWA are subareas of Zone A.

3. Jurisdiction.

Except as permitted by the Conservation Commission no person shall commence to remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter any land within the Coastal Resilience Zone (CRZ).

General comment: Refer to the attached map and section for graphic illustrations of the different geographic subareas contained within the CRZ.

4. Performance Standards.

When the Conservation Commission determines that the activities within the CRZ which are subject to the permit application, or the land and water uses which will result therefrom, are likely to have a significant individual or cumulative effect on the interests of flood control, storm damage prevention, and natural resource protection protected by this article of the Bylaw, the following performance standards shall apply:

Comment: Several clauses below include alternative language based on the Best Available Flooding Model selected by the Town.

ALT 1 is SLR-BFE and any required freeboard. This alternative should be used if the town is using a Best Available Coastal Flooding Model that does not incorporate freeboard.

ALT 2 is the DFE. This alternative should be used if the town is using MC-FRM or another model that incorporates freeboard into its Best Available Coastal Flooding Model.

4.1 General Performance Standards within CRZ.

Comment: It is anticipated that the final DEP Regulations for LSCSF will contain the performance standards set forth in clause (a). The performance standards set forth in clauses (b) and (c) shall also apply under the Bylaw.

- (a) Any activity shall not have an adverse effect by increasing the elevation or velocity of flood waters, or by redirecting or increasing flows or causing channelization, in each case at the project site, adjacent or nearby properties, or any public or private way.

(b) Any activity shall avoid or mitigate adverse flooding effects on nearby properties, by ensuring that return flow will not be prevented by confined basins on the site (i.e., ponding).

(c) Any activity shall preserve existing soils, vegetation, and other natural conditions that serve as buffers to coastal flooding and storm surges.

Comment: The general performance standards for the CRZ set forth in clauses (a), (b), and (c) above will provide important measures of protection, but they will not fully address the risks of damage to natural resources, buildings, and structures. The final DEP Regulations for LSCSF will only require the elevation of structures above the BFE within the V Zone and MoWA, based upon the backward-looking historical data of FEMA maps. A fuller measure of protection would require the elevation of structures above the SLR-BFE or DFE, as defined by the Best Available Coastal Flooding Model that is the basis for defining the CRZ. To do so, the Town could adopt one of the two alternatives for clause (d), shown as follows. The selected alternative clause should be coordinated with the applicable requirements of the local zoning code. See the general comment above, in Section 1, for the relationship between local wetlands and zoning bylaws and the State Building Code.

(d) [**ALT 1**] Any new construction, expansion, substantial repair, or Substantial Improvement of a building or occupied structure shall be elevated at least two (2) feet above the SLR-BFE.

(d) [**ALT 2**] Any new construction, expansion, substantial repair, or Substantial Improvement of a building or occupied structure shall be elevated at least to the DFE.

4.2 Additional Performance Standards within V Zone.

Within the V Zone, in addition to the general performance standards set forth in Section 4.1, the following additional performance standards shall apply, notwithstanding the provisions of Section 4.7:

Comment: It is anticipated that the final DEP Regulations for LSCSF will contain additional performance standards for the V Zone. These standards, set forth in clauses (a), (b), and (c), shall also apply under the Bylaw.

(a) No new construction or expansion of any building or other structure, road, impervious surface, or septic system shall be permitted.

(b) No new construction, expansion, substantial repair, or restoration of any structure that redirects or channelizes floods including retaining walls, fences, and sea walls shall be permitted.

(c) With respect to any building or other structure, in the event of any Substantial Repair of the

Foundation, any Substantial Improvement, or any restoration of a building or structure that has sustained Substantial Damage, the entire building or structure shall be elevated at least two (2) feet above the BFE.

Comment: This clause is consistent with current FEMA requirements. It is anticipated that the final DEP Regulations, like the MSBC, will not prevent the repair or restoration of existing buildings within the V Zone that have been heavily damaged or destroyed by coastal storms, even in the case of repetitive loss. This Model Article does not expressly address the issue of repetitive loss either; however, it should be noted that FEMA is separately considering policies regarding repetitive loss for insured structures.

Comment: As discussed under Section 4.1, the Bylaw would be more protective by requiring the elevation of all structures within the CRZ above the SLR-BFE or DFE, as defined by the Best Available Coastal Flooding Model. If Sect. 4.1, clause (d) [ALT 1] is selected, then [ALT 1] should be used for the following Sect. 4.2 (c). If [ALT 2] was selected for Sect. 4.1, then [ALT 2] should also be selected in Sect. 4.2.

Even if Sect. 4.1 is not modified, the inclusion of this clause (c) [ALT] in Sect. 4.2 would provide a higher degree of protection within the V Zone by elevating buildings relative to the SLR-BFE or DFE. As noted above, this alternative clause should be coordinated with the applicable requirements of the local zoning code.

(c) [ALT 1] With respect to any building or other structure, in the event of any Substantial Repair of the foundation, any Substantial Improvement, or any restoration of a building or structure that has sustained Substantial Damage, the entire building or structure shall be elevated at least two (2) feet above the SLR-BFE.

(c) [ALT 2] With respect to any building or other structure, in the event of any Substantial Repair of the Foundation, any Substantial Improvement, or any restoration of a building or structure that has Substantial Damage, the entire building or structure shall be elevated at least to the DFE.

4.3 Additional Performance Standards within MoWA.

Within the MoWA, in addition to the general performance standards set forth in Section 4.1, the following additional performance standards shall apply, notwithstanding the provisions of Section 4.7:

Comment: It is anticipated that the final DEP Regulations for LSCSF will contain additional performance standards for the MoWA. These standards, set forth in clauses

(a), (b), and (c), shall also apply under the Bylaw.

- (a) The new construction and expansion of any building or other structure, road, impervious surface, or septic system shall be permitted, subject to the other provisions of this Bylaw, provided that any building or occupied structure shall be elevated at least [**ALT 1**: two (2) feet above the BFE] [**ALT 2** to the DFE].
- (b) No new construction, expansion, substantial repair, or restoration of any structure that redirects or channelizes floods including retaining walls, fences, and sea walls shall be permitted.
- (c) With respect to any building or other structure, in the event of any Substantial Repair of the Foundation, any Substantial Improvement, or any restoration of a building or structure that has sustained Substantial Damage, the entire building or structure shall be elevated at least [**ALT 1**: two (2) feet above the BFE] [**ALT 2**: to the DFE].

Comment: It is anticipated that the final DEP Regulations, like the MSBC, will not prevent new construction or expansion of buildings within the MoWA, or the repair or restoration of existing buildings in the case of repetitive loss. As an alternative, the Town could adopt a more protective version of clause (a), as follows. This alternative clause should be coordinated with the applicable requirements of the local zoning code. As noted above, FEMA is separately considering policies regarding repetitive loss for insured structures.

- (c) [**ALT (c-1)**] No new construction or expansion of any building or other structure, road, impervious surface, or septic system shall be permitted.

Comment: A further measure of protection, as discussed under Sections 4.1 and 4.2, would be to elevate buildings within the MoWA relative to the SLR-BFE or the DFE, as applicable. As noted above, this alternative version of clause (c) should be coordinated with the applicable requirements of the local zoning code.

- (c) [**ALT (c-2)**] With respect to any building or other structure, in the event of any Substantial Repair of the Foundation, any Substantial Improvement, or any restoration of a building or structure that has sustained Substantial Damage, the entire building or structure shall be elevated at least [**ALT 1**: two (2) feet above the SLR-BFE] [**ALT 2**: to the DFE].

4.4 Additional Performance Standards within MiWA

Within the MiWA, in addition to the general performance standards set forth in Section 4.1, the following additional performance standards shall apply, notwithstanding the provisions of Section 4.7:

- (a) New construction or expansion, repair or modification of any building or other structure shall not redirect, channelize or exacerbate flood conditions in wetlands resources or at other properties, and
 - (ii) the new structure and the expanded portion of an existing structure shall be elevated at least to the [ALT 1: two (2) feet above the BFE] [ALT 2: to the DFE].
- (b) In the event of any Substantial Repair of the Foundation, any Substantial Improvement, or any repair or restoration after Substantial Damage, the top of the bottom floor of the building or structure shall be elevated at least to the [ALT 1: two (2) feet above the BFE] [ALT 2: to the DFE].
- (c) Fill material may be placed at a Project Site located in the MiWA provided such material does not redirect, channelize or exacerbate flood conditions.

4.5 General Performance Standards for Redevelopment Sites.

For any Redevelopment Site that is located within the CRZ, the underlying performance standards set forth in the DEP Regulations for Redevelopment Sites within LSCSF, if any, shall govern, and shall supersede the general performance standards set forth in Section 4.1. Provided, however, that (a) within the V Zone, the additional performance standards set forth in Section 4.2 shall continue to apply, and (b) within the MoWA and the MiWA, the additional performance standards set forth in Section 4.3 and Section 4.4 shall continue to apply.

Comment: It is anticipated that the final DEP Regulations for LSCSF will contain a different set of general performance standards for redevelopment, similar to those applied to Redevelopment Sites within Riverfront Areas under the current DEP Regulations (see 310 CMR 10.58). Sites would be eligible, at Conservation Commission's discretion, if flood control and storm damage protection functions have already been impaired. Redevelopment must improve existing conditions by reducing impervious surfaces, and by restoring or creating other wetland resource areas. Redevelopment cannot expand the existing footprint of buildings. These standards would apply under the Bylaw to all sites that meet the criteria, throughout the CRZ.

- (a) Any new construction or reconstruction of existing structures shall be constructed entirely within the footprint of the foundation of the previously developed structure and shall comply with the provisions of the DEP Regulations applicable to Redevelopment within LSCSF and the applicable provisions set forth in Section 4.2 through Section 4.4.
- (b) In the event of any Substantial Repair of a Foundation, any Substantial Improvement, or any repair or restoration after Substantial Damage, the building or structure shall be elevated as required in the applicable provisions set forth in Section 4.2 through Section 4.4 and constructed within the

footprint of the previously existing structure, except that a structure on a Redevelopment Site that is located within the V Zone may be moved landward beyond the V Zone.

(c) Repair or vertical extension of an existing seawall or placement of fill for flood control purposes may be allowed at Redevelopment Sites where impervious surfaces have predominantly replaced the natural coastal floodplain, provided that (i) such Projects shall not redirect, channelize or exacerbate flood conditions or impede the return flow of flood waters and (ii) the Project otherwise complies with the requirements of the underlying CRZ zone and wetlands resource area.

4.6 Additional Performance Standards within Special Transitional Areas.

Special Transitional Areas are likely to be in a state of transition as sea levels rise, and the entire complex of coastal wetland resources gradually moves landward. Therefore, maintaining these Special Transitional Areas in their natural state is necessary to protect the interests of other wetland resources. The additional performance standards are intended to encourage the location of any new, expanded, or reconstructed development activities on the site in a manner that will allow the natural migration of wetlands resources due to sea level rise and increased frequency and intensity of storms. In addition to the general performance standards set forth in Section 4.1, the following additional performance standards shall apply:

(a) To the greatest extent feasible, no buildings, structures, retaining walls, fences, or other ground level structures shall be placed at ground level within the predicted path of wetland migration.

(b) To the greatest extent feasible, no septic systems shall be placed within the predicted path of wetland migration.

(c) To the greatest extent feasible, vegetated areas shall be preserved or expanded and impervious surfaces shall be avoided or minimized. If an expansion of impervious surfaces within the Special Transitional Area cannot be avoided, it shall be mitigated on at least a 1:1 basis on-site, with the predicted path of wetland migration to be the prioritized location for preserved vegetation and mitigation or restoration of an existing degraded wetland, including removal of invasive species, debris, or pollutants in an existing wetland.

Comment: In the event that buildings throughout the entire CRZ are not required to be elevated above the SLR-BFE or the DFE (see comments on Sect. 4.1), the goals of the Special Transitional Area would be furthered by imposing the requirement within this subarea.

(d) [**ALT**] With respect to any building or other structure, in the event of any Substantial Repair of

the Foundation, any Substantial Improvement, or any restoration of Substantial Damage, the entire building or structure shall be elevated at least [*ALT 1*: two (2) feet above the SLR-BFE] [*ALT 2*: to the DFE]; provided, however, that if the building or structure has been affected by repetitive loss, no substantial repair, improvement, or restoration shall be permitted.

4.7 Performance Standards within Other Coastal Wetland Resource Areas.

For any land within Other Coastal Wetland Resource Areas that is located within the CRZ, the underlying performance standards set forth in the DEP Regulations and the Bylaw shall supersede the general performance standards set forth in Section 4.1, except to the extent otherwise set forth in the DEP Regulations. Provided, however, that (a) within the V Zone, the additional performance standards set forth in Section 4.2 shall continue to apply, (b) within the MoWA, the additional performance standards set forth in Section 4.3 shall continue to apply, and (c) within the MiWA, the additional performance standards set forth in Section 4.4 shall continue to apply.

Comment: It is anticipated that under the final DEP Regulations for LSCSF, the underlying performance standards under the current DEP Regulations for all Other Coastal Wetland Resource Areas contained within the LSCSF will supersede those set forth for the LSCSF. The principal exceptions will be within the V Zone and the MoWA, where the new additional performance standards will apply regardless. The same rule of precedence shall apply under the Bylaw for all Other Coastal Wetland Resource Areas throughout the CRZ.

5. Exemptions and Exclusions.

5.1 The provisions of the DEP Regulations exempting certain activities within LSCSF from the requirement to submit a Notice of Intent and receive an Order of Conditions shall apply within the CRZ.

Comment: The current DEP Regulations contain general exemptions that apply within all wetland resource areas, including maintenance, repair, and replacement (but not change or enlargement) of existing utilities (see 310 CMR 10.02(a)(2)). These exemptions will apply under the Bylaw as well.

5.2 To the extent that the DEP Regulations contain broader exemptions for activities located within portions of LSCSF outside of the V Zone and the MoWA, the same exemptions shall apply to activities located within all portions of the CRZ outside of the V Zone and the MoWA.

Comment: It is anticipated that the final DEP Regulations for LSCSF will contain broader exemptions for certain activities located within portions of LSCSF outside of the

V Zone and the MoWA, such as unpaved walkways less than 30” wide, fencing, vista pruning, and sheds and other accessory residential structures, if less than 100 s.f. The same exemptions will apply under the Bylaw as well.

As an alternative approach, the Bylaw could be more restrictive than the DEP Regulations regarding exemptions within LSCSF. For exemptions within areas of the CRZ outside of LSCSF, the Bylaw could be either more restrictive or less restrictive than the standards of the DEP Regulations for LSCSF.

6. Limited Projects.

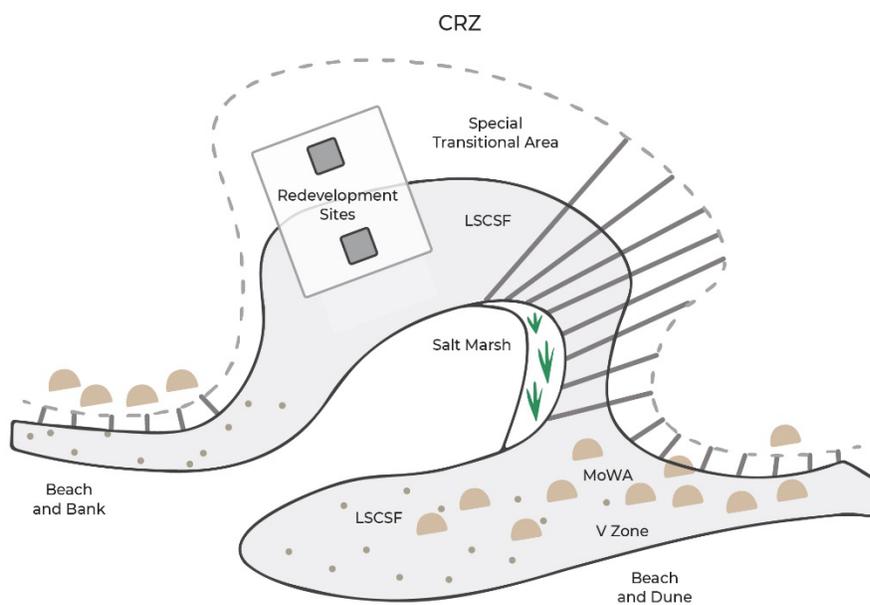
6.1 The provisions of the DEP Regulations governing Limited Projects within LSCSF shall apply within the CRZ.

6.2 For activities within areas of the CRZ outside of LSCSF, the construction, expansion, or reconstruction of any structure or utility with an anticipated useful life that does not extend beyond the Target Year shall be considered a Limited Project.

Comment: The current DEP Regulations define categories of Limited Projects, applicable within all coastal wetland resource areas, including electrical power facilities; public utilities; maintenance, repair, and replacement of structures and roadways; and ecological restoration projects (see 310 CMR 10.24(7, 8)). It is anticipated that under the final DEP Regulations, additional Limited Projects may be identified throughout LSCSF, including the V Zone and MoWA, such as relocating roads, public utilities, and water-dependent structures vulnerable to sea-level rise. The same categories of Limited Projects, which are subject to different performance standards, would apply under the Bylaw as well.

As an alternative approach, the Bylaw could be more restrictive than the DEP Regulations regarding Limited Projects within LSCSF. For Limited Projects within areas of the CRZ outside of LSCSF, the Bylaw could be either more restrictive or less restrictive than the standards of the DEP Regulations for LSCSF.

Figure 1: Map of subareas within Coastal Resilience Zone (CRZ)



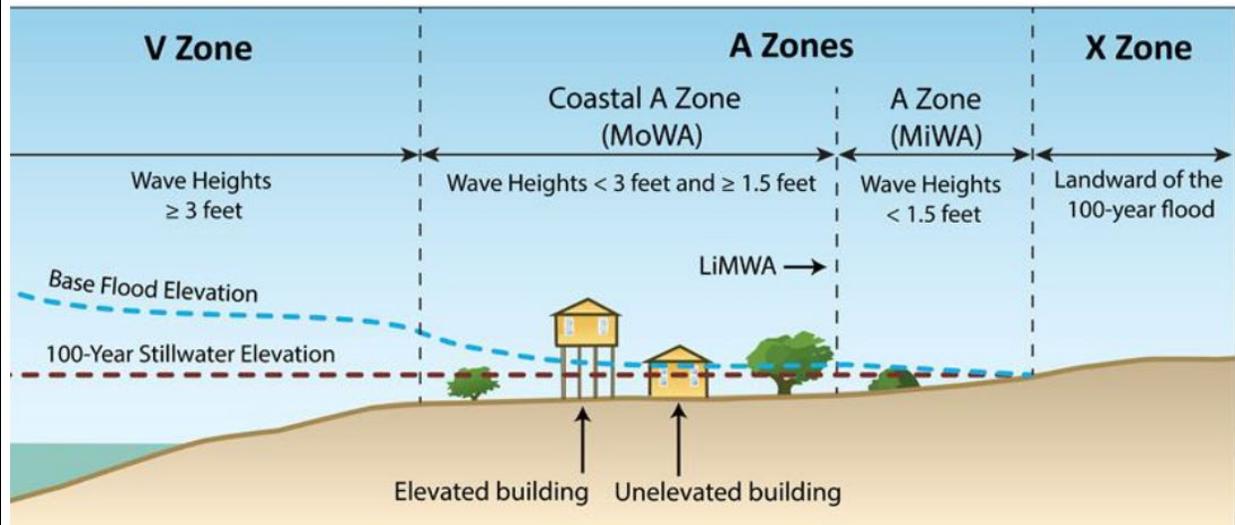
LSCSF - Land Subject to Coastal Storm Flowage; includes 1% annual flood risk per FEMA map, plus surge / storm of record

V Zone - Velocity Zone

MoWA - Moderate Wave Action Area

Adapted from figure created by Woods Hole Group

Figure 2: Section Diagram of Subareas within LSCSF



V Zone - Velocity Zone

MoWA - Moderate Wave Action Area

MiWA - Minimum Wave Action Area

LSCSF - Land Subject to Coastal Storm Flowage; includes 1% annual flood risk per FEMA map, plus surge / storm of record.