

# Model Coastal Resilience Zone Wetlands Regulations

June 2024



Model regulations developed by the Cape Cod Commission; Urban Harbors Institute at UMass Boston; Noble, Wickersham and Heart, LLP; and Cape Cod Cooperative Extension/WHOI Sea Grant on behalf of coastal communities.

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*General Comment: These regulations are intended to be adopted after the Town approves the Coastal Resilience Bylaw. The Bylaw should include language authorizing the Conservation Commission to promulgate the regulations. The regulations focus on provisions that the Town may decide to change over time as new data and relevant information becomes available. Because these regulations are adopted by the Conservation Commission, instead of at Town meeting, there is greater flexibility to update the regulations, as needed. Provisions that may change over time include performance standards and the selection of the boundaries of the Coastal Resilience Zone as supported by the Best Available Coastal Flooding Model and Target Year.*

**1. Preamble.**

Wetlands resources support biodiversity, recreation, and scenic beauty within the Town. These resources also serve as natural protections against flood damage by slowing the velocity of waves and storm surge and providing storage for heavy precipitation and flood waters. Shoreline features such as beaches, marshes, and dunes are inherently dynamic systems. Infrastructure built in or adjacent to these resources are impacted by and can impact the movement of the resource(s). For example, shorelines can erode and coastal and inland flooding can undermine buildings and structures, especially during heavy storms and flood events.

Seawalls and man-made structures in these resource areas can exacerbate this erosion by redirecting and/or increasing velocity and by preventing new sediment from entering the system. Structures (including buildings, sheds, fences, walls, patios, decks and docks) can redirect or channelize flooding and increase flood volume and velocity, exacerbating flood damage, erosion and damage to wetlands resources, buildings, roads and other structures. Debris, building materials and hazardous materials washed into the flooded area damage and pollute valuable wetland resources.

Most wetlands by-laws and regulations limit flood protection measures to areas delineated on FEMA Flood Insurance Rate Maps (“FIRM”) as Special Flood Hazard Areas (SFHA). The SFHA, identified on the FIRM as flood Zones A and V, are areas with 1% risk of flooding in any given year. However, FIRMs are developed based on observed prior flood conditions and fail to consider expected changes that will occur with sea level rise and increasingly intense storm events.

The current state building code only applies to the SFHA identified on the FIRM and may not adequately protect buildings and the surrounding wetlands resources from sea level rise and increased storm conditions. Buildings and other structures constructed today have an anticipated useful life well beyond the static conditions identified in the FIRM and the State Building Code. As sea level rises and storm frequency and intensity increase, the FIRM will not reflect the full extent of flood risk; and the current State Building Code will no longer adequately protect buildings constructed under the outdated FIRMs. More structures will be subject to coastal floods and more structures will exacerbate flood impacts and sustain significant damage during floods and storms, releasing debris and pollution into valuable wetland resources.

As sea level rises and storms increase, the shoreline, salt marshes and other coastal wetland resources will gradually move landward in most locations. The areas anticipated to be impacted by this landward migration are identified in these regulations as “Special Transitional Areas.” Because these areas are likely to be impacted by future floods and are necessary for sustaining the wetlands resource and future flood storage capacity, development that inhibits landward migration is likely to result in greater flood damage to buildings and structures and greater damage to and/or loss of wetland resources.

*Comment: Towns can elect to include this preamble or omit it and include it in a separate guidance document.*

*Comment: Cape Cod Commission staff and Cape Cod Cooperative Extension/Woods Hole Oceanographic Institution Sea Grant staff are available to assist towns with interpreting and implementing these regulations.*

## **2. Purpose of the Regulations.**

The purpose of these Regulations is to protect wetland resource areas by controlling activities that are likely to have a significant individual or cumulative effect on wetland resources. These Regulations aim to protect wetland resources today and into the future, as the frequency and intensity of storms and flooding increases. In protecting the wetlands resources from future flood damages, these regulations can provide an additional layer of flood protection for private and public property and vulnerable infrastructure. These regulations are critical to the preservation of the unique environment of [*TOWN*].

These Regulations are authorized by and supplement and complement the Massachusetts Department of Environmental Protection (“MassDEP”) wetlands regulations (310 CMR 10.00) including

the regulations governing Land Subject to Coastal Storm Flowage (“LSCSF”) and the [TOWN’S] Wetlands Bylaw by designating the Best Available Coastal Flooding Model and Target Year for [TOWN] and providing additional performance standards. All activities within the Coastal Resilience Zone (“CRZ”) must comply with the Coastal Resilience provisions of the Wetlands Coastal Resilience Bylaw and Regulations and [TOWN’S] Floodplain Zoning Bylaw. The Floodplain Zoning Bylaw governs uses and dimensions in the floodplain and incorporates the minimum requirements for compliance with the National Flood Insurance Program. Applicants must comply with the Coastal Resilience Bylaw and Regulations and the Floodplain Zoning Bylaw.

*Comment: As of the date of these Model Regulations, the MassDEP regulations for LSCSF were in draft form. If approval is delayed then the reference to the MassDEP regulations could be modified.*

*Comment: If the Town amends its existing floodplain zoning bylaw to add coastal resilience provisions or adopts a separate coastal resilience zoning bylaw, we recommend referencing that zoning bylaw here.*

The current Regulations are based on the best available information and shall be enforceable upon the effective date. Some provisions of these Regulations are designed to be updated when more data and improved models on climate impacts become available.

Additional resources are available to assist in interpreting these Regulations and in designing Projects in compliance with these Regulations. Those resources include, but are not limited to:

- [Floodplain Data Viewer](#)<sup>1</sup>
- [Coastal Resiliency Technical Bulletin, Cape Cod Commission \(2019\)](#)<sup>2</sup>
- [Cape Cod Commission Flood Area Design Guidelines](#)<sup>3</sup>
- [FEMA Technical Bulletins](#)<sup>4</sup>

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<sup>1</sup><https://cccommission.maps.arcgis.com/apps/instant/portfolio/index.html?appid=7010cb5c13c44f3ab3a239a614ae9e84>

<sup>2</sup> [https://www.capecodcommission.org/resource-library/file/?url=/dept/commission/team/Website\\_Resources/regulatory/tech\\_bulletins/Coastal\\_Resiliency\\_Technical\\_Bulletin\\_2019.pdf](https://www.capecodcommission.org/resource-library/file/?url=/dept/commission/team/Website_Resources/regulatory/tech_bulletins/Coastal_Resiliency_Technical_Bulletin_2019.pdf)

<sup>3</sup> <https://capecodcommission.org/our-work/flood-area-design-guidelines/>

<sup>4</sup> <https://www.fema.gov/emergency-managers/risk-management/building-science/national-flood-insurance-technical-bulletins>

- [NFIP Floodplain Management Bulletin for Historic Structures](#)<sup>5</sup>
- [OTHER REFERENCE MATERIALS]

### 3. **Jurisdiction.**

The area subject to protection under this Coastal Resilience Zone Model Regulation is the Coastal Resilience Zone which includes Land Subject to Coastal Storm Flowage (“LSCSF”), Coastal Flood Risk Area (1% storm) for Target Year, and Other Coastal Wetland Resources within the LSCSF or Coastal Flood Risk Area, the Special Transitional Area, and the buffer to each of these resource areas.

### 4. **Definitions.**

*Comment: These definitions could be streamlined by referencing the definitions that are in the Bylaw or in the DEP regulations, instead of including the full definition. In electronic versions of these regulations, a link to the Bylaw can be added. Note that if the same definitions are repeated in the Bylaw and the regulations, then if one is updated, the other will need to be updated as well.*

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

**Act** – The Massachusetts Wetlands Protection Act, M.G.L. c. 131 §40.

**Activity** – Construction, development, renovation, or any modification to an existing structure or excavation, filling, grading, paving or other modification to land that will alter a Project Site located within the Coastal Resilience Zone.

**Alter** – As defined in the DEP Regulations at 310 CMR 10.04 and shall include any activity that exacerbates erosion, sedimentation, or flooding or channelizes floods within the CRZ for the Target Year. [IF DEFINED IN THE TOWN WETLANDS BYLAW, REPLACE THE REFERENCE TO THE DEP REGULATIONS WITH A REFERENCE TO THE DEFINITION IN THE TOWN BYLAW.]

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<sup>5</sup> [https://www.capecodcommission.org/resource-library/file/?url=/dept/commission/team/Website\\_Resources/FEMA\\_NFIP\\_Floodplain\\_Management\\_Bulletin\\_Historic\\_Structures.pdf](https://www.capecodcommission.org/resource-library/file/?url=/dept/commission/team/Website_Resources/FEMA_NFIP_Floodplain_Management_Bulletin_Historic_Structures.pdf)



**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 MC-FRM as its Best Available Coastal Flooding Mode or another model that is based on a design flood elevation that includes freeboard. If the town is using MC-FRM, then this definition can be omitted.*

*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** – The Conservation Commission has adopted [IDENTIFY THE MODEL WITH THE TITLE, DATE, AND SOURCE OF THE MODEL] as the Town’s Best Available Coastal Flooding Model. The map of the Best Available Coastal Flooding Model is [ATTACHED AS APPENDIX OR IDENTIFY WHERE THE MAP IS AVAILABLE.] As new maps with updated data and/or greater scientific reliability become available, the Conservation Commission may modify the selected model or adopt an alternative best available coastal flooding model of equal or greater scientific reliability. At the time of completion of this model regulation, the Massachusetts Coastal Flood Risk Model (MC-FRM) is recognized by the Commonwealth as the best available coastal flooding model. A map viewer showing three future flood extents and elevations, as well as other planning resources, is available here: [Floodplain Data Viewer](#).

**Best Available Wetland Migration Information** – Current information on wetland migration developed for the Commonwealth, showing the predicted wetland migrations patterns for coastal towns. The Town has selected [IDENTIFY THE MODEL WITH THE TITLE, DATE, AND SOURCE OF THE MODEL] Model for the Target Year.

*Comment: The current model used by the Commonwealth is the Sea Level Affecting Marshes Model (SLAMM) developed by the Massachusetts Office of Coastal Zone Management (MCZM). The SLAMM model is available 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. The intermediate-high SLR scenario is recommended for consistency with MC-FRM.*

**Buffer Zone** – The area of land extending 100 feet horizontally outward from the boundary of the specified coastal resource area, other than a river.

*Comment: If the Town has enlarged the buffer zone for any resource, 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 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)** – The 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 shall include within its boundaries one or more of the following subareas: Velocity (V) Zone; A Zone (including the Zone A subareas: Moderate Wave Action Area and Minimal Wave Action Zone) and Special Transitional Area.

**Commission** – The Conservation Commission of [TOWN].

**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 using the MC-FRM maps to define the CRZ, the DFE incorporates an adequate estimate of future flood elevation and eliminates the need for additional freeboard above the DFE. For towns using the SLR-BFE or other models that do not*

*incorporate freeboard, it will be necessary to add freeboard requirements to achieve adequate flood protections – see the definition of SLR-BFE below.*

**FEMA** – The US Federal Emergency Management Agency.

**Fill** – To deposit any material so as to temporarily or permanently raise an elevation, fill wetlands or depressions or to provide a barrier to flood waters. Fill shall not include beach nourishment, repairs (but not expansion) to existing revetments or seawalls; nature-based flood protection projects that allow for the movement of sediment, and low impact stormwater systems approved under the Bylaw and these Regulations.

**Flood Insurance Rate Maps (“FIRM”)** – The most recent map, as adopted by Town Zoning or General bylaw, identifying flood profile data for the Town prepared by or on behalf of FEMA and the National Flood Insurance Program, including any map amendments and revisions approved by FEMA.

**Historic Structure** – Historic Structure means any structure that is listed individually in the National Register of Historic Places, preliminarily determined by the U.S. Secretary of the Interior as meeting the requirements for individual listing on the National Register, or certified or preliminarily determined by the U.S. Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the U.S. Secretary of the Interior to qualify as a registered historic district. Historic Structure also means any structure individually listed on the Massachusetts Register of Historic Places or individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified by the Massachusetts Historical Commission.

*Comment: The definition of “Historic Structure” is the same definition provided in the proposed amendments to 310 CMR 10.36. When and if, those amendments are finally adopted, this definition can be revised to simply reference the definition in the DEP Regulations.*

**Land Subject to Coastal Storm Flowage (LSCSF)** – As defined in the DEP regulations, 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 Regulation, 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 Regulation 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.

*Comment: Limited Projects have less stringent standards than other projects within wetland resource areas. Since towns cannot impose regulations that are less stringent than the DEP regulations, towns cannot create additional categories of Limited Projects within those areas subject to DEP wetlands jurisdiction. However, towns can add new forms of Limited Projects in Special Transition Areas and in other areas that are not currently regulated by DEP.*

**Minimal Wave Action Zone Area (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(2). 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 36.(2). The MoWA is the area where base flood heights are equal to or greater than 1.5 but less than 3 feet.

*Comment: If the Best Available Coastal Flooding Model projects the MoWA and the boundaries of the MoWA are broader than that defined in the FIRM or DEP Regulations, the Conservation Commission may adopt such modified projection in this Regulation.*

**Notice of Intent** – The written application submitted to the Commission by any person intending to remove, fill, dredge or alter a wetlands resource area.

**Order of Conditions** – The permit issued by the Commission authorizing the proposed activity at the project site.

**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 at 310 CMR 10.04.

*Comment: Although rivers are categorized as inland wetland resources under the DEP Regulations, for the purposes of the Bylaw and these Regulations, 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. 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: 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-slammm>. The SLAMM viewer shows predicted wetland migration patterns for coastal towns throughout the state.*

**Project** – The activity proposed by the applicant.

**Project Site** – The area comprising the limit of work for activities, including but not limited to, any dredging, excavating, filling, grading, the erection, reconstruction or expansion of a building or structure, the driving of pilings, the construction or improvement of roads or other ways, construction or expansion of sea walls and other engineered coastal barriers, and the installation of drainage, stormwater treatment, environmentally sensitive site design practices, sewage and water systems.

*Comment: This definition expands on the definition in 310 CMR 10.04.*

**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.

*Comment: 310 CMR 10.04 defines “Redevelopment” but does not define “Redevelopment Site.”*

**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: If the town elects to use MC-FRM as its Best Available Coastal Flooding Model, the Town should use the term “DFE” and omit the term “SLR-BFE” and the freeboard requirements in these regulations. Towns using other models should retain the language in these regulations.*

**Segment or Segmentation** – The completion of any project including, without limitation, construction, renovation, repair, site work or other Activity in phases or segments.

**Special Flood Hazard Area (SFHA)** – The area with a current 1% flood risk, identified on FIRMs as the A zones and V zones. The SFHA only applies to areas identified on current FIRMs. The anticipated flood risk for the Target Year is defined as the Coastal Flood Risk Area in accordance with the Best Available Coastal Flooding Model

**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** – Damage that has occurred as a result of any origin where the total cost of repairs is 50 percent or more of the structure’s *assessed value* before the disaster occurred.

*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 use assessed value because the assessed value is more likely to provide a consistent basis for valuing properties throughout the Town.*

**Substantial Improvement** – Any repair, reconstruction, rehabilitation, alteration, addition or other improvement to a structure where the cost is 50 percent or more of the structure’s *assessed value* prior to commencing the improvement. This term includes any alteration of a historic structure, except to the extent that the alteration would preclude the structure’s continued designation as a historic structure.

*Comment: Substantial Improvement of a building or structure is defined in the State Building Code as the repair, reconstruction, rehabilitation, alternation, addition or other improvement with a cost equal to or exceeding 50% of its market value. As noted above, we elected to use assessed value in place of market value. We also note that a threshold of 50% of assessed or market value may be reached more quickly when repairs are made to buildings with a lower market value compared to buildings with a high market value. The town may use a different, more equitable threshold, provided that it does not create a conflict with the State Building Code by restricting the use of materials, or methods of construction of structures regulated by the state building code.*

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

**Target Year** – The Conservation Commission has established [*INSERT YEAR SELECTED*] as the Target Year for projections of sea level rise and flood risk.

*Comment: 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 and insert in this definition, the Target Year for the Best Available Coastal Flooding Model. Because most of the existing flood models include projections through 2070, we recommend using 2070 as the Target Year.*

**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, or the velocity zone defined in the Best Available Coastal Flooding Model, whichever is broader.

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

## 5. Procedures.

Any person planning to conduct an activity that is subject to the jurisdiction of the Bylaw and these Regulations shall file a Notice of Intent with the Commission in accordance with the requirements of the Bylaw. In addition to the standard requirements of the Notice of Intent, each Notice of Intent for a Project within the CRZ shall identify the location of the Project Site within the CRZ, identify all activities proposed at the Project Site for all phases of the Project, including without limitation, all structures, and impervious surfaces to be constructed, renovated or modified. The Notice of Intent shall also identify the [ALT 1: SLR-BFE] [ALT 2: DFE] and the elevation of (a) the bottom floor and (b) the lowest horizontal structural member of the building or structure (as determined in accordance with the applicable Performance Standards set forth in Sections 8.b, 9a, 9b., 10.c, 11.a and/or 11.c), and shall describe the proposed flood protection measures to be implemented for the Project.

If the Project involves repair of damage or an improvement to the structure, then the Commission shall determine that the Project is a repair of Substantial Damage or a Substantial Improvement if the total cost of the Project exceeds 50 percent of the assessed value of the structure prior to the damage or improvement.

In reviewing the Notice of Intent, the Commission may consult with the [TOWN'S BUILDING INSPECTOR, ENGINEER, ZONING ADMINISTRATOR, OR COASTAL RESOURCES OR FLOODPLAIN ADMINISTRATOR] to gather additional guidance and to coordinate the proposed Order of Conditions with the requirements of those other Town departments. Except in accordance with the emergency procedures of the DEP Regulations at 310 CMR 10.6 and/or the [WETLANDS BYLAWS/REGULATIONS OF TOWN], no activities shall commence prior to receiving and without complying with an Order of Conditions issued pursuant to these Regulations.

*Comment: the Town should revise the list of officials with the titles used by the Town and include only those officials who may have a role in reviewing the Notice of Intent for an Order of Conditions.*

*Comment: the Town should reference the emergency procedures adopted by the Town or refer to the DEP regulations.*

## **6. Presumptions.**

- a. A project that involves filling, dredging, or constructing one or more buildings, or other structures within the CRZ or otherwise altering the CRZ, is presumed to have a significant effect on wetlands resources, flood control, erosion and sediment control, and water quality.
- b. Any person who files a Notice of Intent to perform work within the CRZ has the burden of demonstrating to the Commission either that (i) the location does not currently and is not expected in the future to directly contribute to the protection of wetland resources, or (ii) the proposed activity will comply with the performance standards and will not harm wetlands resources or contribute to flood damage for the foreseeable future. In the event that the Commission determines that the presumptions have been overcome, the Commission shall make a written determination to this effect, setting forth the grounds.
- c. The following activities within the CRZ are presumed to have a significant or cumulative adverse effect on the protected resource areas and, based on the type and location of the activity, may be prohibited, or may require compliance with Performance Standards set forth in Sections 7 through 12 of these Regulations:
  - (i) Construction of new structures, including buildings, sheds, garages, swimming pools, patios, decks, other impervious areas, docks, and piers; and additions and Substantial Improvements to existing structures, including renovations, modifications, elevation of existing structures and reconstruction of any structure which has sustained Substantial Damage;
  - (ii) New construction or horizontal or vertical expansion of seawalls and other engineered coastal barriers;
  - (iii) Impermeable paving for new roads, driveways, and parking lots;
  - (iv) New septic systems.
  - (v) Placement of fill material.

## **7. General Performance Standards.**

When the Commission determines that a proposed project or activity is located within the CRZ, the following performance standards apply. The applicant shall demonstrate that it has met the following

performance standards and has also met the performance standards set forth in Sections 8 through 12, as applicable to the Project location.

*Comment: Several clauses below include two alternatives.*

*ALT 1 should be used if the town is using SLR-BFE or another model that does not incorporate freeboard as its Best Available Coastal Flooding Model.*

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

- a. Any project that involves construction, expansion, or repair of an existing structure shall be designed to prevent any exacerbation of current or future flood conditions and prevent any harm to wetland resources.
- b. During new construction and during expansion or repair of existing structures, construction materials shall be stored and secured to prevent damage from flood waters or dislodging into flood waters.
- c. Any activity in the CRZ shall not cause an increase in the elevation or velocity of flood waters, redirect flows or cause channelization, or impede return flows or cause ponding at the project site or at adjacent or nearby properties or in any public or private way. This performance standard shall not prohibit the construction of flood protection infrastructure approved under these Regulations such as a stormwater or floodwater management system, as defined in the DEP Regulations at 310 CMR 10.04.
- d. Any activity in the CRZ shall, to fullest extent possible, preserve existing native soils, vegetation, and other native natural conditions that serve as buffers to coastal flooding and storm surges.
- e. Any new construction, expansion, Substantial Repair of a Foundation, Substantial Improvement or repair of Substantial Damage to a building or occupied structure located within the CRZ shall be elevated at least to the [*ALT 1*: SLR-BFE] [*ALT 2*: DFE] in accordance with the applicable Performance Standards set forth in Sections 8.b, 9.a, 9.b, 10.c, 11.a and 11.c and constructed in accordance with the applicable provisions of the State Building Code and Town Zoning Bylaw.
- f. Any activity in the CRZ shall be designed and constructed to result in no net loss of open or undeveloped space in the CRZ unless the applicant can demonstrate that the use of open or



undeveloped space will not exacerbate flooding, or otherwise adversely impact wetlands resources from the date of construction through the Target Year.

- g. In determining the applicability of any Performance Standard to a Project or Activity, the Commission shall consider all phases and Segments of the Project from the date of the adoptions of these Regulations. A Project may not be phased or Segmented to evade, defer or limit the applicability of these Regulations.

**8. Additional Performance Standards within V Zone.**

The following performance standards shall apply in the V Zone, in addition to the General Performance Standards and applicable provisions of the DEP Regulations.

- a. Except as permitted herein for relocation of utilities and as permitted in Section 12(a) for Redevelopment Sites, no new construction or expansion of any building or other structure, including sheds, garages, pools, septic systems or other structures may be permitted. An expansion for the sole purpose of relocating utilities above anticipated flood levels may be allowed provided that the expansion is no more than 100 square feet or as may be permitted by the conservation commission on a case by case basis and is elevated to or above the [ALT 1: at least two feet above the SLR-BFE] [ALT 2: to the DFE]. No new construction or expansion of roads, parking lots, public shared use paths or other impervious surfaces shall be permitted within the V Zone, except within a Redevelopment Site or as permitted as a Limited Project in accordance with the requirements of 310 CMR 10.24(7)-(9). Subject to all other applicable performance standards of these Regulations, maintenance and repair of roads and parking lots, conversion of at grade roads to elevated roadways and bridges shall be allowed, and upgrading without expanding and repair of existing septic systems shall be allowed.

*Comment: The reference to 310 CMR 10.24(7)(c) includes proposed amendments to the DEP regulations. If these proposed amendments are not adopted, then this clause should be revised accordingly.*

- b. In the event of any Substantial Repair of a Foundation, any Substantial Improvement, or any repair or restoration after Substantial Damage, the lowest horizontal structural member of the building or structure shall be elevated at least to the [ALT 1: at least two feet above the SLR-BFE] [ALT 2: to the DFE]. A historic structure shall not be required to be elevated if the structure

complies with the Floodplain Zoning Bylaw and such alteration will preclude the structure's continued designation as a historic structure.

*Comment: Towns and applicants should consult with the Historic District Commission or consult with a Historic Preservation Specialist in weighing the potential loss of historic designation against the likelihood of Substantial Damage or destruction of the building or structure when determining whether, and to what extent, to elevate or otherwise protect a historic structure.*

- c. Any structure that has incurred Substantial Damage due to floods or storms may be rebuilt to meet the current applicable requirements of FEMA, the State Building Code, the Zoning Bylaw and these Regulations. If the structure incurs Substantial Damage due to floods or coastal storms after rebuilding to all applicable flood protection standards for a second time, then the structure shall either be (a) moved landward beyond the V Zone or (b) demolished. After moving or demolishing the structure, the site shall be returned to a vegetated, undeveloped state. No construction of any new structures on the vacated land within the V Zone is allowed.

*Comment: If a structure is Substantially Damaged by a coastal storm after meeting all applicable flood protection requirements, then it may be too risky and unsafe to rebuild in that location. After weighing this risk, Towns may elect to modify this clause to allow structures to be rebuilt more than one time or exclude historic structures or municipal buildings from the prohibition on reconstruction. If after weighing the risk, the Town decides against adopting any prohibitions on rebuilding after repeated Substantial Damage, then this clause 8(c) should be omitted.*

- d. No new construction or horizontal or vertical expansion of seawalls, berms, or other engineered coastal barriers shall be allowed unless the applicant can demonstrate that the seawall, berm, or other barrier will not deflect, redirect, or increase the velocity of wave action or flood waters in a manner that impairs wetlands resources or other properties.
- e. Stairs, boardwalks, fiberglass or other temporary seawalls, temporary flood barriers and docks may be permitted within V Zone resource areas such as dunes and coastal banks provided that such structures comply with the performance standards of the Bylaw and these Regulations applicable to those resource areas; and are designed to be (i) removed and placed in a secure location in advance of a storm or other extreme high tide; (ii) anchored and secured to prevent destruction or damage by wave action; and/or (iii) elevated, with open step risers or spacing in

boardwalks and docks sufficiently wide to allow waves and flood waters to pass through or under without damaging the footings, piers or structure. Each step, board and component of stairs, boardwalks, docks and other similar structures must be marked with the contact information of the applicant and the Commission may, in its enforcement discretion, hold the applicant responsible for any damage caused by dislodged materials.

*Comment: The Conservation Commission shall determine the form of identification required on steps and other components. Forms of identification may include the Owner's name, phone number, DEP file number, a local Conservation Commission number or other similar form of identification.*

- f. New or expanded impervious patios shall not be permitted. Patios constructed with permeable pavers and unenclosed decks elevated at least to the [*ALT 1*: at least two feet above the SLR-BFE] [*ALT 2*: to the DFE] and constructed with adequate spacing to allow water drainage may be permitted. Outdoor kitchens must be adequately secured to prevent damage during floods and outdoor furniture, grills and other outdoor equipment must be moved to a secure flood-protected location that can accommodate such equipment prior to storms and flood conditions. Each paver, board and component of any patio or deck must be marked with the contact information of the applicant and the Commission may, in its enforcement discretion, hold the applicant responsible for any damage caused by dislodged materials.

*Comment: If the property owner does not inhabit the property on a full-time basis, rents the property, or leaves for extended periods of time, the Commission could consider adding a Special Condition to the Order of Conditions requiring such equipment and furniture to be secured prior to vacating the property for more than one week or if a storm is anticipated within one week of vacating the property. Although this may be difficult to enforce, it would provide support for an enforcement action after the fact, if such materials do become dislodged and the owner has failed to comply. The Cape Cod Commission's Flood Area Design Guidelines may be referenced for guidance on limiting the size of expanded or new decks to minimize storm debris.*

*Comment: The Commission could also require the applicant to mark all furniture with its contact information and hold the applicant responsible for any damage caused by dislodged furniture.*

- g. Hazardous materials, including without limitation, gasoline, propane, and pesticides, shall not be stored in the V zone unless limited to quantities typically used by households, or minimum quantities required for commercial operations, and secured in a flood-protected location [*ALT 1*: at least two feet above the SLR-BFE] [*ALT 2*: above the DFE].

Except as provided below, fill material, may be placed in the V Zone only after the applicant demonstrates that such fill material will not redirect, channelize, or exacerbate flood conditions. Structural fill for support of a building or for mounding septic systems shall not be used anywhere within the V Zone except as may be provided in the MassDEP regulations.

- h. Fences and gates shall be installed with the posts anchored in the ground and the fence or gate panels shall be placed above the ground and constructed with open slats or other openings so as to allow water to pass under and through the fence or gate. Retaining walls shall not be permitted if the retaining wall would redirect or channelized floodwaters.
- i. Activities that disrupt sediment transport (seawalls, jetties, breakwaters, revetments) shall be permitted only when the applicant can demonstrate that such adverse impacts will be mitigated and the Project is consistent with the other requirements of these Regulations, other Town bylaws and regulations, the DEP Regulations and the state waterways regulations (310 CMR 9.00).
- j. Nature-based flood protection measures that allow for movement of sediment and resources shall be permitted. Constructed dunes and dune restoration to support and protect existing wetlands resources shall be permitted.

**9. Additional Performance Standards within MoWA Zone.**

The following performance standards shall apply within MoWA, in addition to the General Performance Standards and applicable provisions of the DEP Regulations.

- a. Except as permitted in Section 12(a) for Redevelopment Sites, any new construction or expansion, repair or modification of any building or other structure, including sheds, garages, pools, septic systems or other structures, may be allowed only if the applicant demonstrates that (i) the project will 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 to the [*ALT 1*: at least two feet above the SLR-BFE] [*ALT 2*: above the DFE].

*Comment: In the Floodplain Zoning Bylaw, towns could elect to prohibit or restrict the dimensions of any new construction or expansion of a building structure, or septic system in the MoWA. In that case, the Performance Standard for the V Zone (Section 8.a) could also be used here instead of this Section 9.a.*

*Comment: Towns could elect to prohibit rebuilding if the structure incurs Substantial Damage after twice rebuilding to applicable flood protection standards. In that case, the Performance Standard for the V Zone (Section 8.c) could be added to this Section 9.*

- b. In the event of any Substantial Repair of the Foundation, any Substantial Improvement, or any repair or restoration after Substantial Damage, the lowest horizontal structural member of the building or structure shall be elevated to the [**ALT 1**: at least two feet above the SLR-BFE] [**ALT 2**: above the DFE]. A historic structure shall not be required to be elevated if the structure complies with the Floodplain Zoning Bylaw and such alteration will preclude the structure's continued designation as a historic structure.

*Comment: Towns and applicants should consult with the Historic District Commission or consult with a Historic Preservation Specialist in weighing the potential loss of historic designation against the likelihood of Substantial Damage or destruction of the building or structure when determining whether, and to what extent, to elevate or otherwise protect a historic structure.*

- c. No new construction or horizontal or vertical expansion of seawalls, berms or other engineered flood or coastal barriers shall be allowed unless the applicant can demonstrate that the seawall, berm or other barrier will not deflect, redirect, or increase the velocity of wave action or flood waters in a manner that impairs wetlands resources or other properties.
- d. Stairs or access to the beach and to other water resources, boardwalks, fiberglass or other temporary seawalls, temporary flood barriers and docks may be permitted within the MoWA resource areas such as dunes and coastal banks, provided that such structures comply with the performance standards of the Bylaw and these Regulations applicable to those resource areas; and are designed to be (i) removed and placed in a secure location in advance of a storm or other extreme high tide; or (ii) anchored and secured to prevent destruction or damage by floods or wave action; and/or (iii) elevated, with open step risers or spacing in boardwalks and docks

sufficiently wide to allow waves and flood waters to pass through or under without damaging the footings, piers or structure. Each step, board and component of stairs for access to the beach and other water resources, boardwalks, docks and other similar structures must be marked with the contact information of the applicant and the Commission may, in its enforcement discretion, hold the applicant responsible for any damage caused by dislodged materials.

- e. New or expanded impervious patios shall not be permitted. Patios constructed with permeable pavers and unenclosed decks constructed with sufficient spacing and elevation to allow water to pass through and under the deck may be permitted. Outdoor kitchens must be adequately secured to prevent damage during floods, and outdoor furniture, grills and other outdoor equipment must be moved to a secure flood protected location that can accommodate such equipment and furnishing prior to storms and flood conditions. Each paver, board and component of any patio or deck must be marked with the contact information of the applicant and the Commission may, in its enforcement discretion, hold the applicant responsible for any damage caused by dislodged materials.
- f. Hazardous materials including, without limitation, gasoline, propane, and pesticides, shall not be stored in the MoWA unless limited to quantities typically used by households, or minimum quantities required for commercial operations, and secured in a flood protected location [*ALT 1*: at least two feet above the SLR-BFE] [*ALT 2*: above the DFE].
- g. Fill material that is not structural fill may be placed at a Project Site located in the MoWA only after the applicant demonstrates that such fill material will not redirect, channelize or exacerbate flood conditions. Structural fill for support of a building or for mounding septic systems shall not be used anywhere within the MoWA, except as may be provided in the MassDEP regulations.
- h. Fences and gates shall be installed with the posts anchored in the ground and the fence or gate panels shall be placed above the ground and constructed with open slats or other openings so as to allow water to pass under and through the fence or gate. Retaining walls shall not be permitted if the retaining wall would redirect or channelize floodwaters.
- i. Activities that disrupt sediment transport (seawalls, jetties, breakwaters, revetments) may be permitted only when the applicant can demonstrate that such adverse impacts will be mitigated and the structure is consistent with the other requirements of these Regulations, other Town bylaws and regulations, the DEP Regulations and the state waterways regulations (310 CMR 9.00).

- j. Nature-based flood protection measures that allow for movement of sediment and resources shall be permitted. Constructed dunes and dune restoration to support and protect existing wetlands resources shall be permitted.

**10. Additional Performance Standards within MiWA Zone.**

- a. Except as permitted in Section 12(a) for Redevelopment Sites, any new construction or expansion, repair or modification of any building or other structure, including sheds, garages, pools, septic systems or other structures, may be allowed only if the applicant demonstrates that (i) the project will 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*: above the SLR-BFE] [*ALT 2*: to the DFE].

*Comment: In the Floodplain Zoning Bylaw, towns could elect to prohibit new construction or expansion or restrict the dimensions of any building structure, or septic system in the MiWA. In that case, the Performance Standard for the V Zone (Section 8.a) could also be used here instead of this Section 9.a.*

*Comments: Towns could elect to prohibit rebuilding if the structure incurs Substantial Damage after twice rebuilding to applicable flood protection standards. In that case, the Performance Standard for the V Zone (Section 8.c) could be added to this Section 9.*

- 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*: SLR-BFE] [*ALT 2*: to the DFE]. A historic structure shall not be required to be elevated if the structure complies with the Floodplain Zoning Bylaw and such alteration will preclude the structure's continued designation as a historic structure.

*Comment: Towns and applicants should consult with the Historic District Commission or consult with a Historic Preservation Specialist in weighing the potential loss of historic designation against the likelihood of Substantial Damage or destruction of the building or structure when determining whether, and to what extent, to elevate or otherwise protect a historic structure.*



- c. Hazardous materials including, without limitation, gasoline, propane, and pesticides, shall not be stored in the MiWA unless limited to quantities typically used by households, or minimum quantities required for commercial operations, and secured in a flood protected location above the [*ALT 1*: above the SLR-BFE] [*ALT 2*: the DFE].
- d. Fill material may be placed at a Project Site located in the MiWA only after the applicant demonstrates that such fill material will not redirect, channelize or exacerbate flood conditions.
- e. Fences and gates shall be installed with the posts anchored in the ground and the fence or gate panels shall be placed above the ground and constructed with open slats or other openings so as to allow water to pass under and through the fence or gate. Retaining walls shall not be permitted if the retaining wall would redirect or channelized floodwaters.

**11. Additional Performance Standards for Special Transitional Areas.**

The following Performance Standards shall apply within Special Transitional Areas. The General Performance Standards and if the Project is located in the V Zone, MoWA or MiWA then the applicable Performance Standards for the V Zone, MoWA or MiWA shall also apply. These Performance Standards are intended to enable the natural migration of wetlands resources due to sea level rise and increased storm intensity and frequency.

- a. Any new construction or expansion of any building or other structure, including sheds, garages, or other structures, shall be allowed only if the applicant demonstrates that (i) the project will not impede the Predicted Path of Wetland Migration, (ii) the project will not redirect, channelize or exacerbate flood conditions in wetlands resources or at other properties, and (iii) the new structure or expanded portion of a structure shall be elevated at least to the [*ALT 1*: SLR-BFE] [*ALT 2*: DFE].
- b. 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.
- c. No new septic systems shall be placed within the Predicted Path of Wetland Migration unless the application demonstrates that there is no other feasible alternative and uses best available

technology to minimize adverse impacts on current and future wetland resources. Upgrading and repair of existing septic systems shall be allowed.

- d. In the event of any Substantial Repair of a Foundation, any Substantial Improvement, or any restoration of Substantial Damage in a Special Transition Area located in the V Zone, MoWA, or MiWA, the building or structure shall be elevated as follows:

(i) In the V Zone and MoWA: the lowest horizontal structural member of the building or structure shall be elevated at least to [*ALT 1*: at least two feet above the SLR-BFE] [*ALT 2*: to the DFE].

(ii) In all other areas within the CRZ: the top of the bottom floor shall be elevated at least to the [*ALT 1*: SLR-BFE] [*ALT 2*: DFE].

A historic structure shall not be required to be elevated if the structure is in compliance with the Floodplain Zoning Bylaw and such alteration will preclude the structure's continued designation as a historic structure.

*Comment: Towns and applicants should consult with the Historic District Commission or consult with a Historic Preservation Specialist in weighing the potential loss of historic designation against the likelihood of Substantial Damage or destruction of the building or structure when determining whether, and to what extent, to elevate or otherwise protect a historic structure.*

- e. No new construction or horizontal or vertical expansion of berms or other engineered flood barriers shall be allowed unless the applicant can demonstrate that the berm or other barrier will not impede the migration of wetland resource areas and will not deflect, redirect, or increase the velocity of wave action or flood waters in a manner that impairs wetlands resources or other properties.
- f. Fill material, including structural fill, and retaining walls may be placed at a Project Site located in a Special Transitional Area only if (i) the Special Transition Area is not within the V Zone, MoWA or MiWA or placement of fill is allowed in the underlying flood zone and (ii) the applicant has demonstrated that such fill material or retaining wall will not impede the Predicted Path of Wetland Migration and will not redirect or channelize flood waters in a manner that impairs wetland resources or other properties.

- g. Fences and gates within Special Transitional Areas may be approved as a Limited Project. Fences and gates shall be installed above the ground and constructed with open slats or other openings to allow water to pass under and through the fence or gate. Fences and gates that are damaged by the migration of a wetland resource area shall be removed and shall not be replaced.

## **12. Additional Performance Standards for Redevelopment Sites.**

The following performance standards shall apply to Redevelopment Sites, in addition to the General Performance Standards, Performance Standards for the resource area and flood zone in which the Project is located, and applicable provisions of the DEP Regulations.

- a. At Redevelopment Sites, 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 of Section 7 through Section 11 of these Regulations. This limitation shall not apply to decks or sheds constructed in accordance with the applicable provisions of the Performance Standards set forth in Sections 7-11 of these Regulations and the provisions of the Floodplain Zoning Bylaw applicable to accessory structures.
- b. Any activity at a Redevelopment Site, including construction, repair or alteration of a structure or road, shall improve existing conditions by reducing impervious surfaces or restoring or creating compensable flood storage and wetland resources.
- c. In the event of any Substantial Repair of a Foundation, any Substantial Improvement, or any repair or restoration after Substantial Damage, the entire building or structure shall be elevated [*ALT 1*: at least two feet above the SLR-BFE] [*ALT 2*: at least to the DFE] in accordance with the applicable Performance Standards 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. A historic structure shall not be required to be elevated if the structure is otherwise in compliance with the Floodplain Zoning Bylaw and such alteration will preclude the structure's continued designation as a historic structure.

*Comment: Towns and applicants should consult with the Historic District Commission or consult with a Historic Preservation Specialist in weighing the potential loss of historic designation against the likelihood of Substantial Damage or destruction of the building*

*or structure when determining whether, and to what extent, to elevate or otherwise protect a historic structure.*

- d. The elevation 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.

### **13. Enforcement.**

The enforcement provisions of the Bylaws and Regulations shall apply to the CRZ. In addition, the following enforcement provisions shall apply solely with the CRZ.

- a. A Project that is segmented to avoid applicable regulations shall be in violation of the Regulations and subject to enforcement actions, as provided in the DEP Regulations and the Bylaw.
- b. A Project that rebuilds after demolishing or removing a structure as required by these regulations, DEP Regulations or FEMA requirements shall be subject to [*TOWN TO ADD ITS SELECTED ENFORCEMENT ACTION SUCH AS FINES, REVOCATION OF BUILDING PERMIT, REVOCATION OF BEACH PARKING PERMIT*].
- c. A Project that restores use in abandoned basement or constructs habitable space below elevated structure shall be subject to enforcement action.
- d. Commission may, in its enforcement discretion, hold the applicant responsible for any damage caused by dislodged materials.
- e. [*OTHER ENFORCEMENT PROVISIONS SPECIFICALLY APPLICABLE TO THE CRZ.*]