

MEMBERS PRESENT – Craig Hannafin (CH) Chair, Bert O'Donnell (BO) Vice Chair, Susan Caron (SC), John O'Donnell, Joe Ring (JR), Ken Dodge (KD), David Good (DG), Mike Seele, Conservation Agent (MS)

CALL TO ORDER – CH motions to open the meeting at 9:30 AM. SC second. Approved 5-0-0.

CHAIRMAN'S ADDRESS

- Pursuant to Chapter 20 of the Acts of 2021 date June 16, 2021, An Act Relative to Extending Certain COVID 19 Measures Adopted During the State of Emergency regarding suspending certain provisions of the Open Meeting Law, G. L. c. 30A §18, Commission meetings will be conducted both in-person and via remote participation. Members of the public may attend in-person or may participate remotely. While an option for remote attendance and/or participation is being provided as a courtesy to the public, the meeting/hearing will not be suspended or terminated if technological problems interrupt the virtual broadcast, unless required by law.
- CH notes that the purpose of today's hearing is to view a presentation from Rebecca Haney (RH), Coastal Geologist for Massachusetts Coastal Zone Management (CZM); also present are MassDEP Circuit Rider Andrew Poyant and CZM South Shore Regional Coordinator Jason Burtner (JB).

PRESENTATION

Rebecca Haney, CZM Coastal Geologist

CZM works jointly with DEP to provide technical assistance to conservation commissions. Today's presentation will focus on delineation, function assessment, and protection of coastal dunes and barrier beaches. Balancing human uses and resource protection in these areas is a continual challenge. How these areas are developed can affect their susceptibility to storm damage. CZM and DEP developed and recently updated a guidance document, *Applying the Massachusetts Coastal Regulations* (or "Coastal Manual") for coastal dune/barrier beach protection that addresses delineation, assessing function, examples of function, lessons learned, and activities that adversely affect functionality. The Coastal Manual is available on the CZM and DEP websites.

The 7th Edition of the MA State Building Code required all new foundations in coastal dunes to be open pilings for consistency and public safety, and to reduce damage. Under the National Flood Insurance Program, there are certain requirements that town must implement, including that foundations constructed on erodible soils, including sand, gravel, or cobble, be on open pilings; this is especially important in situations where multiple storms occur back to back. To help officials determine the location of coastal dunes, CZM has developed maps that show areas that *may* be coastal dune, but the actual determination of whether a specific site is in coastal dune is left to the Conservation Commission and DEP. Open piling foundations are embedded much deeper in the ground than open pier foundations, which go down to a footing, are subject to more scour, and interfere with the function of the dune. Commissioners should ask specifically whether an applicant is proposing pilings, piers, or columns, and specify the open piling requirement without grade beams or footings.

Chapter 1 of *Applying the Massachusetts Coastal Regulations* provides guidance as to coastal dune/barrier beach delineation, including what kind of information to ask of applicants and how to evaluate the information. There is also a checklist for delineating in the field. Chapter 2 deals with function analysis. Applicants often try to argue that an area is not coastal dune/barrier beach because it is not functioning as such. Commissioners should evaluate how an area provides storm damage and flood prevention functions. Chapter 3 provides performance standards along with their requirements, and with a methodology for determining whether an activity meets the performance standards. Chapter 4 provides examples and case studies. Appendices include a glossary, technical specifications, Policy 92-1 for Coastal Bank, and other reference materials.

310 CMR 10.28 defines a Coastal Dune as "Any natural hill, mound or ridge of sediment landward of a coastal beach deposited by wind action or storm over wash. Coastal dune also means sediment deposited by artificial means and

serving the purpose of storm damage prevention and flood control.” In Section B of the WPA Notice of Intent Application (WPA Form 3), applicants must indicate the size and location of resource area impacts; in Section D, they must attach documentation of the methodology they used to delineate the resource area.

Challenging areas for delineations include those with flat or tapering dunes, secondary dunes, or human alterations that have flattened a site and/or armored a shore. Distinguishing coastal dunes from coastal banks has much to do with the subsurface sediments. Barrier Beach Inventory Maps, DEP GIS layers, and USDA soil survey sites are useful reference points but only provide a rough estimate of dune locations. To meet the definition of “coastal dune”, a landform must be located landward of coastal beach; consist of sediments deposited by wind or wave action or storm over wash; and exhibit a hill, mound, or ridge topography. Multiple transections should be taken across the site, and an auger, shovel, corer, or machine should be used to determine the characteristics/thickness of the subsurface layers. The thickness of dune/glacial material should be compared; if 50% or more dune, the area is coastal dune; otherwise it is coastal bank.

There will often be a surface layer of topsoil or artificial fill; in such sites, Commissioners should check the sub-layers against what is on the beach. Even heavily altered areas are still considered barrier beach and can be established as such by looking at the underlying layers. If the soils are wind or wave-deposited or are artificial fill in a flood zone, the area is coastal dune regardless of alteration or revetment. The WPA presumes all dunes on barrier beaches to offer significant storm damage prevention and this presumption cannot be overcome. Altered dunes may not exchange sediment with the beach but still serve to erode and dissipate wave energy.

Dune sediments are typically rounded and well sorted whereas glacial sediments are relatively unsorted; beaches on the South Shore are often a mixture of sand, gravel, and cobble. Commissioners should consider the type of flood zone, the height of the base flood elevation above ground, and if AE zone, how close it is to the V or Coastal A zone. Storm damage field observations are tracked on the MyCoast database; Commissioners can help update the database by safely making observations during storm events.

Flow channels between buildings are a frequent source of damage in heavily altered coastal dunes, and can undermine or wash houses completely off their foundations. FEMA has a mitigation assessment team that studies why buildings are damaged in storms, and makes recommendations for building codes and regulations to reduce future damage.

Structures that adversely affect the flood-control functions of coastal dunes include solid foundations, retaining/landscape walls, certain types of fencing, low-lying (under 2 ft above grade) decks, stairs with risers, and concrete slabs. Pavers may be pervious to stormwater but can become projectiles in storms. Peastone, gravel, or shell are recommended for driveways/walkways, and pile-supported ramps are a better option for handicap accessibility. CZM has a coastal landscaping guide on its Web site that provides recommendations to homeowners. The roots of native beach vegetation tend to be much deeper, and thus more likely to hold soils and less likely to wash away. A mix of cobble stones and beach sand can help dissipate wave energy, which should be the objective rather than trying to stop the water. Solid fences and sturdy drift fencing can effectively armor an area with all the associated impacts including scour, interference with sediment flow, and trapping debris. CZM and DEP recommend sand fencing comprised of thin wood slats. Vegetation is often a viable alternative to fencing. Retaining walls are another type of structure that can impact the dune’s ability to dissipate wave energy, effectively redistributing it to neighboring properties. Breakaway walls or panels, although FEMA compliant, can have an adverse effect on floodwater in smaller events when the panels redirect the water rather than breaking away.

A slide entitled General Review Guidelines states (1) the performance standard for all coastal dunes on barrier beaches is “no adverse impact”; (2) virtually all coastal dunes in flood plans provide damage prevention and flood control, regardless of alteration; (3) all projects should be reviewed based on wave and flooding activity at a site, and what role it serves in providing storm damage protection to inland areas.

The presentation also includes general guidelines for coastal bank delineation, which is statutorily defined as “the seaward face of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland. (310 CMR 10.30).” They are frequently altered by walking trails or

revetment structures. Applicants proposing work in/on a coastal bank must map the bank on a plan to scale not greater than 1 inch = 50 ft. A coastal bank delineation must consider the overall landform, not artificial alterations, in determining its slope, verify the slope in the field, and indicate which of the diagrams in DEP Policy 92-1 is representative of the site.

CZM is available to assist in the review of complicated sites or projects.

DISCUSSION

CH thanks RH, AP, and JB for their informative presentation.

ADJOURNMENT – CH makes a motion to adjourn at x AM. JR second. Approved 5-0-0.

Respectfully submitted,
Liz Anoja, Conservation Administrative Clerk
Mike Seele, Conservation Agent

Marshfield Conservation Commission	
Craig Hannafin, Chair	Bert O'Donnell, Vice Chair
Joe Ring	Susan Caron
John O'Donnell	Ken Dodge
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