

APPROVED MINUTES - CONSERVATION COMMISSION  
THURSDAY, SEPTEMBER 23, 2021 7:00 P.M., SELECTMEN'S CHAMBERS)  
MARSHFIELD TOWN HALL, 870 MORaine STREET, MARSHFIELD, MA

APPROVED 10/19/21 5-0-0

**MEMBERS PRESENT** – Craig Hannafin (CH) Chair, Bert O'Donnell (BO) Vice Chair, Arthur Lage (AL), Joe Ring (JR), Susan Caron (SC), Eric Flint, Conservation Agent (EF); and Bill Grafton, Conservation Administrator (BG)

**MEMBERS NOT PRESENT** – Rick Carberry (PC)

**GUEST PRESENTERS** – Rebecca Haney (RH), Coastal Geologist for Massachusetts Coastal Zone Management (CZM); Massachusetts Department of Environmental Protection (DEP) Circuit Rider Andrew Poyant and CZM South Shore Regional Coordinator Jason Burtner (JB)

**CALL TO ORDER** – CH motions to open the meeting at 7:00 PM. JR second. Approved 5-0-0 by roll call: AL yes; BO yes; SC yes; JR yes; CH yes.

**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 tonight'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 (AP) and CZM South Shore Regional Coordinator Jason Burtner (JB). BG has seen RH at MACC conferences and thanks RH as well as AP and JB for presenting this technical overview to the Marshfield Conservation Commission.

**PRESENTATION**

**Rebecca Haney, CZM Coastal Geologist**

CZM works jointly with DEP to provide technical assistance to Conservation Commissions. Tonight'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*, for coastal dune/barrier beach protection that addresses delineation, assessing function, examples of function, lessons learned, and activities that adversely affect functionality.

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 Towns must implement, including that foundations constructed on erodible soils, such as 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 and 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. Building Commissioner Andrew Stewart (AS) notes that he has copies of ASE 24 and the Coastal Construction Manual in his office, along with the FEMA technical bulletins, which Conservation staff and commissioners can review.

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.

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 composition of the subsurface sediments. Barrier Beach Inventory Maps, DEP GIS layers, and USDA soil survey sites are useful reference points. 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 overwash; 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. In sites where artificial fill has been brought in, 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.

The FEMA flood zone definitions are then defined and reviewed, and a sample FEMA National Flood Hazard layer is shown. RH recommends checking flood zone delineations on the FEMA portal specifically, as the flood layers change frequently. 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. Town Administrator Michael Maresco (MM) notes they have also employed drones for this purpose.

RH shows slides of the Atlantic Avenue/Crescent Beach area in Hull, noting that pavement in heavily altered barrier beach/coastal dune areas is subject to increased water velocity and undermining. Hull reached out to DEP for assistance on the road, and CZM has recommended that more homes in the area be raised on pilings to dissipate the floodwater energy. Flow channels between buildings are another source of damage in these areas, 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.

JR asks if anything can be done to mitigate the water velocity issues in the Bay Avenue area? RH suggests a combination of the strategies recommended for Atlantic Avenue in Hull plus replacement of concrete/paved surface on individual properties and possibly beach nourishment. By minimizing the presence of these surfaces on individual projects, the Commission can help improve conditions in the area over time. MM notes that the Town has passed a Bylaw prohibiting decks, patios, or other structures from being connected to Town seawalls, as this also damages the seawalls. The Town is working on obtaining easements from residents that will allow them to do beach nourishment in the Bay Avenue area. JB comments on the role that native beach vegetation can play in stabilizing beaches and dunes; the turf grass often put down on individual properties is not as effective in this role. CZM has a coastal landscaping guide on its Web site that provides recommendations to homeowners. RH notes that the roots of native beach vegetation tend to be much deeper, and thus more likely to hold soils and less likely to wash away.

BO suggests that a short list of standard materials applying to all properties an area may help with after-storm cleanup. RH feels the Commission can encourage this standardization as it looks at individual projects, as well as possibly through outreach to residents. 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. RH notes that 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.

RH notes that 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. AS notes that the Building Department is discouraging the use of breakaway walls or panels, as they can become projectiles in heavy storms. He would like to develop a system to help determine when houses should be elevated on piles as part of repairs after storm damage, especially since homeowners after a storm tend to seek expedited permitting to make repairs. RH notes that assistance in making these evaluations is available at the state level.

A slide entitled General Review Guidelines states (1) the performance standard all coastal dunes on barrier beaches is "no adverse impact"; (2) virtually all coastal dunes in flood plans provide storm 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. CZM is available to assist in the review of complicated sites or projects.

## **DISCUSSION**

BO asks whether the Web sites referenced provide the latest flood plan information? RH indicates that the FEMA map Service Center, [msc.fema.gov](http://msc.fema.gov), will have the all the map changes current and effective at an address. AS notes he frequently uses this site and is available to assist Commissioners. Town Planner Greg Guimond (GG) suggests that the Town do away with the paper floodplain maps available in Town Hall and refer residents to the FEMA Web site so they receive the most accurate information. RH notes that the Web site is not difficult to learn, and is probably the better resource for some of the specific questions Commissioners may have. AS asks whether soil sampling, as opposed to the maps, will be needed to determine if an individual work site is in coastal dune. RH notes that the FEMA maps only delineate the primary frontal dune and not the coastal dune, so they should not be used to determine the location of the coastal dune; the Commission should request

subsurface soil information as needed to make the determination. BG states that in certain areas, the burden of proof is on the applicant to show a site is not coastal dune, and this can be accomplished by soil studies. AP believes the MSC is a helpful resource to this end, but on-field soil sampling is the ultimate arbiter. RH notes that subsurface soils will be an especially important determinant in highly altered areas such as Bay Ave, but areas that are clearly barrier beach are also coastal dune. JR hopes this presumption will ultimately drive applicants in certain areas to proactively design homes on open pilings. MM notes there can be a tendency for long-time coastal homeowners to want to keep building designs the way they always were despite the increased risks of storm damage, but new buyers seem to be willing to elevate the homes. RH notes that helical piles rather than driven piles may be necessary in areas with significant subsurface stone or cobble. AS asks whether caissons or concrete piles are acceptable? RH indicates they are, as long as they don't have a footing or grade beam, are structurally sound, and an engineer can certify the piles are deep enough.

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

**ADJOURNMENT** – CH makes a motion to adjourn at 8:42 PM. JR second. Approved 5-0-0 by roll call: AL yes; BO yes; SC yes; JR yes; CH yes.

Respectfully submitted,  
Liz Anoja, Conservation Administrative Clerk

Bill Grafton, Conservation Administrator  
Eric Flint, Conservation Agent  
Marshfield Conservation Commission

Craig Hannafin, Chair	Bert O'Donnell, Vice Chair
Arthur Lage	Joe Ring
Rick Carberry	Susan Caron