MEMORANDUM

TO: Cape Elizabeth Planning Board
FROM: Maureen O'Meara, Town Planner
DATE: February 4, 2014
SUBJECT: Normal High Water Line Amendments

Introduction

At the January 21, 2014 meeting, the Planning Board tabled the Normal High Water Line amendments to the next workshop. Below, I have attempted to summarize the issues raised and provide information.

Summary of issues

1. Top of Bank definition. Early in this process, the Planning Board considered whether to keep the current definition or to replace it with another definition. The current definition appears below:

> **Normal High Water Line of Coastal Waters:** That line on the shore of tidal waters which is the apparent extreme limit of the effect of the tides, i.e. the top of the bank, cliff or beach above high tide.

Originally, the Board considered using the standard definition in the DEP Shoreland Zoning Guidelines. That definition was criticized at the public hearing and the Planning Board tabled the definition back to workshop. The proposed definition now references the Highest Astronomical Tide plus 3' vertical feet. Both proposed definitions reflected the Planning Board's preference to move to a definition based on science and able be consistently applied on multiple sites.

One issue raised was to have Pete Slovinsky of the Maine Geological Survey create a map showing the top of bank. When he attended the Planning Board workshop, he was asked about definitions based on top of bank. He responded that he was not aware of any definitions in Maine, but slopes have been factored into definitions on the west coast. Those definitions have been geared to establishing setbacks due to unstable soils, and do not create a clear definition of top of bank when there is no clearly eroding slope.

The challenge with using the "top of the bank" definition is that almost all sites have a varying slope from the water's edge rather than a clear break in the slope. In this situation, the Code Enforcement Officer must determine the normal high water line. The result has been that code enforcement officers mostly have been

using the Highest Annual Tide as the normal high water line. This is the standard state DEP Shoreland Zoning definition.

At the public hearing, Richard Bryant suggested the following definition be considered:

> Coastal Wetland: ...In sections of shoreland characterized primarily by exposed, sloping, rocky ledge, [*including without limitation those areas from A to B, C to D, etc]* the coastal wetland shall extend to a line along the top of the exposed ledge. This line of exposed ledge along the top of a cliff or bank shall be determined without reference to occasional landward intrusions of exposed ledge within cuts or gullies obviously caused by upland stormwater runoff rather than by the apparent effect of the wave action or sea spray which prevents the formation of an organic soil layer.

The definition above would require the town to review the entire coastline and identify the locations where this definition would apply. It may be useful to note that the Zoning Ordinance already addresses highly unstable bluffs (Sec. 19-6-11) and land subject to severe erosion adjacent to tidal waters (Sec. 19-6-9.A.4.c).

The Board should confirm if it wants to retain the current "top of bank" definition in some form or to move to a new definition based on objective scientific data that can be consistently applied on multiple sites.

2. Court decisions. One issue raised is the conclusions in the Mack case (1983) where the court upheld the current definition using top of bank. The Mack decision also states the definition is "somewhat confusing" and incorporates multiple high water marks. The court found as follows:

> The definitions in the ordinance of "setback" and "normal high water mark of coastal waters" are somewhat confusing. The setback definition implies that the top of the bank, beach, or cliff may be, depending on the particular site, the normal high-water mark; however, it plainly contemplates other normal high-water marks. The definition of "normal high water mark" begins with a general definition ("that line on the shore of tidal waters which is the apparent extreme limit of the effect of the tides") and end with what are obviously intended to be three examples ("the top of the bank, cliff or beach above high tide")[4]

[4] The abbreviation"i.e." is used when in fact, to be consistent with the setback definition, the abbreviation "e.g." should have been used.

A more recent case illustrates how variable the interpretation of the current definition can be. In 2000, the Town prevailed in the "Armstrong" case. In that case, the code enforcement officer used the highest astronomical tide as the normal high water line, in an area with a rocky slope topped by a seawall. The court found as follows:

> However, a man-made structure is not necessarily the *apparent* extreme limit of the tide's effect. In Mack, the town building inspector located the normal high water mark by observing "a line of vegetation, beyond which the topography is characterized by jagged ledge and small pools." As in this case, a visual determination of the apparent extreme limit of the *effects* of the tides was a sufficient means of determining "normal high water mark" in Mack. The Board correctly interpreted the Ordinance by focusing on the apparent effects of the tide rather than by assuming that the sea wall, by default, necessarily establishes the normal high water line.

This case included several pictures of the waterfront, which are attached. The pictures show a site with no obvious top of bank except for the sea wall.

3. DEP Shoreland Zoning Measurement. The Department of Environmental Protection (DEP) is responsible for administering the Mandatory Shoreland Zoning Act. In the information sheet "Establishing the Starting Point for Measurement of the Shoreland Zone and Related Setback Determinations" October 2003, 2 methods of measuring the setback for coastal wetlands are described. The "Visual Inspection Method" looks for "evidence of shoreline scouring, a tidal debris line and/or the presence of salt tolerant vegetation." The "Elevation Method" uses the Maximum Spring Tide Levels.

The proposed definition moves the town from a "visual inspection" method to an "elevation method." Both methods are acceptable to the DEP and any amendment to Shoreland Zoning regulations will need to be submitted to the DEP for approval. I expect the proposed amendment would be well received.

An issue has been raised regarding the need to develop a survey to comply with the proposed amendment. Current Zoning Ordinance provisions require that any development with a value of $10,000 or greater within 125' of the normal high water line is required to prepare a standard boundary survey before a building permit can be issued (Sec. 19-3-3.C). In most cases, a survey is already required.

4. Mapping. The Official Zoning Map depicts the areas subject to Shoreland Zoning. The map is based on multiple data layers of varying levels of accuracy. The memo from Judy Colby George of Spatial Alternatives describes the limitations in greater detail.

As stated in #3 above, the practice of the town has been to identify the normal high water line using the "visual inspection method." The normal high water line, which is the base point for measuring the shoreland zone and applicable setbacks, has not been located by "zooming in" on the Official Zoning Map.

For non-resource related zones, zoning boundaries typically follow property lines. This is described further in Sec. 19-2-4 of the Zoning Ordinance. For resource related zoning districts, such as the Resource Protection Districts and Shoreland Zoning, the zoning boundary is determined by the physical characteristics of the site. The Zoning Ordinance describes the physical features and those areas are determined to be the limits of that district.

The Official Zoning map has limited accuracy in depicting resource related zoning districts. For that reason, field verification of the physical characteristics is necessary. The Resource Protection Districts, as described in the Zoning Ordinance, include the following provision:

> Sec. 19-6-9.A.1 The Town has prepared a zoning map showing the RP1-CW District based upon the best available information at a townwide scale. The actual boundaries of this district, however, shall be determined by field verification in accordance with Sec. 19-2-5, Location of Resource Protection District Boundaries.

The Planning Board may want to consider adding the following new amendment to the Shoreland Zoning District:

SEC. 19-6-11. SHORELAND PERFORMANCE OVERLAY DISTRICT

A. Purpose

In order to maintain safe and healthful conditions; to prevent and control water pollution; to protect spawning grounds of fish, aquatic life, bird and other wildlife habitat; to protect archaeological and historic resources; to protect freshwater and coastal wetlands; to control building sites, placement of structures and land uses; to conserve shore cover; to protect visual, as well as actual, points of access to inland and coastal waters; to conserve natural beauty and open space; and to anticipate and respond to the impact of development in Shoreland areas, all land use activities within the Shoreland Performance Overlay District shall conform to the applicable

land use standards in Sec. 19-8-2, Shoreland Performance Standards. This district is established in accordance with the provisions of 38 M.R.S.A. §435 et seq.

The Shoreland Performance Overlay District applies to all land within two hundred fifty (250) feet, horizontal distance, of the:

- normal high-water line of any great pond and the Spurwink River
- upland edge of a coastal wetland, including all areas affected by tidal action such as cobble and sand beaches, mudflats, and rocky ledges;
- upland edge of a freshwater wetland

and all land areas within seventy-five (75) feet, horizontal distance, of the normal high-water line of a stream. This district also applies to any structure built on, over or abutting a dock, wharf or pier, or other structure extending below the normal high-water line of a water body or within a wetland. **(Effective October 15, 2009)** The Town has prepared a zoning map showing the Shoreland Performance Overlay District based on the best available information at a town wide scale. The actual boundaries of this district, however, shall be determined by the physical features present on the site that are included in the Shoreland Performance Overlay District as define above.

An issue has been raised that the Official Zoning Map depicts the top of bank as the boundary of the Shoreland zone. The Shoreland Zone on the Official Zoning Map was not created to accurately depict the top of bank.

Nevertheless, an effort to improve the accuracy of the Shoreland Zoning line could be undertaken. The Planning Board could recommend a map amendment to the Official Zoning Map that more accurately represents the Shoreland boundary. Even with accuracy improvements to the map, however, the boundary of the shoreland zoning should continue to be based on the physical features present. Staff is working on a map amendment that depicts the shoreland line based on the Highest Astronomical Tide plus 3'. Please note that a map amendment will include a mailed public hearing notice to all property owners in the Shoreland district.

5. Water movement. An issue has been raised that the current top of bank definition includes consideration of how water moves while the proposed definition is based on a still water elevation.

Planning Board Chair Victoria Volent addressed this comment at the January 21st meeting and has summarized her comments below:

> Tides are the slow rise and fall of ocean waters due to changes in gravitational forces. The highest tides, or astronomical tides, occur on or near the time when the moon is new or full. Storm surge is an abnormal

rise of water generated by a storm, over and above the predicted astronomical tide. The storm tide is the combination of the astronomical tide and surge. During the 100 year period from 1912-2012, the storm tide level (measured in feet at the Mean Lower Low Water (MLLW)) in Portland Harbor reaches 11.7′ ever year. Every ten years the storm tide reaches a level of 12.9′. Once, every 100 years, the storm tide level will reach 14.1′ (about one foot above the ten year storm).

The benchmarks for minor, moderate, and severe coastal flooding in Portland Harbor are 12.0 feet, 12.5 feet, and 13.0 feet respectively. The categories were established based on combined storm impact and the height of the peak storm tide. Severe coastal flooding events are rare and limited to the top 15 storm tides ever recorded in Portland (1914-2007). Along with the effects of extreme tides are large battering waves, which can cause significant damage. In recognition of water level fluctuations that include astronomical tides, storm surges, and long-term sea level rise or fall, the Planning Board is considering the adoption of the Highest Astronomical Tide plus three feet as the Normal High Water Line.

The Highest Astronomical Tide (HAstT) at Portland Head Light is 11.6′ (MLLW); plus three feet would be 14.6′ (MLLW). Given the 100 year storm tide level reaches 14.1′ and severe coastal flooding is at 13.0′ (in Portland Harbor), HAstT plus three feet will protect against coastal hazards as well as establish a setback that includes the splash over effect of large battering waves that cause significant damage.

6. Floodplain. An issue was raised about incorporating floodplains into consideration of the normal high water line. Currently, state shoreland zoning requires that the 100 year floodplain be zoned resource protection. This is the town's Resource Protection 3 District.

Floodplains are mapped by the Federal Emergency Management Agency (FEMA). FEMA is currently wrapping up a process to update the floodplain maps for this area. Towns, property owners and FEMA have engaged in an extensive process to develop accurate maps and this process is not yet complete.

Because floodplains are separately regulated by the Floodplain Ordinance (Chapter 6, Section 6) and incorporated in the Zoning Ordinance as the RP3 District (Sec. 19-6-9.A.4), the Planning Board may not want to add that effort to this zoning amendment.

7. Adjacent to Tidal Waters. An issue was raised about how to determine when an area is not tidal and therefore not part of the coastal wetland definition.

The existing Zoning Ordinance definition of "Normal High Water Line of Inland Waters" specifies "that line on the shores and banks of *non-tidal waters* "[italics added]. Like these other definitions, the physical characteristics of a site will determine what is tidal and non-tidal. As reference, when the town was seeking permits to build the Spurwink Marsh pedestrian bridge, a wetlands expert identified the limit of tidal influence based on salt-tolerant vegetation and other factors.

8. Potential for more development. An issue has been raised that a change to the normal high water line definition may allow development where it currently is not allowed. Because application of the current definition is so variable, it is difficult to measure a difference from existing to proposed. It appears that the normal high water line has most often been interpreted to be the Highest Annual Tide line. A definition of Highest Astronomical Tide plus 3' is more restrictive than the Highest Annual Tide.

9. Text edits. The proposed text amendment language is based on the standard state definition.

Does the Planning Board want to revise (clean up) the wording of the proposed amendment?

Attachments:

1. Draft Amendment
2. Armstrong Case (pp 1-3 of the decision are pertinent to NHWL) with pictures, Code Enforcement Officer memo
3. DEP Information Sheet, Establishing the Starting Point for Measurement of the Shoreland Zone and Related Setback Determinations
4. Spatial Alternatives memo on Origin and Accuracy of Shoreland Zoning GIS Data, 1/16/2014