



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

MEMORANDUM

DATE April 15, 2010
TO: Board of Environmental Protection
FROM: Bill Bullard, Division of Land Resource Regulation
RE: Appeal of Department Order L-24089-4H-A-N (Denial) of Marion Stone, Scarborough, ME

Statutory and Regulatory References:

38 M.R.S.A. Sections 480-A et seq. and Chapter 355 (Coastal Sand Dune Rules, or Rules)
Chapter 310 (Wetlands and Waterbodies Protection Rules, or Wetland Rules)

Location:

14 Harmon Street, Scarborough (Prouts Neck)

Description:

On March 18, 2008, the appellant, Marion Stone, submitted an application to build a stone revetment seawall at her property in the Town of Scarborough. The stone structure would replace a vertical wooden bulkhead seawall that was damaged during a storm in April 2007, an event commonly referred to as the Patriot's Day storm. The damaged bulkhead extends approximately 238' across the applicant's frontage and is located near the southerly end of a continuous line of similar structures extending approximately 1/3 of a mile in front of all adjoining properties. The damaged wall was constructed in 1992 with what now appears to be a design flaw, namely a "bump out" or seaward protrusion in the wall. During the Patriot's Day storm wave energy became focused on that area and storm waves broke through, destroying a significant amount of the structure.

The continuous line of timber bulkheads has been in place since the early 20th century and has been subjected to many coastal storms in that time. It has been rebuilt and repaired many times in various locations along its length over the years. Bulkheads on neighboring properties were also damaged to a lesser degree in the Patriot's Day storm and have since been repaired through the Permit by Rule permitting process. A band of naturally vegetated dune, up to 100 feet in width, is present along most of the length of the extended bulkhead, and separates the beach from developed areas on the lots.

The appellant applied for this permit to construct this larger stone structure to replace the wooden bulkhead seawall in order to reduce maintenance requirements. The existing damaged wall is made of several layers of timbers and is about one foot wide. The stone revetment would consist of a 24 foot-wide, 6 foot-thick layer of stone extending across the front of the property. The structure would be anchored by a row of "toe stones" up to 4-1/2 feet in diameter and weighing 4-5 tons. Several underlayers of stone would be covered with 2-3 ton "armor stones" on the surface. At the ends of the revetment, curved sections of 20 foot-deep sheet pile would be driven into the ground, backed by a layer of stone, to provide a transition to abutting timber walls at either end.

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Environmental Issues:

The front dune environment is a dynamic system, continually changing with wind and wave activity moving sand to and from the beach. The Coastal Sand Dune Rules were developed to interpret the standards of the Natural Resources Protection Act, and to guide the Department and the Board in the determination of what impacts to the sand dune system are unreasonable. Recognizing that a considerable amount of the dune system is already developed with houses, roads and other structures that inhibit sand movement and can focus wave energy into undeveloped areas, the Rules limit new construction in both front and back dune locations. In frontal dune areas, new structures are generally deemed unreasonable and are permitted only in limited circumstances. New seawalls and seawall expansions are generally prohibited under the Rules. The construction of expanded building footprints, new patios, swimming pools, driveways, piers, docks and most other structures – all are generally not approvable in frontal dunes. The existing timber wall occupies an area of approximately 238 square feet. The proposed structure would cover an area of 4,800 square feet, more than 1/10 of an acre, and would contain 1,100 cubic yards of boulders and rocks.

Discussion and Department Recommendation:

The application for approval of this revetment was proposed by the appellant as meeting an exception in the Rules pertaining to new structures in frontal dune areas. A provision in the Sand Dune Rules, Chapter 355(5) (E) (1), allows a replacement seawall to be of a different size or in a location further landward – if it would be less damaging to the coastal sand dune system and adjacent properties than would a replacement identical to the existing structure.

The appellant's proposed stone revetment, located in a front dune, would start at the location of the existing structure and from there would extend more than twenty feet landward. Its footprint would be more than 2,000% larger than that of the existing structure and it would contain the equivalent mass of 20 house foundations with floor slabs and footings.

The appellant maintains that the proposed revetment structure would result in reduced erosion, based on calculations submitted by her consultant. Based on those calculations, the appellant maintains that the revetment would also be less damaging to adjacent properties than would an in-kind replacement of the existing structure which would be essentially a continuation of the existing 1/3 mile-long timber bulkhead which fronts the beach.

Department staff and coastal geologists at the Maine Geological Survey (MGS) visited the site on a number of occasions during the project review and reviewed the original application as well as nine supplemental memos submitted by the appellant. MGS staff could not corroborate the reported benefits projected from the appellant's calculations and concluded that the harm to the frontal dune from the large footprint of the revetment, trapping sand underneath and prohibiting its natural movement, would outweigh any theoretical benefit from decreased erosion associated with the proposed structure. MGS staff noted that erosion and scour at the site in front of the vertical timber bulkhead is mitigated during the storm season by the presence of a cobble apron that forms naturally at the base of the wall. During the project review, the applicant redesigned the transition areas connecting the revetment to abutting timber walls, but MGS remained concerned about the significant potential for increased erosion to adjacent properties with the revetment design. Although some owners of property set back from the shorefront wrote in support of the project, abutting property owners along the shorefront expressed strong reservations about the enormity of the proposed revetment and its potential to result in damage to their property or to their adjacent timber bulkheads.

Because the proposed revetment would be constructed in a sand dune system, part of which is defined as a coastal wetland (a wetland of special significance), the Chapter 310 Wetlands and Waterbodies Protection Rules apply. Under the analysis of whether a proposal avoids and minimizes the impacts to the coastal wetland to the greatest extent practicable, the proposal to construct a revetment with a footprint that is 2,000% larger than the existing structure would result in an unreasonable impact because the appellant had a reasonable alternative, a replacement similar to the existing timber bulkhead, that would impact no additional wetland.

The Department recommends that the Board uphold the Department order denying construction of the stone revetment.

Estimated Time of Presentation:

Two hours.