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EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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THE OFFICE OF APPEALS AND DISPUTE RESOLUTION

June 19, 2020

In the Matter of
Charles J Jr. and Karen M. Peters

OADR Docket No. WET-2019-023
Gloucester, MA

RECOMMENDED FINAL DECISION

INTRODUCTION

The Petitioners, Anne Marie Reilly and Joseph Hadley, challenge the Superseding Order of Conditions ("SOC") issued by the Massachusetts Department of Environmental Protection's Northeast Regional Office ("MassDEP"), pursuant to the Wetlands Protection Act, G.L. c. 131 §40, and the Wetlands Regulations, 310 CMR 10.00. The SOC approved the Applicants', Charles and Karen Peters, proposed project at their property on the Gloucester coast at 81 Eastern Point Boulevard ("the Property"). The Applicants' proposed project is to raze and reconstruct a single family house along with other work, including a cabana, patio and pool, landscaping and utilities ("the Project"). The Petitioners own abutting coastal property at 79 Eastern Point Boulevard.

The Wetlands Resource Areas at the Property include Coastal Bank and Land Subject to Coastal Storm Flowage ("LSCSF"). See G.L. c. 131 § 40; 310 CMR 10.02; 310 CMR 10.30. Portions of the Project would be located on a Coastal Bank, the Buffer Zone to Coastal Bank, and in LSCSF. The Petitioners oppose the Project, primarily because of their assertion that construction of a retaining wall in LSCSF and on part of a Coastal Bank will be contrary to the

wetlands interests of storm damage prevention and flood control for LSCSF and Coastal Bank, resulting in the deflection of storm water towards their property along with consequential property damage to a boundary wall running upland from the coastline between the properties.

MassDEP and the Applicants disagree with the Petitioners. They contend that the Project complies with the Coastal Bank performance standards because it will not destabilize the coastal bank. 310 CMR 10.30. They also assert that the Project meets the existing requirements for work in LSCSF, mostly because the portion of the Project in LSCSF is located at or near the landward limit of LSCSF where storm forces would be significantly diminished and the Project impacts will not materially alter the wetlands interests of storm damage prevention and flood control. During the adjudicatory proceeding the Applicants offered to include conditions in a Final Order of Conditions that would enhance the Project's protection of wetlands interests by constructing a vegetated terrace on part of the proposed retaining wall in LSCSF and moving pool equipment and its visual buffer wall from an area where they could possibly obstruct the flow of storm water and deflect it onto the Petitioners' property.

After holding an adjudicatory hearing, conducting a site view, and reviewing the entire administrative record, I recommend that MassDEP's Commissioner issue a Final Decision and a Final Order of Conditions that approves the Project approved in the SOC but adds the conditions proposed by the Applicants for: (1) a vegetated terrace and (2) relocation of the pool equipment and its buffering wall. In sum, the Project will not destabilize the coastal bank nor will it materially alter flowage of storm waters in LSCSF to adversely affect the functions of storm damage prevention and flood control.

EVIDENCE

The evidence in the administrative record is derived from pre-filed written testimony and exhibits submitted by the parties. The testimony is sworn to under the penalties of perjury, and thus materially equivalent to an affidavit. Pre-filed testimony was filed on behalf of the witnesses identified below. The witnesses were required to be available for cross examination at the adjudicatory hearing, or their testimony would be stricken, absent the parties' agreement to the contrary.

For the Petitioners, testimony from the following witness is in the administrative record:

- Peter S. Rosen. Rosen is a coastal geologist with more than 40 years of experience in the study of coastal landform evolution and processes on the Massachusetts coastline. He holds M.S. and B.A. degrees in geology (coastal processes) and a Ph.D. in marine science. He is a Professor Emeritus at Northeastern University where during a 36 year period he was an assistant and associate professor, chair of the Department of Earth and Environmental Sciences, and Director of the Marine Studies Program. He was previously employed as a senior scientist from 1973 to 1987 with an engineering firm.
- Curtis R. Young. Since 1986, he has served as the President and Senior Consultant of Wetlands Preservation, Inc., an environmental consulting firm specializing in wetlands. Young holds a M.S. degree in fisheries science and animal behavior, a B.S. degree in forest zoology and botany, and a B.S. degree in forestry.

For the Applicants, testimony from the following witnesses was provided:

- Lester B. Smith, Jr. Smith is employed as a coastal geologist and principal with Epsilon Associates, Inc., an environmental consulting firm that he helped to start in 1997. He has over 40 years of experience in environmental science. He holds a B.S. degree in geology and an M.S. degree in oceanography (geological), along with doctoral studies in geography (coastal geomorphology).
- Markus B. Pinney. Pinney is employed as a consultant and sole proprietor with Land Use and Environmental Consultant. He has worked in the land use and environmental fields for more than 35 years, focusing mostly on wetlands permitting projects. He has substantial environmental and engineering experience working with other firms since approximately 1986. The only educational background he provided was that he attended graduate school in urban and environmental studies.
- Edward C. Akerley. Akerley is president of E.C. Akerley Corp., a construction company that specializes in drilling and blasting rock throughout the North Shore of Massachusetts. He has over 50 years of experience in this field, much of it occurring in the Gloucester area.
- Brian Williams. Williams has been a contractor and building consultant for over 30 years, owning and operating Weston Property Management, LLC since 1988.

For MassDEP, testimony from the following witness was provided:

- Michael Abell. Mr. Abell has been employed with the Department since 2001, and is presently serving as an Environmental Analyst. He has a M.S. degree in

natural resource science. He previously worked as the Conservation Administrator for the Town of Topsfield. His duties include review of requests for Superseding Order of Conditions, Superseding Determinations of Applicability, 401 Water Quality Certificates, and drafting SOCs, SDAs and 401s.

BACKGROUND

The Property consists of 1.5 acres that face to the west/northwest on the coast of Gloucester Harbor. It is primarily comprised of Cape Ann Granite with a shallow surficial overlay of sediments in the central and rear parts of the Property. The Cape Ann Granite at the Property is a massive, very hard durable rock. Smith PFT[1], ¶ 26.

The Petitioners' property borders on the north side, where there is a large stone wall between the two properties. The wall is a boundary wall where it begins at the coastline and then as it travels upland and inland near the 15 foot elevation it becomes both a boundary wall and a retaining wall, where the elevation behind the wall becomes greater than the elevation on the Applicants' Property, holding back landscaping and other development on the Petitioners' side of the wall. Despite this, I refer to it generically in this decision as the boundary wall. The Petitioners' residence is at a significantly higher elevation further landward and behind the wall. The wall has seaward facing opening at approximately elevation 12. Tr[2]., pp. 131, 136; Smith PFT, ¶¶ 17, 20, 22; Williams PFT, ¶ 9.

The Property includes two coastal banks. The most seaward coastal bank is Coastal Bank 1, which is not at issue. Coastal Bank 2, which is at issue, is upland from Coastal Bank 1, extending approximately from elevation 12 upland at a slope of approximately 30% to elevation 20; as admitted by the Petitioners' expert, Rosen, Coastal Bank 2 is accurately delineated on the

[1] "PFT" refers to the witnesses' pre-filed testimony.
[2] "Tr." refers to the transcript from the adjudicatory hearing.

most recent plans of record.[3] Tr., 31; Abell PFT, ¶¶ 16-21, 45, 46; Rosen PFT, ¶ 6. Coastal Bank 2 stretches across much of the proposed site development area from the border with the Petitioners' property and across the site to the south, diminishing in elevation from north to south from 20 feet down to 16 feet. Coastal Bank 2 is shown on the Plan of Record as a dotted area enclosed by a brown-dashed line. Smith PFT, ¶¶ 9, 10, 28; Tr., p. 30. It is generally parallel to incident wave forces, which, because of the bank's relatively gradual slope, helps to intercept and dissipate rather than deflect the wave forces. Rosen PFT, p. 3.

The Wetlands Regulations at 310 CMR 10.04 define LSCSF as "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." LSCSF at the Property extends landward across the Property to elevation 15. As part of the LSCSF, the Property includes the zone referred to by the U.S. Federal Emergency Management Agency ("FEMA") as the Limit of Moderate Wave Action ("LiMWA"). LiMWA is a FEMA designation to indicate possible wave heights between 1.5 and 3 feet during a 100 year storm. Smith, Tr., 8-12. FEMA provides this designation to emphasize that these wave heights can damage structures that are constructed without consideration of coastal hazards. Rosen PFT, p. 4. The LiMWA also extends to the 15 foot elevation. Tr., pp. 31-31, 239; Abell PFT, ¶ 13. The Property does not include a VE zone, or Coastal High Hazard Area where flood hazards include wave heights greater than or equal to 3 feet.

[3] The Petitioners had initially raised an issue concerning the location of Coastal Bank 2, and it was identified as an issue for adjudication; the Petitioners did not press that issue and abandoned any arguments on it. The most recent plans of record are Proposed Conditions Site Plan, 81 Eastern Point Boulevard, Gloucester, MA dated March 30, 2018 and revised through September 26, 2018, and the Landscape Plan titled Proposed Landscaping Plan, Dana Schock and Associates, August 22, 2018. Pinney PFT, Ex. 2, and Applicants' Closing Brief, Ex. 1. The Landscape Plan shows the final elevations.

The existing house is approximately 79 feet upland from Coastal Bank 1. The Project includes razing the house, installing a new septic system, installing a terrace, pool, and cabana. Some work will occur on Coastal Bank 2, and some will occur in LSCSF and the buffer to Coastal Bank 2. A small portion of the new dwelling will also be located in LSCSF. Landscape Plan, Tr., pp. 215-217, 267-269; Smith PFT, Exs. 5 and 6; Proposed Landscape Plan.

Part of the terrace and cabana will be located on approximately 247 square feet of Coastal Bank 2. The Project includes limited and targeted blasting of granite and placement of stone to establish a base elevation or platform at elevation 18, for installation of the terrace, and the placement of a cabana and the installation of the pool. Pinney PFT, ¶ 12, Ex. 2; Tr., pp. 165-66; Smith PFT, ¶¶ 24, 25, 28. The terrace, pool, and cabana have proposed finish grades at or above elevation 18 and are built mostly upon existing grades ranging from 13+/- to 20+. Smith PFT, ¶¶ 25, 64, 65; Pinney PFT, ¶ 21.

The remainder of the Project will be in the buffer zone to Coastal Bank 2 and some of it will be within LSCSF. Smith PFT, ¶¶ 25, 64, 65; Pinney PFT, ¶ 21. The new house would be placed farther back on the lot, approximately 94 feet from Coastal Bank 1, which is farther back than most other homes on this shore line. Pinney PFT, ¶ 10.

The work within LSCSF includes construction of a retaining wall that is curved outward, or convex facing the ocean, and stairs up to the cabana and terrace. That work begins at approximately elevation 14.1, or .9 feet in elevation seaward of the LSCSF limit.

When the Project was before the Gloucester Conservation Commission the Commission members' vote resulted in a 3 to 3 outcome, which constituted a denial. The Peters then appealed that denial to MassDEP, which issued the SOC approving the Project after conducting a

site visit and reviewing the plans. Abel PFT, ¶¶ 7-8, 15. The Petitioners appealed the SOC here, to the Office of Appeals and Dispute Resolution ("OADR").

THE BURDEN OF PROOF

As the party bringing this de novo appeal[4], the Petitioners had the burden of going forward by producing credible evidence from a competent source in support of their position. 310 CMR 10.03(2); see Matter of Town of Freetown, Docket No. 91-103, Recommended Final Decision (February 14, 2001), adopted by Final Decision (February 26, 2001) ("the Department has consistently placed the burden of going forward in permit appeals on the parties opposing the Department's position."). Specifically, the Petitioners were required to present "credible evidence from a competent source in support of each claim of factual error, including any relevant expert report(s), plan(s), or photograph(s)." 310 CMR 10.05(7)(j)3.c. So long as the initial burden of production or going forward is met, which it was, the ultimate resolution of factual disputes depends on where the preponderance of the evidence lies. Matter of Town of Hamilton, DEP Docket Nos. 2003-065 and 068, Recommended Final Decision (January 19, 2006), adopted by Final Decision (March 27, 2006).

"A party in a civil case having the burden of proving a particular fact [by a preponderance of the evidence] does not have to establish the existence of that fact as an absolute certainty. . . . [I]t is sufficient if the party having the burden of proving a particular fact establishes the existence of that fact as the greater likelihood, the greater probability." Massachusetts Jury Instructions, Civil, 1.14(d).

[4] Because this is a de novo appeal, assertions of error before the Commission are generally not relevant absent a showing to the contrary. Here, the Petitioners make assertions regarding omissions in the review process before the Commission, but they failed to show how those omissions are relevant to analyzing impacts on resource areas that have been adjudicated in this appeal.

The relevancy, admissibility, and weight of evidence that the parties sought to introduce in the Hearing were governed by G.L. c. 30A, § 11(2) and 310 CMR 1.01(13)(h)(1). Under G.L. c. 30A, § 11(2):

> [u]nless otherwise provided by any law, agencies need not observe the rules of evidence observed by courts, but shall observe the rules of privilege recognized by law. Evidence may be admitted and given probative effect only if it is the kind of evidence on which reasonable persons are accustomed to rely in the conduct of serious affairs. Agencies may exclude unduly repetitious evidence, whether offered on direct examination or cross-examination of witnesses.

Under 310 CMR 1.01(13)(h), "[t]he weight to be attached to any evidence in the record will rest within the sound discretion of the Presiding Officer. . . ."

DISCUSSION

I. An Overwhelming Preponderance Of The Evidence Demonstrates That The Project Complies With The Coastal Bank Performance Standards

The Petitioners assert that the Project's placement of a retaining wall on the seaward side of a portion of Coastal Bank 2 will adversely affect what they refer to as the performance standard for flood attenuation for coastal bank. They argue that part of the granite coastal bank's face will be adversely altered with the vertical wall designed to support and retain the structures behind and on top of it. They claim that this is contrary to the wetlands interests because it effectively allows the placement of a coastal engineering structure on the bank, transforming part of the bank's gradually sloping face to the proposed vertical convex wall.

MassDEP and the Applicants disagree with the Petitioners, asserting that the wall is not prohibited and that it complies with the performance standards for coastal bank. I agree with MassDEP and the Applicants.

As discussed in Matter of Cohen, Docket No. 99-206, Recommended Final Decision (February 15, 2001), adopted by Final Decision (May 3, 2001), the "Wetlands Protection

Regulations prescribe one set of performance standards for work on a coastal bank that is "determined to be significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches," see 310 CMR 10.30(3)-(5), and another set of standards for work on a coastal bank that is "determined to be significant to storm damage prevention or flood control because it is a vertical buffer to storm waters." See 310 CMR 10.30(6)-(8).

There is no argument in this appeal that Coastal Bank 2 is significant to storm damage prevention or flood control because it supplies sediment. I therefore focus only on the bank's significance because it is a vertical buffer to storm waters, which is undisputed. As a consequence, the relevant performance standard for projects on a Coastal Bank or within 100 feet of the top of a Coastal Bank (the Buffer Zone) is that there be no adverse effects on the stability of the coastal bank. 310 CMR 10.30(6); Matter of Cohen, supra. Specifically, the performance standard provides in pertinent part the following:

> (6) Any project on such a coastal bank or within 100 feet landward of the top of such coastal bank shall have no adverse effects on the stability of the coastal bank.
>
> (7) Bulkheads, revetments, seawalls, groins or other coastal engineering structures may be permitted on such a coastal bank except when such bank is significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes, and barrier beaches.

310 CMR 10.30 (emphasis added). Coastal banks, because of their height and stability, may act as a buffer or natural wall, which protects upland areas from storm damage and flooding. 310 CMR 10.30(1). The use of "adverse effect" in this regulation means a greater than negligible change in the resource area or one of its characteristics that diminishes the value of the resource area to one or more of the specific interests of G.L. c. 131 § 40.

As clearly articulated in the above performance standard, and contrary to the Petitioners' argument, structures, including coastal engineering structures, may be permitted on coastal banks that are *not* significant to storm damage prevention or flood control because they supply sediment to coastal beaches, coastal dunes, and barrier beaches. The performance standard is explicitly focused on bank stability, making no mention of the bank's ability to attenuate the forces of the ocean because of its rough surface and gradual slope. While I readily appreciate the importance of that function, especially within LSCSF, it is not included as an interest to be protected with respect to coastal banks. That coastal engineering structures are permitted on banks that do not supply sediment further erodes the argument that attenuation is an interest to be protected for banks. There are very sound policy reasons as to why bank attenuation should perhaps receive heightened protection, but the regulations make no mention of that, explicitly or implicitly. This, however, is not the end of the inquiry for wave attenuation because, as discussed below, that is an important interest for the LSCSF, in which a part of Coastal Bank 2 is located.

Turning to the coastal bank performance standard for stability, there was no material dispute at the adjudicatory hearing that the Project would somehow adversely affect the stability of Coastal Bank 2. MassDEP and even the Petitioners' expert, Rosen, provided testimony that Coastal Bank 2 is currently stable and the Project will not affect the bank's stability. Tr., 49; Abell PFT, ¶¶ 30-31. The Applicants provided testimony from a longstanding blasting and rock drilling expert from Gloucester who testified that the blasting would not adversely affect the stability of the coastal banks. Akerley PFT. The Petitioners proposed blasting expert, Peter J. McNamara, failed to appear for cross examination and thus his testimony was stricken from the

administrative record, leaving Akerly's testimony unopposed.[5] Tr., p. 148; Ackerly PFT, Ex. 2. Other witnesses, including Akerley, further testified that neither the blasting work nor the Project more generally will affect the stability of Coastal Bank 2. Akerley PFT, ¶¶ 9-12; Smith PFT, ¶¶ 25, 28, 64, 65; Abell PFT, ¶ 31; Tr., p. 328, 374.

For all the above reasons, an overwhelming preponderance of the evidence demonstrates that the Project will comply with the performance standards for coastal banks.

II. A Preponderance Of The Evidence Demonstrates That The Project Complies With LSCSF Requirements

The Petitioners assert that the Project undermines the wetlands interests for LSCSF because, generally, it would involve the placement of solid structures, particularly the retaining wall within LSCSF, and thus interrupt the natural flow and subsidence of storm water and deflect storm water onto their Property, causing damage to the boundary wall, which is approximately 40 to 50 feet away from the retaining wall. MassDEP and the Applicants disagree, contending that any possible impacts would be de minimis, or negligible, and thus not amount to an adverse effect on the wetlands interests. I agree with MassDEP and the Applicants.

LSCSF is a protected wetlands resource area in the Wetlands Act. G.L. c. 131 § 40, ¶ 1. There are no LSCSF performance standards in the Wetlands Regulations, but they do define LSCSF as: "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." 310 CMR 10.04. LSCSF is "likely to be significant to [the wetlands interests of] flood control and storm damage prevention." Matter of Edward Longo, Docket No. 91-001, Final Decision

[5] The Adjudicatory Proceeding Rules at 310 CMR 1.01(12)(f) and 310 CMR 1.01(13)(h) mandate that the sworn PFT of any witness who does not appear at an evidentiary adjudicatory hearing for cross-examination "[is to] be excluded from the record unless the parties agree otherwise." The parties did not stipulate or agree to keep McNamara's PFT in the record as a result of his failure to attend the evidentiary adjudicatory hearing, and, as a consequence, the PFT was stricken from the record.

(February 7, 1996). "Flood Control" means the prevention or reduction of flooding and flood damage. 310 CMR 10.04. "Storm Damage Prevention" means the prevention of damage caused by water from storms, including, but not limited to, erosion and sedimentation, damage to vegetation, property or buildings, or damage caused by flooding, water-borne debris or water-borne ice. Id.

The LSCSF resource area, "by its very nature, serves to dissipate the force of coastal storms, [and thus,] serves the [Act's] interests of flood control and storm damage prevention . . . ." Longo, supra. It does this by, among other things, enabling flood waters to: gradually decelerate; spread laterally and inland without unnatural channeling and increased velocity or refraction, diffraction, and reflection of waves; and percolate downward and infiltrate the subsurface. Matter of Collins, Docket No. WET 2016-008, Recommended Final Decision (July 28, 2016), adopted by Final Decision (August 9, 2016); Abell PFT, ¶ 35. MassDEP may only authorize activities in LSCSF if it determines that the proposed activities will not adversely affect the Wetlands Act's interests of flood control and storm damage prevention. Longo, supra. When a project is located in a coastal area open to the ocean, such as the site at issue, MassDEP decisions have consistently found that there is no need for compensatory storage or mitigation since any displaced flood water would be de minimis and spread over the ocean. Matter of Meadows at Marina Bay, LLC, Docket No. 98-006, Final Decision (February 18, 1999).

Ordinarily, as the Petitioners' expert, Rosen, asserts, when "seawalls are proposed in LSCSF, a fundamental concern is whether the seawalls will deflect storm flow toward or onto adjacent properties." Rosen PFT, ¶22. Indeed, it is generally inconsistent with the LSCSF interests to place hard surfaces, like walls and other obstructions, within LSCSF, especially when the hard surface is in close proximity to other hard surfaces. These conditions often cause

moving water to accelerate, channelize, and refract, diffract, and reflect off of the hard surfaces. All of these consequences can generally cause or exacerbate storm damage and flooding. The resulting forces of channelized, accelerated, or deflected moving water can damage LSCSF by eroding the landscape and destroying vegetation and other natural features that help to slow moving water and thus preserve the natural LSCSF landscape. Vegetation helps to prevent erosion, slow moving water, and filter sediments. This impairment of LSCSF from the introduction of hard surfaces can lead to more flooding, in the short and long terms, from the destruction of natural features that serve to slow, hinder, and infiltrate moving water. And that, unfortunately, is not the full extent of the potential impacts. Fast moving channelized or deflected storm water can cause severe destruction to property, including buildings, roadways, and other features of the built environment. These problems can lead to more severe erosion and flooding in the future—a cyclical problem that feeds on itself.

Here, the Petitioners contend that the proposed retaining wall will prevent flood waters from reaching their natural flow patterns to spread inland uninterrupted to the LSCSF boundary at elevation 15. They argue that instead some waves may break on or flow to the wall and thus not reach elevation 15, therefore interrupting and adversely affecting the function of the LSCSF. Moreover, they contend that the stairs and retaining wall for the cabana and pool will deflect waves in their direction and damage their boundary wall, which mostly lies approximately 40 to 50 feet away from the retaining wall. They add that there is an area at the boundary of the properties where there is a gradually narrowing cavity where the boundary wall and Coastal Bank 2 increase in elevation and the bank is angled towards the boundary wall to converge into a "v" shape, creating a funneling effect where the forces from waves meet in a narrowing space as

one moves further landward and upland between the boundary wall and Coastal Bank 2.[6] Tr., pp. 74-75. They believe that this funneling effect will be exacerbated by the deflection of water from the Project and will increase the volume and velocity of the water, which is an adverse effect on LSCSF and will lead to further damage to their boundary wall. Rosen PFT, ¶¶ 15-17.

MassDEP and the Applicants disagree with the Petitioners. They contend that the Petitioners arguments are not based on a solid evidentiary foundation, and instead are speculative and conclusory in nature. Moreover, they believe that any alteration of LSCSF flow patterns will be negligible, i.e. there will not be any material or significant effect from any deflection of waves from the Project and encroachment into LSCSF.

While the Petitioners' assertions raise legitimate concerns that must be carefully considered under these circumstances, MassDEP and the Applicants correctly believe that there will be no appreciable marginal adverse effect on LSCSF and thus the Petitioners' boundary wall from the Project.

[6] The Petitioners refer to the pool retaining wall as a Coastal Engineering Structure. But whether it is or is not a Coastal Engineering Structure is not relevant here because there is no prohibition on Coastal Engineering Structures for banks that are not a sediment source. Instead of the focus being on what to call the proposed wall, it should be on whether it adversely affects the interests of the Wetlands Act for LSCSF. The Petitioners correctly point out that seawalls and revetments because of their hardness, smoothness, and verticality can significantly alter coastal systems and have adverse effects. Because of this, they are generally discouraged and only allowed in very limited circumstances. See Massachusetts Coastal Zone Management Fact Sheet 7 ("seawalls and revetments can significantly alter the coastal system and may have adverse impacts on the project site and neighboring properties. Because these effects are now well understood, new construction of these hard structures is only allowed in very limited circumstances."); Applying the Massachusetts Coastal Wetlands Regulations: A Practical Manual for Conservation Commissions to Protect the Storm Damage Prevention and Flood Control Functions of Coastal Resource Areas (2017), p. 3-42 ("New coastal engineering structures may be allowed on coastal banks that do not provide sediment to other resource areas, as long as they are designed so that they do not have impacts on adjacent coastal banks and other resource areas. The impacts of such structures may include deflection of water and waves and reflection of energy onto adjacent beaches, banks, and areas; adverse impacts on groundwater and surface runoff; and destabilization of the bank and adjacent banks."). Here, the structure is allowable because it is being placed on a bank that is protected for its height and stability, as opposed to sediment supply, it complies with the performance standards for coastal bank, and it does not have an adverse effect on the wetlands interests for LSCSF, primarily because it only affects the very outer perimeter of an LSCSF area where wave energy will have been substantially dissipated by the gradually sloping and rough more seaward LSCSF area, which includes Coastal Bank 1.

The vast majority of the Project lies landward of the LSCSF boundary at elevation 15, removing those Project components from any impact on the LSCSF interests of storm damage prevention and flood control. The Petitioners' argument and concern with impacts to LSCSF and their property from the retaining wall, while theoretically solid, is lacking in evidentiary support to show that the LSCSF interests will be adversely affected.[7]

Their expert, Rosen, sought to show the destructive ocean forces that will exist at the Property. He testified that under present conditions storm waves from seasonal winter storms affecting the Petitioners' property can be quite powerful and destructive to the Petitioners' existing boundary wall and seawalls on or near the coastline. Rosen PFT, p. 5. He contends that the Project, primarily the retaining wall, will make this problem worse by deflecting these powerful waves towards the Petitioner's Property. But Rosen's analysis is inapt. The Applicants' Project, including the retaining wall, will be substantially farther landward and upland than the Petitioners' seawalls and boundary wall at the coastline. Between the Project's more landward location and the coastline on the Applicants' Property is a generally upward sloping gradient strewn with large rough rocks, vegetation (including trees), Coastal Bank 1, and ultimately lawn rooted in a relatively thin layer of sediment on top of bedrock. None of that intervening area on the Petitioners' Property exhibits storm damage, erosion, or other indicators of damage from past storms. See Abell PFT. Thus, the storm forces that Rosen focused on at the very front of the Petitioners' coastal property are of a different magnitude than those farther inland and upland where the Project will be located, and thus the comparison does not hold water.

[7] The focus in this decision is on whether the Project will impair the LSCSF's interest of storm damage and flooding, not on whether there will actually be damage to the wall, although consequential damage to property from impairment of the LSCSF interests is relevant to LSCSF impacts. Matter of Reichenbach, Docket No. WET 2014-001, Recommended Final Decision (June 20, 2014), adopted by Final Decision (September 30, 2014).

Rosen also opined that storm water will be deflected by the proposed retaining wall towards the funnel shaped area, exacerbating the current conditions that result from the funnel effect. He believes that waves reflected northward off the wall will intersect other waves flowing from the west causing wave height to increase in the funnel. Rosen PFT, ¶ 19. He also opined that waves may deflect directly from the proposed retaining wall and strike the Petitioners' boundary wall causing higher breaking wave heights and greater forces and potentially undermining the boundary wall. Rosen PFT, ¶¶ 20, 22. He testified: "This can lead to damage to the structure of undercutting the base of the wall or displacement of wall stones." Id. (emphasis added) He added that that wave energy and flow deflected along the proposed wall "can cause damage to the [Petitioners' boundary] wall and/or create overtopping which may lead to flooding to the [Petitioners'] Property." Rosen PFT, ¶ 21 (emphasis added). Rosen concludes that the "proposed construction of vertical seawalls in LSCSF and on Coastal Bank will significantly, and adversely, alter their flood control and storm damage functions, counter to the interests of the Act." Rosen PFT, ¶ 25.

Rosen's opinion, while conceptually solid, lacks a sufficient evidentiary foundation tied to the Project and conditions at issue. Indeed, while some flood waters and waves out of the west may be deflected towards the Petitioners' Property, there is no evidence showing that this effect adversely impacts the interests of storm damage prevention and flood control beyond a negligible degree. The Applicants readily concede that there is already a funneling effect arising from the stormwaters flowing from the west or southwest into the natural funnel created by the space where Coastal Bank 2 recedes and angles towards the Petitioners' Property. Tr., p. 282. That funneling problem already exists, and is exacerbated by the manner in which Coastal Bank 2 simultaneously increases in elevation and angles and directs flood waters towards the

Petitioners' property as one travels landward. And, the Petitioners' projections were partially based upon a wave analysis that altered the angle of impact by 30% over what can realistically be expected. Tr., pp. 308-09.

The Petitioners' projections that conditions will deteriorate from the Project are overly pessimistic and not supported by a preponderance of the evidence, for several reasons. First, the Property lies in a relatively protected area. The Applicants presented evidence that the Property is relatively sheltered from storm conditions by the surrounding features of the coastline. The Property is not in a Velocity Zone, where higher energy waves flow three feet above still water flooding elevation, or the base flood elevation. Instead, it is in a moderate wave zone. While those waves have been shown to cause destruction during severe storms under certain conditions, the Property's specific location and landscape features undermine that potential. Smith PFT, ¶ 35; Tr., 258. The area receives protection from larger storms from the south and southwest because the Property faces west and northwest. Id.; Tr., pp. 258-260. The Property's location in the harbor decreases the open water facing the Property, and thus diminishes the fetch, or distance over which wind may produce waves. The largest fetch is approximately 1.5 miles from the northwest, but storms from that direction tend not to be high energy events because of the limited fetch and the fact that storm waves from that direction would tend to push water out of Gloucester Harbor. Smith PFT, ¶ 55. Also, to the south and southwest is a large jetty—the Dog Bar Breakwater—at the east side of the harbor entrance, significantly hindering storm forces from reaching the east side of Gloucester Harbor (where the Property is located). Further protecting the Property from storm forces is a pier, or breakwater, that extends westward from the Property and a stone masonry wall, both rising to at least elevation 11. Tr., pp. 258-260, 309; Smith PFT, ¶¶ 35, 54-55, Ex. 2.

The 100 year flood elevation for Gloucester Harbor is 14.1 feet. Id. The Property's physical features and gradient will cause waves to begin breaking at roughly the same depth as their height, so 3 foot waves will begin to break at approximately elevation 11 during a 100 year storm event, and then potentially washing landward approximately another 35 linear feet up to elevation 15. Tr., 68, 297-298; Rosen PFT, ¶¶ 2-4, 11-12, 19-24. The generally gently sloping gradient beginning roughly at Coastal bank 1, the surrounding rough hardscape, and substantial vegetation will significantly diminish wave energy before it reaches elevation 15 (the outer limit of LSCSF), and even elevations for the toe of the proposed wall at elevations 12.5 to 13 feet, where wave height will be reduced to 1 to 1.5 feet. Smith PFT, Ex. 5. Based upon FEMA modelling the depth of water at the base of the wall during a 100 year storm will be approximately 1 foot, excluding wave height. Tr., 379. The Applicants' evidence that the limits of the LSCSF area receive low wave energy when storms are strong enough for water to reach those areas was corroborated by MassDEP and the landscape of vegetation and soils that show no signs of scour or destruction on the Applicants' Property. Abell PFT, ¶¶ 38, 42.

The vast majority of the project components, the terrace wall, with which the Petitioners take issue are above elevation 15. The terrace wall area with which the Petitioners are primarily concerned begins at elevation 14.1, and thus the differential LSCSF impact from the status quo is .9 feet or 10.8 inches. Any impacts from this intrusion into LSCSF, will be diminished by the wall's design. The wall is primarily curved, or convex, to soften the impact of the waves and disperse any deflection, instead of focusing it. The angle of deflection is similar to the current wave deflection patterns. Tr., pp. 282-84. And although those wave deflection patterns may be problematic for the Petitioners during severe storms, the Project does not materially alter that system. Moreover, any waves reaching the terrace wall that are reflected north towards the

boundary wall will interact with waves from the west, which will further reduce wave energy before reaching the Petitioners' wall. Tr., pp. 264-65.

The Petitioners' argument that this will materially detrimentally impact their Property, specifically the boundary wall, by increasing the volume and velocity of flood waters toward their Property is not supported by a preponderance of the evidence. The Petitioners never attempted to quantify the impacts through modelling or other evidence to show that the differential or marginal impact would be significantly different than the status quo, i.e., greater than a negligible impact. There is no factual evidence (as opposed to opinion) as to how impacts on the wall will vary from present circumstances, i.e. whether impacts will be at a higher elevation or with a larger volume of water at a greater velocity. Tr., pp. 22, 25, 54-55.

Any possible impacts would occur at the more seaward end of the boundary wall, a significant distance from the upland portion of the Petitioners' property where their house lies. The Applicants persuasively demonstrated that the Project will not materially alter the present LSCSF conditions to result in adverse impacts to the Applicants' Property.[8] Smith PFT, ¶¶ 35-40; Tr., pp. 263-64, 286.

Despite all of the above, to further reduce the wave forces that may deflect off of the Applicants' retaining wall, the Applicants proposed an additional Project condition during the adjudicatory proceeding to add a 1.5 foot tall vegetated mitigation terrace at base of the proposed wall. It will be 1.5 feet in height to capture and diminish the small waves that may impact that area. Smith PFT; Tr., pp. 257-59. This will further reduce any energy from waves reaching that point and reflecting towards the Petitioners' property, roughly replicating the current manner in which waves break. Smith PFT, ¶ 37; Ex. 6, Figure 3; Tr., pp. 278, 282, 306-08, 314-319, 380-81.

[8] It is also worth noting that the Petitioners' house is above elevation 23, 8 feet above the LSCSF boundary.

In addition, the Applicants will be adding to the existing vegetation in front of the Petitioners' boundary wall with substantial native landscape plantings such as woody shrubs, further reducing the force of any waves that reach that point. Smith PFT, ¶ 39, Exs. 5, 6; Pinney PFT.

In furtherance of mitigating any potential storm impacts from the Project, during the adjudicatory proceeding, the Peters proposed to relocate the pool equipment and a structural facade to enclose and visually buffer the equipment. Smith PFT, Ex. 6, Figure 3. Those components of the Project were to be located proximate to the narrow end of the "funnel" on the Property's border. Relocation of those components will allow that area to remain in their current condition, keeping the narrow end of the natural funnel open for the passage of storm waters in the event they reach that point. Relocation of the pool equipment and structural façade would reduce the work on Coastal Bank 2 down to 233 square feet. Tr., pp. 207-209; Smith PFT, ¶ 24; Pinney PFT, Ex. 3.

For all the above reasons, I agree with MassDEP and the Applicants that there will be no adverse effect on the LSCSF wetlands interests. Abell PFT, ¶¶ 37-40; Tr., 336, 377-78, 389. In sum, the Project will not materially increase the velocity of flood waters or reflection, refraction, or channelization and impair the LSCSF interests of storm damage prevention and flood control.

CONCLUSION

For all the above reasons, I recommend that MassDEP's Commissioner issue a Final Decision and a Final Order of Conditions that affirm the Project approved in the SOC but add the conditions proposed by the Applicants for a vegetated terrace and relocation of the pool equipment and its buffering wall. In sum, the Project will not destabilize the coastal bank nor

will it materially alter flowage of storm waters in LSCSF to adversely affect the functions of storm damage prevention and flood control.

NOTICE- RECOMMENDED FINAL DECISION

This decision is a Recommended Final Decision of the Presiding Officer. It has been transmitted to the Commissioner for his Final Decision in this matter. This decision is therefore not a Final Decision subject to reconsideration under 310 CMR 1.01(14)(d), and may not be appealed to Superior Court pursuant to M.G.L. c. 30A. The Commissioner's Final Decision is subject to rights of reconsideration and court appeal and will contain a notice to that effect.

Because this matter has now been transmitted to the Commissioner, no party shall file a motion to renew or reargue this Recommended Final Decision or any part of it, and no party shall communicate with the Commissioner's office regarding this decision unless the Commissioner, in his sole discretion, directs otherwise.

Date: June 19, 2020

Timothy M. Jones
Presiding Officer

SERVICE LIST

In The Matter Of:	Charles J. Jr. and Karen M. Peters
Docket No. WET-2019-023	File No. 028-2591 Gloucester

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