



CHESAPEAKE BAY FOUNDATION

Environmental Protection and Restoration
Environmental Education

Senate Bill 546

Environment - State Wetlands - Shoreline Stabilization Measures

Date: February 20, 2024

Position: **Favorable**

To: Senate Education, Energy, & Environment Committee

From: Matt Stegman
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Chesapeake Bay Foundation (CBF) **SUPPORTS** Senate Bill 546, which clarifies existing state law preferencing living shorelines for shoreline stabilization by making explicit that the Maryland Department of the Environment (MDE) may not issue a waiver from the living shoreline mandate based solely on the presence of an existing structural shoreline feature. The bill further adds provision of grants for the replacement of existing hardened shorelines with living shorelines to the allowable uses of the Tidal Wetlands Compensation Fund.

SB 546 *does not* change or expand the existing state preference for nonstructural living shorelines. Under current law, MDE may issue a waiver from the nonstructural erosion control mandate in two instances: (1) in areas where departmental mapping has identified conditions where living shorelines are not appropriate, and (2) in other areas, where a review of the subject property shows conditions where a living shoreline would not be feasible. SB 546 does not create any additional burden for waiver applicants, nor does it create any additional review requirements for MDE. Amendments to be offered by MDE would more precisely state the intended clarification contained in the bill, and CBF considers those amendments to be friendly.

The Tidal Wetlands Compensation Fund consists of money paid by applicants for a tidal wetlands license when mitigation to replace the values and functions associated with the wetlands to be impacted is not feasible. These funds are intended for use in the creation, restoration, or enhancement of tidal wetlands. SB 546 does not restrict or encumber money in the Tidal Wetlands Compensation Fund, but rather adds grants for the replacement of hardened shorelines with nonstructural living shoreline elements as one of the specifically enumerated allowable uses of the fund. Given hardened shorelines already exceed threshold levels that would cause negative impacts to Bay water quality and living resources in many areas, replacement of hardened shorelines with living shorelines is critical.

In sum, SB 546 is a modest clarification of existing state law that will advance the state's policy goal of developing living shorelines in the areas that support them.

For these reasons, **CBF urges the Committee's FAVORABLE report on SB 546.**

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The Chesapeake Bay Foundation (CBF) is a non-profit environmental education and advocacy organization dedicated to the restoration and protection of the Chesapeake Bay. With over 200,000 members and e-subscribers, including 71,000 in Maryland alone, CBF works to educate the public and to protect the interest of the Chesapeake and its resources.

Living Shorelines Better Protect Land from Sea Level Rise and Severe Weather:

The National Oceanic and Atmospheric Administration (NOAA) defines living shoreline as “a broad term that encompasses a range of shoreline stabilization techniques along estuarine coasts, bays, sheltered coastlines, and tributaries. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with a shoreline or shore-adjacent structure (e.g. oyster reefs or rock sills) for added stability. Living shorelines maintain continuity of the natural land–water interface and reduce erosion while providing habitat value and enhancing coastal resilience.”¹ This contrasts with structural or armored shoreline stabilizations, which include bulkheads, rip rap, stone or seawalls.

Maryland is at the forefront among eastern states when it comes to both the amount and proportion of armored shoreline.²

State	Hardened (km)	Total (km)	% Hardened	State	Hardened (km)	Total (km)	% Hardened
1 Pennsylvania	179.03	333.74	53.65	12 Virginia	2,247.45	20,586.57	10.92
2 New Jersey	615.71	1,688.21	36.47	13 Oregon	425.51	3,916.65	10.86
3 New York	1,880.37	6,280.84	29.94	14 Delaware	334.32	3,671.88	9.10
4 Maryland	3,170.61	12,607.28	25.15	15 North Carolina	1,810.48	21,363.73	8.47
5 Rhode Island	321.73	1,458.45	22.06	16 New Hampshire	53.10	634.48	8.37
6 California	1,286.50	6,234.01	20.64	17 Maine	372.85	10,352.57	3.60
7 Texas	1,916.67	9,947.36	19.27	18 Louisiana	2,078.77	85,495.88	2.43
8 Washington	1,136.41	6,984.99	16.27	19 South Carolina	339.26	14,196.13	2.39
9 Alabama	357.92	2,617.68	13.67	20 Georgia	150.50	9,900.29	1.52
10 Massachusetts	807.89	6,308.51	12.81	21 Connecticut	657.38	3,483.53	0.19
11 Mississippi	366.64	3,032.78	12.09	22 Florida	7,848.13	46,537.48	0.17

¹ National Oceanic and Atmospheric Administration (NOAA), *Guidance for Considering the Use of Living Shorelines*. 2015. Available at https://www.habitatblueprint.noaa.gov/wp-content/uploads/2018/01/NOAA-Guidance-for-Considering-the-Use-of-Living-Shorelines_2015.pdf. Accessed Feb. 15, 2024.

² Correll-Brown R, Wellman EH, Eulie DO, Scyphers SB, Smith CS, Polk MA and Gittman RK (2022) *Shifting Baselines May Undermine Shoreline Management Efforts in the United States*. *Front. Clim.* 4:719109.doi: 10.3389/fclim.2022.71910

Throughout Maryland, armored shorelines such as rip rap and bulkheads remain a primary approach to protect properties from erosion. The table below shows the prevalence of armored shorelines, particularly in urban and suburban areas³:

	hardened shoreline (Miles)	total shoreline (Miles)	%
Anne Arundel	235.03	537.49	44%
Baltimore	97.13	256.50	38%
Calvert	49.74	288.87	17%
Caroline	5.87	151.82	4%
Cecil	59.00	302.85	19%
Charles	31.76	302.97	10%
Baltimore City	47.34	63.18	75%
Dorchester	101.34	1651.00	6%
Harford	25.81	311.27	8%
Kent	36.22	360.35	10%
Prince George's	9.09	126.58	7%
Queen Anne's	101.79	433.34	23%
Somerset	31.36	1285.02	2%
St. Mary's	108.85	485.35	22%
Talbot	195.52	758.34	26%
Wicomico	19.41	393.11	5%
Worcester	104.56	582.58	18%

Scientific models predict sea levels in coastal areas like Annapolis will rise 1.5 feet by 2050 and 3 feet by 2100, which would overwhelm our current infrastructure. If we continue armoring our shorelines in the face of this reality, we'll displace floodwaters to communities that can't afford to build ever-higher sea walls.

While armored shoreline elements degrade over time and may cause negative downstream effects, living shorelines can protect land from erosion and become more stable over time as plants, roots, and oyster reefs grow. While adjustments to hard materials within the living shoreline might be needed, the actual living elements of a living shoreline - like oyster reefs and grasses - are expected to maintain elevation relative to predicted sea level rise through 2100.⁴ Living shorelines further protect land from erosion by dampening wave energy. By contrast, bulkheads amplify and reflect wave energy.⁵

Living shorelines can be a vital component to protect waterfront land from severe weather events, which are becoming ever-more common as a result of climate change.⁶ Studies suggest that living shorelines not

³ Summarized from the Chesapeake Bay Program Percent Hardened Shoreline in Maryland dataset <https://data-chesbay.opendata.arcgis.com/datasets/percent-hardened-shoreline-in-maryland/explore>. Accessed February 15, 2024.

⁴ National Oceanic and Atmospheric Administration (NOAA), *Guidance for Considering the Use of Living Shorelines*.

⁵ *Id.*

⁶ *Id.* "On sheltered coasts along the North Carolina outer banks, marshes (with and without sills) outperformed bulkheads during Category 1 Hurricane Irene in 2011. Those marsh and sill designs accreted sediment, while 75 percent of regional bulkheads surveyed were damaged (Gittman et al. 2014)."

only hold up better to severe weather than armored alternatives, they also produce a significant atmospheric carbon sequestration benefit.⁷

Living Shorelines Have Tremendous Ecological and Economic Benefits:

Living shorelines have a documented positive impact on the natural wildlife of Chesapeake Bay, including economically important species of fish and crabs. Conversely, a proportional negative impact on these same species can be noticed in areas with increased hardened shoreline. Living shorelines provide vital habitat for benthic organisms (clams, worms, and other bottom-dwelling creatures) that in turn are key food sources for fish and crabs.

Experts from the Virginia Institute of Marine Science and William & Mary University have determined that threshold declines in key bay species occur at levels of between 10 and 30% of shoreline hardening. Notably, there was a 4% decrease in crab abundance for every 10% of additional shoreline hardening. Additionally, healthy crab and fish populations have impacts up the food chain supporting healthy communities of birds, terrapins, and other vertebrates.

There is a Need for Additional Incentives to Convert Hardened Shorelines to Living Shorelines:

SB 546 specifically permits tidal wetlands compensation funds to be used to provide grants for the replacement of structural shoreline stabilization measures with nonstructural shoreline stabilization measures. It is CBF's hope that this funding can be used, along with other sources of public and private funding, to expand the extent of living shoreline along Maryland waterways. As demonstrated above, the benefits of living shorelines are cumulative. As adjoining property owners employ living shoreline techniques, their neighbors may notice some of the same benefits of decreased wave energy and erosion. Similarly, the deleterious impacts of excessive armoring are also cumulative.

In areas where property owners may have the option to pursue a waiver or install a living shoreline, they may often choose shoreline armoring because of a perceived lower cost. While hardened shorelines can occasionally be less expensive up front, living shorelines are less expensive to maintain over the life of the project. Incentives that better balance the cost-benefit calculation between hardened and living shorelines will spur additional development of living shoreline.

Funding partnerships can be one solution to this issue. Maryland has a relatively recent model for a successful funding partnership model in the Living Shorelines Grant Program, which brought together MDE, DNR, the Chesapeake Bay Trust, and other stakeholders to provide financial assistance for living shoreline installations.⁸ This partnership leveraged MDE and DNR's subject matter expertise and regulatory capacity and the Trust's experience in grant administration to install thousands of feet of living shorelines. We strongly encourage a return to these types of innovative partnerships in the future.

⁷ Davis JL, Currin CA, O'Brien C, Raffenburg C, Davis A (2015) *Living Shorelines: Coastal Resilience with a Blue Carbon Benefit*. PLoS ONE 10(11): e0142595. <https://doi.org/10.1371/journal.pone.0142595>

⁸ Kearney, Virginia. *MDE Partners with Chesapeake Bay Trust to Create "Living Shorelines"*. E-MDE, March 2009. <https://mde.maryland.gov/programs/ResearchCenter/eMDE/Pages/vol3no9/livingshorelines.aspx>. Accessed Feb. 16, 2024.