Ocean and Coastal Law Journal

Volume 18 | Number 1 Article 11

2012

Built Seawalls: A Protected Investment Or Subordinate To The Public Interest

Sorell E. Negro

BUILT SEAWALLS: A PROTECTED INVESTMENT OR SUBORDINATE TO THE PUBLIC TRUST?

Sorell E. Negro[*]

I. INTRODUCTION

Over half of the population in the United States lives within fifty miles of the coast, and the number of people living along the coast continues to increase.[1] Sea levels are rising at accelerating rates due to global warming threatening coastal communities.[2] A 2009 report on the impact of global climate change in the United States by an advisory committee to the federal government predicted that, in the future, "more

* Sorell E. Negro is a lawyer at Robinson & Cole LLP's Hartford, CT office, where she practices land use, real estate, and environmental law. She has a B.S. from Georgetown University, *cum laude*, and a J.D. from Cornell Law School, *magna cum laude*. She would like to thank Prof. Laura Underkuffler for her support and valuable feedback in writing this article. Prior to joining Robinson & Cole, Ms. Negro was a law clerk to the Hon. Fernando M. Olguin, U.S. Magistrate Judge for the Central District of California.

1. NATIONAL OCEAN AND ATMOSPHERIC ADMINISTRATION, *Ocean Facts* (Nov. 17, 2011), http://oceanservice.noaa.gov/facts/population.html ("Between the years 1980 and 2003, population in coastal counties increased by 33 million people or by 28 percent."). About one-third of the U.S. population lives in counties on the coasts. U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES, 149 (Thomas R. Karl, Jerry M. Melillo & Thomas C. Peterson eds., 2009), *available at* http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts [hereinafter CLIMATE CHANGE IMPACTS].

2. CLIMATE CHANGE IMPACTS, *supra* note 1, at 37; U.S. CLIMATE CHANGE SCIENCE PROGRAM, COASTAL SENSITIVITY TO SEA-LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION (January 2009), *available at* http://www.epa.gov/ (search "Coastal Sensitivity to Sea-Level Rise" and follow hyperlink with the same title) [hereinafter MID-ATLANTIC COASTAL SENSITIVITY]. *See also* Massachusetts v. EPA, 549 U.S. 497, 521 (2007) ("The harms associated with climate change are serious and well recognized"; this includes, "the accelerated rate of rise of sea levels.") (quoting COMM. ON THE SCIENCE OF CLIMATE CHANGE, NATIONAL RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE 16 (2001), *available at* http://www.nap.edu/openbook.php?record_id=10139).

Americans will be living in the areas that are most vulnerable to the effects of climate change."[3]

High levels of greenhouse gases in the atmosphere, such as carbon dioxide, are raising temperatures worldwide.[4] Higher temperatures cause sea levels to rise by expanding ocean water, melting glaciers and ice caps, and causing parts of ice caps to break off and melt into the ocean.[5] Global sea levels rose about 1.7 millimeters per year in the twentieth century, but changed very little over the previous two thousand years.[6] The Intergovernmental Panel on Climate Change (IPCC) has concluded that the average rate of global sea level rise will very likely increase in the twenty-first century.[7] The IPCC predicted that sea levels will rise between nineteen and fifty-nine centimeters (or between seven and twenty-three inches) over the next one hundred years.[8] Although posing potentially staggering consequences, the IPCC prediction is relatively benign compared to a March 2012 study by Climate Central that reported that scientists anticipate sea levels along the U.S. coasts to likely rise twenty to eighty inches this century.[9] Specifically, the Climate Central report projects a rise of one to eight inches by 2030 and four to nineteen inches by 2050, depending on location.[10] Most of the U.S. coast has faced rising seas over the past several decades, and these levels are expected to continue to rise throughout the coming centuries.[11]

Sea levels are rising more rapidly along some areas of the U.S. coast, such as the mid-Atlantic, than others due to subsidence and particularly low elevations.[12] Some areas of the Atlantic coast have experienced sea level increases of eight inches or more in the past fifty years.[13] Studies indicate that sea levels along this vulnerable region, from New York to North Carolina, are rising more quickly than the global average, and rose

3. CLIMATE CHANGE IMPACTS, *supra* note 1, at 100.

4. *Id.* at 14, 27.

5. *Id.* at 37.

6. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 2.

7. *Id.*

8. *Id.*

9. BEN STRAUSS, CLAUDIA TEBALDI & REMIK ZIEMLINSKI, SURGING SEAS: SEA LEVEL RISE, STORMS & GLOBAL WARMING'S THREAT TO THE U.S. COAST 3 (Mar. 14, 2012), *available at* http://slr.s3.amazonaws.com/SurgingSeas.pdf.

10. *Id.* at 4.

11. CLIMATE CHANGE IMPACTS, *supra* note 1, at 37.

12. *Id.*; MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 2-3. Some areas, such as parts of Alaska's coast, have faced lower sea levels due to uplift. CLIMATE CHANGE IMPACTS, *supra* note 1, at 37.

13. CLIMATE CHANGE IMPACTS, *supra* note 1, at 37.

between 2.4 and 4.4 millimeters per year (or a total of one foot) throughout the twentieth century.[14]

Rising sea levels threaten coastal development and ecosystems, including wetlands, barrier islands, and beaches.[15] Higher sea levels erode beaches and permanently flood wetlands.[16] Erosion is a significant problem along the coasts.[17] Thirty-one percent of Maryland's ocean coast is eroding,[18] and estimates of how much shore Maryland loses per year as a result of erosion vary from 260 acres to 580 acres.[19] Many beach towns and resorts pay thousands of dollars per year to replace sand that has washed away. North Beach, Maryland, for example, spends $25,000 each year to rebuild its beach, and the state, local, and federal governments spent seven million dollars to bring in sand to Ocean City in 2006 alone.[20]

Rising sea levels are expected to contribute to the severity of storms, one of the most serious impacts of climate change.[21] Higher sea levels result in larger waves, which crash against the shore with greater force than smaller waves and increase the rate of erosion.[22] Scientists have hypothesized that higher seas increased the intensity of Hurricane Isabel,

---

14. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 2.

15. Titus et al., *State and Local Governments Plan for Development of Most Land Vulnerable to Rising Sea Level Along the US Atlantic Coast*, ENVIRONMENTAL RESEARCH LETTERS (2009), http://iopscience.iop.org/1748-9326/4/4/044008/fulltext/ [hereinafter *Most Land Vulnerable*].

16. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 2-3 ("While some wetlands can keep pace with sea-level rise due to sediment inputs, those that cannot keep pace will gradually degrade and become submerged.").

17. *See generally* TIDAL SEDIMENT TASK FORCE, CHESAPEAKE BAY PROGRAM, SEDIMENT IN THE CHESAPEAKE BAY AND MANAGEMENT ISSUES: TIDAL EROSION PROCESSES (May 2005), *available at* http://www.mgs.md.gov/coastal/pub/tidalerosionChesBay.pdf [hereinafter TIDAL EROSION PROCESSES].

18. MD. COMM'N ON CLIMATE CHANGE ADAPTATION AND RESPONSE WORKING GROUP, COMPREHENSIVE STRATEGY FOR REDUCING MD.'S VULNERABILITY TO CLIMATE CHANGE, ch. 5, 5 (2008), *available at* http://www.mde.state.md.us/assets/document/Air/ClimateChange/Chapter5.pdf.

19. *See id.*; TIDAL EROSION PROCESSES, *supra* note 17, at 3.

20. David A. Fahrenthold, *Eco-Bills Come Due at Bay's Beaches; Region Pays Dearly For Climate Change In Erosion, Abatement*, WASH. POST, Mar. 19, 2009 at A1.

21. *See* CLIMATE CHANGE IMPACTS, *supra* note 1, at 114 ("Sea-level rise and the likely increase in hurricane intensity and associated storm surge will be among the most serious consequences of climate change.").

22. *See id.*; *see also* MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 5 ("Higher sea level provides an elevated base for storm surges to build upon and diminishes the rate at which low-lying areas drain, thereby increasing the risk of flooding from rainstorms.").

which struck the Atlantic coast of the U.S. in 2003.[23] An infamous 1933 hurricane that hit the same region was more powerful than Hurricane Isabel, but both hurricanes had about the same storm tide, or maximum water level, because the mean sea level in 2003 was about 1.4 feet higher than it was seventy years before.[24] Both hurricanes were Category Two storms, but Isabel caused much more damage. An increase in the water level by one foot caused a forty percent increase in wave power,[25] and sea levels in the Chesapeake Bay are expected to increase by at least two feet.[26]

In addition, wetlands and barrier islands protect coasts from storm surges by soaking up excess water and mitigating the impacts of larger waves and flooding.[27] The loss of wetlands and barrier islands results in further increased erosion.[28] Wetlands significantly assist in flood control, pollution control, erosion prevention, and aquifer recharge.[29] Gradual increases in sea levels, as well as abrupt flooding due to storm surges, threaten wetlands. Rising sea levels have already submerged tidal wetlands in Louisiana and Maryland, and the U.S. Climate Change Science Program has concluded that, "it is *likely* that most wetlands [in the mid-Atlantic region] will not survive acceleration in sea-level rise by [seven] millimeters per year."[30] Over 200 square miles of coastal lands and wetlands were flooded and lost as a result of hurricanes Rita and Katrina in 2005.[31] Without adequate planning and management, coastal states will continue to lose the aesthetic, recreational, and economic values of coastal ecosystems.

---

23. *See* VIRGINIA INSTITUTE OF MARINE SCIENCE, PLANNING FOR SEA LEVEL RISE AND COASTAL FLOODING 2 (2008), *available at* http://www.vims.edu/research/units/programs/icccr/_docs/coastal_sea_level.pdf [hereinafter PLANNING FOR SEA LEVEL RISE]; *see also Hurricane Isabel and Sea Level Rise*, INTEGRATION & APPLICATION NETWORK, http://ian.umces.edu/isabelconference/isabel_summary.php (last visited Sept. 21, 2012).

24. PLANNING FOR SEA LEVEL RISE, *supra* note 23, at 2.

25. Lauren F. Jones, *Treasuring the Chesapeake: An Analysis of Climate Change and Its Impact on the Chesapeake Bay and Maryland's Surrounding Coastal Regions*, 38 U. BALT. L. REV. 331, 341 (2009).

26. CLIMATE CHANGE IMPACTS, *supra* note 1, at 149.

27. A "storm surge" is an increase in the water level due to a storm. PLANNING FOR SEA LEVEL RISE, *supra* note 23, at 2.

28. CLIMATE CHANGE IMPACTS, *supra* note 1, at 63.

29. JULIAN CONRAD JUERGENSMEYER & THOMAS E. ROBERTS, LAND USE PLANNING AND CONTROL LAW § 11.9 (1998).

30. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 4.

31. CLIMATE CHANGE IMPACTS, *supra* note 1, at 114. Eighty-five percent of the Chandeleur Islands, located to the east of New Orleans, were also lost. *Id.*

Wetlands also provide wildlife habitats, including nurseries for commercial fish and shellfish.[32] Many plants and animals depend on coastal ecosystems, and as their habitats are lost, they will likely be threatened or forced to move.[33] Seawalls and similar erosion protection measures also prevent wildlife from coming ashore. For example, horseshoe crabs in Maryland have difficulty coming ashore to spawn as they get stuck in the small openings of revetments along Maryland's "armored coast."[34]

Coastal ecosystems can survive rising sea levels by migrating inland, or growing vertically or laterally, but development prevents this migration.[35] On the Atlantic coast, about sixty percent of land below one meter is already developed or is expected to be developed.[36] State and local governments plan to conserve less than ten percent of land below one meter.[37] In addition, many remaining wetlands are unable to generate new soil quickly enough to keep up with rising sea levels.[38] These wetlands will become submerged.[39] While recent studies suggest a three or four-foot increase in sea levels this century, a two-foot increase alone would destroy much of the remaining coastal wetlands in the U.S.[40] Thus, there is a critical need to protect the remaining wetlands in order to mitigate, rather than exacerbate, rising sea levels.

Seawalls, bulkheads, and other forms of coastal defense armor a significant portion of the coast.[41] Almost half of New Jersey's developed coast is armored with these barriers, as is over twenty percent of Maryland's shoreline (and 16.5% of the state's coast along the bays).[42]

---

32. *See id*. at 113-16.

33. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 4-5.

34. Jim Titus, *Is Rising Sea Level a Problem for Delaware Estuary*, 13 ESTUARY NEWS 1, 2 (2003) (Revetments are erosion protection measures that consist of rocks piled along the coast.).

35. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 2; *Most Land Vulnerable*, *supra* note 15, at 1.

36. *See Most Land Vulnerable*, *supra* note 15, at 1.

37. *Id.*

38. CLIMATE CHANGE IMPACTS, *supra* note 1, at 150.

39. MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 3.

40. CLIMATE CHANGE IMPACTS, *supra* note 1, at 150.

41. A seawall is a construction, often made of concrete, built on the edge of coastal property to hold back the sea. Other structural shore protection measures include bulkheads, dikes, and beach renourishment. *See Most Land Vulnerable*, *supra* note 15.

42. *State of the Beach – New Jersey*, BEACHAPEDIA.ORG, http://www.beachapedia.org/State_of_the_Beach/State_Reports/NJ (last visited Sept. 21, 2012) [hereinafter *State of Beach New Jersey*]; *State of the Beach – Maryland*, BEACHAPEDIA.ORG, http://www.beachapedia.org/State_of_the_Beach/State_Reports/MD (last visited Sept. 21, 2012) [hereinafter *State of Beach Maryland*].

These structural stabilization measures are important for protecting development and populations from rising seas and storms. However, they prevent the inland migration of wetlands and beaches, and they have significant cumulative impacts.[43] Seawalls actually increase coastal erosion.[44] Without a seawall, beaches naturally migrate inland. Seawalls and similar structures prevent this natural migration as waves rebound off of the seawalls, taking sand away with greater force.[45] Seawalls also cumulatively increase the intensity of storms because as the beaches disappear, they no longer absorb the impacts of the waves.[46] In addition, seawalls increase erosion of neighboring lands that are not protected by seawalls, stimulating more seawall construction.

Instead of moving inland as the rising sea erodes the shoreline, these barriers cause ecosystems to become trapped between the seawalls and the rising water until eventually the ecosystems are destroyed.[47] Throughout this century, coastal ecosystems will disappear; where there used to be beaches, the water will meet a wall.[48] Examples of such former Maryland beaches include Dares Beach, Columbia Beach,

---

43. *See Most Land Vulnerable*, *supra* note 15, at 2.

44. CORNELIA DEAN, AGAINST THE TIDE: THE BATTLE FOR AMERICA'S BEACHES 53 (1999) ("Seawalls damage virtually every beach they are built on. If they are built on eroding beaches—and they are rarely built anywhere else—they eventually destroy [the beach]."); *see generally* Todd T. Cardiff, *Conflict in the California Coastal Act: Sand and Seawalls*, 38 CAL. W. L. REV. 255, 258 (2001) (explaining that seawalls result in erosion by preventing the retreat of the shoreline, and also cause waves to rebound off of seawalls and take sand away with greater force).

45. *See* Cardiff, *supra* note 44, at 258.

46. Robert Jerome Glennon & John E. Thorson, *Federal Environmental Restoration Initiatives: An Analysis of Agency Performance and the Capacity for Change*, 42 ARIZ. L. REV. 483, 503-04 (2000) ("Beaches smooth out and absorb the energy of large waves during storms. Although severe storms may cause significant beach erosion, sand naturally regenerates during normal periods of average wave size. A seawall prevents the sea from carrying out this wonderfully natural function of changing a beach's shape during and after a storm event, thereby affording the shoreline less protection from erosion in the long run.").

47. *See Most Land Vulnerable*, *supra* note 15, at 2.

48. Cardiff, *supra* note 44, at 261 ("The ultimate impact of the current shoreline-armoring trend is the loss of the public beach."); James G. Titus, *Rising Seas, Coastal Erosion, and the Takings Clause: How to Save Wetlands and Beaches without Hurting Property Owners*, 57 MD. L. REV. 1279, 1281 (1998) [hereinafter *Rising Seas*] (explaining the danger of shoreline protection and neglecting impacts of rising sea levels on coastal lands); *Most Land Vulnerable*, *supra* note 15, at 9; *see also* Fahrenthold, *supra* note 20, at A1 ("To keep higher waves from washing away waterside property, homeowners and government agencies have spent millions to make the Chesapeake look like a high-sided swimming pool. About a quarter of Maryland's shoreline has been 'armored' with man-made sea walls or rock piles.").

Mason's Beach, North Beach Park (or Holland Point), and Scotland Beach.[49]

Many states have permitting systems for seawalls and other shoreline protection measures. Permitting systems often seem like mere formalities, however; in the last 10 years, the New Jersey State Department of Environmental Protection approved 95% of the applications for development in the state's coastal review zone, and the Army Corps of Engineers approved all but six of the thousands of applications to construct or modify docks.[50] Between 1996 and 2005, the Maryland Department of the Environment permitted armoring of over 200 miles of coastal land.[51] Despite the coast's vulnerabilities to rising sea levels, people continue to move to the coasts and develop delicate areas.[52]

James Titus of the Environmental Protection Agency (EPA) has suggested for over a decade that states can mitigate impacts of rising sea levels through rolling easements.[53] There are a variety of rolling easements that preserve natural shorelines by ensuring that the rights of landowners are subordinate to the public's rights. Depending on the common law or statutory law of a state, a rolling easement may transfer title of coastal property to the state as sea levels rise; this may be a form of codifying the state's property law. The state's easement "rolls" inland as the sea rises.[54] Alternatively, the state may hold rolling easements on coastal property that give the state title to the coastal land if a private landowner builds a seawall.[55] Or the state's easement may allow the state to purchase a property right to private land if the sea rises by a certain amount.[56] Rolling easements allow property owners to use and develop their land, but they cannot hold back the sea.[57] This effect can

---

49. Fahrenthold, *supra* note 20, at A1 ("In a few places, it's too late: They are civic misnomers, where the only beach in town is in their name.").

50. *State of Beach New Jersey*, *supra* note 42.

51. *State of Beach Maryland, supra* note 42.

52. *See* MID-ATLANTIC COASTAL SENSITIVITY, *supra* note 2, at 5.

53. *See Rising Seas*, *supra* note 48, at 1313-18; *see generally* JAMES G. TITUS, ROLLING EASEMENTS (2011), *available at* http://water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf.

54. *See, e.g.*, Severance v. Patterson, 370 S.W.3d 705, 723 (Tex. 2012) (explaining that Texas law finds rolling easements as a result of erosion, but not from sudden storm events); *see generally* Rising Seas, *supra* note 48.

55. Rising Seas, *supra* note 48, at 1313.

56. *Id.*

57. NATIONAL OCEAN AND ATMOSPHERIC ADMINISTRATION, *Erosion Control Easements*, OCEAN & COASTAL RES. MGMT. (Apr. 16, 2010),

be accomplished through easements, covenants, defeasible estates, or statutes clarifying the state's property law.[58] Unlike setbacks, rolling easements do not prevent property owners from developing their land.[59]

Perhaps rolling easements could successfully prevent further shoreline armoring, but, ultimately, much of the U.S. coast is already armored. Although seawalls can serve the public interest when in appropriate places, they are also located in many places that are harmful to the public interest. Rather than always serving a calculated public interest, as opposed to private interests, seawalls are ubiquitous and pose significant threats to public resources. What can states that allowed landowners to build seawalls as they please do?

Given the precarious position of the state of Maryland in particular, in light of its high rate of sea level rise and subsidence, as well as its high rate of shoreline armoring, this paper focuses on the seawall problem in that state. Part II discusses how coastal landowners in Maryland have been able to construct hundreds of miles of shoreline armor and analyzes whether landowners have a vested right in those structures. This section also examines whether those property owners have title to the land beneath and behind the seawall, which might otherwise be submerged had the seawall not been built. Part III examines states' options for addressing the armored shoreline problem, and whether these options pose any takings problems or are protected by the public trust doctrine. Part IV discusses recommendations for moving forward including recommendations for the permitting process regarding seawalls, the importance of educating the public about armored shorelines, and recommendations for addressing existing seawalls. Part V concludes that there is no easy solution to the problem of armored shorelines, but there are options, and states are obliged to protect public trust property, including tidelands.

II. THE MARYLAND COASTAL LANDOWNER'S RIGHT TO A SEAWALL?

Given the significant armoring of coastal land and growing understanding of the importance of allowing coastal ecosystems to migrate inland to preserve wetlands and mitigate the effects of storms, floods, and erosion, states might look into the possibility of dismantling some seawalls that have already been built in their efforts to protect

---

http://coastalmanagement.noaa.gov/initiatives/shoreline_ppr_easements.html (hereinafter NOAA).

58. *Rising Seas*, *supra* note 48, at 1313.

59. NOAA, *supra* note 57.

shoreline areas. Generally, landowners may obtain a right to build a seawall from a statute or a permit.[60] Ordering a seawall to be dismantled means telling the landowner that she can no longer protect her property from rising seas through structural means. A landowner may have the option of using nonstructural means such as planting vegetation or creating marshland.[61]

A. Permission to Build

Until July 2008, Maryland gave landowners a statutory right to build structural stabilization measures such as seawalls and bulkheads to protect their property from erosion.[62] As a result, hundreds of miles of Maryland's shoreline were armored in the last few decades.[63] Since 2008, Maryland has required a permit to build a seawall or other structure to protect land from erosion.[64] The Living Shoreline Protection Act of 2008 permits landowners to protect their property from erosion through nonstructural measures or living shorelines "that preserve the natural environment, such as marsh creation."[65] To armor the shore with a seawall, landowners must show that nonstructural shoreline protection measures are "not feasible."[66] A landowner can show a nonstructural stabilization measure is not feasible if the property is subject to excessive erosion or heavy tides.[67] Although the statute also provides that the property at issue must be in an area designated as appropriate for a structural measure, this requirement may be waived if the landowner adequately demonstrates that nonstructural measures are not feasible.[68]

---

60. *See, e.g.*, MD. CODE ANN., ENVIR. § 16-201(a) (2012) ("The person may make improvements into the water in front of the land to preserve that person's access to the navigable water or . . . protect the shore of that person against erosion."); *see also* Shell Island Homeowners Ass'n v. Tomlinson, 517 S.E.2d 406, 417 (1999) (finding no fundamental right to build a seawall under the Constitution).

61. *See* MD. CODE ANN., ENVIR. § 16-201(c) (2012) (allowing nonstructural improvements to coastal property to protect against erosion where structural shoreline stabilization measures are prohibited).

62. Living Shoreline Protection Act of 2008, Md. Laws 1869 (codified as amended at MD CODE ANN., ENVIR. § 16-201 (2012)).

63. *See Rising Seas*, *supra* note 48, at 1399 (nearly 300 miles of Maryland's coasts were armored between 1978 and 1994).

64. MD. CODE ANN., ENVIR. § 16-201 (2012).

65. *Id.* § 16-201(a), (c).

66. *Id.* § 16-201(c)(1)(ii).

67. *Id.* § 16-201(c)(1)(ii).

68. *Id.* § 16-201(c).

Whether or not the new permitting scheme proves to have teeth, much of Maryland's coast, on both the ocean and the Chesapeake Bay, is already armored with seawalls. Maryland landowners armored between 15 and 25 miles of shoreline each year in the 1980s and 1990s.[69]

B. The Public Trust Doctrine

Under the public trust doctrine, states hold certain property in trust for the benefit of their citizens, including land beneath navigable waters and nonnavigable tidal waters.[70] This doctrine may substantially affect riparian landowners and their investments in structural shoreline stabilization measures such as seawalls and bulkheads.

The public trust doctrine was set forth in the famous 1892 case of *Illinois Central Railroad Co. v. Illinois*, in which the Supreme Court held that Illinois had to revoke the transfer of title of 1,000 acres of submerged land to the railroad because the state never had the authority to convey it in the first place.[71] The state must preserve such trust property for the benefit of the beneficiaries, who are the citizens.[72] The government must protect public trust lands for the purposes of navigation, commerce, and fishing.[73] Public trust property may only be transferred to private parties in limited circumstances—only when such use promotes the public interest or "can be disposed of without any substantial impairment of the public interest in the lands and waters remaining."[74]

Many states have further developed this federal public trust doctrine, meaning the public trust doctrine articulated by the U.S. Supreme Court. Many state courts emphasize the narrowness of the limited circumstances under which a state may transfer title of public trust land.[75] Some states

---

69. *Rising Seas*, *supra* note 48, at 1302.

70. Phillips Petroleum Co. v. Mississippi, 484 U.S. 469, 476-81 (1988).

71. Illinois Cent. R.R. Co. v. State of Illinois, 146 U.S. 387, 459-64 (1892).

72. *See* RESTATEMENT (SECOND) OF TRUSTS § 176 (1959) ("The trustee is under a duty to the beneficiary to use reasonable care and skill to preserve the trust property.").

73. *Illinois Cent. R.R.*, 146 U.S. at 452 (holding that the government holds public trust property "in trust for the people of the State that they may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein freed from the obstruction or interference of private parties").

74. *Id.* at 453.

75. *See, e.g.*, Nat'l Audubon Soc'y v. Superior Court, 658 P.2d 709, 724 (Cal. 1983) ("It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust."); Kootenai Envtl. Alliance v. Panhandle Yacht Club, 671 P.2d 1085, 1094 (Idaho 1983).

completely prohibit the transfer of public trust property.[76] Other states allow the legislature, or agency to which the legislature delegated this responsibility, to determine whether a transfer of tidelands violates the public trust and therefore whether a landowner has title over those lands.[77]

States have interpreted the public trust doctrine differently, and some states have extended the doctrine to cover additional uses. Many states have expanded the doctrine to protect recreational uses such as swimming or boating, and some have expanded the doctrine's environmental protections to cover wildlife and other natural resources.[78] Maryland's public trust doctrine protects navigation, use of the foreshore, swimming, hunting, boating, and bathing.[79] The geographic extent of the public trust doctrine also varies among states, but many states, including Maryland, provide that land seaward of the high water mark belongs to the public trust.[80]

C. Vested Rights in Seawalls

If a landowner has a vested right in a particular use of his or her land, that use is a property right that is protected from changes in regulation that would make the use impermissible.[81] A vested right is constitutionally protected to the extent other property rights are protected, and it is therefore protected against a taking without just compensation.[82] The vested rights doctrine developed out of fairness concerns to protect development proposals that are far enough along in the development process from having new law applied that may threaten

76. *See, e.g.*, LA. REV. STAT. ANN. §§ 9:1101, 9:1108 (2007) (invalidating transfers of any navigable waters and their beds).

77. *See, e.g.*, Tulare Lake Basin v. United States, 49 Fed. Cl. 313, 321 (2001) ("Whether a particular use or method of diversion is unreasonable or violative of the public trust is a question committed concurrently to the State Water Resources Control Board and to the California courts.").

78. Robin Kundis Craig, *A Comparative Guide to the Eastern Public Trust Doctrines: Classifications of States, Property Rights, and State Summaries*, 16 PENN ST. ENVTL. L. REV. 1, 18-19 (2008); *see also id.* at 5 (footnote omitted) (noting, "[a]s most commentators have acknowledged, when state law public trust doctrines vary from the U.S. Supreme Court's pronouncements, they almost always expand the federal public trust doctrine . . . ," and considering "the federal public trust doctrine the default minimum standard for the states.").

79. Dep't of Natural Res. v. Ocean City, 332 A.2d 630, 634 (Md. 1975).

80. *See Rising Seas*, *supra* note 48, at 1293, fig. 11.

81. *See* DANIEL R. MANDELKER, LAND USE LAW § 6.12 (5th ed. 2003).

82. *See id.*

the project.[83] The doctrine developed from the due process clause of the Fourteenth Amendment, which prohibits the government from arbitrarily divesting property rights.[84]

While the specific requirements vary among jurisdictions, states generally find that a landowner has a vested right to a particular use if the landowner obtained a valid building permit, substantially relied on the permit, and acted in good faith.[85] Some states spell out in statutes when certain rights vest.[86] The vested rights doctrine is intended to balance the interests of the landowner or developer, who wants to rely on current regulations, with local governments' needs to change their regulations to respond to different problems.[87]

Whether a landowner has a vested right in the seawall or title to the land that the seawall protects from submersion depends on the law of the state. In certain states that have a more expansive public trust doctrine, the government cannot transfer title of submerged lands to private landowners.[88] In Maryland, if the seawall was completed under the statutory right or substantially built pursuant to a permit, the landowner has a vested right in that seawall.[89] The former Maryland statute gave property owners a right to build structural stabilization measures "to reclaim fast land lost by erosion."[90] Such structural stabilization measures were called improvements, and the statute provided that a "person may make improvements into the water in front of the land to . . . protect the shore of that person against erosion. After an improvement has been constructed, the improvement is the property of the owner of the land to which the improvement is attached."[91] These provisions gave landowners a property interest in built bulkheads and seawalls.

A property owner who did not construct a seawall before the statute was amended does not have a property interest in a seawall. The

83. *See* JUERGENSMEYER & ROBERTS, *supra* note 29, § 5.27.

84. *See id.*

85. MANDELKER, *supra* note 81, at § 6.14-6.18 (explaining the requirements for vested rights or estoppel); JUERGENSMEYER & ROBERTS, *supra* note 29, § 5.27.

86. MANDELKER, *supra* note 81, § 6.21 (identifying a Washington statute that provides that rights vest on the date a landowner files a valid and complete development application for a permitted structure).

87. *Id.* at § 6.12.

88. *See, e.g.*, LA. REV. STAT. ANN. §§ 9:1101, 9:1108 (2007) (invalidating transfers of any navigable waters and their beds).

89. *Rising Seas*, *supra* note 48, at 1376-77 n.407.

90. MD. CODE ANN., ENVIR. § 16-201 (2012).

91. *Id.*

Maryland courts have confirmed the distinction between used and unused riparian rights.[92] In *Potomac Sand & Gravel Co. v. Governor of Md.*, the Court of Appeals of Maryland found that unused riparian rights are not entitled to constitutional protections, as used riparian rights are, if they are unexercised before the statute authorizing the action is revoked.[93] A coastal landowner therefore has an "unused" riparian right if he or she did not build a seawall before July 2008 pursuant to the statutory authorization.

A landowner's vested right in a seawall, or "used" riparian right, is entitled to the constitutional protections that other property interests receive,[94] but, like other property interests, it is also subject to public rights.[95] The Court of Appeals of Maryland has emphasized that common law riparian rights are still subject "to the rights of the public"[96] and to regulations enacted "to protect the rights of the public."[97] Riparian rights cannot be taken for a public purpose without compensation; however, the public trust doctrine is an important defense to a takings claim.[98]

Is there any difference for seawalls built pursuant to a permit rather than a statutory right? If a landowner has a permit, the landowner has a vested right in the seawall if there has been substantial construction. The landowner certainly has vested rights in the seawall once construction is complete.[99] The used/unused distinction likely does not apply to the permitting scheme because the decision to build a seawall is not left to the landowner's discretion; it is up to the local government agency, which determines whether a permit for a seawall is appropriate on a case-by-case basis. Constructing a seawall pursuant to a permit does not

92. Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 439 (Md. 1971) (holding that the legislature could revoke a statutory right for riparian landowners to fill tidal waters, and landowners who had not exercised that right before the revocation had no claim; the "right" was really a revocable license); *Rising Seas*, *supra* note 48, at 1376 n.407.

93. Potomac Sand & Gravel Co. v. Governor of Md., 293 A.2d 241 (Md. 1972).

94. *See* MANDELKER, *supra* note 81, at § 6.12.

95. *Larmar Corp.*, 277 A.2d at 438 ("[R]iparian rights, founded on the common law, are property, and are valuable, and while they must be enjoyed in due subjection to the rights of the public, they cannot be arbitrarily or capriciously destroyed or impaired").

96. *Id.*

97. Harbor Island Marina, Inc. v. Bd. of Cnty. Comm'rs of Calvert, Md., 407 A.2d 738, 747 (Md. 1979).

98. *See* Illinois Cent. R.R. Co. v. State of Illinois, 146 U.S. 387, 453 (1892).

99. *See* MANDELKER, *supra* note 81, at § 6.20 (explaining that many courts find substantial reliance if expenditures constitute a significant percentage of the total cost of the project).

constitute a used riparian right, but a landowner has a vested right in a built seawall whether it was built pursuant to a statutory right or a permit.

D. Title to Land Beneath and Behind Seawalls?

Pursuant to the public trust doctrine, the state owns certain lands in trust for its citizens.[100] The contours of the public trust doctrine—the lands and uses to which it pertains—vary from state to state. Generally, the states own the tidelands in trust, and private landowners own the dry beach.[101] Depending on the state's property laws, the public trust lands may extend to the mean high water mark,[102] as is the case in Maryland.[103] In five states, the land seaward of the mean low water mark is public, but the public has an easement to access the tidelands for some purposes, such as navigation or fishing.[104]

According to the law of erosion, the line between public land and private land moves inward as sea levels rise, and the boundary extends outward as the sea recedes.[105] Any increase in land as a result of water receding belongs to the private landowner.[106] This rule ensures that the riparian landowners maintain their access to the water.[107] Land that becomes submerged as a result of sea levels rising belongs to the state.[108] Because the state holds tidelands in trust for the public pursuant to the public trust doctrine, the lands over which the state has responsibility to protect shift inland as a result of erosion.[109]

---

100. *Ill. Cent R.R.*, 146 U.S. at 453.

101. *Rising Seas*, *supra* note 48, at 1292-93.

102. *See id.* In many states, public trust lands extend to the high water mark although the state recognized private ownership down to the low water mark. Craig, *supra* note 78, at 15 (discussing the examples of Massachusetts, Louisiana, Delaware, Minnesota, and Pennsylvania).

103. *See* Dep't of Natural Res. v. Mayor of Ocean City, 332 A.2d 630, 633 (Md. 1975); Van Ruymbeke v. Patapsco Indus. Park, 276 A.2d 61, 65 (Md. 1971).

104. *Rising Seas*, *supra* note 48, at 1293.

105. *See* Harbor Island Marina, Inc. v. Bd. of Cnty. Comm'rs of Calvert, Md., 407 A.2d 738, 745 (Md. 1979); *Rising Seas*, *supra* note 48, at 1356 ("[O]wnership migrates inland when shores erode.").

106. *See Harbor Island Marina*, 407 A.2d at 745; Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 432 (Md. 1971) ("the right to accretion . . . [is] an interest appurtenant to the principal land") (citing Balt. & Ohio R.R. Co. v. Chase, 43 Md. 23, 34-5 (1875)).

107. *See Larmar Corp.*, 277 A.2d at 432; Steinem v. Romney, 194 A.2d 774, 777 (Md. 1963).

108. *Dep't of Natural Res.*, 332 A.2d at 638 ("Land inundated by mean high water [as a result of gradual erosion] reverts to State ownership.").

109. *See Balt. & Ohio R.R. Co.*, 43 Md. at 34-35 (explaining that these principles of erosion are background principles of state property law).

While the law of erosion developed to account for "imperceptible" changes in sea levels,[110] Maryland riparian law evolved to encourage development. A Maryland law first enacted in the mid-18th century gave title to land under navigable water over which riparian property owners built improvements, such as piers and wharves, to those private landowners.[111] The Act of 1745, which supplemented the Act that incorporated Baltimore Town, provided:

> All improvements, of what kind soever, either Wharf, Houses, or other Buildings, that have been or shall be made out of the Water, or where it usually flows, shall (as an Encouragement for such Improvers) be for ever deemed the Right, Title and Inheritance of such Improvers, their Heirs and Assigns for ever.[112]

The structures were deemed "improvements" because they enhanced otherwise undeveloped water by increasing access to the water and thereby advanced navigation and commerce; the state wanted to encourage such advancement.[113] Courts often referred to the action of improving as "to improve out" or "to extend one's lot," indicating the Act's purpose of encouraging property owners to extend their activities into the water or to bring activity to the water.[114] The right to improve conferred by the Act was inextricable from the Act's goal of encouraging

---

110.

> By the common law it is well settled, that where land lies adjacent or contiguous to a navigable river, in which there is an ebb and flow of the tide, any increase of soil formed by the *gradual and imperceptible recession* of the waters, or any gain by the *gradual and imperceptible formation* of what is called alluvion, from the action of the water in washing it against the fast land of the shore, and there becoming fixed as part of the land itself, shall belong to the proprietor of the adjacent or contiguous land.

Id. (emphasis in original).

111. *See Harbor Island Marina*, 407 A.2d at 745.

112. *Balt. & Ohio R.R. Co*., 43 Md. at 32–33. The Act of 1862 replaced the Act of 1745 and specifically stated that no improvement may interfere with navigation, but it maintained that a riparian landowner had title to improvements built out into the water and the submerged lands underneath such improvements, once the improvement was completed. *Larmar Corp*., 277 A.2d at 433.

113. *See Balt. & Ohio R.R. Co.*, 43 Md. at 36 ("[T]he Act of 1745, chapter 9, sec. 10, was intended to encourage improvements on the water fronts of the harbor of Baltimore, for the convenience and accommodation of commerce.").

114. *Id.* (discussing "the right of the lot owner, fronting on the water, to extend his lot, or improve out, to the limit prescribed by the authorities of the city" conferred by the Act).

commerce.[115] To encourage this development, the state not only gave title to the structures to the people who built them, but it also transferred title to the submerged lands beneath these structures.[116] Development was considered more vital to the public interest than the state maintaining title to those small amounts of public trust property.[117]

Interestingly, seawalls and other structural stabilization measures are also considered to be "improvements" under Maryland law.[118] In Maryland, the case law and comments to section 16-201 discuss structural stabilization measures such as bulkheads as being improvements on par with wharves, despite their differences.[119] Presumably, because the statute categorizes shoreline stabilization measures as "improvements," once a seawall is completed, title to land on which the seawall is built belongs to the property owner who built the seawall if it previously belonged to the state. If the sea rises so that the seawall is seaward of the high water mark, the property owner arguably still holds the property that would be tidelands had the seawall not been built.

Despite the case law and statute categorizing seawalls as "improvements," there are strong arguments that the state of Maryland did not transfer title to land beneath and behind seawalls by allowing a landowner to build a seawall and possess title over the built seawall. First, the language describing the transfer of title of improvements makes less sense when applied to bulkheads and seawalls. The Court of Appeals of Maryland held that title to land under the water *over which improvements are made* pass to the property owner who made the improvements.[120] Bulkheads and seawalls are built into land, however, rather than water; there is no submerged land underneath these structures.

---

115. *See id.*

116. *Id.*

117. *See id.* Apparently, the purpose of the provision was "to accommodate the growing pains of a burgeoning colony . . . [and] the building of a bustling port on the eastern seaboard to support westward expansion of population and commerce." *Larmar Corp.*, 277 A.2d at 432-33.

118. *See* MD. CODE ANN., ENVIR. § 16-201(a) (2012) (an owner of land on navigable water "may make improvements into the water in front of the land to preserve that person's access to the navigable water or . . . [to] protect the shore of that person against erosion.").

119. *See id.*; Hirsch v. Md. Dep't of Natural Res., 416 A.2d 10, 12 (Md. 1980); Owen v. Hubbard, 271 A.2d 672, 677-78 (Md. 1970).

120. Hodson v. Nelson, 89 A. 934, 938 (Md. 1914) (Maryland gives title of submerged land under improvements "to the extent [the structures] actually occupy the soil and the water over it").

Second, the rationale for the original rule, that title of land beneath improvements such as piers and wharves transfers to the private landowner who built such structures, does not apply if the seawalls only benefit the individual landowner and not the general public. As explained above, the state may only transfer title of public trust property below or behind seawalls if the transfer furthers the public trust interests.[121] The Maryland Code allows improvements into the water in front of the land for two reasons: to preserve the landowner's access to navigable water *or* to protect the landowner's shore from erosion.[122] Categorically, the first reason does not serve the purposes of the public trust doctrine. With regard to the second, allowing these improvements to protect the shore from erosion may or may not further the public trust purposes. A nonstructural stabilization measure will likely protect the public's right to fish by maintaining fisheries. Structural stabilization measures such as seawalls, however, may harm fisheries, but may maintain other protected uses.

The category "improvements" was used for wharves and piers and other structures built in navigable water near the shore that improved access to navigable water and aided in commerce.[123] The right to build certain riparian structures to encourage development "was designed, manifestly, to embrace only structural improvements, such as wharves, piers, (or) warehouses."[124] Seawalls, however, do not generally support the expansion of commerce, unlike piers and wharves. Case law has distinguished improvements that can be extended to the sea, such as wharves and piers, because they enhance the property owner's access to navigable water and therefore promote key public trust interests.[125] The Maryland courts have interpreted the Act of 1745 as a grant by the legislature of all of its sovereign rights in the land beneath such improvements to the improvers, as well as title to the structures themselves, to advance the development of commerce. This purpose is

121. *Ill. Cent. R.R.* Co. v. Illinois, 146 U.S. 387, 453 (1892).

122. MD. CODE ANN., ENVIR. § 16-201(a) (2010).

123. *See* Balt. & Ohio R.R. Co. v. Chase, 43 Md. 23, 33 (1875).

124. *See* Harbor Island Marina, Inc. v. Bd. of Cnty. Comm'rs of Calvert, Md., 407 A.2d 738, 746 (Md. 1979) (quoting Hess v. Muir, 5 A. 540, 542 (Md. 1886) (Alvey, C.J. concurring)).

125. Wicks v. Howard, 388 A.2d 1250, 1251 (1978) ("The right to extend improvements such as wharves and piers into the water is a statutory one, granted by the State as successor to the Lord Proprietary to enhance the right of riparian access to the waters.").

inextricably intertwined with public trust purposes and the transfer of title.[126]

Third, the Maryland statute does not explicitly transfer title to land. Courts have broadly construed the public trust doctrine and generally require a legislature to clearly express any exception to that doctrine, such as the transfer of tidal waters to private landowners.[127] It would be contrary to this policy to find that a property interest in a seawall, granted by statute, indirectly transfers title of any tidelands should the high water mark rise to the seawall. The transfer would be conditional and implied, rather than clear and express. In Maryland, the public has a variety of rights in public trust lands: the right of navigation, the right to use the foreshore (the land between the high and low water marks),[128] and the rights of "fishing, boating, hunting, bathing, taking shellfish and seaweed, and of passing and repassing."[129] The statute does not assert that protecting the shore from erosion is related to such public trust purposes.[130]

Courts have determined that the statute transferred public trust title in the submerged lands beneath piers, wharves, and other such improvements.[131] The legislature's purpose was clearly to promote commerce and navigation, which are the interests protected by the public trust doctrine.[132] When the statute was enacted, sea levels were not rising as they are now, and global warming was not so widely acknowledged as a threat. The legislature determined that transferring title to these tidelands served the purposes of the public trust doctrine, and did not threaten coastal ecosystems.[133] The purpose of conferring title to the

126. *See* Hess v. Muir, 5 A. 540, 542 (Md. 1886) ("Farming and commercial interests are promoted by the privilege [of constructing improvements into the water], and to encourage the development of these was the main object of conferring it.").

127. *See*, *e.g.*, Berkeley v. Superior Court, 606 P.2d 362, 369 (Cal. 1980) ("[S]tatutes purporting to abandon the public trust are to be strictly construed; the intent to abandon must be clearly expressed . . . and if any interpretation of the statute is reasonably possible which would retain the public's interest in tidelands, the court must give the statute such an interpretation."); *Rising Seas*, *supra* note 48, 1376-77, n.407.

128. *Dep't of Natural Res*. v. Ocean City, 332 A.2d 630, 633 (Md. 1975).

129. *See id.* at 634.

130. *See* MD. CODE ANN., ENVIR. § 16-201 (2012).

131. *Harbor Island Marina*, Inc. v. Bd. of Cnty. Comm'rs, 407 A.2d 738, 745–46 (Md. 1979); Balt. & Ohio R.R. Co. v. Chase, 43 Md. 23, 36 (1875).

132. *See Harbor Island Marina*, 407 A.2d at 745-46.

133. Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 432–33 (Md. 1971) ("This Act . . . was obviously passed to accommodate the growing pains of a burgeoning colony as a prelude to the state and nation to be. Environmental factors and ecological balances were not yet the concern of the people of this new land.").

submerged lands was to connect the land with the water and thereby facilitate access and economic activity.[134] The purpose was not to protect the land from the sea or separate the land from the sea, which is the purpose of structural stabilization measures like seawalls.

The Court of Appeals of Maryland has previously distinguished riparian activities that lack a connection between private land and submerged land from improvements giving property owners title to submerged land. In *Hess v. Muir*, the court held that merely planting oysters in the sea was not an improvement that transferred title of the submerged land.[135] It reasoned that the activity facilitated "no essential union or relation between the main land and the soil under the water contiguous, and therefore, [did] not effect an improvement of the former."[136] The planting of oysters on the seabed did not involve construction of something that connected private land to submerged land and thereby facilitated commercial interests.[137] Riparian improvements that transfer title of submerged lands "are to be made 'into' the water – a term inconsistent with entire separation from the land."[138] The purpose of seawalls is to separate the land from the sea, a purpose that is contrary to the fundamental reason for giving title to submerged lands underneath improvements that advance commerce to the owners of such improvements.[139]

The argument that the state, by giving landowners title to built seawalls as "improvements," has also transferred any land beneath and behind a seawall (which would otherwise be submerged as the seas rise) is not aligned with the purposes of the public trust doctrine. The public trust doctrine is meant to evolve over time to protect certain lands, including tidelands, for the interests of the state's citizens.[140] Even if the same word, "improvements," is used to describe shoreline stabilization measures and additions such as wharves and piers, the state is ultimately

134. Hess v. Muir, 5 A. 540, 542 (Md. 1886) ("Farming and commercial interests are promoted by the privilege, and to encourage the development of these was the main object of conferring it.").

135. *Id.*

136. *Id.*

137. *Id.*

138. *Id.* ("Wharves, piers, and landings are examples of such improvements.").

139. *See id.*

140. *See* Matthews v. Bay Head Improvement Ass'n, 471 A.2d 355, 365 (N.J. 1984) ("[W]e perceive the public trust doctrine not to be 'fixed or static,' but one to 'be molded and extended to meet changing conditions and needs of the public it was created to benefit.'").

bound by the public trust doctrine and may only transfer title of public trust land if it is in the public interest to do so.[141]

If a seawall is holding back the sea and preventing what would otherwise be tideland from becoming submerged, these arguments suggest that the seawall is on public trust property. Although under Maryland law, a property owner who built a seawall before July 2008 has an interest in the seawall, it does not follow that the property owner also obtains title over the land that would otherwise be tideland. The government may only transfer public trust property in very limited circumstances, when it is in the public interest to do so.[142] Even then, transferees of an interest in public trust property either hold the property subject to the public trust or the transfer is invalid.[143]

III. OPTIONS FOR STATE GOVERNMENTS

Given that seawalls may inflict extraordinary harm on coastal ecosystems, including making coastal developments even more vulnerable to intensified storms,[144] state governments may contemplate taking action to reduce the amount of their shoreline that is armored. Possible measures include dismantling some seawalls to allow the inward migration of wetlands and beaches, changing the zoning of certain coastal areas to prohibit structural shoreline stabilization measures, or enacting regulations providing that permits that allowed seawalls to be built no longer apply in certain areas due to dramatically changed conditions. How far can the state go to protect its coastal ecosystems, in light of coastal landowners' vested rights in their built seawalls? When can and must the state act to protect public lands, and when will its actions be a taking of private property?

---

141. Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 453 (1892).

142. *Id.* at 453; *see also* Richard A. Epstein, *The Public Trust Doctrine*, 7 CATO J. 411, 419 (1987) (arguing that to transfer property from the public trust to a private owner, there must be a belief that the private owner will make better use of the land, and that the transaction will better the general welfare). Some states prohibit the transfer of title of certain public trust property. *See, e.g.*, LA. REV. STAT. ANN. §§ 9:1101, 9:1108 (2007) (invalidating transfers of any navigable waters and their beds); *see supra* Part II.B.

143. *See Ill. Cent. R.R.*, 146 U.S. at 460-64.

144. CLIMATE CHANGE IMPACTS, *supra* note 1, at 114.

A. Dismantling Seawalls

1. Is This a Taking?

The Fifth Amendment protects private property from being taken for public use without just compensation.[145] Most state constitutions contain similar takings provisions.[146] A physical taking occurs when the government physically condemns private property or when a regulation authorizes a permanent physical invasion of land.[147] For example, in *Loretto v. Teleprompter Manhattan CATV Corp.*, the Supreme Court held that a New York statute authorizing the installation of cable equipment on apartment buildings was a regulatory taking.[148] A land use regulation is a taking if it requires a property owner to "suffer a physical 'invasion' of his property" or if it results in no viable economic use of the property.[149] If successfully challenged, such a regulation will be invalidated.[150] Other land use regulations might be a taking if they go "too far."[151] To determine this, courts consider the character of the governmental action and the economic impact of the regulation—specifically, whether the regulation interfered with "distinct investment backed expectations."[152] In this context, a piece of property is examined as a whole; even if a regulation makes part of the property unusable, the ability to use the remainder of the property may vitiate a takings claim.[153]

---

145. U.S. CONST., amend. V.

146. MANDELKER, *supra* note 81, at 15.

147. Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 441 (1982) ("[A] permanent physical occupation of property is a taking."); MANDELKER, *supra* note 81, at 16.

148. *Loretto*, 458 U.S. at 441.

149. Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1015 (1992). For example, if a flood plain regulation renders a property valueless, courts will likely find a taking. *See*, *e.g.*, Dooley v. Town Plan & Zoning Comm'n, 151 Conn. 304 (1964).

150. MANDELKER, *supra* note 81, at 16.

151. Pa. Coal Co. v. Mahon, 260 U.S. 393, 415 (1922) ("The general rule at least is, that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking."). In addition, the U.S. Supreme Court has recognized the possibility of a "judicial taking," when a court declares that an established property right no longer exists. *See* Stop the Beach Renourishment, Inc. v. Fla. Dep't of Envtl. Protection, 130 S. Ct. 2592 (2010).

152. Pa. Cent. Transp. Co. v. New York City, 438 U.S. 104, 124 (1978).

153. Keystone Bituminous Coal Ass'n v. DeBenedictis, 480 U.S. 470, 497 (1987) ("In deciding whether a particular governmental action has effected a taking, this Court focuses . . . both on the character of the action and on the nature of the interference with rights in the parcel as a whole.").

A taking does not occur if the regulation prohibits no more than what is already prohibited under nuisance law or other background principles of the state's property law.[154] For example, the government has the power to remove a structure that constitutes a nuisance or danger without effecting a taking.[155] A private party's claim that a property interest has been taken must be reasonable.[156] If government action is lawful pursuant to the state's background principles of property law, a private party cannot have a reasonable expectation that the government would not pursue such action.[157] If a landowner has vested rights in a structure, the state may not require the structure's removal without providing for just compensation, unless the structure is prohibited under the state's background principles such as nuisance law or the public trust doctrine.[158] Accordingly, if a state orders a seawall dismantled and the seawall would constitute a nuisance under the state's property law, then the dismantling is not a taking.[159] Similarly, if the property at issue is subject to the public trust doctrine, the state has the responsibility to protect the public interests in that property.[160]

Maryland law indicates that the riparian landowner has a vested right in a built seawall.[161] Therefore, a state order to dismantle a privately owned seawall for a public purpose would be a physical taking unless the public trust doctrine applies. As discussed above, the owner of the seawall does not, by virtue of his ownership interest in the seawall, necessarily also own the lands below or behind the seawall that would otherwise be submerged.[162] Even if a court finds that the property owner does own those lands, the public trust doctrine may still preclude a takings claim if the state orders the seawall dismantled. If the seawall owner does not own the lands below or behind the seawall, there is no valid takings claim for those lands.

---

154. *Lucas*, 505 U.S. at 1029-30 ("[T]his recognition that the Takings Clause does not require compensation when an owner is barred from putting land to a use that is proscribed by those 'existing rules or understandings' is surely unexceptional.").

155. *See Keystone Bituminous*, 480 U.S. at 491-92 (holding that abating a public nuisance is not a taking under the Fifth Amendment because "[l]ong ago it was recognized that 'all property in this country is held under the implied obligation that the owner's use of it shall not be injurious to the community'").

156. *See* Phillips Petroleum Co. v. Miss., 484 U.S. 469, 482 (1988) ("We have recognized the importance of honoring reasonable expectations in property interests.").

157. *Lucas*, 505 U.S. at 1029-30.

158. *See id.*

159. *See id.*

160. Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 452 (1892).

161. *See supra* Part II.C.

162. *See supra* Part II.D.

Maryland case law demonstrates that the purpose underlying common law rights of riparian landowners is to preserve the landowners' access to navigable water.[163] The fundamental purpose of riparian rights is not violated by a legislative order requiring the dismantling of a seawall by landowners because the legislature did not transfer landowners' title to the tidelands in the first place and, thus, no just compensation is owed to landowners. Given such an order, the landowners would retain access to navigable water, but would not be compensated for the cost of dismantling the seawalls.

The public trust doctrine may constitute a defense to a takings claim under at least two interpretations. First, a court may revoke a purported transfer of title of public trust property to a private party if the transfer was not in the public interest, as in *Illinois Central*.[164] The government cannot "take" land that is subject to the public trust because the government already has authority over such property.[165] Second, private interests are subject to public rights and regulations enacted to protect public rights.[166] A private property owner therefore has no reasonable expectation of using his or her property in a manner that harms the public trust, and the state may not relinquish its duty to protect the public trust for public uses.[167]

States may allow seawalls to hold back the sea and may transfer public trust land or use of public trust land to private landowners if it determines that the transfer furthers the public interests.[168] For example, a state may find that permitting seawalls for more populated areas

163. Harbor Island Marina, Inc. v. Bd. of Cnty. Comm'rs, 407 A.2d 738, 745 (Md. 1979).

164. *Ill. Cent. R.R.*, 146 U.S. at 452–53; *accord In re* Wai'ola O Moloka'i, 83 P.3d 664, 693 (Haw. 2004) (explaining that the public trust "authority empowers the state to revisit prior diversions and allocations, even those made with due consideration of their effect on the public trust").

165. *See Ill. Cent. R.R.*, 146 U.S. at 460. Some states require that transfers of public trust lands remain subject to a public trust easement, preserving public interests. *See*, *e.g.*, CWC Fisheries, Inc. v. Bunker, 755 P.2d 1115, 1118 (Alaska 1988) (holding that the government may only pass "naked title" to tidelands, meaning that title to tidelands may only pass subject to a continuing public trust easement).

166. *See*, *e.g.*, *In re Wai'ola O Moloka'i*, 83 P.3d at 693 (pursuant to the public trust doctrine, vested rights may not be used to harm public trust purposes); *Harbor Island Marina*, *Inc.*, 407 A.2d at 747; Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 438 (Md. 1971) ("[R]iparian rights . . . must be enjoyed in due subjection to the rights of the public.").

167. *Ill. Cent. R.R.*, 146 U.S. at 453.

168. *See Ill. Cent. R.R.*, 146 U.S. at 453. Some states prohibit the transfer of certain public trust property under any circumstances. *See*, *e.g.*, LA. REV. STAT. ANN. §§ 9:1101, 9:1108 (2007) (invalidating transfers of any navigable waters and their beds).

protects the public right of navigation. The question under *Illinois Central* is whether the transfer promotes the public trust interests, such as navigation and fishing, and some states have expanded the public uses protected by the public trust doctrine.[169] It also seems possible that a state might engage in a full balancing of public interests, weighing the public's interest in the beach and coastal ecosystems against the public's interest in protecting developed land from rising seas, depending on the scope of its public trust doctrine. If the transfer was not in the public interest, as defined by the state's public trust doctrine, it may be revoked pursuant to *Illinois Central*, and the state arguably could order the seawall dismantled to protect the public trust without violating the takings clause.[170]

In Maryland, even if the government transfers rights in public trust property and the transfer is not revoked under the public trust doctrine, the transferees hold those property rights subject to the public rights.[171] The state may not relinquish the public's rights by transferring an interest in public trust property.[172] The transferees have no vested rights claim to use their rights in a way that harms the public interest.[173] Licenses or other rights to public trust lands that are transferred therefore remain subject to the public trust.

In determining whether a governmental decision to dismantle a seawall would be a taking, the Maryland courts would have to determine whether the landowner's interest in the seawall is subject to the public trust purposes. If sea level rises so that the high water mark reaches the wall, then the property interest is likely subject to the public trust purposes because the lands behind the seawall would otherwise be below the high water mark and, consequently, public trust property.[174] The state may regulate property that is part of the public trust, and, generally,

---

169. Craig, *supra* note 78, at 18–19; *see supra* Part II.B.

170. *See Ill. Cent. R.R.*, 146 U.S. at 460.

171. *See* Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 438 (Md. 1971).

172. *See id.* (explaining that exclusive use of navigable water, and the land under such waters, may not be transferred from the state to private parties; such property is subject to the public interest in such rights as navigation and fishery).

173. Nat'l Audubon Soc'y v. Superior Court, 658 P.2d 709, 712 (Cal. 1983) (The public trust doctrine "bars DWP or any other party from claiming a vested right to divert waters once it becomes clear that such diversions harm the interests protected by the public trust."); *In re* Wai'ola O Moloka'i, Inc., 83 P.3d 664, 693 (Haw. 2004) (explaining that the public trust doctrine "precludes any grant or assertion of vested rights to use water to the detriment of a public trust purpose") (quoting *In re* Water Use Permit Applications, 9 P.3d 409, 453 (Haw. 2000)).

174. *See* Dep't of Natural Res. v. Mayor of Ocean City, 332 A.2d 630, 633 (Md. 1975); *see supra* Part II.C.

even a private property owner who holds an interest in that land would not have a regulatory takings claim.[175] The landowner has no reasonable expectation that the state would not protect the public interest in that land. If the government dismantled such a seawall to protect the public trust land, for example, to allow the beach seaward of the high water mark to migrate inland rather than become submerged, it follows that the public trust doctrine could prove to be a valid defense to a takings claim.

If the high water mark has not risen to reach the seawall, the public trust doctrine is less likely to apply because the seawall remains on private land and is less likely to implicate public rights. If the government dismantles such a seawall to build a public boardwalk, for example, then the government's act constitutes eminent domain and the government must pay just compensation.

Even if the state permitted a seawall and transferred title to the land beneath the seawall, if the land use becomes injurious to the public trust in those coastal lands, the state arguably has the responsibility to preclude that particular land use in order to protect the public trust.[176] As the Supreme Court of California articulated, and other states adopted, "[t]he state may at any time remove [the] structures . . . even though they have been erected with its license or consent, if it subsequently . . . finds that they substantially interfere with navigation or commerce."[177] If that use becomes harmful due to sea levels rising at accelerated rates, it is unreasonable to think that the state can do nothing to protect the public interest, that the state must lose coastal ecosystems and cannot protect public trust property as it gains understanding of the threats of rising sea levels. That outcome would be contrary to the purposes of the public trust doctrine: to preserve public trust property for the public's benefit.[178]

---

175. *See*, *e.g.*, Matthews v. Bay Head Improvement Ass'n, 471 A.2d 355, 365–66 (N.J. 1984) (holding that New Jersey could require beach access through private property pursuant to the public trust doctrine); Just v. Marinette Cnty., 201 N.W.2d 761, 769 (Wis. 1972) (the government could bar swampland filling to protect wetlands under the public trust doctrine); Martin H. Belsky, *The Public Trust Doctrine and Takings: A Post-Lucas View*, 4 ALB. L.J. SCI. & TECH. 17, 29 (1994) ("Once it is found that a regulation is of property that is part of the public trust, even if held in private hands, the regulation is justified and is not a taking.").

176. *See*, *e.g.*, *In re Wai'ola O Moloka'i*, 83 P.3d at 693 (explaining that the public trust doctrine "precludes any grant or assertion of vested rights to use water to the detriment of a public trust purpose") (quoting *In re* Water Use Permit Applications, 9 P.3d 409, 453 (Haw. 2000)).

177. *Nat'l Audubon Soc'y*, 658 P.2d at 722 (quoting Boone v. Kingsbury, 273 P. 797, 816 (Cal. 1928)); Kootenai Envtl. Alliance v. Panhandle Yacht Club, 671 P.2d 1085, 1094 (Idaho 1983) (adopting the language of the California courts).

178. *See Ill. Cent. R.R.*, 146 U.S. at 452.

The Court of Appeals of Maryland acknowledged that common law riparian rights are subject to change as a result of statutes or "by the nature and circumstances of the grant by which the title may have been acquired."[179] If a property interest transferred later threatens the public trust, the state may be able, or even required, to regulate the private property to protect the public trust. A private property owner may not have a reasonable expectation to harm public trust property, and the state may not relinquish its responsibilities to protect public trust property.[180] If the state does not restrict the armoring of its shores to protect coastal ecosystems, it may violate its duty to protect the public trust.[181]

If a private property interest is subject to the public trust, then the private party's expectation to contest a regulation aimed at protecting the public trust may be unreasonable. Especially as public awareness of rising sea levels has increased substantially in recent years, a property owner's expectation that he or she can contest the government's protection of the coastal land held in trust seems more unreasonable.[182]

Public trust property can be alienated only "when parcels can be disposed of without detriment to the public interest in the lands and water remaining."[183] If transfer of interest in property is detrimental to the public interest in the remaining land at the time of transfer, the court should find that the state did not have the authority to transfer the interest to begin with. If the transfer was not harmful to the remaining land at the time of transfer, but becomes injurious as a result of sea level rise, the state has the responsibility to step in to protect the public trust property. "[G]overnment trustees, who serve at the will of the public, may not allocate rights to destroy what the people legitimately own for themselves and for their posterity."[184]

Like the police power, a legislature cannot abridge a future legislature's public trust power or responsibilities. According to the

---

179. Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 439 (Md. 1971) (quoting Balt. & Ohio R.R. Co. v. Chase, 43 Md. 23, 35-36 (1875)).

180. *Ill. Cent. R.R.*, 146 U.S. at 453; *see also* Craig, *supra* note 78, at 10.

181. Robert L. Fischman, *Global Warming and Property Interests: Preserving Coastal Wetlands as Sea Levels Rise*, 19 HOFSTRA L. REV. 565, 585 (1991) ("If a state fails to restrict bulkheads, it may be abdicating its fiduciary responsibility to protect tidal lands.").

182. *See Ill. Cent. R.R.*, 146 U.S. at 455 ("The trust with which they are held, therefore, is governmental and cannot be alienated.").

183. *Id.* at 455-56.

184. Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift*, 39 ENVTL. L. 43, 69 (2009).

Supreme Court, "[i]t is vital to the public welfare that each [legislature] should be able at all times to do whatever the varying circumstances and present exigencies touching the subject involved may require."[185] Courts may invalidate legislative actions that are inconsistent with the public trust doctrine.[186]

A claim that a state's order to dismantle a privately owned seawall constitutes a taking is a situation to which the public trust doctrine has not been specifically applied. The public trust doctrine, however, is meant to be flexible to adapt to changing circumstances. The doctrine stems from the common law, which adapts over time to new situations.[187] When applying riparian law to new situations and assessing how the law should evolve to address current issues, the Maryland courts instruct that this basic rationale for riparian rights be kept in mind.[188] Applying the public trust doctrine in this case to serve the public interest does not conflict with the essential purpose of riparian rights: to maintain the riparian landowners' access to the water.[189]

The state may determine that a seawall should be dismantled to protect the public interest in navigation and fishing over the land on which the seawall sits, and the land behind the seawall that would be submerged if the seawall had not been built. Strong arguments, discussed above, suggest that those lands remain public trust lands even with a built seawall holding back the water.[190] The public trust doctrine defense may preclude a claim that dismantling the seawall is a taking of the seawall or of the land beneath and behind the seawall.

---

185. Newton v. Comm'ns, 100 U.S. 548, 559 (1879).

186. Lake Mich. Fed'n v. U.S. Army Corps of Eng'rs, 742 F. Supp. 441, 446 (N.D. Ill. 1990) ("The very purpose of the public trust doctrine is to police the legislature's disposition of public lands."); Wood, *supra* note 184, at 75–76; *see also Ill. Cent. R.R.*, 146 U.S. at 453 ("The control of the state for the purposes of the trust can never be lost . . . .").

187. Wood, *supra* note 184, at 78; *see also* Matthews v. Bay Head Improvement Ass'n, 471 A.2d 355, 365 (N.J. 1984).

188. *See* Bd. of Pub. Works v. Larmar Corp., 277 A.2d 427, 432 (Md. 1971) ("In assessing the changes which have occurred in riparian rights down the corridor of years it is well to keep in mind an appreciation for the basic rationale behind the rule of law which gave to the riparian owner the rights to land surfacing through the process of accretion or reliction. In its nascency, the sole purpose of the rule was to assure to the riparian owner that he would never be cut off from his access to water.").

189. *See id.*

190. *See supra* Part II.D.

2. Political and Practical Considerations

Even if ordering a seawall dismantled would not amount to a taking in certain situations, political and practical considerations may make this approach a less viable, or even impossible option. Where people have been allowed to build seawalls, landowners believe they have a right to stay on their coastal property and protect themselves from rising seas, and some landowners believe the government has an obligation to protect them from rising seas while allowing them to continue their living arrangement. They have expectations in their property, development, and way of life. Dismantling seawalls means that part of the coastal property that previously was not flooded will likely become submerged, either as soon as the seawall is dismantled or as the sea continues to rise. This will likely feel invasive and unacceptable to many landowners. They would fiercely oppose any measures to dismantle seawalls, and this voting bloc could threaten elected officials and proposed legislative action.

To have the political support for dismantling seawalls would take great understanding on behalf of the public of the threat of sea level rise and global warming. This could be achieved through public outreach and education, which has successfully led to increased support for other environmental regulations.[191] The requisite political will and public support is more likely to come about following disasters, unfortunately. Once people experience loss, they have something personal to which they can connect the vague and diffuse threat of rising seas. In addition, as coastal areas are struck with more intense hurricanes and flooding occurs more regularly, the threats posed by rising sea levels will gain publicity. The availability heuristic suggests that people will expect sea level disasters to occur with greater frequency and probability as they occur.[192]

In light of these considerations, changing zoning regulations and amortizing seawalls seems more attractive than dismantling seawalls. This option is discussed below.

---

191. *See, e.g.*, Lisa A. St. Amand, *Sea Level Rise and Coastal Wetlands: Opportunities for a Peaceful Migration*, 19 B.C. ENVTL. AFF. L. REV. 1, 8 (1991) (explaining that Maine officials "credit a strong effort at public education for their success in convincing coastal residents of the certainty of sea level rise and continued beach erosion" and thus the success of the state's Coastal Sand Dune Rules).

192. *See* Jeffrey J. Rachlinksi, *Innovations in Environmental Policy: The Psychology of Global Climate Change*, 2000 U. ILL. L. REV. 299, 311–12 (2000) (discussing the availability heuristic in the context of the cognitive biases that cut against a political will to address climate change).

B. Zoning Changes

Local governments may change zoning to regulate where seawalls are authorized with a permit, and where they are not allowed and landowners are unable to obtain such a permit. This could be accomplished by establishing an overlay zone on existing zoning schemes.

Seawalls that are already built, but are then located in a nonstructural stabilization zone based on the new overlay zone, would be a nonconforming, accessory use. These seawalls could be amortized, or allowed for a certain period of time such as a number of years or until they are naturally destroyed.[193] The regulation could preclude them from being maintained or rebuilt. The regulation is likely to be upheld because amortization gives landowners notice of the change in use, and the change is only with regard to an accessory use, the seawall, and not the entire property.[194] The landowners may continue to use the property, but they may not hold back the sea.

Amortization periods will likely be upheld if they give the landowner a reasonable amount of time to use the property.[195] Some courts require that the period of time amortizes the full value of the use, while others only require a balance between the landowner's interest in the nonconforming use and the government's interest in the new regulation.[196] Substantial nonconforming uses such as buildings require longer amortization periods, but a shorter timeframe suffices for smaller accessory uses.[197]

In the case of a seawall, the amortization period would likely only be a few years because it is an accessory use and the investment cannot be recouped in a specific number of years because a seawall does not create income for the property. Perhaps it can be thought of as protecting the value of the property that is not inundated with water or affected by erosion for that period of time. Nonetheless, amortization periods are

---

193. *See generally* MANDELKER, *supra* note 81, § 5.52, at 135 (explaining amortization, "the most effective zoning technique for eliminating nonconforming uses"); JUERGENSMEYER & ROBERTS, *supra* note 29, § 4.39, at 158-62 (providing examples of amortization).

194. As discussed above, a regulation will only effect a taking if it results in no economically viable use of the property or if it "goes too far" (meaning the landowner's investment-backed expectations or economic loss outweighs the government interest). *See supra* Part III.A.1.

195. *See* MANDELKER, *supra* note 81, § 5.52, at 135.

196. *Id.*

197. *Id.*

usually only a few years for less substantial structures like accessory uses,[198] and the effects of sea level rise and erosion are generally imperceptible over that period of time. The effects of sea level rise are felt over several years; the predicted sea level increase for the mid-Atlantic coast of the U.S. is expected to be noticeable within the next few decades.

Strong public interests also weigh in favor of an amortization period that enables coastal ecosystems to migrate inland before becoming inundated by rising seas.[199] The seawall increases the amount of private property at the expense of the public property. This conveyance seems to be imperceptible for each seawall, but cumulatively, this conveyance may substantially take away land from the public. As sea levels rise, beaches and coastal ecosystems will disappear rather than migrate inland where there are seawalls.[200] The amortization period should also give landowners sufficient notice in light of the public interests at stake.

If the zoning change is enacted to protect the public trust, then, depending on the reach of the state's public trust doctrine, the public trust doctrine defense may apply to regulatory takings claims for the same reasons as explained above in the context of physical takings claims.[201] If the seawalls prevent the public from exercising public rights in public trust property, a regulation that phases out certain seawalls will not effect a taking.[202] Even if the public trust doctrine does not apply, a regulation will only be a taking of private property if it renders the property as a whole economically unviable, or if the property owner's economic loss outweighs the government's interest.[203] This may only be true for extreme situations—for example, where eliminating a seawall would result in an entire parcel being flooded.

C. The Revocation of Permits Due to Changed Conditions

Do government authorities have the power to provide that permits for seawalls are no longer valid because of changed, unforeseeable conditions—i.e., rising sea levels? Arguably, when many permits for structural shoreline stabilization measures were granted, the authorities

198. *See id.*

199. *See supra* Introduction.

200. *See id.*

201. *See supra* Part III.A.1.

202. *See* Fischman, *supra* note 181, at 573 ("If bulkheads or development are incompatible with the exercise of these public rights, then no compensation is required for regulatory restrictions.").

203. *See supra* Part III.A.1.

did not understand the extent of the threat posed by rising sea levels or the acceleration in the rate of sea levels rising. It seems that each year brings new climate change studies that better understand the impact of climate change and suggest that the seas are rising more quickly than previously anticipated. However, in recent years, and certainly now, especially in places already experiencing noticeable destruction of coastal ecosystems such as Maryland, it might be a stretch to say that the threats of rising sea levels were so unforeseeable as to allow the government to renege on permits simply for that reason.

If the legislature changed its regulation, it is unclear how the permits would stand up. It depends on the conditions of the permit and the language used in the permit, as well as the circumstances propelling the change in regulation.[204] If the permit included a right to maintain the seawall, it is less likely that this option will be plausible. Generally, if a landowner builds a structure pursuant to a permit, in good faith, then the landowner has a vested right in the construction, and that right is constitutionally protected.[205]

If a landowner's vested right is deemed to have substantially harmed the public trust, the state's permitting should be deemed a violation of the public trust and thus impermissible. The state has a duty to preserve the public's rights in public trust property. The Supreme Court held that, "[t]here can be no irrepealable contract in a conveyance of property by a grantor in disregard of a public trust, under which he was bound to hold and manage it."[206] Just as a state may not transfer title to public trust property unless the transfer furthers the public interests,[207] a state should not be allowed to issue permits that allow private parties to infringe on public trust lands, unless the issuance otherwise furthers the public trust purposes.

D. Doing Nothing in Terms of Built Seawalls

In the face of rising sea levels and armored coasts, state governments could do nothing. They could sit back while the forces already in motion that are causing seas to rise, beaches to erode, and people to maintain seawalls continue. This is generally what most states and local governments have been doing. Even when seawalls and other coastal properties are destroyed by hurricanes or flooding, government

204. *See id.*
205. *See* MANDELKER, *supra* note 81, § 6.12; *supra* Part II.C.
206. Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 460 (1892).
207. *See id.*

authorities are quick to issue blanket permits for rebuilding seawalls to put the pieces back together again, as they were before the disaster.[208] The longer the government waits to act, however, the more people will develop the coasts and will want to carry on life as usual in coastal communities, despite the rising seas.[209]

If the threat from rising sea levels becomes severe and imminent, the state would probably be able to use its police powers to evacuate and move people. However, because the rise is gradual, even with accelerating sea levels due to climate change,[210] people tend to under-appreciate the threat until a disaster strikes, such as a hurricane or flash flood.[211] After that happens, the state faces the issue of whether to rebuild or relocate. Even if the state could use its police powers to relocate people in the face of severe risks from sea levels rising, however, this would be a very costly resolution. It involves waiting until the last minute, encouraging people to continue to have the same expectations in coastal properties as before, and allowing development that is increasingly vulnerable. This course of action will likely lead to legal uncertainties and huge expenses to taxpayers if the government later must force coastal property owners to relocate or buy them out.[212] This is not an ideal outcome.[213]

---

208. For example, the Army Corps of Engineers authorized owners to repair bulkheads, seawalls, and other structures destroyed by Hurricane Isabel, as long as the repairs conformed to the original permits. Press Release, U.S. Army Corps of Eng'rs, Army Corps of Eng'rs Announces Permitting Guidance for Repairs to Structures and Fills Damaged by Hurricane Isabel (Sept. 22, 2003), *available at* http://www.nab.usace.army.mil/publications/News/03/03-11.pdf; *see also* E.L. HENNESSEE & J.P. HALKA, HURRICANE ISABEL AND EROSION OF CHESAPEAKE BAY SHORELINES, MARYLAND 83 (K.G. Sellner ed., 2005), *available at* http://www.chesapeake.org/pubs/Isabel/Hennessee%20and%20Halke.pdf (stating that following Hurricane Isabel, the Baltimore County Department of Environmental Protection and Resource Management replaced damaged bulkheads and seawalls or issued permits to rebuild).

209. Fischman, *supra* note 181, at 571 ("The longer governments wait, the more development will occur and the greater stake landowners will have in protecting property with bulkheads.").

210. *See supra* Introduction.

211. *See* Rachlinksi, *supra* note 192 at 311-12.

212. *See Rising Seas*, *supra* note 48, at 1327.

213. If the state is unwilling to protect public trust property, it is plausible that the state could be sued if the party commencing the suit has standing, there is a cause of action, and the state waives its sovereign immunity by consenting to the suit. It is unlikely, however, that all of these criteria would be met. Some courts have found that the public trust doctrine gives the state as well as any person suing on behalf of the state standing to assert a cause of action under existing state law. *See* State v. Deetz, 224 N.W.2d 407,

IV. RECOMMENDATIONS

A. Recommendations for the Permitting of Seawalls

1. The Public Interest Must Be Considered in Greater Complexity

When deciding whether to grant a permit for a seawall, the state must consider both the public interest in holding the sea back in that particular area and the public interest in allowing the coastal ecosystem to migrate inland. The state should consider any public benefit from protecting the private property and allowing the public trust property to be in private hands should the seas rise up to the seawall. Even if the structure does no harm to the private property (for example, by increasing risk of flooding or subsidence), it must still be in the public interest to allow it. Public trust property may only be transferred in the first place if the transfer benefits the public interest.[214] The state must essentially ask whether having a seawall furthers the public interest in light of cumulative effects of seawalls and the state's public trust policies.

There are places where seawalls are appropriate and absolutely necessary to prevent significant loss of development and life, notably in urban areas. The critical question is not whether seawalls should be permitted; it is where they should be placed, as well as where the coastal ecosystems should be permitted to migrate inland, and who should be deciding.

2. Risks of Permitting Seawalls Locally

In Maryland, local governments undertake the permitting. This is problematic because the local governments generally do not look aggregately at the entire state, but only consider their local interests. They are also more likely to capitulate to local landowners' concerns. The placement of seawalls should involve a state or regional plan to determine which developed areas need to be protected, what are the best

---

413 (Wis. 1974). Thus, citizens may be able to sue private parties and municipalities for violations of the public trust doctrine, even if unable to sue the state. *See id.*; Gillen v. City of Neenah, 580 N.W.2d 628, 635 (Wis. 1998) (citizens could sue a private party who the citizens believed was inadequately regulated by the state agency and therefore violated the public trust, as well as a municipality). *But see* Edmonds Inst. v. Babbitt, 42 F. Supp. 2d 1, 17 (D.D.C. 1999) (finding that Congress's regulatory scheme governing national parks supplanted public trust obligations and precluded plaintiffs' claim against the Department of the Interior under the public trust doctrine).

214. Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 453 (1892).

mechanisms for doing that, which ecosystems need to be conserved, and where the seas should be allowed to rise naturally onto the coast.[215] Balancing development and ecosystems on a large scale is an inappropriate role for local governments. It may be best for the state if most of the coast of one municipality has seawalls while another municipality has few or no seawalls. If local agencies are the decision-makers, they will be more inclined to permit seawalls in their jurisdiction to protect their local development and appease landowners despite the interests of the state or region. Permitting at the state or regional level using state or regional maps and comprehensive plans would more likely lead to consideration of the cumulative impacts of seawalls.

3. Considering the Cumulative Effects of Seawalls

While each individual decision of whether to allow a permit for a structural shoreline stabilization measure may not have a significant impact on the environment and public trust property, the cumulative impacts of each permit are apparent and alarming.[216] Hundreds of miles of armored shoreline along U.S. coasts threaten coastal ecosystems, including wetlands and beaches, increase the intensity of storms, and threaten wildlife that depend on coastal habitats.[217] To adequately protect the coasts, the public trust property, the decision-making process for permitting seawalls and other structural stabilization measures must consider the cumulative impacts of the seawalls, bulkheads, and revetments already authorized.[218]

One way to consider cumulative impacts is to have state or regional comprehensive plans and maps that indicate the likely effects of sea level rise along the shoreline, varying from place to place. Such mapping and plans could mark the impact of seawalls, which would aid in determining where seawalls should be located and where they should not be

215. *See also Most Land Vulnerable supra* note 15, at 2 ("Property owners and land use agencies have generally not decided how they will respond to sea level rise, nor have they prepared maps delineating where shore protection and retreat are likely.").

216. *See id.* at 5; *supra* Introduction.

217. *See supra* Introduction.

218. *See* Wood, *supra* note 184, at 44 ("Although environmental statutes were designed to protect natural resources, most agencies have used permit provisions to allow continual destruction of natural resources. Though permits often contain mitigation conditions, the overall cumulative effect of agency-permitted damage pursuant to statutory authority is staggering.").

permitted.[219] For example, Maryland maintains the Coastal Atlas' Shorelines mapping tool, which provides information online regarding shoreline erosion, identifies coastal areas that are at risk to rising sea levels, and demonstrates, through county maps, where structural stabilization measures are appropriate and non-structural stabilization measures are appropriate.[220] In a typical permitting process, the landowner must demonstrate that a nonstructural shoreline stabilization measure is insufficient to protect the property from erosion, or that a seawall on that particular property will not have significant ecological impacts.[221] This type of process focuses on the individual applicant rather than the region or the cumulative impacts of built seawalls in the area. Comprehensive plans and mapping can consider cumulative effects of seawalls in a way that the typical permitting process does not.

In addition to state permits for seawalls, the U.S. Army Corps of Engineers issues national permits for classes of activities under the Clean Water Act as long as they do not have cumulative environmental impacts.[222] The Corps regularly grants permits for bulkheads, having determined that they do not have significant cumulative impacts.[223] The Corps' decision was based on the assumption that a seawall only threatens an area equal to the size of the seawall itself, not taking into account any loss of habitat as a result of the seawall blocking inland migration of coastal ecosystems.[224] The Corps should revisit such determinations in light of the recent national studies on climate change and sea level rise, which suggest that bulkheads and seawalls do have cumulative environmental impacts to a greater extent in some areas than others.[225]

Including an express condition on the permit that allows dismantling for the public interest in the event of exigent circumstances, such as

---

219. *Coastal Atlas: Shorelines*, MD. DEP'T OF NATURAL RES., http://dnr.maryland.gov/ccp/coastalatlas/shorelines.asp (last visited Aug. 22, 2012) (stating that Maryland's Shoreline mapping is intended to "aid[] shoreline management decisions by identifying areas of high erosion and to visualize potential shoreline positions in 50 years").

220. *Id.*

221. *See* MD. CODE ANN., ENVIR. § 16-201(c) (2010).

222. *Most Land Vulnerable, supra* note 15, at 2, 9.

223. *See* 72 Fed. Reg. 11, 183 (2007); *Most Land Vulnerable, supra* note 15, at 2.

224. *See Most Land Vulnerable*, *supra* note 15, at 9 (arguing that the Army Corps of Engineers' finding that shoreline armoring has a minimal cumulative environmental impact is unreasonable because that conclusion was drawn by "[i]gnoring the habitat eventually lost by blocking wetland migration," and a re-evaluation "should find that shore protection has a cumulative environmental impact.").

225. *See id.*

drastic sea level rise, would provide clear notice to landowners about the scope of the state's public trust responsibilities.

4. Seawalls Should Be Treated Differently from Other Structures

In allowing the construction of a seawall, the state is not just allowing another private structure; it may be transferring some property interest from the public trust to private ownership. When the state lumps seawalls in with other structures or improvements, as Maryland has done, it may not clearly balance all of the interests and policies at stake when armoring shorelines, especially the public trust purposes. Seawalls change and possibly eliminate coastal ecosystems, including beaches. Unlike structures such as piers around cities in the 1800s which unambiguously furthered the public interests of navigation and commerce, in it unclear whether a seawall is in the public interest. Some seawalls may further the public interests depending on their location and impact, while others may not. It would be more effective to consider seawalls separately from other "improvements" and require case-by-case (or area-by-area) considerations of the public interest.

B. The Importance of Educating the Public

Educating the public about the threat of rising sea levels and armored shorelines is extremely important for both affecting reasonable expectations concerning private development, and to garner political will for successful coastal ecosystems management. For example, Maine had relatively early success in protecting its remaining beaches through the Coastal Sand Dune Rules, adopted in 1985, due to educating the public on the threats of sea level rise and erosion.[226] As another example, the North Carolina Department of Natural Resources and Community Development garnered support for the 1974 Coastal Area Management Act by educating local planners about natural resource protection.[227]

Numerous examples show comprehensive, thoughtful coastal management legislation that had to be retracted or significantly amended soon after enactment because of political backlash. Massachusetts, for example, faced considerable difficulty in enforcing its Wetlands Protection Regulations;[228] as soon as landowners were denied a permit for a seawall, the state faced considerable resistance and lawsuits. A

226. Amand, *supra* note 191, at 8.
227. *Id.* at 9.
228. *Id.* at 17.

successful coastal ecosystems management plan requires educating the public about the threats of rising sea levels and erosion, the urgent need to allow inland migration of coastal ecosystems, and the consequences that private property owners may face as a result of these circumstances.[229]

C. Dealing with Existing Seawalls

Determining where to allow seawalls should be made through comprehensive plans and maps that indicate how the coastline will likely respond to sea level rise.[230] Because seawalls reflect local characteristics, this process should consider the cumulative impacts and the public interests of having or not having a seawall in a particular area. Considerations should include development, population, likely effects of sea level rise in the area, and public interests in the coastal ecosystems.

The state will likely find that the maps indicating where seawalls should and should not be located do not correspond to where seawalls currently stand. The municipalities could use an overlay district to rezone in compliance with the comprehensive plan.[231] In this way, a built seawall in a zone that no longer allows seawalls would be a nonconforming accessory use. The municipality could prohibit these nonconforming uses from being maintained or rebuilt if destroyed by a storm, and they could amortize the existing seawalls over a period of a few years to facilitate the zoning change.[232] This approach, however, is well poised to face a regulatory takings challenge by angry residents.[233]

On the other hand, states may consider ordering certain seawalls dismantled to adequately protect public trust property. If the state undertakes this course of action, it will likely face physical takings claims.[234] If the action is in fact pursuant to the state's public trust obligations, the state should have a valid public trust doctrine defense to such claims. Nonetheless, these claims would be costly for the state to litigate, and without substantial public education and support, the

229. *See id.* ("In developing any plan to allow for coastal wetlands migration, the sometimes painful process of public discussion must be complete before sea level rise threatens private property.").

230. *See Most Land Vulnerable*, *supra* note 15, at 2; *supra* Part IV.A.2.

231. *See supra* Part III.B.

232. *See id.*

233. *See id.*

234. *See supra* Part III.A.1.

political resistance from constituents may be too great to make this option plausible.[235]

V. CONCLUSION

Coastal ecosystems are unique, beloved, and fragile. Sea levels are rising at accelerated rates, particularly along the Atlantic coast of the United States, threatening beaches, wetlands, development, and population centers.[236] States are weighing their options in the face of these threats and assessing their vulnerability. The traditional state and local governmental response has been to harden shorelines to protect private property at the expense of beaches, wildlife, wetlands, and other public interests.[237] While, there is no easy resolution, states have options moving forward. States should comprehensively assess where seawalls appropriately further public interests and where they inappropriately harm public interests.[238] On the individual level, looking solely at one house on one lot at a time, the benefits of a seawall always appear to outweigh any harm. Cumulatively, however, armoring shorelines may threaten the environment and the resources that have drawn people to the coasts to begin with, as well as the public rights in common resources that the state has a duty to protect.[239]

235. *See supra* Part III.A.2.

236. *See supra* Introduction.

237. *See id.*

238. *See supra* Part IV.A.4; *see also* Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 455 (1892) ("[P]roperty is held by the State, by virtue of its sovereignty, in trust for the public.").

239. *See Ill. Cent. R.R. Co.*, 146 U.S. at 452; *supra* Introduction, Part II.B.