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TAKING BACK THE BEACH

*Lora Naismith**

The numerous effects of anthropogenic climate change, including sea-level rise, continue to make global changes to our environment. With greenhouse gas emissions come warmer temperatures, melting glaciers, and a higher sea-level. In an attempt to address the rising sea, communities have the option to protect the shoreline, alter structures to be able to remain in the area, or abandon the area as the sea rises. The Texas coast alone is home to roughly 6.5 million people and provides jobs to nearly 2.5 million of those people. As the sea continues to rise, the Texas coast is subject to more severe storms, flooding, and coastline loss. The coastal economy includes various industries that generate billions of dollars in revenue and has ports that are essential for national exporting. As the sea begins to encroach on coastal properties, these industries, as well as the interests of both private property owners and the general public with access to the waterfront, are at risk. However, protecting the coast and balancing the interests of these parties leads to numerous lawsuits and litigation. The Texas Open Beaches Act was an attempt to codify traditional common law doctrines of public trust and rolling easements, which were generally interpreted in favor of the public. However, the 2012 Texas Supreme Court decision in Severance v. Patterson favored the rights of the private property owner over the public's access to beaches. Because alternative measures to mitigate sea-level rise from impacting waterfront properties can have detrimental ecological effects on the coastal environment, Texas should implement a regulatory scheme that addresses these potential issues. The Texas Coastal Resiliency Plan discusses numerous coastal concerns and outlines several projects to restore Texas coastlines. While this plan aims to protect the coast and its numerous industries, it does not consider how the projects affect property rights. To remedy this, Texas communities should establish regulations that protect public access easements, develop more stringent construction setbacks or permitting procedures, and require more risk disclosure for potential property owners buying coastal properties.

* Lora Naismith is a 2021 J.D. Candidate at Texas A&M University School of Law. She would like to thank Professor Vanessa Casado-Perez for her mentorship and guidance throughout the writing process. She would also like to thank her father, who inspired this article, and her mother and wife for supporting and encouraging her.

INTRODUCTION

On August 25, 2017, Hurricane Harvey hit Rockport, Texas.¹ The hurricane initially destroyed thousands of homes, blocked the water supply to the area for nearly a week, and created a storm surge that destroyed numerous piers, boats, and marinas.² The hurricane then moved north and rained on Harris County causing catastrophic flooding.³ Hurricane Harvey is estimated to have caused around \$125 billion in damage, making it the second most costly hurricane⁴ to hit the United States since 1900. Within a month, Hurricanes Irma and Maria hit Florida, Puerto Rico, and the Caribbean, causing \$50 billion and \$90 billion in damage, respectively.⁵ Climate scientists have described the 2017 hurricane season as unprecedented, yet consistent with the expectations of a warming climate.⁶ The increased rainfall and rapid intensification of these storms is due in part to human-caused climate change.⁷ Climatologists expect that storms will continue to become more intense and frequent and will bring higher levels of rainfall.⁸

In addition to more severe storms, human activities such as greenhouse gas emission will continue to increase global temperatures, which will cause the sea-level to rise. Currently, increasing global temperatures are causing ice caps to melt and the ocean to warm.⁹ This, combined with sinking land, has caused the sea-level to rise at a much faster rate than before the industrial revolution.¹⁰ An increased sea-level has the potential to erode beaches, increase flooding, and destroy homes and infrastructure along the coastline.

¹ Eric S. Blake & David A. Zelinsky, *Hurricane Harvey*, NAT'L HURRICANE CTR. TROPICAL CYCLONE REP. (May 9, 2018), https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf [<https://perma.cc/SY66-TB7U>].

² *Id.*

³ *Id.*

⁴ Blake, *supra* note 1. Hurricane Katrina was the costliest hurricane, at \$160 billion in damages.

⁵ John P. Cangialosi et al., *Hurricane Irma*, NAT'L HURRICANE CTR. TROPICAL CYCLONE REP. (Jun. 30, 2018), https://www.nhc.noaa.gov/data/tcr/AL112017_Irma.pdf [<https://perma.cc/CC8B-A2E8>]; Richard J. Pasch et al., *Hurricane Maria*, NAT'L HURRICANE CTR. TROPICAL CYCLONE REP. (Feb. 14, 2019), https://www.nhc.noaa.gov/data/tcr/AL152017_Maria.pdf [<https://perma.cc/B2MA-CKHZ>].

⁶ Katharine Hayhoe et al., *Our Changing Climate, in* IMPACTS, RISKS, AND ADAPTATION IN THE U.S.: FOURTH NAT'L CLIMATE ASSESSMENT 73, 95 (2018).

⁷ *What Climate Change Means for Texas*, ENV'T PROT. AGENCY, <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-tx.pdf> [<https://perma.cc/82HF-H4LB>] (last visited Aug. 14, 2020).

⁸ *Id.*

⁹ *Causes*, SEALEVELRISE.ORG, <https://sealevelrise.org/causes/> [<https://perma.cc/JN79-HGQZ>] (last visited Aug. 13, 2020).

¹⁰ *Id.*

As of 2016, 29% of the U.S. population lived in coastline counties.¹¹ These coastal communities are not just home to millions of houses for residents, but are also home to billions of dollars in infrastructure like government projects and private-sector businesses.¹² These communities are continuing to grow despite the potential effects of sea-level rise.¹³ While not everyone who lives on a coast will experience sea-level rise directly, most, if not all, will experience indirect effects in their communities.¹⁴ In an attempt to shield their property, coastal property owners are armoring the shoreline by building barriers such as bulkheads and seawalls.¹⁵ While these barriers may protect private property, they also lead to the destruction of coastal wetlands and beaches.¹⁶ This leads to a tension between the private property owners who want to develop and protect their property, and the right of the public to access, use, and conserve the natural resources of the coast.¹⁷

Currently, there is no comprehensive federal statute that addresses sea-level rise,¹⁸ but there are federal statutes that give agencies authority to take action to mitigate climate change. For example, the Clean Air Act gives the Environmental Protection Agency (“EPA”) the authority to regulate certain gas emissions.¹⁹ However, not all agency actions adequately balance the interests of private property owners and the public. This has led to numerous court cases wherein the court becomes responsible for balancing these interests.²⁰ In an attempt to better balance these competing interests and fill the gaps left by federal statutes and common law, many states and cities have adopted laws and programs that directly or indirectly address the causes and

¹¹ Darryl T. Cohen, *Coastline County Population Continues to Grow*, U.S. CENSUS BUREAU (Aug. 6, 2018), <https://www.census.gov/library/stories/2018/08/coastal-county-population-rises.html> [<https://perma.cc/VZ83-HX7M>].

¹² Richard O. Jacobs & Steven M. Hogan, *Will Our Future Drown? Paying for the Costs of Sea-level Rise*, 91 FL. BAR J. 52, 52 (2017); Peter Folger & Nicole T. Carter, *SEA-LEVEL RISE AND U.S. COASTS: SCIENCE AND POLICY CONSIDERATIONS 2* (Congressional Research Service ed., 2016).

¹³ Serena L. Liss, *Shoreline Armoring and the Public Trust Doctrine: Balancing Public and Private Interests as Seas Rise*, 46 ENV'T L. REP. NEWS & ANALYSIS 10033, 10034 (2016).

¹⁴ Folger, *supra* note 12, at 2.

¹⁵ Liss, *supra* note 13, at 10034.

¹⁶ *Id.* at 10034.

¹⁷ *Id.* at 10034.

¹⁸ MICHAEL B. GERRARD, *GLOBAL CLIMATE CHANGE AND U.S. LAW 3* (Michael B. Gerrard & Jody Freeman eds., 2nd ed. 2014).

¹⁹ *See generally*, Clean Air Act, 42 U.S.C. § 7401.

²⁰ *See Severance v. Patterson*, 370 S.W.3d 705 (Tex. 2012); *Stop the Beach Nourishment v. Florida Dep't of Env't Prot.*, 560 U.S. 702 (2010); *Borough of Harvey Cedars v. Karan*, 214 N.J. 384 (2013).

effects of climate change and sea-level rise.²¹ One such statute is the Texas Open Beaches Act (“TOBA”). This act was originally passed to ensure the public will have access to beaches even as the tidal line changes.²² However, the Texas Supreme Court decision in *Severance v. Patterson* shifted the benefit back to private property owners by interpreting the statute narrowly.²³ This decision is potentially detrimental to Texas’s coastal ecosystem and could result in more damage to coastal properties as the sea level continues to rise. Texas has made some strides following *Severance v. Patterson* in supporting the public’s right to access beaches. Nevertheless, as the sea-level continues to rise and weather patterns become more extreme, Texas needs to ensure that its coastlines are protected, and the public does not lose access to their beaches.

Part I of this Article looks at the causes of sea-level rise and the effects on Texas coasts. Part II looks at the common law doctrines of public trust, public access easements, rolling easements, and how each relates to sea-level rise. Part III looks at the codification of these doctrines in the Texas Open Beaches Act, and the Texas Supreme Court decision in *Severance v. Patterson*. Part IV provides a discussion on how Texas law can better prepare to handle the effects of sea-level rise.

I. CLIMATE CHANGE AND SEA LEVEL RISE

A. Causes of Sea-Level Rise

There are several causes of sea-level rise, and while some are natural, most are the result of human-caused climate change. Sea-level is generally expressed as either global mean sea-level, the average height of the sea surface around the globe, or as relative sea-level, the height of the sea surface relative to land surface.²⁴ With current technology, climatologists are able to predict increases in sea-level to 2050 with a high level of certainty.²⁵ These estimates are directly tied to greenhouse gas concentration in the atmosphere, showing how more greenhouse gas emissions will result in a higher sea-level.²⁶ Increased greenhouse gas emissions have raised the temperature of both the air and the ocean. These increasing temperatures have led to melting

²¹ Gerrard, *supra* note 18, at 3.

²² Tex. Nat. Res. Code § 61.001(8).

²³ See *Severance v. Patterson*, 370 S.W.3d 705 (Tex. 2012).

²⁴ Folger, *supra* note 12, at 4, 8.

²⁵ Michael Oppenheimer et al., *Chapter 4: Sea Level Rise and Implications for Low Lying Islands, Coasts and Communities*, in SPECIAL REPORT ON THE OCEAN AND CRYOSPHERE IN A CHANGING CLIMATE 4-1, 4-9 (2019), https://report.ipcc.ch/srocc/pdf/SROCC_FinalDraft_Chapter4.pdf [<https://perma.cc/9TNF-K4LS>].

²⁶ *Id.* at 4-4.

ice caps, ice sheets, and alpine glaciers.²⁷ Climatologists estimate that melting ice contributes to around two-thirds of global sea-level rise, however, the exact effects are difficult to measure.²⁸ With current technology, climatologists estimate that the Greenland and the Antarctic ice sheets will cause thirty-six centimeters of sea-level rise by 2100.²⁹

Increasing ocean temperatures also result in a phenomenon known as thermal expansion, where the volume of water increases as temperature rises.³⁰ Because higher temperatures result in a lower density, an increase in temperature will result in a higher sea-level even if no additional water flows into the ocean.³¹ As the oceans continue to become warmer, thermal expansion will occur more rapidly and cause an increase in water volume which then causes an increase in sea-level.³² Melting ice and thermal expansion account for nearly 75% of sea-level rise since the 1970s.³³

In addition to ice melt and thermal expansion increasing the global sea-level, there is regional variation in sea-level rise due to factors such as changing land elevation. For example, the southern coastline of Alaska is rising, resulting in a lower relative sea-level, while the coastline near New Orleans, Louisiana is sinking, resulting in a higher sea-level rise.³⁴ This gradual, human-induced sinking known as subsidence is one of the main causes of regional sea-level rise in delta areas such as New Orleans.³⁵ Texas is particularly susceptible to an increased sea-level from subsidence³⁶ due to the “natural compaction of sediments and extraction of groundwater, oil and

²⁷ See generally CORE WRITING TEAM, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT 8 (Rajendra K. Pachauri & Leo Meyer eds. 2014) [hereinafter IPCC].

²⁸ *Causes*, *supra* note 9.

²⁹ Oppenheimer, *supra* note 25, at 4-34, 41. Measurements show the Greenland ice sheet is not expected to contribute more than 20 centimeters to sea-level rise by 2100, and the Antarctic ice sheet will most likely only contribute 16 centimeters by 2100.

³⁰ COMMITTEE ON SEA LEVEL RISE IN CALIFORNIA, OREGON, AND WASHINGTON, SEA-LEVEL RISE FOR THE COASTS OF CALIFORNIA, OREGON, AND WASHINGTON: PAST, PRESENT, AND FUTURE 33 (2012).

³¹ Oppenheimer, *supra* note 25, at 4-15.

³² *Id.*

³³ IPCC, *supra* note 27, at 42.

³⁴ *Causes*, *supra* note 9.

³⁵ Oppenheimer, *supra* note 25, at 4-5.

³⁶ Subsidence can be caused by human activities such as groundwater extraction, oil and gas extraction, and fracking have led to increased regional sea-level rise. As groundwater, oil, or natural gas is pumped out of the ground, the surface of the land sinks to fill the now empty space. *Causes*, *supra* note 9.

gas.”³⁷ From subsidence alone, the sea-level of the Texas coast is estimated to rise two feet by the year 2100.³⁸

Climatologists currently estimate that the sea-level will rise between forty-three and eighty-four centimeters by 2100, depending on global greenhouse gas emissions.³⁹ While this number may seem small and easily manageable, one meter of coastal land is lost for every centimeter of sea-level rise.⁴⁰ Limitations in current technology led to high levels of uncertainty when forecasting past the year 2050, which makes addressing potentially mitigating factors in regulations difficult. Regional variation also makes it difficult to pass any comprehensive federal statute, although smaller studies at state or municipal levels give localities better information on the causes and effects of sea-level rise for that area.

B. Effects on Texas Coasts

Roughly 6.5 million people in Texas live on the coast of the Gulf of Mexico.⁴¹ More than 1.5 million acres of land lie less than ten feet above the high tide line, and this land has over \$33 billion in property value.⁴² The Texas coast employs 3.1 million people and earns almost \$200 billion in revenue annually.⁴³ This area also has the fastest growth of any coastline region in the United States,⁴⁴ and continues to grow despite the accelerating rate of sea-level rise.⁴⁵

The potential effects on Texas coasts due to sea-level rise are broadly categorized as increased erosion and shoreline change, increased impacts and damages from storms, increased flooding, and increased saltwater intrusion of estuaries and aquifers. Erosion occurs more rapidly with higher sea-levels. In Texas, the areas that are most at risk from erosion are the barrier islands because they are directly exposed to “wave action,” which is the movement

³⁷ GEORGE P. BUSH, TEXAS COASTAL RESILIENCY MASTER PLAN 20 (2019) [hereinafter Master Plan 2019].

³⁸ *Id.*

³⁹ Oppenheimer, *supra* note 25, at 4-4.

⁴⁰ *Sea Level Changes and the Texas Coastal Environment*, BUREAU OF ECONOMIC GEOLOGY, <https://www.beg.utexas.edu/coastal/thscmp/support/SeaLevelRiseLesson.pdf> [<https://perma.cc/WN9N-N998>] (last visited May 2, 2020).

⁴¹ *Texas*, OFFICE FOR COASTAL MANAGEMENT, <https://coast.noaa.gov/states/texas.html> [<https://perma.cc/D95L-ACFC>] (last visited May 2, 2020).

⁴² BEN STRAUSS ET AL., TEXAS AND THE SURGING SEA: A VULNERABILITY ASSESSMENT WITH PROJECTIONS FOR SEA LEVEL RISE AND COASTAL FLOOD RISK 15-16 (2014).

⁴³ OFFICE FOR COASTAL MANAGEMENT, *supra* note 41.

⁴⁴ *Id.*; Cohen, *supra* note 11.

⁴⁵ Strauss, *supra* note 42, at 7.

of the waves that causes erosion.⁴⁶ Increased erosion will result in the shoreline advancing and can potentially lead to the loss of coastal homes, infrastructure, beaches, and wetlands.⁴⁷ Erosion models predict that Texas shorelines “will continue to retreat by 13.12 m (4 ft.) per year,” which could result in a loss of “a quarter of homes and other structures within 152.4 m (500 ft.) of the U.S. coastline” over the next sixty years.⁴⁸

Advancing shorelines and increased sea-levels also increase the severity of weather events and the amount of damage storms can inflict on coastal communities. The 2017 hurricane season was one of the worst in terms of damage to coastal communities.⁴⁹ This is due to the combined effect of increased air and ocean temperatures, weather patterns, and higher sea-levels.⁵⁰ Higher temperatures result in longer lasting and more intense rainfall. This was seen in the highest rainfall in history, recorded during Hurricane Harvey.⁵¹ Higher sea-levels also result in more severe storm surges. That, combined with increased rainfall, make flooding on coastal communities more commonplace.⁵² Hurricane Hanna recently made landfall in south Texas, which resulted in record levels of rainfall and “catastrophic flooding.”⁵³

One of the most direct effects of sea-level rise on coastal communities is the increased risk of flooding. Although storm surges from more powerful storms cause increased flooding, a larger concern is the increased frequency of “coastal nuisance flooding.”⁵⁴ This occurs when the local sea-level rises above a “threshold height for flooding” and combines with the rising tide to result in high tide floods.⁵⁵ These floods usually result in closed roads and other inconveniences and, when they occur infrequently, do not cause

⁴⁶ BUREAU OF ECONOMIC GEOLOGY, *supra* note 40, at 6; Folger, *supra* note 12, at 18.

⁴⁷ Folger, *supra* note 12, at 18.

⁴⁸ BUREAU OF ECONOMIC GEOLOGY, *supra* note 40, at 6.

⁴⁹ Hayhoe, *supra* note 6, at 95.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

⁵³ Matthew Cappucci et al., *Hanna Hammers South Texas, Hit Hard by Coronavirus, with Flooding Rains*, WASH. POST (Jul. 26, 2020) <https://www.washingtonpost.com/weather/2020/07/26/hanna-south-texas/> [<https://perma.cc/5JT7-YRZ2>].

⁵⁴ *What is High Tide Flooding?* NAT’L OCEANIC AND ATMOSPHERIC ADMIN., <https://oceanservice.noaa.gov/facts/nuisance-flooding.html> [<https://perma.cc/V7C4-MMLV>] (last visited Aug. 13, 2020).

⁵⁵ *High-Tide Flooding*, U.S. CLIMATE RESILIENCE TOOLKIT, <https://toolkit.climate.gov/topics/coastal-flood-risk/shallow-coastal-flooding-nuisance-flooding> [<https://perma.cc/H6T7-LA57>] (last modified July 1, 2020).

extreme amounts of damage.⁵⁶ However, sea-level rise is beginning to flood drainage systems and push seawater into drainage pipes and up onto streets as the tide rises.⁵⁷ A failure of drainage systems combined with higher storm surges, more powerful storms, and increased levels of precipitation could be potentially catastrophic for Texas coastal communities.

The last major effect of sea-level rise on Texas coasts is saltwater intrusion of aquifers and estuaries. With an increased sea-level, saltwater from the Gulf of Mexico advances inland into rivers, bays, and aquifers.⁵⁸ This causes an increase in salinity which destroys vegetation and makes aquifers unusable for irrigation or fresh drinking water.⁵⁹ This is a large problem in Texas because the main cause of sea-level rise in Texas is land subsidence from the extraction of oil, gas, and groundwater.⁶⁰ The Houston-Galveston region of Texas has high levels of land subsidence due to groundwater pumping, which increases both the sea-level along the coast as well as the amount of saltwater intrusion of aquifers.⁶¹

The Texas coast is over 370 miles long, and its shoreline is bordered by tidal flats, salt marshes, and estuaries that are home to numerous species of birds, fish, and other sea life.⁶² In addition to providing essential habitats for wildlife, coastal wetlands and beaches act as a buffer for flooding and storms.⁶³ Wetlands also absorb carbon dioxide and pollutants, purifying the water.⁶⁴ As the sea-level rises, the survival of wetlands depends on the wetland's ability to migrate inland.⁶⁵ On undeveloped coasts, wetlands can move inland without human structures stopping them.⁶⁶ However, depending on the rate at which the sea-level advances, the wetland may go through a

⁵⁶ *Id.*

⁵⁷ *Texas' Sea Level Is Rising*, SEALEVELRISE.ORG, <https://sealevelrise.org/states/texas/> [<https://perma.cc/LHK9-JK3N>] (last visited May 2, 2020).

⁵⁸ BUREAU OF ECONOMIC GEOLOGY, *supra* note 40, at 7.

⁵⁹ *Id.*

⁶⁰ Land subsidence is the sinking of land due to decreased pressure in underground oil/gas/water reservoirs. Folger, *supra* note 12, at 15; *Texas' Sea Level is Rising*, *supra* note 57.

⁶¹ Folger, *supra* note 12, at 15.

⁶² BUREAU OF ECONOMIC GEOLOGY, *supra* note 40, at 4.

⁶³ GEORGE P. BUSH, TEXAS COASTAL RESILIENCY MASTER PLAN 80 (2017), <https://www.glo.texas.gov/coastal-grants/projects/files/Master-Plan.pdf> [<https://perma.cc/A8TB-K3ZY>] [hereinafter Master Plan 2017].

⁶⁴ *Id.*

⁶⁵ Folger, *supra* note 12, at 20.

⁶⁶ *Id.* at 18. Wetlands on undeveloped coasts with low topography will move inland, if the terrain is mountainous or has hills, then the wetland will not migrate inland past the mountain or hill.

habitat transition. If the sea-level advances slowly, coastal wetlands and beaches have a better chance at adapting and persisting despite sea-level rise. If the sea-level advances more rapidly, wetland habitats like coastal forests and flat lands will likely be lost,⁶⁷ but mangroves, saltmarshes, and potentially some estuaries would survive.⁶⁸

Because wetlands buffer coastal communities from flooding and storms, sea-level rise should theoretically increase society's reliance on these coastal habitats. However, because communities tend to prefer to protect their homes instead of retreating from the incoming shoreline, wetlands are being destroyed instead of preserved.⁶⁹

C. Responses to Sea Level Rise

There are three ways that communities commonly respond to advancing shorelines: (1) shoreline protection; (2) accommodation; and (3) retreat.⁷⁰ Each of these methods has certain benefits and risks that vary depending on location.

1. Shoreline Protection

Shoreline protection describes the process of protecting the coast through either "hard armoring" or "soft armoring."⁷¹ Hard shoreline armoring is the construction of hard structures such as jetties and bulkheads to protect property.⁷² States generally allow private owners to build these structures and exclude the public from the area inland of the structure, effectively privatizing that section of the beach.⁷³ Shoreline armoring can also change natural sand and sediment migration patterns, which can have detrimental ecological impacts on wetlands and beaches.⁷⁴ Additionally, the area between the shoreline and the structure is eliminated through erosion and sea-level rise because the shoreline structure prevents the beach from naturally migrating

⁶⁷ Coastal flatlands and forests will not likely survive a rapid change in salinity (higher salt concentration from advancing sea water). BUREAU OF ECONOMIC GEOLOGY, *supra* note 40, at 4.

⁶⁸ Folger, *supra* note 12, at 21.

⁶⁹ Liss, *supra* note 13, at 10036.

⁷⁰ JAMES G. TITUS, ROLLING EASEMENTS 1 (Climate Ready Estuaries Program ed., 2011) [hereinafter *Rolling Easements*].

⁷¹ *Id.*

⁷² Erica Novak, *Resurrecting the Public Trust Doctrine: How Rolling Easements Can Adapt to Sea Level Rise & Preserve the United States Coastline*, 43 B.C. ENV'T. AFF. L. REV. 575, 579 (2016).

⁷³ Liss, *supra* note 13, at 10041.

⁷⁴ Novak, *supra* note 72, at 579.

inland.⁷⁵ Shoreline armoring structures are effective at protecting the specific property they were designed to protect, but they tend to exacerbate beach erosion and flooding in neighboring areas.⁷⁶ Increased flooding and erosion in neighboring areas presents a potential Fifth Amendment takings issue, if the structure is a government project, or a potential tort liability for private property owners.⁷⁷

Conversely, soft armoring uses natural features and resources to protect the shore through beach nourishment or wetland restoration.⁷⁸ Beach nourishment is the process of adding sand onto beaches,⁷⁹ and is most commonly used on developed beaches.⁸⁰ The sand is usually acquired from dredged material from offshore areas and is pumped to the beach through a series of pipes.⁸¹ Heavy machinery then moves the sand into the shape of the new beach, generally widening the beach 100 to 200 feet.⁸² This process aims to preserve the ecology and natural landscape of the beach; however, it has the potential to adversely affect the wildlife of the beach and only provides a temporary solution to sea-level rise.⁸³ Additionally, soft armoring raises issues regarding the ownership of the newly developed or restored beach.⁸⁴

2. Accommodation

Accommodation occurs when communities develop ways to continue to live in coastal areas where the shoreline has migrated inland.⁸⁵ This includes flood-proofing buildings and warning systems for flooding events.⁸⁶ Common forms of accommodation include elevating houses with stilts or pilings and floating homes.⁸⁷ However, accommodation does little to address sea-level rise, erosion, or flooding, so wetlands and beaches continue to migrate

⁷⁵ *Id.* at 579.

⁷⁶ *Id.* at 580.

⁷⁷ J. Peter Byrne, *The Cathedral Engulfed: Sea-Level Rise, Property Rights, and Time*, 73 LA. L. REV. 69, 87 (2012).

⁷⁸ *Id.* at 93.

⁷⁹ Matthew Rupert, Note, *Beach Nourishment to the Rescue: Through an Extensive Regulatory Review Process, Beach Nourishment Can Restore and Protect Vital Sea Turtle Nesting Habitat*, 19 SE. ENV'T L. J. 327, 344 (2011).

⁸⁰ Rolling Easements, *supra* note 70, at 1.

⁸¹ Rupert, *supra* note 79, at 344.

⁸² *Id.* at 344-345.

⁸³ David Rusk, *Fix It or Forget It: How the Doctrine of Avulsion Threatens the Efficacy of Rolling Easements*, 51 HOUSTON L. REV. 297, 306 (2014).

⁸⁴ Byrne, *supra* note 77, at 94.

⁸⁵ Rolling Easements, *supra* note 70, at 1.

⁸⁶ IPCC, *supra* note 27, at 12.

⁸⁷ *Id.* at 27.

inwards.⁸⁸ Without addressing these problems, accommodation is not a sustainable response to sea-level rise.

3. Retreat

Retreat occurs when communities allow the shoreline to migrate inland, remove structures, and relocate.⁸⁹ This type of response generally occurs in undeveloped areas.⁹⁰ A common form of retreat regulation is establishing setbacks, which prohibit property owners from building structures seaward of an established line.⁹¹ State legislatures typically establish this line based on the annual erosion rate,⁹² or by setting a specific distance from the shoreline.⁹³ Private property owners typically tolerate setbacks, so long as they can build structures somewhere on their property.⁹⁴ While setbacks are usually viewed as a favorable response to sea-level rise and erosion, establishing a setback line can be rather difficult. The legislature has to balance several factors including: (1) private property interests; (2) public access to beaches; (3) erosion, which can be gradual or rapid; and (4) sea-level rise.⁹⁵

II. PUBLIC VERSUS PRIVATE RIGHTS TO BEACHES

The boundary line between private and public property along coastal beaches is generally the “mean high water” line. This leaves the wet beach and open water accessible to the public, and the high dry sandy beach open only to the private property owner.⁹⁶ The mean high-water line constantly moves due to natural processes such as erosion, tides, and storms. As the sea-level continues to rise, the boundary between the water and the land will move inland. States that favor the public’s right to access the beach, such as Texas, are likely to get numerous complaints from private property owners. For example, in *Borough of Harvey Cedars v. Karan*, the U.S. Army Corps of Engineers was constructing a long line of sand dunes to protect coastal landowners from flooding and storms, and to protect the beach from erosion.⁹⁷ In constructing the dunes, part of the plaintiff’s private property was taken via

⁸⁸ Rolling Easements, *supra* note 70, at 1.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ Rusk, *supra* note 83, at 303.

⁹² This is known as a floating setback.

⁹³ This is known as a fixed setback.

⁹⁴ Rolling Easements, *supra* note 70, at 4.

⁹⁵ Rusk, *supra* note 83, at 304.

⁹⁶ 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, 1291 (1998).

⁹⁷ *Borough of Harvey Cedars v. Karan*, 70 A.3d 524, 527 (N.J. 2013).

eminent domain and just compensation.⁹⁸ The plaintiff sued because the dune obstructed the beachfront view which lowered their property value.⁹⁹ The plaintiff did not want to allow testimony describing the potential benefits the dune would provide to the home. The court ruled that the benefits the dune provides to the property must be taken into consideration when determining just compensation.¹⁰⁰ The court in this case attempted to balance the mostly aesthetic interest of the private property owner with the protection of both the property and the beach.¹⁰¹ This is one example of how balancing the interests of private property owners and the interests of the public can result in outcomes that leave both sides feeling unsatisfied.

A. Takings

Takings claims are one of the most common discussions surrounding regulations responding to sea-level rise.¹⁰² Private property owners that are negatively impacted from a sea-level rise regulation generally claim a regulatory taking, leaving regulators apprehensive about potential liability and litigation.¹⁰³

Under the Fifth Amendment, the government cannot take private property without compensating the owners of the property.¹⁰⁴ Takings are divided into two categories: physical takings and regulatory takings.¹⁰⁵ Physical takings occur when the government either seizes property or makes a permanent physical invasion of property.¹⁰⁶ Regulatory takings occur when laws or regulations restrict property rights in some way.¹⁰⁷ One of the most commonly known takings cases is *Penn Central Transportation Co. v. New York*, in which New York passed a historic preservation law that prohibited the construction of a skyscraper on top of Grand Central Station.¹⁰⁸ The Supreme Court created a balancing test that looks at the economic impact of the law, the owner's reasonable "investment-backed" expectations, and the

⁹⁸ *Id.* at 528.

⁹⁹ *Id.*

¹⁰⁰ *Id.* at 532.

¹⁰¹ *See generally id.*

¹⁰² Byrne, *supra* note 77, at 72.

¹⁰³ *Id.*

¹⁰⁴ Mark D. Holmes, Comment, *What About My Beach House? A Look at the Takings Issue as Applied to the Texas Open Beaches Act*, 40 HOUS. L. REV. 119, 123 (2003).

¹⁰⁵ *Takings*, LEGAL INFO. INST., <https://www.law.cornell.edu/wex/takings> [<https://perma.cc/WNP4-PZ2H>] (last visited Aug. 14, 2020).

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *Penn Central Trans. Co. v. New York*, 438 U.S. 104 (1978).

character and purpose of the government action.¹⁰⁹ The Court also established two circumstances in which a regulation is a taking per se: when a regulation “authorizes a permanent physical invasion” and when a regulation “deprives the owner of all economic value.”¹¹⁰

While numerous takings cases have challenged regulations involving the governments’ responses to sea-level rise, hard armoring and retreat pose the most takings issues. In the case of *Lucas v. South Carolina Coastal Council*, South Carolina passed an act that prohibited constructing permanent structures seaward of a baseline to protect the coast from erosion.¹¹¹ Lucas owned undeveloped property which he intended to develop into single family homes. The new regulation prohibited him from developing because his property was located seaward of the baseline.¹¹² Lucas filed suit, claiming the new regulation was a taking without just compensation because it completely destroyed his property value.¹¹³ The Supreme Court agreed and ruled that the regulation constituted a taking because Lucas was forced to “sacrifice all economically beneficial uses in the name of the common good.”¹¹⁴

However, in order for a regulation to be considered a taking under *Lucas*, the owner must have lost the *entire* property value.¹¹⁵ If the entire property value is not lost, the regulation is analyzed under the *Penn Central* balancing test. The Court in *Lucas* also rejected the South Carolina Supreme Court’s decision that the act was a “reasonable environmental measure” with the purpose of protecting the public from harm.¹¹⁶ Rejecting this ruling made passing new regulations that limit construction on coastal properties for the purpose of preventing environmental harm “constitutionally impracticable.”¹¹⁷

Takings issues commonly arise from regulations preventing private property owners from building armoring structures, such as in *Lucas*. However, takings issues can also stem from government-authorized construction that causes permanent flooding to the surrounding land.¹¹⁸ In

¹⁰⁹ Byrne, *supra* note 77, at 86.

¹¹⁰ *Id.*

¹¹¹ This baseline was established by the South Carolina Coastal Council, and it connected the “landward most ‘points of erosion . . . during the last forty years.’” *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1008 (1992).

¹¹² *Id.* at 1007.

¹¹³ *Id.*

¹¹⁴ *Id.* at 1019.

¹¹⁵ *Id.* at 1014-1019.

¹¹⁶ Byrne, *supra* note 77, at 98.

¹¹⁷ *Id.*

¹¹⁸ Byrne, *supra* note 77, at 88.

Arkansas Game and Fish Commission v. United States, the U.S. Army Corps of Engineers temporarily flooded the Arkansas Game and Fish Commission's timber forest during the growing season for six consecutive years.¹¹⁹ This flooding was the result of the Corps deviating from the Water Control Manual, which set rates for releasing water from a dam upstream of a timber forest.¹²⁰ The Commission claimed that the flooding constituted a taking and that they were entitled to just compensation.¹²¹ The Supreme Court found that government-induced flooding is only a taking if "the flooding is 'permanent or inevitably recurring.'"¹²² However, the Court also held that temporary government-induced flooding *may* be compensable.¹²³ As the sea-level continues to rise, flooding will become more common and more severe. Under the holding in *Arkansas*, the government will be limited in regulating hard armoring structures. Constructing seawalls or levees that can cause flooding on private land poses takings claims, which limits regulators' options in addressing sea-level rise.

B. Public Trust Doctrine

The general idea behind the public trust doctrine is that certain natural resources, such as bodies of water, should belong to the public without limitation by private parties.¹²⁴ While the doctrine has roots in Roman law, the idea that the public has access to bodies of water is fundamental to most civilizations throughout history.¹²⁵ In the United States, the modern idea of the public trust doctrine is described in the Supreme Court case *Illinois Central Railroad Co. v. Illinois*.¹²⁶ This case involved a dispute over the control of the bed of Lake Michigan. The court held that "the ownership of and dominion and sovereignty over lands covered by tide waters" belonged to the State of Illinois and was to be "held in trust for the people."¹²⁷ Further, the court ruled that any title held in trust for the people is inalienable and can

¹¹⁹ Ark. Game & Fish Comm'n v. United States, 568 U.S. 23, 29 (2012).

¹²⁰ *Id.* at 28.

¹²¹ *Id.* at 29.

¹²² *Id.* at 27.

¹²³ *Id.* at 38.

¹²⁴ The traditional public trust doctrine was first described by Joseph Sax in 1970. See Joseph L. Sax, *Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970); Charles F. Wilkinson, *The Headwaters of Public Trust: Some Thoughts on the Source & Scope of the Traditional Doctrine*, 19 ENV'T L. 425, 426 n.3 (1989).

¹²⁵ Wilkinson, *supra* note 124, at 429-30.

¹²⁶ *Illinois Central R.R. Co. v. Illinois*, 146 U.S. 387 (1892).

¹²⁷ Joseph D. Kearney & Thomas W. Merrill, *The Origins of the American Public Trust Doctrine: What Really Happened in Illinois Central*, 71 U. CHI. L. REV. 799, 801 (2004).

be “resumed at any time.”¹²⁸ Generally stated, the federal public trust doctrine says that the government holds certain lands “in trust” for current and future generations. This right supersedes any private property rights, and the government has a duty to “safeguard the long-term preservation of those resources for the benefit of the general public.”¹²⁹

Some form of the public trust doctrine applies in every state, which has consequently led to a degree of variability in applications of the doctrine.¹³⁰ States vary in their definitions of “tidelands”; for example, tidal lands in New Jersey include the seashore and the sandy area up to the nearest public road.¹³¹ Other states, such as New Hampshire and Maine, do not include the dry sandy areas because courts thought that including these areas would infringe on private owners’ property rights.¹³² States also vary in what constitutes public use. Most states have expanded the definition of public use from navigation, fishing, and commerce to include recreational activities, wildlife habitat, ecological conservation, and aesthetic or scenic uses.¹³³

States also have the power to convey public trust property to private owners, but still retain a duty to protect public uses of these lands.¹³⁴ This is because courts recognize a “split title” where the private parties hold a private title and the states hold a public title in trust.¹³⁵ Other states have held that the state can “extinguish public rights of access,”¹³⁶ but that the public title only ends if the land is “no longer burdened by the public trust doctrine.”¹³⁷ Despite state variability, courts tend to follow the general trend of expanding, not limiting, the public trust doctrine.¹³⁸

However, the boundaries of the mean high tide lines and the mean low tide lines are constantly changing from natural occurrences such as tides, currents, and storms, and from human intervention, such as beach development and anthropogenic climate change.¹³⁹ Common law addresses

¹²⁸ Illinois Central R.R. Co., 146 U.S. at 455.

¹²⁹ Richard M. Frank, *The Public Trust Doctrine: Assessing Its Recent Past & Charting Its Future*, 45 U. CAL. DAVIS L. REV. 665, 667 (2012).

¹³⁰ Wilkinson, *supra* note 124, at 425.

¹³¹ Frank, *supra* note 129, at 674.

¹³² *Id.*

¹³³ Liss, *supra* note 13, at 10039.

¹³⁴ *Id.* at 10038.

¹³⁵ *Id.*

¹³⁶ JOSEPH SINGER ET AL., PROPERTY LAW: RULES, POLICIES, AND PRACTICES 79 (Wolters Kluwer, 6th ed. 2014).

¹³⁷ Liss, *supra* note 13, at 10039.

¹³⁸ Rusk, *supra* note 83, at 302.

¹³⁹ Celeste Pagano, *Where’s the Beach? Coastal Access in the Age of Rising Tides*, 42

whether the property line moves along with changes to the shoreline under the doctrines of erosion, accretion, and avulsion.¹⁴⁰ Accretion, the addition of land to a shoreline, and erosion, the wearing away of soil, rock, or land, are both changes that occur gradually. As the shoreline advances or retreats, the property lines that run along the shoreline advance or retreat with the shoreline.¹⁴¹ This doctrine is considered fair because coastal property owners bear both the risk of losing land through erosion and the potential benefit of gaining land through accretion.¹⁴²

Conversely, when a shoreline moves rapidly, either landward or seaward, the movement of the property line is governed under the common law doctrine of avulsion.¹⁴³ This doctrine holds that the property line does not move, regardless of the change in shoreline.¹⁴⁴ For example, a property line would not move for either a storm destroying most of a beach nor a beach restoration project that increases the land on the beach, as these are both considered avulsion events.¹⁴⁵ This doctrine was challenged in the U.S. Supreme Court case *Stop the Beach Nourishment v. Florida Department of Environmental Protection*, where a beach nourishment project in Florida planned to add seventy-five feet of sand to extend the beach.¹⁴⁶ Nourishment projects such as these are considered an avulsion event so, under the law of avulsion, the property line would not increase with the land.¹⁴⁷ When performing a beach nourishment project workers establish an erosion control line, which replaces the high tide line as the boundary between private and public property.¹⁴⁸ Once this line is established, the private property owners lose their contact with the water and can no longer receive land from accretion.¹⁴⁹

The plaintiffs in this case viewed these losses as an unconstitutional taking, but the Supreme Court ruled that the doctrine of avulsion allows the state to “reclaim the restored beach on behalf of the public.”¹⁵⁰ Similar to the doctrines for erosion and accretion wherein the private property owner stands

SW. L. REV. 1, 11 (2012).

¹⁴⁰ *Id.* at 12.

¹⁴¹ Josh Eagle, *Are Beach Boundaries Enforceable? Real-Time Locational Uncertainty and the Right to Exclude*, 93 WASH. L. REV. 1181, 1194 (2018).

¹⁴² Pagano, *supra* note 139, at 12.

¹⁴³ Eagle, *supra* note 143, at 1194.

¹⁴⁴ Pagano, *supra* note 139, at 12.

¹⁴⁵ *Id.*

¹⁴⁶ *Stop the Beach Nourishment v. Florida Dep’t of Env’t Prot.*, 560 U.S. 702, 711 (2010).

¹⁴⁷ *Id.* at 709.

¹⁴⁸ *Id.* at 710.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.* at 712.

to either lose or gain land, the state stands to gain or lose land for the public with the rapid advance or retreat of the shoreline under the doctrine of avulsion.¹⁵¹

C. Easements

The public trust doctrine does not provide the public with a right to access privately owned beaches that are beyond the high tide line. However, public access to these beaches is permitted by obtaining easements through custom, dedication, or prescription.

The doctrine of custom states that the “customary use of land operating since ‘time immemorial’ can have the effect of law.”¹⁵² This is commonly seen in Hawaii where Native Hawaiian custom gives the public access to all parts of the beach up to the “highest wash of the waves.”¹⁵³ The doctrine of custom originated in English common law, which recognized that rights to a certain piece of land were established through “continuous transgenerational use.”¹⁵⁴ A community can establish customary rights by showing that the use is “ancient, continuous, peaceable, reasonable, certain, obligatory, and . . . in conformance with other customs and laws.”¹⁵⁵ Easements by custom for beaches usually only apply to the wet-sand portion of the beach, but some states have found easements by custom for the dry-sand portions. Easements by custom are not widely adopted and, in most states, are generally restricted to specific beaches.¹⁵⁶

Easements by dedication are more widely accepted than easements by custom. An easement by dedication occurs when a private property owner dedicates a piece of property to the public.¹⁵⁷ A dedication is defined as a “donation of land or the creation of an easement for public use,”¹⁵⁸ and the dedication can be express or implied.¹⁵⁹ While an express dedication usually occurs through a deed or other written document, implied dedications are more difficult to establish.¹⁶⁰ In Texas, a dedication must satisfy the following four elements: (1) the owner making the dedication must have title to the land

¹⁵¹ Pagano, *supra* note 139, at 14.

¹⁵² *Id.* at 15.

¹⁵³ *Id.*

¹⁵⁴ Rusk, *supra* note 83, at 312.

¹⁵⁵ *Id.*

¹⁵⁶ Pagano, *supra* note 139, at 16.

¹⁵⁷ Holmes, *supra* note 104, at 125.

¹⁵⁸ *Id.*

¹⁵⁹ Pagano, *supra* note 139, at 16.

¹⁶⁰ Holmes, *supra* note 104, at 125.

prior to the dedication; (2) the dedication must serve a public purpose; (3) the owner must make either an express or implied offer to dedicate his land; and (4) the public must accept the offer.¹⁶¹

Easements by prescription equate public use of a property for an extended period of time with obtaining a grant from the property owner.¹⁶² The public can show an easement by prescription by proving the “actual, continuous, uninterrupted for the statutory period, and adverse” use of the land (or beach).¹⁶³ Land use is adverse when the public’s use of the land differs from the landowner’s use. If adverse use cannot be shown, claiming a prescriptive easement can be more difficult for the public.¹⁶⁴ Because the public uses beaches in Texas in numerous ways, such as fishing, tanning, swimming, and other recreational activities, the public will almost always be able to show different use from the owner.¹⁶⁵

These common law doctrines provide the public with an easement to access beaches, and these easements adequately balance public and private interests in a predictable environment. Because climate change is creating highly variable weather patterns that will likely result in more sudden shoreline changes, these doctrines may have to adapt to ensure the balance of private property rights and the public’s right to access the beach. One such change is the idea that established easements move with the shoreline.¹⁶⁶

D. Rolling Easements

A rolling easement is “a legally enforceable expectation that the shore or human access along the shore can migrate inland instead of being squeezed between an advancing sea and a fixed property line or physical structure.”¹⁶⁷ Rolling easements are rooted in the public trust doctrine. They were originally proposed in the 1990s as an alternative method for dealing with sea-level rise to protect coastal habitats and mitigate the ecological impacts from armoring projects.¹⁶⁸ Rolling easements allow public access easements to move with

¹⁶¹ *Moody v. White*, 593 S.W.2d 372, 378 (Tex. Civ. App. 1979).

¹⁶² *Holmes*, *supra* note 104, at 128.

¹⁶³ *Pagano*, *supra* note 139, at 17. These are also the elements to prove adverse possession.

¹⁶⁴ *Id.*

¹⁶⁵ *Holmes*, *supra* note 104, at 131.

¹⁶⁶ *Rolling Easements*, *supra* note 70, at 21.

¹⁶⁷ *Id.* at 7.

¹⁶⁸ Richard J. McLaughlin, *Rolling Easements as a Response to Sea Level Rise in Coastal Texas: Current Status of the Law after Severance v. Patterson*, 26 J. LAND USE 365, 369 (2011).

the boundary line as the boundary moves inland.¹⁶⁹ Rolling easements also expand common law doctrines to allow public access easements to roll with “accretion, erosion, or avulsion.”¹⁷⁰

Rolling easements are generally implemented in one of four ways: (1) prohibiting armoring structures; (2) purchasing a property right to take possession of privately owned land when the sea-level rises by a specified amount; (3) including language in a deed that the boundary between public and privately owned lands will migrate inland; or (4) passing a statute that states all coastal land is subject to rolling easements.¹⁷¹ Using the first method, the shoreline can continue to migrate inward, conserving both the beach and the public’s right to access.¹⁷² If this method is applied to bay shores and the coastal shoreline, it could protect wetlands, preserving the important functions that they provide to coastal communities.¹⁷³ The second method can be implemented by transferring property to a local land trust as the sea-level rises.¹⁷⁴ The local land trust can then restore the land or allow the shoreline to continue moving inland. For example, a property that is one meter beyond the high tide line is transferred to the local land trust when the sea rises one meter. Because property owners expect to transfer the land, most will not invest in shoreline armoring. Similarly, including language in a deed that the boundary line will move inland and passing a statute that subjects all coastal land to rolling easements, deters coastal property owners from investing in shoreline armoring because the deed gives them notice that their property line will likely move inland as the sea rises.¹⁷⁵

Coastal property owners generally lose both the right to exclude the public from their property and the right to protect their property with shoreline armoring structures when rolling easements are implemented.¹⁷⁶ Because the property owners cannot protect their property from the rising sea, it may eventually force them to abandon their property.¹⁷⁷ Additionally, the right to exclude is commonly thought of as one of the most important rights of property owners, and rolling easements have the potential to give the public

¹⁶⁹ Rusk, *supra* note 83, at 308.

¹⁷⁰ Pagano, *supra* note 139, at 17.

¹⁷¹ Carolyn Ginno, *Do Mess with Texas: Why Rolling Easements May Provide a Solution to the Loss of Public Beaches Due to Climate Change-Induced Landward Coastal Migration*, 8 SAN DIEGO J. CLIMATE & ENERGY L. 225, 239-40 (2017).

¹⁷² Rolling Easements, *supra* note 70, at 50.

¹⁷³ *Sea Level Changes and the Texas Coastal Environment*, *supra* note 40, at 4-5.

¹⁷⁴ Rolling Easements, *supra* note 70, at 50.

¹⁷⁵ *Id.* at 64.

¹⁷⁶ Rusk, *supra* note 83, at 308.

¹⁷⁷ *Id.* at 309.

access to areas that were once private property.¹⁷⁸ So, while rolling easements uphold the public trust doctrine, they also shift the risk of losing land to private property owners.¹⁷⁹

III. REGULATION OF TEXAS COASTLINES

Texas has used the rolling easement doctrine extensively, although the focus has been to protect public beach access instead of the environment.¹⁸⁰ Beaches in Texas have been used for “transportation, camping, fishing, swimming, and other public uses,” which are fundamental to Texans. Historically, public and private parties believed that the state held both wet and dry portions of beaches in trust for the public.¹⁸¹ However, the Texas Supreme Court ruled that the state only owned the wet sand portion of the beach, while private beachfront property owners retained ownership over the dry sand portion above the mean high tide line.¹⁸² The general public believed they had the right to use the entire beach and therefore disagreed with the decision.¹⁸³ To assuage the public’s concerns following the decision, Texas passed the Texas Open Beaches Act (“TOBA”) in 1959.¹⁸⁴

A. Texas Open Beaches Act

TOBA gives the public the “free and unrestricted right of ingress and egress to the larger area extending from the line of mean low tide to the line of vegetation bordering on the Gulf of Mexico,”¹⁸⁵ and gives the State the power to remove a structure if (1) the public has access to the beach by public road or ferry; (2) the public has acquired an easement to access or use the beachfront area by custom, dedication, or prescription; and (3) the property is located on the public beach.¹⁸⁶ TOBA also codifies the common law doctrines that provide public access by saying the public has “a right of use or easement to or over an area by prescription, dedication, or has retained a right by virtue of continuous right in the public.”¹⁸⁷ Additionally, TOBA implies a type of

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ McLaughlin, *supra* note 170, at 369-70.

¹⁸¹ *Id.* at 370.

¹⁸² *Luttes v. State*, 324 S.W.2d 167, 169 (Tex. 1958).

¹⁸³ McLaughlin, *supra* note 170, at 370.

¹⁸⁴ *Id.*

¹⁸⁵ Tex. Nat. Res. Code Ann. § 61.011(a) (Vernon 2019).

¹⁸⁶ Holmes, *supra* note 104, at 124.

¹⁸⁷ § 61.011(a) (Vernon).

rolling easement that prohibits people from building any shoreline barrier that would interfere with the public's right to access.¹⁸⁸

In order to “further strengthen the public easement,” the Texas legislature amended TOBA to require contracts conveying land “located seaward of the Intracoastal Waterway” to include language that “expressly acknowledges that the purchaser has acquired an easement up to the vegetation line.”¹⁸⁹ Additionally, these contracts must contain, “in capital letters, structures erected seaward of the vegetation line (or other applicable easement boundary) or that become seaward of the vegetation line as a result of natural processes such as shoreline erosion are subject to a lawsuit by the state of Texas to remove the structures.”¹⁹⁰ These amendments were enacted to put purchasers of coastal property on notice that their structures may be removed if they violate TOBA. Further amendments added a presumption of a public easement in “beach areas located seaward of the vegetation line.”¹⁹¹ These amendments ensure that private property owners who purchased beachfront property have notice that they lose the right to maintain or own the property if it “becomes located seaward of the vegetation line” as a result of natural processes.¹⁹² Because the property owners have notice, they waive any possible takings claims, meaning that any beachfront property purchased after these amendments will not constitute a taking.¹⁹³ Property owners who purchased beachfront property prior to these amendments can raise potential takings claims, analyzed under the *Lucas* test.¹⁹⁴

Texas courts are generally deferential to TOBA policies and tend to favor the public easement over private property owners.¹⁹⁵ In *Feinman v. State*, a hurricane caused several houses to become situated seaward of the vegetation line.¹⁹⁶ The Texas Attorney General did not allow the property owners to repair the houses and threatened to remove the houses from the beach.¹⁹⁷ The main issue in this case was whether the State, under TOBA, had to re-establish the public's easement every time the vegetation line moves, or if the easement automatically rolls with the vegetation line.¹⁹⁸ The court ruled that a rolling

¹⁸⁸ § 61.013 (a) (Vernon).

¹⁸⁹ McLaughlin, *supra* note 170, at 372.

¹⁹⁰ § 61.025 (Vernon).

¹⁹¹ McLaughlin, *supra* note 170, at 373.

¹⁹² Holmes, *supra* note 104, at 142.

¹⁹³ *Id.*

¹⁹⁴ *Id.* at 143.

¹⁹⁵ McLaughlin, *supra* note 170, at 373.

¹⁹⁶ *Feinman v. State*, 717 S.W.2d 106, 107 (Tex. App. 1986).

¹⁹⁷ *Id.*

¹⁹⁸ *Id.* at 108.

easement was implicit in the statute and the state was not responsible for reestablishing the easement each time the vegetation line moved.¹⁹⁹

The court in *Arrington v. Texas General Land Office* upheld this decision, wherein the court found the state did not have to prove the public used the new area established by the rolling easement.²⁰⁰ Further, Texas courts have held that TOBA applies to “anything that interferes with the public’s use of the easement,” indicating that both existing and new structures fall under the Act.²⁰¹ After the ruling in *Feinman*, many beachfront property owners feared the loss of their land from a storm or hurricane.²⁰² Homeowners also feared that the state would not compensate them if their homes were removed under TOBA, which could potentially be classified as a regulatory taking.²⁰³ Despite these fears, recent court decisions have severely undermined the public’s right to access in favor of private property owners, leaving Texas in a bad position to deal with rising sea-levels.

B. *Severance v. Patterson*

In *Severance v. Patterson*, the plaintiff, Carol Severance, owned three beachfront properties in Galveston, Texas, each with a single-family home.²⁰⁴ Under TOBA, the public has access to the sandy part of the beach between the mean low tide mark and the vegetation line if the beach is state-owned or the public has obtained an easement through prescription, dedication, or custom.²⁰⁵ When Severance originally purchased the three properties, the houses were beyond the vegetation line, but the vegetation line moved inward due to natural causes.²⁰⁶ After a survey confirming that the houses were encroaching on the public easement, the General Land Office informed Severance that state officials could require her to remove “any portion of the home that encroached on the public beach.”²⁰⁷ Shortly after this notice, Severance was contacted and offered \$40,000 for the removal of one of the homes.²⁰⁸ Severance then filed suit seeking declaratory and injunctive relief to prevent the state from enforcing the public easement.²⁰⁹ In the rehearing of

¹⁹⁹ *Id.* at 110.

²⁰⁰ *Arrington v. Tex. Gen. Land Office*, 38 S.W.3d 764, 766 (Tex. App. 2001).

²⁰¹ *McLaughlin*, *supra* note 170, at 375-76.

²⁰² *Holmes*, *supra* note 104, at 137.

²⁰³ *Id.*

²⁰⁴ *Severance v. Patterson*, 370 S.W.3d 705, 711 (Tex. 2012).

²⁰⁵ § 61.011 (Vernon).

²⁰⁶ *Severance*, 370 S.W.3d at 711-12.

²⁰⁷ *Severance v. Patterson*, 485 F. Supp. 2d 793, 798 (S.D. Tex. 2007).

²⁰⁸ *Severance*, 370 S.W.3d at 720.

²⁰⁹ *Id.* at 712.

her case,²¹⁰ the court found three main issues: (1) whether Texas recognizes a rolling easement with a boundary that “migrates solely according to naturally caused changes in the location of the vegetation line, without proof of prescription, dedication, or customary right in the property so occupied;” (2) whether the rolling easement is recognized under common law or from a construction of TOBA; and (3) whether beachfront property owners affected by rolling easements are entitled to compensation.²¹¹

The court ruled that easements do not roll with vegetation lines moved through avulsive events, like the hurricane in this case.²¹² Additionally, the court held that the state must prove that the easement is established by dedication, prescription, or custom for each individual case where an easement is destroyed through an avulsive event.²¹³ The state is highly unlikely to meet this requirement because, until the hurricane moves the vegetation line, the public has reason to use that portion of the beach.²¹⁴

Severance v. Patterson overturned years of state precedent and created a legal difference between avulsion and erosion.²¹⁵ Texas addressed this issue in a prior case, *City of Corpus Christi v. Davis*, where a private landowner wanted compensation for a large portion of his property that disappeared, mainly from hurricanes.²¹⁶ The State filled this area for use as a public park, but the landowner claimed the property was still his because the loss of land resulted from avulsion.²¹⁷ The court held that loss of land through avulsion should be treated no differently than loss of land through erosion.²¹⁸ Additionally, the court found that the private landowner failed to prove that the loss of land was caused by a single sudden avulsive event, as opposed to erosion or a combination of the two.²¹⁹ This distinction in light of climate change is particularly detrimental to the public’s right to access.²²⁰ Climate change is causing an increase in strength and frequency of storms, which leads

²¹⁰ Her original case was dismissed for lack of ripeness, as the state officials had not yet filed any enforcement actions against her. McLaughlin, *supra* note 170, at 378.

²¹¹ *Severance*, 370 S.W.3d at 708.

²¹² *Id.*

²¹³ *Id.*

²¹⁴ *Id.*

²¹⁵ McLaughlin, *supra* note 170, at 380.

²¹⁶ *Corpus Christi v. Davis*, 622 S.W.2d 640, 642 (Tex. App. 1981).

²¹⁷ *Id.*

²¹⁸ *Id.* at 646.

²¹⁹ *Id.*

²²⁰ McLaughlin, *supra* note 170, at 386.

to more avulsive events. This case law makes it more difficult for states to maintain a right of access to the beach for the public.²²¹

This case also changed easement law by finding that an easement's boundaries are fixed.²²² Justice Lehrmann argues in the dissent that by adopting this view, the majority "renders the Open Beaches Act's invitation to prove the existence of an easement 'by prescription, dedication, [or] . . . continuous right in the public' meaningless."²²³ The court failed to acknowledge, as other coastal states had, that easements on coastal shores should not be treated in the same manner as inland easements.²²⁴ For example, in North Carolina, easements on coastal shoreline are not "treated as precise permanent boundaries" but instead shift along with the "dynamic natural changes of the beachfront."²²⁵ Similarly, Georgia beachfront easements allowing public access are "subject to expansion or contraction by the forces of nature."²²⁶

Ultimately, this decision strongly favored private property owners over the public's right to access the beach. In creating a legal difference between avulsive and erosion effects, Texas severely weakened its ability to deal with sea-level rise. By diminishing the application of rolling easements, private property owners may partake in more shoreline armoring, further damaging the Texas coast.

IV. POLICY CONSIDERATIONS FOR TEXAS

Severance v. Patterson gave Texas the opportunity to address climate change and enforce the public's right to access the beach. Instead, the Texas Supreme Court gave private property owners the ability to shrink the public's beach access. After *Severance v. Patterson*, TOBA was amended by House Bill 3459.²²⁷ This bill gave decision making authority to the General Land Office, allowing the office to suspend the determination of the vegetation line after it is destroyed by a "sudden meteorological event."²²⁸ The Land Office

²²¹ *Id.*

²²² *Id.* at 385.

²²³ *Severance*, 370 S.W.3d at 752.

²²⁴ See *Corpus Christi v. Davis*, 622 S.W.2d 640 (Tex. App. 1981).

²²⁵ McLaughlin, *supra* note 170, at 386.

²²⁶ *Id.* (quoting *Bruce v. Garges*, 379 S.E.2d 783, 785 (Ga. 1989)).

²²⁷ *Rolling Easements & the Texas Open Beaches Act*, TEXAS A&M AGRILIFE, <https://coastalresilience.tamu.edu/home/wetland-protection/policy-framework/bay-and-ocean-side-submerged-lands-some-fundamental-differences-in-law-and-management/the-texas-open-beaches-act-an-exceptional-example-of-a-rolling-easement/> [https://perma.cc/8THC-UX85] (last visited May 3, 2020).

²²⁸ *Id.*

can then determine a new location for the vegetation line, which is imperative when deciding how public access easements should roll.²²⁹ One of the main issues in *Severance v. Patterson* was “whether Texas recognized a rolling easement with a boundary that migrates solely according to naturally caused changes in the location of the vegetation line, without proof of prescription, dedication, or customary rights in the property so occupied.”²³⁰ By giving the General Land Office this authority, the Texas legislature took a step towards protecting beaches.

A. Texas Coastal Resiliency Plan

When Hurricane Harvey made landfall in 2017, it hit the uninhabited and undeveloped San Jose Island.²³¹ This island was healthy and had “robust natural beach and dune systems,” which provided a significant buffer for the storm surge and mitigated the damage done to the surrounding community.²³² This shows that keeping coastal wetlands and the surrounding ecology healthy is important in addressing sea-level rise and other climate change effects. Prior to Hurricane Harvey, the Texas General Land Office released a coastal resiliency master plan outlining goals and plans for protecting the Texas coastline from erosion, hurricanes, flooding, habitat degradation, and sea-level rise.²³³ This report highlights the insufficiencies of a “piecemeal approach to coastal restoration” and “coordinates the efforts of many parties, produces carefully selected and evaluated projects, and provides efficient and cost-effective methods to achieve a resilient coast.”²³⁴ The report outlines several projects to restore the Texas coastline and focuses primarily on restoring the coastline to a more natural ecology through wetland conservation, delta and lagoon restoration, oyster reef creation and restoration, and rookery island creation and restoration.²³⁵

These projects aim to improve water and air quality, preserve breeding and nursery areas for commercial fish, increase habitat diversity, and bolster the ecotourism industry.²³⁶ Additionally, by restoring deltas and lagoons, this plan will have a positive downstream effect because deltas and lagoons support the health of coastal wetlands, bird rookeries, and other coastal

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ Master Plan 2019, *supra* note 37, at 26.

²³² *Id.*

²³³ Master Plan 2017, *supra* note 63, at 1.

²³⁴ *Id.* at 3.

²³⁵ *See generally* Master Plan 2017, *supra* note 63.

²³⁶ *Id.*

habitats.²³⁷ Coastal wetlands provide numerous benefits such as purifying water, acting as a buffer for storms and flooding, and absorbing carbon dioxide, and focusing on restoring coastal habitats to a more natural ecology will directly benefit Texas coasts.

The Texas General Land Office released another resiliency plan in 2019, which further outlined plans to address coastal infrastructure and increased flood risks while still focusing on preserving natural habitats.²³⁸ This plan outlined a subsidence study and monitoring project to gather information on subsidence along the Texas coast. A major contributor of sea-level rise in Texas is land subsidence from extracting groundwater, oil, and natural gas, but there is limited information on subsidence for the entire Texas coast.²³⁹ Funding subsidence research projects can provide coastal communities with historical subsidence data and future subsidence predictions, which will help communities develop better policies to address subsidence-caused sea-level rise.²⁴⁰

B. Regulating Land Development

To further protect beaches and public access, the Texas legislature could pass regulations limiting where and how much coastal land can be developed. One way to regulate land development is increasing construction setbacks on coastal shorelines.²⁴¹ Setbacks prohibit property owners from building shoreline armoring structures “seaward of a legislatively demarcated line.”²⁴² There are currently no mandatory setback regulations in Texas, so increasing construction setbacks could also increase the erosion buffer²⁴³ and help protect wetlands. Additionally, a larger setback can help mitigate the risk that homes will be removed under TOBA.²⁴⁴ Setbacks have been used in the city of Satellite Beach, Florida, which enacted a mandatory setback that limits “construction, reconstruction, modification, repair, or replacement of principle or accessory structures” east of the highway that runs along the coast.²⁴⁵ However, setbacks are generally disfavored in Texas because private

²³⁷ *Id.* at 83.

²³⁸ See Master Plan 2019, *supra* note 37.

²³⁹ *Id.* at 101.

²⁴⁰ *Id.*

²⁴¹ Kristin R. Hicks, *Providing Beach Access in Texas: The Implications of Severance v. Patterson on the Texas Open Beaches Act 83* (Fall 2012) (unpublished master’s thesis, University of Delaware).

²⁴² Rusk, *supra* note 83, at 303.

²⁴³ The amount of land that is eroded before the water reaches structures.

²⁴⁴ Hicks, *supra* note 243, at 84.

²⁴⁵ Erin L. Deady, *New Evolutions in the Law of Climate Change and Sea-Level Rise*, FL. BAR J. 55, 57 (2020).

property owners view them as highly restrictive on their rights.²⁴⁶ To counter this view, Texas could adopt a special permitting system, similar to that of South Carolina, where a special permit can be issued that allows the construction or reconstruction of a structure so long as the structure is not on a “primary oceanfront sand dune or on the active beach.”²⁴⁷ If the beach erodes past the permitted structure, then the permittee “agrees to remove the structure from the active beach . . . ”²⁴⁸ Furthermore, the use of the property cannot be “detrimental to the public health, safety, or welfare.”²⁴⁹

C. Rolling Easement Regulations

Rolling easements are more effective when combined with other regulatory approaches, such as beach nourishment.²⁵⁰ Beach and dune restoration projects can address erosion and sea-level rise but tend to be extremely expensive.²⁵¹ Beach nourishment projects need tons of beach-quality sand which, in Texas, is sourced from offshore sand deposits. It can cost anywhere from \$10 to \$20 million to transport and restore a two-mile stretch of beach using this method.²⁵² Additionally, after the *Severance v. Patterson* decision in 2012 required the public to re-establish beach access easements after an avulsive event, the previous General Land Office commissioner cancelled a \$40 million beach restoration project in Galveston.²⁵³ The project was cancelled because state law prohibits using public money to benefit private property.²⁵⁴

These types of projects are not prioritized due to both the high price tag and the resulting uncertainty of property rights. To remedy this, the Texas legislature could amend TOBA to ensure that public access easements to the beach roll with avulsive events. This, combined with a beach nourishment project, would result in more land for the public and private property owners, and a defense against erosion and sea-level rise.

²⁴⁶ *Id.*

²⁴⁷ S.C. Code Ann. §48-39-290(D) (2016).

²⁴⁸ *Id.*

²⁴⁹ *Id.*

²⁵⁰ Rusk, *supra* note 83, at 329.

²⁵¹ Master Plan 2017, *supra* note 63, at 90.

²⁵² *Id.*

²⁵³ Harvey Rice, *Mayor Faults ‘Blow to Galveston’ After State Halts Beach Project*, CHRON (Nov. 15, 2010) <https://www.chron.com/business/real-estate/article/Mayor-faults-blow-to-Galveston-after-state-1708528.php> [<https://perma.cc/4UGS-JLMF>].

²⁵⁴ *Id.*

Another option would be to give private property owners a choice to reclaim their lost property.²⁵⁵ Many states that follow the doctrine of avulsion give private property owners a reasonable amount of time to fill their land. After that time has passed, the public access easement rolls back if the land was not reclaimed.²⁵⁶ For example, if Carol Severance in *Severance v. Patterson* had chosen to fund a private nourishment project to reclaim her land after the hurricane, she would not have risked her property. If she had chosen not to fill the land, the public easement would roll, and she would lose her property to the public. In giving the property owner the right to reclaim their land, it shifts the burden back to the private property owner, effectively bypassing the *Severance v. Patterson* decision.

D. Reducing Incentives for Purchasing Coastal Properties

Currently, there are numerous programs that property owners can use to manage the risks to coastal property, such as storms and flooding. For example, the National Flood Insurance Program (“NFIP”) provides insurance for property owners in areas susceptible to flooding.²⁵⁷ NFIP is managed by the Federal Emergency Management Agency (“FEMA”), which subsidizes insurance rates in flood risk areas “in exchange for the adoption of voluntary floodplain management actions by local governments.”²⁵⁸ This program minimizes the financial risk of purchasing and developing in areas that are prone to flooding and storms.²⁵⁹ After a large storm, coastal property owners expect to have the cost of repair or rebuilding covered by NFIP, as opposed to bearing the cost themselves.²⁶⁰ However, the NFIP is losing money due to rising costs of development and reconstruction, increasing damage caused by more frequent flooding, and repairing the same properties multiple times.²⁶¹ Texas could address this issue by limiting the amount of insurance coastal properties can receive for damage from flooding and storms. By shifting the financial burden back onto property owners, developing on the coast will become riskier, and potential buyers and developers will be disincentivized to buy or develop coastal property.

Texas could also expand the risk disclosure requirements for coastal property sellers to ensure that potential buyers are aware of the risks of coastal

²⁵⁵ Rusk, *supra* note 83, at 330.

²⁵⁶ Rolling Easements, *supra* note 70, at 20.

²⁵⁷ Hicks, *supra* note 244, at 86.

²⁵⁸ *Id.*

²⁵⁹ *Id.*

²⁶⁰ *Id.*

²⁶¹ *Id.* at 87. The number of repetitive loss properties (properties that have been damaged and repaired by NFIP multiple times) is estimated to have increased by over 50%.

property. This was adopted in TOBA, which required land purchase contracts to include language that “expressly acknowledges that the purchaser has acquired an easement up to the vegetation line,” and “structures erected seaward of the vegetation line (or other applicable easement boundary) or that become seaward of the vegetation line as a result of natural processes such as shoreline erosion are subject to a lawsuit by the state of Texas to remove the structures.”²⁶² These provisions in TOBA highlighted the risk that property owners could potentially lose some of their land.

Another regulation that requires disclosure was passed by Texas in 2019, Senate Bill 339.²⁶³ This bill requires homeowners to disclose whether their home is located “wholly or partly” in a 500-year flood plain, in a flood pool, in a reservoir or five miles downstream of a reservoir, if the home “may flood under catastrophic circumstances,” and “whether the home has flooded in a flood event.”²⁶⁴ Prior to this bill, homeowners only had to disclose whether the home was in a 100-year flood plain.²⁶⁵ Increasing the disclosure requirements also increases the difficulty of selling homes that are at a higher risk of flooding.²⁶⁶ Texas could further expand the disclosure requirements for coastal properties by requiring homeowners to disclose risks associated with sea level rise and other coastal hazards in addition to the TOBA requirements. Requiring more risk disclosures allows potential coastal property owners to be put on notice about the hazards of owning coastal property.

CONCLUSION

Sea-level rise will continue to cause tidelines to creep further inland. Texas has more than 1,000 square miles of land that lie less than five feet above the high tide line. Within those 1,000 square miles is \$9.6 billion in property value, home to more than 45,000 people and 37,000 homes. These lands sit on the coast of the Gulf of Mexico, making them especially vulnerable to sea level rise. Property owners are watching their property line inch closer to their homes, while public beachgoers face trespassing issues and a loss of public access to beaches. As of now, there is no foreseeable end

²⁶² Tex. Nat. Res. Code § 61.025.

²⁶³ 2019 Tex. Gen. Laws 1337.

²⁶⁴ *Id.*

²⁶⁵ A 100-year floodplain is “an area, typically along a river or bayou, that has a 1% chance of flooding every year.” Lara Korte & Connie Hanzhang Jin, *After Harvey Surprised Thousands With Unexpected Flooding, New Law Aims to Better Inform Homebuyers*, TEXAS TRIBUNE (Aug. 22, 2019) <https://www.texastribune.org/2019/08/22/texas-law-requires-buyers-to-disclose-flood-risks/> [<https://perma.cc/6TME-UVZC>].

²⁶⁶ *Id.*

to climate change, meaning that there will be stronger storms, more flooding, and more property disputes. Texas must decide how to balance the interests of private property owners and the public's right to access the beach.

Texas is not alone in balancing private property rights and public access, with thirty other coastal states facing the same or similar issues. Yet balancing these interests is not the only issue, as several alternative measures to mitigate sea-level rise from impacting waterfront properties can have detrimental ecological effects on the coastal environment. Texas has addressed this in a coastal resiliency plan that outlines several projects to restore their state coastlines. This plan highlights the need to maintain a healthy coastal ecosystem, which will provide a powerful buffer from the severe storms and increased flooding associated with sea-level rise and climate change. However, the coastal resiliency plan does not address how the projects affect property rights. Under the current regulatory scheme, Texas favors private property owners over the public.

In *Severance v. Patterson*, the Texas Supreme Court chose to give the benefit to private landowners by creating a legal difference between avulsive and erosion effects. The court also ruled that these public access easements would have to be re-established by the public, and current easement law in Texas makes this difficult and places an unreasonable burden on the public. After *Severance v. Patterson*, Texas has tried to protect its beaches by giving authority to the General Land Office to suspend the determination of the boundary line after a "sudden meteorological event." While this is a step towards protecting public access to beaches, Texas communities can go further and should create regulations that shift the burden of reclaiming land back to private property owners, enact more stringent construction setbacks or permitting procedures, and require more risk disclosure for potential property owners buying coastal properties.

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