

Shoreline Management

Abstracts

GALVESTON BAY STORM SURGE MITIGATION

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Hurricane Ike cost the Houston and Galveston area \$38 billion in 2008 and flooded over 100,000 homes and businesses which prompted discussions regarding mitigation strategies for Galveston Bay such as the implementation of the Ike Dike. The development of such a project is worth the investments of time and money because it will protect the national economic impact of Houston industries, local human capital, and the diverse wildlife of the Galveston Bay estuary. The Houston area is home to over six million people and the second largest petrochemical complex in the world which employs over 60,000 workers. Galveston Bay is the seventh largest estuary in the United States and contains over 4,000 acres of created wetlands which serve as erosion and flood control while providing nursery habitats for many valuable species.

The Houston and Galveston area is the most dangerous hurricane spot in the nation. Hurricane Ike could have been far more devastating to Galveston; Ike would have more than doubled the number of flooded establishments if it had hit just 20 miles southwest. When the Bay is struck by its next storm, there is a significant chance of oil pollution occurring from the thousands of tanks stored in the area. Experts fear that the Galveston Bay estuary is not prepared for another large hurricane. The Galveston region of the Gulf Coast sustains a significant storm every six years on average which is why it is integral for the area to proactively anticipate future damages. This paper is a call for building the Ike Dike as the most feasible, proactive measure in mitigating storm surge damages to social, ecological, and industrial structures.

The present dike structure in Texas City provides mitigated protections for industrial complexes within the Port of Houston but neglects storm surge protections for the social infrastructure of this community and the surrounding wildlife habitats including national parks. Issues such as recruiting and relocating a temporary workforce into the area, rebuilding homes and communities, and disruption of operations are costly for companies. The existing infrastructure also fails to protect the wetlands and recreational activities associated with Galveston Bay. When the next storm strikes the area, these realities will impact local business activities including operations within the Port of Houston and Galveston fisheries. These disruptions will reverberate nationally because Houston is strongly interconnected to industries within the United States.

The most viable option for protecting the Galveston and Houston area from future storms is the implementation of the Ike Dike. This infrastructure would cost \$6,478,200,000 with opportunistic benefits to the area of \$14,042,424,000. These benefits would include ensuring a stable workforce, protection of Bay flora and fauna, and the continuation of business operations. The study phase of implementing the Ike Dike is pending approval by Congress but requires sustained political support from state and federal representatives. Support is needed from businesses, politicians, scholars, and community members in order to protect the economic investment and community infrastructure of the area.

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Oral presentation preferred, will accept poster
Topic: Shoreline Management-mitigation of coastal hazards

INFORMED PRESERVATION AND MANAGEMENT: THE DEVELOPMENT OF THE BEACH AND COASTAL MANAGEMENT PORTAL

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Management of coastal areas is critical for world coastlines. In the US, for example, over 55% of the population lives along the coast. These areas are sources of important economic activity, providing food, commerce, recreation and energy production. They protect human life and property and protect from other environmental impacts. Managers of these areas need access to best practices by other managers, innovative ideas, beach and coastal data and working documents.

The vision for the Beach and Coastal Management Portal is to become the primary document and publication resource for public beach and coastal area managers and professionals. It will serve as the premiere information access point for data, documents, best practices and news pertaining to beach management around the world. The Portal will serve as the clearinghouse for beach and coastal management resources and will give managers daily access to information they need and want.

The Portal is a partnership between Texas A&M University at Galveston and the Galveston Park Board of Trustees started in January, 2014. Staff and faculty at Texas A&M University at Galveston Jack K. Williams Library manage the technical side of the operation, setting up the repository, loading documents and resources and operating the “back end” of the Portal. TAMUG in turn partners with the Texas Digital Library to maintain the site and provide legacy access to resources. Park Board staff assist with identifying resources that are useful to beach managers, publicizing the site and assisting with development of new partnerships.

This presentation will present the vision for the Portal, discuss present activities and milestones and will demonstrate the Portal for the audience. The goal is to introduce members to the Portal and to get them actively participating in the Portal's growth and utility.

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Oral presentation but will accept poster

Shoreline Management

CHANGES IN THE DELIVERY OF ECOSYSTEM SERVICES IN GALVESTON BAY, TEXAS, UNDER DIFFERENT SEA-LEVEL RISE SCENARIOS

Greg Guannel, The Nature Conservancy
Jorge Brenner, The Nature Conservancy
Joe Faries, Stantec
Anne Guerry, Natural Capital Project
Jesse Silver, Natural Capital Project
Michael Thompson, Research Planning, Inc.

Galveston Bay is the 7th largest estuary in the United States, home to the 2nd port in the country by tonnage, and is a favorite recreation destination. The bay's rich ecosystem also hosts the most valuable fisheries resource in Texas, and its wetlands can store millions of tons of carbon. However, the region also suffers severely from the impacts of rapid sea level rise (SLR), resulting in a rapid displacement of marshland. As a result, it becomes critical to know whether the bay's coastal habitats will be able to deliver in the future all the benefits on which many Texans depend. In this presentation, we discuss how the delivery of ecosystem services in Galveston Bay will change under different SLR scenarios. We quantify the landward migration of coastal habitats by SLR and potential subsequent changes in the delivery of coastal protection, storm water retention, fisheries habitat and population, and carbon storage and sequestration services. These unique modeling outcomes will be useful to any decision makers and stakeholders across the globe that need reliable methods to evaluate changes in ecosystem services delivery under different climate change scenarios.

Presenter's information:

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ORAL presentation is first choice.

Topics:

- Ecosystem services and impact of estuarine resources
- Shoreline management