Shoreline

FLORIDA SHORE & BEACH PRESERVATION ASSOCIATION
A League of Cities and Counties on Beach and Coastal Issues

news from the Florida Shore and Beach Preservation Association **July 2017**

Join us
September 27-29, 2017
Westin Fort Lauderdale
Beach Resort

JULY'S FEATURED ARTICLE

Sea Level Rise Adaptation for a Portfolio of Assets

Photo credit: http://blamebuffett.blogspot.com

John R. Schedel, PhD, PE, Assistant Professor, Mechanical Engineering Dept, U.S. Naval Academy
Angela L. Schedel, PhD, PE, Assistant Professor, Ocean Engineering Dept, U.S. Naval Academy

Inside this Edition

SAVE THE DATE!

2018 Tech Conference
February 7-9
Edgewater Beach Resort
Panama City Beach, Florida

2017 Annual Conference

September 27-29 ♦ Westin Fort Lauderdale Beach Resort

We hope you are making plans to join us for the 60th Diamond Anniversary Annual Conference which will be held at the Westin Fort Lauderdale Beach Resort. Conference registration and hotel reservation information are now available online. Remember to **RESERVE YOUR ROOM EARLY!** The group rate of $169, plus tax, is guaranteed through August 31, 2017, or as long as rooms remain available in our room block, which unfortunately could occur before the 31st.

Key dates to remember:

- **July 31** - Awards Nomination DEADLINE
- **August 31** - last day Hotel Room Reservations guaranteed at $169
- **Through August 31** - Early Conference Registration
- **September 1-22** - Regular Registration
- **After September 22** - Onsite Registration
- **September 27-29** - Annual Conference

Go online to www.fsbpa.com/annual-conference.html

for complete details, registration information, and hotel reservations

Next Page

Award Nominations are open for FSBPA's 60th Anniversary Banquet

Deadline to submit: July 31, 2017

You are invited to nominate a colleague or other beach-advocate to receive a 2017 FSBPA Award in recognition of their outstanding service to beach preservation. The Awards will be presented during the 60th Annual Awards Banquet on Thursday evening, September 28th. Please submit the nomination form along with supporting information for consideration by the Awards Committee through July 31st.

Awards Committee

Laird Wreford, Chair
Dr. James Houston
Gary McAlpin

The award categories for the 60th celebration include:

Per Bruun Distinguished Service Award
Bob Dean Coastal Research Award
Jim Purpura/T.Y. Chiu Engineering Award
Local Government Award
The Richard E. Bonner Award
Environmental Award
Public Service Award
Ralph Sexton Private Citizen Award

Outstanding Leadership Award – 60th Anniversary
Statesman of the Decade – 60th Anniversary
Project of the Decade Diamond Anniversary Award
Member of the Decade Diamond Anniversary Award

Complete details and the nomination form are on our website at: www.fsbpa.com/documents/2017AnnualConferenceAwardForm.pdf

Next Page

A Look Back at the 2016 Award Winners

FSBPA was honored to present awards to four very special beach supporters last year. Here's a look back to the Awards Banquet on September 15, 2016 ~~

Jason S. Harrah was presented the Richard E. Bonner Award for his outstanding commitment and ability to direct and manage complex projects from start to finish.

Gary McAlpin was recognized for the FSBPA Local Government Award for his 11 years of distinguished service to Collier County's beach preservation and inlet management programs and unwavering commitment to public safety.

Cliff Truitt received the Per Bruun Distinguished Service Award for his 40 years of significant contributions to beach preservation in both private and public sectors.

Leanne Welch was surprised with the Member of the Year Award – given for setting the standard of excellence and commitment to the preservation of Florida's beaches and for exemplary contribution and leadership to FSBPA.

2016 Award Winners

Back to Main Page

Sea Level Rise Adaptation for a Portfolio of Assets

John R. Schedel, PhD, PE, Assistant Professor, Mechanical Engineering Dept, U.S. Naval Academy
Angela L. Schedel, PhD, PE, Assistant Professor, Ocean Engineering Dept, U.S. Naval Academy

Annapolis, Maryland, is best known as the "sailing capital of America" and as home to the United States Naval Academy, where the U.S. Navy's future officers are educated and trained. In downtown Annapolis, life revolves around the City Dock area, home to a vibrant restaurant and shopping scene, as well as historic homes dating back to the country's birth.

At the heart of City Dock, the Kunta Kinte – Alex Haley Memorial commemorates the thousands of slaves brought into America through the port of Annapolis. The Memorial's life-sized statues depict Alex Haley, the author of "Roots," reading his book to a group of children gathered nearby. On most summer days, the Memorial is a common place for locals and tourists to enjoy picnic lunches and soak up sunshine. But on days with high tides and prevailing winds from the right direction, water from the Chesapeake Bay crests over the sea wall and laps at Alex Haley's feet, shooing away would-be picnickers (Figure 1). And on days with extreme high tides, usually the result of a major storm event, water can reach Haley's knees, waist, or even shoulders, flooding nearby roads and shutting down local businesses.

(a) Photo credit: http://www.kintehaley.org

(b) Photo credit: http://blamebuffett.blogspot.com

(c) Photo Credit: Alexis Bond, http://www.kintehaley.org

Figure 1: Kunta Kinte – Alex Haley Memorial at City Dock in Annapolis, Maryland.
(a) On a typical sunny day;
(b) On a day with an extreme high tide;
(c) During Tropical Storm Isabel in 2001.

All too often, the Kunta Kinte Memorial has become a tangible reminder of Annapolis' ongoing battle against rising sea levels. In the 1970's, when "Roots" was written, the City Dock region experienced nuisance flooding, where the sea wall is barely crested and roads are slightly flooded, less than 10 times per year. Thus far in the 2010's, the occurrence of nuisance flooding has averaged over 40 events per year. And by the 2040's, nuisance flooding at City Dock in downtown Annapolis is expected to occur more than 100 times per year. The reason for this increase is sea-level rise. Since the early 1900's, due to a combination of global and local causes, Annapolis has averaged 3.6 mm/year of sea level rise, resulting in over 0.4 meters (16 inches) of total rise. Since the 1990's, when the Kunta Kinte Memorial was built, the rate of sea-level rise in Annapolis has further accelerated, to 5.0 mm/year.

Next Page

Rising sea level results in a higher baseline water level which flood events start from. Annapolis has a relatively consistent daily tidal range. Thus, when the City Dock area was first developed in the late 1700's, it was not built much higher than a typical high tide height for the day. This served it well for two centuries. However, gradually rising sea levels in Annapolis have finally reached a tipping point. Tide heights that previously had no effect are now able to crest the sea wall and cause problems. This is because the mean sea level is higher, not because the tides themselves are any more severe or frequent.

As is the case in many other coastal communities, Annapolis has reached the point where it must adapt to sea-level rise if it hopes to survive and continue to thrive.

Why Does a Little Bit of Sea-Level Rise Matter?

For most coastal communities, sea-level rise directly contributes to an increased number of nuisance flood events. Historical water-level data shows that relative tide heights above Mean Sea Level have not changed over the years. However, with an increase in Mean Sea Level, these tides reach higher absolute heights than ever before, since they are starting from a higher point.

This concept can be portrayed with an example. Imagine a one-story home with a replacement cost of $1,000,000, built with a first-floor elevation of 5 feet above Mean Sea Level. Such homes are common along the Severn River in Annapolis. During a hurricane flood surge of 5 feet, the home would not be damaged (Figure 2).

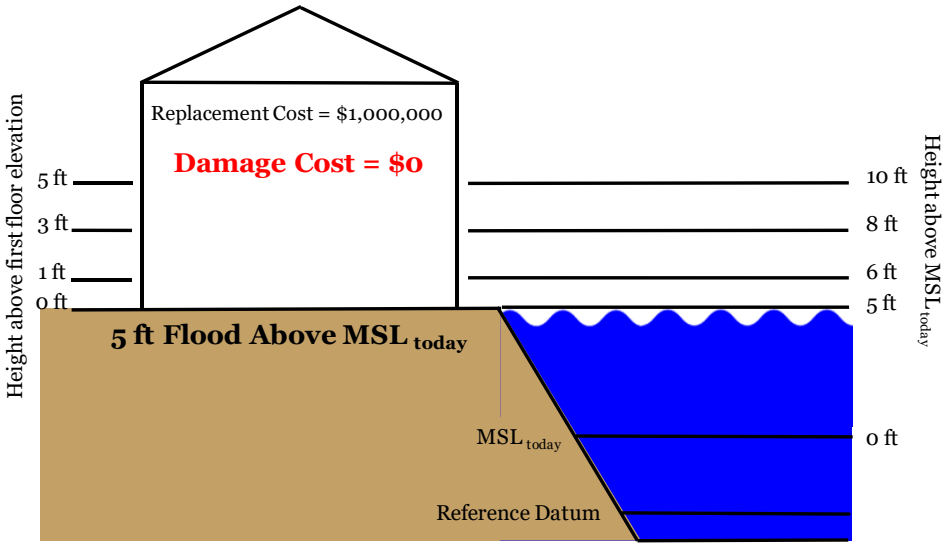

Figure 2: Example home, built at an elevation of 5 feet above Mean Sea Level, will not flood during a storm surge of 5 feet.

Next Page

However, after 2 feet of sea level rise, which is the most common prediction for Annapolis in the next 50 years, the example home will be at a first-floor elevation of 3 feet above Mean Sea Level. In this scenario, adding a storm surge of 5 feet will significantly damage the home, flooding it to a depth of 2 feet (Figure 3).

Due to sea-level rise, infrastructure that had previously been safe from flooding is now threatened during a high tide with strong onshore winds (sometimes called a "King Tide.") Heavy intensity, short duration rain events lead to flooding more often than in the past as low-lying stormwater outlets back up due to higher sea levels. Storm surges due to hurricanes are now reaching areas that had never before been flooded. From nuisance flooding to storm events, even a little bit of sea-level rise increases the likelihood of exceeding past flood heights.

Economically, sea-level rise increases risks to low-lying coastal properties. Property damage due to flooded structures, along with beach and dune damage due to floods, are usually the most visible examples. However, economic losses can extend far beyond the costs of physical flood damage. Lost workdays and business revenue during cleanup from a flood can rapidly exceed the actual cost of repairs. In many communities, damaged beaches and inaccessible roads from a flood event mean fewer visitors. Tourism-generated revenue throughout the region can be impacted for months afterward, even among businesses that escaped physical damage.

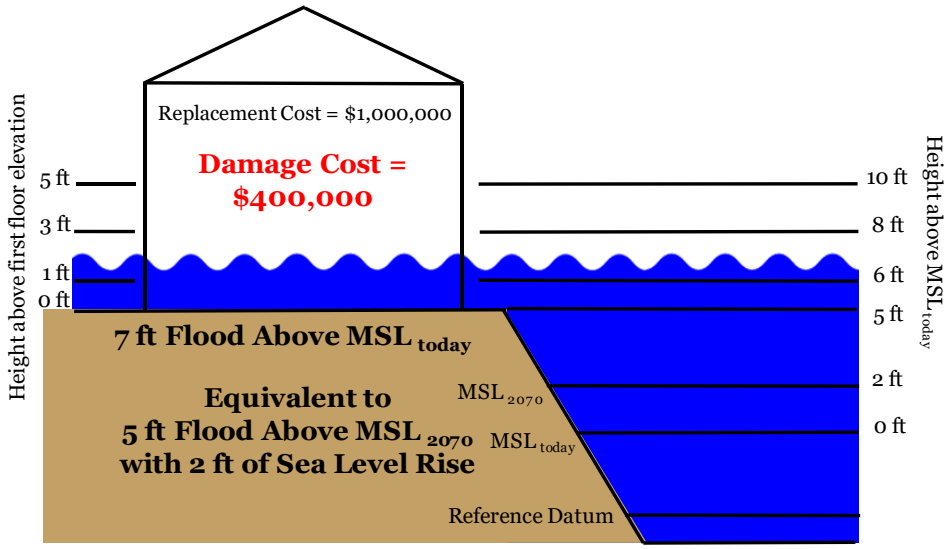

Figure 3: After 2 feet of sea-level rise, the example home's elevation will be only 3 feet above Mean Sea Level. Thus, it will flood during a storm surge of 5 feet, damaging the home.

Next Page

Deciding Whether to Adapt

Often, the question of whether to adapt an asset to sea-level rise, as well as how and when to do it, is a calculation of economics and risk. Unfortunately, there is not a one-size-fits-all adaptation option for every property. Rather, decisions depend on a variety of factors, including location, property type, type of framing, year built, remaining design life, historic tide data, and storm surge return period.

Continuing the example from earlier, imagine that a 3-foot high protective wall could be built around the structure for an annualized cost of $10,000. If the wall were built today and a 5-foot storm surge occurred, there would be no damage to the home, as the water would not reach the first-floor entry. The protective wall was not needed to hold back this flood. However, if the wall were still in place after 2 feet of sea-level rise, it would prevent damage from a 5-foot storm surge, and the protective wall's annualized cost would seem minimal in comparison to an unprotected home's potential damage costs (Figure 4).

Thus, the economics of each situation should be considered in determining whether to adapt, how to adapt, and when to adapt. It may significantly lower risk to protect all of one's assets from any future sea-level rise scenario, but this is often not economically feasible. Nor is it, in many cases, economically responsible. For an asset with short remaining design life, low replacement value, and/or extremely low probability of flooding, the most economically sound decision may be not to protect it at all.

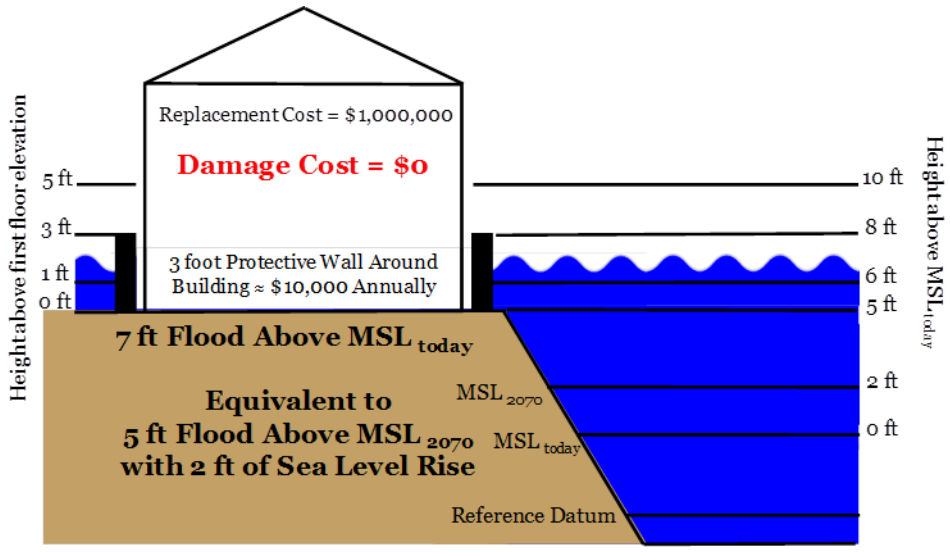

Figure 4: After 2 feet of sea level rise, the example home will be at an elevation of 3 feet above Mean Sea Level. However, with a 3 foot high protective wall around the perimeter, it will not flood during a storm surge of 5 feet.

Next Page

Individual Asset Protection vs. Protection of a Portfolio of Assets

In the past, adaptation measures typically focused either on protecting individual assets or protecting entire communities. However, in some locations, a middle-ground approach is being championed: protection of a portfolio of assets.

Adaptation of individual assets can take many forms. Dry floodproofing, wet floodproofing, elevation, and relocation are the most common categories. In downtown Annapolis when a nuisance or flash flood is forecast, simple barriers such as a combination of sandbags, plywood, and pumps are used by local businesses to temporarily protect their buildings. At the nearby U.S. Naval Academy, a combination of temporary "stop logs" and quick-close water-tight doors protect vulnerable buildings (Figure 5).

(a) Photo credit: Blake Sell, Associated Press

(b)

(c)

Figure 5: Examples of floodproofing used in Annapolis
(a) Makeshift floodproofing using plywood, sandbags, and pumps
(b) Temporarily installed "stop logs" used on vulnerable entries
(c) Quick-seal watertight doors at low-lying locations

Likewise, communities with a history of flooding have constructed large-scale measures to protect an entire region. The levee system in New Orleans, the Thames Barrier in London, the Delta Works in the Netherlands, and the MOSE flood barrier system in Venice are well-known examples of community-sized protection. Such projects are often municipally funded and cost billions of dollars.

Recently, due to sea-level rise and an increasing number of flood events worldwide, the idea of protecting a portfolio of assets, rather than protecting just one asset or protecting the entire community, has become a common option with many property owners. With portfolio protection, multiple assets are protected by a single protective measure. For example, in downtown Annapolis, as part of maintenance and repairs to the City Dock seawall, a concrete cap was added to the wall, raising its height by over one foot (Figure 6). Combined with an upcoming redesign of the local storm drain system, these changes will provide extra flood protection to about fifty local businesses at a minimal cost to the public. Annapolis received a federal grant to defray the costs of protecting its community.

Next Page

At the U.S. Naval Academy, labor costs exceed $12,000 each time its full complement of temporary, individual flood barriers are deployed. And with the sea level increasing, flood barriers are being deployed more frequently than ever before – over 20 times in 2016. Thus, the Academy is proactively developing plans to protect its entire portfolio of assets. Adaptation options being considered include raising the elevations of its outer ring of sports fields, rerouting stormwater drains and building flood walls which could act as a levee system to protect portions of the campus from future floods.

Photo credit: www.cormanmarine.com

Photo credit: Matt Cole, www.capitalgazette.com

Figure 6: Recent renovation of City Dock in Annapolis included addition of a 1 foot high cap to raise its height. Future work will include a redesign of the local storm drain system.

Which Option to Choose

Quite often, economics are the driving factor behind decisions about whether to adapt to sea-level rise and, if so, how and when to do it. At the U.S. Naval Academy, for example, the majority of costs related to deploying temporary flood barriers is only for protecting a few historic buildings. One of the protective options being considered would permanently protect these buildings from up to four feet of sea-level rise, with minimal upkeep or deployment costs. However, this adaptation option has a high initial cost. Among the decision-making methods being used is probabilistic economic modeling using cash flow diagrams, such as those shown in Figure 7. Portfolio protection of these buildings has a high initial cost but low annual operating and maintenance costs. Individual asset protection for each of the buildings has a lower initial cost but significantly higher annual costs, which will continue to rise along with sea levels. Using economic analysis, total costs of the different options can be compared over their expected lifetimes, both to each other and to the probable flood damage costs if no adaptation actions are taken.

Beyond economics, some of the other questions to consider in deciding on portfolio versus individual asset protection are practicality, timeline, modularity, risk, economics of scale, and additional benefits. Practically, does it make sense to even protect certain assets? That is, does flooding have enough adverse effect on the asset to justify the extra cost of protecting it? With regards to timing, should the asset be adapted immediately, or can it wait until later? Can adaptations be modular, starting small and building higher at a later date? How much risk is

Next Page

acceptable to the property owner? Are there potential economies of scale involved, where it is only slightly more expensive to adapt once, but to a greater degree than is needed now, rather than adapting multiple times over the years? Beyond the impact on current businesses and residents, what additional benefits might come from a collective solution, such as attracting future business and visitors to the region? Each of these questions needs to be carefully considered in deciding upon an adaptation strategy.

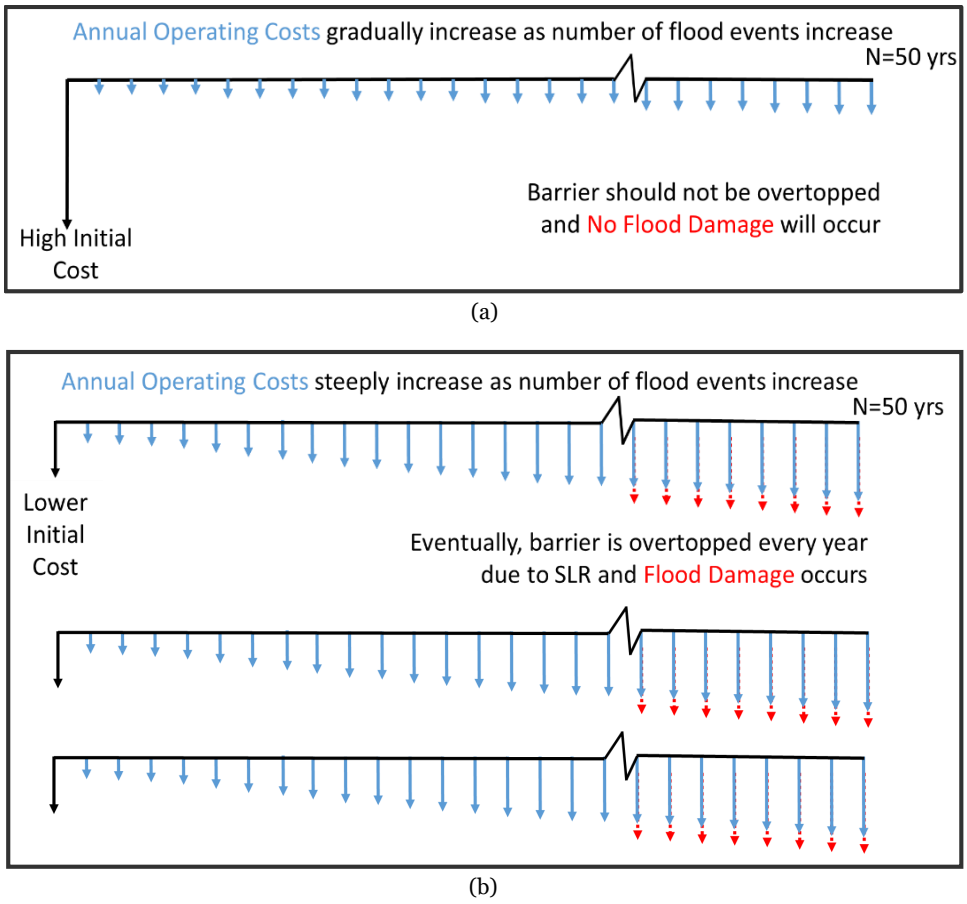

Figure 7: Economic analysis, including cash flow diagrams, is used to compare the economic impact of (a) protecting a portfolio of assets versus (b) protecting the assets individually

A key, first step in implementing adaptation is to be informed about sea-level rise and its potential impacts. Each community should learn from other region's experiences, while considering its own unique vulnerabilities. Communities must take action and proactively study potential solutions, rather than waiting for disaster before responding.

Ultimately, sea-level rise is a problem facing all residents and business owners in coastal communities, not just a select few. Shouldering the potential financial and physical risks of flooding alone is no longer a viable option. In many cases, a collective solution may be the best solution, both in terms of how well it protects assets and in terms of economics.

Back to Main Page

USACE Jacksonville District

U.S. Army Corps of Engineers Regional Sediment Management Techniques under Consideration in Tampa Bay

By Gabriel Todaro
Intern, EN-WC
U.S. Army Corps of Engineers
Jacksonville District

The U.S. Army Corps of Engineers (USACE) Jacksonville District (SAJ) for Tampa Bay prepared a Regional Sediment Management (RSM) Technical Report document. This Technical Report includes an overview of the study area, descriptions of the Federal projects in the study area, past RSM efforts in the study area, and new strategies developed to implement RSM.

Tampa Bay is located on the Gulf Coast of Florida, and includes portions of three counties: Pinellas, Hillsborough, and Manatee (see Figure 1). The study area includes Tampa Bay and the coastlines adjacent to the mouth of the Bay, where a number of Federally authorized USACE projects are located:

- Three deep draft Federal harbors (Tampa Harbor, Manatee Harbor, and St. Petersburg Harbor)
- Three shallow draft inlets (Johns Pass, Blind Pass, and Clearwater Pass)
- Two Federal hurricane and shore protection projects (Pinellas and Manatee counties)
- The Gulf Intracoastal Waterway (GIWW)

USACE is currently studying the feasibility of providing erosion control measures to assist the City of Gulfport to address flooding concerns at Boca Ciega Bay through the Federal Continuing Authorities Program. It is the proximity of these Federal and local projects, and their needs for sediment removal or placement, that make this an ideal area to implement RSM strategies.

Next Page

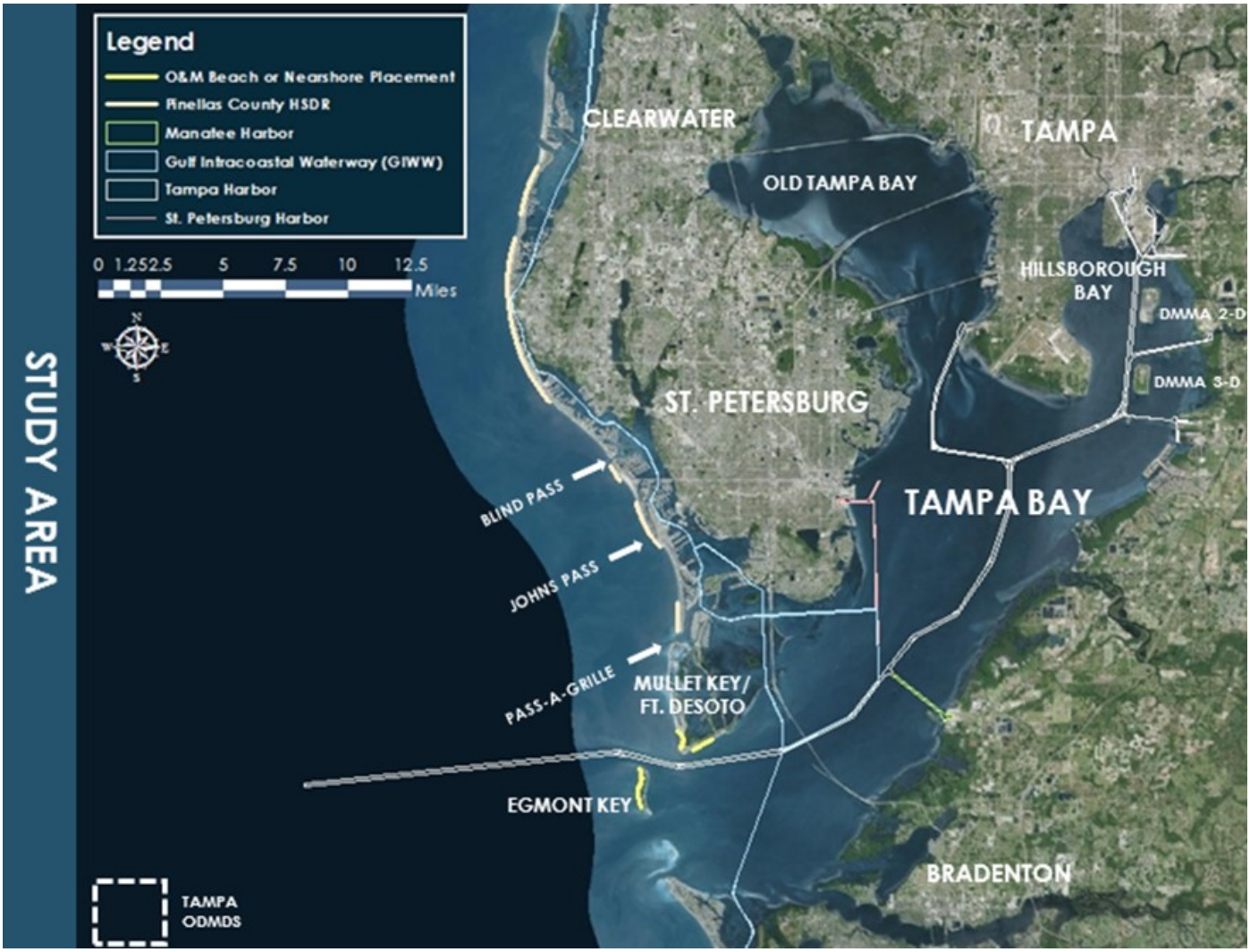

Figure 1: Study area noting the locations of all Federal projects in the Tampa Bay area and the Tampa Ocean Dredged Material Disposal Site (ODMDS).

Past USACE RSM Efforts in Tampa Bay:

USACE has implemented RSM strategies in the Tampa Bay area for a number of years. While not originally thought of as beneficial use, the islands created through the placement of dredged material during the initial construction of Tampa Harbor are currently some of the most important shorebird and colonial seabird nesting sites in Florida.

SAJ has worked with the local stakeholders through the Tampa Bay Regional Planning Council's Agency on Bay Management since the early 2000s to identify beneficial uses for the maintenance material dredged from both Tampa and Manatee Harbors. A multi-agency partnership conducted a Dredged Hole study (TBEP, 2005) that analyzed a number of previously dredged holes throughout the Bay for their habitat value. The final report provided guidance to agencies on which holes to

Next Page

prioritize for restoration. The report's findings have since been used to restore (or partially restore) two dredged holes in Tampa Bay: MacDill Hole and McKay Bay Dredged Hole.

Another historic instance of Regional Sediment Management was the placing of material from Johns Pass and Blind Pass onto the downdrift beaches that comprise the Pinellas county Shore Protection Project. SAJ has also placed smaller volumes of material in the nearshore area of Egmont Key.

Current RSM Techniques under Consideration:

While some RSM efforts have been ongoing for twenty years, SAJ has been studying the area to increase the effectiveness and sustainability of the efforts in Tampa Bay. The techniques that are being considered for further implementation include beach nourishment, nearshore placement, dredge hole restoration, island creation, longshore bar restoration, and thin layer placement. Descriptions of these techniques can be found below.

Beach Nourishment: Beach nourishment at Egmont Key, Fort DeSoto, and the Pinellas County beaches combats coastal erosion while being a relatively cost-effective placement opportunity. The need for land-based equipment increases costs over nearshore placement, but the associated restoration benefit is substantial.

Nearshore Placement: Nearshore placement adjacent to any of the Hillsborough County (Egmont Key) or Pinellas County beaches is an appropriate placement option for material that is too silty for beach placement. As long as it is placed within the sediment sharing system, material placed in the nearshore region will aid in preventing erosion on the adjacent beach. A portion of the material placed in the nearshore is generally expected to move onshore through wave action, depending on the local wave climate. As it does not require shore-based equipment, it is extremely cost-effective.

Dredged Holes: Dredged holes created for the purpose of obtaining construction material are scattered throughout Tampa Bay. While some provide valuable fisheries habitat, others experience poor water quality and would benefit from restoration. It can be difficult for dredge equipment to access some dredged holes, and turbidity impacts to adjacent seagrasses can be a concern.

Island Creation/Stabilization: Uninhabited islands in Tampa Bay provide valuable habitat for nesting shorebirds, seabirds, and wading birds. Dredged material (especially from new construction projects) could be used to create new islands and expand existing islands. Turbidity controls are required, especially if maintenance material were used for the work.

Longshore Bars: Restoring longshore bars in the Bay could positively impact seagrass habitats in areas impacted by increased wave climate. This is the most expensive option due to the linear nature of placement and the turbidity control requirements.

Next Page

Thin Layer Placement: Thin layer placement involves discharging the material as a slurry onto marsh habitats experiencing lower substrates due to sea level rise or subsidence. Material is typically spread in six to eight inch increments to avoid smothering the existing vegetation. Vegetation generally recovers in one to two years. Mobile Bay and the Columbia River Basin have successfully implemented subtidal thin layer placement applications as well.

Figure 2: Thin-layer placement during the New Jersey Avalon Pilot Project (Chasten and Goldberg, 2016).

Future of Tampa Bay RSM Efforts:

One concern that exists is the data gaps with respect to sediment compatibility for the various types of habitat restoration. While some restoration efforts can utilize a wide variety of sediment types, other habitats may require a narrow type of sediment that would be difficult to guarantee from maintenance activity without extensive pre-construction sediment sampling.

For the time being, studies will continue within Tampa Bay with the goal of better understanding the most efficient way of utilizing Regional Sediment Management. All of the techniques mentioned above will come under further study in order to maximize their potential efficiency. Proper use of Regional Sediment Management will aid existing and future projects be more efficient, environmentally beneficial, and less expensive.

Chasten, M., Goldberg, K. (2016). Recent Experience with Channel Dredging and Placement to Restore Wetlands in New Jersey. U.S. Army Corps of Engineers.

Tampa Bay Estuary Program (TBEP). (2005). Technical Publication #04-05, Tampa Bay Dredged Hole Habitat Assessment Project, Final Report, A report to the U.S. Environmental Protection Agency Region 4 By the Tampa Bay Dredged Hole Habitat Assessment Advisory Team.

Back to Main Page

FDEP Division of Water Resource Management

Agency Updates

Storm Tide Hydrographs Available:

In 2009, the Florida Department of Environmental Protection (FDEP) recognized the importance and need for high-frequency storm tide hydrographs in coastal planning and regulation activities. The former Beaches and Shores Resource Center at Florida State University was contracted to study and develop a storm tide hydrograph for coastal counties having beach management activities where a Coastal Construction Control Line was established. Since 2013, the FDEP has continued the studies and recently completed the storm tide hydrographs for all 24 coastal counties with sandy beaches. The study reports and hydrographs are posted on the FDEP website for use by department staff and Florida's coastal consulting engineers.

Farewell to Two Seasoned Employees:

Bobby Halbert has left the Beaches, Inlets and Ports (BIP) Program to become the Enforcement Chief for the Regulatory Division of the U.S. Army Corps of Engineers in Jacksonville. Prior to working as a BIP permit manager, Bobby worked as the Beaches Compliance Officer and as a permit manager for the Coastal Construction Control Line (CCCL) Program for years. We look forward to continuing our relationship with Bobby regarding federal compliance matters.

Fritz Wettstein has left the CCCL Program to become the Land Use Planning Program Administrator in the Office of Conservation Planning at the Florida Fish and Wildlife Conservation Commission. He has worked for Beaches for 14 years and held previous positions in the Division of Recreation and Parks and the Coastal Aquatic Managed Areas program. His expertise in coastal plants and habitats will be missed. "I'm going to miss the sand in my shoes" he remarked on his last day.

Welcome Aboard to new Engineering, Hydrology and Geology Program Personnel:

Michael Bateman is the new Environmental Administrator for the Engineering, Hydrology and Geology (EHG) Program, following Richard Musgrove's retirement. Michael has been the Bureau Chief of Environmental Resource Permitting in the Northwest Florida Water Management District for the last six years. In his new role, he will oversee the stormwater, dam safety and hydrology aspects of the EHG Program.

Peter Bacopoulos is a new coastal engineer to the EHG Program. He comes from the University of North Florida and has extensive experience in the physics of coastal and estuarine hydrodynamics. His experience includes the study of tides, storm surge and waves, salinity and sediment transport, estuarine/riverine hydraulics and hydrology, high-resolution unstructured meshing techniques, numerical modeling of coastal-ocean circulation and waves, large-scale high-performance computing and multi-process simulation (physical/biochemical/eco-landscape).

Back to Main Page

The 2017 Best Beaches in the U.S.A.
Siesta Beach Ranks #1

Just in time for Memorial Day, three Florida beaches received national recognition from Dr. Leatherman, otherwise known as Dr. Beach. After evaluating 650 beaches across the country using 50 criteria, Dr. Leatherman nominated Sarasota County's Siesta Beach as the #1 beach in the country. Two other Florida beaches nominated in the top 10 were Caladesi Island State Park in Dunedin/Clearwater, and Grayton Beach State Park in Santa Rosa Beach; all have been winners of this prestigious award in previous years.

Visit Sarasota County released the following announcement after receiving the news:

"It is an honor for Siesta Beach to receive this recognition for a second time," says Virginia J. Haley, CDME, President of Visit Sarasota County. "The investments by Sarasota County to improve the amenities offered at the beach have paid off with this #1 ranking. Since holding the number one spot in 2011, Sarasota County invested more than $21 million to renovate the amenities offered at the beach. These include additional free parking spaces, a playground, extended picnic areas and more. These investments only add to the pristine beauty Siesta Beach."

America's Best Beaches are evaluated on criteria that include aesthetic and environmental conditions, amenities, beach use, and safety. Dr. Leatherman said "Siesta Beach is not only a beautiful location for beachgoers, but it is also an environmentally healthy beach and offers first-rate beach safety for its visitors." Siesta Beach also received accolades for its fine, white sand, gently-sloping beach-face, and clear, clean waters.

Next Page

For more information about visiting Siesta Key Beach in Sarasota County on Florida's Gulf Coast, go to visitsarasota.org.

Congratulations, Siesta Beach. Thank you for keeping Florida's brand strong.

Back to Main Page

The **36th INTERNATIONAL CONFERENCE ON COASTAL ENGINEERING (ICCE)** will be held in the Inner Harbor, Baltimore, Maryland - the city's premier tourist attraction - during **July 30 to August 3, 2018.**

The abstract deadline is **AUGUST 1, 2017**. For more information go to http://www.icce2018.com

Back to Main Page

Shoreline

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CALENDAR OF EVENTS

FSBPA Conferences

September 27-29, 2017
60th Annual Conference
Westin Fort Lauderdale Beach Resort
Fort Lauderdale, Florida

February 7-9, 2018
2018 Tech Conference
Edgewater Beach & Golf Resort
Panama City Beach, Florida

OTHER DATES OF INTEREST

October 24-27, 2017
ASBPA 2017 National Coastal Conference
Fort Lauderdale, Florida

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Back to Main Page