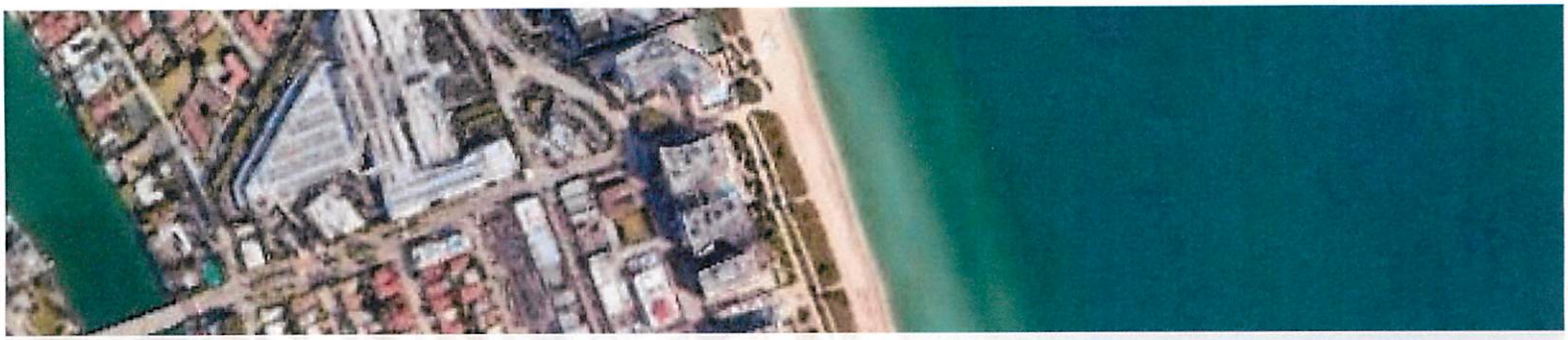
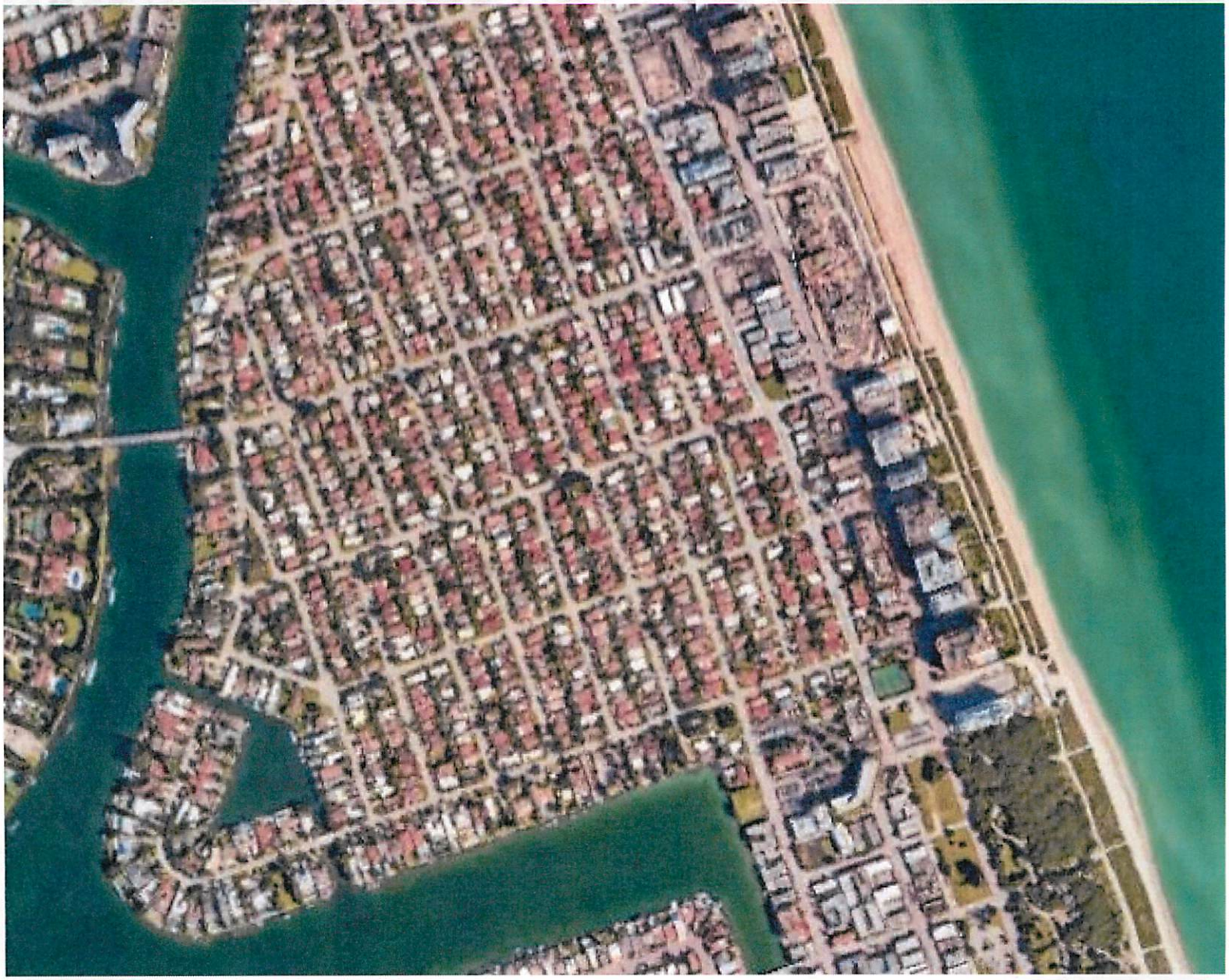


TOWN OF SURFSIDE

CLIMATE CRISIS

OVERVIEW, ACTIONS TAKEN + NEXT STEPS

FIRST EDITION | NOVEMBER 2019



TEAM

DEVELOPMENT TEAM

Daniel Dietch	MAYOR
Guillermo Olmedillo	TOWN MANAGER
Duncan Tavares	ASST. TOWN MANAGER

CONSULTANTS

Calvin, Giordano & Associates, Inc.
University of Miami School of Architecture **LU_lab**

REVIEWERS

SUSTAINABILITY + RESILIENCE COMMITTEE
PLANNING + ZONING COMMITTEE
TOWN COMMISSIONERS

CONTENTS

CALL TO ACTION

"In the short term, sea level rise is projected to be 6 to 10 inches by 2030 and 14 to 26 inches by 2060 (above the 1992 mean sea level). Sea level has risen 3 inches from 1992 to 2015. In the long term, sea level rise is projected to be 31 to 61 inches by 2100." These are the projections of the Southeast Florida Regional Climate Change Compact's Unified Sea Level Rise Projection for Southeast Florida.

"Human Influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gasses are the highest in history. Recent climate changes have had widespread impacts on human and natural systems." That is the headline statement from the Synthesis Report (SYR) of the Intergovernmental Panel on Climate Change (IPCC) fifth assessment report (AR5). Climate, generally defined as the weather conditions prevailing in an area in general or over a long period, is not static and is not anticipated to be. However, it is the rapidity in the change in climate that is now creating global shocks and stresses. It is the rapidity in the change in climate that has now created a global climate crisis.

There is consensus in the global scientific data that greenhouse gas (GHG) emissions are the causal factor in the current rapidly occurring changes to the climate. The principal GHGs are Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), and fluorinated gasses such as Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. These gasses received the name 'greenhouse gasses' because they trap heat in the atmosphere. Global impacts will only increase in frequency and / or intensity over time if effective actions are not identified to reduce GHG levels in the atmosphere.

LEXICON OF TERMS

Adaptation_ the process of changing to suit different conditions

BFE_ base flood elevation

Climate Change_ a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels

Comprehensive Transportation_ The distribution of mobility– personal, services and goods– through a comprehensive transportation approach reduces pressure on roadway networks. A comprehensive transportation approach includes small-scale short distance services through shared bike and scooter services, public mass transient methods and adaptability to new or developing services.

Dry Floodproofing_ for non-residential buildings, a flood mitigation technique that results in the building resisting penetration of flood water, with walls substantially impermeable to the passage of water and structural components having the capacity to resist specified loads

Freeboarding_ in the design of a structure, the additional height that the structure is protected from flood waters above the BFE is called the freeboard.

Mitigation_ the act of reducing how harmful, unpleasant, or bad something is

NAVD 88_ North American Vertical Datum, 1988

Resilience_ the capacity to recover quickly from difficulties; toughness

Retreat_ an act or process of withdrawing especially from what is difficult, dangerous, or disagreeable

Shocks_ acute, sudden, intense events that threaten a community, such as a hurricane

Sea Level Rise [SLR]_ an increase in sea level caused by a change in the volume of the world's oceans due to temperature increase, deglaciation (uncovering of glaciated land because of melting of the glacier), and ice melt.

Storm Surge_ a rising of the sea as a result of atmospheric pressure changes and wind associated with a storm

Stresses_ pressures that weaken the fabric of a community over time, such as recurrent flooding, or overtaxed or inefficient transportation or other infrastructure systems

Tidal Flooding_ the consistent occurrence of coastal saline waters collecting and impacting land areas that had historically been dry land areas, often during high tides or king tides

Wet Flood-proofing_ a flood mitigation technique designed to permit parts of the structure to intentionally flood, by equalizing hydrostatic pressures and by relying on the use of flood damage-resistant materials.

3.0 CLIMATE ASSESSMENT
REGIONAL OVERVIEW

Florida is the third largest state by population. The southeast region is recognized as the fourth largest urban area in the country (projected to be 6.5 M by 2030), is one of fastest growing regions, and is characterized by:

- Dense urban coastal development with 140 miles of shoreline,
- Flat and low-lying topography,
- Porous geology,
- Active flood management, and
- Fragile natural resources.

These characteristics create challenges in that the porous geology does not allow for protection from sea level rise just through the use of levees or seawalls, the relatively flat topography increases the area prone to flooding and subject to surge, the dense urban development limits open space and green infrastructure options, and the protections provided by offshore reefs and other marine systems are degrading due to ocean acidification.

Dredging of Tamiami Trail, 1921.

Large scale systems such as regional water storage, protection of the aquafer and potable water source, functionality of the Central and South Florida flood control system, regional beach sediment management, protection of the offshore reef system, and regional transportation and infrastructure systems require a collaborated and cooperative regional approach; which the Town is actively doing and will continue to do. Effecting changes in the building code to ensure structural integrity of the built environment to projected increases in storm strength is a state-wide and larger cooperative effort. And reducing carbon emissions is an effort to be addressed at the local, regional, state, federal and global levels.

The Town does not have its own well-field, water or wastewater treatment facilities. The Town continues to coordinate with Miami-Dade on the production and transport of potable water to the Town and on the transport and treatment of wastewater

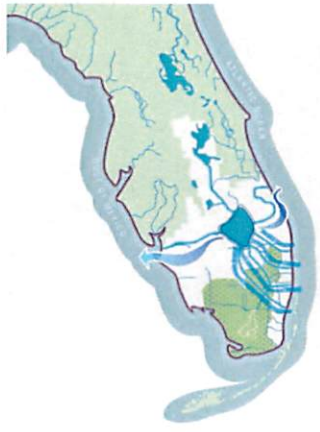
View of intricate water system providing drainage and water supply throughout southern Florida.

Created in 2013 the 100 Resilient Cities (100RC) program, pioneered by the Rockefeller Foundation, is dedicated to helping cities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21st century. In December of 2013 the Greater Miami and the Beaches (GM&B) area was selected in the first group of 32 cities to participate in this program. The program reference to the Greater Miami and the Beaches (GM&B), encompasses not only the Cities of Miami and Miami Beach but also includes the metropolitan areas of Miami-Dade County inclusive of Surfside. On July 8, 2019, The Rockefeller Foundation announced an $8 million commitment to continue supporting the work of Chief Resilience Officers and member cities within the 100RC Network. GM&B recognizes the following as their regional 21st century shocks and stresses:

- Coastal / Tidal Flooding
- Hurricanes / Extreme weather events
- Inadequate Public Transportation Systems
- Infrastructure Failure
- Lack of Affordable Housing
- Poverty
- Rainfall Flooding
- Sea Level Rise / Coastal Erosion

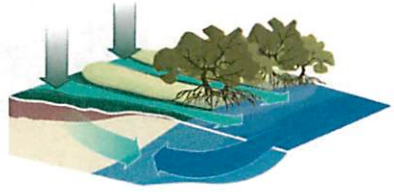
HISTORICAL FLOW

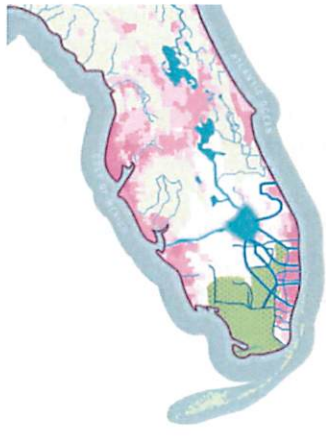
The landmass that forms Miami-Dade County was originally a flat coastal ridge bounded by the dense mangrove forests along Biscayne Bay and the broad flat expanses of Everglades wetlands. The line between land and water was blurry and in constant flux.



1899 -1927: DRAINING THE EVERGLADES

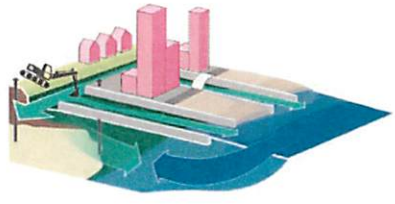
The US Army Corps of Engineers is given authority to regulate the navigable waterways and construction of obstructions such as dams. Approximately 225 miles of canals are dug over the next seven years to attract farm settlement and to accommodate steamboats for commerce. Later, six large drainage canals and 440 miles of smaller canals, including 47 miles of levees and 16 locks and dams are constructed to further drain the swampland, significantly lowering groundwater levels.





1970s-Present: DENSE DEVELOPMENT

The canal system effectively drained much of the wetlands in the western part of Miami-Dade County to allow population growth and infrastructure development. However, alterations in the water system have also led to a decline in water quality. Because our drinking water comes from the aquifer just below the land surface, and because a clean environment is vital to our tourism-based economy, it is essential we find ways to protect our water resources. Additionally, because so much is built so close to the water and just a few feet above sea level, there is a substantial risk of flooding.

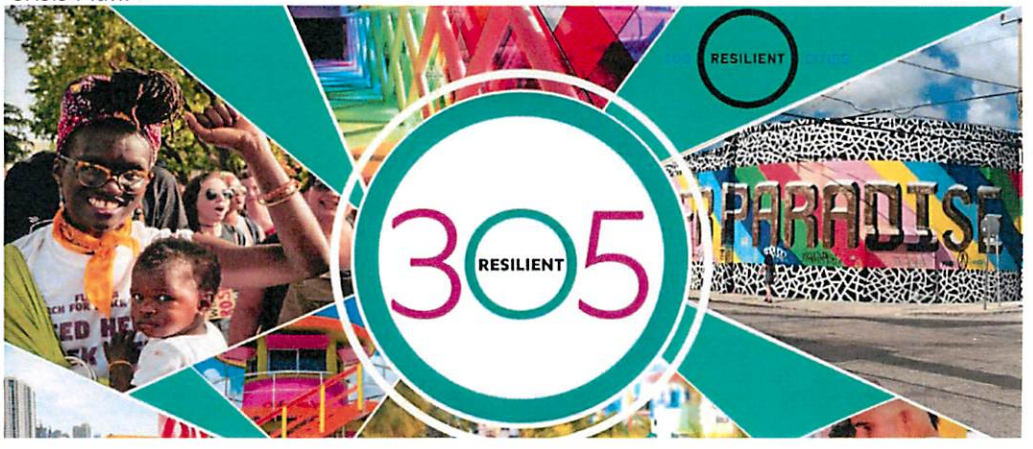


Miami's History: *Living With Water* map series by Miami Dade County Resiliency Team, 2019.

REGIONAL OVERVIEW [cont.]

As a part of the 100 Resilient Cities initiative, the Resilient 305 Strategy (named after the highly recognized area code) was developed; this is identified as **"a living document to address resilience challenges and encourage the 305 community (GM&B) to work together to better prepare for an increasing occurrence of shocks, such as hurricanes, and infrastructure failures, as well as better mitigate stresses, such as sea level rise and sunny day flooding, crippling traffic and severe economic inequities."** The Resilient 305 report states that "over 50 actions have been identified, developed and organized for the Resilient 305 Strategy into three overarching goal areas: Places, People, and Pathways."

The Resilient 305 program, also referred to as R305, met with the Town and produced a document specific to Surfside identifying tools and opportunities for the Town within the framework of the R305 Strategy. On June 11, 2019 through Resolution 19-2597 the Town pledged to join, collaborate and support the implementation of the Resilient 305 strategy. The Resilient 305 Surfside document is included as an exhibit to the Climate Crisis Plan.



305 Resiliency Plan: City of Miami, Miami Beach + Miami Dade County, 2019.

3.0 CLIMATE ASSESSMENT
LOCAL IMPACT

Climate change is a global issue with regional and localized specific impacts. Due to the geophysical location and characteristics of the Town, sea level rise alone has the potential to be disruptive and destructive both physically and economically. Climate change also includes public health and socio-economic impacts. Outlined below are the projected local impacts.

3.1 Locally the changing climate:

- Will bring varying precipitation patterns increasing the potentials for drought or flood;
- Has the potential to increased storm and hurricane intensity;
- Will cause prolonged periods of high temperatures threatening vulnerable members of the community and greatly increase energy use;
- Increases sea temperatures and ocean acidification compromising the viability of the offshore protective reef systems;
- Creates conditions to introduce and increase the presence of tropical diseases that have not historically been concerns; and
- Is causing rising sea levels.

Image of historic Miami and natural ecology.

3.2 Local sea level rise challenges include:

- Intrusion into the freshwater source for potable water;
- Increases in storm surges;
- Decreasing functionality of the storm-water drainage systems;
- Intrusion into storm-water and sewer system infrastructure;
- Flooding in neighborhoods and roadways;
- Releases of contaminants, debris, or hazardous materials associated with flooding; and
- Rising ground water elevations.
- Beach and dune erosion

Historic images of natural barrier islands and future Miami Beach from 1919.

3.3 Local socio-economic impacts include:

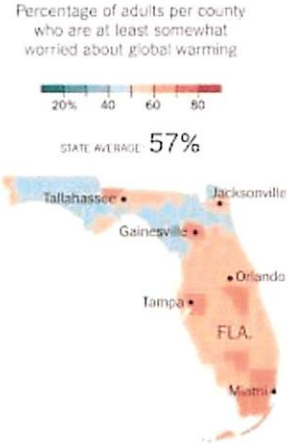
- Displacement;
- Decrease in property values and tax base;
- Increased costs to harden or replace infrastructure;
- Increases in insurance costs; and
- Loss of services and impaired access to infrastructure.

3.0 CLIMATE ASSESSMENT

PROJECTED SEA LEVEL RISE

Southeast Florida Regional Compact logo and mission.

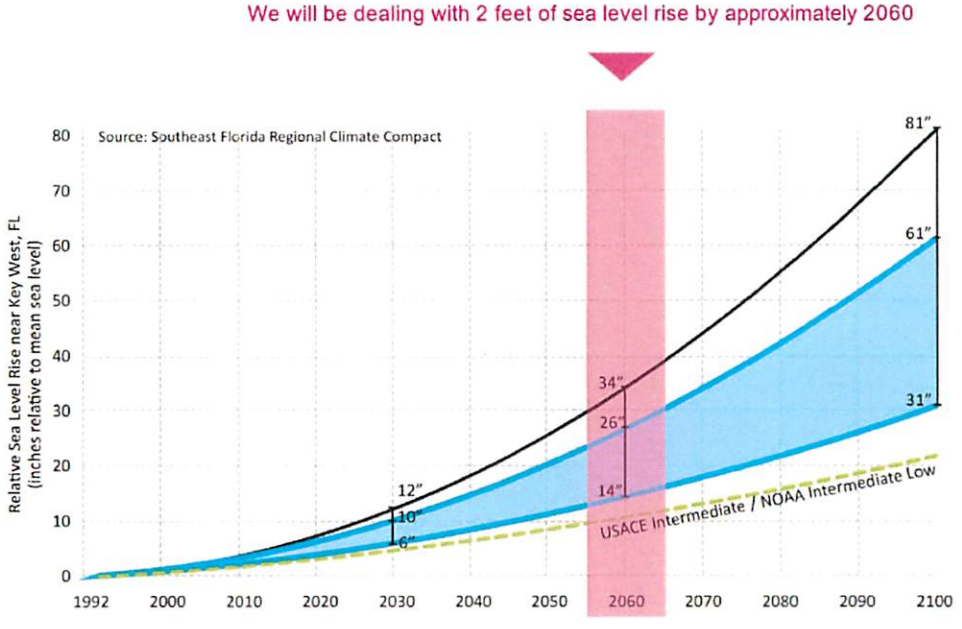
Per the IPCC, Florida is one of the more vulnerable areas in the U.S. to climate change impacts. In recognition of these impacts Broward, Palm Beach, Miami-Dade and Monroe Counties formed the Southeast Florida Regional Climate Change Compact (Compact) in 2009. The Compact coordinates mitigation and adaptation activities; provides valuable resources and data; and provides a substantive voice to jointly advocate for state and federal policies and funding. The Compact has developed the Regional Climate Action Plan (RCAP) and has defined regional climate and community indicators based on local, state, and federally produced data. The Compact produced the 2015 update of the Unified Sea Level Rise Projection for the Southeast Florida compact counties inclusive of Surfside.



Sea Level Rise and Global Warning awareness mapped by Southeast Florida Regional Compact.

The updated report restated that the "objective of the unified sea level rise projection is for use by the Climate Compact Counties and partners for planning purposes to aid in understanding of potential vulnerabilities and to provide a basis for developing risk informed adaptation strategies for the region." The unified sea level rise projection includes three curves, in descending order, the National Aeronautics and Space Administration (NOAA) High Curve, the U.S. Army Corps of Engineers (USACE) High Curve and a curve corresponding to the median of the IPCC Fifth Assessment Report. For critical infrastructure projects with design lives in excess of 50 years, use of the upper curve is recommended. The NOAA Jet Propulsion Laboratory (2015) has reported the average global sea level has risen almost 3 inches between 1992 and 2015 based on satellite measurements. Sea level rise in South Florida has been of similar magnitude over the same period (NOAA, 2015) but is anticipated to outpace the global average due to ongoing variations in the Florida currents and Gulf Stream.

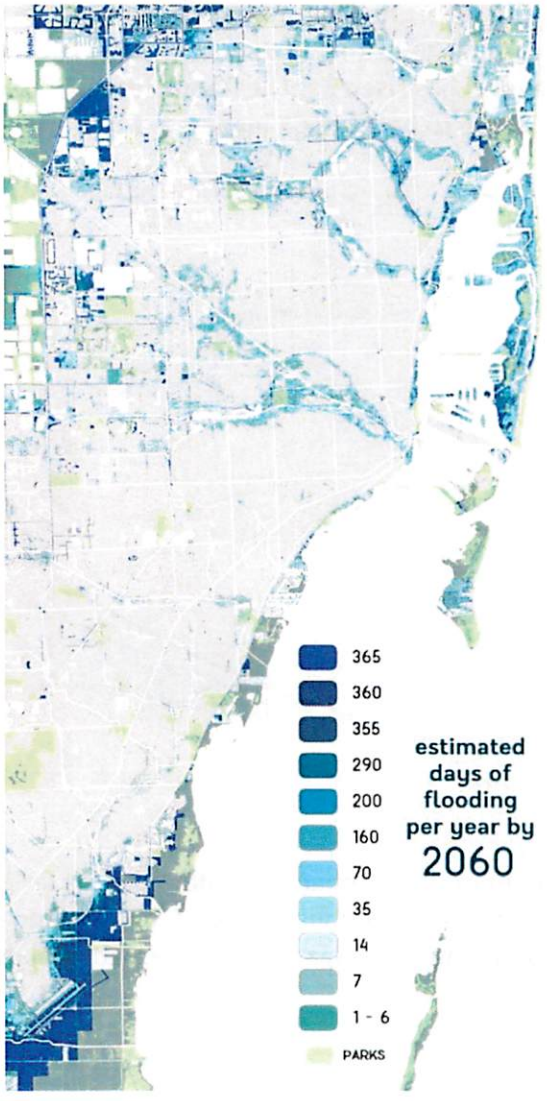
To restate the report findings, **"In the short term, sea level rise is projected to be 6 to 10 inches by 2030 and 14 to 26 inches by 2060 (above the 1992 mean sea level). Sea level has risen 3 inches from 1992 to 2015. In the long term, sea level rise is projected to be 31 to 61 inches by 2100."**



Southeast Florida Regional Compact Projections of Sea Level Rise.

It is the intent of the Compact to update the sea level rise projections every five to seven years, to continuously aid the Counties and the Cities of the Southeast region in preparation, mitigation and adaptation planning.

3.0 CLIMATE ASSESSMENT
PROJECTED SEA LEVEL RISE [cont.]



Estimated days of flooding per year by 2060 show increased frequency and severity of King Tides will cause frequent flooding. Provided by Miami Dade County, analysis completed by Arcadis Inc.

PROJECTED SEA LEVEL RISE

Below are maps of Surfside shown under the high NOAA, sea level projection curve for the years 2040, 2060 and 2080. Very limited impacts are projected for 2040, but the impacts increase for 2060 and significantly more for 2080, providing long range guidance under the high projection curve scenario.

2040

Estimated flood inundation by 2040. Data based on: https://sls.geoplan.ufl.edu/#about. Scenario NOAA, high projection curve.

2060

Estimated flood inundation by 2060. Data based on: https://sls.geoplan.ufl.edu/#about. Scenario NOAA, high projection curve.

2080

Estimated flood inundation by 2080. Data based on: https://sls.geoplan.ufl.edu/#about. Scenario NOAA, high projection curve.

3.0 CLIMATE ASSESSMENT

SURFSIDE GREENHOUSE GAS EMISSIONS INVENTORY

The Town is a participating member in ICLEI-Local Governments for Sustainability. ICLEI is "a global network of cities, towns and regions committed to building a sustainable future." ICLEI provides technical assistance in many regards but in particular in conducting carbon emission inventories; and they provide access to ClearPath™ a leading online software platform for completing greenhouse gas inventories. The Town is in the process of compiling the data necessary to enter into the ClearPath software to complete an emissions inventory specific to the Town, and to establish a baseline for the Town to be able to determine what emissions reductions they may be able to move forward with. Establishing the carbon emissions for a community informs climate action planning, demonstrates accountability and leadership, and enables aggregation of GHG emission data across regions, among other benefits.

4.0 COMMUNICATION + COMMUNITY

Effective communication helps civic and government partners, and citizens understand their community's capacities, strengths, weaknesses, and risks in a comprehensive way. Public information and outreach are essential components in the resilience toolkit. Effective communication facilitates cohesion, a sense of community and civic buy-in.

The Resilient Cities, Resilient Lives Learning from the 100RC Network Abridged Version July, 2019 document states that the "business-as-usual models of reactive planning and siloed decision-making will not generate the fundamental strength and flexibility essential for us to thrive in the face of the shocks and stresses of the 21st century." Resilience planning requires forward thinking; without a cohesive sense of community, residents will not feel invested in forward thinking outcomes. Civic buy-in for needed resilience measures is impeded without a shared sense of investment.

From a superficial look at just bold headlines, addressing climate impacts seems daunting; however, the stresses are incremental and are more and more being defined and refined. The impacts are not unexpectedly occurring and can be planned for. In the local context, communicating the following manageable incremental steps to increase resilience aids in capacity building.

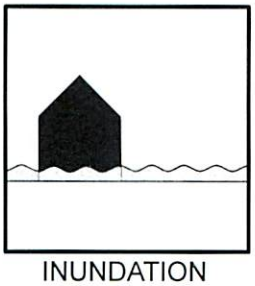
- **Understand the local impacts**
- **Identify the local vulnerabilities**
- **Prioritize the local vulnerabilities**
- **Implement the best resiliency strategy for the priority vulnerabilities**
- **Develop a time-line that addresses short term | medium | long term strategies**

4.0 COMMUNICATION + COMMUNITY

Strategic resilience options include but are not limited to protection, accommodation, managed retreat, or avoidance. Through emissions reductions, preparedness, mitigation and adaptation, the Town can increase resilience and reduce the current and projected adverse impacts from the changing climate. Strategic resilience options also require the development and implementation of an effective public information program. Effective communication increases understanding of these options and the outcomes.

5.0 VULNERABILITIES + RISKS [cont.]

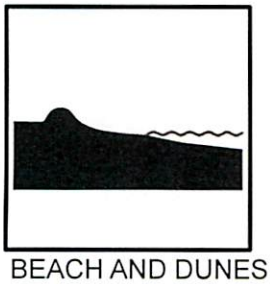
Although communities can be at risk to a variety of shock events such as terrorist attacks, biohazards, hacking of computer systems, disruptions to communication, transportation or other infrastructure systems, or to widespread disease outbreaks, and are subject to a variety of stressors that may be transportation or socio-economic in nature, the focus of this report is climate and this section will focus on the most prominent climate related vulnerabilities and risks.



INUNDATION

Inundation – sea level rise puts the Town at risk of inundation. In 2012 the Compact and the individual Compact Counties completed a region-wide and county-wide sea level rise inundation vulnerability assessment. The assessment ran inundation scenarios at 1, 2 and 3 feet of sea level rise. The report produced countywide Maps at 1, 2, and 3 Foot Sea Level Rise highlighting Possible and More Likely Impacts. The maps did not show any impacts for the Town at 1 and 2 foot of sea level rise but did show impacts at the 3-foot level. The report can be found at: http://www.southeastfloridaclimatecompact.org//wp-content/uploads/2014/09/vulnerability-assessment.pdf.

The University of Florida GeoPlan Center provides the Sea Level Scenario Sketch Planning Tool. The tool helps to identify transportation infrastructure vulnerable to current and future flood risks using sea level rise (SLR) scenarios from the U.S. Army Corps of Engineers (USACE) and the National Oceanic and Atmospheric Administration (NOAA) / National Climate Assessment. This tool is found at https://sls.geoplan.ufl.edu/#about. **[SEE MAPS IN SEA LEVEL RISE SECTION]**

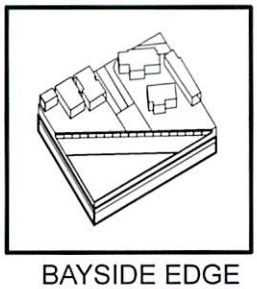


BEACH AND DUNES

Beach and dunes – this protective natural system is by nature unstable. The Town recognizes the protective value of the beach and dune system, particularly to the Town's main thorough fairs that are also main thorough fairs for the entire barrier island. The Town also recognizes that beaches and dunes are constantly subject to erosional forces and are not stable systems. The Town obtained beach dune

5.0 VULNERABILITIES + RISKS [cont.]

height topographic survey information with a grid of cross section elevations traversing from the ocean Bulkhead line to the edge-of-water along the Atlantic coastline and compiled a Beach Dune Report to understand the conditions, ownership, responsibility designations, and the applicable regulatory structure of the beach and dune system to guide future decisions on the management and protection of this protective coastal system. An U.S. Army Corps of Engineers (USACE) driven project is placing 330,000 cubic yards of sand along the beach front of Surfside. Work on this beach renourishment project began in mid-August of 2019. The Town is an active partner with the USACE and Miami-Dade County in this project. The Town has provided surveying services and provided the permit processing services for this project. See Exhibit 8.2 Beach and Dune Report.

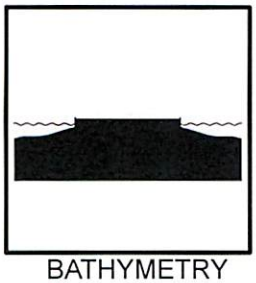


BAYSIDE EDGE

Bayside Shorelines / Seawalls – not all seawall heights within the Town provide protection from storm surge, nuisance and seasonal high tide flooding, and short-term elevated water levels. Although the porous geology of south Florida does not allow for protection from sea level rise just through the use of levees or seawalls; seawalls can however provide a level of protection from storm surge, nuisance and seasonal high tide flooding, and short-term elevated water levels. The Town obtained two Florida Inland Navigation District (FIND) grants to financially assist in replacing and elevating all Town owned seawalls and has raised all Town owned seawalls. At the time the Town replaced and elevated the Town owned seawalls, the Town residents and businesses were provided a very competitive rate to replace seawalls their seawalls through the contractor working on the Town project. No residents took advantage of that opportunity. The Town also adopted an ordinance that specifically requires the following: "The elevation for the top of shore end of all groins or other shore protective work shall be plus five feet above mean low water; the elevation for the top of seaward end of all groins and other shore protective work shall be +2.5 feet above mean low water; and the elevation of the top of all seawalls fronting on the waters of

5.0 VULNERABILITIES + RISKS [cont.]

Biscayne Bay, Indian Creek and Point Lake shall be plus five feet above mean low water." This ordinance provides for an initial, and for an ever-increasing height as the mean low water line increases. Unfortunately, until all seawalls are uniformly elevated to a specified protective height, flood protection is limited.



BATHYMETRY
TOPOGRAPHY

Topography – the low elevation of the Town places it at risk of inundation from sea level rise, storm surge and hinders effective stormwater management. The Town is relatively flat and has very low elevation, particularly on the west side making the Town very vulnerable to sea level rise, storm surge and stormwater ponding. In the Town's ongoing efforts to develop accurate, effective and comprehensive flood reduction strategies, in 2018 the Town obtained elevation data at all street centerline intersections of the public rights-of-way within the Town. The street intersection data will produce specific and accurate information on the lowest locations within the Town. This data will be incorporated into the Town's GIS database to cross reference FEMA Flood Insurance Rate Maps (FIRM) data, infrastructure data, historic site data and all other data layers the Town has developed. The analysis of this data will enable the Town to direct planning efforts and strategies toward the infrastructure, critical facilities and adjacent properties in specific locations; direct Capital Improvements funds most effectively; and assist the Town in assessing and developing effective freeboard criteria as needs arise.

AGING
INFRASTRUCTURE

Aging Infrastructure - inefficiencies and failures increase with aging systems. The Town of Surfside is an older, built-out community. The Town was founded in 1935. Much of the infrastructure in the Town is old, not only Town owned and controlled infrastructure but the infrastructure in place through FDOT, FPL, TECO, Miami-Dade County or other service providers. The older stormwater drainage system designed for lower sea levels, lower ground water levels, lower rainfall patterns and less pervious surfaces is less efficient. The Town Hall that houses

5.0 VULNERABILITIES + RISKS [cont.]

the Emergency Operations Center (EOC) is an older building constructed before the Florida Building Code was updated to enhance storm protection, and before increased elevations were required for vital facilities.

STORM EVENT

Shocks and Stresses – hurricanes and chronic flooding are the most prominent.

Shocks: The most significant natural disaster threat the Town needs to plan for is the event of a hurricane; tornadoes may accompany these extreme weather events. Hurricanes have the potential to cause widespread property and infrastructure destruction and damage from wind and water, and can incapacitate water, sewer, communication and transportation systems and the capacity for police and emergency responders to function. The changing climate is projected to increase storm and hurricane intensity.

RISING SEAS

Stresses: The most persistent stressor in the Town is chronic flooding. Rising seas, increased rainfall and rising ground water elevations will only exacerbate this problem with time.

RISING
GROUND WATER

6.0 ACTIONS TAKEN

Global, national, state and regional agencies and actions are necessary in addressing the impacts of climate change and are vital partners to cities, but cities are the key to effective climate actions. The vast majority of people and assets on the planet are in cities. Cities are uniquely positioned, and often are the only entity, to identify, prioritize and implement the best strategies for local conditions. The Town has taken an early and aggressive leadership position in addressing resilience and in forming effective alliances and partnerships. Resilience is a commitment by the Town and continues to be. Below is a brief overview of the Town's climate leadership actions.

6.1 FEDERAL + STATE INCENTIVES

The Town cannot take federal or state actions but does influence those actions by establishing relationships and effective communications to relay the needs of and the views of the Town on state and federal legislative matters. Below are several matters the Town has taken an active position on.

- Urged the U.S. Congress to pass the Energy Innovation and Carbon Dividend Act (H.R. 763) Resolution No. 19 – 2572
- Opposing Federal considerations for Offshore Drilling Including Seismic Airgun Blasting, Resolution 18-2528
- Urged the US Congress to establish a Fund to Financially Assist and Support Local Governments, such as the Town of Surfside, Florida in Developing and Implementing Solutions to Sea Level Rise and Related Impacts, Resolution 16-Z-2360
- Urging Expedition and Completion of the Biscayne Bay Coast Wetlands Project, Resolution 17-2413
- Urged the Florida Legislature to allocate $300 Million of the Funds in the Land Acquisition Trust Fund Annually Toward Land Acquisition, Resolution 16-2351

6.0 ACTIONS TAKEN [cont.]

- Supprting the Central Everglades Planning Project, Resolution 12-2105 and Resolution 14-2222
- Encouraging the return or recycle of all beverage containers and other recyclable materials, Resolution 11-2011
- The Town supported the Active Design Miami: Design and Policy Strategies for Healthier Communities implemented by the Miami Center for Architecture & Design (MCAD) as part of a contract with the Florida Department of Health, funded through the Centers for Disease Control.
- Miami Beach Fund, urging the US Congress to Fund the Study of Foreign Sand Use in Beach Nourishment Projects in Miami-Dade County, Resolution 18-2486
- Urging The United States Congress to Support Language In The FY 2018 Federal Appropriations Bill and the 2018 Disaster Recovery Supplemental Providing For 100 Percent Federal Funding of the South Atlantic Coastal Study Authorized In Section 1204 of the Water Infrastructure Improvements For The Nation Act, With The Necessary Language And Funding To Ensure Inclusion of the Previously Authorized Central and South Florida Flood Control Project and Its Area as Part of This Study
- Urging the Florida Legislature and the FL Public Service Commission to require expedited conversion of overhead electric distribution facilities to unground facilities. Resolution 17-2473

6.2 STRATEGIC ALLIANCES

Strategic alliances with like-minded organizations amplify your voice and your efforts. The Town has effectively sought out and established alliances with organizations that amplify the Town's resilience efforts. Below is a list of a few of the Town's effective alliances.

6.0 ACTIONS TAKEN [cont.]

- Southeast Florida Regional Climate Change Compact. The Town of Surfside early on endorsed the 'Mayor's Climate Action Pledge' on May 5, 2013, in support of the Southeast Florida Regional Climate Change Compact and the Regional Climate Action Plan.
- **Mayor's Beach Alliance.** This is a coalition of the Miami-Dade barrier Island municipalities to create a unified voice to urge the County, State and Federal governments to develop long term solutions to beach erosion and restoration.
- **Compact of Mayors.** This is the largest global alliance for city climate leadership, partners to the Compact of Mayors include C40, ICLEI, UCLG and UN Habitat.
- **American Flood Coalition.** This is a nonpartisan group of political, military, business, and local leaders that have come together to drive adaptation to the reality of higher seas, stronger storms, and more frequent flooding.
- **Resilient 305.** This is a Greater Miami and the Beaches coalition working together to prepare for 21st century shocks and stresses and implement unified resiliency strategies.
- **Youth Environmental Alliance.** The Town is providing logistical support for the Youth Environmental Alliance (YEA) in connection with the Miami-Dade County environmental enhancement and education grant program for environmental education funding. The Town also had partnered with YEA on a Town sea oats dune planting project. YEA is instrumental in delivering hands-on educational programs focusing on Florida's fragile ecology and restoration and recreational opportunities, their programs target underserved communities.
- **Florida International University (FIU).** The Town has engaged the FIU's Lehman Center for Transportation Research (LCTR) to study the Town's

6.0 ACTIONS TAKEN [cont.]

and neighboring municipalities' transportation systems.

- **University of Miami.** The Town is currently working with the University School of Architecture, Littoral Urbanism (LU_Lab) on a the development of a comprehensive urban resilient strategy.
- **Environment America's "Mayors for Solar Energy".** This organization is building a broad, bipartisan community of mayors and providing tools they need to advance solar.
- **Solar United Neighbors**. This organization is a community of people building a new energy system with rooftop solar as the cornerstone. They help people go solar. The Town is supporting their efforts.
- **ICLEI-Local Governments for Sustainability.** ICLEI is "a global network of cities, towns and regions committed to building a sustainable future". The Town is a participating member.
- **Climate Leadership Engagement Opportunities (CLEO) Institute.** This is a Miami-based grassroots organization that works with front-line communities to build climate literacy and resilience. They provide training to simply climate science to aid in more effective communication. In 2015 the Town's Mayor, Daniel Dietch, was inducted into the CLEO Institute Leadership Circle that honors Miami's top climate activists for their extensive efforts in advancing climate awareness.
- **Surf/Bal/Bay Plan.** Continue the ongoing efforts to implement the Surf/Bal/Bay plan to development a coordination program with Bal Harbour Village and Bay Harbor Isles.

6.3 LOCAL LEGISLATION

One of the strongest tools local leaders have is enacting local legislation. The Town has given careful consideration to the regulatory tools needed to enhance

6.0 ACTIONS TAKEN [cont.]

resilience. Below is a list of some of the Town's adopted resilience measures.

- Zero Emission/Clean Energy Buses by **2025.**
- **Green Building Requirements.** The Town code requires all development other than single family residential be developed in accordance with Leadership in Energy & Environmental Design (LEED) or Florida Green Building Coalition (FGBC) building design and construction standards to ensure the incorporation of green development practices. In 2019 the Four Seasons Hotel at The Surf Club was honored to achieve the Leadership in Energy & Environmental Design, LEED Silver Certification.
- **Zoning Code Updates**. The Town updated its zoning ordinance in 2007 and has continually updated the code as needed since that time. Some significant ordinances include a requirement to provide charging stations for electric vehicles in multifamily and hotel buildings, requiring one additional foot of freeboard to create flood resiliency and providing language to remove any barriers relating to rooftop photovoltaic solar systems.
- **Architecturally Significant Designation.** This provides an option to retain existing structures that could otherwise be torn down. With this program, an architect would perform a study to determine if a structure had architectural significance, which is a set of criteria in the code. If so, the structure can be expanded utilizing the same setbacks, with the intention of preserving buildings.
- **Improved Floodplain Management Program.** Requiring additional freeboard. Adopting the model ordinance as prepared by the State to remove conflicts with the Florida Building Code.
- **Sea Turtle lighting ordinance** to protect hatchlings from disorientation and females from distractions and false crawls.
- **Coastal Corridor Property Assessed Clean Energy (PACE) District.** Surfside

6.0 ACTIONS TAKEN [cont.]

was a founding community.

- **Seawall Height.** This ordinance specifically requires: "The elevation for the top of shore end of all groins or other shore protective work shall be plus five feet above mean low water; the elevation for the top of seaward end of all groins and other shore protective work shall be plus 2&half feet above mean low water; and the elevation of the top of all seawalls fronting on the waters of Biscayne Bay, Indian Creek and Point Lake shall be plus five feet above mean low water." This ordinance provides for an initial, and for an ever-increasing height as the mean low water line increases.
- Require commercial properties to install conduit for electric vehicle charging stations.
- Incorporated Sustainability segments into the Goals, Objectives and Policies, as well as the Data Inventory and Analysis sections of the Town's Comprehensive Plan.
- Established Resiliency Fund to Aid in Future Planned Relocation. Creation of a fund for new development to pay into for potential relocation due to sea level rise.
- Solar and Other Sustainability Incentives e.g., waive permit fees and expedite review.
- **Prohibited Styrofoam, plastic straws and looking into potential to prohibit point to sale single-use plastic bags.**
- Updating the landscape code requirements to adopting Florida Friendly Landscape requirements.

6.4 ORDINANCES + RESOLUTIONS

A log of resilience related Resolutions and Ordinances adopted since 2011 is attached as Exhibit 9.4 Resilience Ordinances and Resolutions.

6.0 ACTIONS TAKEN [cont.]

Local Initiatives to maintain and strengthening community bonds. The Town residents and leaders have always taken great pride in their distinctive community. Below is a list of some of the actions the Town has taken to maintain and continue to strengthen the strong sense of community and pride within the Town.

- Rain Barrel Workshop
- Community Garden (and Best Mango Contest)
- Community Volunteer opportunities
- Community Boards and Committee opportunities
- Community Dog Park
- Piano on Parade
- Town Sea Turtle Art and Sculptures designed by local artist
- Art in Public Places
- Town Tree Give-Away Program
- Butterfly Garden at the Community Center
- Town Earth Day Activities
- Sea Level Awareness Program (SLAP) Poles
- Household Hazardous Waste Roundups
- Community Shuttle Bus
- Bike Racks at Street Ends and Surface Parking Lots
- Monthly Coffee with the Cops meetings
- Little Free Library
- Park and Recreation Department Youth Programs and Senior Programs
- BigBelly Solar Inc. solar powered trash/recycle compaction containers

Local Initiatives to adapt, mitigate and conserve. Below are actions that the Town has implemented that conserve resources or mitigate or adapt to the changing climate.

6.0 ACTIONS TAKEN [cont.]

- Tree City USA. The Town has maintained a Tree City designation for the past three years. Tree City is a nationwide movement, under the Arbor Day Foundation, that provides the framework necessary for communities to manage and expand their public trees. Urban tree canopy reduces the heat Island effect, enhances air quality and absorbs carbon emissions.
- LED Lightbulbs in Municipal-Owned Lights. The Town switched out older less efficient bulbs in all municipal-owned lights to reduce energy use.
- Coordinated with FPL to have FPL convert all residential streetlights to LED bulbs.
- Elevated public seawalls. The Town obtained two Florida Inland Navigation District (FIND) grants to financially assist in replacing and elevating all Town owned seawalls. This project was completed by the end of 2017.
- Wyland National Mayors Water Conservation Challenge. This is an annual competition between cities to conserve water. The Town declares April as water conservation month and urges and inspires residents to participate by making on-line pledges to reduce their impact on the environment.
- The Town is a participating member in the Community Rating System (CRS). This is a voluntary program through the FEMA National Flood Insurance Program (NFIP) to aid communities in reducing flood damage risks. Through community actions the Town was able to obtain a CRS rating of 7 that provides for a 15% reduction in flood insurance costs for properties that fall within the Special Flood Hazard Area (non X flood zones) and rate reduction of 5% for properties outside the Special Flood Hazard Areas (X flood zones).
- Landscape improvement in municipal parking lots. The Town installed trees, shrubs and ground covers in the various Town parking lots to

6.0 ACTIONS TAKEN [cont.]

increase tree canopy and combat heat island effect.

- Implemented bike-share program. There are four Citi Bike rental docking locations in the Town to facilitate access to bike sharing opportunity and aid in reducing vehicle miles traveled.
- Water Conservation Rate Structure. As of October 1, 2017, utility rates were increased in order to assist the Town in recovering the cost of providing utility services, promote equity in utility rates, encourage water conservation, improve the Town's water and sewer capital infrastructure, and enable the Town to secure funding for capital improvement debt service costs. This utility rate increase was the first increase to take place in seven years.
- Water, Sewer and Stormwater Improvements. The most significant efforts the Town has undertaken relate to water, sewer and stormwater Improvements. By the end of 2009 the Town completed hydrology and hydrological modeling to determine immediate stormwater improvement needs that meet FDEP water quality and water quantity requirements. The modeling and report included the best approach to reduce or eliminate pollutant discharge loadings into Biscayne Bay and targeted improvements in hydraulic performance of the Town's drainage system to reduce stormwater flooding. The report informed the actions of the significant drainage system improvements the Town then undertook in 2013.

The drainage improvements were a part of an overall utility rehabilitation project that included the sanitary sewer and potable water systems. This was a significant project that consisted of the replacement of over 32,000 linear feet of water main, 1,587 water services, 1,278 new water meters and 46 additional fire hydrants. The sanitary sewer upgrades included over 50,000 linear feet of

6.0 ACTIONS TAKEN [cont.]

sanitary sewer main being lined or replaced, two (2) sewage pump stations being completely rebuilt with updated and more efficient pumps including SCADA controls, the force mains from the pump stations to the shared transmission main being replaced, and placing full dish gaskets on all manhole openings.

The stormwater system was upgraded to include 3 SCADA controlled pump stations, 9 shallow injection drainage wells, 20 control structures and the required pipeline to interconnect the existing gravity drainage system with the newly installed pumped well system. It also included the installation of over 45,000 linear feet of curb and 167,000 square yards of asphalt roadway resurfacing, sealing all stormwater manholes and installing back flow preventers on outfalls. The Town searched for and obtained funding assistance for this project from multiple sources.

In 2015, the Town completed drainage improvements for Biscaya Island along 88th Street. The Town constructed new check valves to prevent back flow into the existing roadways and upsized one 12" outfall to a 24" diameter outfall.

In 2018 the Town authorized a drainage study for Abbott Avenue to make recommendations on reducing flooding issues in this location. The Town is currently reviewing the recommendations to determine best next steps and funding sources for these steps.

To continue these efforts, in 2019, the Town is proposing to update the Stormwater Mater Plan and create inundation maps and provide updated stormwater and flood control recommendations.

6.0 ACTIONS TAKEN [cont.]

6.5 LOCAL DATA AND DEVELOPMENT TOOLS

The Town has taken the following steps to create locally specific data and locally effective tools.

- **Climate Action Plan**. In 2019 the Town contracted the creation of a Town specific "Climate Action Plan" to outline Objectives and Actions to build resiliency into the community from the projected impacts of climate change. Attached is the Town Climate Action Plan, First Edition reflective of the Compact's Regional Climate Action plan and the recommendations of the Resilient 305 Surfside report. See Exhibit SE.2 Climate Action Plan.
- **Topographic Data.** In the Town's ongoing efforts to develop accurate, effective and comprehensive flood reduction strategies, in 2018 the Town obtained elevation data at all street centerline intersections of the public rights-of-way within the Town. The street intersection data will produce specific and accurate information on the lowest locations within the Town. This data will be incorporated into the Town's GIS database to cross reference FIRM data, infrastructure data, historic site data and all other data layers the Town has developed. The analysis of this data will enable the Town to direct planning efforts and strategies toward the infrastructure, critical facilities and adjacent properties in specific locations; direct Capital Improvements funds most effectively; and assist the Town in assessing and developing effective freeboard criteria as needs arise.
- **Beach and Dune Management.** The Town recognizes the protective value of the beach and dune system. The Town obtained beach dune height topographic survey information with a grid of cross section elevations traversing from the ocean Bulkhead line to the edge-of-water along the Atlantic coastline and compiled a Beach Dune Report to understand the conditions, ownership, responsibility designations, and the applicable

6.0 ACTIONS TAKEN [cont.]

regulatory structure of the beach and dune system to guide future decisions on the management and protection of this protective coastal system.

- **Sustainability Committee.** Reflective of recommendations of the Southeast Florida Regional Climate Change Compact's Regional Climate Action Plan, in April of 2016, the Town Commission officially formed the Sustainability Subcommittee of the Planning and Zoning Board. The purpose of the Subcommittee was to study and recommend policies and programs that strengthen the resiliency of the community. The Subcommittee's goals included:
    1. Adapting and mitigating to climate change and sea level rise;
    2. Promoting green and sustainable building, construction and operations;
    3. Protecting, restoring, optimizing and creating green spaces;
    4. Improving alternative transportation and mobility; and
    5. Increased environmental awareness and stewardship of our treasured ecosystems.
- In 2018 the Sustainability subcommittee of the Planning and Zoning Board was sunsetted and established in its place the Town Sustainability and Resiliency Committee to study and recommend policies to the Town Commission was established.
- Property Assessed Clean Energy (PACE) Program. In 2013 the Town created a PACE Program and in 2018 the Town approved PACE Programs with The Florida Green Finance Authority, The Florida Resiliency and Energy District, and The Florida Pace Funding Agency.
- Carbon Emission Inventory. The Town will be completing a GHG emissions inventory in 2019 and establishing an emissions baseline.

7.0 RESOURCES + TOOLS

Climate change is not a new topic, it has been on the forefront of public discourse and investigation for well over a decade. This crucial subject is critically being examined and data is consistently being updated and predictions are being refined. There is an overwhelming amount of information available varying from detailed scientific literature to generalized non-specific overviews. Outlined below are some, although by no means all, valuable information resources to assist the Town in continuing to understand climate impacts and making informed decisions.

7.1 MIAMI-DADE COUNTY

The County has had a significant focus on climate change since 2008, and through their participation in the 100 Resilient Cities network and the Resilient 305-Greater Miami and the Beaches (GM&B) program. The County produced the GreenPrint Design for Sustainable Development and a Climate Change Action Plan that, along with other documents can be found at https://www.miamidade.gov/green/climate-change.asp

7.2 SOUTHEAST FLORIDA REGIONAL CLIMATE CHANGE COMPACT

Broward, Palm Beach, Miami-Dade and Monroe Counties formed the Southeast Regional Climate Change Compact (Compact) in 2009. The Compact has been widely acknowledged to be an innovative leader in addressing climate change on a regional level. The Compact works with many collaborative partners. The Compact has held numerous workshops and provides helpful documents on their website at http://www.southeastfloridaclimatecompact.org/ Major resources from the Compact include:

- The annual Regional Summit to report on progress, to educate, and to identify emerging issues; the first summit was held in 2009,
- The Regional Climate Action Plan (RCAP), defined as "a set of recommendations, guidelines for implementation, and shared best practices for local entities to act in-line with the regional agenda",

7.0 RESOURCES + TOOLS [cont.]

- The Unified Sea Level Rise Projections for South Florida, and
- A unified legislative agenda for the region.

7.3 SOUTH FLORIDA REGIONAL PLANNING COUNCIL [SFRPC]
The Coastal Resiliency program within the SFRPC provides various resiliency reports, tool kits and guides that can be found at http://sfregionalcouncil.org/programs/coastal-resilience/

7.4 SEA LEVEL SCENARIO SKETCH PLANNING TOOL
This tool is offered through the University of Florida GeoPlan Center to help identify transportation infrastructure vulnerable to current and future flood risks. As stated on their website - the tool analyzes and visualizes current flood risks (100-year and 500-year floodplains and hurricane storm surge zones) as well as future flood risks using sea level rise (SLR) scenarios from the U.S. Army Corps of Engineers (USACE) and the National Oceanic and Atmospheric Administration (NOAA)/ National Climate Assessment. The Tool includes (1) a map viewer to help visualize vulnerable infrastructure to flooding, (2) GIS data layers available for download, and (3) an ArcGIS calculator tool for creating GIS layers of SLR inundation. This tool is found at https://sls.geoplan.ufl.edu/#about

7.5 FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION [FDEP]
FDEP runs the Florida Resilient Coastlines Program offering resilience resources at https://floridadep.gov/fco/florida-resilient-coastlines-program/ FDEP also publishes Climate Change and Sea-Level Rise in Florida an Update of the Effects of Climate Change on Florida's Ocean and Coastal Resources, this can be found at https://floridadep.gov/fco/fco/documents/climate-change-and-sea-level-rise-update

7.0 RESOURCES + TOOLS [cont.]

7.6 FLORIDA CLIMATE INSTITUTE [FCI]
The FCI is a multi-disciplinary network of national and international research and public organizations, scientists, and individuals concerned with achieving a better understanding of climate variability and change. The FCI has ten member universities – Florida A&M University (FAMU); Florida Atlantic University (FAU); the Florida Institute of Technology (FIT); Florida International University (FIU); Florida State University (FSU); Nova Southeastern University (NSU); the University of Central Florida (UCF); the University of Florida (UF); the University of Miami (UM); and the University of South Florida (USF) – and is supported by relevant colleges, centers, and programs at these universities. UF and FSU initiated the FCI in 2010; FAU, UCF, UM, and USF formally joined in 2012; FIU formally joined in 2013; FAMU formally joined in 2014; FIT formally joined in 2015; and NSU formally joined in 2017. Information is found at https://floridaclimateinstitute.org

7.7 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY [EPA]
The scientific arm of the EPA updates and publishes Climate Change Indicators in the United States compiling a key set of indicators relating to the causes and effects of climate change. Current updates can be found at https://www.epa.gov/climate-indicators/downloads-indicators-report

7.8 U.S. NATIONAL OCEANIC + ATMOSPHERIC ADMINISTRATION [NOAA]
NOAA runs the Digital Coast interactive website. The website provides coastal data, tools, mapping and training. Data sets range from economic data to satellite imagery and contain visualization tools, predictive tools, and tools that make data easier to find and use. This resource can be found at https://coast.noaa.gov/digitalcoast/

7.9 INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE [IPCC]
The IPCC is the United Nations body assessing science related to climate change.

7.0 RESOURCES + TOOLS [cont.]

As stated on their website "The IPCC prepares comprehensive Assessment Reports about the state of scientific, technical and socio-economic knowledge on climate change, its impacts and future risks, and options for reducing the rate at which climate change is taking place. It also produces Special Reports on topics agreed to by its member governments, as well as Methodology Reports that provide guidelines for the preparation of greenhouse gas inventories." Reports and data can be found on their website at https://www.ipcc.ch/

7.10 AMERICAN PLANNING ASSOCIATION [APA]

The APA Knowledge Center provides various helpful climate related guides and policy documents at https://planning.org/resources/climatechange/

7.11 ICLEI LOCAL GOVERNMENTS FOR SUSTAINABILITY

ICLEI is described as "a global network of cities, towns and regions committed to building a sustainable future". ICLEI aids cities in particular as it relates to carbon emissions inventories. Information is found at https://iclei.org/

7.12 RESILIENT 305

Developed to enable Greater Miami and the Beaches (GM&B) area to more effectively tackle emerging global challenges and trends such as urbanization, globalization and climate change. Information is found at http://resilient305.com/

7.13 UNIVERSITY OF MIAMI SCHOOL OF ARCHITECTURE LU_LAB

The town of Surfside is collaborating with the University of Miami School of Architecture's LU_lab to develop a set of adaptation strategies that work to support a Comprehensive Urban Resilience. These strategies are an integral part of the currently developing Surfside Climate Action Plan. The strategies will be shared through a Community Adaptation Toolkit, an illustrative series of diagrams that works to identify urban vulnerabilities and adaptation strategies to address these conditions.

8.0 STRATEGIC NEXT STEPS

Like a GHG emissions inventory and establishment of an emissions base line, this document is the inventory of the initial resilience steps the Town has implemented and the **'base line'** of where they are at relating to the unfolding climate crisis. **This document is intended to be a functional tool and foundation for the next steps the Town will take to continue to increase resilience.**

Below are some next steps in this ongoing process:

8.1 RESILIENT 305 SURFSIDE [see attached exhibit SE.1]

ACTIONS

- Send Your Boss to Bootcamp: resilience training for newly elected officials in the
  305 ACTION: Send elected officials to trainings

- Provide Resilience Training for All Employees: internal staff resilience training - what is resilience, project specific
  305 ACTION: Send staff to trainings

- Enable Community Resilience Through CERT and the CLEO Institute: government training for neighborhood emergency volunteers
  305 ACTION: Augment current hurricane preparedness program

- Complete and Implement the SLR Strategy: countywide effort to analyze SLR models, projections and develop capital projects
  305 ACTION: Share information

- Prepare Your Property: on-line guidance for homeowner adaptation
  305 ACTION: Share and promote tools

8.0 STRATEGIC NEXT STEPS [cont.]

- Design a Better Bus Network: ongoing effort to reconfigure bus routes based on effectiveness of route
  305 ACTION: Support outreach, workshops + coordinate with Trolley system

- Building Efficiency 305: evaluate facilities over 20,000 SF for energy efficiency
  305 ACTION: Evaluate and upgrade

TOOLS

- Property Adaptation Tools – Online guidance + outreach events for homeowner adaptation
- Expanded CERT Training – Government training for neighborhood emergency volunteers
- Resilient 305 ArcGIS Hub – Online platform for 35 governments to access+ upload resilience data
- Pre-Planning for Post-Disaster Toolkit – Recovery resource to help local governments preplan for post-recovery organization and finance tools
- 5-Step Guide to Innovative Disaster Recovery Financing - "Five Step" finance resource to help governments preplan for post-recovery and understand all recovery financing available
- Resilience Financing Decisions Toolkit - Will serve as a resource and guide for municipalities that are evaluating prioritization of, and funding options for, resilience-related projects
- Financing a Resilient Future – Reference materials and training to assist governments with resilient budgeting
- Development Review Checklist – This checklist will help develop consistent standards, use of consistent information, best practices for projects, and facilitate decision making
- Sea Level Rise Checklist for Capital Projects - Ensure that new infrastructure is built to withstand future floods and storms and integrate a consistent approach across departments

8.0 STRATEGIC NEXT STEPS [cont.]

8.2 SURFSIDE CLIMATE ACTION PLAN [see attached exhibit SE.2]

Upon finalization of the document, establish a program to implement the actions contained within the Town's Climate Action Plan.

REVIEW SEAWALL STRATEGY

- Update the seawall height ordinance. Continue ongoing efforts to increase seawall height on all seawalls.

MITIGATE FLOODING THROUGH FREEBOARDING + HYPER-LOCAL STRATEGIES

- Continue ongoing efforts to address localized stormwater flooding. Continue steps to update freeboard and base flood elevations as needed. Identify those impacts that are unavoidable and develop retreat or relocation strategies.

STORMWATER MASTER PLAN DEVELOPMENT

- Move forward with updates in stormwater modeling that will include locating and prioritizing flooding problems under various storm design events and inundation maps for 1, 2 and 3 feet of sea level rise with recommendations for potential improvements.

8.3 HEALTHY BEACH ECOLOGY

BEACH RENOURISHMENT

- An Army Corps of Engineers (ACOE) driven project in conjunction with Miami-Dade County is placing 330,000 cubic yards of sand along the beach front of Surfside. Work began in mid-August 2019. The Town is an active partner with the ACOE and Miami-Dade County in this project. The Town should continue effective state, federal and regional collaboration on the management of the beach to ensure this resource continues to provide protective functions for the Town.

8.0 STRATEGIC NEXT STEPS [cont.]

DUNE MANAGEMENT

- Build on the Beach and Dune report to establish a Dune Management Plan for the Town. Continue to construct 'diverter dunes' at the oceanside openings of the beach access points.

AMERICAN FLOOD COALITION

- Coordinate with the American Flood Coalition to facilitate the completion of the Flood Adaptation Assessment that was awarded to the Town by a grant from the American Flood Coalition. The Coalition also selected the neighboring City of Sunny Isles Beach and will utilize this opportunity to turn this project into a micro-regional effort.

8.4 CONTINUED DEVELOPMENT OF A COMPREHENSIVE RESILIENT URBAN NETWORK

- Continue to coordinate with the University of Miami School of Architecture Littoral Urbanism LU_Lab on their walkability study and report.
- Implement the recommendations of the report to develop comprehensive resilient network.
- Enhance walkability by completing the Surfside Boulevard project in conjunction with Indian Creek Village, the 96th Street beach end project in conjunction with Bal Harbour Village. The LU_lab in coordination with a series of studies and a public workshop will develop a proposal identifying and prioritizing sites for intervention.
- Additionally, the LU_lab will continue to explore and implement actions to utilize the street ends that terminate at the bay side or the beach dune system for effective public access and purposes.

8.0 STRATEGIC NEXT STEPS [cont.]

8.5 GREENHOUSE GAS EMISSION

ZERO EMISSION | CLEAN ENERGY BUSES

- Continue to move forward with the plan for the replacement of buses that are Town-owned and/or continuously or regularly used by the Town to be zero emission/clean energy buses with a goal of conversion by 2025, Resolution 18-2483. The Town should consider that transition to zero emission/clean energy for other Town-owned vehicles.
- Complete a facilities assessment of the Town Hall that serves at the Town Emergency Operations Center (EOC).
- Upon completion of the Town GHG emissions inventory set target GHG reductions and time frames and establish the steps to reach the target reductions.

DEVELOP + IMPLEMENT SOLAR STRATEGIES

- Install a photo-voltaic solar system on the Community Center. Explore other opportunities for solar charging with battery storage and other renewable options to benefit and improve resilience and to facilitate recovery after shocks.

8.6 BUDGET REVIEW + IMPLEMENTATION

- Organize the Town budget around the four dimensions of the 100 Resilient Cities' City Resilience Framework, which are Health and Well-being, Leadership and Strategy, Planning and Finance, and Infrastructure and Ecosystems. Move forward with the current budge initiatives of funding the Resilient 305 recommendation, the ULI initiative and the Town resiliency Fund mechanism.

- Research and identify future financial risk as it relates to climate change, in particular as this would relate to loan and mortgage opportunities and to insurance costs and coverage.

8.0 STRATEGIC NEXT STEPS [cont.]

- Research and identify future funding sources for climate adaptation, mitigation or relocation.

8.7 CLIMATE COMMUNICATION DEVELOPMENT

Develop effective climate communication messages and strategies, including the dedication of a climate page on the Town website. Ensure resources are allocated to continue to update the webpage and implement the communication strategy. Establish a communication schedule including updates to the climate website.

TRACK + REPORT RESILIENT MEASURES

- Track resilience measures. Develop a process to track implementation of these strategic next steps and to update as new steps are required.

TOWN OF SURFSIDE MAPPING + DOCUMENTATION

- Assess the current GIS program and determine what additional tools and data sets may be needed to be able to create the layers needed to aid in climate impact assessment and decision making.

- Make Surfside information compatible to Arc GIS and accessible for open source public use.

LIST OF EXHIBITS

SE.1 RESILIENT 305-SURFSIDE

SE.2 CLIMATE ACTION PLAN

SE.3 BEACH DUNE REPORT

SE.4 RESILIENCE ORDINANCES AND RESOLUTIONS LOG

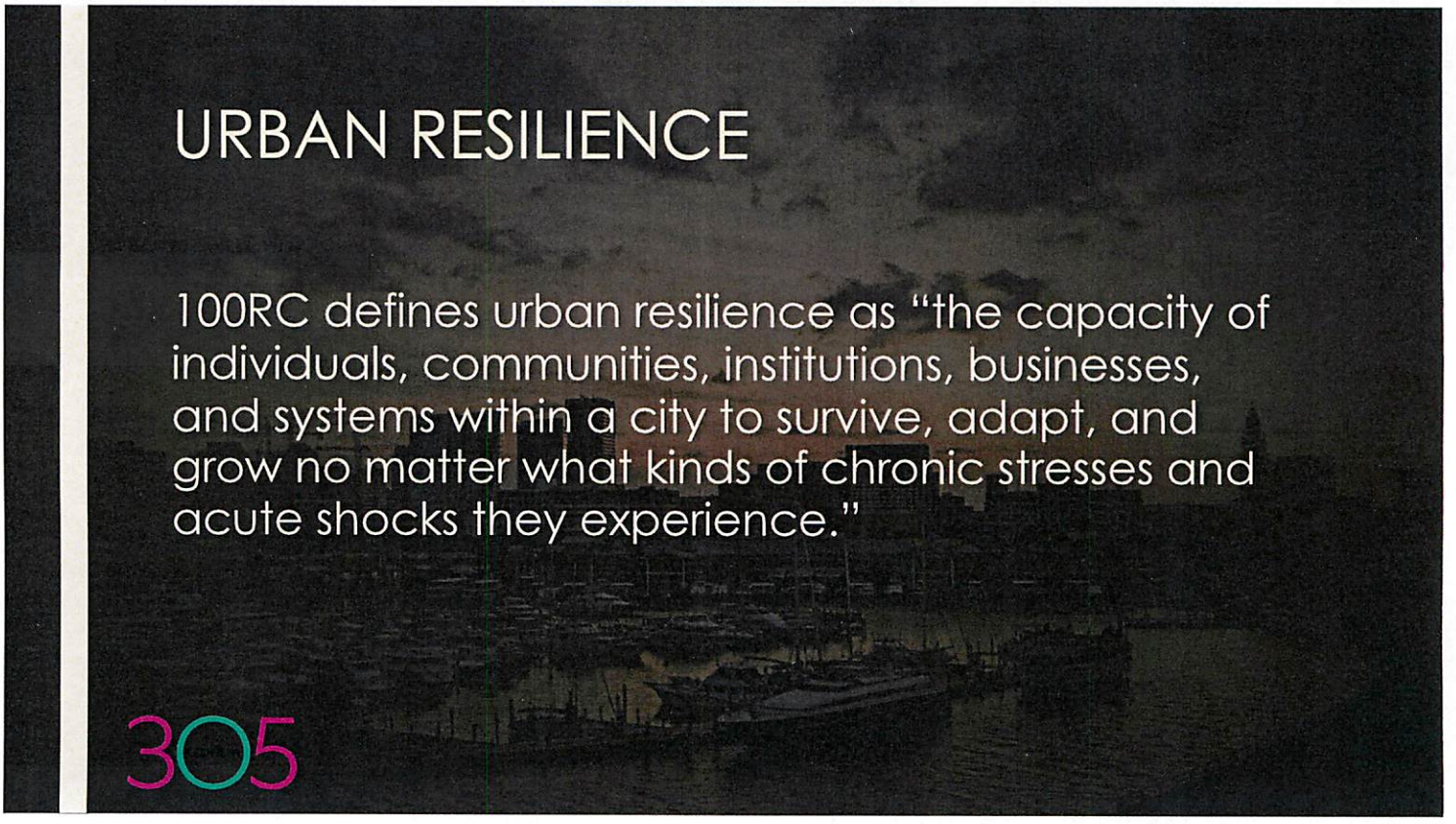
SE.5 COMMUNITY ADAPTATION TOOLKIT

305 RESILIENT-SURFSIDE

EXHIBIT SE. 1

305 RESILIENT

Surfside



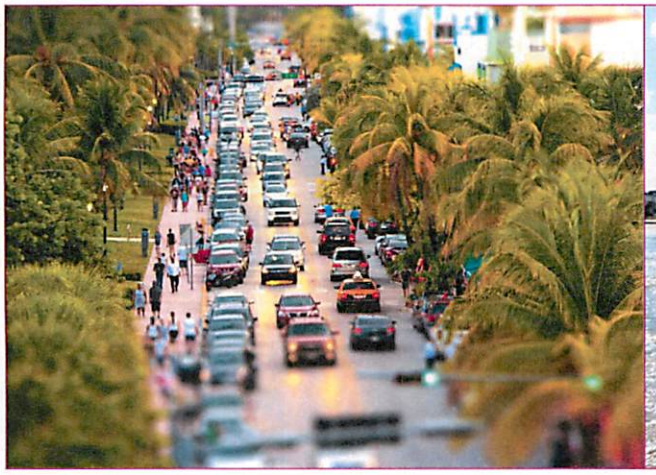
Who We Are

Timeline

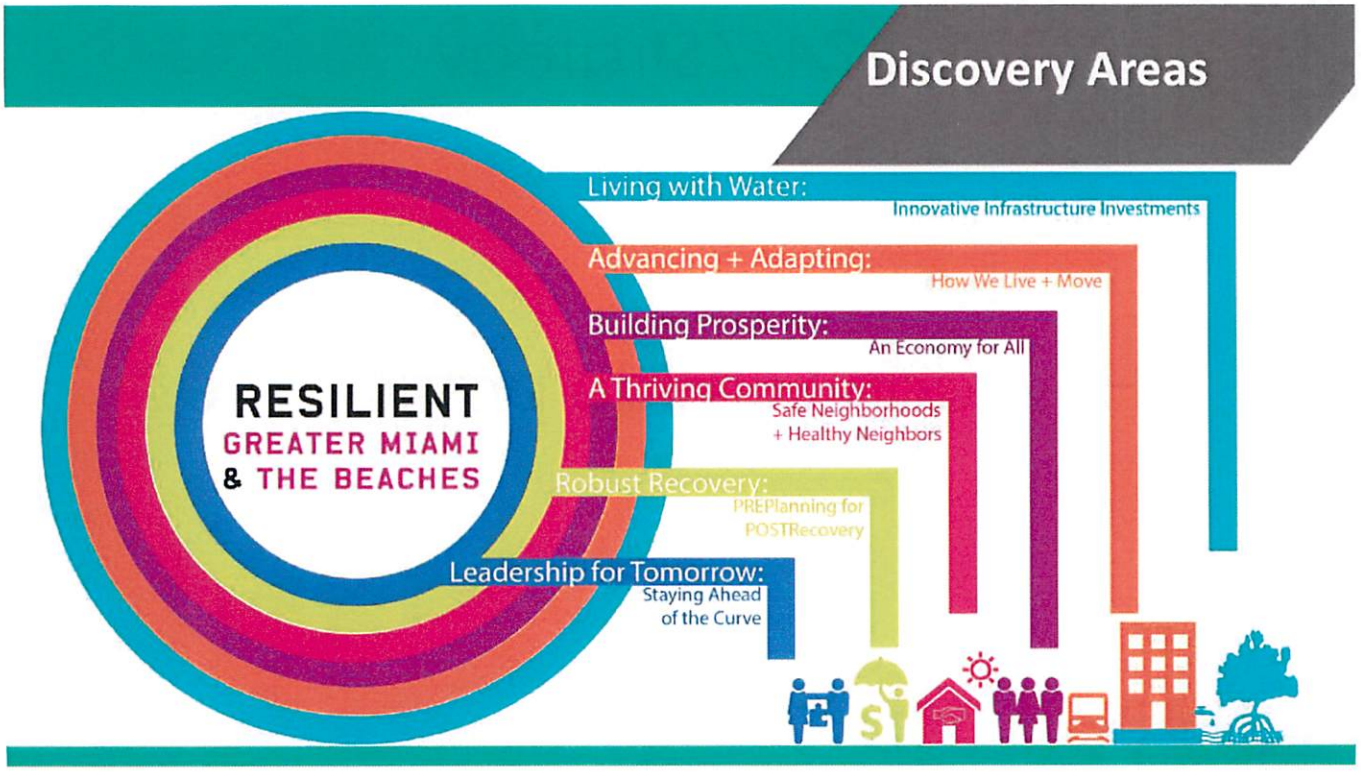
305 RESILIENT

Shocks

Stresses




City Resilience Framework:
The 12 drivers in the City Resilience Framework collectively determine the city's ability to withstand a wide range of shocks and stresses
Leadership & strategy
Health & wellbeing
Economy & society
Infrastructure & environment
Meets basic needs
Supports livelihoods & employment
Ensures public health services
Promotes cohesive & engaged communities
Ensures social stability, security and justice
Fosters economic prosperity
Provides & enhances natural and manmade assets
Ensures continuity of critical services
Provides reliable communication & mobility
Promotes leadership & effective management
Empowers a broad range of stakeholders
Fosters long-term & integrated planning


Discovery Areas
RESILIENT
GREATER MIAMI
& THE BEACHES
Living with Water:
Innovative Infrastructure Investments
Advancing + Adapting:
How We Live + Move
Building Prosperity:
An Economy for All
A Thriving Community:
Safe Neighborhoods
+ Healthy Neighbors
Robust Recovery:
PREPlanning for
POSTRecovery
Leadership for Tomorrow:
Staying Ahead
of the Curve

What We Heard From You in 2017

Surfside
Areas of Strength:
Surfside was developed as a walkable community

Doing Well But Can Improve:
the importance of people and social cohesion is most important to be resilient, sea level vulnerability, erosion, water, wastewater, stormwater (seawall infrastructure)

Most Proud Of:
moved to a quasi form-based code to help properties and people interact with one another

Greater Miami + the Beaches
Doing Well But Can Improve:
emergency management, evacuation approach

Needs To Do Better:
affordable housing is a serious issue, transient populations, city services

305 RESILIENT

Interviewees: Mayor Daniel Dietch + City Manager Guillermo Olmadillo

Resilient305 *DRAFT* Strategy

How can **Surfside** participate?

305 RESILIENT

R305 Tools for Surfside

Property Adaptation Tools	Online guidance + outreach events for homeowner adaptation
Expanded CERT Training	Government training for neighborhood emergency volunteers
Resilient 305 ArcGIS Hub	Online platform for 35 governments to access + upload resilience data
Pre-Planning for Post-Disaster Toolkit	Recovery resource to help local governments preplan for post-recovery organization and finance tools
5-Step Guide to Innovative Disaster Recovery Financing	"Five Step" finance resource to help governments preplan for post-recovery and understand all recovery financing available
Resilience Financing Decisions Toolkit	Will serve as a resource and guide for municipalities that are evaluating prioritization of, and funding options for, resilience-related projects
Financing a Resilient Future	Reference materials and training to assist governments with resilient budgeting
Development Review Checklist	This checklist will help develop consistent standards, use of consistent information, best practices for projects, and facilitate decision making
Sea Level Rise Checklist for Capital Projects	Ensure that new infrastructure is built to withstand future floods and storms and integrate a consistent approach across departments

R305 Opportunities for Surfside

1. ***Send Your Boss to Bootcamp!:*** *resilience training for newly elected officials in the 305*
   Action: Send elected officials to trainings
2. ***Provide Resilience Training for All Employees:*** *internal staff resilience training - what is resilience, project specific*
   Action: Send staff to trainings
3. ***Enable Community Resilience Through CERT:*** *government training for neighborhood emergency volunteers*
   Action: Augment current hurricane preparedness program
4. ***Complete and Implement the SLR Strategy:*** *countywide effort to analyze SLR models, projections and develop capital projects*
   Action: Share information
5. ***Prepare Your Property:*** *online guidance for homeowner adaptation*
   Action: Share and promote tools
6. ***Design a Better Bus Network:*** *ongoing effort to refigure bus routes based on effectiveness of route*
   Action: Support outreach, workshops + coordinate with Trolley system
7. ***Building Efficiency 305:*** *evaluate facilities over 20,000 SF for energy efficiency*
   Action: Evaluate and upgrade

Complete Set: R305 Objectives + Actions

GOAL 1. PLACES
Enhance Natural Systems
Preserve and Restore Biscayne Bay
Build Reef Biodiversity and Defenses
Bolster Our Beaches
Nature-Based Infrastructure - More Than Just Habitat!
Integrate Resilience into Park + Open Space Design
Safeguard Urban Systems
Reduce "Back Bay" Flooding
Implement Sea Level Rise Strategy
Develop a Sea Level Rise Checklist for Capital Projects
Create Development Review Checklist
Strengthen Resilience Planning
Maximize Opportunity Zones
Create Mobility Options
Develop Mobility Hubs in the 305
Design a Better Bus Network
Drive into the Future!
It's Electric
Increase Energy Efficiency
Expand Renewable Energy
Building Efficiency 305
Enhance Housing Options
Stay and Live in the 305
Redeveloping Resilient Public Housing
Adapting at Home Too

GOAL 2. PEOPLE
Cultivate Financial Stability
Build an Inclusive Economy
Let's Build
Back to Work
Buy Local
Be Counted
Re-establish + Support MDC Financial Capability Collaborative
It's Time to Save Kids
Expand Youth Career Opportunity Programs
Advance Public Health Priorities
Unite to Break the Cycle of Youth Violence
Respecting Older Adults
Update Miami-Dade County's Social Services Master Plan
Build Capacity to Address Mental Health Challenges
Pilot an Arrest Diversion Program for Opioid Users
Accelerate Progress of HIV/AIDS Strategy
Advance Pandemics Communication
Strengthen Community Response
Increase Community Resilience through CERT
Time to Volunteer or Get Involved!
Prepare Your Property
Support Resilience Hubs
Communicate the Concept of Resilience
Get the 311 on Resilience in the 305
Create and Implement a K-12 Plan for Resilience Literacy
See It to Believe It!

GOAL 3. PATHWAYS
Pre-Plan for Post-Recovery
Pre-Planning for Post-Disaster Toolkit
Roll-Out 5-Step Guide to Innovative Disaster Recovery Financing
Bounce Forward 305 - Resilient Urban Land Use Essentials Guide
Cultivate Resilience Expertise
Send Your Boss to Bootcamp!
Resilient 35 in the 305 Network
Provide Resilience Training for all Employees
RISE to the Rescue
Leverage our Experience
Collaborative with Universities
Create an Actionable Science Advisory Panel
Resilience Accelerator Workshops
Develop Shared Resources
Create Resilient 305 ArcGIS Hub
Share Bold Integrated Water Models
Implement the One Water Approach
Plan Efficiently + Effectively Together
Leverage Our Dollars
Financing a Resilient Future
The Power of Purchasing
Pilot Resilience Financing Decisions Toolkit
Demonstrate the Costs and Benefits of Resilience Investments

305 RESILIENT

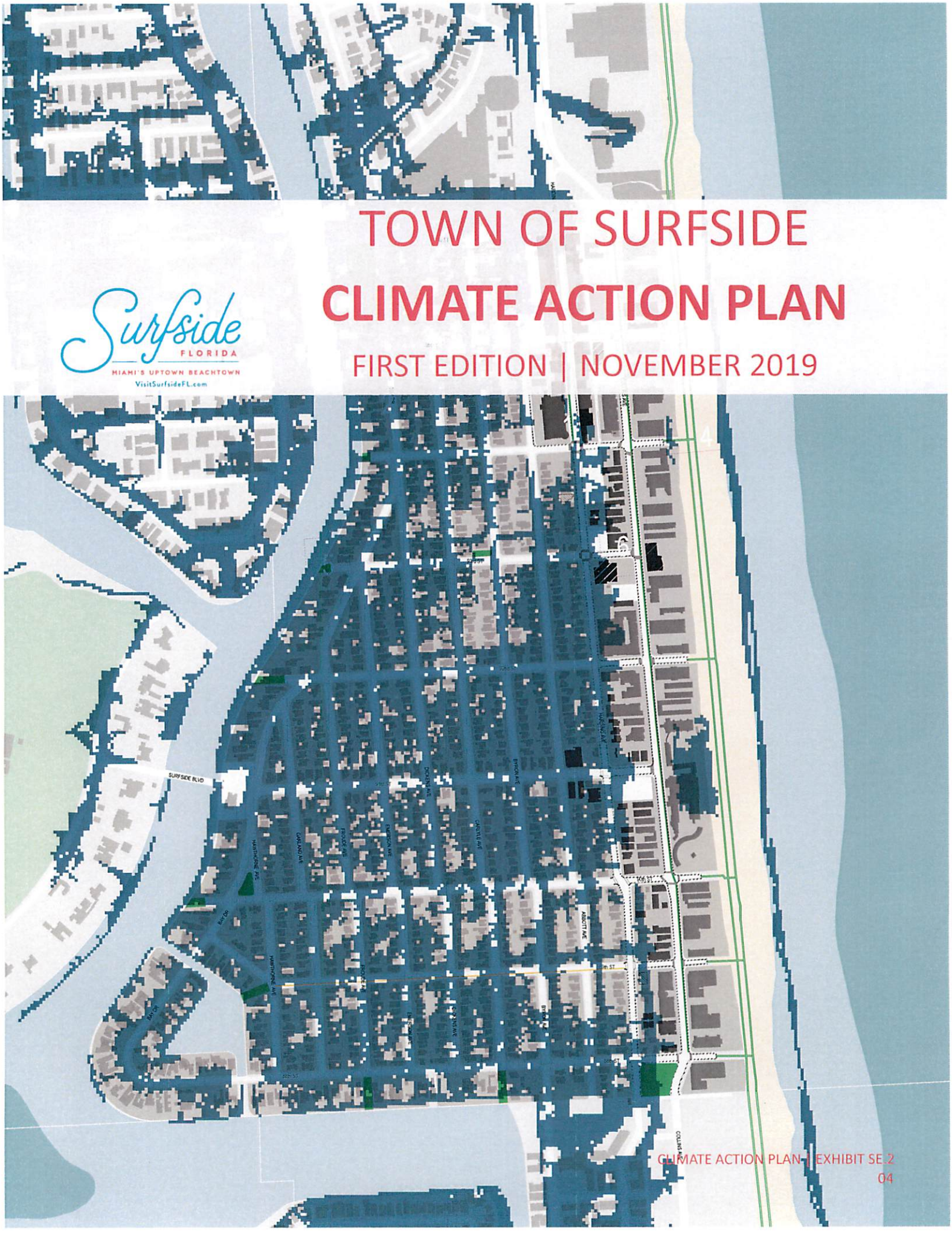
#Resilient305

WWW.RESILIENT305.COM

@Resilient305

CLIMATE ACTION PLAN

EXHIBIT SE. 2



TOWN OF SURFSIDE

CLIMATE ACTION PLAN

FIRST EDITION | NOVEMBER 2019

Surfside
FLORIDA
MIAMI'S UPTOWN BEACHTOWN
VisitSurfsideFL.com

TEAM

DEVELOPMENT TEAM

Daniel Dietch	MAYOR
Guillermo Olmedillo	TOWN MANAGER
Duncan Tavares	ASST. TOWN MANAGER

CONSULTANTS

Calvin, Giordano & Associates, Inc.
University of Miami School of Architecture **LU_Lab**

REVIEWERS

SUSTAINABILITY + RESILIENCE COMMITTEE
PLANNING + ZONING COMMITTEE
TOWN COMMISSIONERS

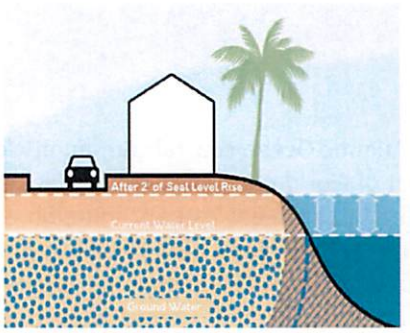
CONTENTS

1.0 TOWN OVERVIEW

Surfside is an Atlantic Ocean coastal community located on a barrier island along the southeast coast of Florida. The barrier island is separated from the mainland by the north end of the Biscayne Bay estuary containing the Intracoastal Waterway. The natural conditions of the barrier island have been highly altered. Founded in 1935, the Town is nearly built out with only a few remaining vacant lots. The entirety of the Town's Bayside shoreline has been significantly altered and is bulkheaded, and the adjacent nearshore waters have been dredged. The one-mile length of beach and dune along the Town's ocean frontage is created from a beach renourishment program. The beach is monitored and managed in accordance with Florida's Department of Environmental Protection's Strategic Beach Management Plan (SBMP) for the Southeast Atlantic Coast Region.

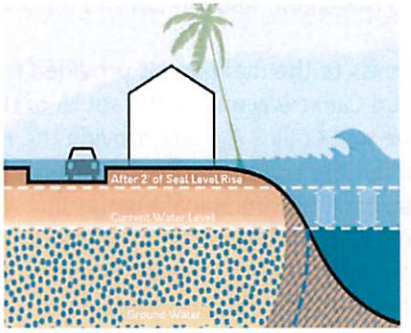
The nearest access to the mainland is provided from the north edge of the Town at 96th Street/the Broad Causeway and to the south of the Town via the 79th Street Causeway. Harding Avenue and Collins Avenue provide the main north/south roadways to the adjacent Communities on the Barrier Island. The Town is predominately residential with the commercial corridor running along Harding Avenue. There are nearly 6,000 residents in the community. This is a small community in area measuring roughly one mile in length (north to South) and 0.80 miles in width (east to west) at its widest point and less than 0.50 miles in width at its narrowest point. Other than the Coastal dune created through a beach nourishment program the Town is relatively flat and low in elevation. Due to the geophysical location and characteristics the Town is highly vulnerable to the impacts of climate change.

For the past decade the Town has been addressing resiliency concerns on an ongoing basis and continues to build on these efforts. The compilation of this document is another step in this ongoing process.

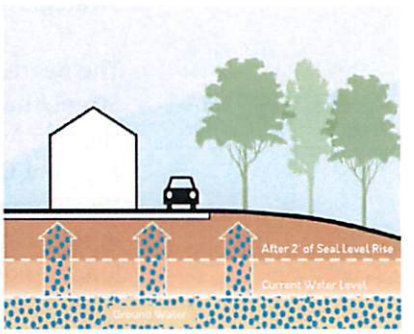


SEA LEVEL RISE

STORMWATER



STORM SURGE



GROUNDWATER

KEY

- Surge below 3.3 ft (existing)
- Surge 3.3 to 6.6 ft (existing)
- Surge 6.6 to 7.5 ft (after 2' of Sea Level Rise) Surge 7.5 to 12.5 ft
- After 2' of Sea Level Rise
- Estimated Storm Surge Levels after 2' of Sea Level Rise

**Note these surge levels indicate wave height. In some cases, the land elevation may exceed surge and remain dry. This is a simulated storm with maximum winds of 120 mph.

Provided by Miami Dade County, analysis completed by Arcadis Inc.

2.0 INTRODUCTION TO CLIMATE RESILIENCE

Of the many factors challenging resilience, climate change is a critical force. Climate change is a global issue with regionally specific impacts. Climate related impacts may seem daunting and unrelenting, but they are incremental and are more and more being defined and refined; they are not unexpectedly occurring.

Resiliency strategy options to climate change may include, but are not limited to protection, accommodation, managed retreat, or avoidance. Through emissions reductions, preparedness, and strategic action, the Town can increase resiliency and reduce the current and projected adverse impacts from the changing climate and prepare for those impacts that cannot be avoided. Effective public information and outreach to build support for the implementation of selected adaption strategies is also a component of an effective resiliency toolkit.

Provided by Miami Dade County, analysis completed by Arcadis Inc.

Resiliency planning must be taken in a regional and local context. Large scale systems such as regional water storage, protection of the aquafer and potable water source, functionality of the Central and South Florida flood control system, regional beach sediment management, protection of the offshore reef system, and regional transportation and infrastructure systems require a collaborated and cooperative regional approach. Effecting changes in the building code to ensure structural integrity of the built environment to projected increases in storm strength is a state-wide and larger cooperative effort. Reducing carbon emissions is an effort to be addressed at the local, regional, state, federal and global levels. The Town continues to collaborate with its regional partners on these issues.

Climate related impacts may seem daunting and unrelenting, but they are incremental and are more and more being defined and refined; they are not unexpectedly occurring and can be planned for. In the local context, the following manageable steps can be taken to increase resiliency:

- Understand the local impacts,
- Identify the local vulnerabilities,
- Prioritize the local vulnerabilities, and
- Implement the best resiliency strategy for the priority vulnerabilities.

With a goal to build resilience to the impacts of a changing climate, the following document outlines objectives and actions for the Town.

GOAL:

Build URBAN RESILIENCE to the impacts of a changing climate.

3.0 LEXICON: CONDITIONS + STRATEGIES

Aging Infrastructure_ The degradation of infrastructures is a common and an expected condition. Infrastructures must have scheduled inspections and planned maintenance if they are expected to perform their intended tasks consistently.

Bayside Seawalls_ Structural strategies focused on controlling a static edge between Biscayne Bay and the city.

Bathymetry/ Topography_ Specifically the description of the undulations and formal characteristics of the ground plane above the waterline– Topography– and below the waterline–Bathymetry. These landform characteristics are informative to how rising waters, storm surges and general inundation of flood events will occur.

Comprehensive Transportation_ The distribution of mobility– personal, services and goods– through a comprehensive transportation approach reduces pressure on roadway networks. A comprehensive transportation approach includes small-scale short distance services through shared bike and scooter services, public mass transient methods and adaptability to new or developing services.

Data, Tools and Strategies_ Comprehensive approaches to policy, planning and interventions regarding urban resilience and walkability.

Electric Vehicle Infrastructure_ Implementation of public EV charging stations and dedicated parking spaces for a diverse group of mobility vehicles.

Green Roofs_ The implementation of flat or low sloped roof conditions for planting native grasses and small-scale vegetation. Green roof systems can reduce Urban Heat Island effect, buffer solar heat gain of buildings and mitigate surface run off pertaining to water management strategies.

Inundation_ Recognizing the potential for the surrounding waters of the Atlantic Ocean the Biscayne Bay to infiltrate and inundate the buildings and public spaces.

Low Absorption High Emissivity Surface_ The implementation of white or light colored surfaces for building roofs, road surfaces, pedestrian walkways and parking surfaces can reduce Urban Heat Island effect and reduce localized urban temperatures.

Managed Retreat_ As increasing environmental pressures become overwhelming to urbanism forcing inhabitants to retreat to higher ground, exploring the range of options and subsequent impacts will be important for a safe and productive exit. Managed retreat requires exploring many possibilities to understand what the best option will be for the specific circumstance.

Pervious Paving_ a method of paving vehicular and pedestrian pathways to enable infiltration of stormwater runoff

Policy Adaptation_ Urbanism, ecological and human needs are in a constant state of change requiring policies to be flexible. The changing state must also recognize shorter needs and longer term trajectories to provide a balanced and resilient future.

Urban Tree Canopy_ An urban tree canopy is a distributed network of trees within an urban setting with enough density to create a continuous canopy above the ground plane. Extending the urban tree canopy provides urbanism the opportunity to mitigate surface water management, Urban Heat Island effect, and resiliency to erosion and storm systems.

Urban Heat Islands_ Urban Heat Islands [UHI] are described as urban settings which are hotter than the nearby rural areas. UHIs are caused by the exposure to insolation and the subsequent storage of large quantities of heat energy.

4.0 ACTION PLAN: GOALS + OBJECTIVES

1.0 DATA, TOOLS + STRATEGIES

OBJECTIVE:
Increase community resiliency through utilization of the best available data, tools and strategies.

POLICY PLANNING:
The Town shall incorporate strategies to reduce risk and economic losses associated with sea level rise and flooding into the Town's comprehensive plan, building standards, zoning, and land development regulations.

The Town shall recognize adaptation strategy options may include, but are not limited to, protection, accommodation, managed retreat, avoidance, and/or other options.

The Town shall incorporate the Southeast Florida Regional Climate Change Compact (Compact) unified sea level rise projections, by reference, into the Town comprehensive, transportation, and other infrastructure plans, and capital improvement plans.

The Town shall maintain or establish processes to assure coordination and communication with other governmental and non-governmental entities for the purpose of increasing resiliency to the impacts of climate change and making resiliency efforts more impactful.

The Town shall strive to make sustainability and climate resiliency decisions based on the most current, applicable and credible information available, including the Compact's Unified Sea Level Rise Projection to inform planning, prioritizing, and annual funding.

ACTION ITEMS:

- The Town shall develop and manage a process for tracking resiliency implementation strategies.

- The Town shall provide informational training for staff and for newly elected officials on climate change and resiliency issues.

- The Town shall use social media for climate, resiliency planning, emergency, public health, and tidal flooding messaging.

- The Town shall routinely review and update plans to identify gaps, and to integrate mitigation, sea level rise, and climate change adaptation, and strive for consistency among:
  a. Strategic plans,
  b. Disaster recovery and redevelopment plans,
  c. Comprehensive plans,
  d. Long-range transportation plans,
  e. Comprehensive emergency management plans,
  f. Capital improvement plans,
  g. Economic development plans,
  h. Local mitigation strategies,
  i. Climate change action plans or resilience strategies,
  j. Future land use plans, and
  k. Threat and hazard identification and risk assessments.
  l. Beach and Dune Erosion

- The Town shall continue to actively monitor the activities and recommendations of the Southeast Florida Regional Climate Change Compact and coordinate with neighboring municipalities to share technical expertise, assess regional vulnerabilities, and identify and advance agreed upon mitigation and adaptation strategies and develop policies and programs.

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

2.0 LAND USE + BUILT ENVIRONMENT


BAYSIDE EDGE

OBJECTIVE:
Increase community resiliency through sustainable land use and built environment regulations.


POLICY ADAPTATION

POLICY PLANNING:
The Town shall review current land development regulations to assess capacity to adapt to, or mitigate for the following projected climate impacts:

a. Higher temperatures,
b. Extreme rain events,
c. Increased storm surge,
d. Saltwater intrusion, and
e. Sea level rise.

The Town shall review and evaluate the zoning code and land development regulations to identify and reduce obstacles for enabling urban agriculture, gardening, and other front and backyard agricultural practices.

The Town shall review and evaluate the land development code and make recommendations and updates to adopt climate resilient construction practices to enhance design specifications to increase resistance to more frequent and/or intense storm events.

The Town shall review and evaluate the zoning code and land development regulations to identify and reduce obstacles for enabling renewable energy and to better accommodate energy efficient practices; and develop programs and tools to support the expansion and the use of solar energy systems on all new construction, retrofitting of existing buildings or use on vacant land.

The Town shall develop policies requiring certain new properties to be solar ready or include a minimum amount of solar energy production per property.

The Town shall review and evaluate the zoning code and land development regulations to ensure urban heat island and urban tree canopy considerations are incorporated.

The Town shall develop policies to require new commercial and multi-residential properties to have electric vehicle-ready electrical infrastructure and dedicate a minimum amount of parking spaces for electric vehicle parking.

ACTION PLANNING:

- The Town shall create incentives for developers to maintain and expand existing tree canopy on development sites, specifically areas of community use or with limited tree canopy.

- The Town shall review and evaluate the zoning code and land development regulations to identify and reduce obstacles for enabling green roofs, white roofs, and white pavement.

- The Town shall review and evaluate the zoning code and land development regulations to identify and reduce obstacles to and to promote the use of electric vehicles (EV).

- The Town shall develop and adopt standards to increase designated bike parking facilities at office and retail developments.

- The Town shall review and evaluate the zoning code and land development regulations to identify and remove obstacles to implementing green

ACTION PLAN: GOALS + OBJECTIVES [cont.]

infrastructure, grey infrastructure and low-impact development practices in development and redevelopment projects.

- The Town, shall review and update the zoning code, and land development regulations according to sustainable community development practices, such as those defined in Section 255.253(7) of the Florida Statutes or those outlined in the criteria recommended by the United States Green Building Council's Leadership in Energy and Environmental Design for Neighborhood Development (LEED-ND) certification, the Smart Growth Principals developed by Smart Growth America, the case studies of the Urban Land Institute, or by application of a national rating system for local governments, such as the STAR Community Index ™ (STAR) and make recommendations on feasible revisions for incorporating increased sustainability.

- The Town shall maintain a Property Assessed Clean Energy (PACE) program.

- The Town shall promote and expand programs that reduce long-term energy need, such as weatherization assistance programs.

- The Town shall develop policies to regularly audit, benchmark, and/or retro-commission government buildings.

- Town shall encourage and support personnel within the Planning and Zoning, Building, Public Works or other Departments, to obtain and maintain LEED Green Associate certification; energy audit training or other energy or green building education or certifications.

- The Town shall develop a resiliency review checklist.

03.00 TRANSPORTATION

OBJECTIVE:
Increase community resiliency through sustainable transportation and transportation infrastructure decisions.

POLICY PLANNING:
The Town shall continue to collaborate on the implementation of a system of Complete Streets that is context sensitive and safely serves the transportation needs of transportation system users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers.

The Town shall continue to support the existing Miami-Dade County Transit bus routes that service the Town and shall coordinate with them on ensuring effectiveness and efficiency of routes.

The Town shall strive to reduce crashes and encourage non-motorized modes of transportation through coordinated engineering, education, evaluation, and enforcement solutions.

The Town shall encourage transit agencies to reduce greenhouse gas emissions by procuring renewable fuel and electric buses.

The Town shall pro-actively plan for future deployment of autonomous vehicles and determine what step the Town should begin to take to prepare for this technology, particularly as it relates to:

a. Shared ownership/private ownership and public transit
b. Convenient drop-off locations
c. Communication networks
d. Signage and street markings
e. Designated Biking Lanes

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

The Town shall pro-actively plan for future deployment of aerial and ground drone delivery systems and determine what steps the Town should begin to take to prepare for this technology.

ACTION PLANNING:

- The Town shall identify and expand electric vehicle (EV) charging infrastructure, including supporting a regional framework for locating public EV charging stations and expanding EV opportunities at multifamily buildings, workplaces, and commercial and retail centers.

- The Town shall pro-actively plan for deployment of scooter services and establish parameters to ensure safe and effective deployment specifically as it relates to:
  a. pick-up/drop off locations, and
  b. sidewalk safety of pedestrians.

- The Town shall, where possible, increase bicycle and pedestrian connections between residential areas and public/civic areas and transit access, and enhance street networks for greater connectivity and multi-modal use in order to:
  a. Reduce motor vehicle traffic,
  b. Reduce greenhouse gas emissions, and
  c. Increase neighborhood health and safety.

- The Town shall increase bike racks and bike storage facilities to increase bike utilization though the development review and capital improvements review processes.

04.00 WATER RESOURCES

OBJECTIVE:
Increase resiliency of existing and future water resources, and wastewater and storm water systems and infrastructure through review and implementation of improvement projects and adopted standards.

POLICY PLANNING:
The Town shall review and evaluate the zoning code and land development regulations to identify feasible regulations that require new construction, redevelopment, additions, retrofits or modifications of property to incorporate porous materials, reduce total impervious area, and employ other techniques to reduce run-off, capture and reuse rain water, and recharge the Biscayne Aquifer.

The Town shall encourage and remove obstacles to the use of green infrastructure and shall review and amend the land development code to provide accommodation for green infrastructure.

The Town shall work with Miami-Dade County to evaluate infiltration and inflow programs to strategically reduce the flow of groundwater and stormwater to wastewater collection and treatment facilities.

The Town shall coordinate with Miami-Dade County to assess the adequacy of water supply and water/wastewater facilities and infrastructure to effectively capture, store, treat, and distribute potable water and reuse under variable climate conditions, including changes in rainfall patterns, sea level rise, and flooding, with potential water quality and quantity impacts.

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

The Town shall work with South Florida Water Management District to develop water demand projection scenarios that account for potential changes in demands if temperatures increase and drought conditions become more frequent or persistent.

The Town shall coordinate with Miami-Dade County and other appropriate agencies in the implementation of adaptive management strategies to improve the resiliency of water and wastewater transmission, disposal and treatment systems, and infrastructure resources.

ACTION PLANNING:

- The Town shall installation back-flow preventers on drainage systems that discharge to the Biscayne in coordination with the appropriate agencies.

- The Town shall evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems with consideration of water quantity and quality-including public health-related metrics.

- The town shall establish a water use baseline for the entire community.

- The Town shall conduct an assessment to identify public investments and infrastructure at risk from sea level rise and other climate change related impacts and update this assessment every five (5) years. The assessment shall include including but not be limited to:
  a. Buildings,
  b. Water and wastewater infrastructure,
  c. Transmission lines and pumping stations,
  d. Stormwater systems,
  e. Roads, bridges, and all transportation and transit infrastructure,

f. Power generation facilities and power transmission infrastructure,
g. Critical facilities such as Town Hall, police and fire stations.

- The Town shall maintain and improve land development and other regulations that include:
  a. Water conservation-based irrigation requirements,
  b. Water conservation-based plant species requirements derived from the South Florida Water Management District's list of native species and other appropriate sources,
  c. Lawn watering restrictions,
  d. Mandatory use of high-efficiency water saving devices for substantial rehabilitation and new construction, and
  e. Other water conservation measures, as feasible.

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

05.00 OPEN SPACE + PROTECTIVE NATURAL RESOURCES

OBJECTIVE:
Increase community resiliency by conserving open space and protective natural resources.

POLICY PLANNING:
The Town shall encourage current citizen-driven programs, such as the Florida-Friendly Landscaping program and the Florida Yards and Neighborhoods Homeowner program.

The Town shall support and advocate for continued implementation and funding on the state and federal levels for the Comprehensive Everglades Restoration Plan (CERP).

The Town shall continue to collaborate with the federal, state, and local governments on long-term, sustainable, regional solutions to protect the Biscayne aquifer.

The Town shall support the efforts of state environmental and planning agencies to jointly develop, assess, and recommend a suite of planning tools and climate change adaptation strategies for local municipalities to maximize opportunities to protect the coastal resources and assets from the impacts of sea level rise.

The Town shall cooperate with federal and State agencies on canal or shoreline protection programs to enhance coastal resiliency and storm protection.

The Town shall continue to collaborate with the federal, state, and local governments on long-term, sustainable, regional solutions to beach erosion and sediment supply.

The Town shall align local beach erosion prevention efforts with Florida's Department of Environmental Protection's Strategic Beach Management Plan (SBMP) for the Southeast Atlantic Coast Region.

The Town shall support the Florida Department of Environmental Protection's efforts to enforce the Coastal Construction Control Line program and to educate the general public about its importance.

The Town shall support and advocate for coral reef protection, restoration, and sustainable-use initiatives to help Florida's reefs adapt to the changing climate and ocean acidification.

The Town shall support efforts and regulations that reduce negative human impacts on coral reefs, to include efforts to:

a. Reduce pollution and runoff,
b. Reduce the use of pesticides and lawn fertilizers,
c. Dispose of trash properly,
d. Promote responsible boating, snorkeling, and diving practices,
e. Promote sustainable, low-impact fishing practices, and
f. Increase the installation of mooring buoys.

ACTION PLANNING:

- The Town shall review the Land Development Code to identify means to reduce the amount of impervious coverage and increase the permeability of surface drainage and amend the code where feasible.

- To reduce heat island effect and encourage carbon sequestration, the Town shall continue to maintain and enhance its tree canopy through such efforts as implementation and periodic updates of the zoning code and land development regulations, urban forestry grants, and other actions.

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

06.00 COORDINATION, COOPERATION + COMMUNICATION

OBJECTIVE:
Increase community resiliency through effective coordination, cooperation and communication.

POLICY PLANNING:
The Town shall continue to coordinate with local, County, regional, State and federal agencies and other non-governmental entities and academic institutions in the ongoing assessment of climate change and sea level rise and shall continue to collaborate in the identification and implementation of appropriate mitigation, protection, accommodation and adaptation strategies.

The Town shall aid in advancing resiliency measures by fostering collaboration among elected officials and local government staff.

The Town shall continue to coordinate with the Municipalities and Counties in the Southeast Florida Regional Climate Change Compact, in the identification of modeling resources and development of locally effective initiatives and goals to address climate change.

The Town shall continue to coordinate with State, federal and regional partners to ensure consistency in efforts to map saltwater intrusion across the region to create better information and improve management decisions for protecting the regional freshwater aquifer.

The Town shall recognize the regional indicators as identified by the Southeast Florida Regional Climate Change Compact, and as applicable, contribute local data.

The Town shall seek and support cooperative efforts to engage the support of federal agencies, such as National Oceanic and Atmospheric Administration, U.S. Geological Survey, Federal Emergency Management Agency, Environmental Protection Agency, the U.S. Department of Interior, U.S. Department of Energy, and the U.S. Army Corps of Engineers, that can provide technological and logistical support to further state, regional, county, and local planning efforts in the assessment of climate change vulnerabilities and adaptation strategies.

The Town shall continue to advocate for federal and state funding for applied monitoring and climate-related science, conducted in partnership with the Compact and the Florida Climate Institute.

The Town shall encourage the South Florida Water Management District to integrate potential future climate conditions, sea level rise scenarios, and potential impacts to water quality and supply into the regional water management models used to support the Lower East Coast Water Supply Plan, environmental resource permitting, and consumptive use permitting.
The Town shall continue to collaborate with the Southeast Florida Regional Climate Change Compact to strengthen advocacy by the Compact in Tallahassee and Washington.

ACTION PLANNING:

- The Town shall continue to collaborate with the Southeast Florida Regional Climate Change Compact to advance and promote a Southeast Florida resilience strategy that includes regionally coordinated resilience standards as the basis for planning, development, and infrastructure investments to proactively address flood risk associated with sea level rise and predicted changes in coastal water levels, groundwater tables, flood elevations, and storm surge.

ACTION PLAN: GOALS + OBJECTIVES [cont.]

- The Town shall assist in coordinating transportation-related adaptation policies across jurisdictional boundaries and ensure consistency among broader planning and plan implementation efforts. Specifically, strategies for preparing for sea level rise, such as increasing road surface elevation standards, subsurface stabilization, stormwater management and drainage, and adjustment of bridge heights to allow for navigation, should be collaboratively assessed and implemented.

- The Town shall share data and encourage the use of common approaches to vulnerability analysis and, ultimately, the development of adaptation strategies that will be complementary across sectors and result in a cohesive, resilient built environment.

- The Town will continue to share information about effective climate policies and implementation successes among counties, municipalities, school districts, and other units of government through platforms like the Regional Climate Action Plan.

- The Town shall advocate for state laws and programs that expand all opportunities for solar or other renewable energy deployment statewide.

07.00 PUBLIC OUTREACH

OBJECTIVE:
Increase community resiliency through effective public outreach.

POLICY PLANNING:
The Town shall partner with local governments, NGOs, academic institutions, libraries, faith-based organizations, advocacy organizations and community groups to disseminate local and regional resiliency messages and to deploy communication projects.

The Town shall facilitate the availability of climate related data sets produced by federal, state, and local government; academic research; and Compact participatory research.

The Town shall effectively use social media to promote public awareness and understanding of climate impacts and resiliency matters.

To enhance resiliency message coverage, the Town shall incorporate non-internet public communication alternatives, such as:

a. Community boards at public spaces,
b. Flyers,
c. Local and neighborhood papers and newsletters.

ACTION PLANNING:

- The Town's resiliency messaging shall include information on citizen's personal actions available to respond to climate change as well as public policy options.

ACTION PLAN: GOALS + OBJECTIVES [cont.]

- The Town shall provide educational materials on home energy and water use reduction strategies; on the environmental effects of automobile idling; and on placement of landscape materials to reduce energy consumption.

- The Town shall provide information to the public and community stakeholders about the current and potential impacts of climate change and sea level rise, as well as mitigation, protection, accommodation and adaptation strategies.

- The Town shall continue to support public education and outreach programs addressing issues including, but not limited to:
  a. Energy efficiency,
  b. Water conservation,
  c. Solid waste reduction and recycling,
  d. Urban forests and native landscaping,
  e. Air quality,
  f. Greenhouse gas reduction, and
  g. Climate change adaptation and response planning.

08.00 COMMITMENT TO FUNDING

OBJECTIVE:
Increase community resiliency through the commitment to fund climate change adaptation and mitigation measures.

POLICY PLANNING:
The Town shall use vulnerability and risk assessment analyses and tools to assist in identifying priorities for resilience investments.

The Town shall prioritize climate adaptation improvement projects pertaining to water supply, wastewater systems, stormwater management, and flood protection as part of capital improvement planning.

The Town shall explore opportunities for and pursue external governmental or NGO funding mechanisms to implement adaptation and resiliency projects.

The Town shall evaluate the costs and benefits of adaptation alternatives in the location and design of new infrastructure as well as the fortification or retrofitting of existing infrastructure.

Capital improvement cost-benefit analyses shall consider investments into natural systems, traditional infrastructure, green infrastructure and hybrid green/gray approaches.

The Town shall give high investment priority to local, state, and federal transportation infrastructure investments, programs, and services that will reduce GHG emissions and increase resilience and adaptability to climate change.

ACTION PLAN: GOALS + OBJECTIVES [cont.]

ACTION PLANNING:

- The Town shall commit funding to climate change adaptation and resiliency projects and shall use the best available data, models, and resources, including the Southeast Florida Regional Climate Change Compact's Unified Sea Level Rise Projection, to inform planning and prioritizing annual funding.

- The Town shall develop a sea level rise checklist for capital projects.

- The Town shall center the budget on resilience and fund for planned retreat.

09.00 IDENTIFY VULNERABILITIES

OBJECTIVE:
Increase community resiliency through identification of vulnerabilities created by climate change impacts and cyber attacks.

POLICY PLANNING:
The Town shall continue to review updated mapping studies to aid in identifying areas of the Town most vulnerable to sea level rise, tidal flooding, compromised drainage, and other impacts of climate change.

The Town shall identify areas that are at increased risk of flooding due to, or exacerbated by, sea level rise as projected for the next 40 years, and work to make these areas more climate resilient through the implementation of adaptation and mitigation strategies.

The Town shall identify and map at-risk historic and archaeological resources (i.e., resources susceptible to sea level rise and the effects of natural disasters) and continue to update these maps as more data become available and scientific projections are refined.

The Town shall establish a ranking of at-risk regional historic and archaeological resources based on a matrix of vulnerability, historical significance, scientific and economic value, and other criteria as determined by the appropriate historic preservation entities and prioritize adaptive preservation and mitigation strategies to increase the resilience of these resources against sea level rise and natural disasters.

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

The Town shall continue to identify existing under-performing infrastructure- both physical and digital- and implement infrastructure improvement strategies that facilitate targeted investments, allow managed performance, and achieve greater flexibility in system operations.

ACTION PLANNING:

- The Town shall identify vulnerable roadways and bridges using the Florida Department of Transportation Sea Level Scenario Sketch Planning Tool.
- The Town shall continue to update their Stormwater Master Plan as updated data and groundwater and sea level projections become available.
- The Town shall identify and quantify infrastructure and populations at risk to sea level rise and storm surge.
- The Town shall identify susceptibility to cyber attacks and plan steps to reduce risk.
- Identify organizations that work with insurance groups for event preparedness.

10.00 DISASTER RESPONSE PREPARATION

OBJECTIVE:
Increase community resiliency through disaster response preparation in the context of climate change to promote rapid recovery.

POLICY PLANNING:
The Town shall continue to communicate and collaboratively plan with other local, regional, state and federal agencies on emergency preparedness and disaster management strategies including incorporating climate change impacts into updates of local mitigation plans, water supply and management plans, shelter placement and capacity, review of major traffic-ways and evacuation routes, and cost analysis of post disaster redevelopment strategies.

ACTION PLANNING:

- The Town shall examine and determine the resilience of evacuation routes by mapping them against projected climate impacts, and collaboratively plan for the redesign of any evacuation routes that are threatened by climate impacts.

- The Town shall provide emergency and disaster training for Town Staff, including for flooding scenarios and extreme heat wave events.

- In assessing expenditures the Town shall prioritize renewable and distributed energy technologies power at emergency command centers and disaster recovery functions.

- The Town share regional tools and templates on preparing business recovery plans and home adaptation plans and encourage individual small businesses

ACTION PLAN: GOALS + OBJECTIVES [cont.]

and homeowners to develop personal recovery plans.

- The Town shall designate solar charging with battery storage and other renewable options to benefit and improve the community's emergency management preparedness in times of power outages.

- Encourage community members to obtain Community Emergency Response Training (CERT) and provide information on training opportunities.

11.00 NATIONAL FLOOD INSURANCE AND COMMUNITY RATING SYSTEM PROGRAMS

OBJECTIVE:
Increase community resiliency through continued participation in the National Flood Insurance Program (NFIP) and Community Rating System program to promote flood damage reduction.

POLICY PLANNING:
The Town shall collaborate with regional partners to advocate for regional long-term affordability and sustainability of flood insurance coverage and options within the National Flood Insurance Program (NFIP), and for private insurers that properly credit communities and individual policyholders for investments in resilience.

The Town shall continue to identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies and implement these techniques and best practices through the land development code and Community Rating System.

ACTION PLANNING:
- The Town shall evaluate the FEMA FIRM Map special flood hazard areas periodically against local water level data.

ACTION PLAN:
GOALS + OBJECTIVES [cont.]

- The Town shall review and evaluate the Town's Floodplain Management regulations to evaluate and make recommendations and updates to adopt climate resilient practices such as:
    a. Increased finish floor elevation standards with respect to projected sea level rise scenarios and flooding potential,
    b. Enhanced cumulative tracking standards for substantial improvement projects
    c. Establishment of a minimum Base Flood Elevation if warranted.

12.00 PUBLIC HEALTH

OBJECTIVE:
Increase community resiliency through identification of and preparation for public health risks associated with climate change.

POLICY PLANNING:
The Town shall consider the public health consequences of climate change, such as extreme temperatures and vector-borne diseases, and take steps to build capacity to respond to or support other agency responders.

The Town shall ensure the availability of, and access to, public cooling centers during extreme heat events.

ACTION PLANNING:
The Town shall continue to coordinate with its County and State Public health partners to stay informed of emerging diseases associated with climate change impacts, and current gaps in health data that would support the monitoring of climate change health impacts.

BEACH DUNE REPORT

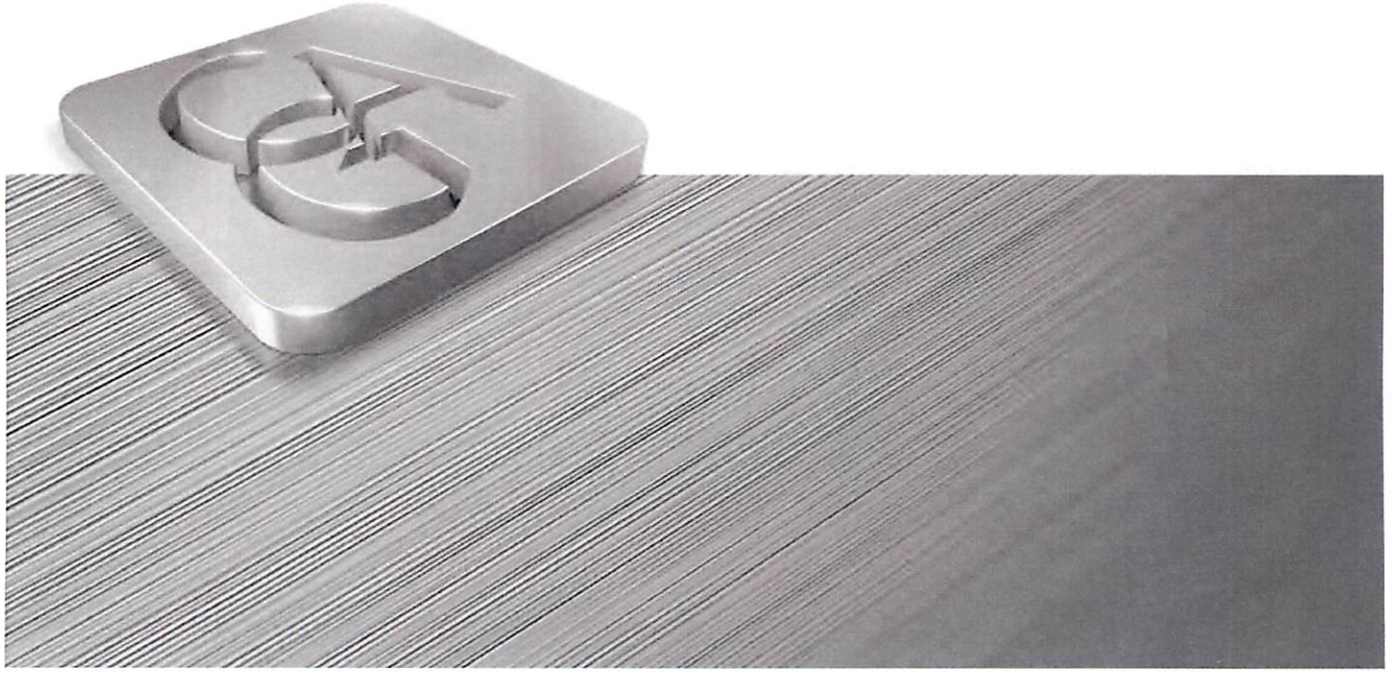
EXHIBIT SE. 3

Town of Surfside

9293 Harding Avenue
Surfside, FL 33154

Beach and Dune Report
W.A. 110
CGA Project number: 18-9942

Prepared By: Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS™



BEACH CREATION AND STATUS

The approximate one mile length of public beach and dune along the Town of Surfside's (Town or Surfside) ocean frontage was created from a beach renourishment program. The federally-authorized Dade County Shore Protection Project, which included Surfside, began in 1978 and was completed in January 1982 using sand from offshore borrow sites. This project included creation of a 20 foot wide dune at elevation +10.7 foot NGVD and a 50 foot wide level storm protection berm at elevation +8.2 foot NGVD. Additional fill material, equivalent to ten years of advance nourishment, was placed seaward of the design berm with this initial program. The Miami-Dade (County) *Erosion Control Master Plan* (Plan) reports that an additionally 590,000 cubic yards of sand was placed in Surfside again in 1999. The attached aerial photographs of Surfside in 1970 and 1984 demonstrate the initial beach renourishment effort and the 1999 aerial photographs (February and December) demonstrate the follow-up project. See Exhibit A. Aerial photograph of Surfside 1970 and 1984 and 1999.

The December 2017, *Critically Eroded Beaches in Florida,* report from the Florida Department of Environmental Protection (FDEP) states that most of the County's barrier island coast north of Cape Florida is critically eroded. FDEP, pursuant to rule 62B-36.002(5), Florida Administrative Code (F.A.C.), defines a critically eroded shoreline as, "a segment of the shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. Critically eroded shorelines may also include peripheral segments or gaps between identified critically eroded areas which, although they may be stable or slightly erosional now, their inclusion is necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects." The report identifies three critically eroded areas (17.0 miles), two non-critically eroded areas (1.4 miles) and one non-critically eroded inlet shoreline area (0.3 mile) in the County. Between Bakers Haulover Inlet and Government Cut (R27 – R74.4) are 9.4 miles of critical erosion, which threaten development and recreational interests along Bal Harbour, Surfside and Miami Beach. See Exhibit B. Critically Eroded Beaches Map.

The Town is approximately 0.85 miles south of Bakers Haulover Inlet. The Plan states that "areas immediately south of most inlets typically experience erosion due to sand being lost, creating a deficit on the downdrift side. At Bakers Haulover Inlet, sand is lost due to high current velocities, which tend to jet sand coming into the inlet either offshore, or into Biscayne Bay, where it accumulates in ebb and flood shoals, respectively. While these shoals are periodically dredged and the sand placed on the beach, there are inherent losses which create erosional conditions. In addition to the direct effects of the inlet, the curved jetty structure on the south side of the inlet can result in wave refraction under certain weather conditions that can accelerate the loss of sand from the beach in the vicinity of the jetty." Although Bal Harbour, which lies immediately south of the jetty and to the north of Surfside, is most strongly affected by the inlet, the lack of downdrift sand also impacts the Town and the beaches to the south, by depletion of the sand source that naturally should drift south. Inlets throughout Florida are studied, monitored and managed in accordance with their adopted Inlet Management plans; *The Baker Haulover Inlet Management and Implementation Plan* was jointly developed by FDEP and the County. Ongoing is a *Baker Haulover Inlet Feasibility Study* that is funded by FDEP with the County leading this project. A Techincal Advisory Group comprised of Surfside, Bal Harbour, Sunny Isles Beach, the County, FDEP and the Florida Inland Navigation District, has been meeting over this past year to collaboratively work with the firm of Moffat & Nichol to finalize the report that is evaluating and investigating improvements to sand bypassing at the inlet . It is anticipated the report will be completed in the spring of

2019. FDEP will then review and utilize the report to update the inlet management plan. The FDEP process may take an additional year.

Beaches and dunes are not discrete units confined by municipal limits; they are components of a larger ecosystem. The beach and dune system along Surfside is a part of the larger managed beach dune system along the County's Barrier Islands. An upcoming United States Army Corps of Engineers (ACOE) driven project proposes to place 300,000 cubic yards of sand along the beach front of Surfside from coastal range monument 31.5 to 36.5 (the entire length of the Town). This project is in the final stages of permit processing and it is anticipated work will begin in mid-2019. The proposed renourishment will have a typical berm crest of 6.1', a berm width of 240' and a construction slope of 1 vertical to 10 horizontal. The Town is an active partner with the ACOE and the County in this project. The Town is providing surveying services and permit processing services for this project. The State is reviewing the project and will be issuing a joint coastal permit through the Beaches, Inlets and Ports Program that falls within the FDEP. The County and the ACOE are co-permittees on this project and will also be issuing permits. For the Surfside project sand will be hauled to the site from approved inland sand mines sources.

The Town beach renourishment project is a component of an overall ACOE driven project in the County that also includes the Bal Harbour beach and the inlet. The Bal Harbour component involves inlet dredging as well as sand placement on the beach. It is anticipated work will begin in mid-2020 on this component. Other components of the overall County project include Sunny Isles Beach and segments of Miami Beach. These other components will run through 2020. Beach monitoring and renourishment throughout the County is a monitored and managed project with the ACOE and the County taking lead roles.

BEACH OWNERSHIP, FEATURES AND REGULATORY STRUCTURE

To understand ownership, responsibility and the applicable regulatory structure of the beach and dune system there are three distinct delineations that must be understood; these are: 1) the erosion control line (ECL), 2) the ocean bulkhead line and 3) the coastal construction control line (CCCL). These are shown on Exhibit C. Beach Aerial with ECL, Bulkhead and CCCL Delineations

1) Erosion Control Line: The ECL is defined in F.A.C. 62B-41.002(15) as "the line determined in accordance with the provisions of sections 161.141-.211, Florida Statute (F.S.) and recorded pursuant to section 161.181, F.S., in connection with beach restoration projects. Where established, an erosion control line represents the landward extent of the claims of the state in its capacity as sovereign title holder of the submerged bottoms and shores of the Atlantic Ocean, the Gulf of Mexico, the Straits of Florida and the bays, lagoons and other tidal reaches thereof."

The Plan describes the ECL as follows "Under Florida law, all land located seaward of the Mean High Water Line (MHWL) (with certain exceptions) is the property of the State of Florida. In implementing a beach nourishment or other activity that will artificially move the MHWL seaward, the State requires, pursuant to Chapter 161, F.S., that the project sponsor establish an ECL in order to allow the State to maintain ownership of these previously submerged areas. Prior to the establishment of an ECL, a riparian owner's seaward property line is the MHWL and is subject to fluctuation based on naturally occurring erosion or accretion. The establishment of an ECL occurs by surveying the location of the pre-project MHWL prior to the project using established survey procedures. This surveyed shoreline position then becomes a fixed property line known as the ECL. Once established, this line remains the seaward extent of the riparian owner, regardless of the change on the MHWL by fill placement or other means. In most cases, any new beach established seaward of the ECL is under State ownership and is available as public beach."

Within the Town the ECL runs roughly along the crest of the storm protection dune (slightly landward of the footpath that runs along the crest of the dune). Everything seaward of the ECL is owned by the State and is open for public recreation. See Exhibit C. Beach Aerial with ECL, Bulkhead and CCCL Delineations. This line identifies the shoreline prior to the beach renourishment completed in 1982. Although not owned by the Town, the beach area east of the ECL does fall within the corporate limits of the Town. Other than one lifeguard station, there are no piers, cabanas, marinas or other structures on the public beach.

The beach and associated dune system seaward of the footpath is maintained through agreement and on behalf of the State by the County Park and Recreation Department. The beach is maintained in a natural condition. The County specifically mechanically and manually cleans the beach, removes seaweed, empties the trash cans and removes/levels any escarpments that form. The Town Commission recently approved and adopted in the 2018-2019 budget for additional mechanical beach raking to supplement that done by the County, the Town is working on implementing this raking program. The Town maintains the walking path on the crest of the dune.

Unless an extremely significant storm event would occur to move the MHWL landward of the existing ECL and a subsequent publically funded renourishment program would trigger the necessity for a new ECL survey, the ECL will remain static in the Town.

2) Ocean Bulkhead Line: The Town has established an ocean bulkhead line that falls within and applies to the privately owned beach front properties east of Collins Avenue; this line is also shown on Exhibit C. Beach Aerial with ECL, Bulkhead and CCCL Delineations. The Town zoning code prohibits development or redevelopment seaward of the ocean bulkhead line. Seaward of this bulkhead line there are approximately 19 acres that lie adjacent to the State owned beach. Within this ocean bulkhead setback area, along the landward side of the dune, there is an unimproved maintenance path that is utilized by the State, the County and the Town that runs the entire length of the Town. This maintenance path is and has historically been, a popular public walking and biking path. This maintenance path, which is also utilized for emergency vehicles, is maintained by the Town. Any commercial use of the maintenance path, for construction or special events, etc., requires a Police Department Escort permit. Nearly all of the property owners have provided landscape improvements in the area between the bulkhead line and maintenance path. The maintenance path, also referred to as the 'Hardpack' is defined in Sec. 34-3 of the Town code as "The sand road west of the Erosion Control Line used by public safety and other authorized vehicles, pursuant to section 90-60.1(5) of the Town Code of Ordinances."

Relating to the ocean bulkhead line, Article IV, Division 2 of the Town Code specifically states the following within Section 14:

> Sec. 14-87. - Construction east of line. It shall be unlawful for any person to construct any groin, bulkhead, seawall, jetty, breakwater or other protective work or to place any permanent or temporary structure of any nature whatsoever east of the ocean bulkhead line. It shall also be unlawful for any person to repair, extend, alter or replace any existing structure lying east of the ocean bulkhead line.
> Sec. 14-88. - Construction west of line. Except as provided in section 90-187 no structure of any nature whatsoever may be erected within 20 feet west of the ocean bulkhead line and it shall be unlawful to repair, extend, alter or replace any existing structure lying within 20 feet west of the ocean bulkhead line which is not permitted under the provisions of section 90-187.
> Sec. 14-89. - Vehicles east of line. It shall be unlawful for any person to drive, park, store or leave unattended any vehicle east of the ocean bulkhead line. In case of an emergency, the Town manager may

grant temporary permission for vehicular access, upon such terms and conditions as he shall deem appropriate.

Additionally, Sec. 90-60 of the Town code addresses construction adjacent to the ocean bulkhead line and states the following:

90-60.1 Ocean bulkhead lines are established in section 14-86 and the following regulations shall control construction adjacent thereto:

(1) No permit shall be issued for the construction of any habitable, fully-enclosed structure east of the ocean bulkhead line.

(2) No permit shall be issued for the repair, extension, alteration or replacement of any habitable, fully-enclosed structure east of the ocean bulkhead line.

(3) No permit shall be issued for the construction of any habitable, fully enclosed structure closer than 20 feet to the west of the ocean bulkhead line.

(4) No permit shall be issued for the repair, extension, alteration or replacement of any habitable, fully enclosed structure lying within 20 feet to the west of the ocean bulkhead line.

(5) All properties east of Collins Avenue which upon redevelopment or expansion of habitable, fully enclosed structures require a permit from the town shall be required to provide an access easement to the town granting the perpetual use of the hardpack to the public, provided that the development creates an impact on public safety and the need for the easement is proportional to the impact created. The hardpack is defined as the sand road west of the Erosion Control Line used by public safety vehicles. Each access easement agreement shall be in a form acceptable to the town manager and approved as to legal sufficiency by the town attorney and shall contain a signed and sealed boundary survey and legal description of the easement area.

3) Coastal Construction Control Line: The CCCL Program is an integral component of the state's Beach and Shore Preservation Act pursuant to Part I of Chapter 161, F.S. Per FDEP, the program regulates and protects Florida's beaches and dunes from imprudent construction that could jeopardize the beach/dune system, accelerate erosion, threaten upland structures and property and interfere with public beach access while allowing reasonable use of private property. The CCCL program is administered through the FDEP. Other than a few limited exceptions, all development seaward of the CCCL requires a permit from FDEP. The CCCL permitting criteria is contained in F.A.C. 62B-26 through 56. Within the Town the CCCL runs roughly through the middle of the developable portions of the properties that fall east of Collins Avenue, this line is also shown on Exhibit C. Beach Aerial with ECL, Bulkhead and CCCL Delineations.

As stated on the FDEP website "the Coastal Construction Control Line defines that portion of the beach and dune system subject to severe fluctuations based on a 100-year storm event and establishes the landward limit of jurisdiction of the Department of Environmental Protection along sandy beaches of the state which front on the Gulf of Mexico, the Atlantic Ocean and the Straits of Florida. Unless otherwise exempt; a permit is required from FDEP for construction and excavation activities seaward of the CCCL. The CCCL is not a seaward limit for construction of upland structures (as in a setback line), but is an area where special siting and design considerations are necessary to protect the beach and dune system, proposed or existing structures, adjacent properties, public beach access, native salt-tolerant coastal vegetation and marine turtles."

There are seven platted right of ways that run east to the ECL, these are 96th, 95th, 94th, 92nd, 90th 89th and 88th streets. The improved roadways end near the ocean bulkhead line with unimproved paths that continue and crossover the dune and provide public access to the beach. To limit impacts to the dune and dune vegetation, there are a total of sixteen dune cross-over pathway locations that have been established within the Town, seven of these cross-overs correspond to the termination of the platted public right-of-ways referenced above and another one is in front of the Town Community Center providing public access to the beach. Although the remaining cross-overs begin on private properties, the established 'hardpack' maintenance path provides public access to the beach on these cross-overs as well. Creation or relocation of a dune cross-over requires a CCCL permit from the FDEP and notification to the Town.

In addition to the Hardpack maintenance path there is also a narrower walking path along the crest of the dune. This foot path has a coquina crushed shell base and post and rope edging to protect adjacent vegetation from foot traffic. This post and rope fencing also abuts the established maintenance path to block foot traffic from entering into the vegetated dune. The post and rope fencing is maintained by the Town.

To summarize, development on the properties east of Collins Avenue is subject to the FDEP CCCL permitting program, development within these properties adjacent to and east of the ocean bulkhead line is highly restricted through the Town code –the landward side of the dune and the public maintenance path falls within this area-and eastward of the ECL the dune and beach system is state owned and maintained by the County.

BEACH AND DUNE FUNCTIONS

In addition to the recreational functions, the beach and dune system protects upland properties from storm damage and provides habitat for plants and animals. Dunes block storm surge and absorb wave energy; vegetated dunes minimize erosion and accrete sand and enhance beautification. Impacts to dunes and dune vegetation are regulated by the State of Florida through the CCCL program. The CCCL program directs development away from the dunes, protects dune vegetation and regulates the relocation of sand within the permitted project area. The CCCL program also ensures that any relocated sand or imported sand is compatible with the existing beach sand.

The following definitions are contained in F.A.C. 62B-55.002:

(2) "Beach" means the zone of unconsolidated material that extends landward from the mean low water line to the place where there is a marked change in material or physiographic form, or to the line of permanent vegetation, usually the effective limit of storm waves.

(9) "Dune" means a mound or ridge of loose sediments, usually sand-sized, lying landward of the beach and deposited by any natural or artificial mechanism.

(10) "Frontal dune" means the first natural or man-made mound or bluff of sand which is located landward of the beach and which has sufficient vegetation, height, continuity and configuration to offer protective value.

To strengthen protection for the beach and dune system, Sec. 34-2 of the Town Code states "It is hereby declared and determined that preserving and enhancing the quality of the Town's beaches is essential to serve and benefit the town's residents and visitors. The chemical and physical composition of beach sand must not interfere with the health, safety or welfare of the public." The Town has also installed 'diverter' dunes at the ocean-side ends of the beach access pathways at 96th street and the cross-over located between 90th and 92nd street (adjacent to the Surfclub development). Diverter dunes

are small triangular shaped dunes structures created within the seaward side openings of the beach access paths designed to impede and slow the velocity of the storm surge entering the access way opening. The Town is exploring opportunities to install additional diverter dunes at other access pathway openings.

FDEP also administers the Beaches, Inlets and Ports Program (BIPP). The BIPP program permits beach renourishment projects and piers and per FDEP, "projects that generally are below the mean high water line and extend into the sovereign submerged lands and are likely to affect the distribution of sand along the beach."

FLORA AND FAUNA CONSIDERATIONS

Florida's sandy beaches are nesting sites for several species of threatened or endangered marine turtles. Turtle nesting season runs from May 1 to October 31 in the County. Activities that interfere with the movement of turtles up or along the beach, result in a change in the basic character of the beach itself, or result in improper lighting, can inhibit the successful nesting of turtles. The marine turtles listed below in Table 1. Protected Marine Turtle Species in Florida; are protected under the Federal Endangered Species Act of 1973 and Florida's Marine Turtle Protection Act, F.S. 379.2431.

Florida Statutes restrict the take, possession, disturbance, mutilation, destruction, selling, transference, molestation, and harassment of marine turtles, nests or eggs. Protection is also afforded to marine turtle habitat. Additionally, specific authorization from the Florida Fish and Wildlife Conservation Commission (FWC) staff is required to conduct scientific, conservation, or educational activities that directly involve marine turtles in or collected from Florida, their nests, hatchlings or parts thereof, regardless of applicant's possession of any federal permit.

Table 1. Protected Marine Turtle Species in Florida

Green sea turtle	*Chelonia mydas*	Federally-designated Threatened
Hawksbill sea turtle	*Eretmochelys imbricata*	Federally-designated Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Federally-designated Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Federally-designated Endangered
Loggerhead sea turtle	*Caretta caretta*	Federally-designated Threatened

Historically hatchling turtles were guided to the ocean by an instinct to travel away from the dark silhouettes of the dune vegetation and toward the brightest horizon which was the light from the sky reflecting off the ocean. Many coastal areas are highly populated with artificial lights near the beach that can deter females from nesting and disorient hatchling sea turtles. When disoriented, the hatchlings travel inland toward the artificial lights where they often die from dehydration, entrapment predation, or sometimes crawling onto roads where they are run over by cars.

FDEP and FWC dually review permits under the CCCL program for coastal construction under Chapter 62B, F.A.C. for affects to marine turtles. FDEP also regulates mechanized beach cleaning under the Florida Beach and Shore Preservation Act, F. S. 161. In order for beach cleaning to occur during nesting season, FWC and FDEP have developed special conditions to protect marine turtles, their nests and hatchlings.

To protect turtle hatchlings from disorientation the Town code established lighting standards for new and existing development in Sec. 34-84. - *Lighting Standards for Coastal Construction Activities*, which states the following:

(a) *Lighting standards for new development.* It is the policy of the Town of Surfside that no artificial light shall illuminate within direct line-of-sight of the beach that has potential to interfere with turtle nesting. To meet this intent, new development construction within line-of-sight of the beach shall comply with the following:

(1) Exterior artificial light fixtures shall be designed and positioned so that:
   a. The point source of light or any reflective surface of the light fixture is not directly visible from the beach;
   b. Areas seaward of the frontal dune are not directly or indirectly illuminated; and
   c. Areas seaward of the frontal dune are not cumulatively illuminated.

(2) Exterior artificial light fixtures within direct line-of-sight of the beach are considered appropriately designed if:
   a. Completely shielded downlight only fixtures or recessed fixtures having low wattage (i.e., 50 watts or less) bug type bulbs and non-reflective interior surfaces are used. Other fixtures that have appropriate shields, louvers, or cut-off features may also be used if they are in compliance with subsection (a)(1)a.—c. above; and
   b. All fixtures are mounted as low in elevation as possible through use of low-mounted wall fixtures, low bollards, and ground-level fixtures.

(3) Floodlights, uplights or spotlights for decorative and accent purposes that are directly visible from the beach, or which indirectly or cumulatively illuminate the beach, shall not be used.

(4) Exterior lights used expressly for safety or security purposes shall be limited to the minimum number and configuration required to achieve their functional role(s). The use of motion detector switches that keep lights off except when approached and that switch lights on for the minimum duration possible are preferred.

(5) Only low intensity lighting shall be used in parking areas within line-of-sight of the beach. Such lighting shall be:
   a. Set on a base which raises the source of light no higher than 48 inches off the ground or higher if necessary to conform with life safety codes; and
   b. Positioned or shielded so that the light is cast downward and the source of light or any reflective surface of the light fixture is not visible from the beach and does not directly or indirectly illuminate the beach.

(6) Parking areas and roadways, including any paved or unpaved areas upon which motorized vehicles will park or operated, shall be designed and located to prevent vehicular headlights from directly or indirectly illuminating the beach.

(7) Vehicular lighting, parking area lighting, and roadways lighting shall be shielded from the beach through the use of ground-level barriers. Ground-level barriers must not interfere with marine turtle nesting or hatchling emergence, or cause short-or long-term damage to the beach/dune system.

(8) Tinted glass shall be installed on all windows and glass doors of single and multi-story structures within line-of-sight of the beach.

(9) Use of appropriately shielded low pressure sodium vapor lamps and fixtures shall be preferred for high-intensity lighting applications such as lighting parking areas and roadways, providing security, and similar applications.

(10) Temporary lighting of construction sites during the marine turtle nesting season shall be restricted to the minimal amount necessary and shall incorporate all of the standards of this section.

(11) Properties that abut the beach which have signage facing the beach or in the line-of-sight of the beach, including building identification signs, shall not be illuminated during the nighttime hours of the nesting season. Properties that face the beach but do not abut the beach which have signage visible from the beach shall be properly shielded with downward facing fixtures where the chosen background does not reflect the light source and signs that are lit internally must illuminate only the text and have the appropriate shielding, and not reflect the light source.

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(b) *Lighting standards for existing development.* It is the policy of the Town of Surfside that no artificial light shall illuminate any area within direct line-of-sight of the beach that has the potential to interfere with turtle nesting. To meet this intent, within 12 months of the effective date of this article or when an existing development has begun renovations exceeding 50 percent of the tax assessed value of the structure as determined by the building official, an existing development shall be in compliance with the following:

(1) Existing artificial light fixtures shall be repositioned, modified, or removed so that:
   a. The point source of light or any reflective surface of the light fixture is not directly visible from the beach;
   b. Areas seaward of the frontal dune are not directly or indirectly illuminated; and
   c. Areas seaward of the frontal dune are not cumulatively illuminated.

(2) The following measures shall be taken to reduce or eliminate the negative effects of existing exterior artificial lighting:
   a. Reposition fixtures so that the point source of light or any reflective surface of the light fixture is no longer visible from the beach;
   b. Replace fixtures having an exposed light source with fixtures containing recessed light sources or shields;
   c. Replace traditional light bulbs with bug type bulbs not exceeding 50 watts or any alternative lighting source as defined herein;
   d. Replace nondirectional fixtures with directional fixtures that point down and away from the beach;
   e. Replace fixtures having transparent or translucent coverings with fixtures having opaque shields covering an arc of at least 180 degrees and extending an appropriate distance below the bottom edge of the fixture on the seaward side so that the light source or any reflective surface of the light fixture is not visible from the beach;
   f. Replace pole lamps with low-profile, low-level luminaries so that the light source or any reflective surface of the light fixture is not visible from the beach;
   g. Replace incandescent, fluorescent, and high intensity lighting with the lowest wattage low pressure sodium vapor lighting possible for the specific application or an alternative lighting source;
   h. Plan or improve vegetation buffers between the light source and the beach to screen light from the beach;
   i. Construct a ground level barrier to shield light sources from the beach. Ground-level barriers must not interfere with marine turtle nesting or hatchling emergence, or cause short- or long-term damage to the beach-dune system;
   j. Permanently remove or permanently disable any fixture that cannot be brought into compliance with the provisions of these standards.

(3) Properties that abut the beach which have signage facing the beach or in the line-of-sight of the beach, including building identification signs, shall not be illuminated during the nighttime hours of the nesting season. Properties that face the beach but do not abut the beach which have signage visible from the beach shall be properly shielded with downward facing fixtures where the chosen background does not reflect the light source and signs that are lit internally must illuminate only the text and have the appropriate shielding, and not reflect the light source.

(4) One or more of the following measures shall be taken to reduce or eliminate the negative effects of interior light emanating from doors and windows within line-of-sight of the beach:
   a. Apply window tint or film that meets the standards in the definition of "tinted or filmed glass";
   b. Rearrange lamps and other moveable fixtures away from windows;
   c. Use window treatments (e.g., blinds, curtains) to shield interior lights from the beach; and/or
   d. Turn off unnecessary lights.

Additionally, Sec. 34-83. - *Prohibited Activities Disruptive to Marine Turtles,* includes the following provisions:

(a) *Prohibited activities.* The following activities involving direct illumination of portions of the beach are prohibited on the beach at nighttime during the nesting season for the protection of nesting marine turtle females, nests and hatchlings:

(1) The operation of all motorized vehicles, except emergency and law enforcement, or emergency beach maintenance vehicles or those permitted on the beach for marine turtle's conservation and/or research.

(2) The building of campfires or bonfires.

(3) Fireworks displays, except those that have town special event permits and, if applicable, a FDEP permit; however, nothing in this article shall prohibit the town's July 4th fireworks display.

(4) Special events pursuant to chapter 35, article 1, of the town Code, unless allowed first by permit issued by FDEP.

The Town also affords protection for turtle nesting and hatchlings through the following Town codes: Sec. 86-30. - *Limitations on Beach Furniture* and Sec. 86-31. - *Beach Furniture Permit Requirements,* specifying that beach furniture shall not inhibit access to the public beach, nor obstruct reasonable access on the beach for pedestrians and emergency vehicles, nor impact native vegetation, nor affect sea turtles or other wildlife; and requiring a hotel beach furniture operator to procure a local business tax receipt and comply with the regulations of section 70-41 of the Town of Surfside Code and all required licenses or permits from the County, the State of Florida and federal entities.

Predation or destruction of nests can occur by raccoons or uncontrolled dogs. A comprehensive beach maintenance program should include the control of these animals. The Town does not allow dogs on the public beach as specified in Code Sec. 10-33 stating "No dog, whether on a leash or without a leash, muzzled or unmuzzled, shall be permitted at any time on any public beach in the town. Nothing in this section shall be construed to apply to any deaf or hard of hearing person, totally or partially disabled person, or physically disabled person accompanied by a guide dog or service dog specially trained for the purpose."

Throughout Florida a multitude of citizen volunteers walk beaches during nesting season to report on crawls, nesting activity and nest locations. FWC's Fish and Wildlife Research Institute (FWRI) coordinates nesting beach survey programs around the state and the FWRI staff members coordinate the Florida Sea Turtle Stranding and Salvage Network (FLSTSSN), which is responsible for gathering data on dead or debilitated (i.e., stranded) sea turtles found in Florida. The beach survey program is administered on behalf of FWRI locally by the County and the Town's Park and Recreation Depart staff maintain communication with the County staff.

Sea Oats (*Uniola paniculata*) and Seagrapes (*Coccolobis uvifera*) are considered the most common dune vegetation. These are protected under F.S. 161.242 which states "Harvesting of sea oats and sea grapes prohibited; possession prima facie evidence of violation.

(1) The purpose of this section is to protect the beaches and shores of the state from erosion by preserving natural vegetative cover to bind the sand.

(2) It is unlawful for any purpose to cut, harvest, remove, or eradicate any of the grass commonly known as sea oats or Uniola paniculata and Coccolobis uvifera commonly known as sea grapes from any public land or from

any private land without consent of the owner of such land or person having lawful possession thereof. Possession of either Uniola paniculata or Coccolobis uvifera by other than the owner of such land shall constitute prima facie evidence of violation of this section. However, licensed, certified nurserymen who grow any of the native plants listed in this section from seeds or by vegetative propagation are specifically permitted to sell these commercially grown plants and shall not be in violation of this section of the law if they do so, as it is the intent of the law to preserve and encourage the growth of these native plants which are rapidly disappearing from the state."

The FDEP has established *Sea Grape Trimming Guidelines* for maintenance trimming of sea grapes, any trimming outside the established guidelines, or the need to remove a tree, will require a permit from the FDEP.

There are several listed plant species that may make their home in the sandy dune habitat of south Florida. These include but are not limited to the plants listed below in Table2. Listed Dune Plant Species

Table 2. Listed Dune Plant Species

Scientific name	Common Name	Status
Coccothrinax argentata	Florida Silver Palm	Threatened-State
Ernodea cokeri	Coker's Beach Creeper	Endangered-State
Heliotropium gnaphalodes	Sea Rosemary; Sea Lavender	Endangered-State
Leucothrinax morrisii	Brittle Thatch Palm	Threatened-State
Okenia hypogaea	Beach Peanut	Endangered-State
Scaevola plumieri	Beachberry; Inkberry; Gullfeed	Threatened-State

There are several aggressive invasive plant species that can flourish in the sandy dune habitat and disrupt native vegetative communities. In particular the Hawaiian half-flower or beach naupaka (*Scaevola taccada*) is a common invasive exotic dune plant plaguing south Florida beaches. The plant's shallow roots and fragile stems are easily destroyed in high winds or storms making it far less effective in dune stabilization than sea oats and other native species. This aggressive plant will colonize and block out native vegetation. Brazilian-pepper trees *(Schinus terebinthifolius)* and Australian-pine trees *(Casuarina equisetifolia)* can also infest and disrupt dune vegetative communities. All three of these species are recognized as Category I invasive species by the Florida Exotic Pest Plant Council. A Category I species is defined as "Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives."

For the landward side of the dune on the private properties, when these properties pursue development permits the Town code in Section 90-90.3 states "As a condition of approval, the property owner shall remove all invasive exotic species from the property prior to final approval." The Town also regulates native vegetation through the following codes: Sec. 90-86 "All buildings, structures, new developments, redevelopment and changes of use requiring a permit shall require submittal of a landscape and irrigation plan"; and Sec. 90-97 "Tree removal/relocation permits and native plant community vegetation removal permits are required prior to the removal/relocation of trees, specimen trees, or any vegetation, pursuant to section 24-60 of the County Code. Also, tree abuse including hack racking is prohibited with in the town. Tree protection barriers are required during site development to preserve existing and relocated trees. The County Department of

Environmental Resources Management (DERM) is responsible for administering and enforcing these provisions." As a component of a project specific CCCL permit the FDEP may require dune plantings and the removal of invasive vegetation on the dune system adjacent to a development project.

The Town partnered with the not-for-profit Youth Environmental Alliance (YEA), on a one-time dune planting project along with the removal of the invasive Scaevola plant.

RECOMMENDATIONS

The Town's capacity to directly manage or impact the beach and dune system activity is limited due to their limited ownership; however, below are some best management practices (BMPs) that the Town can pursue to provide protection for sea turtles and the dune system.

Control Light Pollution: Turning out unnecessary lights is the simplest, most effective and most energy efficient solution to avoid negative impacts to wildlife from light pollution. However, this is not a feasible solution where lighting is required for safety and security.The FWC wildlife lighting criteria specifies that a fixture, lamp, or community lighting must be able to satisfy three (3) conditions. These conditions are: 1) keep it low, 2) keep it shielded and 3) keep it long. These are described as follows:

- "Keep it low" means that the fixtures must be able to be mounted as low as possible and still be appropriate for the needed purpose, must be able to accept lamps that produce only the lumens necessary for the needed purpose and bulb must produce the lowest lumens necessary for the needed purpose.
- "Keep it shielded" means that the: fixture must meet or exceed full cut-off (meaning the fixture blocks light from shining at an upward angle), must be able to shield the bulb, lamp, or glowing lens from the beach, wildlife corridor, or protected natural area (when mounted appropriately) and that the bulb must be able to be used in an FWC approved fixture.
- "Keep it long" means that the fixture must accept long wavelength bulbs. The acceptable long wavelength light is 560 nanometers (nm) while anything below 560 nm would be unacceptable.

The site plan review, CCCL and Town building permit processes ensure that new oceanfront lighting complies with the FDEP and FWC lighting criteria, the Town code compliance process can ensure that lighting remains in compliance. Lighting Surveys of beach facing properties can be conducted to identify any existing lighting that may need to be brought into compliance.

Provide Public Education: Many visitors to the Town are unfamiliar with beach and dune habitat and marine turtles. Educational signage at public beach access points can inform visitors. Information on the Town website and in the Surfside Gazette can reach and inform residents and visitors alike. The Town can utilize useful education material on turtles from http://myfwc.com/education/wildlife/sea-turtle/. The Town can publicize the FWC Wildlife Alert phone number (1-888-404-FWCC) to inform people where to report information on injured or stranded turtles.

Beach Furniture Compliance: The Town code compliance process can ensure that beach furniture placement remains in compliance and that any hotel or condominium that plans to put beach furniture on the beach obtain the required Town permit.

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Protect Native Dune Vegetation: Native dune species help to trap and hold sand and inhibit erosion. Invasive dune species can crowd out and impede the growth of native species and often have shallow roots and fragile stems that are easily destroyed in high winds or storms making them ineffective in dune stabilization. The removal of invasive species and installation of native dune species restores the dune's natural functions and biodiversity. The following measures protect and enhance native dune vegetation and the dune structure:

- Remove invasive vegetation. Coordinate with the County to ensure invasive/aggressive vegetation is removed from the state owned portions of the dune. Conduct the follow-up inspection on private properties to ensure invasive species are completely removed when required through the issuance of a Town development permit. On the platted right of ways and Town-owned properties all invasive vegetation should be removed with a routine inspection and follow-up eradication program established.
- Do not leave removed invasive vegetation on-site. Removed invasive exotic vegetation shall be completely removed (including root systems) and properly disposed of; do not shred or chip and leave on site.
- Protect native vegetation during exotic plant removal. To ensure native species are not collaterally damaged during the removal of non-natives, barriers should be installed prior to the removal of invasives.
- Immediately replant cleared areas. To impede re-infestation of aggressive non-native vegetation, any cleared dune area should immediately get installed with diverse native materials. See attached DEP brochure for a list of native dune species. Exhibit D. Recommended Florida Native Beach and Dune Plants for Beachfront Properties and Dune Restoration.
- Sea oats planting. Coordinate with FDEP and the County and support sea oat planting programs and sponsor a Town planting program.
- Limit dune crossovers. Coordinate with FDEP when CCCL permits are sought to ensue no additional dune crossovers are permitted and constructed.
- Maintain the rope and post sand fencing. To impede foot traffic into the dune and the creation of addition unpermitted dune crossovers of convenience, routinely inspect and conduct or coordinate any needed repairs to the rope and post fencing system.

Dune Management: Develop a Town Dune Management program addressing vegetation, wildlife, lighting, maintenance and interagency coordination. Include information on which public and/or private entities currently conduct any beach or dune maintenance activities and what these are.

Code Review: Review the Town code to determine if amendments are needed to provide definitions or to strengthen beach and dune protection measures.

Control Raccoons and Feral Cats: The raccoon is a native species with a year-round hunting and trapping season in Florida. Raccoons are known to carry a wide variety of diseases and parasites and they destroy marine turtle nests. Per Florida Rule 68A-9.010 if a raccoon is a nuisance, it can be captured or taken as a nuisance animal using legal and humane methods. The best way to avoid raccoons is to not attract them, do not feed raccoons. Per F.A.C.68A-4.001, placing food outside attracts wild animals and intentional feeding of raccoons is illegal. Ensure trash cans and dumpsters are not accessible to raccoons and are frequently emptied. When raccoons are reported as frequenting the beach, professional firms can be hired that lawfully remove them. Large populations of feral cats can impact native dune wildlife species, management plans should

implement spay and neutering programs for feral cats to ensure population levels are maintained. Professional firms can be hired that can humanly capture injured or unhealthy cats for appropriate treatment and adoption if feasible.

Maintain Interagency Communication: Multiple agencies play roles in the ownership, management, maintenance, protection and restoration of the beach and dune. The Town does and should continue to maintain effective communication with these agencies to facilitate effective management.

FWC's Fish and Wildlife Research Institute (FWRI) coordinates nesting beach survey programs around the state, volunteers ensure crawls are identified and nests are marked as soon as they are established. The Town maintains communication with the local ongoing beach survey program to best understand local nesting activity, locations and beach conditions.

The County conducts beach maintenance including trash and debris removal. In addition to being unsightly, trash on the beach can entrap, entangle or be ingested by marine turtles and be detrimental. The beach maintenance program should ensure debris does not easily escape from trash receptacles and that loose debris is picked-up. On occasion tar washes onto the beach; this can be detrimental to hatchlings. The beach maintenance program should include removal and proper disposal of any tar that has washed ashore. Compacting beach sand can also be detrimental to marine turtle nesting, the County ensures beach cleaning firms adhere to FWC requirements relating to tire pressure. Other than for life safety, vehicles should be prohibited from the beach. The Town coordinates with the County to designated established access points for emergency and other vehicles to prohibit vehicles from destroying the structure of the existing dunes in other locations. When applicable, mobi-mats should be used for beach access for other special purpose needs.

FDEP produces the annual critically eroded beaches report and administers the CCCL permitting program. Coordinate with FDEP when CCCL permits are sought to ensue no additional dune crossovers are permitted and constructed.

Beach renourishment is a region-wide multi-agency program including Federal, State, County and Local agencies with the Army Corps of engineers taking the lead role. The Town maintains contact with the Corps and with the County to ensure they are apprised of all proposed or pending activities and to ensure the Town's needs and concerns are considered in project planning and implementation.

ATTACHMENTS

Exhibit A. Aerial photograph of Surfside 1970 and 1984 and 1999

Exhibit B. Critically Eroded Beaches Map

Exhibit C. Beach Aerial with ECL, Ocean Bulkhead Line and CCCL Delineations

Exhibit D. Recommended Florida Native Beach and Dune Plants for Beachfront Properties and Dune Restoration

Exhibit A. 1970, 1984, and 1999 Aerial photographs of Surfside

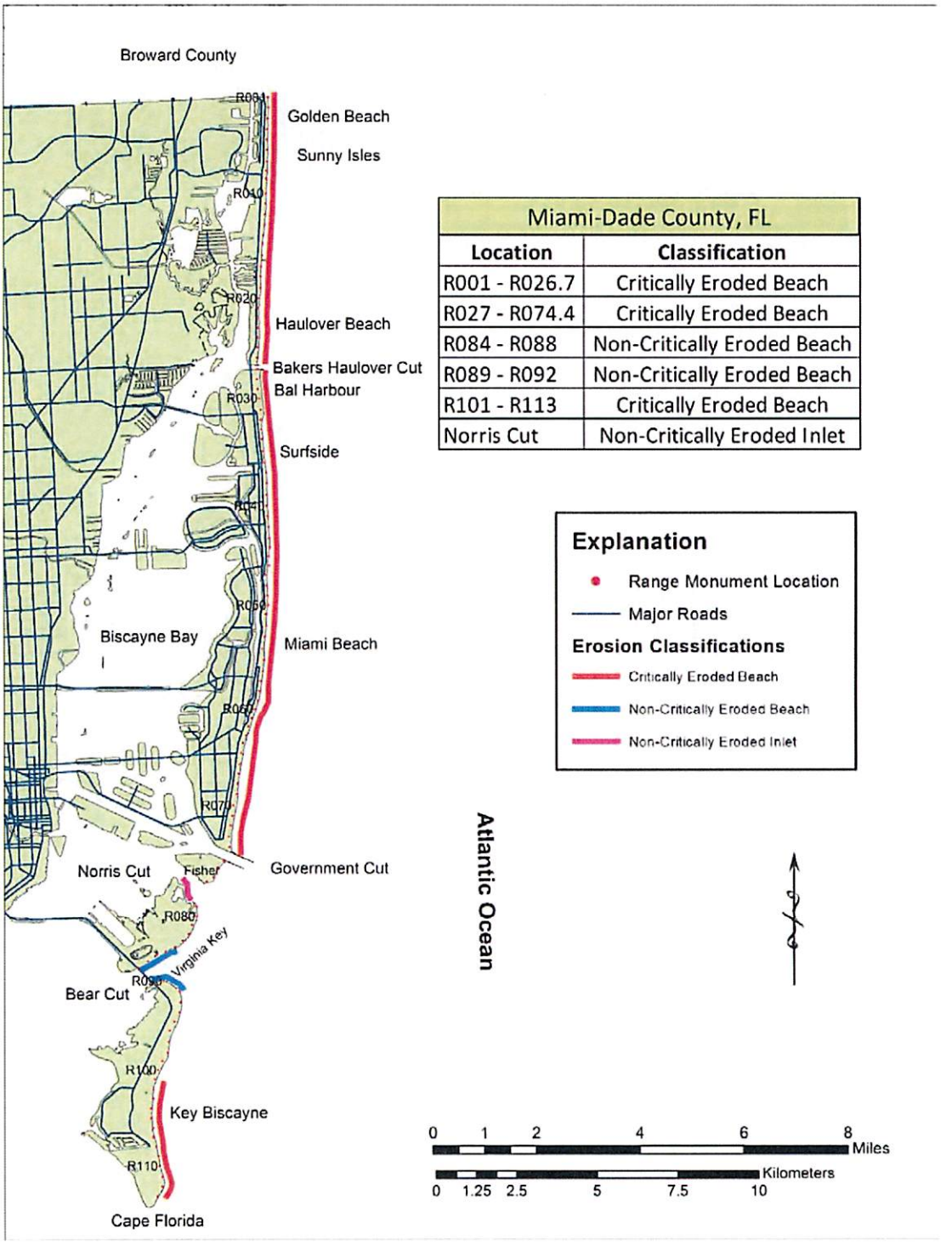
1970 Aerial photo of Surfside from the University of Florida Map and Imagery Library (before beach renourishment)

1984 Aerial Photo of Surfside from the University of Florida Map and Imagery Library (after beach renourishment)

February 1999 December 1999

Aerial Photos of Surfside from Google Earth

Exhibit B. Critically Eroded Beaches Map



Miami-Dade County, FL	
Location	**Classification**
R001 - R026.7	Critically Eroded Beach
R027 - R074.4	Critically Eroded Beach
R084 - R088	Non-Critically Eroded Beach
R089 - R092	Non-Critically Eroded Beach
R101 - R113	Critically Eroded Beach
Norris Cut	Non-Critically Eroded Inlet

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Exhibit C. Beach Aerial with ECL, Bulkhead Line and CCCL Delineations

LOCATION & KEY MAP

NO	DATE	REVISION	BY

FIELD BOOK: PAGE:
DRAWN: SMW DATE: 8/15/2018
CHECKED: DATE:

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DUNE SURVEY
&
BEACH MANAGEMENT PLAN
TOWN OF SURFSIDE

BEACH FRONT PROPERTY MAP

SCALE: N/A
PROJECT No: 18-9942
WORK AUTHORIZATION NO: 110

SHEET: 1 OF 5

Exhibit C. Beach Aerial with ECL, Bulkhead Line and CCCL Delineations

NO	DATE	REVISION	BY

FIELD BOOK:
PAGE:
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DATE: 9/15/2018
CHECKED:
DATE

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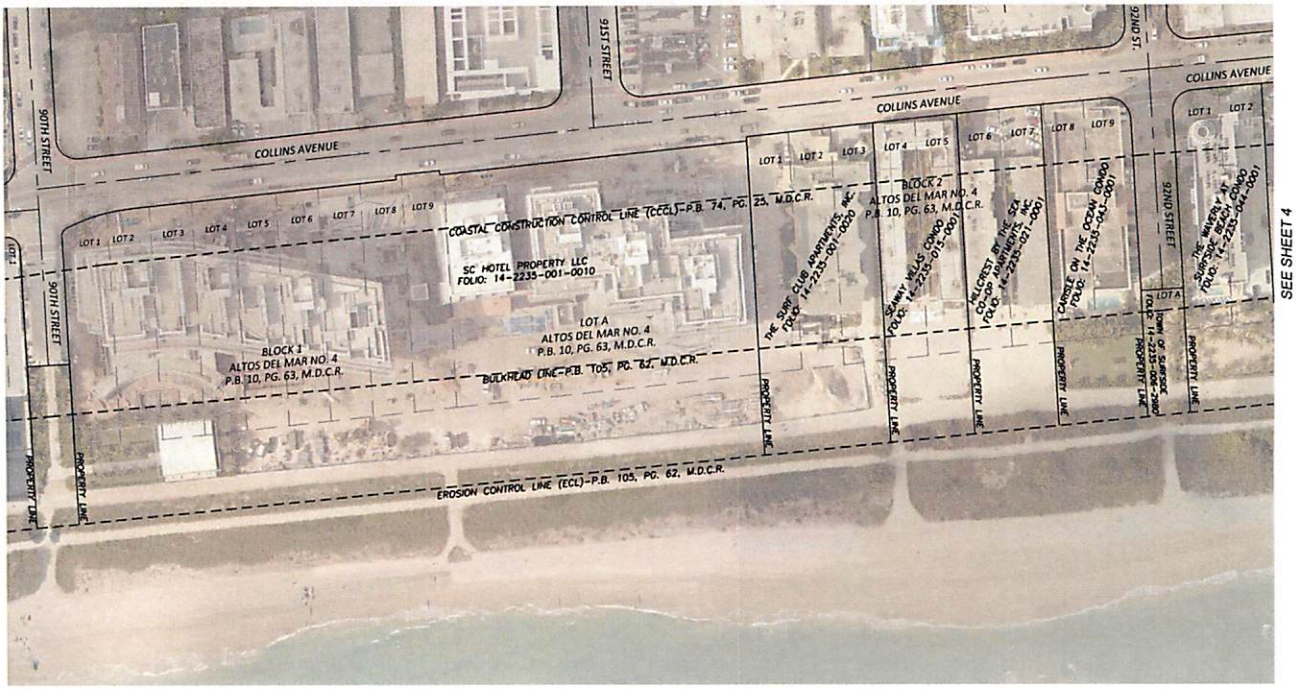
DUNE SURVEY
&
BEACH MANAGEMENT PLAN
TOWN OF SURFSIDE

BEACH FRONT
PROPERTY MAP

SCALE: 1'=100'
PROJECT No: 18-9942
WORK AUTHORIZATION NO: 110

SHEET: 2 OF 5

Exhibit C. Beach Aerial with ECL, Bulkhead Line and CCCL Delineations



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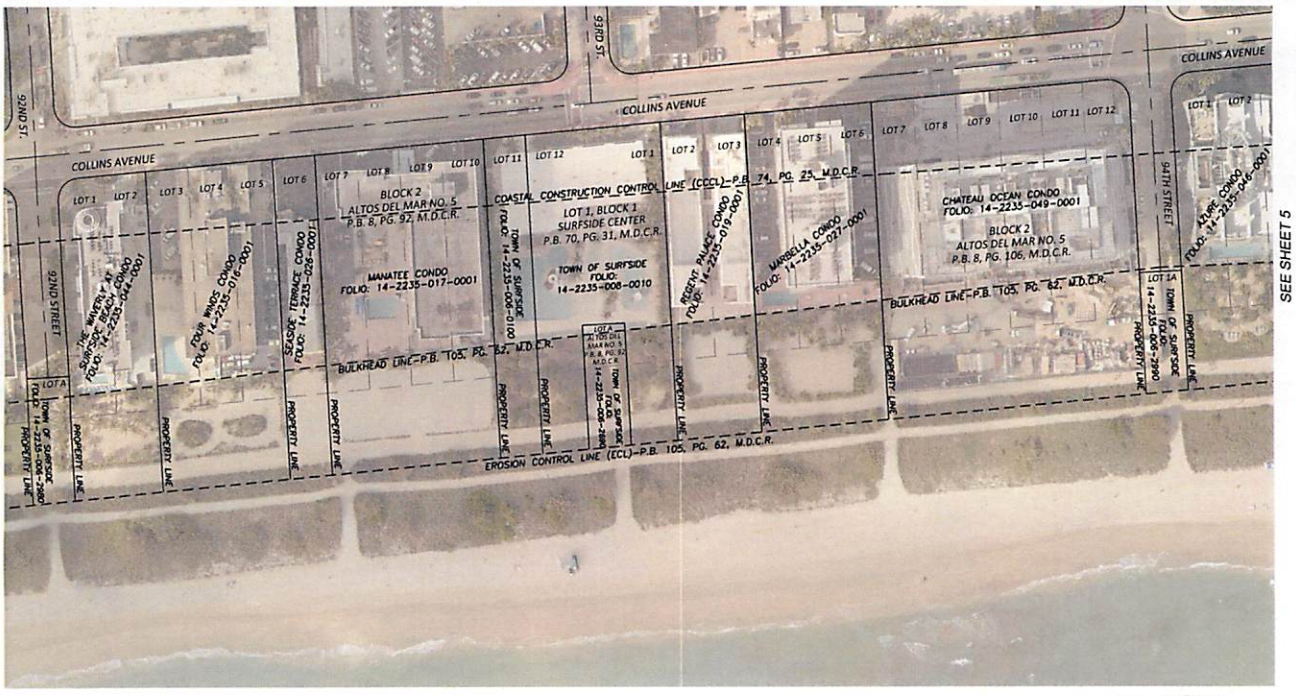
DUNE SURVEY
&
BEACH MANAGEMENT PLAN
TOWN OF SURFSIDE

BEACH FRONT
PROPERTY MAP

SCALE: 1"=100'
PROJECT No: 18-9942
WORK AUTHORIZATION NO: 110

SHEET: 3 OF 5

Exhibit C. Beach Aerial with ECL, Bulkhead Line and CCCL Delineations



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DUNE SURVEY
&
BEACH MANAGEMENT PLAN
TOWN OF SURFSIDE

BEACH FRONT
PROPERTY MAP

SCALE: 1'=100'
PROJECT NO.: 18-9942
WORK AUTHORIZATION NO.: 110

SHEET: 4 OF 5

Exhibit C. Beach Aerial with ECL, Bulkhead Line and CCCL Delineations

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DUNE SURVEY
&
BEACH MANAGEMENT PLAN
TOWN OF SURFSIDE

BEACH FRONT
PROPERTY MAP

SCALE: 1'=100'
PROJECT No: 18-9942
WORK AUTHORIZATION NO: 110

SHEET: 5 OF 5

Exhibit D.
Recommended Florida Native Beach and Dune Plants for Beachfront Properties and Dune Restoration

Notes:

1. Salt tolerance: high (tolerant of heavy and frequent salt spray, salt water flooding); moderate (tolerant of salt spray but subject to leaf burn from heavy salt spray or root damage from flooding); low (tolerant of salt laden air and short duration, infrequent salt water flooding but usually in protected areas).
2. Region: NW = northwest Florida Panhandle; SW = Pinellas to Collier counties; NE = Nassau to Volusia counties; SE = Brevard to Dade counties; Keys = restricted to the Florida Keys and adjacent Dade and Monroe County islands. Regions have primarily been determined by the historic distribution of the plant in Florida's coastal upland natural communities, not necessarily by the range of areas or habitats where the plant could survive.
3. Soil Moisture: moist (subject to flooding as within low dune swales); moderate (not subject to frequent flooding but not adapted to deepest sands or driest conditions; dry (adapted to deep sands, dune ridges, or well drained rocky soils); and variations for plants adapted across a range of conditions.

References:

1. Nelson, Gil. 2003. Florida's Best Native Landscape Plants: 200 readily available species for homeowners and professionals. Florida Association of Native Nurseries. University Presses of Florida.
2. Williams, M.J. 2007. Native Plants for Coastal Dune Resotration: what, when and how for Florida. USDA, NRCS, Brooksville Plant Materials Center, Brooksville, Florida.
3. Wunderlin, Richard P., etal. Plant Atlas. University of South Florida (www.plantatlas.usf.edu).

Scientific Name	Common Name	Salt tolerance	Region (NW/SW/NE/SE/Keys)	Soil Moisture
Dune Grasses				
Distichlis spicata	salt grass	high	all	moist
Muhlenbergia capillaris var. filipes	Gulf hairawn muhly grass	moderate	all	moderate
Panicum amarum	bitter panic grass	high	all	dry
Panicum vaginatum	seashore paspalum	high	all	moderate
Schizachyrium scoparium	coastal bluestem	high	all	moderate
Spartina patens	marshhay	high	all	moderate
Sporobolus virginicus	seashore dropseed	high	all	moist
Uniola paniculata	sea oats	high	all	dry

Exhibit D

Scientific Name	Common Name	Salt tolerance	Region (NW/SW/NE/SE/Keys)	Soil Moisture
Groundcovers				
Borrichia arborescens	sea oxeye	high	SW, SE, Keys	moist
Borrichia frutescens	sea oxeye	high	all	moist
Ernodea littoralis	golden beach creeper	high	SW, SE, Keys	moderate - dry
Gaillardia pulchella	blanket flower	moderate	all	dry
Helianthus debilis	East Coast dune sunflower	high	NE, SE, Keys	dry
Helianthus debilis spp. cucumerifolius	cucumber leaf dune sunflower	high	NW, SW	dry
Helianthus debilis ssp. vestitus	West Coast dune sunflower	high	SW	dry
Hymenocallis latifolia	beach spider lily	high	SW, NE, SE, Keys	moist - dry
Ipomoea imperati	beach morning glory	high	all	moderate - dry
Ipomoea pes-caprae	railroad vine	high	all	moderate - dry
Iva imbricata	beach elder	high	all	moist – dry
Sesuvium portulacastrum	sea purslane	high	all	moist - moderate
Solidago sempervirens	seaside goldenrod	high	NW, SW, NE, SE	moist – moderate
Yucca filamentosa	Adam's needle	moderate	NW, SW, NE, SE	dry
Shrubs				
Ardisia escallonoides	marlberry	moderate	SW, SE, Keys	moderate
Argusia gnaphalodes	sea lavender	high	SE, Keys	dry
Chrysobalanus icaco	coco plum	moderate	SW, SE, Keys	moderate - dry
Erythrina herbacea	coral bean	low	all	moderate - dry
Eugenia axillaris	white stopper	low	SW, SE, Keys	moderate
Eugenia foetida	Spanish stopper	low	SW, SE, Keys	moderate
Forestiera segregata	Florida privet	low	SW, NE, SE, Keys	moist -moderate

Scientific Name	Common Name	Salt tolerance	Region (NW/SW/NE/SE/Keys)	Soil Moisture
Shrubs (continued)				
Ilex vomitoria	yaupon	moderate	SW, NE, SE, Keys	moderate - dry
Myrica cerifera	wax myrtle	moderate	all	moist - moderate
Quercus geminata	sand live oak	moderate	NW, SW, NE, SE	dry
Quercus myrtifolia	myrtle oak	moderate	NW, SW, NE, SE	dry
Rapanea punctata	myrsine	moderate	SW, SE, Keys	moist - dry
Serenoa repens	saw palmetto	high	all	moist - dry
Suriana maritima	bay cedar	high	SW, SE, Keys	dry
Zamia pumila	coontie	moderate	SW, NE, SE, Keys	dry
Thorn/Scrub Plants				
Agave decipiens	false sisal	high	SW, SE, Keys	dry
Caesalpinia bonduc	gray nickerbean	moderate	SW, SE, Keys	moderate - dry
Erythrina herbacea	coral bean	low	all	dry
Opuntia spp.	prickly pears	high	all	moderate - dry
Serenoa repens	saw palmetto	high	all	moist - dry
Sideroxylon tenax	tough bully	low	NE, SE	dry
Smilax auriculata	earleaf catbrier	moderate	all	dry
Ximenia Americana	hog plum	low	NE, SE	dry
Yucca aloifolia	Spanish bayonet	high	all	dry
Yucca filamentosa	Adam's needle	moderate	NW, SW, NE, SE	dry
Yucca gloriosa	Moundlily yucca	moderate	NW, SW, NE	dry
Zanthoxylum clava-hercules	Hercules' club	moderate	NW, SW, NE, SE	dry
Zanthoxylum fagara	wild lime	moderate	SW, NE, SE, Keys	moderate - dry

Exhibit D.

Scientific Name	Common Name	Salt tolerance	Region (NW/SW/NE/SE/Keys)	Soil Moisture
Trees				
Acacia farnesiana	sweet acacia	moderate	all	moist - dry
Baccharis halimifolia	salt bush	high	all	moist - moderate
Bursera simauruba	gumbo limbo	moderate	SW, SE, Keys	moderate - dry
Capparis cynophallophora	Jamaica caper	moderate	SW, SE, Keys	dry
Celtis laevigata	hackberry	low	NW, SW, NE, SE	moist - moderate
Chrysophyllum oliviforme	satinleaf	moderate	SE, Keys	moderate - dry
Citharexylum spinosum	fiddleleaf	moderate	SE, Keys	dry
Coccoloba diversifolia	pigeon plum	high	SW, SE, Keys	moderate - dry
Coccoloba uvifera	sea grape	high	SW, SE, Keys	moderate - dry
Conocarpus ererctus	buttonwood	high	SW, SE, Keys	moist - moderate
Cordia sebestana	Geiger tree	moderate	SW, SE, Keys	moderate - dry
Ficus aurea	golden fig	moderate	SW, SE, Keys	moderate
Ilex x. attenuata	East Palatka holly	low	NW, SW, NE, SE	moderate
Ilex cassine	dahoon holly	low	NW, SW, NE, SE	moist - moderate
Ilex opaca	American holly	low	NW, SW, NE, SE	moderate
Ilex vomitoria	yaupon holly	moderate	NW, SW, NE, SE	moderate - dry
Juniperus silicicola	southern red dedar	moderate	NW, SW, NE, SE	moderate
Laguncularia racemosa	white mangrove	high	SW, SE, Keys	moist - moderate
Magnolia grandiflora	southern magnolia	moderate	NW, SW, NE	moderate
Persea borbonia	redbay	moderate	NW, SW, NE, SE	moderate

Exhibit D.

Scientific Name	Common Name	Salt tolerance	Region (NW/SW/NE/SE/Keys)	Soil Moisture
Trees continued				
Persea humilis	silkbay	moderate	SW, NE, SE	moderate - dry
Pinus clausa	sand pine	moderate	NW, SW, NE, SE	dry
Pinus elliottii	slash pine	moderate	NW, SW, NE, SE , Keys	moist - moderate
Quercus geminata	sand live oak	moderate	NW, SW, NE, SE	moderate - dry
Quercus virginiana	live oak	moderate	NW, SW, NE, SE, Keys	moderate - dry
Sideroxylon foetidissimum	mastic	moderate	SW, SE, Keys	moderate
Palms				
Acoelorrhaphe wrightii	paurotis palm	moderate	SW, SE, Keys	moist - moderate
Coccothrinax argentata	silver palm	high	SE, Keys	dry
Sabal palmetto	cabbage palm	high	all	moist - moderate
Serenoa repens	saw palmetto	high	all	moist - dry
Thrinax morrissii	brittle thatch palm	moderate	Keys	dry
Thrinax radiata	Florida thatch palm	moderate	Keys	dry

Fritz Wettstein
Coastal Construction Control Line Program
Division of Water Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station 3522
Tallahassee, Florida 32399
850/245-7672
john.wettstein@dep.state.fl.us
www.floridadep.org/beaches

RESILIENCE ORDINANCES AND RESOLUTIONS LOG

EXHIBIT SE. 4

Exhibit 9.4 Resilience Ordinances and Resolution Log

Column1	Column2
	Resiliency Resolutions & Ordinances 2011 to 2019
Ordinance No. 19-1698	Amending Section 4 34-11, "Prohibition on Distribution, Sale or Use of Plastic Straws" Of The Town's Code of Ordinances by Amending the Title to Be "Prohibition On Distribution, Sale Or Use Of Single-Use Plastics," Providing For Definitions For Single-Use Plastics, and Regulating Single-Use Plastics
Ordinance No. 19-1697	Repealing and Replacing Chapter 42 "Floods" Relating To The Town's Floodplain Management Regulations, Including Adopting Procedures and Criteria for Development in Flood Hazard Areas; To Adopt Flood Hazard Maps; To Designate a Flood Plain Administrator
Ordinance No. 19-1696	Amending Article VIII, "Landscape Requirements," of Chapter 90 "Zoning," Of The Town's Code of Ordinances by Establishing Florida-Friendly Landscape Requirements
Resolution No. 19-2604	Approving Work Authorization No. 117 for Engineering Services for a Design-Build Photovoltaic System at the Surfside Community Center
Resolution No. 19-2602	Approving the Purchase and Installation of an Emergency Generator for Town Hall
Resolution No. 19-2598	Approving an Agreement with CRS Max Consultants, Inc. for Community Rating System Consultant Services
Resolution No. 19-2597	Support of Resilient305 Strategy and Participation and Collaboration on Implementation of Local and Regional Resilience Strategies
Resolution No. 19-2589	Waiving Town Building Permit Fees and Requiring Expedited Development and Review Processes for Sustainability Projects
Resolution No. 19-2588	Approving Logistical Support for The Youth Environmental Alliance (Yea) In Connection With the Miami-Dade County Environmental Enhancement and Education Grant Program for Environmental Education Funding
Resolution No. 19-2585	Agreement Between the Town of Surfside and Bigbelly Solar, Inc. for Additional Solar Powered Trash/Recycle Compaction Containers
Resolution No. 19-2583	Urging the Miami-Dade County League of Cities to Create a Committee Dedicated to the Protection and Conservation of The Biscayne Bay Ecosystem, To Address and Formulate Comprehensive Policies on Regional Issues Impacting Biscayne Bay
Resolution No. 19-2580	Approving an Expenditure For Purchase of Trees From Luke's Landscaping In Connection With The Town's Tree Giveaway Program
Resolution No. 19 - 2573	Approving Work Authorization No. 113 with Calvin Giordano & Associates, Inc. for Resiliency Planning Support
Resolution No. 19 - 2572	Urging the United States Congress to Pass the Energy Innovation and Carbon Dividend Act (H.R. 763) to Levy an Annually Increasing Revenue-Neutral Fee on the Carbon in Fossil Fuels at the Point of Production or Importation and Return a Dividend to All Americans
Resolution No. 19 - 2566	Declaring April as Water Conservation Month in the Town of Surfside, Florida, and Supporting The National "Wyland Mayor's Challenge For Water Conservation"
Resolution No. 18-2560A	Approving a Temporary Easement Agreement with Miami-Dade County For Equipment Staging In Connection With Beach Renourishment, Erosion Control and Hurricane Protection Project
Resolution No. 18-2552	Approving a Temporary Easement Agreement With Miami-Dade County for Beach Renourishment, Erosion Control and Hurricane Protection Project
Resolution No. 18-2543	Approving An Agreement With Waste Management Inc. Of Florida For Recycling Services; Finding That The Services Are Exempt From Competitive Procurement Pursuant To Section 3-13(3) Of The Town Code Of Ordinances

Resolution No. 18-2528	Opposing Offshore Drilling Activities, Including Seismic Air Gun Blasting
Resolution No. 18-2524	Relating To Solid Waste Management Services, Including Collection, Disposal And Recycling of Residential Solid Waste In The Town Of Surfside, Florida; Describing The Method Of Assessing Solid Waste Costs Against Assessed Property Located Within The Town Of Surfside; Determining The Solid Waste Cost And The Initial Solid Waste Service Assessments; Directing The Preparation Of An Assessment Roll
Resolution No. 18-2522	Approving Property Assessed Clean Energy (Pace) Programs With The Florida Green Finance Authority, The Florida Resiliency And Energy District, And The Florida Pace Funding Agency
Resolution No. 18-2521	Approving The Proposal And Work Authorization With Calvin Giordano & Associates, Inc. To Perform A Dune Survey And Beach Management Plan
Resolution No. 18-2519	Sunsetting and Abolishing The Town Of Surfside Sustainability Subcommittee Of The Planning And Zoning Board
Resolution No. 18-2518	Establishing The Town Of Surfside Sustainability And Resiliency Committee To Study And Recommend Policies To The Town Commission
Resolution No. 18-2509	Approving A Work Authorization To Calvin Giordano & Associates, Inc. To Perform A Drainage Study For Abbott Avenue
Resolution No. 18-2501	Ratifying And Approving A Donation To The Pelican Harbor Seabird Station In Support And Sponsorship Of Their Programs
Resolution No. 18-2498	Adopting A Proclamation Honoring The Importance Of Trees For The Town Of Surfside's Community And Environment And Encouraging The Planting Of Trees; Proclaiming April 17, 2018 In The Town Of Surfside As "Arbor Day"
Resolution No. 18-2497	Amending The Town's Schedule Of Civil Penalties And Administrative Fees To Be Assessed For Violations Of Section 34- 11, "Prohibition On Distribution, Sale Or Use Of Plastic Straws"
Resolution No. 18-2493	Urging Concerted Local Actions To Take Steps Necessary To Retain The NOAA Fisheries Headquarters On Virginia Key
Resolution No. 18-2492	Waiving All Town Building Permit Fees And Requiring Expedited Development And Review Processes For Photovoltaic Solar System Installations
Resolution No. 18-2490	Calling On The State Of Florida, Governor Rick Scott, President Donald Trump, And The Federal Government To Reduce Gun Violence In America And Help Prevent Future Shootings By Requiring Universal Background Checks For Every Firearm Sale; Supporting The Passage Of A Red Flag Law; Supporting Raising The Age For Legal Purchase Of Firearms, Magazines And Ammunition To 21; Supporting The Passage Of Legislation That Would Keep Military-Style Weapons And High-Capacity Magazines Away From Our Schools
Resolution No. 18-2486	Urging The United States Congress To Fund The Study Of Foreign Sand Use In Beach Nourishment Projects In Miami-Dade County
Resolution No. 18-2484	Urging The United States Congress To Support Language In The FY 2018 Federal Appropriations Bill And The 2018 Disaster Recovery Supplemental Providing For 100 Percent Federal Funding Of The South Atlantic Coastal Study Authorized In Section 1204 Of The Water Infrastructure Improvements For The Nation Act, With The Necessary Language And Funding To Ensure Inclusion Of The Previously Authorized Central And South Florida Flood Control Project And Its Area As Part Of This Study
Resolution No. 18-2483	Setting A Goal For All Town Buses To Be Zero-Emission And Powered By Clean Energy By 2025; Urging Miami-Dade County And All Municipalities In The County To Adopt The Same Goal

Resolution No. 18-2482	Declaring April As Water Conservation Month In The Town Of Surfside, Florida, And Supporting The National "Wyland Mayor's Challenge For Water Conservation" In The Town Of Surfside
Ordinance No. 18-1690	Amending Section 34-11, "Prohibition on Distribution, Sale or Use of Plastic Straws"
Ordinance No. 18-1688	Amending The Town Code By Creating Article Vi, "Lighting Regulations For Marine Turtle Protection" Of Chapter 34 "Environment
Ordinance No. 18-1680	Amending The Town Of Surfside Code Of Ordinances By Amending Article III, Property Maintenance Standards, Of Chapter 14, Buildings And Building Regulations, And Chapter 90, Zoning, To Prohibit Use Of Mulch In The Right-Of-Way And Address Property Owner Maintenance Responsibilities For Public Right-Of-Way Adjacent To Private Property
Ordinance No. 18-1676	Amending Chapter 34 "Environment" Of The Town's Code Of Ordinances To Create Section 34-11, "Prohibition On Distribution, Sale Or Use Of Plastic Straws"
Ordinance No. 18-1674	Amending Chapter 42 "Floods" Section 42-92 "Specific Standards" to address lowest Floor Elevation Requirements for Single Family Residential Structures
Ordinance No. 18-1673	Amending Chapter 90 "Zoning," Section 90-2 "Definitions," To Revise The Measurement Of Roof Height
Resolution No. 17-2477	Approving The Memorandum Of Understanding ("MOU") With The Village Of Bal Harbour And The Town Of Bay Harbor Islands To Retain The Lehman Center For Transportation Research At Florida International University (FIU LCTR) To Assess Shuttle Bus Services; Authorizing The Town To Enter Into An Agreement With FIU LCTR For Such Services
Resolution No. 17-2475	Providing For The Town To Join The Seawall Coalition And Supporting Its Policies; Authorizing The Town Manager To Transmit This Resolution To The Seawall Coalition
Resolution No. 17-2473	Urging The Florida Legislature And The Florida Public Service Commission To Require The Expeditious Conversion Of Overhead Electric Distribution Facilities To Underground Facilities; Further Urging The Florida Public Service Commission To Condition Any Hurricane Irma Cost Recovery Sought By The State's Power Companies On Such Companies' Required Conversion Of Their Overhead Electric Distribution Facilities To Underground Facilities
Resolution No. 17-2459	Urging The Florida Public Service Commission To Require Florida Power & Light To Improve Safety, Reliability And Service Of Its Electric Facilities Within The Town Of Surfside, Including Hurricane Preparedness And Restoration Efforts
Resolution No. 17-2445	Urging The Florida Legislature To Appropriate Funds For Beach Renourishment Projects; Supporting Senate Bill 174 Endorsing And Supporting The Expansion Of The New Starts Transit Program (NSTP) To Facilitate Funding For The Strategic Miami Area Rapid Transit (Smart) Plan
Resolution No. 17-2434	Approving The Renewal Of The Interlocal Agreement Between Co- Permittees Named In National Pollutant Discharge Elimination System Permit No. Fls000003 And Miami-Dade County; And Also Between All Co-Permittees; Providing For Identification And Control Of Pollutant Discharges In Shared Municipal Separate Storm Sewer Systems
Resolution No. 17-2430	Adopting the Current Miami-Dade County Multi -Hazard Local Mitigation Strategy, As Amended, In Accordance With The National Flood Insurance Program Community Rating System Requirements

Resolution No. 17-2420	Supporting United States Congressional Bills .279 And H.B. 833 To Amend Section 935 of the Water Resources Development Act Of 1986 to Facilitate the Use of Foreign Offshore Sand in Beach Nourishment Projects; Urging the United States Congress To Expedite And Fund The Study To Allow Foreign Sand To Be Used In Beach Nourishment Projects In Miami-Dade CPIMTU
Resolution No. 17 - 2419	Supporting the Implementation of Active Design Miami; Design and Policy Strategies for Healthier Communities as Developed by The Miami Center for Architecture and Design (MCAD)
Resolution No. 17-2414	Waiving the Bid Process Pursuant to Section 3-13(6) Of the Town of Surfside Code Of Ordinances; Authorizing The Town Manager To Enter Into A Sole Source Connect Services Agreement With Big Belly Solar, Inc. For a Term Of Five (S) Years Effective April 1, 2017 With Subsequent One (1) Year Renewal Terms For The Service, Including Software, Equipment, Equipment Delivery, Installation, Customer Service And Equipment Maintenance, Warranty For Defective Part Replacement And Repair , Set Up And Training For Twelve Solar Trash And Recycling Compaction Containers; Approving And Authorizing The Expenditure Of Funds In The Amount Of $15,040 From The Fiscal Year 2016/2017 Solid Waste Fund Account No. 403- 4000-534-4403
Resolution No. 17-2413	Urging The U.S. Army Corps Of Engineers, The Florida Department Of Environmental Protection And The South Florida Water Management District To Take All Steps Necessary To Expedite And Complete The Construction Of Phase I Of The Biscayne Bay Coastal Wetlands ("BBCW") Project; Further Urging The U.S. Army Corps Of Engineers, The Florida Department Of Environmental Protection And The South Florida Water Management District To Take All Steps Necessary To Expedite The Planning Of Phase II Of The BBCW Project Prior To The Current Scheduled Date Of 2021
Resolution No. 16-2405	Urging Bal Harbour Village to Work Cooperatively to Address Impacts Identified by The Town of Surfside in Development Related to Bal Harbour Shops Expansion
Resolution No. 16-2402	Urging the U.S. Environmental Protection Agency to Adhere to Stricter Standards and To Continue to Maximize Opportunities For The Protection of Public Health and The Environment in their Consideration of Florida's Proposed Human Health-Based Water Quality Criteria
Resolution No. 16 - 2384	Approving Work Authorization No. 98 Seawall Grant Application and Management for the Surfside Seawall Replacement Project Phase II
Resolution No. 16 - 2383	Awarding a Contract to Pac Comm, Inc. For The Surfside Seawall Replacement Project Phase II
Resolution No. 16 - 2378	Establishing the Town of Surfside Sustainability Subcommittee of the Planning and Zoning Board to Meet on a Periodic Basis
Resolution No. 16 - 2369	Supporting the National "Wyland Mayor's Challenge for Water Conservation" in the Town of Surfside
Resolution No. 16-2368	Supporting and Endorsing the Miami-Dade Parks and Open Space Master Plan
Resolution No. 16-Z-2360	A Resolution of The Town of Surfside, Florida Planning And Zoning Board; Recommending to the Town of Surfside Commission pursuant to Section 90-15(8) of the Town of Surfside Code of Ordinances to Appropriate Resources from the General Fund to the Planning and Zoning Board as Requested to Provide for the Consultation, Implementation and Study Related to Sea Level Rise Solutions in the Town of Surfside

Resolution No. 16 - 2355	Urging the United States Congress to Establish a Fund to Financially Assist and Support Local Governments, such as the Town of Surfside, Florida in Developing and Implementing Solutions to Sea Level Rise and Related Impacts
Resolution No. 16 - 2354	Adopting a Proclamation Honoring the Importance of Trees for the Town of Surfside's Community and Environment; Proclaiming April 17 in the Town of Surfside as "Arbor Day"
Resolution No. 16 - 2351	Urging the Florida Legislature to Allocate $300 Million of the Funds in the Land Acquisition Trust Fund Annually Toward Land Acquisition
Resolution No. 15 - 2320	Supporting the Dade County Beach Erosion Control and Hurricane Protection Project, and Urging Miami-Dade County, the State of Florida, and the United States Army Corps of Engineers to Provide Recurring Appropriations to Advance Beach Renourishment in Surfside and Miami-Dade County On Or Ahead of Schedule
Resolution No. 15 - 2313	Supporting the Creation of the South Florida Mayors' Beach Alliance
Resolution No. 15 - 2309	Urging the Florida Legislature to Remove Barriers to Customer- Sited Solar Power and Expressing Support for the Floridians For Solar Choice Ballot Petition
Resolution No. 15 - 2308	Establishing the Town of Surfside Coastal Issues Committee
Resolution No. 15 - 2298	Approving Assistance under the Florida Inland Navigation District Waterways Assistance Program
Resolution No. 15 - 2291	Declaring April As Water Conservation Month In The Town Of Surfside, Florida, And Supporting The National "Wyland Mayor's Challenge For Water Conservation" in The Town of Surfside
Resolution No. 15 - 2288	Awarding Request for Proposal No. 2014-003 ("RFP No. 2014-003") to Pac Comm, Inc. for the Surfside Seawall Replacement
Resolution No. 15 - 2282	Urging the State of Florida Legislature and the Florida Department of Environmental Protection to Establish Chemical Testing Standards Prior to Issuing a Coastal Construction Control Line Permit ("CCCL"} which Authorizes the Transfer and Placement of Excavated Sand Seaward of the CCCL onto a Public Beach; Recommending Additional Chemical Testing Standards
Ordinance No. 15 - 1639	Prohibitions Regarding the Sale or Use of Expanded Polystyrene Food Service Articles by Food Service Providers and Stores
Ordinance No. 15 - 1631	Beach Sand Regulations
Ordinance No. 15 - 1641	Amending the Town's Water Supply Facilities Work Plan and Applicable Elements within the Town's Comprehensive Plan Relating to Water Supply Planning
Ordinance No. 15 - 1630	Prohibition Regarding Sale or Use of Expanded Polystyrene (Styrofoam) Food Service Articles
Ordinance No. 14 - 1623	Rooftop Photovoltaic Solar Systems
Ordinance No. 14 - 1617	Electric Vehicle Car Charging Station
Resolution No. 14 - 2222	Supporting the Central Everglades Planning Project
Resolution No. 15 - 2280	Supporting the Miami-Dade Sea Level Rise Task Force Recommendations
Ordinance No. 13 - 1607	Amending Chapter 90 Section 90-60 "Construction Adjacent to Bulkhead Lines"
Resolution No. 13 - 2152	Endorsing the Mayor's Climate Action Pledge
Resolution No. 13 - 2170	Creating a Property Assessed Clean Energy Program and Creating the Clean Energy Coastal Corridor Program through an Interlocal Agreement
Resolution No. 13 - 2192	Supporting Florida Water and Land Conservation Amendment which would dedicate funds to acquire and restore Florida Conservation and Recreation Lands
Resolution No. 13 - 2203	National Flood Insurance Program
Resolution No. 13 - 2207	Biscaya Drainage Improvement
Resolution No. 13 - 2211	Supporting Beach Dune Restoration & January 1st Renourish Beach Day

Resolution No. 13 - 2212	Agreement With Florida Inland Navigational District (FIND)
Resolution No. 13 - 2214	Restricting The Use of Plastic Shopping Bags
Resolution No. 12 - 2066	Urging the Florida Legislature to reject any and all gambling expansions in Florida
Resolution No. 12 - 2103	Assistance from the Florida Inland Navigation District Waterways Assistance program for structural repairs to bulkhead
Resolution No. 12 - 2098	Renewal of Interlocal Agreement between all co-permittees in National Pollutant Discharge Elimination System and MDC
Resolution No. 12 - 2105	Supporting the Central Everglades Planning Project
Resolution No. 11-2011	Encouraging the return or recycle of all beverage containers and other recyclable materials
Resolution No. 2011-2021	Earth Day Proclamation for April 22, 2011
Resolution No. 11- 2050	Agreement with Urban Gardeners
Ordinance No. 11 - 1582	Amending Chapter 42 "Floods"
Ordinance No. 11 - 1581	Prohibiting of Litter

COMMUNITY ADAPTATION TOOLKIT

EXHIBIT SE. 5

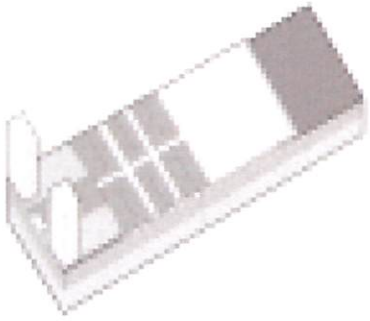
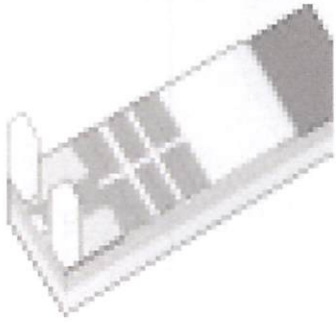
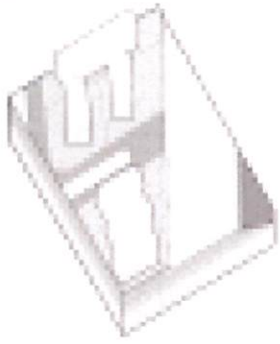
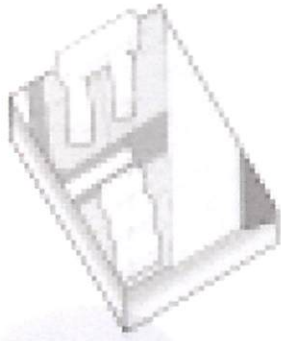
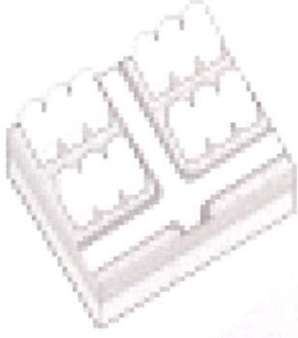
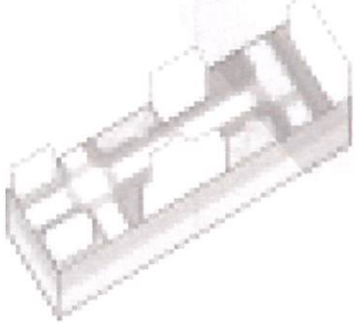
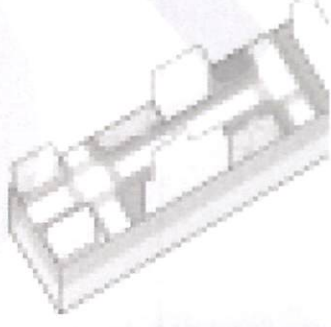
CONTENTS

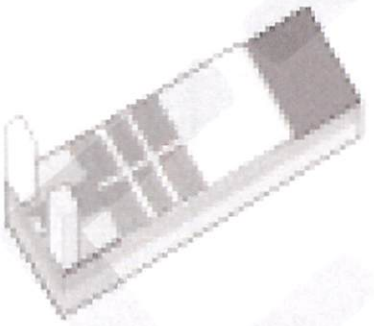
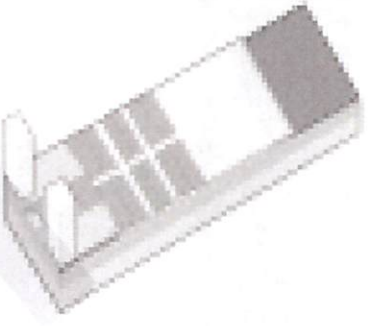
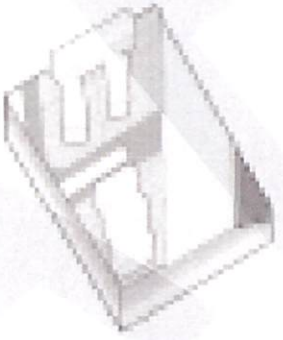
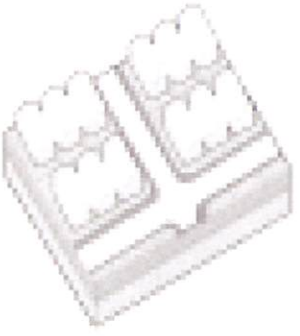
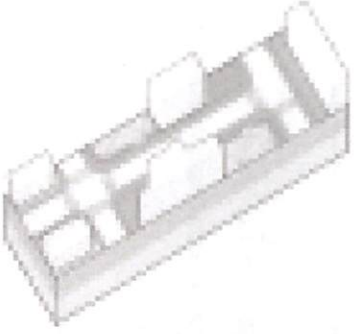
COMMUNITY ADAPTATION TOOLKIT**

***EXHIBIT SE.5 IS IN THE DEVELOPMENT STAGES, BUT WAS INCLUDED TO PROVIDE INSIGHT ON THE INTENTION OF THE SECTION. ADDITIONAL DEVELOPMENT AND STRATEGIES ARE IN THE PROCESS OF BEING INTEGRATED BASED ON THE COMMUNITY WORKSHOP IN-TAKE SESSION HELD ON NOVEMBER 14TH.*

COMMUNITY ADAPTATION TOOLKIT

COMPREHENSIVE URBAN RESILIENCE STRATEGY

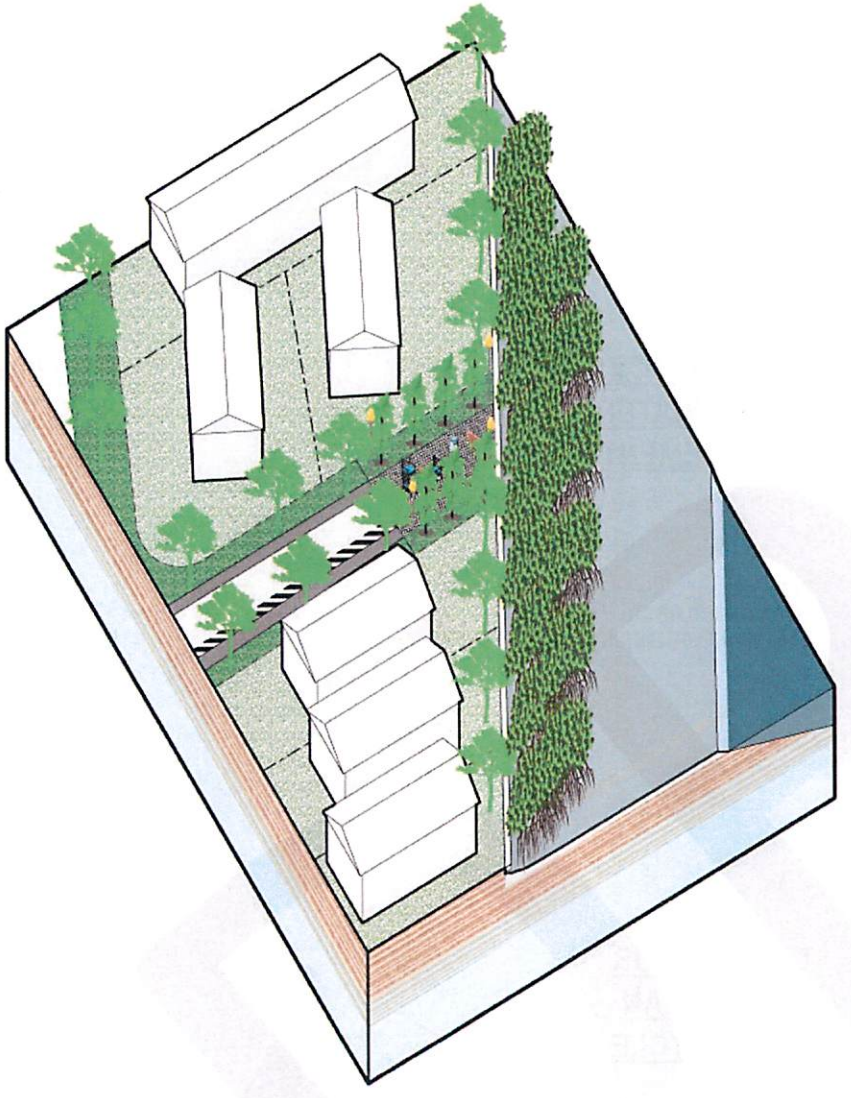
	ENERGY	ENVIRONMI
BEACH SIDE		
BAYSIDE		
RESIDENTAIL		
COMMERCIAL		

ENT	POLICY	INFRASTRUCTURE + TECHNOLOGY
		
		
		
		

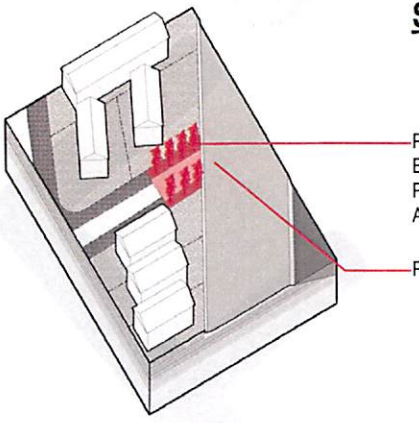
COMMUNITY ADAPTATION TOOLKIT

BAY SIDE STRATEGIES

COMPREHENSIVE URBAN RESILIENCE STRATEGIES



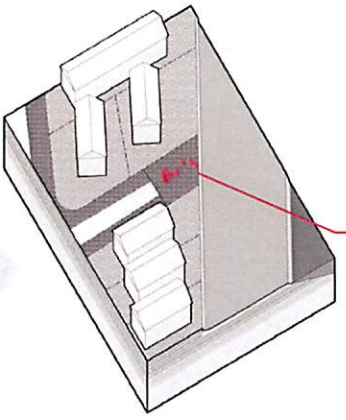
DEFINE PUBLIC SPACES



PROGRAM PUBLIC 'POCKETS' FOR INCREASED PUBLIC AMENITIES AND TO ACTIVATE PUBLIC REALM

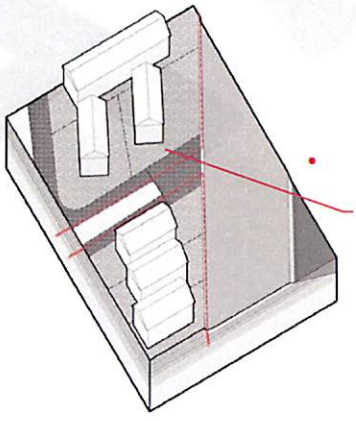
PUBLIC WATER ACCESS

PROVIDE POROUS SURFACES



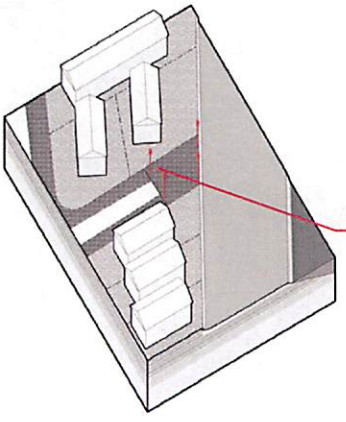
INCREASED MATERIAL PALETTE WITH MINIMAL NON-POROUS SURFACES

PROVIDE COASTAL STORM WATER MANAGEMENT



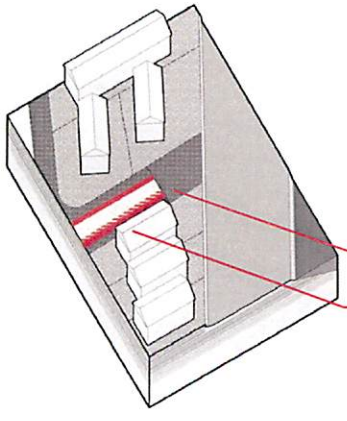
INCREASED INFRASTRUCTURE OR SOFT WATER RETENTION

PROVIDE LIGHTING SYSTEM



SOLAR POWERED STREET LIGHTS OR GROUND LIGHTS

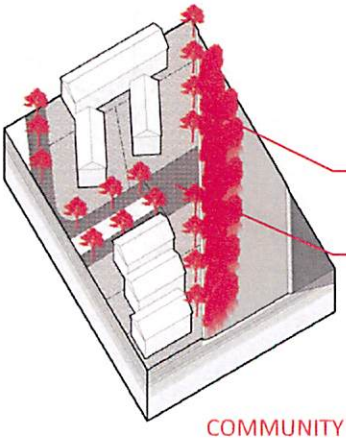
CONTINUOUS PEDESTRIAN AND BICYCLE PATH



SIDEWALK

CONTINUOUS BIKE PATH

IMPROVE COASTAL CANOPY



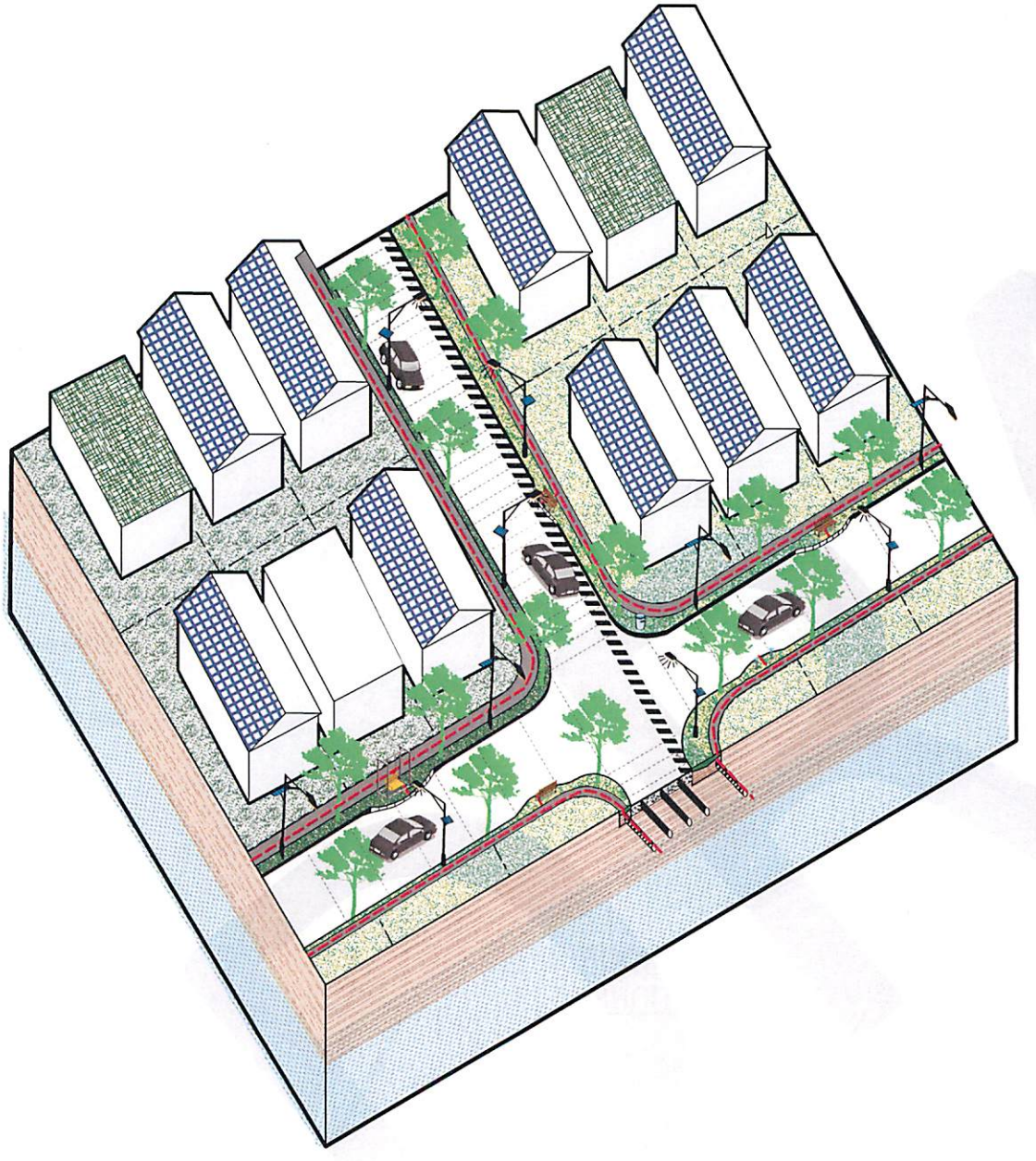
COMBINE SOFT EDGE VEGETATION STRATEGIES WITH SEA WALLS

PROVIDE INCREASED SHADE AND WATER ABSORPTION CAPACITY

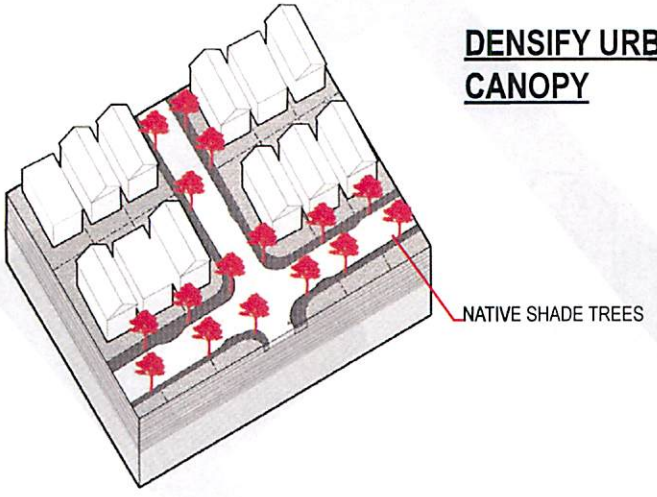
COMMUNITY ADAPTATION TOOLKIT

RESIDENTIAL STRATEGIES

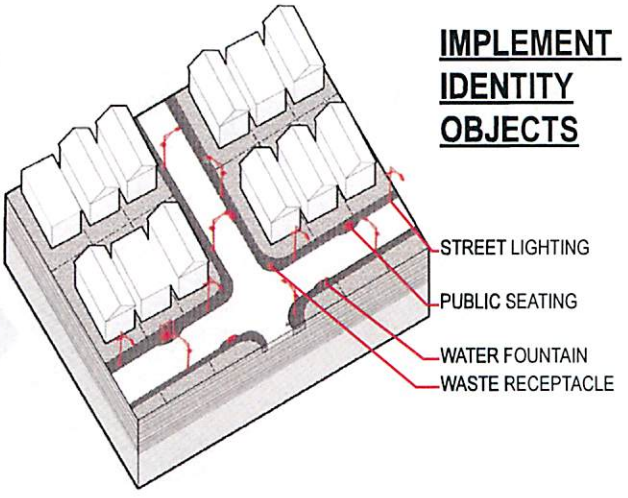
COMPREHENSIVE URBAN RESILIENCE STRATEGIES



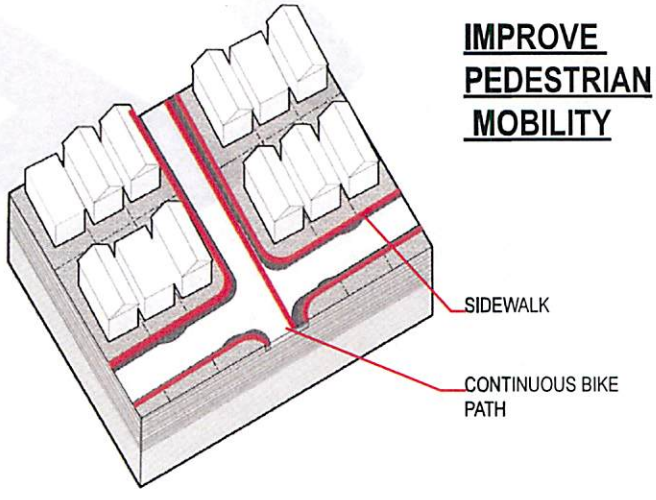
DENSIFY URBAN CANOPY



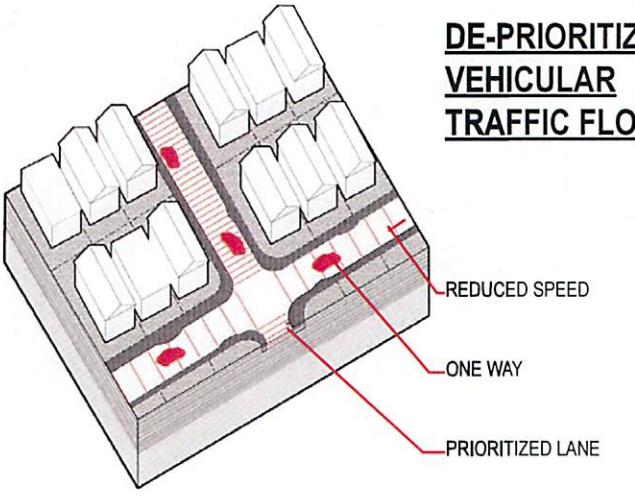
IMPLEMENT IDENTITY OBJECTS



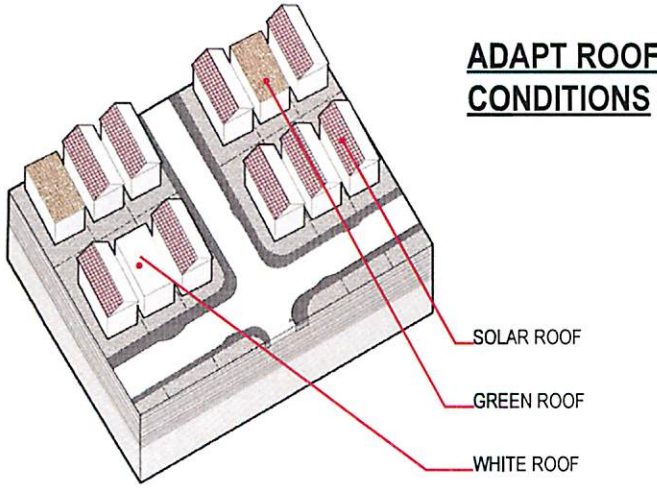
IMPROVE PEDESTRIAN MOBILITY



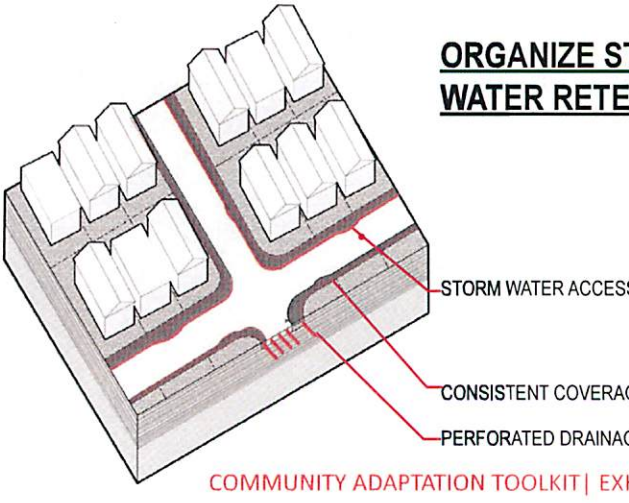
DE-PRIORITIZE VEHICULAR TRAFFIC FLOW



ADAPT ROOF CONDITIONS



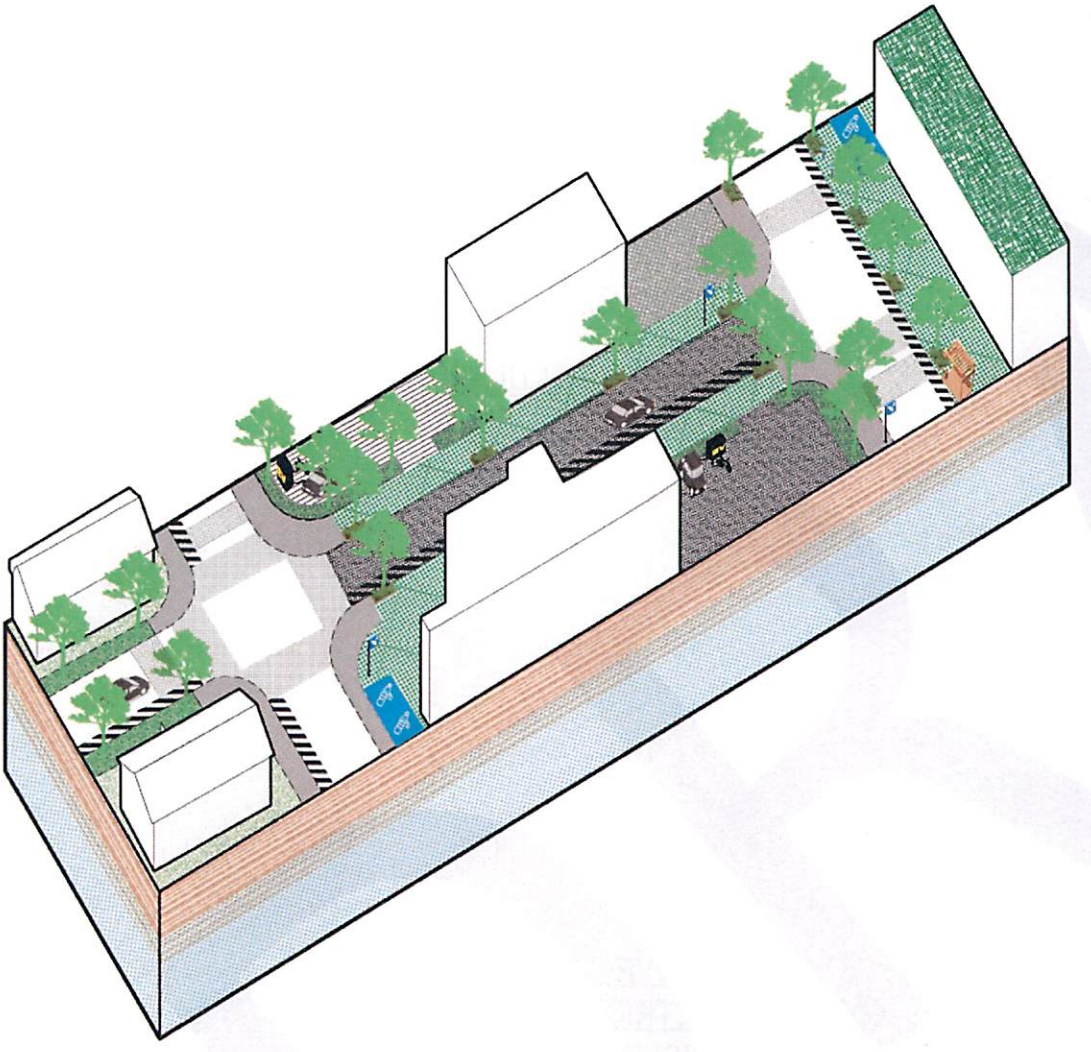
ORGANIZE STORM WATER RETENTION



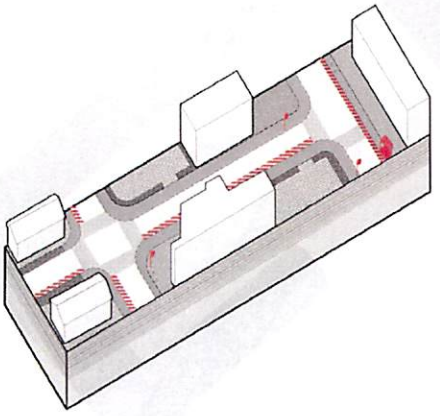
COMMUNITY ADAPTATION TOOLKIT

COMMERCIAL STRATEGIES

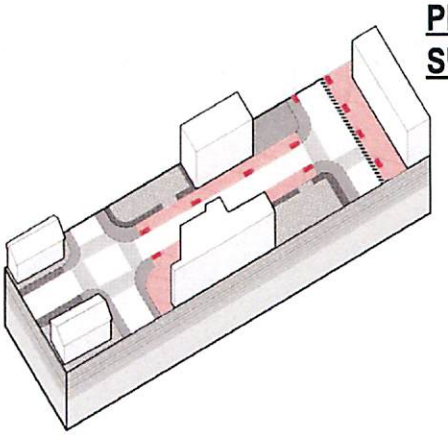
COMPREHENSIVE URBAN RESILIENCE STRATEGIES



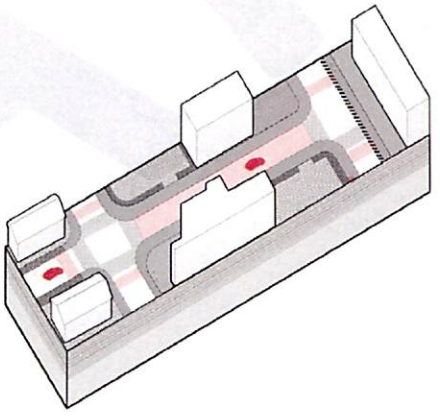
TRANSPORTATION NETWORK



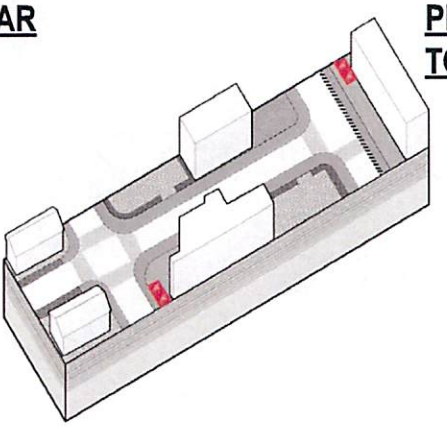
PROVIDE POROUS SURFACES



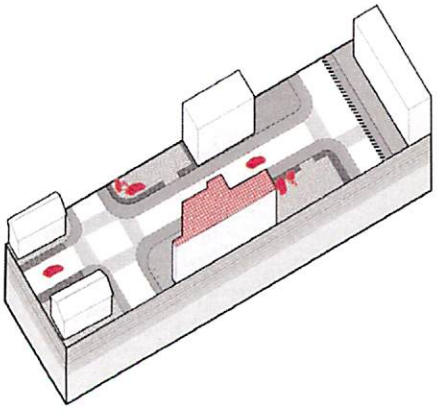
DISRUPT VEHICULAR TRAFFIC



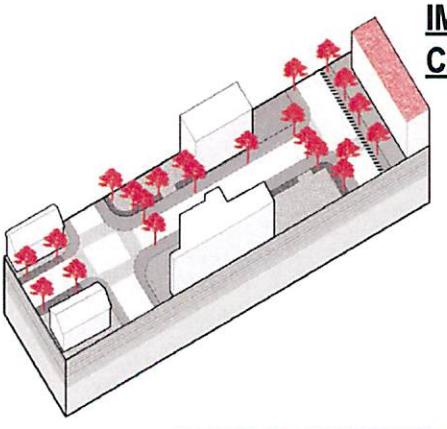
PROVIDE ACCESS TO HYDRATION



IMPROVE ELECTRIC VEHICLE CAPACITY



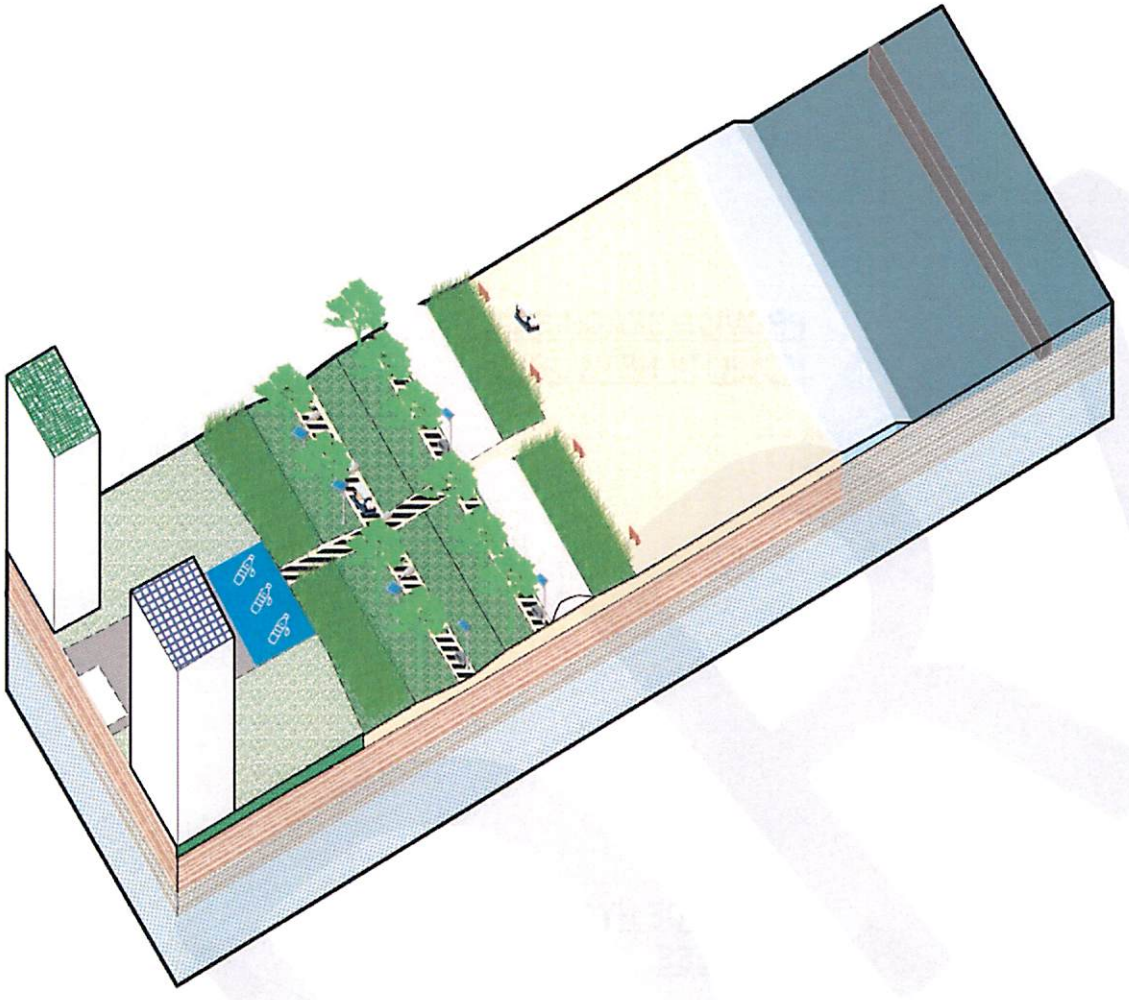
IMPROVE URBAN CANOPY



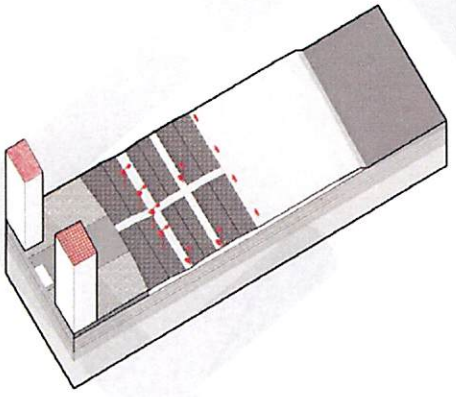
COMMUNITY ADAPTATION TOOLKIT

BEACH SIDE STRATEGIES

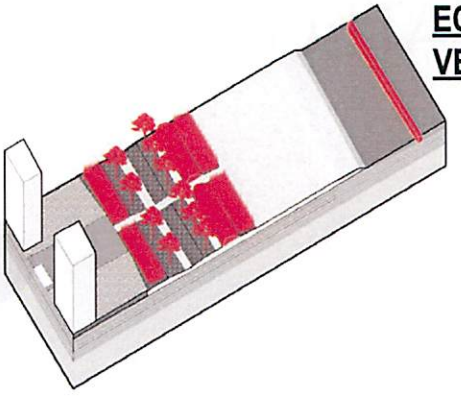
COMPREHENSIVE URBAN RESILIENCE STRATEGIES



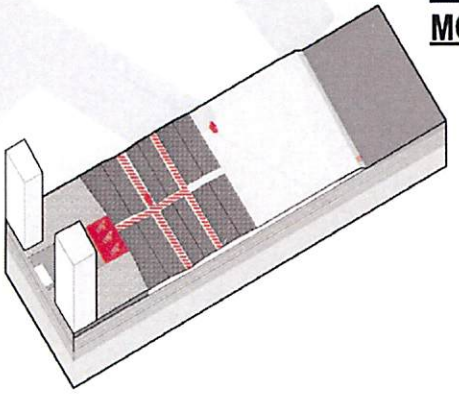
PROVIDE BEACH-SIDE ENERGY



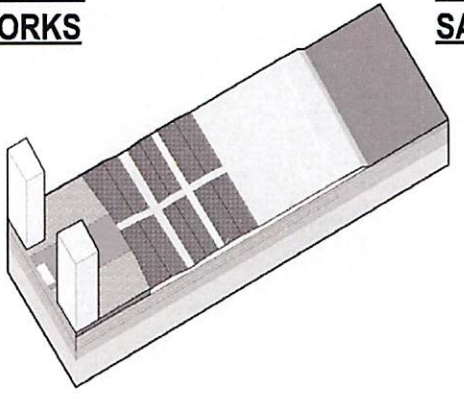
AMPLIFY BEACH ECOLOGY + VEGETATION CANOPY



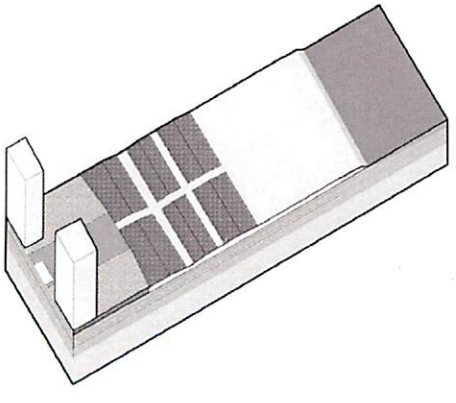
PROVIDE BEACH-SIDE MOBILITY NETWORKS



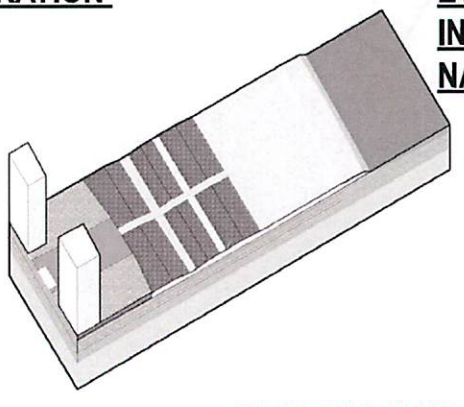
CONTINUED DUNE AND SAND REHABILITATION



PROVIDE HYDRATION ACCESS



EVALUATE OFF-SHORE INTERVENTIONS NATURAL AND BUILT



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