Town of Sullivan's Island
Resilience & Sea Level Adaptation Plan

July 7, 2025

AGENDA

1. Research Methodology
2. Proposed Adaptation Strategies
3. Timeline to Completion

This project seeks to work with the Town, community members, and the consultant team to co-create and develop an actionable adaptation plan that assesses vulnerabilities of the Island community, identify strategies to mitigate risk from sea level rise, and increase community resilience.

Research Methodology

- ✓ **Interviews with 12 key stakeholders** (Fire Dept, Water & Sewer, Police Dept, Design Review Board, National Park Service, business leaders, and contractors)
- ✓ **12 personal or small group interviews with community members and/or local experts** (SC-DOT, SC Sea Grant Consortium, Sullivan's Island & IOP town staff, non-profit organizations, business owners, cultural resource experts, and residents).
- ✓ **Document and code feedback** from interviews for inclusion in the project.
- ✓ **Review of up to 10 Plans** relevant to the project to include the Town's Comprehensive Plan 2018-2028, the Town's Stormwater Master Plan, and relevant regional and statewide plans.
- ✓ **Compile & visualize sea level rise data** and associated impacts.
- ✓ **Compile all available data on existing storm drainage system,** including system deficiencies.
- ✓ **Coordinate and facilitate 2 public engagement sessions** before Plan is drafted.
- ✓ **GIS Analysis and Flood Modeling**

Plan Vision

The Sullivan's Island Resilience & Sea Level Adaption Plan will provide **strategies on diverse scales**, ranging from community-wide to site level opportunities, that **honor the history** of the Island and learn from past applications, identify open areas for **storage and protection**, and further understand challenges to provide **adaptive solutions**.

Plan Goals

Goal #1 Engage: Plan is co-developed with the community to increase buy-in and ensure a place-based approach where strategies for continued community involvement are established.

Goal #2 Protect: natural and cultural resources through management and policy efforts.

Goal #3 Restore: natural systems on the Island using nature-based solutions that provide improved hydrology, ecological function, and enhanced aesthetics.

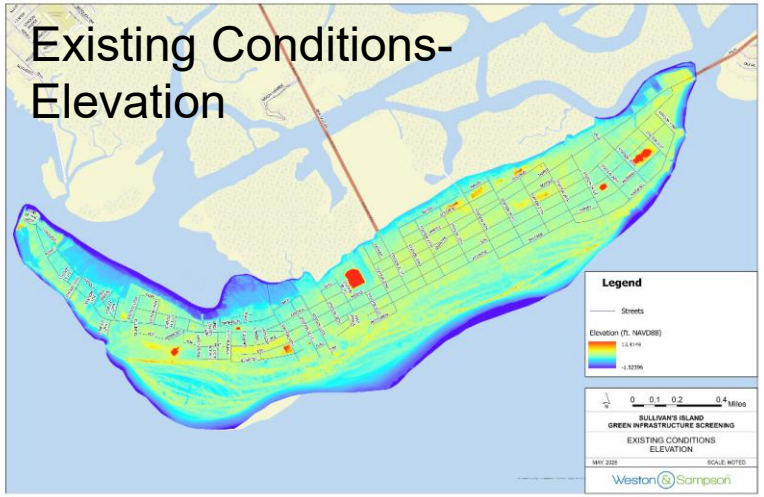
Goal #4 Adapt: on diverse scales that consider parcel-level strategies to community-wide approaches.

Strategy 1: Residential-Scale Nature-Based Solutions (NBS)

Establish zones on the Island that determine which residential-scale practices are most appropriate. Zones are based on soil types, elevation, and tidal inundation.

Conserve Zone: areas with minimal development, typically along the perimeter of the Island.
Potential NBS- Living Shoreline, Vegetative Buffer, Tree Planting, Bog Garden

Restore Zone: areas that are low lying and typically have C/D soils present.
Potential NBS - Bioswales, Rainwater Harvesting, Living Shoreline, Vegetative Buffer, Tree Planting, Bog Garden



Adapt Zone: areas that the elevation is greater that 7.5 ft. and soils are often B soils. Infiltration based practices may be suitable.
Potential NBS - Rain Gardens, Permeable Pavement, Bioswales, Rainwater Harvesting, Living Shoreline, Vegetative Buffer, Tree Planting, Bog Garden

Strategy 2: Engage & Involve

Establish roles, responsibilities, and opportunities for collaboration for internal staff as well as partnering agency staff. Establish methodology for communication with the community & involvement opportunities. Framework for Sullivans Friendly Yard Certification Program. Plan will also provide high level outline of communication strategy.

Draft Roles & Responsibilities Table

Task	Lead Entity	Support Groups	Details
Review Site Plans	Town of Sullivan's Island Planning & Zoning Department	Charleston County Government, Professional Engineers and Landscape Architects, Town Council Land Use & Natural Resource Committee	Review the submitted application and determine if suitable stormwater measures are incorporated
Review & Revise Residential Land Development Standards	Town of Sullivan's Island Planning & Zoning Department	Town Council, Town of Sullivan's Island Planning Commission	Revise specific Town ordinances as they relate to single-lot development
Establish a Communications Plan for Resilience Based Efforts	Town of Sullivan's Island		A Communications Plan outlines effective engagement strategies to provide consistent messaging to achieve consensus building
Engage and Involve the Community	Town of Sullivan's Island	Non-profit organizations, local municipalities, Charleston County Government	Offer involvement opportunities that provide understanding and empowerment to act
Maintain & Restore Town-owned Parcels	Town of Sullivan's Island		Undeveloped parcels provide ecosystem services and should be maintained as needed. Enhancements may incorporate NBS at a parcel level.

Yard Certification Program

Sullivan's Island residents use native plantings on their properties which helps manage water and has ecological benefits.

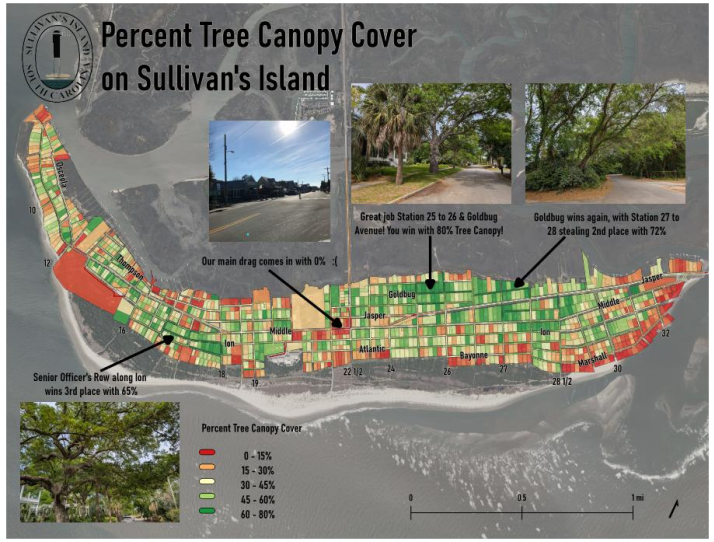
Stewardship Activities

- Storm Drain Marking
- Invasive Species Removal
- Litter Sweeps
- Involvement in NBS installations

Marsh Restoration at Mingo Point, Kiawah Island.

Strategy 3: Open Space & NBS Planning

Map open space, flow paths, soil types, and elevations across Island to determine locations for NBS on Town-owned properties where demonstration projects could be established. NBS projects are prioritized based on feasibility criteria.



NBS Cited Across Island

- Open Space/Conservation
- Bioretention
- Rain Garden
- Green Roof
- Bioswale
- Permeable Pavement
- Living Shoreline

Prioritization Criteria

Flood reduction

- Storage volume

Feasibility

- Soil infiltration rates
- Land ownership
- Permitting effort
- Cost
- Operations and Maintenance
- Professional Judgement (utility conflicts)

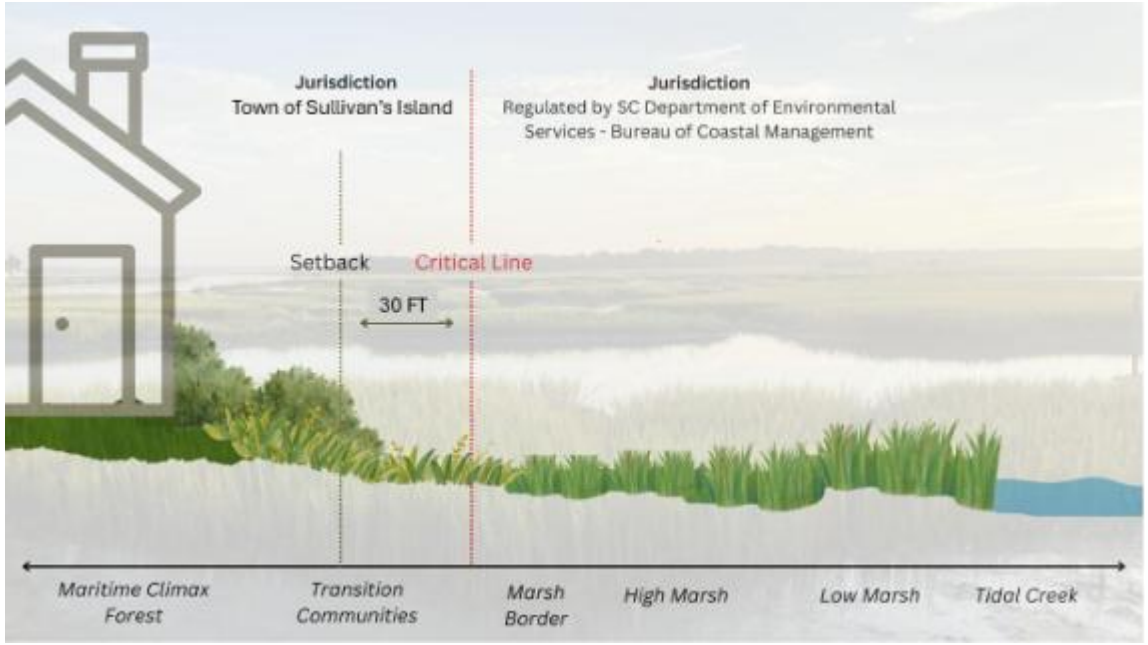
Co-Benefits

- Urban Heat Mitigation
- Water Quality
- Biodiversity/Habitat
- Environmental Justice
- Cultural

Strategy 4: Marsh Management & Protection

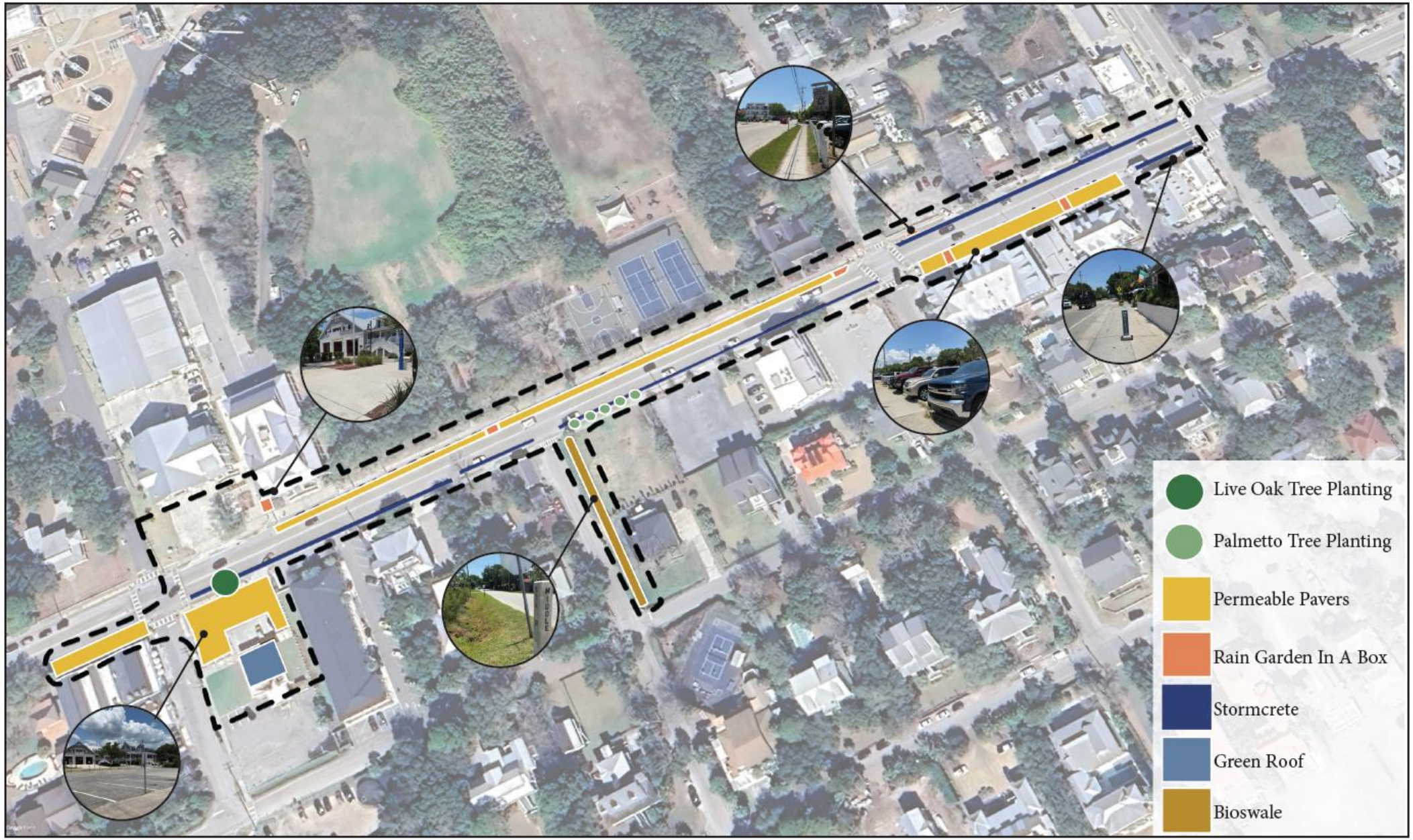
Marsh management is important to protect vital functions of the salt marsh including absorbing floodwaters, and filtering pollutants. Considerations for robust marsh management activities:

- Create and promote volunteer opportunities like marsh cleanups and oyster reef builds.
- Define extent and existing conditions of marsh areas and inventory structures.
- Collaborate with stormwater plan to minimize marsh impacts.
- Refine allowable uses within the 30-ft setback and permit eco-friendly erosion control measures (ie. Envirolok).
- Incorporate native vegetation into the 30-ft setback.
- Encourage the reduction of impervious surfaces in development and re-development activities.
- Explore the potential for beneficial use of dredge material.
- Explore creating funding opportunities in the form of mini-grants or incentives.



Envirolok on Sullivan's Island

Strategy 5. Business District Complete Street



High level siting and analysis of opportunities for incorporation of street level bioretention, permeable pavement, tree planting, and green roofs, in the Middle Street focus area.

5. Business District Complete Street

Permeable pavement options include **permeable pavers** and **porous concrete**. These materials are most appropriate in areas used for parking and pedestrian traffic. Maintenance is required to assure the systems continues to function as intended.

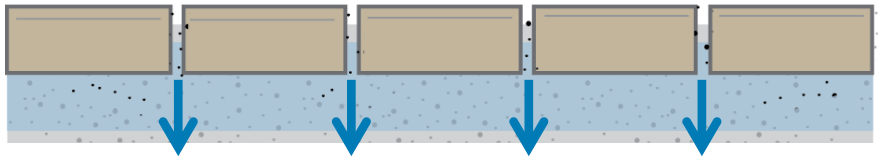
Porous parking area at a Charleston County Library.

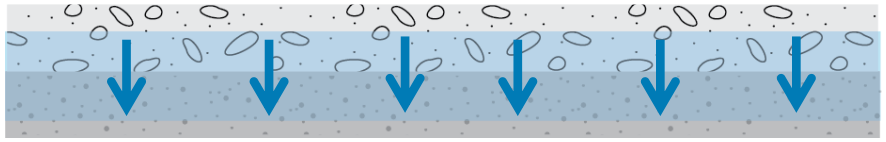
Existing permeable parking lot at Obstinate Daughter.

Materials vary such as this *Powerblock* System

Pre-cast *Stormcrete* can be placed to make a porous gutter.

Permeable Pavers provide spaces for stormwater to infiltrate between pavers. The pavers themselves are not permeable.

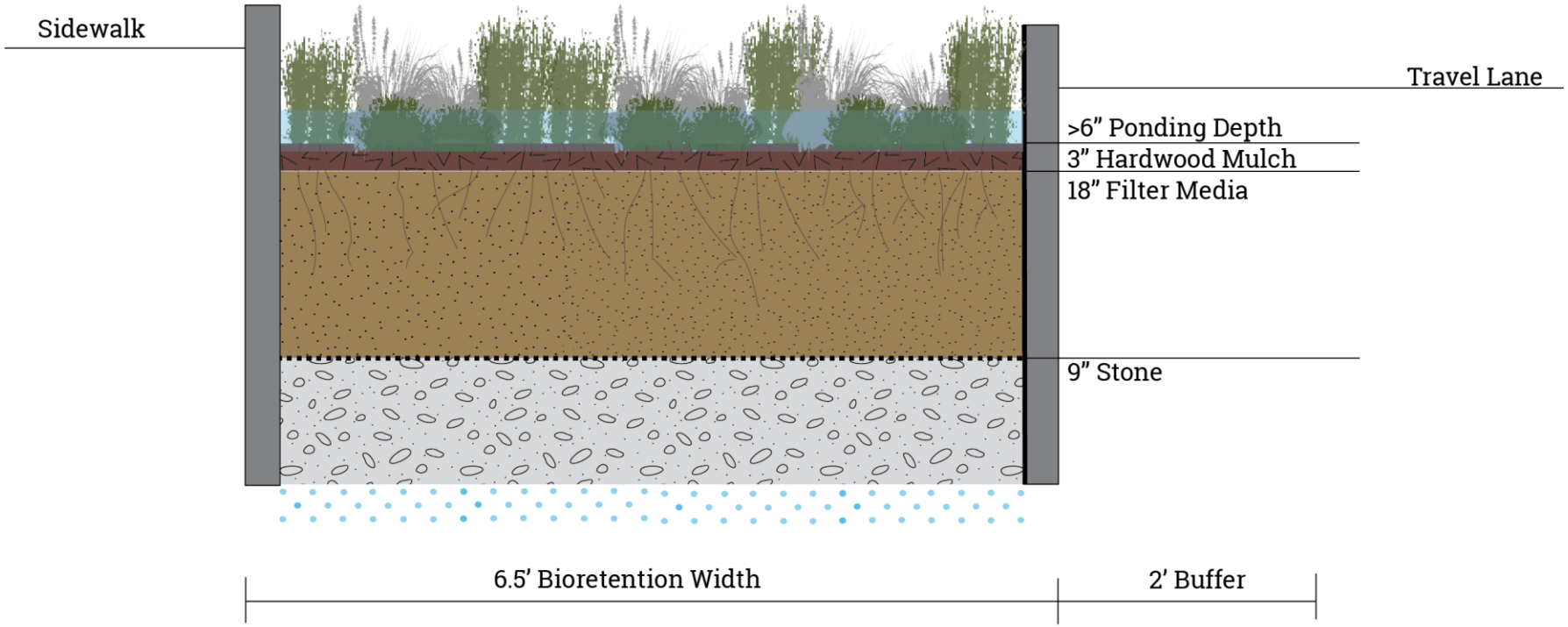




Porous concrete provides spaces for stormwater to infiltrate through the pavement surface.

5. Business District Complete Street

Bioretention options include **rain gardens** and **bioswales**. These systems use soils and plants to provide water an opportunity to slow down and to infiltrate. Maintenance is required to assure the systems continue to function as intended.

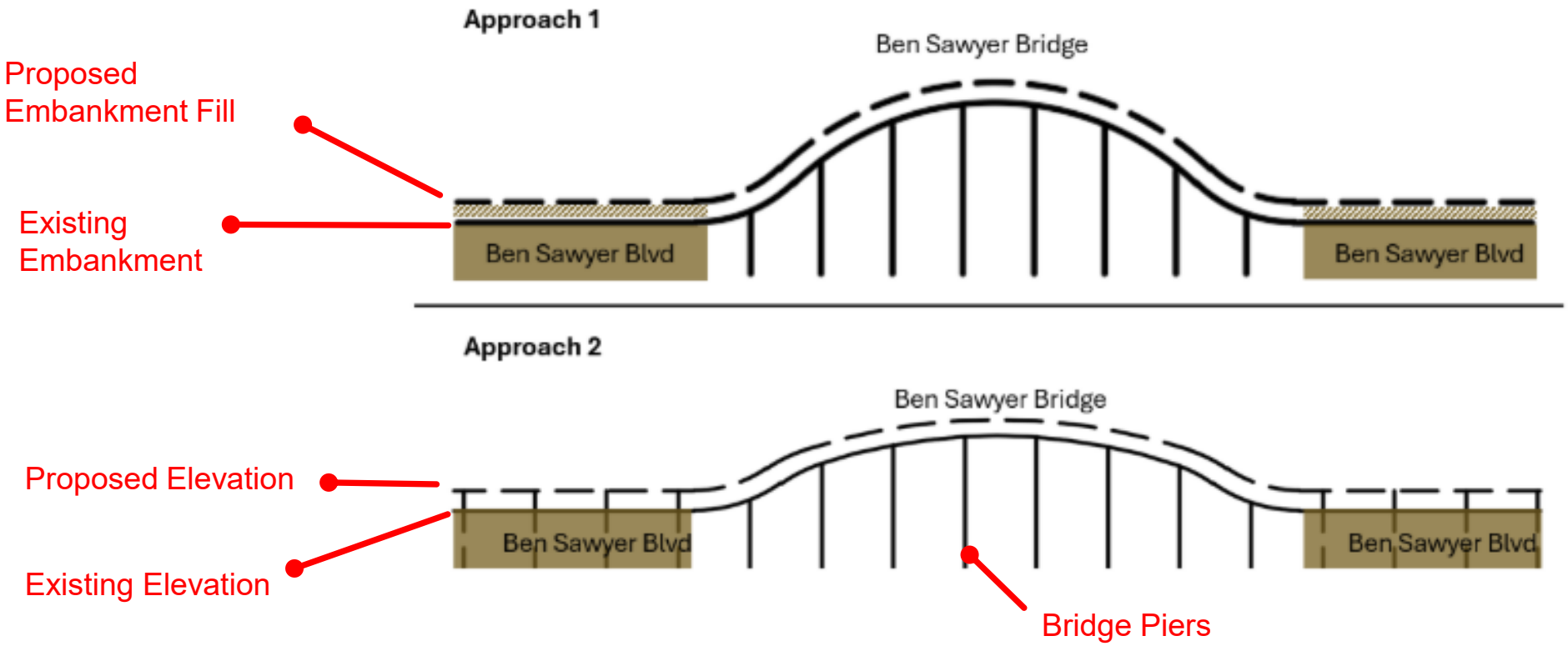


"Rain Garden in a Box"

Bioswale installation in Mt. Pleasant

Strategy 6. Causeway Adaptation

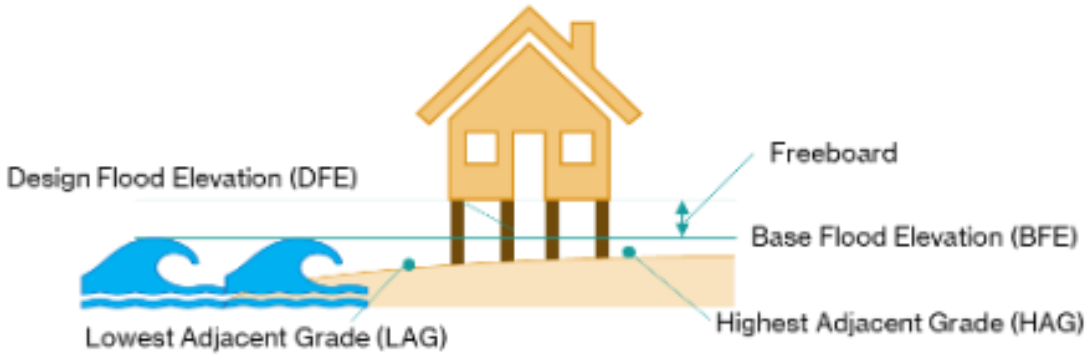
Ben Sawyer Blvd is a critical path for hurricane evacuations as well as emergency vehicles. Protecting the causeway from flood waters is critical to the safety of the Island. Most of the elevation of the roadway embankment is currently around 9 ft. High level options and considerations for Causeway retrofits are provided.



Strategy 7: New/Re-Development Policy Review

Review of existing codes and ordinances, compare to other coastal communities to provide recommendations for consideration. The review includes the following topics:

- Clarifications for definition of impervious surface, garages, and addition of hardscapes
- Added language and guidance for native plant landscaping
- Ordinance updates as it relates to Low Impact Development
- Address fill materials
- Potential for stormwater management overlay areas
- Vegetated buffers along critical area line
- Protection for isolated, non-jurisdictional wetlands
- Higher freeboard consideration in Special Flood Hazard areas
- Updates to language on floodproofing/venting



Strategy 8: Dune System Management & Restoration

A healthy dune system can establish a continuous line of defense along the beachfront. Key recommendations for dune system management:

Manage walkovers and access paths.

- Maintain and upgrade public paths, boardwalks, and walkovers to minimize pedestrian disruption and promote natural adaptation.
- Build raised “dune walkovers” according to S.C. state guidance.

Between Stations 16 and 28, reduce private beach access paths through the primary dune.

- Identify volunteer property owners willing to terminate private access paths behind the secondary dune ridge.
- Funnel pedestrian traffic along paths behind the secondary dune ridge or along the Nature Trail to public walkovers.

Restore dunes.

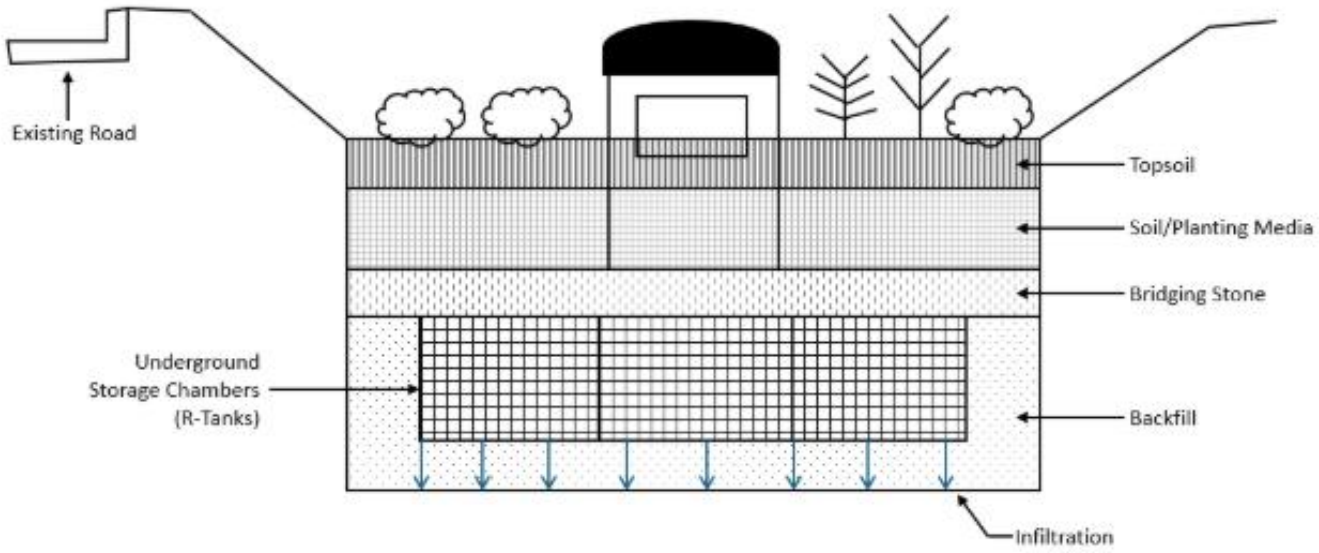
- Install sand fencing and plant native vegetation to promote gradual and natural dune growth.
- Beach vitex (*Vitex rotundifolia*) should be prohibited.
- Acquire undevelopable and vulnerable beachfront property
- Consider the innovative Dune Infiltration System that leverages drainage relief for native vegetation irrigation at public accesses.

Concept to funnel pedestrian traffic to public access

Installation of Dune Infiltration System on Folly Beach

Strategy 9: Underground Detention

Underground detention is a storage tank underground. Stormwater is captured in the tank and released over time. Considerations, including benefits and limitations, and for implementation of underground detention.



Concept for R-Tank rain garden system

An option suitable for Sullivan's Island is placing underground detention tanks beneath rain gardens or permeable sidewalks/pedestrian areas in a treatment train approach.

Example R-Tank rain garden system in in Dundalk, MD

Strategy 10: Maritime Forest

A healthy maritime forest can survive harsh conditions and serve as a buffer during storm events. Key recommendations for maritime forest:

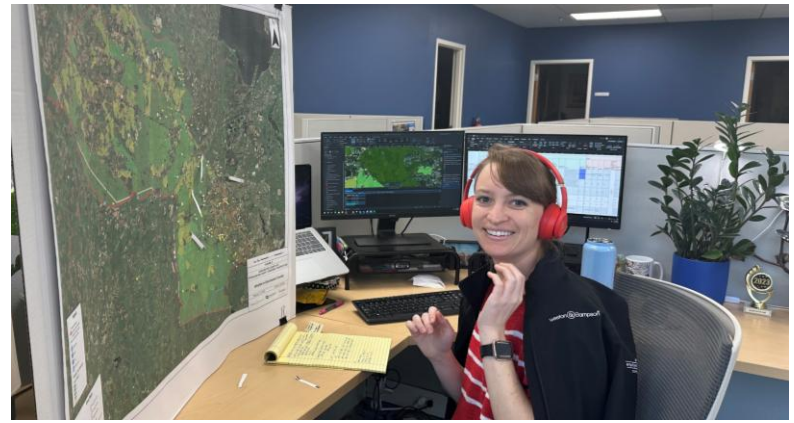
- Allow for removal of invasive species outside the specified pruning window of November 1 to February 28.
- Establish a training course to teach landscapers and interested community members about invasive species removal.
- Restore areas once invasive species are removed with native vegetation.
- Provide interpretation along trails within the maritime forest.
- Engage the community with volunteer opportunities that involve management activities.

Common Name	Photo	Scientific Name	Problems
Chinese Tallow Tree/Popcorn Tree		*Triadica sebifera*	Outcompetes native oaks and pines, alters soil composition and reduces wildlife food sources
Scarlet Sesbane		*Sesbania punicea*	Forms dense thickets, replacing native species and taking food resources from wildlife
Privets		*Ligustrum sinense, Ligustrum lucidum, ligustrum japonicum*	Dense shrub prevents growth of native seedlings
Elaeagnus		*Elaeagnus pungens, Elaeagnus umbellata*	Forms in dense thickets, displace native species, and disrupt wildlife.
White Mulberry		*Morus alba*	Invasive root systems grow fast in thick patches so native vegetation cannot grow.
Pampas Grass		*Cortaderia selloana*	Dense clumps outcompete native vegetation, wind-dispersed seeds spread quickly.

Table of common invasive species found in Maritime forest

Final Plan Development

- Conduct **2 meetings** with Town staff for final revisions.
- Provide **1 presentation** on the final Plan to key stakeholders.
- Present **1 presentation** to Town Council for Council adoption.



Task	June	July	August
Plan Visualization & Revisions			
Presentation to Stakeholders			
Presentation to Town Council for Adoption			

Final Plan Outcomes

A physical Resilience Plan through 2050 that is place-based & actionable.

Locations, form & function, and cost estimating for in-the-ground adaptation strategies.

Improved communication for diverse audiences through established and proposed channels.

Policy update recommendations to guide future decision making and land use.

Open Discussion

July 7, 2025