

Natural Design for Coastal Resiliency

A coastal landscape featuring a rocky shore with a line of green seaweed in the water. The sky is blue with white clouds. The foreground is a dark, textured surface, possibly a beach or a path.

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Who is Anchor QEA?

- We are an environmental firm focused on coastal and nearshore planning, science, and engineering
- Gulf of Mexico focus
 - Hancock County Living Shoreline and Marsh Restoration
 - Matagorda Bay Ecosystem Health
 - Freshwater inflows
 - Beneficial Use of Dredge Materials
 - Deer Island restoration
 - Agency planning support

Our Coastal Resiliency and Climate Change Adaptation Consulting Services

- Vulnerability assessment and coastal hazards analysis
- Adaptation planning
- Coastal process evaluation and beach nourishment
- Green solutions
- Wetland creation and restoration
- Facilities design for coastal resiliency
- Adaptive shoreline ecosystem design

Tools for Coastal Resiliency Planning

- Vulnerability assessments
 - Climate risk
 - Sea level rise
 - Coastal hazards analysis
 - Coastal process evaluation
- Partnerships
- Planning
- Funding

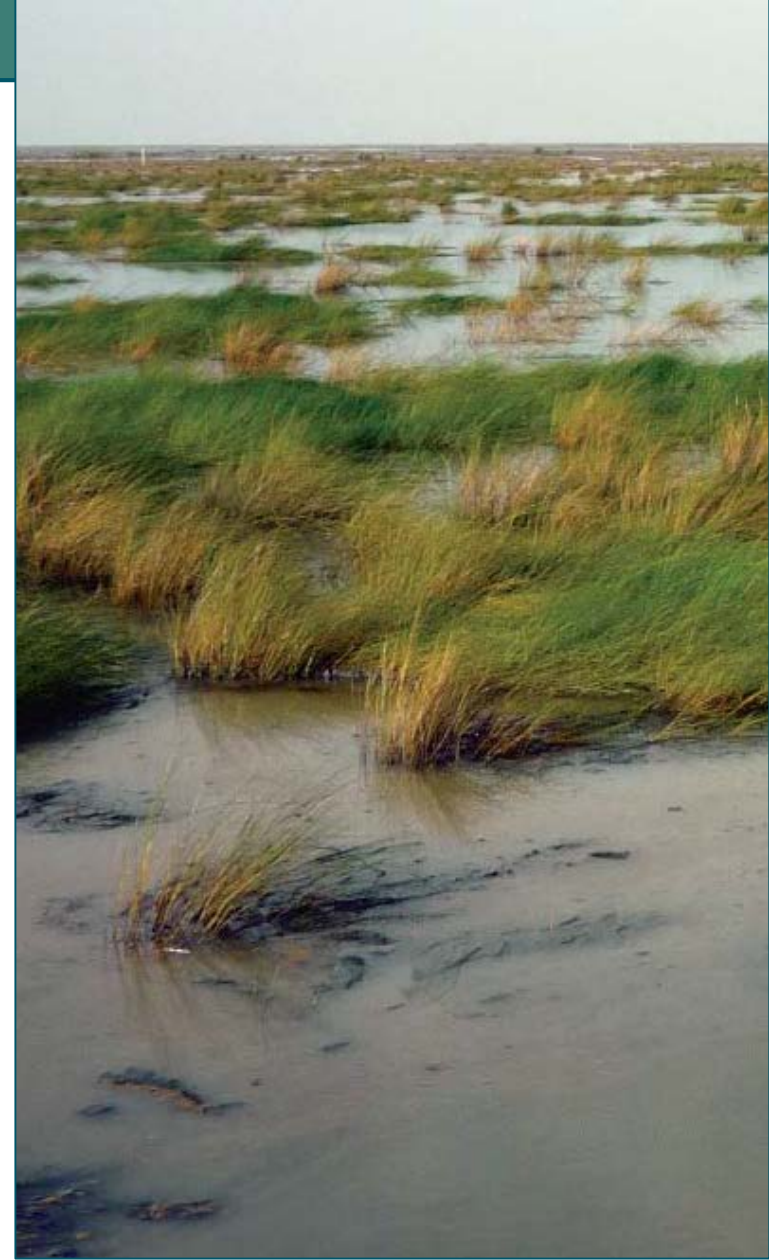


What is a Living Shoreline?

- Shoreline stabilization along estuarine coasts, bays, sheltered coastlines, and tributaries
- Comprised mostly of native material
 - Incorporates vegetation or other living, natural, “soft” structure
- Can be combined with a harder shoreline structure (e.g., oyster reefs or rock sills) for added stability

What does it do?

- Living shorelines maintain continuity of the natural land–water interface and reduce erosion while providing habitat value and **enhancing coastal resilience**

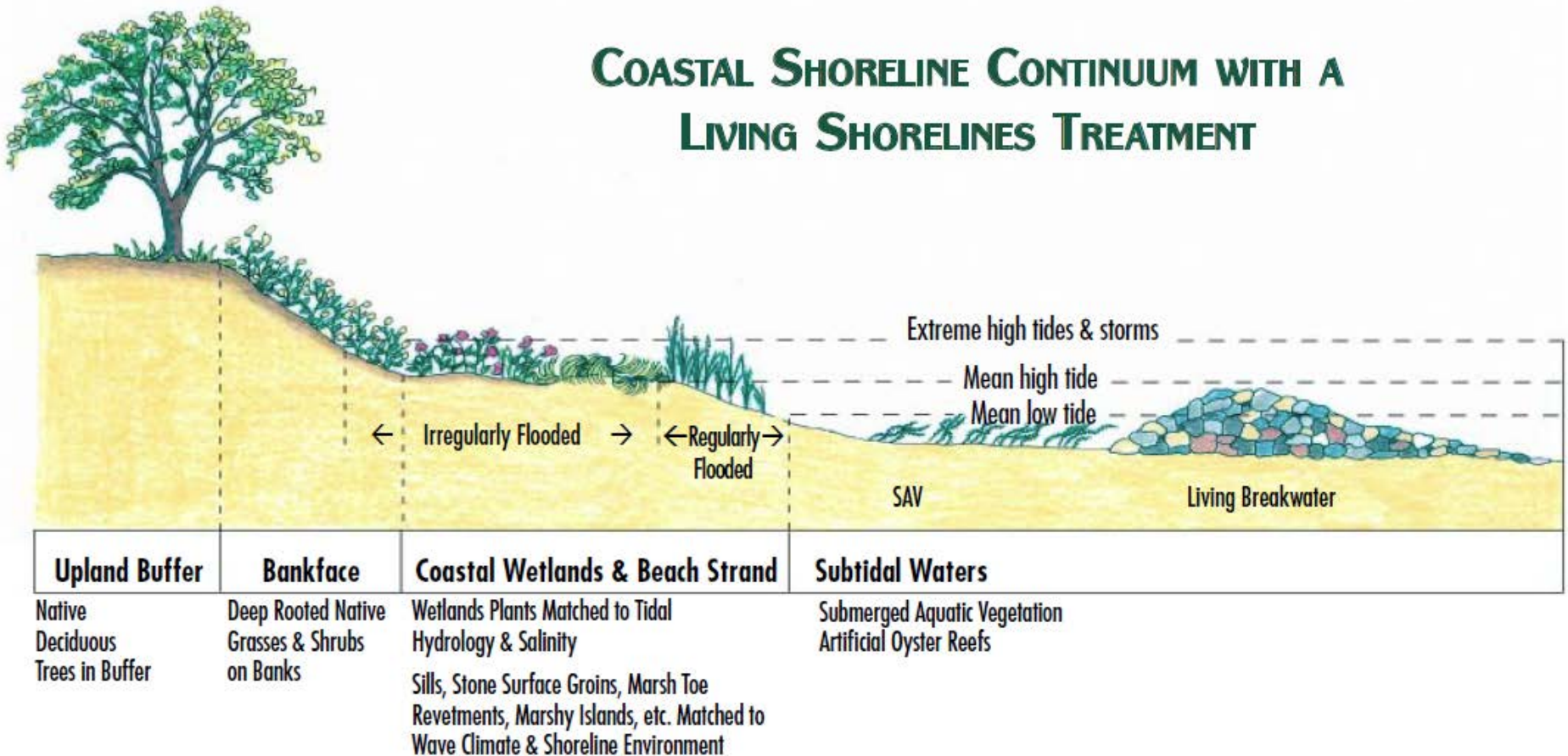




Living Shoreline Planning and Implementation

- Site analysis
- Permit approval and legal compliance
- Site preparation
- Installation
- Post-construction monitoring and maintenance

COASTAL SHORELINE CONTINUUM WITH A LIVING SHORELINES TREATMENT



Graphic from Burke Environmental Services.

Integrated Planning

How natural (green vs. gray) should it be?

Small waves, gentle slope,
sheltered coast

Large waves, steep slope,
open coast

Vegetation only

Edging

Sills (e.g., oyster blocks)

Beach and dunes

Beach only

Breakwater

Groin

Revetment

Bulkhead

Seawall

Living Shoreline Treatments



Vegetation Only

- Marsh
- Seagrass



Vegetation Base with Edge Protection

- Fence
- Oyster reef
- Toe protection
 - Coir tubes
 - Geotubes
 - Blankets



Sills

- Rocks
- Oyster reef
- Rock baskets/gabions
- Breakwater



Beaches

- Beach nourishment
- Beach and dunes with vegetation



What are the benefits?



Living Shoreline Benefits

- Erosion control and shore stabilization
- Restored and enhanced habitat
- Increased property values
- Enhanced community enjoyment
- Opportunities for education
- Improved public access
- Increased resilience
- Improved water quality

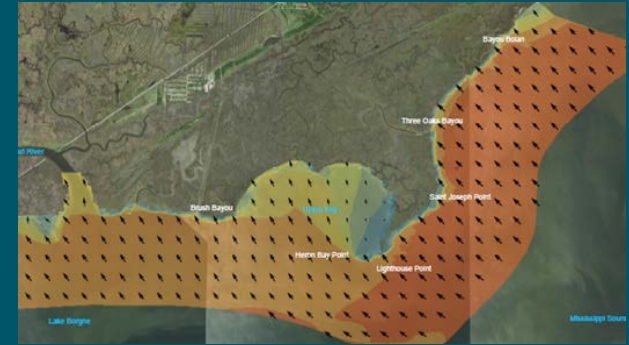
Resiliency Planning

Why is it contentious?



Challenges

- Risk
 - Will it work?
 - How do we know?
- Permits
- Land ownership issues
- Limited availability of sites
- Bigger picture
- Monitoring
- Cost
- Public outreach/communication





Questions/Discussion