

“We share in the
responsibility
to protect and restore our
coastal public trust
resources.”

TODD MILLER, Executive Director

Tracy Skrabal
Coastal Scientist, Southeast Manager



**North Carolina
Coastal Federation**
Working Together for a Healthy Coast

Our Approach

Since 1982, the Coastal Federation has worked to protect and restore the coastal water quality and habitats throughout the N.C. coast.

This is how we do our work:



We Collaborate

From community groups to local businesses to research institutions to government agencies.

We achieve long-lasting results by working together.



We Advocate

We take action by engaging people from all walks of life in decisions about the future of our coast.



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We Restore and Protect

In the field, we restore and protect critically important habitats and water quality.

By building and preserving:

- living shorelines
- oyster reefs
- wetlands
- & native coastal forests

We Educate

-Service learning and community projects

-Outdoor and hands-on education using local environmental issues

-Create coastal stewards and informed decision-makers.

We Inform

- Coastal Review Online (CRO), is our award-winning, daily, not-for-profit news and feature service covering the N.C. coast.

- A member of the N.C. Press Association.

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Case Studies of Living Shoreline Projects



Photo: by North Carolina Coastal Federation



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Beach Nourishment at Cape Lookout Lighthouse

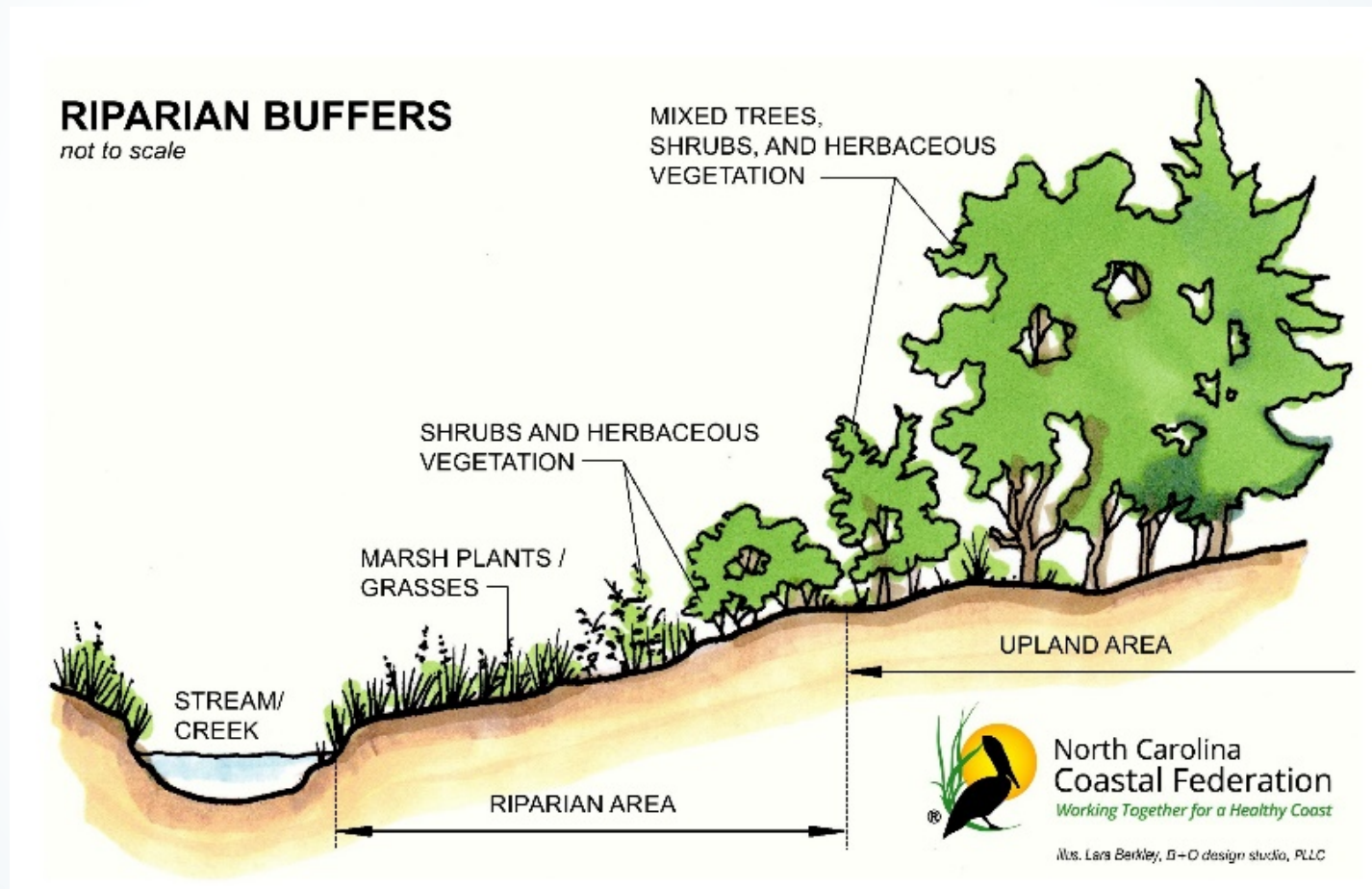


Photo: North Carolina Coastal Federation



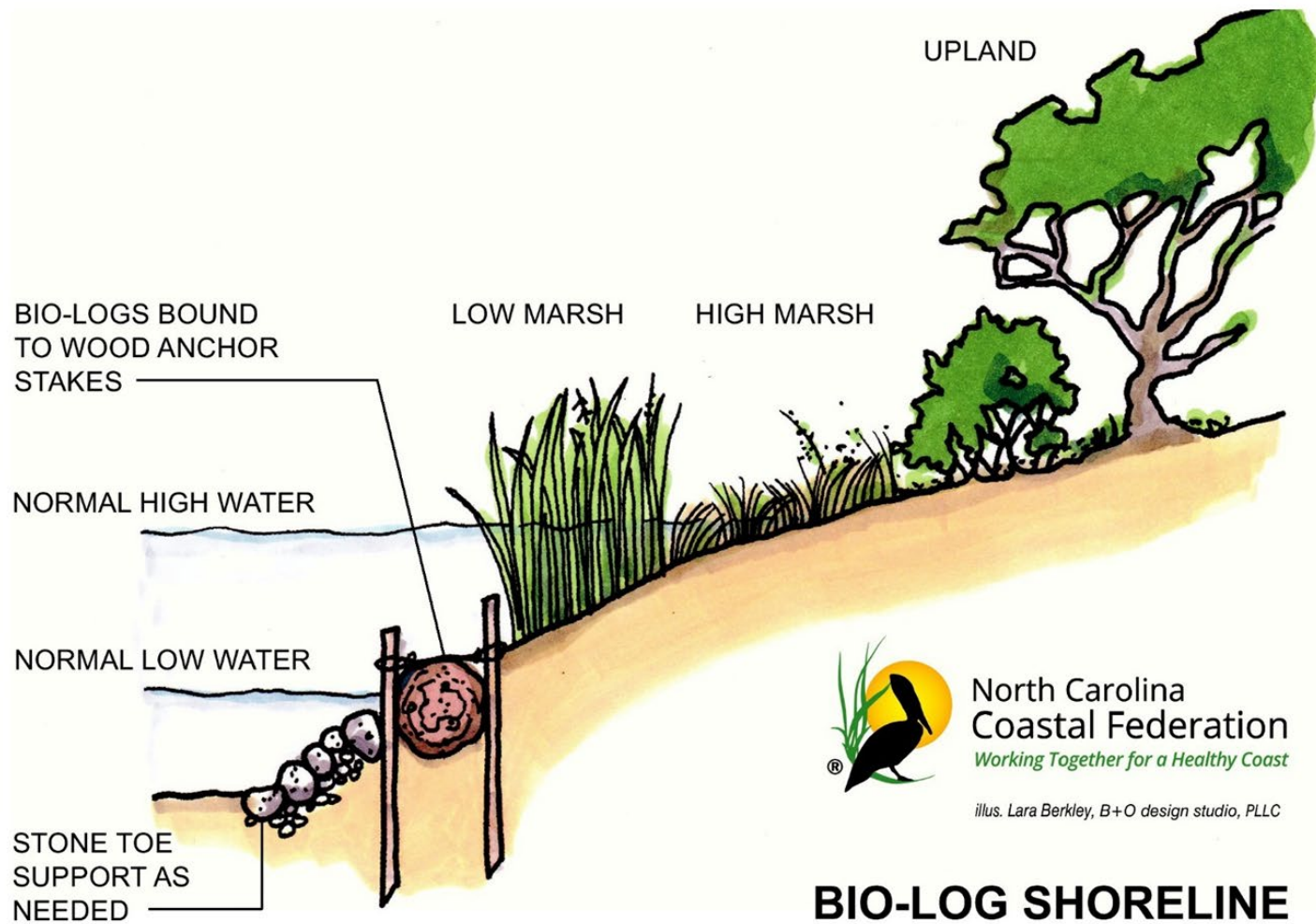
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Riparian Buffer Restoration with Marsh Creation





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BIO-LOG SHORELINE

not to scale



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Marsh Plantings and Biologs



Photo: North Carolina Coastal Federation

Marsh Plantings with Biologists



Photo: North Carolina Coastal Federation

Living Shoreline (Hybrid) Projects



Photo: North Carolina Coastal Federation



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Vertical Wall Living Shoreline Sills

Typical construction costs for 50 linear feet of vertical wall sill *

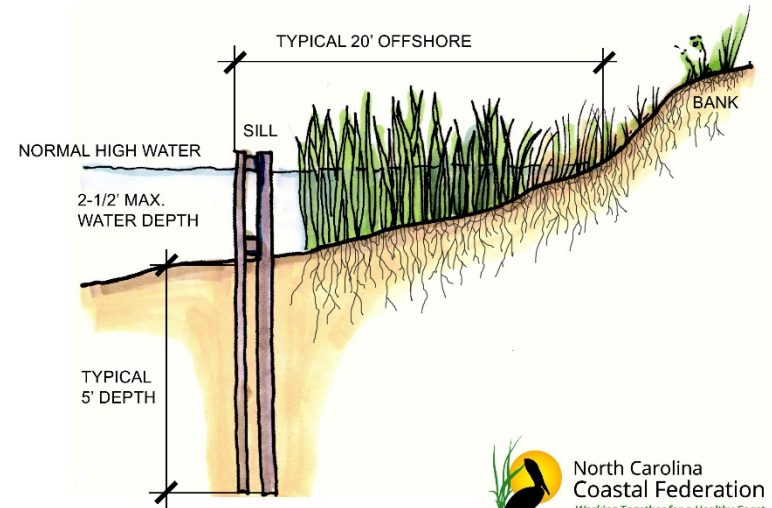
Vertical sill installed (materials + labor) Estimate includes 8' vinyl sheeting panels, marine treated whalers, galvanized hardware

\$120-\$140/linear foot= \$6,000- \$7,000

Plantings, 1,500 plants (1,500 square feet)
@ \$1.00/per plant = \$1,500

Total cost = \$7,500- \$8,500

* Note: Costs of sills vary significantly by size of structure, mobilization/demobilization costs, location, availability/transport of material, and market conditions



VERTICAL WALL SILL
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Wilmington, NC
Photos by North Carolina Coastal Federation.



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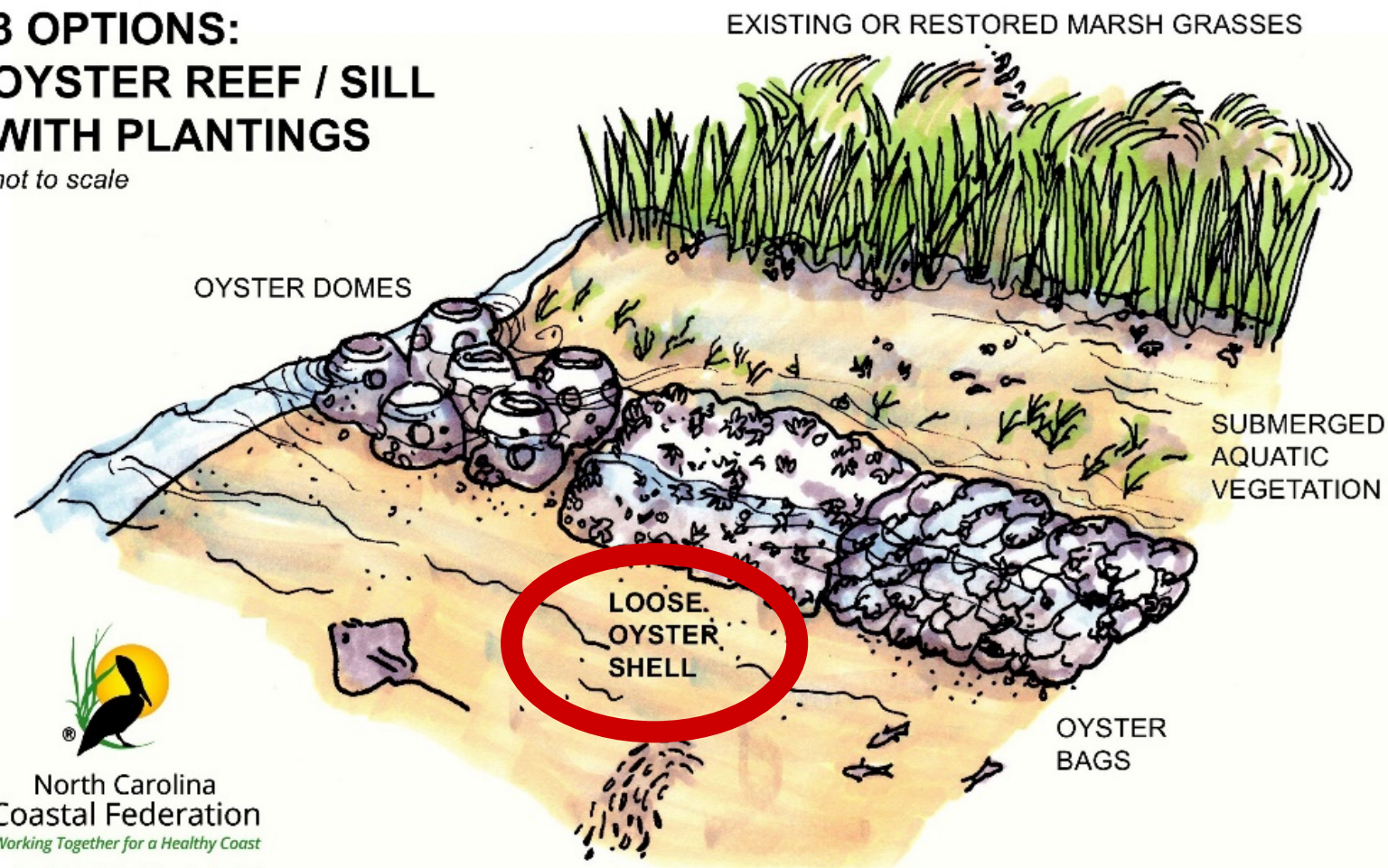
Vertical Wall Sills



Photo: North Carolina Coastal Federation

3 OPTIONS: OYSTER REEF / SILL WITH PLANTINGS

not to scale



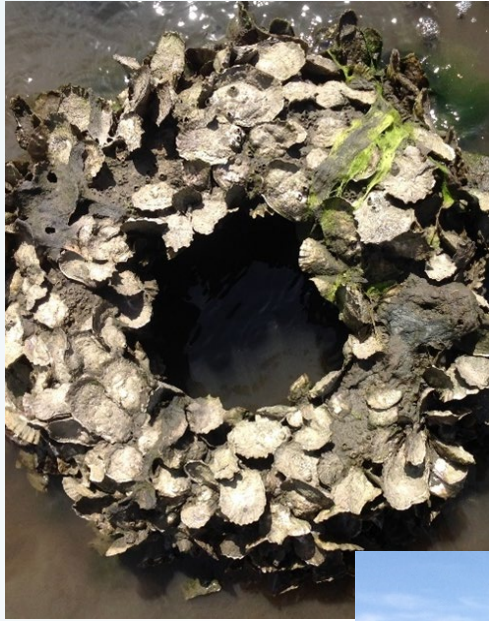
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Use of Oyster Domes For Living Shorelines



Photos by North Carolina Coastal Federation.

Typical Costs for Oyster Dome Project Morris Landing, NC

Typical costs for 150 linear feet*:

Plantings: 1,500 plants @ \$1.50 = \$750

Domes: 200 @ \$90/dome= \$18,000

Delivery of domes (from VA): \$1,500

Installation of domes: \$7,000

Total cost = \$27,250, or \$182/ft.

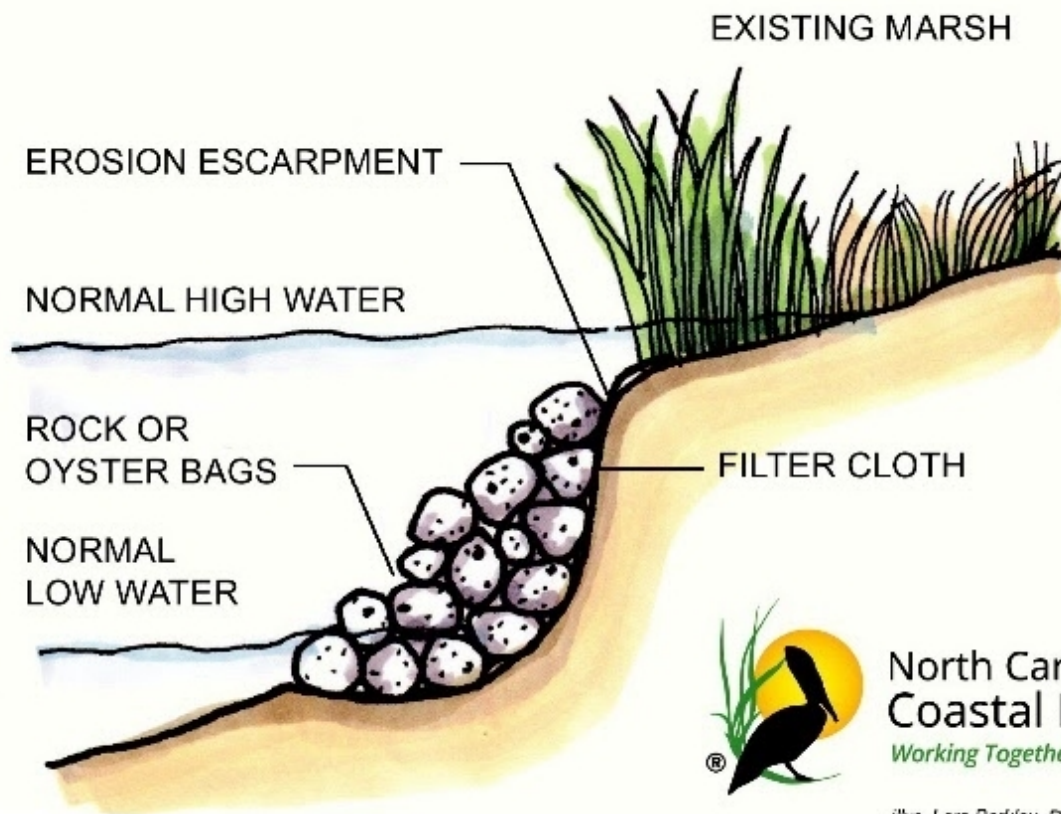
(For comparison: \$9,083 for 50 feet)



* Note: Costs of sills vary significantly by size of structure, mobilization/demobilization costs, location, availability/transport of material, and market conditions.



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MARSH TOE REVETMENT

not to scale



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Typical Costs for Oyster Shell Bag Marsh Toe Revetments

Typical construction costs for 50 linear feet*

700 bags, 175 bushels @ \$3.00/bushel
= \$525 (14 bags/lf)

3 rolls of mesh @ \$125/roll = \$375

Bagging frame = \$100

Labor, \$5.00 per bag = \$3,500

Plantings, 1,500 plants @ \$1.00 =
\$1,500

Total cost = \$6,000 or \$120/linear ft.



* Note: Costs of stone sills vary significantly by size of structure, mobilization/demobilization costs, location, availability/transport of material, and market conditions

Systems, Inc.

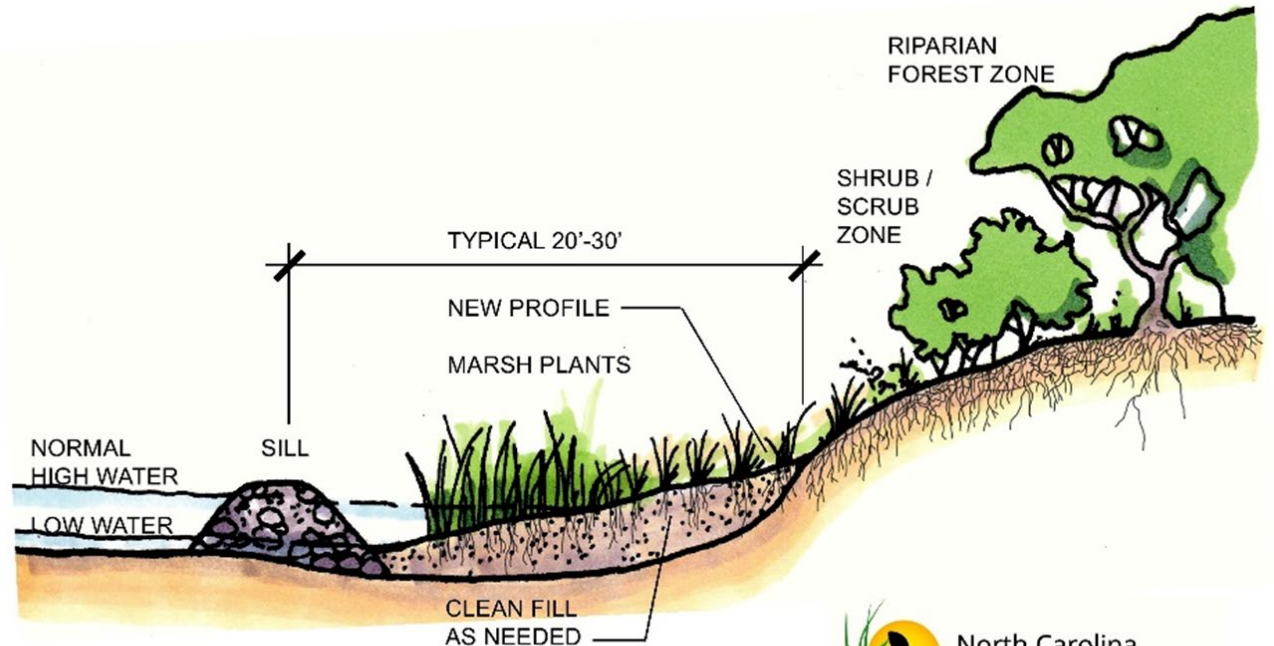


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Stone Living Shoreline Sills With Plantings



SILL WITH PLANTINGS

not to scale



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Typical Costs for Stone Sills

Typical construction costs for 50 linear feet of stone sill *

Stone installed (materials + labor)
@ \$150-\$200/linear foot=
\$7,500-\$10,000

Plantings, 1,500 plants (1,500
square feet) @ \$1.00/per =
\$1,500

Total cost = \$9,000- \$11,500



Federation.

* Note: Costs of sills vary significantly by size of structure, mobilization/demobilization costs, location, availability/transport of material, and market conditions



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Oyster Shell Bag Sills at Jones Island



Photo: North Carolina Coastal Federation



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Oyster Shell Bag Sills at Jones Island



Photo: North Carolina Coastal Federation



Morris Landing: Six Living Shoreline Projects



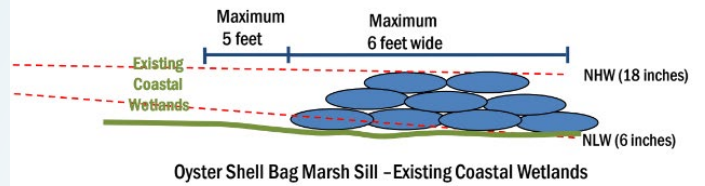
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Morris Landing: Living Shoreline Projects



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Morris Landing: Living Shoreline Projects



Cross-Section/Profile of Oyster Shell Bag Marsh Sill



Example of Oyster Shell Bag Marsh Sill - Existing Coastal Wetlands



Example of Oyster Shell Bag Marsh Sill - 30 Feet Waterward of NHW

Phase VI: Construction



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Stone Sills with Marsh Plantings



Photo: North Carolina Coastal Federation



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Stone Sills with Marsh Plantings



Columbia, North Carolina (Albemarle Sound)

Pivers Island, Beaufort, North Carolina
(Beaufort Channel)



Photo: North Carolina Coastal Federation

Edenhouse Boat Ramp, Chowan



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Edenhouse Boat Ramp, Chowan River Edenton, NC 2020



November 2020



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Living Shorelines: Innovative Approaches

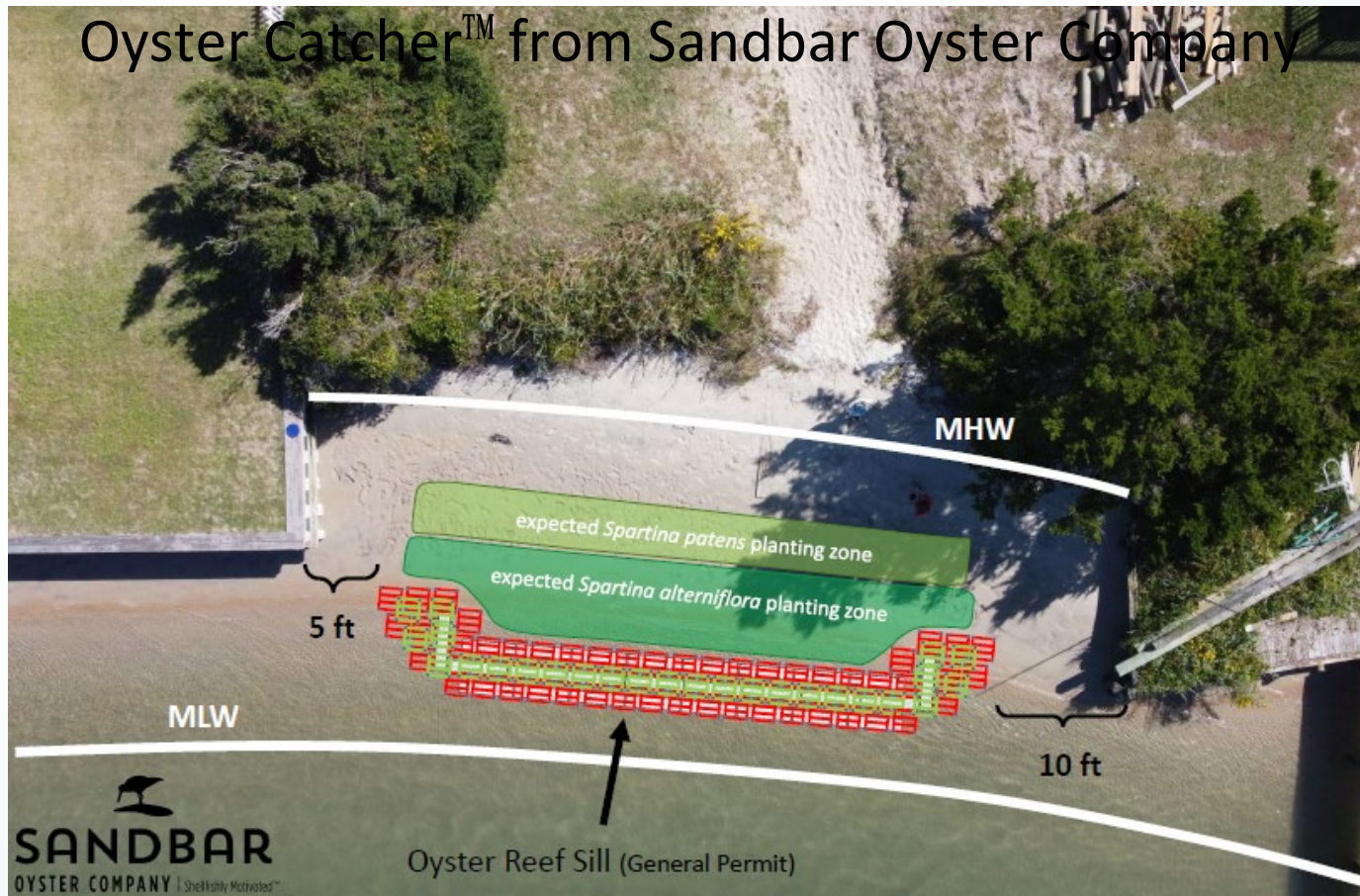
Oyster Catcher™ from Sandbar Oyster Company
sandbaroystercompany.com



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Living Shorelines: Innovative Approaches

Oyster Catcher™ from Sandbar Oyster Company



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Living Shorelines: Innovative Approaches

Oyster Catcher™ from Sandbar Oyster Company



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Living Shorelines: Innovative Approaches- Oyster Castles®

Oyster Castles® from Allied Concrete alliedconcrete.com



Bulkhead & Rip-Rap Revetment Enhancement Projects

- Bulkhead or revetment enhancement projects can be utilized when existing structures are already in place or if there are infrastructure conflicts
- Elements such as rip-rap, marsh plantings, or other shoreline plants can provide wave dissipation and habitat
- These features can mitigate the effects of erosion on the existing structures and extend the life of the structure



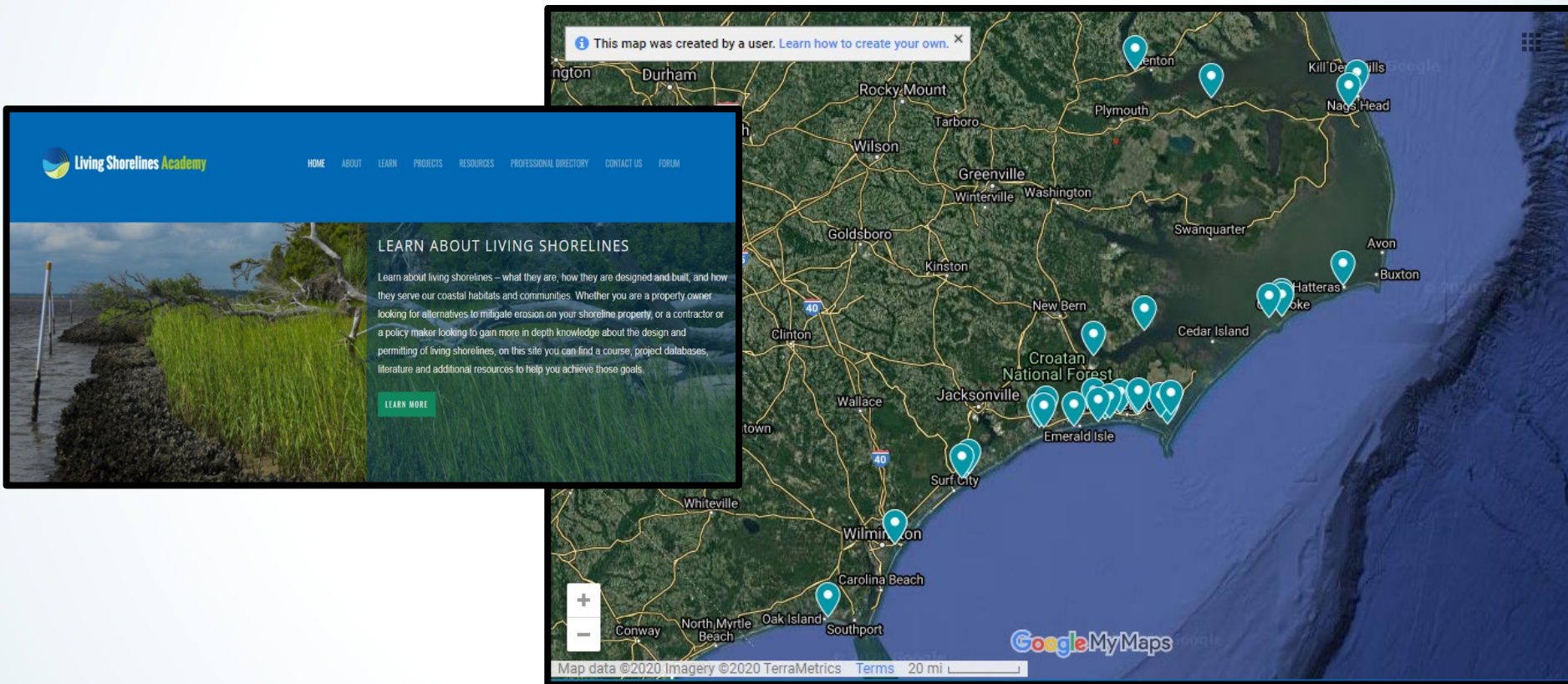
Photo: North Carolina Coastal Federation



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Additional Case Study Resources: Living Shorelines Academy

www.livingshorelinesacademy.org/index.php/projects-databases



Questions?

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