NOAA

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NOAA's Living Shorelines Engagement

Roles and Capabilities

Our oceans and coasts are subject to increasing stresses from storms, warming waters, and declining habitats. Green infrastructure solutions to shoreline management, such as living shorelines, will help humans and natural resources coexist on our coasts in a changing climate.

The term "living shorelines" is broadly recognized to encompass a range of different shoreline stabilization applications (along estuary coasts, bays, and tributaries) tyically comprised of vegetation or other "soft" elements and may include some type of harder shoreline structure (e.g., oysters or oyster reefs) for added stability.

Living shorelines reduce erosion in ways that provide habitat value and enhance coastal resiliency. While techniques and designs are regionally specific, they all have elements that maintain the seamless continuum between land and water to support ecosystem services and habitat values.

Leading by Example

- Providing technical assistance on project design and siting
- Funding pilot projects to develop techniques
- Conducting biological research to evaluate innovative techniques
- Promoting the use of living shorelines on NOAA properties and trust resources

Building and Nurturing Innovative Partnerships

- NOAA partners with state coastal management programs to strengthen state policies and regulatory processes
- NOAA collaborates with other federal agencies to clarify requirements for federal permits and consultations
- NOAA partners with foundations to build support for living shorelines and implement projects across the nation
- NOAA participates in interagency efforts to promote green and gray technologies such as Systems Approach to Geomorphic Engineering (SAGE) and Southeast Regional Partnership for Planning and Sustainability (SERPPAS)

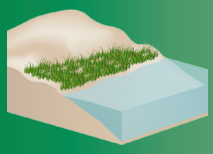
Bringing Science & Planning to Stakeholders

- Disaster Planning and Response: Helping communities develop disaster response plans that would include discussion on what sort of living shoreline would be appropriate
- Conducting research to improve effectiveness and show value (e.g., ecosystem services)
- Providing guidance, training, and public awareness

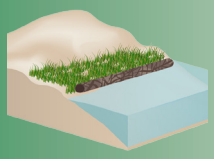
HOW GREEN OR GRAY SHOULD YOUR SHORELINE SOLUTION BE?

GREEN - SOFTER TECHNIQUES → **GRAY - HARDER TECHNIQUES**

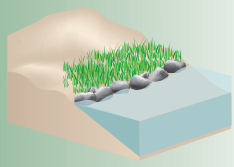
Living Shorelines



VEGETATION ONLY - Provides a buffer to upland areas and breaks small waves. Suitable only for low wave energy environments.

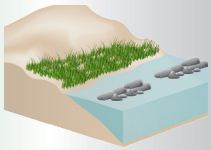


EDGING - Added structure holds the toe of existing or vegetated slope in place.

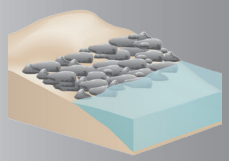


SILLS - Parallel to existing or vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.

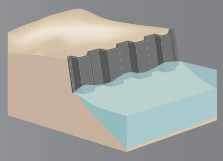
Coastal Structures



BREAKWATER (vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion Suitable for most areas.



REVETMENT - Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with pre-existing hardened shoreline structures.



BULKHEAD - Vertical wall parallel to the shoreline intended to hold soil in place.Suitable for areas highly vulnerable to storm surge and wave forces.

Future Agency Actions

Policy/Implementation objective: *Facilitate the use of living shorelines where appropriate*

- Clarify NOAA's position on regionally-appropriate living shoreline approaches
- Create a NOAA facilities policy around living shorelines
- Coordinate with Army Corps of Engineers to understand Clean Water Act Section 404 regional permitting process variations

Science objective: *Identify knowledge gaps and coordinate research and funding to resolve them*

- Publish a synthesis of living shoreline research
- Build long-term monitoring plans and adaptive approaches into key projects
- Conduct research to fill knowledge gaps

Outreach objective: *Disseminate the best available shoreline management science and practices*

- Provide state-level technical assistance, guidance, and training to increase the rigor of living shoreline projects
- In the long-term, consider creating and managing a living shorelines web portal

NOAA's Habitat Conservation Team, a cross-line-office collaborative effort, emphasizes living shorelines as an approach that includes many aspects of NOAA's mission

www.habitat.noaa.gov/livingshorelines