

## THE SOLUTION:

- EC engineers and scientists have designed and constructed hundreds of acres of tidal marsh in the Chesapeake Bay watershed.
- Each design is site specific. To be sure that we have a complete understanding of the shoreline, our engineers survey the property at high and low tide - mapping bathymetry and upland elevations. The soils, fetch and shoreline orientation are investigated, and natural resource and land records are researched.
- Permit applications are filed with the appropriate Federal, State and local agencies. With permits in hand, the restoration crews prepare the location – protecting landscape features and sensitive areas with fencing, truck mats, etc. A turbidity curtain is installed in the water to confine sediments.
- The new marsh planting base is installed to the design elevation. An appropriate containment structure is constructed to protect this new marsh.
- The marsh base is then planted with appropriate marsh vegetation.
- The upper bank may be graded channelward to meet the new marsh elevation.
- The buffer is planted with native grasses and shrubs.

## THE PROBLEM:

- Stormwater runoff from agricultural fields, lawns and impervious surfaces contributes 5.7 million pounds of nitrogen and 4.2 million pounds of phosphorous to Chesapeake Bay waters annually.
- Eroding shorelines deposit 4.7 million cubic yards of sediment annually into Chesapeake Bay waters. Suspended sediments smother subaquatic vegetation (SAV) and degrade oyster beds.
- Tide and wave action is reflected by riprap and bulkheads – resuspending sediments, and therefore, degrading water quality.
- Estuarine, emergent tidal marshes, the most productive ecosystem in the Chesapeake Bay watershed, continue to disappear at an alarming rate.



*Spartina alterniflora* in our nursery.

*The Environmental Concern Native Plant Nursery propagates hundreds of thousands of wetland plants annually in support of our wetland restoration activities.*



Environmental Concern Inc.

**Leaders in  
Wetland Creation  
and  
Restoration  
Since 1972**



**Environmental  
Concern**

*Restoring the bay...  
one wetland at a time*

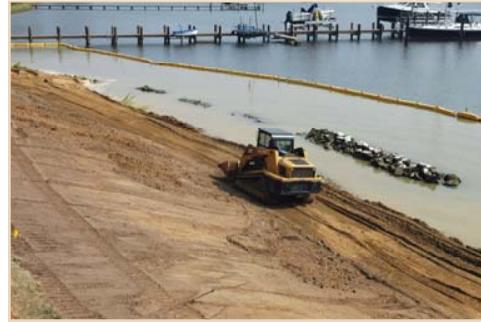
**RESTORATION DIVISION**  
201 Boundary Lane, P.O. Box P  
St Michaels, MD 21663  
Phone: 410-745-9620  
Fax: 410-745-3517  
e-mail: [construction@wetland.org](mailto:construction@wetland.org)

**[www.wetland.org](http://www.wetland.org)**

## THE PROBLEM:



## THE SOLUTION:



## THE BENEFITS:



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- This Living Shoreline Stewardship Initiative is a property owner-based contribution toward improving the water quality and living resource habitat in the Bay and its tributaries. Our Living Shoreline recreates the natural functions of a shoreline ecosystem.
- The tidal marsh improves water quality by trapping silt and pollutants contained in stormwater runoff and in the receiving waters. The marsh uptakes nutrients and processes chemical and organic wastes.
- The tidal marsh is the estuarine farmland, supporting the Bay's living aquatic resources. More than half of the commercially useful fish depend on the tidal marsh as spawning beds, hatcheries, nurseries or feeding grounds.
- The tidal marsh protects the shoreline by dissipating wave energy and stabilizing the marsh soils. While riprap and bulkheads failed during Hurricane Isabel, the marshes constructed by EC protected shorelines from the tidal surge of the storm.

### PLANTS ARE THE KEY

- *Spartina alterniflora* (cordgrass) and *Spartina patens* (saltmarsh hay) are halophytes—well suited to tidal inundation. Cordgrass thrives in the intertidal zone.
- The fibrous roots of these grasses stabilize the marsh soils. The biomass of the marsh grasses dissipate wave energy—thereby protecting the shoreline.
- Deep rooted native grasses create a natural landscape. The gradual slope of the constructed marsh presents a gracious, aesthetically pleasing entrance to tidal waters.