Living Shoreline Restoration for Low Energy Systems

Living Shoreline Professionals' Training 2
February 22nd 2010 Centerville, MD

Presented by: Rob Schnabel, Chesapeake Bay Foundation

Project Selection Criteria

Energy Environment	*Low Energy*	*Medium Energy*		*High Energy*
Shoreline Location	creek or cove	minor river	major tributary	main stem Bay
Water Depth (ft)	-1.0	-1.0 to -2.0	-2.0 to -4.0	-4.0 to -15.0
Fetch (miles)	0.5	1.0 to 1.5	2.0 or more	2.0 or more
Erosion rate (ft/yr)	2 or less	2 to 4	4 to 8	8 to 20
Erosion Control Treatment Options	***Non-structural Projects***	***Hybrid Projects***		***Structural Projects***
	beach replenishment	marsh fringe w/groins		bulkheads
	fringe marsh creation	marsh fringe w/sills		revetments
	marshy islands	marsh fringe w/breakwaters		stone reinforcing
	coir logs edging, groins	beach replenishment w/breakwaters		groins & jetties
Cost per foot	$50-100	$150-300	$350-500	$500-1,200

Source: MD Dept. of Natural Resources

Examples of over engineered projects in low energy areas that impact wildlife habitat and expensive.

Right: Revetment fills in and reflects energy, results in scour and no shallow water habitat .

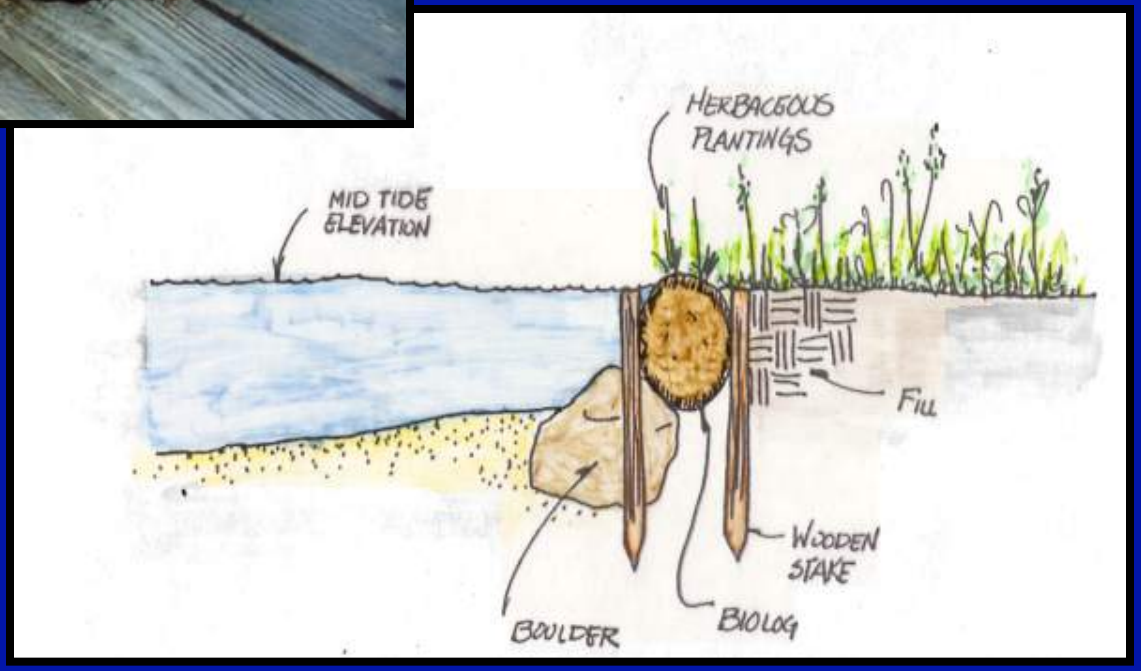
Left: Huge Stone Sill and wetland creation, no wildlife access.

Right: Bulkhead fills in and reflects energy, results in scour and no shallow water habitat .

Typical Detail: Biolog with Boulder Footer

Left: Biolog made of coconut fiber. Temporary stabilization until plants get established.

Below: Top of log set at mid-tide. Top of rock set at mean low tide elevation.



Do you want to use Coir Fiber Logs?

Pros

- Movable by hand (20' long – 200 lbs)
- Less impact for construction access
- Wildlife friendly – plant within & biodegrades
- Less expensive ($7 – $12 per foot)

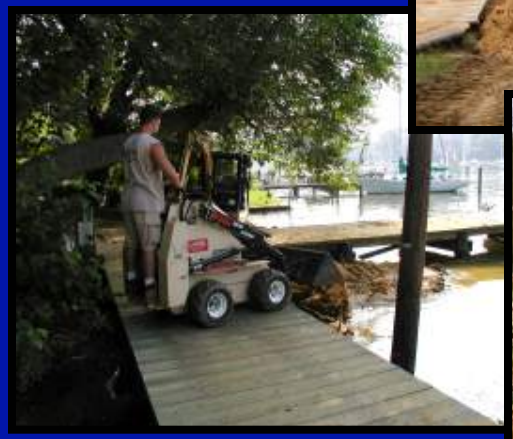
Cons

- Temporary!
- Labor intensive (Partner w/landscape company?)
- Only good for low energy areas
- Only good for areas w/less tidal fluctuation

Can be Large or Small Scale project:

800' Shoreline – St John's College
Bulkhead Removal &
Sand Placement
Equipment:
3 Excavators, 1 Loader,
250 Truck Loads of Sand, & 1 Bulldozer

120' Shoreline –
Sand placement w/logs
Small track-hoe and sand mover



Can be used for Shoreline / Lake / Slope Terracing:

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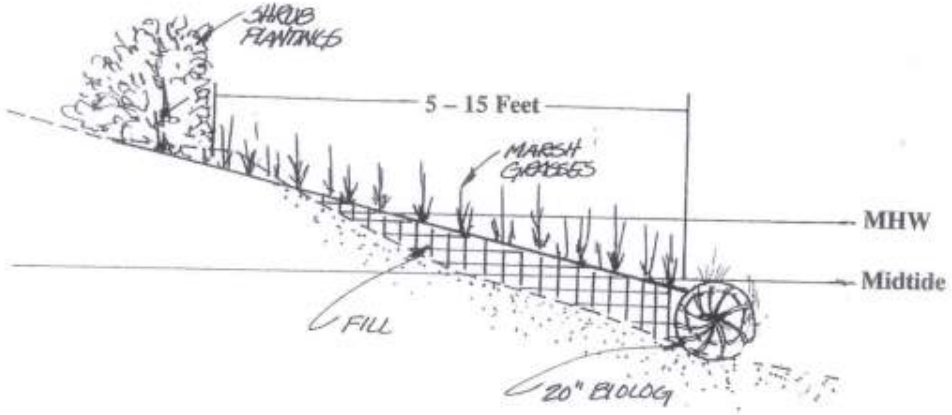
Restoration Plans

Typical Detail & Installation Sequence

Typical Cross Section
Coir Fiber Logs (Biologs) for Marsh Enhancement / Creation



COIR FIBER LOG (BIOLOG)

Installation Sequence

1. Excavate a small pilot trench (6" wide x 3" deep) where the coir fiber logs are to be placed.
2. Place the coir fiber logs into the pilot trench making sure to have continuous contact between the logs and the bottom of the trench.
3. Tie the logs together, end to end, using 1/8 inch woven nylon rope.
4. Place two rows of wooden stakes along the front and back edge of the coir fiber log on five foot centers.
5. Drive stakes into substrate until 10 to 12 inches remain above the logs.
6. Cut a notch into each stake approximately 6 inches from the top of each stake. Tie stakes together with the rope, alternating tying from front stake to stake behind biolog. Continue driving stakes until the rope is flush with the logs.
7. Backfill behind revetment to achieve final grade.
8. Plant herbaceous plugs every two feet within coir fiber logs and water the plugs. Plant additional herbaceous plugs and shrubs behind the biolog.

How to Install – Critical to anchor well or do not bother

Place log so that it-

- has continuous contact with the ground.
- is at appropriate elevation.

1) Place stakes every 3-4', opposite one another.
2) Pound down until 1' above top of log.
3) Notch Stakes w/chainsaw, angle up
4) Tie rope from stake to stake
5) Pound stake until rope flush w/log

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6) Backfill log to appropriate elevation

7) Plant log with wetland plugs, every 1-2'

8) Plant up rest of area

Install Goose Exclusion fencing

Remove fencing after
one growing season

Right:
Hybrid Living Shoreline
Medium Energy

Annual Shoreline Workshop: Hands-on Education

- Discuss Living Shoreline Design
- Associated Costs
- Permit Requirements
- Timeline, schedule
- Consultant Listing
- What to plant
- Where to get Materials
- How to install

Where to get Coir Fiber Logs;
Pinelands Nursery
www.pinelandsnursery.com
Logs, wooden stakes, plants & Goose exclusion fencing

2010 Workshop in Oxford -working out the details but will likely be in June

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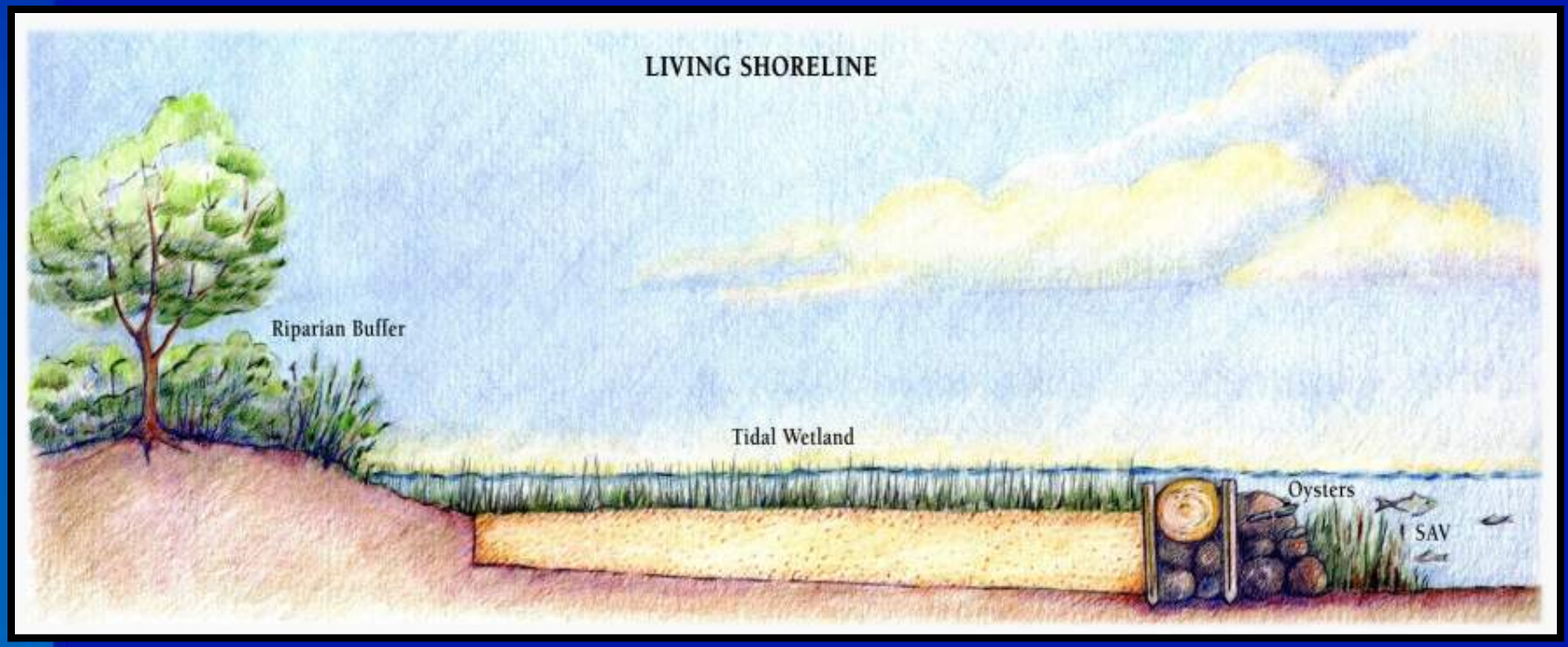
Think Holistically

Potential Components of a Living Shoreline Restoration Project

Riparian Buffer | Tidal Wetlands | Oysters | SAV's



Provide Erosion Control, Water Quality Filter, Fish & Wildlife Habitat

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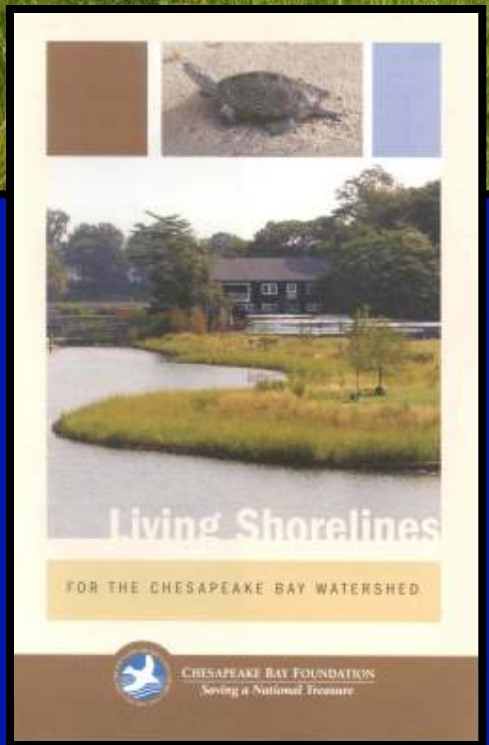

Landowner's can;

1) reduce erosion
2) enjoy the resource
3) improve Fish & Wildlife Habitat
4) increase "green" filter

All at the same time.

As technical experts it is our job to educate shoreline landowners, potential clients.

CBF put together a brochure to that may help you do this.

Please take as many as you like!