

TECHNIQUES FOR CONTROLLING SHORELAND EROSION PART 3

SAMPLES AND CASE STUDIES

2017 Wisconsin Lakes Partnership Convention

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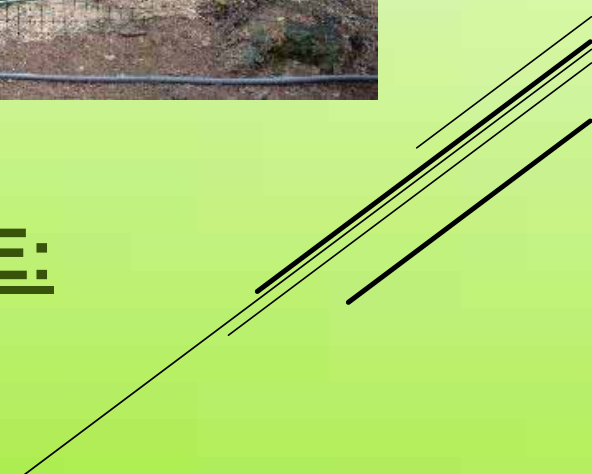
WATERING!!

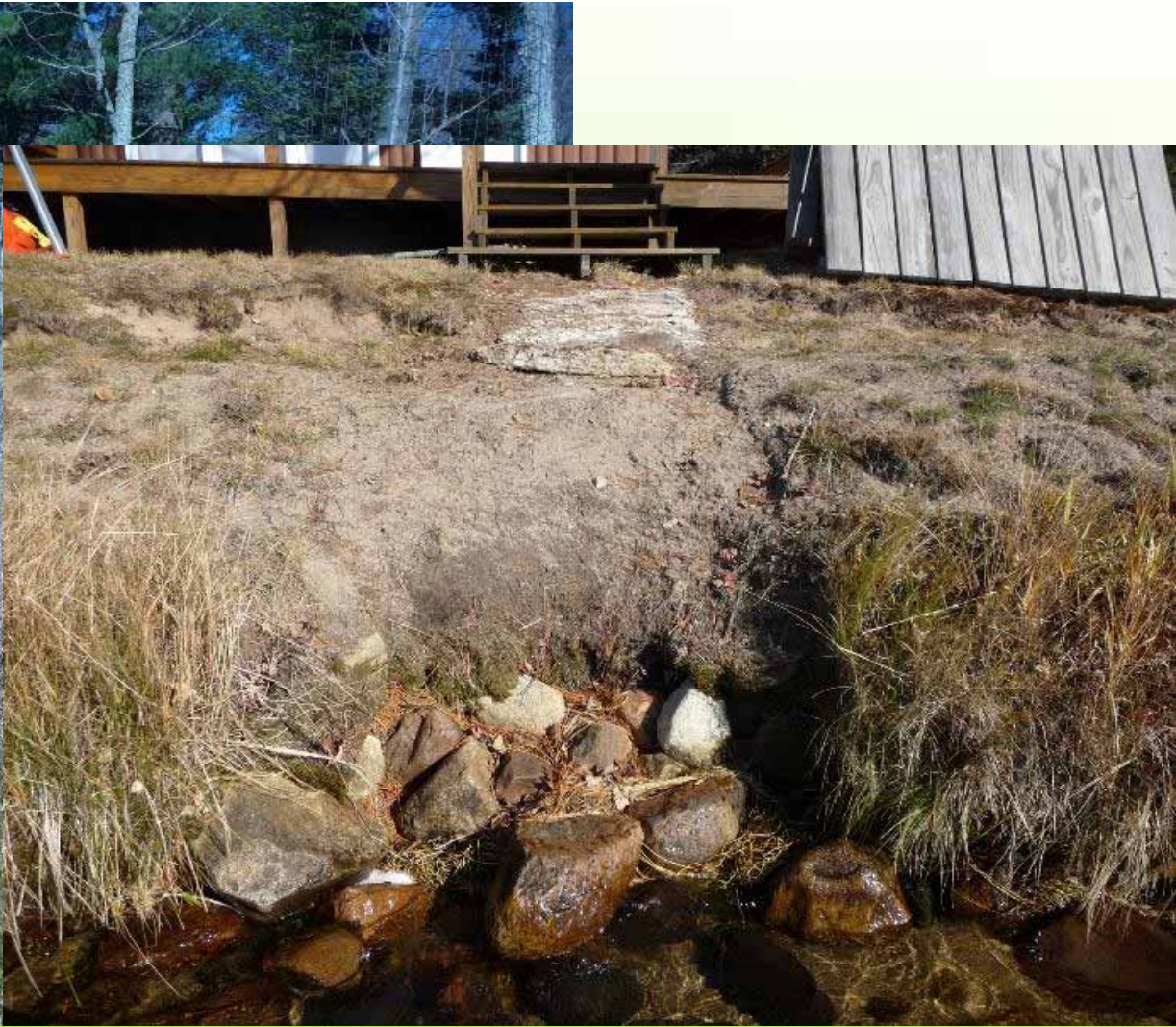


PROTECTION FROM BROWSE!!



ALL Bio-engineered Techniques REQUIRE:









Denuded shoreline 2009





Technique: Coir
Biologs and restored
native plant buffer
2010





Technique: Subsurface Rock Drain and Ou





Diversion 2011





Slope to the water 201

Technique:
Vegetated Berm
2014





Vegetated berm 2016

Technique: Boulder toe with Vegetation





Seawall
Removal





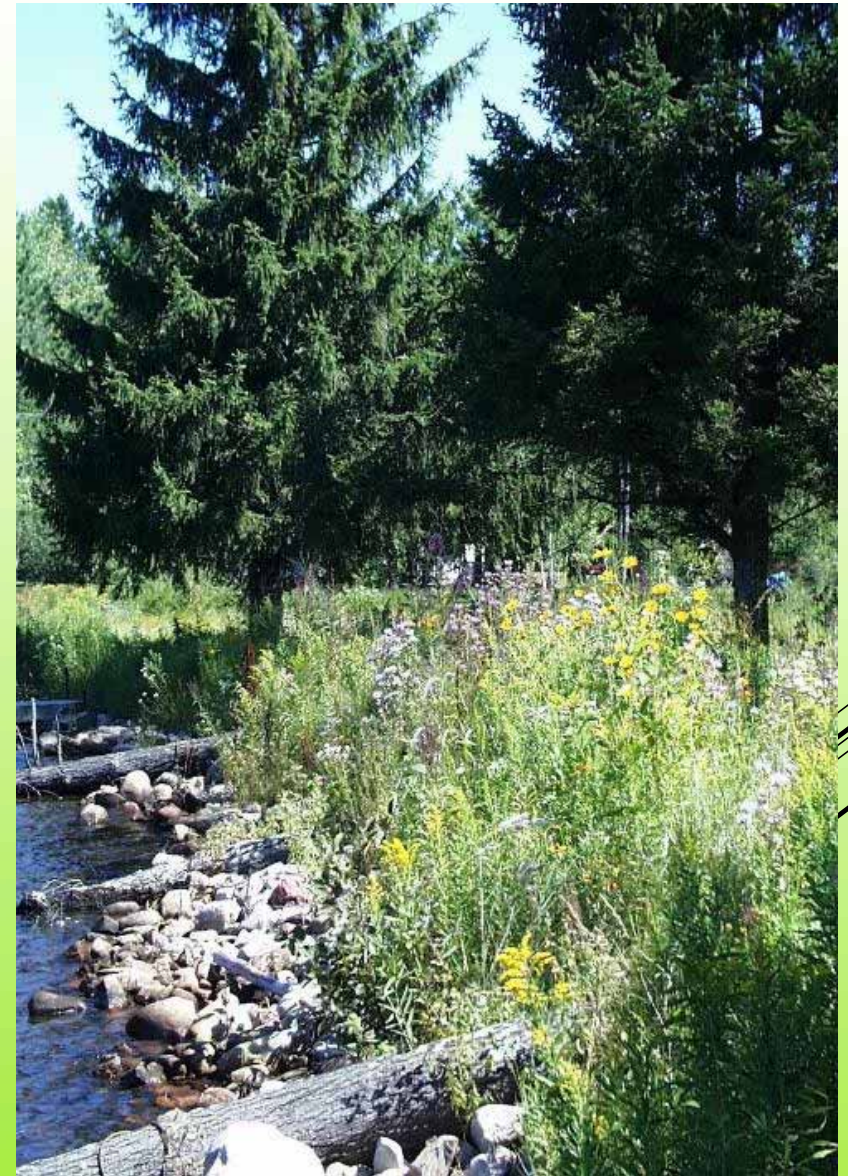
Technique: Rock Riprap

Technique:
Rock riprap with planting
and tree drops.

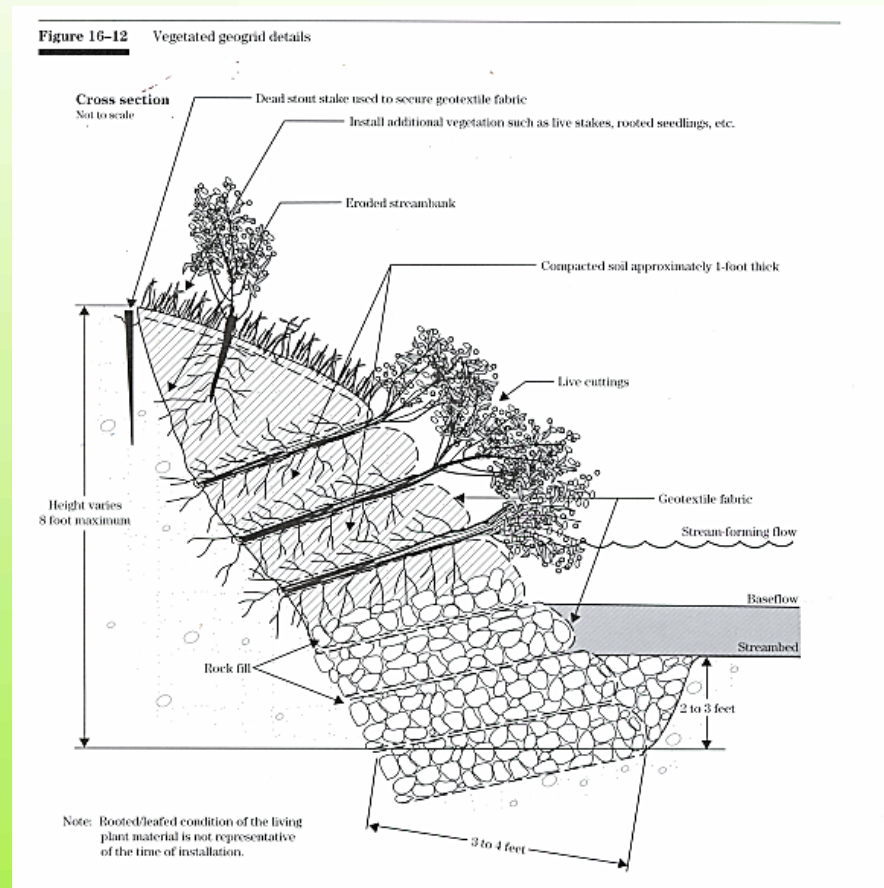
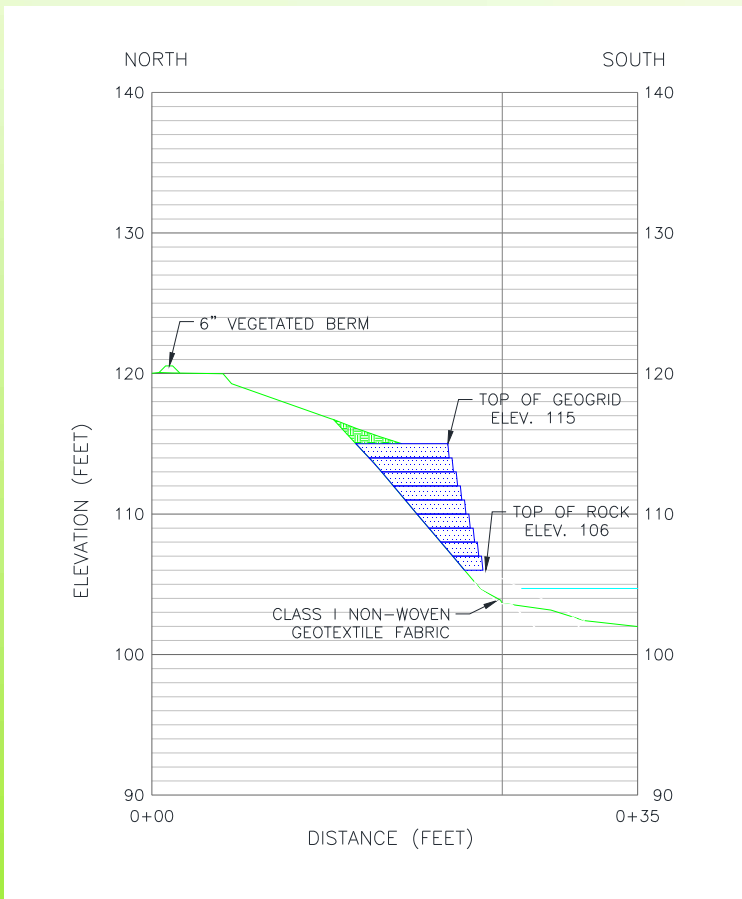




Rock riprap with planting
and tree drops Year 1
And Year 3



Technique: Vegetated Geogrid



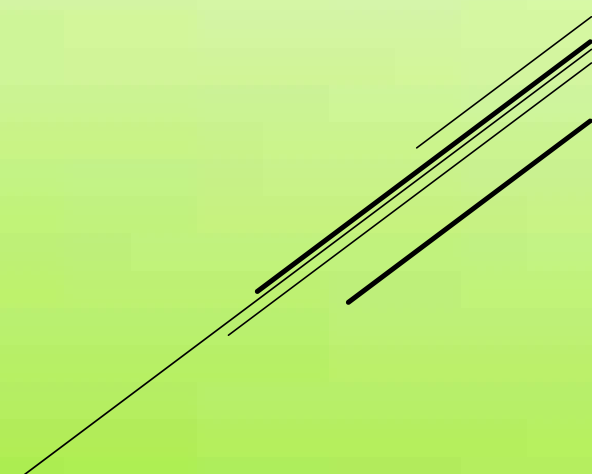


Technique: Vegetated Geogrid 2009





Vegetated Geogrid 2011





Technique:
Vegetated
Geogrid with a
Rock Riprap
Base
2007



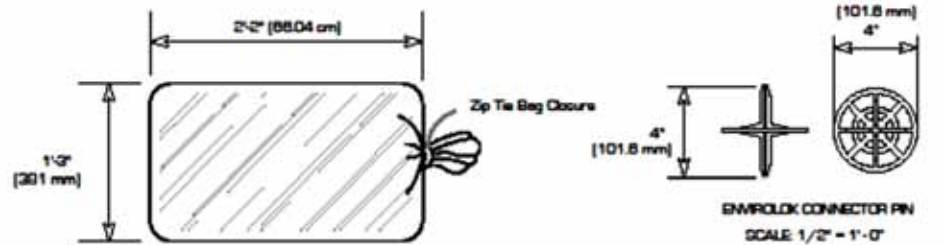
Technique: Vegetated Geogrid with a Rock Riprap Base 2007



Vegetated Geogrid with a Rock Riprap Base 2011



Techniques: Geotextile Bag Walls



PLAN VIEW
Mattress Face Area: 2.7 sq ft (.25 m²)/ unit



ELEVATION
Face Area: 1 sq ft (.093 m²)

ENVIROLOK SPECIFICATION:
Calculated Unit Fill: 1.25 cu ft (.0354 m³)/ unit
Face Area: 1 sq ft (.093 m²)
Mattress Face Area: 2.7 sq ft (.25 m²)/ unit

NOTE:
* Quantities required vary based on unit filling
* One Envirolok Unit consists of:
One Envirolok Bag
Two Connector Pins
One Zip Tie Bag Closure

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PROJECT
**ENVIROLOK INSTALLATION
STANDARD UNIT**

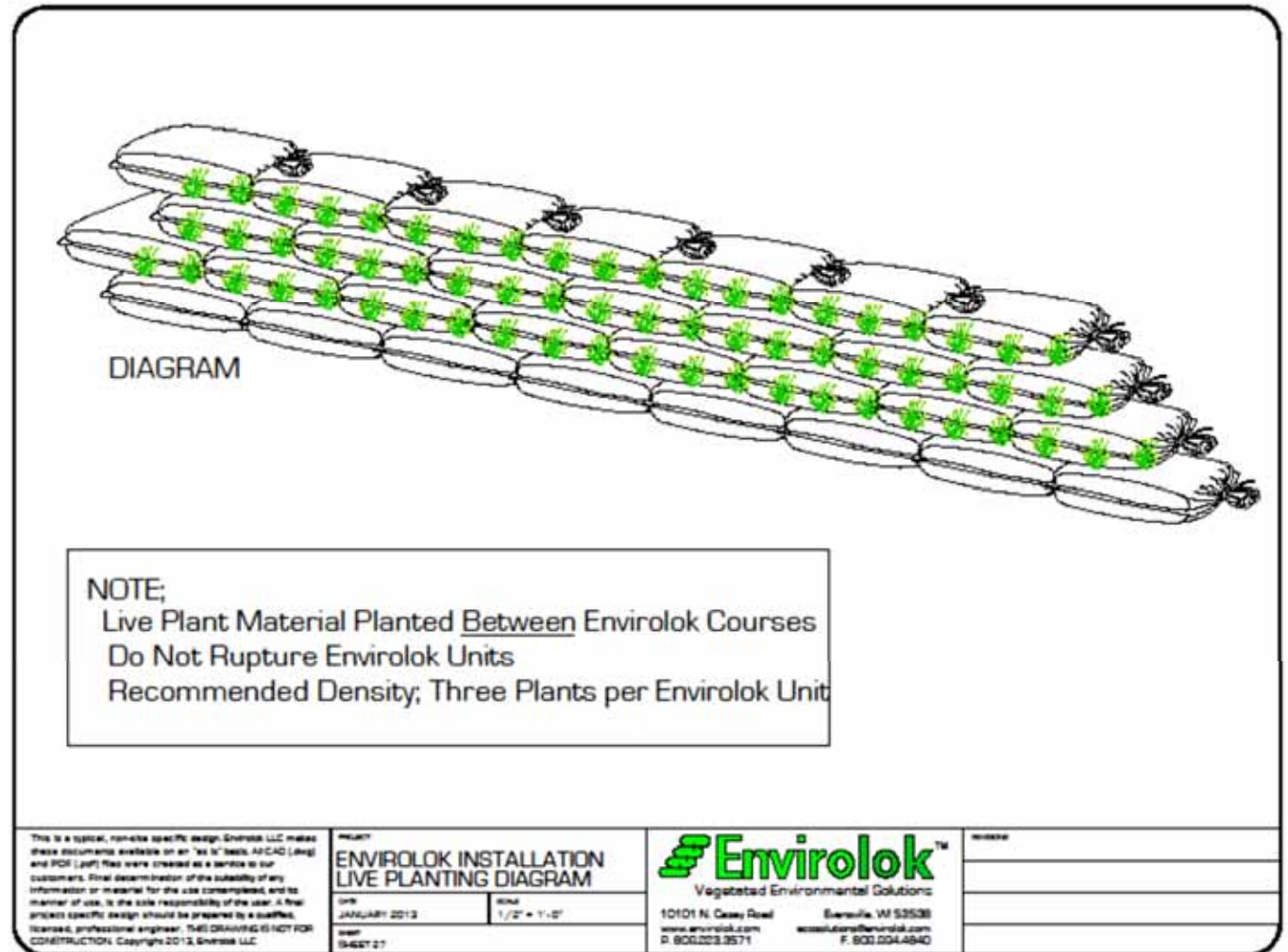
DATE: JANUARY 2013
SCALE: 1" = 1'-0"



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REVISION

Geotextile Bag Walls





Deltalok GTX Bag

The Deltalok System evolves bag work construction practices by combining an innovative and patented interlocking method with a vegetation sustainable GTX soil bag.



Deltalok Standard Connector

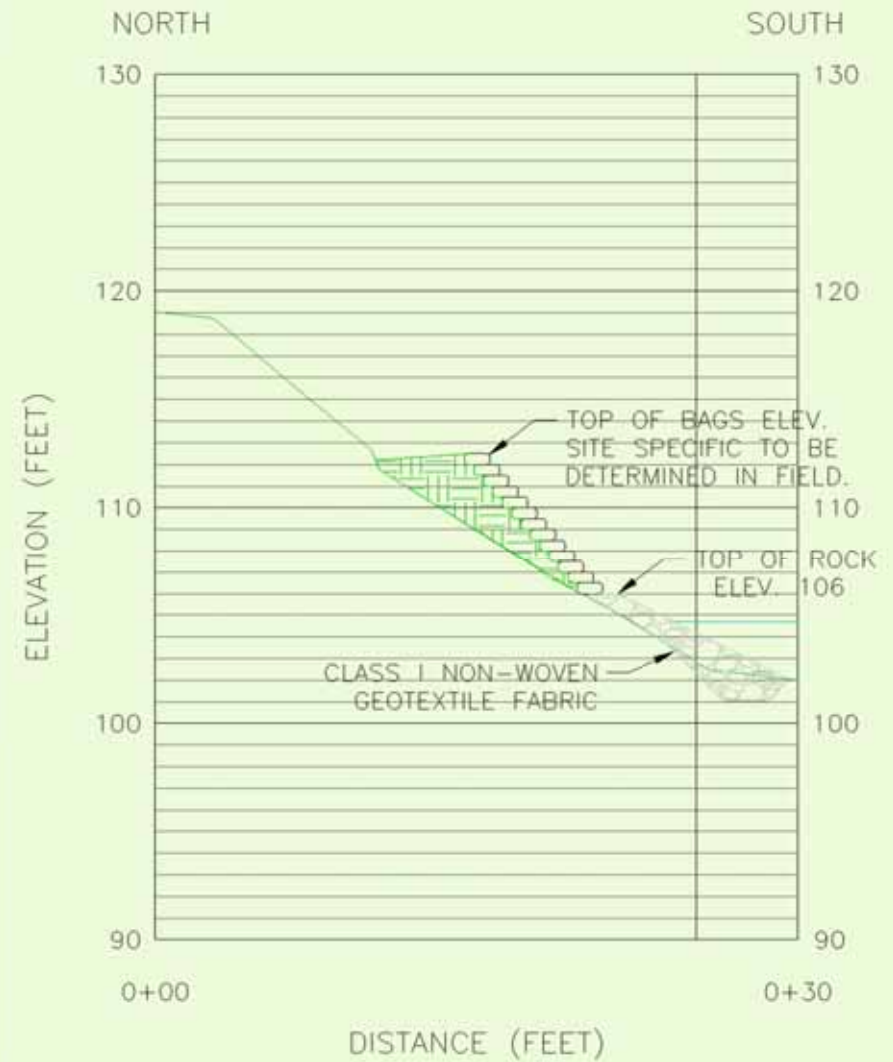
The Deltalok Connector is placed between sand/soil filled Deltalok GTX bags to dramatically increase the shear strength of the bag structure. The result is an interlocking soil mass that promotes and sustains vegetation.

The connector also provides a positive mechanical connection to geogrid in the construction of steep slopes and retaining wall structures where needed.



Deltalok Engineered Connector

Technique: Geotextile bag wall above rock riprap







Geobag wall over riprap 2016





Terchnique: Geobag wall terraces with plantings



Geobag wall terraces with plantings
After 5 months of growth (May 2010 to Oct 2010)





One growing season later – Summer 2012

(left side of stairs)

- Native plants are growing successfully
- Bags are camouflaged and will break down in time (biodegradable)



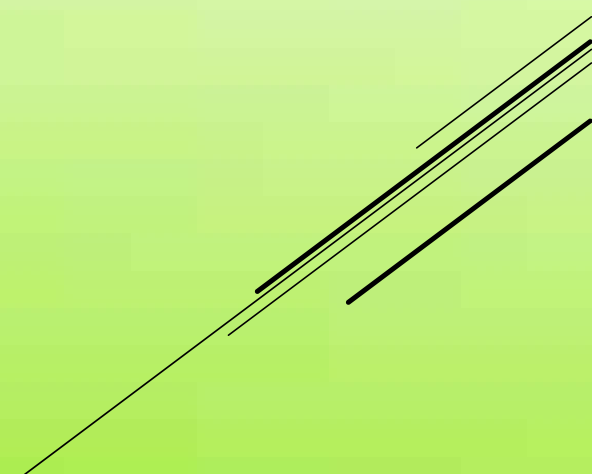
Technique:
Geobag wall
restoring
slope
integrity.

Before photo



Geobag wall
restoring slope
integrity

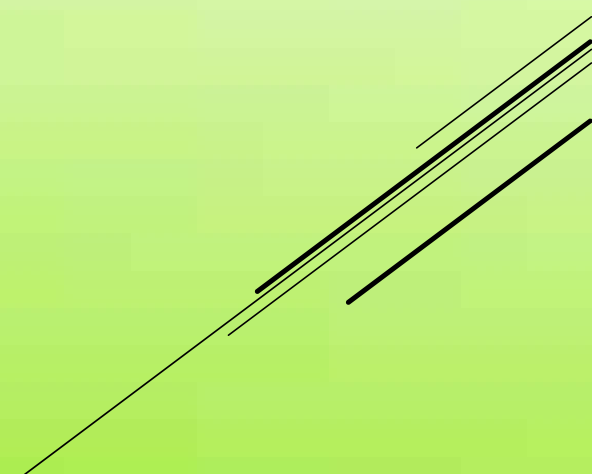
June 2011



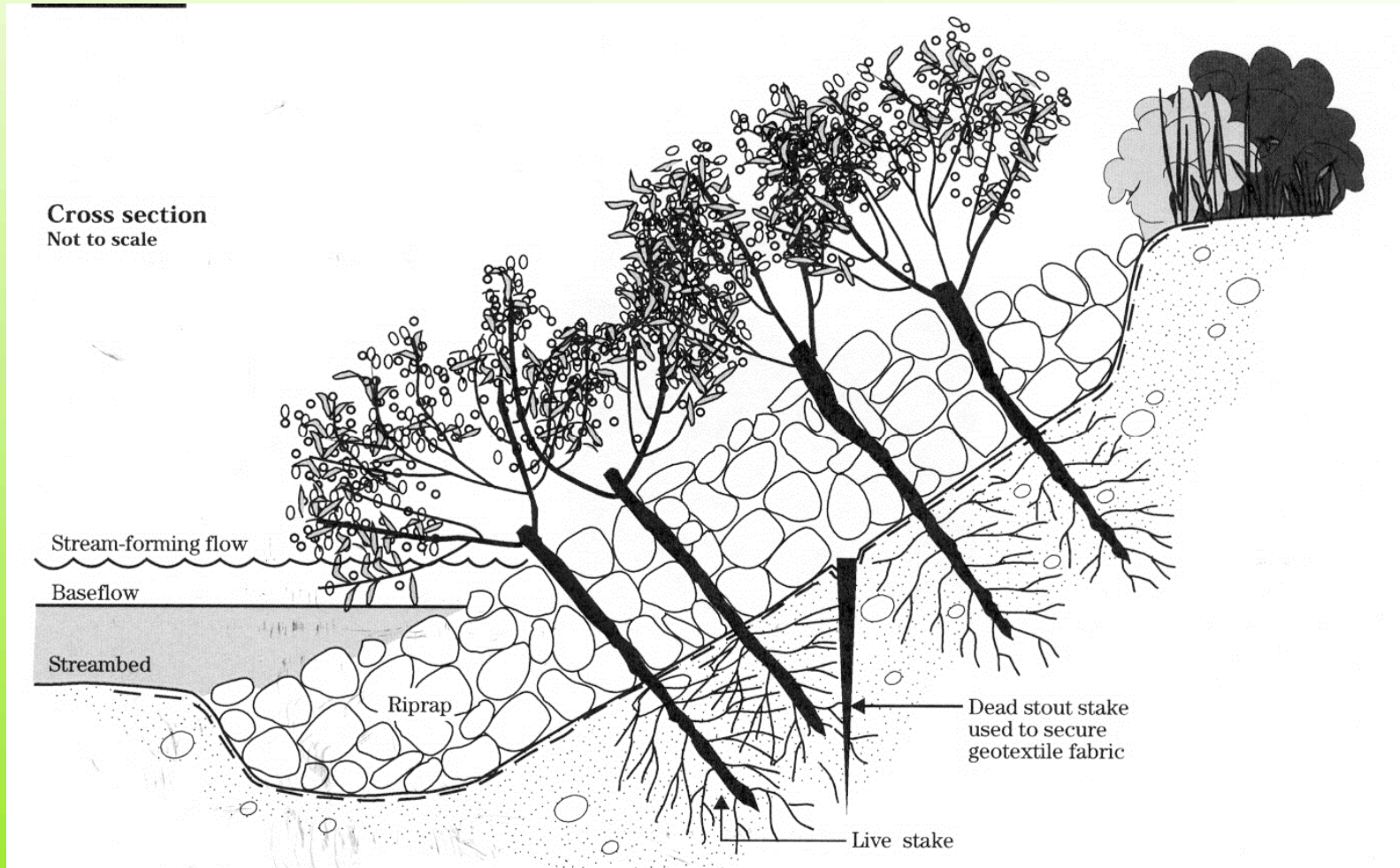


Geobag wall
restoring slope
integrity

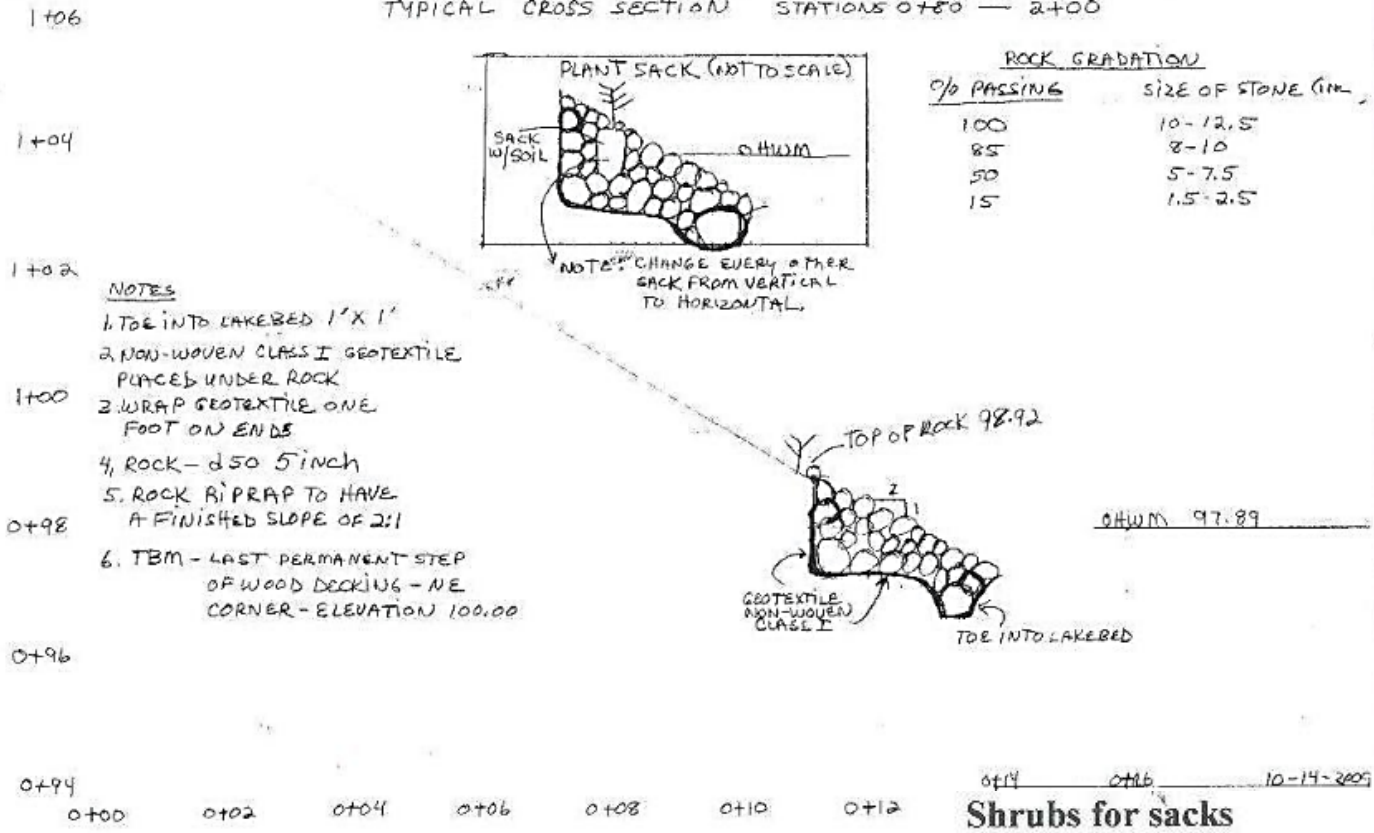
June 2012



Technique: Vegetated Riprap



NOESGES PHASE II
TYPICAL CROSS SECTION STATIONS 0+80 — 2+00



Vegetated Riprap

10-14-2009

Shrubs for sacks

Meadowsweet	<i>Spirea alba</i>
Sweet Gale	<i>Myrica gale</i>
Speckled alder	<i>Alnus incana</i>

Vertical Geotextile Bag Photo



Vertical Geo-textile bag in riprap

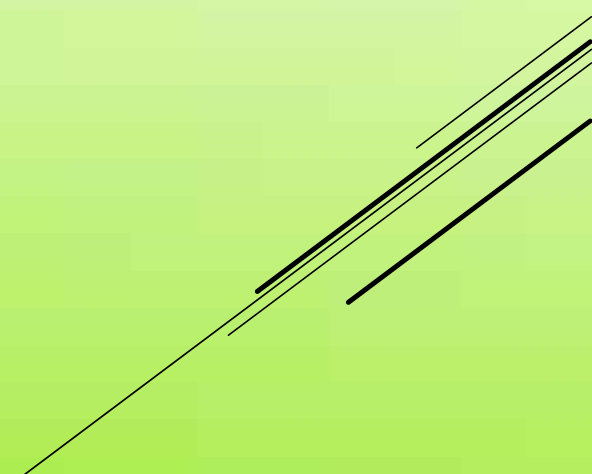




2008 - Ranch, lack of vegetation
Techniques: what ever works!



Installation of coir
biologs 2009



Sediment logs



Geobag walls



Installing
the
vegetation
2009





Monitoring in late
summer 2012





Low impact installation techniques

Scourstop™

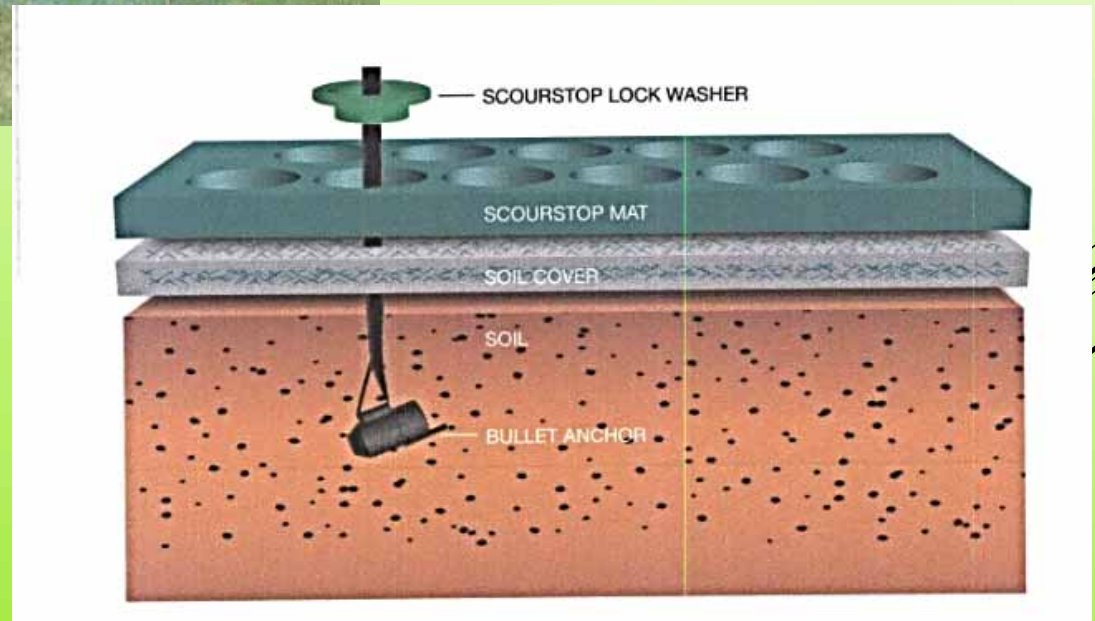
Literature ▼



culvert outlets



Technique: Scourstop



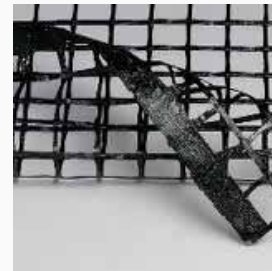
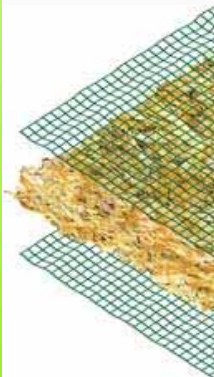
Flexamat is a "Tied Concrete Block Mat".

(Tied Concrete Block Mat is a generic term for Flexamat.)

Flexamat consists of concrete shapes, locked together with a high strength, polypropylene geogrid. There are openings around each concrete block that give Flexamat the flexibility and enable it to be packaged in rolls. The openings also allow vegetation to grow through the mat. Eventually, vegetation will completely cover Flexamat. It can be manufactured with various backings such as non-woven fabric to stop vegetation growth or a TRM (turf re-enforcement mat) depending on the soil conditions and other factors.

There's a wide range of applications where Flexamat is utilized, but it is most commonly used for erosion control. Flexamat is used to [control erosion](#) in channels, outlet protection, on slopes, for shoreline protection and many other applications.

Flexamat offers permanent, hard armor protection, with a natural vegetated appearance. Flexamat may be mowed over with commercial mowing equipment or left to grow wild. Besides grass, there are many other types of native plant species that can be planted to grow within the mat. For example, Willow Saplings were planted through Flexamat for a streambank re-vegetation project.





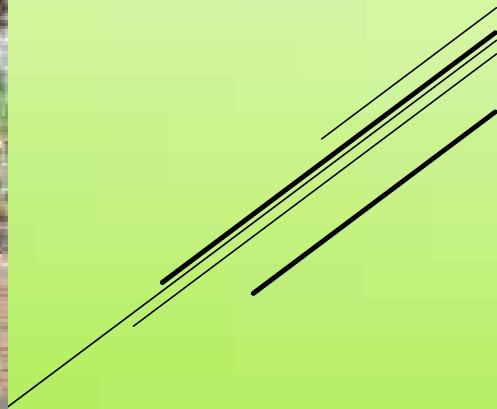
Technique:
Flexamat





Technique: Grass Protect







Technique:
Enkamat





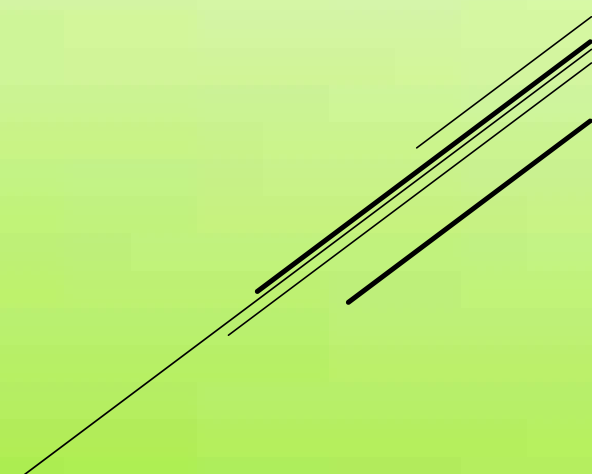
Enkamat

Shoremax 2011





Shoremox 2012



Questions?

