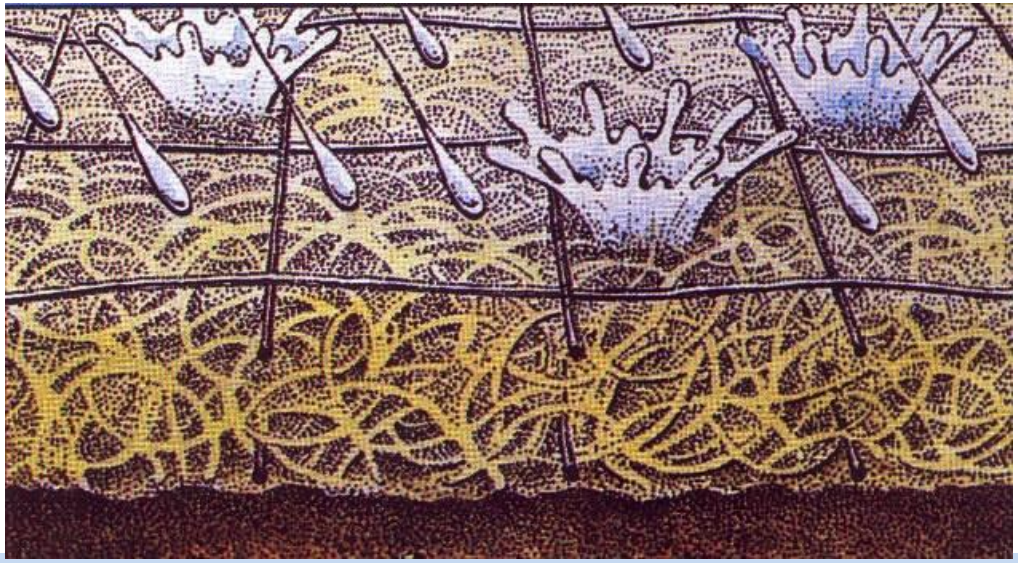

RECP's

Cost, Safety, and Maintenance!

John Slupecki, CPESC
john@flexamat.com
770-231-5914

made in USA

IECA Member

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follow us on twitter

Rolled Erosion Control Product's (RECP's) Soft Armor for Slopes and Channels

RECP's provide the unique benefit that they are rolled up for transportation, then unrolled on projects that have limited access and require improved product performance. RECP's provide a manufactured performance specification, that supports a vegetated soft and hard armor storm water improvement. Typical applications are steep slopes, channels, drop down structures, outlet protection, shoreline applications, and temporary stream crossings. These applications are often alternates for gabions mattresses, and rock riprap.

Rolled Erosion Control Product's (RECP's) Soft Armor for Slopes and Channels

- Straw
- Straw/Coco (70/30)
- Coconut
- Excelsior
- Composite TRM's
- Synthetic TRM's

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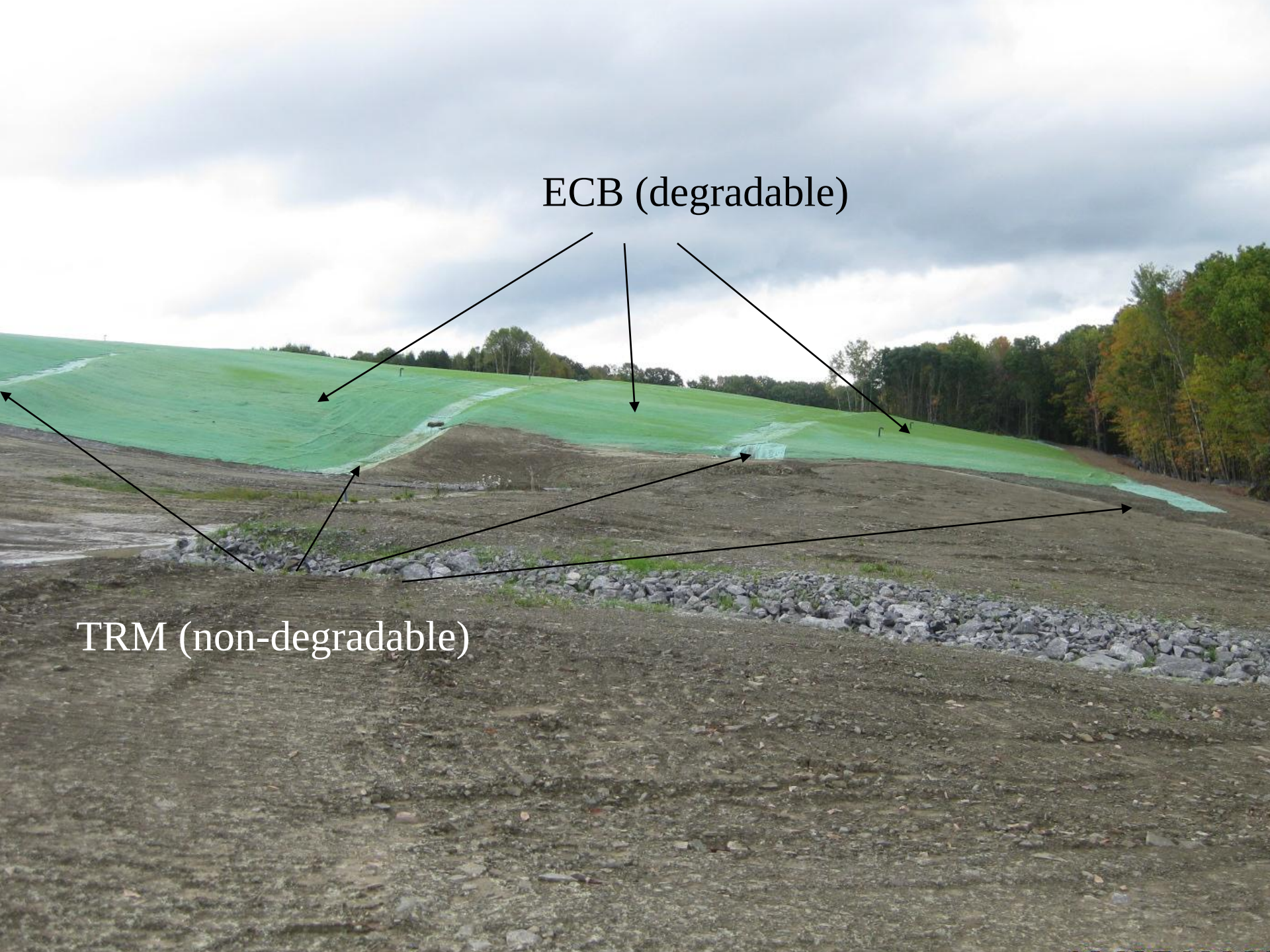
Desired Time Scale		Type Code	Product Category	Material Composition	Max Slope Gradient (H:V)	Max Channel Shear Stress[1]	
Description	Length					(lb/sq ft)	(Pa)
Short-Term	3-12 months	1A	Single-Net Erosion Control Blanket	Processed degradable natural and/or polymer fibers mechanically bound together by a single rapidly-degrading synthetic or natural fiber netting	3:1	1.50	72
			Open-Weave Textile	Processed rapidly-degrading natural or polymer yarns or twines woven into a continuous matrix			
		1B	Double-Net Erosion Control Blanket	Processed degradable natural and/or polymer fibers mechanically bound together between two rapidly-degrading synthetic or natural fiber nettings	2:1	1.75	84
Extended-Term	24 months	2A	Erosion Control Blanket	Processed slow-degrading natural or polymer fibers mechanically bound together between two slow-degrading synthetic or natural fiber nettings to form a continuous matrix	3:2	2.00	96
			Open-Weave Textile	Processed slow-degrading natural or polymer yarns or twines woven into a continuous matrix			

Desired Time Scale		Type Code	Product Category	Material Composition	Max Slope Gradient (H:V)	Max Channel Shear Stress[2]	
Description	Length					(lb/sq ft)	(Pa)
Long-Term	36 months	3A	Erosion Control Blanket	Processed slow-degrading natural or polymer fibers mechanically bound together between two slow-degrading synthetic or natural fiber nettings to form a continuous matrix	1:1	2.25	108
			Open-Weave Textile	Processed slow-degrading natural or polymer yarns or twines woven into a continuous matrix			
Permanent	--	4A	Turf Reinforcement Mat	Non- or partially degradable synthetic fibers, filaments, nets, wire mesh, and/or other elements, processed into a permanent, three-dimensional matrix of sufficient thickness	1:2	6.00	288
		4B				8.00	384
		4C				10.0	480


ECB (degradable)
TRM (non-degradable)

Summary of Nets

- FiberNets are 100% organic degradable jute fiber. **This will double the cost, so make sure of your design needs.*
- White nets are still UV grids with additives to accelerate degradation for mowing applications.
- Green nets are now standard with Ecocycle and NatureZone Technology, and can replace some degradable needs.
- Black net are extended term products.

Tools for Anchoring

Resist the desire for Sediment Control BMP's.

Sediment Control in Concentrated Flow

RECP’s and SRFR’s (Sediment Retention Fiber Roll’s) used with PAM Flocculants for dewatering.

Performance Testing!

ASTM Large Scale Testing

- RECP's – full scale Channels and Slopes
- HECP's – full scale Slopes
- SRFR's – full scale Channels and Slopes
  - Channels 10% grade, 40' long, 2' bottom, 30 minute test, 0.5" soil loss. Vegetated 1 hr.
  - Slopes: 3:1 slope, 8' wide, 40' long. 2" at 20 min, 4" at 20 min, 6" at 20 min.

Bench Scale Testing

Slope Specifications

- Products performance capabilities shall be determined by ASTM D6459, Determination of ECB performance in protecting Hill slopes from Rainfall-Induced Erosion.

Large-Scale Rainfall Testing on Slopes – ASTM D6459

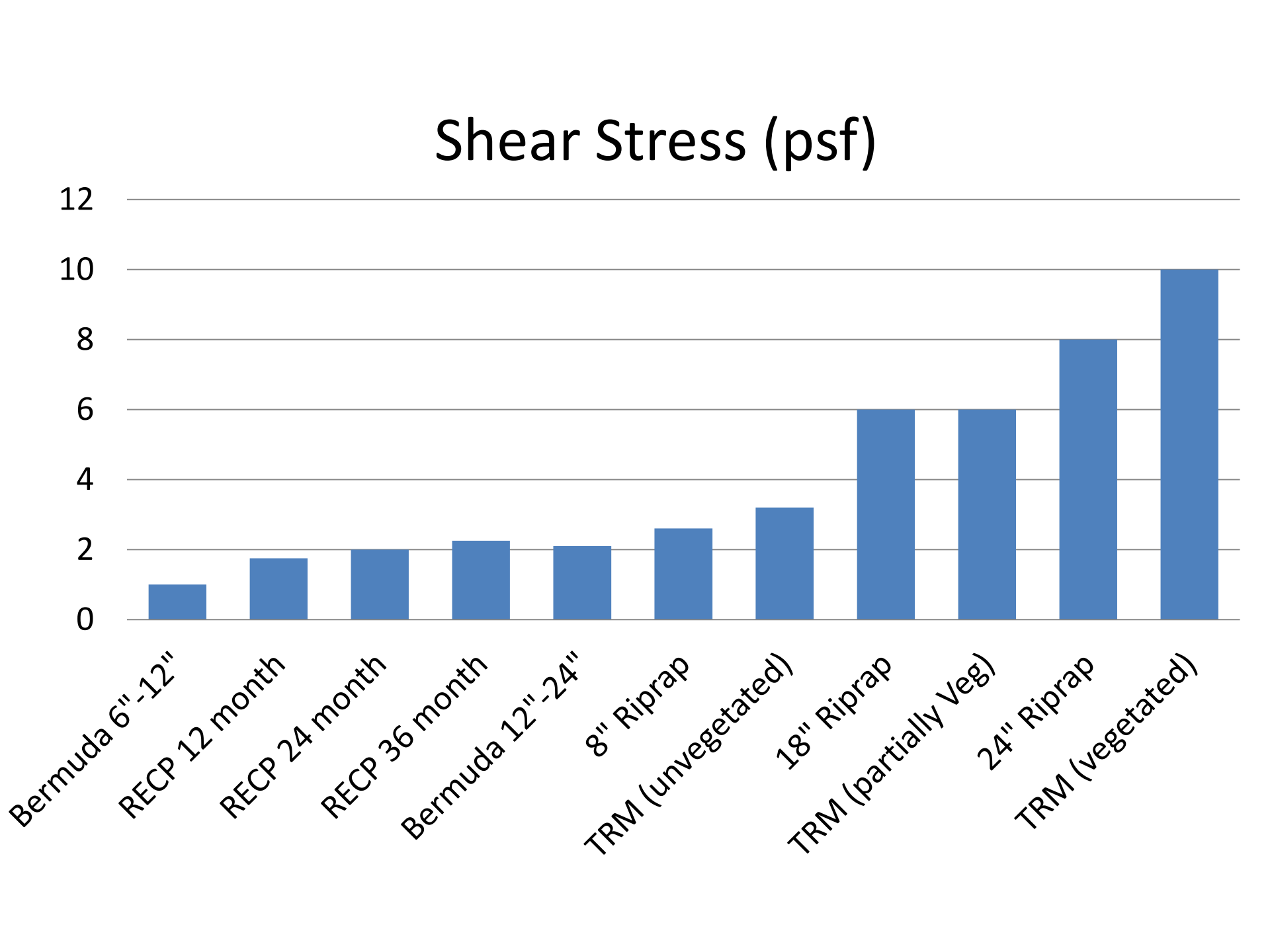
Channel Specification

- Products performance capabilities shall be determined by ASTM D6460, Determination of ECB performance in protecting Earthen Channels from Stormwater-Induced Erosion.

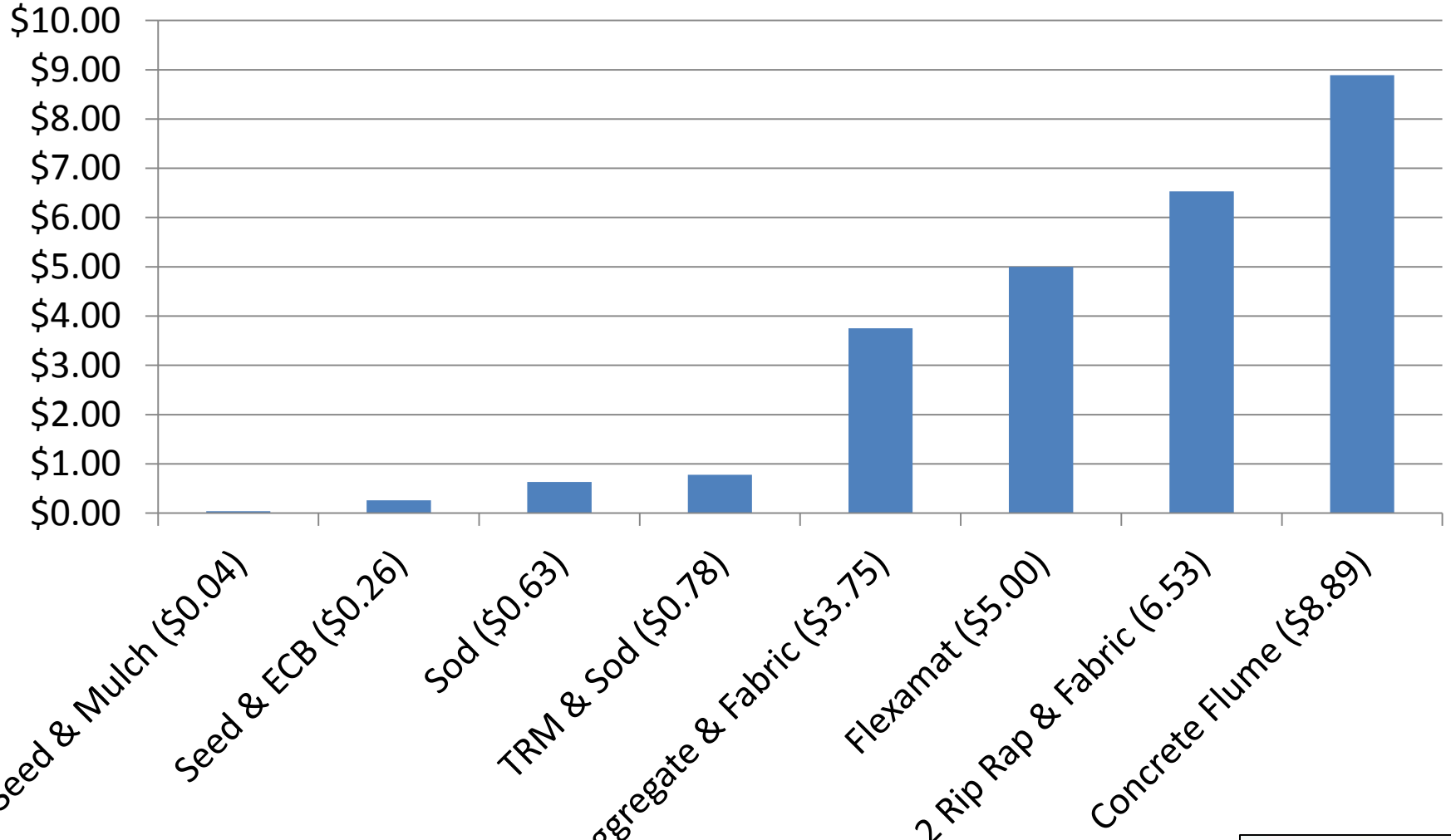
Large-Scale Channel Testing - ASTM D 6460 Unvegetated

Large-Scale Channel Testing - ASTM D 6460 Vegetated

Rock Rip Rap Performance


Shear Stress (psf)
12
10
8
6
4
2
0
Bermuda 6" -12"
RECP 12 month
RECP 24 month
RECP 36 month
Bermuda 12" -24"
8" Riprap
TRM (unvegetated)
18" Riprap
TRM (partially Veg)
24" Riprap
TRM (vegetated)

Cost per Square Foot



Flexamat

Flexamat is a Tied Concrete Block.

Block Size:
6.5” x 6.5” x 2” with a 1.5” spacing between blocks.

Flexamat

Physical Properties

Concrete : 4500 psi, 5% Air Entrained, 3/8 Aggregate.

Interlocking Geogrid: Fornit 30-30

Reinforcing Netting: 5 Pick Action Back.

Underlayment: Organic or Poylester

Weight per sf: 10 lbs

Flexamat

Flexamat Rolls

Roll Widths: 4’, 8’, 10’, 12’, 16’
Roll Lenths: 30’, 40’, 50’

ASTM testing: D6460 Large Scale Flume

Flexamat

ASTM testing: D6460 Large Scale Flume

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

February 23, 2009

Mr. Jim Motz
Motz Enterprises, Inc.
9415 Montgomery Rd, Ste H
Cincinnati, Ohio 45241

E-mail: mmotz@flexamat.com

Subject: Channel Testing of Flexamat over Sandy Loam (Log #2278-01-34)

Dear Mr. Motz:

This letter report presents the results for large-scale channel erosion tests performed on Flexamat channel lining over Sandy loam. Included are data developed for target hydraulic shears ranging from 4 to 16 psf (0.2 to 0.8 kPa). All testing work was performed in general accordance with the ASTM D 6460, *Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion*, except, the permissible shear was projected rather than interpolated. Generated results were used to develop the following permissible or limiting shear (τ_{limit}) and limiting velocity (V_{limit}) for the tested material:

$\tau_{limit\ FLEXAMAT(std)}$ = **24+ psf** $V_{limit\ FLEXAMAT(std)}$ = **19+ ft/sec**

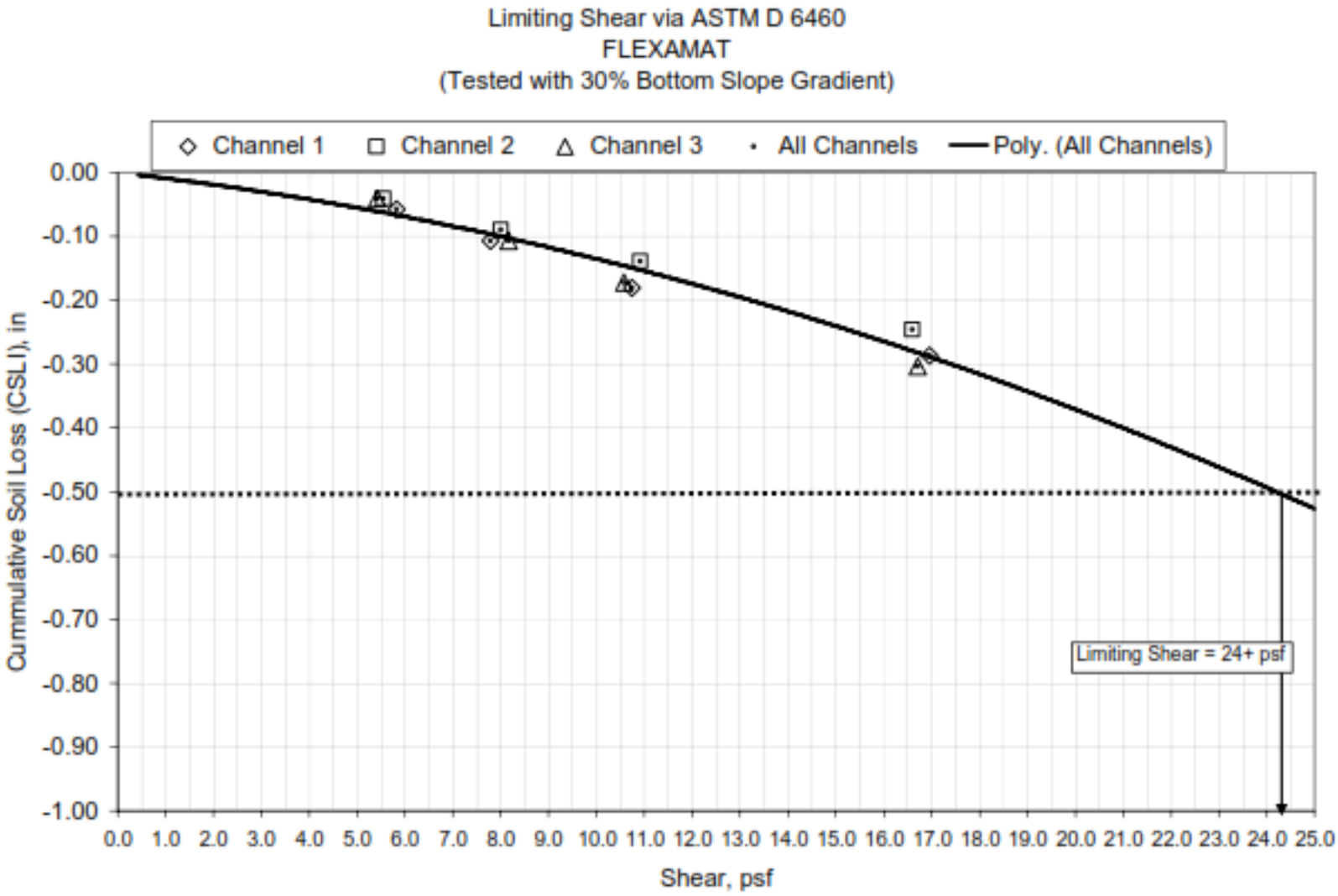
TRI is pleased to present this *final* report. Please feel free to call if we can answer any questions or provide any additional information.

Sincerely,

C. Joel Sprague

Flexamat

Product	Limiting Shear, τ_{limit}	Limiting Velocity, V_{limit}
FLEXAMAT - standard	24+ psf	19+ ft/sec



Flexamat replaces Rip Rap

Benefits:

- Can be maintained with commercial mowers.
- Locked in place, will not move like rock.
- Rocks can be thrown.

Flexamat replaces Concrete Flumes

Benefits:

- Will not crack with freezing/thawing.
- Contaminates are filtered through vegetated channels

Safety!

Maintenance!

With Rip Rap / With Flexamat

Maintenance!

Before and After of Mowing,
after the removal of the Rip Rap

Flexamat

Flexamat Longevity at 10 Years

Expected Longevity, 75 years plus.

Before and After

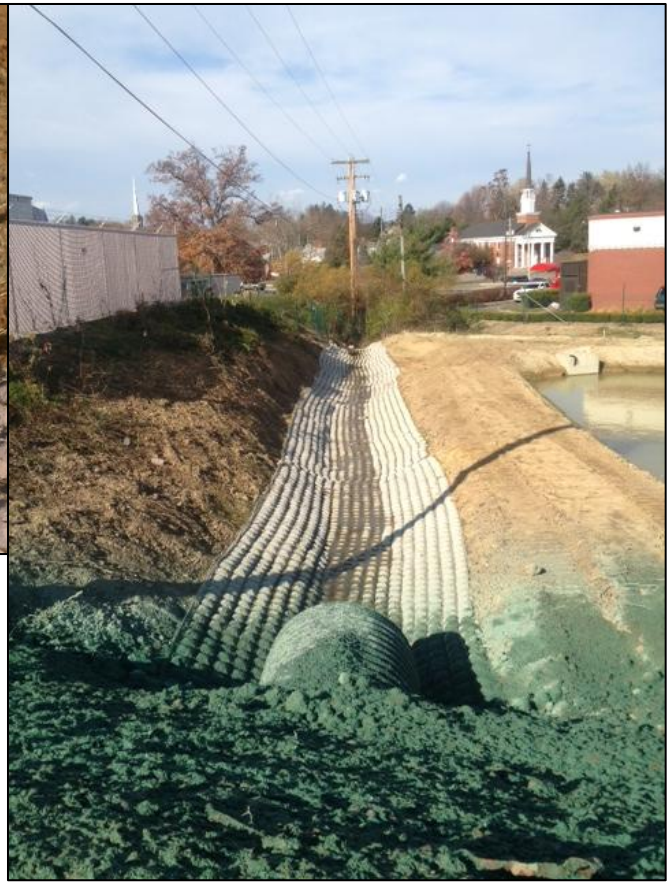
Flexamat

Before and After

Transition Zones:

Channel Stabilization (Ch)

Storm Drain Outlet Protection (St)



Permanent Downdrain (Dn2)

Under Bridges

Edge of Pavement

Canal Stabilization

Flexamat

Thank You!

John Slupecki, CPESC
john@flexamat.com
850-408-8954