



Vegetated Environmental Solutions

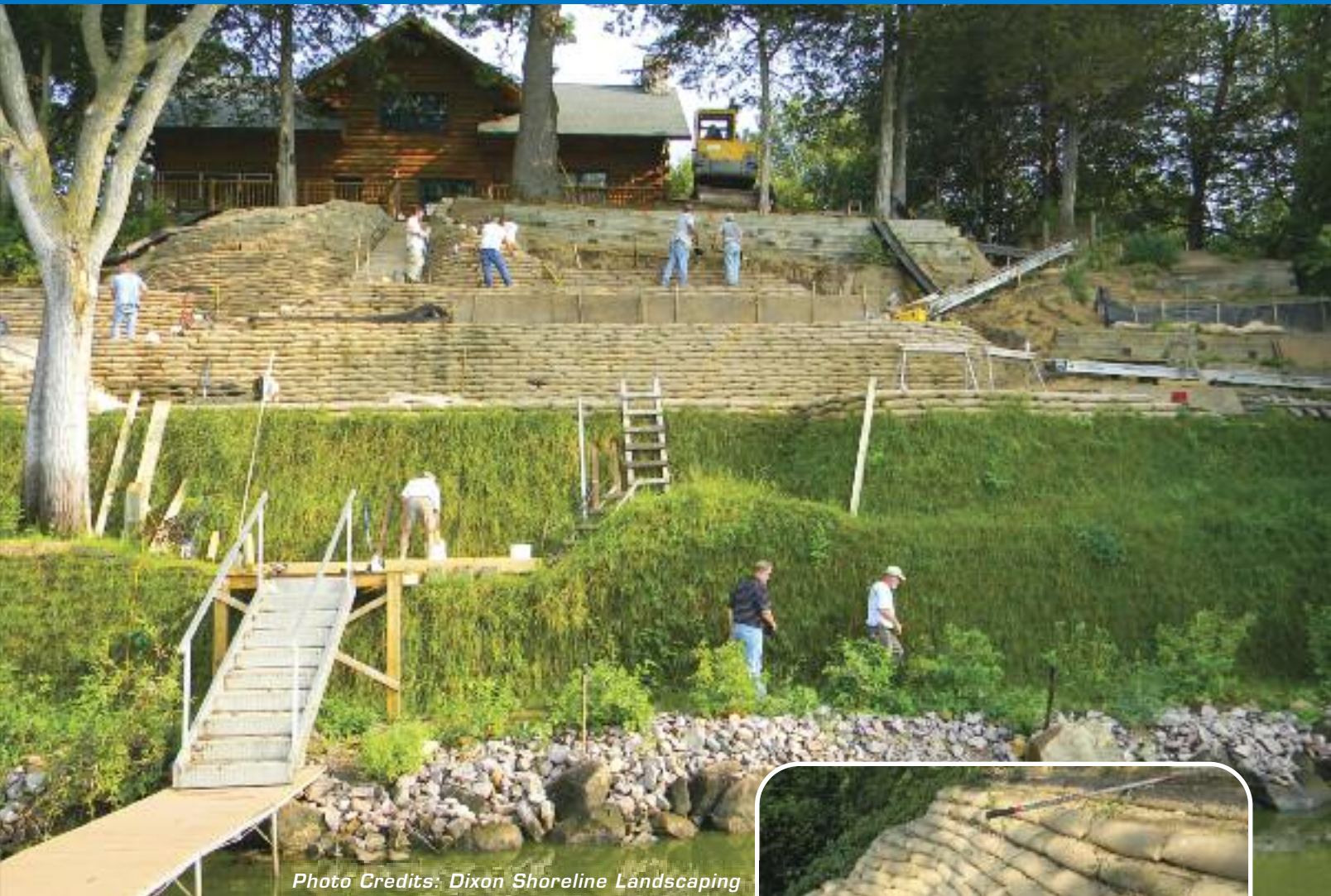


Photo Credits: Dixon Shoreline Landscaping



- ➕ Shoreline Protection
- ➕ Slope Stabilization
- ➕ Retaining Walls
- ➕ Erosion Control





Envirolok®

Patented



Vegetated Environmental Solutions

Ecologically engineered, the Envirolok vegetated system provides permanent erosion control.

Envirolok immediately stabilizes erosive soils in both dry land and in-water sites.

Envirolok's patented soil bag technology provides a permanent vegetated solution by combining the engineered strength of soil, reinforcing materials and ecological principals.



WWW.ENVIROLOK.COM

Native Vegetation is the Sustainable Solution

Envirolok is a wholly owned subsidiary of Agrecol LLC.

www.agrecol.com



 **Agrecol®**
Native Seed & Plant Nursery

APPLICATIONS

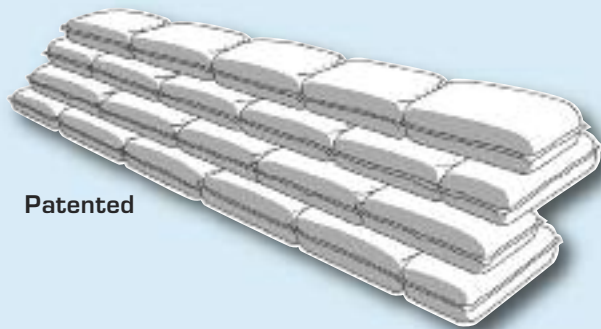
STREAMBANK RESTORATION
STORMWATER MANAGEMENT
SHORELINE RESTORATION
VEGETATED SLOPE STABILIZATION
RESIDENTIAL LANDSCAPES



ENVIROLOK BENEFITS

+ MAKE IT SUSTAINABLE

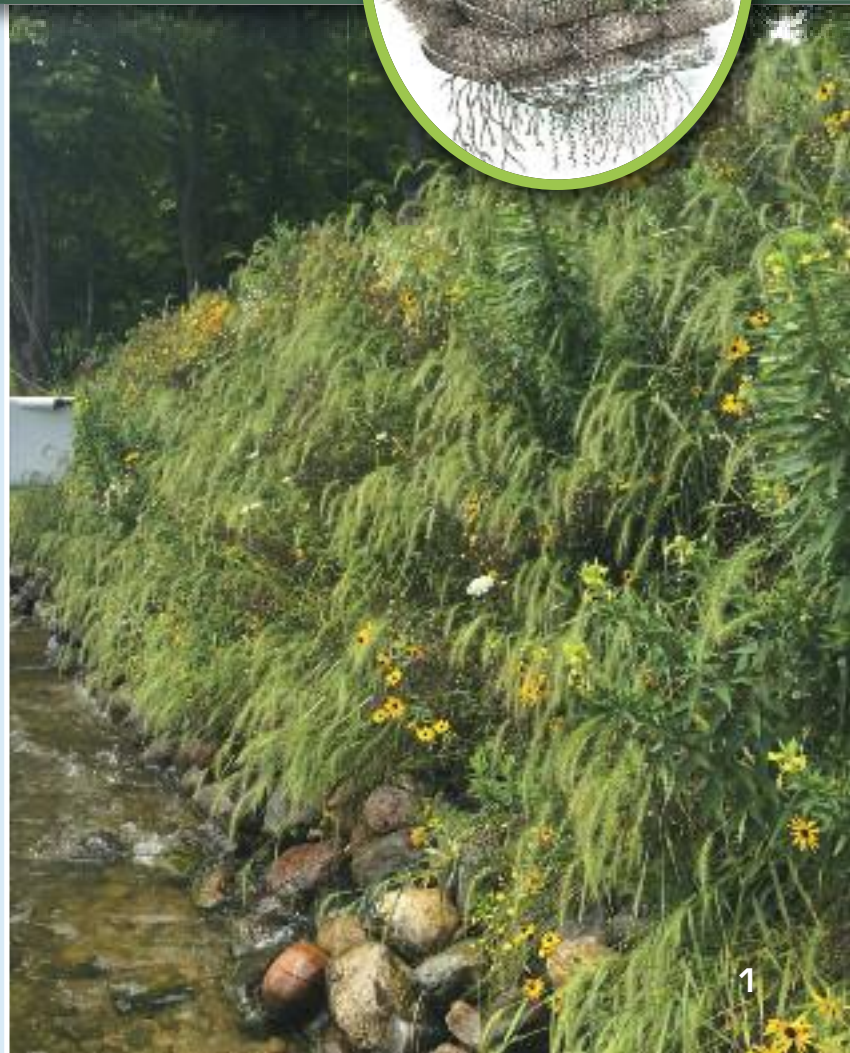
Replacing traditional hard armor methods of shoreland protection, Envirolok provides a vegetated solution that renews itself year after year.

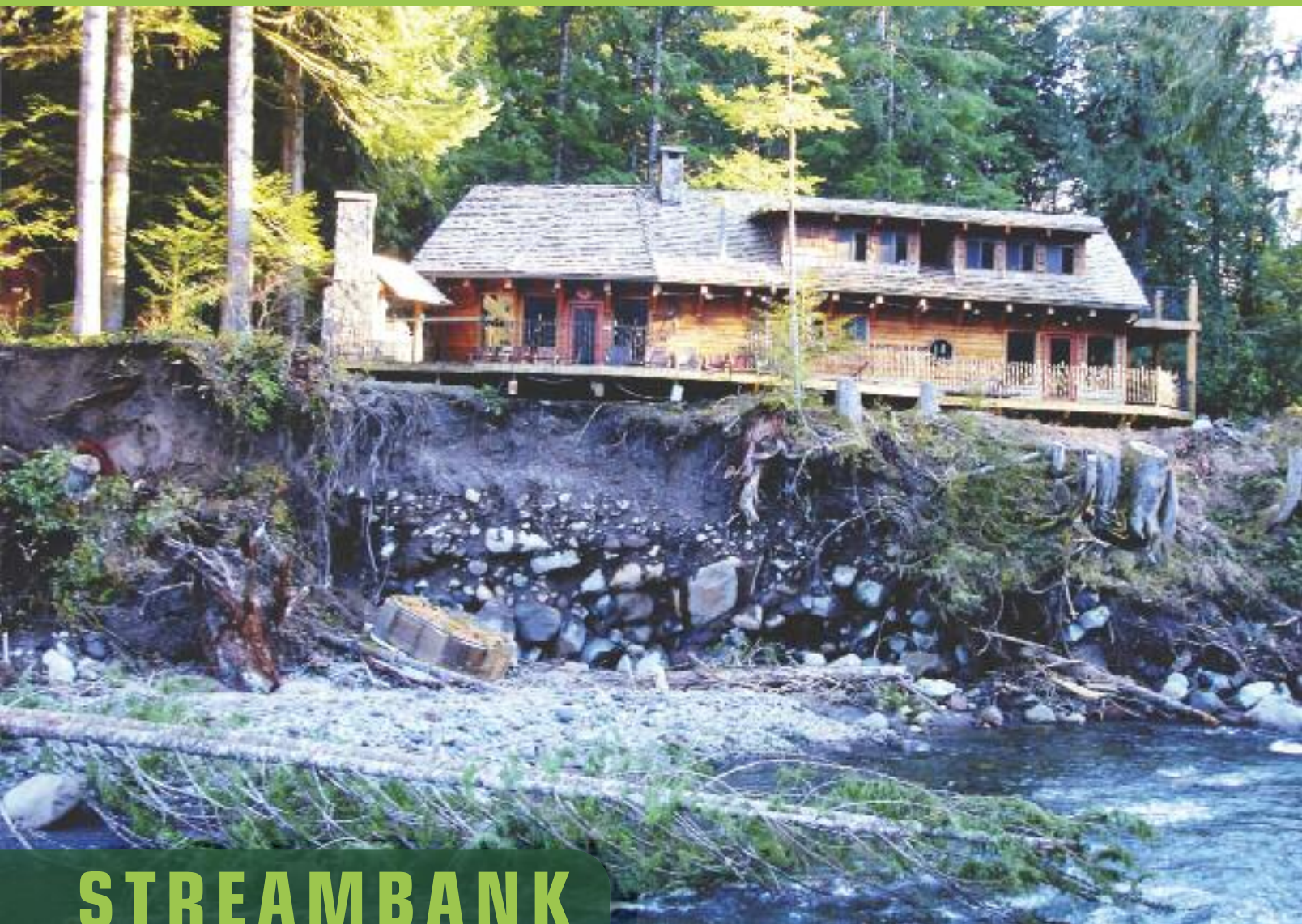


Patented

+ SEE IT PERFORM

Pleasing aesthetics in a permanent solution. Envirolok's soft armor solution with hard armor applicabilities is a revolutionary advancement in shoreland protection.

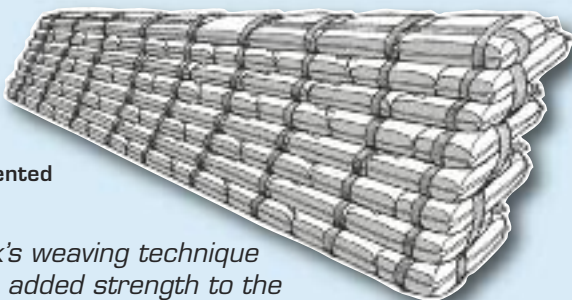




STREAMBANK RESTORATION

Envirolok's patented system provides support over soft, saturated streambeds and shoreline environments while allowing construction to follow existing contours.

Envirolok supplies a permanent vegetated solution to persistent shoreline erosion which contributes to the bioaccumulation of sediment in our lakes and rivers.



Patented

Envirolok's weaving technique provides added strength to the modular bioengineered system





- + Planted with native vegetation, Envirolok provides structural root support that allows establishment of habitat along sensitive environmental corridors
- + Envirolok effortlessly conforms to natural contours

STORMWATER MANAGEMENT

Stormwater management historically focuses on the collection of stormwater in pipes or concrete channels to transport it off site as quickly as possible. This contributes to downstream flooding, streambank erosion, increased turbidity, habitat destruction, sewer overflows, infrastructure damage and contaminated lakes, rivers and coastal waters.

Low Impact Development (LID) and Green Infrastructure utilize methods and technologies to better manage stormwater through the use of vegetation and soil, preferring to keep rainwater where it falls. Envirolok incorporates ecological principles in the construction environment.





- + Emergency repairs are a quick fix with Envirolok's onsite adaptability
- + Fits with any culvert without use of forms or specialized tools
- + Encapsulate soil in washout areas with Envirolok





• RETAINING WALLS

Envirolok enhances the natural surroundings and turns what was once unstable soil into a beautiful focal point. Gravity walls or Mechanically Stabilized Earth (MSE) walls are great applications for this environmentally sound system.

• HYDROSEEDING

Once thought only for use on barren slopes hydroseeding is now used on a variety of applications including Envirolok. Achieving vegetation through hydroseeding is a quick way to grow vegetative cover on the system.

• SWALE PROTECTION

Promote infiltration and slow run-off with an Envirolok swale lining. Envirolok combines the protection of a turf reinforcement mat and the encapsulation of high quality soils to grow more robust vegetation in hydraulic conveyance systems.

***“Discontent
is the first necessity for progress” - Thomas Edison***



● STORMWATER

Decrease stormwater volume through infiltration and increase its quality with native vegetation planted in the Envirolok system. Help keep our lakes, streams and rivers clean for generations to come.

● SLOPE RETENTION

Restore and strengthen slopes damaged in storm events with Envirolok. Absorb rain drop impact and surface run-off velocity to prevent further erosion. For difficult access sites try Envirolok with earth anchors.

● BRUSH LAYERING

Increase vegetative cover and improve resident habitat communities with commonly found woody species such as dogwood and willow. Consult locally for preferred planting times and species selections.

Envirolok is dedicated to sustainability through the preservation of shorelines, streambanks, stormwater passages, and landscapes.

Don't settle for the status quo.

Eroding shorelines are often stabilized with hard armor, such as rip rap, concrete bulkheads, treated timber, and seawalls. Ironically, these structures increase the erosion rate by reflecting wave energy to adjacent properties. Hardened structures provide little habitat and keep the shoreline from carrying out its natural processes.

Envirolok's living shorelines utilize native seed and plants, soil encapsulation and engineering methods when necessary to naturally enhance the shoreline. Envirolok protects the riparian environment, filters runoff and creates habitat.

SHORELINE RESTORATION



- + Envirolok restores your shoreline to its original condition, while stabilizing soil, promoting drainage and providing sustainable erosion control
- + Diverse native vegetation grown into the Envirolok system creates a buffer zone, mitigating effects of lakeshore development and increasing water quality in our lakes, rivers and wetlands
- + Envirolok protects your property while preserving an attractive natural appearance
- + Envirolok's living shorelines use natural shoreline ecosystems to absorb wave energy reducing erosion on adjacent properties



- + Use Envirolok for Mechanically Reinforced Slopes (MSE) or Reinforced Soil Slopes (RSS)
- + Native plant roots reinforce soil by growing across failure planes and limiting surface erosion
- + Envirolok allows for soil stabilization in hard to access areas

VEGETATED SLOPE STABILIZATION



- + Envirolok minimizes soil disturbance in sensitive areas through various methods of anchoring
- + Create landscape designs with ease

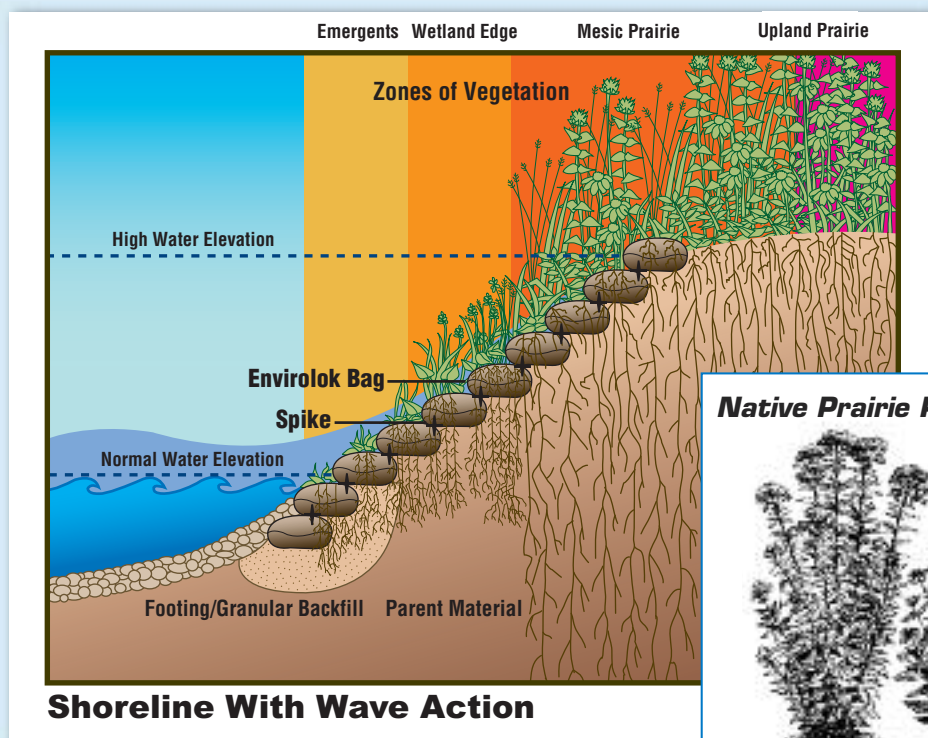


RESIDENTIAL LANDSCAPE



VEGETATION

Once established, native plants do not need fertilizers, herbicides, pesticides or watering, thus benefiting the environment and reducing maintenance costs. A diverse mix of sedges, grasses, wildflowers and live stakes creates sustainable vegetation when combined with the Envirolok system. Native species in shoreline transitional zones allow for ecological restoration of habitat for game fish, amphibious life, birds, butterflies, and other animals.



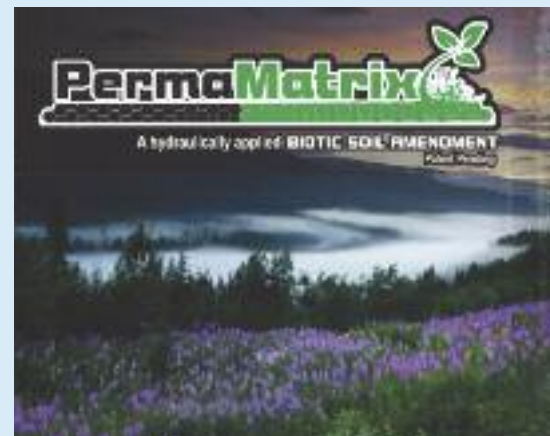
+ WHY NATIVES?

Preferred Planting Program:

Envirolok recommends planting three plants per unit. Plants may be herbaceous or woody species. Speak with a professional consultant with intimate knowledge of the local environment regarding appropriate species for your project.

Envirolok encapsulation of engineered soil is designed to support vegetation

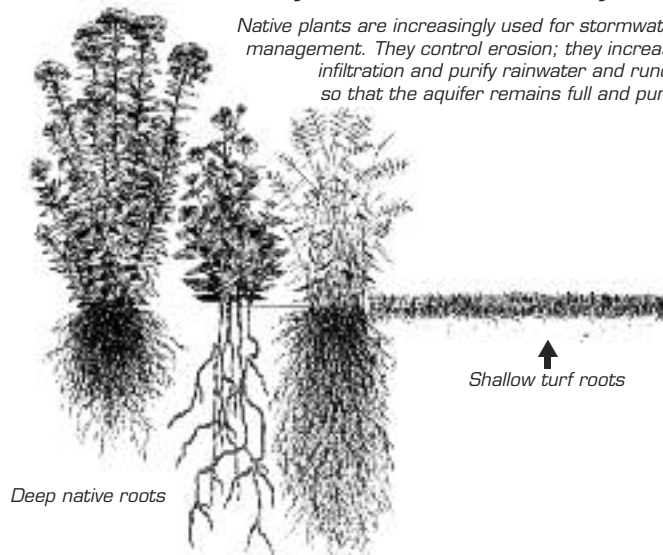
Hydroseeding or hand seeding over the top of the plantings is recommended. Use a complimentary seed mixture to match plantings, sun exposure and local habitat. A cover crop, erosion control blanket and hydration may also be necessary for successful vegetation establishment.

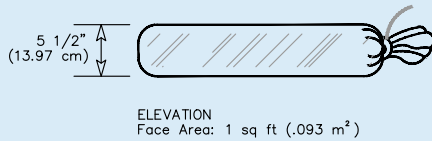
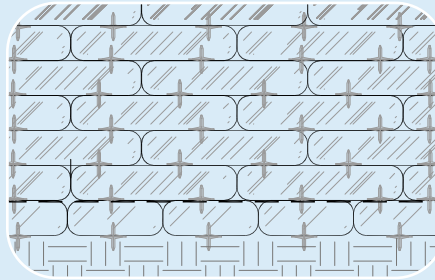
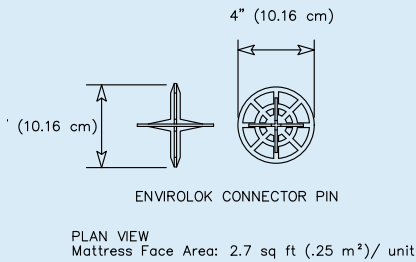


PermaMatrix, a biotic soil amendment, is recommended when seeding. PermaMatrix is a blend of pure organics and recycled materials for use in all native plant communities to improve plant health without the fear of contaminating waterways.

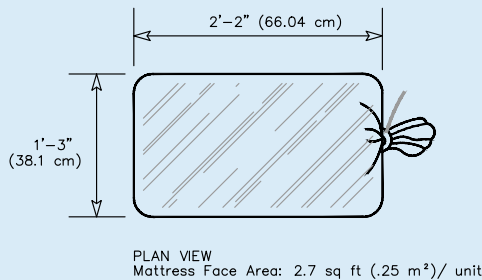
Native Prairie Root System vs. Turf Root System

Native plants are increasingly used for stormwater management. They control erosion; they increase infiltration and purify rainwater and runoff so that the aquifer remains full and pure.

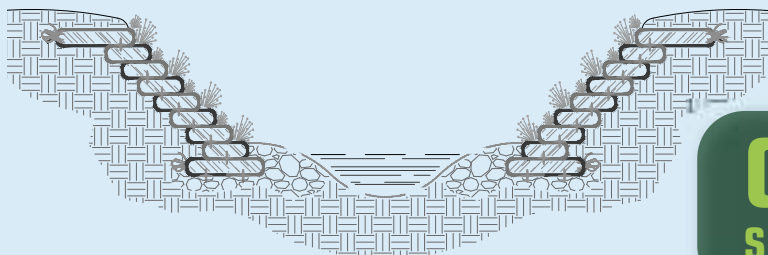




ENVIROLOK SPECIFICATION:
 Calculated Unit Fill: 1.25 cu ft (.0354 m³) / unit
 Face Area: 1 sq ft (.093 m²)
 Mattress Face Area: 2.7 sq ft (.25 m²) / unit



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

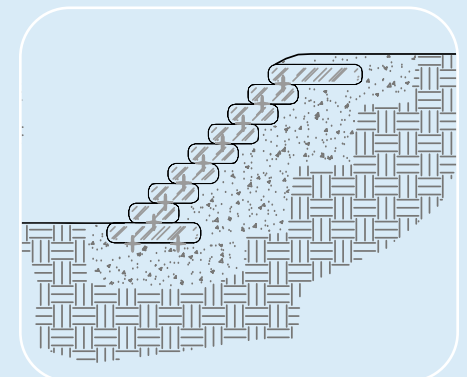
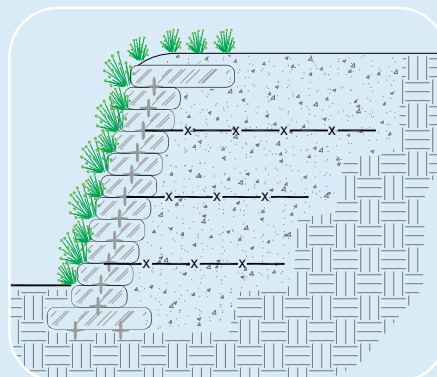
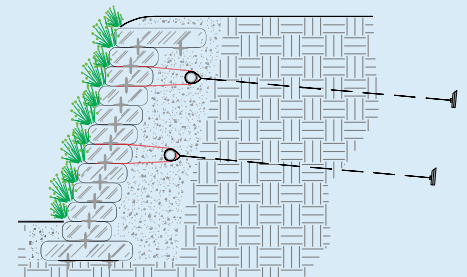
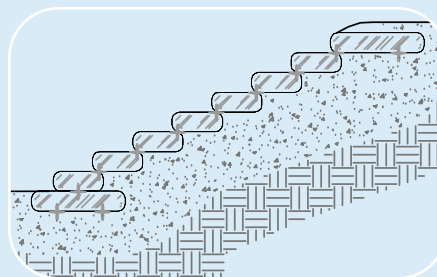


CONSTRUCTION STANDARDS

Advanced Construction

For use on unstable slopes Envirolok is constructed using a variety of techniques. Common methods include geogrid stabilization, earth anchoring and a weaving method that is exclusive to the Envirolok vegetated system. Seek assistance from a licensed professional engineer for walls exceeding 4' in height.

Envirolok's patented modular system and encapsulated structural soils allows for near vertical construction that can be contoured to the existing non-load bearing soils, unlike hard armor.



INSTALLATION

1. Filling and Closing Envirolok Bags

Fill the Envirolok bags with an engineered soil using an Envirolok Bag Filler. The soil properties should consist of 60% sand, 20% high grade compost and 20% top soil. The engineered soil may change to meet the specific project needs. Excavated material may be used to backfill during construction. Clay and silt are not appropriate fill material. All bags should be filled consistently and will be closed with a UV resistant zip tie. Bags may also be sewn or closed using hog-rings.



2. Preparation

Dig a trench no less than 3" deep, 16" wide for the length of the structure. Embedment depth will be specific to the project. Compact bottom of foundation using hand tamper or vibratory plate compactor. This trench serves as toe stabilization and will protect the structure from undermining. Larger structures will require engineering.



3. Placing Bags

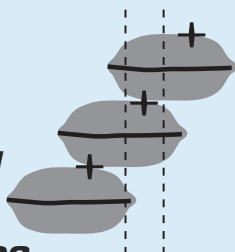
The foundation course will begin with placing spikes in the excavated trench at the desired location of the first row. Place filled bags next to each other, seam side in, horizontally, the full length of the structure. The "snorkel" of the bag will land on top of the previously placed bag.



4. Placing Additional Bag Courses

After laying one entire course of bags, compact the soil ensuring a solid and uniform structure.

Insert two spikes in the top of each bag evenly spaced. The spike placement will vary with the slope of the structure and should be placed in the center of the bag contact area between courses.



These installation steps are for general guidance only. It is the responsibility of the project owner to ensure the application of Envirolok into the overall project through a design specification. The specification should include factors which affect the overall integrity of the retaining wall such as location, interaction with other project components, and engineering aspects including but not limited to global slope stability, site soil bearing capacity, presence of underground or surface water, etc.

5. Backfilling and Compacting the Structure

Backfill and compacting after each course ensures strength and stability of the system. Backfill should be compacted to the specifications of the wall design. Backfill must support vegetation and be free draining.

6. Geogrid Placement

Structures that require geogrid reinforcement will be specified by an engineer. After compaction, geogrid placement will begin at the front of the bag course and will go towards the existing material. Place spikes on top of the geogrid and continue placing bag course. Geogrid should be pulled tight prior to backfill. Continue with course compaction.

*Some structures may require additional strength using Envirolok's geo-grid weaving technique; for installation instructions please refer to engineer's drawings or contact an Envirolok distributor near you.

7. Top Row

Install the top row of the structure the same way the other courses have been placed. Tuck the "snorkel" under to give a finished look to the last course. If specified, the top row may need to be anchored into the existing landscape.

8. Vegetation Establishment

Once the wall is completed, vegetation is the final step. Native vegetation is recommended because of its adept root structures that will bind the wall together forming a monolithic structure that will renew itself year after year. Using vegetation suitable for your local climate is necessary for a successful project. You may build the wall and place live plants in the courses as you build the structure. Live plant material should always be placed in between the courses. Cutting the bags open and planting into this cavity is NOT recommended. It is recommended that a combination of live plants and seed are used to ensure proper vegetation.

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Environmental Services
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WWW.ENVIROLOK.COM for more information on:

Specifications

Distributor Locations

Native Vegetated Mat

Typical Drawings

Installation Instructions

News

Case Studies

Vegetation Selection



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Envirolok Product Warranty

Envirolok LLC guarantees all materials and workmanship of the individual components to be free of manufacturer defects. The guarantee excludes vandalism, improper use, corrosion caused by chemicals and acts of God. Any claim under this warranty must be filed within the timeframe of original invoice date and must be accompanied by the original invoice or invoice number. Envirolok does not imply or express any other warranties associated with its products.

**PROTECT YOUR PROPERTY
FROM DEVASTATING EROSION WITH
ENVIROLOK'S SUSTAINABLE SOLUTION**



Vegetated Environmental Solutions

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