

Soil Stabilization and Hydraulic Mulches

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Solutions for your Environment™

Overview

- Manufacturing Process
- Soil Prep and Application of Hydraulic Mulches
- Product Categories
- Temporary Stabilization Options
- Q & A



Profile is the worlds largest producer of Hydro Mulch Products

“Through the years, Profile Products has recycled over 2 billion pounds of wood and paper, removing it from the waste stream and returning it to the natural environment”

Products are Environmentally Friendly...

- All mulch fibers are 100% recycled
- All mulch fibers and tackifiers are biodegradable
- Wood fibers are phyto-sanitized, removing pathogens and weed seeds
- Products are non-toxic, passing ecotoxicity testing protocol





It all starts with top quality wood chips





Premium wood chips are then screened, sorted and stored for processing





Chips are then transferred to the plant for thermal refinement



Basic Hydromulch and product application



Hydraulically-Applied Erosion Control Products

- Customized to site specific conditions
- Minimal labor required
- Economical way to control erosion and establish vegetation
- Wide range of performance platforms
- Safe for environment



Examples of markets where Hydro Mulch can be used

- Road, highway and building construction sites (City, County, DOT)
- Oil & gas pipelines
- Fly ash stockpiles
- Drainage channels, stream banks, levees
- Mining sites
- Drilling platforms
- Landfills
- Railroads
- Golf courses and sports fields



Hydromulching is a good choice for both large and small jobs,...



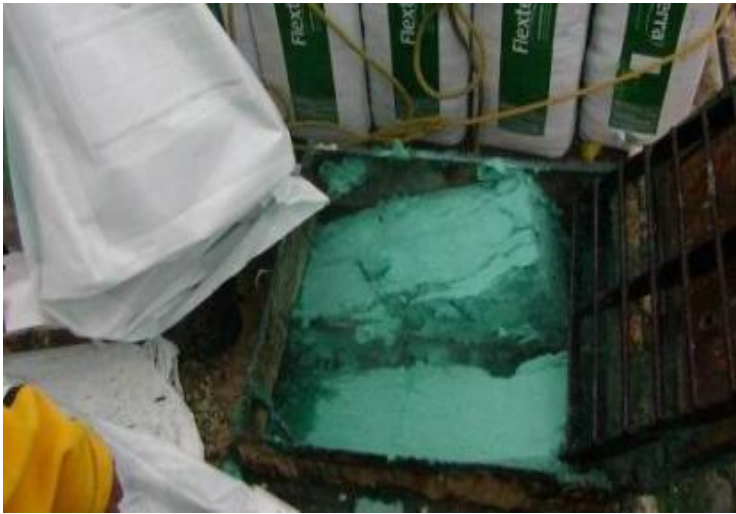
Common Hydroseeders



Low
Maintenance
Requirements



Mix HECP's into hydro-seeder, add seed, fertilizer and soil modifiers then shoot from hose or cannon



Proper soil preparation & analysis is critical for successful projects.

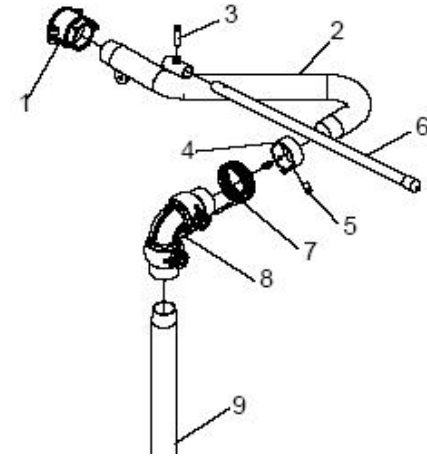


Smooth final grade is not necessary when Hydro Mulching



Spraying from the Tower

- Most efficient way to apply HECP Products
- Distance can vary depending on type of machine, pump, degree of slope and wind
- Fan nozzle works best but distance nozzle might be required – change out nozzles as needed
- Shooting down hill is very difficult to get coverage – rain in material – might have to use hose to catch the back side of the soil



Spraying with Hose



Two directions prevents shadowing



Does not have to be top and bottom





100 percent soil coverage

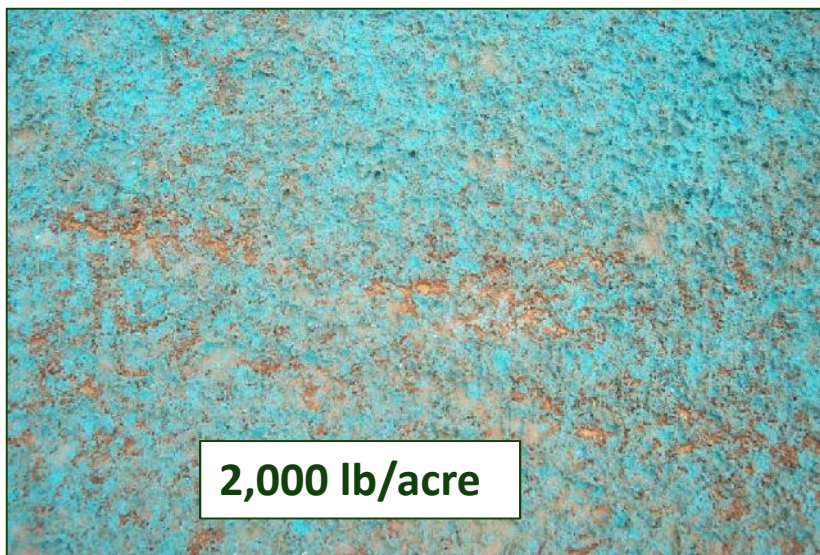




Dimpled look on the ground



Application Guidelines



Mulch Rates Makes a Big Difference in Results

- Test Plot 1 After 18 Days
(1,500 lbs. mulch)
- Test Plot 2 After 18 Days
(2,500 lbs. mulch)
- Test Plot 3 After 18 Days
(3,500 lbs. mulch)



HECP's are a very small part of
the over-all project cost!

Hydraulic Erosion Control Products (HECP)



Installation Tip

- Slope interruption devices or water diversion techniques are recommended when slope lengths are in excess of 50 to 75 feet depending on the degree of slope



Control Overland Flow



Doing it right will give you great results every time







What is the best form of Erosion Control?



Sustainable vegetation!

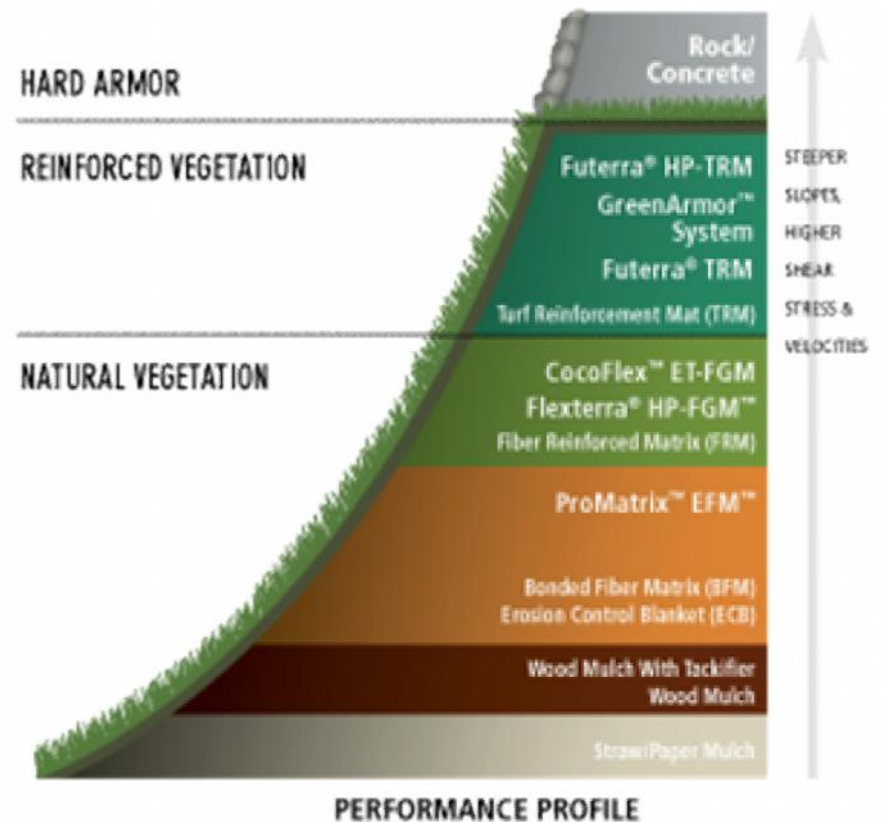
Considerations when choosing a Hydromulch

When comparing base paper and wood mulches the key items to consider are (see datasheets for all Technical information):

- Maximum slope inclinations
- Slope lengths
- Erosion prevention capabilities
- Erosion Control Effectiveness
- Functional Longevity
- Quality and Consistency
- Water holding capacity
- Yield & Coverage
- COLOR

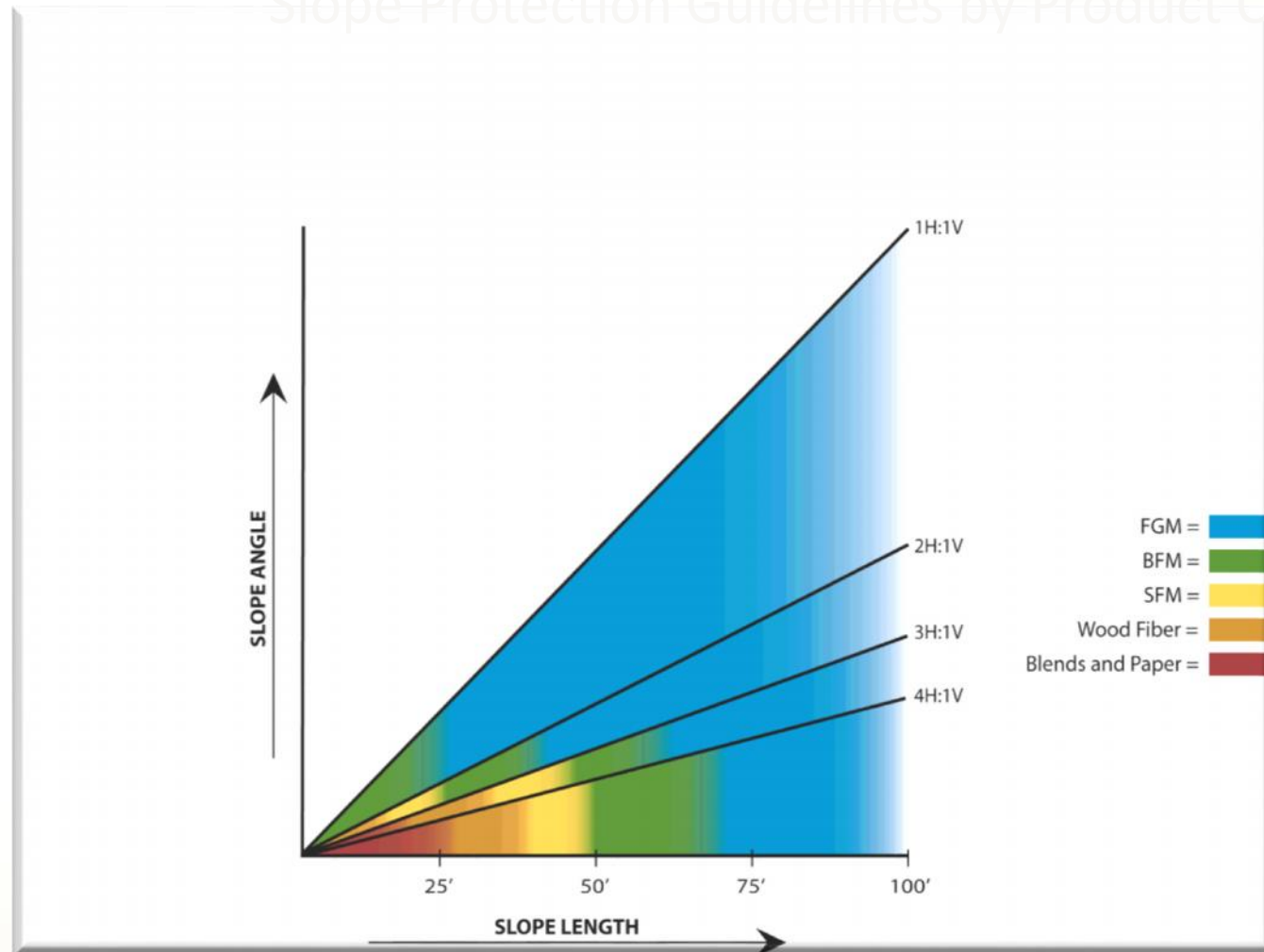
Summary of where products fit

- Where erosion potential is present, wood fiber mulches should always be specified
- Paper should not be allowed for use on slopes steeper than 4:1
- Where greater than 50% erosion control effectiveness is desired, don't allow the use of paper mulch or base wood fiber mulch, but instead use SMM, BFM, EFM, FGM™



Visual Guide for Much Selection

Slope Protection Guidelines by Product Category



Types of Hydraulic Mulch

Seeding Mulch Products

Pellet Mulch

Blend

Wood Fiber

Blend with
Tack

Wood Fiber
with Tack



Erosion Control Mulch Products

Flexterra
FGM

ProMatrix
EFM

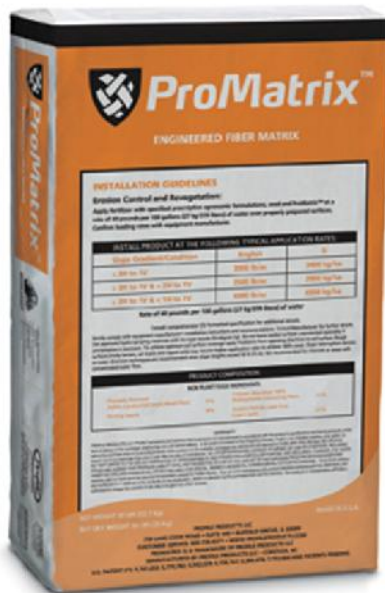


Hydraulically Applied Erosion Control Material Category Comparisons



Property	SMM	BFM	EFM	FRM
Bond Type	Chemical	Chemical	Chemical & Mechanical	Chemical & Mechanical
Functional Longevity	3-6 months	6-12 months	6-12 months	12-18 months
Percent Effectiveness	90%	90%	95%	99%
Cure Time	12-36 hr	24-48 hr	24-48hr	none
Max. Slope	3H:1V	2H:1V	>2H:1V	1H:1V

Key erosion products for today's discussion



Engineered Fiber Matrix



Flexible Growth Medium





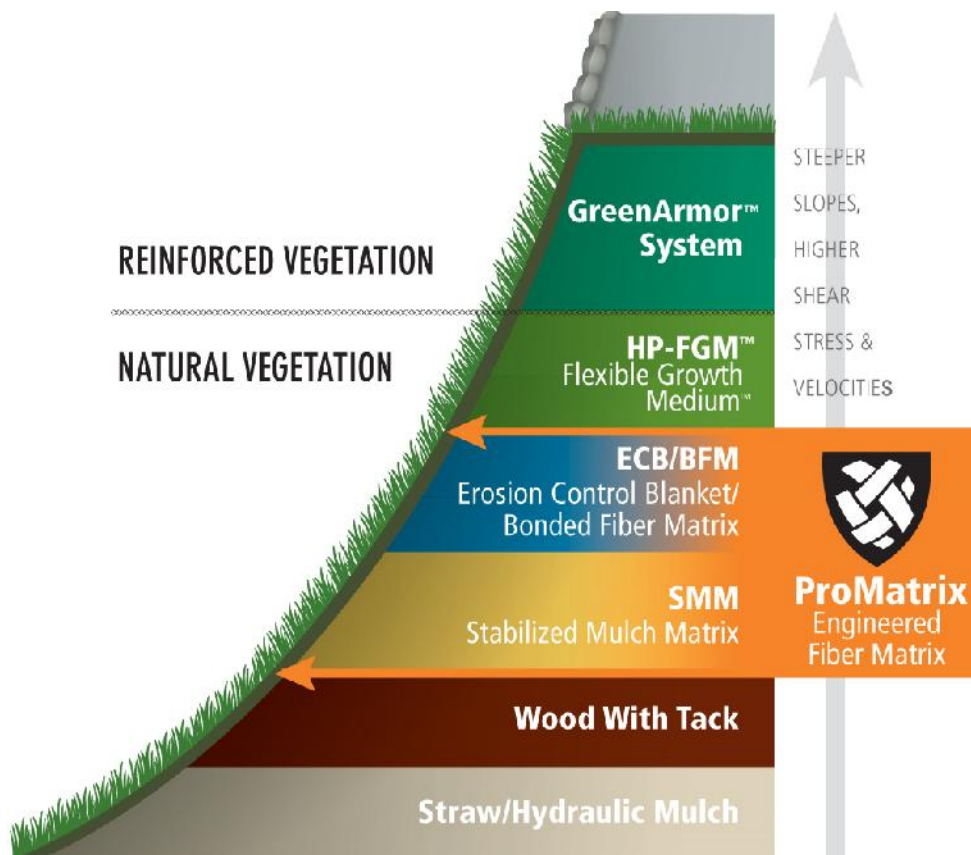
ProMatrix™

Engineered Fiber Matrix™



NDOT Hydromulch
Type 3





- Superior BFM Erosion Control effectiveness
 - **>95%** Erosion Control effectiveness via UWRL

600% min Vegetative Establishment using ASTM D7322

Up to 12 months Functional Longevity

1100% water holding capacity

100% biodegradable, non-toxic

No dangerous nettings



ProMatrix EFM - ORC Chromite Mine Reclamation



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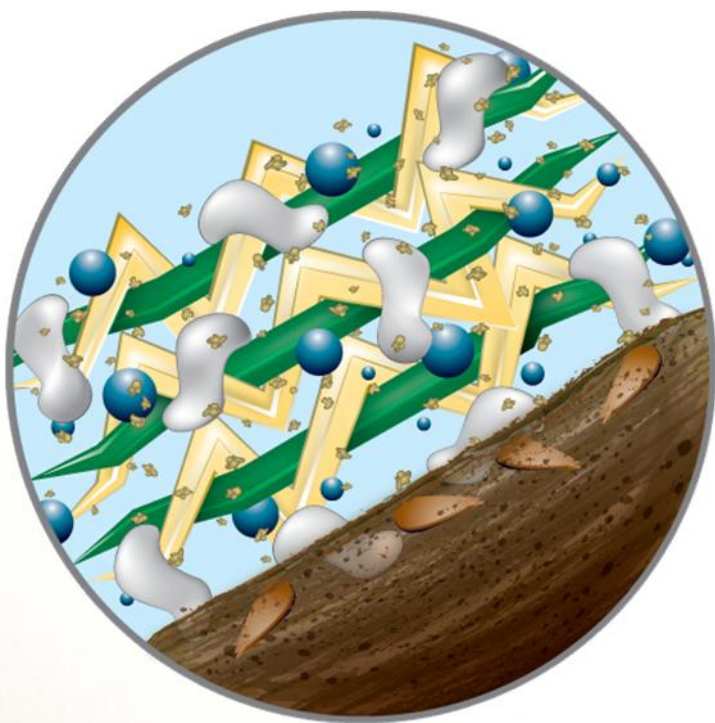
June 22, 2012

- Large or Small
- Hydraulic Mulches can be the best option for all projects
- Product precisely where needed
- No mowing issues once grown in



Flexterra® HP-FGM™

High Performance Flexible Growth Medium



100% biodegradable interlocking
man-made fibers



100% recycled Thermally Refined®
wood fibers



Micro-Pore granules



Naturally derived
cross-linking biopolymers



Water absorbents



Seeds




Flexible Growth Medium (FGM)



- **99% Erosion Control Effectiveness**
 - C-Factor < 0.01
 - No cure time – effective upon application
- **Superior Vegetative Establishment**
 - 1700% water holding capacity
Holds 17 times its weight in water
 - 800% Growth Improvement factor
8 times more growth than bare soil
- **Functional Longevity** of 12-18 months
- **100% biodegradable, non-toxic**
- **No dangerous nettings**
- **NDOT Hydromulch Type 4**



A close-up photograph of a person's hand holding a dark, moist soil sample. The soil is heavily reinforced with bright green, fibrous geotextile material, likely Flexterra. The fibers are visible throughout the soil mass, particularly along the edges and around a small, dark, cylindrical object (possibly a pipe or probe) embedded within the sample. The background shows a sandy, vegetated area, possibly a beach or dune.

**Flexterra:
superior soil-
bonding
strength**

2008 7 14

Ideal for steep slopes



Customized Seed Mixes



Also Ideal For Native Seed Applications

Seeding Completion, August 1, 2019







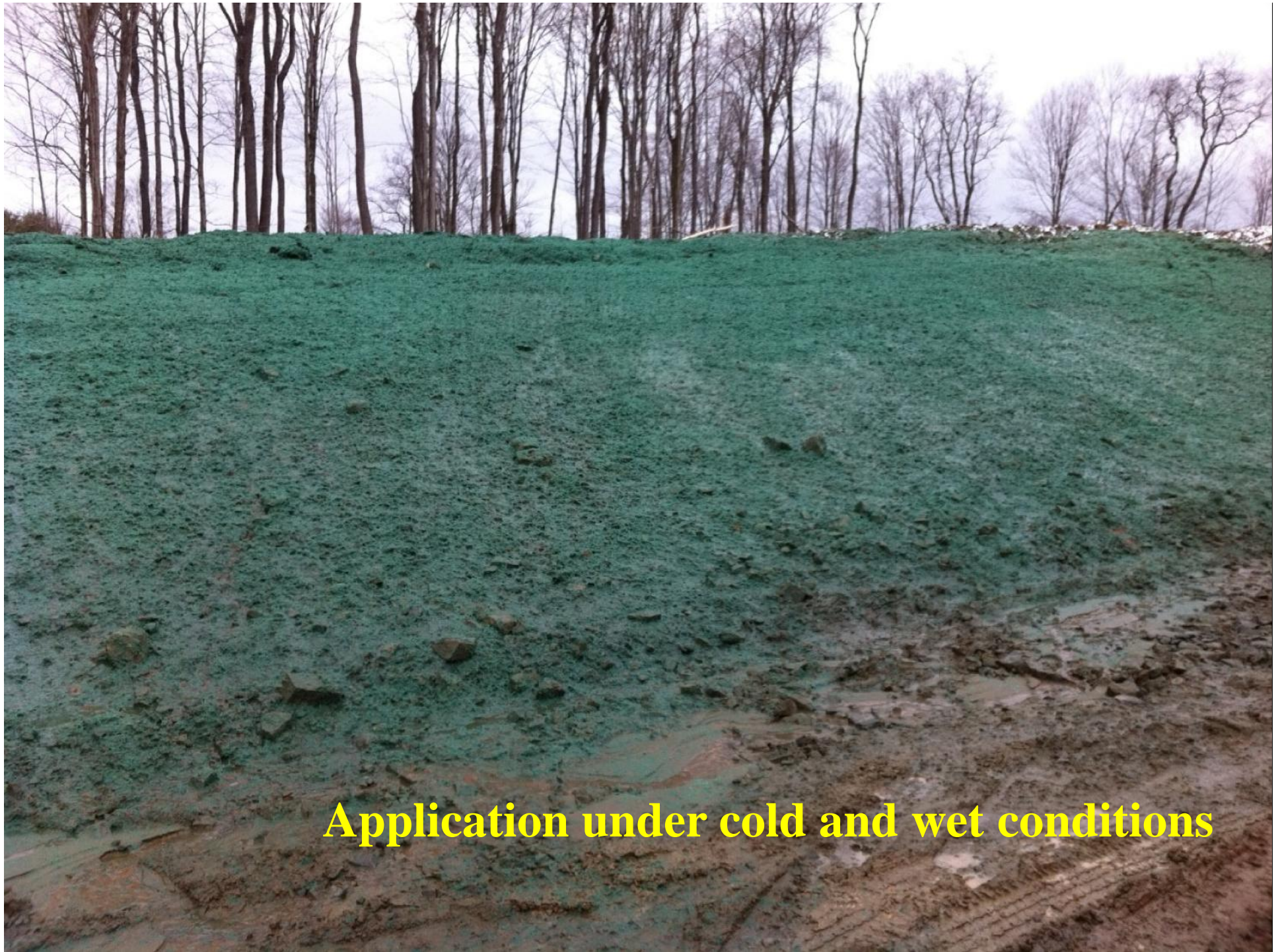
30 days After Hydroseeding

60 Days Following Hydroseeding





Mid-July 2020



Application under cold and wet conditions





Temporary Stabilization





- 100% Coverage
- Adheres directly to soil
- Winter Lockdown!





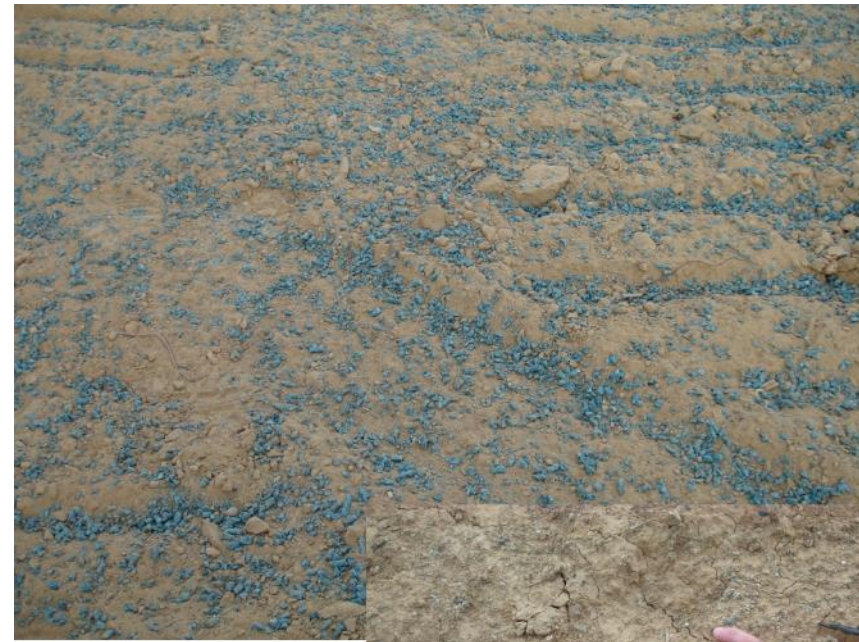




Seed Aide Aero™

Soil Stabilization Granules

- Recycled paper/wood
- Naturally derived biopolymer
- Contains growth bio-stimulants
- Not harmful to aquatic species
- For remote areas/limited access
- Holds soil & seed in place
- Increases moisture retention
- Promotes germination & vegetation establishment
- Apply aerially or on ground with drop spreaders



NDOT Hydromulch
Type 1

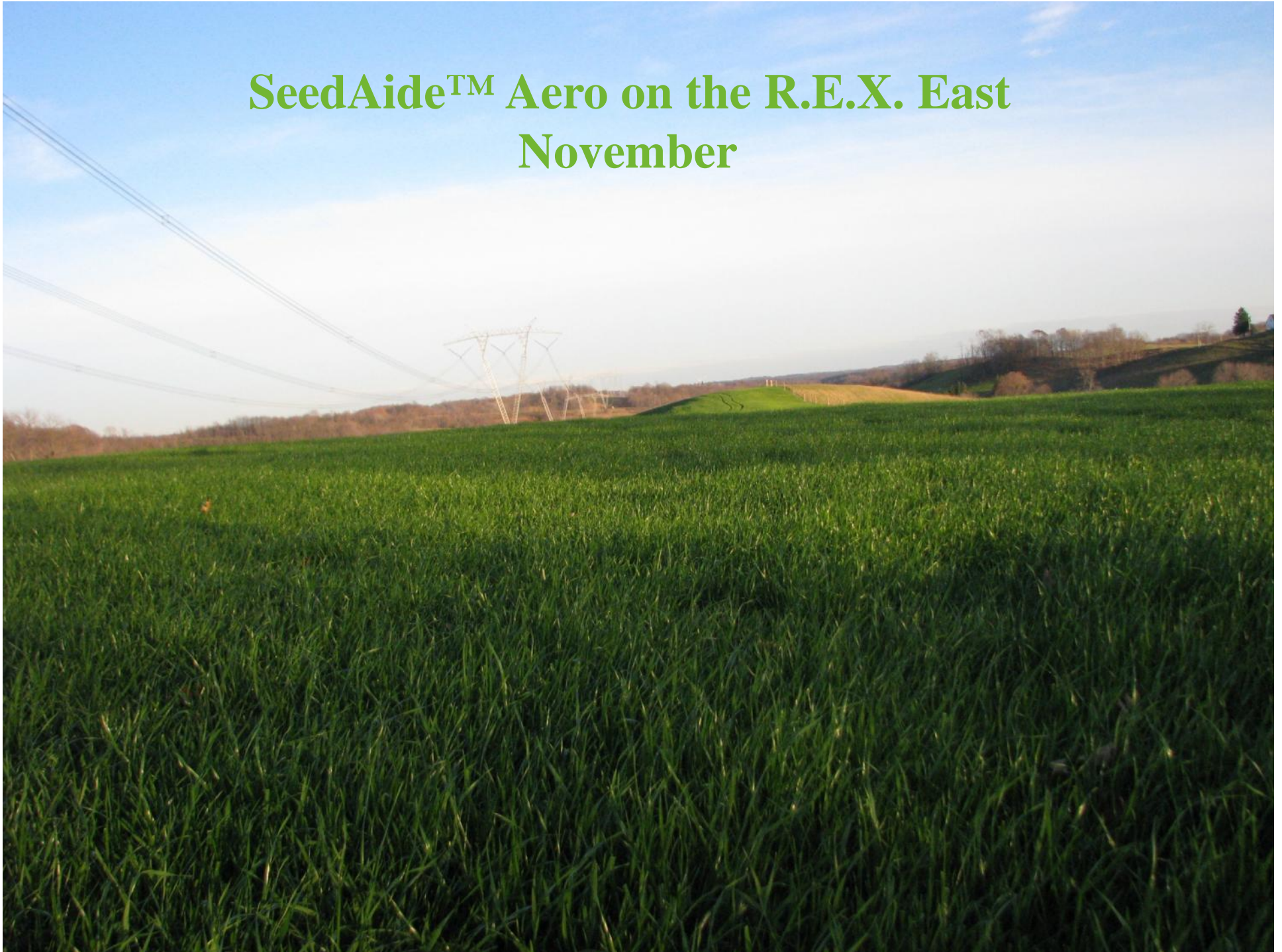


R.E.X. East
September



2009 9 24

SeedAide™ Aero on the R.E.X. East November



Hydromulch Summary



- Products can be customized for site specific challenges
- Economical way to grow grass
- Provides a wide range of performance platforms
- Seed, stabilize and treat soils in one application
- Minimal labor – very efficient
- Multiple project applications



GREEN DESIGN ENGINEERING™

Questions?

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www.profileps3.com

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