



NEWEA-NYWEA  
Spring Technical Conference & Exhibition 2023

Manufactured Topsoil Approved by  
VT Agency of Transportation

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# Resource Management, Inc.

- ▶ RMI is a regional organic residuals recycling company based in Holderness, NH
- ▶ RMI employs 30 people including agronomists, compliance specialists, field technicians, truck drivers, operations, sales and project managers



**Annually, RMI recycles over 300,000 cubic yards of organic residuals**

# Wastewater Treatment Facilities

- ▶ Produce biosolids as a byproduct, which are wastewater solids that have been treated and tested to meet strict federal and state standards



## Paper Mills

- ▶ Produce paper fiber as a byproduct, which are the fibers too small to bond to make paper



# Commonality

- ▶ Congress Passed the Clean Water Act in 1972
- ▶ Required that municipalities and industry adhere to more stringent discharge and effluent requirements
- ▶ Wastewater treatment facilities were constructed to improve the collection of solids at both municipal and industrial sites
- ▶ Which led to the production of biosolids and paper fiber...and cleaner water!



# Two byproducts that can be combined to produce Manufactured Topsoil (MFT)



# Components of Manufactured Topsoil

## ▶ **Paper Fiber**

- ▶ Organic Matter
- ▶ Moisture Retention
- ▶ Improves soil fertility and increases pH

## ▶ **Class A Biosolids**

- ▶ Slow-release nitrogen and phosphorous
- ▶ Contain essential plant nutrients and organic matter
- ▶ Low cost compared to commercial fertilizers

## ▶ **Sand (other aggregate)**

- ▶ Structural Component
- ▶ Porosity

## ▶ **Wood Ash - optional**

- ▶ Provides dark coloration
- ▶ Contains calcium, potassium, and additional nutrients

# Benefits of MFT

- ▶ Uses renewable resources
- ▶ Erosion resistant
- ▶ Superior water holding capacity
- ▶ Drought resistant
- ▶ Establishes hearty vegetation eliminating runoff
- ▶ Eliminates need to strip native topsoil
- ▶ Cost effective
- ▶ Recycled byproducts used locally!



# Previous MFT Project

Mosher Pasture - Killington, VT

Before





# Previous MFT Project

Mosher Pasture - Killington, VT

After



# Current Disposal or Management Options

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Landfill



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Incineration



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Land application



All are subject to capacity –  
which in the Northeast is quite tight

# Three-Legged Stool

- ▶ These three management options can be compared to the three legs of a stool
- ▶ If you remove one of the three options by banning land application...
- ▶ The two remaining options are not able to support the weight



# Initial Collaboration

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RMI

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Department of Environmental Conservation (DEC)

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Vermont Agency of Transportation (VTrans)

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Recycled Materials Working Group (RMWG)

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Engineers Construction Inc. (ECI)

# Approval Timeline of MFT


June 1<sup>st</sup> 2021, first meeting with Recycled Materials Working Group



After several additional meetings, approval received in July of 2022



Specification 755.02 Published October 2022



MFT used at Park & Ride I-89 Exit 12 VTrans Project in Williston, VT

**GENERAL SPECIAL PROVISIONS**  
**VERSION NUMBER GSP-1818**

- (b) Manufactured Topsoil. Manufactured topsoil shall conform to the requirements of *ASTM D 5268* for topsoil, except as modified below:
- (1) pH. The pH shall be 5.5 to 8.5.
  - (2) Organic Content. Short paper fiber used for organic content shall be in accordance with the Vermont Agency of Natural Resources *Comprehensive Short Paper Fiber Management Procedure*.

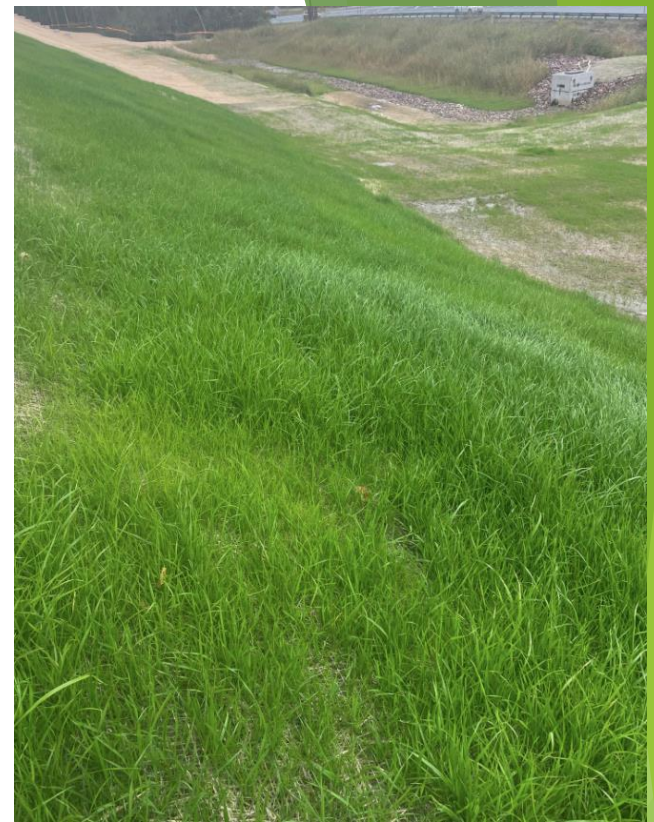
# Park & Ride I-89 Exit 12 Williston, VT

## Before



# Park & Ride I-89 Exit 12 Williston, VT

After





# PFAS in the News

## Marguerite Adelman: EPA should ban all PFAS in drinking water

By **Opinion**

May 15 2023

Advocates call for action to protect people from PFAS in cosmetics, textiles, and turf

Local News

The EPA is taking steps to regulate toxic 'forever chemicals' in drinking water. What does that mean for Vermont?

Vermont Public | By **Abagael Giles**  
Published March 15, 2023 at 5:53 PM EDT



## In Craftsbury Common PFAS leads to don't-drink warning

Published 1 year ago - TRACY DAVIS PIERCE 194

TOP STORY

## EPA sets dramatically lower PFAS advisory levels for drinking water

By Jim Therrien, Bennington Banner Jun 15, 2022

## Vermont Bans PFAS from Food Packaging and More

Posted on 5/21/2021 by Lauren Scott

# Challenges Along the Way

- ▶ In April 2023, VTrans raised questions about PFAS content in MFT
- ▶ Projects came to a halt – concern over whether inventory was going to be usable
- ▶ This was a challenging hurdle that was aided by the results of soil samples taken at MFT sites
- ▶ Soundview Paper Mill CEO was very involved in the conversation to ensure paper fiber could continue to be recycled. Mill would have to shut down if not, resulting in massive local job loss
- ▶ Approval of MFT was reissued May 10<sup>th</sup>, 2023 with on-going monitoring of PFAS in blended MFT prior to use

# MFT Soil Sampling Results

	VT soil background – Average*	VT soil background – Maximum*	VT proposed soil screening levels	MFT from Franklin Cty. Airport	Existing runway soil Franklin Cty. Airport
ug/kg, or parts per billion (dry weight)					
PFOA	0.50	4.90	1.60	ND	ND
PFOS	0.97	4.40	3.40	0.91	0.27

*\*VT soil background - Average and VT soil background - Maximum is determined from the 2018 soil sampling conducted by University of Vermont, Sanborn, Head & Associates, and VTDEC.*

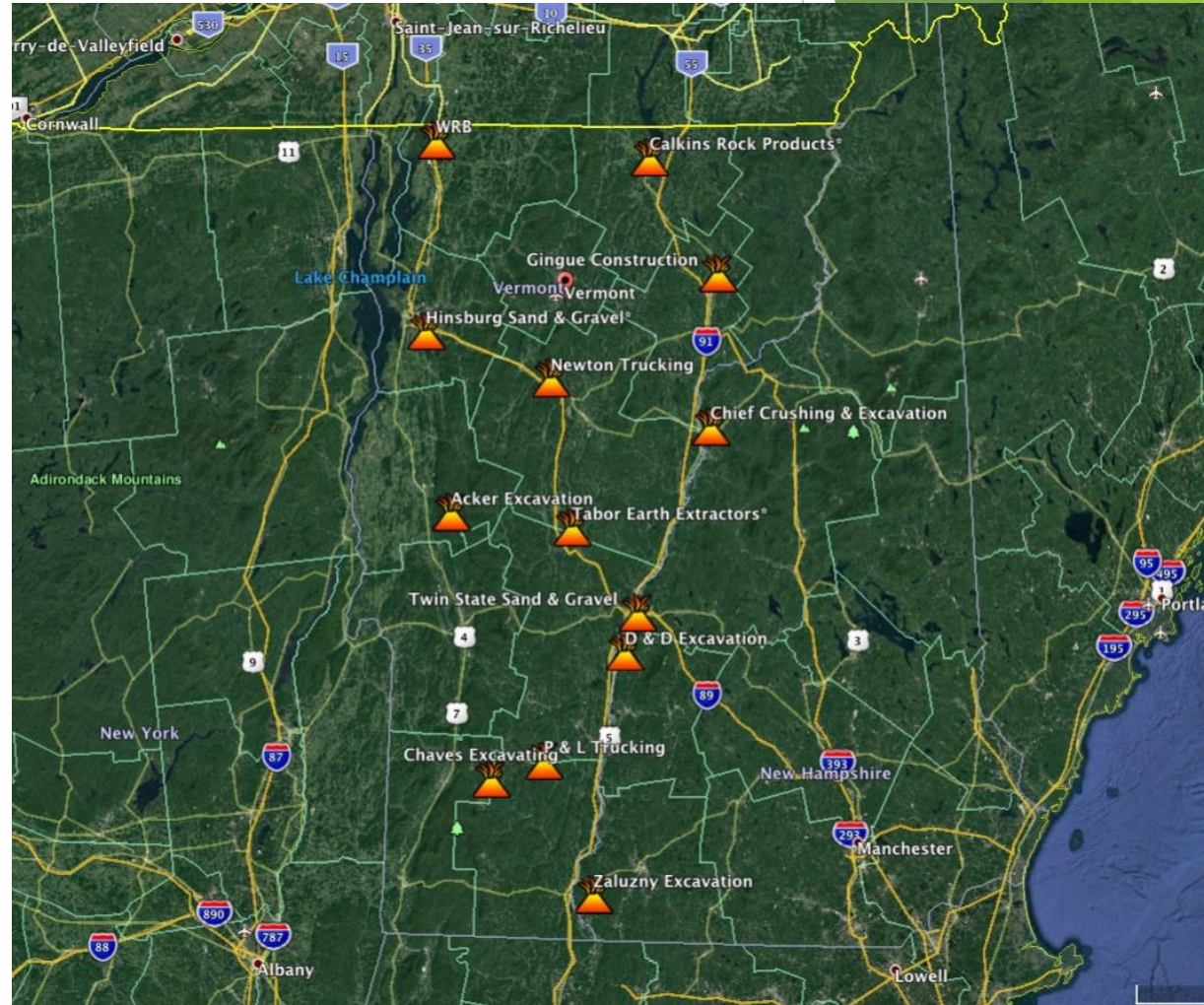


# Current VTrans Projects

- ▶ Park & Ride Exit 12 I-89  
Williston, VT
- ▶ Franklin County Airport  
Swanton, VT
- ▶ Route 2 AOT Project  
Williston, VT
- ▶ Major Bridge Construction  
South Royalton, VT

# Distribution Partners

- ▶ ECI  
South Burlington, VT
- ▶ Stanislas Sand & Gravel  
Swanton, VT
- ▶ Renaud Gravel Inc  
Vernon, VT
- ▶ Chief Logging & Construction Inc.  
S. Ryegate, VT
- ▶ Sunny Syde Sand & Gravel  
Middletown Springs, VT
- ▶ D&D Excavating  
Hartland, VT



# Franklin County State Airport Swanton, VT



# D&D Excavating



# Importance of Public Outreach



Green Mountain  
Water Environment  
Association



Biosolids Based Manufactured Topsoil  
Approved for Use by State Agency



Check out this successful project using a biosolids-based manufactured topsoil as part of a Vermont Department of Transportation improvement project at the Park & Ride at Exit 12 off Interstate Route 89 in Williston, VT.



## Positive Outcome with Vermont Regulators

- ▶ Instead of a knee-jerk reaction, Vermont regulators were methodical and looked at the science regarding PFAS
- ▶ Recognized the benefits of using MFT
- ▶ All projects will comply with VT Agency of Transportation General Special Provisions
- ▶ Set a good precedent for other States
- ▶ Recycling locally is a good practice!

# Summary

- ▶ MFT was created as a beneficial and sustainable reuse for residuals
- ▶ Obtaining VTrans approval was the result of the efforts of many individuals
- ▶ While PFAS concerns caused a temporary pause on projects, approval was reissued for MFT
- ▶ VT regulators were very receptive
- ▶ VTrans projects provide an outlet for residuals
  - ▶ 32 ECI MFT jobs currently bid
- ▶ Continued public and regulatory collaboration and education are key



Thank you!

Questions  
or  
Comments

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