



July 2006

A Tough Act To Beat!



Would you like to have a drainage product with a higher flow rate? Has meeting the permeability value required by regulations been a struggle? And are you concerned about creep of the geonet under high stress? If these issues are important to your project, then we have some exciting updates to share with you on our latest drainage products, **GSE PermaNet Geonets and Geocomposites**.

GSE PermaNet products have been manufactured and installed for over six months and we have awards on several landfill projects to be completed this year. Extensive performance transmissivity testing has been completed under a range of test conditions. The testing has demonstrated that GSE PermaNet can resist extremely high stress and still maintain the design flow rate over the life of a project. This innovation was achieved by re-engineering the biplanar structure to ensure the geonet structure remains stable at the high stress levels found in very deep landfills. Also, both conventional and SIM creep testing have been completed on several product varieties. This data along with competitive pricing information showed that for stresses above 15,000 psf, GSE PermaNet provides the best combination of high flow rate performance and value among all geosynthetic drainage products. Additional detailed testing accomplished over the last six months has validated the overall quality of GSE PermaNet as a superior drainage product.

Attached please find a new ad that illustrates the advantages of GSE PermaNet, and a case history on one of our GSE PermaNet projects. Also, attached is a return fax form if you require additional information to be mailed to you.

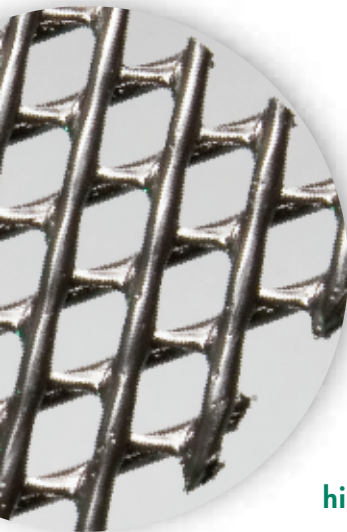
If you have any question please do not hesitate to contact us. We look forward to discussing the many advantages of specifying GSE PermaNet products on your project.

Best Regards,

A handwritten signature in black ink, appearing to read "Boyd Ramsey".

Boyd Ramsey
VP – Technical Sales

A Tough Act To Beat!



GSE PermaNet*

Geonets & Geocomposites

Our newest offerings, GSE PermaNet bi-planar geonet and geocomposite drainage products are a tough act to beat. These products are designed for tough applications requiring high transmissivity under high loads. **GSE PermaNet products are tougher and stronger with higher crush strength and higher multi-directional flow, and do not roll-over under high loads.** No other

drainage products can offer these tough benefits in one product. Let a GSE professional demonstrate how tough GSE PermaNet products will be on your project.

* U.S. Patent Pending



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GSE Lining Technology Company Limited
GSE Lining Technology GmbH
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GSE PermaNet UL Geocomposite Case History

Sanitary Landfill

Project Name: Cape May Secure Sanitary Landfill Cell 1F
Location: Woodbine, NJ
Engineer: Shaw Environmental, Inc.
Installer: Atlantic Lining Company, Inc.
Status: Under Construction

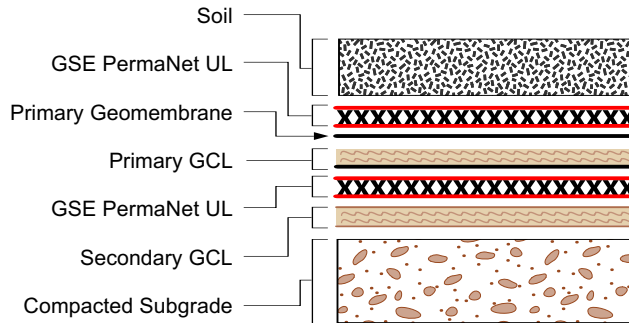


Figure 1 – Cape May Secure Sanitary Landfill Lining System



Figure 2 – PermaNet UL Geocomposite Being Installed at Cape May Landfill

The Cape May Secure Sanitary Landfill has a total footprint area of 95 acres divided into several contiguous cells. Cell 1F is currently under construction and has 18 acres of double composite liner system as shown in Figure 1. This liner system was installed on a $\pm 2\%$ slope with GSE PermaNet UL geocomposite used as the primary and secondary drainage layers.

Shaw Environmental, Inc. performed the liner system design and prequalification of geosynthetic materials, including the drainage geocomposites. Primary approval requirements for drainage geocomposites involved transmissivity, interface shear strength and compressive creep testing. Specifically, the geocomposite had to meet a long-term design transmissivity of $1.6 \times 10^{-4} \text{ m}^2/\text{sec}$ and $7.8 \times 10^{-5} \text{ m}^2/\text{sec}$ at 25,000 psf for the primary and secondary drainage layers. The requirement for creep resistance was very high. The geonet had to achieve a creep reduction factor of not more than 1.2 at 25,000 psf. There were specific and detailed requirements related to peak and residual shear strength of the drainage geocomposite with the adjoining materials. Material evaluation for prequalification testing was performed by IT/Emcon and TRI/Environmental, Inc. Shaw performed a detailed material assessment after the prequalification testing and determined GSE PermaNet UL to be acceptable for the Cape May Landfill Cell 1F.

Atlantic Lining Company, Inc. performed the installation for Cell 1F. With a roll width of 14.5 feet, Atlantic Lining found the drainage geocomposites to be quicker to install compared to the Triplanar[®] drainage geocomposites that were previously installed in the other cells. Material properties were verified during production by quality control testing and during installation by third party conformance testing. GSE PermaNet UL met all the requirements.

Cape May Landfill Cell 1F utilized GSE PermaNet UL, because it offered a superior performance compared to the other products installed in the other cells. Improvement in drainage material performance also resulted in lower product cost than in the other cells. The use of GSE PermaNet UL was a win-win situation for everyone involved. The owner benefited the most in overall project cost savings.

CH020 PermaNet CapeMay R07/18/06

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South America	GSE Lining Technology Chile S.A.	Santiago, Chile		56 2 595 4200	Fax: 56 2 595 4290
Asia Pacific	GSE Lining Technology Company Limited	Bangkok, Thailand		66 2 937 0091	Fax: 66 2 937 0097
Europe & Africa	GSE Lining Technology GmbH	Hamburg, Germany		49 40 767420	Fax: 49 40 7674234
Middle East	GSE Lining Technology-Egypt	The 6th of October City, Egypt		202 2 828 8888	Fax: 202 2 828 8889



FAX RESPONSE FORM

Information Requested

___ GSE Drainage Binder (Printed & CD version)

___ GSE PermaNet Samples (HL – High Load & UL – Ultra Load):

___ GSE PermaNet HL Geonet

___ GSE PermaNet HL Geocomposite (Double-Sided)

___ GSE PermaNet UL Geonet

___ GSE PermaNet UL Geocomposite (Double-Sided)

Data Sheets:

___ GSE PermaNet HL & UL Geonet

___ GSE PermaNet HL Geocomposite (Single-Sided)

___ GSE PermaNet HL Geocomposite (Double-Sided)

___ GSE PermaNet UL Geocomposite (Single-Sided)

___ GSE PermaNet UL Geocomposite (Double-Sided)

___ Please take my name off your mailing list

Please fax this form to **281/230-6739** or email to marketing@gseworld.com.
Request will be shipped by DHL ground, unless specified in comments section below.

Please Send Information To:

(*Denotes required information and physical mailing address before we can process your request. Thank you.)

*Name: _____

*Title: _____

*Company Name: _____

*Address: _____

*City: _____ *State: _____

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*Phone: _____ *Fax: _____

*Email: _____

Comments: _____
