GSE CoalDrain Geocomposite

INTRODUCTION
The design of geotextile filters for very fine-grained soils is one of the most daunting geotechnical problems. These soils include coal-combustion by-products, silts, fine sands and dispersed clays. To address this problem, particularly for coal-combustion projects, GSE has developed the CoalDrain geocomposite. CoalDrain is comprised of an innovative composite filter (CoalTex) and a high flow GSE geonet. This patent-pending product allows filtration of very fine soils without such concerns as clogging and piping.

COAL ASH LANDFILL LEACHATE COLLECTION AND REMOVAL SYSTEM
Coal combustion products (CCPs), including fine-grained fly ashes and flue gas desulfurization (FGD) materials, are regularly deposited in landfills. A leachate collection and removal system is necessary beneath the CCP waste to provide adequate drainage and reduce the hydraulic head on top of bottom liner system. The traditional solution for such drainage layers is a graded sand and gravel layer. The natural granular materials require extra preparation of the sub-grade and consume valuable airspace, typically several feet of a fine sand filtration layer and an aggregate drainage layer.

GSE CoalDrain geocomposites utilize an innovative composite geotextile that replaces the graded granular filter. GSE’s geonet, laminated to the filter geotextile, acts as the drainage material. CoalDrain requires less sub-grade preparation and occupies far less airspace than natural granular materials (only 0.30 in to 0.50 in compared to several feet). GSE CoalDrain geocomposite has proven efficacy in efficiently retaining fine-grained particles while allowing only liquids to pass. The geonet core provides sufficient in-plane lateral flow capacity; it has excellent long-term hydraulic performance and creep resistance to ensure that the leachate collection system will continue working throughout the project’s lifespan.

A PROVEN SYSTEM
A patent pending innovative drainage geocomposite that has been independently tested to perform in coal ash applications.

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INNOVATIVE STRUCTURE
The CoalTex filter geotextile is an innovative structure with an apparent opening size (AOS), specially designed for CCP filtration functions. This patent-pending product relies on a layered filter that mimics traditional graded granular filters. The structure created as a result of the composite filters makes it possible to use CoalDrain even in the most challenging of environments such as CCPs.

PROVEN RELIABILITY
Extensive laboratory and field tests have been conducted to evaluate the performance of GSE CoalDrain with CCR materials (stabilized FGD, gypsum, ad fly ash) from different coal combustion power facilities. CoalDrain was tested under the exact same conditions as would exist in an actual CCP disposal site. The research program proved that GSE CoalDrain geocomposite meets or exceeds the filtration design requirements.

GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We've built a reputation of reliability through our dedication to providing consistency of product, price and protection to our global customers.

Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.

[Results of Large-Scale Field Tests (Schmitt & Cole, 2012)]

[Total Suspended Solids From Intermediate Scale Field Tests (Butalia, 2012)]

[HCR Tests on Two Different CCRs]

[Gradient Ratio Tests on Three Different CCRs]