Landfills

LANDFILL CELL LINERS
Today’s state-of-the-art landfill utilizes a range of geosynthetic products to maximize design efficiency, integrity and performance while minimizing overall cost. For environmental protection, the essential landfill component is the primary geomembrane liner. GSE offers several varieties of geosynthetic products from 60 mil black geomembranes to highly-engineered specialty products, like Leak Location Liner, that help ensure the absolute minimum site leakage and environmental impact. The primary liner contains dangerous leachates and protects valuable groundwater resources. However, for a landfill liner system to function optimally, it needs to incorporate more than a smooth surfaced geomembrane. Steep side slopes have become standard in landfills as a means to increase capacity and revenue. Steep slopes present problems for smooth liners because cover soil may not stay in place, and with overburden the liner itself can slip down the slope and increase stress on seams and the sheet itself. To solve this problem, GSE offers a variety of textured geomembranes.

Many regulations require a leak detection system to ensure the integrity of the primary liner on a continuous basis. This system consists of a secondary HDPE geomembrane below the primary liner which is overlaid with either a geonet or a geocomposite net. If the leak detection system is placed directly below the primary liner, a geonet is used. GSE Leak Location Liners provide the best possible containment for landfill leachates. For leachate collection, geocomposite nets provide high in-plane flow. The geocomposite is composed of one of several geonets with specifically selected filtration geotextile bonded to one or both sides to keep cover soil from clogging the geonet. GSE geocomposite is placed directly on top of the primary liner. The geotextile clings to textured geomembrane to lock the composites in place, especially on slopes. Many regulations require a leak detection system to ensure the integrity of the primary liner on a continuous basis.

LEACHATE CONTAINMENT
GSE supplies the industry’s broadest range of geocomposites and geonets manufactured for use in soil separation, filtration, protection and drainage applications.

GSE LANDFILL SOLUTIONS
• Textured HDPE Geomembrane
• White Textured Geomembrane
• Leak Location Liner
• Geonets and Geocomposites

[Landfill Application, Hawaii]

GSE Textured Geomembranes

GSE Geonets and Geocomposites

[Landfill Application, Germany]
This system consists of a secondary HDPE geomembrane below the primary liner which is overlaid with either a geonet or a geocomposite net. If the leak detection system is placed directly below the primary liner, a geonet is used. If an intermediate soil layer or clay layer is used, then a geocomposite net is utilized. Landfill cell liners are massive and critical projects. The geosynthetic liner system represents a small fraction of the overall cost but virtually 100% of the protection. Don’t settle for mediocre product selection or quality. GSE provides everything you need for the highest quality installation and the largest selection.

**LANDFILL COVERS**

A major long-term concern when employing a landfill cover is differential settlement caused by decaying and shifting waste. The geomembrane cover must accommodate deformation caused by differential settlement without failure of the containment. To meet this requirement, GSE UltraFlex is made from a unique, linear low density polyethylene resin (LLDPE). Its utility and durability has been proven in decades of use and millions of square feet/meters of landfill cover applications.

**LEACHATE PONDS**

Leachate is collected from landfill cells and typically stored in lined ponds for treatment or evaporation. The liners in these ponds are generally exposed to the elements. GSE White High Performance Geomembrane delivers the highest degree of durability under extreme environmental conditions including sunlight, freezing temperatures and abrasion.

**HIGH-VALUE ENGINEERING**

To achieve true state-of-the-art landfill design, incorporate GSE’s White High Performance Leak Location Liner. The white surface has two primary functions. First, it reflects sunlight which minimizes radiant heat absorption and heat buildup and effectively minimize liner temperature. This results in less expansion of the liner, so wrinkles are minimized. Another benefit of lower liner temperature is decreased moisture evaporation from underlaying clay layers.

The second benefit of a white surface is improved visual inspection. If the thin white surface is damaged, the black portion of the sheet shows clearly. Post-installation damage is much more likely to be observed and repaired. See the GSE White application sheet for more information.

The electrically-conductive layer of White High Performance Leak Location Liner allows the integrity of the liner to be verified after soil has been placed above the geomembrane, which is when most damage occurs. GSE Leak Location Liner can achieve nearly perfect performance without the added expense of flooding or the uncertainties of other leak testing methods. GSE Leak Location Liner is the only conductive liner that allows ELI surveys to be performed before and after cover soil is placed.

**GEOMEMBRANE QUALITY, CONSISTENCY SERVICE**

Geomembrane quality begins with base resin selection. GSE’s resins are blended with premium carbon black, antioxidant additives and UV stabilizers to ensure long life even in exposed conditions.

GSE’s manufacturing facilities include state-of-the-art production lines. GSE utilizes two unique geomembrane extrusion systems. With flat cast and round die extrusion capabilities, GSE can meet stringent tolerance requirements as well as produce coextruded products.

GSE geomembrane materials must pass a battery of quality control checks before being shipped and installed. From the base resin checks to 100% spark-tested product to laboratory quality assurance testing, all GSE geomembranes are thoroughly inspected. Installations require extensive planning to ensure on-time delivery and coordination with the earthmoving contractors.

**ENGINEERING SUPPORT**

The GSE Engineering Support Staff is comprised of multidisciplinary product professionals to support you across a range of project requirements. This includes knowledge in geomembrane, geosynthetic clay liners, geonet, geocomposite, nonwoven geotextile and concrete protection products and application solutions. Rely on our technical staff to help you solve your project issues.

**CUSTOM FABRICATION**

The GSE Custom Fabrication Group builds products to your exact specifications. We have extensive experience in prefabricated polyethylene products and components. A few examples of our custom fabricated products are Aqua Tanks, Quick Containment, concrete protection liners, boots, sumps, pads, pipes, daily covers, temporary containment, containment boom and other products to fulfill your fabrication needs.