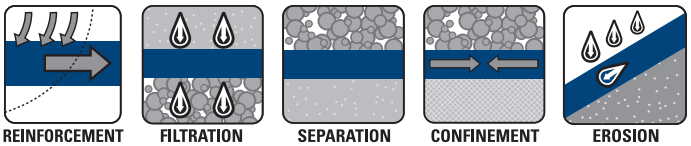
TENCATE Mirafi®



Case Study

application	Wastewater Sludge Lagoon-Cap CLosure System	job owner	Arizona Chemical
location	Arizona Chemical, Dover, OH	engineer	ENSR
product	Mirafi® GC1000 & Mirafi® FW404	contractor	Envirocon

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

Arizonia Chemical Company (a subsidary of International Paper) needed to close a wastewater lagoon no longer in use. The engineered specification detailed geosynthetics for two distinct sections of the lagoon. The west section required ultimate strength of 180kN/m (1028 ppi), and 600 kN/m (3426 ppi) for the east section plus a minimum 60% seam strength. Normally, these strengths would dictate the use of a Mirafi® HS type polyester geotextile, however upon closer review of the project documentation, it was determined that the sludge had a pH of 11.8, well past the acceptable limits for polyester. This meant utilizing a polypropylene fabric with high pH resitance and pushing the strength capabilities of TenCate Mirafi® woven HP geotextiles.

THE DESIGN

After consulting with the design engineer, it was determined that the properties of GC1000, placed in three (3) layers, two perpendicular and the third on the bias, would sufficiently orient the strength to satisfy the tensile requirements for the east section. For the west section, one (1) layer of Mirafi® GC1000, overlaid with a single layer of Mirafi® FW404, parallel and offset, would meet the design requirements. In order to insure that the seam requirements could be met with in-field seaming, TenCate in cooperation with Flint Industries submitted seam test results prior to product acceptance. Flint Industries, using their advanced field seaming techniques and equipment, was able to supply several versions of seam samples (butterfly, J-seam, prayer) with various stitch counts, thread deniers and twist, for wide width testing at TenCate's Jefferson, GA facility. This pre-installation effort proved that simple prayer seams, with the correct stitch configuration, could more than meet the 60% seam requirement. In fact, the seam strength was in excess of 122 kN/m (700 ppi), almost 70%.

THE CONSTRUCTION

Approximately 71 m^2 (85,000 syds) of Mirafi® GC1000 was shipped commencing the first week of October 2001, with Flint completing the install by November 15th. Flint Industries installed the GC1000 at a rate of approximately 4180 m^2 (5000 sy) per day using a boom mounted double needle sewing machine attached to a six-wheel ATV. The installation process was enhanced through all the preliminary sampling, thereby eliminating potential field seaming unknowns.

THE PERFORMANCE

Closure cap is functioning as designed to date. Monitoring continues.

Mirafi® GC1000 was used to cap this sludge lagoon.

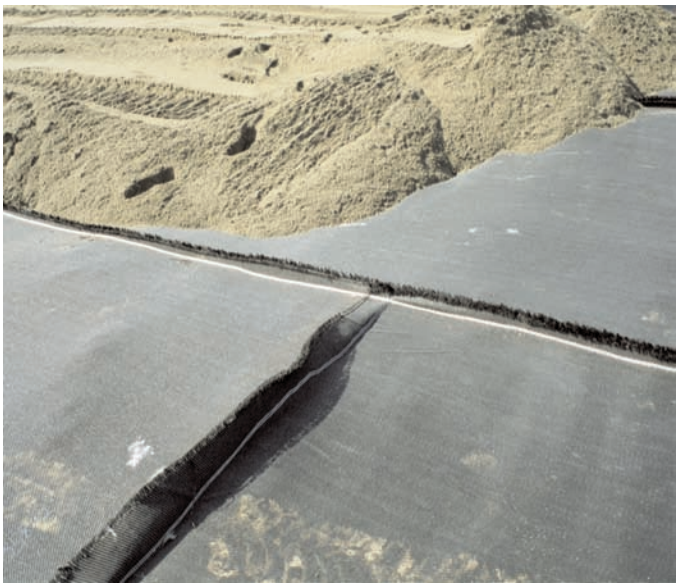
85,000 sq. yards of Mirafi® GC1000 were needed to cap the two sections.

Protective & Outdoor Fabrics
Aerospace Composites
Armour Composites
Geosynthetics
Industrial Fabrics
Synthetic Grass

TENCATE™
materials that make a difference

Backfilling over the lagoon cap closure system.

Three layers of Mirafi® GC1000 were placed on the east section of the lagoon. One layer each of Mirafi® GC1000 and Mirafi® FW404 were used on the west section.



The geotextile was field-seamed with a seam strength of 122 kN/m (700 ppi).

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