KAYTECH CASE STUDY

OPTIMIZING GAS EXTRACTION EFFICIENCY AT COASTAL PARK LANDFILL WITH A GEOTEXTILE

GEOSYNTHETICS USED

bidim®: A continuous filament nonwoven needlepunched geotextile manufactured of 100% recycled polyester.

bidim® A5: Employed in a gas extraction layer for filtration purposes.

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PROJECT DESCRIPTION

Since 2000, the City of Cape Town has managed the expansive 75-hectare Coastal Park landfill near Muizenberg. Serving as a crucial disposal site for domestic and inert waste, the landfill's Phase 1A neared capacity, prompting the initiation of Cell 1B's construction in September 2020. Encompassing about 11 hectares, Cell 1B is ingeniously situated atop an existing waste mound, functioning as a "piggy-back" cell with a depth of roughly 25 meters.

A BETTER SOLUTION

To comply with air quality regulations, effective extraction of landfill gas (LFG) from both active and closed landfills entails a network of horizontal and vertical wells to extract and transport the gas to designated vents. Horizontal wells consist of perforated pipes within a stone layer, wrapped in a geotextile. Given the expected loadings from landfill machinery and the critical interface requirements between the sand and stone layers, as well as effective filtration, a specialized geotextile was imperative.

Compliant with GRI-GT13a and comprising 100% recycled polyester, bidim® A5 was chosen for the gas extraction layer due to its robust strength, elongation, and filtering properties. This choice was essential to withstand the demanding installation conditions prevalent on-site while ensuring the integrity of the gas extraction system.

bidim® A5's robust strength and puncture resistance make it a reliable choice for demanding installations. Its mechanical bonding allows significant elongation, ensuring flexibility and stress relief, while also aiding the creation of a reverse filter in nearby soil. This balances fine particle retention with drainage permeability.

The Coastal Park Landfill project demonstrates the strategic integration of bidim® A5 non-woven geotextile, showcasing its efficiency in enhancing gas extraction efficiency while upholding environmental compliance and project cost-effectiveness. This innovative approach underscores the importance of tailored geosynthetic solutions in challenging environments. By selecting materials that align with installation conditions and regulatory requirements, Coastal Park Landfill illustrates how advanced geotextiles can optimize gas extraction systems and contribute to long-term landfill functionality.


Laying of bidim® A5 in gas extraction trench.


Laying of gas collection pipes.


Gas extraction system.


Backfill of gas extraction trench.

Interesting facts

9,300
used
2-liter plastic
bottles

produced

1860 m²
of bidim® A5
for this project