

LA ROCHELLE, FRANCE

Sensitive environment and stormwater management



Industry: Site development
Sub-industry: Stormwater management
Location: La Rochelle, France
Product: OSMORIA™ Geoclean®

Overview

In November 2021, a vital infrastructure project was completed in La Rochelle (17), France, designed to address traffic congestion while ensuring environmental sustainability. This initiative involved the construction of Avenue Simone Veil, a multimodal thoroughfare that connects the city's downtown to the RN 137, providing alternative access to La Rochelle and supporting a new 500-space parking facility. The project was commissioned by the Communauté d'Agglomération de La Rochelle (CDA La Rochelle) and was managed by SCE La Rochelle. Eiffage Route, a well-established public works company, was tasked with the execution of the project, integrating eco-friendly design principles to minimize environmental disruption.

One of the major challenges of this project was to manage and treat stormwater runoff from the road while preserving the Tasdon marshland, a sensitive natural environment the avenue crosses. As part of a sustainable water management solution, a 700-meter infiltration channel was constructed alongside the road to collect and treat runoff. A critical element of this system was the installation of OSMORIA Geoclean Crystal, an innovative depolluting aquatextile, designed to capture and biodegrade hydrocarbons typically found in roadway stormwater.

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CASE STUDY

Sensitive environment and stormwater management

Challenge

As urbanization intensifies, managing stormwater in a way that reduces pollution and preserves natural ecosystems has become a significant challenge for municipalities and engineers alike. This project aimed to resolve several key issues.

Firstly, the increased road surface presented a risk of substantial hydrocarbon pollution from vehicle emissions and accidental oil spills. Roadway stormwater runoff typically contains hydrocarbons, including polycyclic aromatic hydrocarbons (PAHs), which are known for their persistence and harmful effects on both terrestrial and aquatic environments.

Additionally, the project required a solution that could integrate seamlessly with the natural landscape of the Tasdon marshland, a protected area, while ensuring that stormwater infiltration did not introduce pollutants into the ecosystem. This created a demand for a stormwater management approach that went beyond standard filtration and drainage systems. The solution needed to actively treat the water as it infiltrated the ground, thereby minimizing the environmental footprint of the new infrastructure.

Moreover, there was a need to avoid the complex and costly infrastructure traditionally associated with stormwater treatment plants or underground drainage networks. The CDA La Rochelle desired an environmentally sustainable approach that would be cost-effective and low-maintenance in the long term, while still capable of treating stormwater at the source before it could infiltrate the marshland.



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Solution

To address these challenges, the project team selected OSMORIA Geoclean Crystal, an advanced active depolluting aquatextile, as the primary solution for treating the roadway runoff. This innovative material was deployed within the 700-meter-long infiltration channel along Avenue Simone Veil, covering an area of approximately 2,200 m². The aquatextile was placed at the bottom of the valley, beneath a permeable layer of topsoil, allowing for both filtration and treatment of the runoff before it could seep into the surrounding natural environment.

OSMORIA Geoclean Crystal operates by binding hydrocarbons and PAHs from the stormwater as it passes through the infiltration channel. What sets this material apart from traditional filtration systems is its ability to not only capture these pollutants but also to facilitate their biodegradation over time. The aquatextile's structure is embedded with a natural growth activator in the form of continuous blue filaments, which stimulate the colonization of microorganisms in the soil and water. These microorganisms, in turn, break down the hydrocarbons attached to the aquatextile, ensuring that the material retains its effectiveness in pollutant removal over the long term.

This approach provides a sustainable and environmentally friendly solution to managing hydrocarbon pollution, reducing the need for more complex and costly infrastructure, such as oil/water separators. Furthermore, the system is self-sustaining, requiring minimal maintenance. The microbial degradation process is continuously renewed by the natural environment, ensuring that the aquatextile maintains its pollution retention and degradation capabilities for years to come.

In addition to its functionality, the aquatextile blends harmoniously into the landscape, supporting the aesthetic and ecological goals of the project. The vegetated infiltration channel was designed to complement the surrounding environment, promoting biodiversity and reducing the visual impact of the new roadway infrastructure. By incorporating cycle paths and footpaths, the project also enhances sustainable mobility options for residents, reducing car traffic in the town centers of La Rochelle and Aytré.

One of the standout features of the OSMORIA Geoclean system is its ability to manage both chronic and localized



hydrocarbon pollution. While the primary concern was the long-term accumulation of pollutants from vehicle emissions, the system is also equipped to handle accidental spills. This flexibility ensures that the stormwater management system can adapt to varying levels of pollution without compromising the integrity of the surrounding environment.

By treating stormwater at the source, the system reduces the risk of pollutants reaching sensitive ecosystems such as the Tasdon marshland. This proactive approach to stormwater management not only protects local biodiversity but also contributes to the long-term sustainability of the region's water resources.

In conclusion, the Avenue Simone Veil project in La Rochelle showcases a cutting-edge solution to the challenges of stormwater management in urban environments. The installation of OSMORIA Geoclean Crystal depolluting aquatextile offers an effective, low-maintenance method for capturing and degrading hydrocarbons from road runoff, ensuring that stormwater infiltrates into the ground in a depolluted state. The integration of this technology into the natural landscape aligns with the project's broader goals of sustainability, ecological preservation, and enhanced mobility. This innovative approach sets a benchmark for future infrastructure projects seeking to balance urban development with environmental stewardship.

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