

**Saturated-Unsaturated Groundwater Flow model to assess the design of Sustainable Urban Drainage Systems
Abstract n°2097**

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KEYWORDS: infiltration, groundwater model, SuDS

The accelerated cities expansion in recent decades, have had various environmental impacts+ one of them has been the replacement of permeable and semi-permeable natural soils by impervious surfaces+ this fact and the climate change have produced an alteration of water cycle in urban areas. The rain water management concept in cities, have changed from the typical perspective known as end of pipe solution, to a more integral concept of sustainable approach to mitigate the externalities of urbanization. Sustainable Urban Drainage Systems (SuDS) aim to look for alternatives to improve the runoff management, and Infiltration is one of the mechanisms that could be implemented to restore the water cycle, mainly in permeable soils due to its condition to recharge a quifers. The objective of this study is to assess the design of ground and underground infiltration tanks, build up from modular geocells, for different types of soils, taking into account the infiltration rates through the unsaturated zone up to the water table. A numerical saturated-unsaturated ground water flow model was implemented in Feflow to evaluate the different alternatives proposed. The Feflow infiltration rates outputs were used to optimize the design process of tanks based on the variation on water level inside the infiltration structure.

