



Sizing efficient underdrains for treatment wetlands

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Treatment wetlands are recognized as an effective technology for mitigating the impacts of urban runoff. However, there is no consensus on the design guidelines, and the effects of some design features, such as the underdrain system, remain unexplored.

A simple analog model has been developed to mimic the underdrain network (when operating at saturation) and to evaluate the spatial heterogeneity of the flow entering it. The model has been applied to a treatment wetland in the Paris area and shows that the underdrain network was largely undersized, likely causing an uneven distribution of infiltrating flow along the length of the treatment wetland. It was also shown that this analog model can be used for optimization purposes and that it is important to use conservative values of the rugosity coefficient when designing an underdrain network.