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Implement of JW ecological technology to an area under heavy rainfall

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Floods and droughts are exacerbated due to global warming and climate change. Heavy rainfall often leads to serious flooding events. How to improve traditional methods for storm sewer system design or alternative measures therefore has become an important issue in Taiwan. The objective of this study is to use the SWMM module to simulate the use of the JW eco-technology (JWET) in an area under different heavy rainfall resulting in surface runoff and infiltration. A small region in a city in north Taiwan is selected as the target area for the simulations and the results are compared with the flood potential map produced based on the simulation results from the SOBEK model developed by Deltares System for river, urban or rural management. The low-impact development module of the SWMM is chosen to simulate the spatial distributions of surface runoff and infiltration using the JWET in the target area under different heavy rainfall intensities. The results show that the implement of JWET to the target area can effectively reduce surface runoff and significantly increase surface infiltration and groundwater recharge. In other words, the implement of JWET to an urban area can achieve the objective of environmental adaptation and reduce the loss of people's lives and property.

Keywords: heavy rainfall; low impact development; JW ecological technology