

Effectiveness of LID Technologies to Mitigate the Impact of Climate Change on Stormwater Design Storms

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Abstract. Current prediction models are showing an increase in intensity and frequency of rainfall events due to climate change's effects on atmospheric temperature. This increase in precipitation can result in increases in peak runoff as well as total runoff volume. Low Impact Development (LID) can be used to mitigate these increases in water runoff through the uses of various hydraulic detention or infiltration practices. Three different site designs (Small commercial, residential, and big-box store) will be used as case studies for three different locations (coastal, midlands, and piedmont) and will be modeled in HEC-HMS. The SCS rainfall distribution and infiltration rate are the only variables that change from the locations. Precipitation from 0.5 to 12 inches, in steps of 0.5 inch, is run for each scenario to obtain rainfall-sub basin response curves that compare the pre-development, standard post-development and LID post-development. These curves will illustrate the impact of LID technologies to reduce the peak runoff and runoff volume when compared to standard design, for a range of precipitation rates.