ANALYTICAL HYDROLOGICAL MODELLING OF GREEN ROOF TECHNOLOGY ON A WATERSHED BASIS

By: Andrew Chan
Master of Applied Science, 2009
Environmental Applied Science and Management
Ryerson University, Toronto, Ontario, Canada

ABSTRACT

Urban stormwater design usually involves a continuous simulation model (CSM). A CSM can determine numerous scenarios and outputs implementing best management practices (BMP). Green roof technology has recently emerged as a BMP. Although a CSM is accurate, an alternative type of model can be used for preliminary planning stages. Based on statistics, analytical modelling does not involve complex computer simulations and is appropriate at planning stages. This applied study calibrated an analytical model using outputs from a CSM created for the Highland Creek watershed in Southern Ontario. The analytical model predicted total runoff volume and runoff volume reduction (from green roof technology) within 0.6-6% and 4-8% respectively. Runoff reduction from other research has been found in the range of 1-12%. Analytical tools combined with the Unit Response Function (URF) method can easily be changed for any watershed and
highlights the usefulness for predicting runoff on a volumetric basis for watersheds.