RAINFALL-RUNOFF MODELING USING HEC-HMS

By

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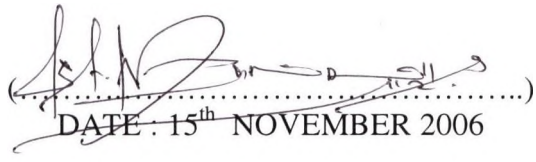
DECLARATION BY THE CANDIDATE

I (Siti Munirah Bt Ismail, 2003339917) confirm that the work is my own and that appropriate credit has been given where reference has been made to the works of others.



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ABSTRACT

The changes of natural hydrology characteristic due to the replacement of natural vegetation to a high percentage of impervious surfaces in the watershed will effect to the volume of runoff in receiving water. It is due to the increasing of surface runoff and flow velocities which will cause to decrease in flow travel time. This phenomenon has alleviate problems regarding the local runoff impacts on receiving water flow and lead to increase in flood peak. In Malaysia, flooding is one of the natural hazards that affect the communities and have caused damages worth of million every year. For more than thirty years, computer models have been used as an essential tool for flood analysis. This report depicts a hydrologic engineering study carried out at Sg. Junjung, Penang, Malaysia for rainfall runoff modelling using HEC-HMS. The Hydrologic Modeling System is designed to simulate the rainfall-runoff processes of dendritic watershed systems. HEC-HMS model was used to predict design flow for major system (ARI 50 and ARI 100 years). The data collected were used to develop flow rating curve and to derive historical and predicted flood hydrograph. The historical flood hydrograph for the 20^{th}-21^{st} October 2005 was used to calibrate with the predicted flood hydrograph (HEC-HMS model). The calibrated model was validated with historical flood hydrograph on storm event 15^{th}-17^{th} July 2005. Hydrographs produced by this study can be used directly or in conjunction with other software for studies of water availability, urban drainage, flow forecasting, future urbanization impact, weir design, flood damage reduction, floodplain regulation, wetlands hydrology, and systems operation.

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