

Urban flooding management using the natural drainage system case study: Tehran, capital of Iran

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Abstract The natural drainage system could be used for management of urban flooding in Tehran City, the capital of Iran. Disregarding the natural drainage networks during urban development has caused flooding issues in this city. The purpose of the study is to find the areas where watercourses are incompetent for flood control. The HydroModel tool was applied to “burn” the digital elevation model (DEM) through flood collection network using Agree DEM in ArcGIS. The runoff coefficient and Curve Number (CN) derived from land-use data were used to calculate surface runoff with the SCS Model. The distance between the natural network and current one was calculated with the Near Function. The results indicate that the maximum distance between the natural drainage system and the flood collection network is where flows divert towards the east and west. These effects are greater in the north due to steep slopes and higher runoff, and in the south and centre due to covered canals and the sewage system.

Key words natural drainage; Tehran, Iran; flood; urban runoff collection network