

Studies on Hydrology and Geomorphology of Metsimotlhabe Catchment at Thamaga, Botswana

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Abstract

The influence of urban sprawl in Metsimotlhabe river catchment at Thamaga, located in the Kweneng District (Botswana) had made significant changes in land use between the years 1980 and 2000 due to its proximity to the capital city of Gaborone. The study carried out for the two decades (1980-1990 and 1990-2000) showed that though the catchment experienced an increase in rainfall by 7% over the previous decade, peak flow during the similar periods increased by nearly 35% over its peak, suggesting the impact of land use at large. Also investigation into the changes in the Horton order ratios viz: Area, Length and Bifurcation ratios in the similar periods, showed changes by 15, 7 and 1% respectively. Other morphometric characteristics such as: Drainage density and Stream frequency also showed increases by 26.1 and 50% respectively suggesting, the catchment is likely to experience flash flood situations in near future.

Key Words: Climate Change, Hydrology, Geomorphology, Drainage Density, Horton Oder Ratios, Land Use Changes, Stream Frequency.