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Hydrological Modelling of Geological Behaviours in Environmental Planning for Urban Areas

Authors : Sheetal Sharma

Abstract : Runoff,decreasing water levels and recharge in urban areas have been a complex issue now a days pointing defective urban design and increasing demography as cause. Very less has been discussed or analysed for water sensitive Urban Master Plans or local area plans. Land use planning deals with land transformation from natural areas into developed ones, which lead to changes in natural environment. Elaborated knowledge of relationship between the existing patterns of land use-land cover and recharge with respect to prevailing soil below is less as compared to speed of development. The parameters of incompatibility between urban functions and the functions of the natural environment are becoming various. Changes in land patterns due to built up, pavements, roads and similar land cover affects surface water flow seriously. It also changes permeability and absorption characteristics of the soil. Urban planners need to know natural processes along with modern means and best technologies available,as there is a huge gap between basic knowledge of natural processes and its requirement for balanced development planning leading to minimum impact on water recharge. The present paper analyzes the variations in land use land cover and their impacts on surface flows and sub-surface recharge in study area. The methodology adopted was to analyse the changes in land use and land cover using GIS and Civil 3d auto cad. The variations were used in computer modeling using Storm-water Management Model to find out the runoff for various soil groups and resulting recharge observing water levels in POW data for last 40 years of the study area. Results were anlayzed again to find best correlations for sustainable recharge in urban areas.

Keywords : geology, runoff, urban planning, land use-land cover
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