

ABSTRACT

For many hydrological studies on an ungaged watershed, a methodology has to be select for the determination of runoff at its outlet. The Soil Conservation Services (SCS) curve number method is the most popular method used in estimating the direct runoff for small catchment. The method can be apply by specifying a single parameter called the curve number CN, the CN values for a wide variety of soil types and condition are available in tabulation form. At the same time, the possibility of rapidly combining data of different types in a Geographical Information System (GIS) has led to significant increase in its use in hydrological application.

In the present study, SCS method is to be used with GIS to estimate the runoff from Wadi Su'd watershed as a case study for agricultural watershed. The Wadi is located in Dura area of the Hebron District-West Bank. The watershed having a geographical area of 1.87 square kilometer and the average annual rainfall is around 500 mm. The rainfall and land use data were used along with the experimental data of soil classification and infiltration rate for the estimation of the runoff for the study area.

The results of the present study show that the average annual runoff depth for the study area (Wadi Su'd watershed) is 36.3 mm, and the average volume of runoff from the same watershed is 67840.2 cubic meter per year. The amount of runoff represents 7.3% of the total annual rainfall. In the present thesis, the methodology for determination of runoff for Wadi Su'd using GIS and SCS method was described. This approach could be applied in other Palestinian watersheds for planning of various conservations measures.