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ANALYSIS AND PREDICTION OF PEAK SURFACE RUNOFF OF BDA PLANNING DISTRICT-215 MATHIKERE, BENGALURU NORTH

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ABSTRACT

Runoff plays a very important role in modern urban planning. When authorities consider various developmental infrastructure and services, runoff is one important factor to be considered in the planning phase to do away with the ill effects of runoff in a future time period.

Runoff can be defined as the amount of water due to rainfall that makes its way through rooftops, pavements, roads and open ground finally to form streams. These streams due to excess runoff may result in catastrophic disasters like landslides, collapse of infrastructure, etc.

The determination of amount of runoff was calculated using the combine efforts of various software, statistical models and coefficients. The result thus arrived at will give us an approximate Peak Runoff amount and the factors that would affect the amount of runoff Runoff can be classified into three main category, namely Surface Runoff, Inter Flow and Base Flow.

In this project we have calculated the runoff of Mathikere Planning District of BDA situated in Bengaluru and predicted the runoff for the future time period of 2030. We have projected the rainfall data using certain statistical tools and also made use of the urbanization factors to compute the peak amount of runoff. Rational method is used for the calculation of peak runoff.

Softwares like Google Earth, QGIS and Microsoft Excel will play an important role in the whole study. While the first two softwares has been used for tasks such as Georeferencing, calculations of various areas under considerations, etc. Excel is used for projecting rainfall data and other similar calculations.

Finally we have calculated the amount of runoff for both the years, which is 2015 and 2030. From this we identified the factors that affect runoff in the future time period. This result might help certain government authorities to plan future developmental activities in the particular planning district. A clear change is observed regarding the difference in terrace/roof and paved/road area and it is perceived that the paved/road area and terrace/roof area has increased. Runoff value for the year 2030 has changed depending on the change in the open area and rainfall intensity. It was found that there was a slight variation in runoff value.