

## Hydrological, Hydraulics, Analysis and Design of the Aposto -Yirgalem Road Upgrading Project, Ethiopia

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**Abstract :** This study tried to analyze and identify the drainage pattern and catchment characteristics of the river basin and assess the impact of the hydrologic parameters (catchment area, rainfall intensity, runoff coefficient, land use, and soil type) on the referenced study area. Since there is no river gauging station near the road, even for large rivers, rainfall-runoff models are adopted for flood estimation, i.e., for catchment areas less than 50 ha, the rational method is used; for catchment areas, less than 65 km<sup>2</sup>, the SCS unit hydrograph method is used; and for catchment areas greater than 65 km<sup>2</sup>, HEC-HMS is adopted for flood estimation.

**Keywords :** Arc GIS, catchment area, land use/land cover, peak flood, rainfall intensity

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