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Drainage Morphometric Analysis of Watershed Basin of River Beas at Harike Pattan, Punjab-Using Remote Sensing and GIS Approach

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ABSTRACT

To understand the hydrological processes of a watershed and its characteristics, its morphometric analysis is necessary. Nowadays there is an increasing trend of using Remote Sensing (RS) and Geographic Information System (GIS) to delineation the drainage pattern and groundwater potential and its planning. In the present study Remote Sensing and GIS was used to understand the geometry of one of the watersheds of Harike Lake with much emphases on the evaluation of the morphometric parameters, which include linear parameters such as Stream number, Stream order (U), Stream Length (LU), Mean stream length (Lsm), Stream length ratio (RL), Bifurcation Ratio (Rb) relief parameters such as Basin relief (Bh), Relief Ratio (Rh), Ruggedness Number (Rn), Gradient ratio (Gh), Dissection index (Di) and aerial parameters viz: Drainage density (Dd), Drainage texture (T), Stream frequency (Fs), Form factor (Rf), Circulatory ratio (Rc), Elongation ratio (Re), Length of overland flow (Lg) and Constant channel maintenance(C). The study area is located at 31°21´23.58´´N latitude and 75°09´12.55´´E longitude in Punjab state of India. The Morphometric analysis revealed that that the watershed under study has 5th stream order drainage basin as per the Strahler method, having 625 total no. of streams, with 489 sq. km basin area with 120 km of perimeter. The drainage system of the basin is coarse with permeable subsurface strata and having good groundwater prospects.

Key words: GIS Harike, Morphometry, Punjab, Remote Sensing, Strahler, Watershed