

Groundwater Recharge Potential Zones in Udaipur District, Rajasthan, INDIA

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The groundwater potential zones in the Udaipur with a catchment area of 1813 km² has been delineated using various thematic layers including geomorphology, drainage, soil, land use, slope, topographic elevation, and net recharge. As the topography is highly undulating with rolling uplands and in-filled valleys, the velocity of runoff is high whenever the rainfall occurs during the monsoon months. Suitable relative weights have been assigned to the thematic layers on a scale of 1 to 5 based on their influence on the occurrence of groundwater potential, and thereafter integrated using ILWIS GIS software. The analysis indicated a net recharge of 2 to 5 cm per year takes place in about 62 percent of the study area. The study area has been divided into four groundwater potential zones, viz., 'good', 'moderate', 'poor', and 'very poor', which covers 12.82%, 49.65%, 33.21% and 4.32% of the study area. Since 37.53% of the study area has poor to very poor groundwater potential, immediate measures are required for ensuring sustainable groundwater management in the basin through supply-demand management as well as artificial groundwater recharge of potential aquifers. About 15% percent of the study area is suitable for artificial recharge in the southern part of the basin.

Keywords: Groundwater, Recharge, GIS, Numerical Modeling, Resource Management