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Assessment of Groundwater Zones in Maldad Watershed of Sangamner Taluka, using GIS Technique

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Abstract

Association of well and drainage line is one of the surface indicator for groundwater sources. Geographical Information System (GIS) techniques are useful in exploring the proximity of wells and drainage. In this context, the Maldad watershed of Sangamner taluka, Ahmednagar district is investigated that has an areal extent of 2337ha and covers 438 wells and 79 drainages. The database layers generated using GIS show total 66km length of drainage with the highest 4th order drainage. The locations of wells were mapped using Google Earth and the watershed boundary was delineated using Survey of India (SOI) Topographical Sheets. The crowding of well in specific areas is found qualitative indicator of good source of groundwater. The well to well proximity analysis indicates that 23.3% wells in the study area are individual, 25.6% are close with another well, 22.6% associated with another two that of 17.3% wells are in the vicinity of another three and 8.1% are close to other four wells. The drainage line and well proximity shows that 38.01% of the total wells are in 50m buffer on sides of drainage line, 31.79% in 50-100m zone, 15.89% in 100-150m zone, 8.29% in 150-200m zone and remaining 5.99% wells fall beyond 200m zone. The maximum numbers of wells fall within 50m zone indicates greater availability of groundwater along the drainage line up to 50m from the center. As the distance increase from drainage line, groundwater availability goes to minimum level. The crowding of wells are more around 3rd order and higher drainage lines indicating good source of groundwater in the study area.

Keywords: Watershed, Well proximity, Drainages, GIS, Maldad watershed, Sangamner taluka, Ahmednagar district.