Occurrence and Development of Groundwater in the Deccan Trap Basalts of Semi-arid parts of Maharashtra, India

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Deccan trap basalts are of Cretaceous-Eocene age covering an area of about 500,000 sq. km in the western and central parts of India. In the central part of Maharashtra state the climate is semi-arid. The predominant rock type is Deccan trap basalt, which consists of several flow units. The thickness of individual flow unit may vary from a few meters to 50 m. The individual flow units are separated from each other by either residual palaeo-soils (bole) or interflow sedimentary deposits (intertrappeans). Deccan traps usually form poor aquifers due to lack of open spaces, viz. vesicles and lava tubes. Groundwater occurs both under unconfined and confined conditions.

Yield of large diameter dug wells in this area is in the range of 0.01- 0.05 $m^3 s^{-1}$. Borewells are of 10 – 25 cm diameter and 40 –50 m depth having a yield of 1 to 2 x 10^{-3} $m^3 s^{-1}$. Borewells located on the intersection of lineaments have higher yield (0.02 –0.04 $m^3 s^{-1}$). Groundwater recharge is about 10% of rainfall . Tritium and ^{14}C data indicate lack of interconnection between shallow and deeper aquifers.

Artificial recharge by percolation (infiltration) tanks is the main method for augmenting groundwater recharge. The recharge from these tanks is estimated to be 30 to 60% of impounded water depending upon the soil and bedrock characteristics.