

Geotechnical Parameters Impact on Artificial Ground Water Recharging Technique for Urban Centers

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ABSTRACT

Water scarcity is a serious problem throughout the world for both urban & rural community. Urban centers in India are facing an ironical situation of water scarcity today. This paper includes an Analytical solution, Numerical modeling, Empirical approaches, In-situ test results to predict recharge (rate) mound of the ground-water and capacity of recharge well which is essential for the proper management of suitable artificial ground-water recharge systems to maintain water balance and stop salt water intrusion. Authors have derived analytical equation for predicting growth as well as decline of the ground-water mound depending on the intensity of recharge rate qr with different value of permeability k , depth of pervious strata H and diameter of well d , also studying the effects of variation in the geotechnical parameters on water-table fluctuations. In this paper to study the impact of numerical modeling using quadratic equation for unconfined aquifer base on rainfall intensity P and a change in saturated thickness H with variation in piezometric level. Empirical approaches are for evaluation of correct value of k of an undercharged unconfined aquifer with drawdown s_0 , influence zone L , recharge rate qr . In-situ test results give actual correlation between value of recharging rate of well and permeability on field. Authors have verified recharging rate of installed well from all approaches. A result obtained from the various field case studies gives the validation of the derived equation. Scientific quality measures of aquifer water are also recorded.

KEYWORDS

Unconfined Aquifer, Well Determinant – Recharge Rate & Hydraulic Conductivity, Geometrical Properties Of Aquifer, Pre Cast Octagonal Recharge Well

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