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Estimation of Artificial Recharge through Defunct Dug-Well: A Case Study in Semi-Arid Region of South India

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ABSTRACT

An experiment to natural recharge the aquifer through defunct dug-wells by allowing the water from a catchment surrounding it to fall into the wells and seep through the bottom as well as walls of the dug-well has been carried out in Maheshwaram watershed. The water collected in the dug-well due to runoff from different episodes of rainfall has been used as an input in a numerical model and spatial and temporal effects were predicted.

The extent of recharge and the associated time lag has been quantified. Recharge estimation is crucial for planning and management of aquifer systems. It has been estimated that in the given situation artificial recharge through defunct dug-wells during the hydrological year June 2005 to June 2006 (a good monsoon year having an annual rainfall of about 1287 mm), about 1350 m^3 of water was artificially recharged by this method to revive the aquifers and at almost no cost.

Almost about 600 dug wells are needed to overcome the lowering of water table signifying that this method is not enough to overcome the declining water table in the present scenario, thus leading to an edge to decision makers to consider other options in addition to this method like crop rotation, rejuvenation of other water structures, etc.