

ABSTRACT

Groundwater being the major source of fresh water is being utilized by domestic, industrial and agriculture sectors worldwide. The present developmental activities have put pressure on the groundwater and the results are in the form of depleting groundwater level. Quantitative assessments of groundwater resources require conceptualization, quantification and modelling of often vast, complex and heterogeneous groundwater systems. Chaksu being in close proximity to Jaipur and historically rich in groundwater resources is selected for present study. Chaksu Tehsil of Jaipur district in Rajasthan covers the southern part of the Jaipur district. Pace of decline in water level has caused drying up of dug wells and compelled farmers to get these deepened by boring or replacing by tube wells and thereby incurring additional expenditure for well deepening and pumpage. A regional groundwater flow model was developed for the Chaksu region. The finite difference code, MODFLOW was chosen to solve the equation for hydraulic heads in the study area. MODFLOW has a modular structure that allows it to be modified to adapt the code for special applications. The groundwater flow modelling results reveals that the general groundwater flow is from north-west to south-eastern direction. In calibration, the RMS error has been found to be 5.154 % whereas the NRMS error came out to be 6.693 %. Simulations indicate the mean recharge rates are 130 mm/yr in Chaksu watersheds, which represent 16% of mean annual precipitation.

Key words: Groundwater, Groundwater Modelling, MODFLOW, Simulation, Calibration, RMS