

Hydrogeological framework and groundwater balance of a semi-arid aquifer, a case study from Iran.

Abstract

Climate changing and associated factors combined with considerably increases in water demand have been accompanied by severe depletion of reservoir storage of the most groundwater supplies of Iran. Shahriar aquifer in west of Tehran is a representative aquifer of these kinds. In order to meet water demand of the area and protecting groundwater from quantity and quality deterioration, precision recognition of geology, hydrologic and hydrogeologic characteristics of the aquifer is first step. The basic objective of this study is to develop the hydrogeological framework of the groundwater system in Shariar, Iran and to estimate ground-water balance as a scientific database for future water resources development programs. Based on this re-search lateral groundwater inflows, direct infiltration of rainfall, stream bed infiltration, irrigation return and surplus drinking and industrial water are the recharging factors of the aquifer. Subsurface outflows, domestic and industrial pumping wells and agricultural abstraction are the main parameters discharge the aquifer system. Water balance in the Shahriar aquifer system is in disequilibrium and a deficit of about 24.7 million cubic meters exists.

Keyword: Groundwater balance; Hydrogeology; Alluvial aquifer; Semi-arid basin; Iran.