ARTICLE INFO

Article history:
Received 22 November 2015
Accepted 14 January 2016

Keywords:
Hydrogeology;
Shallow Aquifers;
Middle Eocene;
Groundwater;
West Samalot.

ABSTRACT

The present work aims to study the hydrogeological settings of the topmost aquifers along the area lying West of Samalot (El-Minia Governorate). To achieve this target, the field geomorphologic features, the geologic exposures and structures are investigated. The subsurface successions are detected through the collected data of the drilled wells from the rigs of the Arab Contracting drilling Company (ECDC) during the field investigations. In addition, the archival data as well drilling reports and well log charts from the office of this company. The groundwater level in these wells and along the nearest eastern irrigation water canal is recorded. Pumping and recovery tests are carried out on six wells. Thirty three groundwater samples are collected and are subjected to chemical analysis. The Middle Eocene (Samalot Formation) fractured limestone is the available water bearing rocks in the investigated area. The maximum penetrated thickness reaches 225 m. It occurs under free water table conditions. The geometry of the aquifer is controlled by the fracture density, caving and fissuring. The depth to water ranges between 109.43 m to the West and 14.30 m to the East. The groundwater flows to the east and northeast towards Abo Edahab irrigation canal which acts as a discharging area rather than recharging one. An annual drop in water level occurs. It ranges between 0.5 m and 2.45 m. The aquifer transmissivity ranges between 4394.9 m^2/d and 3515.929 m^2/d (high potentiality) along the eastern parts. However, it ranges between 274.68 m^2/d and 15.13 m^2/d (moderate potentiality) in the western parts. Most of the analyzed groundwater samples are of sodium chloride and some of sodium sulphate water types. Some recommendations are given in order to best use of the available groundwater wells and the future exploration for new occurrences.