

GROUNDWATER INVESTIGATION USING GEOELECTRICAL SURVEY OF SELECTED FIELD-ZARAYAN AREA, SULAIMANYAH, NE OF IRAQ

Sarkhel Hawre Mohammed^a, Bakhtiar Qadir Aziz^b, Diary Ali Mohammed^b

^aUniversity of Miskolc, Faculty of Earth Science and Engineering, Department of Hydrogeology Engineering

^{b,c}University of Sulaimani, College of Science, Department of Geology
(sarkhel.geo@gmail.com)

ABSTRACT

The study area lies about 40 km to the SE of Sulaimanyah City, NE of Iraq, the Zarayan field selected for this study because it represents good characteristics of geology and hydrogeology and it located in the center of the Sharazoor plain. There are many wells were drilled in the area for agriculture and drinking purposes. The lack of a good groundwater management in the area is the major problem in the area which add a negative future impact.

Several geological field trip were carried out to investigate the area, and acquisition of the geoelectrical survey. The data of a drilled well was obtained including well profile and water chemistry. The well lies on the studied geophysical lines were crossed and the data from two lines surveyed obtained by using SYSCAL Jr switch-72 and later the two dimensional 2D model interpretation was performed using the last new version of software package RES2DINV, the result of interpretation of two lines survey shows the resistivity range of the aquifer in the area ranges between 10-80 ohm.m, and shows in the area two different aquifer layers at different depth with lenses of aquifer the depth of shallow one between 10-20 m and the deeper one start after 40 m depth, according to obtained interpretation the aquifers are combination between gravel and sandstone were abandoned and clay also, then compared to the obtained well data, as a result the area of the drilled well is Tanjero formation.

From the interpretation of the data it concluded that the aquifer in this area is clastic and has the ability to store huge volume of water. The quality of the water well from selected area is good for drinking according to WHO standard. The well data and geophysical data matched together which proved that the geoelectrical survey is a best way to groundwater monitoring.

Keywords: *Geoelectrical survey, groundwater resources, groundwater management.*