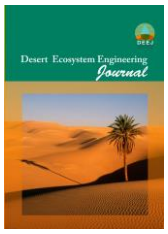
DEEJ (2014) 3 (4) 43-56

University of Kashan

Desert Ecosystem Engineering Journal

Journal homepage: http://deej.kashanu.ac.ir



Investigation of Kashan plain Aquifer Condition Using Electric Resistance Method with Shelomberje Arrangement

Mohammad Mirzavand[1]*, Reza Ghazavi[2], Seyed Javad Sadatinejad[3], Hoda Ghasemieh[4], Abbasali Vali[5]

Received: 15/03/2013 Accepted: 30/03/2014

Abstract

The present research investigates the Kashan aquifer condition, bed rock depth, thickness of aquifer saturation layer, salt water boundary and sediment permeability in Kashan plain using electric resistance with Schlumberger arrangement. In this study, 41 Latitudinal profiles and 1 longitudinal profile were used in order to evaluate aquifer condition using Geo-electric method. Based on the obtained results and using Arc-GIS software, harvested points were drawn as maps of apparent special resistance for flow lines of 300, 400, 600, 800 and 1000 m, maps of absolute elevation for bed rock, maps of iso-thickness, maps of saltwater boundary with respect to the relative quality of groundwater. Then for all profiles, pseudo-sections were mapped. Finally, results showed that aquifer qualitative condition was acceptable in western, southwest parts of aquifer and water quality reduced in northwest parts and in other points, to some extent. Also, the results showed that eastern part of the aquifer was brackish to saline due to aquifer hydraulic gradient. Changes of hydraulic gradient are leading to saltwater intrusion in aquifer especially in northeast parts.

Keywords: situation of Kashan aquifer, Electrical Resistance method, Shelomberje arrangement, water quality.

1. * Graduated M.Sc. student of watershed management, university of Kashan Corresponding author, Email: Mmirzavand23@yahoo.com
2. Assistant Professor Department of Rangeland and Watershed Management, College of Natural Resources& Earth Sciences University of Kashan
3. Associate professor Department of new sciences and technologies, University of Tehran
4. Assistant Professor Department of Rangeland and Watershed Management, College of Natural Resources& Earth Sciences University of Kashan
5. Assistant Professor Department of Rangeland and Watershed Management, College of Natural Resources& Earth Sciences University of Kashan