

Geoelectric Sounding and Hydrochemical Investigations for Groundwater Potentiality in the Area West of the River Nile, Assiut, Egypt

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Abstract

Surface geophysical investigations, in addition to hydrochemical measurements were made on some locations at the western part of the River Nile, Assiut. All the geoelectrical sounding measurements were made using the D.C. resistivity method. The obtained geophysical results were integrated as possible with all available geological and hydrogeological information in order to recognize the probability of presence water-bearing formations either fresh (low resistivity) or polluted (extremely low resistivity). Two conductive wet zones (shallow and /or deep) were detected. Also, two extremely high resistive zones can be recognized; the first represents the surface dry zone (consists of dry sands and gravels), whereas the second is deeper in the whole surveyed parts, it may represent the bed rock, (e.g. limestone). Only an extremely conductive zone (< 20 Ohm.m) especially near and at the cultivated land in El-Madabigh and Beni-Adi is present, it may correspond clayey sediments or polluted zone. The hydrochemical data showed that the salinity decreases along the regional direction of the groundwater flow and also along the sewage water movement in the irrigation canals.