

# **GEOPHYSICAL AND HYDROGEOLOGICAL STUDY TO DELINEATE THE GROUNDWATER AND SUBSURFACE GEOLOGIC STRUCTURES OF THE AREA AROUND THE TENTH OF RAMADAN CITY, EGYPT.**

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Fifty six vertical electrical soundings have been carried out to evaluate the extension of the Pleistocene aquifer and the geologic structures, that may affect the type of the groundwater. These VESes are interpreted qualitatively and quantitatively. The Pleistocene aquifer in the area is subdivided into four geoelectric zones. The first surface layer is composed of sands and gravels, with relatively high resistivity values and small thicknesses. The second zone is affected by large variations in the resistivity values, which may be due to lithologic variations within this zone. The third zone is considered to be the water bearing horizon and composed of sands and gravels. The fourth zone is characterized by low resistivity values compared with clays, sandy clays and limestone. The area is found to be affected by about 20 faults, which may affect the extension, the thickness and the type of the groundwater, therefore twelve water samples were collected from the Pleistocene aquifer in the area. The water samples were analyzed to obtain the major anions and cations and also some trace elements to study the effect of the industrial waste products on the groundwater. Pleistocene groundwater aquifer is considered as free to semi confined aquifer type. It is connected from the bottom by the Miocene formation. At the west the aquifer seems to be in direct connection with the Nile-Delta with limited entrance throughout faulting system, so the freshwater is governed by the flow from Ismailia canal and from the main Nile-Delta aquifer. This aquifer is recharged mainly from the seepage of the water of Ismailia canal and from the Nile-Delta through limited entrance of connection.