

Geomorphologic and hydrogeologic studies for some basins in the area between Abu Ghusun and Bernice, South Eastern Desert, Egypt"

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ABSTRACT

Geomorphological and hydrogeological investigations were carried out in 7 selected basins in the area between Abu Ghusun and Bernice (Eastern Desert), to evaluate their groundwater potentialities. Seven hydrogeological basins were extensively studied through morphometric analyses. These basins from north to south are Um Al Abas, Abu Ghusun, Ranga, El Reidi, Khashir, Lahami and Mukhit. These basins of second order discharge towards the coastal plain of the Red Sea at the east. The groundwater stored in the lower parts of the wadi filling and the upper fractured bedrock of the wadi (fractured basement rocks). On the other hand, the sedimentary rocks of the down stream parts of the wadis and morpho-tectonic plains contain the Miocene sandstone water bearing formations. Generally, the water bearing formation in the upstream portions of these wadis of limited groundwater potentiality. The thickness as well as the structural elements which affect water percolation and accumulation was defined.

Promising location for digging new groundwater well was recommended in these basins and the results confirmed those obtained from the geoelectric survey in these basins.

Keywords: Eastern Desert, Geomorphology, hydrogeology, Abu Ghusun, Hamata, Bernice, Ranga, El Reidi, Khashir, Lahami and Mukhit.

INTRODUCTION

The water resources represent the greatest difficulty towards the development of desert regions. Special attention should be focused on the future development for groundwater exploration, evaluation are required. In general, desired goals of any management is to obtain the maximum quantity with water quality to meet requirements at least coast. Egypt has turned to the use groundwater to satisfy the growing demand of water. In the last decades, the Eastern Desert of Egypt attracts the attention of numerous investments especially in the fields of tourism, marine sports, diving, fishing, medical treatment, agriculture, petroleum exploration, mining and quarrying.

The present area is previously studied by Samuel and Saleeb-Roufaiel (1977), Abd El Khalik (1978), Samir *et al.* (1982), Khaled (1995), Aggour (1997), Gheith and Sultan (2002), Al Temamy (2008), Kamal (2010) and Tahooun (2011). The studied area includes some selected basins are terminated at the Red Sea in the east and originate from the high mountainous range (water divide) in the west.

The present investigation is an attempt to evaluate the groundwater potentialities in these basins through geomorphological and hydrogeological approaches.