Environmental Impact on the Underground Waters in Eastern Desert of Egypt

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New areas of utilization had to be developed within the desert area where the underground water reservoir could be used. Therefore, selection of good localities for drilling new water wells suitable for human use and how to use the present water wells is very important in any development. The aim of this paper is to ultimate the benefits of the water wells and delineate their risk. There are 96 gold mines in Eastern Desert, in spite of gold mining activities started in the Pre-Dynastic period of the Egyptian history and continued up to the recent years. Besides to 2 ochre (iron oxides), 7 Pb-Zn and 3 Cu mines. In this study, we proposed the following geoenvironmental factors to ultimate the water wells availability and quality; i-Impact of the surrounded (host) rocks and the type of aquifer sediments, three main aquifers are recognized in Eastern Desert; wadi fill inside thbasement terrain (Ouaternary), carbonate (Miocene)and Nubia sandstone. ii- Impact of mining and quarries activities and the mineralized bodies in the drained basin. iii- Impact of well's situation in site of water flow in it's drained basin. New geomorphological and drainage basin maps for Eastern Desert had been prepared using Landsat ETM images and revise the published geological and topographic maps. Correlation between the published chemical analyses of the underground water for 82 wells on one side and the host rock forming minerals, mining activities, position in the drained basin and the type of the aquifer on the other side.

Elements, when leached from mining wastes are concentrated in certain parts of a drainage basin by flash flood. And contaminate the underground water with elements both from the ore body and mining activities such as Pb, Zn, Cu, and Fe and dissolved materials are high content in these wells. The alkaline water found at the footslopes of syenite mountaines. Abundance from clay minerals in underground water found at granite and syenite terrain as a result of weathering of feldspars. This study monitored that the underground water analyses reflected the rock forming minerals and mining activities in it's surroundings. The aquifer type has considerable significance.

The study elucidates that the proposed impact of these factors is actually, the first attempt in the study of the subject in Egypt. There are good water wells can people drink because of their drained basins are empty from heavy minerals, and located at good aquifers not hosted by alkaline rocks. The depth of the wells is an important factor in the same basin. The wells drilled in clay, silt, gravels and sandstones are less minerals content than that those drilled in Quaternary deposits in the same drainage basin.