GEO-ENVIRONMENTAL STUDY OF THE AREA BETWEEN INCHAS AND ABU ZAABL, EAST CAIRO, EGYPT

Submitted By

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B.Sc. of Science (Geology), Faculty of Science, Cairo University, 1982
Master in Environmental Sciences, Institute of Environmental Studies and Research, Ain Shams University, 2013

A Thesis Submitted in Partial Fulfillment
Of
The Requirement for the Doctor of Philosophy Degree
In
Environmental Sciences

Department of Environmental Basic Sciences
Institute of Environmental Studies and Research
Ain Shams University

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APPROVAL SHEET

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ABSTRACT

The study area lies around Ismailia Canal which is one of the most important branches of the Nile River in Egypt. It is the main source of drinking and irrigation water for many cities. This canal was constructed in 1862 to supply drinking water to the villages on the Suez Canal zones and to the workers during digging the Suez Canal Navigation Route.

Twenty three groundwater samples were collected from the area east and west of Ismailia Canal. The collected samples represent regions of Mashtool El Souq, Abu Zaabal, Shebeen El Qanater, Al Monier, Salamant, Inchas, Inchas El Raml, Belbees and Al Obour.

Fifteen surface water samples were collected from Ismailia Canal along Cairo - Ismailia agricultural road, in addition to, Abu Zaabal lake which characterized by high salinity. Each surface water sample was labeled and identified according to its location. TDS, EC and pH were measured in the field.

Twenty one soil samples were studied from the cultivated and reclaimed lands east and west of Ismailia Canal. The soil samples were selected close to the sites of water samples, whether it is groundwater or surface water and labeled accordingly. The samples were collected from five different points and mixed together to represent the location of sampling.

The objective of the study is to discuss the chemical and physicochemical characteristics of groundwater and surface water of the study area. The chemical and physicochemical characteristics comprise the abundance and distribution of major ions, heavy metals, Hydrogen

Ion Concentration (pH), Total Dissolved Salts (TDS), Total Hardness (TH) and Electrical Conductivity (EC).

Spatial distribution maps of chemical constituents and heavy metals of groundwater in the study area were provided by using Arc GIS technique Ver. 10.1 to explain the areal distribution of these constituents.

The study showed that many concentrations of heavy metals in groundwater, surface water and soil exceed the proportions allowed by international standards, whether in drinking, irrigation or household uses.

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