شبكة المعلومات الجامعية

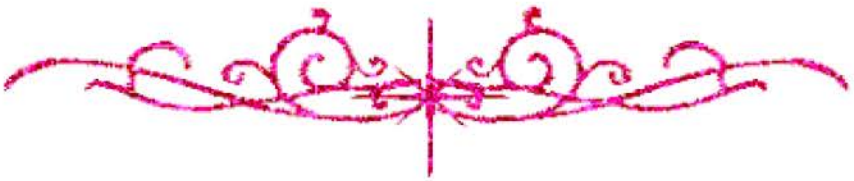
بسم الله الرحمن الرحيم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



HOSSAM MAGHRABY

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

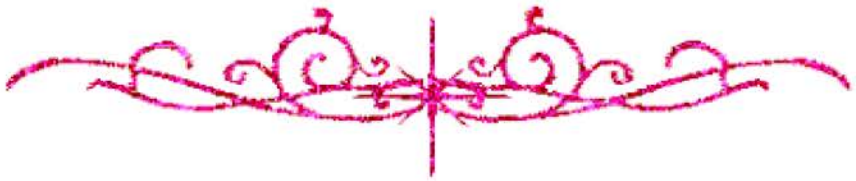
يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة



HOSSAM MAGHRABY

شبكة المعلومات الجامعية

بالرسالة صفحات

لم ترد بالأصل

HOSSAM MAGHRABY

Minufiya University
Faculty of Science

جامعة المنوفية
كلية العلوم

"GEOPHYSICAL STUDY ON THE GROUNDWATER OCCURRENCE IN THE DELTAS OF SOME WADIS, GULF OF AQABA, SINAI"

Thesis

Submitted to Dept. of Geology, Faculty of Science, Minufiya University, In Partial Fulfillment of the Requirements for the Degree of Master (M.Sc.) in Geophysics

By

Mostafa Said Mostafa Barsim
B.Sc. Chemical Geology (1995)
Minufiya University

Supervisors

Prof. Dr. Maghawry Sh.Diab
Prof of Hydrogeology,
Ex. Head of Minufiya University

Prof. Dr. Mohamed .Mabrouk
Prof. of Geophysics,
Desert Research Center

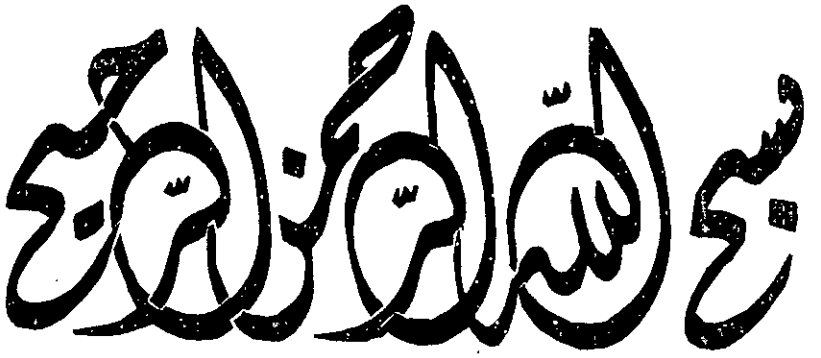
Dr. Ahmed Mohammed A. Yousef
Assistant Prof. of Geophysics,
Desert Research Center

Approved by:

1- **Prof. Dr. Nasr Mohamed Abo Ashour**
2- **Prof. Dr. Mahmoud El- Hefnawi**
3- **Prof. Dr. Maghawry Shehata Diab**
4- **Prof. Dr. Mohamed Abas Mabrouk**

January
(2003)

Approved
1 / 2 / 2003


بسم الله الرحمن الرحيم

STATEMENT

The present thesis is submitted to the faculty of Science, Minufiya University, in partial fulfillment of the requirements for the degree of Master of Science in Geophysics.

Beside the resersh work materialized in this thesis, the candidate has attentede eleven postgraduate courses for one academic year in the following topics.

1- Remote sensing.
2- Seismology.
3- Geophysical exploration.
4- Well logging.
5- Statistics.
6- Computer.
7- English.
8- Geoelectric.
9- Avanced structure geology.
10- Data processing.
11- Mathematics.

He has successfully passed the final examination of these courses.

ACKNOWLEDGMENTS

Praise be to my God for granting me health and patience to complete this thesis.

I wish to express my deep gratitude and appreciation to Prof. Dr. Maghawry Sh. Diab, ex. president of Minufiya University, for supervising and for critical reading and revising the manuscript.

I wish to express my deep gratitude and appreciation to Prof. Dr. Mohamed A. Mabrouk, president of Geophysics Department, Desert Research Center, for suggesting the point of research, supervising and planning the work and critical reading and revising the manuscript.

Special thanks are due to Dr. Ahmed Mohammed A. Yousef, Assistant Prof. of Geophysics, Geophysics Department, Desert Research Center, for his continuous advise during the field work, for help during the interpretation of the data, encouragement and revising the thesis.

Thanks are due to Dr. Magdy Mina Gergis, Geophysics Department, Desert Research Center, and Dr. Ahmed Esmael, Geologic Survey of Egypt, for their help in magnetic interpretation.

Special thanks to the staff members of the Geophysics Department, Desert Research Center, specially, Mr. Ayman M. Al- Temamy, Mr. Mamdouh F. Hamed and Mr. Ahmed M. Al- Shenawy for their help during the fieldwork.

Thanks to Dr. Ashraf R. Shabana, Geology Department, Desert Research Center, for his help and encouragement.

Finally, I wish to express my gratitude and appreciation to my parents, wife, brother and sisters for their patience and continuous encouragement

ABSTRACT

The growing settlements, communities and tourism resorts along the Gulf of Aqaba coast have caused an ever-increasing demand for water. Groundwater can be considered as main source in supplying that coastal area with the needed water.

The deltas of Wadi Dahab and Wadi Kid on the Gulf of Aqaba are two promising areas concerning agricultural and tourism development. The extensive area and outstanding location of these two Deltas support the capability of the two areas to share in such a development. Both of the deltas have been selected to carry out the present geophysical study.

The Delta of Wadi Dahab occupies an area of about 8 km^2 and lies between longitudes 28° 28' 01'' and 28° 31' 02'' E and between latitudes 34° 32' 01'' and 34° 28' 05'' N. On the other hand, the Delta of Wadi Kid covers an area of about 100 km^2 and bounded by longitudes 28° 27' 30'' and 28° 19' 53''E and latitudes 34° 15' 00'' and 34° 05' 01'' N.

The present geophysical work has been carried out with the main purposes of delineating the subsurface geologic setting, delineating the groundwater aquifer/aquifers in the study area and to study the impacts of the structural elements on the groundwater occurrence in the study area.

In order to fulfill such objectives, land magnetic measurements as well as geoelectrical resistivity sounding survey have been carried out in the investigated Deltas. The measurements included measuring the total magnetic intensity along 3 profiles in the Delta of Wadi Dahab and 8 profiles in the Delta of Wadi Kid. The geoelectrical resistivity sounding

survey included measuring forty six stations distributed between the Delta of Wadi Dahab (19 sounding stations) and the Delta of Wadi Kid (27 sounding stations).

The interpretation of the magnetic data along three profiles in the Delta of Wadi Dahab revealed the presence a number of repeated horsts (uplifted basement) and grabens (basins) controlled by four normal faults. The minimum estimated depth to the basement is 63 m at the northeast part of the delta and increases regionally southwestwards to reach 235 m.

The corrected total magnetic intensity values measured along eight profiles in the Delta of Wadi Kid and the constructed intensity map revealed that the delta had been subjected to a complex structural pattern through a number of normal faults that control the regional eastward slope of the basement surface.

In the Delta of Wadi Dahab, the interpretation of the 19 soundings led to identification of six main geoelectrical layers. The whole succession can be only observed at the eastern parts of the Delta. The second geoelectrical layer (sand and gravel) and the fourth one (sandstone) are considered as the water bearing layers having resistivity range of 11-70 Ohm-m and 22.6 - 44.2 Ohm-m, respectively. From the constructed geoelectrical cross sections, Four normal faults have been found to affect the succession.

In the Delta of Wadi Kid, six geoelectrical layers had been identified with different distribution at the conducted 27 soundings. The second geoelectrical layer (sand and gravel), the fourth geoelectrical layer (clayey sand and fine sand) and the fifth geoelectrical layer (sandy clay) represent