

HYDROGEOLOGICAL STUDIES OF SUDR AREA ,
SOUTHERN SINAI , EGYPT

A THESIS

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DEGREE OF MASTER OF SCIENCE

in

GEOLOGY

BY

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NOTE
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The present thesis is submitted to Ain Shams University in partial fulfillment of the requirements for the Master Degree of Science in Geology .

Besides the research work materialized in this thesis , the candidate has attended nine graduate courses for one year in the following topics :-

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- Photogeology .
- Sampling techniques .
- Mapping .
- Data processing .
- Fluid mechanics .
- Filtering techniques .
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CHAPTER I

Chapter 1

INTRODUCTION

The area under consideration (Sudr and Abu Seweira) Which is a part of the Sinai Peninsula has promising potentialities for future land-use projects. So, groundwater resources are of essential importance to these projects which represent the great demands at Egypt particularly in the arid zones.

1- Location of the studied area :

The area of study is situated on the eastern side of the Gulf of Suez in west-central Sinai. It lies between latitudes $29^{\circ} 30'$ and $29^{\circ} 40' N$ and between longitudes $32^{\circ} 40'$ and $32^{\circ} 50' E$ Figures(1a) and (1b).

2- Objectives of the present work :

The main objective of this work is study in detail the hydrogeological conditions of the study area. This study is based upon the study of the physiographic features (climatic conditions and geomorphology), The geologic setting, the hydrologic conditions of the Pleistocene aquifer and the hydrogeochemical functions of the groundwater.

The hydrogeological status of the Sudr and Abu Seweira areas is interpreted as well as the groundwater is evaluated for drinking, irrigation, industrial uses and poultry purposes.

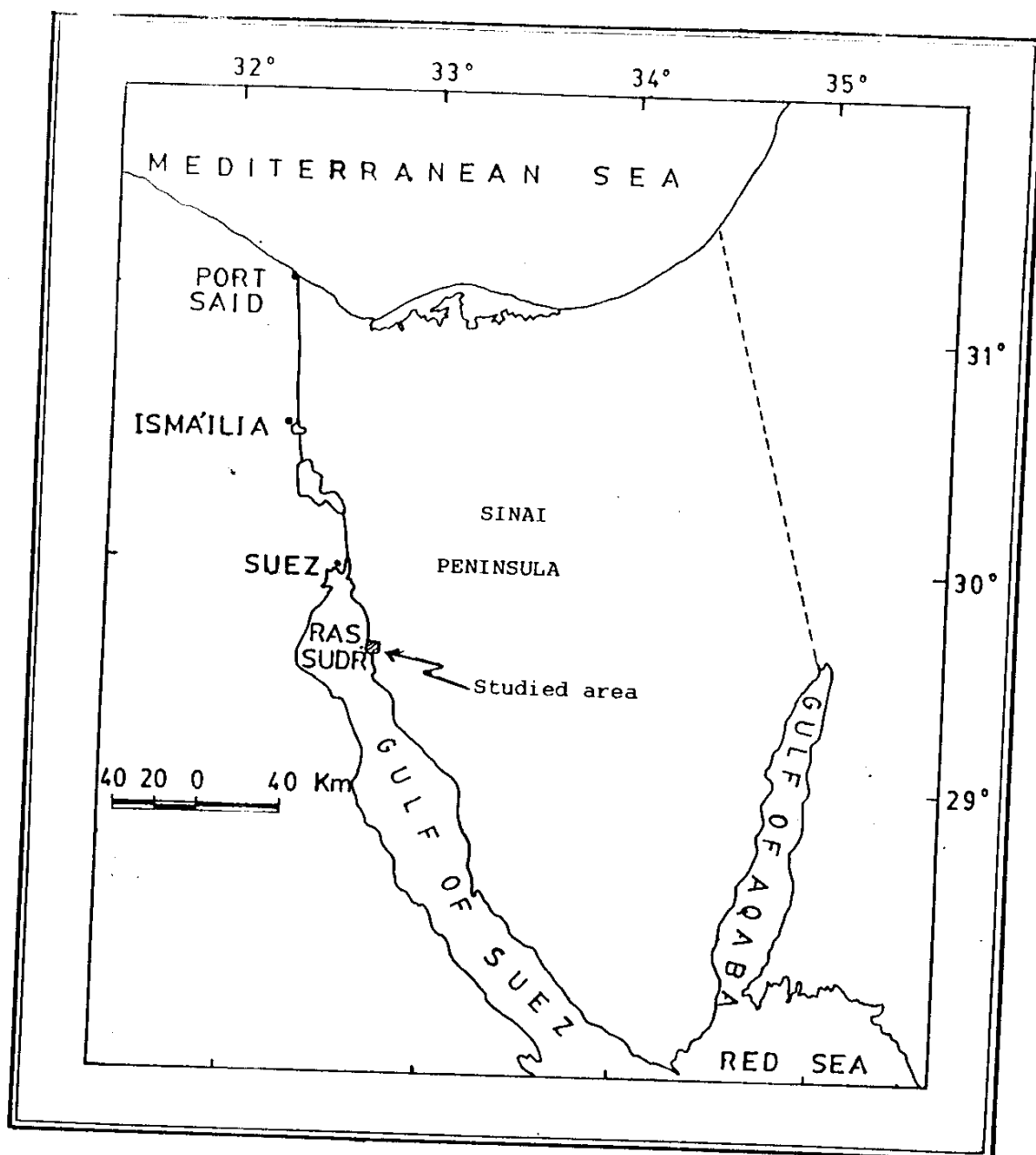


Figure (1a) : Location map of the studied area .

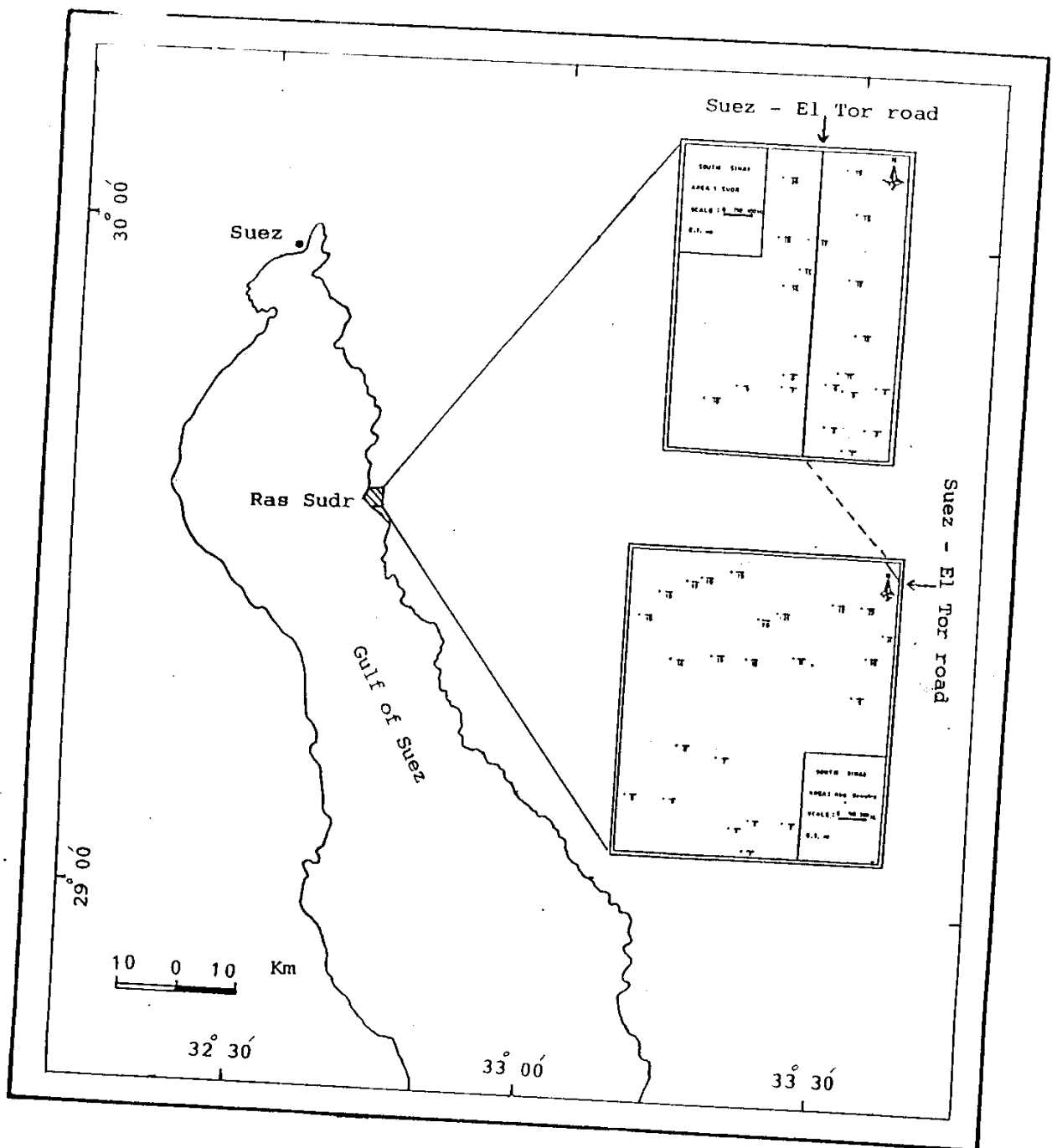


Figure (1b) : Detailed location map of the studied area .

3- Steps of investigations :

The following steps were followed in the present study :

- i - Study of the climatic conditions and their hydrogeological implications.
- ii- Study of the landforms and drainage pattern to give an idea about the physiographic features of study area.
- iii- Review of the previous work carried out on the studied area.
The geologic setting of the area is summarized after dealing with the available literatures .
- iv- Study of the hydrological conditions such as hydrological parameters (permeability, transmissibility and storativity), groundwater flow pattern, recharge and discharge area and the hydraulic gradient.
- v - Study of the hydrogeochemical functions of the study area.

The following field and laboratory methods of investigation were carried out :-

3- 1- Field Methods :

Field methods used in this study include the following :-

- i - Surveying the dug and drilled wells at Sudr and Abu Sewaira areas and constructing the base maps for both areas, see tables (1) and (2)
- ii- Periodic field measurements of the water depths in the dug and drilled wells.

Table (1) : Dug and Drilled wells at Sudr area .

Description Well no.	Well Owner	Ground Elevation (m)
1	Awad Salim	9.00
2	Government well	—
3	Sileam Sallam Auda	—
4	Soilam Salama	—
5	Desert Institute*	10.19
6	Desert Institute*	—
7	S. Aid Abu-Sabaa	6.40
8	N. Aid Abu-Sabaa	6.66
9	Sileam Abu-Salam	2.79
10	Mosalm Abu-Said	1.14
11	Desert Institute*	10.32
12	Mosaad zedan	—
13	Khames Adbes	12.16
14	Salem Abu-Ali	8.00
15	Aid Sileam	—
16	Atia Hamed	12.09
17	Hossen Aid Soleman	8.01
18	Bir Atta	5.70
19	Soliman Hamed	11.15
20	Sileam Salman	5.7

* Drilled wells

Table (2) Dug Wells at Abu Seweira area

Description Well no.	Well Owner	Ground Elevation (m)
1	Shikh Salama	11.11
2	Hag Moharib	12.35
3	Salim Sileam	11.76
4	Aid zaazoa	10.66
5	Mosad Zidan	9.68
6	Mohamed Mossalem	8.14
7	Hag Sallam	11.61
8	Aid zaazoa	10.84
9	Gomaa Mohamed Soleman	14.10
10	Gomaa Mohamed Soleman	—
11	Mosleh Aid	12.80
12	Hag Attia	11.90
13	Shigh Soleman	11.36
14	Aid zaazoa	10.41
15	Awad Silmy	—
16	Mossalem Aoda	9.56
17	Hamdy Abied	—
18	Salman Halluk	—
19	Said Salama	—
20	Shigh Salman Said	—
21	Aoda Said	—
22	Aid said	—
23	Allan Aid	—