AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
IRRIGATION AND HYDRAULICS DEPARTMENT

INTEGRATED SUPPORT SYSTEM FOR DRAINAGE WATER MANAGEMENT IN THE NILE DELTA

BY

Eng. Rasha Mohamed Saeed Mahmoud El-Kholy

(B.Sc. Civil Engineering , Ain Shams University , 1993)

A thesis

Submitted for the Fulfillment of the Requirements for the

DEGREE OF MASTER OF SCIENCE

IN CIVIL ENGINEERING

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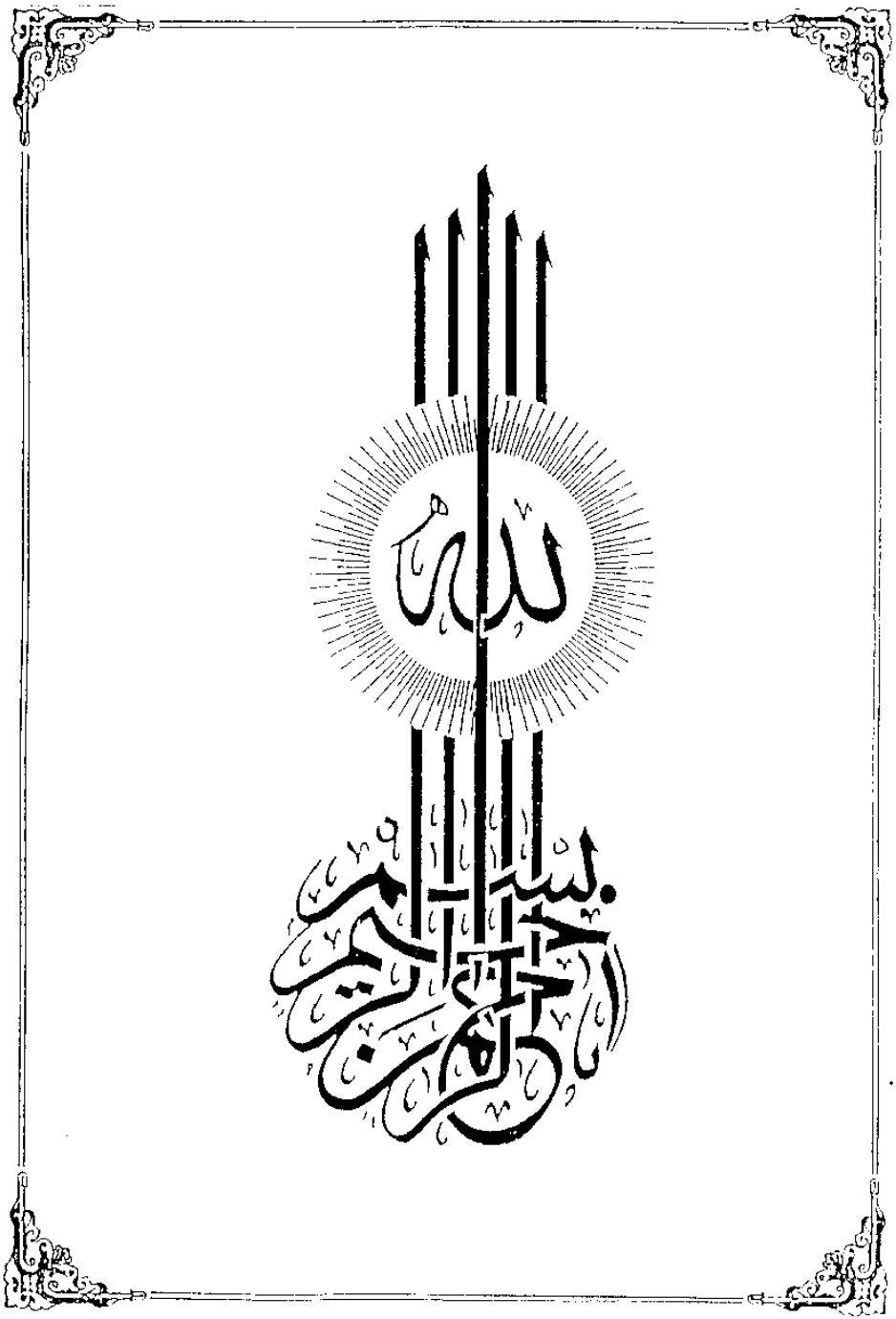

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STATEMENT

This dissertation is submitted to Ain Shams University for the degree of Master of Science in Civil Engineering.

The work included in the thesis was carried out in the Department of Irrigation and Hydraulics, Ain Shams University, from January 1996 to May 1997.

No part of this thesis has been submitted for a degree or a qualification at any other University or Institution.

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ABSTRACT

This study is aimed to develop a simple computer software application that makes use of the water quality available data of the whole drainage system to identify locations of problems, using the GIS technology. The presentation is made in a very simple way that any user could get information out of it without having a back ground of the used software ARC/INFO or the procedure followed for data formatting, analyzing or handling. That could be done in a short time to get an overall opinion or initial decision about any location, drain or region.

To accomplish this work six steps were followed:

First introducing real drainage map with names and lengths of the drains and the monitoring locations with codes and real world co-ordinates.

Second handling a huge amount of analysed chemical and biological data and linking it with the map.

Third giving patterns, trends and profiles of all locations especially in major drains.

Forth making classifications of the major parameters used, according to high and low levels.

Fifth developing the system that could answer the required questions and highlight the potential locations of pollution problems or availability of reuse.

Sixth applying law-48 to assess the drainage water status and also classifying the parameters exceeding the national standards into categories.

As an application for the system, a case study (Eastern Delta) was conducted and Bahr El Baqar drain was chosen as an example of the sites suffering from high pollution problems.

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BOD	Biological Oxygen Demand
Ca	Calcium
Cl	Chloride
COD	Chemical Oxygen Demand
Cu	Copper
EC	Electrical Conductivity
Fe	Iron
HCO3	Bicarbonate
K	Potassium
Mn	Magnesium
Mn	Manganese
Na	Sodium
NH4	Ammonia
NO2	Nitrite
NO3	Nitrate
P	Phosphorus
Pb	Lead
pH	Hydrogen Ion
SAR	Sodium Adsorption Ratio
SO4	Sulphate
TDS	Total Dissolved Salts
TSS	Total Suspended Solids
Zn	Zinc