شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

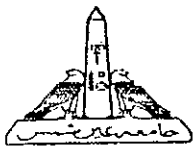
تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل



Ain Shams University

Faculty of Engineering

Irrigation and Hydraulics Department

Water Quality Management of Drainage Systems in Western Delta

By

Eng. Sherien Ahmed El-Sayed Zahran

(B Sc. Civil Engineering, Zagazig University / Shoubra)

A Thesis Submitted in Partial Fulfillment

of the Requirements for the Degree of

MASTER OF SCIENCE IN CIVIL ENGINEERING

Supervised by

Prof Dr Osman Ali Elnawawy

Irrigation and Hydraulics Department

Faculty of Engineering, Ain Shams University, Cairo

Prof. Dr. Mona Mostafa El-Kady

Chairman of National Water Research Center

Ministry of Public Works and Water Resources, Cairo

Dr Gamal Abd El-Nasser Kamel

Drainage Research Institute

National Water Research Center, Kanater

Dr Nagy Ali Ali Hassan

Irrigation and Hydraulics Department

Faculty of Engineering, Ain Shams University, Cairo

Cairo, Egypt

2000

بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

سورة البقرة – الآية ٣٢

M.Sc. Thesis submitted by

Eng. Sherien Ahmed El-Sayed Zahran

in Civil Engineering (Irrigation and Hydraulics)

Examiners Committee

Prof. Dr Thany Fahiem Yossef

Civil Engineering Department

Faculty of Engineering. Helwan University, Cairo

Prof. Dr. Abd El-Kawey Ahmad Mkhtaar

Irrigation and Hydraulics Department

Faculty of Engineering Ain Shams University, Cairo

Prof Dr. Mona Mostafa El-Kady

Chairman of National Water Research Center

Ministry of Public Works and Water Resources, Cairo

Prof. Dr. Osman Ali Elnawawy

Irrigation and Hydraulics Department

Faculty of Engineering. Ain Shams University, Cairo

STATEMENT

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

The work included in this thesis was carried out by the researcher in the Department of Irrigation and Hydraulics, Ain Shams University and in the Environment and Climate Research Institute, National Water Research Center, Ministry of Public Works and Water Resources from December 1994 to1999.

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

Date :

Name : Sherien Ahmed El-Sayed Zahran

Signature :

ABSTRACT

In Egypt water demand is increasing rapidly parallel to the population increase. At the same time, Egypt's share from the Nile water is fixed (55.5 billion m^3/yr). There is also limited rainfall in Egypt along the northern coast (0.2 m/yr).

Several strategies were thus planned to utmostly benefit from the available water resources to satisfy the future requirements. Among these strategies is the re-use of the agricultural drainage water in irrigation. Currently, only about 4 billion m^3/year are re-used. This quantity will be increased to 7 billion m^3/year in the year 2000.

In this research, the re-use of agricultural drainage water is investigated. El-Omoum drain was chosen to be our case study. It is one of the most important drains west of the Nile Delta of Egypt. It discharges about 6621 m^3/day to lake Mariout. This water is then pumped at El-Max pump station to the Mediterranean sea. The study investigates the water quality in El-Omoum main drain and the impact of re-using drainage water from Shereshra or Truga area.

The study phases thus proceeded by identifying the quality of the water in El-Omoum drain. This was achieved by a monitoring program in the period 1994 to 1996. The results of the program were then compared to the national and international standards (law 48/1982 and FAO , respectively). The water quality indices were also calculated generally and for every season for specific purposes. The seasonal monitoring data were introduced to a mathematical model "QUAL2EU". Different scenarios were then suggested for the safe re-use of El- Omoum main drain. The statistical results of the data collected are presented in this research. The results indicate that the Sodium was the dominant cation while the Chloride was the dominant anaion. All the parameters increase in the direction of El-Omoum main drain outfall and this is due to the polluted drainage water which was lifted to the main drain. The results of indices indicate that the Sodium and the Chloride were the most effective parameters for irrigation purposes in the area. The results of the suggested scenarios in the model indicate that the drainage water either from Shereshra or Truga area can be re-used for irrigation and the difference of the impact between each of them is insignificant. It is recommended to re-use the drainage water from Shereshra because of its high quantity and good quality.

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