سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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سامية محمد مصطفى

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

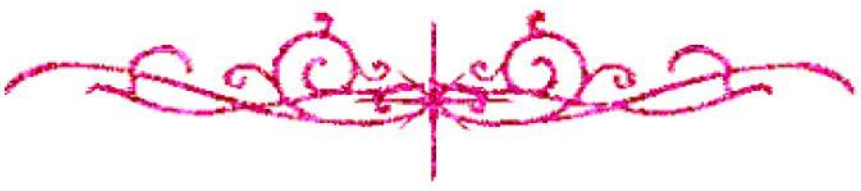
يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

سامية محمد مصطفى

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة



سامية محمد مصطفى

شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

CAIRO UNIVERSITY
FACULTY OF ENGINEERING
IRRIGATION AND HYDRAULICS DEPARTMENT

EFFECT OF THE WASTEWATER DISCHARGES ON THE WATER QUALITY OF BAHR EL BAQAR DRAIN

BY

ASHRAF EL SAYED MOHAMED ISMAIL
B.Sc. IN CIVIL ENGINEERING
(1985)

A THESIS SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE DEGREE OF MASTER OF SCIENCE IN CIVIL ENGINEERING

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(1994)

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ABSTRACT

The Egyptian water requirements in different fields are rapidly increasing while the water resources are limited. Therefore, the water planner started to consider the reuse concept including both agricultural drainage water and sewage water in irrigation. Bahr EL Baqar drain system in Eastern Nile Delta has been chosen to study the suitability of its water for reuse in irrigation. Field measurements and monitoring of the study area have been made to establish better understanding of the conditions of its surroundings and to identify the sources of pollution to the drain system. The monitoring program has been designed and executed to include five hydrological stations and eighteen sampling stations along the drain. The collected water samples have been analyzed to determine the physical, chemical and microbiological characteristics. The sediment samples, which have been collected from five locations along the drain system, have been analyzed to determine the distribution of the heavy metals in the drain system.

The study shows that the microbiological health hazard is the major pollution problem to the drain system. The average value of coliforms bacteria for the drain water was $2.2*10^6$ cell/100ml. while, the concentrations of the heavy metals in water samples were usually under the limits which could cause problems to soils or plants except the cadmium. The sediment samples had high concentrations of selenium, vanadium, copper, manganese and cadmium. In case of reusing the drain water, heavy metals in sediment can be resuspended and increased in the reused water. The high salinity within the last reach of the system will cause severe problem to crops and soils. In addition, the high concentrations of sodium and chloride may cause severe toxicity problem to crops.

ACKNOWLEDGMENTS

The author wishes to express his gratitude to those who generously helped him to carry out this study with their knowledge, valuable advice and kind encouragement.

Grateful thanks are due to Dr. Sameh Abdel Gawad and Dr. Kamal A. Ibrahim, who kindly supervised this work, for their guidance, comments, valuable advice, kind encouragement and support.

Particular mention must be made for Dr. Shaden Abdel Gawad, Deputy director of Drainage Research Institute whose sincere efforts extended more than supervising this work. Her endless support and continuous encouragement have continued since the author started his professional career.

The author is grateful to Dr. Gamal Abdel Nasser, head of laboratory unit for his efforts in samples analysis and Eng. Adel Abdel Rashed, head of monitoring unit for his kind support through the monitoring stage.

The author is grateful to Dr. M.A. Abu Sinna, Agricultural Research Center, Soil and Water Research Institute for his help in samples analysis.

Gratitude is expressed to the staff of the Drainage Research Institute, especially the Open Drainage Division family, for their encouragement and support.

Finally and most importantly, I would like to express my special thanks to my family and wife for their endless support, patience and love.

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