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

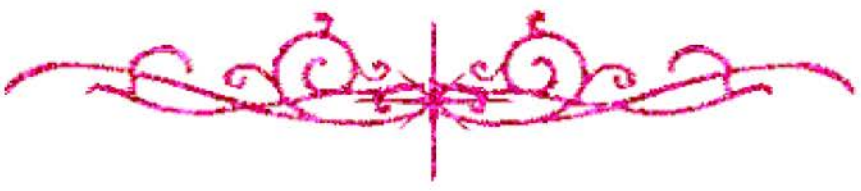
يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

سامية محمد مصطفى

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة



سامية محمد مصطفى

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بالرسالة صفحات لم ترد بالأصل

CAIRO UNIVERSITY
FACULTY OF ENGINEERING
IRRIGATION AND HYDRAULICS DEPARTMENT

NUMERICAL SIMULATION OF WATER POLICIES IN MIDDLE NILE DELTA

BY

WAEL MOHAMED KHAIRY ALY GONDIA
B. Sc. IN CIVIL ENGINEERING
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A THESIS SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE DEGREE OF MASTER OF SCIENCE IN CIVIL ENGINEERING

SUPERVISED BY

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ABSTRACT

The present situation of the water availability for the different purposes in EGYPT is critical. So that, the future prospectives are alarming as a result of the rapidly increasing water requirements, while the water resources are limited. The water use must be subjected to strict rationalization strategies.

The numerical simulation model SIWARE had been calibrated and validated by the Drainage Research Institute of the National Water Research Center over the three Nile Delta regions during the period (1985-1990). The SIWARE is a powerful and a predictive tool for analyzing different water policies on regional scale. In other words, the SIWARE simulates and predicts short and long term effects of changes in: water supply, cropping pattern, irrigation processes, drainage water quantity and salinity, ...etc, in the Nile Delta regions.

In this thesis, the SIWARE model has been used successfully to simulate the actual irrigation, agriculture and drainage conditions of Middle Delta region during year 1991. Also, the regional water and salt balances for Middle Delta region, based on data of year 1991, have been analyzed. Then, three water policies have been carried out.

The Nile water supply reduction policy is to save considerable quantities of the Nile water at the Delta barrages to irrigate new reclamation projects in the Delta fringes. Besides, studying the effects of water shortage condition. Crop production and soil salinity are not allowed to be significantly infected. The results of that policy shows that, the Nile water supply can be reduced by 10% without

significant adverse effects on both crop production and soil salinity on the long term, providing that, the shortage of water would be compensated by improving the irrigation system efficiency and by reusing additional quantities of drainage water in irrigation.

Reducing the drainage water disposed to the Sea allows its use in irrigating new reclaimed areas in the northern parts directly or after mixing with fresh water. The results of that policy show that, the drainage water disposed to the Sea could be decreased by 30%. Moreover, about 43,000 feddan could be reclaimed in the northern area of Middle Delta.

Sharp shortage in the Nile water supply for one year has been simulated by the SIWARE model. This policy has differentiated between four different water management scenarios by a graphical method, on the small sub-area level. The result of that policy shows that, the actual water management, under practice now by the Ministry of Public Works and Water Resources, is the best with the least adverse effects under severe Nile water supply shortage for one year.

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