



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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**Ain Shams University
Faculty of Engineering
Irrigation and Hydraulics Department**

REUSE OF TREATED WASTEWATER IN RURAL AREAS

By

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**A Thesis Submitted for the Fulfillment of the Requirements for
The Degree of Master of Science in
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STATEMENT

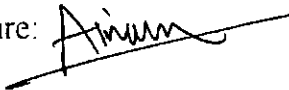
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The work included in this thesis was carried out by the author in the Department of Irrigation and Hydraulics, Faculty of Engineering, Ain Shams University from 1995 to 2000.

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ABSTRACT

Shortage of irrigation water sources in arid and semi-arid regions brings out the issue of using the domestic wastewater to meet the demand for agriculture sector.

The objective of this study is to propose and investigate the most appropriate natural treatment systems that can be used in rural areas of Egypt taking into account the land requirement, initial and operational cost and effluent efficiency. In addition, the reuse potential of the effluent of such wastewater treatment systems is investigated.

Pilot scales that have populations ranged from 1,000 to 20,000 are studied with respect to natural treatment systems. The selected pilot areas are in eastern delta (Sharkeya Governorate), western delta (Behira Governorate) and average of Egypt.

Mathematical and cost analysis of several treatment systems are conducted. In addition, the effluents of the treatment systems are evaluated for reuse purposes.

The effluent of the treatment systems are evaluated and compared. The BOD, TSS, Nitrogen and Fecal Coliform Bacteria parameters were compared and evaluated with respect to the Egyptian, FAO and WHO guidelines setup for reuse in agriculture purpose.

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The results of the study show that the effluents of the natural treatment systems are appropriate for reuse for irrigation under the marginal environmental factors of the arid climates. The main conclusion of the study this is that the natural treatment systems can be used under Egyptian conditions with good efficiency and reasonable cost.

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