



ENHANCEMENT OF MODIFIED SEPTIC TANK BY USING EFFECTIVE MICROORGANISMS

A Thesis

Submitted to the Faculty of Engineering
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DEDICATION

I wish to dedicate this work to whom suffered to educate,
prepare, build capacity and help myself to be as I am,

**To
My Mother & My Father
&
My Brothers and Sisters**

Also thanks

To My Husband

For his encouragement and support to complete this work.

Finally for **My Dear Son** to be proud me

STATEMENT

This dissertation is submitted to Ain Shams University, Faculty of Engineering for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the department of Public Works, Faculty of Engineering, Ain Shams University, from September 2007 to July 2011.

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

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others

Date: - ---/-- /2011

Signature: - -----

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ABSTRACT

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Abstract:-

The increase of waste water environmental problems in Egypt rural areas with the high cost of traditional treatment, led to try new low cost treatment techniques to get high efficiency and low cost. One of these techniques is the Upflow Septic tank/Baffled Reactor (USBR) that achieves removal efficiency from 80 to 85% for all parameters developed by a research team from Faculty of Engineering, Ain Shams University.

The study had used the effective microorganisms to improve the SBR removal efficiency. It was developed and tested at pilot scale for twenty-two months in El Berka sewage treatment plant where was studying the impact of adding EM by adding a different doses (0.5-4) g/l in order to determine the optimum dose which raise the efficiency.

The system has demonstrated satisfactory removal results even at high wastewater strength that when EM addition applied at second part of the unit, the overall removal ratios were 96%, 93.5% and 90.9% for COD_{tot.}, BOD₅ and T.S.S respectively.

The optimum mixing ratio (dose) of EM which gets the maximum removal efficiency was 3 g/l this dose enhanced the system stability under variable inlet load and accelerated the reaching to the steady state.

The study recommended that system is suitable to be applied for the small communities with small sewage flow and the private separate housings to get optimal benefits from this system.

SUPERVISORS

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