



DESIGN OF  
A FACULTATIVE LAGOON

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## SUMMARY

The purpose of this work was the design of a wastewater treatment system, with its major component being a facultative lagoon, for treating the wastewater arising from a specific community.

The design was carried out for the communities of Astromeritis and Peristerona, with the proposed site being near Astromeritis. The proposed irrigation area is the part of the Morphou Plain near Astromeritis.

One of the simpler schemes was implied for the waste stabilization ponds, comprising a facultative lagoon and two subsequent maturation ponds in series, a system not requiring any external -apart from solar- energy at all.

This system is capable of producing an effluent suitable for irrigation and this may be utilized for irrigating the local citrus plantation as well as the rest of the cultivities, being vegetables and fodder crops.

Unrestricted irrigation is to be carried out only during the period of May-October. For the rest of the year, the effluent should be stored in a storage pond for a period of 30 days for further removal of excreted pathogens and hence released.

## INTRODUCTION

The overall population of the Earth keeps increasing with a very high rate. A contemporary, noticeable fact is that of the non-uniform distribution of people, since a rapid increase in urban populations was observed relatively recently. The main reason for that was impetuous evolution of industry, with the majority of the industrial, work-offering units been sited at urban areas.

As a direct consequent, the natural and manufactured wastes generated and released in to the environment by these increased numbers of human beings have upset the natural equilibrium.

Human waste disposal became - from a point and after - troublesome. Traditional methods of domestic sewage disposal, such as land spreading, discharge into coastal and estuarine waters and other ways scoping practically in "getting rid of" untreated sewage, resulted in environmental deterioration, gross pollution and adverse effects on human health. That is why the need for developing intensive treatment processes ensuring the safe disposal of domestic wastes, appeared.

Cyprus of course, could not escape the global evolution and thus what said before hold true. So far, sewage was in its majority disposed of, untreated, in remote areas or in the case of coastal towns, discharged into the sea.

In the last few years though, it was realized that this would add to the spoiling of the fragile ecosystem as well as featuring consequent, unfavourable effects, referring to agriculture, fishery, tourism and numerous interrelated fields, causing severe impacts on their development. For these reasons, some wastewater treatment plants were created.

Especially for Cyprus, with the current water problem, except from the protection of the environment, wastewater treatment can seriously contribute in saving water, since



part of the treated effluent may be used for irrigation purposes.

This project deals with wastewater in general (qualities and problems arising from disposal) and with methods of treating wastewater. Methods and units of conventional treatment are described, but great emphasis is given on the Facultative Lagoon method, a natural means of treatment and that because this was deemed to be a feasible solution for Cyprus, judging from the prevailing conditions (climatic and others), explained in a later stage of this work.

The major objective of the project is the design of a Facultative Lagoon for a specific site in Cyprus, to treat domestic, or predominantly domestic, wastewater, with an effluent produced, satisfying the quality standards for irrigation purposes or, at least, for safe disposal, with no adverse consequences.