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### Design of a Waste Water Treatment Plant for Labuduwa Farm

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Labuduwa farm, Galle is one of the major vegetables and meat supplier to the local residence in the Galle area. Also, Sri Lankan sweets produced by the farm have a high demand among the customers. For all cultivations and food processing works the farm uses water from a well and the town water supply system. At present, about 15 m<sup>3</sup> waste water accumulates daily at the farm and there is no any method to reuse this water except dispose to the environment creating many environmental problems for residence around the area.

Understanding the present situation in the farm, this study proposed a waste water treatment plant considering a budgetary allocation provided by the Southern Provincial Council. In the design procedure, samples of the waste water were collected at different time intervals during daytime and the samples were tested at the Environmental Engineering Laboratory, Faculty of Engineering for finding microbiological, physical and chemical parameters such as BOD, COD, pH, TSS and TDS. Considering the laboratory results and the rate of accumulation of waste water, this study selected the SBR (Sequencing Batch Reactor) method to treat the raw waste water. The size of the batch reactor was calculated by the procedure explained in the literature with the use of parameters obtained in the laboratory tests.

In this study, to provide uniform effluent to the biological treatment process in the SBR, an equalization Tank was introduced before the SBR tank and for the secondary treatment of the effluent Clarifier-Settler tank was propose. The plant is designed to treat raw waste water and finally produce an effluent of the Central Environmental Authority (CEA) standard quality that can dispose to the environment with minimum impact on human health and environment.

**Keywords:** biochemical oxygen demand (BOD), chemical oxygen demand (COD), sequencing batch reactor(SBR), biological treatment