IN-SEWER PROCESSES
WASTEWATER QUALITY CHANGE UNDER ANOXIC CONDITION

A report submitted to Universiti Teknologi Mara in partial fulfillment of the requirements for the Degree of Bachelor Engineering (Hons) (Civil) in the faculty of Civil Engineering.

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I hereby declare that thesis report has not been submitted, either in the same or different form to this or any other university for a degree and except where reference is made to the work of others, it is believed to be original.

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OCTOBER 2002

AKNOWLEDGEMENT

All praise to Allah. Lord of Universe, The Merciful and The Gracious. Selawat and salam to Nabi Muhammad, his the follow of the companions and the people who follow his path. First of all, I would like to express my gratitude to Allah that with His Help and Guidance I have manage to and complete this report.

I would like to take this opportunity to express special gratitude to our project advisors, Ir Hj Suhaimi Abdul Talib, En Moktar Shaharuddin and Pn Rozita Aris, for their continued help, patience, guidance, inspiration, constructive comments and keen contribution during this project.

My sincere thanks are also due to all laboratory staffs who kindly assisted us in various way during our experimental research especially Tn Hj Mat Som Marwi, Pn Nora Sofian and En Hazeri Othman.

Thanks a lot, Wassalam

Mohd Feaidzal bin Sulaiman

August 2002

ABSTRACT

Wastewater composition is generally divided into biodegradable chemical oxygen demand (COD), non-biodegradable COD and heterotrophic active biomass. Changes in composition of COD fractions are currently used as measures of wastewater quality changes. Transportation time in sewers will effect the quality of wastewater due to microbial transformations under aerobic, anoxic or anaerobic.

The objective of this project is to investigate wastewater quality changes under anoxic conditions. The study will focus on changes in the bulkwater phase of municipal wastewater. Since anoxic conditions do not exist naturally, sodium nitrate will be used to create anoxic conditions in this study. Tests were conducted on 7 different wastewater samples from the wastewater treatment plant (WWTP) at Section 23, Shah Alam.

Changes in electron acceptor (nitrate) will be monitored in an anoxic reactor, while changes in electron donor (organic carbon) will be monitored in an aerobic reactor. The changes in COD-fraction will give the wastewater quality change under anoxic condition.

KEYWORDS: COD fractions, In-sewer process, nitrate utilization rate, oxygen utilization rate and wastewater quality changes

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