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A STUDY OF CRITICAL POINT METHOD FOR MIXING ZONES IN RIVERS

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SYNOPSIS.

This project presents a steady state mathematical modelling technique to predict far field concentration distribution of pollutant in mixing zone of river. The models are based on the stream tube concept developed by Yotsukura and Sayre, and are modified by Gowda to account for the reach dependency of pollutant decay rate, tranverse diffusion factor and channel hydraulic parameters.

An expression for allowable effluent concentration of a pollutant is obtained in term of critical concentration of water quality criterion. A graphical procedure for determining the longitudinal boundary of a limited use zone is described and validated by field data concentration profile of dissolved oxygen.

The application of the methodology is outlined in a step-by-step design procedure and illustrated by field data analysis for ammonia nitrogen from palm oil waste collected in shallow stream located in Kapar, Selangor. In general the models presented in this project are applicable to conservative and exponentially decay pollutants.

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TABLE OF CONTENTS

Page

Synopsis .....(i)
Acknowledgements ..... (ii)
Table of Contents .....(iii)
List of Figures ..... (v)
List of Tables .....(vii)
List of Plates ..... (vii)
Nomenclature .....(viii)

CHAPTER 1 - INTRODUCTION 1

1.1 General 2

1.2 Background 2

1.3 Objectives 6

1.4 Waste and Wastewater Characteristics 7

1.4.1 Wastewater Analysis 7

1.4.2 Defination of Conservative and Non-conservative 9

1.4.3 Palm Oil Wastes and Treatment 10

CHAPTER 2 - THEORETICAL ASPECT 14

2.1 Process of Mixing in Natural Streams 14

2.1.1 Process of Diffusion 14

2.1.2 Process of Differential Advections ... 16

2.1.3 Other Process 17

2.2 Ammonia Nitrogen Losses from Streams 18

2.2.1 General 18

2.2.2 Ammonia Nitrogen Exolution 19

2.2.3 Temperature Correction 23

2.3 Description of Model 24
2.4 Limited Use Zone Boundary 25
2.5 Mathematical Formulations 28
2.5.1 Expressions for Critical Point 37

CHAPTER 3 - FIELD TEST AND SAMPLES ANALYSIS 45
3.1 Field Test 45
3.1.1 Site Selection 45
3.1.2 Site Location and Description 48
3.1.3 Site Survey 49
3.2 Samples Analysis 54
3.2.1 Dissolved Oxygen 54
3.2.2 pH Value 55
3.2.3 Ammoniacal Nitrogen 55
3.3 Hydraulic and Water Quality Parameters 57

CHAPTER 4 - APPLICATION, DATA ANALYSIS AND
DISCUSSION 68
4.1 Design Procedure 68
4.1.1 Sample Calculations 72
4.1.2 Summary of the Results of Critical
Point Method 77
4.2 Discussions 83

CHAPTER 5 - CONCLUSION 93
CHAPTER 6 - RECOMMENDATION 94
REFERENCES 95
APPENDIX 97
LIST OF PLATES 113