

**WATER QUALITY STUDIES OF THE MAIN RIVERS THAT SUPPLY  
SEMENYIH DAM**

**NORIZAN BT MAT SEMAN**

**Final Year Project Report Submitted in  
Partial Fulfilment of the Requirements for the  
Degree of Bachelor of Science (Hons.) Chemistry  
in the Faculty of Applied Sciences  
Universiti Teknologi MARA**

**NOV 2008**

## ACKNOWLEDGEMENT

In the name of Allah the most compassionate and the Most Merciful

All praises are upon Allah for giving me the opportunities and strength to complete the thesis entitled “Water Quality Studies of the Main Rivers That Supply Semenyih Dam”.

Upon completion of this project, I would like to express my gratitude and appreciation to my supervisor, Pn Nesamalar a/p V. Kantasamy for guiding and sharing with me some of the knowledge about water quality studies. Thanks for the help, support, patience and ideas along the process to finish this proposal. Special thanks also to En. Rosmi and En Zubir, the environmental laboratory assistant for helping me and guiding me in doing the analysis.

Next, I also wish to place on record my deepest gratitude to Mr Sukumar and Mr Mohd Amin of Aliran Bekalan Air Selangor Selatan (ABBAS) for helping me while collecting the water samples at Semenyih Dam.

I also want to thank to my parents Mat Seman b. Hassan and \_\_\_\_\_ and family for their never ending support to me. Thank you for the love, money and strength that you gave. Thanks a lot to all my friends for sharing the ideas.

Last but not least, my gratitude to all people who have helped me during the process to complete this thesis. May Allah bless all of you.

## TABLE OF CONTENTS

	<b>Page</b>
<b>ACKNOWLEDGEMENTS</b>	iii
<b>TABLE OF CONTENTS</b>	iv-v
<b>LIST OF TABLES</b>	vi
<b>LIST OF FIGURES</b>	vii
<b>LIST OF ABBREVIATIONS</b>	viii
<b>ABSTRACT</b>	ix
<b>ABSTRAK</b>	x
<b>CHAPTER 1 INTRODUCTION</b>	
1.1 Water	1
1.2 Water quality	2
1.3 Objectives of the study	4
1.4 Problem statement	5
1.5 Significance of study	5
<b>CHAPTER 2 LITERATURE REVIEW</b>	
2.1 Importance of water	6
2.2 Water quality	8
2.2.1 Chemical tests	9
2.2.1a Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)	12
2.2.1b Dissolved Oxygen (DO)	12
2.2.1c Total Suspended Solid (TSS)	13
2.2.1d pH	14
2.2.1e Ammoniacal- Nitrogen (AN)	15
2.2.2 Physical tests	16
2.2.2a Turbidity	16
2.2.2b Temperature	17
2.3 Heavy metals	18
2.4 Bacteria	19
<b>CHAPTER 3 METHODOLOGY</b>	
3.1 Material	21
3.2 Reagents	21
3.3 Equipments	22
3.4 Collection Site	22
3.5 Method	23

## **ABSTRACT**

### **WATER QUALITY STUDIES OF THE MAIN RIVERS THAT SUPPLY SEMENYIH DAM**

A study of water quality, heavy metal concentrations and total coliform bacteria was conducted at four rivers supplying Semenyih Dam. The study areas include the edge of river mouth of Semenyih River, Kesuma River, Rephen River and Lanjut River. The methods used in this project were in-situ measurements and laboratory analysis. Water Quality Index (WQI) was determined using BOD track apparatus, YSI meter, HACH DRB 200, HACH DR 2010 spectrophotometer, and Ion Chromatograph (IC). The results were compared against Water Quality Index (WQI) and classification of water quality based on the Department of Organization Environment- Water Quality Index (DOE-WQI). The results for the water quality of each river at Semenyih Dam was moderate that is in class III. For the heavy metals analysis, the analysis were conducted using Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) and total coliform bacteria were determined by using membrane filtration. The results showed that the heavy metal concentrations is in class III and total coliform bacteria is in class I.

## CHAPTER 1

### INTRODUCTION

#### 1.1 Water

Water is the common name applied to the liquid form of hydrogen and the oxygen compound, H<sub>2</sub>O. Pure water is an odorless, tasteless, clear liquid. Water is one of the most essential substance for all living things. Water has many uses in our life, such as for drinking, digestion and absorption of food, supplying oxygen and nutrients to the cell, getting rid the body of wastes, washing clothes, bathing, watering the plant and etc.

Water is the key component in determining the quality of our lives. Today, a person is usually concerned about the quality of the water they drink. Water is known as a natural solvent which is involved in many biochemical reactions. As water sources come from the swamps, lakes, rivers and oceans, it can contain many organisms and chemicals that are harmful to our lives. It comes into contact with many different substances including organic matter, chemicals and other contaminants. Pure water rarely occurs in nature because water dissolves numerous substances in large amounts. Therefore the quality of water supply from the main rivers should be checked and tested before it reaches the consumer's tap.