FINAL YEAR PROJECT REPORT
ADVANCED DIPLOMA IN CIVIL ENGINEERING
SCHOOL OF ENGINEERING
MARA INSTITUTE OF TECHNOLOGY
SHAH ALAM

EXPERIMENTAL STUDY ON IRON ACCUMULATION IN PIPES

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TABLE OF CONTENT

ABSTRACT

This project deals with cases of iron present in water distribution pipes and plumbing lines. The presence of iron has affected aesthetic quality of running water in the distribution pipes and plumbing lines. The study will focus on experimental work on this phenomenon and the results being compared to the theoretical data . The experiment was done in the Hydraulic Laboratory of Civil Engineering Department, MARA Institute of Technology Shah Alam.

It was found that for type 1, with pH values ranging from 7.0 to 7.55, the concentration of total iron, ferrous and ferric decreased from the first day the sample was taken to the 21 st. day. For type 2 and type 3 with pH values ranging from 8.0 to 8.5 and 9.0 to 9.4 respectively, the concentration of the total iron, ferrous and ferric concentration also showed a decrease in value, within the same period.

CHAPTER ONE

INTRODUCTION

1.0 GENERAL

Iron is the fourth most abundant elements, constituting, respectively about 4.1 and 0.1 percent of the approximately one hundred elements in the earth's crust, which is known as the lithosphere. Only oxygen, silicon and aluminium are more abundant than iron. They comprise about 48, 28, and 8 percent of the lithosphere, respectively. Other constituents of natural water : calcium, sodium, potassium and magnesium, make up about 3.5, 2.5, 2.5 and 2.25 percent of the lithosphere, respectively. The compounds of two of these, calcium and magnesium, along with those of aluminium iron and manganese are recognised as the causes of hardness in natural waters.[Riehl H.E., 1957]

Iron occurs in silicate minerals of igneous rocks, whereas manganese compounds are found most often in metamorphic and sedimentary rocks. Both are found in minerals mostly as carbonates, oxides, silicates and sulphides. They are also found in clays, soils and sediments.