BUSITEMA UNIVERSITY

Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF MINING & WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT

ASSESSMENT OF THE QUALITY OF SPRING WATER WITHIN TORORO MUNICIPALITY

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This report is presented to the faculty of Engineering as a partial fulfillment of the requirements for the award of a bachelor's degree in Water Resources Engineering of Busitema University.

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ABSTRACT

Tororo municipality has a total number of 11 springs which supply over 40% of the individuals with in the preurban area of the municipality. Some of these springs are shared by animals and are bushy; this therefore makes them prone to contamination. This makes the individuals vulnerable to water related diseases such as typhoid and diarrhea since they are rated among the first five common diseases. The aim of this study was to assess the drinking water quality of these sources. The turbidity, iron content, total dissolved solids, odour and chlorides of all the spring wells within the municipality was below the standard permissible limits.

The colour level, of water within the sampling points ranged from 10 to 65 Ptco with only 4 springs above the standard permissible limit. According to hardness category (Hem. 1970: the British Columbia Groundwater Association, 2007), the spring water was under the category of hard and very hard of which only one well had hard water and the rest had very hard water. This might have resulted from weathering of limestone, sedimentary rock and calcium bearing minerals largely facilitated by activities taking place nearby such as mining. The Aluminium content of the springs ranged from 0.06 to 0.27 mg/l with only 4 springs above the standard permissible limit. According to the standard permissible limit, all of the spring sources are contaminated because the coliforms within the water source ranged from 10 CFUs/100ml to 189 CFUs/100ml.The presence of microbial indicators in the spring wells might be due to soakage pits and latrines in the vicinity that had extended their influence on water qualities.

From correlation, total coliform of spring wells had no linear relationship with colour and turbidity. However colour and turbidity, alkalinity and total hardness, turbidity and total dissolved solids, colour and total dissolved solids exhibited a strong positive correlation. Total hardness and chlorides showed a moderate negative correlation.

DECLARATION

I Nakayovu Lillian Gloria, declare that all the material portrayed in this project report is original and has never been submitted in for award of any Degree, certificate, or diploma to any university or institution.

Signature

.....

Date

3rd June 2016

APPROVAL

This is to certify that the project has been carried out under my supervision and this report is ready for submission to the Board of examiners and senate of Busitema University with my approval.

MAIN SUPERVISOR: Mr. Joseph Ddumba Lwanyaga

SIGNATURE: .....

DATE: .....

CO-PROJECT SUPERVISOR: Mrs. Nakabuye Hope Njuki

SIGNATURE: .....

DATE: .....

DEDICATION

I dedicate this report to my beloved parents for the support they have contributed towards me. Am very grateful for their support and May the Almighty God reward them abundantly.

ACKNOWLEDGEMENT

I am delighted and thankful to all those who helped and encouraged me when I was doing my project report especially my project supervisors, Mr. Joseph Ddumba Lwanyaga who was my main supervisor and Mrs. Nakabuye Hope Njuki my co-supervisor who tirelessly worked hard towards my success. May God richly reward you in all your deeds.

Acknowledgement of appreciation go to all my lecturers in the Department of Water Resources and Mining Engineering, Faculty of Engineering of Busitema University for having shared with me their knowledge without reservations which I have been able to apply in this project report

TABLE OF CONTENTS

ABSTRACT i
DECLARATION ii
APPROVAL iii
DEDICATION iv
1.2 PROBLEM STATEMENT 3
1.3 PURPOSE OF THE STUDY 3
1.4 JUSTIFICATION 3
1.5 OBJECTIVES OF THE STUDY 3
1.5.1 Main objective 3
1.5.2 Specific objectives 3
1.6 SCOPE OF THE STUDY 4
CHAPTER TWO: LITERATURE REVIEW 5
2.0 LITERATURE REVIEW 5
2.1 Introduction 5
2.2 Drinking water 5
2.2.1 Drinking water pollution 6
2.2.2 Drinking water quality 7
2.2.3 Drinking Water Standards 7
2.2.4 Ugandan drinking water standards 9
2.3 Physical quality parameters 10
2.3.1 Total dissolved solids 10
2.3.2 Turbidity 11
2.4 Chemical quality parameters 12
2.4.1 Total alkalinity 12
2.4.2 Total hardness 13
2.4.3 Chloride 14
2.4.4 Iron 14
2.4.5 Aluminium 15

2.5 Microbiological quality parameters 15
2.5.1 Total coliform (TC) 15
2.5.2 Feacal coliform (FC) 16
2.5.3 E.Coli 17
CHAPTER THREE: METHODOLOGY 18
3.1 PREAMBLE 18
3.2 WATER SAMPLING PROCEDURE AND ANALYSIS 18
3.3 WATER SAMPLING POINTS 19
3.4 Determination of water quality parameters 19
3.4.1 Total dissolved solids 19
3.4.2 Turbidity 20
3.4.3 Total alkalinity 20
3.4.4 Chloride 21
3.4.5 Total hardness 21
3.4.6 Iron 21
3.4.7 Colour 22
3.4.8 Aluminium 22
3.4.9 Total coliform 23
3.4.10 odour 23
CHAPTER FOUR: RESULTS AND DISCUSSIONS 24
4.1.1 Colour 25
4.1.2 Turbidity 25
4.1.3 Total hardness 26
4.1.4 Alkalinity 28
4.1.5 Iron 29
4.1.6 Aluminium 30
4.1.7 Chlorides 31

4.1.8 Odour 31
4.1.9 Total dissolved solids 31
4.1.10 Total coliform 32
4.2 Correlation coefficient of different parameters 33
4.2.1 Correlation coefficient for colour and turbidity 33
4.2.2 Correlation coefficient for alkalinity and total hardness 33
4.2.3 Correlation coefficient for alkalinity and aluminium 34
4.2.4 Correlation coefficient for turbidity and total coliform 35
4.2.5 Correlation coefficient for colour and total coliform 35
4.2.6 Correlation coefficient for total hardness and chlorides 36
4.2.7 Correlation coefficient for turbidity and iron 36
4.2.8 Correlation coefficient for turbidity and total dissolved solids 37
4.2.9 Correlation coefficient for iron and total dissolved solids 37
4.2.10 Correlation coefficient for aluminium and total dissolved solids 38
4.2.11 Correlation coefficient for colour and total dissolved solids 39
4.3 DISCUSSION OF RESULTS 39
4.3.1 Colour 39
4.3.2 Turbidity 39
4.3.3 Total hardness 40
4.3.4 Alkalinity 41
4.3.5 Iron 42
4.3.6 Aluminium 42
4.3.7 Chloride 43
4.3.8 Odour 43
4.3.9 Total dissolved solids 43
4.3.10 Total coliform 44

References 47
APPENDICIES 49

LIST OF FIGURES

Figure 4. 1 : Colour of the various spring wells 25
Figure 4. 2 : Turbidity in NTU of the various spring wells 26
Figure 4. 3 : Total hardness in mg/l of various spring wells 27
Figure 4. 4 : Alkalinity in mg/l of the various spring wells 28
Figure 4. 5 : Iron in mg/l of the various spring wells 29
Figure 4. 6: Aluminium in mg/l of the various spring wells 30
Figure 4. 7 : Chloride in mg/l of the various spring wells 31
Figure 4. 8 : Total dissolved solids in mg/l of various spring wells 32
Figure 4. 9 : Total coliform in CFUs per 100 ml of various spring wells 32
Figure 4. 10 : Effect of turbidity in NTU on colour within the various spring wells 33
Figure 4. 11 : Effect of total hardness on alkalinity within the various spring wells 34
Figure 4. 12 : Effect of aluminium on alkalinity within the various spring wells 34
Figure 4. 13 : Effect of total coliform on turbidity within the various spring wells 35
Figure 4. 14 : Effect of total coliform on colour within the various spring wells 35
Figure 4. 15 : Effect of chloride on total hardness within the various spring wells 36
Figure 4. 16 : Effect of iron on turbidity within the various spring wells 36
Figure 4. 17 : Effect of total dissolved solids on turbidity within the various spring wells 37
Figure 4. 18 : Effect of total dissolved solids on iron within the various spring wells 38
Figure 4. 19 : effect of total dissolved solids on aluminium within the various spring wells 38
Figure 4. 20 : Effect of total dissolved solids on colour within various spring wells 39

LIST OF TABLES

Table 1 : Physical requirements for portable water 9
Table 2 : Chemical requirements for portable water 9
Table 3 : Micro biological requirements for portable water 10
Table 4 : Palatability of drinking water in relation to its TDS level 11
Table 5 : Hardness range for drinking water 13
Table 6 : Water sampling points 19
Table 7 : Water quality results in the march 2016 24
Table 8 : Hardness range for drinking water 26

CHAPTER ONE

INTRODUCTION

This chapter includes the following; back ground to the study, statement of the problem, purpose of the study, and objectives of the study, scope of the study and finally the significance of the study.

1.1BACKGROUND OF THE STUDY

Good drinking water quality is essential for the well-being of all people. Unfortunately in many countries around the world, including Uganda, some drinking water supplies have become contaminated, which has impacted on the health and economic status of most people (Akoto and Adiyah, 2007). Potable water has become a scarce commodity due to over exploitation and pollution. Scarcity and misuse of potable water pose a serious and growing threat to sustainable development and protection of the environment. Human health and welfare, food security, industrial development and ecosystems are all at risk. unless water and land resources are managed more effectively in the present decade and beyond than they have been in the past, (ICWE, 1992).

The provision of safe and quality drinking-water is high priority for human health. The appearance, taste and odour of drinking-water should be acceptable to the consumer. This builds the confidence of consumers, avoid complaints and, more importantly, prevent consumers from the use of water from sources that may be unsafe.

Safety of water is affected by several factors including environmental, the nature of the source, the human activities undertaken on or around the sources and the water harvesting, handling and treatment that may be undertaken. Thus, water may be exposed to physical, chemical and microbiological contamination that may make water unsafe for human consumption. A few chemical contaminants have been shown to cause adverse health effects in humans as a consequence of prolonged exposure through drinking-water.

Infectious diseases caused by pathogenic bacteria, viruses and parasites (e.g. protozoa and helminthes) are the most common and widespread health risk associated with drinking-water. The greatest risk to public health from microbes in water is associated with

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