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BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF WATER RESOURCES AND MINING

ENGINEERING

WATER RESOURCES ENGINEERING PROGRAMME

FINAL YEAR PROJECT REPORT.

DESIGN AND FABRICATION OF A MOTORISED DE-SILTING TOOL FOR HAND PUMPED BOREHOLES IN KYERE SUB-COUNTY, SERERE DISTRICT.

BY

OKWALINGA EMMANUEL

BU/UP/2013/302

Email: okwaks256@gmail.com

MAIN SUPERVISOR: MR. JOSEPH DDUMBA LWANYAGA.

A final year project proposal report submitted to the Department of Water Resources and Mining Engineering as a partial fulfillment of the requirements for the award of a Bachelor of Science degree in Water Resources Engineering

ABSTRACT

This project was aimed at solving dangers and health risks which come along with the immense problem of accumulation of silt and small rock debris in borehole casings due to a number of causes which can be natural or due to human/engineering errors during construction and usage of the hand pumped boreholes.

Silt presents a number of challenges to ground water abstraction, and its study and mitigation has not been keenly looked at due to lack of information about its existence.

Bearing in mind that ground water resourcescontribute a great percentage to the amount of water available to people in rural areas for domestic use and small-scale irrigation, a deeper look at problems associated with ground water abstraction and a wider analysis of information available about ground water is of great importance.

Relevant design of this silt removal tool has then been looked at in this project and necessary formulae and appropriate dimensioning measurements have been looked at in this project to come up with a comprehensive design of the silt removal tool.

DECLARATION

I Emmanuel Okwalinga, hereby declare to the best of my knowledge, that this final year project report was an outcome of my original work and that it has not been presented to any institution of learning for an academic award.

Signature: .....

Date: 17th/08/2018

APPROVAL

This final research report was submitted to the Faculty of Engineering for examination with approval of my supervisor.

MAIN SUPERVISOR: MR. JOSEPH DDUMBA LWANYAGA

Signature..... Date...../...../.....

DEDICATION

This report is dedicated to the beloved family of Mr. Okwalinga Gabriel and Mrs. Okwalinga Grace in appreciation for their selfless care and unflinching support provided to me since childhood, and for the spirit of hard work, courage and determination they instilled into me, which attributes I have cherished with firmness and which have indeed made me what I am today.

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I am grateful to my sisters and friends in and out of the university for their unseasonal support of any kind. God bless you all.

LIST OF ACRONYMS.

CAD	-	Computer Aided Drawing
HP	-	Horse Power
Rpm	-	Revolutions per minute
m/s	-	meters per second
m^3/s	-	meters cube per second.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Water is essential for human settlements. Since prehistoric times, water availabilityhas played a keyrole in determining the originand fate of entire civilizations. In today's industrial societies, drinking and irrigation water supplyis often taken for granted. This is because water infrastructure is solidly engineered and there are enough resources to build and maintain them. As a result, failures are rare and the population deos not need worry about taps runinig dry.

However,access to water remains an issue in many regions across the world. In developing countries, where a productive well not only means hydration but also food security, hygiene, health and a better chance for education, a significant share of the population does not yet have access to improved water sources. Millions of people live more than one kilometer away from the nearest faucet, and have to walk several hours each day to provide water for such ordinary needs as drinking or cooking. More often than not, fetching water is a task for women and children, a task that is carried out at the expense of education.

Furthermore, people are often forced to rely on the unreliable sources of water to meet their domestic needs and grow low-value crops.

Within this context, ground water resources can play an important role in challenging poverty by providing a stable supply of water. Aquifers allow users to deliver for themselvess, their crops, and livestock water during long dry spells. This is partly because of the large quantities of water that are naturally stored in aquifer systems underground and are partly because ground water can be accessed with relative ease. This also has the potential to contribute to several of the Sustainable Development Goals(UN,2012), including goal number 6("Ensure accesss to water and sanitation for all").

Ground water provides drinking water to atleast 50% of the global population and accounts for 43% of all of the water used for irrigation and livestock raring(FAO,2010-food and agriculture organisation) and its estimated that worldwide, 2.5 Billion people depend solely on ground water to satisfy their basic daily water needs(UNESCO,2013-United nations world water assesment programme).

Ground water absraction in rural areas especially in Africa is achieved mainly through drilling of boreholes. In Uganda for example, with a population of about 38 million people(APR,2015-

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