FACULTY OF ENGINEERING

DEPARTMENT OF WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT

DESIGN AND INSTALLATION OF A HYBRID WATER TRANSMISSION SYSTEM.

CASE STUDY: BUSITEMA UNIVERSITY, BH1

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Final year project report submitted to the department of water resources engineering in partial fulfillment for the award of bachelors of science in water resources engineering.

DECLARATION

I **AHEBWA CLINGTON, ANEBO ESTHER, AKELLO NERIE PEACE, KAMUHANDA BENON** hereby declare that this final year project proposal report is our own work and has not been previously submitted to any institution of higher learning for achievement of any kind of award.

APPROVAL

This is to satisfy that this work was carried out under strict supervision and has been approved for submission to the department of water resources engineering at Busitema University.

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DEDICATION

We dedicate this report to our parents, our lecturers, fellow students and friends for their support.

ACKNOWLEDGEMENT

We are overwhelmingly thankful to the Almighty God for his abundant provision and love throughout the years of our lives. Special appreciation to our supervisors Eng. Badaaza Mohammed and Mr. Ologe Hector Daniel for the guidance, assistance and advice you gave us towards completion of this work. Sincere thanks to our fellow students, lecturers and other support staff for their continuous provision of knowledge and guidance.

May God reward you abundantly!

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ACRONYMS

FAO - Food and Agriculture Organization

SDGs - Sustainable Development Goals

WASH - Water, Sanitation and Hygiene

Org. - Organization

BH. – Borehole

Hr- Hour

uPVC.- Unplasticized Polyvinyl chloride

GIS - Geographic Information System

DO - Dissolved Solids

HDPE- High Density Polyethylene

PVC- Polyvinyl Chloride

1 CHAPTER ONE: INTRODUCTION

1.1 Background of the study

There is nothing more essential to life on earth than water yet there is a global water crisis. Water scarcity is one of the most pressing development challenges of our time.(Lifeng Li, 2023) Today, 2.4 billion people live in water stressed countries. Many are small holder farmers who already struggle to meet their daily needs for drinking water, nutritious food and basic services such as hygiene and sanitation. Competition for this precious resource is on the rise, as water scarcity increasingly becomes a cause of conflict. Fresh water resources per person have dropped by 20% over the past two decades, while water availability and quality are deteriorating quickly due to decades of misuse, lack of coordinated management, over abstraction of ground water, pollution and climate change. (Lifeng Li, 2023)

Water has been a major issue on the international agenda for several decades as the most essential resource for life (Mancosu, Noemi, 2015).

The world is rapidly urbanizing. From 1950 to 2020, the global population living in cities increased from 0.8 billion (29.6%) to 4.4 billion (56.2%) and is projected to reach 6.7 billion (68.4%) by 2050. Water scarcity, where demand exceeds availability, is a key determinant of water security and directly affects the health and wellbeing of urban residents, urban environmental quality, and socioeconomic development (He Chuyang, 2021)

Globally, water use has been increasing by roughly 1% per year over the last 40 years (AQUASTAT, n.d.). The bulk of this increase is concentrated in middle- and lower-income countries, particularly in emerging economies (Ritchie and Roser, 2017). This trend has been driven by a combination of population growth, socio-economic development and changing consumption patterns. Regions with the largest water withdrawals per capita have been Northern America and Central Asia (FAO, 2022). Between 2010 and 2018, municipal withdrawals increased by 3%, whereas agricultural withdrawals increased by 5%, and now represent 72% of total withdrawals.

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