NATIONAL WATER QUALITY REFERENCE LABORATORY

PERFORMANCE ASSESSMENT OF THE CERAMIC WATER FILTER

1.0 Introduction

This report provides test results for performance assessment of the Ceramic water filter No. 2 delivered to the National Water Quality Reference Laboratory (NWQRL) by staff from Spouts of Water Limited located in Busiro Block 376, Plot 895 Wakiso.

The ceramic water filter is intended to provide household low cost water treatment that removes up to 99.9% germs to provide safe and clean water.

The treatment unit comprises of two components; the ceramic pot and the bucket fitted with a drain tap. Raw Water is poured on to the ceramic pot which is then filtered at a rate of 1.8L/hr and collected in the reservoir (the Bucket). The filtered water can then be collected for drinking through the tap.

The assessment of the performance of the ceramic water filter to remove unwanted contaminants in water to produce acceptable clean water that meets the drinking water standards at the rate of 1.8L/hr has been conducted.

2.0 Methodology

The filtrate was collected through the tap and tested for bacteriological, physical and chemical constituents for good drinking water requirements as show in the *table 1*. The raw water was also tested for similar drinking water constituents. The final volumes of water filtered were measured and the filtration rate determined. The percentage removal rates of the problematic constituents were then calculated. And finally the sustainability of the filtered water measured against the drinking water standards.

3.0 Drinking water requirements

Good drinking water must have acceptable physical appearance and organoleptic characteristics. The drinking water must also be free of disease causing organisms and chemicals that have potential health risks must be within the safe levels. Acceptability of drinking in terms of physical and chemical aspects is measured against the National Standards for drinking water.

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4.0 Laboratory results and discussions

Parameters	% removal	Test Results	US 201:2008 Drinking water Standard class 1
Total Coliforms (CFU/100mls)	99.99.	<1	Not Detected
E.coli (CFU/100mls)	99.99	<1	Not Detected
Turbidity (NTU)	46.30	1.96	5
pH (Units)	6.9	7.6	5.5-8.5
Colour (PtCo)	88.00	3.00	15
Conductivity (µS/cm)	39	208	1500
Flow rate (L/hr)	-	1.8	NS

Table 1; Laboratory test results on average

4.1 Physical characteristics

The physical characteristics refer to properties of water that may be determined by physical methods. Such properties include conductivity, pH and turbidity measurements

Physical characteristics mainly have aesthetic affects such as taste, smell and appearance to water.

The physical Characteristics of the filtered water showed in *table 1* above show water that is within the recommended standards. The Ceramic filter can remove Turbidity, Colour on average of 67%. However, there was an observed increase of 39% in the mineralization of the filtered water.

4.2 Microbiological Characteristics

Microbiological characteristics refer to pollution in water by pathogens commonly determined inform of total Coliforms and *E. coli*. Total Coliforms is derived from the environment as a result of decomposing organic matter while *E. coli* is derived from faecal matter from warm blooded animal. Presence of *E coli* indicates recent contamination.

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The Filtered water samples test results show microbiological characteristic that meet the required drinking water standard. The filter can effectively remove problematic constituents of microbiological nature in the water to up to 99.99% removal as shown in *table 1.*

5.0 Conclusion

The treated water from the ceramic water filter is efficient and effective to produce water that meets the recommended standard of water for human consumption.

6.0 Recommendations

- The company should think of increasing the size of the filtration unit for large communities such as schools etc.
- Regularly carry out cleaning and maintenance of the ceramic water filter to avoid clogging as instructed every after 14 days.

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Form A

Republic of Uganda

MINISTRY OF WATER & ENVIRONMENT

NATIONAL REFERENCE WATER QUALITY LABORATORY - ENTEBBE

Certificate of Analysis

CLIENT NAME: SPOUTS OF WATER LTD

PRODUCT: CERAMIC WATER FILTER

CLIENT ADDRESS: BUSIRO BLOCK 376, PLOT 895 WAKISO

ANALYSIS COMPLETION DATE: 12/5/2015

SAMPLE TYPE: TREATED WATER

Parameters	% removal	Test Results	US 201:2008 Drinking water Standard class 1
Total Coliforms (CFU/100mls)	99.99	<1	Not Detected
E.coli (CFU/100mls)	99.99	<1	Not Detected
Turbidity (NTU)	46.30	1.96	5
pH (Units)	6.9	7.6	5.5-8.5
Colour (PtCo)	88.00	3.00	15
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Flow rate (L/hr)	-	1.8	NS

LABARATORY MANAGER

Checked:
Laboratory Manager
Date:

PRINCIPAL ANALYST LABORATORIES

Issued
Principal Analyst
Date: 30 JUN 2015
NATIONAL WATER QUALITY REFERENCE LABORATORY – ENTEBBE
Sign:

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