

Summary

- No major issues.
- Water analysis for commissioning is ongoing
- Batch 4 results were as expected except for level of Total bacteria from Dispenser #4.
- Free chlorine has remained at slightly elevated levels (0.4 ppm free chlorine).

Sub-systems status:

1. Source water

- Testing has been completed satisfactorily. Water test results remain as expected (brackish source, with high TSS, TDS, sodium and fluoride).

2. Reverse osmosis

- Testing completed satisfactorily. Unit working at production levels.

3. Ice production

- Units working normally and operating at production volumes. Water testing showed bacterial count within acceptable limits (Kenya Standard 459-1: 2007 3<sup>rd</sup> Ed), but with slightly elevated Total bacteria levels.

4. Dispensing systems

- All fully operational. In Test Batch 4, Dispenser 4 showed elevated Manganese (0.6 mg/l). Confusingly, this was higher than batch 3's source water. We are reviewing any plumbing adjustments in our log to identify the cause.
- In the same batch (4) Dispenser 4 also exceeded Total bacteria limit. We have taken remedial action, removing the piping and carrying out a complete saturation clean of the pipe and dispenser units. The entire dispensing system will be re-tested on 13/14 August.

5. Wastewater

- Operational. No issues.

6. Power

- Electrical components and associated wiring testing was completed satisfactorily.

7. General unit management.

- Repaired pump now installed and operational.
- All audit points now actioned. Custom fabricated drip-tray and pipe covers are now with FFK for delivery, to complete all audit tasks.
- Test results for Batch 4 are attached below.

AUGUST 11<sup>TH</sup>, 2015

BASIS AFRICA  
NAIROBI, KENYA

**ATT: IAIN BREWSTER**

Dear Sir,

**RE: WATER QUALITY ANALYSIS REPORT-RO (BATCH 4)**

We refer to the water sample submitted to our laboratory for Physical Chemical analysis. Attached please find the results.

The levels of PH, Color, Total Suspended Solids, Fluoride, Total Dissolved Solids, Sodium and Manganese are above the set Physical Chemical specifications.

We look forward to working with you.

Yours faithfully  
For **AQUATECH INDUSTRIES LTD.**



**GIDEON MAINA**  
GENERAL MANAGER

**AARON MUTHOKA**  
WATER QUALITY LAB.

# AQUATECH INDUSTRIES LTD.

AUGUST 11<sup>TH</sup>, 2015

## WATER QUALITY ANALYSIS: PHYSICAL & CHEMICAL TESTS

Sample N<sup>o</sup> : 1508/18  
 Lpo N<sup>o</sup> : -  
 Date Sampled : 07/08/2015  
 Date Received : 08/08/2015  
 Sample Source : WATER SAMPLE-KAPESE- (BATCH 4)  
 Sample Submitted by : BASIS AFRICA

PARAMETERS	UNITS	RESULTS	KS 459 – 1: 2007 THIRD EDITION 2007
<b>PHYSICAL TESTS</b>			
<b>PH</b>	<b>pH Units</b>	<b>8.65</b>	<b>6.5 – 8.5</b>
Turbidity	NTU	0.90	< 5.0
<b>Color</b>	<b>Pt. Co. APHA</b>	<b>19.0</b>	<b>15 TCU</b>
<b>Total Suspended Solids</b>	<b>Mg/l</b>	<b>4.0</b>	<b>NIL</b>
<b>Total Dissolved Solids</b>	<b>Mg/L</b>	<b>2,050</b>	<b>1000 Max.</b>
Conductivity	Micro Siemens/cm	3,960	NS
<b>CHEMICAL TESTS (ANIONS)</b>			
Phenolphthalein Alkalinity	Mg/l CaCO <sub>3</sub>	ND	NS
Total Alkalinity	Mg/l CaCO <sub>3</sub>	1,244	NS
Chloride	Mg/l Cl <sup>-</sup>	34.8	250
<b>Fluoride</b>	<b>Mg/l F</b>	<b>6.77</b>	<b>1.5</b>
Sulfate	Mg/l SO <sub>4</sub>	60.0	400
Nitrate	Mg/L NO <sub>3</sub>	1.3	50
Nitrite	Mg/l NO <sub>2</sub>	0.149	3.0
Phosphate	Mg/l PO <sub>4</sub> <sup>-3</sup>	0.63	2.2
Sulfide	Mg/l S <sup>2-</sup>	0.005	0.1
<b>CHEMICAL TESTS (CATIONS)</b>			
<b>Sodium</b>	<b>Mg/l Na</b>	<b>906</b>	<b>200</b>
Potassium	Mg/l K	5.4	50
Calcium	Mg/l Ca	12.92	150
Magnesium	Mg/l Mg	4.97	100
Iron	Mg/l Fe	0.08	0.3
<b>Manganese</b>	<b>Mg/l Mn</b>	<b>0.6</b>	<b>0.5</b>
Ammonia	Mg/l NH <sub>3</sub>	0.07	0.5
Copper	Mg/l Cu	0.02	1.0
Zinc	Mg/l Zn	0.01	5.0
Chromium	Mg/l Cr	0.021	0.05
<b>OTHER PARAMETERS</b>			
Total Hardness	Mg/l CaCO <sub>3</sub>	82.0	300
Calcium Hardness	Mg/l Ca <sup>2+</sup>	20.48	NS
Magnesium Hardness	Mg/l Mg <sup>2+</sup>	8.64	NS
Dissolved Silica	Mg/l SiO <sub>2</sub>	106.6	NS
Free Chlorine	Mg/l Cl <sub>2</sub>	0.09	0.2
Free Carbon Dioxide	Mg/l CO <sub>2</sub>	62.0	NS

**NS: No Set Standard**

**ND: Not Detected**

**KS: Kenya Standard (KEBS 2007)**

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors



**AARON MUTHOKA**  
 WATER QUALITY LAB.

AUGUST 11<sup>TH</sup>, 2015

BASIS AFRICA  
NAIROBI, KENYA

**ATT: IAIN BREWSTER**

Dear Sir,

**RE: WATER QUALITY ANALYSIS REPORT-DISPENSER 4(BATCH 4)**

We refer to the water sample submitted to our laboratory for Physical Chemical and Bacteriological analysis. Attached please find the results.

The levels of Free Chlorine, Manganese and Bacteria are above the set Physical Chemical specifications.

We look forward to working with you.

Yours faithfully  
For **AQUATECH INDUSTRIES LTD.**



**GIDEON MAINA**  
GENERAL MANAGER

**AARON MUTHOKA**  
WATER QUALITY LAB.

# AQUATECH INDUSTRIES LTD.

AUGUST 11<sup>TH</sup>, 2015

## WATER QUALITY ANALYSIS: PHYSICAL & CHEMICAL TESTS

Sample N<sup>o</sup> : 1508/19  
 Lpo N<sup>o</sup> : -  
 Date Sampled : 07/08/2015  
 Date Received : 08/08/2015  
 Sample Source : WATER SAMPLE-KAPESE- DISPENSER 4 (BATCH 4)  
 Sample Submitted by : BASIS AFRICA

PARAMETERS	UNITS	RESULTS	KS 459 – 1: 2007 THIRD EDITION 2007
<b>PHYSICAL TESTS</b>			
PH	pH Units	6.94	6.5 – 8.5
Turbidity	NTU	0.34	< 5.0
Color	Pt. Co. APHA	ND	15 TCU
Total Suspended Solids	Mg/l	ND	NIL
Total Dissolved Solids	Mg/L	12.6	1000 Max.
Conductivity	Micro Siemens/cm	27.6	NS
<b>CHEMICAL TESTS (ANIONS)</b>			
Phenolphthalein Alkalinity	Mg/l CaCO <sub>3</sub>	ND	NS
Total Alkalinity	Mg/l CaCO <sub>3</sub>	6.5	NS
Chloride	Mg/l Cl <sup>-</sup>	3.9	250
Fluoride	Mg/l F	0.01	1.5
Sulfate	Mg/l SO <sub>4</sub>	ND	400
Nitrate	Mg/L NO <sub>3</sub>	1.5	50
Nitrite	Mg/l NO <sub>2</sub>	0.006	3.0
Phosphate	Mg/l PO <sub>4</sub> <sup>-3</sup>	0.15	2.2
Sulfide	Mg/l S <sup>2-</sup>	0.002	0.1
<b>CHEMICAL TESTS (CATIONS)</b>			
Sodium	Mg/l Na	7.91	200
Potassium	Mg/l K	1.6	50
Calcium	Mg/l Ca	0.23	150
Magnesium	Mg/l Mg	0.07	100
Iron	Mg/l Fe	0.05	0.3
<b>Manganese</b>	<b>Mg/l Mn</b>	<b>0.6</b>	<b>0.5</b>
Ammonia	Mg/l NH <sub>3</sub>	0.02	0.5
Copper	Mg/l Cu	0.01	1.0
Zinc	Mg/l Zn	0.07	5.0
Chromium	Mg/l Cr	0.017	0.05
<b>OTHER PARAMETERS</b>			
Total Hardness	Mg/l CaCO <sub>3</sub>	1.0	300
Calcium Hardness	Mg/l Ca <sup>2+</sup>	0.98	NS
Magnesium Hardness	Mg/l Mg <sup>2+</sup>	0.03	NS
Dissolved Silica	Mg/l SiO <sub>2</sub>	2.3	NS
<b>Free Chlorine</b>	<b>Mg/l Cl<sub>2</sub></b>	<b>0.44</b>	<b>0.2</b>
Free Carbon Dioxide	Mg/l CO <sub>2</sub>	2.0	NS

NS: No Set Standard

ND: Not Detected

KS: Kenya Standard (KEBS 2007)

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors



**AARON MUTHOKA**  
 WATER QUALITY LAB.

# AQUATECH INDUSTRIES LTD.

AUGUST 11<sup>TH</sup>, 2015

## **BACTERIOLOGICAL ANALYSIS**

Sample N<sup>o</sup> : 1508/19  
Lpo N<sup>o</sup> : -  
Date Sampled : 07/08/2015  
Date Received : 08/08/2015  
Sample Source : WATER SAMPLE-KAPESE- DISPENSER 4 (BATCH 4)  
Sample Submitted by : BASIS AFRICA

### **EXAMINATION RESULTS.**

<b>TEST</b>	<b>KS 459 – 1: 2007 THIRD EDITION 2007</b>	<b>RESULTS</b>
<b>Total Bacteria Count/ ml</b>	<b>100 Max</b>	<b>&gt;1000</b>
MPN of Coliform Organisms in a 100 ml sample	Shall be absent	ND
MPN of E- Coli Organisms in a 100 ml sample	Shall be absent	ND
MPN of Faecal Coliform Organisms in a 100 ml sample	Shall be absent	ND

**MPN: Most Probable Number**

**ND: Not Detected**

**KS: Kenya Standard (KEBS 2007)**

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors.



**AARON MUTHOKA**  
WATER QUALITY LAB

AUGUST 11<sup>TH</sup>, 2015

BASIS AFRICA LTD  
NAIROBI, KENYA

**ATT: IAIN BREWSTER**

Dear Sir,

**RE: WATER QUALITY ANALYSIS REPORT-ICE MACHINE 2 (BATCH 4)**

We refer to the water sample submitted to our laboratory for Bacteriological analysis. Attached please find the results.

We look forward to working with you.

Yours faithfully  
For **AQUATECH INDUSTRIES LTD.**



**GIDEON MAINA**  
GENERAL MANAGER

**AARON MUTHOKA**  
WATER QUALITY LAB.



# AQUATECH INDUSTRIES LTD.

AUGUST 11<sup>TH</sup>, 2015

## **BACTERIOLOGICAL ANALYSIS**

Sample N<sup>o</sup> : 1508/23  
Lpo N<sup>o</sup> : -  
Date Sampled : 07/08/2015  
Date Received : 08/08/2015  
Sample Source : WATER SAMPLE-KAPESE- ICE MACHINE 2 (BATCH 4)  
Sample Submitted by : BASIS AFRICA

### **EXAMINATION RESULTS.**

<b>TEST</b>	<b>KS 459 – 1: 2007 THIRD EDITION 2007</b>	<b>RESULTS</b>
Total Bacteria Count/ ml	100 Max	10-100
MPN of Coliform Organisms in a 100 ml sample	Shall be absent	ND
MPN of E- Coli Organisms in a 100 ml sample	Shall be absent	ND
MPN of Feacal Coliform Organisms in a 100 ml sample	Shall be absent	ND

**MPN: Most Probable Number**

**ND: Not Detected**

**KS: Kenya Standard (KEBS 2007)**

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors.



**AARON MUTHOKA**  
**WATER QUALITY LAB**

AUGUST 11<sup>TH</sup>, 2015

BASIS AFRICA LTD  
NAIROBI, KENYA

**ATT: IAIN BREWSTER**

Dear Sir,

**RE: WATER QUALITY ANALYSIS REPORT-DISPENSER 2 (BATCH 4)**

We refer to the water sample submitted to our laboratory for Bacteriological analysis. Attached please find the results.

We look forward to working with you.

Yours faithfully  
For **AQUATECH INDUSTRIES LTD.**



**GIDEON MAINA**  
GENERAL MANAGER

**AARON MUTHOKA**  
WATER QUALITY LAB.

# AQUATECH INDUSTRIES LTD.

AUGUST 11<sup>TH</sup>, 2015

## **BACTERIOLOGICAL ANALYSIS**

Sample N<sup>o</sup> : 1508/21  
Lpo N<sup>o</sup> : -  
Date Sampled : 07/08/2015  
Date Received : 08/08/2015  
Sample Source : WATER SAMPLE-KAPESE- DISPENSER 2 (BATCH 4)  
Sample Submitted by : BASIS AFRICA

### **EXAMINATION RESULTS.**

<b>TEST</b>	<b>KS 459 – 1: 2007 THIRD EDITION 2007</b>	<b>RESULTS</b>
Total Bacteria Count/ ml	100 Max	<1
MPN of Coliform Organisms in a 100 ml sample	Shall be absent	ND
MPN of E- Coli Organisms in a 100 ml sample	Shall be absent	ND
MPN of Feacal Coliform Organisms in a 100 ml sample	Shall be absent	ND

**MPN: Most Probable Number**

**ND: Not Detected**

**KS: Kenya Standard (KEBS 2007)**

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors.



**AARON MUTHOKA**  
**WATER QUALITY LAB**

AUGUST 11<sup>TH</sup>, 2015

BASIS AFRICA LTD  
NAIROBI, KENYA

**ATT: IAIN BREWSTER**

Dear Sir,

**RE: WATER QUALITY ANALYSIS REPORT-CONTROL (BATCH 4)**

We refer to the water sample submitted to our laboratory for Bacteriological analysis. Attached please find the results.

We look forward to working with you.

Yours faithfully  
For **AQUATECH INDUSTRIES LTD.**



**GIDEON MAINA**  
GENERAL MANAGER

**AARON MUTHOKA**  
WATER QUALITY LAB.

# AQUATECH INDUSTRIES LTD.

AUGUST 11<sup>TH</sup>, 2015

## **BACTERIOLOGICAL ANALYSIS**

Sample N<sup>o</sup> : 1508/20  
Lpo N<sup>o</sup> : -  
Date Sampled : 07/08/2015  
Date Received : 08/08/2015  
Sample Source : WATER SAMPLE-KAPESE- CONTROL (BATCH 4)  
Sample Submitted by : BASIS AFRICA

### **EXAMINATION RESULTS.**

<b>TEST</b>	<b>KS 459 – 1: 2007 THIRD EDITION 2007</b>	<b>RESULTS</b>
Total Bacteria Count/ ml	100 Max	<1
MPN of Coliform Organisms in a 100 ml sample	Shall be absent	ND
MPN of E- Coli Organisms in a 100 ml sample	Shall be absent	ND
MPN of Feacal Coliform Organisms in a 100 ml sample	Shall be absent	ND

**MPN: Most Probable Number**

**ND: Not Detected**

**KS: Kenya Standard (KEBS 2007)**

The results relate to the sample(s) submitted. The laboratory will not be held responsible for any sampling errors.



**AARON MUTHOKA**  
**WATER QUALITY LAB**