



Osiligi Charity Projects

Repair of broken hand pumps in Kenya FF 0504-25

2020 Interim Report

For the Eagle Foundation
Covering pump repairs during Jan - May 2020

Summary

This report provides an update on the progress made by the Osiligi charity for the 5 months of Jan – May 2020, on the restoration of hand-pumps in the regions of Kenya. Despite flooding, the worst plague of locusts for 70 years and the restrictions from COVID-19, the Kenyan team has still managed to repair 59 broken hand pumps. The repairs were achieved using part of the £45,000 donated by the Eagle Foundation. The repaired hand pumps provided access to clean water in the Kenyan counties of Siaya, Makindu, Loitokitok, Kisumu and Kitui and provided water to around 20,000 people.

This is an interim update on the progress of the project. A full report will be written at the completion of the project, around December 2020.



Introduction

The aim of the project is to repair, restore or replace non-functioning hand-pumps to provide access to groundwater supplies to a rural community.

The RWSN study from 2009 concluded that from the installed base at that time of 12,000 hand pumps in Kenya, 3600 hand-pumps (30%) were broken. So although the Osiligi charity has restored almost 1000 hand-pumps over the past 5 years, there are still at least 2000 hand-pumps to repair, probably many more when you consider other pumps installed and broken since 2009.

The failure of a hand-pump means that a rural community would have to either purchase water from an alternative source, e.g. bottled water, or from a neighbouring community hand-pump. This is either expensive or may not be available to them and they would have to go to an open water source, a river, pond or puddle. This carries the risk of drowning when children are collecting water from a river, or being attacked. It also carries the risk of waterborne diseases such as typhoid, cholera, dysentery, diarrhoea.

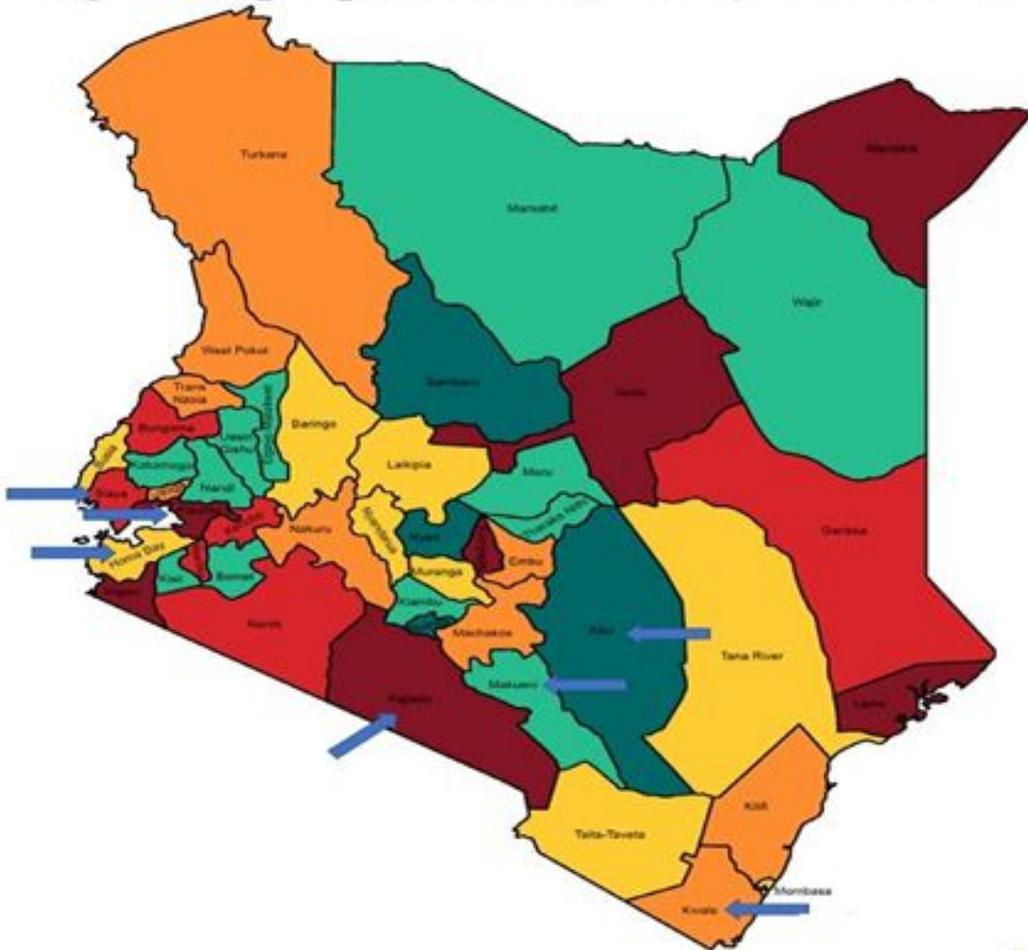
A hand-pump needs periodic maintenance, so the Osiligi charity involves the local communities in their repair for training purposes and in providing spares for the future maintenance of their hand-pump.



The locations of pumps repaired.

Figure 1 indicates the areas in Kenya where the Osiligi charity is working; Siaya, Kisumu and Homa Bay counties in West Kenya, Kitui, Makindu in Makueni and Kajiado counties in Central Kenya and Kwale in East Kenya.

Fig 1 Pump repair areas shown by blue arrows

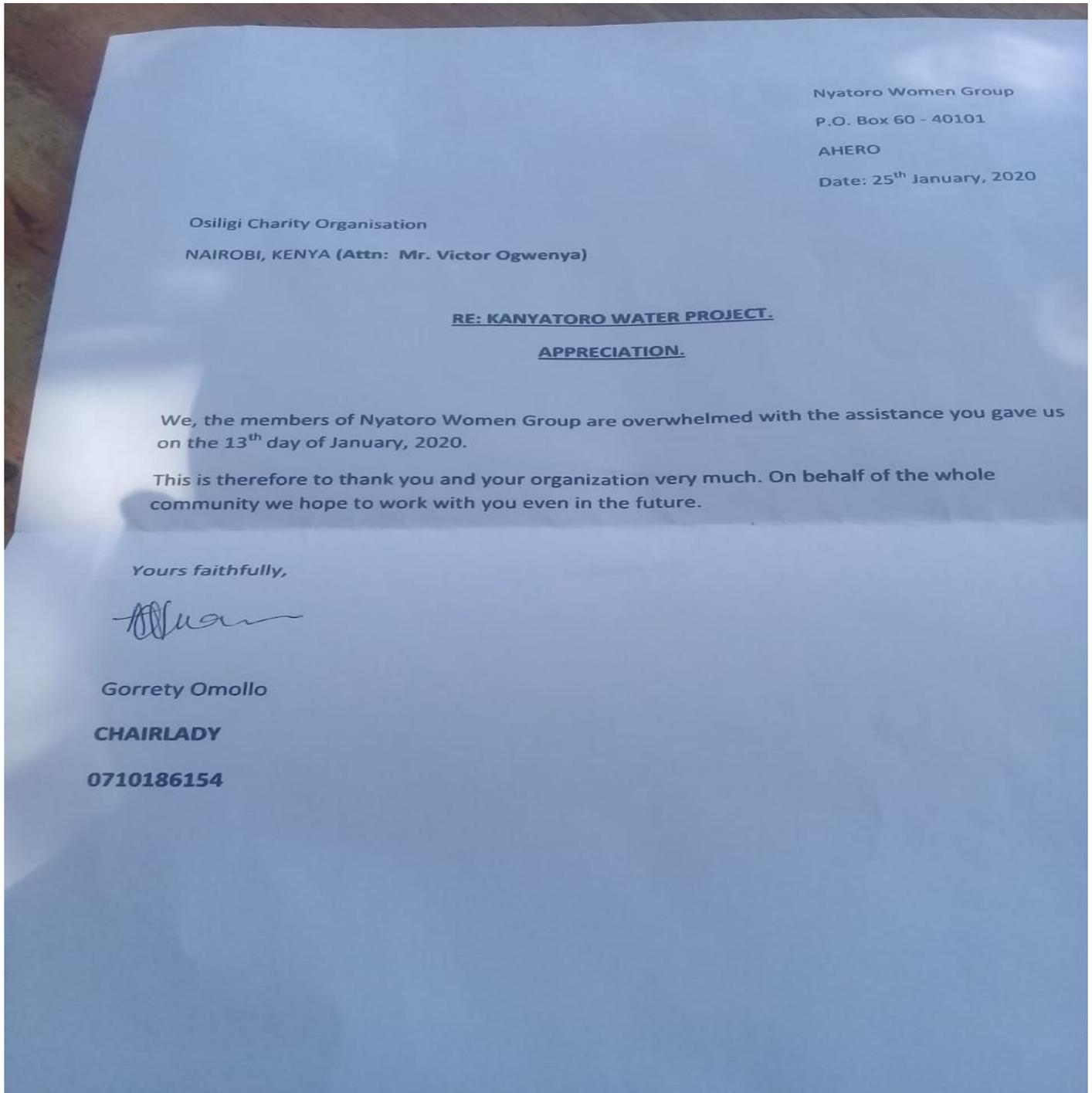


Why do we continue to repair the pumps?

When we started the project 5 years ago, locating broken hand-pumps was a challenge, and it still is. The communities, local contacts and authorities now support us and we have Memorandum of Understanding (MOU)'s with many local authorities (Appendix 3) and monthly Skype meetings to ensure that we are in regular contact with them all.

Children have the security risk when travelling to and from an open water source. This can be over 10km taking several hours. So they cannot attend school and receive an education, in order to gain employment, a vicious cycle of poverty.

Kanyatoro Water Project, a note of appreciation:



How many people have been helped?

This sounds like an easy question but it is actually very difficult to answer. Most villages do not know how many people live in the surrounding community, especially if you include the children. If you ask the community leaders about this number, you normally can get very different answers. Also once a pump is repaired, it can be used by communities from neighbouring villages.

A borehole can serve a community of between 5 to 100 households, and primary, secondary and special schools of up to 250-1000 pupils or more. Each household may have a family of 5 - 10 people living in them and then there are the children. So the minimum number may be 25 or a maximum of 1000+, in other words a lot.

For our estimates of the number of people helped, we use 250 people per pump. During this 5 month period, we repaired 59 pumps, so approximately 15,000 people have benefited. When we repair a pump, we do ask the community about the number of users and record this data. When we use the verbal reports on the number of users, the total for the 59 pumps repaired is 24,476. Let us use a number in the middle, so 20,000 people helped by these repairs.

The village bore-hole and hand pump is such an important resource; it is a community point that must be kept working. So this project is not just about repairing these broken pumps but in giving the communities the resources (knowledge, spares and contact details of engineers who can help) to help keep their pump working and to stay healthy.

Fig 2 Collecting water from a dirty pool.



Water Quality

Water Quality. A bore-hole in Kisumu was tested by Richard Miesen, a water quality engineer, the results of which are shown in appendix 1 and indicate the water quality was considered safe compared with the WHO and KEBS Standards.

Quote *“Based on the parameter done, turbidity, Iron and fluoride concentration have failed compliance for drinkin@ water however the rest of the parameters have complied with the standards for drinking water”.*

In conclusion the water is quite drinkable compared with the previous choices available to the community shown in figure 2..

The Challenges of 2020

Flooding – 8th May 2020

Transportation didn't get any easier.



Homes with running water.



Nzoia bridge now NOT linking Alego to Ugenya in West Kenya



Flooding makes it dangerous to even consider travelling to a rural location. Adding to the delay in the repair. Another consequence of the flooding is in the pollution and contamination of the area around a borehole or well.

Locusts

This year, Kenya is suffering further problems from the worst plagues of Desert Locusts for 70 years, according to BBC's Radio 4 on 10 June 2020 at 11:00 am. The National Geographic states the size of these gigantic swarms can be anything above 1 mile wide 3 miles long and half a mile deep and they eat their body weight of 2 grams every day. This equates to enough food for 36,000 people per day. These feeding habits devour grasslands, acacia trees and farm crops leaving the grazing animals with little to eat. Consequently they starve as the communities lose their animals, and therefore their milk and meat. This creates a further crisis for water and its accessibility.

Covid-19

NTV Kenya 4 mins · 🌐

BREAKING: Ministry of Health confirms the first case of Covid-19 in Kenya.

The case was confirmed yesterday on a victim who travelled back to Nairobi from USA.

#coronavirusinKenya

The lock down restricted travel between regions. This had serious consequences regarding the movement of personnel and materials for the restoration of hand pumps as any movements could be challenged by the police. An evening curfew was imposed so travelling a long way to distant rural areas became very challenging. Parts of Kenya were locked off to people outside these areas. These locked off areas included many of our pump suppliers. In the early days of the curfew, more Kenyan were killed by the police enforcing the curfew than by the virus.

Costs started to escalate for travel of people and materials. Because of the higher costs and the heavy - handed actions of the police, we decided to close down the hand-pump project for a period but as Appendix 4 shows we received many requests from local governments to continue. Clean water is important in the fight against Covid-19 and the repairing of hand pumps was regarded as important work by the Kenyan Government.

The Kenyan team was keen to continue their work but their movements would be restricted. Transport was necessary for the movement of materials. We would need a letter of authority, (Appendix 2) from a local authority to travel to/from their region. We also requested that the MOU's with the local governments (Appendix 3) were reviewed, to recognise the need for assistance in both travel and sanitation for those working in the communities.

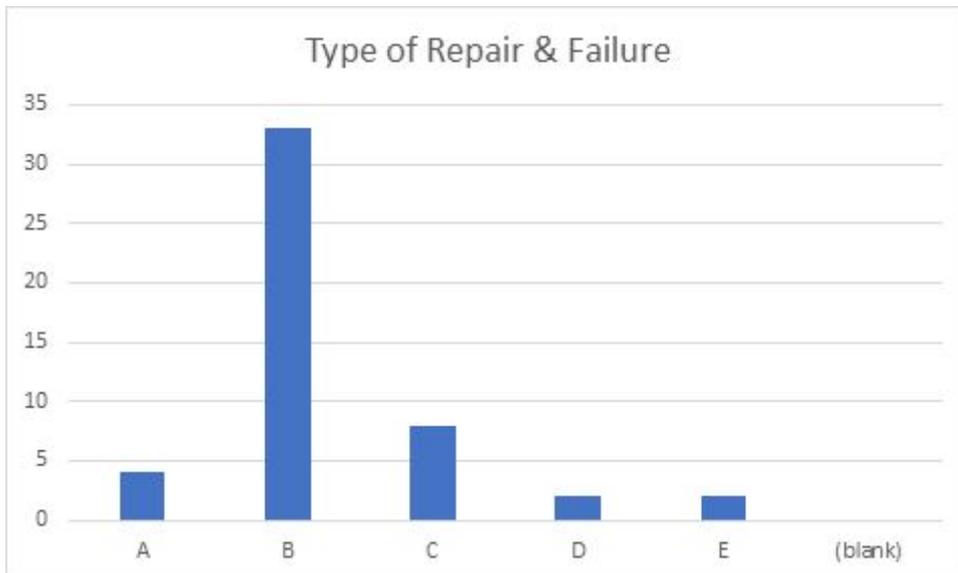


New arrangements had to be made and more responsibility and accountability had to be given to the local contacts and contractors (LC's). The restrictions on gathering data and the availability of receipts for accountability became an issue and use of cash became more common as a consequence and lack of resources available (smart phones) to the LC's

The cost of repairs

We have analysed the cost of repairing 47 of the 59 repaired pumps and this is shown below. The analysis is of the direct material costs only and excludes the indirect costs of transport, accommodation, meals etc. In the far away rural areas, the indirect costs can considerably add to the direct material costs, especially during the covid-19 outbreak. The direct costs are split into 5 categories, A to E. A (4 pumps) is a simple repair where the parts cost less than 5,000Ksh (£40). B (33 pumps) is a more extensive repair where more parts are needed at a cost of between 5000Ksh and 25,000Ksh. All of A repairs and many of B repairs could have been done by the community themselves after suitable training.

Category C (8 pumps) is a more extensive repair where the risers and rods had to be removed. These repairs cost between 25,000 - 50,000Ksh and are usually due to a broken pump being left unused for a long time, a pump that has been vandalised or a pump that has worn out due to heavy usage. D (2 pumps) is the installation of new pumps as the old one's were beyond economic repair. Finally, E (2 pumps) need a more extensive repair, such as having to employ a contractor to fish out broken pipes from the bore-hole, or to flush the bore-hole because it was blocked. Usually a new pump is required. Any old parts, if possible, are recycled.



Data on the 59 pumps repaired

We keep track of the repairs on a large spreadsheet. A copy of this spreadsheet can be seen here https://docs.google.com/spreadsheets/d/19nxSvR8hhV6ANY6H5Upf7A_AfzWRUtV7nUYiASwxthk/edit#gid=521921296

For the purposes of this report, we have shown a mini version of the data spreadsheet with many of the columns missing, so that it fits onto the page.

No	County:	Pump Name:	Depth of Well (m)	Water depth	Users	Type of Repair
1	Kisumu	Kanyatoro	30	22	500	Seal, bushes, centralizers
2	Kisumu	Othith C	17	12	1000	New risers and cylinder
3	Kisumu	Nyabande water pump	40	30	390	Foot valve replaced
4	kisumu	wasare	140	50	700	Adding one rods
5	Kisumu	Kibogo market	45	7	300	Replaced plunger rod,U seal
6	Kisumu	Cherwa water pump	50	20	400	Replaced one riser,two rods
7	Kisumu	Kasawo primary school water pump	45	25	400	Bushes, U seal
8	Kisumu	Kanyangor primary school water pump	60	20	350	Bushes,U seal
9	Kisumu	Wasare school water pump	40	15	250	Bushes,U seal
10	Kisumu	Aluny community water pump	32	24	300	Rods, U seal
11	Kisumu	Mitando	35	20	350	New Installation
12	Kisumu	Nyangoto	40	20	200	
13	Kisumu	Komundo	35	18	300	
14	Kisumu	Kowuor	50	30	250	
15	Kisumu	Kolal water pump	60	20	350	Replaced Hunger pin,bushes, U seal
16	Kisumu	Achollaute	40	10	300	Replaced risers,Ross,U seal
17	Kisumu	Kabuor water pump	60	20	800	Risers,rods,centralizers

18	Kisumu	Kowiti	45	15	350	Replaced Three rods and three risers
19	Kisumu	Kabura	60	20	350	Cylinder replaced
20	Kisumu	Magina Health center	50	40	300	New Installation
21	Kisumu	Mbogo women group	35	14	700	New Installation, 35m
22	Kisumu	Pap onditi traders borehole	15	10	1000	Useal, Bobbin replaced
23	Kitui	Tungutu water well	19	4	300	2 raising main pipes replaced, plunger and foot valve with seal replaced
24	Kitui	Kwa wandui	15	4	250	Change of two broken risers and two bent rods
25	Kitui	Kyulu well	20	3	200	Footvalve and u seal change
26	Kitui	Kakuyuni well	17	5	150	Footvalve and u seal change
27	Kitui	Kamusa primary	25	10	300	Foot valve and 1 riser change
28	Kwale	Tiwi Duga	18	12	200	Ruptured risers, missing rods replaced
29	Kwale	Tiwi Mkoyo	24	18	300	Riser, bearing, seals and plunger .S/S rods replaced
30	Kwale	Kwa Msyoki	39	8	300	replaced rodes with s/s
31	Kwale	Mivuleni WP	25	9	300	Seals and leaking riser , fixed
32	Kwale	Mangawani	18	4	250	
33	Kwale	Mwananyamala	27	11	300	
34	Siaya	Mathiwa Community hand pump	7.2	7	720	
35	Siaya	Alara	47	39	1000	
36	Siaya	Nyamula Kathieno	30	19	370	Cylinder Replaced Rods 8pcs Rod Centralisers 8pc Main riser pipe 1pc
37	Siaya	Aduwa water pump	16.5	7	345	Head and cover replaced U seal

						Plastic bearings Fulcrum and Hanger Pins
38	Siaya	Koketch Water Project	30	8	321	8 Rods and Centralisers Cylinder Replaced 2pcs Risers
39	Siaya	Koketch Water Project	30	8	321	8 Rods and Centralisers Cylinder Replaced 2pcs Risers
40	Siaya	Komol water project	16	13	300	Bolts and nuts 2 stainless steel rods
41	Siaya	Manga	45	24	453	9 risers, 9 rods, 1 Complete cylinder, 1 Hanger pin
42	Siaya	Mayora	50	25	300	Replaced hanger Chain, 1 rod
43	Siaya	Sudhe	56	36	240	Cylinder, 2 risers, Fulcrum pin
44	Siaya	Mareta	23	20	175	1 cylinder 1 riser 1 Fulcrum pin
45	Siaya	Ng'asa wire	14	10	98	Cylinder Hanger pin Plastic bushes
46	SIAYA	SIRISIA	50	24	427	1 CYLINDER 1 RISER PIPE SOLVENT 10 ROD CENTRALIZER
47	SIAYA	GUL	23	9	530	CYLINDER HOUSING PLASTIC BUSHES HANGER PIN
48	SIAYA	WUOROYA	10	8	323	BROKEN ROD, 4 ROD CENTALIZERS FOOTVALVE
49	Siaya	Diraho	50	34	1200	Foot Valve, Useal Plastic bushes
50	Siaya	Kotit Water Project	45	25	410	

51	Siaya	Usere karapul	23	10	1200	Rods worn out/replaced 6 mild steel rods 1 useal 1 Plunger
52	Siaya	Bar Anyanga	23	7	534	Old risers/5 new riser pipes 2 pair plastic bearings 1 fulcrum pin
53	Kisumu	Okuku A	37	12	300	Risers replacement
54	Kisumu	Komundo	26	11	300	Cylinder replaced,risers and rods replaced
55	Kisumu	Nyamani	45	22	350	Cylinder,risers,Ross replaced
56	Kisumu	Karao water pump	52	22	400	Cylinder,risers,rods,I seem,fulcrum pin
57	Siaya	Oyieko	23	20	654	Poor installation, Broken plunger No fulcrum pin Broken pipes
58	Siaya	UyundoA	40	14	490	Broken pipe Faulty plunger U seal
59	Makindu	Lumumba Well			25	

Database – Geo-Mapping

We track the repaired pumps either through the village name or by the GPS coordinates - GPS coordinates being the best but not all our contractors have suitable GPS equipped phones. Having village names or a list of GPS coordinates for the repaired pump, although helpful, is not ideal as it is difficult to know a pump's location from its coordinates. We have started to map the repaired pumps onto a Google maps database so that it is easy to see the locations on a map. For 2020, many of the pumps are on this map with the intention of getting all future repaired pumps onto the map.

Examples of community repairs.

Ikanga and Mutito community wells

PUMP NAME	COUNTY	PUMP TYPE	PEOPLE SERVED	G.p.s coordinates	WELL PARAMETERS	TYPE OF REPAIR	STATUS
Ikanga	Kitui	Afridev	300	1.7256 S,38.0764 E	12 Feet of water 27 feet deep	Replaced 2 rising pipes and bent rods	working
Mutitu	Kitui	Afridev	200	1.2250 S 38.1887 E	10 feet of water 25 feet deep	2 Broken risers patched up	working



Appendix 1 Water Quality

SERIAL NO 1 Sample No 0200/19-20

Name of Noe 0746618820

Purpose of sampling.. Assessment for drinking water. , ..Countyø.oHomabay

Date Sampled.. .27/11/2019 Date Received28/11/2019

WATER RESOURCES MANAGEMENT AUTHORITY	
TITLE: Water Sample Analytical Certificate -Physical Chemical Results	REFe NO: F/9/1/3
	ISSUE NO: 04
DEPARTMENT: Technical	REVG NO: 03
ISSUED BY: DTCM	DATE OF ISSUE: 15 ^t April, 2013
AUTHORIZED BY: TCM	PAGE: I of 2

Source Borehole o, n (Kanyangano primary school), Date compiled. e , 4/12/2019

PARAMETERS	UNIT	RESULTS	WHO STANDARDS	KEBS(KS 459-1:2007) STANDARDS
pH	pH Scale	688	605-805	605-805
Color	mgPt/l	5	Max 15	Max 15
Turbidity	N.T.U.	25	Max 5	Max 5
Conductivity (25 C)	PIS/cm	1420	Max 2500	
Odour	mg/l	Sharp smell of Chlorine		
Taste	mg/l	Slightly saline	Max 100	Max 100
Total Hardness	mgCaC03/l		Max 500	Max 300
Total Alkalinity	mgCaC03/l		Max 500	
Chloride	mg/l		Max 250	Max 250
Fluoride	mg/l	3.42	Max 1.5	Max 1.5
Nitrate	mgN03/l	7.0	Max 10	Max 10
Nitrite	mgN02/l	0.01	Max 0.1	Max 0.003
Orthophosphate	mg/l			
Total Dissolved Solids	mg/l		Max 1500	Max 1000
Aluminium	mg/l	00034	Max 0.2	Max 0.2
Ammonia	mg/l	< 0.02	0	0
Iron	mg/l	0.55	Max 0.3	Max 003

Name of analyst Beryl Akinyi Signature

Comments by head of laboratory:

If so, how?

(Is it completely covered, or sides only?)

	WATER RESOURCES MANAGEMENT AUTHORITY	
	TITLE: Water Sample Analytical Certificate - Bacteriological Results	REF, NO: F/9/1/6
		ISSUE NO: 01
	DEPARTMENT: Technical	REVe No: OO
	ISSUED BY: DTCM	DATE OF ISSUE: 15t April, 2013
	AUTHORIZED BY: TCM	PAGE:I of2

Is there a pump?

If so, how long has it been in use?

Has it been overhauled recently?

SITE SAMPLE TAKEN FROM

(i.e. tap in kitchen, through cistern or direct from the mains)

IS IT A CHLORINATED Residual Levels). .Nil

POSSIBLE SOURCES OF CONTAMINATION

EXAMINATION RESULTS

Total Coliforms organisms per 100 ml

E. Coli per 100 mi.. o , Absent. D

Name of analyst. . Q ! , Signature.

Salmonella Per 100ml

Shigella Per 100ml Absent.

Name of analyst.

Comments by head of laboratory: Based on the analyzed tests the water is free from bacterial Contamination

Name: Fanuel Onyango

	WATER RESOURCES MANAGEMENT AUTHORITY
--	---

	TITLE: Water Sample Analytical Certificate - Bacteriological Results	REF. NO: F/9/1/6
		ISSUE NO: 01
	DEPARTMENT: Technical	REV. NO: 00
	ISSUED BY: DTCM	DATE OF ISSUE: 15t April, 2013
	AUTHORIZED BY: TCM	PAGE:2 of 2

Signature

4/11/2019

Issued by °

(Deputy Technical Coordination Manager)

REGIONAL GER

VTER RESOURCE;

Approved by •

(Technical Coordination Manager)

Appendix 2 – Letters of Authority - Siaya

REPUBLIC OF KENYA



**COUNTY GOVERNMENT OF SIAYA
DEPARTMENT OF WATER, ENVIRONMENT & NATURAL RESOURCES**

All Correspondences should be addressed to:
The Governor,
P.O.BOX 803-40600, Siaya,
Telephone 057 – 3217
In reply please quote:

Executive Department
County Executive Committee Member
Water, Environment & Natural Resources

Ref: CGS/WENR/TECH/9/12/VOL.VII (114)

4th June, 2020

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

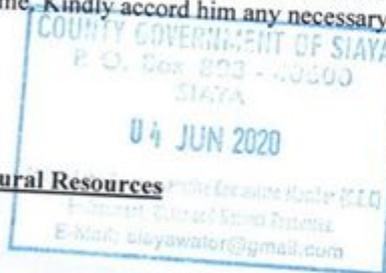
RE: AUTHORIZATION OF MOVEMENT FOR REHABILITATION OF WATER FACILITIES

Osiligi Charity has been running a Water Facilities' Rehabilitation Programme in Siaya County since 2018 by installing hand pumps. The organization through its networks has just managed to procure a consignment of handpumps which they would wish to distribute to various select sites.

In view of the Government protocols regarding the COVID-19 pandemic, the nature of their work will involve movement beyond the recommended hours and also across the borders of the restricted areas.

This therefore is to request that the bearer of this letter be allowed free movement while discharging the duties of the programme. Kindly accord him any necessary assistance.

George Rubiik
CECM, Water, Environment & Natural Resources



Copy to:

- H.E.The Governor
- County Secretary

Appendix 2 - Homa Bay



**HOMA BAY
COUNTY GOVERNMENT**
www.homabay.go.ke



**MINISTRY OF WATER, ENVIRONMENT
AND NATURAL RESOURCES**

REPUBLIC OF KENYA

HOMA BAY COUNTY

Our ref: CO/HBC/WSE/ADM 30/80/20/VOL.IX/20

11th June 2020

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: MOVEMENT AUTHORIZATION TO REPAIR/INSTALL HAND PUMPS

Osiligi Charity Organization has been mandated by the County Government of Homa Bay to carry out the Hand Pump Repair activities within the county to ensure water service provision to the local communities.

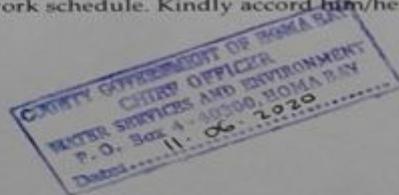
In line with the Government protocols regarding the COVID-19 pandemic, they will be offering an essential water service provision and may move beyond the restricted borders and beyond recommended curfew hours.

The main purpose of this letter is to grant its bearer a movement pass while discharging his/her duties in accordance to their work schedule. Kindly accord him/her any necessary assistance.

Yours faithfully,

Prof. Donald Ogweno

Chief Officer Water, Environment and Natural Resources



Appendix 3. MOU – Homa Bay p1.

Memorandum of Understanding

Between

Osiligi Charity hand pump project Kenya

And

The County Government of Homa- Bay

This Memorandum of Understanding (MOU) sets out the terms and understanding between the Osiligi Charity hand pump project Kenya and the county government of Homa Bay in the installation, restoration and maintenance of hand pumps providing access to water in Homa Bay County.

The Osiligi Charity Foundation is a fully registered organization (Reg No.CLG-AAAAAAM7) mandated to carry out Hand pump repair and installation activities to the rural communities in Kenya. The Organization has so far repaired over 800 pumps in Kenya and over 200 pumps in West Kenya (mostly in Kisumu and Siaya Counties). The Organization has also installed 20 new blue pumps in Siaya County and 5 pumps in Kisumu county.

Purpose

This MOU outlines how a partnership between both organizations will enable the shared use of resources to benefit the rural communities in Homa Bay County; by the effective, efficient and efficacy e.g. the shared use of data for the location of pumps and their prioritization.

The objectives of the partnership will be accomplished by undertaking the following activities:

The County Government of Homa Bay

1. Hydrogeological Survey, Drilling of new boreholes and cleaning the clogged/blocked boreholes.
2. Sharing data for the type of pump, pump location and priorities in their repair.
3. Availability of Transport and access to communities
4. Generate a water economy for the sustainability of the hand pumps.

Osiligi Charity Organization

1. Providing technical expertise and training for local technicians to install, repair and restore hand pumps.
2. Restoration of existing and not in use pumps.
3. Providing monthly reports of the restored hand pumps and newly installed hand pumps.

Appendix 3. MOU – Homa Bay p2.

Appendix 4

4. Sourcing, transporting and installing new pumps in rural communities.
5. Training the local communities for their basic maintenance of the hand pump.
6. Generate a water economy for installation and maintenance.

The outcome will be a more effective use of knowledge and resources for the benefit of the rural communities as it will enable more hand pumps to be restored in a cost effective manner.

Reporting

Monthly reports on the number of pumps repaired with service level agreements, budget expenditure costs will be made to monitor the progress of the outcomes and benefit to partnership and the rural communities

Funding

The future funding for pump repairs and installations depend on the future fundraising of Charity funds from the potential donors. The County government of Homa Bay commits to budget for future pump repairs, pump replacements and installations.

Duration

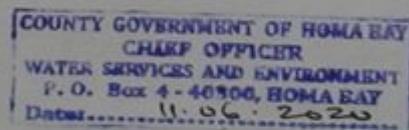
This MOU is for a Two years plan renewable at request of either party. This MOU shall become effective upon signature by the authorized officials and will remain in force but may be modified or terminated by any one of the partners through notice .

Contact Information

Osiligi Charity Foundation

1. Victor Ogwenya (P. Eng.)
Regional Contact Person-West Kenya,
Mobile: 0720536300.
E-mail: ogwenya@gmail.com.

2. Prof. Donald Ogweno.
Chief Officer, Water and Environmental Services,
Homa Bay County,
Email: dogweno54@gmail.com.



Appendix 4

Our ref: CO/HBC/WSE/ADM50/92

17th April 2020

Eric McKinnon

Osiligi Charity Foundation

Project Manager

Mobile +447-970-036-307

Dear Sir,

RE: REQUEST FOR A HAND PUMP AT ACHUNE BOREHOLE

The above subject matter refers.

On behalf of the County Government of Homa Bay, Department of Water, Environment and Natural Resources, I take this opportunity to thank you for the support The Osiligi Charity Foundation had offered for Hand Pump Projects in Homa Bay County and especially at my Kibiri Administrative ward from 2016 to early 2019 .

A new Achune borehole which is based in my administrative ward has been drilled and the borehole depth is 130m and Static Water Level is 40m . As a matter of urgency we request your office to facilitate the procurement of the India Mk II pump to be installed as soon as possible to reduce chances of the new borehole blocking.

The MOU is now ready and will be signed after the COVID-19 has ceased to be a threat,

Yours faithfully,

Hon. Michael Odira

Chairman, Water, Environment and Natural Resources at the County Assembly.

c.c Victor Ogwenya

Regional Contact Person, West Kenya