# 資料-11

# 参考資料

# （4）物理探査結果

Result of Geophysical Survey and Drilling Points Siting

## 1. Introduction

Two dimensional resistivity survey method would be applied as geophysical survey. Comparing to one dimensional survey, namely VES Vertical Electrical Sounding) and HEP (horizontal Electrical Profiling), two dimensional survey can detect more complex structure of geology. If the geology is sedimentary rock area, layered structure can be expected. However, most of the geology in the target area is igneous rock or metamorphic rock consisted granite and gneiss, it is called Gneiss-Granulitic Complex. In such area, the geological structure is complicated, there are not only vertical changes but also horizontally changes. Additionally, high yield boreholes are required for the piped water supply schemes which will be constructed in this project. For the purpose, recharge system for groundwater should be considered. Target structure is deep weathered zone and fracture zone lying under the thick weathered zone. Because two dimensional resistivity survey can be obtained an image of resistivity cross section, it can be grasped variation of geological structure.

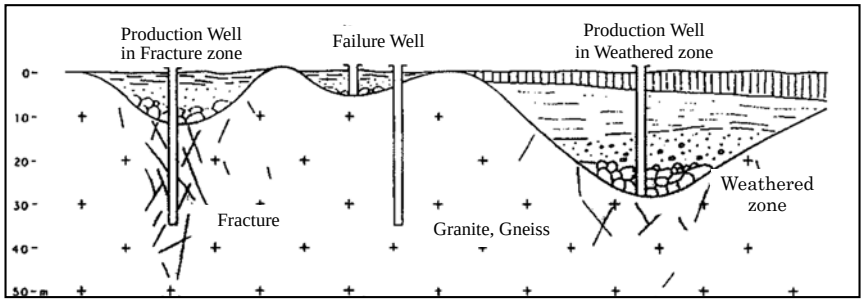



Figure 1 Image of Aquifer and Production Well in Gneiss-Granulite Complex

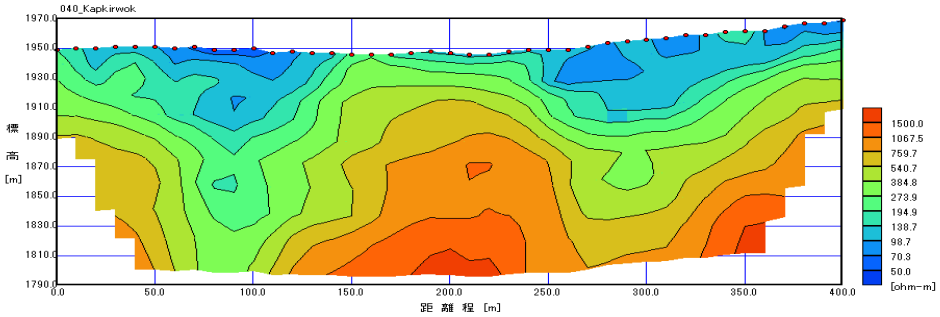



Figure 2 Example of Analyzed Image of 2-dimensional resistivity survey

## 2. Methodology

Figure 3 shows the schematic diagram of the field measurement of two-dimensional resistivity survey. This configuration is called “pole-pole array”. The procedure of the measurement is the following.

(i) Setting remote electrodes

Current electrode (C2) and potential electrode (P2) were set as remote electrodes at the two points located very far from the measuring line (ten times by exploration depth or more). These electrodes are called “remote electrode”. Then, these electrodes connect to resistivity survey equipment with cable.

(ii) Setting and connecting the electrodes along measuring line

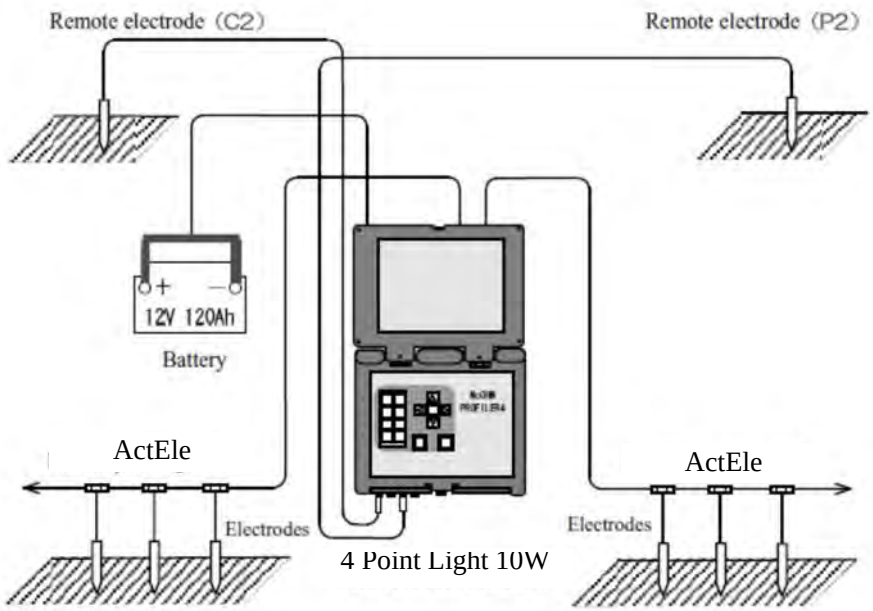


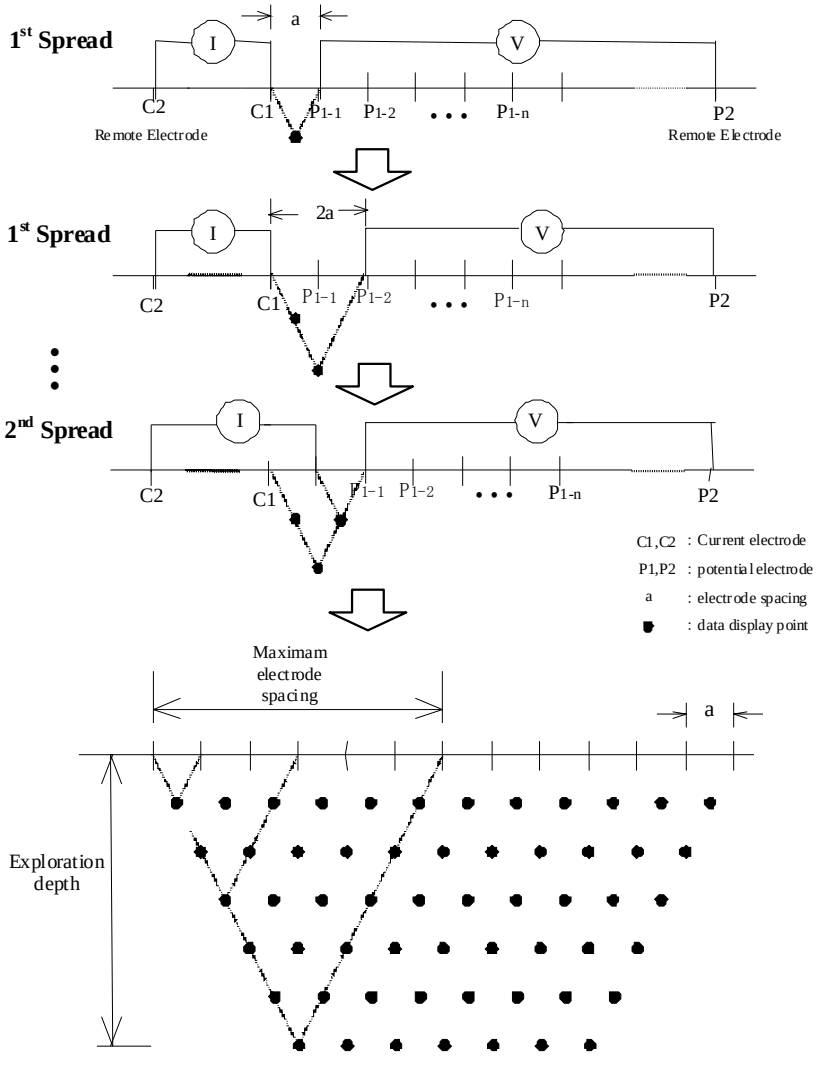

Figure 3　Schematic Diagram of 2-Dimensional Resistivity Survey

Electrodes are set with 5m spacing along measuring line. These electrodes are called “movable electrode”. These electrodes connect to resistivity survey equipment with takeout cable through scanner. The positions of each electrode are measured by using measuring tape and hand level.

(iii) Measurement of voltage

**Figure 4** shows the procedure of measurement. Current electrode (C1) is fixed, and electric current is injected between C1 and C2. Electrical potential difference is measured between potential electrodes (from P1-1 to P1-n) and remote electrode (P2), respectively. If maximum electrode spacing was 100m, measurement was repeated from P1-1 to P1-10 (1st Spread).

Next, current electrode (C1) and potential electrode (P1-1 to




Exploration depth equals maximum electrode spacing, approximately.

Figure 4　Procedure of 2-Dimensional Resistivity Survey

P1-n) were moved 10m each. Then, measurement is repeated as same as the first Spread (2nd Spread).

Two-dimensional survey analysis becomes possible by acquiring many data in the section-shaped.

**Analysis Method**

An apparent resistivity is calculated from the measured data by following equation.

$$\rho_a = 2\pi a \frac{V}{I},$$

where, "*a*" is the electrode spacing from the current electrode to the potential electrode.

Apparent resistivity pseudo-section is drawn by plotting the apparent resistivity calculated by the above equation on the data display point (see **Figure 4**).

Theoretical potential data is calculated by FEM (Finite Element Method) from the initial model made from apparent resistivity pseudo-section. After theoretical potential data are calculated, the model of resistivity structure is modified to reduce the residuals between the theoretical data and the measured data, automatically. To find the model giving the minimum residuals, the non-linear least squares technique is applied. This modification process is iterated until the residuals become sufficiently small or subsequent changes to the model no longer improve the fitting. This procedure is called "inversion". At this point, the inversion program is considered to have converged. The final resistivity model is displayed as a color profile that clearly shows the resistivity structure.

An analysis program called "ElecImager/2D" developed by OYO Corporation in Japan was used for this study.

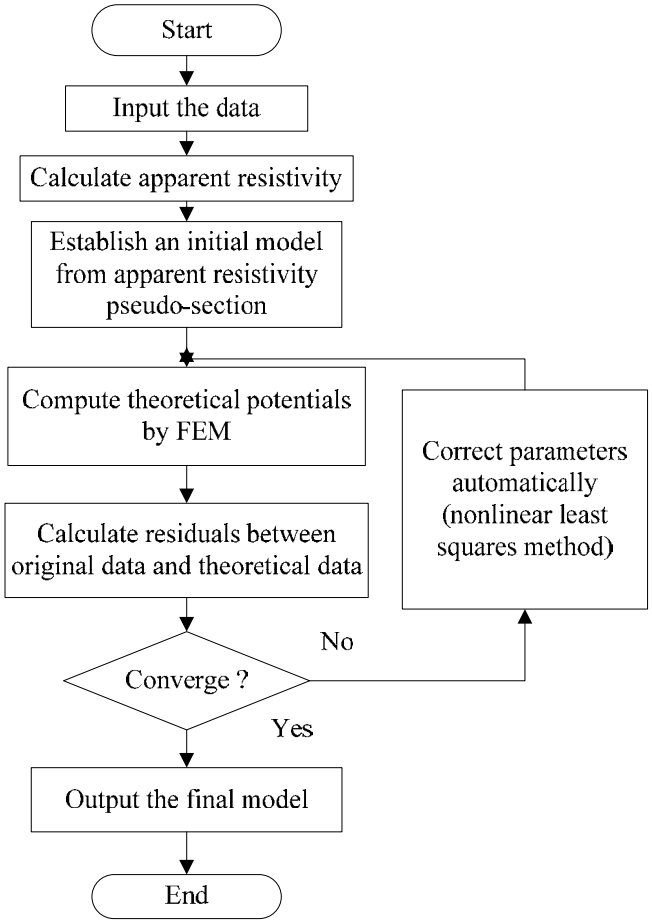



**Figure 5** Flow Chart of 2-D Automatic Analysis.

Equipment and materials used in this survey are shown in Table 1.

Table 1 Specification of Equipment and Materials for the Survey

| Name | Specification | Quantity | Manufacturer |
|---|---|---|---|
| Resistivity Meter | **4 Point light 10W**<br>Output voltage: 380Vp-p<br>Output current: 1μA ---100mA (Constant current)<br>Frequency: 0.26 Hz --- 30 Hz<br>Resolution Receiver: 100nV<br>A/D resolution: 24 bits<br>Display: 4x20 digit LCD<br>Accuracy: 0.2%<br>Weight: 750g<br>Size: 250mm(W)×120mm(D)×50mm(H) | 1 no | LIPPMANN Geophysical Instruments (Germany) |
| Electrode System | **ActEle - Active Electrodes**<br>10m interval<br>Chain is extendable up to 255 electrodes<br>Input Impedance: 1 GΩ at 1Hz<br>Low power comsumption: 2mW/electrode | 40 nos | LIPPMANN Geophysical Instruments (Germany) |
| Single Core Cable | **VSF 0.5sq** (Black & Red)<br>Voltage:300Vmax, Current:5Amax<br>36.7 /km | 2000m | Misawa (Japan) |
| Measuring Tape | Million Rope 100m (**MSR100**)<br>Fiberglass measuring tape<br>Width: 6.2mm, Thickness: 2mm | 2 nos | Yamayo Measuring Tools Co., Ltd. (Japan) |
| Analysis Software | **ElecImager/2D**<br>Electrical Potential simulation by Finite Element Method<br>Function: Data Quality Control, Topographic correction, Remote electrode correction<br>Maximum electrode number for analysis：200 | 1 no | OYO Corporation (Japan) |

**3. Measurement Plan**

The quantities of geophysical survey are expected in the Table 2 tentatively.

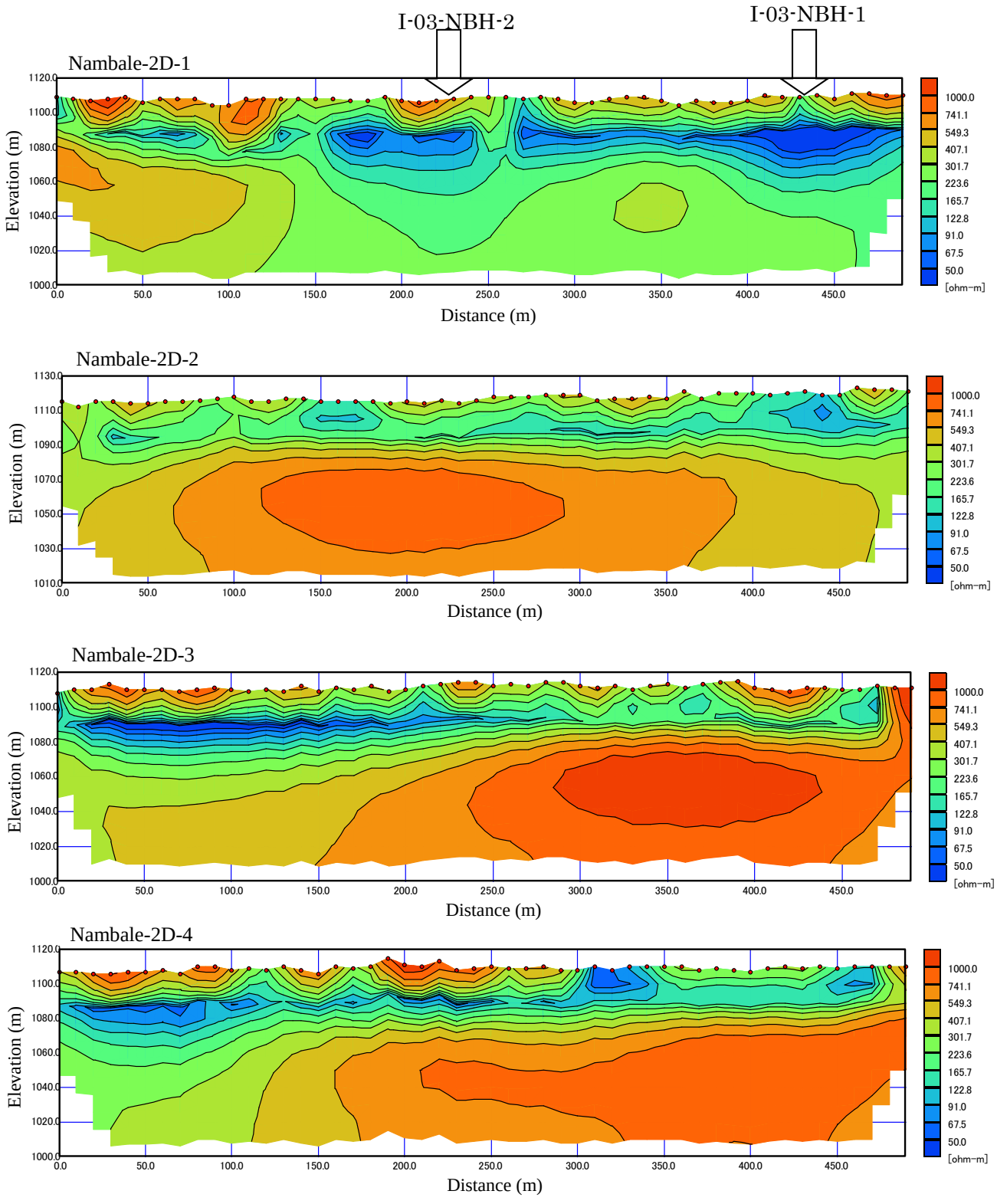
Table 2 Planned Quantities of Measurement of 2-D resistivity Survey

| No. | Code. | RGC Name | District | County | Sub-county | Line Length | Exploration Depth | Measurement Lines |
|---|---|---|---|---|---|---|---|---|
| 1 | I-3 | Nambale | Iganga | Kigulu | Nambale | 500 | 100 | 4 |
| 2 | I-6 | Lambala | Luuka | Luuka | Irongo | 500 | 100 | 4 |
| 3 | I-9 | Kyanvuma | Luuka | Luuka | Irongo | 300 | 100 | 2 |
| 4 | I-11 | Nondwe | Iganga | Bugweri | Makuulu | 500 | 100 | 4 |
| 5 | P-2 | Kasassira | Kibuku | Kibuku | Kasasira | 500 | 100 | 4 |
| 6 | P-4 | Kapala | Pallisa | Pallisa | Gogonyo | 300 | 100 | 2 |
| 7 | P-5 | Buseta | Kibuku | Kibuku | Buseta | 300 | 100 | 2 |
| Not specified, but some sites of the above | | | | | | 500 | 100 | 8 |
| | | | | | | | Total | 30 |

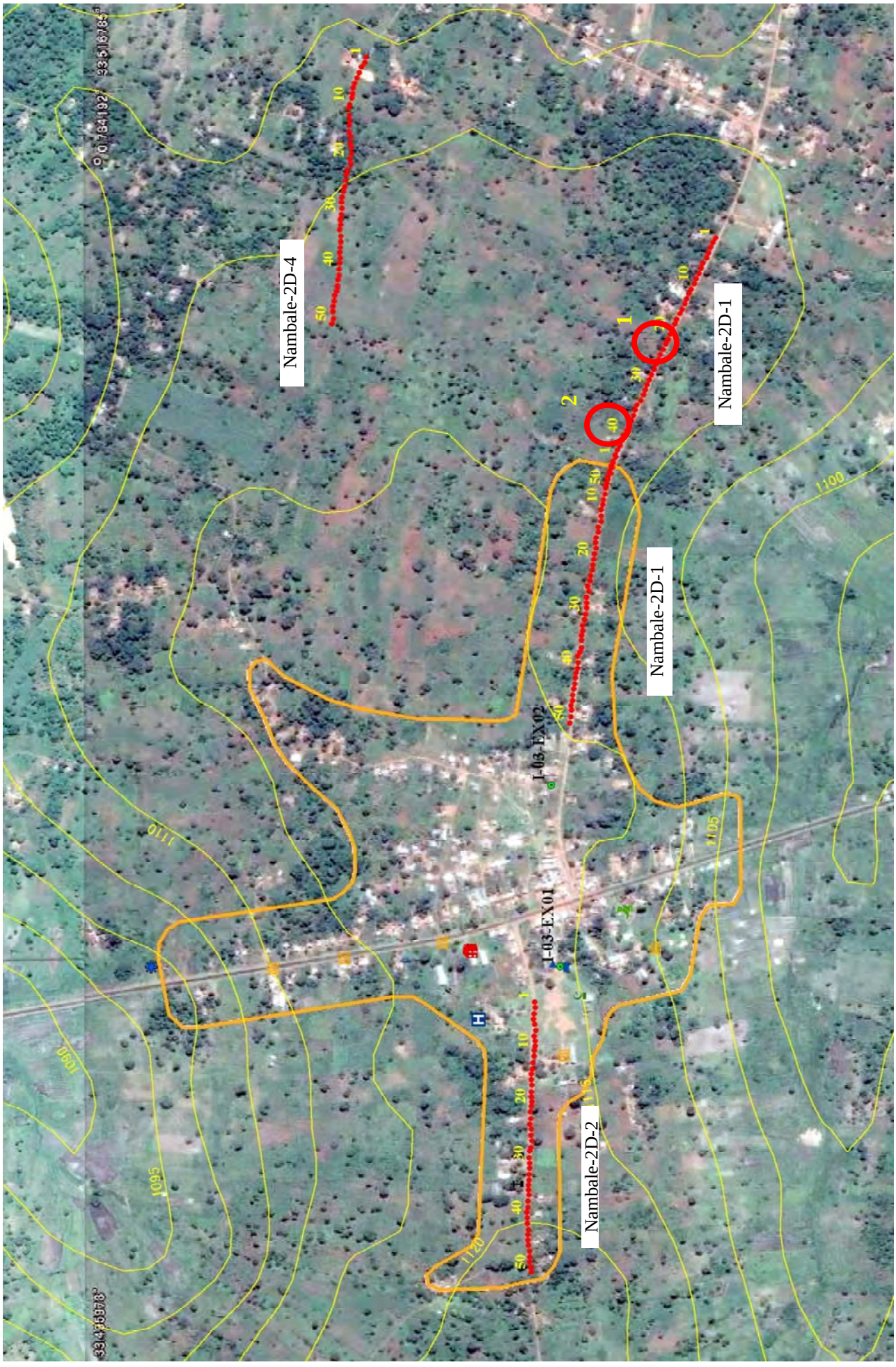
The geophysical survey will be conducted in two stages. The geophysical survey from Code I-3 to P-5 in the above table will be conducted in the first stage. After test borehole drilling for sited points from the result of the geophysical survey in the first stage, geophysical survey in the second stage will be conducted according to the result of the test drilling. Expected number of additional survey line is eight (8).

## 4. Result of 2-Dimensional Resistivity Survey

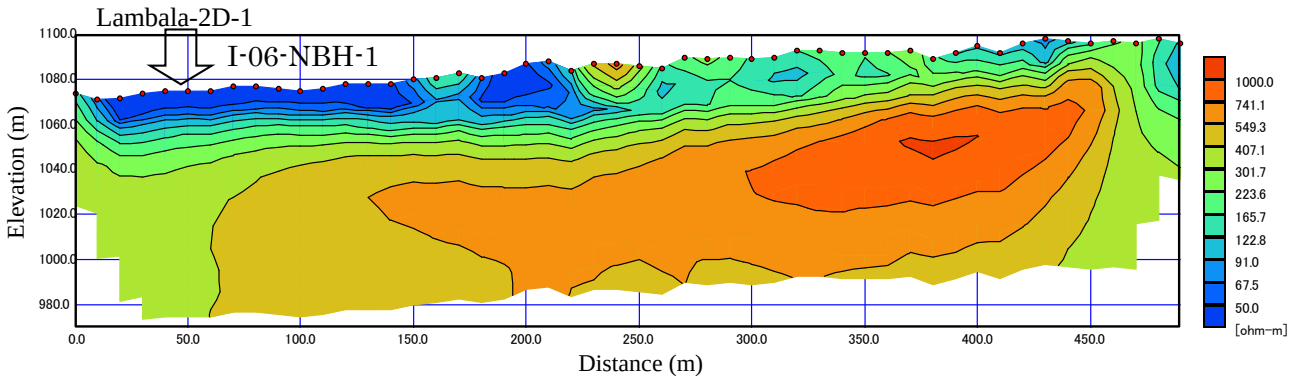
(1) 2-Dimentional Resistivity Survey Result in I-03 Nambale

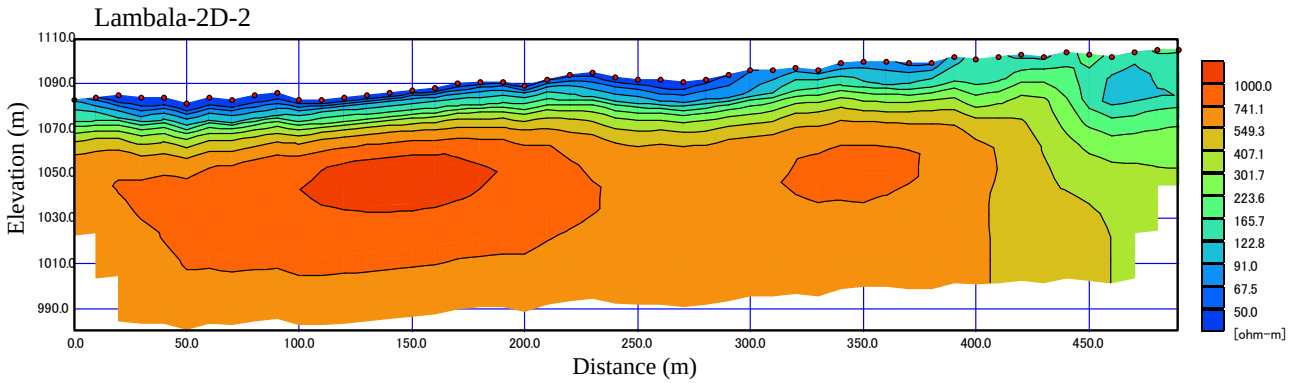


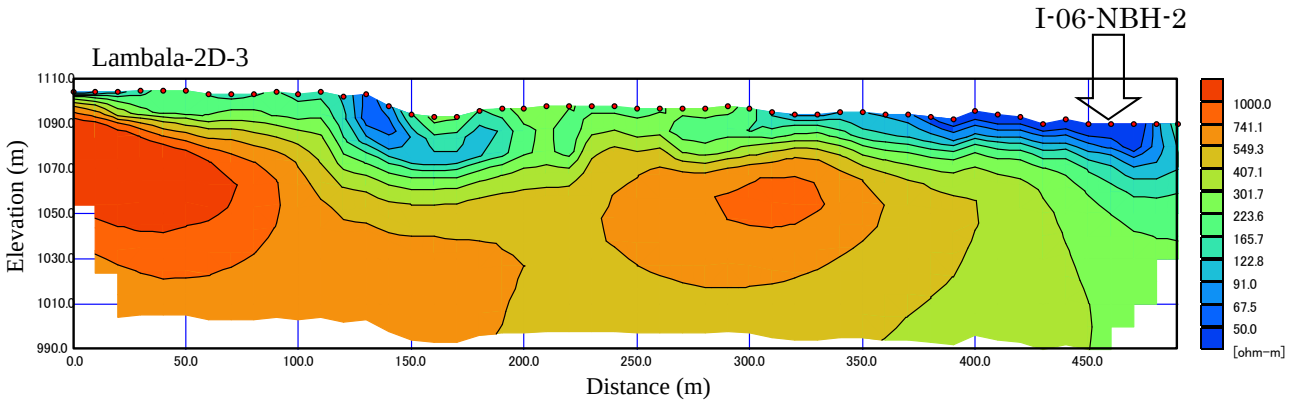
Distribution of 2-Dimentional Resistivity Survey Measurement Line in I-03 Nambale

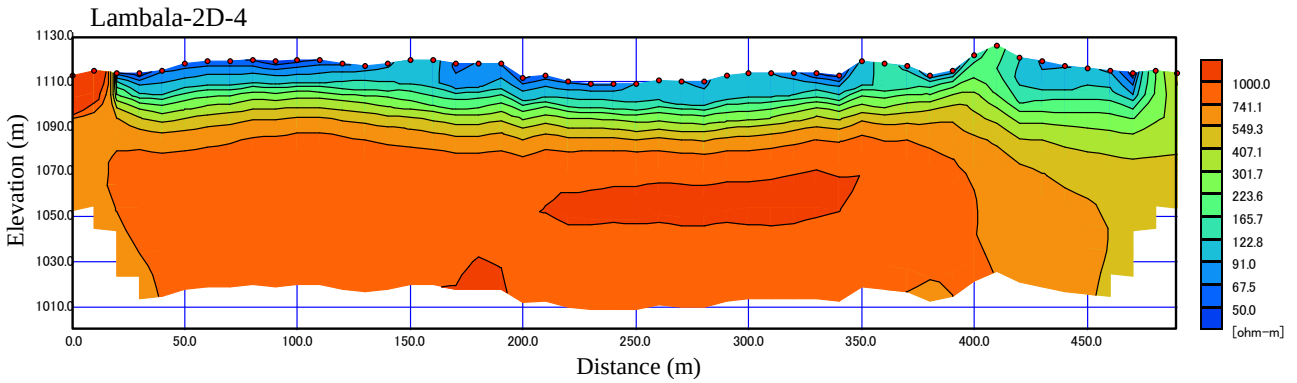


(2) 2-Dimentional Resistivity Survey Result in I-06 Lambala

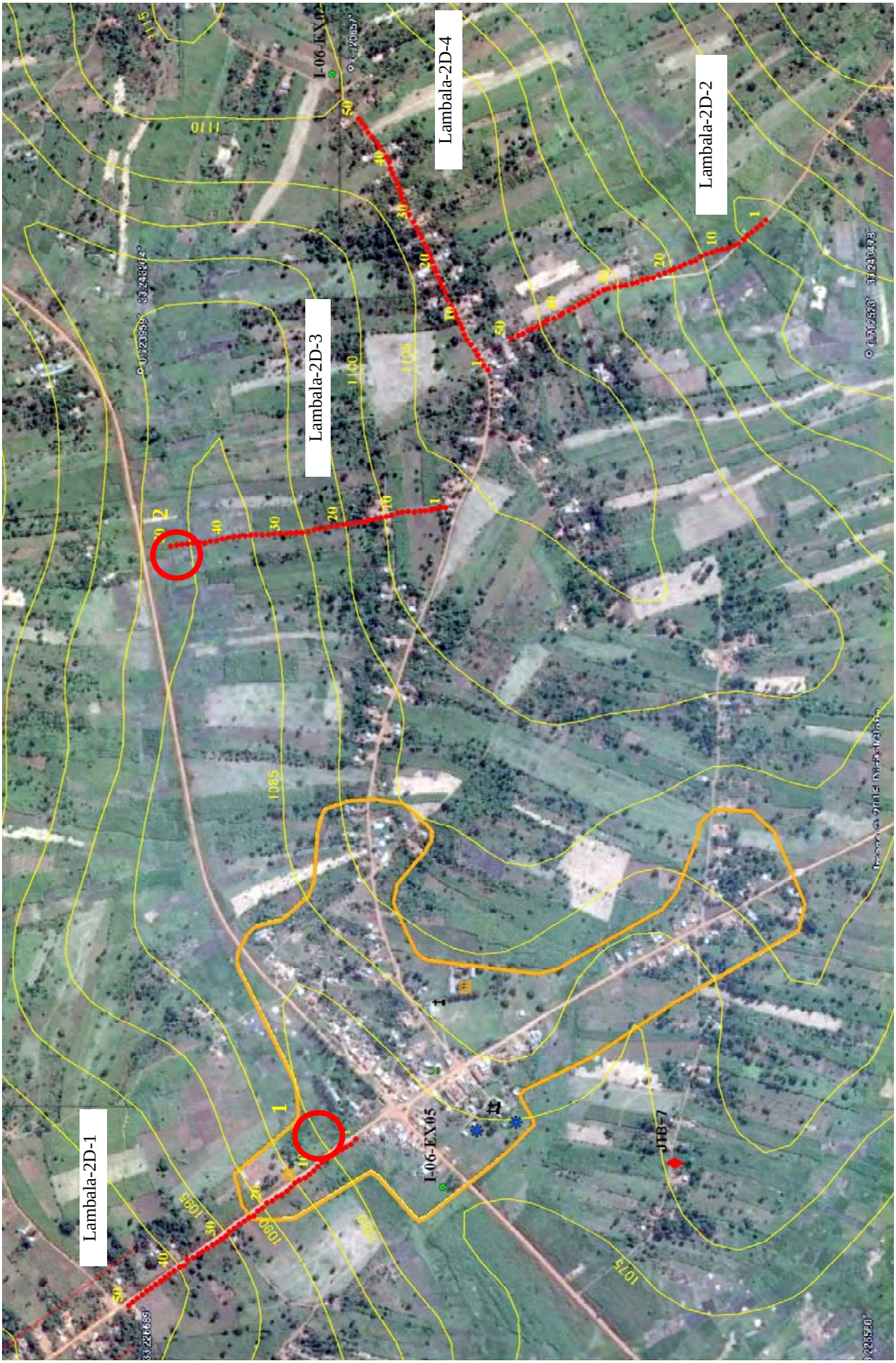


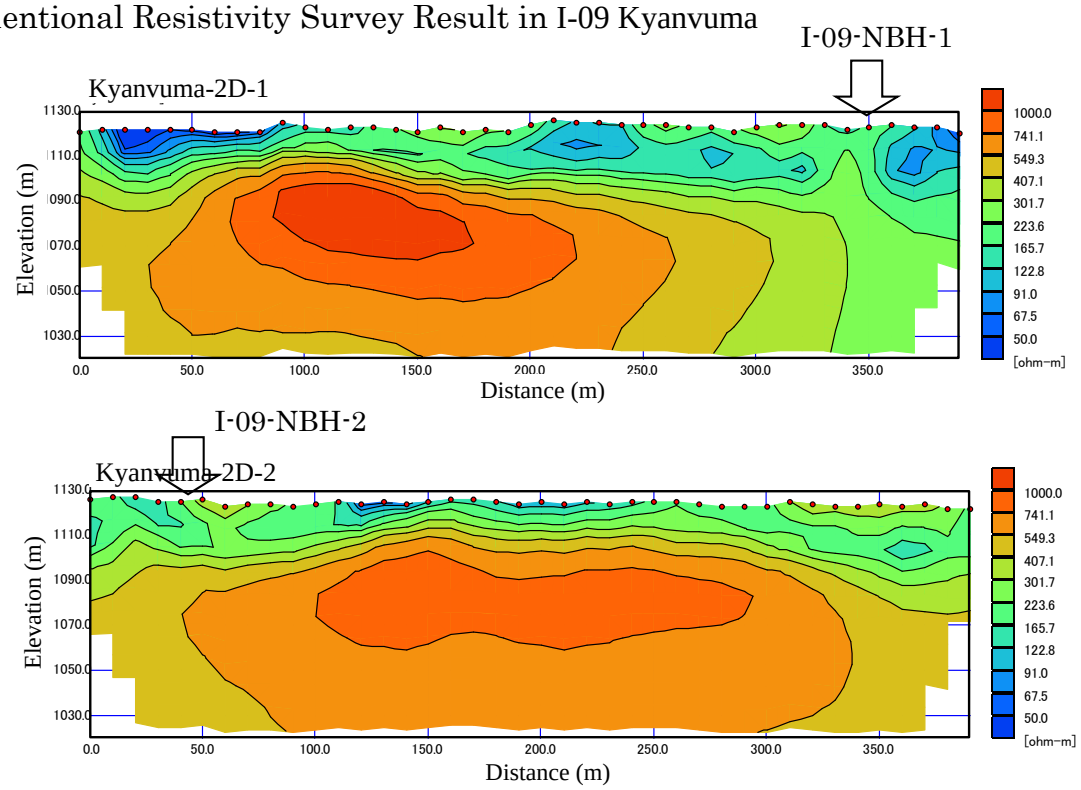



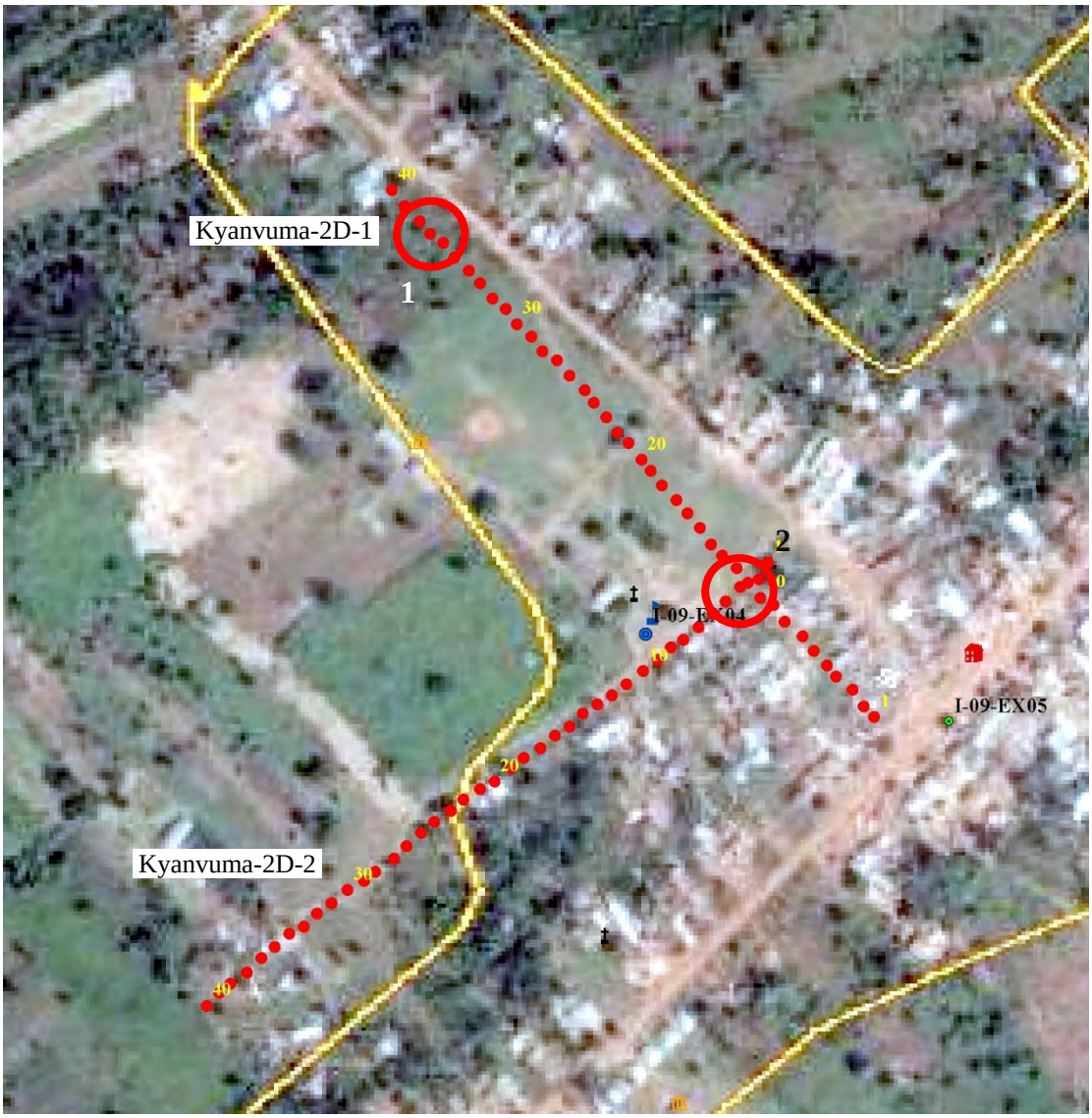
Distribution of 2-Dimentional Resistivity Survey Measurement Line in I-06 Lambala



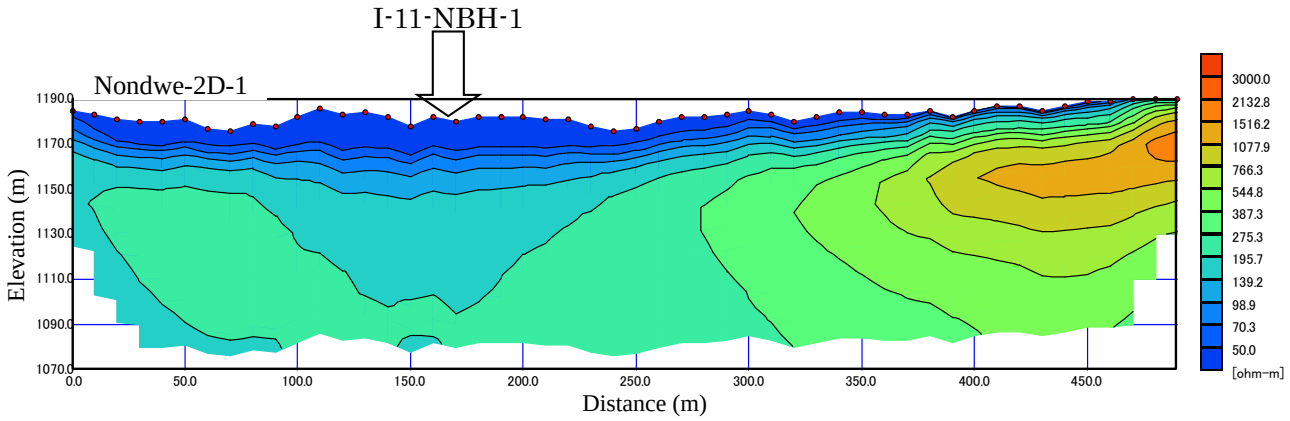
(3) 2-Dimentional Resistivity Survey Result in I-09 Kyanvuma

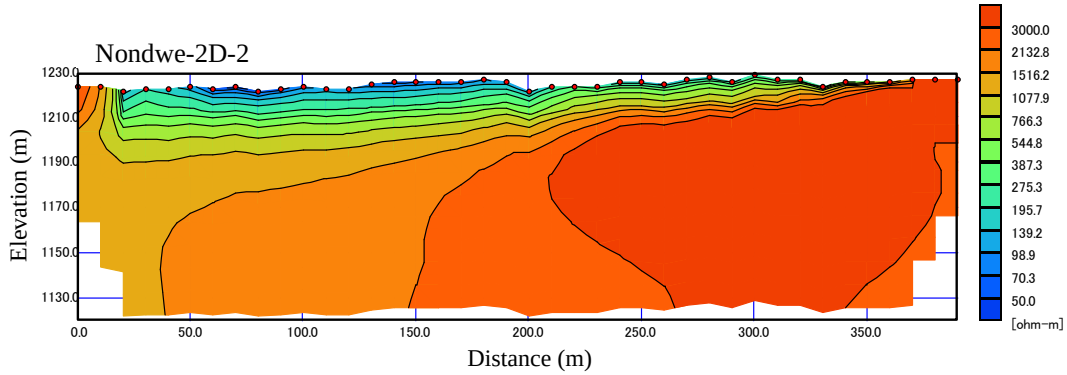


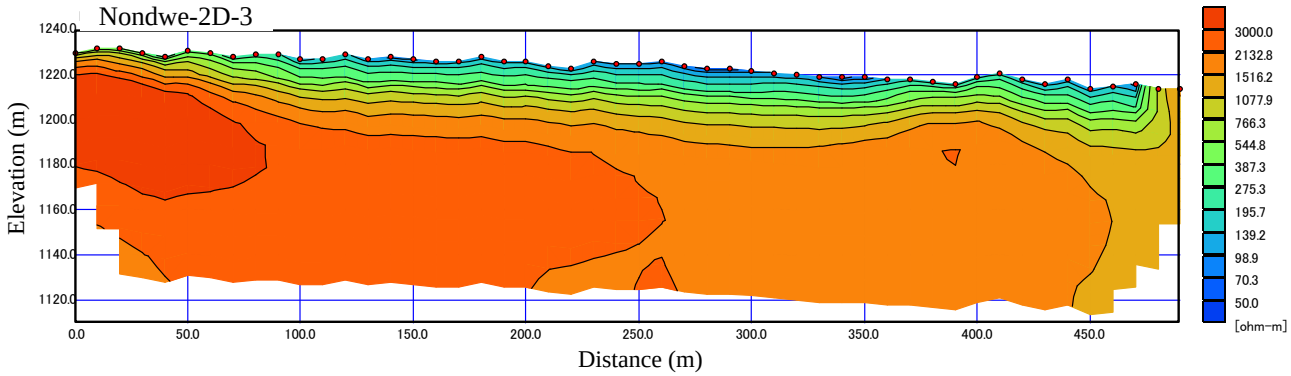

Distribution of 2-Dimentional Resistivity Survey Measurement Line in I-09 Kyanvuma

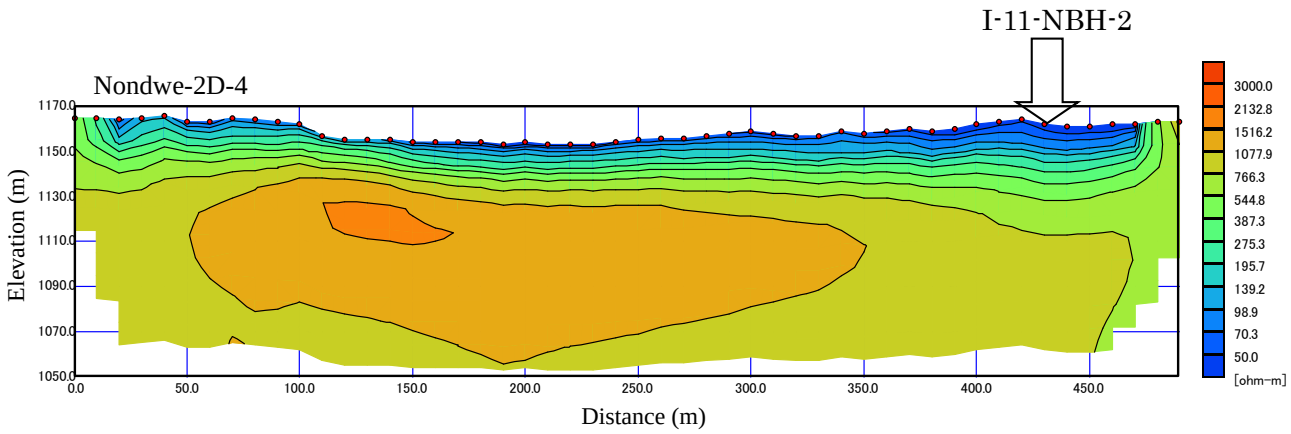


(4) 2-Dimentional Resistivity Survey Result in I-11 Nondwe

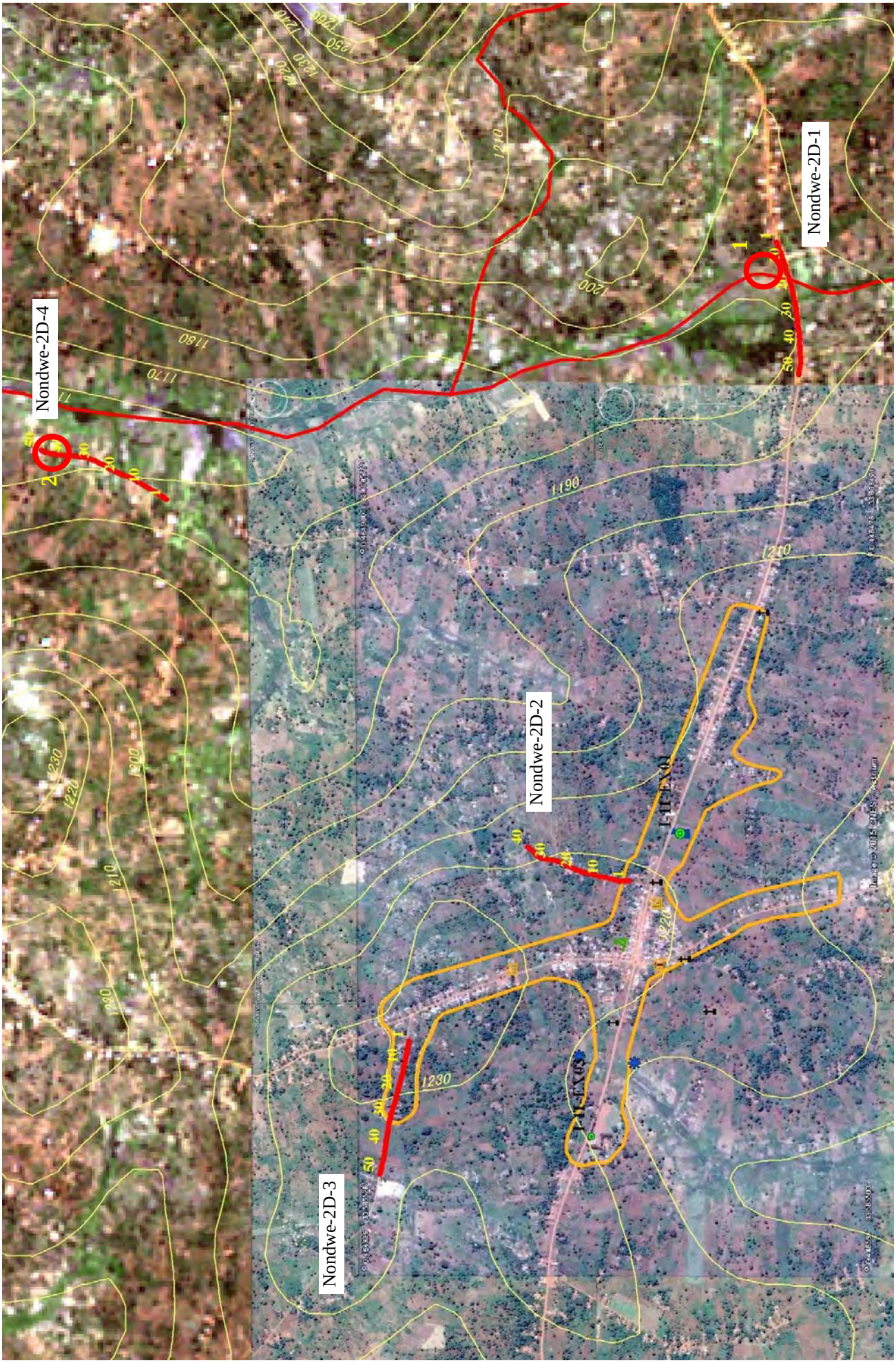


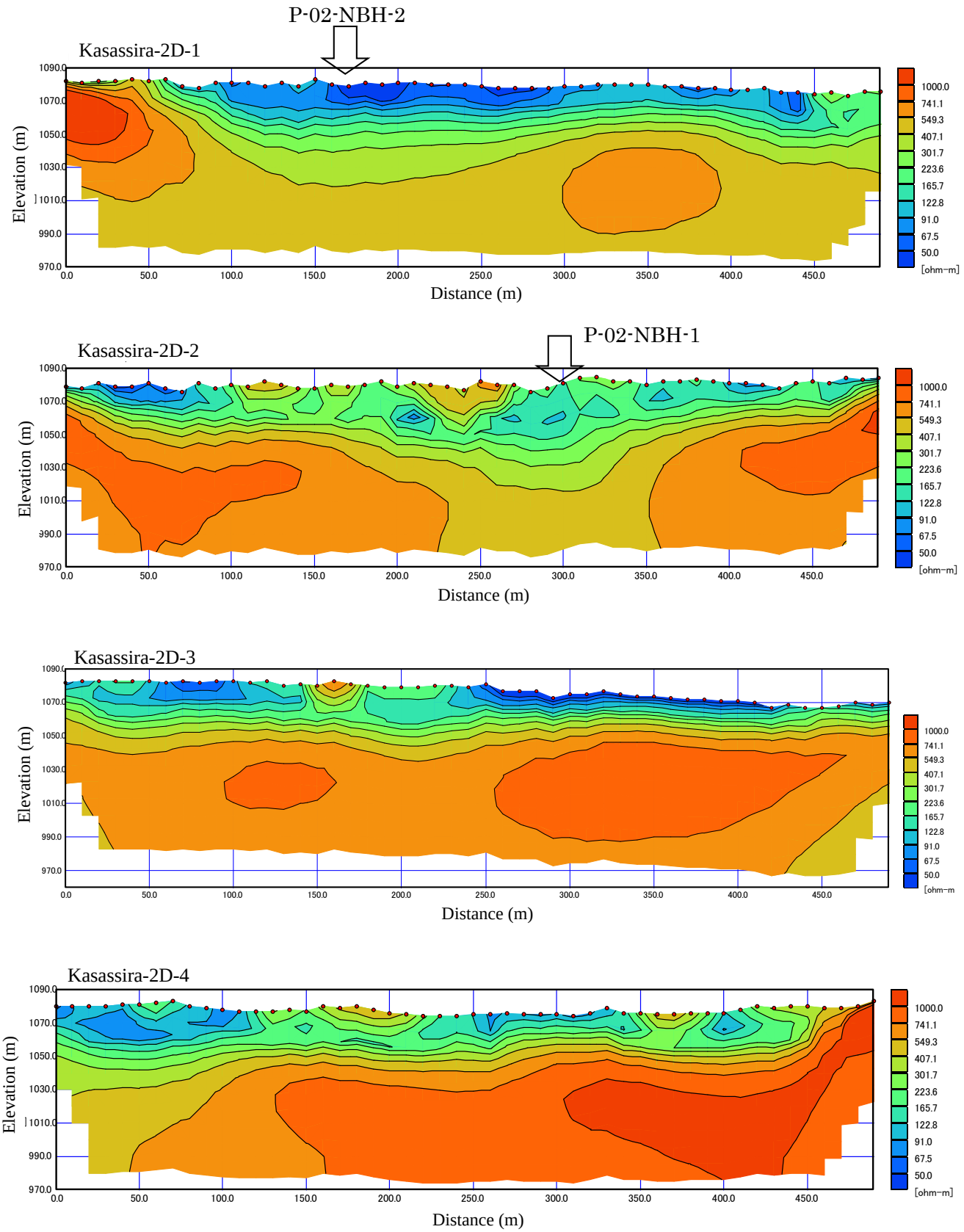



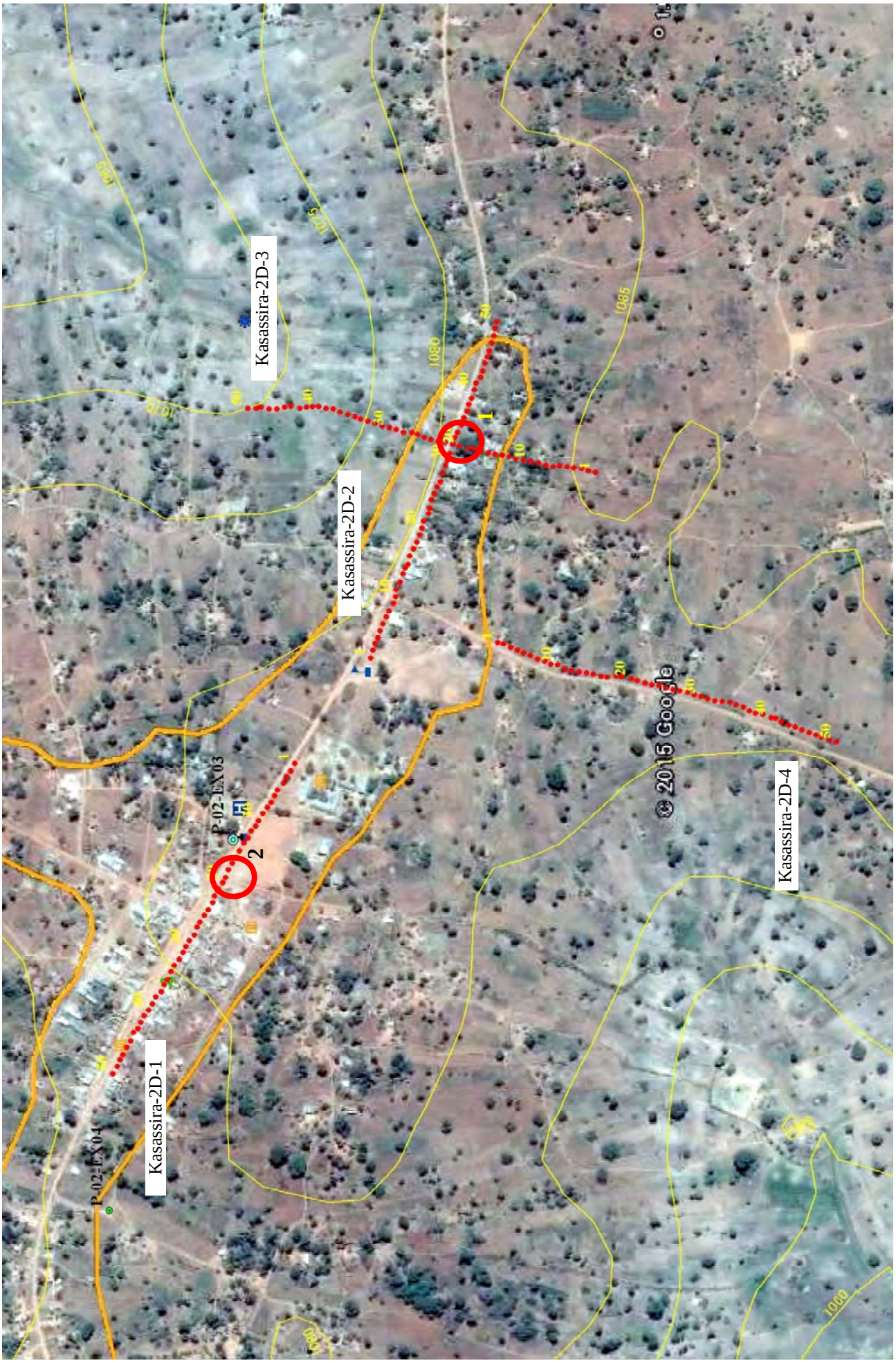
Distribution of 2-Dimentional Resistivity Survey Measurement Line in I-11 Nondwe



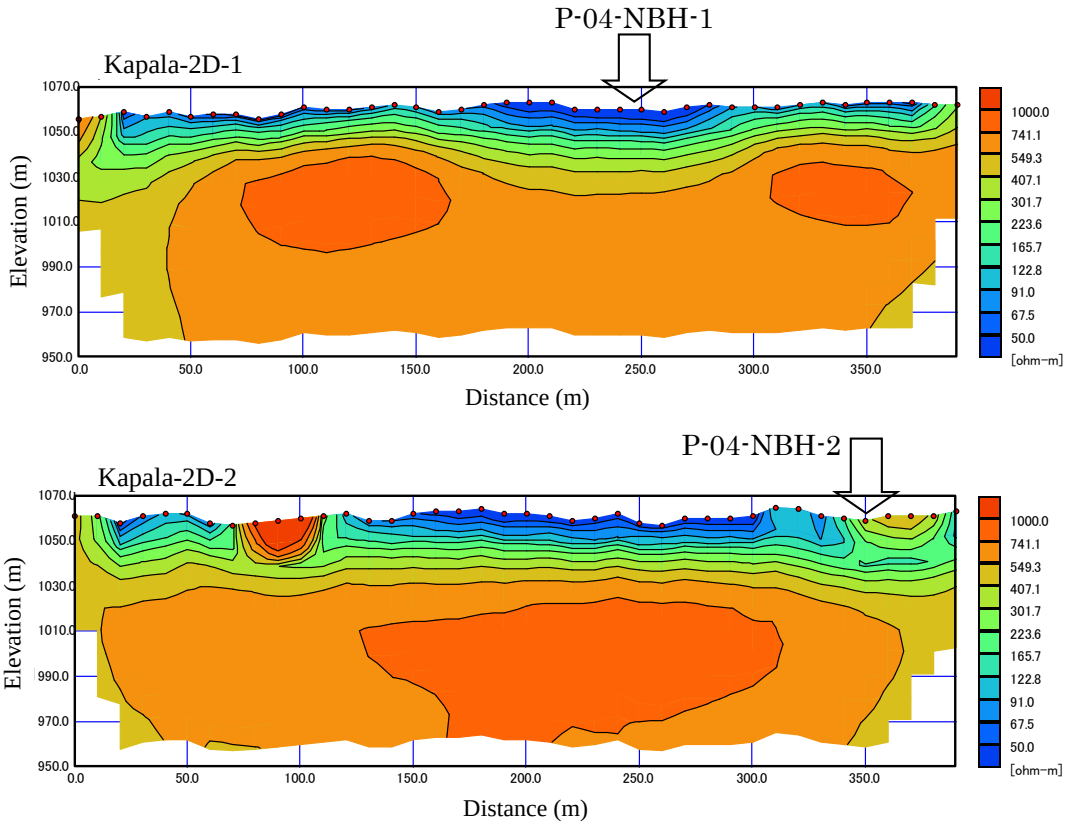
(5) 2-Dimentional Resistivity Survey Result in P-02 Kasassira



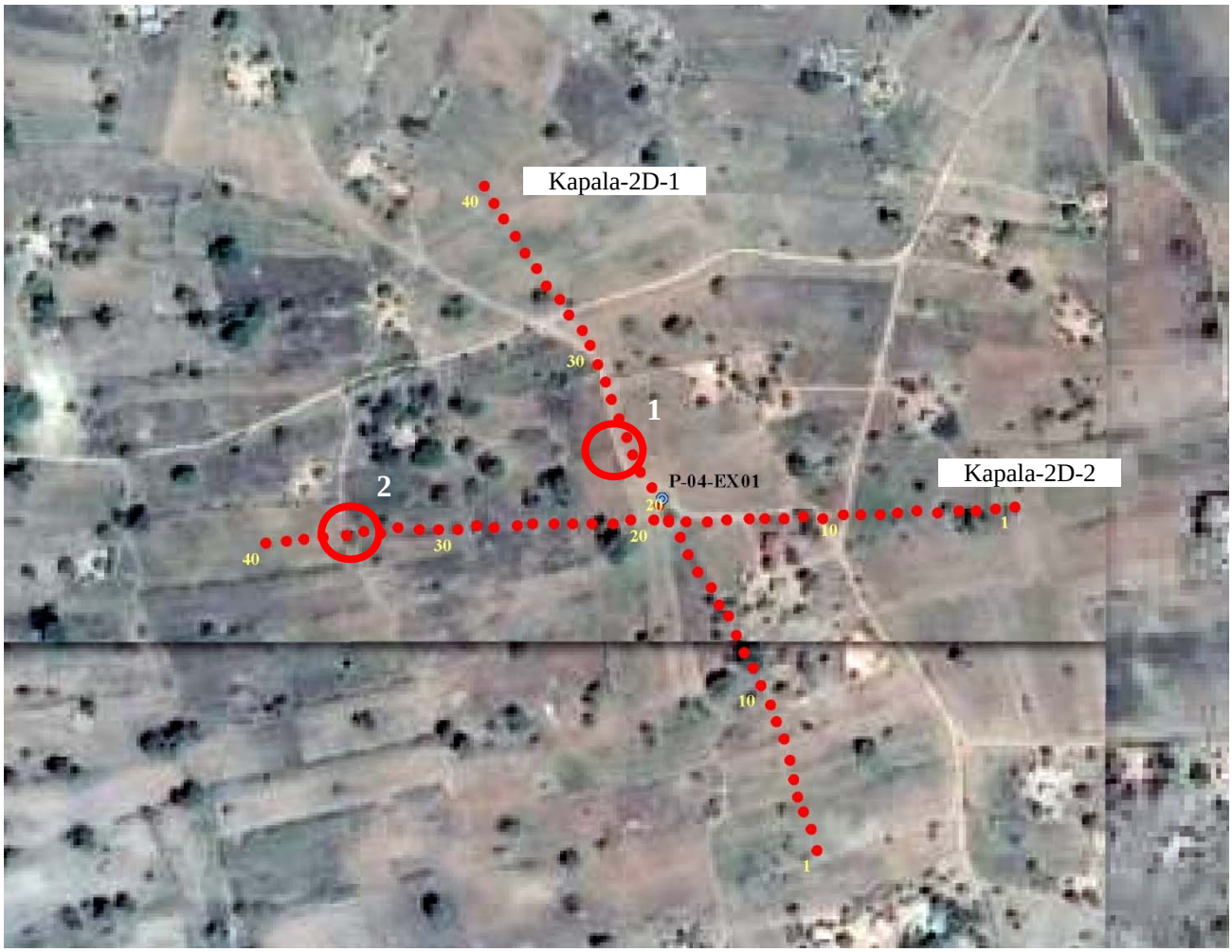
Distribution of 2-Dimentional Resistivity Survey Measurement Line in P-02 Kasassira



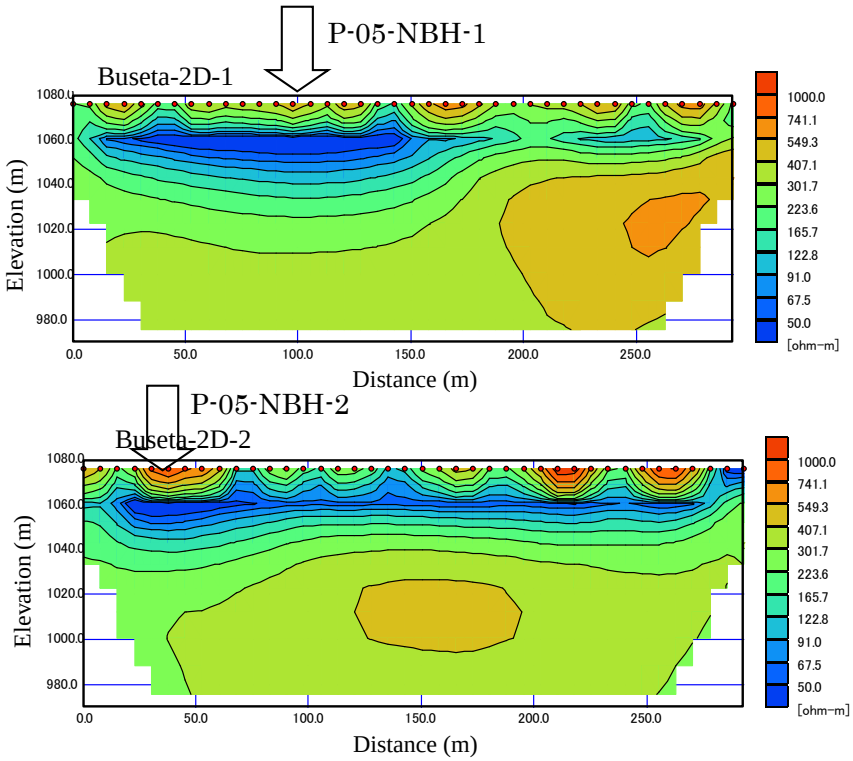
(6) 2-Dimentional Resistivity Survey Result in P-04 Kapala



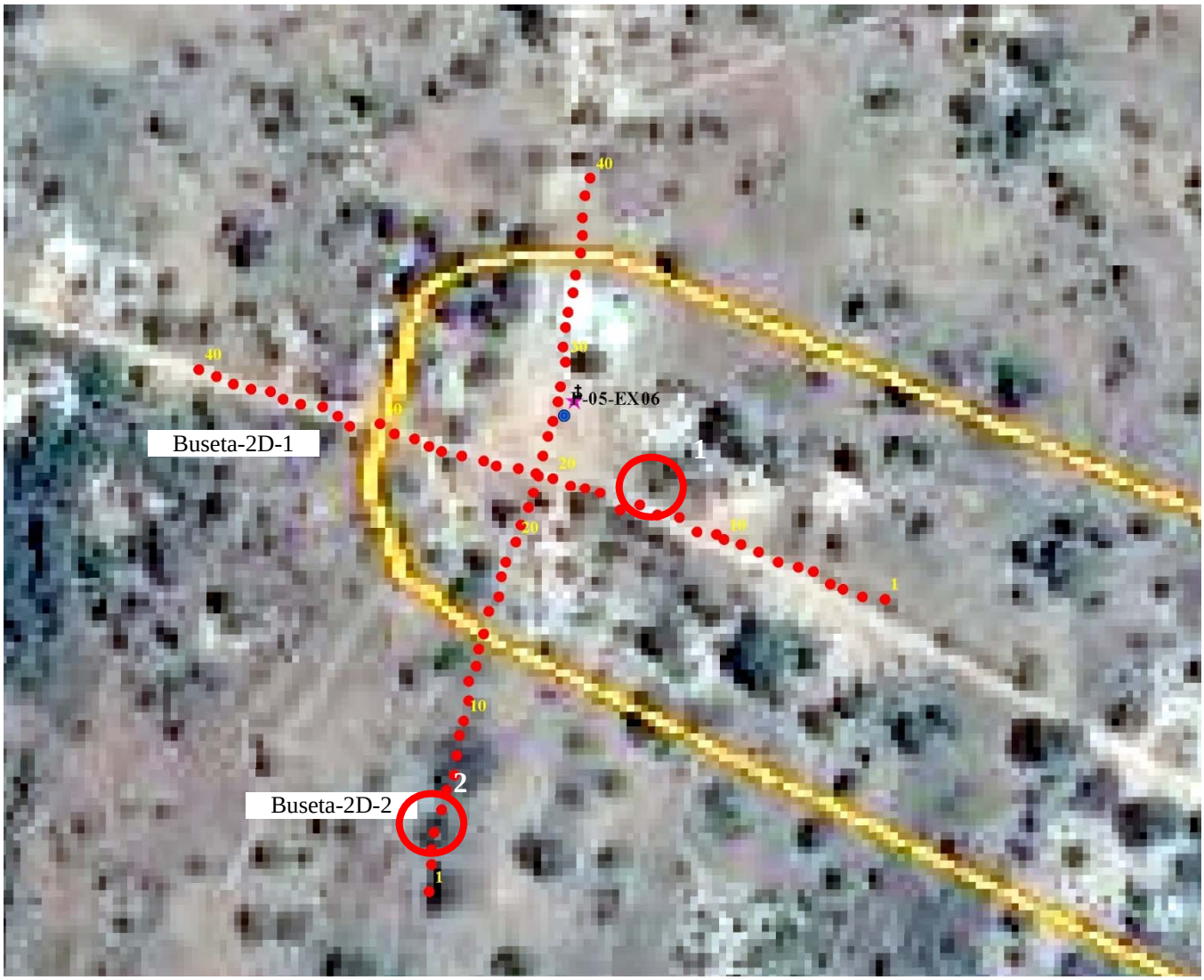

(6) Distribution of 2-Dimentional Resistivity Survey Measurement Line in P-04 Kapala



(7) 2-Dimentional Resistivity Survey Result in P-05 Buseta




Distribution of 2-Dimentional Resistivity Survey Measurement Line in P-05 Buseta



**5. Position of first Drilling Point**

Drilling points were decided based on the result of 2 dimensional resistivity survey. The points were confirmed at the site with Landowner, LCIII Chairperson, Sub-county Chief, Parish Chief and LCI Chairperson.

Table 3　Decided Drilling Points where were agreed by Landowner

| Code | RGC | Priority | BH No. | UTM (E) | UTM (N) | Elevation | Agreement |
|---|---|---|---|---|---|---|---|
| I-03 | Nambale | 1 | I-03-NBH-1 | 557077 | 85941 | 1107 | 2015/12/2 |
| | | 2 | I-03-NBH-2 | 556878 | 86027 | 1105 | 2015/12/2 |
| I-06 | Lambala | 1 | I-06-NBH-1 | 525640 | 80002 | 1074 | 2015/12/3 |
| | | 2 | I-06-NBH-2 | 526675 | 80288 | 1084 | 2015/12/3 |
| I-09 | Kyanvuma | 1 | I-09-NBH-1 | 530037 | 84475 | 1123 | 2015/12/10 |
| | | 2 | I-09-NBH-2 | 530220 | 84292 | 1119 | 2015/12/10 |
| I-11 | Nondwe | 1 | I-11-NBH-1 | 568597 | 50179 | 1185 | 2015/12/2 |
| | | 2 | I-11-NBH-2 | 567999 | 52794 | 1157 | 2015/12/2 |
| P-02 | Kasassira | 1 | P-02-NBH-1 | 579005 | 120630 | 1077 | 2015/12/1 |
| | | 2 | P-02-NBH-2 | 578426 | 120888 | 1079 | 2015/12/1 |
| P-04 | Kapala | 1 | P-04-NBH-1 | 566851 | 137939 | 1056 | 2015/11/30 |
| | | 2 | P-04-NBH-2 | 566711 | 137809 | 1052 | 2015/12/14 |
| P-05 | Buseta | 1 | P-05-NBH-1 | 582972 | 120041 | 1076 | 2015/12/1 |
| | | 2 | P-05-NBH-2 | 582892 | 119923 | 1077 | 2015/12/1 |

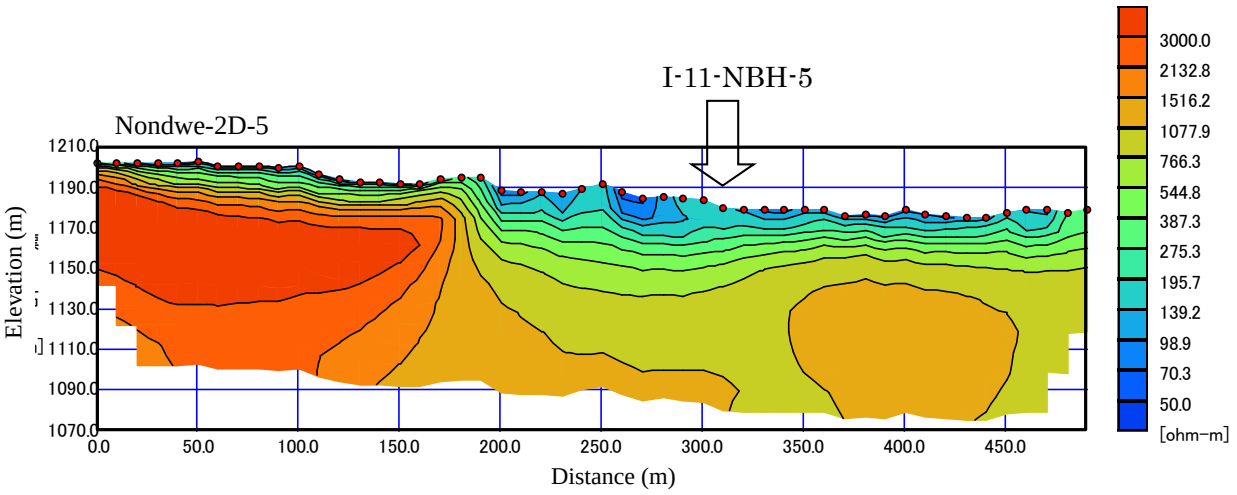
**6.　Second Geophysical Survey**

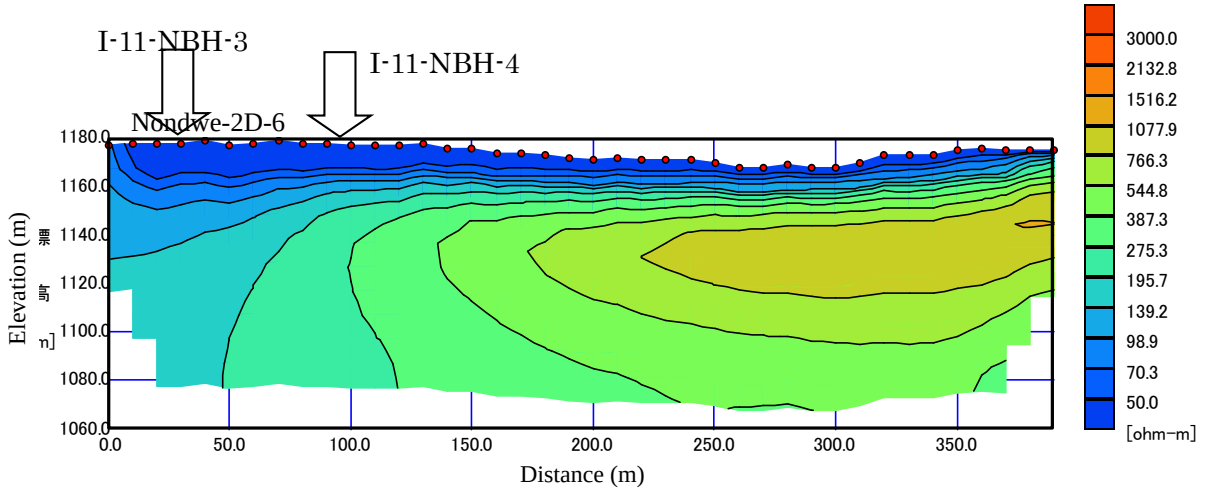
After drilling of 14 boreholes mentioned above, 3 drillings were distributed to Nondwe RGC and Kasassira RGC respectively. For the 3 drillings, 4 measurement lines of 2-dimensional resistivity survey were conducted in Nondwe RGC, and 3 measurement lines of 2-dimensional resistivity survey and 11 vertical electrical soundings were conducted in Kasassira RGC. Additionally, 1 measurement line of 2-dimensional resistivity survey was conducted in Naigobya RGC.

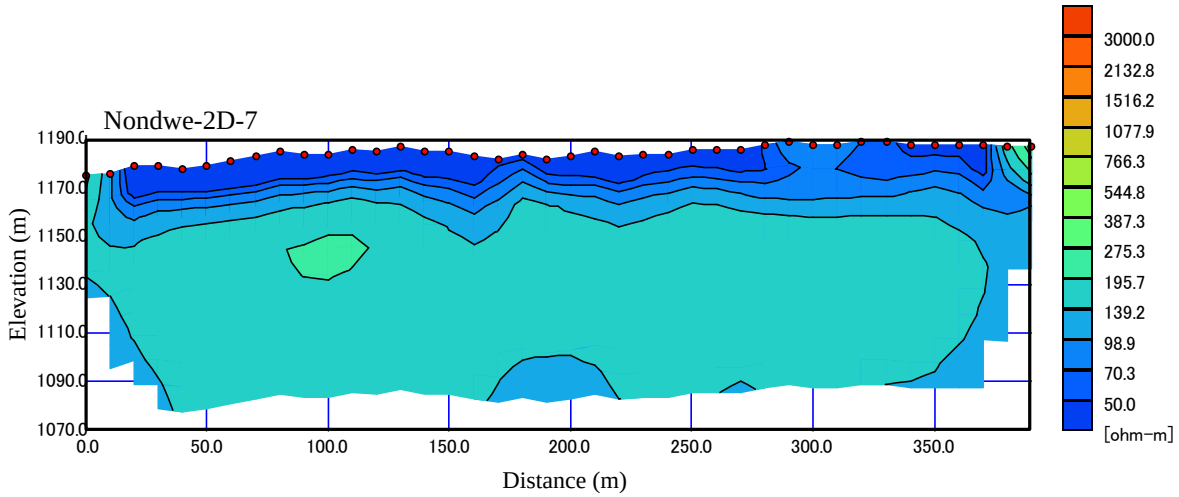
Table 3　Decided Drilling Points where were agreed by Landowner

| No. | Code | RGC Name | District | County | Sub-county | Line Length | Exploration Depth | Measurement Lines |
|---|---|---|---|---|---|---|---|---|
| 8 | I-11 | Nondwe | Iganga | Bugweri | Makuulu | 500 | 100 | 3 |
| 9 | P-02 | Kasassira | Kibuku | Kibuku | Kasasira | 500 | 100 | 4 |
| 10 | I-07 | Naigobya | Luuka | Luuka | Bukooma | 500 | 100 | 1 |
| 2 Dimensional Survey Total | | | | | | | | 30 |
| 11 | P-02 | Kasassira | Kibuku | Kibuku | Kasasira | VES | 120 | 11 |
| 12 | I-07 | Naigobya | Luuka | Luuka | Bukooma | VES | 120 | 2 |

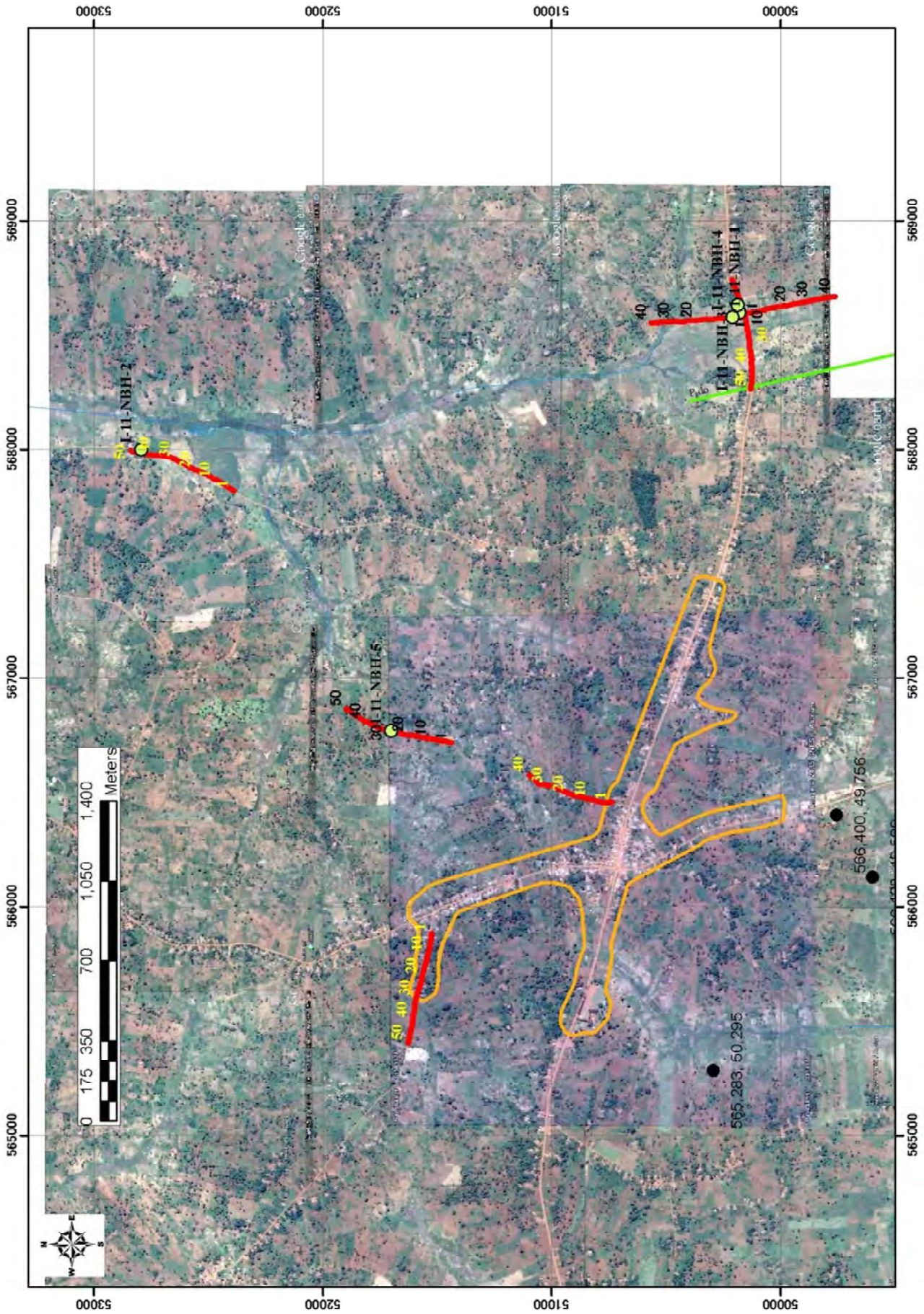
(1) 2-Dimentional Resistivity Survey Result in I-11 Nondwe



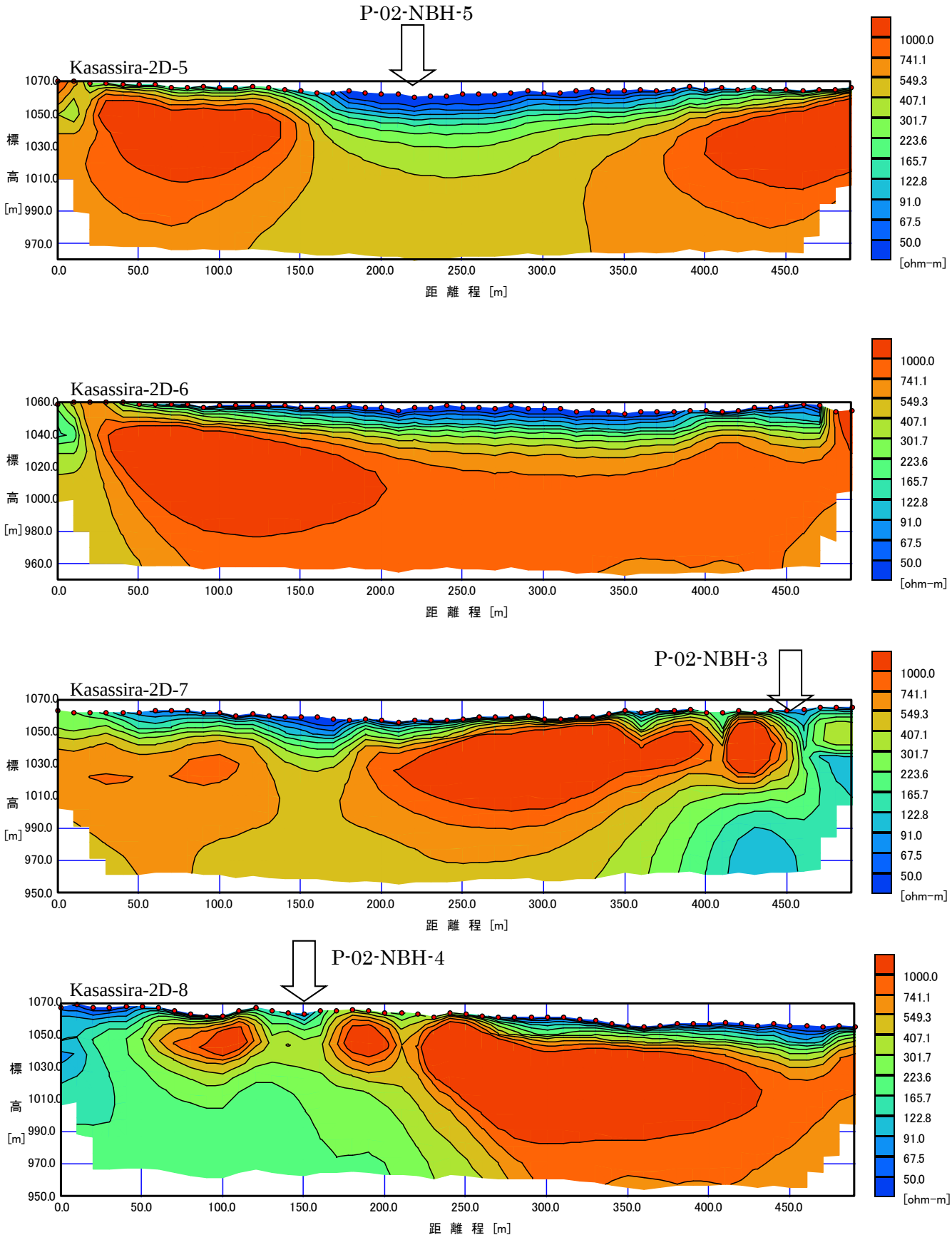



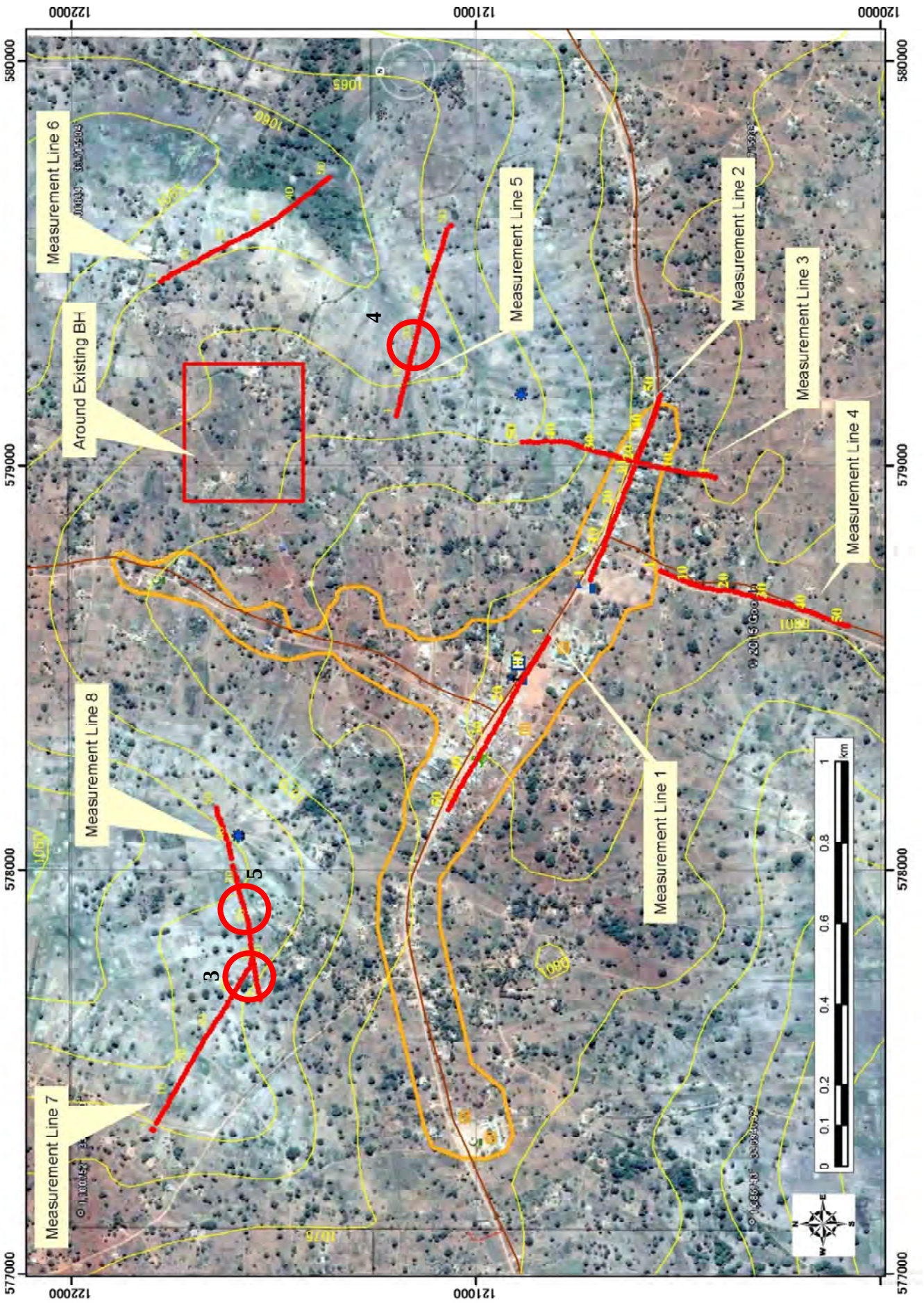
Distribution of 2-Dimentional Resistivity Survey Measurement Line in P-05 Buseta



(2) 2-Dimentional Resistivity Survey Result in P-02 Kasassira

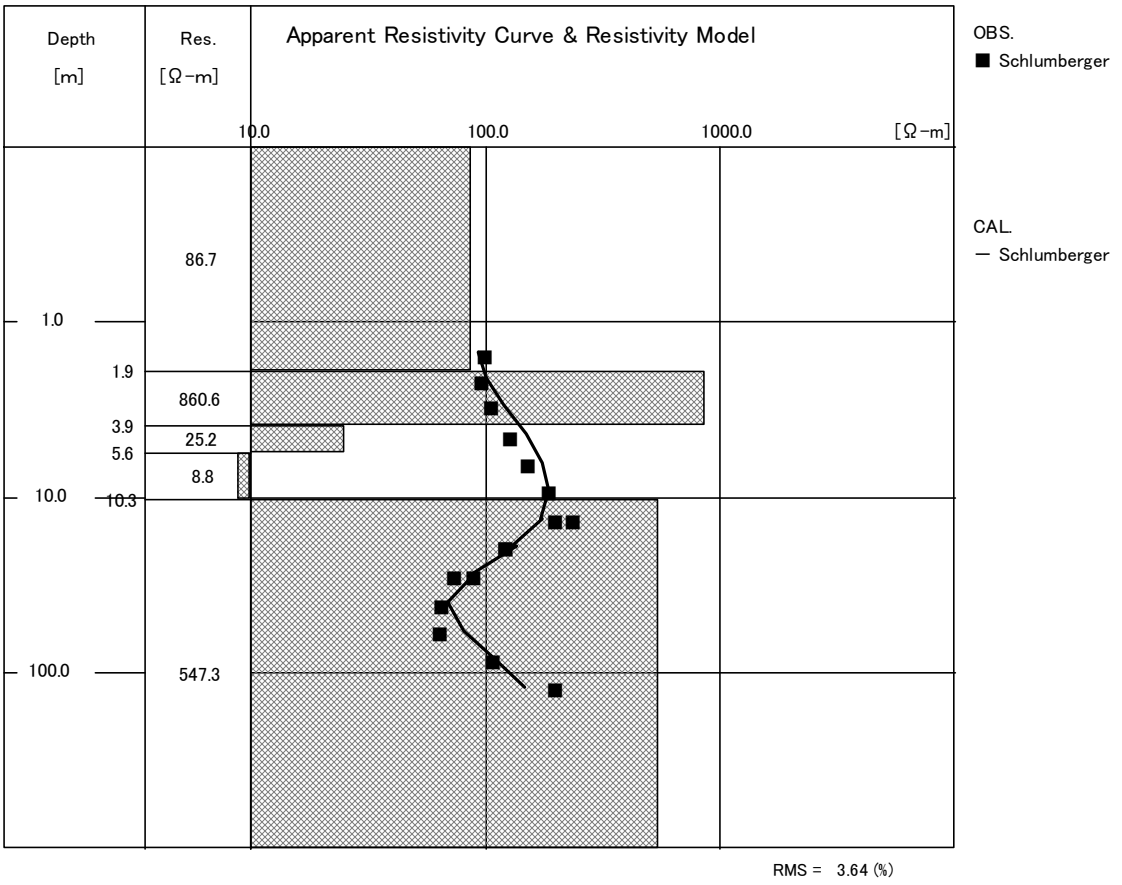


Distribution of 2-Dimentional Resistivity Survey Measurement Line in P-02 Kasassira

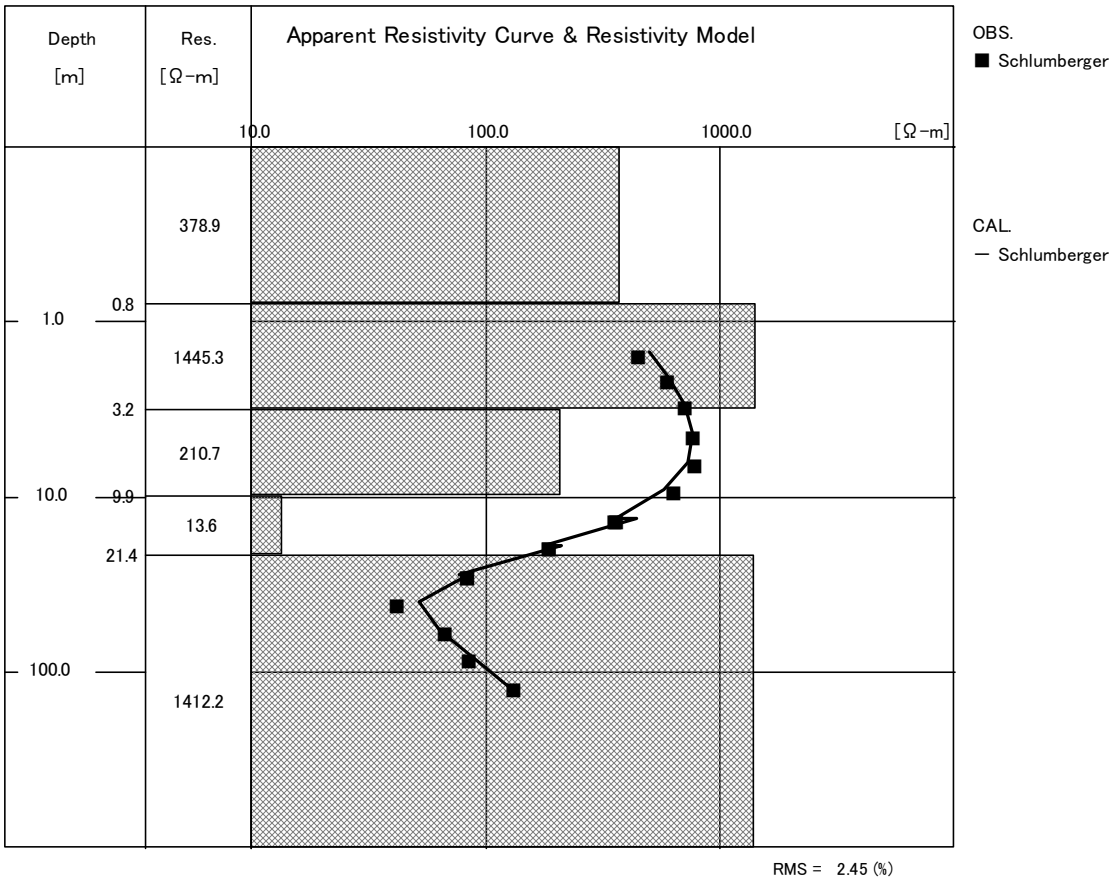


## (3) Vertical Electrical Sounding Result in P-02 Kasassira

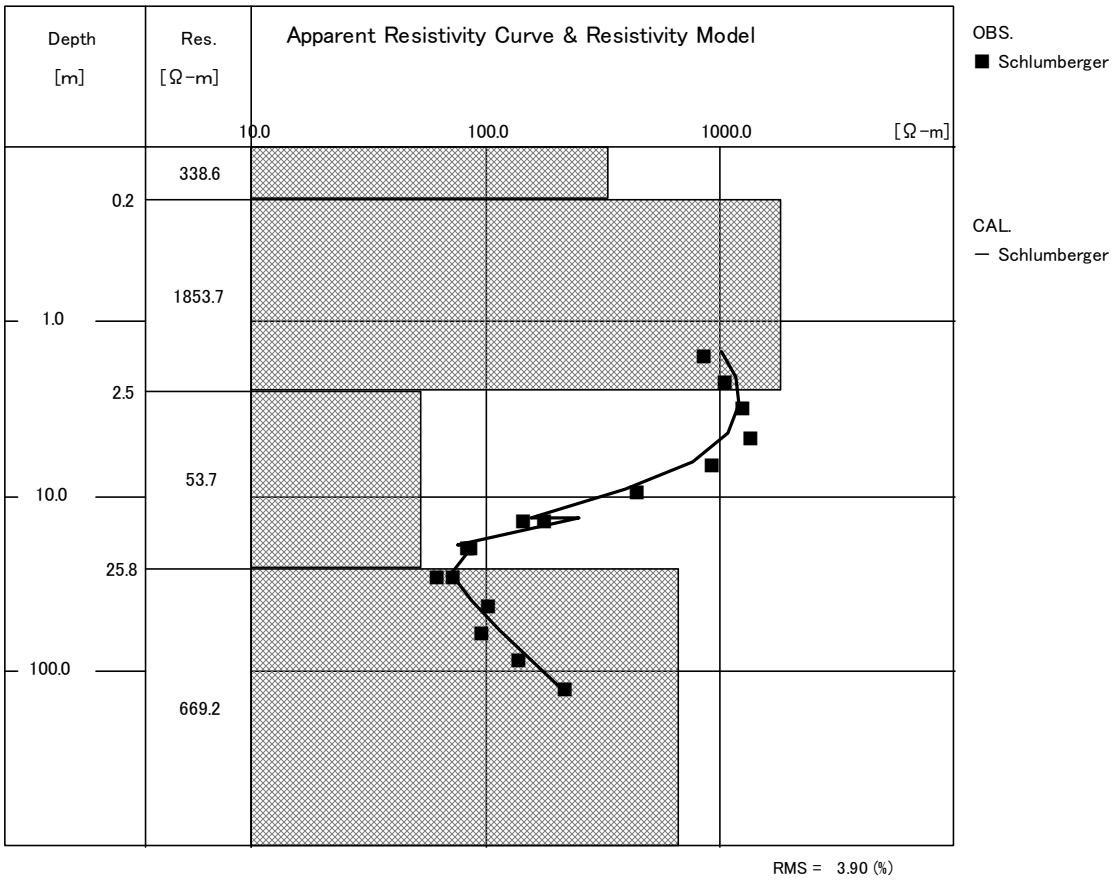
Line Name : P-02-VES-Cal



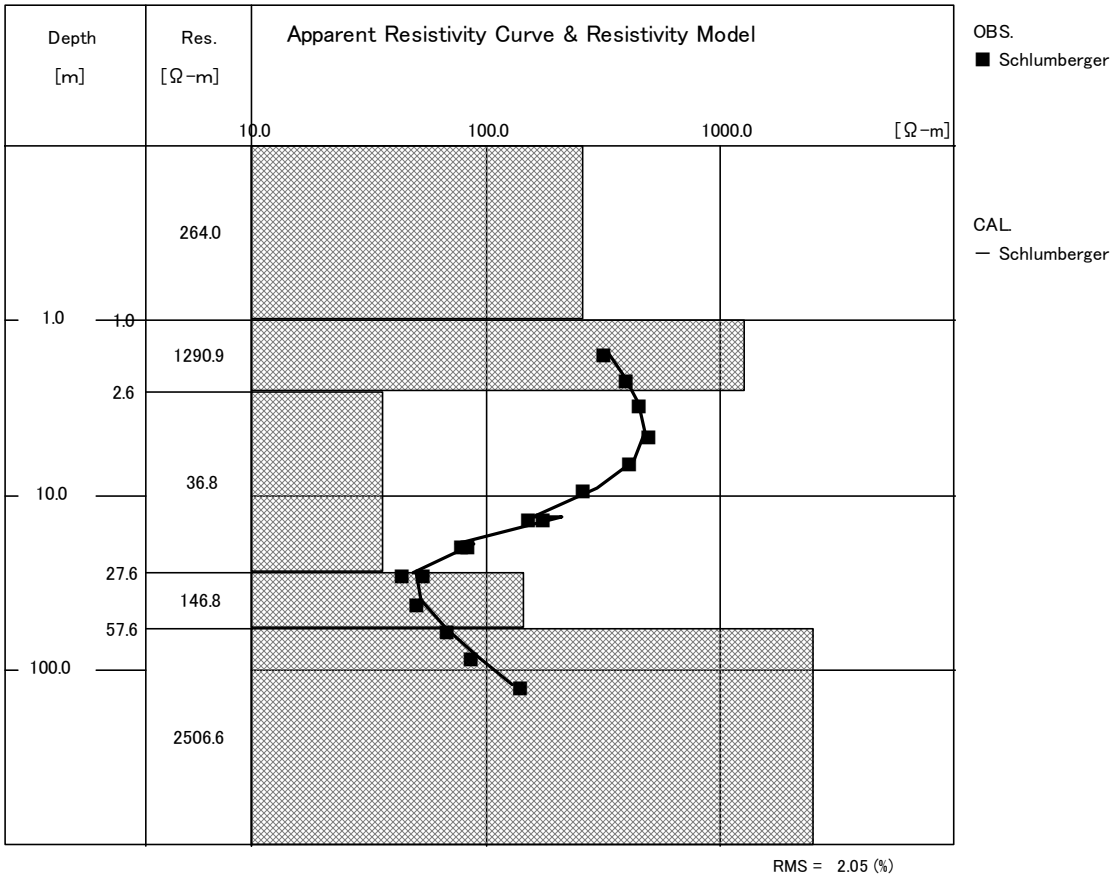

Line Name : P-02-VES-1



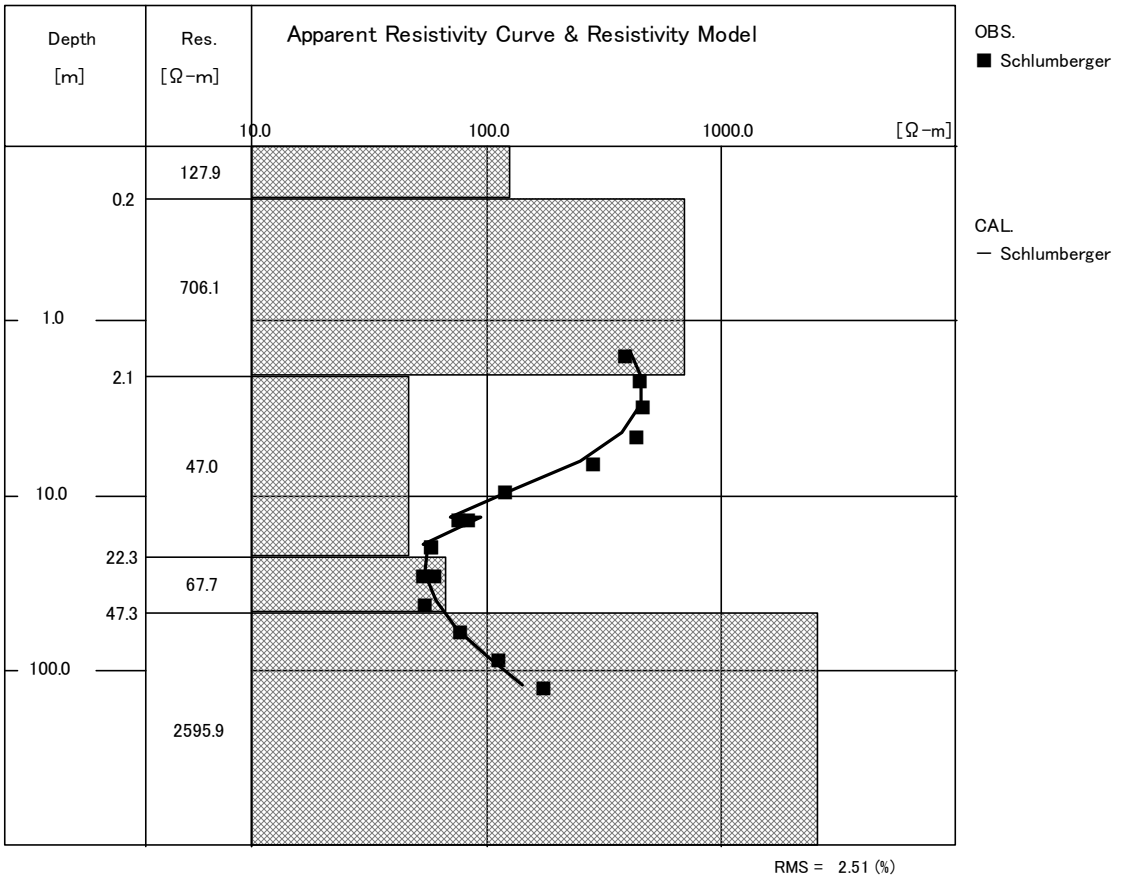
Line Name : P-02-VES-2



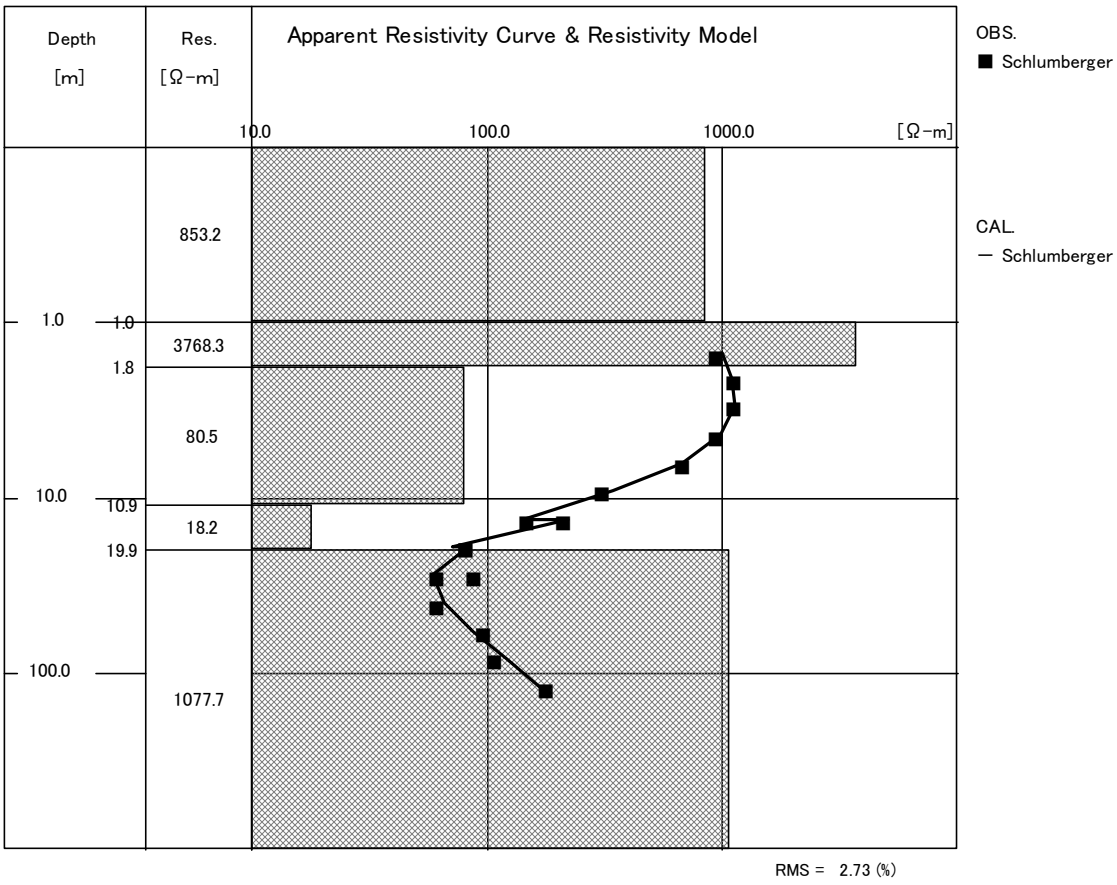

Line Name : P-02-VES-3



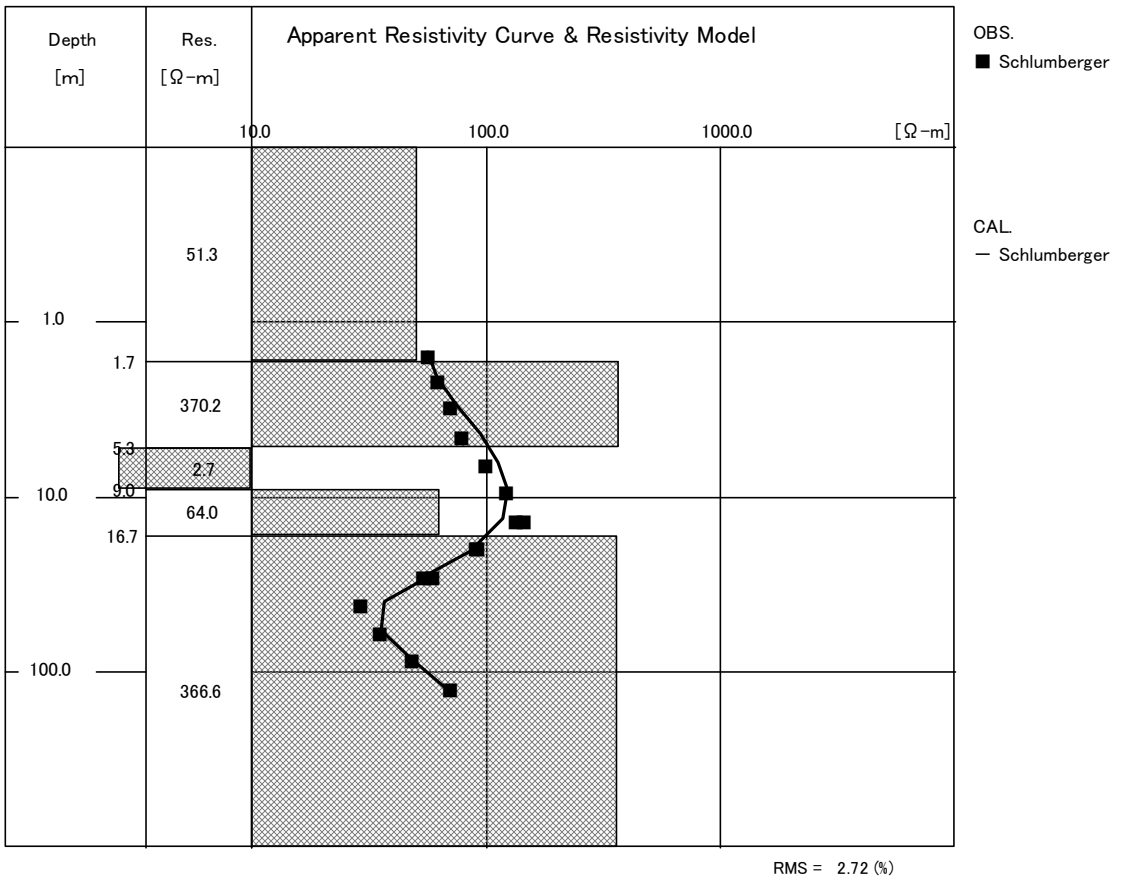
Line Name : P-02-VES-4



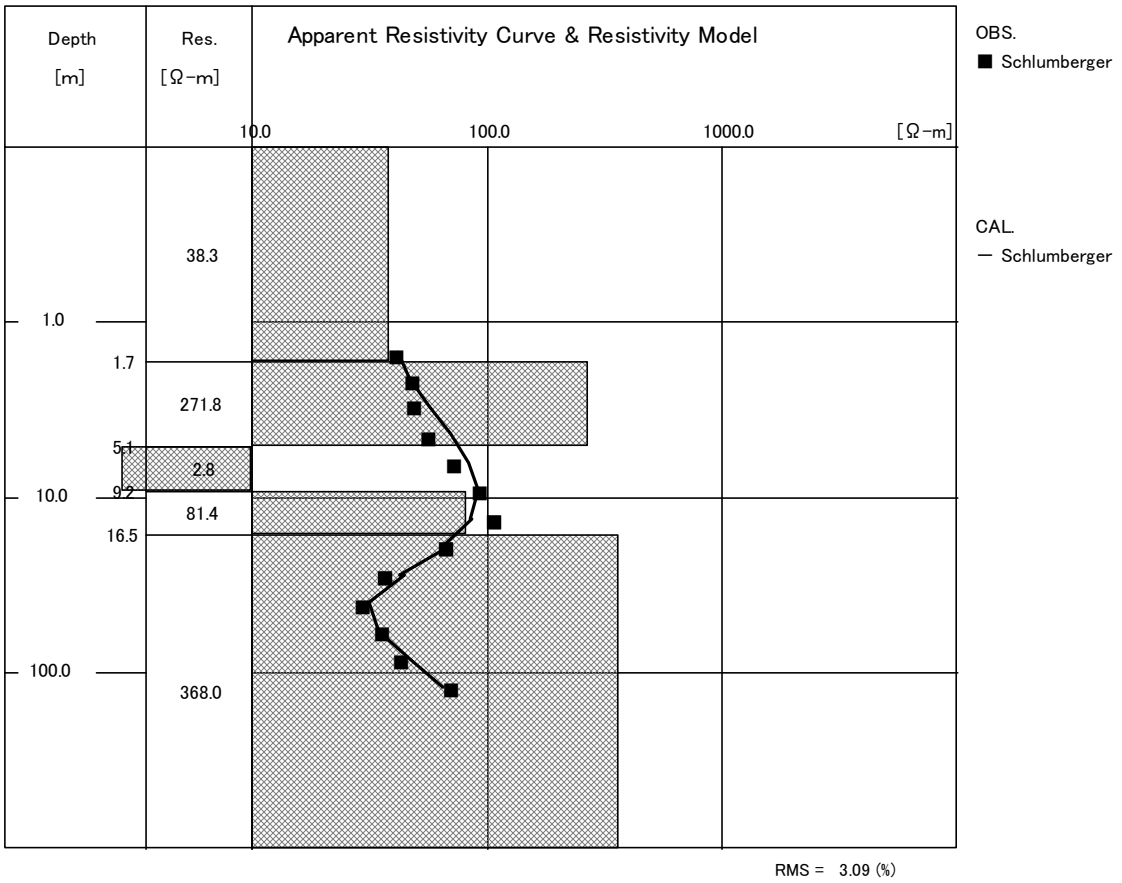

Line Name : P-02-VES-5



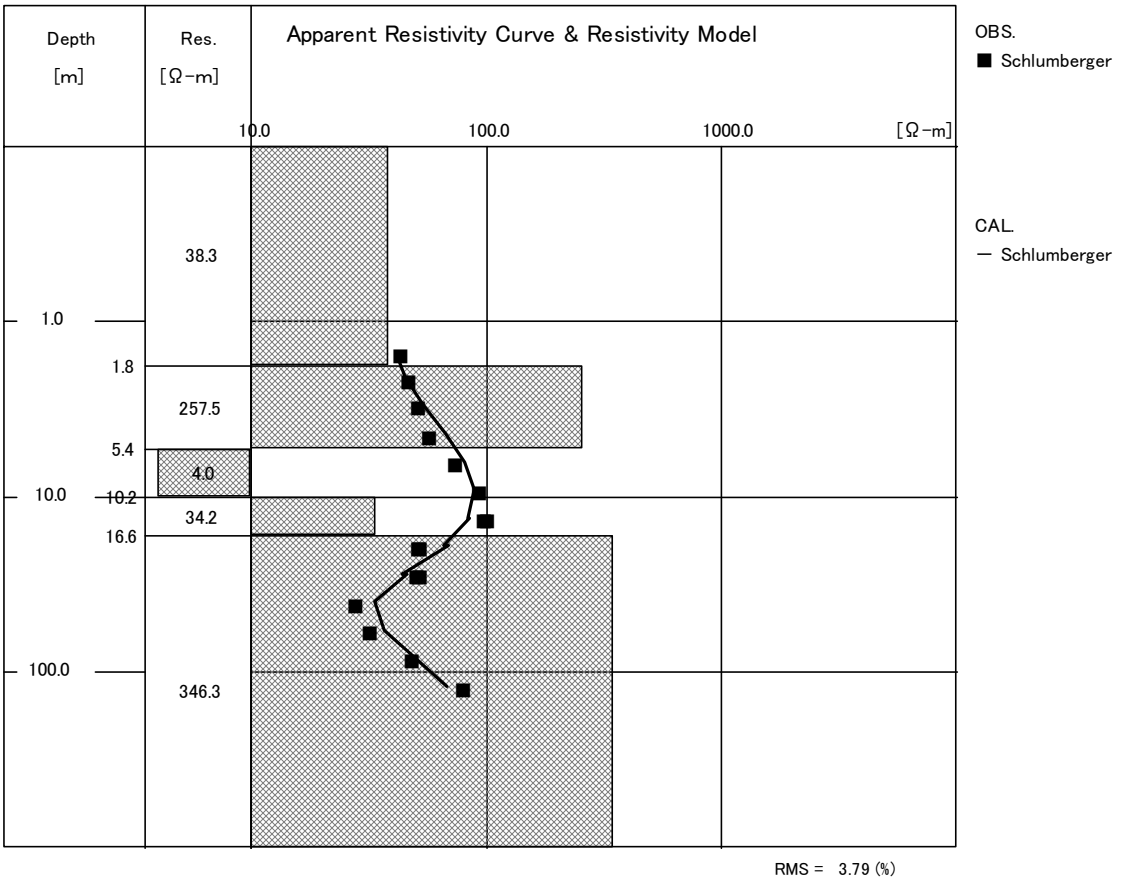
Line Name : P-02-VES2-C1



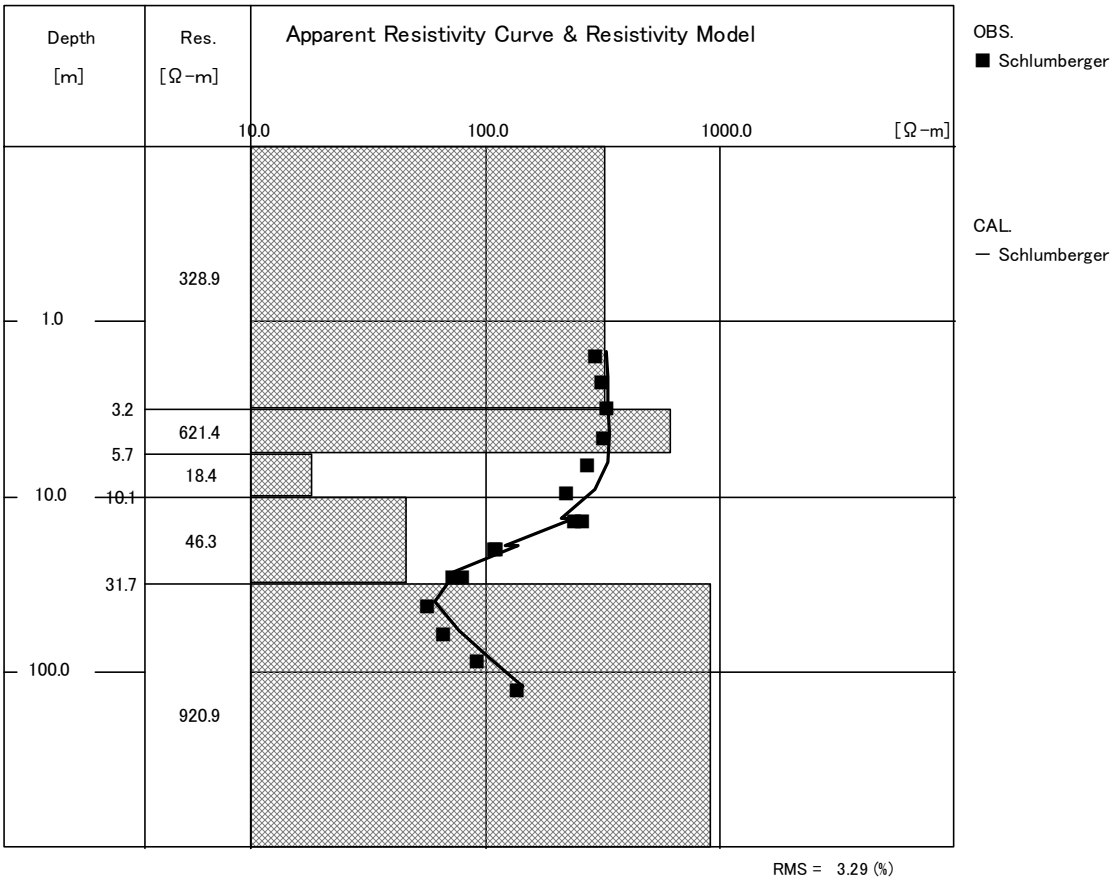

Line Name : P-02-VES2-C45



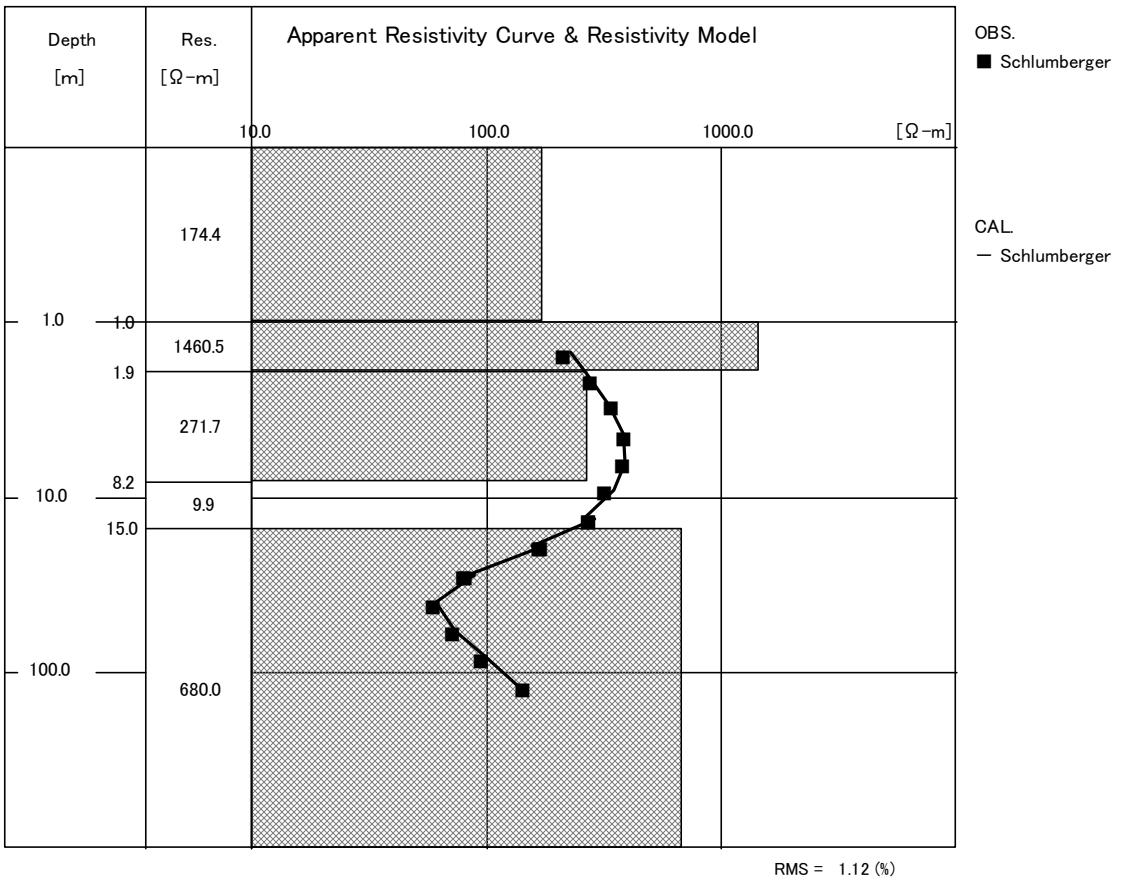
Line Name : P-02-VES2-C-NS



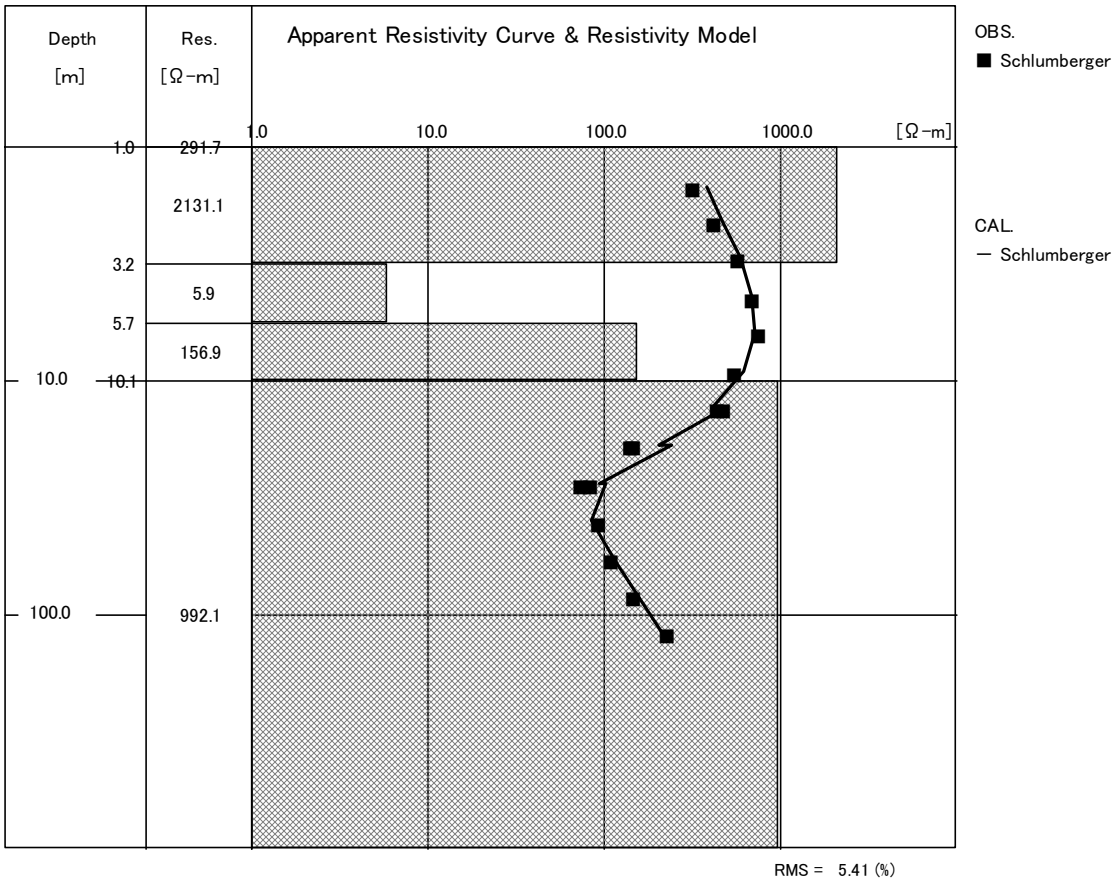

Line Name : P-02-VES2-1



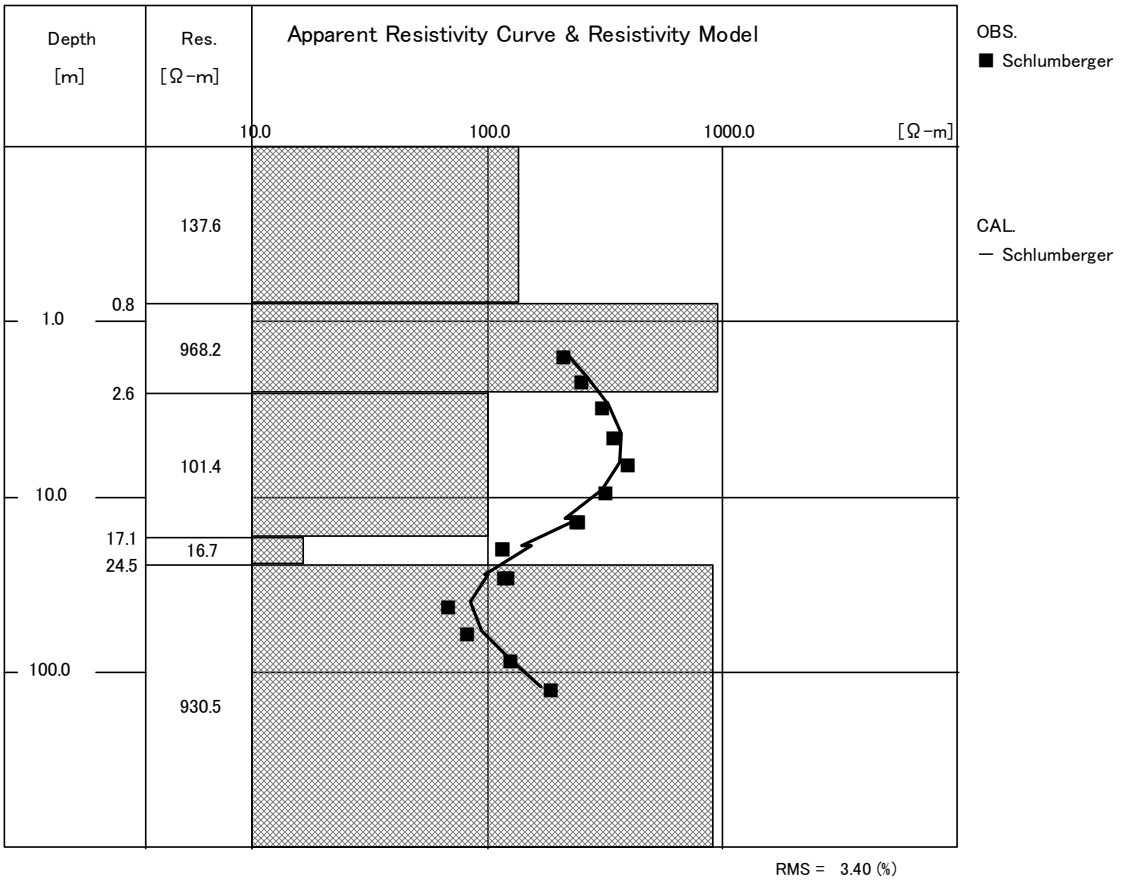
Line Name : P-02-VES2-2



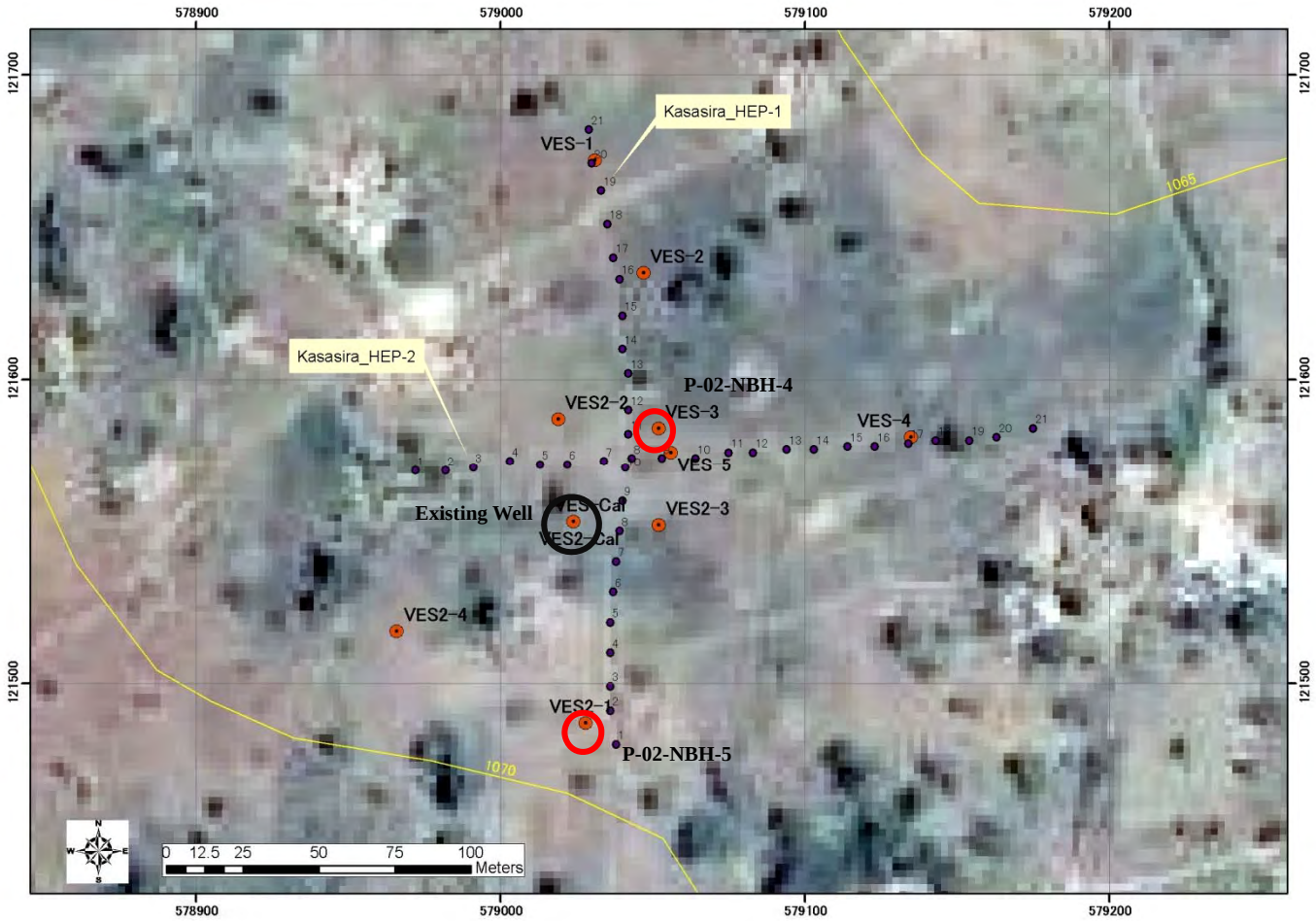

Line Name : P-02-VES2-3



Line Name : P-02-VES2-4




Distribution of Vertical Electrical Sounding in P-02 Kasassira



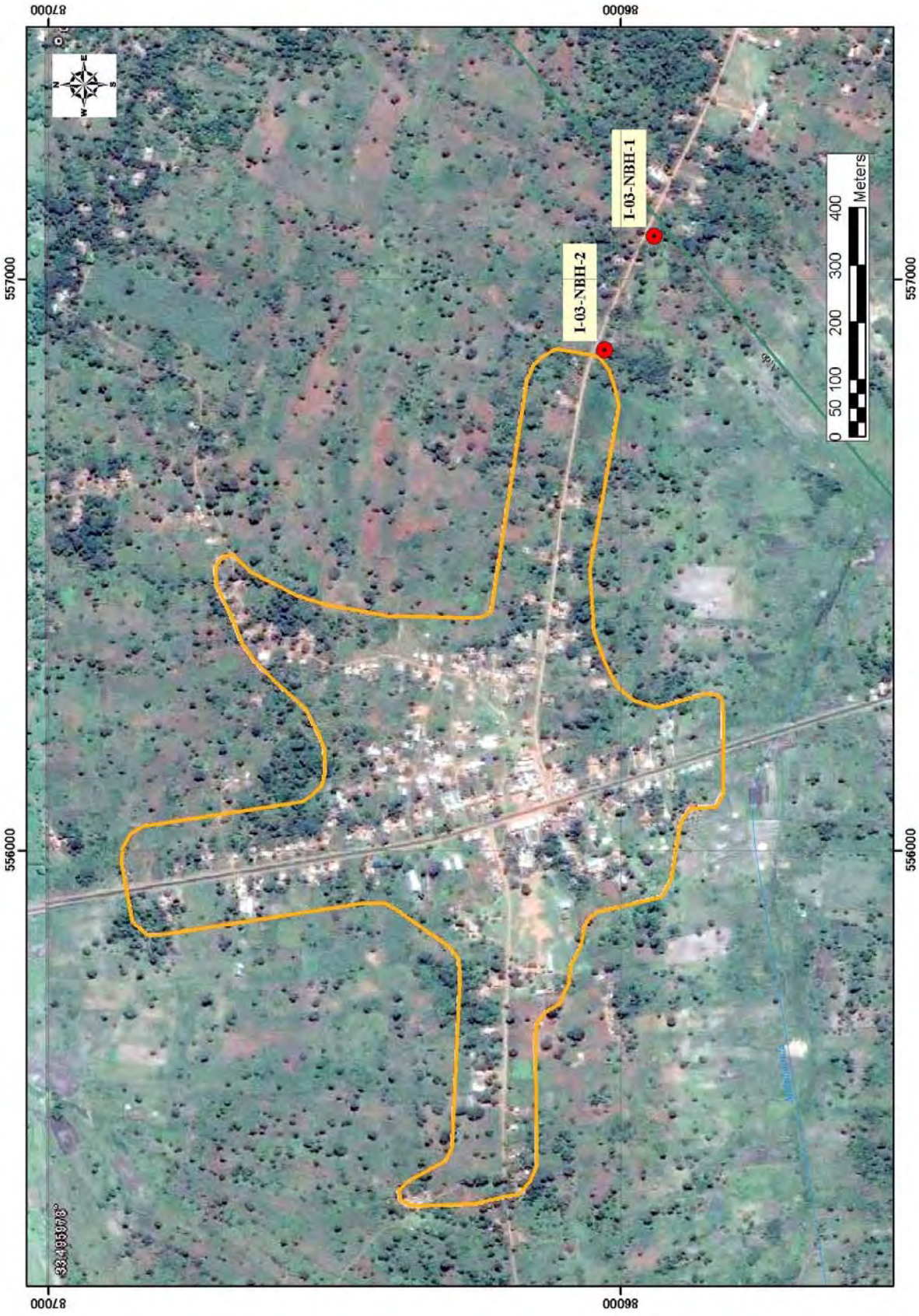
# 資料-11

## 参考資料

## （5）試掘調査結果

(1) Nambale RGC

Distribution of Drilling Sites

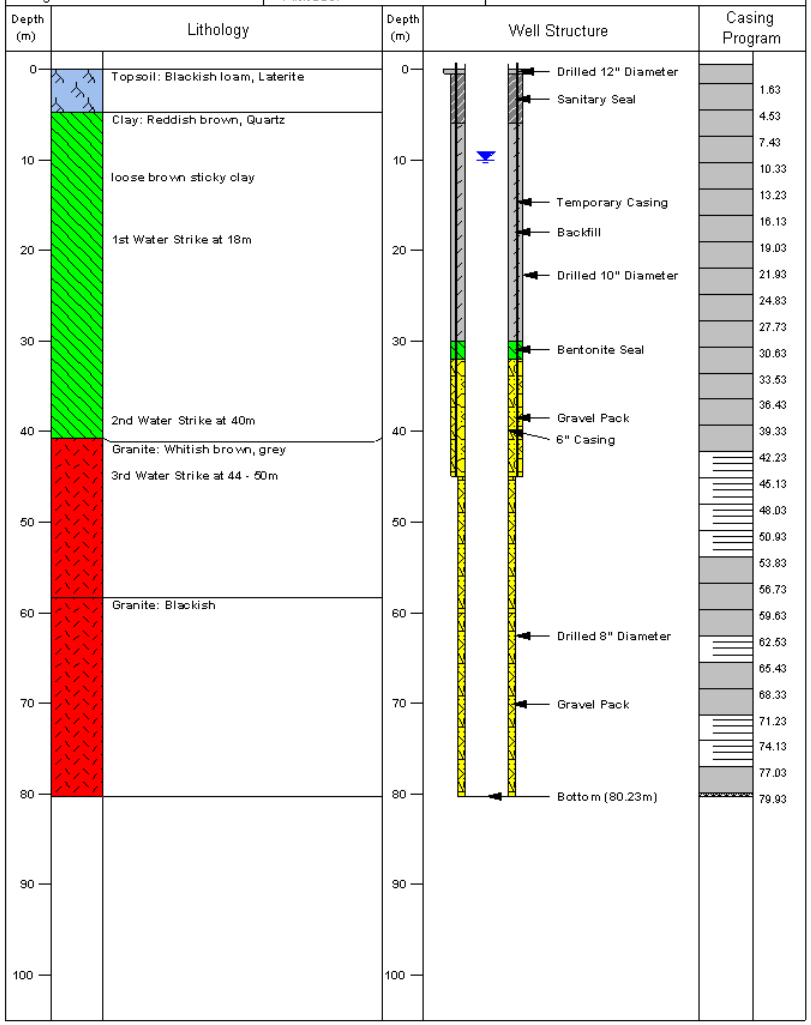


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: I-03-NBH-1 Site Name: Nambale-1 Start Date: 2016/1/12 End Date: 2016/1/17

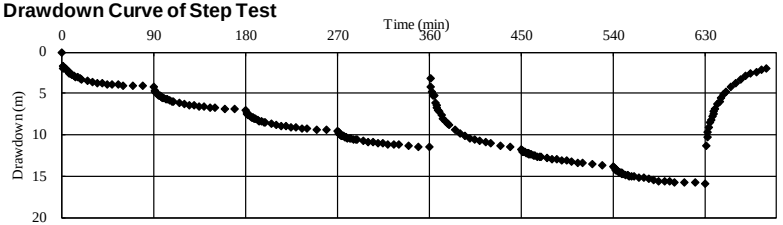
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | Iganga | UTM Zone: | 36N | Drillied Depth: | 80.23 m |
| County: | Kigulu | Easting (X): | 557077 m | Static Water Level: | 12.17 m |
| Subcounty: | Nambale | Northing(Y): | 85941 m | Safe Yield: | 15.0 m3/hr |
| Parish: | Nambale | Altitude: | 1107 m | Dynamic Water Level: | 31.10 m |
| Village: | Nambale | | | | |



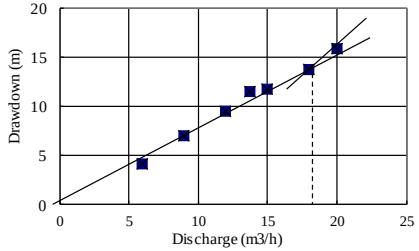

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nambale-1 (I-03-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

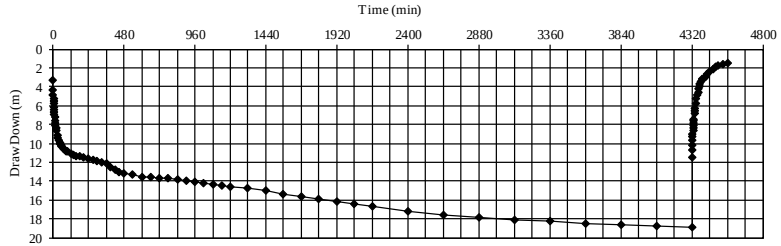



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 6 | 4.19 |
| 2 | 9 | 7.01 |
| 3 | 12 | 9.53 |
| 4 | 15 | 11.72 |
| 5 | 18 | 13.79 |
| 6 | 20 | 15.9 |

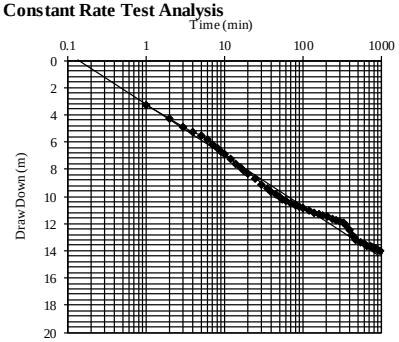
Critical Yield 18.8 $m^3/h$

Safe Yield 15.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 15 $m^3/h$

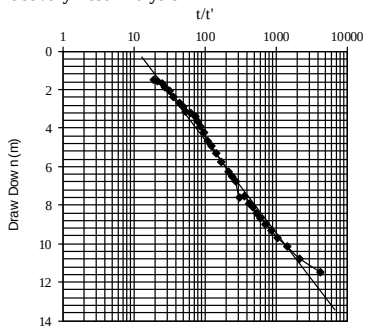
Δs 3.7 m

t0 0.15 min

Transmissivity = 0.75 $m^2/h$

Storage Coefficient = 0.42

### Recovery Test Analysis




Q: 15 $m^3/h$

Δs 4.8 m

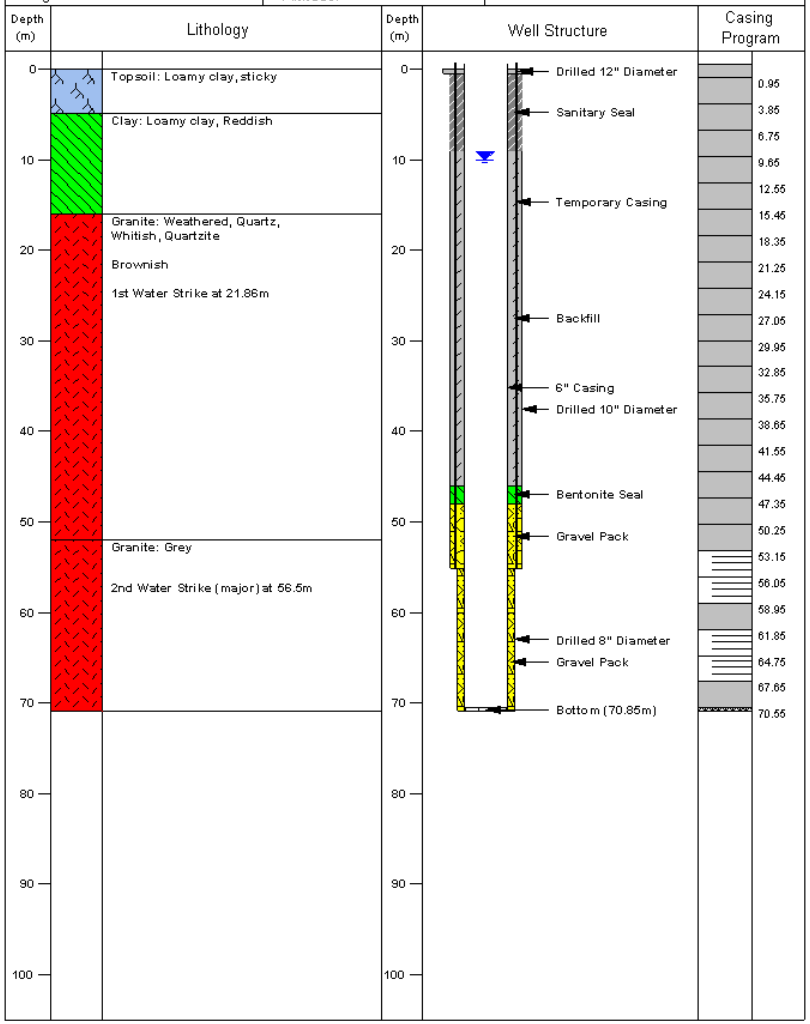
Transmissivity = 0.58 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-03-NBH-2** Site Name: **Nambale-2** Start Date: 2016/1/17 End Date: 2016/1/25

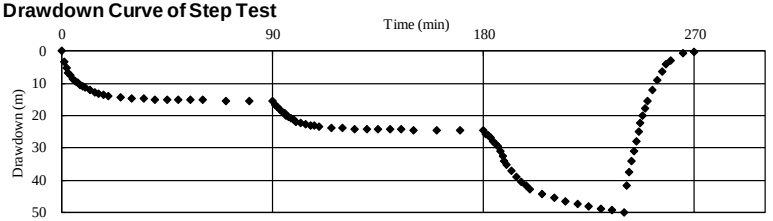
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Iganga** | UTM Zone: | **36N** | Drillied Depth: | **70.85** m |
| County: | **Kigulu** | Easting (X): | **556878** m | Static Water Level: | **10.00** m |
| Subcounty: | **Nambale** | Northing(Y): | **86027** m | Safe Yield: | **2.6** m3/hr |
| Parish: | **Nambale** | Altitude: | **1107** m | Dynamic Water Level: | **19.06** m |
| Village: | **Nambale** | | | | |



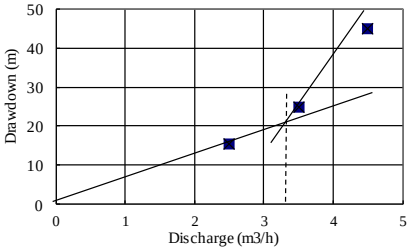

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nambale-2 (I-03-NBH-2) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

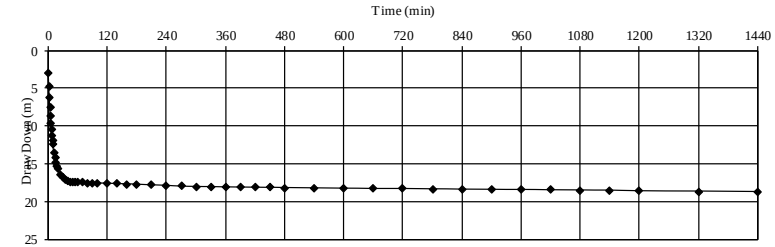



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 2.5 | 15.48 |
| 2 | 3.5 | 24.71 |
| 3 | 4.5 | 45 |
| 4 | | |
| 5 | | |

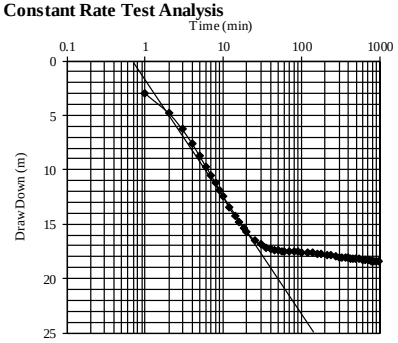
Critical Yield 3.3 $m^3/h$

Safe Yield 2.64 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.6 $m^3/h$

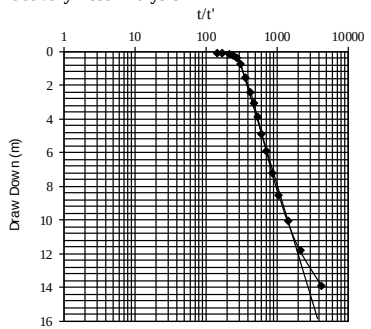
Δs 11.2 m

t0 0.8 min

Transmissivity = 0.04 $m^2/h$

Storage Coefficient = 0.13

### Recovery Test Analysis



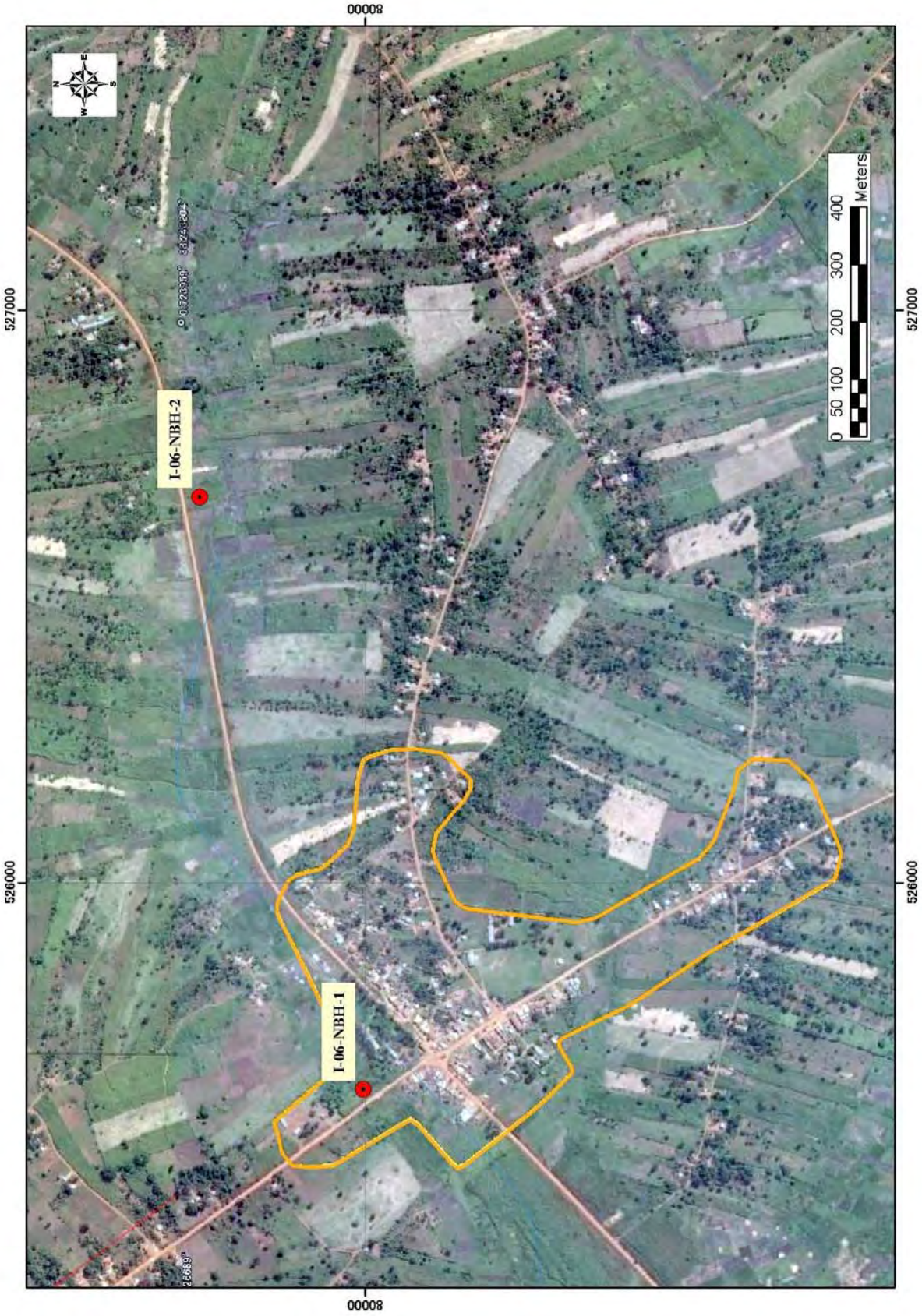

Q: 2.6 $m^3/h$

Δs 14.0 m

Transmissivity = 0.03 $m^2/h$

(2) Lambala RGC

Distribution of Drilling Sites

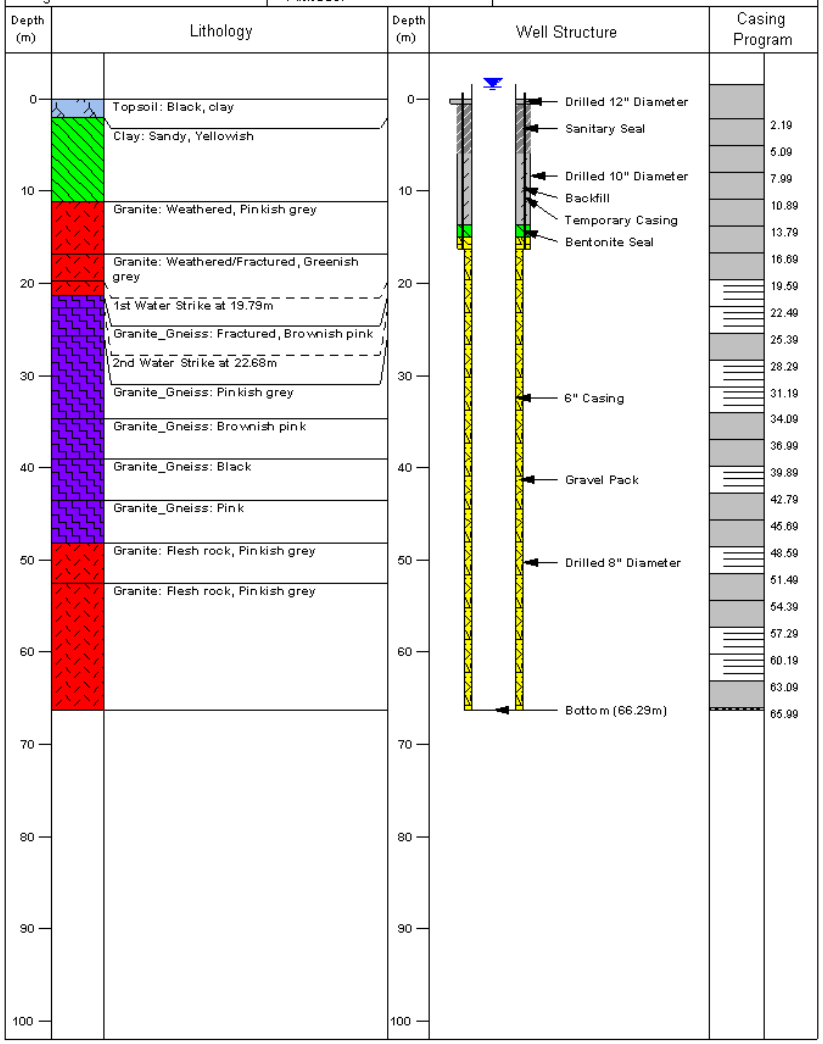


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-06-NBH-1** Site Name: **Lambala-1** Start Date: 2016/2/17 End Date: 2016/2/20

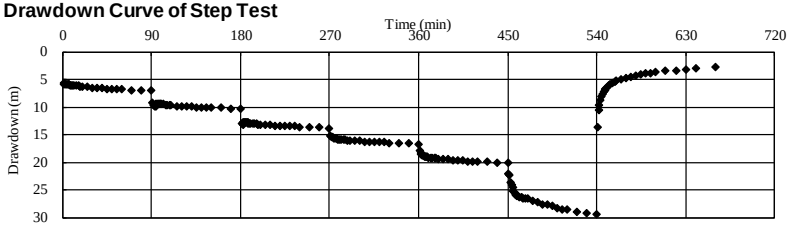
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Luuka** | UTM Zone: | **36N** | Drillied Depth: | **66.29** m |
| County: | **Luuka** | Easting (X): | **525640** m | Static Water Level: | **-1.3** m |
| Subcounty: | **Irongo** | Northing(Y): | **80002** m | Safe Yield: | **28.0** m3/hr |
| Parish: | **Lambala** | Altitude: | **1074** m | Dynamic Water Level: | **25.14** m |
| Village: | **Lambala** | | | | |



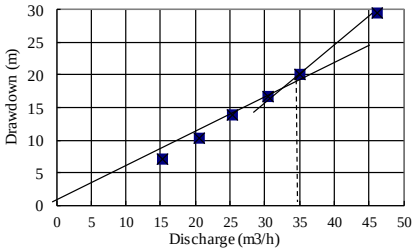

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Lambala-1 (I-06-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

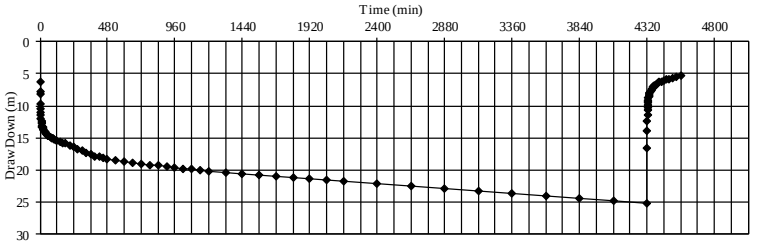



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 15.2 | 7.03 |
| 2 | 20.6 | 10.3 |
| 3 | 25.4 | 13.82 |
| 4 | 30.5 | 16.75 |
| 5 | 35 | 20.17 |
| 6 | 46.2 | 29.46 |

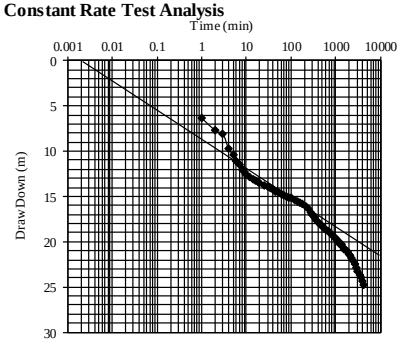
Critical Yield 35.0 $m^3/h$

Safe Yield 28.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 28.4 $m^3/h$

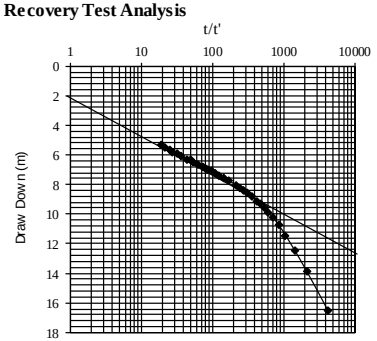
Δs 3.0 m

t0 0.003 min

Transmissivity = 1.73 $m^2/h$

Storage Coefficient = 0.02

### Recovery Test Analysis




Q: 28.4 $m^3/h$

Δs 2.8 m

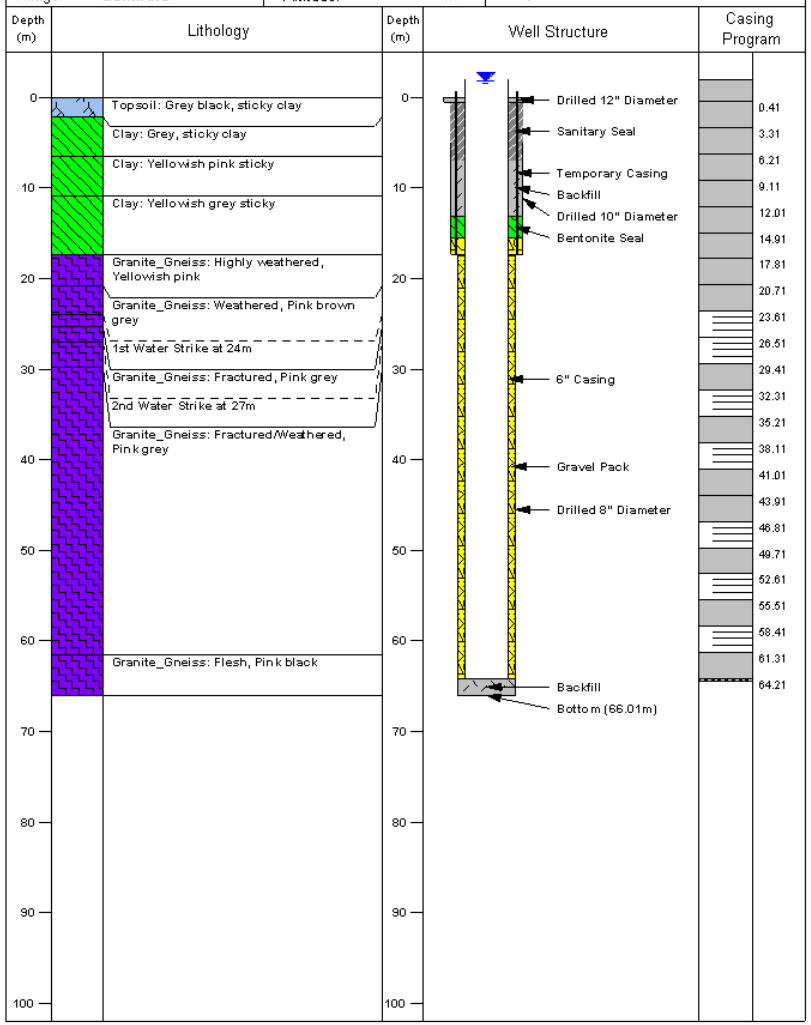
Transmissivity = 1.86 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-06-NBH-2** Site Name: **Lambala-2** Start Date: 2016/2/21 End Date: 2016/2/23

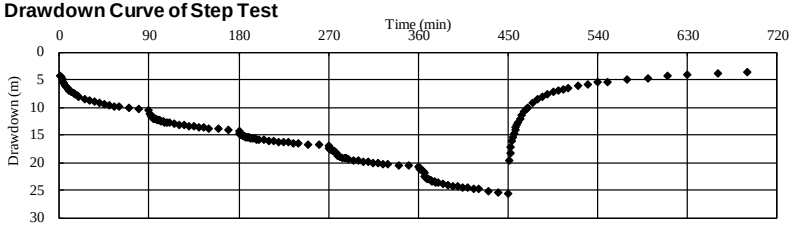
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | | |
|---|---|---|---|---|---|---|
| District: | **Luuka** | UTM Zone: | **36N** | Drillied Depth: | **66.01** | m |
| County: | **Luuka** | Easting (X): | **526675** | m Static Water Level: | **-1.82** | m |
| Subcounty: | **Irongo** | Northing(Y): | **80288** | m Safe Yield: | **40.0** | m3/hr |
| Parish: | **Lambala** | Altitude: | **1084** | m Dynamic Water Level: | **38.94** | m |
| Village: | **Lambala** | | | | | |



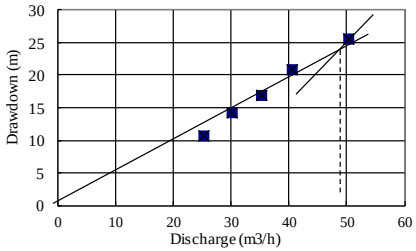

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Lambala-2 (I-06-NBH-2) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

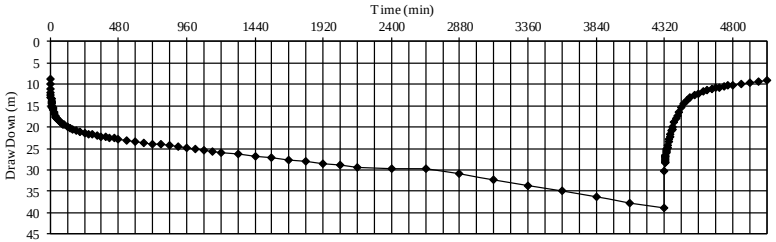



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 25.4 | 10.64 |
| 2 | 30.3 | 14.24 |
| 3 | 35.2 | 16.9 |
| 4 | 40.5 | 20.78 |
| 5 | 50.3 | 25.59 |

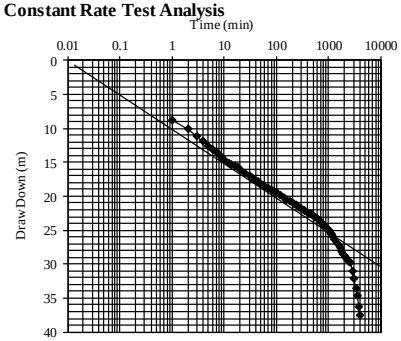
Critical Yield 50.0 $m^3/h$

Safe Yield 40.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 30.19 $m^3/h$

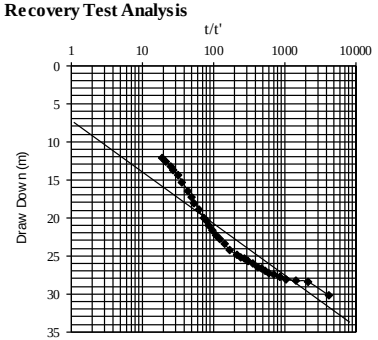
Δs 5.0 m

t0 0.015 min

Transmissivity = 1.11 $m^2/h$

Storage Coefficient = 0.06

### Recovery Test Analysis



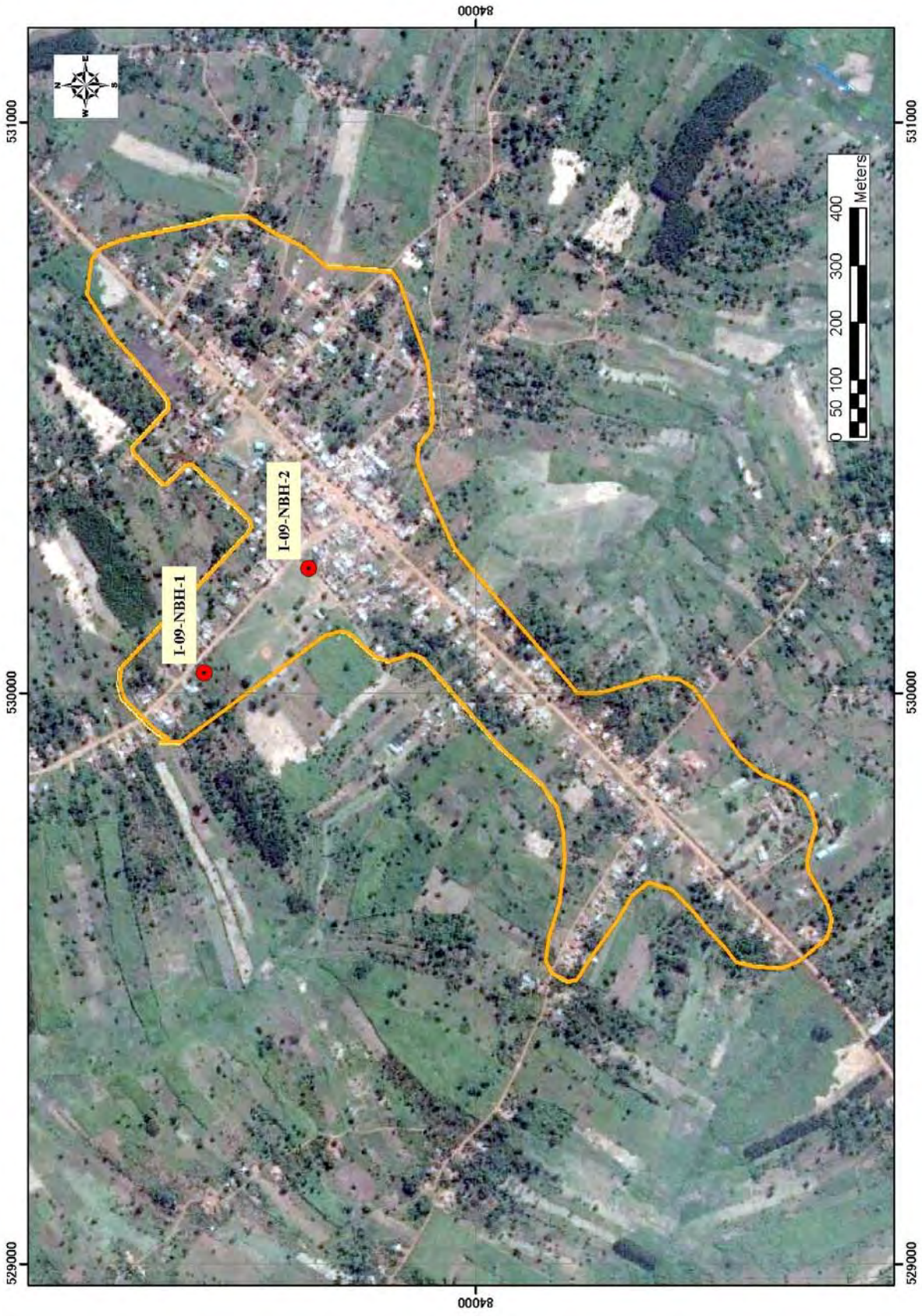

Q: 30.19 $m^3/h$

Δs 9.0 m

Transmissivity = 0.61 $m^2/h$

(3) Kyanvuma RGC

Distribution of Drilling Sites

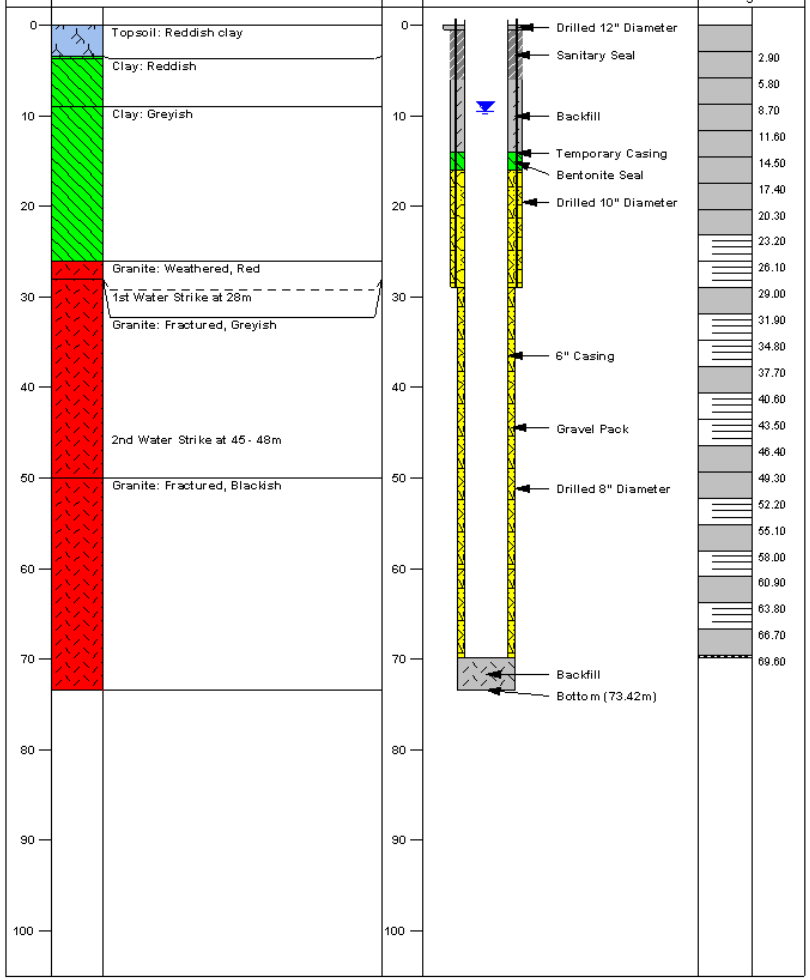


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: I-09-NBH-1 Site Name: Kyanvuma-1 Start Date: 2016/2/19 End Date: 2016/2/22

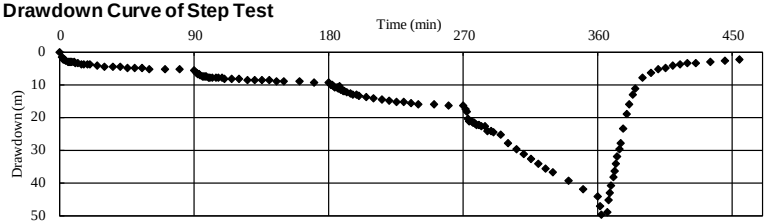
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | Luuka | UTM Zone: | 36N | Drillied Depth: | 73.42 m |
| County: | Luuka | Easting (X): | 530037 m | Static Water Level: | 9.45 m |
| Subcounty: | Irongo | Northing(Y): | 84475 m | Safe Yield: | 2.0 m3/hr |
| Parish: | Kyanvuma | Altitude: | 1123 m | Dynamic Water Level: | 49.58 m |
| Village: | Kyanvuma | | | | |



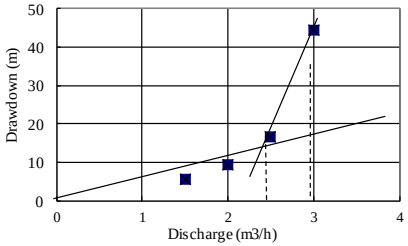

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kyanvuma-1 (I-09-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

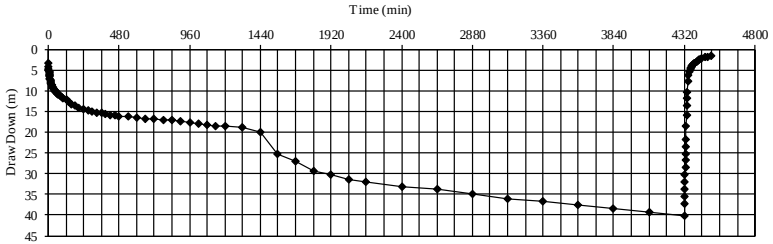



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 1.5 | 5.75 |
| 2 | 2 | 9.5 |
| 3 | 2.5 | 16.54 |
| 4 | 3 | 44.27 |
| 5 | | |

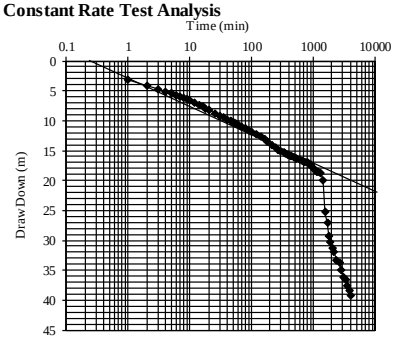
Critical Yield 2.5 $m^3/h$

Safe Yield 2.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.0 $m^3/h$

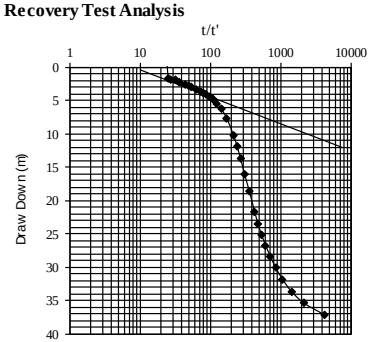
Δs 5.0 m

t0 0.3 min

Transmissivity = 0.07 $m^2/h$

Storage Coefficient = 0.08

### Recovery Test Analysis




Q: 2.0 $m^3/h$

Δs 4.5 m

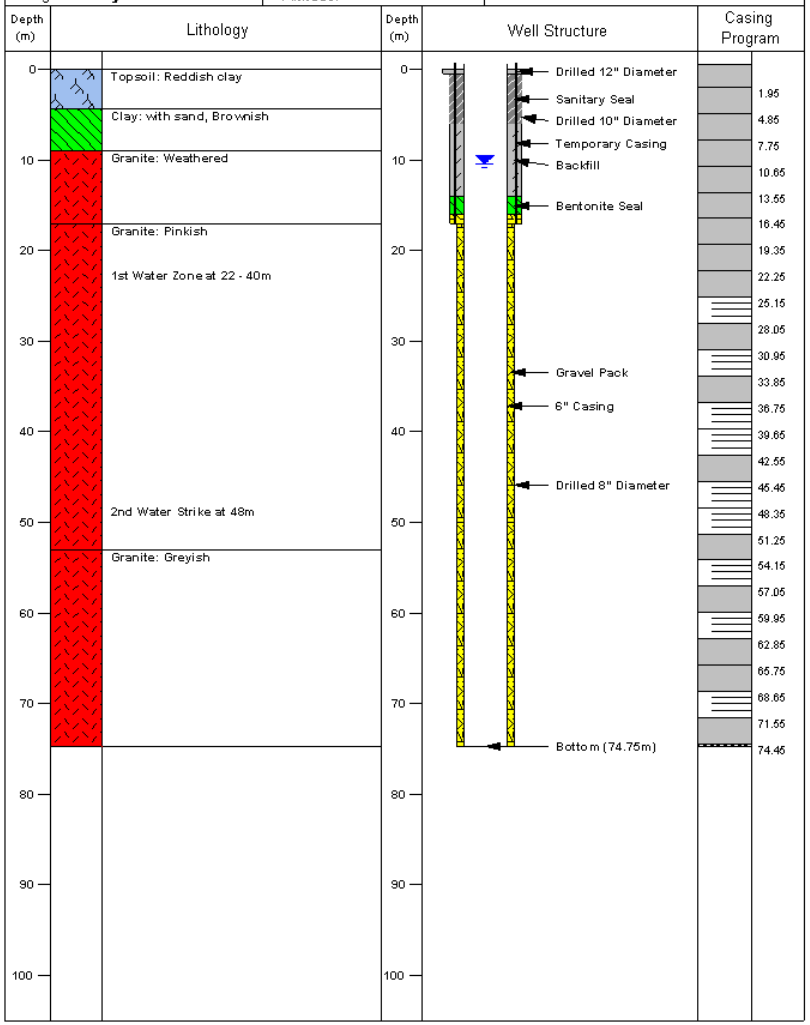
Transmissivity = 0.08 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-09-NBH-2** Site Name: **Kyanvuma-2** Start Date: 2016/2/23 End Date: 2016/2/26

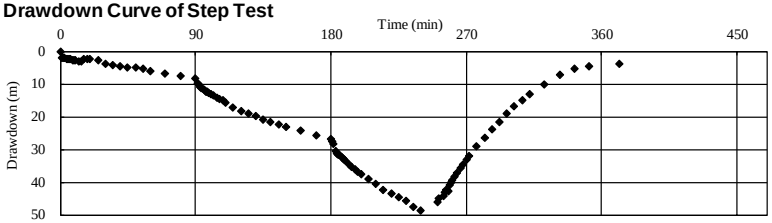
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | | |
|---|---|---|---|---|---|---|
| District: | **Luuka** | UTM Zone: | **36N** | Drillied Depth: | **74.75** | m |
| County: | **Luuka** | Easting (X): | **530220** m | Static Water Level: | **10.5** | m |
| Subcounty: | **Irongo** | Northing(Y): | **84292** m | Safe Yield: | **0.5** | m3/hr |
| Parish: | **Kyanvuma** | Altitude: | **1119** m | Dynamic Water Level: | **23.17** | m |
| Village: | **Kyanvuma** | | | | | |



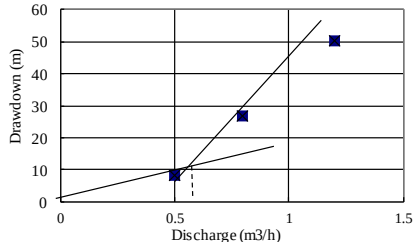

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kyanvuma-2 (I-09-NBH-2) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

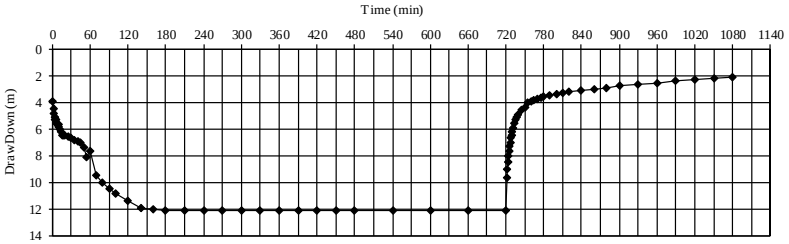



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 0.5 | 8.31 |
| 2 | 0.8 | 26.78 |
| 3 | 1.2 | 50.3 |
| 4 | | |
| 5 | | |

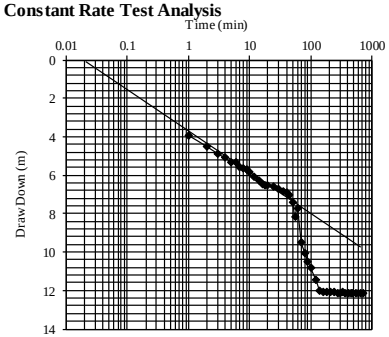
Critical Yield 0.6 $m^3/h$

Safe Yield 0.5 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 0.57 $m^3/h$

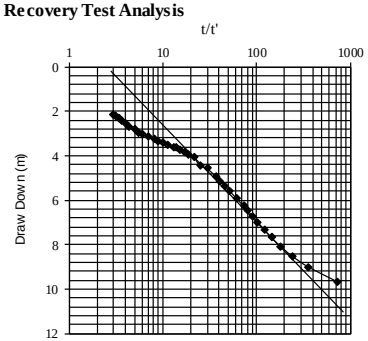
Δs 2.2 m

t0 0.02 min

Transmissivity = 0.05 $m^2/h$

Storage Coefficient = 0.004

### Recovery Test Analysis



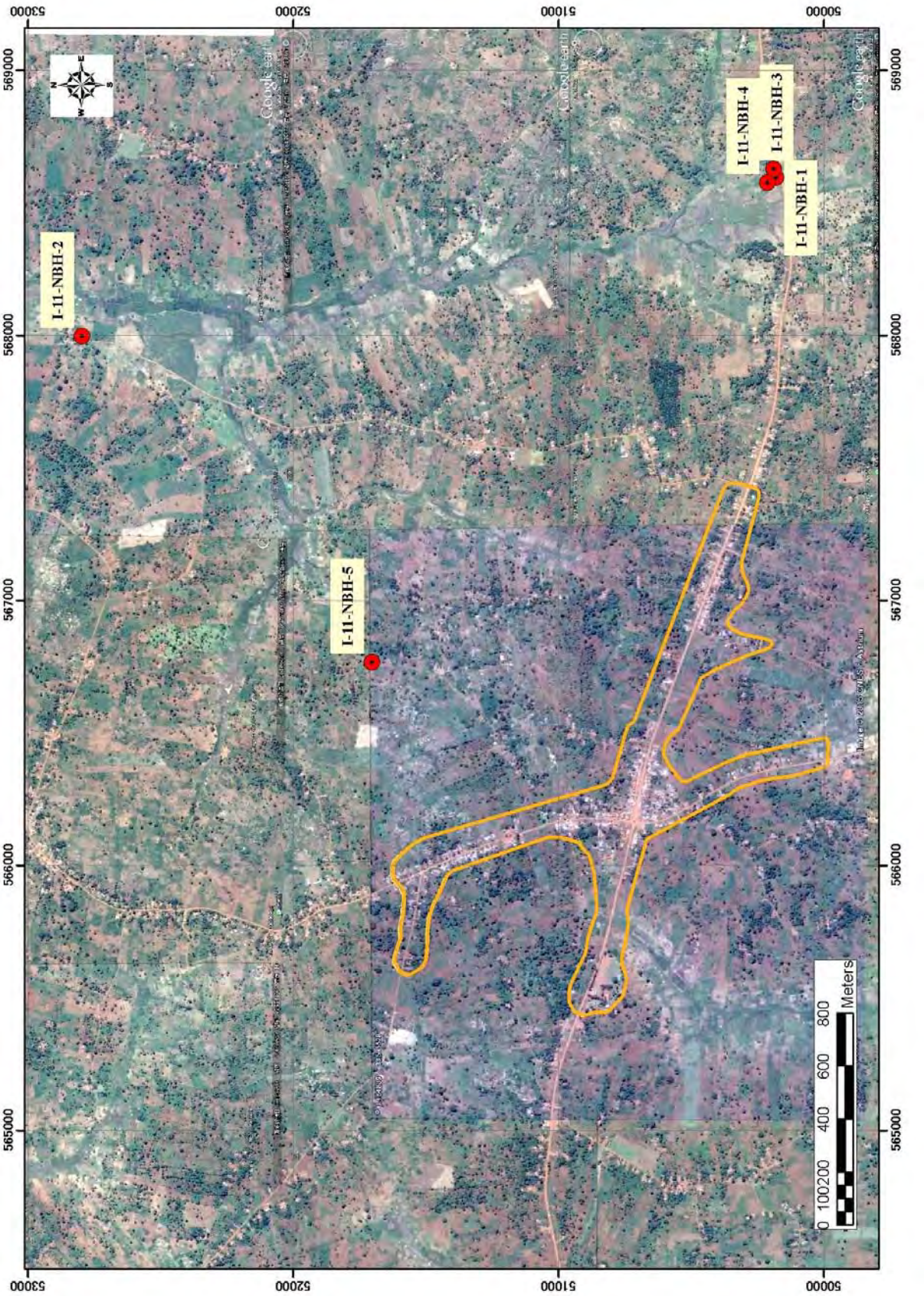

Q: 0.57 $m^3/h$

Δs 4.4 m

Transmissivity = 0.02 $m^2/h$

(4) Nondwe RGC

Distribution of Drilling Sites

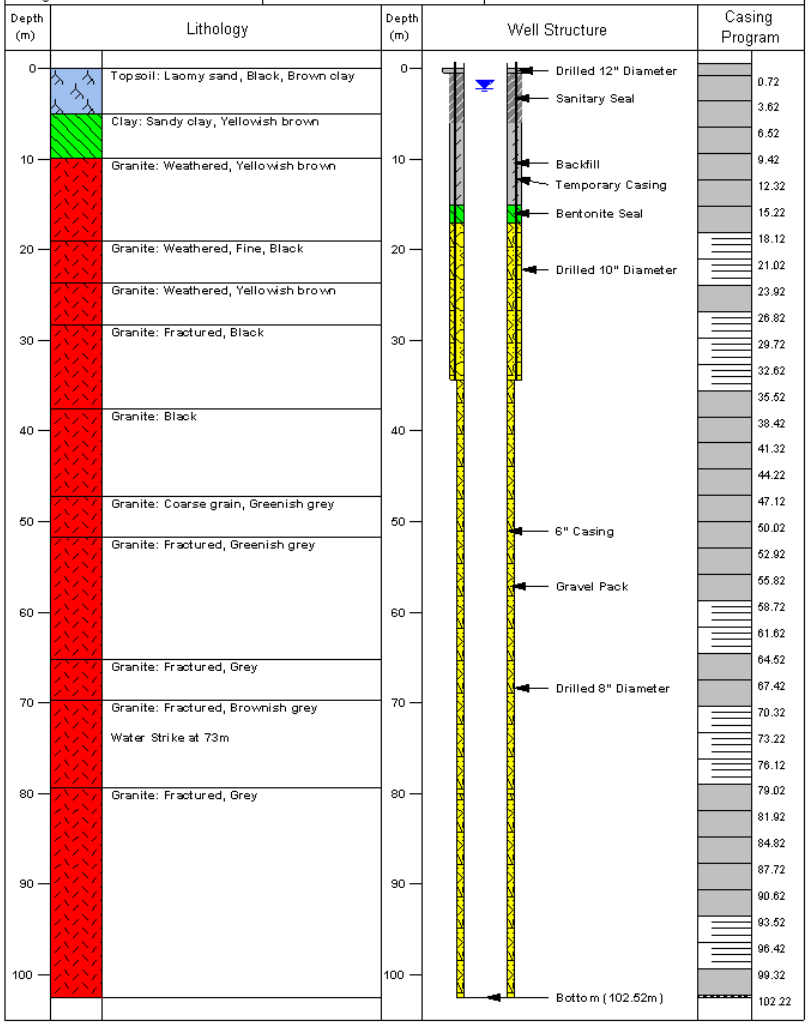


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: I-11-NBH-1 Site Name: Nondwe-1 Start Date: 2016/2/14 End Date: 2016/2/21

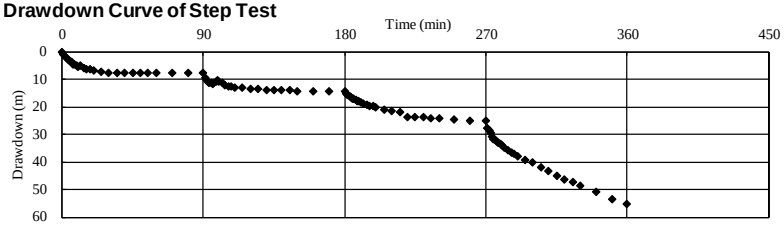
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | Mayuge | UTM Zone: | 36N | Drillied Depth: | 102.52 m |
| County: | Bunya | Easting (X): | 568597 m | Static Water Level: | 2.2 m |
| Subcounty: | Kigandalo | Northing(Y): | 50179 m | Safe Yield: | 3.1 m3/hr |
| Parish: | Isenda | Altitude: | 1185 m | Dynamic Water Level: | 8.18 m |
| Village: | Nanvnano | | | | |



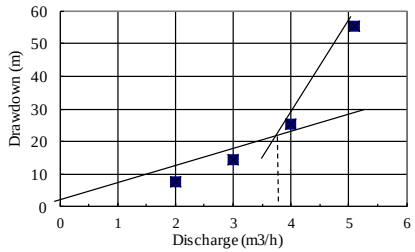

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nondwe-1 (I-11-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

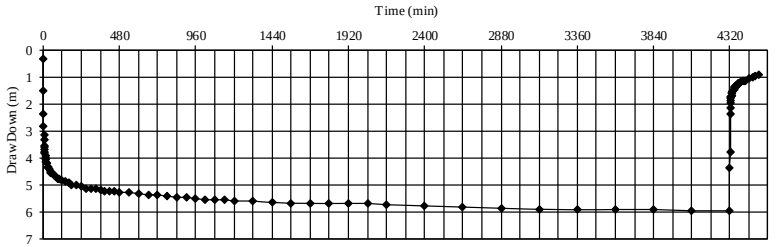



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 2 | 7.81 |
| 2 | 3 | 14.34 |
| 3 | 4 | 25.24 |
| 4 | 5.1 | 55.32 |
| 5 | | |

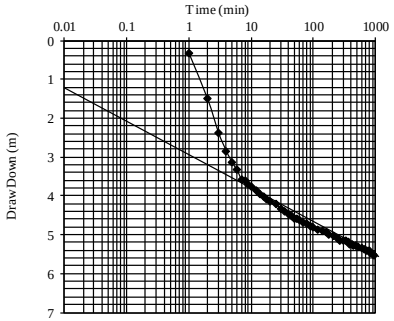
Critical Yield 3.9 $m^3/h$

Safe Yield 3.1 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.5 $m^3/h$

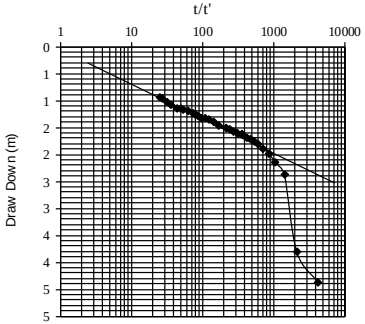
Δs 0.8 m

t0 0.0002 min

Transmissivity = 0.55 $m^2/h$

Storage Coefficient = 0.0004

### Recovery Test Analysis




Q: 2.5 $m^3/h$

Δs 0.6 m

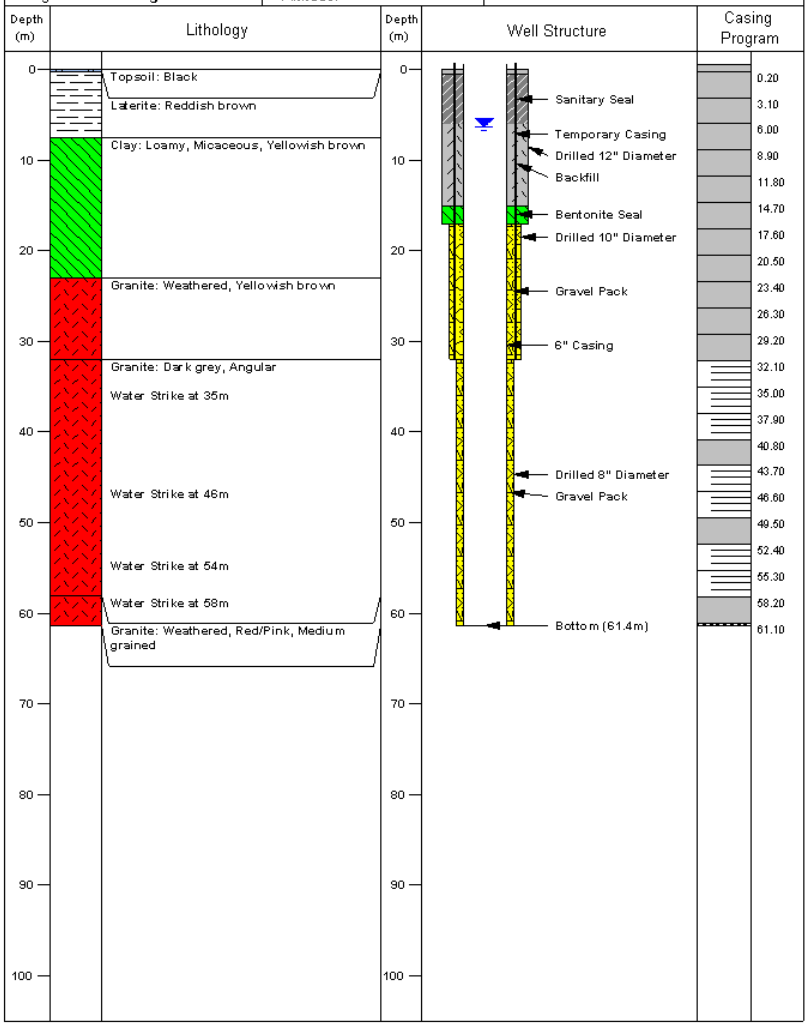
Transmissivity = 0.72 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-11-NBH-2** Site Name: **Nondwe-2** Start Date: 2016/3/29 End Date: 2016/4/6

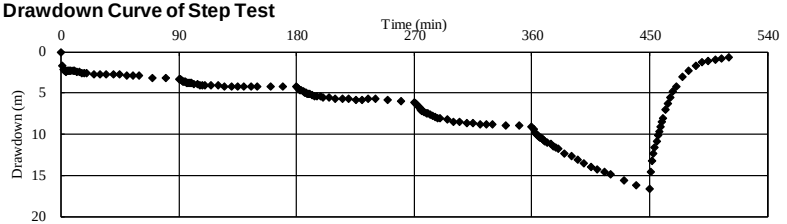
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Iganga** | UTM Zone: | **36N** | Drillied Depth: | **61.40** m |
| County: | **Bugweri** | Easting (X): | **567999** m | Static Water Level: | **6.4** m |
| Subcounty: | **Makuutu** | Northing(Y): | **52794** m | Safe Yield: | **1.0** m3/hr |
| Parish: | **Kasozi** | Altitude: | **1157** m | Dynamic Water Level: | **17.30** m |
| Village: | **Buzongoli** | | | | |



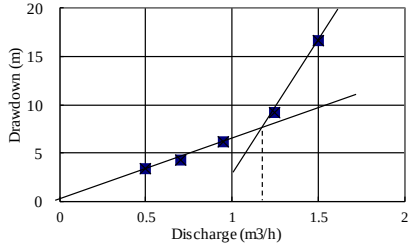

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nondwe-2 (I-11-NBH-2) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

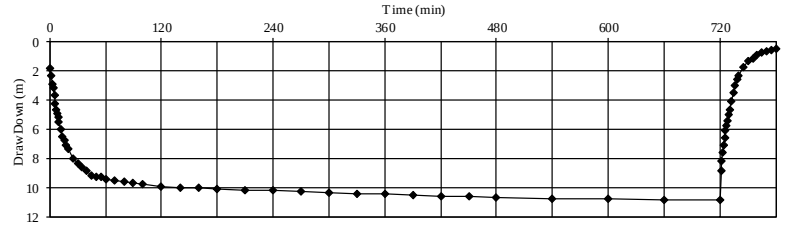



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 0.5 | 3.38 |
| 2 | 0.7 | 4.28 |
| 3 | 0.95 | 6.1 |
| 4 | 1.25 | 9.12 |
| 5 | 1.5 | 16.6 |

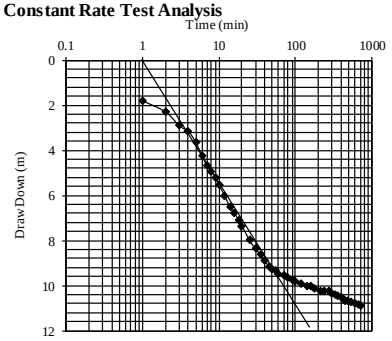
Critical Yield 1.2 $m^3/h$

Safe Yield 0.96 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 1 $m^3/h$

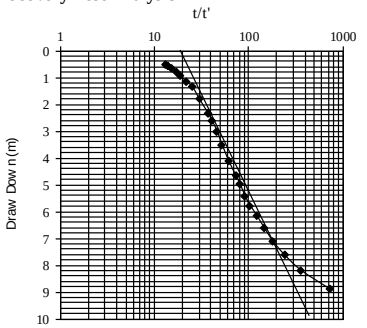
Δs 5.6 m

t0 1 min

Transmissivity = 0.0327 $m^2/h$

Storage Coefficient = 0.123

### Recovery Test Analysis




Q: 1 $m^3/h$

Δs 7.2 m

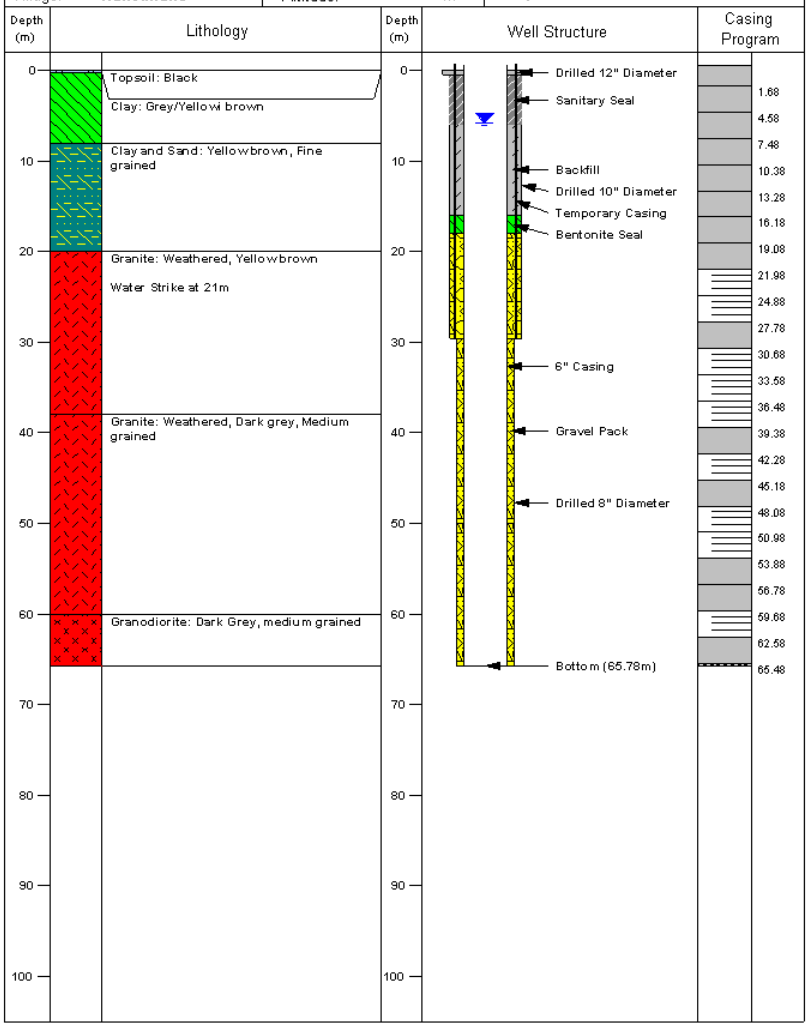
Transmissivity = 0.0254 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-11-NBH-3** Site Name: **Nondwe-3** Start Date: 2016/3/18 End Date: 2016/3/20

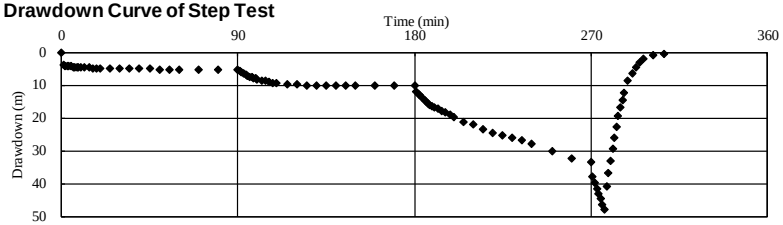
| | | Coordinate (Datum: Arc60) | | | Charactoristics of Borehole | | |
|---|---|---|---|---|---|---|---|
| District: | **Mayuge** | UTM Zone: | **36N** | | Drillied Depth: | **65.78** | m |
| County: | **Bunya** | Easting (X): | **578631** | m | Static Water Level: | **5.75** | m |
| Subcounty: | **Kigandalo** | Northing(Y): | **50187** | m | Safe Yield: | **3.0** | m3/hr |
| Parish: | **Isenda** | Altitude: | **1178** | m | Dynamic Water Level: | **17.83** | m |
| Village: | **Nanvunano** | | | | | | |



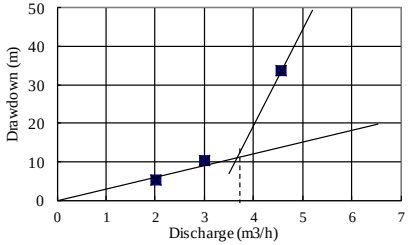

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nondwe-3 (I-11-NBH-3) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

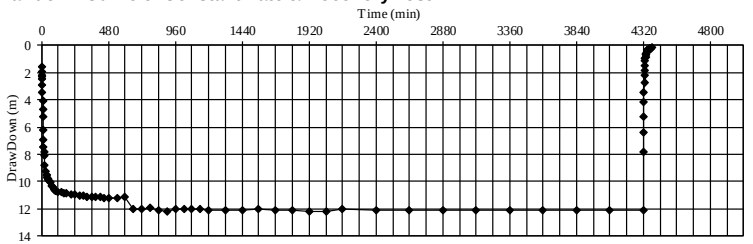



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 2.01 | 5.28 |
| 2 | 3 | 10.36 |
| 3 | 4.56 | 33.69 |
| 4 | 6.2 | 47.95 |
| 5 | | |

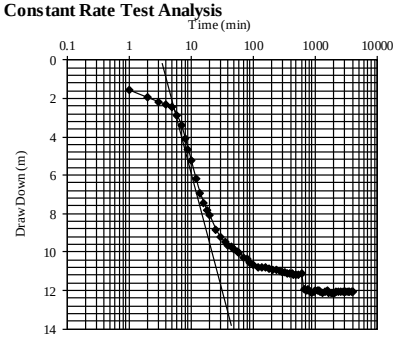
Critical Yield 3.8 $m^3/h$

Safe Yield 3.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 3.1 $m^3/h$

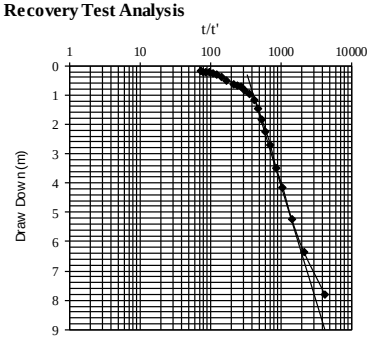
Δs 12.0 m

t0 4 min

Transmissivity = 0.05 $m^2/h$

Storage Coefficient = 0.71

### Recovery Test Analysis




Q: 3.1 $m^3/h$

Δs 7.2 m

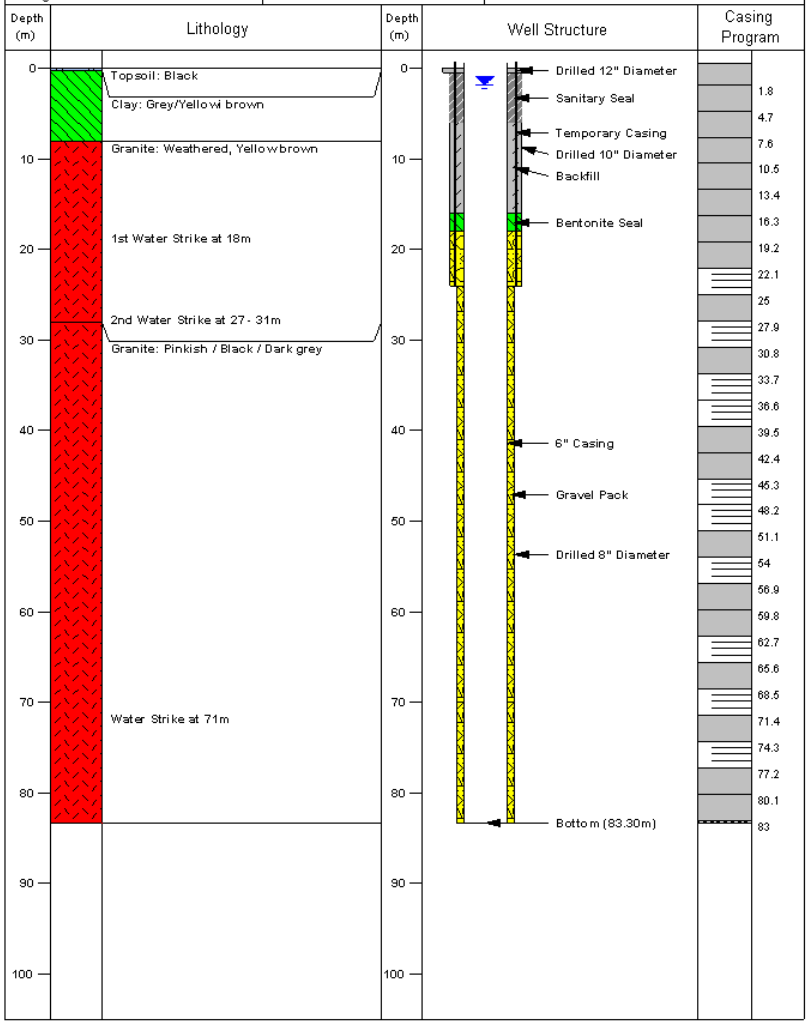
Transmissivity = 0.08 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: I-11-NBH-4 Site Name: Nondwe-4 Start Date: 2016/3/15 End Date: 2016/3/17

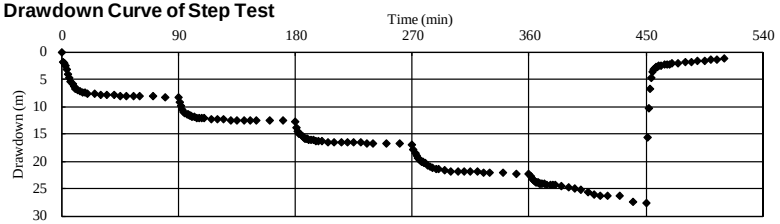
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | Mayuge | UTM Zone: | 36N | Drillied Depth: | 83.3 m |
| County: | Bunya | Easting (X): | 578579 m | Static Water Level: | 1.9 m |
| Subcounty: | Kigandalo | Northing(Y): | 50211 m | Safe Yield: | 9.0 m3/hr |
| Parish: | Isenda | Altitude: | 1176 m | Dynamic Water Level: | 22.8 m |
| Village: | Nanvunado | | | | |



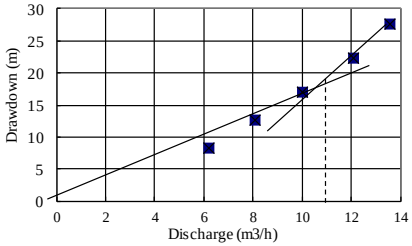

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nondwe-4 (I-11-NBH-4) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

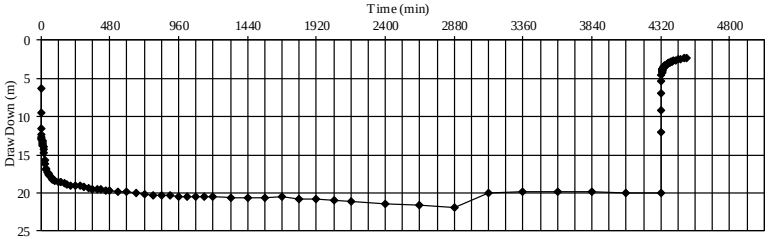



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 6.2 | 8.31 |
| 2 | 8.1 | 12.67 |
| 3 | 10 | 16.91 |
| 4 | 12.1 | 22.28 |
| 5 | 13.6 | 27.62 |

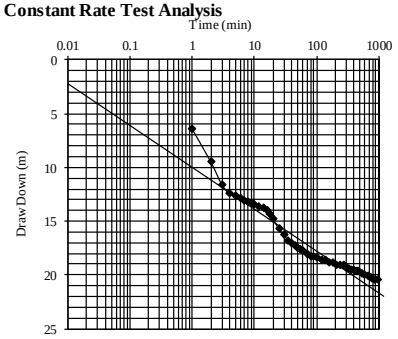
Critical Yield 11.3 $m^3/h$

Safe Yield 9.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 9.0 $m^3/h$

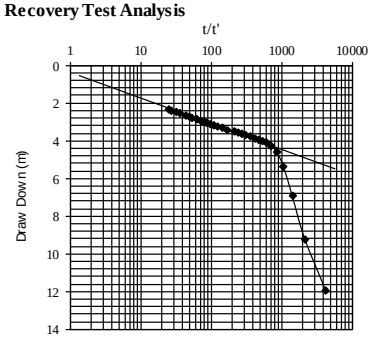
Δs 3.7 m

t0 0.0015 min

Transmissivity = 0.45 $m^2/h$

Storage Coefficient = 0.0025

### Recovery Test Analysis




Q: 9.0 $m^3/h$

Δs 1.3 m

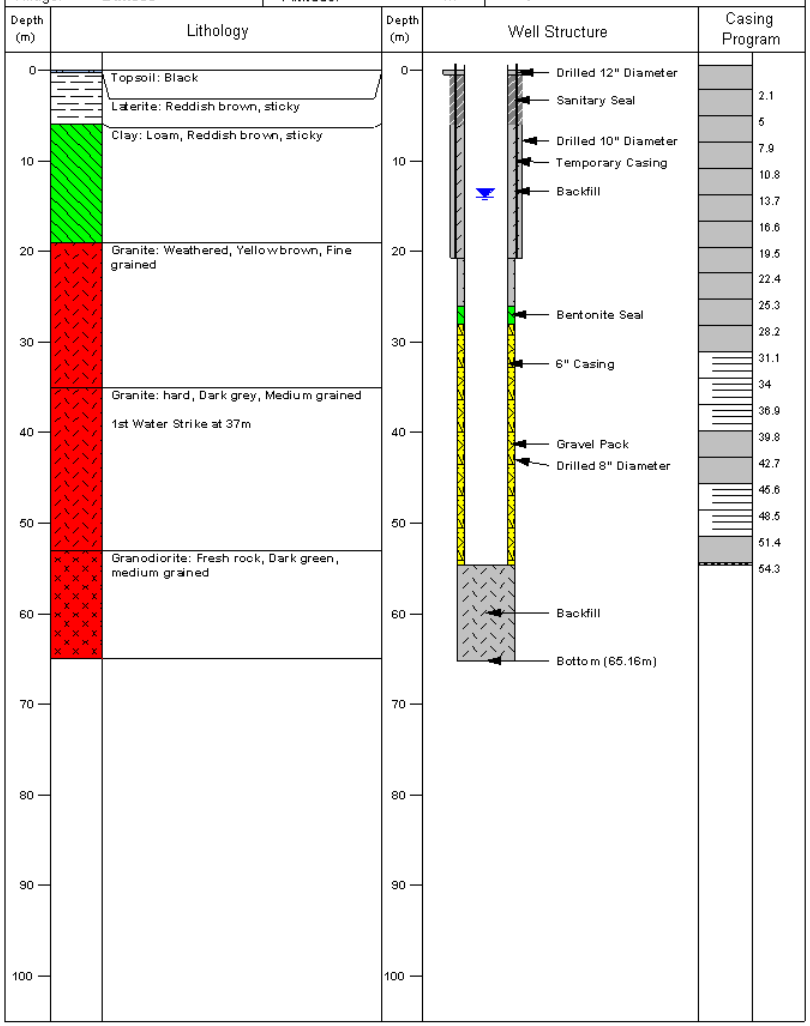
Transmissivity = 1.24 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **I-11-NBH-5** Site Name: **Nondwe-5** Start Date: 2016/3/21 End Date: 2016/3/23

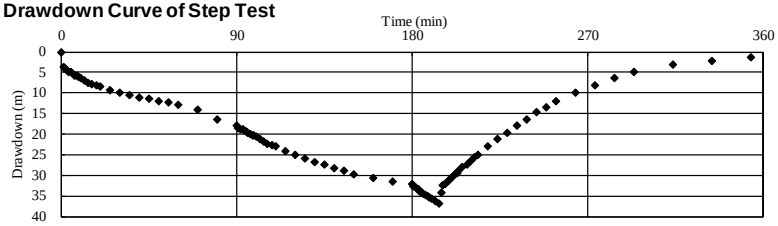
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Iganga** | UTM Zone: | **36N** | Drillied Depth: | **65.16** m |
| County: | **Bugweri** | Easting (X): | **566769** m | Static Water Level: | **14.02** m |
| Subcounty: | **Makuutu** | Northing(Y): | **51702** m | Safe Yield: | **0.52** m3/hr |
| Parish: | **Kasozi** | Altitude: | **1185** m | Dynamic Water Level: | **32.91** m |
| Village: | **Bukose** | | | | |



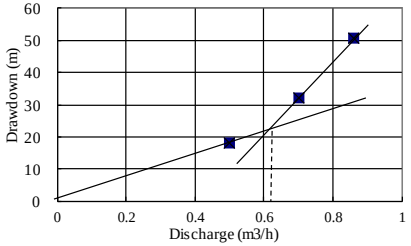

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Nondwe-5 (I-11-NBH-5) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

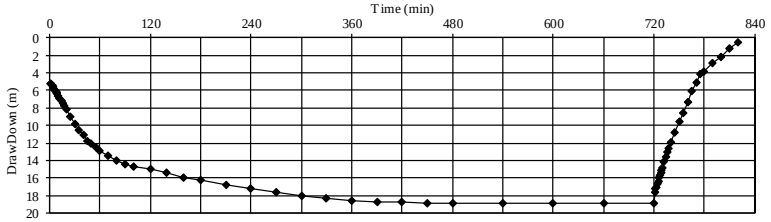



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 0.5 | 17.98 |
| 2 | 0.7 | 32.27 |
| 3 | 0.86 | 50.79 |
| 4 | | |
| 5 | | |

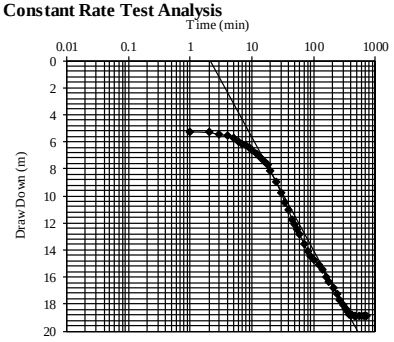
Critical Yield 0.65 $m^3/h$

Safe Yield 0.52 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 0.4 $m^3/h$

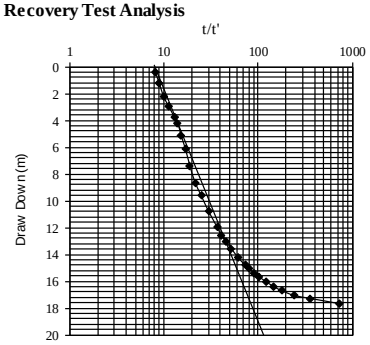
Δs 8.4 m

t0 2 min

Transmissivity = 0.0087 $m^2/h$

Storage Coefficient = 0.065

### Recovery Test Analysis



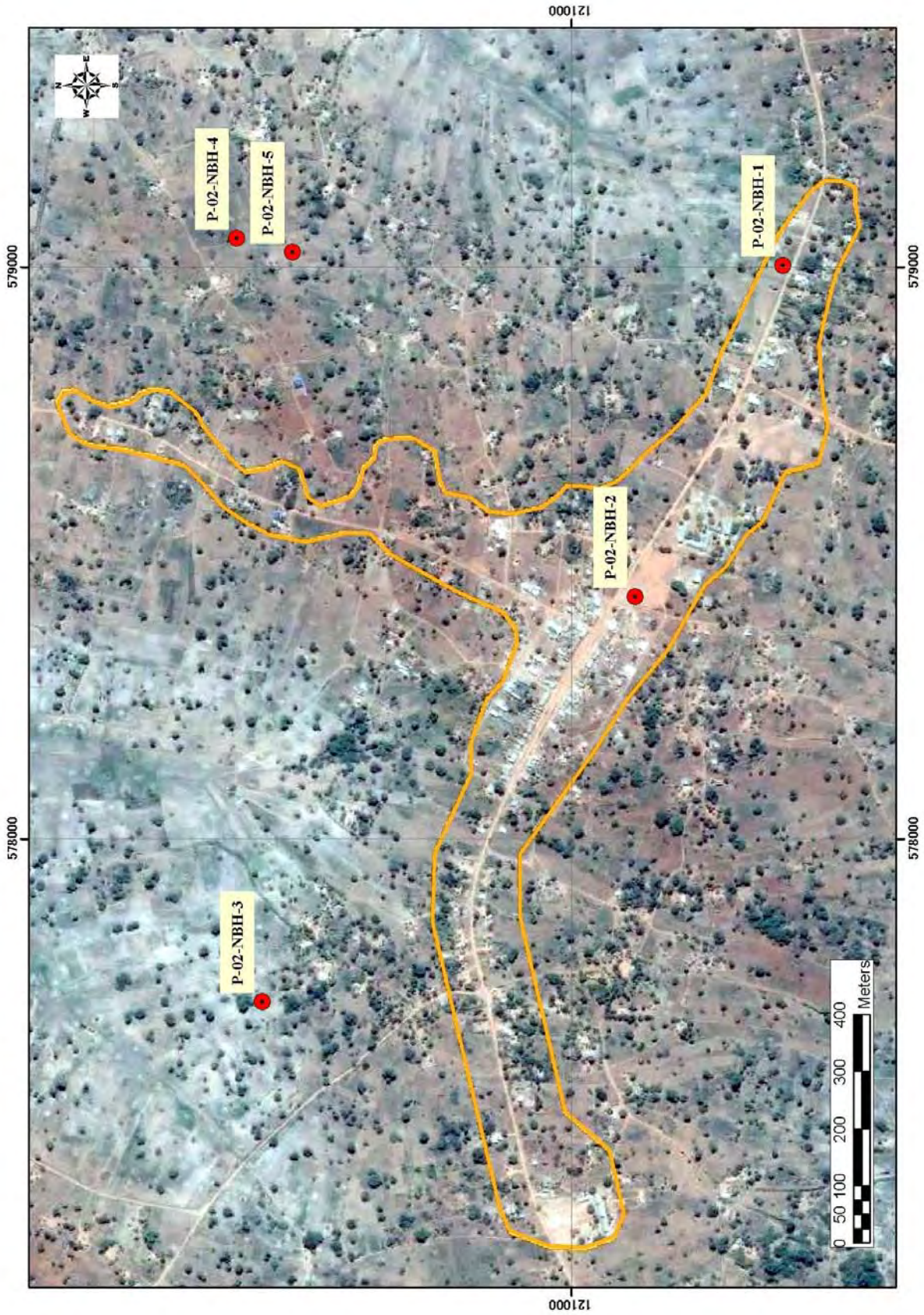

Q: 0.4 $m^3/h$

Δs 16.8 m

Transmissivity = 0.0044 $m^2/h$

(5) Kasassira RGC

Distribution of Drilling Sites

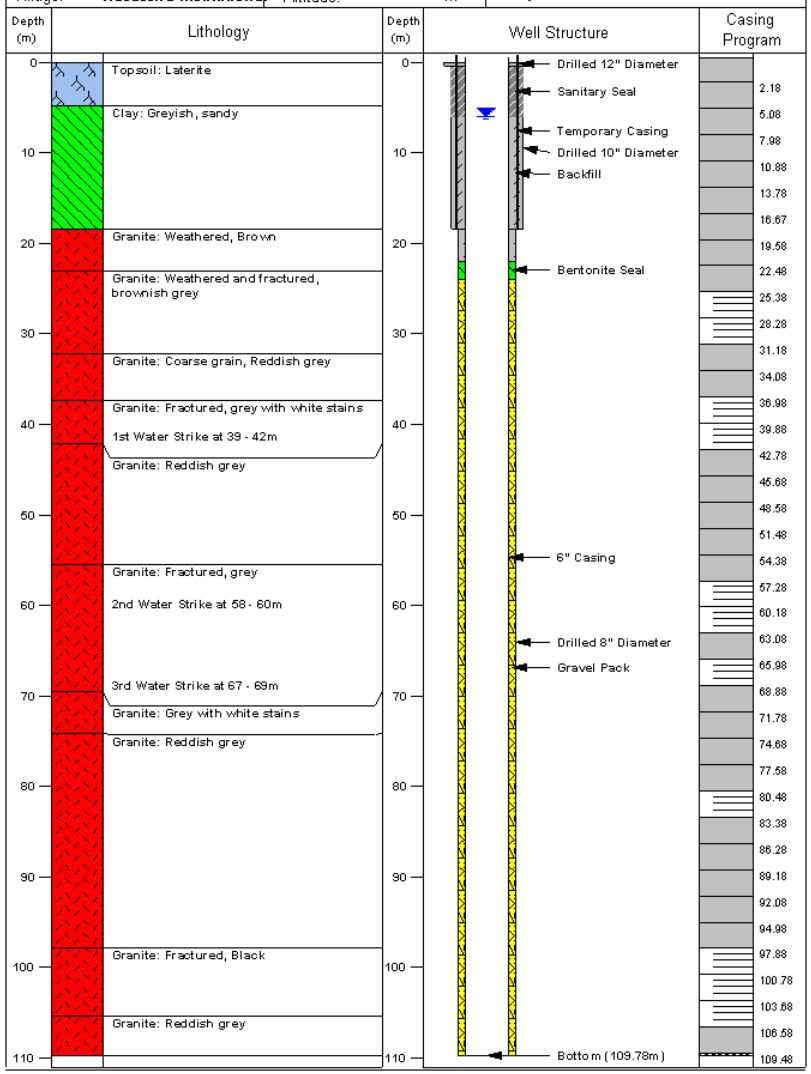


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-02-NBH-1** Site Name: **Kasassira-1** Start Date: 2016/1/29 End Date: 2016/2/2

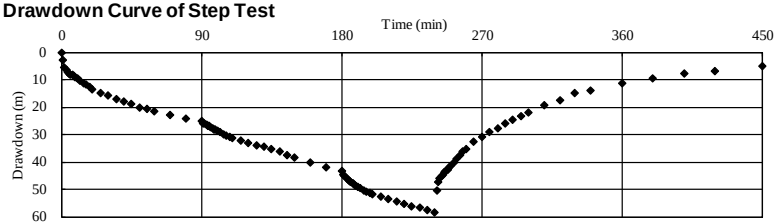
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | | |
|---|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **109.78** | m |
| County: | **Kibuku** | Easting (X): | **579005** m | Static Water Level: | **6.0** | m |
| Subcounty: | **Kasassira** | Northing(Y): | **120630** m | Safe Yield: | **0.8** | m3/hr |
| Parish: | **Kasassira** | Altitude: | **1077** m | Dynamic Water Level: | **43.83** | m |
| Village: | **Kasassira Institutional** | | | | | |



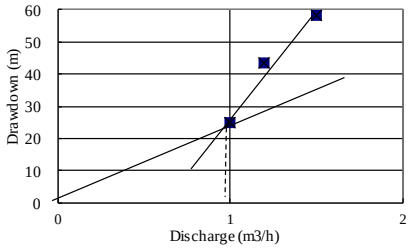

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kasassira-1 (P-02-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

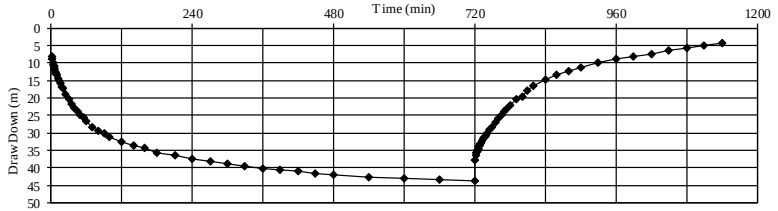



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 1 | 25.05 |
| 2 | 1.2 | 43.5 |
| 3 | 1.5 | 58.3 |
| 4 | | |
| 5 | | |

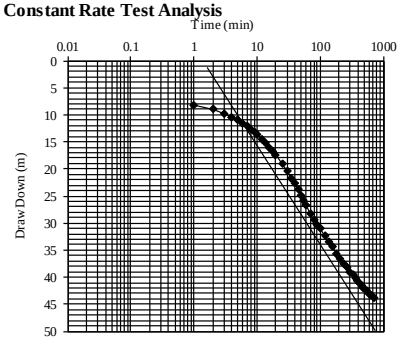
Critical Yield 1.0 $m^3/h$

Safe Yield 0.8 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 1 $m^3/h$

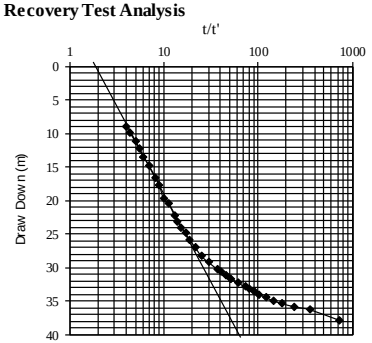
Δs 18.5 m

t0 1.8 min

Transmissivity = 0.0099 $m^2/h$

Storage Coefficient = 0.067

### Recovery Test Analysis




Q: 1 $m^3/h$

Δs 27.0 m

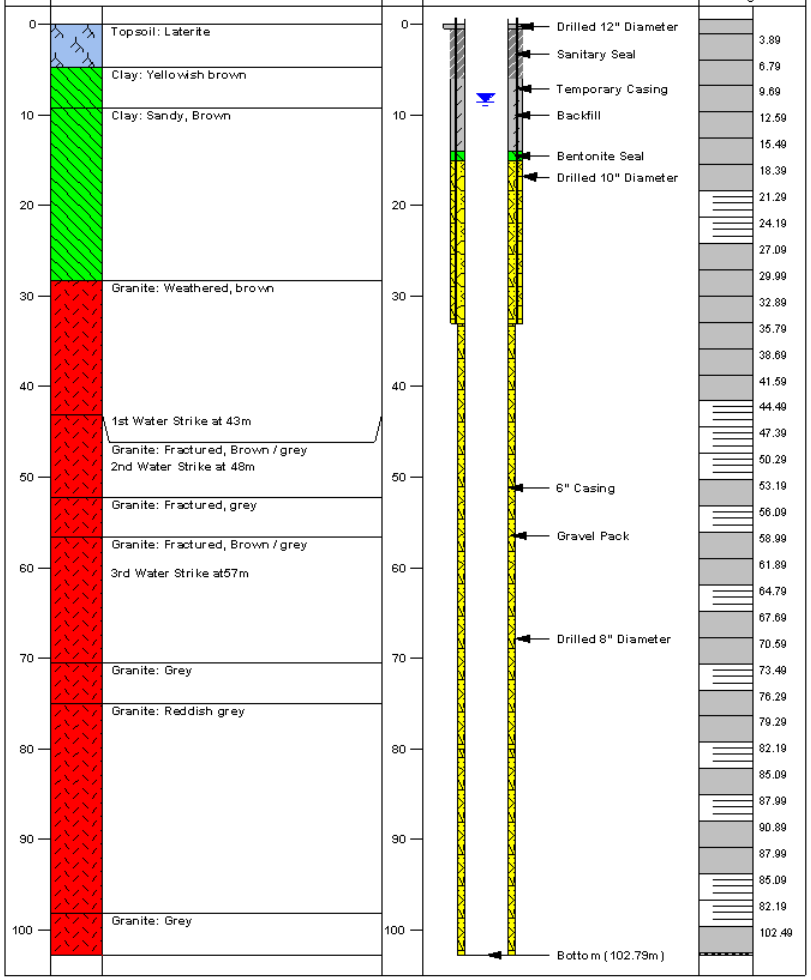
Transmissivity = 0.0068 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-02-NBH-2** Site Name: **Kasassira-2** Start Date: 2016/2/3 End Date: 2016/2/7

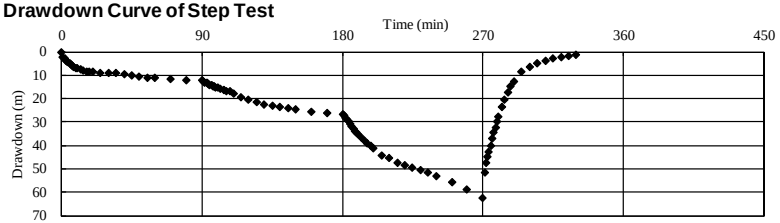
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **102.79** m |
| County: | **Kibuku** | Easting (X): | **578426** m | Static Water Level: | **8.6** m |
| Subcounty: | **Kasassira** | Northing(Y): | **120888** m | Safe Yield: | **2.6** m3/hr |
| Parish: | **Kasassira** | Altitude: | **1079** m | Dynamic Water Level: | **39.66** m |
| Village: | **Kasasira Institutional** | | | | |



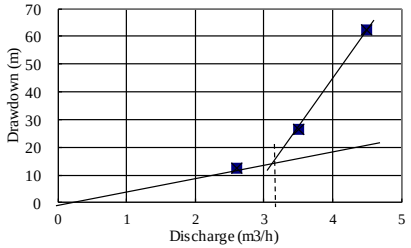

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kasassira-2 (P-02-NBH-2) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

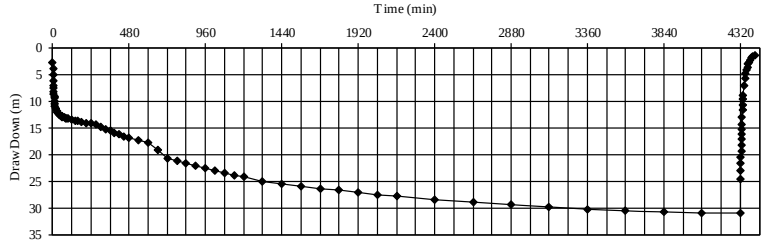



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 2.6 | 12.26 |
| 2 | 3.5 | 26.5 |
| 3 | 4.5 | 62.37 |
| 4 | | |
| 5 | | |

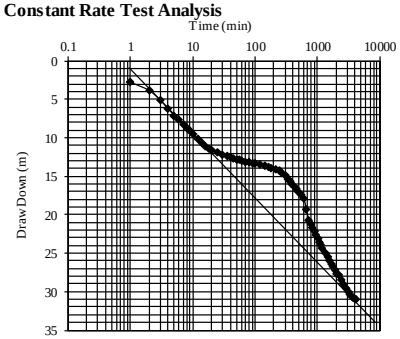
Critical Yield 3.2 $m^3/h$

Safe Yield 2.6 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.6 $m^3/h$

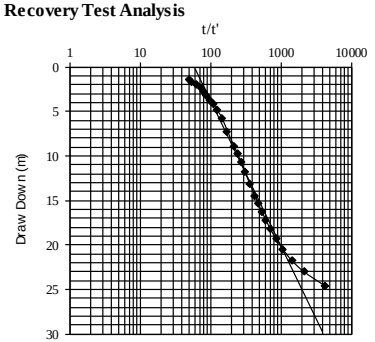
Δs 8.3 m

t0 0.7 min

Transmissivity = 0.06 $m^2/h$

Storage Coefficient = 0.15

### Recovery Test Analysis




Q: 2.6 $m^3/h$

Δs 18.0 m

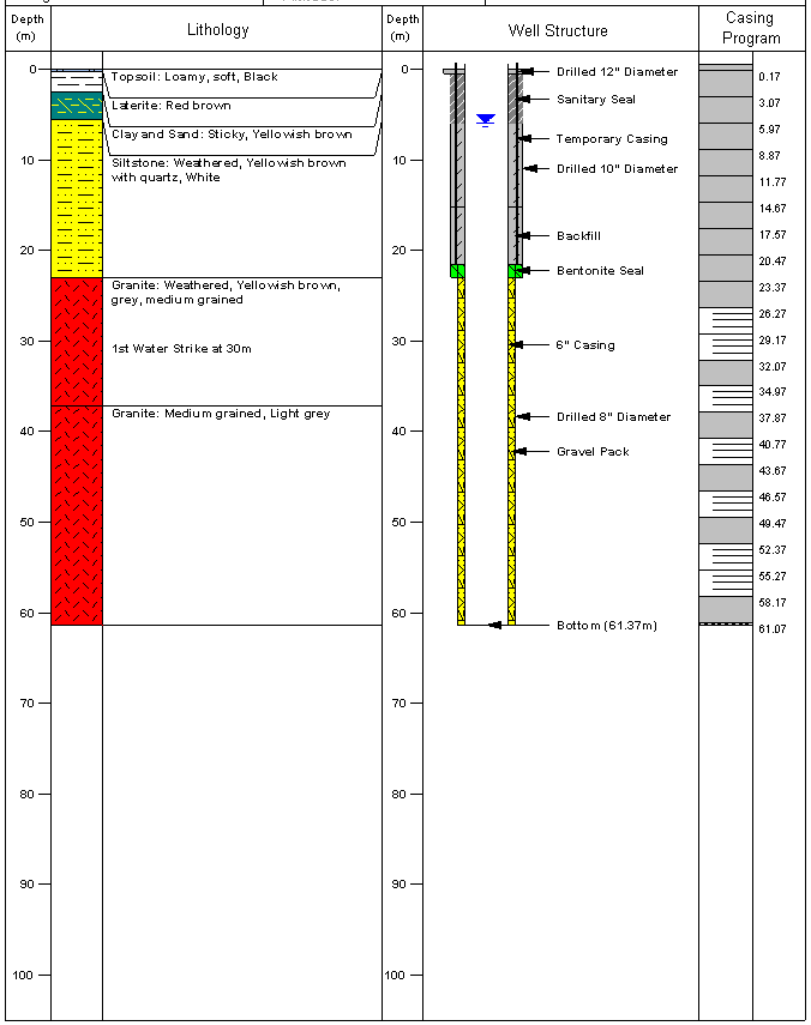
Transmissivity = 0.03 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-02-NBH-3** Site Name: **Kasassira-3** Start Date: 2016/3/8 End Date: 2016/3/12

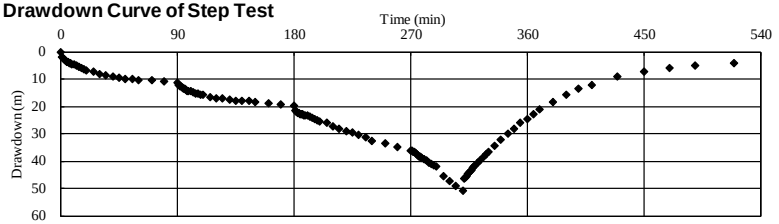
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **61.37** m |
| County: | **Kibuku** | Easting (X): | **577717** m | Static Water Level: | **6.00** m |
| Subcounty: | **Kasassira** | Northing(Y): | **121540** m | Safe Yield: | **0.5** m3/hr |
| Parish: | **Kasassira** | Altitude: | **1068** m | Dynamic Water Level: | **36.97** m |
| Village: | **Kasassira West** | | | | |



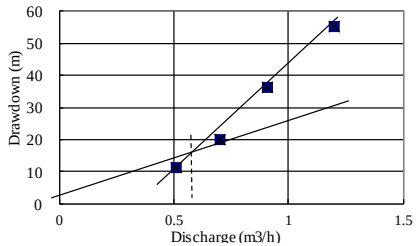

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kasassira-3 (P-02-NBH-3) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

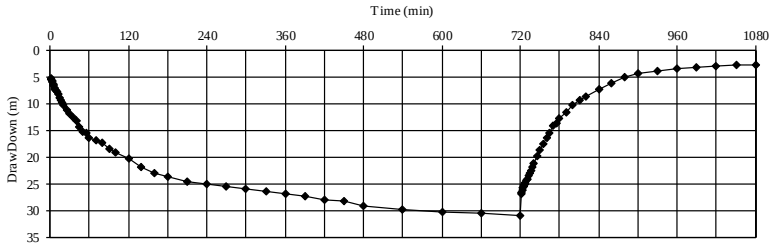



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 0.51 | 11.12 |
| 2 | 0.7 | 19.93 |
| 3 | 0.91 | 36.08 |
| 4 | 1.2 | 55 |
| 5 | | |

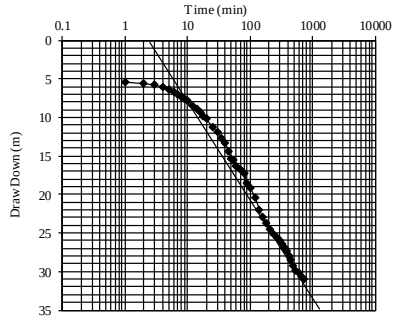
Critical Yield 0.6 $m^3/h$

Safe Yield 0.5 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 0.5 $m^3/h$

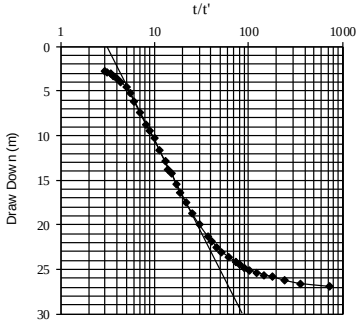
Δs 12.8 m

t0 3 min

Transmissivity = 0.007 $m^2/h$

Storage Coefficient = 0.08

### Recovery Test Analysis




Q: 0.5 $m^3/h$

Δs 21.0 m

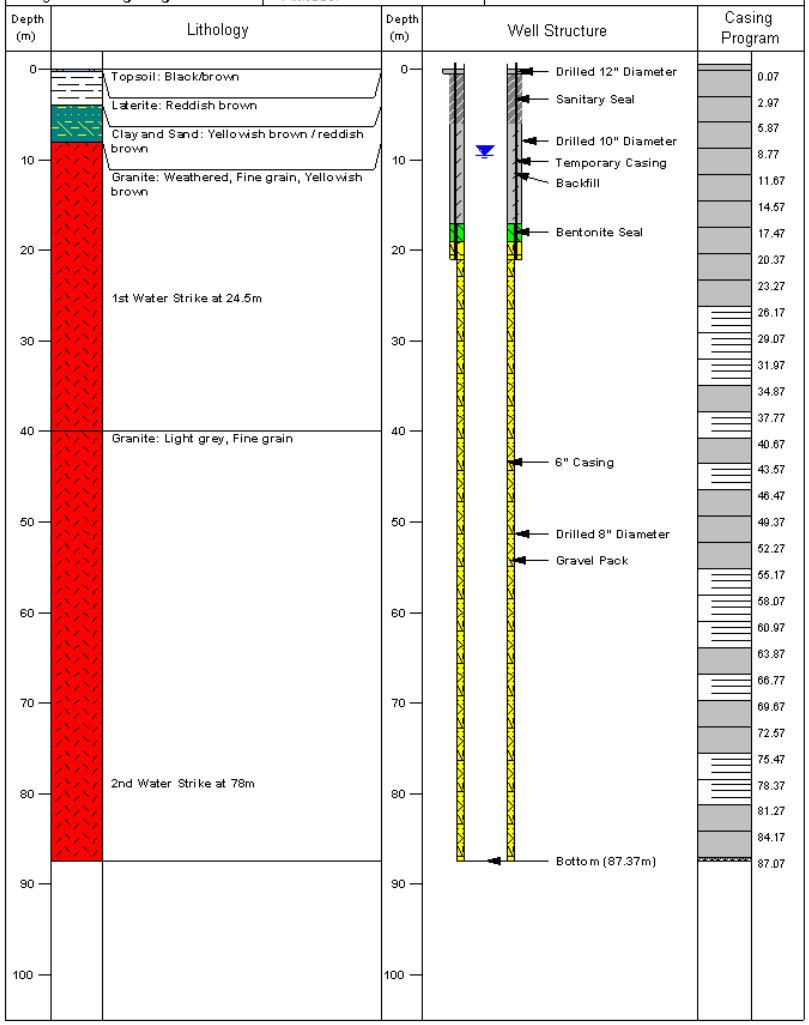
Transmissivity = 0.004 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-02-NBH-4** Site Name: **Kasassira-4** Start Date: 2016/3/24 End Date: 2016/3/27

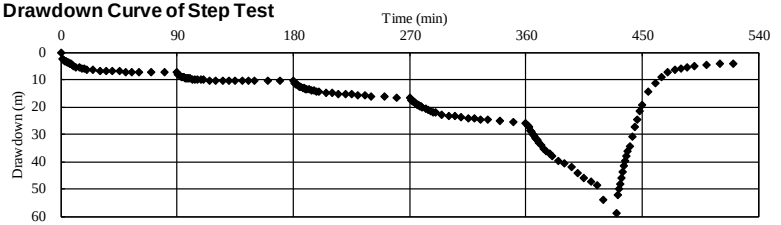
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | | |
|---|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **87.47** | m |
| County: | **Kibuku** | Easting (X): | **579052** m | Static Water Level: | **9.45** | m |
| Subcounty: | **Kasassira** | Northing(Y): | **121584** m | Safe Yield: | **2.1** | m3/hr |
| Parish: | **Kasassira** | Altitude: | **1061** m | Dynamic Water Level: | **27.40** | m |
| Village: | **Nagohnga** | | | | | |



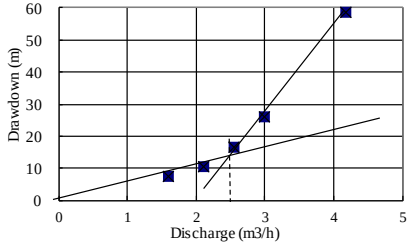

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kasassira-4 (P-02-NBH-4) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

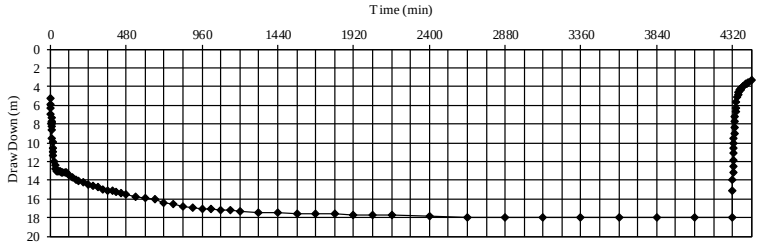



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 1.6 | 7.4 |
| 2 | 2.12 | 10.55 |
| 3 | 2.55 | 16.75 |
| 4 | 3 | 25.95 |
| 5 | 4.18 | 58.67 |

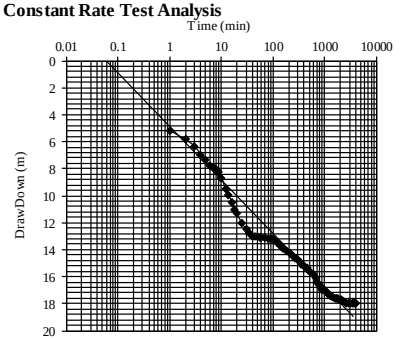
Critical Yield 2.6 $m^3/h$

Safe Yield 2.1 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.0 $m^3/h$

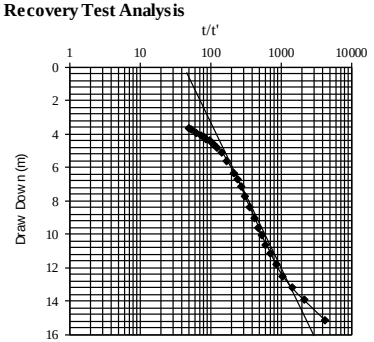
Δs 4.0 m

t0 0.07 min

Transmissivity = 0.09 $m^2/h$

Storage Coefficient = 0.02

### Recovery Test Analysis




Q: 2.0 $m^3/h$

Δs 8.8 m

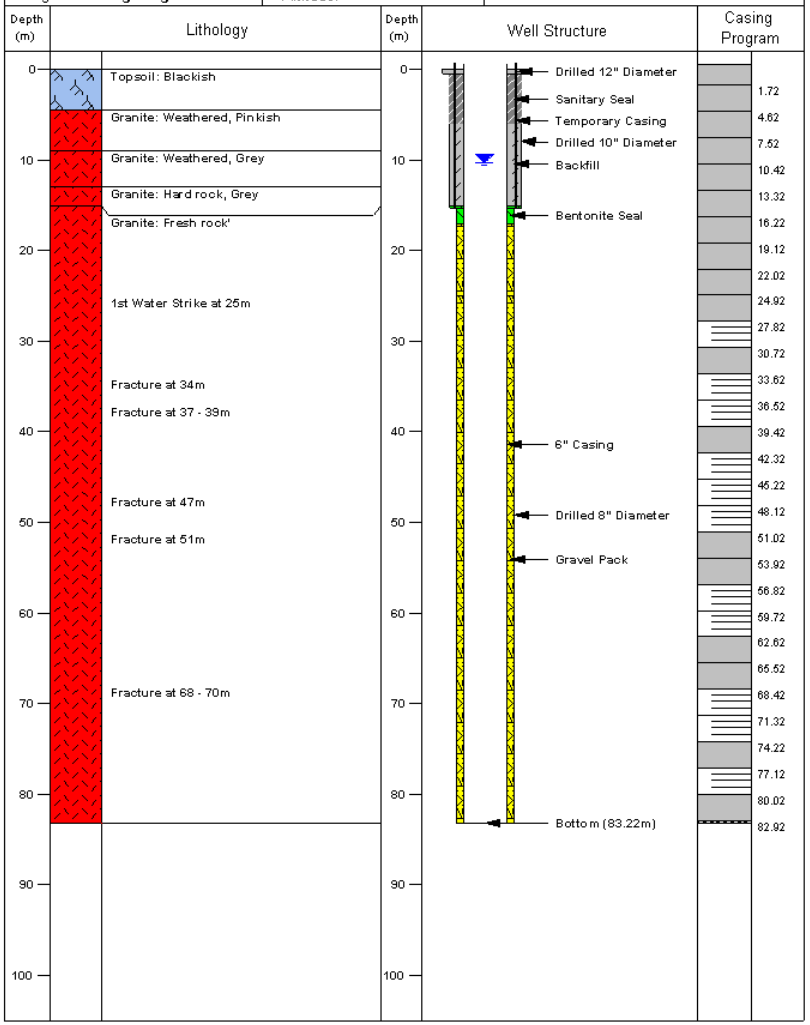
Transmissivity = 0.04 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-02-NBH-5** Site Name: **Kasassira-5** Start Date: 2016/4/7 End Date: 2016/4/11

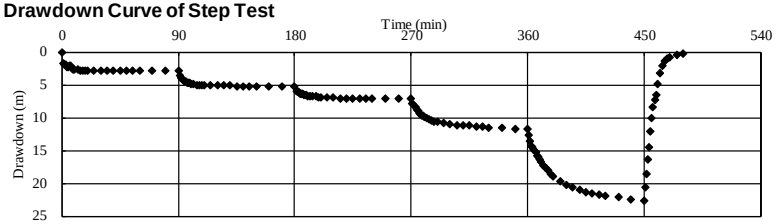
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **83.22** m |
| County: | **Kibuku** | Easting (X): | **579028** m | Static Water Level: | **10.3** m |
| Subcounty: | **Kasassira** | Northing(Y): | **121487** m | Safe Yield: | **2.0** m3/hr |
| Parish: | **Kasassira** | Altitude: | **1065** m | Dynamic Water Level: | **20.85** m |
| Village: | **Nagohnga** | | | | |



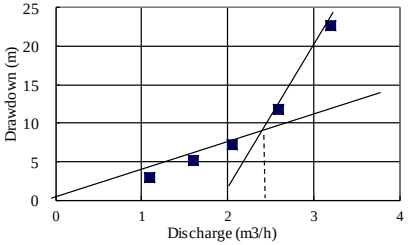

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kasassira-5 (P-02-NBH-5) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

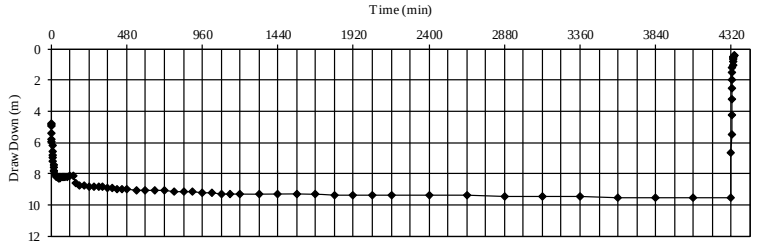



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 1.09 | 2.9 |
| 2 | 1.6 | 5.22 |
| 3 | 2.05 | 7.17 |
| 4 | 2.6 | 11.8 |
| 5 | 3.2 | 22.67 |

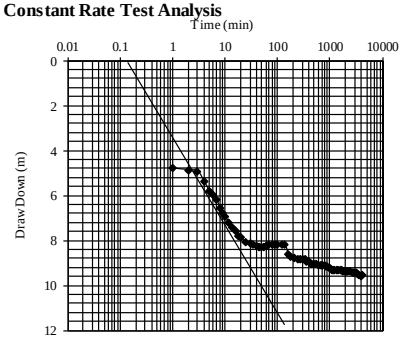
Critical Yield 2.5 $m^3/h$

Safe Yield 2.0 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.1 $m^3/h$

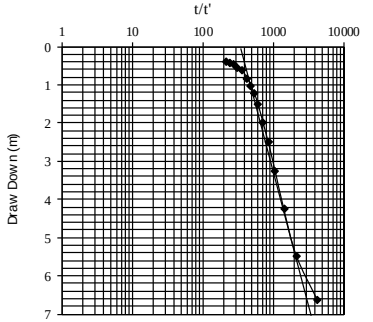
Δs 4.0 m

t0 0.2 min

Transmissivity = 0.10 $m^2/h$

Storage Coefficient = 0.07

### Recovery Test Analysis



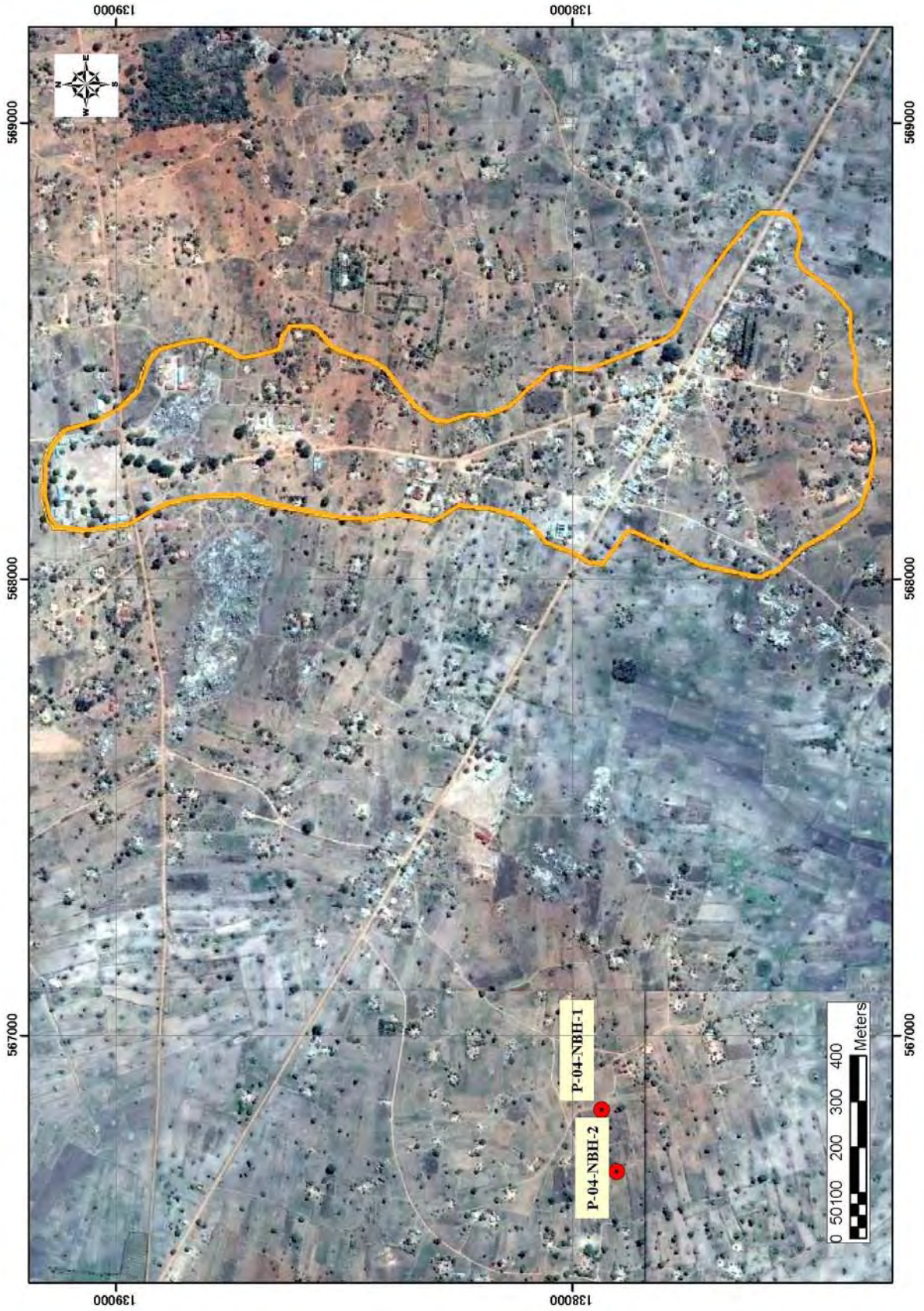

Q: 2.1 $m^3/h$

Δs 7.0 m

Transmissivity = 0.05 $m^2/h$

(6) Kapala RGC

Distribution of Drilling Sites

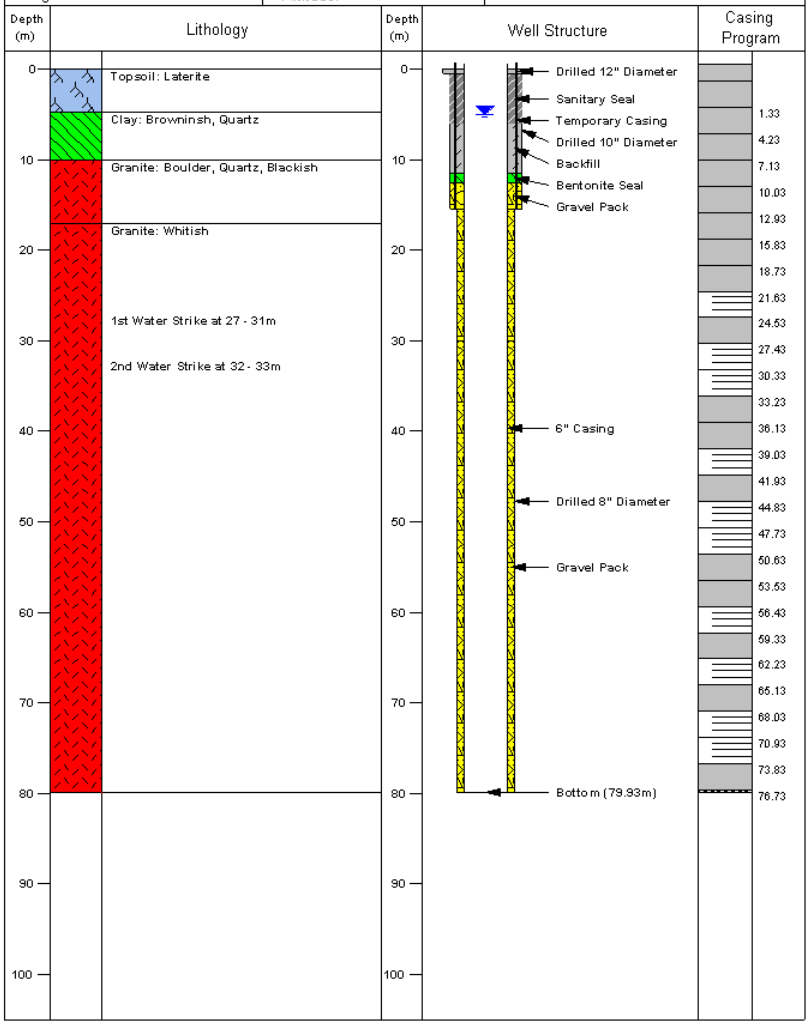


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-04-NBH-1** Site Name: **Kapala-1** Start Date: 2016/1/27 End Date: 2016/2/3

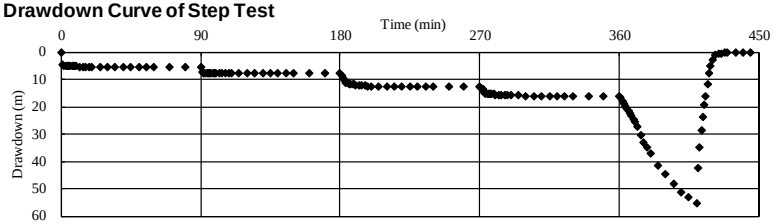
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Pallisa** | UTM Zone: | **36N** | Drillied Depth: | **79.93** m |
| County: | **Agule** | Easting (X): | **566839** m | Static Water Level: | **7.05** m |
| Subcounty: | **Gogonyo** | Northing(Y): | **137935** m | Safe Yield: | **8.0** m3/hr |
| Parish: | **Kapala** | Altitude: | **1056** m | Dynamic Water Level: | **23.55** m |



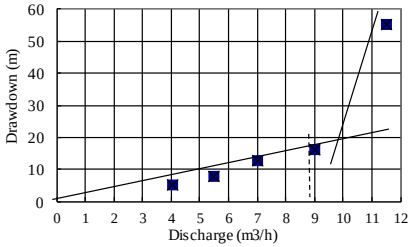

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kapala-1 (P-04-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

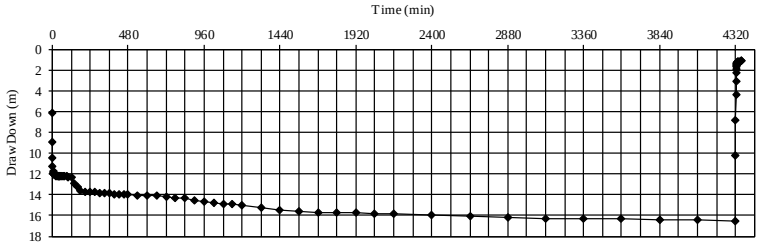



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 4.05 | 5.4 |
| 2 | 5.49 | 7.81 |
| 3 | 7 | 12.88 |
| 4 | 9 | 16.25 |
| 5 | 11.5 | 55.12 |

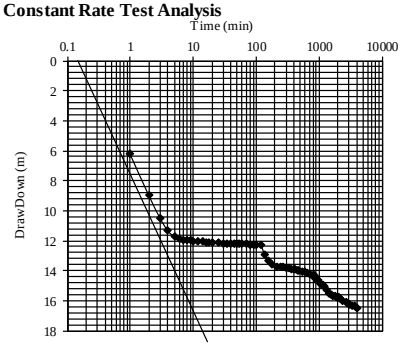
Critical Yield 10.0 $m^3/h$

Safe Yield 8.00 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 8.0 $m^3/h$

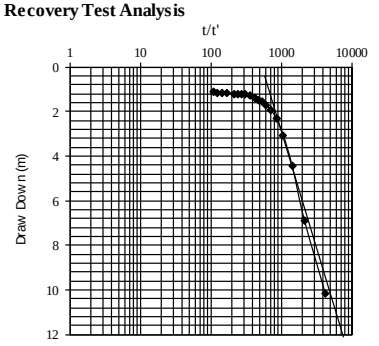
Δs 8.0 m

t0 0.15 min

Transmissivity = 0.18 $m^2/h$

Storage Coefficient = 0.10

### Recovery Test Analysis




Q: 8.0 $m^3/h$

Δs 10.8 m

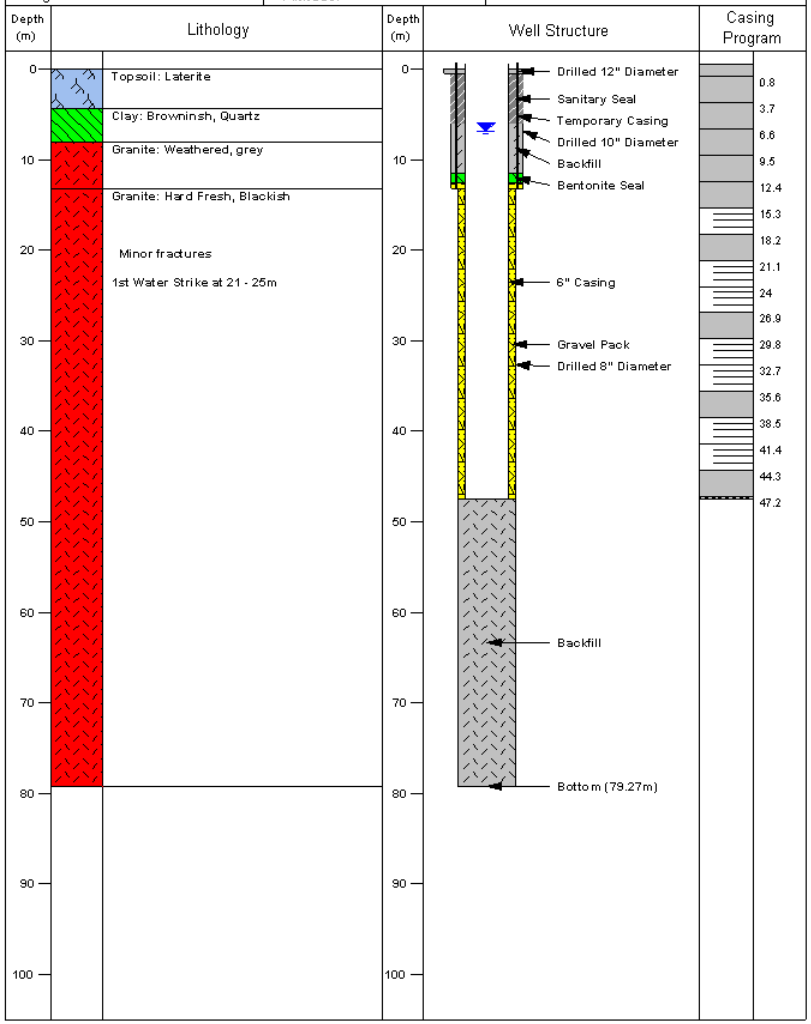
Transmissivity = 0.14 $m^2/h$

*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-04-NBH-2** Site Name: **Kapala-2** Start Date: 2016/2/4 End Date: 2016/2/9

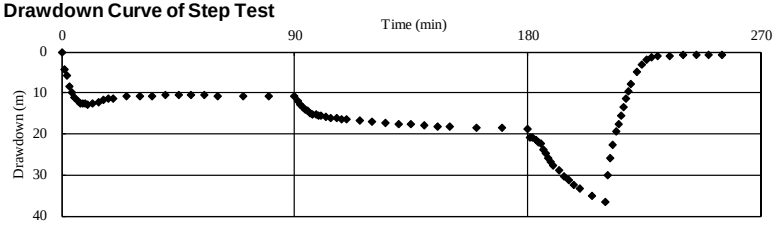
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Pallisa** | UTM Zone: | **36N** | Drillied Depth: | **79.27** m |
| County: | **Agule** | Easting (X): | **566703** m | Static Water Level: | **6.85** m |
| Subcounty: | **Gogonyo** | Northing(Y): | **137901** m | Safe Yield: | **2.8** m3/hr |
| Parish: | **Kapala** | Altitude: | **1052** m | Dynamic Water Level: | **19.90** m |
| Village: | **Okwii** | | | | |



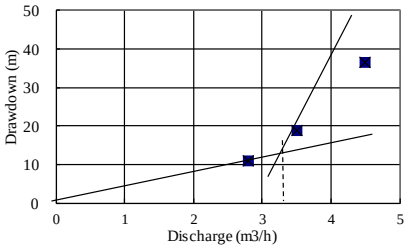

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Kapala-2 (P-04-NBH-2) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

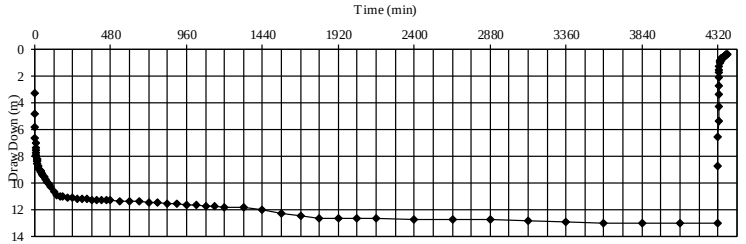



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 2.6 | 12.26 |
| 2 | 3.5 | 26.5 |
| 3 | 4.5 | 62.37 |
| 4 | | |
| 5 | | |

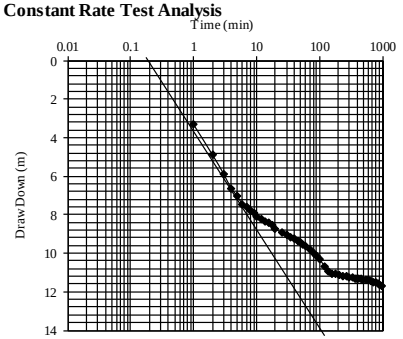
Critical Yield 3.3 $m^3/h$

Safe Yield 2.64 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 2.8 $m^3/h$

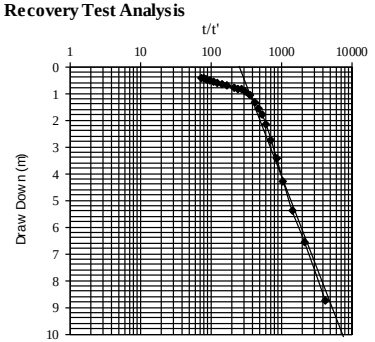
Δs 4.8 m

t0 0.15 min

Transmissivity = 0.11 $m^2/h$

Storage Coefficient = 0.06

### Recovery Test Analysis



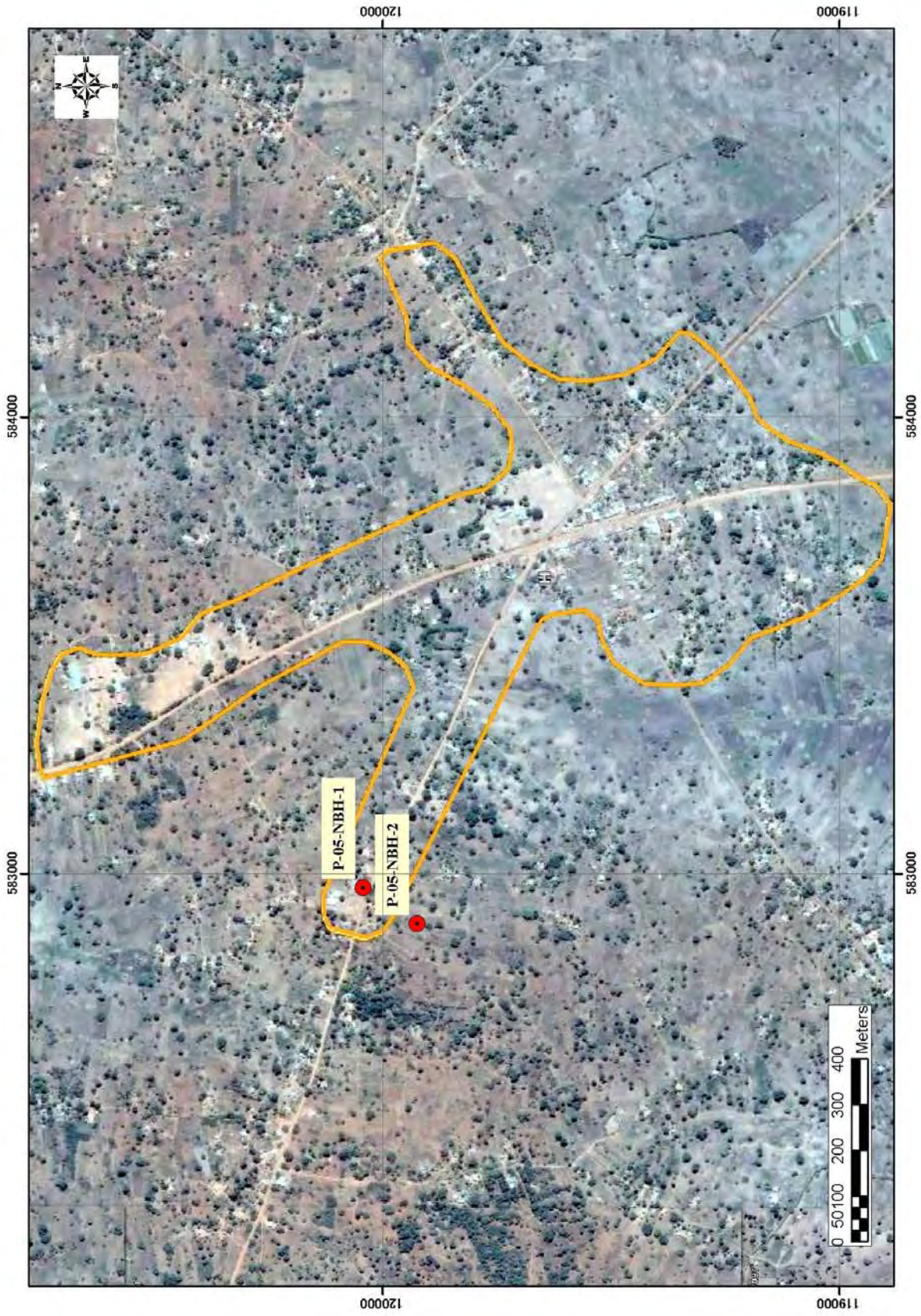

Q: 2.8 $m^3/h$

Δs 7.3 m

Transmissivity = 0.07 $m^2/h$

(7) Buseta RGC

Distribution of Drilling Sites

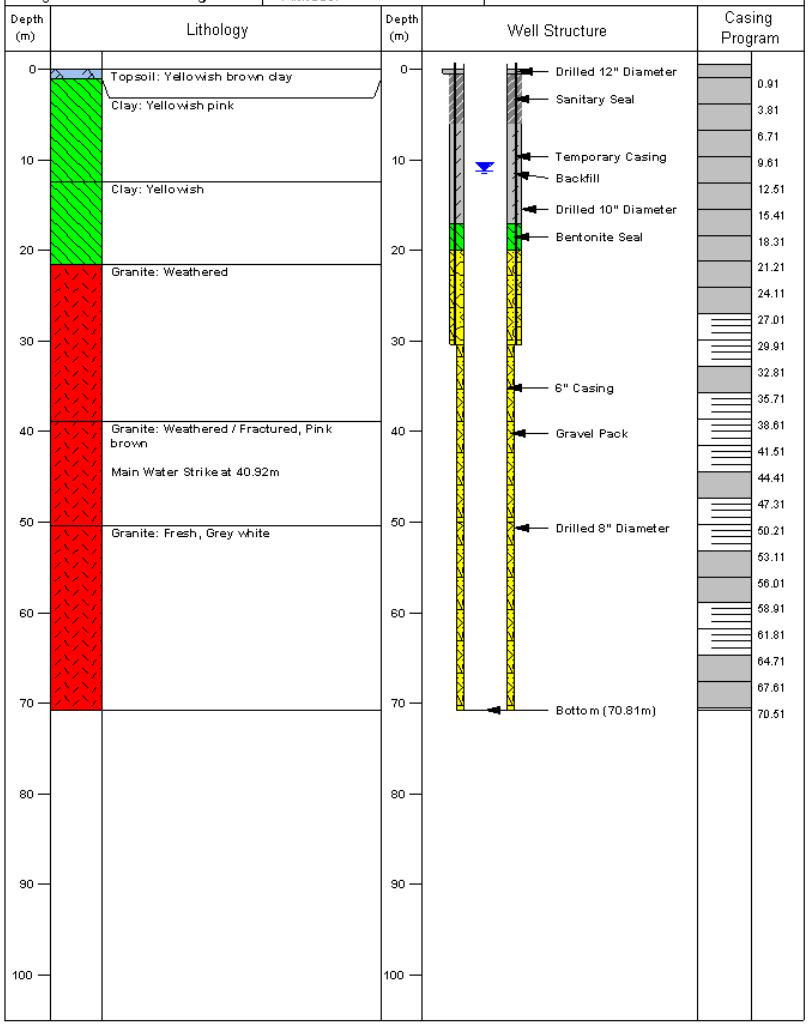


*The Preparatory Survey on the Project for Rural Water Supply Phase III in Lake Kyoga Basin, Eastern Uganda in the Republic of Uganda*

## Borehole Drilling Result

Site No.: **P-05-NBH-1** Site Name: **Buseta-1** Start Date: 2016/2/9 End Date: 2016/2/15

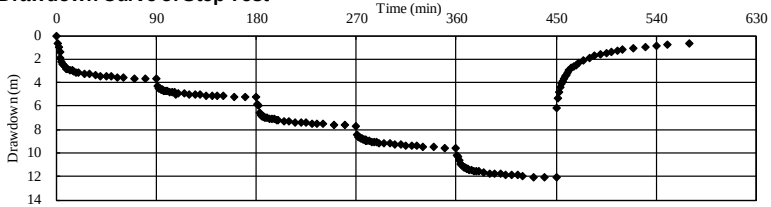
| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **70.81** m |
| County: | **Kibuku** | Easting (X): | **582972** m | Static Water Level: | **11.20** m |
| Subcounty: | **Buseta** | Northing(Y): | **120041** m | Safe Yield: | **22.7** m3/hr |
| Parish: | **Buseta** | Altitude: | **1076** m | Dynamic Water Level: | **19.92** m |
| Village: | **Buseta Triangle** | | | | |



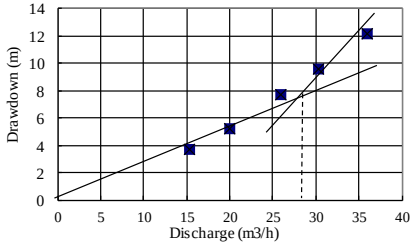

*OYO International Corporation in association with TEC International Co., Ltd.*

## Pumping Test Analysis for Buseta-1 (P-05-NBH-1) Borehole

### Drawdown Curve of Step Test




### Step Test Analysis

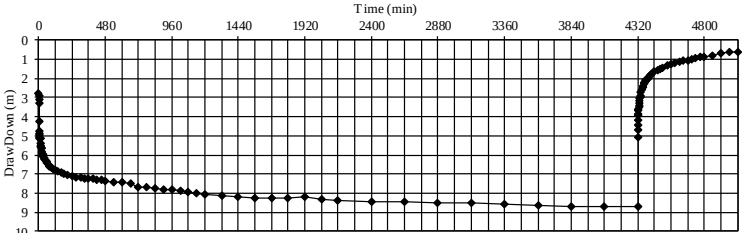



| Step | Q(m3/hr) | sw(m) |
|---|---|---|
| 1 | 15.3 | 3.7 |
| 2 | 20 | 5.26 |
| 3 | 25.9 | 7.68 |
| 4 | 30.3 | 9.59 |
| 5 | 36 | 12.12 |

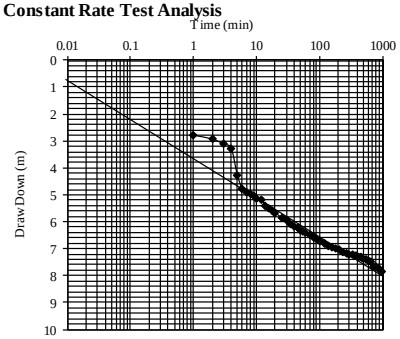
Critical Yield 28.4 $m^3/h$

Safe Yield 22.7 $m^3/h$

### Drawdown Curve of Constant Rate & Recovery Test




### Constant Rate Test Analysis




Q: 23.4 $m^3/h$

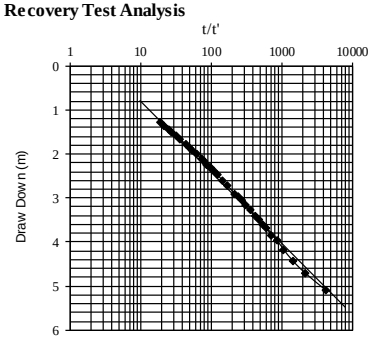
Δs 1.4 m

t0 0.0015 min

Transmissivity = 3.06 $m^2/h$

Storage Coefficient = 0.02

### Recovery Test Analysis




Q: 23.4 $m^3/h$

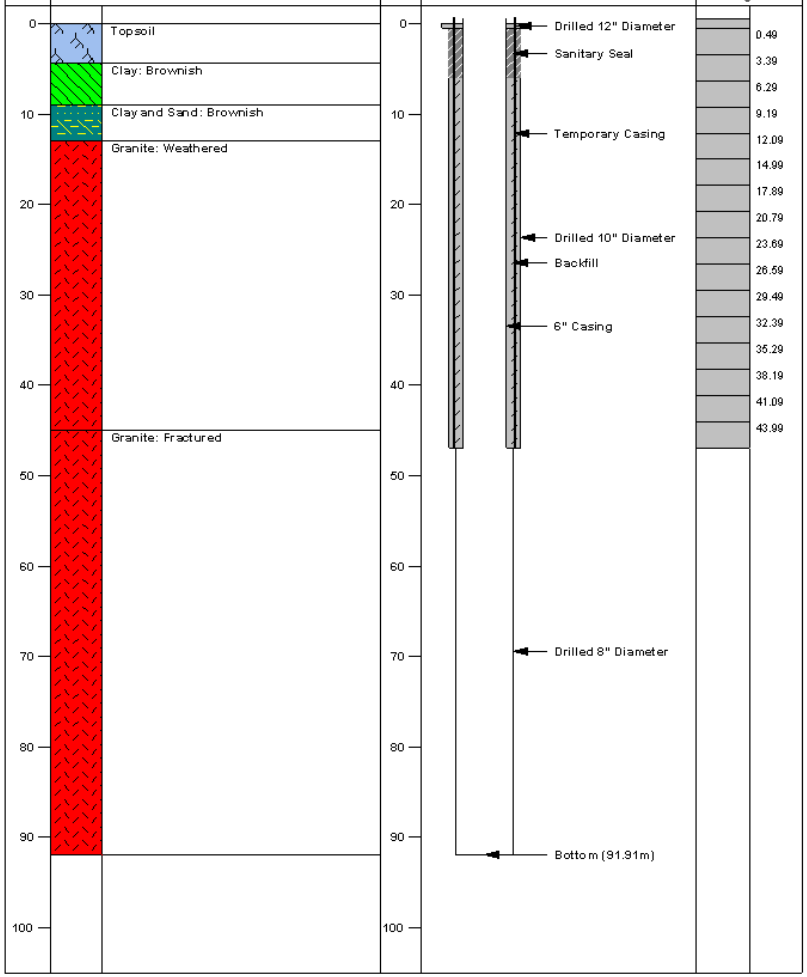
Δs 1.7 m

Transmissivity = 2.57 $m^2/h$

# Borehole Drilling Result

Site No.: **P-05-NBH-2** Site Name: **Buseta-2** Start Date: 2016/2/11 End Date: 2016/2/16

| | | Coordinate (Datum: Arc60) | | Charactoristics of Borehole | |
|---|---|---|---|---|---|
| District: | **Kibuku** | UTM Zone: | **36N** | Drillied Depth: | **91.91** m |
| County: | **Kibuku** | Easting (X): | **582892** m | Static Water Level: | m |
| Subcounty: | **Buseta** | Northing(Y): | **119923** m | Safe Yield: | m3/hr |
| Parish: | **Buseta** | Altitude: | **1077** m | Dynamic Water Level: | m |
| Village: | **Buseta I** | | | | |




*OYO International Corporation in association with TEC International Co., Ltd.*

# 資料-11

# 参考資料

# （6）地盤調査結果

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH1** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **13/04/2016** |
| **Location** | Nambaale | | | | | | **Testing Date** | **13/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 556008 | **Y** | 86260 | **Z** | 1112 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH1 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | Water |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 10.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | rainfall overnight, hence soaked ground, cloudy weather, hot | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm sandy silty clay with organic matter |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm sandy gravelly clay |
| 1.0-1.5 | 12 | 14 | 13 | 27 | 353.7 | 176.85 | 909.009 | 303.003 | Brown firm to stiff sandy gravelly silty clay |
| 2.0-2.5 | 7 | 6 | 5 | 11 | 144.1 | 72.05 | 370.337 | 123.4456667 | Brown firm gravelly lateritic sandy clays |
| 3.0-3.5 | 3 | 3 | 3 | 6 | 78.6 | 39.3 | 202.002 | 67.334 | Brown firm gravelly sandy clay |
| 4.0-4.5 | 3 | 2 | 2 | 4 | 52.4 | 26.2 | 134.668 | 44.88933333 | Reddish brown soft sandy silty clay |
| 5.0-5.5 | 5 | 6 | 7 | 13 | 170.3 | 85.15 | 437.671 | 145.8903333 | Reddish brown firm fine sandy silty clay |
| 6.0-6.5 | 6 | 8 | 9 | 17 | 222.7 | 111.35 | 572.339 | 190.7796667 | Pink red brown stiff clay sandy silts |
| 7.0-7.5 | 5 | 6 | 7 | 13 | 170.3 | 85.15 | 437.671 | 145.8903333 | Pink red brown stiff fine sandy silty clay |
| 8.0-8.5 | 10 | 13 | 14 | 27 | 353.7 | 176.85 | 909.009 | 303.003 | Pink brown stiff sandy silty ckay |
| 9.0-9.5 | 11 | 14 | 15 | 29 | 379.9 | 189.95 | 976.343 | 325.4476667 | Yellow pink brown very stiff fine sandy silty clay |
| 10.0-10.5 | 12 | 15 | 17 | 32 | 419.2 | 209.6 | 1077.344 | 359.1146667 | Yellow pink brown very stiff to fine sandy silty clay |

| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

A11-6-1

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH4** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **15/04/2016** |
| **Location** | Lambaala (Elevated tank) | | | | | | **Testing Date** | **15/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 525815 | **Y** | 79694 | **Z** | 1080 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH4 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 3.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Hot cloudy weather/rainfall | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Dark brown organic dense clay sandy with grass on top |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown dense clay sandy lateritic gravel |
| 1.0-1.5 | 17 | 20 | 24 | 44 | 576.4 | 288.2 | 1481.348 | 493.7826667 | Yellow brown very dense sandy clay lateritic gravel with quartz |
| 2.0-2.5 | 19 | 22 | 26 | 48 | 628.8 | 314.4 | 1616.016 | 538.672 | Yellow brown white very dense lateritic gravel with quartz |
| 3.0-3.5 | 16 | 23 | 27 | 50 | 655 | 327.5 | 1683.35 | 561.1166667 | Yellow brown very hard lateritic gravelly weathered material with quartz |

| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

資料-11(6)

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH5** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **15/04/2016** |
| **Location** | Lambaala (Solar equipment) | | | | | | **Testing Date** | **15/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 525839 | **Y** | 79681 | **Z** | 1079 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH5 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | 5.0 |
| **Overall Boring Depth** | 7.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Hot cloudy weather/rainfall | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Dark brown firm fine sandy silty clay |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Reddish brown firm gravelly clay sandy silts |
| 1.0-1.5 | 6 | 5 | 6 | 11 | 144.1 | 72.05 | 370.337 | 123.4456667 | Reddish brown firm gravelly sandy silty clay |
| 2.0-2.5 | 5 | 3 | 3 | 6 | 78.6 | 39.3 | 202.002 | 67.334 | Yellow brown red firm gravelly sandy silty clay |
| 3.0-3.5 | 5 | 6 | 7 | 13 | 170.3 | 85.15 | 437.671 | 145.8903333 | Brown yellow stiff gravelly sandy silty clay |
| 4.0-4.5 | 8 | 12 | 14 | 26 | 340.6 | 170.3 | 875.342 | 291.7806667 | Pink yellow brown stiff sandy silty clay |
| 5.0-5.5 | 10 | 15 | 16 | 31 | 406.1 | 203.05 | 1043.677 | 347.8923333 | Brown yellow moist stiff clay sand silts |
| 6.0-6.5 | 10 | 15 | 17 | 32 | 419.2 | 209.6 | 1077.344 | 359.1146667 | Brown pink yellow moist very stiff clay sand silts |
| 7.0-7.5 | 11 | 15 | 16 | 31 | 406.1 | 203.05 | 1043.677 | 347.8923333 | Yellow grey pink moist very stiff clay silty sand with mica |

| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH2** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **14/04/2016** |
| **Location** | Naigobya | | | | | | **Testing Date** | **14/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 540088 | **Y** | 90336 | **Z** | 1093 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH2 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 5.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | hot and cloudy weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Dark brown organic fine sandy silty clay |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown stiff sandy silty clay |
| 1.0-1.5 | 4 | 5 | 9 | 14 | 183.4 | 91.7 | 471.338 | 157.1126667 | Pink brown gravelly stiff sandy silty clay |
| 2.0-2.5 | 3 | 2 | 3 | 5 | 65.5 | 32.75 | 168.335 | 56.11166667 | Yellow brown soft gravelly sandy silty clays |
| 3.0-3.5 | 10 | 12 | 14 | 26 | 340.6 | 170.3 | 875.342 | 291.7806667 | Yellow brown stiff gravelly sandy silty clays |
| 4.0-4.5 | 12 | 15 | 15 | 30 | 393 | 196.5 | 1010.01 | 336.67 | Yellow stiff-fine gravelly clay sand with quartz |
| 5.0-5.5 | 15 | 22 | 25 | 47 | 615.7 | 307.85 | 1582.349 | 527.4496667 | Very hard stratum - yellow clay gravelly sand to weathered rock material |

| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

A11-6-2

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH3** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **14/04/2016** |
| **Location** | Kyanvuma | | | | | | **Testing Date** | **14/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 529854 | **Y** | 83567 | **Z** | 1118 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH3 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 3.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Hot cloudy weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N" (300mm) | N"' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Dark brown stiff sandy clay gravel |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown yellow stiff sandy silty clay lateritic gravel |
| 1.0-1.5 | 12 | 15 | 17 | 32 | 419.2 | 209.6 | 1077.344 | 359.1146667 | Yellow brown very stiff sandy clay lateritic gravel |
| 2.0-2.5 | 15 | 20 | 24 | 44 | 576.4 | 288.2 | 1481.348 | 493.7826667 | Yellow brown crushed very dense clay sandy lateritic gravel |
| 3.0-3.5 | 20 | 20 | 28 | 48 | 628.8 | 314.4 | 1616.016 | 538.672 | Yellow brown crushed very hard quartz-lateritic gravel material |

| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH6** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **16/04/2016** |
| **Location** | Nondwe | | | | | | **Testing Date** | **16/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 565968 | **Y** | 51926 | **Z** | 1114 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH6 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 1.0 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Hot weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N" (300mm) | N"' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Brown grey dense clay silty sand with organic material |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Yellow brown dense clay silty sand |
| 1.0-1.5 | 30 | 50 | 50 | 100 | 1310 | 655 | 3366.7 | 1122.233333 | Whitish grey very hard rock-granite |

| | | | |
|---|---|---|---|
| **Comments** | No sample was extracted; For N" & N"', the value of N is assumed >50. Only 1m is drilled. | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

A11-6-3

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | **Sample Source** | **BH14** | |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | **Sampling Date** | **26/04/2016** | |
| **Location** | Kasassira | | | | | **Testing Date** | **26/04/2016** | |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 578416 | **Y** 120807 | **Z** | 1079 | |
| **Soil Description** | | | | | | | | |
| **Borehole/Pit No.** | BH14 | | | | | **Drilling method** | Rotary drilling using augers | |
| **Reduced Ground Level (m)** | | | | | | **Drilling fluid** | Water | |
| **borehole diameter** | 6" | | | | | **Ground Water Level** | Not reached | |
| **Overall Boring Depth** | 7.5 | | | | | **Test drive Interval** | 1.0 | |
| **Weather and Environmental Conditions** | Sunny and cloudy | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Brown red loamy sandy clayish material with organic matter |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown red gravelly lateritic clay |
| 1.0-1.5 | 12 | 15 | 12 | 27 | 353.7 | 176.85 | 909.009 | 303.003 | Brown red blackish lateritic gravelly clay sand |
| 2.0-2.5 | 2 | 2 | 3 | 5 | 65.5 | 32.75 | 168.335 | 56.11166667 | Very hard Brown red clay with fine coarse quartz grains with silts sandy clays |
| 3.0-3.5 | 4 | 6 | 7 | 13 | 170.3 | 85.15 | 437.671 | 145.8903333 | Yellowish brown reddish sandy clay with yellowish quartz grains and mica particles |
| 4.0-4.5 | 8 | 12 | 14 | 26 | 340.6 | 170.3 | 875.342 | 291.7806667 | Very tough-hard greyish brown yellowish silts sandy clay with mica |
| 5.0-5.5 | 9 | 13 | 15 | 28 | 366.8 | 183.4 | 942.676 | 314.2253333 | Pink brown grey silts sandy clay with mica |
| 6.0-6.5 | 7 | 12 | 17 | 29 | 379.9 | 189.95 | 976.343 | 325.4476667 | Brown reddish greyish clayish sandy silts with mica & quartz-yellowish |
| 7.0-7.5 | 7 | 14 | 18 | 32 | 419.2 | 209.6 | 1077.344 | 359.1146667 | Pink brown grey silts sandy clay to weathered rock stratum |

**Comments**

**For laboratory technician 1** — **For the Supervisor**

**For laboratory technician 2**

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | **Sample Source** | **BH8** | |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | **Sampling Date** | **17/04/2016** | |
| **Location** | Kameke | | | | | **Testing Date** | **17/04/2016** | |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 586053 | **Y** 140130 | **Z** | | |
| **Soil Description** | | | | | | | | |
| **Borehole/Pit No.** | BH8 | | | | | **Drilling method** | Rotary drilling using augers | |
| **Reduced Ground Level (m)** | | | | | | **Drilling fluid** | NIL | |
| **borehole diameter** | 6" | | | | | **Ground Water Level** | Not reached | |
| **Overall Boring Depth** | 5.5 | | | | | **Test drive Interval** | 1.0 | |
| **Weather and Environmental Conditions** | Hot & cloudy weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm sandy silty clay with grass on top |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Reddish brown firm sandy silty clay |
| 1.0-1.5 | 6 | 10 | 15 | 25 | 327.5 | 163.75 | 841.675 | 280.5583333 | Brown yellow stiff clay silty sand |
| 2.0-2.5 | 7 | 12 | 13 | 25 | 327.5 | 163.75 | 841.675 | 280.5583333 | Brown yellow stiff clay lateritic gravelly sand |
| 3.0-3.5 | 8 | 10 | 12 | 22 | 288.2 | 144.1 | 740.674 | 246.8913333 | Yellow stiff clay gravelly sand |
| 4.0-4.5 | 15 | 28 | 32 | 60 | 786 | 393 | 2020.02 | 673.34 | Yellow very stiff sand gravel lateritic material |
| 5.0-5.5 | 20 | 35 | 50 | 85 | 1113.5 | 556.75 | 2861.695 | 953.8983333 | Whitish yellow very hard sandy lateritic gravel |

**Comments**

**For laboratory technician 1** — **For the Supervisor**

**For laboratory technician 2**

A11-6-4

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH7** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **16/04/2016** |
| **Location** | Kapala | | | | | | **Testing Date** | **16/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 568245 | **Y** | 138934 | **Z** | |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH7 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 3.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Hot & cloudy weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Dark brown organic firm silty sandy clay |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm sandy silty clay |
| 1.0-1.5 | 5 | 5 | 6 | 11 | 144.1 | 72.05 | 370.337 | 123.4456667 | Brown firm sandy silty clay |
| 2.0-2.5 | 10 | 22 | 30 | 52 | 681.2 | 340.6 | 1750.684 | 583.5613333 | Reddish brown very stiff clay sand silts |
| 3.0-3.5 | 32 | 40 | 50 | 90 | 1179 | 589.5 | 3030.03 | 1010.01 | Whitish grey very hard weathered to granite rock (No sample is extracted) |

| | |
|---|---|
| **Comments** | No sample is extracted for the SPT at 3.0 -3.5m |
| | |
| **For laboratory technician 1** | |
| | **For the Supervisor** |
| **For laboratory technician 2** | |

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH9** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **17/04/2016** |
| **Location** | Buseta | | | | | | **Testing Date** | **17/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 583377 | **Y** | 120507 | **Z** | 1071 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH9 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 3.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Hot & cloudy weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm sandy silty clay with grass on top |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Reddish brown firm sandy silty clay |
| 1.0-1.5 | 8 | 10 | 22 | 32 | 419.2 | 209.6 | 1077.344 | 359.1146667 | Pinkish brown very stiff clay silty sand |
| 2.0-2.5 | 20 | 24 | 26 | 50 | 655 | 327.5 | 1683.35 | 561.1166667 | Pinkish brown yellow very stiff clay sandy gravel |
| 3.0-3.5 | 25 | 38 | 50 | 88 | 1152.8 | 576.4 | 2962.696 | 987.5653333 | Very hard clay sandy lateritic gravel & weathered rock material |

| | |
|---|---|
| **Comments** | |
| | |
| **For laboratory technician 1** | |
| | **For the Supervisor** |
| **For laboratory technician 2** | |

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH13** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **20/04/2016** |
| **Location** | Kidetok | | | | | | **Testing Date** | **20/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 546576 | **Y** | 163963 | **Z** | 1084 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH13 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 5.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Sunny hot & cloudy weather | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N" (300mm) | N"' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Dark grey organic firm fine sandy silty clay |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm fine sandy silty clay |
| 1.0-1.5 | 6 | 5 | 4 | 9 | 117.9 | 58.95 | 303.003 | 101.001 | Reddish brown firm fine sandy silty clay |
| 2.0-2.5 | 3 | 5 | 5 | 10 | 131 | 65.5 | 336.67 | 112.2233333 | Yellow brown firm gravelly sandy silty clay |
| 3.0-3.5 | 12 | 18 | 22 | 40 | 524 | 262 | 1346.68 | 448.8933333 | Yellow stiff gravelly sandy silty clay |
| 4.0-4.5 | 17 | 23 | 25 | 48 | 628.8 | 314.4 | 1616.016 | 538.672 | Yellow very stiff gravelly clay sand |
| 5.0-5.5 | 30 | 38 | 50 | 88 | 1152.8 | 576.4 | 2962.696 | 987.5653333 | Very hard greyish white granite-weathered rock material (No sample is extracted) |

| | |
|---|---|
| **Comments** | |
| | |
| **For laboratory technician 1** | |
| | **For the Supervisor** |
| **For laboratory technician 2** | |

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH11** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **19/04/2016** |
| **Location** | Tubur | | | | | | **Testing Date** | **19/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 558056 | **Y** | 216116 | **Z** | 1116 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH11 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 6.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Cloudy | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N" (300mm) | N"' (450mm) | | | | | | |
| 0.0-0.3 | | | | 0 | 0 | 0 | 0 | 0 | Greyish dark brown firm sandy silty gravelly clay |
| 0.3-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm sandy gravelly silty clay |
| 1.0-1.5 | 13 | 23 | 25 | 48 | 628.8 | 314.4 | 1616.016 | 538.672 | Reddish brown very stiff sandy clay lateritic gravel |
| 2.0-2.5 | 6 | 8 | 11 | 19 | 248.9 | 124.45 | 639.673 | 213.2243333 | Reddish yellow brown stiff sandy gravelly clay |
| 3.0-3.5 | 7 | 10 | 12 | 22 | 288.2 | 144.1 | 740.674 | 246.8913333 | Grey brown yellow stiff sandy silty clay with mica |
| 4.0-4.5 | 6 | 10 | 16 | 26 | 340.6 | 170.3 | 875.342 | 291.7806667 | Yellow grey very stiff clay sandy silts with mica & weathered rock material |
| 5.0-5.5 | 16 | 22 | 25 | 47 | 615.7 | 307.85 | 1582.349 | 527.4496667 | Yellow grey clay very dense silts & weathered rock material |
| 6.0-6.5 | 20 | 32 | 50 | 82 | 1074.2 | 537.1 | 2760.694 | 920.2313333 | Yellow grey clay sand silts & very hard weathered rock material |

| | |
|---|---|
| **Comments** | |
| | |
| **For laboratory technician 1** | |
| | **For the Supervisor** |
| **For laboratory technician 2** | |

A11-6-9

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH10** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **18/04/2016** |
| **Location** | ACUNA | | | | | | **Testing Date** | **18/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 553049 | **Y** | 221677 | **Z** | 1091 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH10 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 8.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Rainfall | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.4 | | | | 0 | 0 | 0 | 0 | 0 | Greyish dark brown firm sandy silty clay |
| 0.4-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm clay silty sandy gravel |
| 1.0-1.5 | 4 | 5 | 6 | 11 | 144.1 | 72.05 | 370.337 | 123.4456667 | Reddish brown firm clay sandy gravel |
| 2.0-2.5 | 8 | 16 | 17 | 33 | 432.3 | 216.15 | 1111.011 | 370.337 | Yellow brown stiff clay sandy lateritic gravel |
| 3.0-3.5 | 6 | 9 | 11 | 20 | 262 | 131 | 673.34 | 224.4466667 | Brown yellow stiff fine sandy silty clay |
| 4.0-4.5 | 7 | 10 | 11 | 21 | 275.1 | 137.55 | 707.007 | 235.669 | Brown yellow stiff sandy silty clay with gravel |
| 5.0-5.5 | 5 | 7 | 10 | 17 | 222.7 | 111.35 | 572.339 | 190.7796667 | Brown yellow firm sandy silty clay |
| 6.0-6.5 | 12 | 15 | 16 | 31 | 406.1 | 203.05 | 1043.677 | 347.8923333 | Grey yellow stiff sandy silty clay |
| 7.0-7.5 | 13 | 16 | 17 | 33 | 432.3 | 216.15 | 1111.011 | 370.337 | Yellow very stiff sandy clay gravel (moist sample) |
| 8.0-8.5 | 15 | 17 | 19 | 36 | 471.6 | 235.8 | 1212.012 | 404.004 | Greyish yellow very stiff gravelly clay sand |

| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

## STANDARD PENETRATION TEST - BS 1377: PART 9: 1990

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Client** | **JICA** | | | | | | **Sample Source** | **BH12** |
| **Project** | **Geotechnical investigations for rural water supply phase II in the Lake Kyoga basin** | | | | | | **Sampling Date** | **20/04/2016** |
| **Location** | Atiriri Health Centre | | | | | | **Testing Date** | **20/04/2016** |
| **GPS Co-ordinates** | **Datum** | ARC 1960 | **X** | 551014 | **Y** | 210528 | **Z** | 1060 |
| **Soil Description** | | | | | | | | |
| | | | | | | | | |
| **Borehole/Pit No.** | BH12 | | | | | | **Drilling method** | Rotary drilling using augers |
| **Reduced Ground Level (m)** | | | | | | | **Drilling fluid** | NIL |
| **borehole diameter** | 6" | | | | | | **Ground Water Level** | Not reached |
| **Overall Boring Depth** | 3.5 | | | | | | **Test drive Interval** | 1.0 |
| **Weather and Environmental Conditions** | Cloudy | | | | | | | |

| depth of penetration (m) | Field N values over 450mm | | | Design N value | Unconfined Compressive Strength qu (kPa) | Undrained Cohesion Cu (kPa) | Ultimate Bearing Capacity qall (kPa) | Allowable Bearing Capacity qall) (kPa) | Predominant fraction of the soil |
|---|---|---|---|---|---|---|---|---|---|
| | N' (150mm) | N'' (300mm) | N''' (450mm) | | | | | | |
| 0.0-0.5 | | | | 0 | 0 | 0 | 0 | 0 | Greyish brown firm sandy silty clay with grass on top |
| 0.5-1.0 | | | | 0 | 0 | 0 | 0 | 0 | Brown firm gravelly sandy silty clay |
| 1.0-1.5 | 6 | 21 | 25 | 46 | 602.6 | 301.3 | 1548.682 | 516.2273333 | Brown very stiff clay sandy lateritic gravel |
| 2.0-2.5 | 20 | 24 | 31 | 55 | 720.5 | 360.25 | 1851.685 | 617.2283333 | Brown very stiff clay sandy lateritic gravel |
| 3.0-3.5 | 25 | 35 | 50 | 85 | 1113.5 | 556.75 | 2861.695 | 953.8983333 | Very hard yellow brown clay sandy lateritic gravel & weathered rock material |

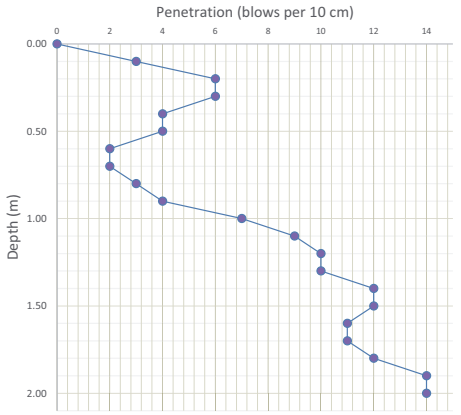
| | | | |
|---|---|---|---|
| **Comments** | | | |
| | | | |
| **For laboratory technician 1** | | | |
| | | **For the Supervisor** | |
| **For laboratory technician 2** | | | |

# Manual DPL Results Nambale RGC EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP1 | | |
| Elevation: | 1093 | UTM X | 556190 | | |
| UTM Datum | (ARC 1960) | UTM Y | 85841 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 6.00 |
| 0.30 | 6.00 |
| 0.40 | 4.00 |
| 0.50 | 4.00 |
| 0.60 | 2.00 |
| 0.70 | 2.00 |
| 0.80 | 3.00 |
| 0.90 | 4.00 |
| 1.00 | 7.00 |
| 1.10 | 9.00 |
| 1.20 | 10.00 |
| 1.30 | 10.00 |
| 1.40 | 12.00 |
| 1.50 | 12.00 |
| 1.60 | 11.00 |
| 1.70 | 11.00 |
| 1.80 | 12.00 |
| 1.90 | 14.00 |
| 2.00 | 14.00 |

## Penetration vs Depth



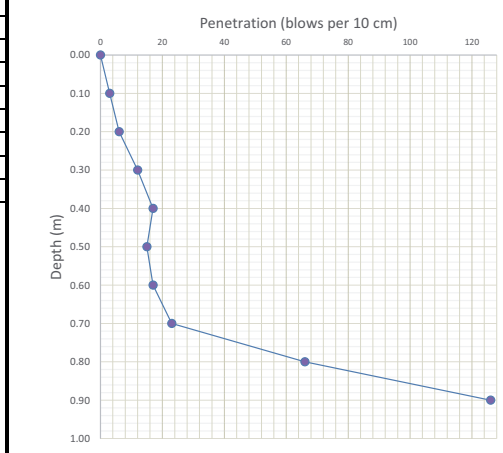


# Manual DPL Results Nambale RGC EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP2 | | |
| Elevation: | 1113 | UTM X | 555450 | | |
| UTM Datum | (ARC 1960) | UTM Y | 86189 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 6.00 |
| 0.30 | 12.00 |
| 0.40 | 17.00 |
| 0.50 | 15.00 |
| 0.60 | 17.00 |
| 0.70 | 23.00 |
| 0.80 | 66.00 |
| 0.90 | 126.00 |

## Penetration vs Depth

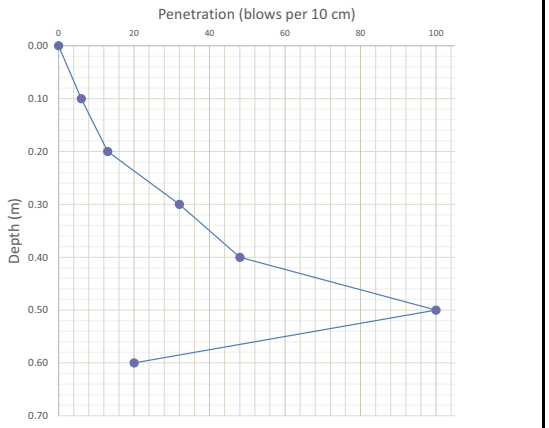



# Manual DPL Results Nambale RGC EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | 0 | District: | Iganga | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | EP3 | | |
| Elevation: | 1080 | UTM X | 555926 | | |
| UTM Datum | (ARC 1960) | UTM Y | 86836 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 13.00 |
| 0.30 | 32.00 |
| 0.40 | 48.00 |
| 0.50 | 100.00 |
| 0.60 | 20.00 |

## Penetration vs Depth



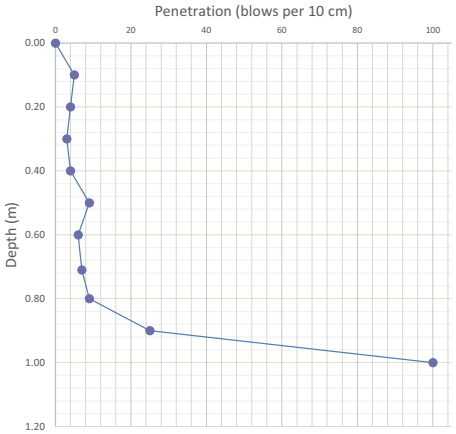


# Manual DPL Results Nambale RGC EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | 0 | District: | Iganga | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | EP4 | | |
| Elevation: | 1108 | UTM X | 556341 | | |
| UTM Datum | (ARC 1960) | UTM Y | 86536 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 5.00 |
| 0.20 | 4.00 |
| 0.30 | 3.00 |
| 0.40 | 4.00 |
| 0.50 | 9.00 |
| 0.60 | 6.00 |
| 0.71 | 7.00 |
| 0.80 | 9.00 |
| 0.90 | 25.00 |
| 1.00 | 100.00 |

## Penetration vs Depth

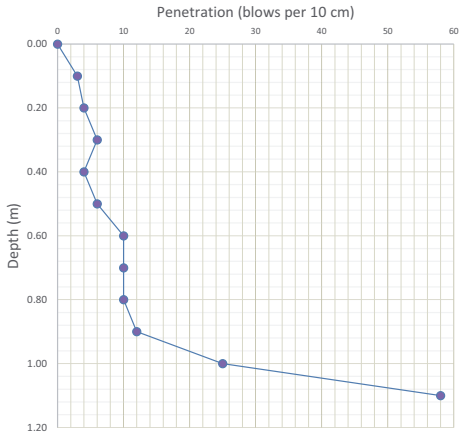



## Manual DPL Results Nambale RGC EP5

| | | | | | |
|---|---|---|---|---|---|
| Client: | 0 | District: | Iganga | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | EP5 | | |
| Elevation: | 1101 | UTM X | 556645 | | |
| UTM Datum | (ARC 1960) | UTM Y | 86082 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 4.00 |
| 0.30 | 6.00 |
| 0.40 | 4.00 |
| 0.50 | 6.00 |
| 0.60 | 10.00 |
| 0.70 | 10.00 |
| 0.80 | 10.00 |
| 0.90 | 12.00 |
| 1.00 | 25.00 |
| 1.10 | 58.00 |

### Penetration vs Depth



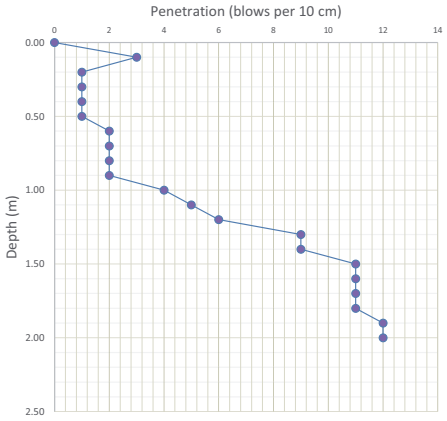


## Manual DPL Results Lambaala EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP1 | | |
| Elevation: | 1075 | UTM X | 525941 | | |
| UTM Datum | (ARC 1960) | UTM Y | 80100 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3 |
| 0.20 | 1 |
| 0.30 | 1 |
| 0.40 | 1 |
| 0.50 | 1 |
| 0.60 | 2 |
| 0.70 | 2 |
| 0.80 | 2 |
| 0.90 | 2 |
| 1.00 | 4 |
| 1.10 | 5 |
| 1.20 | 6 |
| 1.30 | 9 |
| 1.40 | 9 |
| 1.50 | 11 |
| 1.60 | 11 |
| 1.70 | 11 |
| 1.80 | 11 |
| 1.90 | 12 |
| 2.00 | 12 |

### Penetration vs Depth

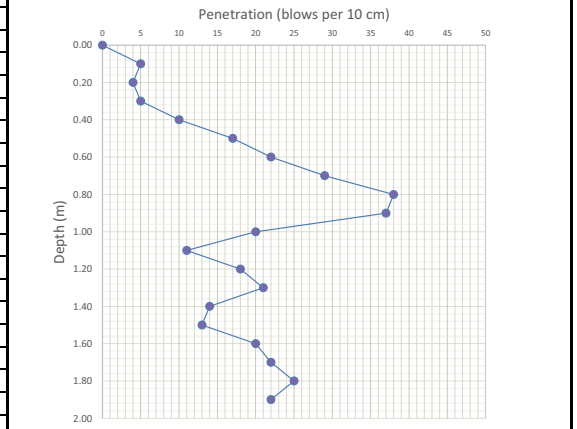



# Manual DPL Results Lambaala EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP2 | | |
| Elevation: | 1075 | UTM X | 526036 | | |
| UTM Datum | (ARC 1960) | UTM Y | 79332 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 5 |
| 0.20 | 4 |
| 0.30 | 5 |
| 0.40 | 10 |
| 0.50 | 17 |
| 0.60 | 22 |
| 0.70 | 29 |
| 0.80 | 38 |
| 0.90 | 37 |
| 1.00 | 20 |
| 1.10 | 11 |
| 1.20 | 18 |
| 1.30 | 21 |
| 1.40 | 14 |
| 1.50 | 13 |
| 1.60 | 20 |
| 1.70 | 22 |
| 1.80 | 25 |
| 1.90 | 22 |

## Penetration vs Depth



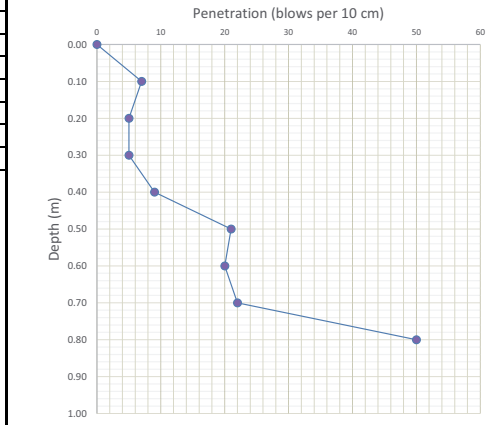


# Manual DPL Results Lambaala EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP3 | | |
| Elevation: | 1078 | UTM X | 525578 | | |
| UTM Datum | (ARC 1960) | UTM Y | 80067 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 7 |
| 0.20 | 5 |
| 0.30 | 5 |
| 0.40 | 9 |
| 0.50 | 21 |
| 0.60 | 20 |
| 0.70 | 22 |
| 0.80 | 50 |

## Penetration vs Depth

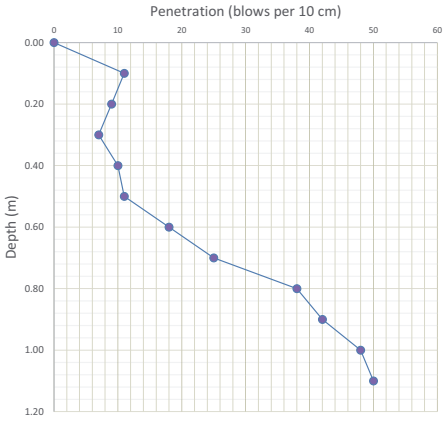



## Manual DPL Results Lambaala EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP4 | | |
| Elevation: | 1074 | UTM X | 525788 | | |
| UTM Datum | (ARC 1960) | UTM Y | 79945 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{11}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 11.00 |
| 0.20 | 9.00 |
| 0.30 | 7.00 |
| 0.40 | 10.00 |
| 0.50 | 11.00 |
| 0.60 | 18.00 |
| 0.70 | 25.00 |
| 0.80 | 38.00 |
| 0.90 | 42.00 |
| 1.00 | 48.00 |
| 1.10 | 50.00 |

### Penetration vs Depth



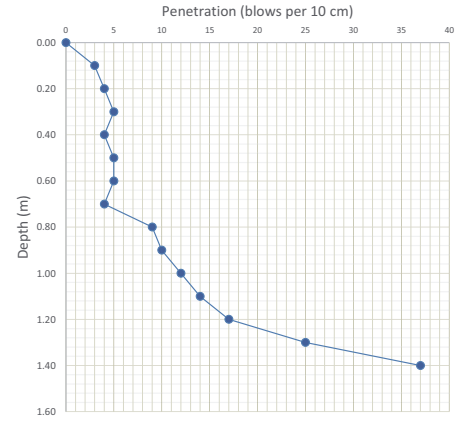


## Manual DPL Results Lambaala EP5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 00/01/1900 | Location: | EP5 | | |
| Elevation: | 1086 | UTM X | 526259 | | |
| UTM Datum | (ARC 1960) | UTM Y | 79905 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | N11 |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 4.00 |
| 0.30 | 5.00 |
| 0.40 | 4.00 |
| 0.50 | 5.00 |
| 0.60 | 5.00 |
| 0.70 | 4.00 |
| 0.80 | 9.00 |
| 0.90 | 10.00 |
| 1.00 | 12.00 |
| 1.10 | 14.00 |
| 1.20 | 17.00 |
| 1.30 | 25.00 |
| 1.40 | 37.00 |

### Penetration vs Depth



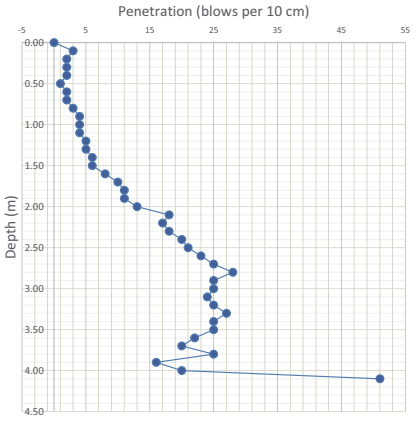

# Manual DPL Results Lambaala 6 (Swamp 1)

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 27/04/2016 | Location: | Swamp 1 | | |
| Elevation: | 1071 | UTM X | 525639 | | |
| UTM Datum | (ARC 1960) | UTM Y | 79988 | | |

Weather & conditions: 0

| Z (m.b.g.l) | N11 |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 2.00 |
| 0.30 | 2.00 |
| 0.40 | 2.00 |
| 0.50 | 1.00 |
| 0.60 | 2.00 |
| 0.70 | 2.00 |
| 0.80 | 3.00 |
| 0.90 | 4.00 |
| 1.00 | 4.00 |
| 1.10 | 4.00 |
| 1.20 | 5.00 |
| 1.30 | 5.00 |
| 1.40 | 6.00 |
| 1.50 | 6.00 |
| 1.60 | 8.00 |
| 1.70 | 10.00 |
| 1.80 | 11.00 |
| 1.90 | 11.00 |
| 2.00 | 13.00 |
| 2.10 | 18.00 |
| 2.20 | 17.00 |
| 2.30 | 18.00 |
| 2.40 | 20.00 |
| 2.50 | 21.00 |
| 2.60 | 23.00 |
| 2.70 | 25.00 |
| 2.80 | 28.00 |
| 2.90 | 25.00 |
| 3.00 | 25.00 |
| 3.10 | 24.00 |
| 3.20 | 25.00 |
| 3.30 | 27.00 |
| 3.40 | 25.00 |
| 3.50 | 25.00 |
| 3.60 | 22.00 |
| 3.70 | 20.00 |
| 3.80 | 25.00 |
| 3.90 | 16.00 |
| 4.00 | 20.00 |
| 4.10 | 51.00 |

## Penetration vs Depth





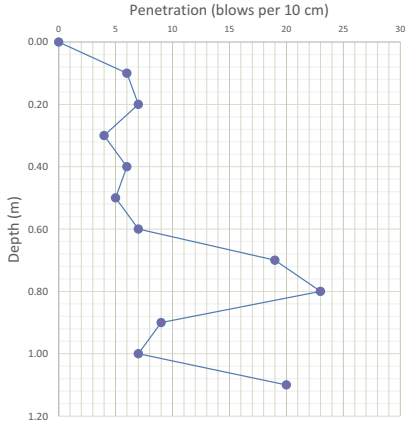
# Manual DPL Results Nambaale RGC EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | EP3 | | |
| Elevation: | 1074 | UTM X | 540326 | | |
| UTM Datum | (ARC 1960) | UTM Y | 92060 | | |

Weather & conditions: 0

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 7.00 |
| 0.30 | 4.00 |
| 0.40 | 6.00 |
| 0.50 | 5.00 |
| 0.60 | 7.00 |
| 0.70 | 19.00 |
| 0.80 | 23.00 |
| 0.90 | 9.00 |
| 1.00 | 7.00 |
| 1.10 | 20.00 |

## Penetration vs Depth

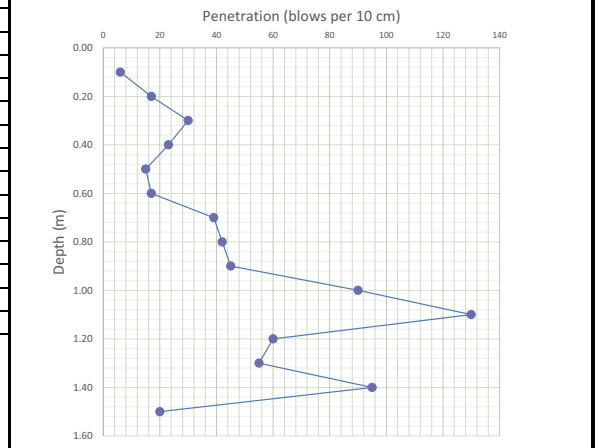



# Manual DPL Results Kyanvuma EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 06/05/2014 | Location: | EP1 | | |
| Elevation: | 1099 | UTM X | 530766 | | |
| UTM Datum | (ARC 1960) | UTM Y | 84631 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | |
| 0.10 | 6 |
| 0.20 | 17 |
| 0.30 | 30 |
| 0.40 | 23 |
| 0.50 | 15 |
| 0.60 | 17 |
| 0.70 | 39 |
| 0.80 | 42 |
| 0.90 | 45 |
| 1.00 | 90 |
| 1.10 | 130 |
| 1.20 | 60 |
| 1.30 | 55 |
| 1.40 | 95 |
| 1.50 | 20 |

## Penetration vs Depth



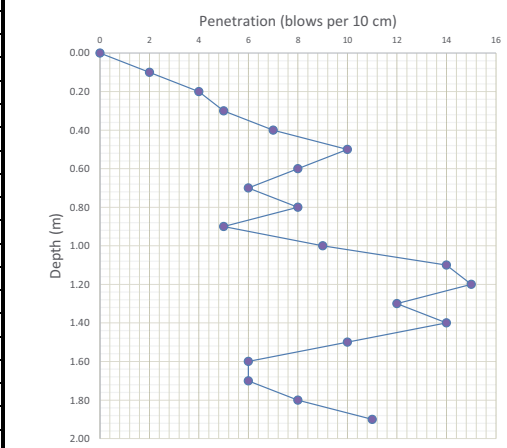


# Manual DPL Results Kyanvuma EP 2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | CT1 |
| Date: | 15/04/2016 | Location: | EP2 | | |
| Elevation: | 1099 | UTM X | 529538 | | |
| UTM Datum | (ARC 1960) | UTM Y | 83402 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2 |
| 0.20 | 4 |
| 0.30 | 5 |
| 0.40 | 7 |
| 0.50 | 10 |
| 0.60 | 8 |
| 0.70 | 6 |
| 0.80 | 8 |
| 0.90 | 5 |
| 1.00 | 9 |
| 1.10 | 14 |
| 1.20 | 15 |
| 1.30 | 12 |
| 1.40 | 14 |
| 1.50 | 10 |
| 1.60 | 6 |
| 1.70 | 6 |
| 1.80 | 8 |
| 1.90 | 11 |
| 2.00 | 12 |

## Penetration vs Depth

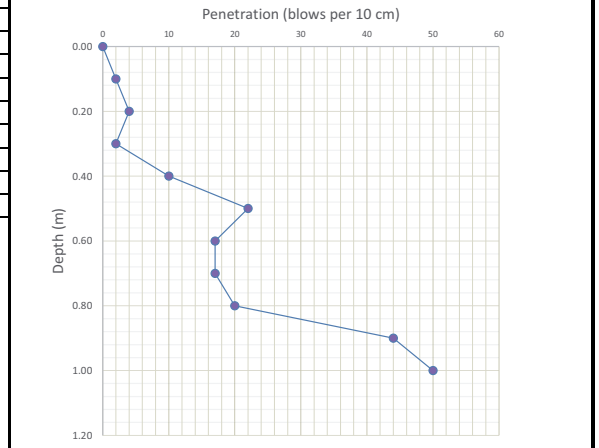



## Manual DPL Results Kyanvuma EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | EP3 | | |
| Elevation: | 1121 | UTM X | 529491 | | |
| UTM Datum | (ARC 1960) | UTM Y | 83860 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2 |
| 0.20 | 4 |
| 0.30 | 2 |
| 0.40 | 10 |
| 0.50 | 22 |
| 0.60 | 17 |
| 0.70 | 17 |
| 0.80 | 20 |
| 0.90 | 44 |
| 1.00 | 50 |

### Penetration vs Depth



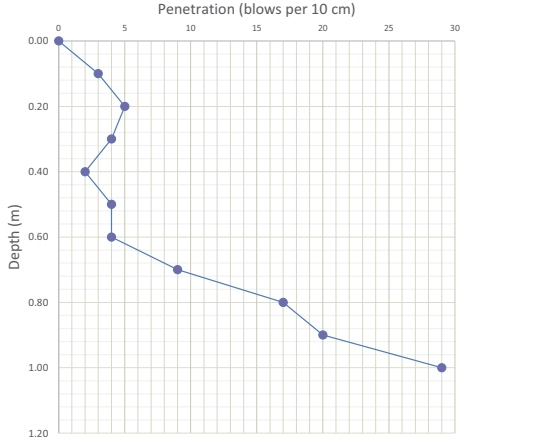


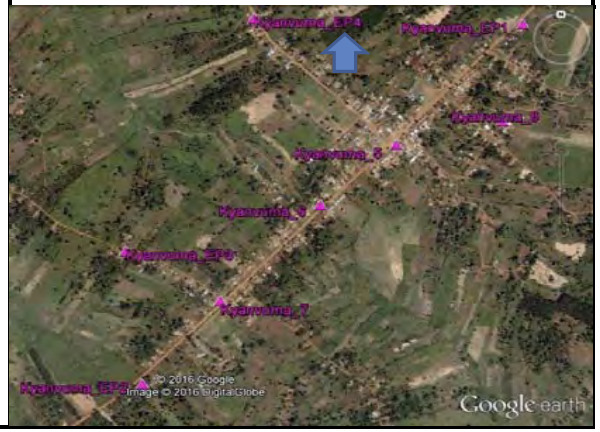
## Manual DPL Results Kyanvuma EP 4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | EP4 | | |
| Elevation: | 1113 | UTM X | 529908 | | |
| UTM Datum | (ARC 1960) | UTM Y | 84657 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3 |
| 0.20 | 5 |
| 0.30 | 4 |
| 0.40 | 2 |
| 0.50 | 4 |
| 0.60 | 4 |
| 0.70 | 9 |
| 0.80 | 17 |
| 0.90 | 20 |
| 1.00 | 29 |

### Penetration vs Depth



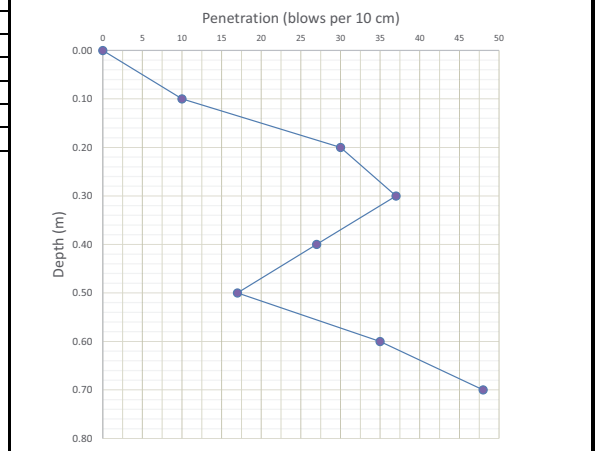



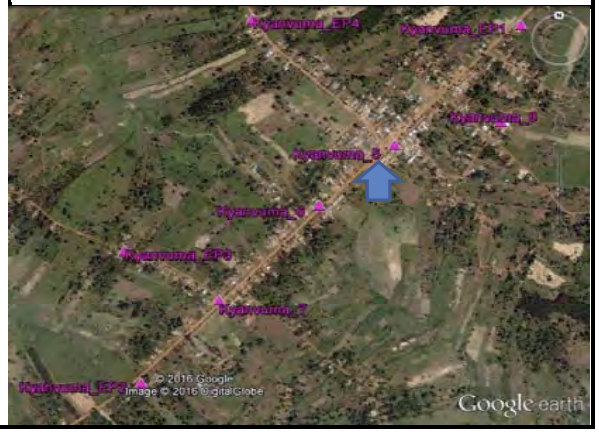
## Manual DPL Results Kyanvuma 5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | 5 | | |
| Elevation: | 1117 | UTM X | 530351 | | |
| UTM Datum | (ARC 1960) | UTM Y | 84215 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 10 |
| 0.20 | 30 |
| 0.30 | 37 |
| 0.40 | 27 |
| 0.50 | 17 |
| 0.60 | 35 |
| 0.70 | 48 |

### Penetration vs Depth



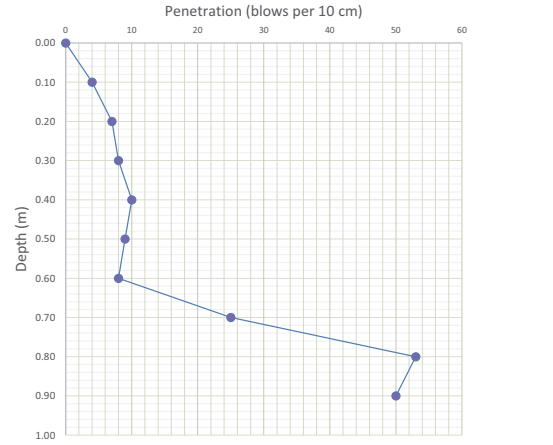



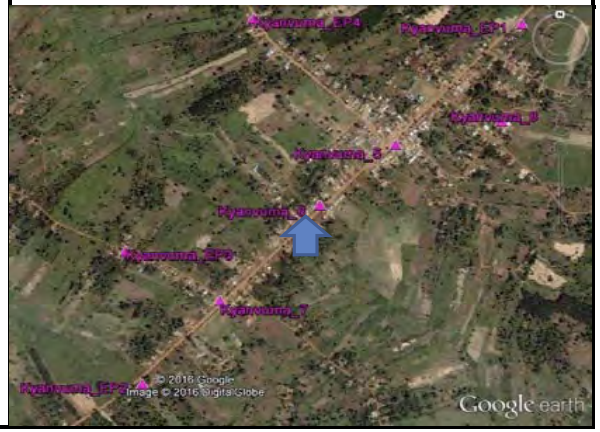

## Manual DPL Results Kyanvuma 6

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | 6 | | |
| Elevation: | 1119 | UTM X | 530109 | | |
| UTM Datum | (ARC 1960) | UTM Y | 84010 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4 |
| 0.20 | 7 |
| 0.30 | 8 |
| 0.40 | 10 |
| 0.50 | 9 |
| 0.60 | 8 |
| 0.70 | 25 |
| 0.80 | 53 |
| 0.90 | 50 |

### Penetration vs Depth



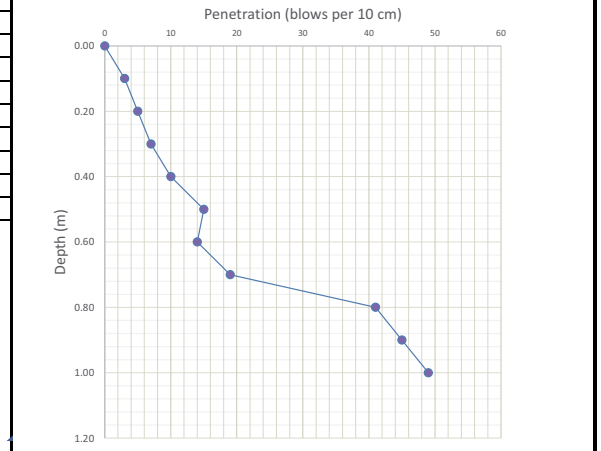



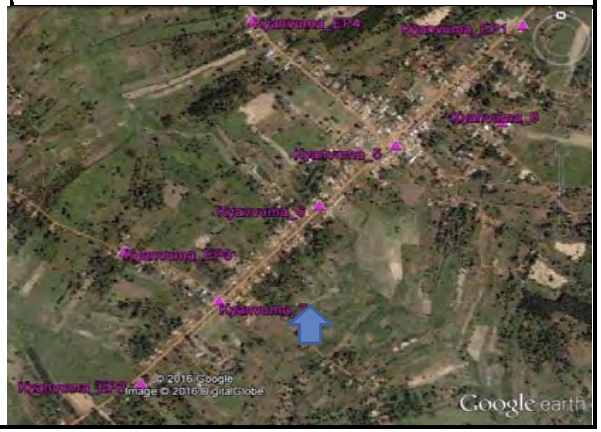
# Manual DPL Results Kyanvuma 7

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | 7 | | |
| Elevation: | 1127 | UTM X | 529788 | | |
| UTM Datum | (ARC 1960) | UTM Y | 83685 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3 |
| 0.20 | 5 |
| 0.30 | 7 |
| 0.40 | 10 |
| 0.50 | 15 |
| 0.60 | 14 |
| 0.70 | 19 |
| 0.80 | 41 |
| 0.90 | 45 |
| 1.00 | 49 |

## Penetration vs Depth



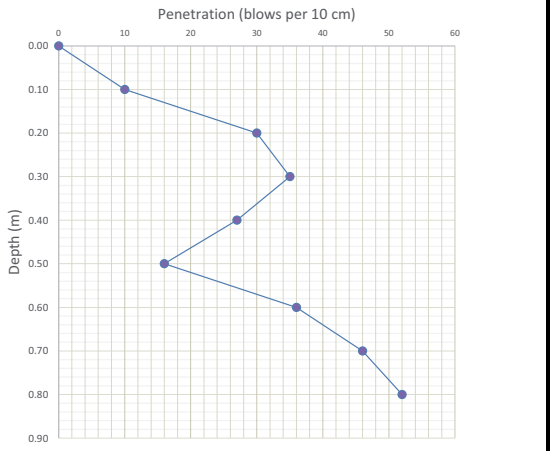




# Manual DPL Results Kyanvuma 8

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Luuka | Cone Type | 0 |
| Date: | 16/04/2016 | Location: | 8 | | |
| Elevation: | 1121 | UTM X | 530689 | | |
| UTM Datum | (ARC 1960) | UTM Y | 84292 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 10 |
| 0.20 | 30 |
| 0.30 | 35 |
| 0.40 | 27 |
| 0.50 | 16 |
| 0.60 | 36 |
| 0.70 | 46 |
| 0.80 | 52 |

## Penetration vs Depth

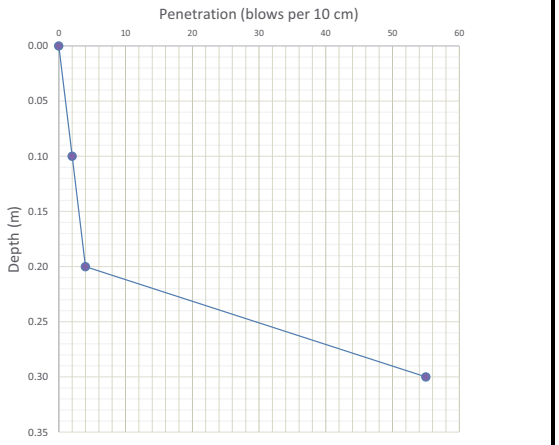



# Manual DPL Results Nondwe EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | EP1 | | |
| Elevation: | 1195 | UTM X | 567810 | | |
| UTM Datum | (ARC 1960) | UTM Y | 50180 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2.00 |
| 0.20 | 4.00 |
| 0.30 | 55.00 |

## Penetration vs Depth



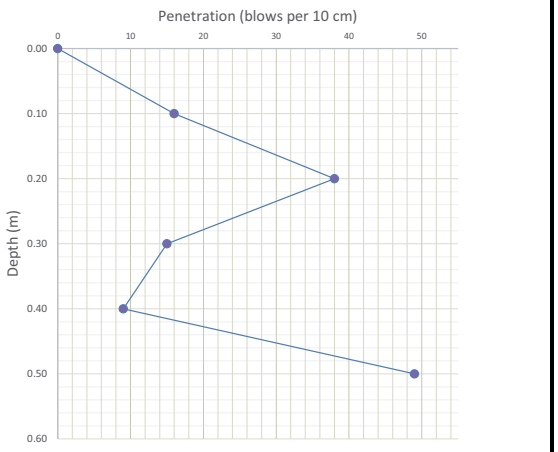


# Manual DPL Results Nondwe EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | EP2 | | |
| Elevation: | 1215 | UTM X | 566240 | | |
| UTM Datum | (ARC 1960) | UTM Y | 1215 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 16.00 |
| 0.20 | 38.00 |
| 0.30 | 15.00 |
| 0.40 | 9.00 |
| 0.50 | 49.00 |

## Penetration vs Depth

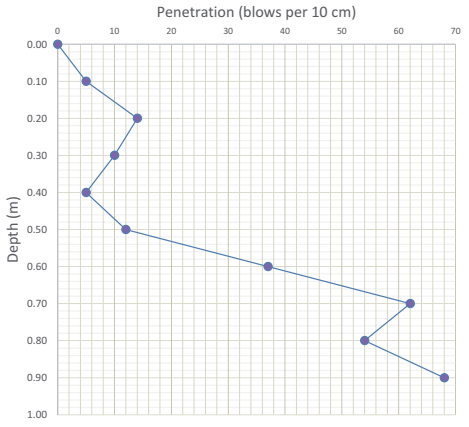



# Manual DPL Results Nondwe EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | EP3 | | |
| Elevation: | 1228 | UTM X | 565942 | | |
| UTM Datum | (ARC 1960) | UTM Y | 51621 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 5.00 |
| 0.20 | 14.00 |
| 0.30 | 10.00 |
| 0.40 | 5.00 |
| 0.50 | 12.00 |
| 0.60 | 37.00 |
| 0.70 | 62.00 |
| 0.80 | 54.00 |
| 0.90 | 68.00 |

## Penetration vs Depth



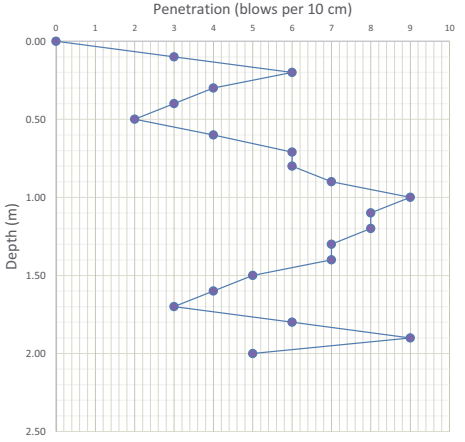


# Manual DPL Results Nondwe EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | EP4 | | |
| Elevation: | 1195 | UTM X | 566456 | | |
| UTM Datum | (ARC 1960) | UTM Y | 217428 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 6.00 |
| 0.30 | 4.00 |
| 0.40 | 3.00 |
| 0.50 | 2.00 |
| 0.60 | 4.00 |
| 0.71 | 6.00 |
| 0.80 | 6.00 |
| 0.90 | 7.00 |
| 1.00 | 9.00 |
| 1.10 | 8.00 |
| 1.20 | 8.00 |
| 1.30 | 7.00 |
| 1.40 | 7.00 |
| 1.50 | 5.00 |
| 1.60 | 4.00 |
| 1.70 | 3.00 |
| 1.80 | 6.00 |
| 1.90 | 9.00 |
| 2.00 | 5.00 |

## Penetration vs Depth

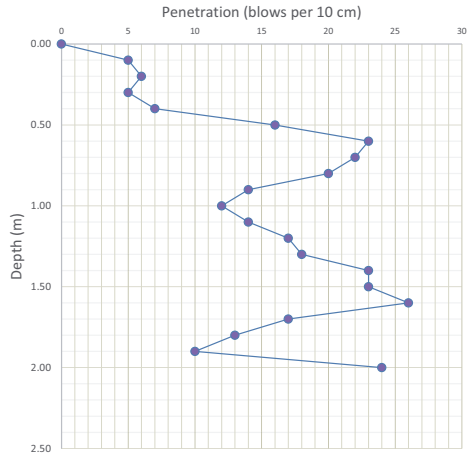



# Manual DPL Results Nondwe EP5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | EP5 | | |
| Elevation: | 1212 | UTM X | 565516 | | |
| UTM Datum | (ARC 1960) | UTM Y | 50909 | | |
| Weather & conditions: | | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 5.00 |
| 0.20 | 6.00 |
| 0.30 | 5.00 |
| 0.40 | 7.00 |
| 0.50 | 16.00 |
| 0.60 | 23.00 |
| 0.70 | 22.00 |
| 0.80 | 20.00 |
| 0.90 | 14.00 |
| 1.00 | 12.00 |
| 1.10 | 14.00 |
| 1.20 | 17.00 |
| 1.30 | 18.00 |
| 1.40 | 23.00 |
| 1.50 | 23.00 |
| 1.60 | 26.00 |
| 1.70 | 17.00 |
| 1.80 | 13.00 |
| 1.90 | 10.00 |
| 2.00 | 24.00 |

## Penetration vs Depth



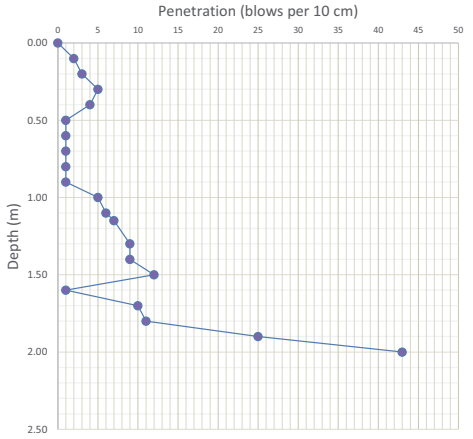


# Manual DPL Results Nondwe 6

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | 6 | | |
| Elevation: | 1213 | UTM X | 566836 | | |
| UTM Datum | (ARC 1960) | UTM Y | 50524 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2.00 |
| 0.20 | 3.00 |
| 0.30 | 5.00 |
| 0.40 | 4.00 |
| 0.50 | 1.00 |
| 0.60 | 1.00 |
| 0.70 | 1.00 |
| 0.80 | 1.00 |
| 0.90 | 1.00 |
| 1.00 | 5.00 |
| 1.10 | 6.00 |
| 1.15 | 7.00 |
| 1.30 | 9.00 |
| 1.40 | 9.00 |
| 1.50 | 12.00 |
| 1.60 | 1.00 |
| 1.70 | 10.00 |
| 1.80 | 11.00 |
| 1.90 | 25.00 |
| 2.00 | 43.00 |

## Penetration vs Depth

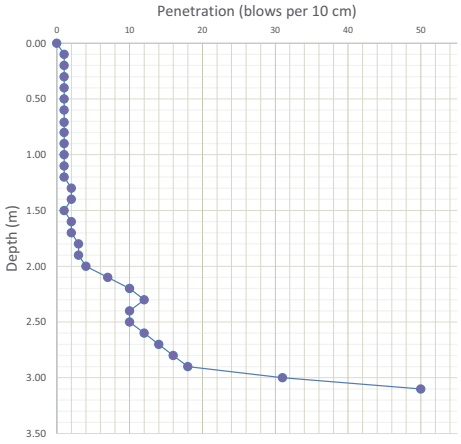



# Manual DPL Results Nondwe (Swamp 1)

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Iganga | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | 7 | | |
| Elevation: | 1198 | UTM X | 565792 | | |
| UTM Datum | (ARC 1960) | UTM Y | 50819 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 1.00 |
| 0.20 | 1.00 |
| 0.30 | 1.00 |
| 0.40 | 1.00 |
| 0.50 | 1.00 |
| 0.60 | 1.00 |
| 0.71 | 1.00 |
| 0.80 | 1.00 |
| 0.90 | 1.00 |
| 1.00 | 1.00 |
| 1.10 | 1.00 |
| 1.20 | 1.00 |
| 1.30 | 2.00 |
| 1.40 | 2.00 |
| 1.50 | 1.00 |
| 1.60 | 2.00 |
| 1.70 | 2.00 |
| 1.80 | 3.00 |
| 1.90 | 3.00 |
| 2.00 | 4.00 |
| 2.10 | 7.00 |
| 2.20 | 10.00 |
| 2.30 | 12.00 |
| 2.40 | 10.00 |
| 2.50 | 10.00 |
| 2.60 | 12.00 |
| 2.70 | 14.00 |
| 2.80 | 16.00 |
| 2.90 | 18.00 |
| 3.00 | 31.00 |
| 3.10 | 50.00 |

## Penetration vs Depth



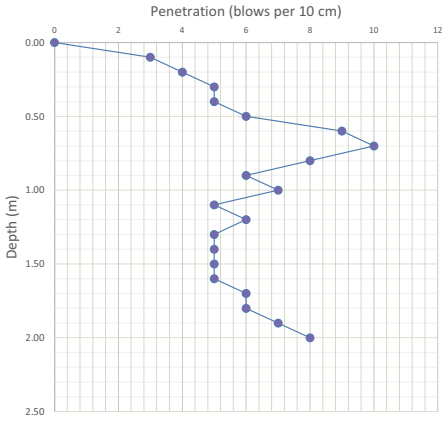


# Manual DPL Results Kasasira EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 26/04/2016 | Location: | EP1 | | |
| Elevation: | 1077 | UTM X | 578680 | | |
| UTM Datum | (ARC 1960) | UTM Y | 120739 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3 |
| 0.20 | 4 |
| 0.30 | 5 |
| 0.40 | 5 |
| 0.50 | 6 |
| 0.60 | 9 |
| 0.70 | 10 |
| 0.80 | 8 |
| 0.90 | 6 |
| 1.00 | 7 |
| 1.10 | 5 |
| 1.20 | 6 |
| 1.30 | 5 |
| 1.40 | 5 |
| 1.50 | 5 |
| 1.60 | 5 |
| 1.70 | 6 |
| 1.80 | 6 |
| 1.90 | 7 |
| 2.00 | 8 |

## Penetration vs Depth





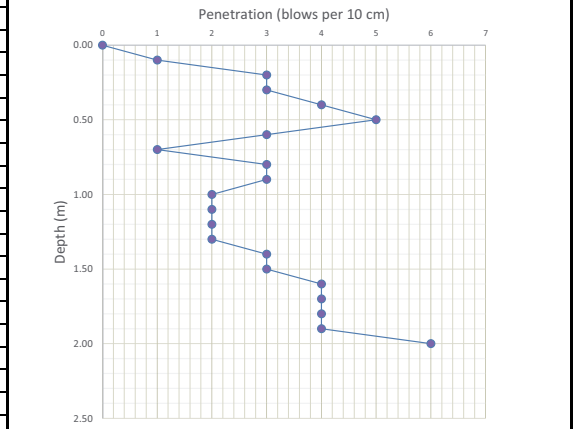
A11-6-21

# Manual DPL Results Kasasira EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 26/04/2016 | Location: | EP2 | | |
| Elevation: | 1077 | UTM X | 579085 | | |
| UTM Datum | (ARC 1960) | UTM Y | 120567 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 1 |
| 0.20 | 3 |
| 0.30 | 3 |
| 0.40 | 4 |
| 0.50 | 5 |
| 0.60 | 3 |
| 0.70 | 1 |
| 0.80 | 3 |
| 0.90 | 3 |
| 1.00 | 2 |
| 1.10 | 2 |
| 1.20 | 2 |
| 1.30 | 2 |
| 1.40 | 3 |
| 1.50 | 3 |
| 1.60 | 4 |
| 1.70 | 4 |
| 1.80 | 4 |
| 1.90 | 4 |
| 2.00 | 6 |

## Penetration vs Depth



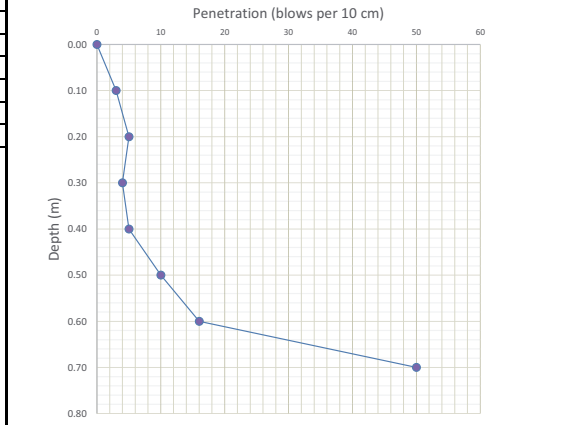


# Manual DPL Results Kasasira EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 26/04/2016 | Location: | EP3 | | |
| Elevation: | 1069 | UTM X | 574779 | | |
| UTM Datum | (ARC 1960) | UTM Y | 121080 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3 |
| 0.20 | 5 |
| 0.30 | 4 |
| 0.40 | 5 |
| 0.50 | 10 |
| 0.60 | 16 |
| 0.70 | 50 |

## Penetration vs Depth





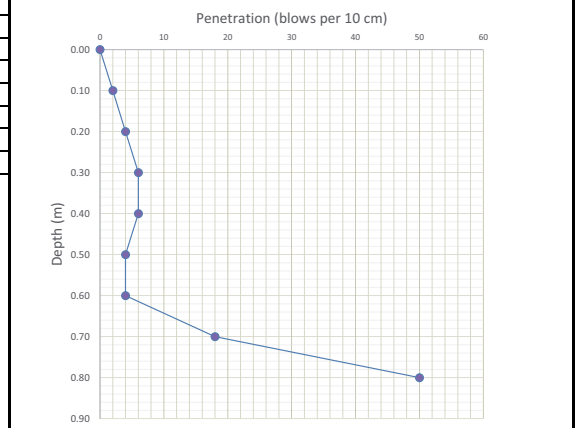
A11-6-22

## Manual DPL Results Kasasira EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 26/04/2016 | Location: | EP4 | | |
| Elevation: | 1068 | UTM X | 578575 | | |
| UTM Datum | (ARC 1960) | UTM Y | 121451 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{11}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2.00 |
| 0.20 | 4.00 |
| 0.30 | 6.00 |
| 0.40 | 6.00 |
| 0.50 | 4.00 |
| 0.60 | 4.00 |
| 0.70 | 18.00 |
| 0.80 | 50.00 |

### Penetration vs Depth



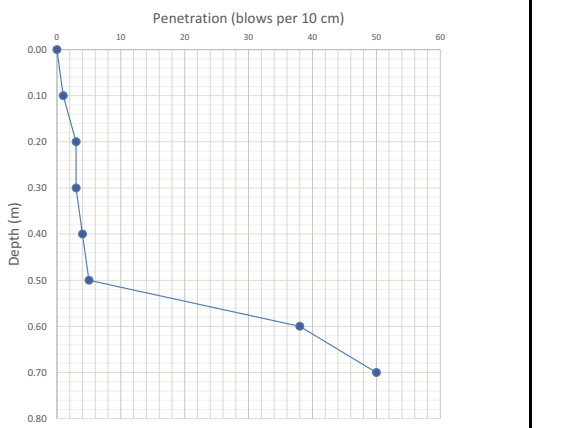


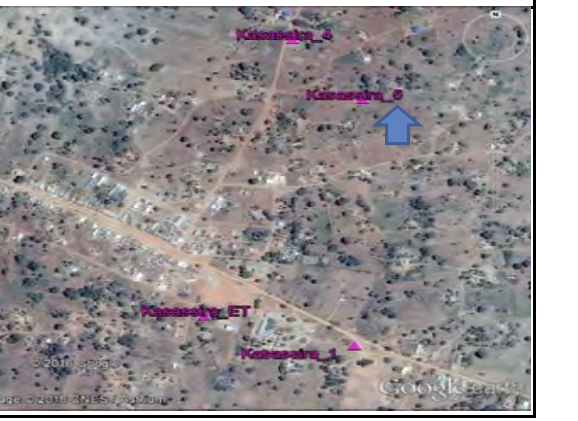
## Manual DPL Results Kasasira EP5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 00/01/1900 | Location: | EP5 | | |
| Elevation: | 1073 | UTM X | 578698 | | |
| UTM Datum | (ARC 1960) | UTM Y | 121310 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | N11 |
|---|---|
| 0.00 | 0 |
| 0.10 | 1.00 |
| 0.20 | 3.00 |
| 0.30 | 3.00 |
| 0.40 | 4.00 |
| 0.50 | 5.00 |
| 0.60 | 38.00 |
| 0.70 | 50.00 |

### Penetration vs Depth



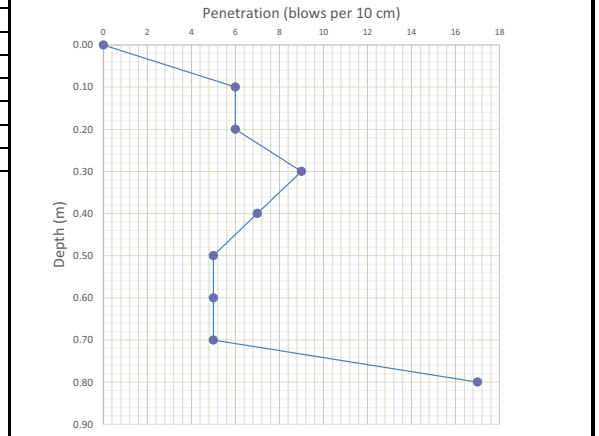

A11-6-23

# Manual DPL Results Kameke-Pallisa RGC EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Pallisa | Cone Type | CT3 |
| Date: | 17/04/2016 | Location: | EP1 | | |
| Elevation: | 1114 | UTM X | 585457 | | |
| UTM Datum | (ARC 1960) | UTM Y | 139878 | | |
| Weather & conditions: | Sunny, becoming cloudy, sloping. Top of the hill - point shifted because of thick vegetation. | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 6.00 |
| 0.30 | 9.00 |
| 0.40 | 7.00 |
| 0.50 | 5.00 |
| 0.60 | 5.00 |
| 0.70 | 5.00 |
| 0.80 | 17.00 |

## Penetration vs Depth



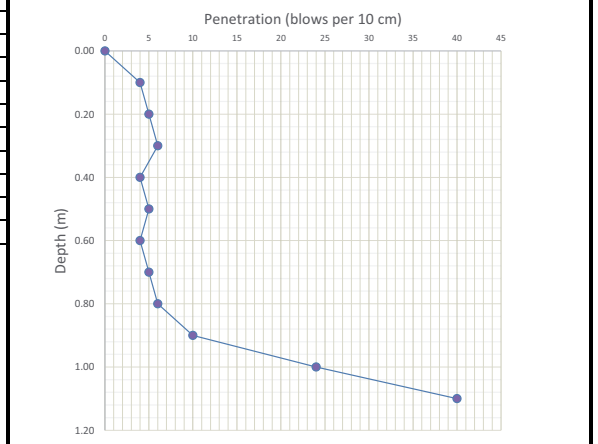


# Manual DPL Results Kameke-Pallisa RGC EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | CT3 |
| Date: | 17/04/2016 | Location: | EP2 | | |
| Elevation: | 1119 | UTM X | 585966 | | |
| UTM Datum | (ARC 1960) | UTM Y | 139819 | | |
| Weather & conditions: | Cloudy, sloping, humus, roots. | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 5.00 |
| 0.30 | 6.00 |
| 0.40 | 4.00 |
| 0.50 | 5.00 |
| 0.60 | 4.00 |
| 0.70 | 5.00 |
| 0.80 | 6.00 |
| 0.90 | 10.00 |
| 1.00 | 24.00 |
| 1.10 | 40.00 |

## Penetration vs Depth

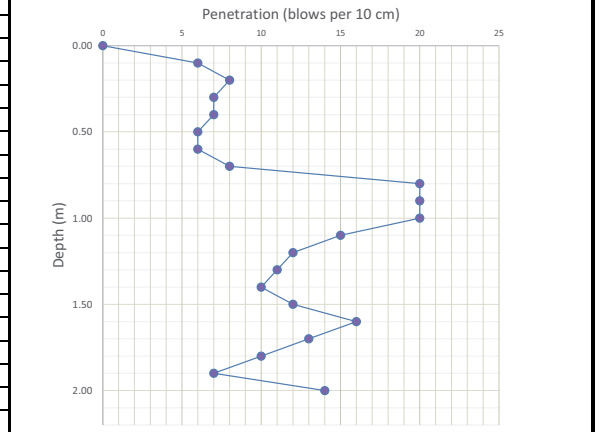



# Manual DPL Results Kameke-Pallisa RGC EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | CT3 |
| Date: | 17/04/2016 | Location: | EP3 | | |
| Elevation: | 1116 | UTM X | 585758.4 | | |
| UTM Datum | (ARC 1960) | UTM Y | 140437 | | |
| Weather & conditions: | Cloudy, sloping, top of the hill, laterite and roots. | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6 |
| 0.20 | 8 |
| 0.30 | 7 |
| 0.40 | 7 |
| 0.50 | 6 |
| 0.60 | 6 |
| 0.70 | 8 |
| 0.80 | 20 |
| 0.90 | 20 |
| 1.00 | 20 |
| 1.10 | 15 |
| 1.20 | 12 |
| 1.30 | 11 |
| 1.40 | 10 |
| 1.50 | 12 |
| 1.60 | 16 |
| 1.70 | 13 |
| 1.80 | 10 |
| 1.90 | 7 |
| 2.00 | 14 |

## Penetration vs Depth



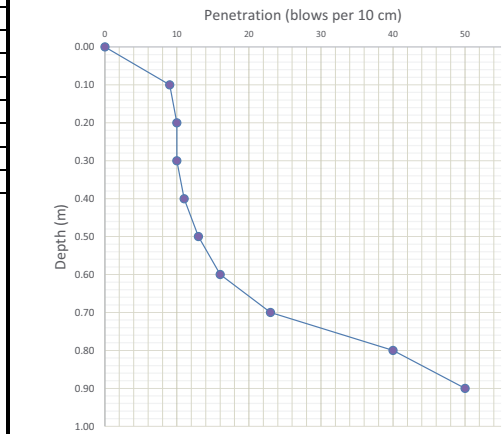


# Manual DPL Results Kameke-Pallisa RGC EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | EP4 | | |
| Elevation: | 119 | UTM X | 586178.4 | | |
| UTM Datum | (ARC 1960) | UTM Y | 140143 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 9.00 |
| 0.20 | 10.00 |
| 0.30 | 10.00 |
| 0.40 | 11.00 |
| 0.50 | 13.00 |
| 0.60 | 16.00 |
| 0.70 | 23.00 |
| 0.80 | 40.00 |
| 0.90 | 50.00 |

## Penetration vs Depth

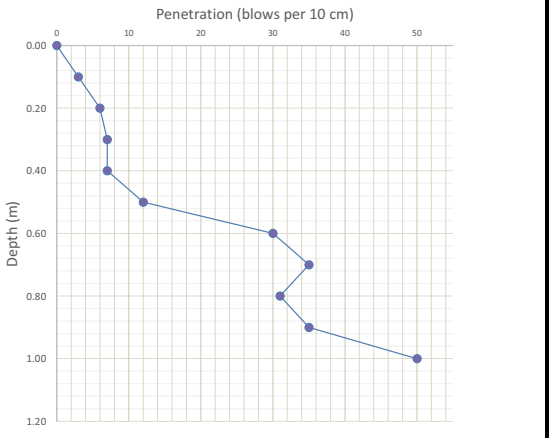



# Manual DPL Results Kameke-Pallisa RGC EP5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | EP5 | | |
| Elevation: | 1111 | UTM X | 586325 | | |
| UTM Datum | (ARC 1960) | UTM Y | 139757 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3 |
| 0.20 | 6 |
| 0.30 | 7 |
| 0.40 | 7 |
| 0.50 | 12 |
| 0.60 | 30 |
| 0.70 | 35 |
| 0.80 | 31 |
| 0.90 | 35 |
| 1.00 | 50 |

## Penetration vs Depth



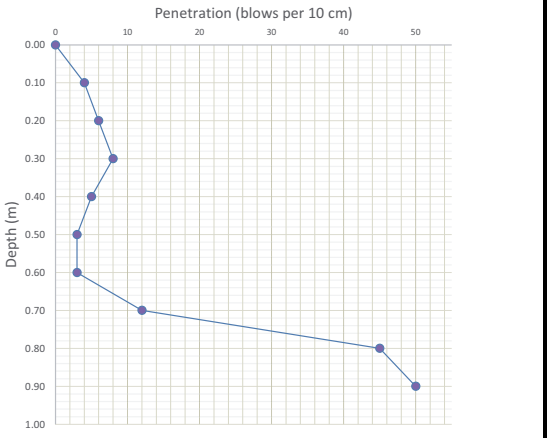


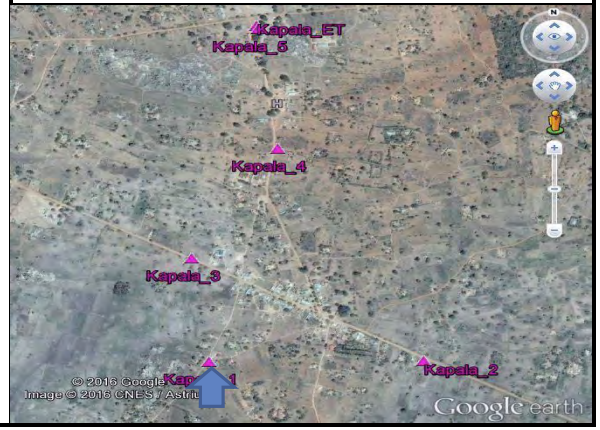
# Manual DPL Results Kapala RGC EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | EP1 | | |
| Elevation: | 1050 | UTM X | 5680714 | | |
| UTM Datum | (ARC 1960) | UTM Y | 137584 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 6.00 |
| 0.30 | 8.00 |
| 0.40 | 5.00 |
| 0.50 | 3.00 |
| 0.60 | 3.00 |
| 0.70 | 12.00 |
| 0.80 | 45.00 |
| 0.90 | 50.00 |

## Penetration vs Depth



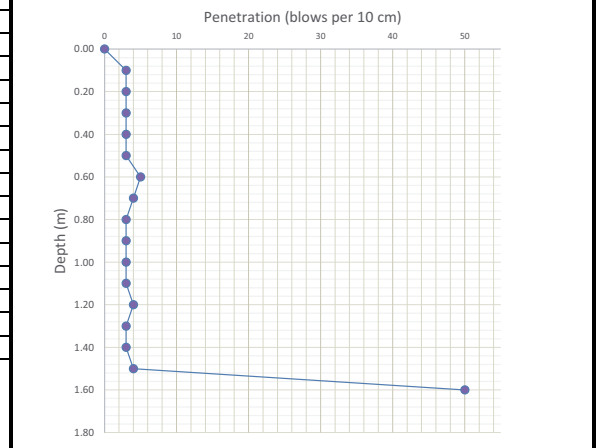



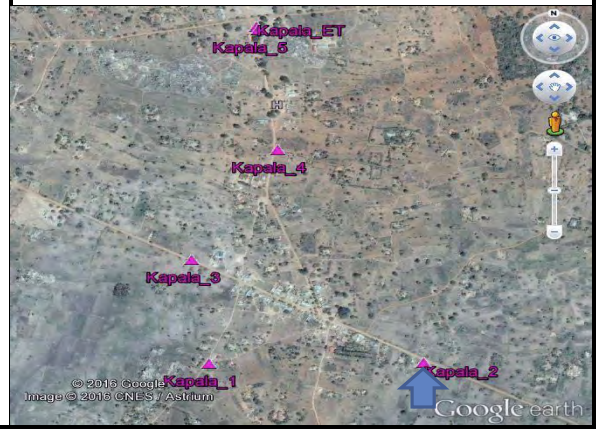
# Manual DPL Results Kapala RGC EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | EP2 | | |
| Elevation: | 1048 | UTM X | 568749 | | |
| UTM Datum | (ARC 1960) | UTM Y | 137573 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 3.00 |
| 0.30 | 3.00 |
| 0.40 | 3.00 |
| 0.50 | 3.00 |
| 0.60 | 5.00 |
| 0.70 | 4.00 |
| 0.80 | 3.00 |
| 0.90 | 3.00 |
| 1.00 | 3.00 |
| 1.10 | 3.00 |
| 1.20 | 4.00 |
| 1.30 | 3.00 |
| 1.40 | 3.00 |
| 1.50 | 4.00 |
| 1.60 | 50.00 |

## Penetration vs Depth



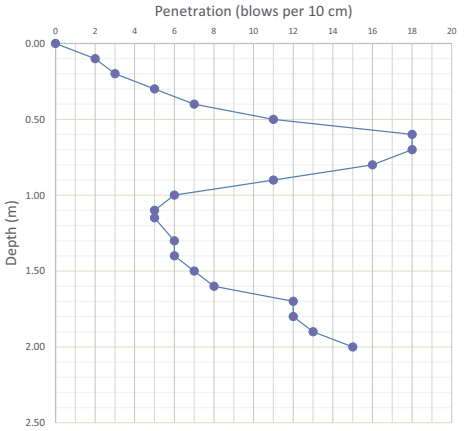



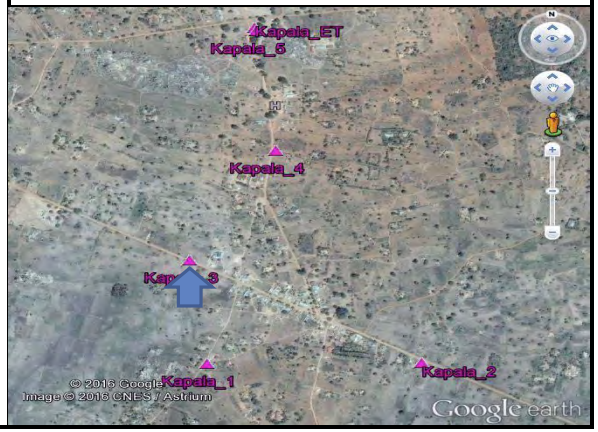

# Manual DPL Results Kapala RGC EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type | 0 |
| Date: | 17/04/2016 | Location: | EP3 | | |
| Elevation: | 1042 | UTM X | 568025 | | |
| UTM Datum | (ARC 1960) | UTM Y | 138003 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2.00 |
| 0.20 | 3.00 |
| 0.30 | 5.00 |
| 0.40 | 7.00 |
| 0.50 | 11.00 |
| 0.60 | 18.00 |
| 0.70 | 18.00 |
| 0.80 | 16.00 |
| 0.90 | 11.00 |
| 1.00 | 6.00 |
| 1.10 | 5.00 |
| 1.15 | 5.00 |
| 1.30 | 6.00 |
| 1.40 | 6.00 |
| 1.50 | 7.00 |
| 1.60 | 8.00 |
| 1.70 | 12.00 |
| 1.80 | 12.00 |
| 1.90 | 13.00 |
| 2.00 | 15.00 |

## Penetration vs Depth



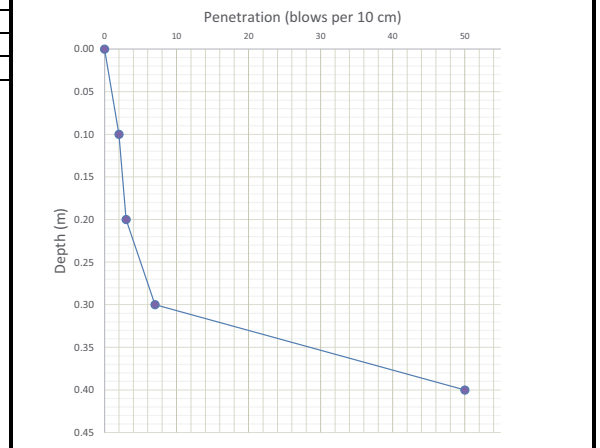



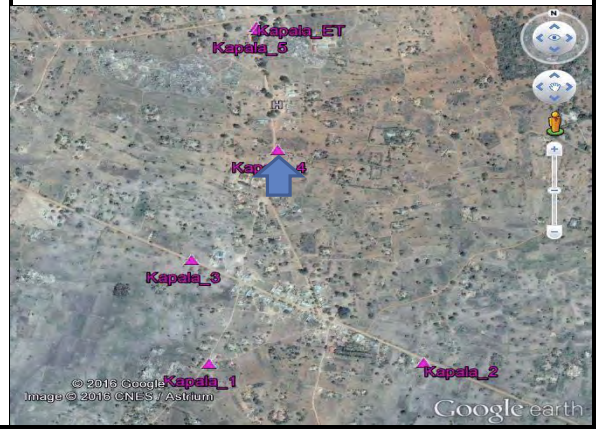
# Manual DPL Results Kapala RGC EP4

| | | | | |
|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type 0 |
| Date: | 17/04/2016 | Location: | EP4 | |
| Elevation: | 1056 | UTM X | 568303 | |
| UTM Datum | (ARC 1960) | UTM Y | 138440 | |
| Weather & conditions: | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2.00 |
| 0.20 | 3.00 |
| 0.30 | 7.00 |
| 0.40 | 50.00 |

## Penetration vs Depth



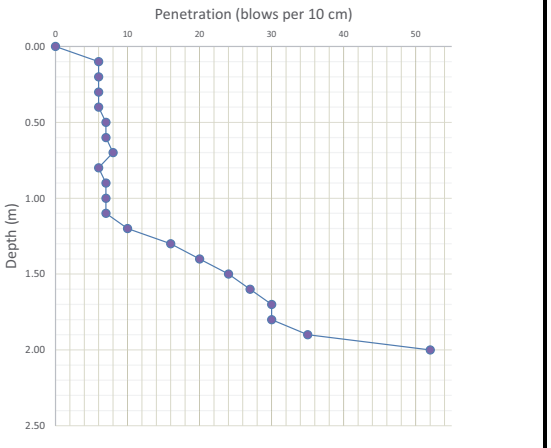



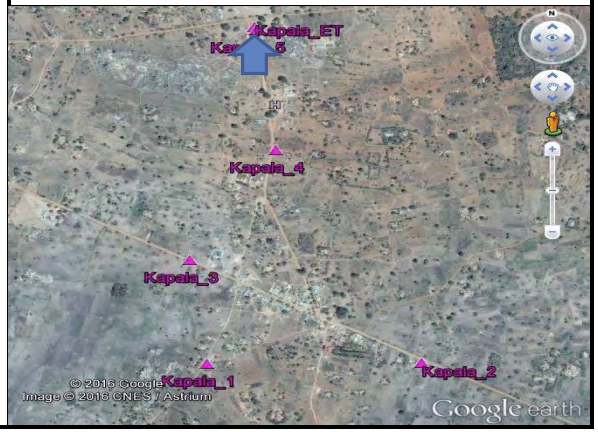

# Manual DPL Results Kapala RGC EP5

| | | | | |
|---|---|---|---|---|
| Client: | JICA | District: | Palisa | Cone Type 0 |
| Date: | 17/04/2016 | Location: | EP5 | |
| Elevation: | 1067 | UTM X | 568250 | |
| UTM Datum | (ARC 1960) | UTM Y | 138921 | |
| Weather & conditions: | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 6.00 |
| 0.30 | 6.00 |
| 0.40 | 6.00 |
| 0.50 | 7.00 |
| 0.60 | 7.00 |
| 0.70 | 8.00 |
| 0.80 | 6.00 |
| 0.90 | 7.00 |
| 1.00 | 7.00 |
| 1.10 | 7.00 |
| 1.20 | 10.00 |
| 1.30 | 16.00 |
| 1.40 | 20.00 |
| 1.50 | 24.00 |
| 1.60 | 27.00 |
| 1.70 | 30.00 |
| 1.80 | 30.00 |
| 1.90 | 35.00 |
| 2.00 | 52.00 |

## Penetration vs Depth



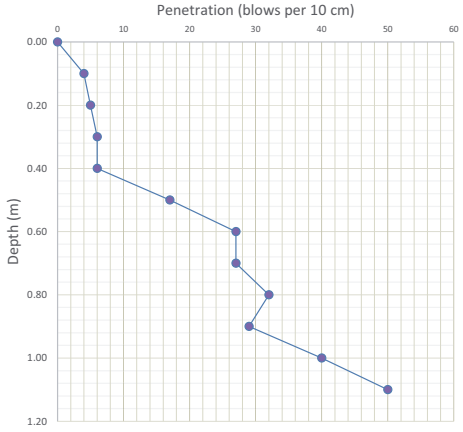



## Manual DPL Results Buseta 1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | 1 | | |
| Elevation: | 1062 | UTM X | 583225 | | |
| UTM Datum | (ARC 1960) | UTM Y | 120797 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 5.00 |
| 0.30 | 6.00 |
| 0.40 | 6.00 |
| 0.50 | 17.00 |
| 0.60 | 27.00 |
| 0.70 | 27.00 |
| 0.80 | 32.00 |
| 0.90 | 29.00 |
| 1.00 | 40.00 |
| 1.10 | 50.00 |

### Penetration vs Depth



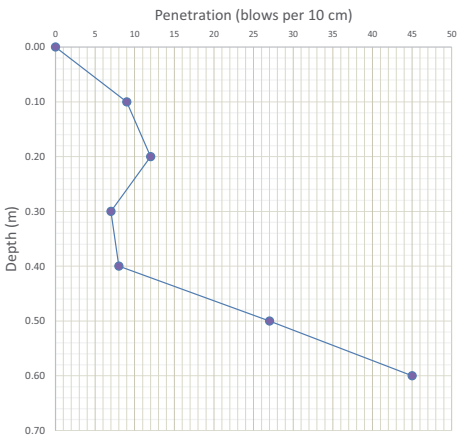


## Manual DPL Results Buseta 2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | 2 | | |
| Elevation: | 1064 | UTM X | 583729 | | |
| UTM Datum | (ARC 1960) | UTM Y | 714676 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 9.00 |
| 0.20 | 12.00 |
| 0.30 | 7.00 |
| 0.40 | 8.00 |
| 0.50 | 27.00 |
| 0.60 | 45.00 |

### Penetration vs Depth

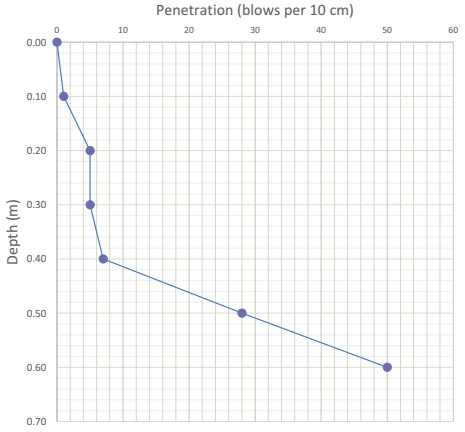



## Manual DPL Results Buseta 3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 16/04/2016 | Location: | 3 | | |
| Elevation: | 1078 | UTM X | 583819 | | |
| UTM Datum | (ARC 1960) | UTM Y | 80067 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 1.00 |
| 0.20 | 5.00 |
| 0.30 | 5.00 |
| 0.40 | 7.00 |
| 0.50 | 28.00 |
| 0.60 | 50.00 |

### Penetration vs Depth



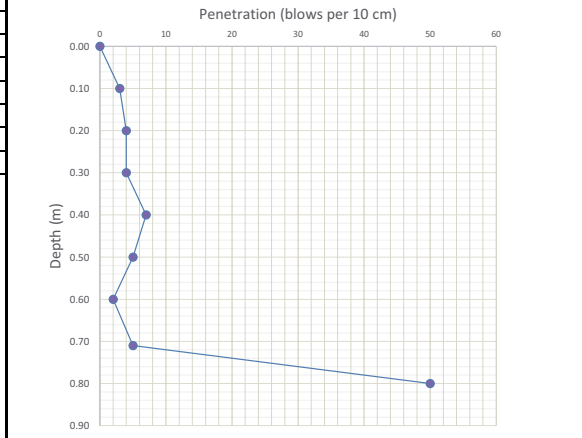


## Manual DPL Results Buseta EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type | CT1 |
| Date: | 17/04/2016 | Location: | 4 | | |
| Elevation: | 1066 | UTM X | 584365 | | |
| UTM Datum | (ARC 1960) | UTM Y | 119929 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{11}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 4.00 |
| 0.30 | 4.00 |
| 0.40 | 7.00 |
| 0.50 | 5.00 |
| 0.60 | 2.00 |
| 0.71 | 5.00 |
| 0.80 | 50.00 |

### Penetration vs Depth

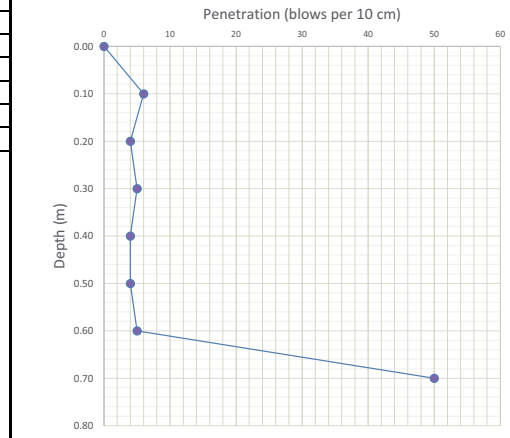



# Manual DPL Results Buseta EP5

| | | | | |
|---|---|---|---|---|
| Client: | JICA | District: | Kibuku | Cone Type 0 |
| Date: | 17/04/2016 | Location: | 5 | |
| Elevation: | 1074 | UTM X | 582968 | |
| UTM Datum | (ARC 1960) | UTM Y | 120034 | |
| Weather & conditions: | 0 | | | |

| Z (m.b.g.l) | $N_{11}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 4.00 |
| 0.30 | 5.00 |
| 0.40 | 4.00 |
| 0.50 | 4.00 |
| 0.60 | 5.00 |
| 0.70 | 50.00 |

## Penetration vs Depth



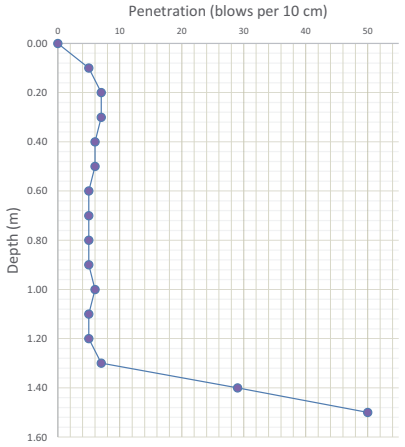


# Manual DPL Results Kidetok EP1

| | | | | |
|---|---|---|---|---|
| Client: | JICA | District: | Selele | Cone Type CT1 |
| Date: | 24/04/2016 | Location: | EP1 | |
| Elevation: | 1089 | UTM X | 546774 | |
| UTM Datum | (ARC 1960) | UTM Y | 163901 | |
| Weather & conditions: | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 5.00 |
| 0.20 | 7.00 |
| 0.30 | 7.00 |
| 0.40 | 6.00 |
| 0.50 | 6.00 |
| 0.60 | 5.00 |
| 0.70 | 5.00 |
| 0.80 | 5.00 |
| 0.90 | 5.00 |
| 1.00 | 6.00 |
| 1.10 | 5.00 |
| 1.20 | 5.00 |
| 1.30 | 7.00 |
| 1.40 | 29.00 |
| 1.50 | 50.00 |

## Penetration vs Depth

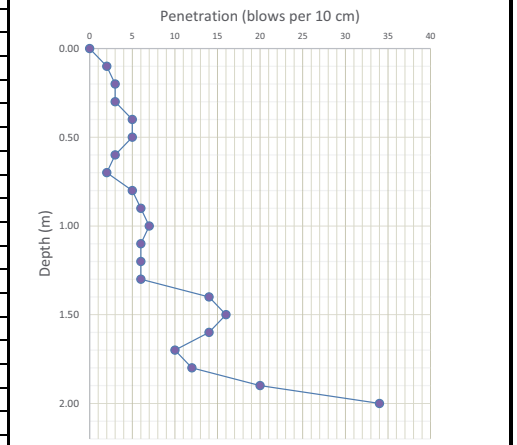



# Manual DPL Results Kidetok EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Selele | Cone Type | CT1 |
| Date: | 24/04/2016 | Location: | EP2 | | |
| Elevation: | 1070 | UTM X | 545755 | | |
| UTM Datum | (ARC 1960) | UTM Y | 163005 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 2.00 |
| 0.20 | 3.00 |
| 0.30 | 3.00 |
| 0.40 | 5.00 |
| 0.50 | 5.00 |
| 0.60 | 3.00 |
| 0.70 | 2.00 |
| 0.80 | 5.00 |
| 0.90 | 6.00 |
| 1.00 | 7.00 |
| 1.10 | 6.00 |
| 1.20 | 6.00 |
| 1.30 | 6.00 |
| 1.40 | 14.00 |
| 1.50 | 16.00 |
| 1.60 | 14.00 |
| 1.70 | 10.00 |
| 1.80 | 12.00 |
| 1.90 | 20.00 |
| 2.00 | 34.00 |

## Penetration vs Depth



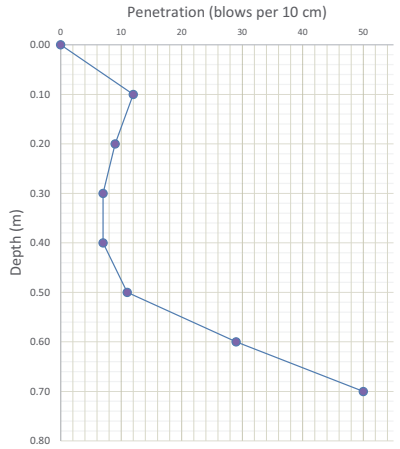


# Manual DPL Results Kidetok EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Selele | Cone Type | 0 |
| Date: | 24/04/2016 | Location: | EP3 | | |
| Elevation: | 1056 | UTM X | 545419 | | |
| UTM Datum | (ARC 1960) | UTM Y | 162735 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 12.00 |
| 0.20 | 9.00 |
| 0.30 | 7.00 |
| 0.40 | 7.00 |
| 0.50 | 11.00 |
| 0.60 | 29.00 |
| 0.70 | 50.00 |

## Penetration vs Depth

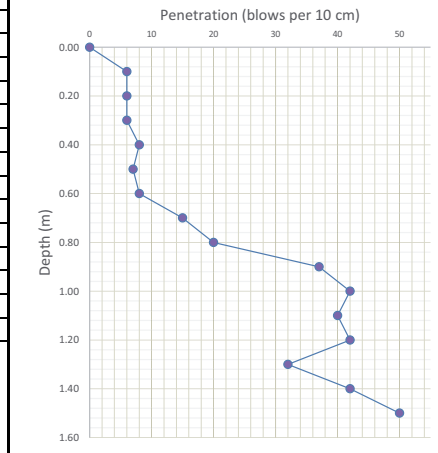



# Manual DPL Results Kidetok EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Selele | Cone Type | 0 |
| Date: | 24/04/2016 | Location: | EP4 | | |
| Elevation: | 1067 | UTM X | 547645 | | |
| UTM Datum | (ARC 1960) | UTM Y | 164806 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 6.00 |
| 0.30 | 6.00 |
| 0.40 | 8.00 |
| 0.50 | 7.00 |
| 0.60 | 8.00 |
| 0.70 | 15.00 |
| 0.80 | 20.00 |
| 0.90 | 37.00 |
| 1.00 | 42.00 |
| 1.10 | 40.00 |
| 1.20 | 42.00 |
| 1.30 | 32.00 |
| 1.40 | 42.00 |
| 1.50 | 50.00 |

## Penetration vs Depth



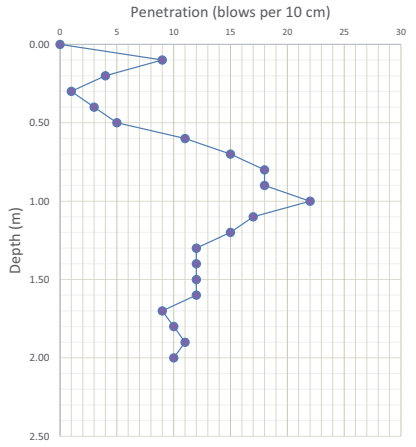


# Manual DPL Results Kidetok EP5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Selele | Cone Type | 0 |
| Date: | 24/04/2016 | Location: | EP5 | | |
| Elevation: | 1084 | UTM X | 553629 | | |
| UTM Datum | (ARC 1960) | UTM Y | 220443 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 9.00 |
| 0.20 | 4.00 |
| 0.30 | 1.00 |
| 0.40 | 3.00 |
| 0.50 | 5.00 |
| 0.60 | 11.00 |
| 0.70 | 15.00 |
| 0.80 | 18.00 |
| 0.90 | 18.00 |
| 1.00 | 22.00 |
| 1.10 | 17.00 |
| 1.20 | 15.00 |
| 1.30 | 12.00 |
| 1.40 | 12.00 |
| 1.50 | 12.00 |
| 1.60 | 12.00 |
| 1.70 | 9.00 |
| 1.80 | 10.00 |
| 1.90 | 11.00 |
| 2.00 | 10.00 |

## Penetration vs Depth

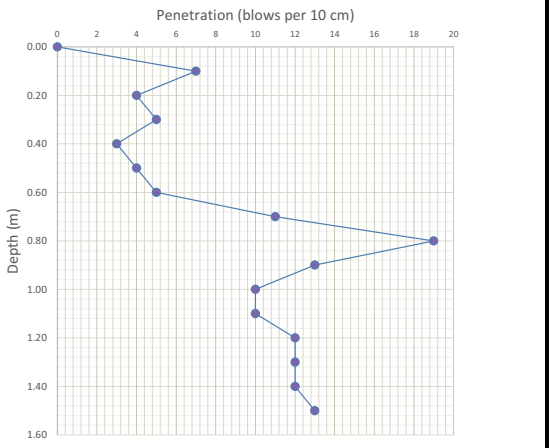



## Manual DPL Results Tubur EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | CT1 |
| Date: | 21/04/2016 | Location: | EP1 | | |
| Elevation: | 1102 | UTM X | 557387 | | |
| UTM Datum | (ARC 1960) | UTM Y | 216074 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 7 |
| 0.20 | 4 |
| 0.30 | 5 |
| 0.40 | 3 |
| 0.50 | 4 |
| 0.60 | 5 |
| 0.70 | 11 |
| 0.80 | 19 |
| 0.90 | 13 |
| 1.00 | 10 |
| 1.10 | 10 |
| 1.20 | 12 |
| 1.30 | 12 |
| 1.40 | 12 |
| 1.50 | 13 |

### Penetration vs Depth



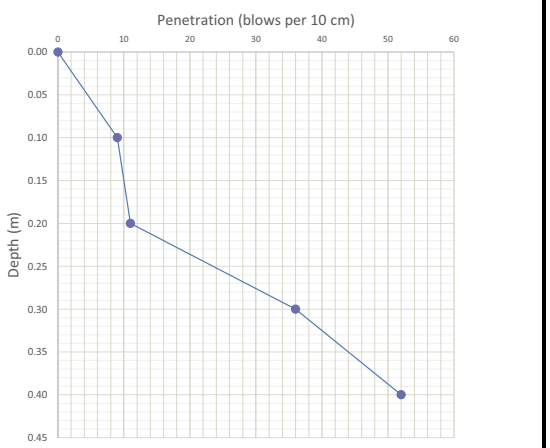


## Manual DPL Results Tubur EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | CT1 |
| Date: | 21/04/2016 | Location: | EP2 | | |
| Elevation: | 1102 | UTM X | 558080 | | |
| UTM Datum | (ARC 1960) | UTM Y | 216248 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 9 |
| 0.20 | 11 |
| 0.30 | 36 |
| 0.40 | 52 |

### Penetration vs Depth

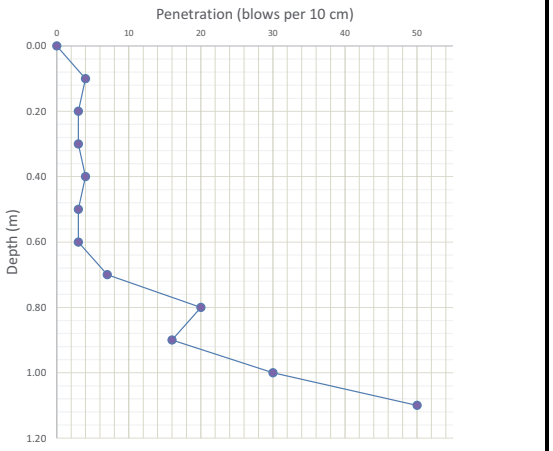



## Manual DPL Results Tubur EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | CT1 |
| Date: | 21/04/2016 | Location: | EP3 | | |
| Elevation: | 1101 | UTM X | 558335 | | |
| UTM Datum | (ARC 1960) | UTM Y | 214847 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4 |
| 0.20 | 3 |
| 0.30 | 3 |
| 0.40 | 4 |
| 0.50 | 3 |
| 0.60 | 3 |
| 0.70 | 7 |
| 0.80 | 20 |
| 0.90 | 16 |
| 1.00 | 30 |
| 1.10 | 50 |

### Penetration vs Depth



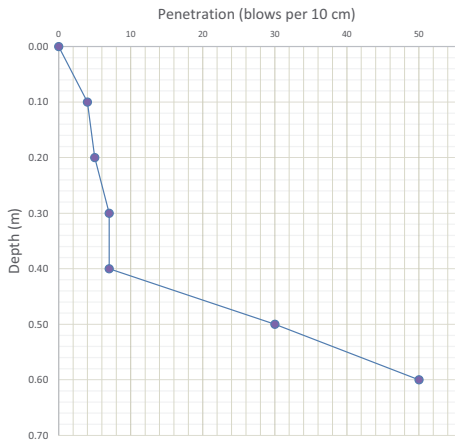


## Manual DPL Results Tubur EP4

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 21/04/2016 | Location: | EP4 | | |
| Elevation: | 1117 | UTM X | 557775 | | |
| UTM Datum | (ARC 1960) | UTM Y | 216594 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4 |
| 0.20 | 5 |
| 0.30 | 7 |
| 0.40 | 7 |
| 0.50 | 30 |
| 0.60 | 50 |

### Penetration vs Depth

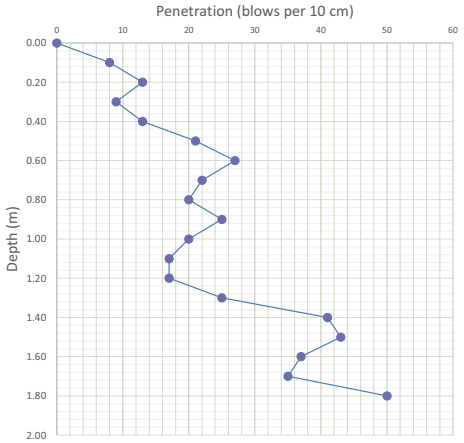



## Manual DPL Results Tubur EP 5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 21/04/2016 | Location: | EP5 | | |
| Elevation: | 1112 | UTM X | 557581 | | |
| UTM Datum | (ARC 1960) | UTM Y | 216368 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 8 |
| 0.20 | 13 |
| 0.30 | 9 |
| 0.40 | 13 |
| 0.50 | 21 |
| 0.60 | 27 |
| 0.70 | 22 |
| 0.80 | 20 |
| 0.90 | 25 |
| 1.00 | 20 |
| 1.10 | 17 |
| 1.20 | 17 |
| 1.30 | 25 |
| 1.40 | 41 |
| 1.50 | 43 |
| 1.60 | 37 |
| 1.70 | 35 |
| 1.80 | 50 |

### Penetration vs Depth



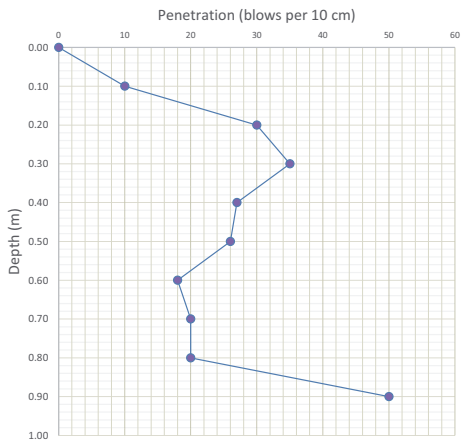


## Manual DPL Results Tubur EP6

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 22/04/2016 | Location: | EP6 | | |
| Elevation: | 1100 | UTM X | 557160 | | |
| UTM Datum | (ARC 1960) | UTM Y | 215800 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 10 |
| 0.20 | 30 |
| 0.30 | 35 |
| 0.40 | 27 |
| 0.50 | 26 |
| 0.60 | 18 |
| 0.70 | 20 |
| 0.80 | 20 |
| 0.90 | 50 |

### Penetration vs Depth

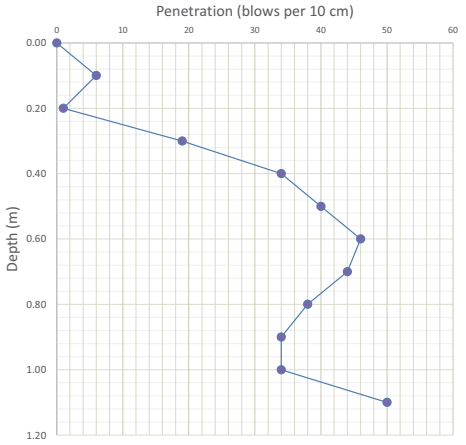



## Manual DPL Results Tubur EP7

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 22/04/2016 | Location: | EP7 | | |
| Elevation: | 1088 | UTM X | 556423 | | |
| UTM Datum | (ARC 1960) | UTM Y | 215247 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6 |
| 0.20 | 1 |
| 0.30 | 19 |
| 0.40 | 34 |
| 0.50 | 40 |
| 0.60 | 46 |
| 0.70 | 44 |
| 0.80 | 38 |
| 0.90 | 34 |
| 1.00 | 34 |
| 1.10 | 50 |

### Penetration vs Depth



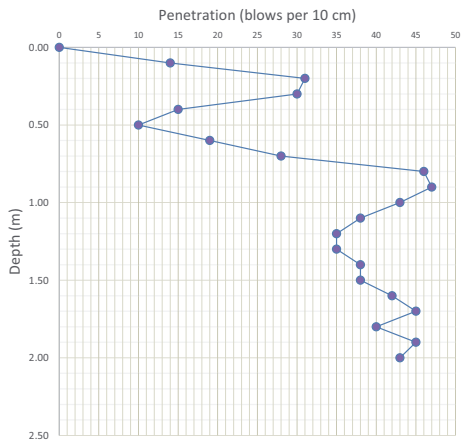


## Manual DPL Results Tubur EP 8

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 21/04/2016 | Location: | EP8 | | |
| Elevation: | 1083 | UTM X | 555513 | | |
| UTM Datum | (ARC 1960) | UTM Y | 214963 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 14.00 |
| 0.20 | 31.00 |
| 0.30 | 30.00 |
| 0.40 | 15.00 |
| 0.50 | 10.00 |
| 0.60 | 19.00 |
| 0.70 | 28.00 |
| 0.80 | 46.00 |
| 0.90 | 47.00 |
| 1.00 | 43.00 |
| 1.10 | 38.00 |
| 1.20 | 35.00 |
| 1.30 | 35.00 |
| 1.40 | 38.00 |
| 1.50 | 38.00 |
| 1.60 | 42.00 |
| 1.70 | 45.00 |
| 1.80 | 40.00 |
| 1.90 | 45.00 |
| 2.00 | 43.00 |

### Penetration vs Depth

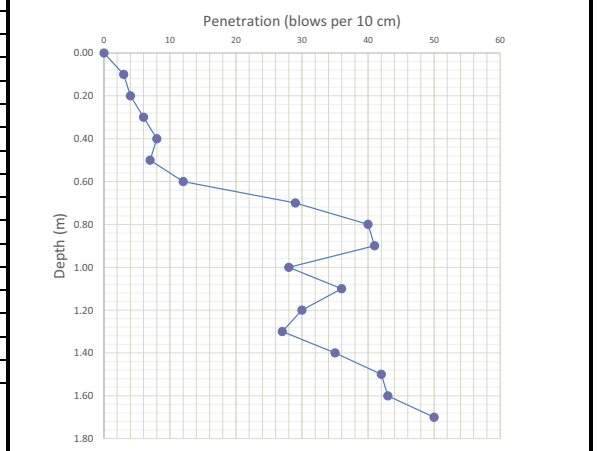



# Manual DPL Results Tubur EP9

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 22/04/2016 | Location: | EP9 | | |
| Elevation: | 1084 | UTM X | 54683 | | |
| UTM Datum | (ARC 1960) | UTM Y | 214825 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 3.00 |
| 0.20 | 4.00 |
| 0.30 | 6.00 |
| 0.40 | 8.00 |
| 0.50 | 7.00 |
| 0.60 | 12.00 |
| 0.70 | 29.00 |
| 0.80 | 40.00 |
| 0.90 | 41.00 |
| 1.00 | 28.00 |
| 1.10 | 36.00 |
| 1.20 | 30.00 |
| 1.30 | 27.00 |
| 1.40 | 35.00 |
| 1.50 | 42.00 |
| 1.60 | 43.00 |
| 1.70 | 50.00 |

## Penetration vs Depth



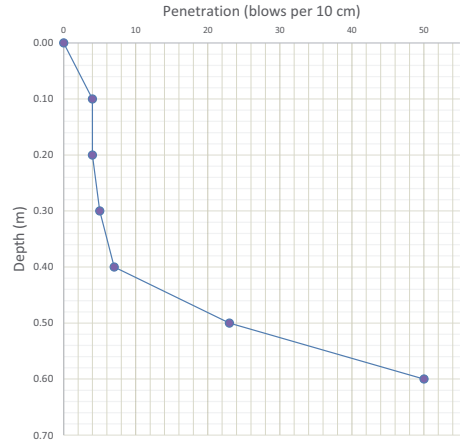


# Manual DPL Results Tubur EP10

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 22/04/2016 | Location: | EP10 | | |
| Elevation: | 1078 | UTM X | 553727 | | |
| UTM Datum | (ARC 1960) | UTM Y | 214625 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 4.00 |
| 0.30 | 5.00 |
| 0.40 | 7.00 |
| 0.50 | 23.00 |
| 0.60 | 50.00 |

## Penetration vs Depth

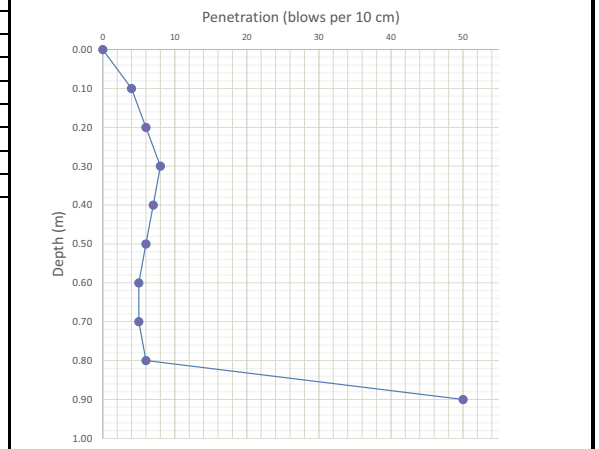


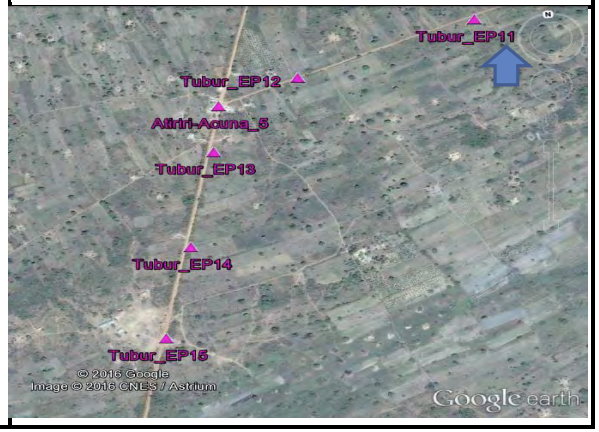

# Manual DPL Results Tubur EP11

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 22/04/2016 | Location: | EP11 | | |
| Elevation: | 1075 | UTM X | 552813 | | |
| UTM Datum | (ARC 1960) | UTM Y | 214330 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 6.00 |
| 0.30 | 8.00 |
| 0.40 | 7.00 |
| 0.50 | 6.00 |
| 0.60 | 5.00 |
| 0.70 | 5.00 |
| 0.80 | 6.00 |
| 0.90 | 50.00 |

## Penetration vs Depth



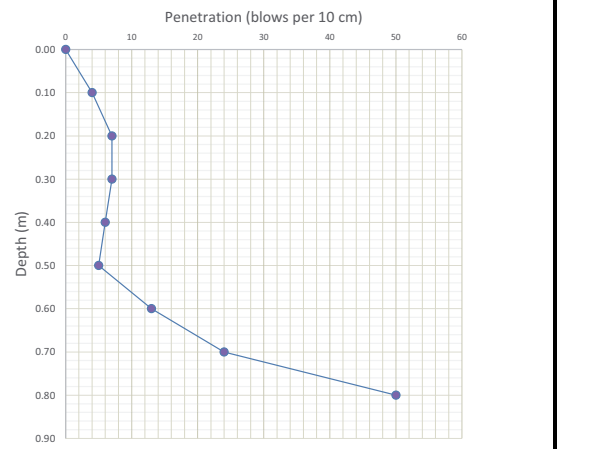




# Manual DPL Results Tubur EP 12

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP12 | | |
| Elevation: | 1074 | UTM X | 552344 | | |
| UTM Datum | (ARC 1960) | UTM Y | 214181 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 7.00 |
| 0.30 | 7.00 |
| 0.40 | 6.00 |
| 0.50 | 5.00 |
| 0.60 | 13.00 |
| 0.70 | 24.00 |
| 0.80 | 50.00 |

## Penetration vs Depth

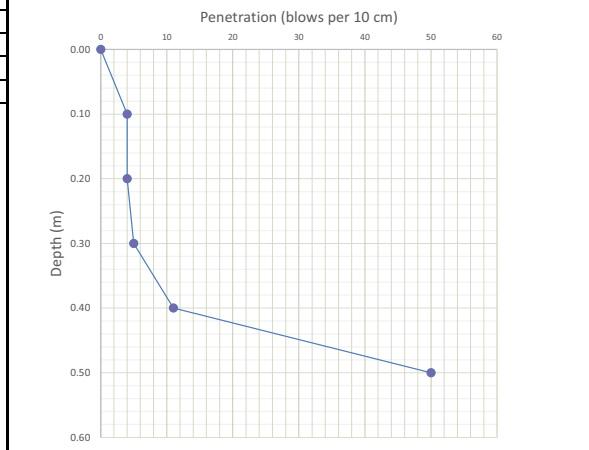



## Manual DPL Results Tubur EP13

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP13 | | |
| Elevation: | 1067 | UTM X | 552105 | | |
| UTM Datum | (ARC 1960) | UTM Y | 213956 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 4.00 |
| 0.30 | 5.00 |
| 0.40 | 11.00 |
| 0.50 | 50.00 |

### Penetration vs Depth



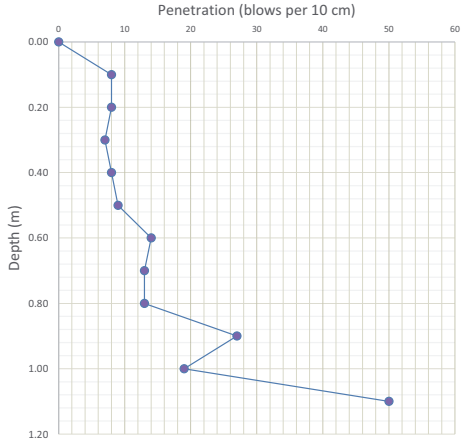


## Manual DPL Results Tubur 14

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP14 | | |
| Elevation: | 1060 | UTM X | 552016 | | |
| UTM Datum | (ARC 1960) | UTM Y | 213645 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 8.00 |
| 0.20 | 8.00 |
| 0.30 | 7.00 |
| 0.40 | 8.00 |
| 0.50 | 9.00 |
| 0.60 | 14.00 |
| 0.70 | 13.00 |
| 0.80 | 13.00 |
| 0.90 | 27.00 |
| 1.00 | 19.00 |
| 1.10 | 50.00 |

### Penetration vs Depth

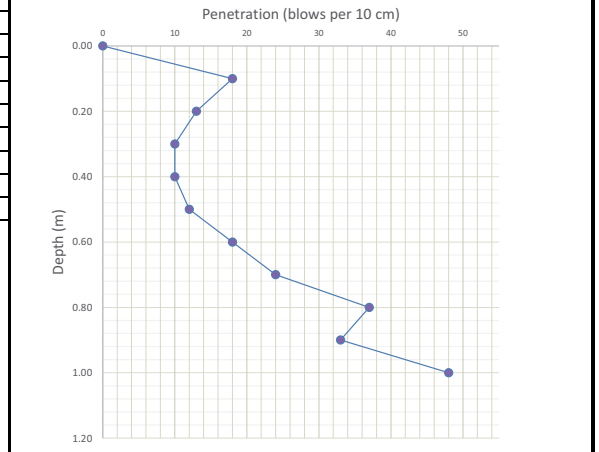


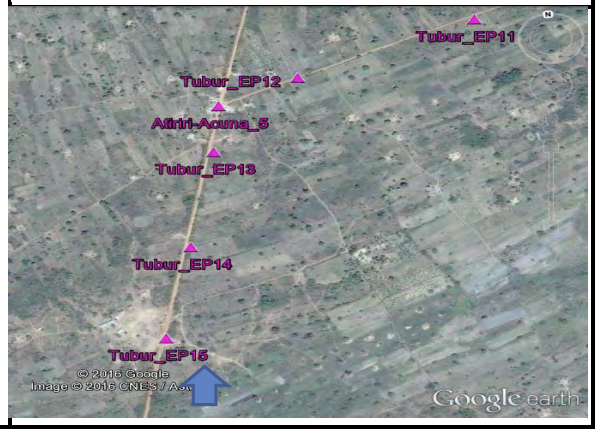

## Manual DPL Results Tubur EP15

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP15 | | |
| Elevation: | 1052 | UTM X | 551923 | | |
| UTM Datum | (ARC 1960) | UTM Y | 213340 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 18.00 |
| 0.20 | 13.00 |
| 0.30 | 10.00 |
| 0.40 | 10.00 |
| 0.50 | 12.00 |
| 0.60 | 18.00 |
| 0.70 | 24.00 |
| 0.80 | 37.00 |
| 0.90 | 33.00 |
| 1.00 | 48.00 |

### Penetration vs Depth



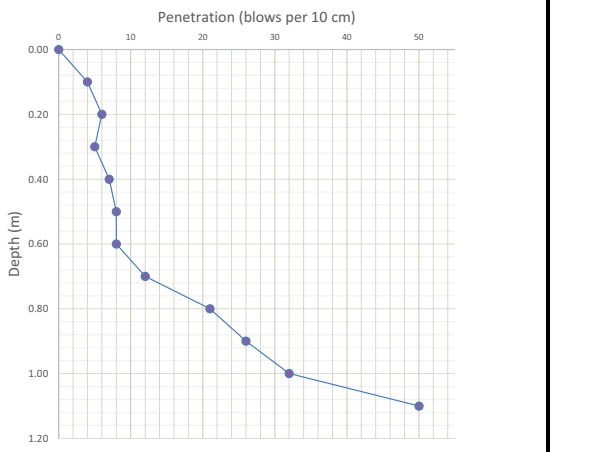




## Manual DPL Results Tubur EP16

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP16 | | |
| Elevation: | 1048 | UTM X | 551713 | | |
| UTM Datum | (ARC 1960) | UTM Y | 212635 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 6.00 |
| 0.30 | 5.00 |
| 0.40 | 7.00 |
| 0.50 | 8.00 |
| 0.60 | 8.00 |
| 0.70 | 12.00 |
| 0.80 | 21.00 |
| 0.90 | 26.00 |
| 1.00 | 32.00 |
| 1.10 | 50.00 |

### Penetration vs Depth

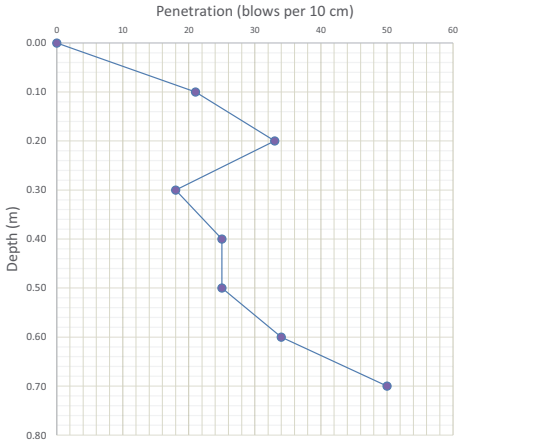



# Manual DPL Results Tubur EP 17

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP17 | | |
| Elevation: | 1055 | UTM X | 551610 | | |
| UTM Datum | (ARC 1960) | UTM Y | 212289 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 21.00 |
| 0.20 | 33.00 |
| 0.30 | 18.00 |
| 0.40 | 25.00 |
| 0.50 | 25.00 |
| 0.60 | 34.00 |
| 0.70 | 50.00 |

## Penetration vs Depth



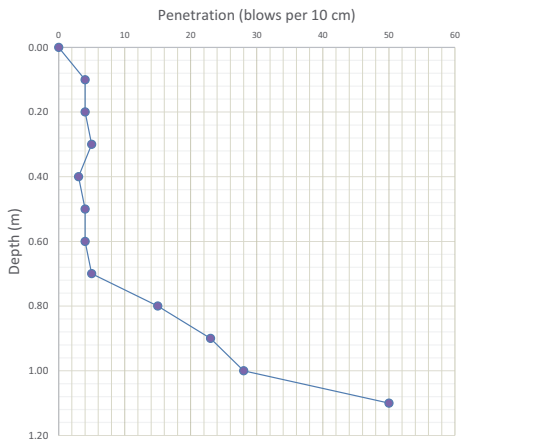


# Manual DPL Results Tubur EP18

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP18 | | |
| Elevation: | 1059 | UTM X | 551502 | | |
| UTM Datum | (ARC 1960) | UTM Y | 211917 | | |
| Weather & conditions: | | 0 | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 4.00 |
| 0.30 | 5.00 |
| 0.40 | 3.00 |
| 0.50 | 4.00 |
| 0.60 | 4.00 |
| 0.70 | 5.00 |
| 0.80 | 15.00 |
| 0.90 | 23.00 |
| 1.00 | 28.00 |
| 1.10 | 50.00 |

## Penetration vs Depth

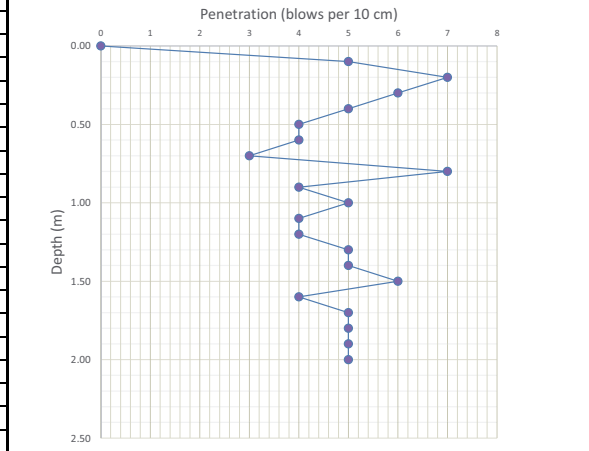



# Manual DPL Results Tubur EP19

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 23/04/2016 | Location: | EP19 | | |
| Elevation: | 1057 | UTM X | 551354 | | |
| UTM Datum | (ARC 1960) | UTM Y | 211417 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 5.00 |
| 0.20 | 7.00 |
| 0.30 | 6.00 |
| 0.40 | 5.00 |
| 0.50 | 4.00 |
| 0.60 | 4.00 |
| 0.70 | 3.00 |
| 0.80 | 7.00 |
| 0.90 | 4.00 |
| 1.00 | 5.00 |
| 1.10 | 4.00 |
| 1.20 | 4.00 |
| 1.30 | 5.00 |
| 1.40 | 5.00 |
| 1.50 | 6.00 |
| 1.60 | 4.00 |
| 1.70 | 5.00 |
| 1.80 | 5.00 |
| 1.90 | 5.00 |
| 2.00 | 5.00 |

## Penetration vs Depth



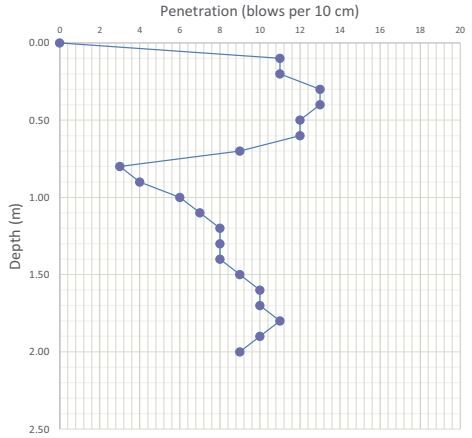


# Manual DPL Results Acuna CP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | CT1 |
| Date: | 20/04/2016 | Location: | CP1 | | |
| Elevation: | 1039 | UTM X | 554680 | | |
| UTM Datum | (ARC 1960) | UTM Y | 204221 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 11.00 |
| 0.20 | 11.00 |
| 0.30 | 13.00 |
| 0.40 | 13.00 |
| 0.50 | 12.00 |
| 0.60 | 12.00 |
| 0.70 | 9.00 |
| 0.80 | 3.00 |
| 0.90 | 4.00 |
| 1.00 | 6.00 |
| 1.10 | 7.00 |
| 1.20 | 8.00 |
| 1.30 | 8.00 |
| 1.40 | 8.00 |
| 1.50 | 9.00 |
| 1.60 | 10.00 |
| 1.70 | 10.00 |
| 1.80 | 11.00 |
| 1.90 | 10.00 |
| 2.00 | 9.00 |

## Penetration vs Depth

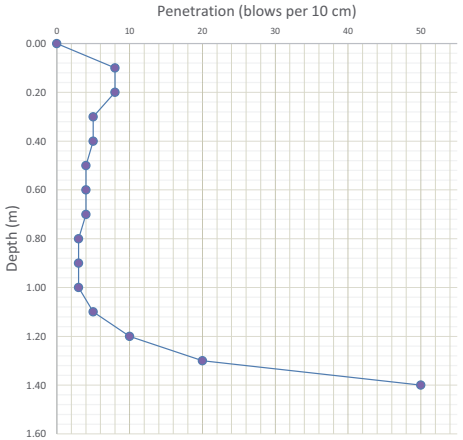



# Manual DPL Results Acuna CP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | CT1 |
| Date: | 20/04/2016 | Location: | CP2 | | |
| Elevation: | 1060 | UTM X | 551085 | | |
| UTM Datum | (ARC 1960) | UTM Y | 210586 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 8.00 |
| 0.20 | 8.00 |
| 0.30 | 5.00 |
| 0.40 | 5.00 |
| 0.50 | 4.00 |
| 0.60 | 4.00 |
| 0.70 | 4.00 |
| 0.80 | 3.00 |
| 0.90 | 3.00 |
| 1.00 | 3.00 |
| 1.10 | 5.00 |
| 1.20 | 10.00 |
| 1.30 | 20.00 |
| 1.40 | 50.00 |

## Penetration vs Depth



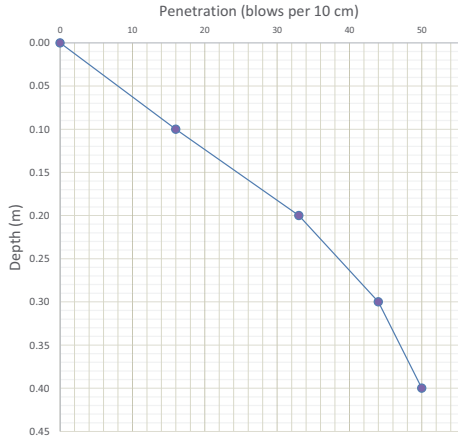


# Manual DPL Results Acuna P5

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 20/04/2016 | Location: | P5 | | |
| Elevation: | 1042 | UTM X | 568025 | | |
| UTM Datum | (ARC 1960) | UTM Y | 138003 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 16.00 |
| 0.20 | 33.00 |
| 0.30 | 44.00 |
| 0.40 | 50.00 |

## Penetration vs Depth

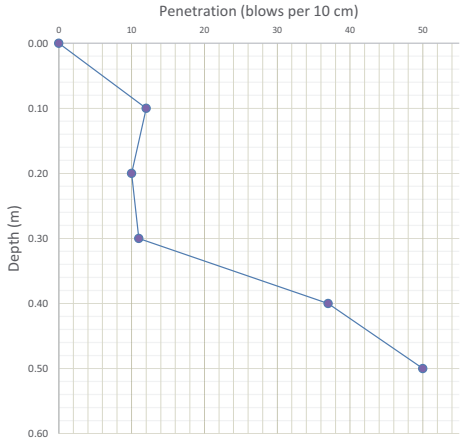


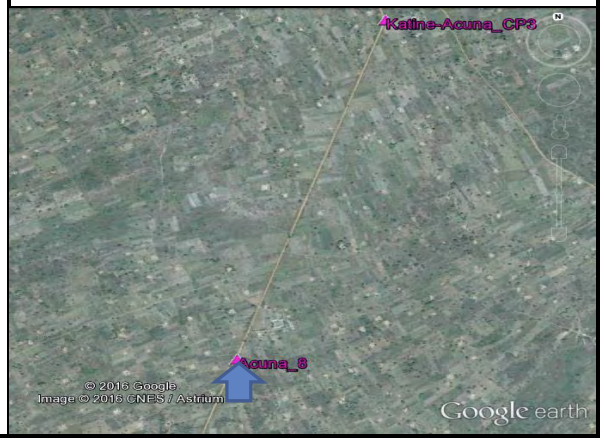

# Manual DPL Results Acuna P8

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 20/04/2016 | Location: | P8 | | |
| Elevation: | 1084 | UTM X | 553326 | | |
| UTM Datum | (ARC 1960) | UTM Y | 217428 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 12.00 |
| 0.20 | 10.00 |
| 0.30 | 11.00 |
| 0.40 | 37.00 |
| 0.50 | 50.00 |

## Penetration vs Depth



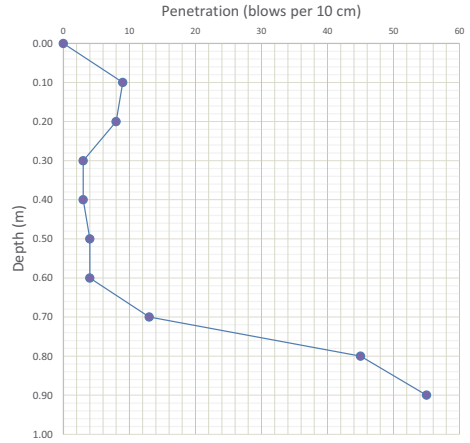




# Manual DPL Results Acuna CP 3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 20/04/2016 | Location: | CP 3 | | |
| Elevation: | 1097 | UTM X | 554154 | | |
| UTM Datum | (ARC 1960) | UTM Y | 219595 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 9.00 |
| 0.20 | 8.00 |
| 0.30 | 3.00 |
| 0.40 | 3.00 |
| 0.50 | 4.00 |
| 0.60 | 4.00 |
| 0.70 | 13.00 |
| 0.80 | 45.00 |
| 0.90 | 55.00 |

## Penetration vs Depth

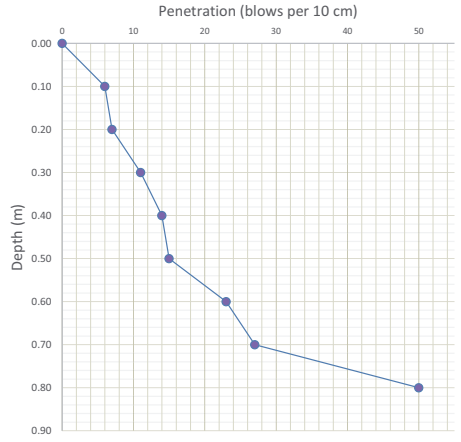



## Manual DPL Results Acuna EP1

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 20/04/2016 | Location: | EP1 | | |
| Elevation: | 1093 | UTM X | 5562991 | | |
| UTM Datum | (ARC 1960) | UTM Y | 221778 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 6.00 |
| 0.20 | 7.00 |
| 0.30 | 11.00 |
| 0.40 | 14.00 |
| 0.50 | 15.00 |
| 0.60 | 23.00 |
| 0.70 | 27.00 |
| 0.80 | 50.00 |

### Penetration vs Depth



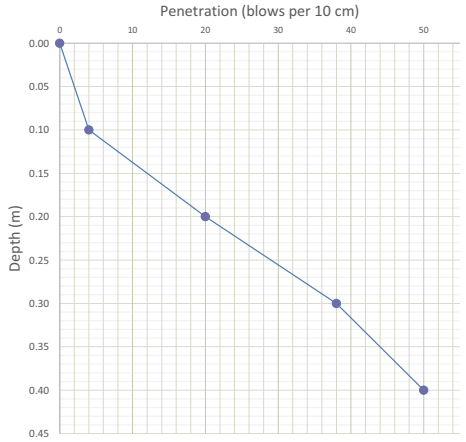


## Manual DPL Results Acuna EP2

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 20/04/2016 | Location: | EP2 | | |
| Elevation: | 1084 | UTM X | 552622 | | |
| UTM Datum | (ARC 1960) | UTM Y | 221955 | | |
| Weather & conditions: | 0 | | | | |

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 4.00 |
| 0.20 | 20.00 |
| 0.30 | 38.00 |
| 0.40 | 50.00 |

### Penetration vs Depth




# Manual DPL Acuna EP3

| | | | | | |
|---|---|---|---|---|---|
| Client: | JICA | District: | Soroti | Cone Type | 0 |
| Date: | 20/04/2016 | Location: | EP3 | | |
| Elevation: | 1093 | UTM X | 552860 | | |
| UTM Datum | (ARC 1960) | UTM Y | 221596 | | |

Weather & conditions: 0

| Z (m.b.g.l) | $N_{10}$ |
|---|---|
| 0.00 | 0 |
| 0.10 | 9.00 |
| 0.20 | 8.00 |
| 0.30 | 6.00 |
| 0.40 | 5.00 |
| 0.50 | 10.00 |
| 0.60 | 50.00 |

## Penetration vs Depth