

# **HAND DUG WELLS ON THE KARAMOJA-TESO BORDER NE UGANDA**

**BGS Meeting 25th September 2001**

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# Kara - Teso Water Project

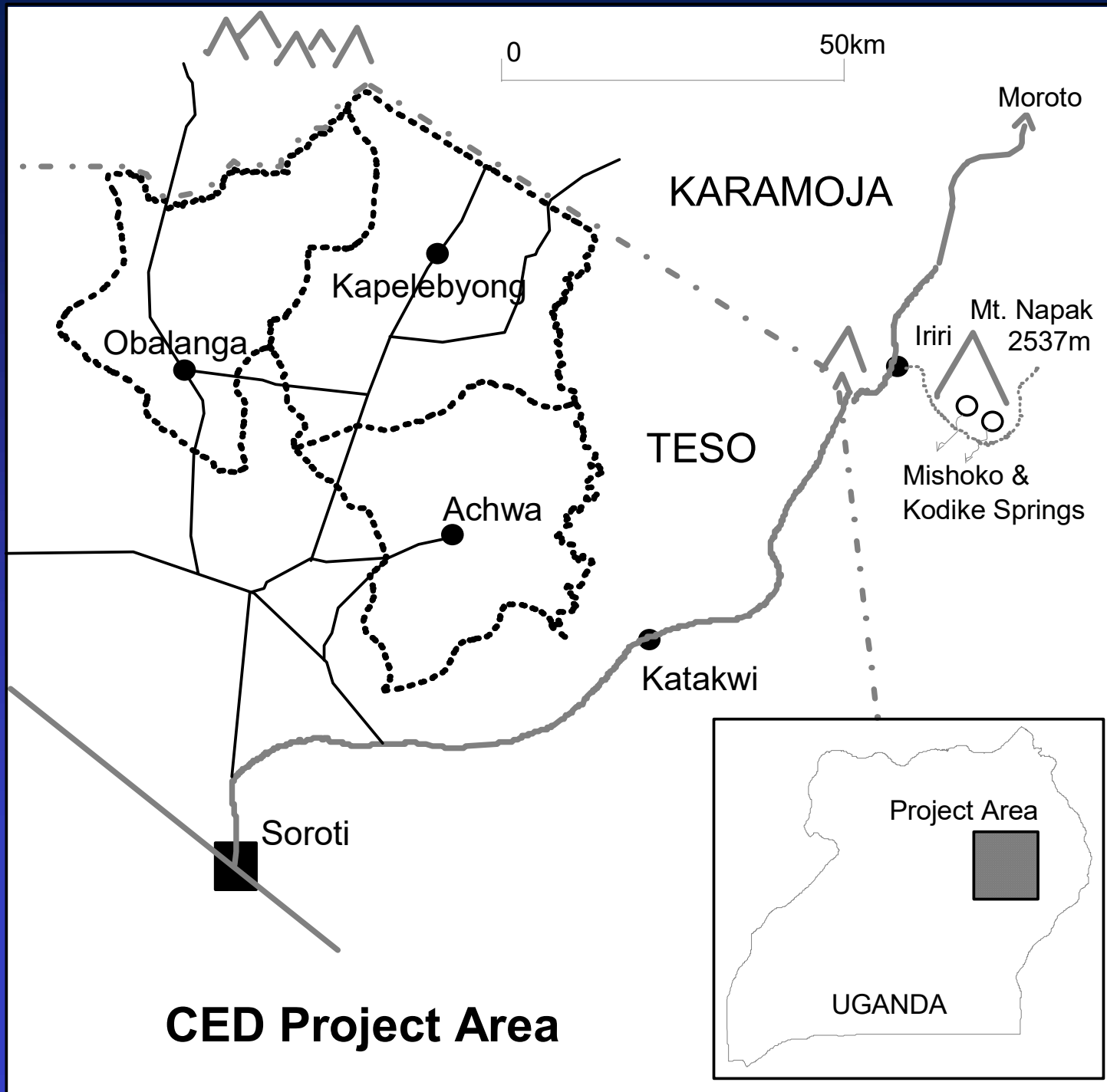
## Undertaken :

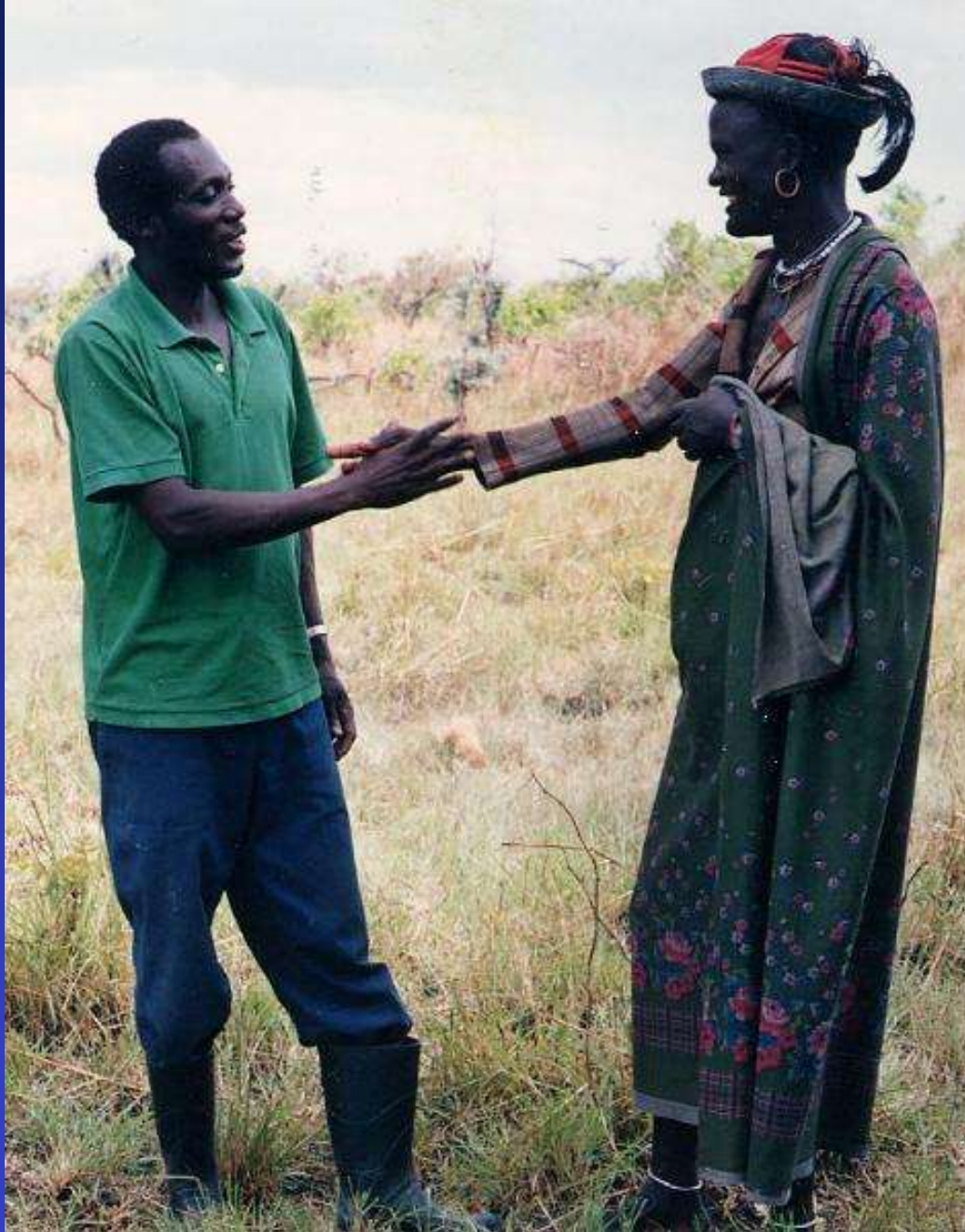
- in partnership with CHIPS
- with funding from ODA (now DiFD) and other sources
- as part of wider development programme

## Included:

- Hand dug well programme
- Rehabilitation of 2 earth valley dams
- Spring protection and gravity pipeline scheme







**CHIPS/CED  
water projects  
secondary  
aim to  
facilitate  
peacemaking**



# View of Kara-Teso Project Area



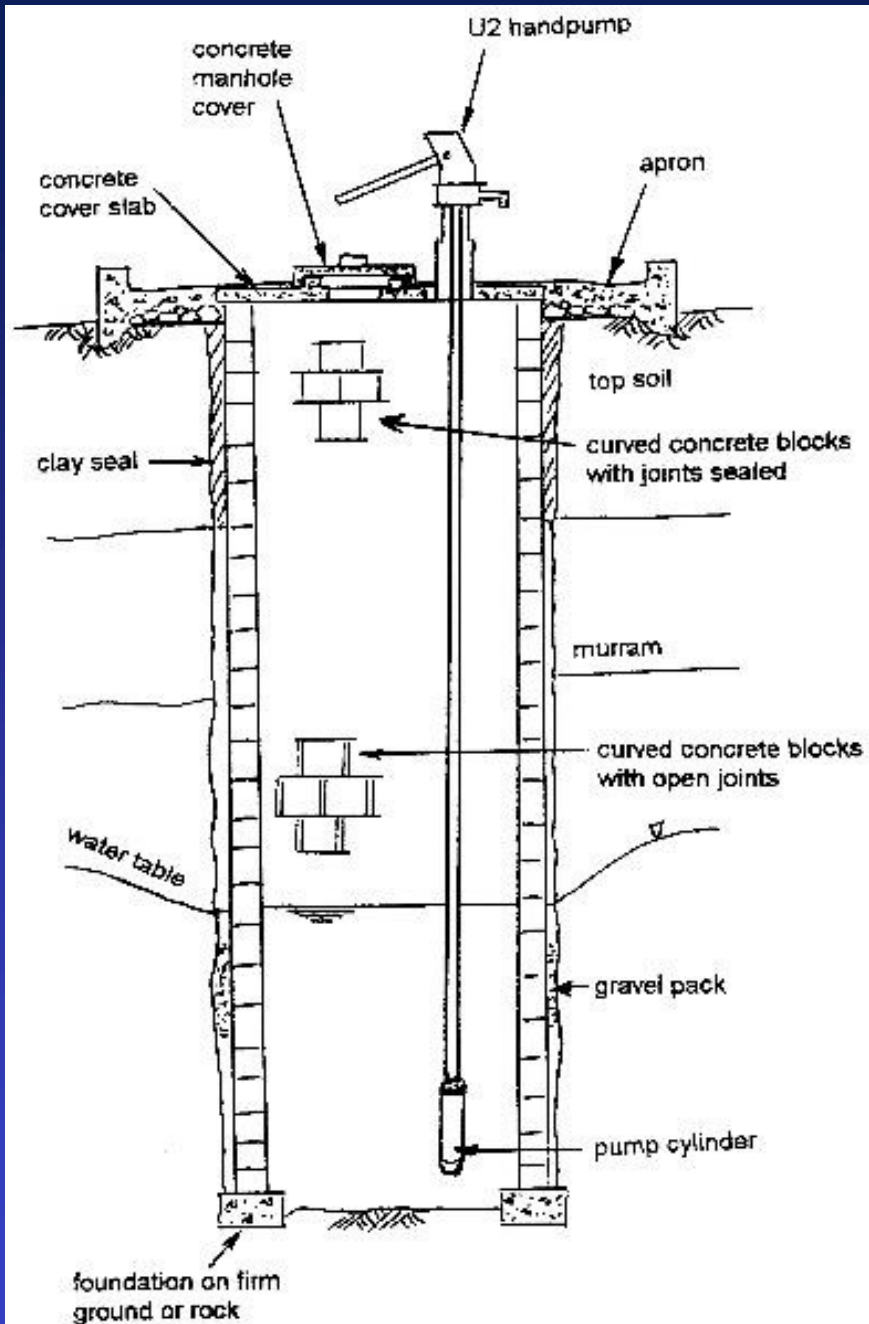
# Development Philosophy

- **Community ownership**
- **Sustainability - maintenance of source**
- **Replicable construction method**
- **Maximise other development spin-offs**



# Traditional waterhole





Fully Protected Well  
With Handpump

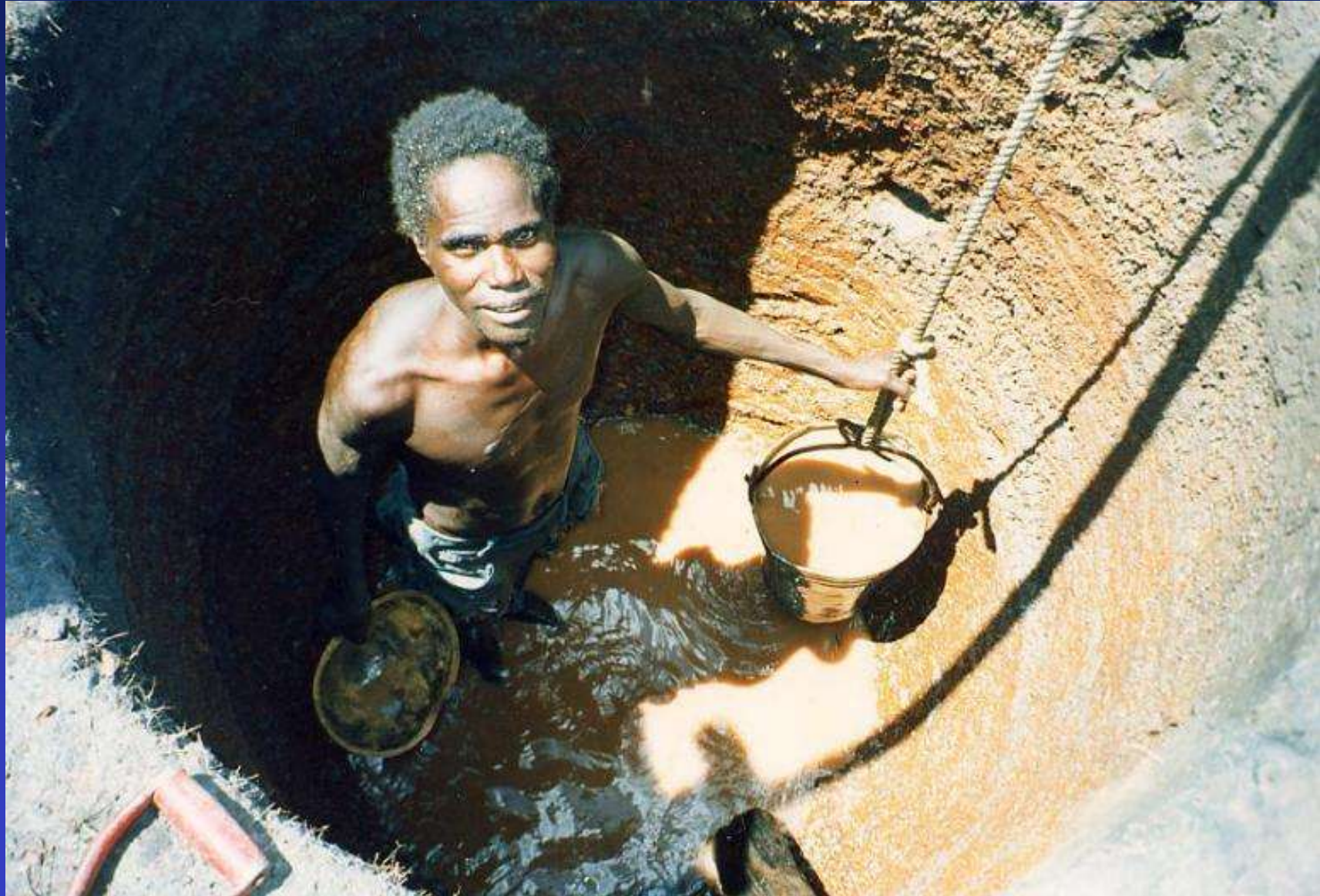
# Hand-dug well - typical section



# The Regolith Profiles for Wells in the Karamoja-Teso Area

- Topsoil 0.3 – 5.1m. [Sandy clay, brown for the first 0.3 – 0.5m, then Orange brown, with a layer of gravel below.]
- Murrum. 0.3 – 4.0m. [A basal ferruginous laterite concretion.]
- Saprolite 0.2 – 7.0m [Clay often containing silt. Often with sand towards the bottom. Prone to collapse]

# Initial well digging



# Well shoring system



# Windlass used for lowering men and equipment

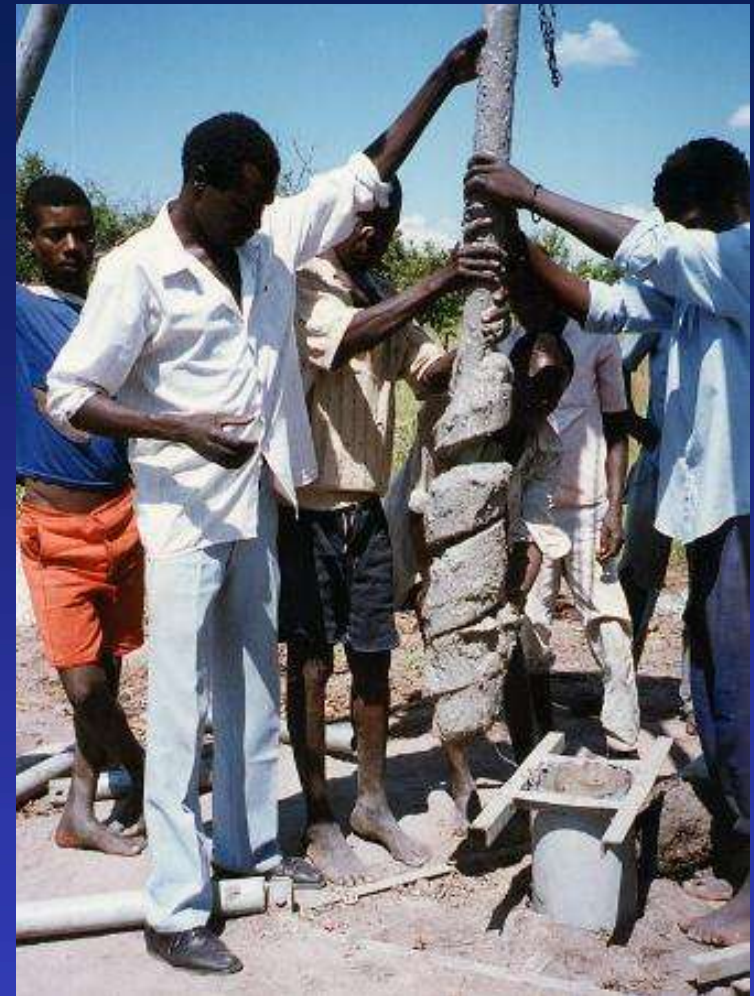


# Well lining using concrete blocks



# Well head construction





**Hand auger rig**





**Well  
opening  
celebrations**





# Causes of Delay

- **Waning initial enthusiasm**
- **Crop planting, harvesting, and cattle migration**
- **Community occasions such as weddings and funerals**
- **Delays in supplies promised by other agencies**
- **Breakdowns of the lightweight submersible pumps**
- **Disruption by floods and famine**
- **Transport problems - breakdowns and impassable roads**



# Revised Community Agreement

## Community agree to:

- Elect an well committee (including 2 women)
- Raise 150,000UShs (£100) to pay their own workers
- House and feed CHIPS well technicians
- Safeguard the site

## NGO agree to:

- Administer funds, provide equipment and technicians
- Provide ox cart on loan for collecting sand & murrum
- Once complete to hand over to WATSAN maintenance programme
- Provide health and hygiene advice - also provide pit latrine cover slabs (through WATSAN)

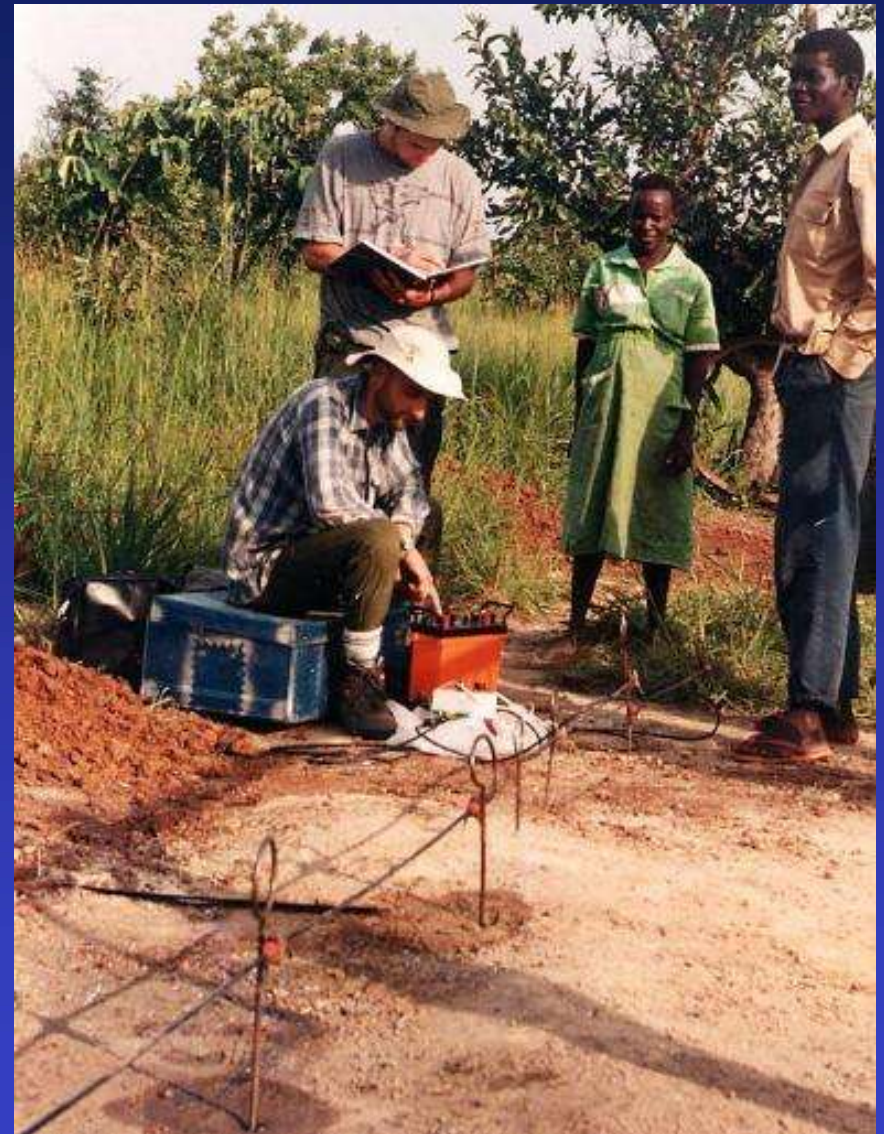




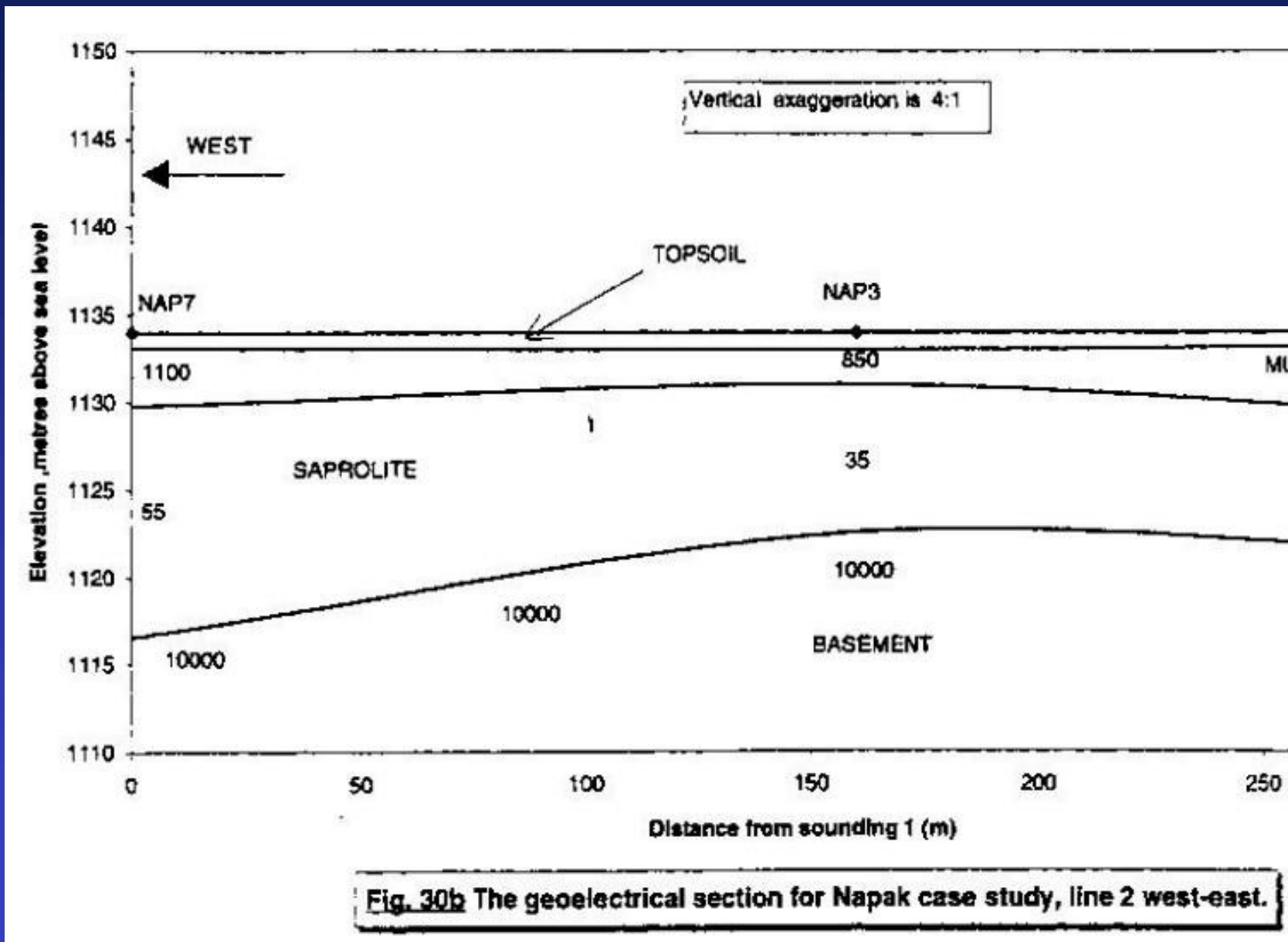
**Petrol driven  
jack hammer**



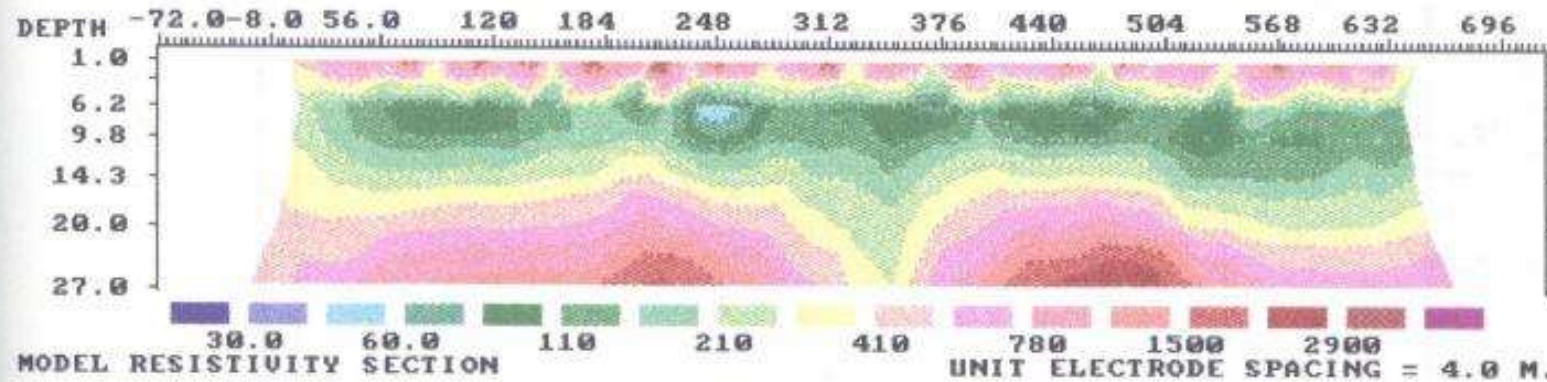
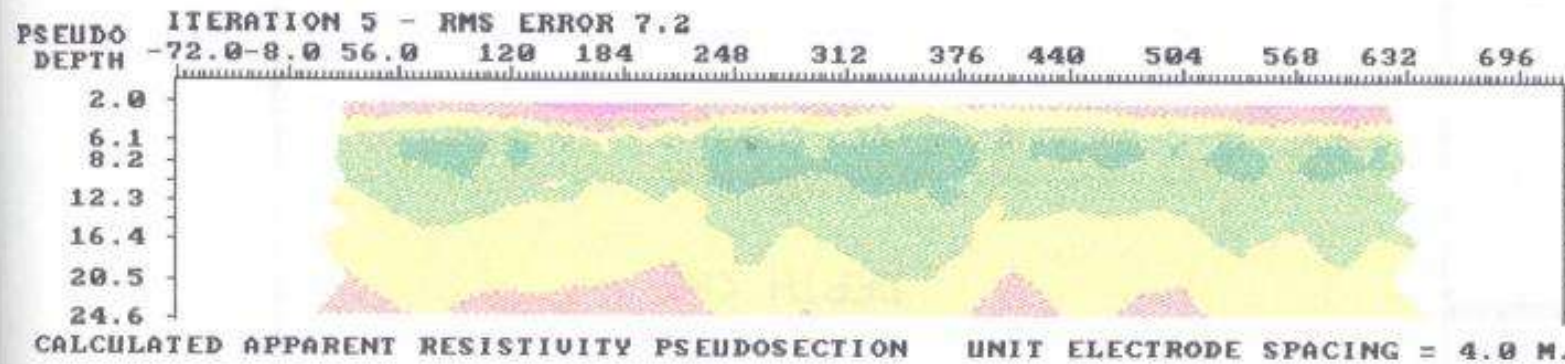
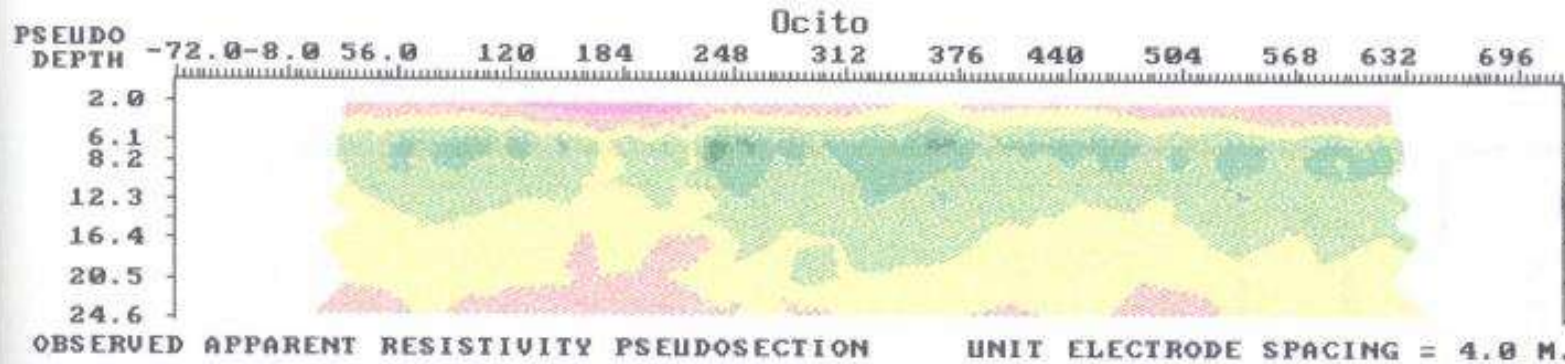
# MSc Research - Hydrogeological Survey and Resistivity Surveying



# Resistivity survey results



# Ocito Pseudosection



# Project Evaluation

<b>Number of wells started</b>	<b>62</b>
<b>Number abandoned</b>	<b>9</b>
<b>Number sunk</b>	<b>53</b>
<b>Number dry</b>	<b>15</b>
<b>Number successfully completed</b>	<b>38</b>
<b>Success rate</b>	<b>71%</b>



# Well Performance

**Yield range** 25 to 4500 l/hr

**Average yield** 425 l/hr

**Increase in water use:**

- prior to well construction 4 to 10 l/day/head

- post to well construction 15 to 26 l/day/head

**No. of people supplied from**

**the 38 new wells:** 6000





# Water Quality

**Thermotolerant (faecal) Coliform counts (TFC/100ml)**

	<b>Range</b>	<b>Typically value</b>
<b>Boreholes</b>	<b>0 – 22</b>	<b>zero</b>
<b>Wells</b>	<b>0 – 590</b>	<b>20</b>
<b>Surface sources</b>	<b>40 – 2000+</b>	<b>1000+</b>

**Boreholes would be classified as of “low risk”**

**Wells would be classified as of “Intermediate to high risk”**

[Lloyd.B. & Helmer.R.1991 ]

**The average for the wells falls within the range, 8 – 200**

**TFC/100ml quoted as typical for Uganda**

[Cairncross and Feacham ]



# Water Storage in Pots

## Possible Causes of contamination:

- Ill fitting cover on pots giving access to insects
- Cup for scooping water out used by whole family and often left on the floor
- Multi-use of same jerrycan for different water sources
- Using cupped hands to funnel pumped well water into jerrycans.
- Sanitary surveys carried out at wells indicated that contamination could occur from dirty well sites

# Conclusions - hand dug well programme



- Hand dug well programme cost £100,000
- Provided water for 6,000 people
- A reasonable quality water provided
- Water consumption increased
- Time spent collecting water much reduced - giving more time for work in fields or education
- Reduced incidence of disease

# Conclusions - other benefits



- **Communities strengthened and able to tackle other development projects**
- **Women's participation encouraged**
- **3 well teams continuing with other NGOs**
- **Helped progress reconciliation between Iteso and Karamojong**
- **4 MSc students contributed valuable reasearch**