No.

BASIC DESIGN STUDY REPORT

ON

THE PROJECT FOR GROUNDWATER DEVELOPMENT IN LILONGWE WEST

IN

THE REPUBLIC OF MALAWI

JUNE 2005

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

In response to a request from the Government of the Republic of Malawi, the Government of Japan decided to conduct a basic design study on the Project for Groundwater Development in Lilongwe West in the Republic of Malawi and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Malawi a study team from October 25 to December 22, 2004.

The team held discussions with the officials concerned of the Government of Malawi, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Malawi in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Malawi for their close cooperation extended to the teams.

June, 2005

Seiji Kojima
Vice President
Japan International Cooperation Agency

June 2005

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Groundwater Development in Lilongwe West in the Republic of Malawi.

This study was conducted by Japan Engineering Consultants Co., Ltd., under a contract to JICA, during the period from October, 2004 to June, 2005. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Malawi and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

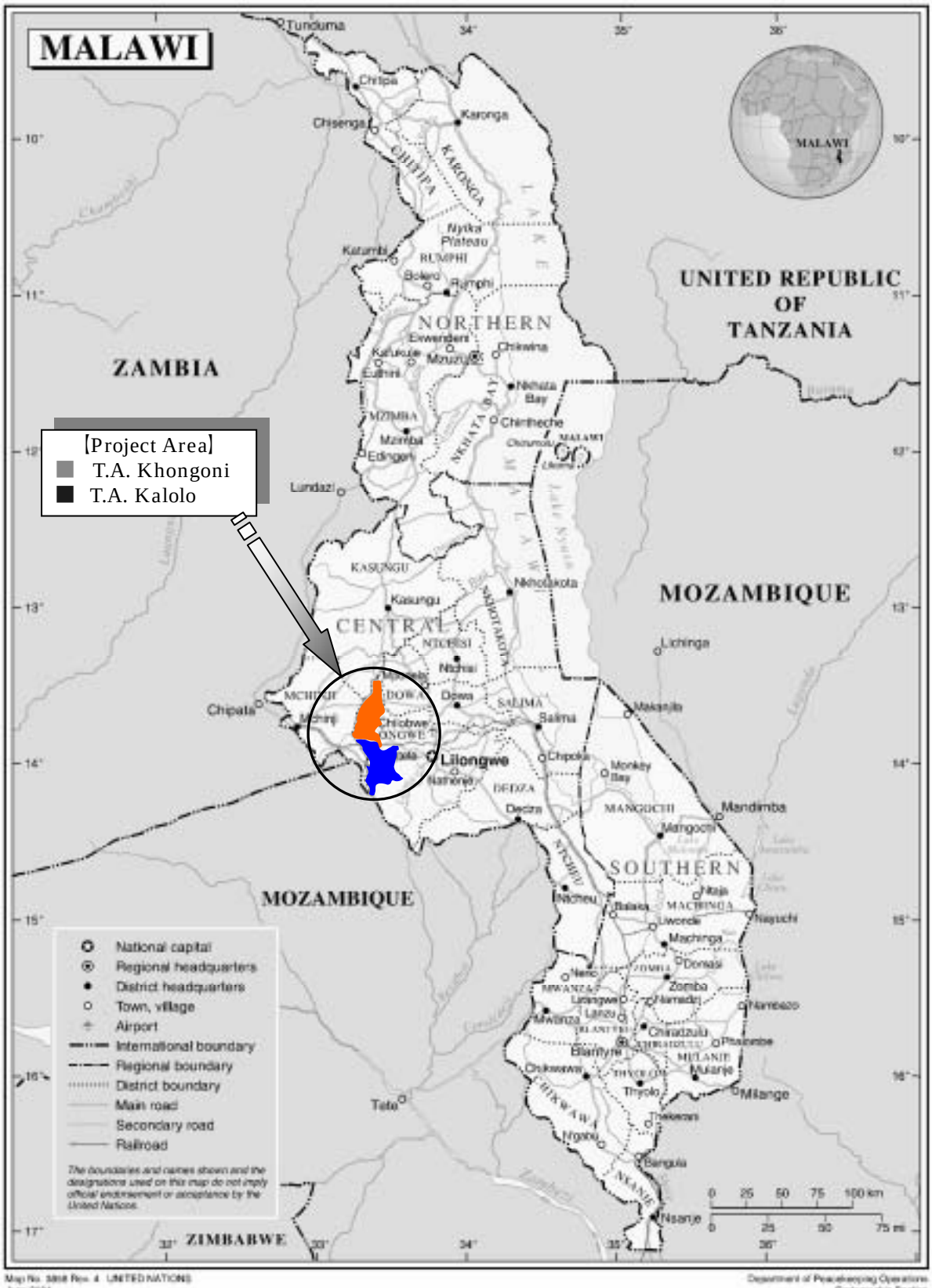
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Hiromi Yamagai
Project Manager

Basic Design Study Team on the Project for
Groundwater Development in Lilongwe West

Japan Engineering Consultants Co., Ltd.



Map No. 3868 Rev. 4 UNITED NATIONS
June 2004

Department of Peacekeeping Operations
Cartographic Section

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ABBREVIATION

ADC	: Area Development Committee
AEC	: Area Executive Committee
AfDB	: African Development Bank
BCF	: Borehole Construction Fund
BH	: Borehole
CBM	: Community Based Management
CDA	: Community Development Assistants
CIDA	: Canadian International Development Agency
DB	: Data Base
DC	: District Commissioner
DCT	: District Coordination Team
DDP	: District Development Plan
DEC	: District Executive Committee
GDP	: Gross Domestic Product
GIS	: Geographical Information Systems
GNI	: Gross National Income
GPS	: Global Positioning System
GVM	: Gross Vehicle Mass
HMIS	: Health Management Information System
HSA	: Health Surveillance Assistants
JEC	: Japan Engineering Consultants Co., Ltd.
JICA	: Japan International Cooperation Agency
JSRM	: Joint Sector Review Meeting
KfW	: Kreditansalt fur Wiederaufbau
lpcd	: litre per capita a day
MASAF	: Malawi Social Action Fund
MDGs	: Millennium Development Goals
MoH	: Ministry of Health
MoWCCS	: Ministry of Women, Child Welfare and Community Services
MoWD	: Ministry of Water Development
MPRS	: Malawi Poverty Reduction Strategy
NGO	: Non Governmental Organization
NSO	: National Statistics Office
OJT	: On the Job Training
PRSP	: Poverty Reduction Strategy Paper
TA	: Traditional Authority
TOT	: Training of Trainers (extension worker)
UNDP	: United Nations Development Program
UNICEF	: UN International Children's Emergency Fund
VHWC	: Village Health Water Committee
VLOM	: Village Level Operation & Maintenance
WHO	: World Health Organization
WMA	: Water Monitoring Assistants
WPC	: Water Point Committee
WSSCC	: Water Supply and Sanitation Collaborative Council
WSSD	: Water Supply and Sanitation Department

SUMMARY

The population of the Republic of Malawi is 11 million (2003) of whom 60% or more have an annual income of 40 dollars or less and in particular, the majority of workers in the agricultural and related industries who make up 85% of the working population face poverty. In April 2002, under the Malawi Poverty Reduction Strategy (MPRS), the government decided to increase ratio of access to safe water from 65.6% (in 2001) to 84% (by 2005) as the target in the water supply and sanitation sector and with the Ministry of Water Development (MoWD) as the principal agency, initiatives for strengthening the capability of the water supply system including the new construction of 7,500 boreholes, rehabilitation of 2,000 boreholes, and rehabilitation of 15 gravity piped water facilities and strengthening capability in maintaining and managing the water supply and hygienic conditions including at the community level are being taken with the support of international agencies and NGOs.

As a result of the limitations in drilling equipment, materials and technology in Malawi, dissemination of water supply facilities in rural areas where boreholes are the principal means of water supply is particularly delayed due to hydrological and geological conditions and areas that are difficult to access and this situation is causing regional differences in the ratio of water supply. Moreover, while the Community Based Management (CBM) programme for water supply facilities was improved in 1999 by adopting the community participation method, the capacity of the budget and number of extension field workers is extremely limited and there are numerous borehole facilities where maintenance and management as well as monitoring activities are not entrenched thus causing the low working ratio.

As of 2004, the ratio of water supply in rural areas was estimated to be about 75% thus clearly indicating that achieving the objective of MPRS is difficult and for this reason, responding to the scheduled review of MPRS in 2005, the MoWD is scheduled to promote local water supply projects towards further enhancing the water supply ratio.

The MoWD has undertaken water supply and sanitation projects through the "Dispersed Borehole Construction Programme" using its own budget and through initiatives under international support particularly in areas with a low ratio of water supply. The area of Lilongwe West, i.e. TA Kalolo and TA Khongoni, has been evaluated as the area of the worst water supply conditions as a result of the Water Point Mapping survey which was conducted by the Water Supply and Sanitation Collaborative Council in 2003. Based on the successful implementation of past four groundwater development projects under Japanese Grant Aid Assistance, the government of Malawi requested a grant from Japan regarding the project for groundwater development in Lilongwe West in October 2003.

Upon receiving this request, Japan International Cooperation Agency (JICA) undertook a preliminary study in July 2004 and dispatched the Basic Design Study Team from October 25 to December 22, 2004. The Study Team conferred with counterpart officials, undertook a site study and after review and analysis of the results of the study upon return to Japan, compiled the Draft Final Report. In

order to explain this Report, JICA dispatched the Study Team from April 20 to April 29 in 2005.

The requested content are: borehole construction for 254 villages in above two TAs in Lilongwe District; procurement of equipment and materials for borehole construction such as a set of drilling machines; provision of technical assistance for community training and the training of extension field workers (CBM programme). The Study Team undertook the field study for basic design on borehole construction, procurement of equipment and materials and technical assistance.

With respect to the 254 villages targeted in the request, the Study Team reviewed the population of each site, status of water supply such as existing supply facilities, possibility of groundwater development based on the hydro-geological conditions, access conditions, the socio-economic conditions of the villages, community awareness with respect to the construction of boreholes, and duplication to other projects. The Team finally listed the villages that are appropriate for the construction of boreholes and identified the number of boreholes to be constructed.

In the targeted area, it was found that there are 202 working boreholes serving an estimated population of 221,000 people and since the ratio of water supply from boreholes is 23%, the water supply situation is extremely poor. Moreover, in the study of the social conditions in each village, it was found that the rationale for the estimated population is based on the 1998 national census and that there were numerous villages were not included and since there are many cases of increase or decrease of population in recent years due to social factors, the village population identified through hearings in the study was taken to be the planned target population of each village.

Excluding the people covered by existing boreholes or repairable un-functioning boreholes, each new boleholes will be distributed to supply drinking water for population of not more than 500 people (estimated 570 people in 2008). The planned volume of water supply is 15 litres per person per day that is equivalent to the volume of drinking water of the current sources of water such as the shallow wells.

In the Project Area, in which the bed rock is composed of gneiss (in the most part) and granite/schist (in the southernmost), the success rate to secure the required yield for hand pump is estimated as 90% according to the track record of drilling in neighboring Mchinji district, though the thickness of aquifer changes significantly depending on the thickness of weathered layer. However, in areas with distribution of graphite gneiss that makes up about 1/3 of the gneiss, borehole water with high iron content is detected with high probability and there are boreholes that are not used. Since the distribution of iron content changes vertically, horizontally (particularly in the east to west direction) and irregularly, if the concentration of iron content is confirmed for various depths during the drilling, by taking measures to avoid intake of water from an aquifer layer with high iron content or by repeating the drilling process within the same village, it was determined that the overall success rate will still be 80% even with the failure due to water quality. In accordance with the result of

geophysical survey and the records of existing boreholes in the Project Area, the depths of boreholes were set to between 30 to 80 m and averaged at 45 m.

Though access to the villages does not present a problem for the most part, the Malawi Government would secure the access to the sites prior to the construction by cooperating with related communities, especially for the five routes on which the drilling machinery could not pass due to irregularity or insufficient width.

Having reviewed the results of the above study and the social condition survey, with the exception of one village that does not have the intention of accepting a new borehole, thirteen villages that are capable of supplying water using existing facilities and six villages which joint use with other neighbouring requested villages was found to be appropriate, 234 villages (or groups of village) were selected as target sites for cooperation under a grant.

With regards to the necessity and its number of borehole construction equipment that need to be procured, our determination was made taking the following examination into consideration; 1) efficiency and adequacy for drilling in the Project area, 2) supplement to the quantitative and qualitative inadequacy of the drilling capabilities of Malawi including the private sector, 3) necessity to promote rural water supply projects through groundwater development in the future, and 4) the organisational strengths, technical capabilities and maintenance & management capabilities of the agency implementing the project.

Moreover, with respect to equipment required in the research and for monitoring purposes, appropriate specifications and number were determined based on the operation, maintenance and management plan.

The operation, maintenance and management of the borehole facilities will be undertaken by the Water Point Committee (WPC) that will be established at each village level and the district and the MoWD will provide monitoring and technical support. The community sensitisation activities to this end will be undertaken in conformance with the CBM programme including hygiene education but in terms of the manual that has adopted the participatory method, the number and experience of extension field workers are inadequate. This project that is targeted for cooperation shall, as software component, support the training of extension workers and technical support for community training undertaken by such extension workers among the local staff selected from the MoWD and Ministry of Health (MoH), and Ministry of Women, Child Welfare & Community Services (MoWCCS). Moreover, as apart of this, towards raising motivation with respect to the maintenance and management of WPC, study tours will be undertaken for mutual exchange of information among the WPCs and from among the pump care-takers at the village level, area pump mechanics (Area Mechanics) who are able to repair cases of major breakdown of pumps will be nurtured and under a public accreditation system, the introduction of a method of maintenance and management in the

private sector will be undertaken as a trial measure.

[Borehole Construction Work]

Item	Requested Contents National Target	Basic Plan	Rationale
Target Area of Assistance	Lilongwe District :2TAs TA Kalolo TA Khongoni	Lilongwe District :2TAs TA Kalolo TA Khongoni	The area was evaluated as the worst safe water supply ratio according to the Water Point Mapping Survey of WSSCC. No other large-scale groundwater development project is planed in the area.
Borehole Construction	500 boreholes (Requested in 2003) 254 villages (confirmed in preliminary study in 2004)	296 boreholes in 234 villages	Out of the requested 254 villages, in the Project area as requested, the following have been excluded, according to field investigation: - To be supplied water with the existing borehole, etc. : 13 villages - To be reasonable to use a borehole jointly with other neighbouring villages because of its small user population or complex village boundary : 6 villages - No willingness to receive a new borehole because of newly constructed protected shallw wells: 1 villages In the villages with large population, so as to avoid the excessive use of the pump against the capacity, more than one borehole has been planned to construct (2 BHs in 46 villages, 3 BHs in 3 villages, 4 BHs in 2 villages, 5 BHs in one village), with the criteria of less than 500 of user population per borehole.
Water Supply Indicators: User population Per capita supply amount Distance of fetching water Standard yield	National Target 250/ BH 27 lpcd less than 500 m -	 100 to 570 /BH 15 lpcd at the minimum Almost < 500 m 12 liter/min	The per capita supply amount shall be set at 15 lpcd as same as the current level of drinking water consumption from existing water sources. Twelve hours operation a day with Standard yield (12 litre/min) supplies 8,640 litre/day to 570 users who consume 15 lpcd.
Drilling Depth	-	30 to 90 m (Average: 45 m)	Determined, according to the aquifer-bottom depth identified from the electric prospecting (in sampled villages). The drilling site shall be determined in the Detailed Design Stage, with the consent of WPC, after recommending the prospective site with deep-aquifer from the geophysical prospecting to be conducted at the candidate site selected by WPC.
Borehole Success Rate	-	80%	The rate was set on the bases of collation and examination between the aquifer identification from the electric prospecting results and the past accomplishment (a real dry hole appearance rate in neighbouring Mchiji district), and in consideration of the dotted existence of the groundwater with high-iron concentration.

[Equipment Procurement]

Name of Equipment	Specification / Contents	Quantity
I. Borehole Drilling Equipment:		
Borehole Drilling Rig	Truck-mounted (4×4, GVM : not more than 16.5t) (Drilling capacity: 100 m)	1 no.
High-pressure Air Compressor	Truck-mounted (4×4, GVM : not more than 16.5t) not less than 2.0 MO×20m^3/min	1 no.
Equipment for Development and Pumping Test	Truck: 4×4, GVM : 10t, loading capacity : 3t, 190 PS, with 3t-crane	1 no.
	Compressor : not less than 0.7 MPa×3.5m^3/min	1 no.
	Generator: 10KVA (50Hz), 3 phase, AC 380V	1 no.
	Submersible pump: 100 litre/min at 50m head, with pipes	1 no.
	Air-lift & Pumping Test Tools: Pipes, measuring box with notch, water gauge (100 m), pH meter, and electric conductivity meter	1 set
Cargo Track	4×4, GVM : 13t, loading capacity : 5.5t, with 3t-crane	2 no.
Pick-up Truck	Single-cabin and Double-cabin, 4×4, not less than 77 PS	1 no.each
Geophysical Prospecting Equipment	Maximum prospecting depth: not less than 200 m, 400V / 1 – 200mA, 12V/24A, with cable wire, electrode and software	1 no.
II. Research and Monitoring Equipment:		
Motorcycle	For off-road use, displacement: 100 to 125cc, 10 PS	3 nos.
GPS	Portable Type	2 nos.
Equipment for operation of GIS Data Base	GIS Software	1 set
	Computer: CPU 2.4 GHz, RAM256MB, HD40Gb, CD-RW, 3.5" FDD, Monitor TFT 17"	1 no.
	Colour Printer	1 no.

The Project shall be implemented as a 3-phase undertaking under the Japanese grant aid scheme. The first phase will be composed of the procurement of equipment and materials and the construction of boreholes (24 boreholes) utilizing local contractors. The second and third phases will be composed of the construction of boreholes (156 boreholes and 116 boreholes respectively) with a total three unit system combining the equipments which have been already procured, be newly procured and be owned by local contractors. The work periods required are: 17.7 months for the implementation design and tendering work; 9.0 months for the manufacturing, transport and delivery of the equipment procured; 24.7 months for the construction of the boreholes (296 boreholes); and 26 months for the CBM activities including training of the extension worker and providing technical support. Almost three years be required, as a whole. The approximate cost of this project is 964 million yen (952 million yen funded by Japan and 12.6 million yen funded by Malawi).

The ratio of water supply by boreholes in the Project area is estimated to be about 23% against the current estimated population of 221,300 people if based on water supply to 250 people per borehole that is the target of the country and this is significantly lower than the achievement target (84%) of MPRS and of the ratio of supply of other areas and many citizens must rely on unsanitary and unstable water sources. By constructing 296 borehole facilities (with hand pump, aprons, water drainage

channel and washing place) in 234 villages where water supply facilities are inadequate, this project may increase the population to which water is supplied at the rate of 250 people per well by 74,000 people and the ratio of water supply from boreholes of the area will increase to 49% by 2008. In this project, in order to provide safe drinking water to as many more people as possible, the water supply of 15 litres per person per day of drinking water will be used as the standard and the plan for deployment of boreholes will assume the current maximum number of users of 500 people per borehole and the population that will directly benefit from this will number 132,000. Moreover, as an indirect effect, through increasing hygienic water supply facilities and educational activities among the users, the sustainability of the facility and awareness of hygiene will be enhanced and it is expected that the incidence of water-related diseases will decrease in the region.

Moreover, it is expected that through procurement of equipment, the ground water development planned by the MoWD after completion of this Project will become more efficient. On the other hand, through the sensitisation activities under the Project, operation, maintenance and management system under the communities taking the initiative will become established and its system supported by the district level staff and Area Mechanics through monitoring will also be formed.

Borehole drilling equipment from past grants are being operated, maintained and managed by the Ministry of Water Development and the Borehole Construction Fund (BCF) that answers to the ministry and maintenance and repairs are being funded from the borehole construction cost paid from the development budget of the government to BCF. The drilling equipment that will be newly procured will succeed to the current staff and maintenance and repair system as replacement for the superannuated equipment procured in the past and as a result, it is believed that sustainable operation, maintenance and management will be achieved to promote rural water supply projects through groundwater development in Malawi.

By undertaking this project as outlined above, the water supply situation particularly in areas with low ratio of supply will be improved and the project will contribute to achieving the national objective (water supply ratio of 84%) of MPRS.

From the above perspective, it is judged that the provision of a grant and cooperation in the targeted project by Japan is appropriate. Furthermore, if the following points may be improved and developed, it will be possible to implement the project more smoothly and efficiently.

- Under a policy of decentralisation, the organisation and budget at the district and lower level of administrative government should be attained and a system for sustainable maintenance and management should be developed.
- A relationship of cooperation with the sanitation improvement activities undertaken by the MoH and the local community development activities of the MoWCCS should be formed to invigorate community activities with emphasis on water supply facilities.

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CHAPTER 1 BACKGROUND OF THE PROJECT

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The government of the Republic of Malawi has been working towards reduction of poverty particularly through the development of an appropriate social infrastructure for residents living in rural areas. The water supply and sanitation project is a vital sector for the development of the social infrastructure of rural areas and the work has been undertaken through the support of numerous international aid agencies and the activities of NGOs due to the prolonged fiscal difficulties that the country faces. The objective of Malawi Poverty Reduction Strategy (MPRS) that is an upper tier plan has been formulated assuming such support.

From 1987 to 2002, Japan has implemented grants with respect to rural water supply using groundwater in one project each for the southern region and northern region and two projects for the central region for a total of four projects and this has been highly evaluated by the government of Malawi. Given this background, the government of Malawi has requested Japan to provide a grant for the Groundwater Development Project in Lilongwe West (the Project)for the area consist of 2 Traditional Authorities (TAs) which have particularly low coverage of water supply, in October 2003.

The area targeted in the request is about 30 to 50 km west or northwest of the capital Lilongwe and since the area is comprised of flat highlands suitable for agriculture, it is an important area for the development of agriculture in Malawi and in addition to maize that is the staple food, the area is a major producer of tobacco that is a cash crop. The two TAs that are targeted are areas where dissemination of water supply facilities is most delayed in Malawi and about 3/4 of the population numbering 220,000 people (2004 estimate) depend on marshes called Dambo, rivers, hand dug shallow wells and other unsanitary sources of water that are also unstable since the sources dry up during the dry season. Moreover, boreholes that are safe facilities for the supply of water number about 340 but the working ratio is about 60% and in order to raise this, sustainable maintenance and management by the users is indispensable and it is believed that providing understanding to the users of the importance of safe drinking water and entrenching capabilities for appropriate management of such facilities as common property are required.

The overall framework of the Project on which the government of Malawi has requested a grant is as follows.

■ Overall Goals

- To increase the standard of living of the people in the project area.
- To create awareness to the beneficiaries that health and hygiene aspects pertaining to water related and water borne diseases.
- To train user communities basic principles of hand pump operation and maintenance for

sustainable usage of water facilities.

- To involve the target communities in decision making from project planning to monitoring and evaluation phase.
- To improve health of the communities hence reduce poverty.

■ Purpose of the project

- To provide safe and reliable water supply to the villagers in the project areas within maximum walking distance of 500m through construction of new water facilities.
- To improve sanitary environment to prevent the outbreak of water borne diseases such as cholera caused by lack of safe clean water supply.
- To build capacity of the rural communities by empowering them to own, operate and maintain their facilities.

■ Content of the request made to Japan

[Construction of facilities]

- Borehole water supply facilities with hand pumps in 500 locations (including aprons, drainage channels and washing place)

(Through the preliminary study in July 2004, this was revised to borehole facilities in 254 villages.)

- CBM training with respect to the above facilities
- Training of CBM extension workers

[Procurement of equipment]

- Truck-mounted drilling equipment (1 set) and related equipment,
- Support vehicles,
- Research and monitoring equipment, etc.

■ Targeted area: The following TAs in western Lilongwe District:

TA Kalolo and TA Khongoni

■ Implementing agency in the counterpart country:

Department of Water Resources, Ministry of Water Development

■ Facilities plan and beneficiaries

Through the construction of 500 boreholes, a total of 173,000 people in the targeted area including users of existing facilities will benefit.

CHAPTER 2 CONTENTS OF THE PROJECT

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2 – 1 Basic Concept of the Project

(1) Overall Goal and Project Purpose

According to the 1998 Census, approximately 3.52 million residents in rural areas where 85% of the population resides (approximately 8.47 million persons) are supplied with water through gravity fed systems and boreholes which supply safe drinking water, coverage of 41.5%.

The Ministry of Water Development (MoWD) planned to achieve coverage of 84% through the "1998 – 1999 Dispersed Boreholes Construction Programme (commonly known as the 3,000 Borehole Construction Programme)" which was implemented from fiscal year 1998/1999 as a rural water supply project during which hundreds of boreholes were subsequently constructed annually with the Government's own budget. In addition, over 7,000 boreholes in total are estimated to have been constructed by the year 2004 in collaboration with Japanese and German international aid agencies and NGOs (commonly known as the 7,000 Borehole Construction Programme).

At the same time, Malawi is committed to Millennium Development Goals (MDGs), for example, "to reduce by half the proportion of people without sustainable access to safe drinking water by the year 2015" as national policies which were established at the UN Millennium Summit in 2000.The Malawi Poverty Reduction Strategy (MPRS) in April 2002 outlined the improvement of rate access to safe drinking water (base of the number of households including protected shallow wells) from 65.6% at the time to a goal of 84% at the time in the field of water supply and sanitation 2005. To accomplish the MDGs, the UNDP estimates that an annual improvement of service ratio of 1.1% should be maintained. Furthermore, considering an increase in population of approximately 3% in rural areas, home to some 10 million people, a service population of 400,000 residents annually should be increased. Since hand pumping of boreholes is the primary method used to supply water in rural Malawian where villages are scattered and few perennial streams exist, if an increase in the service population is to be completely serviced by boreholes, 1,600 more boreholes must be created annually.

However, since the rural service rate as of 2004 is still estimated to be about 65% many challenges lay ahead if the goals of the MPRS are to be accomplished. In response to a review by the MPRS scheduled in 2005, the Government of Malawi plans to push forward with its rural water supply programme in order to improve the coverage. Regardless of the level of achievement in the overall plan, it is clear that a considerable number of new constructed boreholes will be the major component of the rural water service programme.

Based on the a mapping survey of water supply facilities (having the proportion of people without access to safe water by 2015 - A Malawian Perspective) implemented in 2003 by the NGO of the Water Supply and

Sanitation Collaborative Council (WSSCC), it is clear that deflection exists in the dissemination of water service facilities at 35 traditional authorities (TAs) in 6 districts (equivalent to 18% of the total population).

Considering the final goal, which is that all Malawian citizens will have access to a safe water supply, the MoWD formulated a construction plan for borehole facilities in Lilongwe West (Kalolo and Khongoni TAs) where the water supply situation is worst by judging the importance of pushing forward with a rural water supply programme based on the current coverage rate based on the above-mentioned mapping survey of water supply facilities. This plan is considered to be part of the above-mentioned 7,000 Borehole Construction Programme for the purpose of accomplishing the goal of the MPRS.

Since the current estimated population at the target area is 220,000 (including a 3.4% increase in population in the Lilongwe District in the 1998 Census) and the number of boreholes in operation is estimated to be 202 based on the water supply facilities mapping, assuming one water supply facility per 250 persons as the national goal, the coverage rate remains approximately 23%.

Under the grant aid scheme, except the villages which have access to water through the existing water supply facilities (including broken wells which are repairable by simply replacing parts, etc.) in 254 villages requested by the Ministry of Water Development (MoWD), 296 borehole facilities are to be built at sites judged to be appropriate so that safe drinking water at a rate of more than 15 liters/day per person can be provided for approximately 132,000 people (about 52% of the total population of the target area) in the year of the Project completion (2008).

However, Malawi's goal is 250 persons per single borehole. Therefore, the present coverage of 23% will increase to 49% though the implementation of the Project.

Table 2-1-1 Goal to Improve the Coverage under the Project

	Population (3.4% of annual increase rate)			Present Service Facilities (2004)		Post-Project (2008)		
	1998 (Census)	2004 (Estimated)	2008 (Estimated)	Number of boreholes in operation	Coverage	Number of boreholes constructed	Total number of boreholes	Coverage
TA Kalolo	104,939	128,250	146,603	148	29%	149	297	51%
TA Khongoni	76,121	93,031	106,343	54	15%	147	201	47%
Total target sites	181,060	221,281	252,946	202	23%	296	498	49%

The "National Water Development Programme (1994)" states that the management of boreholes should be by the benefiting residents themselves. In addition, an sensitisation programme to promote the establishment of a community level maintenance system (Community Based Management: CBM) incorporated within the construction of water supply facilities has been implemented through groundwater

development programmes since 1994. Residents who use water also participate in planning, execution and maintenance of borehole construction in accordance with the manual of the CBM Programme formulated in 1999. A “participatory-type” method was also adopted in community training in order to promote better awareness of water and sanitation, and training in operation and management is provided for owners of borehole facilities. The aim of the Project is create a sustainable management system for boreholes through the establishment and maintenance of the Water Point Committee (WPC) and through the implementation of the CBM Programme which adopts a participatory-type method.

(2) Outline of the Project

Through the Project boreholes will be built at villages which lack water supply facilities and through CBM activities in order to obtain improvements in coverage at the target area. Approximately 132,000 persons are expected to have easy access to safe water as a result.

The requested Japanese assistance will procure one set of construction equipment necessary for constructing boreholes (drilling equipment, support vehicles and testing equipment) and will carry out borehole construction (296 boreholes at 234 villages in total) utilizing equipment to be procured, equipment to be provided by Malawi and equipment to be utilized local contractors.

The requested Japanese assistance will include the dispatching of engineers in order to ensure sustainable utilization of boreholes to be constructed as the Soft Component and will provide technical assistance on planning, implementation and evaluation of activities of the CBM Programme implemented by the Malawian side through a participatory-type method. At the same time, we will examine the development of a long-term maintenance system and suggest recommendations. In addition, vehicles (motorbikes) will be procured for sensitisation activities and monitoring.

It is requested that a database on water supply facilities at target area be created and include boreholes to be constructed in order to promote the maintenance of facilities to be constructed and a unified water supply programme with the collaboration of other stakeholders, consequently information-processing equipment as fundamentals will be procured.

2 – 2 Basic Design of the Requested Japanese Assistance

2 – 2 – 1 Design Policy

(1) Contents Requested by Malawi and Current Situation

The main requested component of the Project is as follows.

Facility Construction

Construction of boreholes at 254 villages, including apron, drain and washing slab.

121 villages in TA Kalolo and 133 villages in TA Khongoni

Equipment Procurement

＜Equipment for Borehole Drilling＞

1)	Drilling rig (truck mounted), (4 X 4)	1 unit
2)	High pressure air compressor (truck mounted), (4 X 4)	1 unit
3)	Mobile borehole development unit (4 X 4)	1 unit
4)	Pumping test equipment	1 lot
5)	Cargo truck with 5-ton crane (4 X 4)	1 unit
6)	Cargo truck with 3-ton crane (4 X 4)	1 unit
7)	Pick-up truck (single cabin)	1 unit
8)	Pick-up truck (double cabin)	1 unit
9)	Geo-electric survey equipment	1 unit
10)	Telecommunication equipment	1 lot
11)	Spare parts for the above equipment	1 lot
12)	Repair parts and tools for existing the equipment procured under the past Japanese grant aid	1 lot

＜Equipment for Research and Monitoring＞

13)	Motorbikes	3 units
14)	Global positioning systems (GPS)	2 units
15)	Computers for borehole inventory and analysis	2 units

＜Materials for Borehole Construction＞ (for construction of the above-mentioned facilities)

16)	Hand pump (Afridev type)	1 lot
17)	Casing and screen pipe	1 lot

Technical Assistance

1)	CBM training for communities	1 lot
2)	Training for extension workers	1 lot

The Basic Design Study includes an examination of an appropriate number villages and boreholes for the requested village list submitted by the Malawian side at the time of the preliminary study. The water supply

conditions including existing water supply facilities, the possibility of groundwater development based on hydro-geological conditions, accessibility for heavy vehicles, population and socio-economic conditions at each village, community awareness on borehole facilities and overlapping to other projects are taken into account.

After considering the condition of drilling equipment owned by the MoWD which were procured under past grant aid schemes, the maintenance system and number of boreholes to be constructed under the Project, the necessity and relevance of procuring drilling-related equipment are examined. Equipment for research and monitoring is also examined by taking necessity from the viewpoint of maintenance of water supply facilities and necessity of the new groundwater development plan into account. In addition, the procurement of materials for borehole construction will be included as part of facility construction.

Since the Government of Malawi is pushing forward with sensitisation activities through the Community Based Management (CBM) Programme which adopts a participatory-type method to allows communities to participate in the construction of boreholes from the planning stage and to install a system to maintain the facilities through their own initiative, sensitisation activities for the Project will be implemented through the CBM Programme in line with the new borehole construction. However, there are few extension workers, especially with experience in the participatory-type method. In the case of a new development plan, extension workers should be trained and technical assistance should be provided in order to improve their level. In addition, in order to carry out CBM activities in harmony with the progress of construction work within the limited period of implementation of the grand aid scheme, an efficient activity plan should be formulated and activities should be managed based on the practice and experience of the Project for Development of Groundwater in Lilongwe - Dedza, a previous grand aid project.

However, implementation of the CBM Programme has been traditionally dependent on funding from donors, and the Malawian side has not taken budgetary steps to include daily allowance for extension workers, and so that transport necessary for activities has not been secured. Although the Government of Malawi bore a portion of the activity expenses in the Lilongwe and Dedza Project, a more independent implementation system was requested under the Project. The MoWD reached an agreement to bear all allowances including personnel expenses and daily allowances for extension workers (including the MoH and the MoWCCS). This is equivalent to almost half the activity expenses, so that ownership on the Malawian side has increased significantly. Although the development of a maintenance system is the responsibility of the Malawian side, in order to accelerate the activity in the close relationship between CBM activities and construction work, it is necessary that Japanese side bear part of the activity expenses such as vehicle expenses and fuel cost.

(2) Natural Conditions

In due consideration of the hydro-geological conditions in the Project area, favourable groundwater will be developed both quantitatively and qualitatively. A construction plan will be formulated taking account of

meteorological conditions.

1) Hydro-geological Conditions

From a hydro-geological viewpoint in the Project area, since the thickness of the weathered bedrock constitutes a considerably varied aquifer, even in the same requested village, there are places where it may be difficult to obtain groundwater due to the thin weathered zone; the most suitable construction point should therefore be selected. On the other hand, since the actual drilling point at the target village is selected based on the intentions of the Water Point Committee (WPC) in accordance with the CBM Programme, sufficient coordination with the WPC should be taken prior to construction. As described above, detailed geophysical prospecting (survey) to select positions will be implemented in order to increase the success rate of construction work at the detailed design stage through discussions with the WPC.

Furthermore, drilling depth will be deep enough so as to allow a screen to be placed up to the bottom of the aquifer. Although the depth of the bottom of the aquifer (bottom of the weathered zone) changes according to lithological characteristics or location of the bedrock, assuming that the detailed survey will be implemented at the stage of the above-mentioned detailed design, the average drilling depth and the proposed drilling depth at each borehole will be set at the basic design stage based on electrical prospecting and existing borehole data.

2) Water Quality

Areas where graphite gneiss is anticipated accounted for approximately 50% at the Project area. Of these, it became clear that there is a high probability that approximately 30% have over 3mg/L of T-Fe of the Interim Drinking Water Quality Standard for Rural Untreated Water Survey (MoWD). Although the iron content is not an applicable health item, it is related to taste so that some existing boreholes have been abandoned. To avoid such a situation, the success rate will be set for less than 3mg/L iron content. Since the iron concentration in the aquifer varies horizontally and vertically and are not identical concentrations, at sites where iron content may become a problem the borehole structure should be examined not to collect water from aquifers containing high content of iron. Measurement of iron concentration during drilling (at certain depths or for each aquifer) should be imposed on contractors.

Although there are many shallow wells within the Project area, colon bacillus and general bacteria were detected at most wells. A relatively high concentration of nitrates was also detected at some shallow wells. Most cases of contamination were estimated to have been caused by water permeating from surface. When carrying out finishing work at boreholes, the surrounds of casing must be filled with impermeable materials such as mortar. At the same time, in the case of a shallow aquifer which is susceptible to ground water effects, a screen should not be installed on 15m or deeper.

3) Meteorological Conditions

Approximately 90% of the annual rainfall (approximately 900 mm) is concentrated in the rainy season between December and March. During this period, the operational efficiency drops due to poor accessibility to the sites. Accordingly, construction conditions during the rainy season should be taken into consideration when devising the implementation plan.

(3) Socio-economic Conditions

The target villages should be selected in due consideration of population and composition, existing water sources, condition of the existing water supply facilities, required amount of household water, distance and time for water transportation, accessibility to water resources, awareness of residents on the water supply situation, willingness to establish a Village Health Water Committee (VHWC) and/or a Water Point Committee (WPC)[*1] and the willingness to participate in borehole maintenance activities and to bear the maintenance cost.

The site survey revealed that many villages were either omitted from the 1998 Census or established after the that and their population frequently increases or decreases due to seasonal labour at tobacco estates. The population data for the water supply plan will be based on the socio-economic survey implemented under this study and the interview survey conducted by the Study Team.

The target area are generally in much worse condition than the national goal for rural water supply facilities (1 water supply facility per 250 persons, less than 500m distance to transport water, 27 litre of the daily water supply per person). This borehole construction plan is aimed at increasing the coverage of safe water towards the national goal within the scope of project scale as a whole area, even though the goals are not realized for each borehole.

The daily amount of water supply per person should satisfy the minimum drinking water demands. According to the survey on socio-economic conditions, the current drinking water usage including (water for cooking) is 10 (Lpcd: litres per capita per day) on average and more than 80% of residents consume less than 15 (Lpcd). Therefore, the amount should be 15 (Lpcd).

The scale in the target villages varies widely from a level of 75 to 2,000 persons and large-scale villages are often made up of anywhere from 2 to 10 small villages. In addition, some adjacent candidate villages are only about 100m from each other.

If the service population is extremely small, the burden charge per single household becomes large so that adequate maintenance may become a problem. Therefore, maintenance cost should be secured at a level for more than 125 users through the sharing of facilities with neighbouring candidate villages or by inviting users from surrounding villages to help bear the cost.

Conversely, if the service population is too large, not only are waiting time at watering points increase and

convenience decrease, but the pumps and wells also deteriorate quickly due to excessive utilization. Consequently, several boreholes should be constructed so that the service population will not exceed 570 persons (500 persons based on the current population) at villages with a large population considering the limit of service population estimated by the time required to draw the minimum amount of drinking water (15 Lpcd)*2.

In the national programme, the access distance to a borehole is said to be within 500m. Based on the results of the Census, the population density at the target area is higher than that in other rural areas and this goal is attainable based on the estimated population density (251 persons/km^2 estimated population density in 2008) and the service population (570 persons). However, in the case of selecting actual drilling points, the facility should be situated in a convenient place for residents taking accessing distance into consideration through discussions with the VHWC and/or the WPC.

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*1: VHWC is an autonomous body to be set-up in the respective villages which is responsible for providing information on hygiene and promoting sanitary facilities. WPC is a committee, to be instituted under VHWC for operation and maintenance of boreholes for cases where more than one borehole is being constructed in a single village.

*2: If the base pumping amount per borehole is estimated to be 0.21/sec 12(1/min) by judging the pumping capability of the Afridev pump, 8,640 litters can be provided by operating a pump daily for 12 hours supplying 15 liters for 570 persons.

(4) Examination of the Necessity to Procure Equipment

1) Policy of MoWD to Accomplish Goals in the Overall Plan

In the rural water supply field, the MoWD is deemed to be a key governmental agency, and many others, the Malawi Social Action Fund (MASAF), international assistance organizations, NGOs and private companies are also involved. Since many rural water supply facilities depend on groundwater as a source, the construction and repair of boreholes and development of a sustainable maintenance system is one of the major responsibilities of the MoWD.

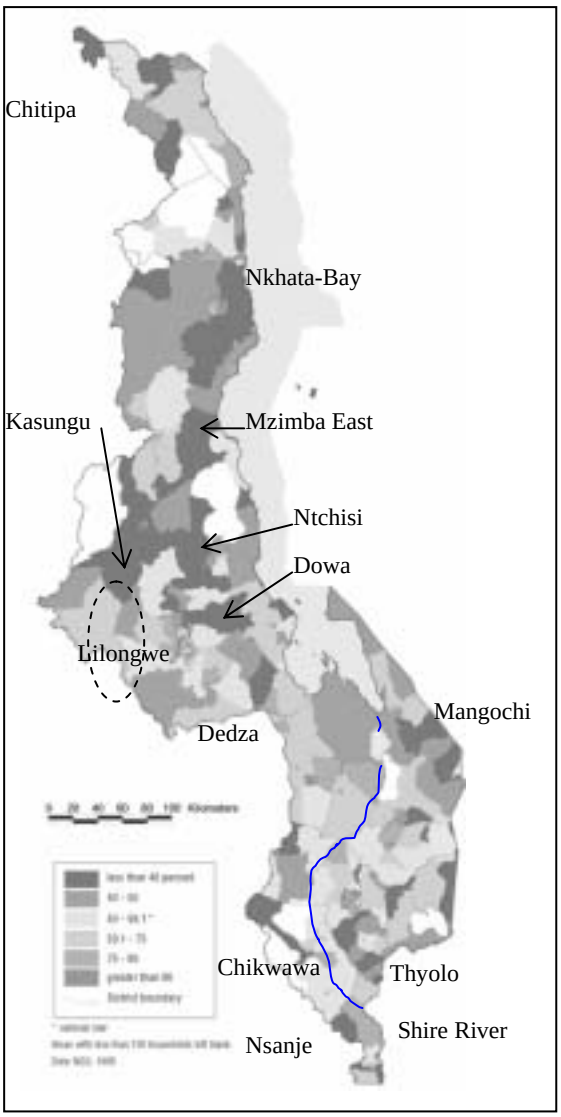

Figure 2-2-1 Distribution of the Coverage of Safe Water
(Malawi Population & Housing Census, 1998)

Areas with a low coverage are concentrated on both sides of Lake Malawi which is geographically equivalent to the slope in the rift valley and in the southern mountainous zone. Since many of these areas are in a rock-bed zone and have the poor groundwater aquifer found in rural areas, the technology to accurately grasp the aquifer and means to appropriately deliver borehole drilling equipment on rugged access roads should be provided. In addition, it is difficult to obtain good quality groundwater in some lowland areas on the Lower Shire River in the Southern Region. Therefore many technical issues exist such as the selection of sites and aquifers.

Since construction of boreholes has been increasing since the end of the 1990s through national projects, the MASAF and international assistance agencies and NGOs in the form of MDGs or MPRS, the boreholes in each district tend to be well-dispersed. However, many of the above-mentioned areas still face difficulties or have been left behind due to domestic borehole drilling companies taking over the responsibilities of most boreholes or due to technical constraints. The regional gap in coverage rates continues to expand as a result.

The recent construction of water supply facilities through international assistance is concentrated in the above-mentioned areas with low coverage rates (such as CIDA: Thyolo District, KfW: Mangochi District,

AfDB: Ntchisi and Mzimba Districts). Whereas, the aim of MoWD is to build 400 to 500 boreholes annually beginning in 2001 mainly in areas with low coverage rates other than those receiving assistance from donors by utilizing its own drilling equipment as much as possible and also by commissioning the construction to private drilling companies.

As shown in the following table, the government owns four units of drilling rig, two of which have exceeded their normal service life of 10 years. Practically speaking, the capability of the equipment is limited to approximately 200 boreholes annually through a 4-unit operation system. In addition, since it is difficult to bring large-scale drilling rigs into areas with poor access roads and where the potential of groundwater development is low in areas covered by a thick layer of soft clay or where groundwater exists only in cracks in the bedrock. Therefore, an appropriate and adequate preliminary survey should be conducted in areas where the success rate for borehole construction is low.

Table 2 – 2 – 1 Achievement of drilling rigs owned by MoWD

(Number of successful boreholes)

Rig No. / Year procured / Construction year	MG-081 (1987)	MG-084 (1992)	MG-254U (1997)	MG-200 (2002)	TOTAL
2003/2004	46 (< 30m depth)	55	52	84	237 (15 months)
2002/2003	17	17 Under overhaul	45	—	79
2001/2002	12	54	36	—	102

Despite all the recent borehole construction, private companies are having difficulty constructing boreholes due to their limited skills and use of equipment in areas with topographical and geological challenges, such as Chitipa District in the north, Kasungu and Dowa Districts in Central Region, and Chikwawa and Nsanje Districts in South Region which are areas still with less than 50% coverage rate. Therefore, the utilization of mobile drilling equipment and the skills of the MoWD are therefore necessary.

To accomplish the goals of the MPRS and the water supply goals of the MDGs, the MoWD is examining an groundwater development plan consisting of the construction of 800-borehole annually as an independent programme of the ministry other than MASAF and bilateral assistance and will carry out their policy of investing government-owned equipment as much as possible in accordance with the diversified geological and topographic features, which is more economical than relying on the private sector.

2) Operation System and Equipment Maintenance and Budget

Although five sets of drilling equipment were procured for the MoWD four times in the past under the Japanese grant aid scheme, one of the two units procured in 1987 has already been scrapped, and the drive

horsepower of the other drops when the drilling depth is below 30m. In addition, their top speed is approximately 30km/hour so they cannot be used on steep slopes. The remaining three units are therefore the primary drilling equipment.

Although the Water Resources Department of the MoWD operates and maintains these drilling rigs, they are applied by the Borehole Construction Fund (BCF) separate from the development and the recurrent budgets of the ministry.

The BCF is a public fund established in 1969 for groundwater development and management, which was included in the development budget within the ministry. However, due to organizational reform between 1999 and 2002, approximately 50 ministerial personnel such as borehole drilling engineers, pumping test engineers, mechanics and drivers were deemed to be personnel of the BCF which became a separate identity from an accounting point of view as an organization that deals with borehole construction and repair work.

The BCF mainly deals with national projects under the supervision of the MoWD and also conducts undertakings of governmental agencies which the MoWD accepts, such as operations of the MoH (water supply facilities at health units and securing of emergency headwater in areas with an outbreak of cholera), the Ministry of Agriculture and Irrigation and the Ministry of Education, Science and Technology.

The revenue and expenditures of the BCF are an independent account covering the salaries and daily allowances of personnel (approximately 30%), fuel cost (approximately 20%) and repair and parts cost (approximately 10%) through the revenue of fiduciary services obtained mainly from the government which maintains a sound balance (equivalent to US$300,000 to 40,000 annually).

The borehole construction cost per borehole of the BCF is more than US$1,000 less than that of the private sector (approximately US$5,000) and is useful in reducing the budget for implementation of national project. In the future, the reinforcement of the governmental equipment will enable the drilling of more boreholes within the limited budget and will contribute to reaching the goals of the overall plan.

On the other hand, since the end of the 1990s the number of local private companies has increased with the rapid increase in borehole construction through the national projects of the MoWD or through funding by the MASAF. Since then it has decreased, and at the present time there are about five companies that own drilling equipment from an apparent majority of approximately ten units nationwide. The other five companies lease equipment from a leasing company owning one unit or from companies possessing their own equipment.

Table 2-2-2 Major Local Drilling Companies in Malawi

	Drilling Companies	Location	Equipment Owned	Major Clients
1	Chitsime Drilling	Lilongwe	3 units	MASAF, MoWD, Private
2	Water boring Contractor	Lilongwe/Limbe	3 units	GITEC/KfW
3	J & F Drilling Contractors	Lilongwe	1 unit	NGO, Estate
4	Scandrill Limited	Lilongwe	1 unit	District/UNICEF
5	SAIFRO Ltd	Lilongwe	2 unit	New entry
6	Artish General Dealers	Lilongwe		
7	Marko Ltd.	Blantyre		
8	Select Drilling and Construction	Lilongwe		
9	Tropical Drilling Company	Lilongwe		
10	N3 Construction Company Ltd.	Lilongwe		

The MoWD or the MASAF places an order for several hundred boreholes annually and the German project also places an order for approximately 150 boreholes annually to the private sector. When adding other private-sector demand, a demand for approximately 600 boreholes is regarded to be deal with so that the operating rate of private borehole drilling rigs in Malawi is deemed to be considerably high. However, since access roads difficult for private equipment or insufficient competency to deal with the diversified geological features (such as shortage of equipment capacity or technical skills) has become a problem, even if a contract is concluded many project sites cannot perform. Even after the completion of the German project, the MoWD estimates the number of boreholes to be conducted by private companies for projects of the MoWD to be approximately 400 at its maximum.

Although the MoWD is aiming at an annual construction rate of 800 boreholes as a national plan in the future, even if private companies are effectively utilized, the problem of processing capacity and skills still exists. So it is very important to maintain a substantial system to consume the BCF to attain the national goals.

3) Drilling Equipment Procurement

As described above, while at least 1,000 boreholes annually are being requested in order to achieve the overall goals, the policy of the MoWD is to implement the borehole construction aimed at 800 wells annually. Even if private companies are utilized to the maximum, approximately 400 boreholes should still be drilled by governmental equipment mainly in areas where the private sector cannot technically handle. As the drilling capability of MoWD is limited to approximately 200 boreholes at the present time, there are merits to maintaining and upgrading the drilling capability of the government so that it can cope with diversified geological and topographical conditions at lower cost against private drillers. In a similar manner as equipment procured in the past, even if the equipment is reinforced, the BCF should be able to cover the cost of repairs and parts utilizing revenue from entrusted projects and maintain relatively favorable conditions over the long term. Accordingly, drilling equipment and one lot of related support equipment will be procured in principle.

4) Other Equipment Procurement

Geo-electric survey equipment and a pick-up truck (double cabin) are vital to future groundwater development. Although geo-electric survey equipment has been distributed to three regional offices, one unit has not functioned for more than ten years, so this will be supplemented. Since most private drillers do not have geo-electric survey equipment, if a private company places an order, a prospecting team from the government is dispatched to screen the borehole sites. During the implementation of the Project, geo-electric survey equipment is considered necessary for drilling point surveys at the time of the detailed design and the occurrence of unsuccessful boreholes, whereas, the pick-up will be utilized for implementing CMB activities.

At the target sites, a monitoring personnel from the Namitete Unit, which is the branch station of Regional Water Development Office for Central Region, is posted as water monitoring assistants (WMA). Unfortunately however, due to financial reasons the only means of transportation are bicycles, making monitoring in remote areas extremely difficult. The MoWD recommends one WMA monitor for every 100 water supply facilities (boreholes) and plans to provide two WMAs additionally at the target areas after the completion of the Project. Consequently, three motorbikes will be necessary (one WMA is scheduled to patrol each water supply facility every 3 to 4 months; in addition, they will be utilized for pump repairs and liaison work, etc.).

At the Joint Sector Review meeting (JSRM) by stakeholders in the water supply and sanitation sector held in 2001 it was agreed that the MoWD should be responsible for the collection, analysis, processing and storing of data from the water supply and sanitation sector as an information management system. On the other hand, a council of NGOs which participated in the JSRM conducted an inventory study on the water supply facilities in their own activities areas (6 districts) through the support of the JICA and created a database on water supply facilities including boreholes and protected shallow wells confirmed at the local sites, thus paving the way for the collection of new data. Despite consensus on this study and its analysis, the MoWD considers that well structures or hydrogeological data when drilling boreholes necessary for the facility development and management should be included and plans to improve the database by deepening its collaboration with the NGO council. In the case of renewing or expanding data, the NGO council also hopes to continue the collaboration because of the abundance of past well data possessed by the MoWD and data on borehole construction work that the MoWD feels is essential. Although the MoWD is planning to assign two young university graduate engineers to this, for financial reasons information-processing equipment cannot be prepared so it will be difficult to exchange information with the NGO council. The NGO council is carrying out an analysis utilizing a geographical information system (GIS); whereas, the MoWD also plans to acquire application skills of GIS software through the process of joint work with the NGO council. As described above, in order for the database on water supply facilities to become more effective, information and skills should be shared between the MoWD and the NGO council. As

fundamental tools, computers, printers and GIS software should also be procured. Furthermore, the sharing of analysis skills is expected to occur through the process of entering data on borehole facilities to be constructed under the Project into the existing database.

On the other hand, geo-electric survey equipment procured under the Lilongwe and Dedza Project, for which study equipment and analysis software to analyze hydrogeological structures through vertical two-dimensional profile are attached, is utilized at sites that demonstrate a complicated geological structure. A requested notebook-type computer will make the confirmation and analysis of field data possible and eliminate the need to collect data again due to errors or shortage of data. In particular, the frequency of travel to remote sites can be reduced, effectively reducing the cost of deciding on drilling positions. However, equipment will not be procured for Project sites close to the capital due to the relatively efficient implementation of two-dimensional prospecting and risk of breakdown or theft when utilizing outdoors.

(5) Construction Conditions

1) Level of Local Drilling Companies and Effective Utilization

Although these private companies were mainly contracted through the "3,000 Borehole Construction Programme" implemented between 1998 and 2000, approximately 10% of the boreholes are exhibit defects (① intermittent pumping, ② no pumping due to lowering of water level, ③muddy water, and ④ collapse of borehole walls). These problems are deemed to have resulted from the selection of inappropriate hydro-geological locations, insufficient depth, inadequate development and defective gravel packing. Since Phase 2 of the MASAF which frequently placed orders for 3,000 boreholes or well construction work for the Project has been completed, in line with the decrease in number of orders placed, private borehole drillers have been decreased so that some ten companies exist at the present time. Approximately ten units of drilling equipment mainly at five companies which have their own equipment are in operation. Although the technical and quantitative level of the private sector cannot satisfy the entire demand for borehole drilling in Malawi, the overall quality of drilling itself is deemed to be sound. Accordingly, the equipment and engineers of private drilling companies will be effectively utilized for a portion of the designed borehole construction under the supervision of Japanese contractors.

On the other hand, since 296 boreholes are to be constructed under the Project, if all the equipment is borrowed from private drillers, as described earlier, there is the possibility of this seriously hindering the progress of well construction projects of other organizations being implemented simultaneously. Accordingly, it appears that one or two units of drilling equipment from private companies is the margin of effective utilization. In a similar manner, since equipment owned by the MoWD should be utilized simultaneously nationwide for borehole construction projects, the maximum investment of existing equipment for the Project will be one unit.

Consequently, as for the requested Japanese assistance, one set of equipment related to borehole drilling

will be newly procured. By procuring and effectively utilizing existing and private equipment through the grant aid, the most appropriate implementation period can be determined.

2) Level of Local Civil Contractors and Effective Utilization

In the installation of pump heads and construction of ancillary facilities, local methods have been used in previous Japanese grand aid schemes. In other borehole constructions which are ordered by MoWD, ancillary facilities are built under similar specifications. Accordingly, when installing pumps and building concrete slabs, execution is judged to be possible based on the grade of local civil contractors for such facilities.

3) Level and Volume of Labour Force and Working Conditions

In Malawi, it is possible to recruit workers for different types of work and also for different grades of work. In principle, there are five working days in a week. However, it is not uncommon for site workers to work on weekends at a higher rate of payment. Under the Project, Saturdays shall be considered a working day in order to reduce the construction period, which means 25 working days a month.

(6) Effective Utilization of Local Equipment and Materials

Necessary equipment (one drilling rig, compressor, development unit, equipment for pumping tests and vehicles for transporting test equipment, fuel tanks and water tanks) procured by the previous Japanese grant aid scheme will be effectively utilized. At the same time, a new unit will be procured under the Project so that construction work will be conducted using totally two units of equipment procured under Japanese grant aid. In addition, implementation will be scheduled to be carried out with equipment of local drilling companies. During the preparatory period for procuring the above-mentioned equipment, borehole construction will be conducted through a constant 3-unit system combining a 2-unit system at local companies and 1 or 2-unit system after procurement.

Locally available materials will be utilized as much as possible. Materials which show no problems with respect to quantity, quality or delivery, for example, cement, aggregates (gravel and sand), bricks, reinforcement bars, fuel (petrol and diesel), casings, screens and PVC pipes will be locally procured. Good-quality gravel for packing can be obtained from Lake Malawi. Government equipment used for borehole construction can be procured at no cost. Even in the case of utilizing private equipment, gravel can be purchased at the same kind of gravel pit.

(7) Operation and Maintenance Capability of Project Implementing Body

1) Project Administration Capability

Although rural water supply programmes have begun to shift to a system of district planning and implementation based on a decentralization policy, both the skills and personnel are insufficient in many district assemblies including in Lilongwe District. The Water Resources Department of the Ministry of Water Development will be the implementing agency under the Project and take primary responsibility over construction; whereas, the Water Supply and Sanitation Department will be responsibility for operation and maintenance of facilities. However, it is under examination whether allowances for local personnel working in sensitisation activities will be paid through district development funding or MoWD.

The Water Resources Department has ample understanding of Japan's grant aid scheme since it has experience through the past four projects. Its organizational structure and number of staff are deemed sufficient for implementing the Project. With respect to the implementation budget for the grant aid scheme on the Malawian side, 3 to 10% of the scheme will be paid from domestic development funds without dependency on donors or sectors. In addition to overall management of the implementation of the Project, responsibilities related to its implementation taken by the Malawian side will include preparation of levelled ground for construction yards, the personnel expenses of BCF staff on the utilization of borehole construction equipment owned by the Government, and the expenses of instructors, managers and extension workers who participate in sensitisation activities. With respect to the securing of budget for sensitization activities, The MoWD is responsible for the budget allocation to this Project instead of the district assembly which shall take charge of the budget in future under the decentralization policy. These expenses will fall within the scope of the above-mentioned domestic development budget for grant aid projects received by Malawi.

2) Operation and Maintenance of Constructed Boreholes

The policy in Malawi is to establish a Village Health Water Committee (VHWC) by promoting resident participation from the planning stage and after completion through CBM activities promoted by the MoWD so that village units will be able to bear the responsibilities of operation and maintenance of water supply facilities. If a several boreholes already exist in the village, a Water Point Committee (WPC) will be similarly established for each borehole. Instructions will be provided to the VHWC and the WPC to secure funding for long-term maintenance charges including repair work when trouble occurs.

In principle, approximately 1,000 MK annually will be borne by the WPC to replace worn parts of hand pumps, approximately 3,000 MK annually for the repair of rods or pumping pipes necessary every few years, and approximately 5,000 MK annually for maintenance of each borehole in addition to transportation costs and miscellaneous expenses. In due consideration of the number of users, residents will be instructed to collect fees of between 5,000 and 10,000 MK through CBM activities. As a result of the survey on socio-economic conditions, few residents oppose to an annual charge of 10,000 MK and 99% of the target

villages are willing to participate in CBM training free of charge. Although a certain amount of funds should be prepared through community training before execution; however, this is not a requirement for the commencement of construction.

On the other hand, the administrative side will support the operation and maintenance of community water supply facilities by organizing a District Execution Committee (DEC) or District Coordination Team (DCT) at the district level, while the Area Executive Committee (AEC) composed of extension workers at the TA level (regional personnel of MoH, MoWCCS and MoWD) who will monitor water supply facilities and hygienic conditions. At the present time, due to the process of authority in each district, it is important to ensure a district budget for periodical monitoring of borehole facilities even after completion of the Project.

As for sensitisation activities and monitoring related to facility maintenance, the time required for activities, from approaching residents to training after facility construction, has increased sharply since the introduction of participatory methods in 1999 and organizational involvement at the district level to examine its effect. However, despite the presence of text materials such as training guides, financing for activities is dependent on donations from rural water supply and sanitation projects. Moreover, extension workers who are locally stationed personnel of the MoWD and Ministries concerned are not experienced in the “participatory-type” method. Taking insufficient capacity and financial difficulties into account, the Japanese side will provide soft component support through the requested Japanese assistance for a completely sustainable maintenance system by planning sensitisation activities incorporating the “participatory-type” method, training extension workers, submitting recommendations on community training and a monitoring system, and by examining ways to supplement the governmental maintenance system. In addition, since it will be necessary to procure motorbikes for sensitisation activities and monitoring, the quantity of procurement will be examined through a monitoring system the completion of facilities.

3) Equipment Operation and Maintenance

Borehole drilling equipment is operated and maintained by the Borehole Construction Fund (BCF) supervised by the MoWD. The BCF is composed of 50 personnel in total including a drilling team, pump testing team, pump installation team and mechanics who carry out commissioned work from the projects of other ministries or from the private sector in addition to national projects ordered by the MoWD. Revenues obtained from these are managed separately from the ordinary (working) ministerial or development budgets in that they are as funds to cover personnel expenses, fuel charges and other expenses. 8 to 10% of the revenue is allocated for repairs and spare parts.

Drilling equipment is utilized for dispersed borehole construction programmes through which projects are assisted by international organizations or through the national budget or emergency measures in areas

where cholera outbreaks have occurred. Each unit of equipment is utilized for construction of approximately 50 boreholes annually. Functional drilling equipment owned by the MoWD has been procured under previous Japanese grant aid and has contributed adequately to rural water supply programmes. However, two pieces of equipment procured in 1988 has exceeded its life, one unit has been scrapped, and another unit has deteriorated and its use is limited to drilling of shallow wells.

Moreover, one unit of drilling equipment procured in 1992 is still in relatively favourable condition after improvements were made during the Lilongwe and Dedza Project. However, the equipment is approaching its standard life span so that a lowering of its overall drilling capacity is unavoidable.

Equipment procured in 1997 and 2001 has been maintained and is in favourable operating condition; replacement of spare parts and expendables for routine maintenance is all that is required.

Major equipment and tools for repairing are available in the workshops including a vehicle repair pit in Lilongwe. A mobile workshop vehicle procured under the Lilongwe - Dedza Project is also utilized for equipment repairs so as to support efficient drilling operations. If technical expertise does not meet the requirements for repair of hydraulic systems, the repair work is contracted out to private repairmen.

Based on the above-mentioned points, with respect to maintenance of drilling equipment including vehicles, the technical skills needed for ordinary utilization are available and part of the above-described BCF will be appropriated from a budgetary point of view. Therefore, we believe that the minimum level has been secured. However, so that the original functions of equipment can be continuously displayed, a larger budget for maintenance and repair should be secured. Moreover, the life span of equipment could be extended and maintenance cost for repair work reduced provided that the technical level of personnel as well as equipment and tools for repairs is further reinforced.

For the Project some of the existing equipment procured in 2001 will be refurbished in preparation for borehole drilling, spare parts for repair work and adjustments provided, and mechanics on the Malawian side will carry out repair work with a Japanese Mechanic for self-improvement.

(8) Setting Facility and Equipment Grades

Since the Project is an integrated type that equipment to be procured will be utilized efficiently for facility construction and the soft component, equipment grade should be adequate for future groundwater development projects in Malawi, and of an appropriate level to utilize equipment efficiently for facility grade, or to ensure a construction schedule under the Project.

1) Facility Construction

Since the coverage in the target area is much lower than that of other areas, improving it to the level of national goal thoroughly makes the Project cost exceed its scale as Japanese grant aid. The policy of the Project is to improve the general coverage at most target area as much as possible by setting the design service amount per person to the minimum drinking water level (15 litres per person per day) based on the survey of socio-economic conditions. Based on the service amount per person, pumping capability and daily operation time, the maximum service population per borehole (570 persons) can be established. This is considered to be the designed water supply facility level, will be applied to existing water supply facilities, and is deemed to be the water supply level when an evaluation of the necessity for new facilities at the requested villages was implemented.

Based on social conditions in each requested village, for example, the water supply situation including existing supply facilities, the population necessary for securing facility maintenance cost, and willingness of residents subject to the assistance, a number of boreholes to be constructed corresponding to the target population will be planed for appropriate villages. At that time, the distribution of the target villages will be taken into consideration, and villages with less than 100 persons will share its request with neighbouring requested village. If several requested villages are located in the same area, the number of necessary boreholes will be examined as one site. In a case where the requested villages are remotely scattered over several small communities, if the population in each village is large enough, a borehole will be constructed in each small community.

The borehole construction will be carried out by efficiently utilizing equipment to be procured and equipment furnished by the Malawian side which was procured through previous grant aid projects while employing local drillers with certain technical skills under the supervision of Japanese engineers. Locally available materials and local suppliers will be effectively utilized for ancillary facilities acceptable to local technical standards while ensuring quality.

＜Grade of Borehole Construction＞

Target Population:	Approx. 115,500 at present; approx. 132,000 in 2008
Service volume per capita:	Over 15 litres/person/day for drinking water
Service population per borehole:	100 to 500 persons at present (less than 570 persons in the future)
Water quality:	Aquifer for intake shall be from a depth of 15m or more for sites susceptible to contamination from surface Conforming to water quality standard for untreated water supply in the rural area, Malawi

2) Equipment Procurement

The nominal drilling depth will be applied depending on the capability of the well drilling equipment, which is the maximum hoisted length of a designated drill pipe, which is dependent on the total weight. If a well wall collapses, since the power needed to lift it up is more than the weight of the suspended drill pipe, nominal drilling capacity approximately twice that of the designed drilling depth is required.

Based on the results of the past grant aid projects, the borehole drilling depth in Malawi is 30 to 90m, many of which are 50m or less. In addition, the designed depth and average drilling depth for the Project are 30 to 80m and 45m respectively. In this regard, 100 to 150m is deemed to be an appropriate nominal drilling capacity. The nominal drilling capacity of equipment procured in the past is 150m, which corroborates the adequate drilling competency.

Drilling equipment with 300 to 400m-depth nominal capacity owned by private companies is generally loaded onto large trucks of more than GVM 20 tons, which cannot run on bumpy roads or hilly areas, over deteriorated bridges. As a consequence, the coverage of water supply facilities in such areas is lagging behind. Although Japanese drilling equipment already-procured is loaded onto trucks of approximately GVM 16 tons and drilling is conducted in areas where private equipment cannot be brought in, many areas are still inaccessible. Some private companies carry out well construction in areas with difficult accessibility by utilizing small drilling rigs which are towed by a tractor. Special arrangements must be made to obtain a large trailer for transporting on national roads and a tractor to tow equipment from the national road to the site, so travel time between sites is long, making it inefficient.

Mobility is being requested so that equipment can be utilized efficiently to drill more boreholes on most plain topography. At the same time, for future underground water development projects, equipment similar to the equipment previously procured or light-weight equipment that can be transported by rugged access roads is also requested.

Based on the above-mentioned examination, assuming approximately GVM 16 tons or less truck-mounted type, the borehole drilling equipment will have more than 100m nominal drilling capacity. By procuring this, the diversification in the capability of drilling equipment owned by the government is expected to increase.

With regards to motorbikes to be used for monitoring equipment, since the majority of roads are unpaved, off-road types are necessary. Therefore, a double occupancy motorbike of approximately 125cc is suitable. Although a motorbike is also needed for CBM activities, several bikes will be necessary during the Project period. The number of units to be procured is expected to be one unit per 100 borehole facility sites based on utilization for monitoring after the completion of the Project. To accommodate the shortage of vehicles

during sensitization activities, motorbikes from the relevant ministry to which extension workers belong and rental bikes will be utilized.

3) Soft Component

Sensitisation activities (CBM Programme) for establishment of Village Level Operation and Maintenance System for water supply facilities requires technical assistance in activity planning and management corresponding to the “participatory-type” approach or implementation plan. All activity expenses have been dependent on donor funds; whereas, the Malawian side is committed to selecting candidate extension workers to be trained and to bear personnel expenses including allowances for the Project. For the first time Malawi managed to obtain funds for CBM activities from a portion of its own budget for the previous Lilongwe and Dedza Project. If allowances for extension workers, which accounts for a large part of the activity expenses under the Project are borne, one could say that ownership on the Malawian side has taken a step forward. Considering the implementation of CBM activities under the grant aid scheme, other activity expenses (such as vehicles, fuel and stationery) equivalent to the burden of the Malawian side are therefore judged to fall under Japanese assistance. Existing allowances for lunch meals paid when benefiting residents participate in workshops after implementation will not be covered under the Project in principle. Based on a survey of social conditions, approximately 99% of residents said they would participate in training after becoming a committee member even without any allowances.

The Project will provide technical assistance by dispatching Japanese consultants specialized in social development as a soft component for a necessary period from the planning and training of extension workers to execution in order to develop the effects and will bear expenses related to such activities to promote the implementing agency.

(9) Construction Method, Procurement Method and Construction Period

1) Construction Method

Due to the variety and depth of aquifer, the location of drilling and depth should be confirmed by carrying out geo-electrical prospecting at the time of the detailed design. At that time, in due consideration of intended locations by the WPC formed through CBM activities as candidate sites, consent should be obtained from the WPC when deciding drilling locations following the prospecting stage.

In consideration of efficiency and to prevent of wall collapses in the holes, hydraulic rotary drilling will be applied to the surface sand (protected by a temporary casing) and air hammer drilling will be used on bedrock under the weathered rock. To secure the enough clearance outside of casing (110 mm OD) to insert gravel, the drilling diameter shall be more than 171 mm. However, assuming an increase in thickness in soil layer, 210mm diameter drilling tools for mud drilling will be prepared.

The aquifer is assumed to be weathered rock subject to hammer drilling so the depth of screen casings will be decided after the interim yield is obtained at various depths. The drilling depth will be secured at approximately 5m for extra drilling to make up for sand trap in the casing hole.

A preliminary staged pumping test will be conducted and a test of continuous pumping volume will be applied. Standard pumping volume will be a sufficient amount to ensure Afridev pumping capability. A simplified water quality test will be conducted at all sites, and if the quality exceeds the standard value for untreated water supply in Malawi, a detailed laboratory test will be implemented

Ancillary facilities should conform to designs of previous grant aid which regarded to be the standards in Malawi. Quality control for concrete, etc. should also be ensured by effectively utilizing local contractors. When installing pumps, representatives from the local community should observe so that they can acquire an adequate understanding of the pump and borehole structure.

Since the construction period can be set up as phases based on Japanese fiscal year, the implementation period should be divided into three phases.

- In due consideration of past results and conditions at the project area, the overall drilling process should be examined by sharing various equipment at the time of drilling and by examining the cycle time.
- Consideration should be given to sites where poor access may become a problem for drilling equipment during the rainy season (December and March).
- The maximum number of drilling equipment simultaneously being operating should be three in order to ensure collaboration with CBM activities or implementation supervision.
- Due to the large amount of construction work, a warehouse for materials should be built at the target sites before starting drilling operations.
- Prior to the commencement of drilling operations, extension workers responsible for CBM activities should be trained and WPCs responsible for maintenance of borehole facilities should be mobilized. Then selection of drilling positions in due consideration of the willingness of WPCs should be completed.

Although a detailed implementation plan will be described later, considering the length of CBM activities, preparatory works and unworkable period in the latter half of the rainy season, it will be difficult for three units of drilling equipment to drill the designated 296 boreholes in two years term.

Due to the poor water supply conditions in the target areas, early commencement of drilling work is desired. Thus, even in Phase 1 for the procurement of following equipment, despite the short implementation period borehole construction can begin by utilizing local equipment and personnel after preparatory works and mobilization of WPCs.

2) Procurement Method

Although equipment will generally be procured from Japan, procurement of drilling rig from South Africa will be examined considering that most of the equipment utilized by Malawian drilling companies is manufactured in South Africa. In addition, following items will be locally procured in Phase 1;

- Motorbikes and a pick-up truck necessary for CBM activities prior to the first year construction,
- A (single cabin) pick-up truck necessary for management of local contractors in the first year,
- Information-processing equipment which required local warranty and technical services.

Approximately one year is required to procure drilling-related equipment taking into consideration manufacture and transportation. The equipment for borehole drilling will be procured during Phase 1 and will be furnished for facility construction after Phase 2.

(10) Regards for Poverty and Gender Balance

In the communities that have boreholes which constructed under the past projects, considerations to their elders and poverty households were seen in each community. For example, exemption of water charge and challenge to participate in piecework for contribution to the maintenance fund without heavy burden to the elderly or poor villagers were seen. The soft component of the project will try to give specific examples to the participants for taking consideration to such unfortunates to pay attentions if necessary.

In addition, most of the water supply facilities are what women use almost every day. Naturally the community members who know the condition, malfunction and problems well are these women. Actually, it was often that men did not know the present situation of their water supply facilities in this field survey either.

On the basis of such situation, more than half of WPC members shall be selected from women and the Project aims at establishment of sustainable management of facilities with users' efforts. Furthermore, for community visits of extension workers, the soft component of the project arranges opportunities for interchange between men and women and will promote sharing information within a community and make an effort so that an ownership infiltrates the whole community.

2 – 2 – 2 Basic Plan

(1) Overall Plan

The target area of the Project is Traditional Authority (TA) Kalolo and Khologoni in Lilongwe District which are located at a direct distance of 30km to 60km to the east or northwest from the capital Lilongwe. Under the Project, 296 boreholes with hand pumps will be constructed at 234 villages (or groups of village) which lack safe and stable water supply facilities. At the same time, necessary equipment will be procured and support will be provided for sensitisation activities to water supply communities.

Since the target area has the lowest coverage rate of safe water in Malawi (estimated to be 23% at present), a user population of 100 to 500 people per borehole was set up from a socio-economic point of view in order to approach the level of other areas. Villages appropriated for new borehole construction were selected after considering hydro-geological conditions, the distribution of existing boreholes and site accessibility.

Since the project site of the "Mchinji Groundwater Development Project implemented between 1992 and 1995 lies just to the west of the target area and has similar geological conditions, depth and unsuccessful rate for borehole construction plan were examined based upon the actual results of the Mchinji Project, the field survey and review of existing borehole data in the project area. The field survey included the geo-electric survey for some of requested sites and the interview on the existing boreholes.

In Mchinji district, approximately 90% and 80% success rate were recorded respectively in areas where gneiss was distributed as the primary bedrock and in areas where granite and schist were distributed as other bedrock. In the target area which is composed of similar base rock, high iron content is frequently found in borehole water, so some abandoned boreholes were observed. Even if the pumping discharge (yield) is adequate enough, there is a possibility of boreholes being regarded as unsuccessful from the viewpoint of water quality. Boreholes with high iron content often exist in areas where bedrock is graphite gneiss and where the distribution was generally grasped through electric prospecting (indicating extremely low electrical resistivity). In this range, the success rate was judged to be lower taking a problem of water quality into account^{*1}. Due to variety of aquifer containing much iron in the graphite dominant areas, the confirmation of water quality shall be conducted during drilling for the relevant aquifers each, in due consideration of measures to be taken in selecting favorable aquifer. Thirty (30) % and ten (10) % of boreholes are estimated to be respectively unsuccessful due to water quality and shortage of water volume, and the success rate in areas with graphite gneiss was set at 60%. As a result, the success rate of borehole construction was set at 80% in total as shown in the following table.

Success Rate = S / (S + D + I)

S: number of successful boreholes

D: number of dry holes

I : number of boreholes with high iron content

Geological Classification	Number of planed boreholes	Boreholes with insufficient water volume	Boreholes with high iron content	Total number of drilled boreholes	Success rate
Graphite gneiss with high iron content	69	8	38	115	60%
Gneiss	210	23	0	233	90%
Granite & Schist	17	4	0	21	80%
Total	296	35	34	369	80%

An appropriate drilling depth was determined to be 30m to 80m (average of 45m) at 74 villages based on the results of geophysical prospecting, and change in depth was randomly observed regardless of deflection of area or geographical features. With respect to the selection of definite drilling positions at the selected target villages, to improve the success rate of borehole drilling by grasping a more secure aquifer and to reflect the intentions of residents, detailed geophysical prospecting and discussions with local organizations will be implemented during the detailed design.

Borehole construction work will be conducted using one unit of equipment to be procured under the Project, one unit of drilling equipment procured under previous grant aid schemes, and other related equipment furnished from the Malawian side. Moreover, by effectively utilizing the equipment and personnel of reputable local drilling companies the construction period can be shortened.

As for the soft component of the Project, while respecting the manual of the CBM Programme improved by the government of Malawi through the introduction of the “participatory-method” in 1999, the Project will also support CBM construction activities by ensuring and training a sufficient number of extension workers and effective activities planning.

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*1: Adopting Iron Removal Equipment

To effectively utilize boreholes containing much iron without advanced technology, an iron removal aeration device is a method to deserve examination. However, for the following reasons, these matters will be dealt with by implementing strict water quality testing during drilling (detecting obstacle aquifers and deciding strainer placement) and by changing the drilling point if a problem arises.

1. Iron Removal Effects through Aeration
   If the iron content is contained as organic iron, the generally accepted view is that iron removal through aeration will not produce satisfactory results. However, iron removal equipment is not utilized at rural water supply groundwater facilities in Malawi because there is no data to prove its effects, so testing to determine the iron removal effects should be taken at the local site.

2. Maintenance of Iron Removal Equipment
   In the case of adopting the iron removal equipment, in addition to periodical inspections, cleaning and maintenance of equipment by the WPC, and filtering materials (for fine sand and gravel) should be replaced. These materials will be procured from aggregate shops in Lilongwe or Malawi Lake. In addition, education or training on maintenance of iron removal equipment for the WPC in accordance with the CBM Programme is necessary. On the other hand, considering that the CBM programme is still not rooted at the Project area, the most important thing is to maintain the pump system. In other words, so that water supply facilities to be completed can be effectively utilized, it is better to avoid the excessive burden of the WPC or village residents (work volume and budget) as much as possible. In addition, considering the current situation in which iron removal equipment has not yet been covered, engineers with an understanding of the chemical mechanism of such equipment will be difficult to find within the country. Consequently, there is a risk of equipment being neglected which could result in major defects due to a lack of repair work.

3. Distribution of Aquifer with Iron Content
   Based on the results of the field survey (exploration and materials) and explanations from local counterparts, since aquifer with high iron content is not widely and continuously distributed in the horizontal and vertical directions, it is estimated to be intermittently sandwiched in certain areas. In other words, aquifer at one location in a village may not be completely contaminated by iron content. It is therefore possible to avoid aquifer containing high iron content by changing the location of the borehole construction. In the case of the target area, since gneiss is distributed in a north-south direction and on nearly sheer slopes, the hydro-geological conditions (aquifer features) can be easily modified by moving the construction site to the west or east.

(2) Facility Plan

1) Target Year

The Project aims at constructing, in an urgent manner, boreholes in the villages currently not provided with water supply facilities. The target year is set at 2008.

2) Water Supply Specifications

The "National Water Development Plan (1994)" establishes the following goals for rural water supply.

a) Borehole coverage level: 1 borehole per 250 persons
b) Service volume per capita: 27 lpcd (litre per capita a day)
c) Transporting distance of safe water: 500m or less

Under the Project, the level of water supply planning will be set as follows in due consideration of the current water supply conditions and scale of the Japanese grant aid scheme.

① Basic Water Supply Unit

At the target area, the water supply coverage rate is extremely low at 23% and water supply conditions are generally inferior. In the requested Japanese assistance, with the aim of providing safe drinking water to as many residents at the target area as possible, when planning the number of boreholes to be constructed at the villages, the minimum set volume will be the service volume per capita without limiting to 250 persons per individual borehole.

Based on the results of the survey on socio-economic conditions, the volume of water usage for most residents who utilize existing shallow wells is 25 to 30L per capita/day which is the same level as the above-mentioned national goal for total volume. However, if it is limited to only drinking water, the volume for the majority of households is 5 to 10L and 80% of residents responded by saying that drinking water volume is 15L or less. The basic water supply unit under the Project will be set at 15 lpcd for drinking water treated preferentially.

② Service Population per Borehole

[Maximum Service Population]

If the feasible pumping volume per borehole is 8,640L/day based on hand pump capacity (12L/minute) and operation time (approximately 12 hours/day), it is possible to provide a water supply of 15 lpcd for 576 persons. Since the service population is estimated to be less than 576 persons in the target year 2008, the present population of 500 persons will be set up as the maximum [3.4% increase rate of population anticipated (NSO estimate)].

In the case of obtaining water from existing sources at water supply facilities with a high service population, water usage restrictions for general usage such as cleaning or bathing will be implemented through the sensitisation activities of the soft component. In addition, if the waiting time for drawing water increases excessively, independent discussions will be held in the community on introducing well restrictions on individual water usage and assigning of utilization time.

[Minimum Service Population]

If the number of borehole water users is too small, usage efficiency per borehole will be lower and it will be difficult to collect service charges from residents whose cash income is small based on the CBM principle that residents bear the necessary daily maintenance cost, which could hamper sustainable utilization.

The majority of housewives responded by saying a suitable maintenance cost per household would be 20 MK/month. Approximately 65% said that they could pay more than 20 MK/month. This amount was suggested by NGOs engaged in the protection and improving of shallow well and installation of pumps for residents at target area, so this can be the goal. Annual pump maintenance and operation cost is expected to be at least 5,000 MK. In order to secure this amount, more than 20households must pay 20 MK/month. If each household is comprised of five persons (1998 National Census), approximately 100persons will be the minimum in order to secure the maintenance cost.

③ Water Transporting Distance

The population density at the target area is 172 persons/km^2 in TA Kalolo and 134 persons/km^2 in TA Khongoni despite many non-residential areas such as tobacco estates where it is relatively higher than 100 persons/km^2 for rural areas. Since many villages settle into shape in the scale of some 100m, approximately less than 500m of a transporting distance can be ensured.

On the other hand, more than 90% of residents who currently use shallow wells said that the transportation distance is 600m or less. Consequently, reducing the distance for transporting water is not expected to have any effect.

In some requested villages, the village is divided or spread into several smaller communities, so if the population is sufficient enough a borehole could be planned for each village taking transportation distance into consideration.

3) Distribution Plan of Boreholes

Except for villages where existing boreholes are sufficient for the population (including broken-down boreholes which can be repaired) and villages where the village master and residents show no willingness

to construct boreholes, the target villages were selected through an examination of field surveys. With respect to the possibility of groundwater development, there were no areas where groundwater is difficult to obtain, in which case selection was not based on such criteria. However, some areas showed high contamination of iron as mentioned later. By examining the water quality failure rate, this will be reflected when establishing the successful rate. With regards to site accessibility, although five sites require road improvement, all only require light repair such as road widening through the cooperation of residents, so that accessibility will be not be a condition in the selection.

Furthermore, since one village has only 75 persons, boreholes will be shared with a neighbouring village which has a population of 155. If several villages share a common boundary, they will be grouped together into one village.

A result of the selection process for the above-mentioned target villages is shown in Table 2-2-3.

Since target service populations also exceed 500 persons even if users of the existing boreholes are excluded, the number of requested villages necessary for two or more boreholes is 51.

As a result of the socio-economic survey, it became clear that the social change in population was strong in the target area due to migrant (seasonal) labourers to estates or outside the country. In the case of confirming the population of villages with a significant population transition or clarifying the large-scale transition at each stage of the detailed design and construction work, the necessity to review a layout plan within the designated limit of boreholes for the Project should be examined.

When selecting the actual drilling locations, borehole layout will be decided in order to secure a distance of more than 300m between existing boreholes and new boreholes within the relevant village by examining the results of detailed geophysical prospecting and the willingness of communities with regards to water supply facilities.

The number of villages for borehole construction per TA, quantity of construction and design locations are shown in Table 2-2-4, Figures 2-2-2 and 2-2-3. The names of villages for borehole construction are shown in the APPENDIX 6 – 1.

Table 2-2-3 Selection of Target Villages

		TA Kalolo	TA Khongoni	Total
Number of Requested Villages		121	133	254
Population	Existing boreholes (including reparable un-functioning boreholes) can supply water for the target population (500 persons/borehole).	-3	-10	-13
	Suitable because the population is small and boreholes can be shared with neighbouring villages.	-1	-	-1
Since several of the requested villages have complicated boundaries, it is better to plan as one village.		-	-5	-5
Village was not willing to receive new borehole due to two protected-shallow wells constructed recently		-1	-	-1
Target villages		116	118	234

Table 2-2-4 Village Population Size, Necessary Number of Boreholes and Design Number
(Maximum service population = 500 person/borehole)

Population size of the requested village	Necessary number of boreholes	Existing BHs	Design nos. of BHs per village	TA Kalolo		TA Khongoni		Total	
				Nos. of villages	Nos. of BH	Nos. of villages	Nos. of BH	Nos. of villages	Nos. of BH
100 to 500	1	0	1	85	85	82	82	167	167
501 to 1,000	2	1	1	3	3	10	10	13	13
		0	2	18	36	21	42	39	78
1,001 to 1,500	3	2	1	1	1	0	0	1	1
		1	2	4	8	2	4	6	12
		0	3	1	3	1	3	2	6
1,501 to 2,000	4	3	1	0	0	0	0	0	0
		2	2	1	2	0	0	1	2
		1	3	0	0	1	3	1	3
		0	4	2	8	0	0	2	8
2,001 to 2,500	5	4	1	0	0	1	1	1	1
3,000 to 3,500	7	2	5	1	5	0	0	1	5
Total				116	151	118	145	234	296

4) Benefiting Population

The total population of the target villages selected is 115,500 (future population is expected to grow to 132,000) including approximately 58,500 in TA Kalolo (approximately 66,900 in the future) and 57,000 in TA Khongoni (approximately 65,100 in the future).

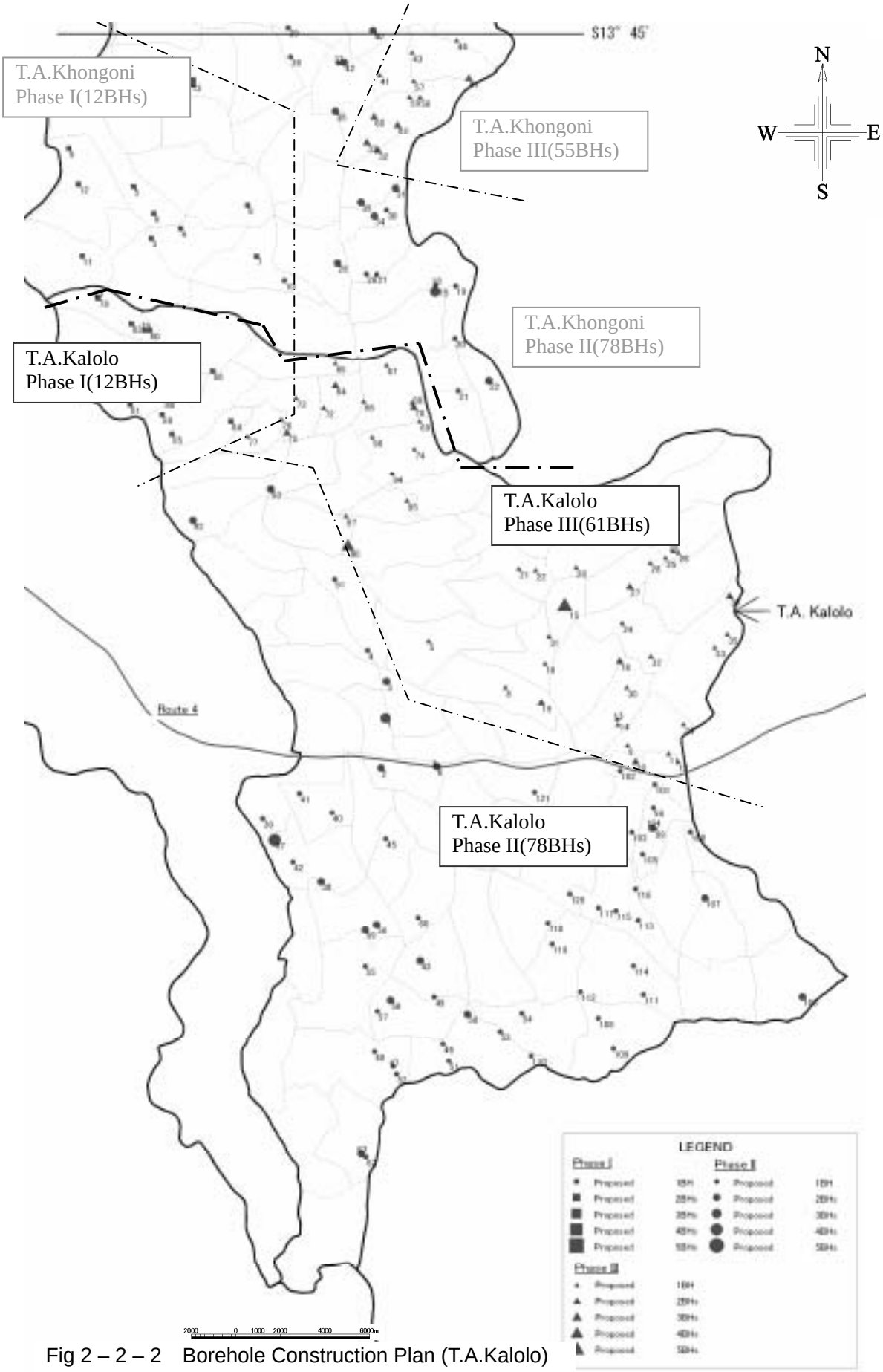


Fig 2 – 2 – 2 Borehole Construction Plan (T.A.Kalolo)

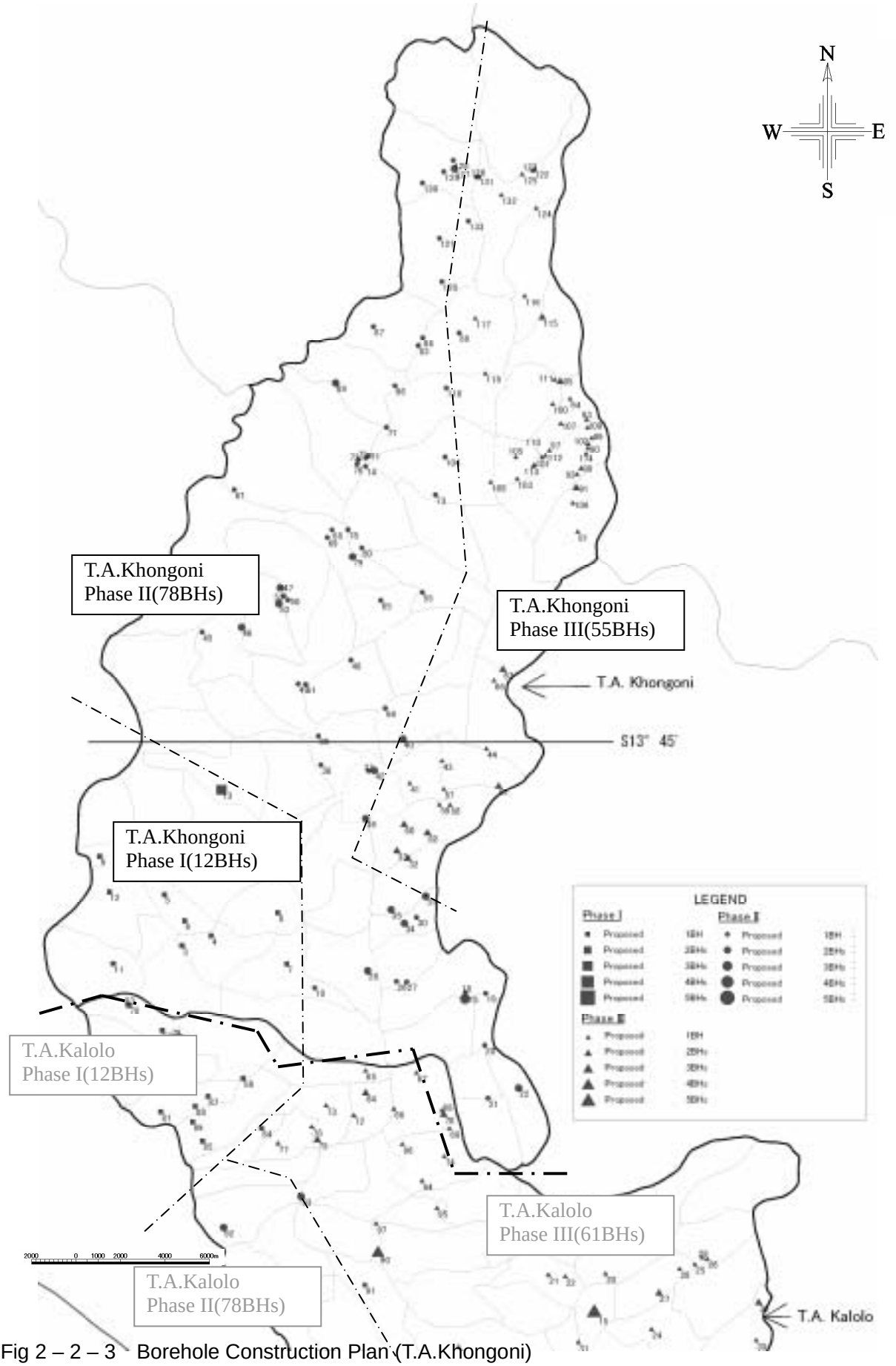


Fig 2 – 2 – 3 Borehole Construction Plan (T.A.Khongoni)

5) Hydro-geological Conditions and Successful Drilling Rate

In adjacent Mchinji District to the west of the target area, 300 boreholes were constructed between 1992 and 1994 in three phases under the Japanese grant aid scheme. By selecting the drilling positions during geo-electric prospecting while supervising construction work, the following success rates were obtained.

Table 2 – 2 -5 Implementation Results at Adjacent Area (Mchinji Project)

Phasing	Geological Features of Major Aquifer	Number of Planed Boreholes	Total Number of Drilled Boreholes	Success Rate (%)	
1st Phase	Granite (Md) Schist (Ml)	80	112	71.4	
2nd Phase	Gneiss (P)	110	115	95.6	89.8
3rd Phase	Gneiss (P)	110	130	84.6	
Total Phases		300	357	84.0	

The target aquifer at project area is mostly a weathered zone of bedrock and its hydro-geological characteristics vary according to geological distribution of the bedrock shown in Figure 2-2-4. In the field survey, distribution of groundwater containing more than 3mg/L iron content is correlative with the distribution of “graphite schist (Pg)” which is a part of the gneiss zone. Although the structure of groundwater aquifer (Pg) is similar to P such that it may possible to withdraw groundwater at a similar rate, there is a relatively high possibility of failure due to the problem of water quality.

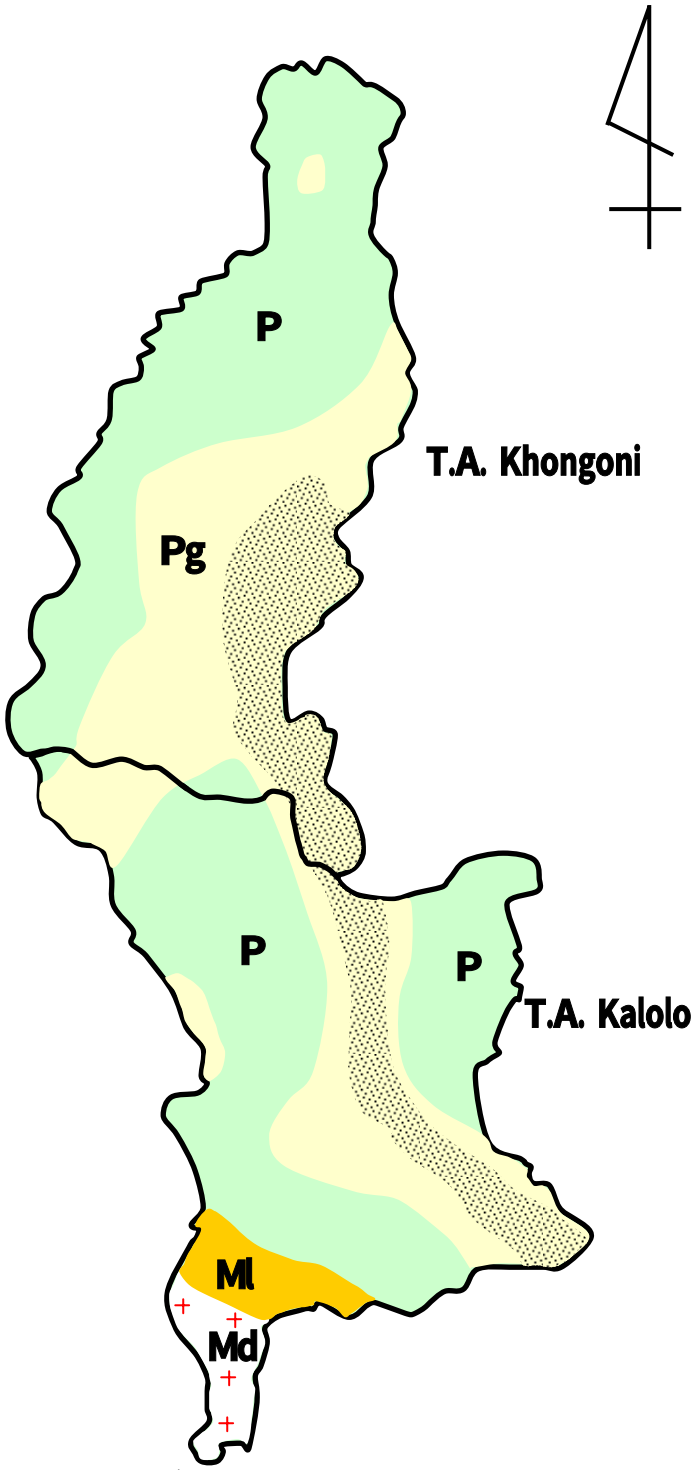
The existing borehole materials within the target area show 10m to 15m of top soil and 30 to 53m drilling depth (45.0m on average). The deviation of depth resulting from geological classification such as graphite schist, gneiss and granite or deviation in areas can be scarcely observed, thus, the depth of aquifer is deemed to have changed. Geo-electric prospecting in this study also obtained the same results to support this tendency.

Table 2-2-6 shows the configuration (setting) by geological classification of borehole drilling examined based on geo-electric prospecting, water quality testing and a geologic map.

Table 2-2-6 Borehole drilling depth and success rate based on geological survey results

Geological classification		Aquifer condition			Water analysis results of borehole	Average drilling depth	Success rate settlement
		Resistivity(based on electrical survey)		Base depth and shape of aquifer			
		Aquifer (weathered rock filled by ground water)	Fresh zone (based rock)				
Md	Dzalanyama granite	Approx. 120-180Ω-m. The value varies according to the weathering condition	1200-6000Ω-m	Several to 45m. Basal boundary of aquifer varies remarkably	No problem	About 44m. (drilling has to do with thick weathered zone)	According to the construction result (71%) of the neighbor project of Mtindi,success rate will be 80% under the carefully management.
Ml	Lifuchere schist (mica quartz schist)	Approx.55-260Ω-m. The value is slightly lower than layer Md	1000-6000Ω-m The value is near Md layer	Several to 45m. Basal boundary of aquifer varies remarkably	No problem	About 45m	
P	Quartzo-feldspathic granulite and gneiss or biotite gneiss	Approx.20-300Ω-m. The value varies according to the weather condition and type of base rock. Clay layer exist in some part of the northern mountain area, and the value of resistivity shows remarkably low.	Approx 20-80Ω-m. The value is slightly higher than layer Md,Ml	Several to 75m. Basal boundary of aquifer varies remarkably. Specially, it is very shallow at monadnock studded area in the northern part of T.A. Khongoni	Water from this layer may include iron in several case. However, in general, iron value is lower than water quality standard(3mg/L) of Malawi.	About 45m. The drilling depth in T.A.Khongoni without monadnock studded area in the northern part is slightly deeper than the one of T.A.Kalolo	According to the construction result (89%) of the neighbor project of Mtindi, success rate will be 90%
Pg	Same as P (with graphite)	Approx 20-80Ω-m. The value is slightly lower than layer P.	Sevral-100Ω-m. The value is remarkably lower than layer P.	Several to 65m. Basal boundary of aquifer varies remarkably. This layer is slightly shallower than P layer	Generally iron content is high. According to the our survey result of the sample test form 13 boreholes in iron suspected area, 5boreholes exceeded limit of the water quality standard (3mg/L) of Malawi.	About 46m	As the ground water condition is same as P layer, success rate will be 90%(in the iron content area) However if the boreholes which has iron content more than 3mg/L are rejected, total success rate became 55%. As the result of the mentioned above, success rate will be 60% under the carefully management. (see notes)

Notes: iron content of Pg layer is not homogenious,and it varies horizontally and vertically.
For example, borehole drilled near(200-300m) the iron contained borehole dose not include iron content.
According to the local MoWD stuff, iron content varies vertically even in the same borehole.
As the result of the mentioned above, if we check iron content with every aquifer and seal iron contained aquifer, it is possible to raise success rate.



LEGEND

Md :Dzalanyama Granite
Ml :Lifuchere Schist(Mica quarts schist)
P :Quartzo-feldspathic granite and gneiss or biotite gneiss
Pg : Same as P (with graphite)
: This area has high possibility to have water with high iron content

＊This map is based on the geo-electrical survey and existing information

Fig 2 – 2 – 4 Geological map of the target area

[Countermeasures for Unsuccessful Boreholes]

After drilling reached to the planed depth, if the required yield cannot be obtained or if the water quality is not satisfied with the Standard the following countermeasures will be taken.

a) By comparing the results of geo-electric prospecting and drilling results, drilling termination or extension of advancing (drilling) will be decided through discussions with the work supervisor. Even if the depth is shallower than the design depth, if it is determined that the anticipated aquifer cannot be obtained at the deeper depth, drilling may be suspended following discussions.

b) If groundwater cannot be obtained even the depth is extended or if the drilling is terminated after the above-mentioned discussions, it is deemed to be an unsuccessful borehole.

c) Even if groundwater can be obtained and the standard yield (12 litters/min.) cannot be ensured during the pumping test after inserting the casing, it is deemed to be an unsuccessful borehole.

d) If groundwater exceeds the Malawian provisional water quality standard by implementing a simplified water quality test on-site, or if it is confirmed that the item exceeds the standard level by implementing an indoor test, it is deemed to be an unsuccessful borehole following an examination of the content of inferior water quality.

e) Based on the above-mentioned results, if the borehole is deemed to be unsuccessful, a substitute location in the same village and same water facility community is added and selected after geo-electric prospecting, and re-drilling is carried out in a different location within the same village with the consent of the VHWC/WOC.

f) Re-drilling within the same site should be limited to 2 boreholes in the design borehole locations.

g) If it will become clear that the population of requested villages will be rapidly increased beyond the estimates, relevant villages will be examined as substitutes for the above-mentioned unsuccessful wells at the detailed design and the implementation stages.

6) Phasing Draft

To ensure smooth cooperation with CBM activities and secured technical management of local contractors, construction work is dividing into 3 phases and the implementation (execution) scope by phase is planned as shown in Figures 2-2-2 and 2-2-3.

The quantity and the anticipated success rate by each phase are shown in Table 2-2-7.

Table 2 – 2 - 7 Borehole Construction Plan by TA/Phase

＜TA Kalolo ＞

Geological Classification	Success Rate	1st Phase	2nd Phase	3rd Phase	Number of Villages	Number of Design Boreholes
Pg	60%	0	11	13	16	24
Pg	90%	9	10	6	24	25
P	90%	3	40	42	62	85
Md, Ml	80%	0	17	0	14	17
Total		12	78	61	116	151

＜TA Khongoni＞

Geological Classification	Success Rate	1st Phase	2nd Phase	3rd Phase	Number of Villages	Number of Design Boreholes
Pg	60%	0	26	19	30	45
Pg	90%	5	26	20	44	51
P	90%	7	26	16	44	49
Md, Ml	80%	0	0	0	0	0
Total		12	78	55	118	145

＜Target Area＞

Geological Classification	Success Rate	1st Phase	2nd Phase	3rd Phase	Number of Villages	Number of Design Boreholes
Pg	60%	0	37	32	46	69
Pg	90%	14	36	26	68	76
P	90%	10	66	58	106	134
Md, Ml	80%	0	17	0	14	17
Total		**24**	**156**	**116**	**234**	**296**

(3) Equipment Plan

1) Basic Policies on Equipment Setting

When selecting the type and quantity of equipment to be procured, the following items are regarded to be basic policies to ensure that borehole drilling work under the Project will be implemented smoothly, to effectively utilize the equipment for underground development after the completion of the work.

① To select the equipment by referring to the organization, personnel and achievements of the MoWD and their own equipment, etc.

② To select equipment superior in mobility and running stability. Although the target area is in a flat plain on plateau, since the majority of target villages are 50km from national roads on average, the equipment has to be moved along muddy roads during the rainy season.

③ To select an equipment type suitable to the geological features which is diversified and ranging from loose top soil to hard deep rock or to fracture zone.

④ To examine the selection after considering its relevance to the Project, such as construction efficiency, construction period and economy.

⑤ To examine the long-term adequacy of the equipment through a utilization plan and a maintenance system for after completion of the Project, because groundwater conditions are still underdeveloped in many areas due to extremely poor accessibility in Malawi.

⑥ To select equipment taking operability, durability, potential, availability to procure spare parts, maintenance, achievements, prices including packing & transportation and after services, etc. into account.

In accordance with the above-mentioned basic policies and design policies for equipment, a list of necessary equipment and equipment to be procured under the Project in due consideration of the borehole drilling rig owned by the MoWD is shown in Table 2-2-8.

Table 2 – 2 – 8 Equipment Plan

Name	Request	Required equipment	Provision of existing Equipment	Bringing-in of equipment	To be newly procured
1) For borehole drilling					
1-1 Drilling rig (truck mounted)*1	1 unit	2	1		1
1-2 Compressor (truck mounted) *2	1 unit	2	1		1
1-3 Mobile borehole development unit & pumping test equipment (Refer to (3), 3), ①)	1 unit	2	1		1
1-4 Water tank (mobile, 4m^3)	0 unit	1	1		
1-5 Fuel tank (Fixed type, 6m^3:1 unit) (Mobile type, 4m^3: 1 unit)	0 unit	2	2		
1-6 Cargo truck with crane (5t)	1 unit	0			
1-7 Cargo truck with crane (3t)	1 unit	4	1	1	2
1-8 Pick-up truck (single cabin)	1 unit	3	0	2	1
1-9 Pick-up truck (double cabin)	1 unit	2	0	2	(1) *3
1-10 Station wagon	0 unit	2	0	2	
1-11 Geo-electric prospecting device	1 unit	1	0	0	1
1-12 Telecommunications equipment	1 set	0			
1-13 Spare parts for the above-mentioned equipment	1 set	1	0	Direct construction cost	
1-14 Repair parts & tools for equipment procured under the previous Japanese grant aid	1 set	1	0	Direct construction cost	
1-15 Equipment for workshops	0 set	1	0	Direct construction cost	
2) For research & monitoring					
2-1 Motorbike	3 units	12	4	5(rental) *4	3
2-2 Global positioning system (GPS)	2 units	2	0	0	2
2-3 Computer for borehole inventory & analysis	2 units	1	0	0	1
3) Construction materials					
3-1 Hand pump (Afridev type)	1set	1		Direct construction cost	
3-2 Casing & screen pipe	1set	1		Direct construction cost	

＊ 1: As for equipment to be procured, 100m in depth/over 171mm at final hole diameter, truck: 4 × 4, GVM 16.5t or less

＊ 2: As for equipment to be procured, 17 bar, over 750 cmf, truck: 4 × 4, GVM 16.5t or less

＊ 3: Although it is subject to new equipment to be procured, since it will be effectively utilized in the CBM Programme during the construction period, the number of vehicles to be brought in will be 2 units.

＊ 4: One unit each for 12 CBM activities teams. The existing equipment will be furnished from MoWCCS in addition to the MoWD.

Furthermore, although the work formation will be described in 2-2-4, its outline is as follows and the standard vehicle formation is shown in Table 2-2-9.

[1st Phase]

① Since 24 boreholes will be drilled using drilling equipment and personnel from local private companies, the equipment will be a 2-unit system to complete the drilling work in dry season.

② After drilling, approximately 2 civil work teams will build ancillary facilities and install hand pumps.

[2nd and 3rd Phases]

① Over a 2-year period, 272 boreholes will be constructed by constantly maintaining a 3-unit system using a set of drilling equipment to be newly procured, a set of existing equipment furnished, and 2 sets of equipment from local companies. Operations will be divided between a drilling team and pumping test team.

② After drilling, the civil work teams (approximately 5 teams) will build ancillary facilities and install hand pumps.

③ In the 2nd Phase, equipment furnished by the Malawian side utilized in the construction work after the 2nd Phase will be repaired and maintained.

Table 2 – 2 – 9 Standard Vehicle Formation in Borehole Construction

Implementation System / Major equipment & vehicle	1st Phase					2nd & 3rd Phases				
	Drilling team		Civil work team (2 teams)	Generalization, liaison, supervision	*1 Total units	Drilling team		Civil work team (3 teams)	Generalization, liaison, supervision	*1 Total units
	Drilling team	Pumping test team				Drilling team	Pumping test team			
Rotary & air hammer drilling rig	(2)				0	2 + (1)				2
Compressors	(2)				0	2 + (1)				2
Pumping test equipment		(2)			0		2 + (1)			2
Truck with crane (3t)	(4)				0	4 + (2)				4
Station wagons				1	1				1	1
Pick-up trucks (single cabin)	(1)		(2)	3*2	3	(1)		(5)	4*3	4
Pick-up trucks (double cabin)		(1)			0	1	1 + (1)			2

The figures in ( ) are equipment anticipated to be borrowed from local companies.

*1: Necessary equipment of the Japanese contractor side except figures indicated in ( ).
*2: For supervision : 3 = 1 (Drilling) + 1 (Test) + 1 (Civil)
*3: For supervision : 4 = 1 (Drilling) + 1 (Test) + 2 (Civil)

2) Examination of Major Equipment and Materials

① Drilling Equipment Type and Other Related Equipment

With respect to the selection of types of drilling equipment, on the assumption that one drilling team from Japanese contractors will construct 52 boreholes a year, attention should be paid to the following matters.

1. Implementation results (drilling capability, efficiency) of borehole construction equipment procured from Japan in the past.
2. Natural conditions and infrastructure, etc. at the target site.
3. The contents on drilling equipment requested by the Government of Malawi and the schedule for utilizing the equipment in future underground development programmes.

With respect to drilling equipment regarded to be major equipment in the Project, in due consideration of the geological conditions, the contents of the plan and its effective utilization after completion of the Project, types that satisfy the following conditions should be selected.

a) At the target area, relatively soft and un-consolidated sediment (3 to 36m) and high weathered rock are distributed on the surface. Lower sections are composed of hard rock mainly containing gneiss from the Precambrian to the early Palaeozoic Era. Groundwater may be borne from the highly weathered zone to a fissure zone at upper hard rock. Consequently, the equipment should be of a type which can be applied to such diversified geological features.

b) The equipment should be efficient.

c) The equipment should be a capable of adopting a mud-water normal circulation method, and be able to drill from collapsible soft formations to hard bedrock with a relatively large drilling diameter.

d) The equipment should be capable of utilizing an air hammer which can drill hard rock with high efficiency.

e) Since the candidate sites for borehole construction are scattered over a wide area, the equipment should be a truck-mounted type with excellent mobility and driving stability, and equipped with a mud pump, injection pump (for foam drilling) and hydraulic drilling derrick.

Specifically, the following type will be selected in due consideration of the design borehole diameter, depth, target geological features and working efficiency.

For the drilling method, a mud-water normal circulation rotary method which can be utilized together with an air hammer for hard rock and which is efficient for drilling boreholes of approximately 200mm will be

adopted.

The efficient top-drive method which can drill to a depth of 100m will be adopted for the rotary drive method.

The planed drilling depth will be 30 to 80m with a diameter of 6-3/4”(171mm); therefore approximately 100m is necessary for the drilling capacity. On the other hand, even though the drilling rig procured under the previous Japanese grant aid has a capacity of 150m drilling and a high mobility in mountainous areas, many sites in Malawi were still left behind because of tough access With the aim at promoting diversity in future groundwater development with smaller and lighter equipment, equipment will be truck-mounted and approximately 16t GVM or less and with a drilling capacity set up more than 100m with 6-3/4” diameter.

Other than the drilling equipment, other necessary tools will be provided for minimum drilling operations. Drilling tools (bits) and spare parts for repair and maintenance to be used in the drilling operations under the Project will be appropriated as direct construction cost.

Since high-pressured compressors are required for air hammer drilling which will be utilized together with truck-mounted drilling equipment, a track-mounted high pressured compressor will be provided with the drilling equipment for the Project. Air compressor capacity will be set as follows according to borehole diameter (6-3/4” to 10-5/8”), depth (100m), and existing equipment capacity.

Rated Operation Pressure: 2.0 MPa or more

Free Air Delivery: 20 m^3/min or more

3) Examination of Other Equipment to be procured

① Mobile Borehole Development Unit and Pumping Test Equipment

There are two methods to procure borehole development and pumping test equipment: one is to procure specially-ordered equipment as a complete unit, and the other is to procure equipment and a truck with a crane separately. The Malawian side has requested the former. Although the specially-ordered equipment is a Japanese original product designed to deal with various development techniques, it is generally more expensive than a combination of separate equipment. On the other hand, individual equipment has its advantages because it is more economical and the truck can be used for other purposes. Accordingly, the equipment will be procured as a combination of separate equipment.

The development of boreholes after drilling, assessment of feasible yield through pumping test and water quality testing will be carried out by the pumping test team. Loading the development

equipment and the pumping test equipment will be transported using a single vehicle. The equipment to be transported includes a compressor, generator, air lift tools, submersible pump, water level gauge, pH meter and electric conductivity meter.

In total, there are five units of the development and pumping test equipment which were procured through previous Japanese grant aid projects. Two units of the equipment procured in 1989 have been scrapped due to an accident or age and the remaining three units are in operable condition.

One set of development equipment and pumping test equipment for one unit of drilling equipment will be used for borehole cleaning and pumping tests after the drilling operations. Since the project implementation needs two sets of development and pumping test equipment for two units of drilling rig, one unit of equipment procured under the Lilongwe-Dedza Project will be furnished and one set of development and pumping test equipment will be newly procured. However, a submersible pump to be furnished cannot be used because of break-down; therefore one pump will be brought in as a contractor's equipment.

This equipment will be loaded onto the truck with a 3t crane for transport to the sites for mobility and efficient operations.

② Support Vehicles

(Support Vehicles for Construction Work)

As shown in the implementation plan, support vehicles shown in Table2-2-7 (Standard Vehicle Formation in Borehole Construction) are required to transport materials and to move personnel for two drilling teams and two development and pumping test teams.

Two trucks with 3t cranes, one pick-up truck (single cabin) and one pick-up truck (double cabin) will be the minimum number of support vehicles procured for drilling equipment under the Project and will be utilized after the Project. A double-cabin truck will be mainly utilized for geophysical prospecting to select drilling points and to transport workers and the survey equipment.

Although two trucks were requested with 3t and 5t cranes respectively, identical two trucks will be procured with 3t cranes and mainly utilized for transporting accessories, tools, water, fuel, gravel and pipes.

Although a pick-up truck (double cabin) will be utilized for the CBM Programme described below during the Project implementation, because its utilization for geophysical survey work is scheduled after the completion of the Project, it is included as a support vehicle for construction work (taken by the Water Resources Department) in the request.

(Vehicles for Sensitisation Activities)

・Pick-up truck (double carbine)

As explained in the paragraph on the soft component, when carrying out sensitisation activities (CBM Programme) for residents promoted by the MoWD, with respect to the borehole water supply facilities to be constructed under the Project, one pick-up truck (double cabin) will be required by management of such activities for training of residents and transportation of materials. During the implementation of the Project, the above-mentioned double-cabin truck to be procured as a vehicle to support construction work will be utilized for CBM activities.

・Motorbikes

Although the most efficient method is to monitor sites and provide sensitisation activities at establishments of the VHWC and/or the WPC on motorbikes, due to financial difficulties they have not been provided at the target area. Therefore, in order to perform the CBM Programme during construction work twelve motorbikes are required. For facility maintenance after constructing the facilities, one water monitoring assistant will be responsible for 100 water facility locations, so three motorbikes should be provided. As described above, three motorbikes will be newly procured. With respect to the remaining nine units needed during the construction period, whatever the ministries concerned can provide and rental bikes will be utilized.

③ Geo-electric Prospecting

Geo-electric prospecting is an indispensable way to supplement surveys for unsuccessful boreholes during construction work. On the other hand, in the past geo-electric prospecting has been arranged at field offices in the North, Central and South regions and is carried out at 150 to 200 (locations) annually. However, the device procured in 1992 has deteriorated and can not be used for normal operations, so each region cannot maintain a single unit system. Therefore, one new unit will be procured.

④ Radio Communication Equipment

The cellular phone network has been expanding in Malawi in recent years so there are no problems with communications in areas adjoining major roads. Since cellular phones are adequate for periodical contact and for emergencies during construction work, radio communications equipment will be excluded from the procurement.

⑤ Global Positioning System (GPS)

The global positioning system (GPS) is effective as a means for identifying the design boreholes and actual drilling locations or to supplement the selecting of substitute locations for unsuccessful boreholes by confirming its relationship with existing boreholes. During the construction work three units in total will be required, one for each drilling team and one for work supervision.

In addition, if the MoWD independently carries out groundwater development after the completion of construction, it can be effectively utilized as described above. Therefore, two new GPS units will be procured as requested. Moreover, one extra unit should be brought in during construction work by the contractor.

⑥ Computer for Borehole Inventory

As requested, two computers will be procured, one desk-top type for borehole inventory (including colour printer) and another lap-top for an analysis of geo-electric prospecting.

A survey for creating a database (DB) on water supply facilities was implemented by obtaining an approval of the MoWD and by utilizing funds of the JICA, the CIDA and the UNICEF, etc. through the WSSC and was completed in 7 districts in 2004. The survey is being conducted in 3 districts including Lilongwe district. The DB represents a compilation of the following data through visual observation of water supply facilities detected by surveyors, positioning with the GPS and through interviews. The data can be analyzed through the GIS utilizing electronic map information prepared by the Department of Survey Malawi.

- Facility number (DB ID number and well number at the time of constructing facilities, if any)
- Position (GPS data is converted to a grid), village names, TAs and districts
- Type of water source (such as gravity fed water supply, boreholes and protected shallow wells)
- Pump type
- Classification of operating conditions
- Construction year, financial sources for construction, service providers (CBM implementing persons or drilling companies)

The prepared DB is available to members of the WSSC, donors and the MoWD and the system also accepts the registering of new and updated data. If funds can be secured, the WSSC plans to cover the entire nation by expanding the future survey range.

Although the MoWD officially recognizes and agrees with this survey, due to the shortage of its own information devices, they just peruse the DB or obtain information resulted from the GIS analysis, so one could say that they are not actively involved. The MoWD has been storing data on many boreholes constructed through their own past projects such as the above-mentioned depths, casing diameters, yields, static water levels, dynamic water levels and geological features subject to drilling, in addition

to borehole numbers, locations, and village names on paper cards. Despite their intention to convert the data into digital format using spreadsheet software, the only computers in operation are information-processing equipment utilized daily by managerial personnel so that compilation of the DB is not a prospect. It is also difficult to search efficiently for information necessary for development planning and maintenance such as past drilling records and the data is also scattered.

Due to the progress of creating the DB at the WSSC, since the MoWD considers it appropriate to share data with the WSSC by posting two responsible technical staff (Bs) and by adding the paper-based data to the DB jointly with the WSSC, they intend to make an analysis by utilizing GIS software and add information wherever possible. However, for easy utilization, computers exclusively utilized by responsible personnel should be newly procured, and if the DB created is applied to the GIS, GIS software and color printers are essential. They are expected to obtain application skills for GIS software during OJT in joint operations with the WSSC. In due consideration of the above-mentioned conditions in the MoWD, as for the equipment necessary for monitoring borehole wells to be constructed under the Project over the long term and formulation of a development plan for the purpose of improving the coverage rate in the target area after implementation of the Project, one computer, color printer and GIS software will be newly procured.

⑦ Other Borehole Drilling and Construction Materials

The request also includes a list of spare equipment parts to be procured, repair parts and tools for the equipment already procured which are necessary for borehole drilling during construction work, including hand pumps, and one set each of casings and screen pipes as construction materials. These will be appropriated as direct construction cost.

4) Equipment Plan

In accordance with the above-mentioned basic policies and examination results, based on the types and quantity of equipment necessary for construction work and existing equipment to be furnished, the plan for procuring equipment and materials is outlined in Table 2-2-10.

Table 2 – 2 – 10 (1) Specifications and Quantity of Equipment and Materials

Name & Specifications of Equipment & Materials	Quantity to be procured
I. Equipment for borehole drilling	
1-1 Truck-mounted drilling equipment Top-drive type truck-mounted, combined mud water rotary & air hammer method Drilling capacity : Depth at 100m (Final borehole dia. at 6-3/4" (171mm) by air hammer) Rotary head :Maximum load at 5,000kgf or more Pull down/ Hold back: 5,000kgf or more, Draw works : Hoisting power of 1,700kgf or more Mud pump capacity : Discharge volume 600 l/min, pressure approx. 20 kg/cm^2 Truck specifications : Water-cooled diesel engine, right handle 4 × 4 , GVM 16.5 ton or less, with PTO for rig drive (In the case of no PTO, deck engine is acceptable.) About 200PS engine output	1 set
1-2 Standard accessories and tools for the above equipment	
a) Standard accessories	1 set
b) Drilling tools (Mud water drilling tools, down the hole hammer drilling tools & others)	1 set
c) Casing tools (Surface casings, casing holders, pipe bands & others)	1 set
d) Fishing tools (Jack, inside & outside tap and others)	1 set
e) General drilling tools (Pipe wrenches, super tongs, sledge hammers & others)	1 set
2. Truck-mounted high pressure compressor Compressor capacity:2.0 MPa, 20 m^3/min or more Truck specifications: water-cooled diesel engine, right handle 4 × 4, GVM 16.5 ton or less, engine output of about 200PS	1 set
3. Borehole development unit & pumping test equipment	
3-1 Truck specifications: 4 × 4, with 3t crane, GVM 10ton or more, loading capacity at 3t, engine output at 190PS	1 unit
3-2 Compressor: 0.7 Mpa × 3.5 m^3/min or more	1 unit
3-3 Generator: 10 KVA / 50 Hz, AC380V, 3-phase	1 unit
3-4 Submersible water pump: discharge volume at Max 100 l/min / 50m head,, with riser main pipe : 40mm dia. x 60m	1 set
3-5 Air lift tools 2" discharge pipe } for 80m 3/4" air pipe 2" delivery hose Measuring box with V notch, etc	1 set
3-6 Other pumping test equipment Water level meter: for 100m depth with alarm buzzer or lamp Potable pH meter : for pH 0 - 14 Potable Electric conductivity meter: with thermometer for 0 · 20,000 micro S/cm	1 set

Table 2 – 2 – 10 (2) Specifications and Quantity of Equipment and Materials

Name & Specifications of Equipment & Materials	Quantity to be procured
4. Support Vehicles	
4-1. Cargo truck with crane Truck specifications: Water-cooling diesel engine, right handle, 4 × 4, GVM 13 ton or more, engine output at about 190 PS Loading capacity: 5,500 kg or more Crane capacity: : 3ton crane	2 units
4-2. Pick-up truck (single cabin) Pick-up specifications: Water-cooling diesel engine, right handle, 4 × 4, engine output at about 77 PS Loading capacity: 1,000kg or more	1 unit
4-3. Pick-up truck (double cabin) Pick-up specifications: Water-cooling diesel engine, right handle, 4 × 4, engine output at about 77 PS Loading capacity: 500 kg or more	1 unit
5. Geo-electric prospecting (maximum prospecting depth: 200m or more)	1 set
II. Equipment for research and monitoring	
1. Motorbikes Off-road: : 100 to 125 cc class, engine output at about 10 PS	3 units
2. GPS	2 units
3. Computers & peripheral equipment 3-1. Desktop CPU: 1.5 GHz, RAM: 256 MB, hard disc: 30 GB, Drive: CD-RM, Monitor: TFT 17 inches	1unit
3-2. Colour printer [Inkjet type or equivalent] Print speed Black: 15 ppm, Colour: 11 ppm 2400 × 1200 dpi, 4 colours, Paper size: Max. A3 size	1unit
3-3. GIS software Specifications: Arc View 3	1 set

2 – 2 – 3 Basic Design Drawings

Borehole Construction Method and Design of Ancillary Structures

Standard procedures for borehole construction work are outlined as follows.

A. The mouth diameter of a borehole is 12-1/4" (311.2mm) and the depth is up to 12m by mud water drilling. A work casing of inner diameter at 248.8mm is inserted. (Surface casing is inserted into the mouth in advance when necessary.)

B. In the subsequent section of soft to hard rock, a borehole of diameter 6-3/4" (171mm) is drilled with an air hammer. If the soil layer is thick, it is drilled by mud water drilling at a diameter of 8-1/2" (216mm.). At the target area, 40m of soil layer thickness at maximum is anticipated.

C. At the depth of the aquifer, an interim yield per drill pipe (L = 3.0m) is measured and recorded. After drilling to the required depth, the depth of the major water-intake layer is examined based on the records of interim yield and a casing programme is decided. Then a 4-inch screen (PVC-Class10) and casing are installed. The slot width of the screen is 0.8mm and the open area rate is 9% or more.

Depending on stratum conditions, a casing programme of 3 nos. of screen pipes (9m) in principle and 1 casing pipe (3m) is placed at the lowest section as sand trap and a screen are installed onto it.

D. Filter materials (2 to 5 mm of grain size) are filled up to the GL - 12m or deeper. On top of that, the residual soil is filled until the GL 4m, and cement should then be filled to the ground level.

E. The inside of the hole is cleaned with an air lift device until the flow of water from the spring becomes clear.

F. The propriety of the borehole is judged by conducting a pumping test for water volume and quality. A borehole is considered successful borehole when a stable water flow of 12 litres/minute or more is obtained. With respect to water quality, the Interim Standard for un-treated water supply set by the Water Resources Department of the MoWD is regarded to be the criteria.

When satisfying the criteria of text results in F, ancillary structures are constructed and pumps are installed. The process from A to D is implemented by the drilling team; whereas, the process from E to F is implemented by the pumping test team. With regards to pump type, since the water levels are more than 5m indicated in half of the existing borehole data and the dynamic water level is anticipated to reach more than 20m, hand pumps for deep wells are necessary. Considering that local residents will maintain the boreholes, the Afridev type listed in the written request is the standard hand pump for boreholes in Malawi.

The pump specifications are as follows.

Afridev-type hand pump

- Length of spout: 580mm
- Pump rod: Stainless steel (AISI30A), eye hook joint
- Plunger: Made of brass
- Pump stand: Tripod type
- Accessories for Maintenance: Spanner and Fishing Tools

Unsuccessful boreholes are filled in with the excavated soil.

Ancillary structures will be designed to meet the following basic requirements.

- Various facilities (such as water drawing platform, washing basin and bucket stand) should be arranged for clean maintenance around the borehole and easy utilization by beneficiaries).
- Structures should be durable.
- Approximately 4m^2 of the apron for receiving water should be left in order not to hinder water drawing operations and a bucket stand should be provided for easy lifting the bucket.
- A sufficient length of drainage should be considered to prevent mud from accumulating around the borehole surface.
- Washing basins should be installed at two locations at a washing place and a wave shape should be created on the surface to prevent splashing of water from beating while washing.(Standard design of MoDW)
- For the purpose of utilizing an Afridev pump, apron footing for the same structure for receiving water should be secured.
- Although drainage become easily congested due to accumulation of leaves or soil, the standard design of the MoWD which is less problematic will be applied.

Of the villages subject to the study, over 85% of villages said that they needed wash basins. Wash basins are therefore scheduled to be installed at all facilities by reason of the above-mentioned sanitation. It was observed that some existing facilities do not utilize wash basins. The residents said that they hesitate to use them because some people washed unsanitary items such as diapers, and that the river was in close proximity. If detailed instructions are provided through awareness activities on good sanitation, the environment and convenience for residents are expected to improve.

In addition, it is essential to create a situation that will not hinder vehicles driving by for repairs or on construction access roads. Therefore, the Malawian side should obtain the cooperation of residents prior to the start of construction work.

[Fences/Drainage/Soak pit around Ancillary Structures of Boreholes]

As a part of the public's participation, fences, drainage and soak ways (drainage chambers) around ancillary structures at the borehole should be built by the WPC and residents should provide construction materials

and labour.

The perimeter fence should be made of wood that is easily available from around the site in order to prevent domestic animals from breaking into the area inside ancillary structures and to maintain sanitary conditions around the facilities. A reference fence is demonstrated in Figure 2-2-14. It does not obstruct a brick fence to be built by the WPC.

An infiltration method is to be applied to the drainage ditches so that unsanitary conditions can be prevented at ground level. Drainage from ancillary structures will flow into open ditches surrounding the structures. Since land surrounding the ditches is suitable for crop cultivation, it should be utilized for growing cash crops such as bananas, and for fund raising activities for maintenance expenses. The above-mentioned reference drainage is demonstrated in Figure 2-2-13.

According to geological and geographical conditions of the Project area, if it is difficult to construct the above-mentioned drainage, soak pits should be installed at the end of ancillary structures and a reference is shown in Figure 2-2-14.

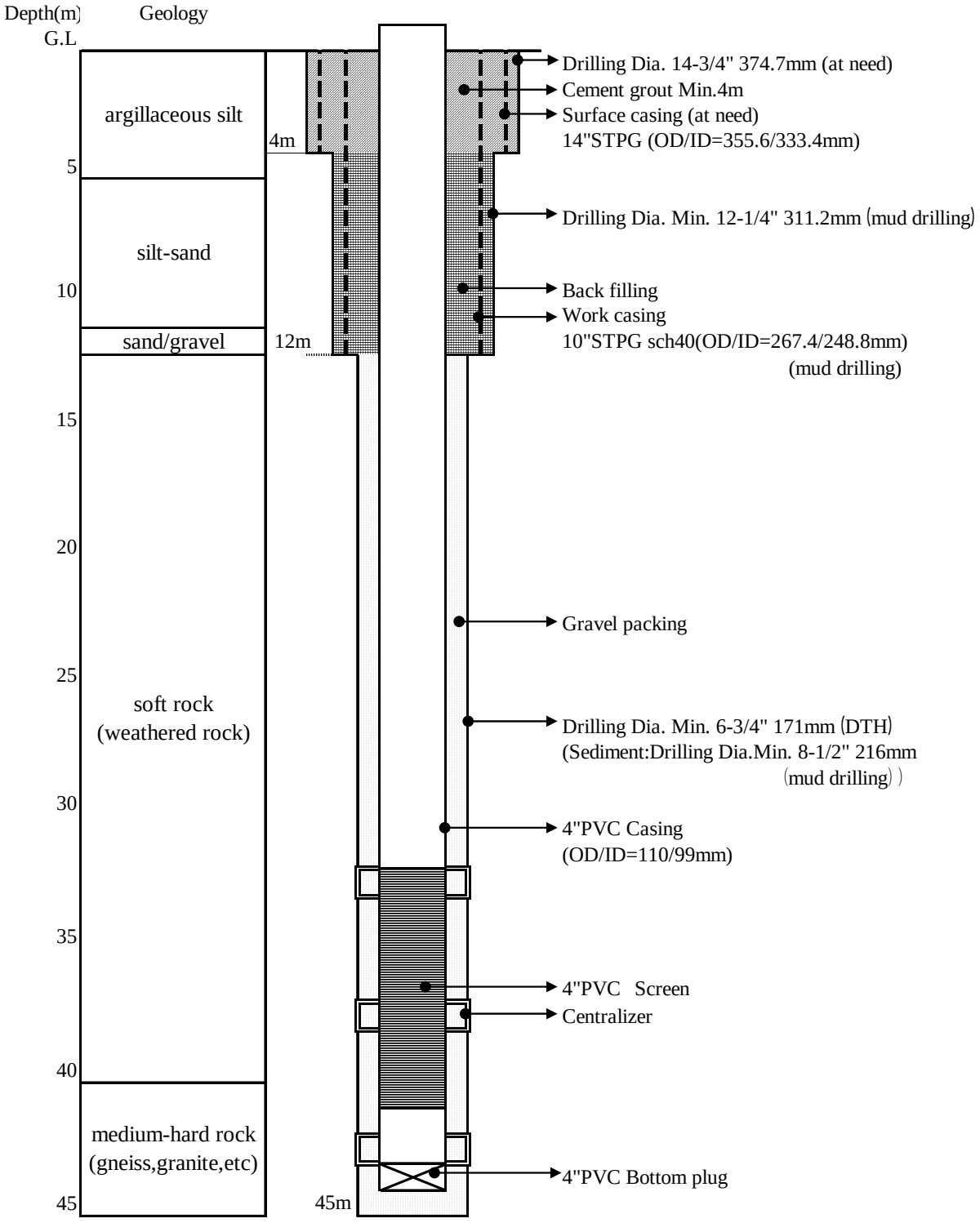


Fig.2 – 2 – 5 Standard Structure of borehole

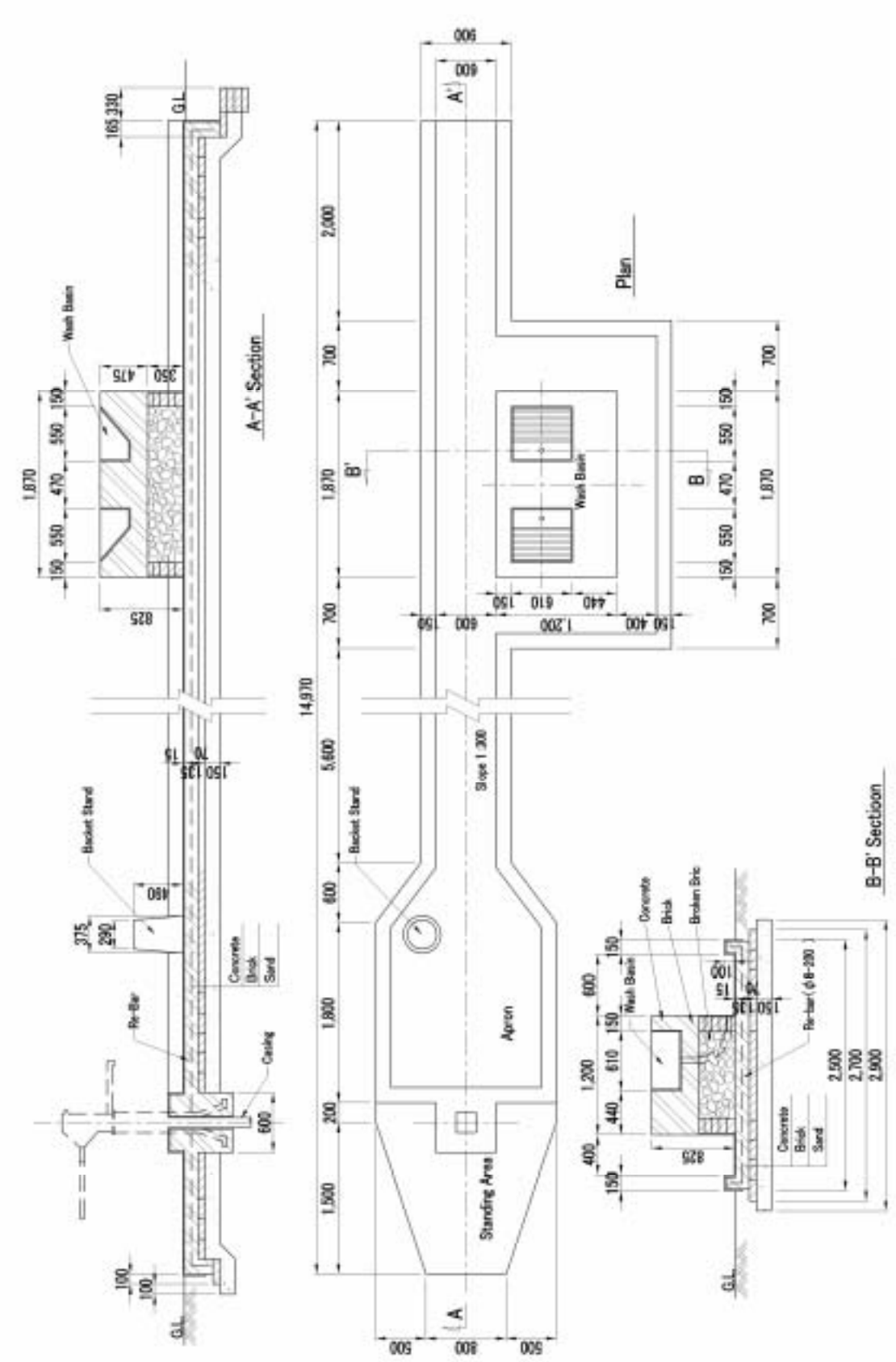


Fig 2 – 2 – 6 Plan and Section of Ancillary Facilities

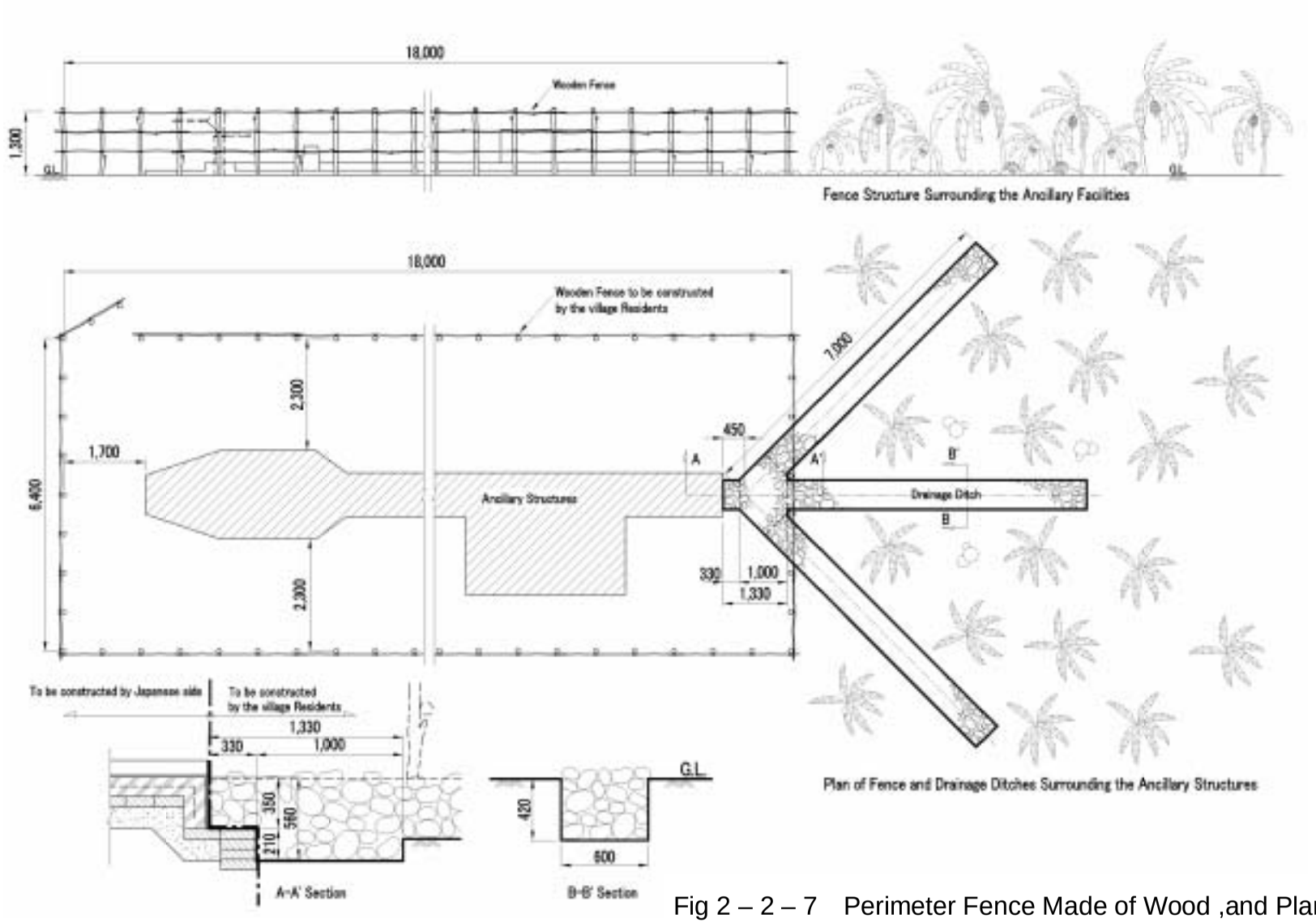


Fig 2 – 2 – 7　Perimeter Fence Made of Wood ,and Plan and Section of Drainage Ditch (reference)

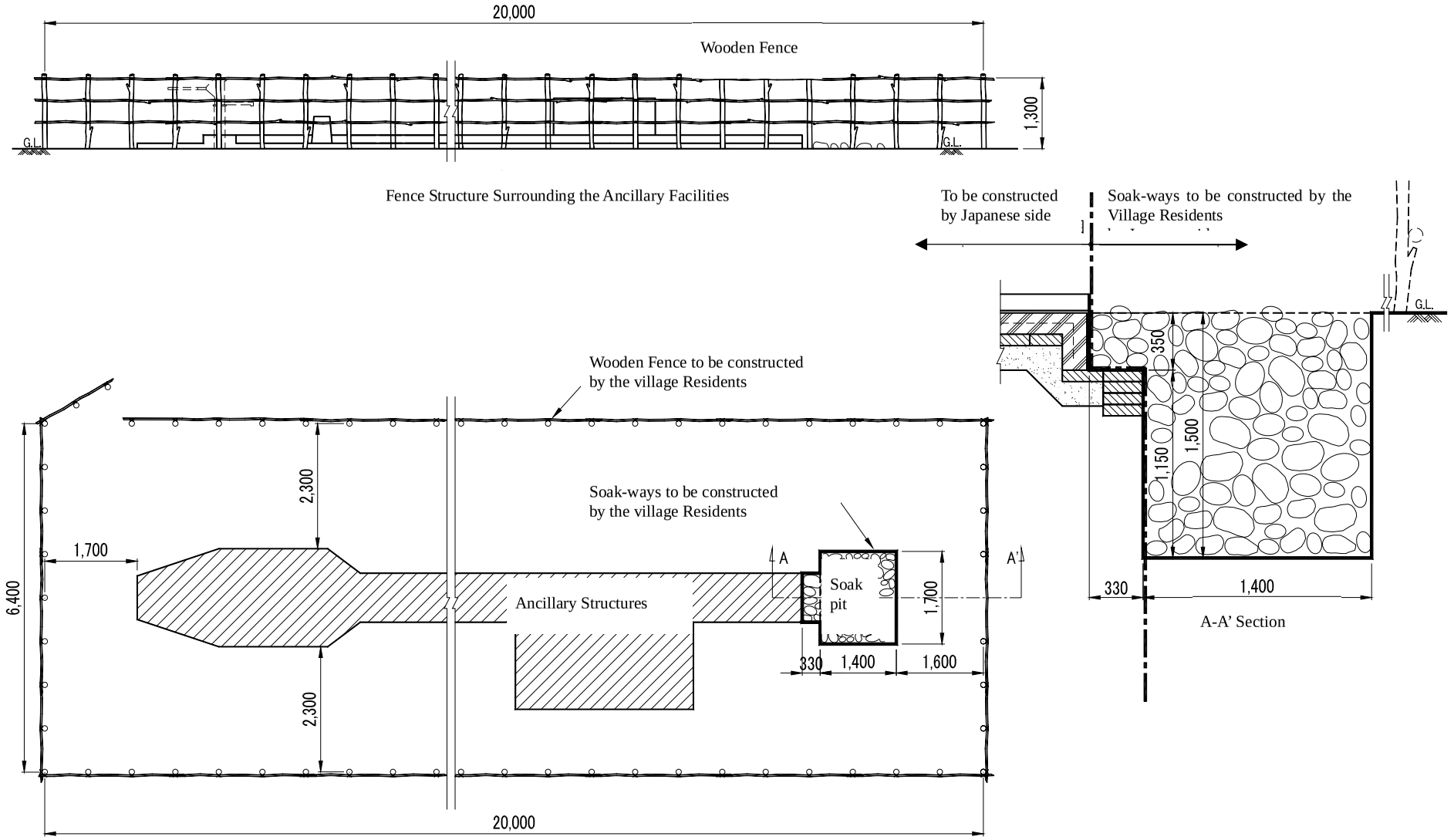


Fig 2 – 2 – 8 Perimeter Fence of Wood, and Plan and Section of Soak pit

2 – 2 – 4 Implementation Plan/Procurement Plan

2 – 2 – 4 – 1 Implementation Policy/Procurement Policy

(1) Fundamental Matters

Fundamental matters in the construction and procurement in the Project are described as follows.

① In accordance with the Japanese grant aid scheme, the Project will be implemented by the Water Resources Development of the Ministry of Water Development (MoWD) as the implementing body.

② In accordance with the Japanese grant aid scheme, a Japanese consultant (the Consultant) will take responsible over the detailed design, vicarious execution of tendering, procurement of borehole construction materials and equipment, borehole construction work supervision.

③ A contractor who is a Japanese national (the Contractor) will take responsible over the procurement and delivery of borehole construction materials and equipment.

④ The MoWD will secure necessary number of capable local staff who participate the construction prior to the commencement of work.

⑤ The MoWD side will secure personnel for implementation of the Project during construction.

⑥ The MoWD will implement measures for tax exemption related to imports of the procurement of equipment and materials with the cooperation with the Ministry of Finance and Economic Planning.

⑦ The MoWD will facilitate for the local procurement of equipment and materials to be preferentially provided in accordance with the implementation schedule so as not to hinder the construction work.

(2) Work Implementation System and Work Schedule

1) Overall Work

Since single-year phasing is possible as a work period, after examining the following conditions three phasing is appropriate.

- Quantity of planned boreholes (45m average depth, 296 boreholes in total)
- Preparatory construction (2 months for base camp construction, selection of private drillers and placing orders, etc.)
- Period required for manufacturing, transporting and receiving check, etc. the equipment to be procured (9 months for the new equipment for borehole drilling)
- Cycle time of construction work (3.10 days for drilling per borehole, 3.13 days for pumping test per borehole and 12 days for ancillary structures)
- Past results (approximately 50 successful boreholes annually, approximately 65 including

unsuccessful ones)

- Road conditions in the rainy season (December to March): Difficult for heavy vehicle such as drilling rigs to drive on local road.
- Ensuring cooperation with CBM activities or work supervision (mobilization of committees prior to construction work, facilitation of resident participation to the construction and training after construction: supervision of three drilling teams simultaneously at the maximum)

The total period required for the construction work based on a three-team scheme will be as follows;

2.0 months for preparatory work
15.0 months for drilling 296 boreholes
0.12 months for the last pumping test remained after the final drilling
0.47 months for the last construction of ancillary structures remained after the above
17.59 months in total

If this will be implemented in 8 months of dry season annually, it will be taken 2 years and 1.59 months (=17.59 months ÷ 8 months/year). In the rainy season except for the first week, vehicles get stuck in the muddy roads. In addition, based on the past experiences that 2 to 3 weeks delays were resulting from breakdowns and repair of equipment annually, it will be difficult to complete the construction in two years and 3 phases of single-year work period are necessary.

The drilling equipment to be newly procured and the equipment procured under the previous grant aid projects will be effectively utilized. However in due consideration of the required periods for the detailed design, tendering, manufacturing, transporting and repair, etc, it will be difficult to utilize these equipment in Phase 1. Consequently, major facility construction will be implemented during the 2nd and 3rd years.

On the other hand, since the facility construction is requested in the 1st year due to poor water supply facility conditions and practical training for extension workers of the CBM activities to be trained in the 1st year is desired at the completion of training, not only will preparatory construction be carried out, but also facility construction effectively utilizing the equipment and personnel of local companies. Due to the necessity of work management and quality control and the limited number of equipment on the market for local companies, a 2-unit scheme to the maximum will be applied even if the period is relatively short. When estimating the schedule from the commencement of work, the work period during the dry season will be approximately 4 months, and the number of facilities will therefore be 24 boreholes which can be drilled in two months, obtained by deducting two months of the preparatory construction (＝ 6 boreholes/month/unit × 2 units × 2 months) in Phase 1. This is an appropriate number because 2WPC in CMB activities is scheduled to be established through 12-team scheme at

the same time. By feeding the reflected point back to the full-scale activities plan in the following year, it is expected to increase the effects of CBM activities.

Construction in the 2nd year will begin through a 3-unit scheme with 1 unit of equipment to be newly procured and 2 units of the equipment of local companies. Construction in the latter half of the 2nd year after repairing the procured equipment and construction in the 3rd year will be implemented through a 3-unit scheme in total with one of the newly-procured and already-procured equipment and the drilling equipment of local companies.

Since there will be insufficient trucks for transporting both private-sector equipment and the already-procured equipment, if one shared truck is added to the equipment brought in by the contractor and an efficient work cycle is adopted, it is suitable to plan the construction work for 52 boreholes annually per 1 unit of the drilling equipment for the entire dry season and the beginning of the rainy season. The construction work for 156 boreholes through a 3-unit scheme (= 52 boreholes × 3units) and the remaining 116 boreholes are scheduled for the construction in the 2nd year and 3rd year respectively. In such case, the quantity of boreholes to be constructed using local private drilling equipment will be 85 boreholes in the 2nd year and 39 boreholes in the 3rd year.

2) Work Implementation Scheme

① Construction in the 1st Year

Due to the vast number of construction site, a base will be built to store construction equipment and materials and for the purpose of organizing local staff office (site office) and warehousing for efficient construction management and a method for transporting construction equipment and materials to each site will be adopted. Since the base will house regional staff of the Ministry of Water Development and is to be located in Namitete, a major town within the target area, and due to the availability of vacant land, land for the base will be loaned at no cost. However, access roads are needed and the land for the base should be levelled, for which the Government of Malawi should take responsibility.

The scale of the base is described as follows.

Buildings to be constructed will include 1 building for administration with 1 office and 3 rooms for materials, a toilet and a yard for a fuel tank, gravel, sand and PVC pipes. Local construction methods mainly utilizing local materials will be applied to the administration building which will be made of brick since it is the most economical method. In addition, fencing to prevent trespassing will be constructed along the site perimeter.

Table 2 – 2 – 11 Facility Plan of Namitete Base

Facility Name	Quantity	Specifications	Remarks
Office & storage building	1 building	Local construction method, single-storey building with 4 rooms, 95m^2, Office = 20m^2	Staff responsible in materials and 2 workers are permanently stationed in an office and storage rooms (hand pumps, maintenance equipment and materials, cement & mud agent) Japanese personnel & local staff visits, meetings
Toilet	1 unit	Local construction method	Underground seepage
Materials yard		For gravel & sand: Concrete base placing, each 10m x 6m For PVC pipes: 10m x 6m (only levelling)	
Parking for large vehicles		7m x 21m, gravel paving	For 6 large-sized vehicles
Fence to prevent trespassing		196m (L) x 2.5m (H)	Standard

In the 1st year, 24 boreholes and ancillary facilities will be constructed by effectively utilizing the equipment and personnel of local contractors under the supervision of Japanese contractors.

The borehole drilling construction will be divided into drilling work and pumping testing. In the 1st year's construction, work will be implemented by 2 teams who will carry out daily technical control and process control. In the case of unsuccessful boreholes, from the selection of substitute drilling locations or simplified on-the-spot water quality test, the iron content is measured, which is also a vital part of field management. Accordingly, the Project will include the dispatching of 1 drill engineer who will be responsible for drilling and 1 hydro-geological engineer in charge of pumping tests and judging of water quality and geological features.

After boreholes are drilled, ancillary facilities such as including hand pump sites will be constructed by a team separate from the drilling. The construction of ancillary facilities will be taken by 1 civil engineer from the Japanese contractor.

The overall scheme of the above-mentioned borehole drilling, pumping test and ancillary facilities is shown in Figure 2-2-9 and Table 2-2-12.

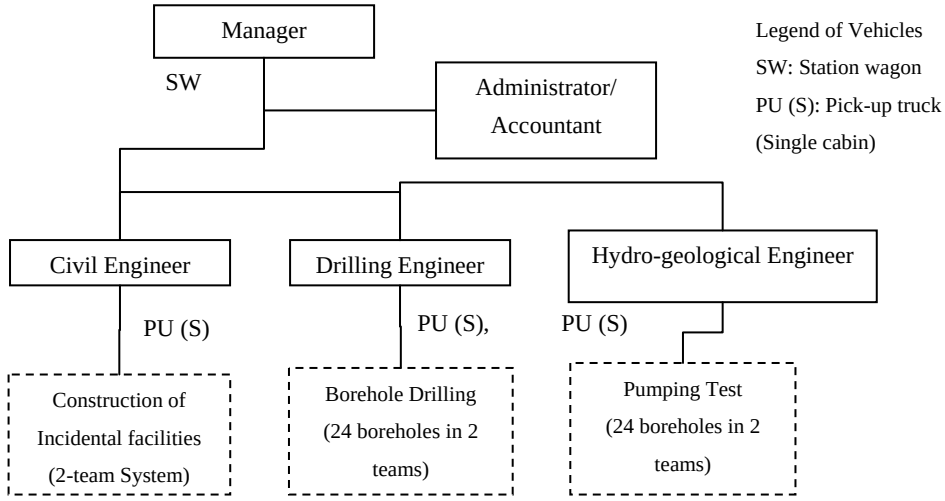


Figure 2 – 2 – 9 Work Implementation Scheme (1st –year of Construction)

Table 2 – 2 – 12 Major Equipment and Vehicles for Borehole Construction (1st-year of Construction)

Work Implementation scheme / Major equipment & vehicles	Standard formation & necessary Number of Units Figures in( )indicate the equipment to be borrowed from a local contractor						
	Borehole drilling (Private Sector)		Ancillary structure team (2 teams)	Generalization/ liaison/ supervision	Necessary quantity & procurement method		
	Drilling team (2 teams)	Pumping test team (2 teams)			Total	Equipment procurement	Brought in from local contractor
Truck-mounted drilling equipment	(2)				0		
Truck-mounted high pressure compressor	(2)				0		
Truck-mounted pumping test equipment		(2)			0		
Truck with 3t crane	(4)				0		
Station wagon (SW)				1	1		1
Pick-up truck with single cabin (PUS)	(1)		(2)	3	3	1	2
Pick-up truck with double cabin (PUD)		(1)			0		

② 2nd-year and 3rd-year of Construction

a) Borehole Construction

In the 2nd year 156 boreholes and ancillary facilities will be constructed including 71 boreholes to be carried out by 2 units of drilling equipment including 1 unit of existing equipment of the Japanese contractor, 1 unit of equipment to be newly procured, and 85 boreholes to be drilled by equipment of a local contractor.

In the 3rd year construction will include 116 boreholes and ancillary facilities through the same system used during the construction of the 2nd phase, including 77 boreholes to be built direct by of a Japanese contractor and 39 boreholes to be drilled using equipment of a local contractor.

b) Repair of Existing Equipment

Equipment already-procured to be utilized during construction from the 2nd year will be repaired using parts manufactured and shipped from Japan prior to the commencement of service. The repair work will be carried out by 1 mechanic from a Japanese contractor responsible for maintaining and repairing of equipment to be utilized after approximately 1 month with mechanic staff of the BCF at the office of Central Region.

In the Project, the cost for repair and replacement parts for existing equipment will be calculated based on the rate of equipment maintenance and repair cost.

Existing equipment to be furnished requiring repair are as follows.

- Truck-mounted drilling rig: 1 unit
- Truck-mounted high pressure compressor: 1 unit
- Development/Pumping test vehicle: 1 unit
- Truck with 3t crane 1 unit

The work implementation scheme is described in Figure 2-2-10.

Support vehicles are necessary for drilling operations. The standard composition of major equipment and vehicles including support vehicles for the borehole construction are shown in Table 2-2-13.

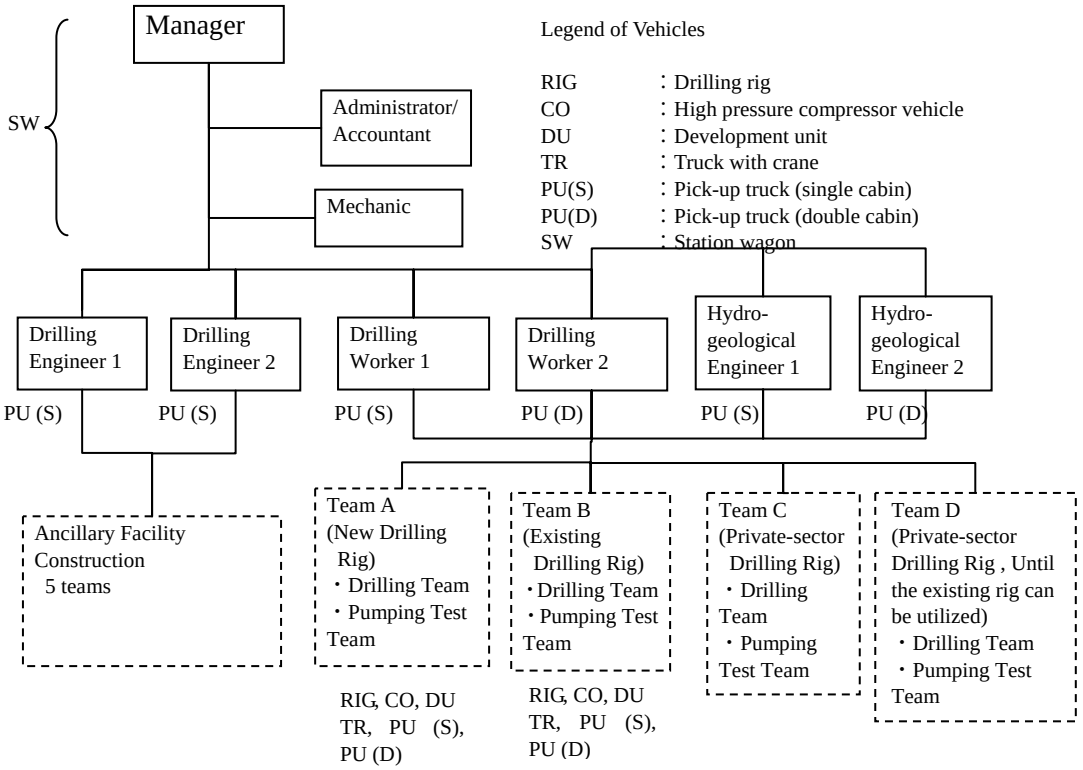


Figure 2 – 2 – 10 Work Implementation Scheme (2nd and 3rd Years)

Table 2 – 2 – 13 Standard Composition of Major Equipment and Vehicles in Borehole Construction (2nd and 3rd-year of Construction)

Work implementation scheme / Major equipment& vehicles	Composition & necessary number of units Figures in (indicate the equipment to be borrowed from the MoWD Figures in( )indicate the vehicles to be borrowed from the local contractor.										
	Borehole drilling						Ancillary structures (5 teams)	Generalization/ liaison/ supervision	Necessary quantity & procurement method		
	Existing equipment		New equipment		Private sector	Share			Total	Equipment procurement	Brought-in by contractor
	Drilling team	Pumping test team	Drilling team	Pumping test team	Drilling & pumping test						
Truck-mounted drilling rig	(1		1		(1)				1	1	
Truck-mounted high pressure compressor	(1		1		(1)				1	1	
Truck-mounted pumping test device		(1		1	(1)				1	1	
Truck with 3t crane	(1 *1		1 *1		(2)	2 *2			3	2	1
Station wagon								1 *3	1		1
Pick-up truck (S)	1		1		(1)		(5)	2*4	4	1	3
Pick-up truck (D)		1		1	(1)				2		2

*1 Full-time work for the drilling team.

*2 A total 2 units for water supply and transportation of gravel will be shared by 2 drilling teams.

*3 For generalization & liaison, supervision for the private-sector drilling team.

*4 For supervision of the ancillary structures team.

The application and necessity of each support vehicle is described as follows.

c) Trucks for Transporting Materials

As shown in Table 2-2-14, a total four trucks for transporting materials and equipment needed for borehole construction work are required, two to be distributed to A and B teams comprised of the drilling group and pumping test group and two to be shared by the teams. Including the existing drilling equipment, one unit will be furnished by the Malawian side, so two units to be newly procured and one unit to be brought in by the contractor.

With respect to the operation of vehicles, a margin should be included for repairs or break-downs, multiple operations to a single unit, and a system should be created in which vehicles can be replaced in a flexible manner.

Table 2 – 2 – 14 Application Plan for Trucks for Transporting Materials

(On and after the 2nd-year of Construction)

Vehicle Name	Application	Base Camp	Operating Rate
Truck A	For exclusive use by "Drilling Team A" to transport the drilling equipment, move materials at the site during drilling work and transport construction materials, personnel & fuel to the site in the mornings & evenings.	Site Base	1.0
Truck B	For exclusive use by "Drilling Team B" to transport drilling equipment, move materials at the site during drilling work and transport construction materials, personnel & fuel to the site in the mornings & evenings.	Site Base	1.0
Truck C	For purchasing filter materials, transportation to the site base & transportation from the site base to each site.	Site Base	0.53
Truck D	For transporting water for mud water drilling.	Site Base	0.64

d) Pick-up Trucks

The drilling construction will be conducted by three teams composed by drilling and pumping test teams. Since two drilling workers and two hydro-geological engineers will manage and guide the drilling team and pumping test team respectively, four pick-up trucks will be arranged. In addition to the management and guidance, these will be utilized for transporting workers, transporting light raw materials, and for liaison and support. Therefore, two double-cabin and two single-cabin pick-up trucks will be used.

In addition, 2 pick-up trucks (single cabin) will be needed to control the construction of ancillary facilities for the 2 civil engineer. (each 5 construction teams will build 2 locations simultaneously)

One pick-up truck (single cabin) will be procured as part of the minimum number of support vehicles for new drilling equipment to be applied after the implementation of the Project. Other than this, five pick-up trucks should also be brought in.

The pick-up truck (double cabin) to be procured under the Project is not included as a support vehicle for the construction work because it will be utilized for CBM activities during the construction period.

e) Station Wagons

1 station wagon will be necessary for project management and administration.

2 – 2 – 4 – 2 Implementation Conditions

The Malawian side should prepare the following prior to the delivery of borehole construction equipment and materials by contacting the Consultant to discuss the start of construction work through the drilling equipment (leased) of local contractors.

1) To confirm that the HVWC and/or the WPC are established prior to commencement of geo-physical prospecting for site selection.
2) To witness geo-physical prospecting to be conducted by the Consultant, to grasp public willingness at the candidate site for drilling and to discuss it with the Consultant. To decide on the location for borehole drilling by adjusting the results of the geo-physical prospecting and the intensions of residents.
3) To construct or repair access roads through the provision of labour (such as site levelling and road construction) and local materials (such as sand and laterite) immediate after deciding the above-mentioned borehole construction location.
4) To decide on the layout for drainage by grasping and coordinating public intensions in order to secure and effectively utilize cultivated land for fund raising (for maintenance).
5) To level land for a base camp (storage for equipment and materials) with laterite scheduled at Namitete owned by the Water Resources Department Namitete prior to the commencement of construction work.
6) Contractors will bring their own tools and spare parts for machinery necessary to maintenance and repairs so minor problems during the construction work can be dealt with. However, if large-scale repairs become necessary, a system should be established that will enable such repairs to be carried out at a MoWD workshop.
7) To secure capable local drivers (BCF staff).

2 – 2 – 4 – 3 Scope of Works

The scope of works taken by the Japanese and Malawian sides is shown in Table 2-2-15.

Table 2 – 2 – 15 Scope of Works

Work Item	Japanese Side	Malawian Side
Security and levelling of base camp site and borehole construction site		○
Development of access roads from base camp to borehole construction site		○
Procurement of equipment and materials necessary for borehole construction work	○	○*1
Borehole construction work	○	○*2
Provision of construction materials such as bricks and civil engineering work of catch basin		○*3
Implementation of CBM Programme to provide sensitisation activities for maintenance of boreholes (including sanitary education) through community initiatives	○	○

*1: Provision of equipment (1 set) procured under a previous Japanese grant aid project

*2: Bearing of cost for engineers on the Malawian side who will participate in the borehole construction work

*3: Enlightenment education for residents based on the CBM Programme

2 – 2 – 4 – 4 Consultant Supervision

Following the conclusion of the consultancy agreement after signing the E/N, the Consultant will prepare a detailed design and tender documents, carry out tendering on behalf of the implementing body and supervise the procurement of equipment and materials for borehole construction and work implementation.

(1) Detailed Design

In the basic design, the Consultant will submit a detailed design report clarifying locations where boreholes will be drilled, drilling depth by implementing detailed geo-physical prospecting at the target villages and shall obtain approval from the Malawian side.

(2) Preparation of Tender Documents

Based on the results of (1), the Consultant shall hold discussions with the Malawian side while preparing the detailed design documents, prepare necessary tender documents, and obtain their approval.

(3) Vicarious Execution of Tender

By announcing the tender, receiving tender applications, distributing tender documents, accepting, analyzing and evaluating bidding documents, the Consultant will implement tendering on behalf of the Government of Malawi, offer advice through negotiations between the Government of Malawi and successful bidders, and assist with the conclusion of a construction contract between both parties.

(4) Supervision of Delivery of Equipment and Materials and Construction Work

The Consultant will supervise borehole construction work and the procurement of equipment and materials as follows.

[Construction Supervision]

1) To confirm and approve the contents of documents for approval such as an implementation plan to be submitted by the Contractor.
2) To give instructions to the Contractor in previous arrangements prior to the commencement after confirming the borehole locations.
3) To take necessary measures when necessary for unsuccessful boreholes or design modifications.
4) To hold discussions and provide guidance by constantly grasping the progress of construction work and examining measures that will ensure completion within the construction period.
5) To inspect and authorize quality control according to the Contract during construction work.
6) To conduct interim and final inspections of construction.

[Procurement Supervision]

1) To confirm and authorize approved drawings and specifications of equipment to be procured as submitted by the supplier.
2) To carry out on-the-spot inspections at the factory.
3) To carry out inspections at the port of shipment.
4) To carry out final inspections for acceptance at the site.

(5) Personnel Plan

The project manager as well as hydro-geology I, II and III personnel dispatched to the site will be responsible for the detailed design of the Project; whereas, personnel responsible for facility design and equipment plan ,procurement plan, preparation of tendering and contract documents and estimation will be arranged in Japan. In addition, the following personnel will be dispatched to site work supervision as follows.

Project Manager (Spot Supervision)

- Vicarious execution of the construction contract, assistance to client
- Generalization of final inspection of equipment procurement and borehole construction
- Work supervision and supervision of equipment procurement (permanently stationed)

Inspector

- Advance arrangements with equipment suppliers and approval of shop drawings of the equipment
- Witnessing of plant inspections and pre-shipment checking and commissioning of inspections prior to loading to a third-party inspection agency

Supervisor for Construction and Equipment Procurement (Resident Supervisor)

- Procurement supervision (acceptance and handing over equipment and materials)
- Prompt determination of counter measures against the unsuccessful boreholes and requirement of design modifications
- Schedule control
- Inspection and approval for quality control and materials conducted by the Contractor
- Coordination with Soft Component related to the work process
- Interim and final inspections of borehole construction

2 – 2 – 5 Quality Control Plan

(1) Related Borehole Drilling Construction

The Consultant will instruct the Contractor to conduct an analysis and test of the following items related to borehole drilling construction in order to reflect the results in quality control.

Construction materials to be locally procured (PVC screens and casing pipes) will be ordered in small quantities in order to prevent their deterioration during on-site storage. Quality and shape (such as slot width and open area rate) will be confirmed at the time of delivery.

Table 2 – 2 – 16 Analysis and Test Methods Related to Quality Control (Borehole Drilling)

Type of Work	Test Items	Test Frequency	Remarks
1.Drilling	・Yield measurement	・Per 3m of drive	To obtain the location of aquifer as a substitute to electrical logging.
	・Continuous pumping test	・Once per borehole	To conduct a simplified test of 12 items (pH, electric conductivity, faecal coliform, common bacteria, ammonium, total hardness, nitrates, total iron, manganese, fluoride, sulphate and chloride) and to conduct a detailed test (indoor re-test) of items exceeding the Malawian provisional water quality standards.
	・Water quality test	・Per borehole	To conduct a simplified test of iron content per groundwater during driving in the construction at the site with high possibility of iron content exceeding 3mg/l of the Malawian provisional water quality standard; based on the results, to assess gross-area of water quality; at the same time, to reflect it in the borehole finishing work such as determining of screen position, etc.
2. Gravel Packing	・Grain size analysis	・Once at each delivery	

(2) Ancillary Structures (Apron) Construction

The Consultant will instruct the Contractor to conduct an analysis and tests of the following items related to the construction of ancillary structures in order to reflect the results in quality control.

Table 2 – 2 – 17 Analysis and Test Method Related to Quality Control (Ancillary Structures)

Type of Work	Test Items	Test Frequency	Remarks
1. Concrete Work			
(1) Test mixing	・Fine aggregate size analysis	・Once in each mixing	
	・Rough aggregate size analysis	・Same as above	
	・Chloride ion concentration test	・Same as above	Simplified method
	・Compression strength test	・Same as above	7-day & 28-day strength
(2) On-site placement	・Slump test	・Once per 5 watering places	
	・Chloride ion concentration test	・Once per 5 watering places	Simplified method
	・Compression strength test	・Once per 5 watering places	7-day & 28-day strength
2. Reinforcing-bar Work	-	・At the time of each delivery	Based on the mill sheet

In addition, the quality and function of the Afridev pumps to be procured from a third country will be inspected at the time of each delivery. The construction materials to be locally procured (PVC riser pipes) will be ordered in small quantities in order to prevent their deterioration during on-site storage. Quality and shape (such as slot width and open ratio) will be confirmed at the time of delivery. In particular, the

presence of bending at the joint sockets will be inspected by utilizing an inspection bar in order to avoid any damage from pipes lifting due to friction between the riser pipe and pump rod at the time of utilization.

2 – 2 – 5 Procurement Plan

As a result of the market survey in Malawi, of equipment and materials necessary for borehole construction work, it is possible to locally procure cement, gravel, sand, laterite, filtering materials (gravel), bricks, reinforcing bars, casings and screens (PVC pipes). With respect to other equipment and materials, in due consideration of distribution, quality and economical efficiency of imported goods in Malawi, countries of the procurement and countries of origin were examined.

The procurement of equipment and materials for the Project will be decided as follows by examining the financial situation of the Government of Malawi, economy and quality, etc.

(1) Construction Materials and Equipment to be arranged in Malawi

There is a domestic company producing cement. Gravel, sand and laterite can be procured at the Project area.

Mud agent is a consumable necessary for the drilling work and an imported light-weight chemical product is available, so this will be locally procured.

Both quantity and quality of filtering materials are available from a borrow-pit run by the MoWD at Mangochi on the shores of Lake Malawi.

Bricks are readily available from many brick factories in Malawi.

The reinforcing bars imported from South Africa are readily available on the market.

Petrol and diesel oil are imported from South Africa and the Middle East so no shortage supply is anticipated.

PVC pipes required for casings, screens and riser pipes (for pumps) will be procured from Malawian manufacturers. Although these can be procured in appropriate quality and quantity from a factory in Lilongwe, small quantities and fast deliveries will be made in order to avoid the deterioration during on-site storage.

Although light vehicles are scheduled to be utilized for supervision of the construction and CBM activities in the 1st year, these can not be utilized in the first year if these are transsported from Japan, and hiring car causes higher cost instead. The vehicles to be procured locally were compared with ones to be brought in as contractors' equipment from a economic point of view to provide these for construction work and the CBM activities of phase 1. As a result, imported vehicles distributed normally in a market will be locally procured. In this case, a third country is included as the country of origin.

(2) Equipment and Materials to be Imported

1) Afridev Pumps

Afridev pumps are manufactured neither in Japan nor Malawi. This will be procured from a third country renowned for quality and quantity.

2) Borehole Drilling Equipment

With respect to equipment and materials related to borehole drilling, although the procurement from Japan and South Africa where achievements in manufacturing and selling of equipment utilized within Malawi have been examined, in a survey in South Africa medium-sized drilling equipment of over 100m drilling capability loaded onto trucks of less than GVM 16t as requested specifications could not be found. In addition, all materials that were presented indicated only large-sized drilling equipment of 300m class were loaded onto trucks with over GVM 19t. Moreover, specifications of the South American products were quite obscure and they could not sufficiently reply to our inquiries. Accordingly, at the present time the procurement of Japanese borehole drilling equipment is being examined. However, if the equipment conforming to the requested specifications is definitely developed in the future, procurement from South Africa is not out of the question.

3) Trucks

Japanese manufactured vehicles will be procured from Japan except for those associated with drilling rigs.

Various agents of Japanese truck manufacturers are located in Malawi so spare parts can be obtained. Although European manufacturers are also present, there is no major advantage from the aspects of transportation cost and price for the vehicles themselves, so vehicles will be procured from Japan.

4) Geo-electric Prospecting and other Test Equipment

Geo-electric prospecting and other test equipment will be procured within Japan. Third countries will also be included.

Although geo-electric prospecting produced in Japan is limited to only one company, it is possible to procure products produced in third countries such as the United States and France within Japan. In Malawi, except for the Japanese manufacturer which supplied the equipment under a previous grant aid scheme, there are no other agents from other manufacturers. Since it appears that there is no particular economic difference between the third-country procurement and the Japanese procurement, the procurement will be taken from Japan and third countries will be included in country of origin.

The GPS written in English will be produced in a third country. Procurement from Japan is not considered

to be economically disadvantageous, so it will be procured from Japan.

(3) Locally Procured or Imported Equipment

Computers will be procured from Malawi or Japan since the functions and specifications of such products in Malawi are almost the same as those in Japan.
Procurement of GIS software will include third country.

2 – 2 – 6 Implementation Schedule

The Project will be divided into the following 3 phases.

(Phase 1)

Procurement:	Major equipment and materials procurement
Construction:	Preparatory work (such as setting up of base camp)
	Borehole construction (through equipment of local companies)

(Phase 2)

Construction:	Preparatory work (Repair of equipment which is to be furnished)
	Borehole construction (with government rigs and private rigs)

(Phase 3)

Construction:	Borehole construction (with government rigs and private rigs)

〔Phase 1〕

After the Exchange of Note (E/N) is signed, in Phase 1 the MoWD will conclude a consultancy agreement pertaining to the detailed design of the Project with the Japanese Consultant. After concluding the consultancy agreement, the Consultant will implement a field survey. 3.5 months is required to prepare tender documents so it will take approximately 6.0 months including tendering to select construction companies (Japanese-national equipment suppliers and borehole construction contractors). The Consultant will conduct the tendering by assisting the MoWD. After a successful bidder is selected, a construction contact will be concluded between the successful bidder and the MoWD through negotiations.

The equipment and machine parts to be procured in Phase 1 will be divided into the emergency equipment provided for the construction management on local contractors and the CBM activities and the equipment utilized from the construction work in Phase 2. For latter equipment, it will take six months for manufacturing, two months for transportation and customs clearance and 0.5 months for inspection and delivery. The former equipment will be procured in parallel with the manufacturing period of the latter equipment.

In the execution, as for a preparatory work prior to borehole construction, a base camp will be set up for approximately 2 months, following which 24 boreholes will be built by borrowing drilling equipment from a local company under the supervision of a Japanese Contractor (4.5 months with a 2-unit system. Total construction term with preparation work is 6.5 months).

With respect to the Soft Component, after concluding the consultancy agreement, the Consultant will prepare an improvement proposal on CBM activities with the collaboration of the MoWD and districts to assist in training for extension workers conducted by the Government of Malawi and the organizations of the VHWC and WPC at 24 sites (approximately 1.5 months). Afterwards, the Consultant will instruct the implementing agency and districts to participate in and witness the execution of water supply facilities in line with the implementation schedule and to implement CBM training for village residents (at 24 sites) after the completion of construction work (approximately 3.5 months). The estimated period for this is 5 months.

〔**Phase 2**〕

In Phase 2, after signing the Exchange of Note (E/N), in similar manner as Phase 1, the MoWD will conclude a consultancy agreement pertaining to the detailed design with a Japanese Consultant. After the conclusion, the Consultant will implement the field survey. It will take approximately 3.5 months to prepare tender documents, so it will take approximately 6.0 months including the tender for selecting the Contractor (borehole construction contractor). The Consultant will conduct the tender by assisting the MoWD, and after a successful bidder is selected, a construction contact will be concluded between the MoWD and the Contractor through negotiations.

It is also anticipated to take 3.0 months for manufacturing and procuring of repair parts for existing equipment and 2.0 months for marine transportation and customs clearance. Accordingly, repair parts for equipment already-procured will be delivered 5.0 months after the contract and will take 1 month for the preparation of construction work (repair and maintenance of equipment already-procured). Then equipment already-procured will be used for borehole construction work in Phase 2.

During the borehole construction work, under the supervision of a Japanese Contractor, 2 drilling rigs and engineers from a local company, 1 unit and a remaining unit will be used to drill 52 and 33 boreholes respectively. At the same time, the above-mentioned Contractor will directly implement borehole construction work for 71 boreholes by utilizing drilling equipment procured during Phase 1 and repaired drilling rigs. The total implementation period will be 10.7 months.

For CBM activities subject to the Soft Component, it will take approximately 2.5 months to organize the VHWC and the WPC (at 156 sites) prior to implementation, 8 months to participate and witness the implementation (at 156 sites) and 5.0 months to provide training (at 156 sites) after completion. These will be overlapped so that it will take approximately 11.5 months in total.

〔**Phase 3**〕

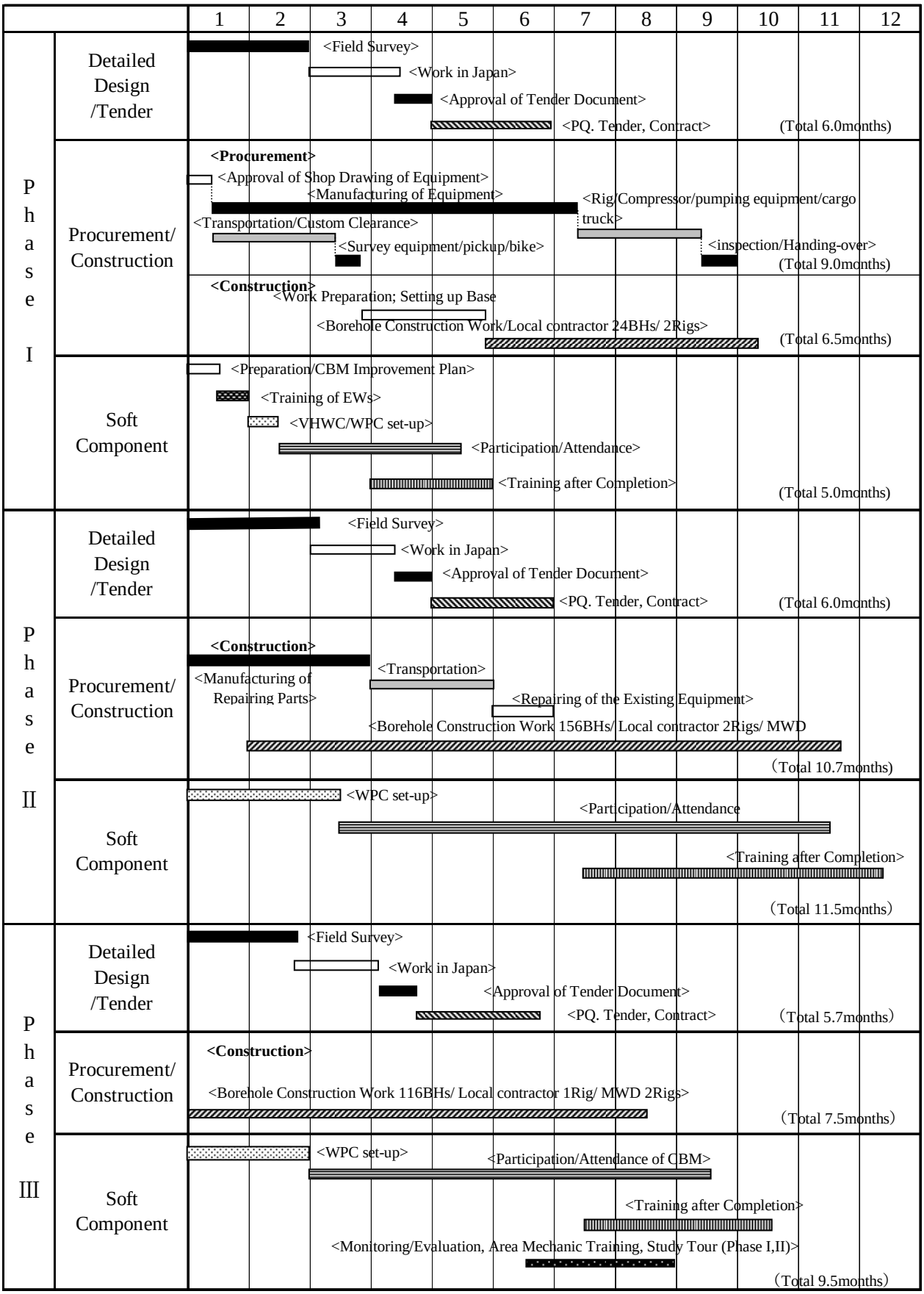
The similar procedure as Phase 1 and Phase 2, Phase3 will be carried out after the signing of the Exchange of Note (E/N). It will take approximately 3.2 months to prepare tender documents after concluding a consultancy agreement and approximately 5.7 months to implement the tender for selecting a company (borehole construction subcontract).

During the borehole construction work, under the control of a Japanese Contractor, 39 boreholes will be drilled using borrowed drilling rigs and engineers of a local contractor. At the same time, the above-mentioned Contractor will construct 77 boreholes by utilizing drilling equipment procured under Japanese aid. The total implementation period will be 7.5 months.

As for CBM activities, it will take approximately 2.0 months to organize the VHWC and the WPC (at 116 sites), 7.5 months to participate and witness the implementation (at 116 sites) and 3.0 months to provide training (at 116 sites) after completion. Meanwhile, as for the Soft Component, area mechanics training (trial), instruction for training after completion, monitoring, evaluation, and study tour of Phase 1 and Phase 2 (at 180 sites) will be carried out (1.5 months).

The above-mentioned implementation is illustrated in Table 2-4-8.

Table 2-2-18 Work Implementation Schedule



2 – 3 Obligations of the Recipient Country

The Government of Malawi should undertake the following.

Necessary measures to be taken by the Malawian side as described in the Minutes of the Basic Design Study (the following (1) to (6) items) were confirmed through discussions.

(1) Access Roads Improvement

Although the drilling rigs can be transported to the construction sites by most access roads despite the fact that many are unpaved, 5 locations which are too narrow or bumpy should be improved.

In either case, roads can be widened or levelled with the cooperation of local residents. If benefiting residents are shown how to repair the roads through CBM activities, no problems with regards to accessibility are expected.

<TA Kalolo>

1) Chilembwe village (No.27): Levelling of roads at dump site
2) Mandindi village (No.33): Securing 3m width necessary for heavy equipment
3) Chingona (B) village (No.49): Same as above
4) Lawudani village (No.51): Same as above

<TA Khongoni >

1) Kadyalu village (No.87): Levelling of roads at dump site

(2) Preparation of Borehole Construction Sites

Sites for borehole construction should be secured by the Malawian side. Although the State will retain ownership of borehole construction plots and local residents will have utilization rights, since the sites will be decided as a result of discussions with residents and geo-physical prospecting, responsible personnel from the MoWD should be involved. Since it is necessary for local residents to level and develop borehole construction sites through the VHWC and/or WPC after drilling point are decided, instructions shall be provided to residents during the sensitisation activities in advance.

(3) Preparation of Plots for Site Office, Storage and Yard

As a plot for the base camp, provisional storage for necessary construction materials during construction, a provisional yard for cement, sand and gravel, and land necessary for fuel tanks and construction vehicles should be provided. Although the area for base camp (required 2,500 m^2) in the branch station of the MoWD named as “Namitete Unit” (approximately 3,600 m^2) is nearly flat, at the present time it is being utilized for farming. The plot should be levelled to endure traffic from drilling rigs and trucks. Consequently, although it is not necessary to obtain new land, considering the previous Mchinji and Mzimba West Project and the Lilongwe and Dedza Project, similar ground levelling work should be carried out.

(4) Furnishing Equipment Procured under the Previous Japan's Grant Aid Project

The MoWD has agreed to lease the following equipment procured under the Lilongwe - Dedza Project free of charge during the implementation of the Project.

1) Drilling Equipment

- Truck-mounted drilling rig (Lilongwe Dedza Project) 1 unit
- Truck-mounted compressor (Lilongwe Dedza Project) 1 unit
- Truck with 3t crane (GVM 16t) (Lilongwe Dedza) 1 unit

2) Development & Pumping Test Equipment (except for broken-down submersible pump)

- Generator (1), compressor (1), lifting pipes, notch box , etc. 1 set
- Truck with 3t crane (GVM 10t) 1 unit

3) Tanks

- Fuel tank 1 unit
- Water tank 2 units
  (Fixed type and mobile type)

(5) Securing Personnel and Budget for Participants to the Project

Staff responsible for the overall project will be appointed from the Water Resources Department of the MoWD and BCF who will be involved in the implementation of the Project specifically for borehole drilling with the equipment owned by the MoWD. Budget for personnel expenses (including allowances and transportation cost) for responsible staff and BCF staff should be secured by the MoWD.

The Water Supply and Sanitation Department has already appointed 36 persons in total including twelve regional personnel of the MoWD, twelve from MoH and another twelve candidates from MoWCCS to become extension workers for CBM activities. Although the budget for personnel expenses pertaining to CBM activities has been recognized through discussions with the district assembly as an executor, in principle the district has agreed to a budget to cover the cost of activities, such as daily allowances, etc.

(6) Liaison and Coordination with Other Donors, NGOs and Other Concerned Organizations

Major concerned organizations include Lilongwe District which is coordinating the local development plan, NGOs carrying out activities at the target sites and donors in the water supply and sanitation sector.

Lilongwe District: In the case of constructing boreholes in the district due to decentralization, discussions with the District Commissioner, District Planning and Development Department should be made, and the implementation of the Project should be disseminated in advance through Area Development Committees

(ADCs) of the traditional authorities (TAs). In addition, since the local development plan financed by the MASAF is implemented by the district, in particular, the borehole construction plan should be coordinated in order not to overlap that of the Project.

Since the borehole facilities to be constructed under the Project require continuous monitoring and sanitary guidance after the implementation of the Project, responsibilities to be fulfilled by a district organization under the collaboration with the Water Supply and Sanitation Department of the MoWD should be discussed.

NGO: By hearing the activities conducted by InterAide in the water supply and sanitation sector in the target area, coordination should be taken so as not to overlap with the Project. Since InterAide trains local-level private mechanic (Local Artisans), in order not to compete with Area Mechanics scheduled to be trained in the Soft Component, it should be coordinated together with the consultant.

The existing data owned by the MoWD and the information on the borehole facilities to be newly constructed under the Project will be shared with the WSSC (NGO group) creating the database on the water supply facilities. At the same time, in order for the MoWD itself to create their necessary database for enthusiastic expansion and improvement of the data, personnel of the MoWD should acquire skills to apply the database.

Donor: Although there is presently no project of an international organization in the target area, the Central Region Water Board is requesting assistance from the African Development Bank (AfDB) with a water supply plan in Namitete. The area subject to water supply is different from the target area of the Project and is the main site at the market along the national road. Its details are scheduled to be examined in the future, so the MoWD should make adjustments in order to avoid the overlapping with the Project.

Training for Area Mechanics as a pilot of the Soft Component in the Project will be implemented with reference to the outcome of the German Project in the eastern part of Mangochi. The MoWD should coordinate discussions with the GITEC which is the implementing consultant.

Since there is a possibility that other water supply facility plans may invest in the target area in the future, the MoWD should constantly inquire (examine) its contents and coordinate so as not to harm the effects of the implementation of the Project. At the same time, in the case considering further (more) improvement of the effects, discussions with the consultant should be made at an appropriate time.

Expenses related to the above-mentioned undertakings to be taken by the Malawian side are outlined as follows.

Expenses to be borne in the Malawian side:	12,383,000MK (About ¥12.6 million) in total
① Base camp construction cost:	200,000MK (About ¥0.2 million)

② Personnel expenses for borehole construction: 5,965,000MK (About ¥6.1 million)

③ Sensitisation activities cost: 6,218,000MK (About ¥ 6.3 million)

In addition, the following items (7) to (18) are procedures and maintenance operations that the Malawian side should be responsible for during the implementation of the Project. Based on their experience in previous Japanese Grant Aid schemes, the Malawian side should be able to handle these without any problems.

(7) To provide information and data vital to the Project

(8) To bear service charges from a Japanese bank in accordance with a banking agreement (B/A)

(9) Necessary formalities to exempt from customs duties and import taxes any machinery and equipment procured under the Project

(10) To secure fast unloading of machinery and equipment to be procured under the Project and to facilitate customs clearance and domestic transportation

(11) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Malawi with respect to the supply of products and services in accordance with validated contracts

(12) To accord Japanese nationals such facilities as may be necessary for their entry into Malawi and stay therein for the performance of their work under the Project

(13) To secure personnel and budget necessary for operation and maintenance of equipment procured under the Japanese grant aid scheme

(14) To appropriately and effectively utilize and maintain machinery and equipment procured under the Japanese grant aid scheme

(15) To bear all expenses other than those to be borne by the Japanese side as part of the grant aid

(16) To maintain tools and spare parts under the Japanese grant aid

(17) Engineers on the Malawian side must participate in OJT for borehole construction work

(18) To provide sensitisation education (including hygiene education) and direction to construct the soak pit and fence by the residents so that local communities can take the initiative to maintain boreholes

2 – 4 Project Operation Plan

The operation and maintenance plan for the Project can be divided into the operation and maintenance of boreholes as water supply facilities and that of the procured equipment. A maintenance system should be set up at the same time of the completion of the Project, which is the key to the success of the Project. In particular, due to urgency of the Project boreholes will be utilized immediately after completion, so a maintenance system should be initiated in parallel with and prior to the construction.

(1) Maintenance System for Water Supply Facilities

Under the framework of "Village Level Operation & Maintenance (VLOM)" for rural water supply facilities, the MoWD has been promoting the CBM Programme to establish and train the VHWC/WPC, which have full responsibility to maintain each their boreholes, through a participatory approach. The monitoring on their maintenance by government staff is also included to the CBM programme.

Apart from village chief, the WPC will be composed of 10 committee members in total including a chairperson, vice chairperson, secretary, assistant secretary, treasurer, vice treasurer, 3 pump caretakers and other, which are decided in a democratic manner through election or nomination and taking gender into consideration. Through the CBM activities, guidance is also provided on management of the committee, methods for utilizing safe water and its significance, collecting of water charges for maintenance and fund management. Pump caretakers will receive technical training on daily inspections and simple repairs.

Although one water monitoring assistant (WMA) is posted at the Namitete Unit which is a field office of the MoWD to deal with any request for monitoring or serious breakdown, due to a lack of activities budget and means of transportation he is unable to meet the demands of the situation. He also has no experience in "participatory-type" CBM activities. Through the CBM activities in the Project, 3 WMAs to receive training as extension workers will be posted after the completion of the Project.

Regarding to the implementation of water supply and sanitation project, a District Coordination Team (DCT), which composed of Director of Planning & Development (DPD) of the District and representatives of the district bureaus from MoH, MoWCCS and MoWD, is set up under the district executive committee (DEC) administratively of a district and form a cooperation system between a district and each ministry about enforcement of CBM programme. However, the past DCTs are not permanent organization so far and tend not to take responsibility for the project area in monitoring and following up the communities after the project. Under the Project, DCT discusses a sustainable monitoring plan for post-project as a part of their duty and states it clearly. On that occasion the Team develop a cooperation with MoH through CBM activities and aim at establishment of the practical and effective follow-up system by taking the Health Management Information System (HMIS), which now is carried out based on health centre (HC) quarterly, into consideration.

As for a means of supplementing system to conventional WMA's activities, which consist of monitoring and repair of serious breakdowns, the "Area Mechanic System" involving private sector will be introduced on trial under the soft component of the Project. After the training of pump caretakers through CBM programme, the area including several tens of WPC will be selected as a trial area for Area Mechanic System. Selected pump caretakers in this area will be trained on further skills for repair of major breakdowns. After this training, the most reliable pump caretaker among these trainees will be requested to be an Area Mechanic who has business licenses for the trial area.

In regard to assure the maintenance cost, hearings in borehole installed villages (11 sites in total) of Lilongwe - Dedza Groundwater Development Project and of Mchinji area in addition to the hearings at the time of visiting the villages for the present project, were taken. As a fund mobilization for the maintenance cost, periodic collection is not practiced and temporary gathering inside the village of the necessary amount when the pump breaks down is found common. But with this method, it is difficult to respond to serious breakdown and sudden breakdown and the way of securing maintenance cost needs to be improved. There were also cases such as income generation through piece works to get incomes by offering workforce in a big farm, sale of the bricks produced in the village and the stock sale of maize. These activities are usually introduced with other methods, at the training of WPC.

There was also a village where the contribution in nature with a plate of maize was accepted at the time of collection, vis-à-vis the households where the payment with the cash is difficult. In general, the contribution is not forced vis-à-vis the elder persons and poor households whose cash income is limited and their part is covered by the villagers who can afford. In these villages, it is often heard that "the way of mobilizing most fairly maintenance costs is the piece work in which everyone can participate and contribute." In other words, the villagers themselves understand that "piece work" is preferable for the mobilization of maintenance costs, considering social economic environment of inhabitants.

There are other methods for the fund securing. As for the reserving of monthly charge, enforcement is difficult in farm villages where most of cash income holds only at the harvest season, and collecting once a year may be a realistic method. In addition, securing land, seeds and manure for initial investment may be a problem to carry out joint farming with community level. The way of contribution with a plate of maize mentioned above has risks also such as that the selling price in market might be less than the expected one.

In contrast, although piece works are done as a cash supply method with an individual, it is also the method how it can wrestle with as a group. When piecework is done in a group at community level, they tend to set the amount of aim and, in addition, it is fund creation as a result of effort of the whole village and is very suitable for management of water supply facilities to share their contribution in community. Poor households can contribute in form of labour participation by this method. And the thought for the unfortunates is taken into account. Though these methods shall be examined with the situation of community on a case-by-case basis, it is considered that is good to designate "piece works" as the pillar of securing maintenance costs in the villages where poor households are many. At all events the Project pays

attention to these points in an implementation of CBM activity and attempts to unify the extension workers' intention to guide communities how the way of fund raising shall be set up.

In principle a participatory-type approach requires that village residents discuss methods for independent collection and management and address problems through CBM activities. In order to secure the maintenance cost, exchanges of experiences (success and failure examples) between WPCs and a study tour will be promoted so that residents will be able to obtain good concrete ideas while maintaining a broad point of view. Of course in reality, the continuous visit of extension workers for guidance and sensitization is important in addition to the direct exchange like study tour. Regarding this matter, it is planned to draw up in the third phase a follow-up and monitoring activity plan for after the completion of the present project. As for this matter, project targeted villages being very varied in the environment and living basis of the inhabitants, the implementation of activities will become highly dependent on the quality of extension workers. Therefore, the training of extension workers (TOT) would be arranged in order to give the strong consciousness on their facilitating role of experience sharing among villages.

(2) Maintenance System for Equipment

Although the administration and Finance Department of the MoWD is responsible for equipment management, substantial equipment operation and maintenance is entrusted to the Borehole Construction Fund (BCF) under the guidance and supervision of the Water Resources Department. The BCF is an independent corporation with separate work-site divisions such as drilling or equipment teams from the Water Resources Department. The regional water development office and its organization are composed of engineers with accumulated experience at the water development office in South, Central and North regions. At one time the BCF was a “fund” to manage the revenue obtained by the work-site operations divisions of the Ministry of Water Development due to borehole construction and repair from an accounting point of view. Then in 2001 and 2002 the MoWD reformed its organization by allowing personnel of the work-site operations divisions such as staff in Water Resources Development and drilling and equipment teams at regional offices of the MoWD to join to this fund. The organization is composed of 50 personnel including technical staff who have received OJT in drilling or equipment maintenance during previous Japanese underground water development undertakings, with each regional office of the MoWD as a base for their activities. Each regional office holds workshops so that a maintenance system for carrying out general repairs of equipment does exist. For example, BCF staff (drilling team) at the office in Central Region is comprised of 8 drillers, 4 mechanics and 6 drivers, and even in the case of 2 drilling rigs, the system works without any hindrance. In addition, temporary workers will be hired when needed for construction work at the construction sites.

All business of accounting is the responsibility of the MoWD. As for the budget, revenue is obtained from

the counter value of borehole construction work or rehabilitation work implemented by the Government of Malawi (99%) and the private sector (1%). When converted into US$, income in 1999 – 2001 from 3 sets of drilling equipment including one old rig has been around $380,000 annually, of which the cost of spare parts or repairs for equipment has accounted for 8 to 10% ($30,000 to $40,000) of total sales, or for $10,000 to 13,000 per one set of equipment.

Considering that the three units of rigs drilled approximately 100 boreholes annually up to 2003, except the period that one unit was under repair or was working under the Japanese grant aid project, the cost per borehole for the maintenance & repair of equipment was estimated to be 300US$ to 400US$. Compared with the cost of Japanese standard maintenance and replacement parts, this is approximately half. However, taking into consideration the local custom of using scrap vehicle parts or second-hand parts, this is judged to satisfy the minimum requirements for equipment maintenance cost. Based on the results that the equipment procured in 1988 was maintained for more than 10 years, the maintenance of one set of drilling equipment to be newly procured is judged to be technically possible. However, when considering that the contractor carried out an overhaul of some of the equipment through a previous grant aid scheme, approximately 50% of the current cost of maintenance and repair should be added to the future budget.

As described above, although the organization and personnel at the MoWD for maintenance of the equipment to be procured are sufficient, for long-term maintenance, an amount of the maintenance and repair cost should be increased. And a budget required for the replacement of main parts which is expended once in several years should be accumulated. One rig was turned on to the project of Japan free of charge for the period assumed to be grounds of the trial calculation of the above-mentioned and another rig that became superannuated needed much repair expense. Therefore, it is thought that income per rig lowered. After the new rig was able to be procured, and to be abandoned the rig that becomes superannuated, it is expected that the maintenance expense and the repair expense can be secured more because the income for one increases.

Motorbikes will belong to regional offices of the MoWD and the WMA who will be responsible for storing and managing maintenance and repair records. One problem is that the fuel cost necessary for ordinary monitoring activities has not been secured. In addition, who will bear the maintenance and repair cost is also not clear. Due to the continued decentralization in the future, permanent budgetary steps to secure these costs should be taken in each district budget. Furthermore, a budget should include the systematic maintenance and repair cost for periodical inspections at the MoWD. Since accidents and theft often occur with motorbikes, the MoWD should provide guidance on safe driving and adequate storing methods and obtain periodic reports on activities, travel distance, storage and any damages.

Personal computer and printer will belong to the Groundwater Division of the Water Resources Department of the MoWD for preparation and utilization of the database on local water supply facilities. The MoWD should appoint a responsible engineer in charge not only of equipment but also of safety of data and

software. In order to acquire skills on the utilization and creation of the database, a technical guidance will be requested from the WSSCC. At the same time, by sharing digitalized paper-based data owned by the MoWD, joint operations to create the database will be conducted with the WSSCC. Ink cartridges will be a primary equipment maintenance expense. Users should be aware of the unit cost for printing paper and restrict printing for other purposes and also ensure the necessary maintenance budget.

2 – 5 Estimated Project Cost

2 – 5 – 1 Estimated Project Cost

The total cost required to implement the Project is estimated to be ¥964 million and each side is expected to bear their respective cost given below based on the estimation conditions described in (3) later. This estimated project cost is not same as limited price of the Exchange Note.

(1) Cost to Borne by Japanese Side

Estimated Total Cost: Approximately ¥952million

- Lilongwe T.A. Kalolo and T.A. Khongoni : 234 villages (groups of village); 296 boreholes

Cost Item		Estimated Cost (¥ million)	
Facilities	Drilling; Development; Pumping Test; Pump Installation; Civil Works	571	753
Equipment	Drilling Rig; Air Compressor; Development/ Pumping Test Equipment; Support Vehicles (Truck with crane; Pick-up Truck); Geo-electric survey equipment; Motorbike for O&M; GPS; Computer for Data Base	182	
Detailed Design; Supervision for Construction/ Procurement; Technical guidance		199	

*The above cost estimate is provisional and will be further examined by the Government of Japan for approval of the grand aid.

(2) Cost to be Borne by Malawi Side

MK12,383,000(approx. ¥12.6million)

①Base camp construction cost: 200,000MK (About ¥0.2 million)

②Personnel expenses for borehole construction: 5,965,000MK (About ¥6.1 million)

③Sensitisation activities cost: 6,218,000MK (About ¥ 6.3 million)

(3) Estimation Conditions

①Date of estimation:	Dec.2004
②Foreign exchange rates:	US$1 = ¥109.93
	MK1 = ¥1.0188
③Project implementation period:	The Project will be 3 Phases. Each period for the detailed design, the procurement and the construction are the indicated on the Project implementation schedule (Table 2 – 4 – 8)
④Others:	The Project will be implemented in accordance with the grand aid scheme of the Government of Japan

2 – 5 – 2 Operation and Maintenance Costs

1) Facilities Maintenance Cost

Annual maintenance costs to be borne by MoWD are the personal expenses for monitoring / repair work to WPCs and boreholes in the Project area.

These costs cover personnel expenses, allowances, maintenance and repair expenses of vehicles (motorbikes), etc. In the case of 296 boreholes to be newly constructed, on the assumption that 3 WMAs will carry out monitoring and follow-ups once every 2 to 3 months at approximately 500 existing facilities, the annual cost is estimated to be MK 752,000.

Personnel expenses (3 persons)	MK5,000/month × 12 months × 3 persons ＝	MK	180,000
Site allowance	MK300/day × 15days× 12 months ×3persons =	MK	162,000
Monitoring activities	(5L/day×MK100×20×3×12) =	MK	360,000
Vehicle maintenance /reparation	(Price×5%) =	MK	50,000
TOTAL		MK	752,000

The personnel expenses (MK180 thousand annually) is incorporated in the recurrent budget of MoWD, and it is 0.1-0.15% of the total recurrent budget (annually MK 117-184 million in these years). And it is in the range that it can manage to come up with enough.

Other expenses (MK572 thousand) are corresponding to 0.3-0.4% of the total development budget, which is amounted to MK135 to 193 million annually for Water Supply and Sanitation, and is judged

that can manage to come up with. But a new budget to appropriate for these running expenses needs to be set up because most of the current development budgets were approved as responsibilities of Malawi side to the projects funded by international supporting organization, and because actual disbursement after the completion of project is currently quite few. A switchover to each district budget is expected with personnel expenses and other expenses by decentralization policy, but, as for the enforcement procedure is not clear yet, it is necessary for MoWD to do discussion with organizations concerned during project implementation process so that a district budget is found surely in future.

The annual maintenance cost of the water supply facilities borne by WPC is estimated to be MK10,000/year per borehole to the maximum in due consideration of the reserves for replacement parts as a preventive step for regular trouble and parts cost, repair commissioning cost, etc. for serious breakdown (such as damage of rising main pipe and accidents when a pump rod falls) anticipated to be once every a few years.

2) Equipment Operation and Maintenance Cost

＜Equipment Related Borehole Drilling＞

Major operating cost includes personnel expenses, fuel cost and consumables cost, based on the past results, 30%, 20% and 20% from the revenue of fiduciary services will be appropriated respectively. If the equipment to be newly procured is utilized in a similar manner with the existing equipment, it is possible to cover with these operating costs from the revenue.

The maintenance and repair cost will be paid by the revenue of fiduciary services of the BCF in a similar manner with the operating costs and varies according to the number of days in operation of the equipment and the number of boreholes drilled. Under the conditions that the unit cost of the drilling work of the present BCF does not change, through the managerial efforts and the improvement in the operating rate, compared with the results before 2001, it is aimed at an increase of 3 points at 13% in the rate of maintenance expenses against the revenue per one drilling team and securing of US$26,000 which is the approximately double of the maintenance and repair cost.

Table 2-2-19 Maintenance and Repair Cost of the Equipment per One Drilling and Pumping Test Team

	① Past Results (Before 2001)	② Maintenance and Repair Cost during the Implementation of the Project	③ Necessary Maintenance and Repair Cost after the Implementation of the Project
Number of Teams	3 (1 unit of deteriorated equipment included *1)	(1 set of the equipment to be newly procured)	4 (1 unit of deteriorated equipment included *2)
Annual Number of Boreholes Drilled	105		200
Number of Boreholes Drilled by One Team	35	52	50
Annual Maintenance and Repair Cost	13,500 US$	36,800 US$	26,000 US$ (70% of ②)
Rate in the Revenue	10%	18% (assumed)	13%

*1: The equipment procured in 1988
*2: The equipment procured in 1993 (assuming that the equipment procured in 1988 cannot be utilize)

＜Survey and Monitoring Equipment＞

① Motorbikes (3 units, days in operation: 20 days/month, driving distance: 100km/day)

Application Conditions:

Three WMAs will carry out monitoring and follow-up once every few months in approximately 500 locations of the existing borehole facilities.

Operating Cost (Fuel):

360,000 MK/annual (activities cost described in the preceding paragraph)

Maintenance Cost:

50,000 MK/annual (maintenance cost described in the preceding paragraph)

Since these have been not sufficiently ensured, a new budget should be permanently secured.

Because fuel costs are the maintenance management cost of facilities, the district has to secure the budget under the decentralization policy, but MoWD makes a budget it for the time being till the switchover of complete duties is institutionalized.

② GPS: AA-size dry batteries × 2 pieces × 6 times replacement/year MK 1,200

③ Computers: 2-time replacement of ink cartridges/year MK 15,000

④ Geo-electric prospecting: Consumables cost such as electrode bars and cables MK 150,000

2 – 6 Other Relevant Issues

2 – 6 – 1 Soft Component Programme

(1) Necessity of Soft Component

The Ministry of Water Development of Malawi has been promoting a Community Based Management (CBM) Programme improved through the introduction of a participatory approach. CBM activities are for the sensitisation of water facility users so as to ensure the maintenance of water supply facilities and improvements in hygiene and sanitation at the community level. CBM activities (its first form which was conducted only after construction) were implemented through funding from NGOs and the counterpart fund in previous Japanese projects of “Mchinji Groundwater Development Project” (1992 to 1994) and "Mzimba West Groundwater Development Project” (1997 to 1999). In addition, improved CBM activities were applied in the “Project for the Development of Groundwater in Lilongwe/Dedza” (2001 to 2002) with the assistance of the Soft Component of the Japanese grant aid. Training manuals (both for extension workers and for community) prepared through the “Community Based Rural Water Supply and Sanitation Programme” financed by the World Bank are officially recognized by the Government of Malawi and the content and quality of the manual are sufficient. Donors such as Germany, Canada and UNICEF also adopt CBM as the standard for water supply facility management.

With respect to the CBM Programme conducted before, during and after the borehole construction work, the Water Supply and Sanitation Department (WSSD) of the Ministry of Water Development is responsible for planning and the Water Supply Division of the Regional Water Development Office administers its implementation. Personnel belonging to the field offices of the Ministry of Water Development (Water Monitoring Assistants), the MoH (Health Surveillance Assistants: HSA) and the MoWCCS (Community Development Assistants: CDA) are to be selected and will be in charge of execution of the programme. It is extremely important that the maintenance and operation system be reinforced for increasing the operating rate of facilities. Monitoring and follow-up activities after facility construction and countermeasures to be taken to major breakdowns of pump, including the private sector's involvement, are especially needed. For this, technical assistance for improving the competence of Malawian government officials and the implementation system for CBM activities is needed.

Although the CBM activities have adopted a participatory approach, in fact many of the local government officials who will be extension workers lack practical experiences and technical support in this field is necessary. In addition, there are various problems to be addressed. These issues include the establishment of a follow-up system to support WPC after the facility construction, effective use of spare parts distribution network, improvement of the fund management of water charge, development of a repair system for major breakdowns, the promotion of sanitary facilities and improvement in hygiene customs, reinforcement of organizational skills of workshops of extension workers, and motivating WPC and strengthening its capacity by organizing study tours. Since the construction of the total number of 296

boreholes will concentrate on the short period of the project, the burden of Malawi government will be extremely increased during the project execution in terms of both human and financial resources. Under such a situation, it is very important to manage the implementation of the activities in an effective and efficient manner and to coordinate and harmonize the CBM activities with the progress of construction works. In this regard, the assistance through the Soft Component is highly needed.

On the other hand, from the financial aspect, although the Malawi government agreed to bear personnel expenses (daily allowances and others) related to the implementation of CBM activities, due to difficulties in fund raising for other expenses (vehicles, fuel, stationery and hall cost), financial allocation from the Japanese project is also requested.

(2) Soft Component Goals

The purpose of the Soft Component is set "to establish an autonomous and sustainable maintenance system, by the own users, for the water supply facilities constructed under the present project".

(3) Expected Outputs of the Soft Component

Output 1	System for efficient and effective implementation of CBM activities is well established at the local government level.
System	Officer in charge of CBM of the government (Ministry of Water Development), 1 Japanese consultant (short-term supervision)

Output 2	The system of maintenance and management of water supply facility with the active participation of local population is established.
System	Extension workers of the District, 1 Japanese consultant (short-term supervision)

Output 3	Maintenance and Management system in the area is strengthened through the training of Area Mechanics who can deal with major breakdowns of Afridev pump
System	Officer in charge of CBM of the government (Ministry of Water Development), WPC pump caretakers, 1 Japanese consultant (short-term supervision)

(4) Measures to Confirm the Achievements

Table 2-6-1 Confirmation of achievement

	Output	Items to Confirm Achievement Level
Reinforcement and establishment of support capacity of local government	System for efficient and effective implementation of CBM activities is well established at the local government level.	1. An effective and efficient plan of CBM activities is programmed.
		2. Reports on site visit are properly produced. (checked by monthly reports)
		3. CBM activities are implemented as planned (checked with the rate of achievement)
		4. Awareness of the implementing agency on the support for WPC is well built (checked by minutes of regular meetings and personal interviews)
		5. Programme of post-project monitoring and follow-up activities is produced (submission of the programme)
Awareness raising of local communities and information dissemination for the promotion of safe water supply and sanitation	The system of maintenance and management of water supply facility with the active participation of local population is established.	1. Documentation related to the management of WPC (such as minutes of general meetings and records of water charge collection) is well kept. (checked at the time of site visit)
		2. The 1st meeting of WPC is held by the residents themselves. (checked at the time of site visit)
		3. Ownership of newly constructed water supply facilities is matured (the residents manage voluntarily the facility: based on interviews)
		4. Water charge for maintenance and operation of water supply facility is properly collected. (by checking the account book of WPC)
		5. Residents' awareness on hygiene and sanitation is improved. (checked by questionnaires at the time of Study Tour)
Improvement of the Maintenance System of local water supply facility	Maintenance and Management system in the area is strengthened by the training of Area Mechanics who can deal with major breakdowns of Afridev pump	1. A mobilization plan of private pump mechanics is submitted.
		2. A proposal of Area Mechanics training programme is submitted.
		3. At least 1 Area Mechanic is trained in a trial basis within the target area and an official authorization framework starts to be discussed.
		4. Proposed system of maintenance and management by private Area Mechanics is approved.

(5) Soft Component Activities

Through the study on the actual situation of the past projects, interviews with other donors and discussions with the Water Supply and Sanitation Department and regional office of the Ministry of Water Development who play the main role in CBM activities, it was agreed that the followings were the principal for CBM activity programme.

1) To incorporate a participatory approach into CBM activities
2) To effectively improve the work of extension workers

3) To examine a sustainable operation and maintenance scheme

Some extension workers have a good understanding of the participatory approach and have received training. However, they cannot put it into practice, which is probably due to a lack of experience. By effectively utilizing the personnel of other ministries and extension workers who have accumulated experiences with the Lilongwe and Dedza Project, inexperienced extension workers would be able to effectively acquire valuable experiences on participatory approach through actual practices of CBM activities on the basis of On-the-Job Training. The project will also propose to use in the training of trainers as resource persons the extension workers already experienced under the Lilongwe and Dedza Project.

In terms of the activities of the Soft Component, in phase 1, the Training of Trainers (TOT) will be the principal activities and so will be technical support for CBM activities in phase 2. In phase 3, one main activity is the monitoring on WPC performances after a series of trainings given and evaluation of CBM activities in view of the improvement in the third phase. And the other main activity is to implement two new activities which are the training of Area Mechanics and Study Tour for WPCs. Area Mechanics training is a new approach for improving the system of maintenance and operation of water supply at the community and Study Tour is an activity to encourage, motivate and strengthen WPCs which have little specific incentive at the moment. The opportunities of the Area Mechanics training will be given to the selected WPCs from among the 24 WPCs of phase 1 and the 156 of phase 2 on the basis of the above-mentioned monitoring and evaluation results.

Since Area Mechanics Training will be new for the Government of Malawi as it touches the private sector, in clarifying relationship with existing governmental or district-level repair systems which are presently centred on WMA, the official certification system, the scope of responsibilities, introduction of authority for economic activities of area mechanics will be examined and discussed in the 2nd phase. A proposition on a necessary frame for introducing Area Mechanics in the sector will be submitted. A detailed training programme (contents of training, implementing period and zoning, etc.) will be prepared while supporting CBM activities. From the WPCs for which boreholes will have been constructed in the 1st and 2nd phases, 30 to 40 WPCs will be selected with reference to the scope of NGO's activities and the intentions of the government or district. The training will be in principle carried out through the following procedure:

- After explaining the roles and services of area mechanics, and objectives and contents of the training to the selected WPCs in the area, 1 pump caretaker is recommended as a candidate.
- To provide a basic and an intermediate level trainings on pump repair for a group of the caretakers.
- After 2 days of training including practical exercises, the members who can move on to an advanced training course are elected through a vote among the participating pump caretakers

- Caretakers who are not elected will immediately end their training.

- The elected caretakers will follow advanced-level pump repair training to cope with major breakdowns.
- After completing the training, a certificate or business license will be given to the caretakers who have achieved the prescribed level.

Through this 2-step approach, the caretakers who complete all the stages of training course will be able to become area mechanics who are recognized by the other caretakers participated in the same training.

With respect to area mechanics training, since major breakdowns generally do not occur in the first one or two years after pump installation, target areas will be selected from among the 24 WPCs of Phase 1 and 156 WPCs of Phase 2, and a area mechanics training will be provided in the second half of Phase 3. The 116 sites of Phase 3 will not be included in the candidate WPCs for area mechanics training. The number of trainees and areas covered should be decided after careful consideration of other similar types of mechanics already present at the time of training, such as “Local Artisans” trained by Inter Aide (NGO), in order to avoid unnecessary conflict with them.

The installation of sanitation facilities such as toilets as a part of the original CBM activities is not included in the Japanese grant aid at this time. Assistance for post-project activities (after the end of validity of E/N) is not included either. In view of such circumstances, a programme for long-term improvements in hygiene and sanitary environment and the establishment of a monitoring and maintenance system will be examined.

The above-mentioned activities plan is shown in Table 2-6-2.

(6) Measures to secure necessary resources for Soft Component Implementation

The project will entrust the Ministry of Water Development with all the CBM activities including training of trainers and management of the activities in view of the government's autonomous execution in the near future.

Since the expenses for CBM activities are dependent on the Part I of the development budget (i.e. foreign aid), it is difficult to secure the CBM budget independently. The present Japanese project will provide a part of the expenses of the activities, such as costs for fuel, vehicles and stationary except for personnel expenses of extension workers (including daily allowances). All the personnel costs related to the project will be covered by the budget of the Ministry of Water Development and/or Lilongwe District.

Concerning human resources, a list of 36 candidates for Extension Workers from three ministries, i.e. Ministry of Water Development, the MoH and the MoWCCS. Some of them have already served for the previous Japanese Project (Project for the Development of Groundwater in Lilongwe-Dedza). The project will utilize these experienced Extension Workers in order to reinforce and improve the quality of CBM activities.

As regards the transportation for extension workers, although the motorbikes and bicycles presently owned by the concerned Malawian ministries will be utilized by the extension workers in addition to the newly procured vehicles by the project, there are not enough to cover all the CBM activities. Therefore a part of necessary transportation will be leased under the cost of the Soft Component of the project.

Table 2-6-2 Soft Component Activities

Detailed Activities	Required Number of Days	Number of Sites	
I. Reinforcement of CBM activities and management system at the District & TA level			
1. Programme explanation, request for cooperation and information collection prior to the project implementation			
Grasp the present situation of the Ministry of Water Development, request for cooperation to the concerned Ministries	4 days	Phase 1	1 site
		Phase 2	-
		Phase 3	-
2. Consultation and planning with stakeholders at the District level			
Discussion with concerned ministries on implementation scheme and coordination, Briefing to the District Commissionner	2 days	Phase 1	1 site
		Phase 2	-
		Phase 3	-
3. Orientation of the project			
A session of orientation on the project for DCT (District Coodination Team)	3 days	Phase 1	1 site
		Phase 2	-
		Phase 3	-
4. Confirmation and promotion of spare parts distribution			
Study on dealers surrounding the project sites and exchange with cncerned NGOs for collaboration	3 days	Phase 1	2 TA
		Phase 2	-
		Phase 3	-
II. Training of Trainers (Extension Workers)			
5. Training of Trainers (Extension Workers)			
Training of Trainers (3 persons/team * 12 teams)	5 days	Phase 1	36 members
		Phase 2	-
		Phase 3	-
III. Community Mobilization			
6. Orientation of the project to the village and Workshop One (1)			
Election of WPC members and WPC formation, Training (Health and Hygiene education, Money management, etc.), Choice of desirable water point	2 days /1 site	Phase 1	24 sites
		Phase 2	156 sites
		Phase 3	116 sites
7. Promotion of WPC formation			
Follow-up and monitoring activities after WPC formation	approx. once per month field visit	Phase 1	24 sites
		Phase 2	156 sites
		Phase 3	116 sites
IV. Planning and Activities Before Borehole Construction			
8. Choice of proper site for water point and others			
Choice of water point, Preparation of construction site and access roads, Adjustment of construction plan and CBM activities		Phase 1	24 sites
		Phase 2	156 sites
		Phase 3	116 sites
V. Activities During Borehole Constcution			
9. Refresh workshop and the Workshop Two (2)			
Revision of Workshop One (1), Workshop 2: Provide Communal labor and local material for construction, Supervise Drilling and Civil works	1days/1 site Construction phase (6 - 7 days)	Phase 1	24 sites
		Phase 2	156 sites
		Phase 3	116 sites
VI.Activities After Borehole Construction			
10. Workshop Three (3)			
Workshop 3: Training for WPC members	5 days / 1 couse / (3 WPCs)	Phase 1	8 courses
		Phase 2	52 courses
		Phase 3	39 courses
VII. Evaluation			
11. Monitoring and Evaluation			
Monitoring and Evaluation of CBM activities during phases 1 & 2, Proposition for improvement		Phase 1	-
		Phase 2	-
		Phase 3	30 samples
VIII. Area Mechanics Training and Study Tour of WPCs			
12. Training of Area Mechanics			
Examination and improvement of existing training manuals, Basic study in search of collaboration with NGO, Trial of Area Mechanics Training	6 days / 1 couse	Phase 1	-
		Phase 2	-
		Phase 3	1 person /30WPC
13. Study Tour			
Mutual visits and experience exchanges among 180 WPCs of phases 1& 2 for self-evaluation	Half day	Phase 1	-
		Phase 2	-
		Phase 3	3 members /WPC
Japanese Cosultant (Social Development) person*month TOTAL	1.50 MM	Phase 1	1 mission
	2.90 MM	Phase 2	2 missions
	2.40 MM	Phase 3	1 mission

(7) Implementation Schedule of the Soft Component

Following the conclusion of the consultant contract of the project for the phase 1, a Training of trainers will be organized and a Water Point Committee will be formed at each of the 24 sites of the phase. The 24 communities will receive Workshop 1 training and the population participates in deciding the location of water point. In the following year (usually the year of borehole construction), one-day training will be provided to the 24 WPCs for the revision of the first training before the real construction work starts. WPC training during the construction will be carried out in accordance with the progress of borehole construction. After the construction, WPC training will be given to a cluster of three neighboring WPCs. The figure hereunder presents a general overview of CBM training schedule at a project site in the year of construction works.

Fig 2-6-1 CBM Training Schedule

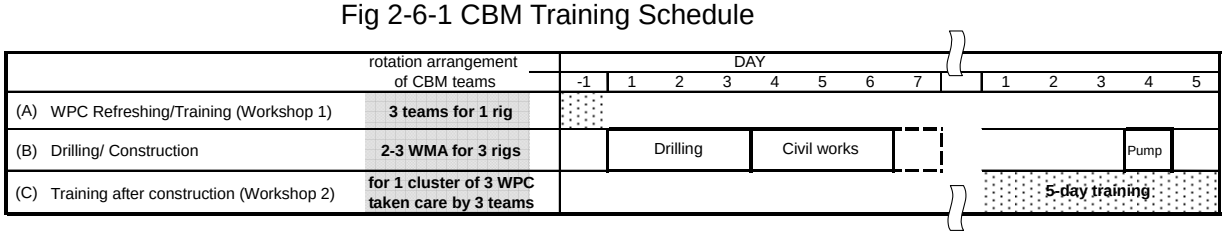


Table 2-6-3 Role of the Implementing agency and the Soft Component

Phasing		Contents	Quantity	Period
Phase 1	Consultant support	Orientation & discussions to the district & TAs	1 district, 2 TAs	1.5 months
		Training for extension workers	36 persons	
		Support for community mobilisation & Workshop (WS) 1	(1 course) 24 sites (partly)	
	Implement-ing Agency	Community mobilisation & Workshop 1	24 sites	0.5 months
		Workshop (WS) 2 (during construction)	24 sites	
		Workshop (WS)3 (after construction)	24 sites	2.5 months
Phase 2	Consultant support	Support for community mobilisation & WS 1	156 sites 24 sites (partly)	1.7 months
		Support for WS 2 (during construction)		
		Study on delivery network of spare parts	1 district, 2 TAs	
		Support for WS 2 (during construction)	156 sites (partly)	1.2 months
	Implement ing Agency	Community mobilisation & workshop 1	156 sites	3.5 months
		Workshop 2 (during construction)	156 sites	
		Workshop 3 (after construction)	156 sites	8 months
Phase 3	Consultant support	Support for WS 2 & 3	116 sites (partly)	2.4 month
		Monitoring & evaluation of CBM activities		
		Organization of Area mechanics training	30 sites (sample)	
		Study Tour for WPCs of the 1st and 2nd phases	30-40 WPCs 180 sites (WPCs)	

Implementing Agency	Community mobilisation & Workshop 1	116 sites		2.5 months
	Workshop 2 (during construction)	116 sites	}	
	Workshop 3 (after construction)	116 sites	}	8 months
	Area Mechanics Training	30-40 WPCs		
	WPC Study Tour	180 WPCs		

(8) Outcomes of the Soft Component

Table 2-6-4 Outcomes

Phase 1
・ Implementation Plan of CBM Activities
・ Village Agreement Signed (for 24 WPCs)
・ Community Visit Reports of Extension Workers and Monthly Reports (24 WPCs)
・ Minutes of Village Meetings (24 WPCs)
・ Report on the situation of water fee collection (24 WPCs)
・ Report on the delivery network of pump spare parts
Phase 2
・ Village Agreement Signed (for 156 WPCs)
・ Community Visit Reports of Extension Workers and Monthly Reports (156 WPCs)
・ Minutes of Village Meetings (156 WPCs)
・ Proposal of Area Mechanics Training and related reports
・ Report on the situation of water fee collection (156 WPCs)
Phase 3
・ Village Agreement Signed (for 116 WPCs)
・ Community Visit Reports of Extension Workers and Monthly Reports (116 WPCs)
・ Minutes of Village Meetings (116 WPCs)
・ Report on the situation of water fee collection (116 WPCs)
・ Report on a Area Mechanics Training
・ Report on WPC Study Tour
・ Implementation Plan of post-project monitoring and follow-up activities
・ Monitoring and Evaluation Report on CBM Activities

(9) Obligations of Implementing Agency in the Recipient Country

It is agreed that the Water Supply and Sanitation Department and Central Region Water Development Office will be the primary implementer of CBM activities in accordance with the work schedule, by mobilizing officials of Lilongwe District, regional staff of the MoH and the MoWCCS. In view of on-going decentralization process, the district (in particular the DCT: District Coordination Team) will be the principal actor to carry out activities, in securing the necessary budget. The Water Supply and Sanitation Department of the Ministry of Water Development will supervise over the CBM activities and administer funding invested by the present project for the activities. In addition, the Central Region Water Development Office of the MoWD which takes part in DCT will be responsible for a overall supervision of all the CBM activities.

Continuing follow-up activities after the completion of the Project, monitoring visits and securing necessary transportation as well as the maintenance of project-related equipment will be the responsibility of the concerned ministries in Malawi, principally MoWD, and Lilongwe District.

CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

3 – 1 Project Effects

Table 3-1-1 Effects of Project Implementation and Improvement

Present Situation and Difficulties	Counter plan of the Project (Japanese Assistance)	Project Effects/ Improvement
1. The water supply service ratio is estimated to be 23% in the targeted area and this is lower than the national target as well as the target in other areas. The majority of the residents rely on unsanitary and unstable water sources.	- 296 borehole water supply facilities (with hand pumps, aprons, drainage channels, and facilities for washing clothes) to be constructed in 234 villages - Procurement of 1 set of borehole drilling equipment and relevant equipment (drilling rig, pumping-test equipment and support vehicles (trucks and pick-ups) Equipment for geophysical prospecting: 1 set each)	[Direct Effects] - It is anticipated that about 132,000 will be the increase in the population that will be served and that the water supply service ratio in the target area will be enhanced to 49%, in 2008. [Indirect Effects] - With the augmented hygienic water supply facilities, the percentage of people contracting water-borne diseases will be reduced in the target area. - After completion of the project, the rural water supply undertakings, such as the measures regarding areas where the development of ground water is delayed and cholera infested areas, may be carried out efficiently by using the procured drilling equipment and other equipment.
2. The intention is to put in place sustainable operation and maintenance of the facilities and improvement of hygienic conditions by adopting the method of "participatory type" sensitisation activities aimed at an operation and maintenance system with the residents as the main constituents. However, there are few successful cases of "participatory type" activities, and it is viewed from the fiscal perspective that the implementation with the government's own budget funds would be difficult.	- Technical as well as financial support in the planning and execution of sensitisation activities (training to 36 extension workers, WPCs set-up, training to 296 WPCs on maintenance and management and hygiene, nurturing of local repair staff, and study tours among WPC.) - Procurement of vehicles for the monitoring and for sensitisation activities (3 motor-bikes)	- Thorough understanding of "participatory type" activities by 36 extension workers and enhanced capability for conducting sensitisation activities. - In the WPCs that are set up, collection of maintenance fees will begin. - Borehole water supply facilities will be autonomously operated and maintained through the spontaneous participation of the residents

3 – 2 Recommendations

In order to make the project effects appear and continue, as well as to draw the rural water supply undertakings to the national target, tackling the matters enumerated below will be indispensable.

(1) Collaboration among the organisations concerned in the monitoring

After the Japanese assistance is provided, the monitoring of water supply facilities (including the existing facilities) will be conducted by the various offices at the District level. In the case of the project, in view of the sensitisation activities adopting the "participatory type" method, the community shall participate in the monitoring with respect to operation/maintenance and the hygienic conditions. The extension workers for the activities of MoWD-CBM (Water Monitoring Assistants (WMA)) of MWD, Health Surveillance Assistants (HSA) of MoH, and Community Development Assistants (CDA) of MoWCCS) shall form a coordination sub-committee in each TA and conduct the monitoring under the guidance of the District Coordination Team (DCT) that is the superior body and DEC, with the participation of the community involved in the TA. For this reason, it is imperative to maintain the communication/ coordination system between DEC that administers projects within the District Assembly and the District offices of the 3 related ministries in order to set up an operation/ maintenance system including that of the existing water supply facilities.

(2) Distribution of the spare parts of pumps

For the sustainable utilisation of water supply facilities, it is necessary to maintain a distribution system in which the users may easily obtain the required spare parts for the pumps. At the commencement of project implementation, it is important to establish a system in which spare parts may be obtained at an appropriate price. The Government of Malawi will need to confirm the distribution situation and give guidance to private sector if appropriate prices are not being quoted or in case the distribution amount is insufficient.

(3) Ground water development programme of the future

The plan for the development of the groundwater at the national level should be undertaken with emphasis on rural areas where the service coverage is low based on the results of a study of the inventory such as a Water Point Mapping survey of WSSCC. On the other hand, since the plan for rural supply of water will be incorporated into the District Development Plan (DDP) in the future due to the policy for decentralization, it is necessary to make adjustments in the plan to ensure that there is no redundancy in the plans of MASAF, NGOs and other implementing agencies under the administration of the District and to ensure appropriateness of the plan for rural water supply that combines drilling new boreholes and rehabilitation of existing facilities.

Furthermore, for the furtherance of the Project effects, the following points are recommended:

(1) Development of a system for the maintenance and management of water supply facilities at the

District level.

Activities for setting up VHWC for each village constitute a project that is being promoted by MoH. The VHWC will not only undertake the operation, maintenance, and management of newly constructed boreholes but will be provided guidance on the democratic election of committee members and on awareness of sanitation and is expected to become an autonomous body that enhances the hygiene of the village. For this reason, the MoWD and MoH will need to adjust their mutual relationship and coordination of activities that are promoted by individual ministries and at the District level, the maintenance and management initiatives with principal emphasis on the monitoring of water supply facilities and improvement of the hygiene at the village level shall be viewed as a seamless activity without waste and towards this, it is important that information be shared. In order to achieve this, budgets will need to be set up for the activities.

(2) Integrated Regional Development:

Provision of safe and reliable water source in the rural area is the basis of hygiene improvement as well as economic development in the area. On the other hand, for the sustainability of water supply facilities, the community will need to have an appropriate perception towards hygienic conditions and secure an income level that is sufficient to bear the financial burden of the maintenance expenses. In this way, water, hygiene, and productivity are mutually related and form the grounds for regional development. If the technical assistance to promote the "participatory type" development at the village level based on the VHWC set up with resident participation, were to be formulated, more significant effects may be realized from the project.

APPENDICES

APPENDIX 1. MEMBER LIST OF THE STUDY TEAM

1.MEMBER LIST OF THE STUDY TEAM

Basic Design Study

NAME	ASSIGNMENT	ORGANIZATION
KATO Takashi	Team Leader	Japan International Cooperation Agency (JICA) Malawi Office Former Resident Representative
YAMAGAI Hiromi	Project Manager/ Groundwater Development Planner	Japan Engineering Consultants Co., Ltd. (JEC)
KUSUDA Kazuchiyo	Socio-Economic Surveyor O&M Planner	Japan Engineering Consultants Co., Ltd. (JEC)
TAKAKU Akinori	Hydrogeologist(I)/Water Supply Planner/Facility Construction Planner/Cost Estimator(I)	Japan Engineering Consultants Co. , Ltd. (JEC)
HOSOOKA Mitsuhiro	Hydrogeologist(II)/ Geophysical Prospecting Surveyor	Japan Engineering Consultants Co. , Ltd. (JEC)
NARITA Kinzo	Equipment Planner / Procurement Planner Cost Estimator (II)	Japan Engineering Consultants Co. , Ltd. (JEC)

Explanation of Draft Final Report

NAME	ASSIGNMENT	ORGANIZATION
MIZUTANI Kyouji	Team Leader	Japan International Cooperation Agency (JICA) Malawi Office Resident Representative
MATSUMOTO Shigeyuki	Coordinator	Japan International Cooperation Agency (JICA) Project Management GroupIII Grant Aid Management Department
YAMAGAI Hiromi	Project Manager/ Groundwater Development Planner	Japan Engineering Consultants Co. , Ltd. (JEC)
KUSUDA Kazuchiyo	Socio-Economic Surveyor O&M Planner	Japan Engineering Consultants Co. , Ltd. (JEC)

APPENDIX 2. STUDY SCHEDULE

2. STUDY SCHEDULE

Field Study Schedule for Basic Design

2004			Team Leader	Project Manager/ Groundwater Development Planner	Socio-Economic Surveyor/O&M Planner	Hydrogeologist(I)/ Water Supply Planner/ Facility Construction Planner/ Cost Estimator (I)	Hydrogeologist (II)/ Geophysical Prospecting Surveyor	Equipment Planner/Procurement Planner/Cost Estimator (II)
SL No.	Date		KATO Takashi	YAMAGAI Hiromi	KUSUDA Kazuchiyo	TAKAKU Akinori	HOSOOKA Mitsuhiro	NARITA Kinzo
1	10/25	M		NRT 17:10→HKG 20:45 (CX521) 23:50→				
2	10/26	T		→JNB 7:00 (CX1749) 11:30 →LUN 13:30 (SA064) Greeting (Embassy)	NRT 17:10→HKG 20:45 (CX521) 23:40→	NRT 17:10→HKG 20:45 (CX521) 23:40→		
3	10/27	W		LUN 7:00→LLW 8:50 (QM182) Greeting/Preparation of discussions	→JNB 6:55(CX749) 10:15 →BLZ 12:35 (SA172) 16:05 →LLW 16:40 (QM201)	→JNB 6:55(CX749) 10:15 →BLZ 12:35 (SA172) 16:05 →LLW 16:40 (QM201)		
4	10/28	T	Meeting at JICA office/Greeting&Discussion with MoWD(Explanation of I/R,Background, purpose, contents, overall plan of the Project)/Activity survey of other donor /Preparation for contract-out					
5	10/29	F						
6	10/30	S		Site Survey				
7	10/31	S					NRT 16:20→HKG 20:45 (CX521) 23:50→	
8	11/1	M	Survey(Implementing organization of the Project, ability, scope of the project) Discussion & Signature of Minutes / Preparation for contract-out Decision of the geophysical prospecting survey points				→JNB 7:10 (CX1749) 10:20 →LLW 12:50 (SA170)	
9	11/2	T					Decision of the geophysical prospecting survey points	
10	11/3	W		Survey of ex-project site	Survey of ex-project site	Survey for B/D and Project cost estimation	Survey for B/D and Project cost estimation	
11	11/4	T		Survey for B/D and Project cost estimation	Survey of activity of other donor (Sensitisation Activity)	・Natural condition (Climate, hydrology) (groundwater develop survey) (Water quality)	・Natural condition (groundwater develop survey) (Geophysical prospecting) (Water quality)	
12	11/5	F		・Natural condition	Survey for B/D and Project cost estimation	・social condition	・social condition	
13	11/6	S		・Social condition	・Natural condition	・Facility and equipment plan	・Facility and equipment plan	
14	11/7	S		・Facility and equipment plan	・social condition	**Total survey on requested villages**	**Total survey on requested villages**	
15	11/8	M			・Facility and equipment plan			
16	11/9	T		**Total survey on requested villages**	**Total survey on requested villages**			NRT 16:20→HKG 20:45 (CX521) 23:50→
17	11/10	W						→JNB 7:10 (CX1749) 10:20 →BLZ 12:35 (SA172) 16:05 →LLW 16:40 (QM201)
18	11/11	T						Survey for B/D and Project cost estimation ・Natural condition ・social condition ・Facility and equipment plan(Site activity condition of donated equipment) **Total survey on requested villages**
19	11/12	F						
20	11/13	S						
21	11/14	S						
22	11/15	M						
23	11/16	T						
24	11/17	W						
25	11/18	T						
26	11/19	F						
27	11/20	S						

NRT:Tokyo HKG:Hong Kong JNB:Johannesburg LUN:Lusaka BLZ:Blantyre LLW:Lilongwe :City :Site

continue to next page

2004			Team Leader	Project Manager/ Groundwater Development Planner	Socio-Economic Surveyor/O&M Planner	Hydrogeologist(I)/ Water Supply Planner/ Facility Construction Planner/ Cost Estimator (I)	Hydrogeologist (II)/ Geophysical Prospecting Surveyor	Equipment Planner/Procurement Planner/Cost Estimator (II)
SL No.	Date		KATO Takashi	YAMAGAI Hiromi	KUSUDA Kazuchiyo	TAKAKU Akinori	HOSOOKA Mitsuhiro	NARITA Kinzo
28	11/21	S		Survey of Overall plan and activity of other donor Survey of implementing organization and ability. Survey of suitability and scope of the Project Survey for B/D and Project cost estimation ・Facility and equipment plan ・Procurement condition ・Facility & procurement plan ・detail for estimation Survey of considerable matter of implementation & planning Survey of way to measuring project effect & ensuring sustainability	Survey on ex-project site Survey on activity of other donor (Sensitisation Activity) Survey for B/D and Project cost estimation Socio-Economic Survey **Total survey on requested villages**	Survey for B/D and Project cost estimation **Total survey on requested villages**	Survey for B/D and Project cost estimation ・Natural condition (groundwater develop survey) (Geophysical prospecting) (Water quality) ・social condition ・Facility and equipment plan **Total survey on requested villages**	Survey of implementing organization and ability. Survey for B/D and Project cost estimation ・Facility and equipment plan ・Procurement condition ・Facility & procurement plan ・detail for estimation
29	11/22	M				Survey for B/D and Project cost estimation ・Facility and equipment plan ・Procurement condition ・Facility & procurement plan ・detail for estimation		
30	11/23	T			Survey of implementing organization and ability. Survey of suitability and scope of the Project Survey of Considerable matter of implementation & planning Survey of way to measuring project effect & ensuring sustainability	Arrangement of discussion report & collected information		Arrangement of discussion report & collected information
31	11/24	W				LLW 13:10→JNB 16:10 (SA171)		LLW 13:10→JNB 16:10 (SA171)
32	11/25	T				Survey of procurement condition (South Africa)		Survey of procurement condition (South Africa)
33	11/26	F				JNB 13:10→		JNB 13:10→
34	11/27	S				→HKG 7:40 (CX748) 10:20 →NRT15:20 (CX520)		→HKG 7:40 (CX748) 10:20 →NRT15:20 (CX520)
35	11/28	S						
36	11/29	M		Site survey of the other donor project	Site survey of the other donor project			
37	11/30	T						
38	12/1	W		Survey of Overall plan and activity of other donor Survey of implementing organization and ability. Survey of suitability and scope of the Project Survey for B/D and Project cost estimation ・Facility and equipment plan ・Procurement condition ・Facility & procurement plan ・detail for estimation Considerable matter of implementation & planning Survey of way to measuring project effect & ensuring sustainability	Survey of Considerable matter of implementation & planning Survey of way to measuring project effect & ensuring sustainability			
39	12/2	T						
40	12/3	F			Arrangement of discussion report & collected information			
41	12/4	S						
42	12/5	S						
43	12/6	M						
44	12/7	T						
45	12/8	W						
46	12/9	T						
47	12/10	F						
48	12/11	S			LLW 9:40→JNB 12:00 (QM201) 17:20→			
49	12/12	S			→HKG 12:35 (CX1748) 15:15 →NRT20:05 (CX500)			
50	12/13	M						
51	12/14	T						
52	12/15	W						
53	12/16	T						
54	12/17	F		Arrangement of discussion report & collected information			Arrangement of discussion report & collected information	
55	12/18	S						
56	12/19	S		LLW 8:20→LUN 10:10 (QM181)			LLW 8:05→JNB 10:25 (QM201) 13:10→	
57	12/20	M		Report to Embassy			→HKG 7:40 (CX748) 10:20 →NRT15:20 (CX520)	
58	12/21	T		LUN 7:40→JNB 9:45 (SA069) 17:20→				
59	12/22	W		→HKG 12:35 (CX1748) 15:15 →NRT 20:05 (CX500)				
60	12/23	T						

NRT:Tokyo HKG:Hong Kong JNB:Johannesburg LUN:Lusaka BLZ:Blantyre LLW:Lilongwe :City :Site

Schedule for Explanation of Draft Final Report

	2005		Team Leader	Coordinator	Project Manager/ Groundwater Development Planner	Socio-Economic Surveyor/ O&M Planner
	date		MIZUTANI Kyouji	MATSUMOTO Shigeyuki	YAMAGAI Hiromi	KUSUDA Kazuchiyo
1	4/20	W			NRT→HKG	
2	4/21	T			(AM) JNB→LLW / (PM) Meeting at JICA office	
3	4/22	F	Greeting & Explanation of DBD (MoWD)		Greeting & Explanation of DBD (MoWD) Greeting (Lilongwe District)	
4	4/23	S		NRT→HKG	Supplementary survey	
5	4/24	S		JNB→LLW Arrangement of collected data and internal meeting		
6	4/25	M	Discussion of Minutes			LLW→BLZ
7	4/26	T	Signature of Minutes	LLW→LUN	LLW→LUN	BLZ→JNB→
8	4/27	W		Report to Embassy		→HKG→NRT
9	4/28	T		LUN →JNB→	LUN →JNB→	
10	4/29	F		→HKG→NRT	→HKG→NRT	

NRT:Tokyo HKG:Hong Kong JNB:Johannesburg LUN:Lusaka BLZ:Blantyre LLW:Lilongwe
City Site

APPENDIX 3. LIST OF PARTIES CONCERNED IN THE RECIPIENT COUNTRY

3.LIST OF PARTIES CONCERNED IN THE RECIPIENT COUNTRY

Ministry of Water Development

Mr. Sydney M. MAINALA	Director of Water Resources
Mrs. M.B.KANJAYE	DD/GW, Dept. of Water Resources
Mr. P.W. MLETA	SEDO, Dept. of Water Resources
Mr. M.G.M. NKHATA	Hydrogeologist
Mr. M. CHINTENGO	Groundwater Development Officer
Mr. A. KUTENGULE	Economist
Mr. Y.E.B. KAMPHALE	Chief Economist
Mr. A. SANDULA	Groundwater Development Officer
Mr. B.N.C. GONDWE	DD (PDC), Dept. of Water Survey
Mr. Joseph KAZOMBO	CCWSSO, Dept. of Water Supply and Sanitation
Mr. Hudgeson MUHEZUWA	PCWSSO, Dept. of WSS
Mr. M.S.K. CHIRAMBO	PhgRO, Dept. of WR
Mr. R. W. Mkwepu NAKANGA	Director of Administration and Finance
Mr. Edward	Namitete Water Unit
Mr. Oliver Cromwell PHIRI	Senior Community Water Supply and Sanitation Officer
Mr. MWENELUPEMBE	Senior Water Supervisor (RWDO (C))
Mrs. Emma Mary MBALAME	Regional Water Development Officer(RWDO (C))
Mr. F. MKANDAWIRE	Water Monitoring Assistant (Mtundu, (RWDO (C))
Mr. H.K. MUNTHALI	District Community -Water Supply Officer (T.O.)

Ministry of Finance

Mr. Davie Y.C. WIRIMA	Debt and Aid Management Division
Mr. Grecium KANDIO	Debt and Aid Management Division

Ministry of Health

Mr. Chris MOYO	Director/ HMIS (Health Management Information System) Unit
Mrs. Florence GLNOBEDA	Officer in Charge, Health Centre/ Nthondo
Mr. Philipe KODONGOLA	Environment and Sanitation Officer, Health Centre/ Nthondo
Mr. Alfred NKHOMA	Environment and Sanitation Officer, Health Centre/ Nthondo
Mr. SIMFUKWE	Medical Assistant, Health Centre/ Mingongo
Mr. Steven KAUENDA	Assistant Environment and Health Officer, HC/ Mingongo
Mr. Mike PEZEMAWA	Senior Health Surveillance Assistant, H C/ Chileka
Mr. MATAYA	Senior Medical Assistant, Health Centre/ Chiwe
Mr. Odala SANDRAM	Environment Health Surveillance Assistant, HC/ Chiwe
Mr. A.S. MAGANIZO	Medical Assistant, Health Centre/ Khongoni
Mr. Dikson BANDA	Senior EHSA, Health Centre/ Khongoni
Mr. Loyd SALIM	Medical Assistant, Health Centre/ Chikowa

Government of Malawi (other Ministries)

Mr. Jones WACHEPA	Lilongwe Zone Engineer, MASAF /Lilongwe Zone office
Mr. Christopher MANYAMBA	Researcher/ Crime and Justice Statistical Division, NSO
Mr. Kadongola EVANS	Dissemination Division, NSO

Lilongwe District Assemly

Mr. Davis G.SADO	District Commissioner (- December 2004)
Mr. C. P. KALEMBA	District Commissioner (December 2004 -)
Mr. D. B. MAGELA	Director of Planning and Development (former)

	Mr. Smart GWEDEMULA	Director of Planning and Development
	Mr.MAPFUPA	Assistant Statistician, Health Management Information System Lilongwe District Health Office
	Mr. Karangeni PATOMTOR	Ward Counsellor (TA Kalolo)
Hospital		
	Dr. CHIUNDILA	Doctor, St. Gabriel's Hospital
	Mr. Roy DENJA	Administrator, St. Gabriel's Hospital
Consultant		
	Mr. Wellington MANDOWA	Willy & Partner
	Mr. Ammiel CHAMPITI	Willy & Partner (representative in Lilongwe)
	Mr. F. KWAULE	Kondwani Consultancy
	Mr. Charles MWENDA	Kondwani Consultancy Associate Consultant
	Mr. Cyrus Gelesoni JEKE	Jezu and Partners
Donors		
	Dr. Mbuya Isaac G. MUNLO	Programme Coordinator, EC Micro-Projects Programme
	Ms. Regan MANCINI	In charge of Mzimba (esp. Khosolo), Canada Fund (CIDA)
	Mr. Gray HOLM	COMWASH Team Leader (Tyolo), CIDA
	Dr. Sham MATHUR	Head of WES, Unicef
	Mr. Jim ANSCOMBE	GITEC, (KfW)
	Ms. Valérie BEY	CPHE Officer / GITEC
NGO		
	Mr. Pierre-Yves DUBOIS	Inter Aide
	Mr. Lionel COMBEY	Country Coordinator /Malawi, Inter aide
	Mr. Eric BERGES	Country Support Officer, Inter Aide
	Mr. MPHANDA	Assistant project manager, MICAH
	Mr. Ma MOYO	MICAH
JICA,	(Malawi Office)	
	Mr. KATO Takashi	Resident Representative (-March 2005)
	Mr. MIZUTANI Kyoji	Resident Representative (April 2005 -)
	Mr. MURASE Tatsuya	Deputy Resident Representative
	Mr. MATSUSHIMA Kiyonori	Project formulation Advisor
	Mr. Gift Thakwalakwa	Programme Officer
Embassy of Japan, Zambia		
	Mr. MIYASHITA Masaaki	His Excellency the Japanese Ambassador to Malawi
	Mr. ZAITSU Tomoyuki	1st Secretary

APPENDIX 4. MINUTES OF DISCUSSIONS

4.MINUTES ON DISCUSSIONS

<Basic Design Study>

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR GROUNDWATER DEVELOPMENT IN LILONGWE WEST
IN THE REPUBLIC OF MALAWI

Based on the results of the Preliminary Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Groundwater Development in Lilongwe West (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Republic of Malawi (hereinafter referred to as "Malawi") the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Takashi Kato, Resident Representative, JICA Malawi Office, and is scheduled to stay in the country from October 27 to December 19.

The Team held discussions with the officials concerned of the Government of Malawi and conducted a field survey at the study area.

In the course of the discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Lilongwe, November 2, 2004

Mr. Takashi Kato
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan

Mr. Sydney M. Mainala
Director of Water Resources
Ministry of Water Development
Republic of Malawi

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the health and living standard of the people who live in Lilongwe West by providing potable water through procurement of equipment and development of water supply facilities.

2. Project sites

The sites of the Project are Traditional Authority (TA) Kalolo and Khongoni in Lilongwe District, Central Region. The location of the sites is shown in Annex-1.

3. Responsible and Implementing Agency

3-1. The Responsible Agency is Ministry of Water Development.

3-2. The Implementing Agency is Department of Water Resources.

The organization chart is shown in Annex-2.

4. Items requested by the Government of Malawi

After discussions with the Team, the items described in Annex-3 were finally requested by the Malawian side. Requested villages are listed in Annex-4. The Malawian side requested to include one set of geo-electric survey equipment instead of a water tank and a fuel tank, because one of the three (3) sets owned actually by the Ministry is not functioning well and only two sets are reliable at the moment. The Ministry plans to keep one set in each of the three regions of the country and only two sets of equipment cannot meet the pressure of work throughout the country. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

The Malawian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Malawi as explained by the Team and described in Annex-5 of the Minutes of Discussions signed by both parties on July 5.

6. Schedule of the Study

6-1. The consultants will proceed to further studies in Malawi until December 19, 2004.

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around March 2005.

6-3. In case that the contents of the report is accepted in principle by the Government of Malawi, JICA will complete the final report and send it to the Government of Malawi by July 2005.

7. Other relevant issues

7-1. Overall framework of rural water supply and groundwater development in Malawi

After phasing out of the current PRSP in 2005, a comprehensive report is to be compiled in view of formulating another PRSP for additional 3 to 4 years. The PRSP will continue to serve as the overall framework for the Project.

7-2. Responsible and implementing agency

Although the reorganization of ministries and governmental offices was executed, the Ministry of Water Development has been keeping its structure and mandate as same as before, and will be responsible for the Project.

The Department of Water Resources has responsibility for implementation of the Project.

7-3. Village selection

Based on the result of the Preliminary Study, 254 candidate villages were selected for the Basic Design Study, as listed on Annex-4.

Criteria for village selection are as follows:

1) Villages with quite inadequate water supply conditions and urgent needs of improvement should be prioritized,
2) Village people should have positive willingness for CBM of a water supply facility including cost burden,
3) There should be no duplication with other organization's project,
4) Villages should be accessible by heavy equipment like a drilling rig or become accessible under responsibility of the Malawian side without major roadwork for new construction or widening, and
5) Populous villages should be prioritized considering cost effectiveness and capability of fund-raising for operation and maintenance.

7-4. Equipment plan

In principle, the existing equipment and vehicles which were procured under the previous Japan's Grant Aid projects will be fully utilized in the Project. The necessity of additional requested equipment and vehicles will be scrutinized applying criteria mentioned below:

1) Managerial, administrative and technical competence of the implementing agency,
2) Qualification and experience of personnel,
3) Operation record of existing equipment and vehicles,
4) Maintenance condition of existing equipment and vehicles,
5) Plan of operation in the future,
6) Personnel and budgetary allocation for operation,
7) Budgetary allocation of the Japanese side, and
8) No duplication of similar support by other donors.

7-5. Undertakings to be taken by the Malawian side

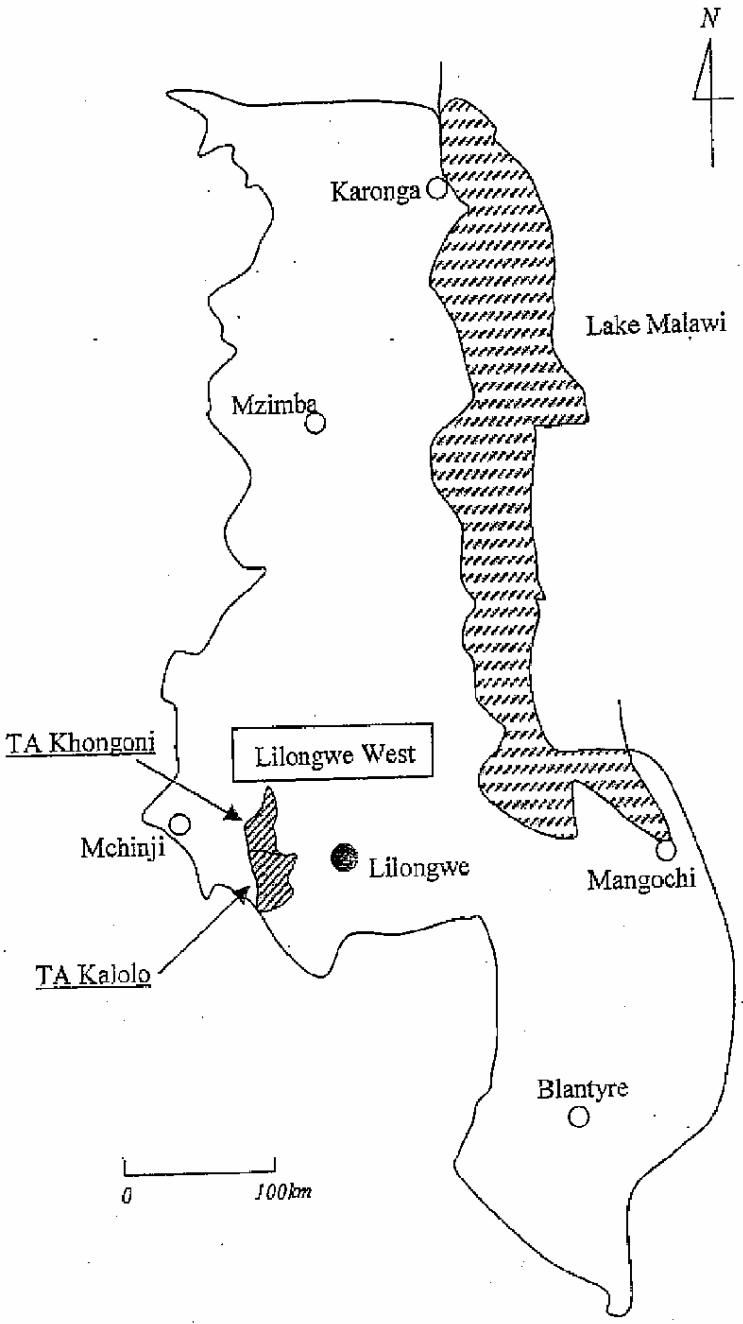
The Malawian side will extend following facilities to the Team:

1) To provide data and information necessary for the Basic Design Study,
2) To allocate counterpart personnel to accompany the Team,
3) To make appointment and provide necessary coordination with related organizations,
4) To provide office space for the Team, and
5) To lend the geo-electric prospecting survey machine provided by the former Japanese Grant Aid.

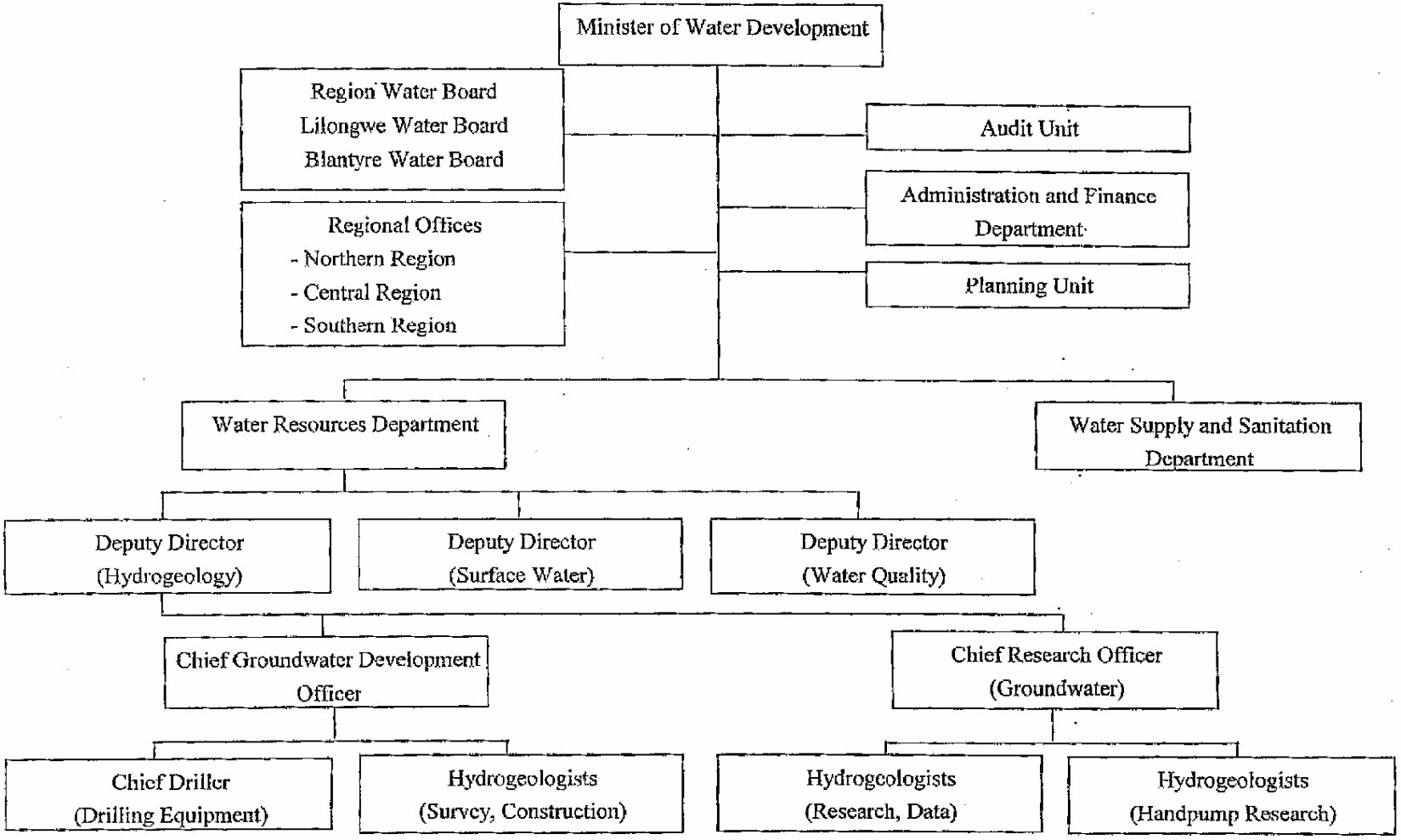
The Malawian side will take the necessary measures, as described below, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

1) To improve access roads where necessary,
2) To secure, clear, level and reclaim sites for well construction,
3) To provide land for a temporary site office, warehouse and stockyard during the implementation of the Project,
4) To lend equipment procured by the previous Japan's Grant Aid projects,
5) To allocate personnel to participate in the Project, especially extension workers to implement CBM activities, and secure budget for them, and
6) To coordinate with other donors, NGOs and related organizations.

ANNEX-1 : Project Sites



ANNEX-2 : Organization Chart of the Ministry of Water Development



ANNEX-3 : Items Requested by the Malawian Side

The main requested component of the Project is as follows:

(1) Construction of boreholes

Boreholes including apron, drain and washing slab in 254 villages

(2) Procurement of equipment

- For Borehole Drilling

1) Drilling rig (truck mounted, 4 x 4)	1 unit
2) High pressure air compressor (truck mounted, 4 x 4)	1 unit
3) Mobile well development unit (4 x 4)	1 unit
4) Pumping test equipment	1 lot
5) Cargo truck with 5-ton crane (4 x 4)	1 unit
6) Cargo truck with 3-ton crane (4 x 4)	1 unit
7) Pick-up type light vehicle (single cabin, 4 x 4)	1 unit
8) Pick-up type light vehicle (double cabin, 4 x 4)	1 unit
9) Geo-electric Survey Equipment	1 unit
10) Telecommunication equipment	1 lot
11) Spare parts for the above equipment	1 lot
12) Repair parts and tools for the existing equipment supplied in the past groundwater development projects under Japanese aid	1 lot

- For Research and Monitoring

13) Motorcycle	3 units
14) Global positioning system (GPS)	2 units
15) Computer for well inventory and analysis	2 units

- Construction Material for (1)

16) Hand pump (Afridev type)	1 lot
17) Well casing and screen pipe	1 lot

(3) Technical assistance

1) CBM training for 500 committees

2) Training of extension workers

ANNEX-4 : List of Villages Requested by the Malawian Side

KALOLO

S. No.	G.V.H KALOLO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
1	1	Kansengwa	969	1 B/hole required	1BH: Functional
2	2	Dzuluwanda	420	1 B/hole required	-
3	3	Chidzenje	304	1 B/hole required	-
4	4	Kamangira	599	1 B/hole required	-
5	5	Guli-guli (B)	1,497	1 B/hole required	1P.S.W.: Not Functional
6	6	Nkhwambala	420	1 B/hole required	1BH: Functional
7	7	Chiziko	1,301	1 B/hole required	1P.S.W.: Not Functional
8	8	Nkhata	769	1 B/hole required	1P.S.W.: Not Functional

S. No.	G.V.H. NYEMBA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
9	1	Kampala	52 HH (314)	1 B/hole required	-
10	2	Chinsenga	68 HH (336)	1 B/hole required	1BH: Not Functional
11	3	Mthiko	72 HH (360)	1 B/hole required	-
12	4	Mnkhowe	199 HH (490)	1 B/hole required	-
13	5	Mchilawankhondo	57 HH (387)	1 B/hole required	-
14	6	Chisikwa (A)	250 HH (1250)	1 B/hole available 1 B/hole required	3BHSs: Not functional 1BH: Funtional

S. No.	G.V.H. CHIBUNGO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
15	1	Chibungo	334 HH (1670)	1 B/hole required	1BH: Not Functional (Old) 1BH: Functional
16	2	Muyala	94 HH (471)	B/hole needs rehab. 1 B/hole required	1BH: Not Functional (Old)
17	3	Phulamazira	200 HH (858)	1 B/hole required	1P.S.W.: Not Functional 1BH: Not Functional (Old)
18	4	Gome	77 HH (539)	1 B/hole required	1P.S.W.: Not Functional
19	5	Mpingo II	200 HH (1200)	1 B/hole required	1BH: Not Functional 1BH: Functional 1P.S.W.: Not Functional
20	6	Kabwana	80 HH (1080?) (400?)	1 B/hole available 1 B/hole required	2BHs: Not Functional
21	7	Madika	70 HH (490)	1 B/hole required	-
22	8	Mzungu	62 HH (434)	1 B/hole required	1P.S.W.: Functional
23	9	Mwagongonda (Mngongonda)	188 HH (1316)	1 B/hole required	-
24	10	Mnjeza	64 HH (448)	1 B/hole required	-

S. No.	G.V.H. CHITUWI	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
25	1	Chituwi	47 HH (490)	1 B/hole required	1BH: Not Functional (Old) 1BH: Functional
26	2	Chakumbutsa (Chakumbuzi)	52 HH (364)	1 B/hole required	1P.S.W.: Not Functional
27	3	Chilembwe	52 HH (312)	1 B/hole required	-
28	4	Kanyoni	60 HH (422)	1 B/hole required	-
29	5	Chitapangombe	84 HH (588)	1 B/hole required	-
30	6	Kumtsizi (Kumtsinzi (A))	69 HH (483)	1 B/hole required	-
31	7	Kamkuwe	56 HH (392)	1 B/hole required	-

S. No.	G.V.H. MPHAMBA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
32	1	Sinsinja	70 HH (352)	1 B/hole required	-
33	2	Mandindi	39 HH (1234?) (200?)	1 B/hole required	-
34	3	Ngalazuka	76 HH (450)	1 B/hole required	-
35	4	Kamatira (Kamatila)	94 HH (562)	1 B/hole required	1BH: Not Functional (Old) 1BH: Functional
36	5	Dambo	95 HH (573)	1 B/hole required	1BH: Not Functional (Old)

S. No.	G.V.H. CHAKUZAMUTU	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
37	1	V.H. Makala (A), (C)	2,100	Too big 1 B/hole required	-
38	2	V.H. Mizati (A), (B)	420	1 B/hole required	-
39	3	V.H. Chipira Msanga	315	1 B/hole required	-
40	4	V.H. Masekese	420	1 B/hole required	
41	5	V.H. Chipira Kakoma (A)	1,880	1 B/hole required	-
42	6	V.H. Guli-guli I	455	1 B/hole required	-
43	7	V.H. Chamoto	1,112	1 B/hole required	1BH: Functional
44	8	V.H. Kaziputa	690	1 B/hole required	1BH: Functional
45	9	V.H. Geremani	1,120	1 B/hole required	-

S. No.	G.V.H. MKUWIRA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
46	1	V.H. Mkuwira	2,940	T/C B/hole available 1 B/hole required	1BH: Functional
47	2	V.H. Nyanda	1,460	1 B/hole required	-
48	3	V.H. Muzayani (Muuzayani)	549	1 B/hole required	-
49	4	V.H. Chingóna (B)	464	1 B/hole required	1BH: Functional
50	5	V.H. Mzokoto	1,050	1 B/hole required	-
51	6	V.H. Lawudani (Laudani)	770	1 B/hole required	-
52	7	V.H. Kalongopywera (Kalongopyera)	749	1 B/hole required	-
53	8	Mgulula	740	1 B/hole required	-
54	9	Mtsinambuto - Kalata	359	1 B/hole required	-

S. No.	G.V.H. CHADZA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
55	1	V.H. Chadza	100HH (562)	Borehole available 1 B/hole required	-
56	2	V.H. Mawulana-Mkuwamba	(329 + 149) 478	1 B/hole required	-
57	3	V.H. Ntchisi	315	1 B/hole required	-
58	4	V.H. Mchawa (A), (B)	86 HH (512)	1 B/hole required	-
59	5	V.H. Mlinga	49 HH (343)	1 B/hole required	-
60	6	V.H. Chingondo	74 HH (371)	1 B/hole required	-

S. No.	G.V.H. CHIPANGA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
61	1	V.H. Chipanga	50 HH (250?)	1 B/hole required	1BH: Functional
62	2	V.H. M'bangombe	60 HH (300?)	1 B/hole required	1BH: Functional
63	3	V.H. Mlera	60 HH (300?)	1 B/hole required	-

S. No.	G.V.H. SINUMBE	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
64	1	Nyozwe	200 HH (1400)	1 B/hole required	-
65	2	Sungamanja	109 HH (545)	1 B/hole required	-
66	3	Mapira	104 HH (520)	1 B/hole required	-
67	4	Kango	250 HH (1259)	1 B/hole required	-
68	5	Chigwasa	90 HH (950)	1 B/hole required	-
69	6	Chapota	91 HH (540)	1 B/hole required	-
70	7	Chilomo	190 HH (1146)	1 B/hole required	-
71	8	Gwani	99 HH (496)	1 B/hole required	-
72	9	Kangulu	145 HH (725)	1 B/hole required	-
73	10	Chimbwala	97 HH (482)	1 B/hole required	-
74	11	Sinumbe (Sinumbe TC.)	47 HH (329)	1 B/hole required	3BHs: Not Functional 1W.S.W.: Functional (*W.S.W. rehabilitated in 2004)

S. No.	G.V.H. LIWINGA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
75	1	Sosola	55 HH (385)	1 B/hole required	-
76	2	Jamu	62 HH (310)	1 B/hole required	-
77	3	Sankhulani	46 HH (323)	1 B/hole required	-

S. No.	G.V.H. DZAMA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
78	1	Dzama	72 HH (432)	1 B/hole required	1BH: Not Functional
79	2	Yotamu	72 HH (432)	1 B/hole required	-
80	3	Kanyopola	61 HH (429)	1 B/hole required	-
81	4	Chafuta	52 HH (370)	1 B/hole required	-
82	5	Jonasi (Jonas)	63 HH (443)	1 B/hole required	-
83	6	Chinkhata	59 HH (415)	1 B/hole required	-

S. No.	G.V.H. LEMWE	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
84	1	Kwezani	39 HH (348)	1 B/hole required	-
85	2	Makoka	58 HH (354)	1 B/hole required	-
86	3	Kalichelo	47 HH (329)	1 B/hole required	-
87	4	Mthyothyo	70 HH (420)	1 B/hole required	-
88	5	Chilima (Chalima)	54 HH (326)	1 B/hole required	-
89	6	Lusha	49 HH (343)	1 B/hole required	-

S. No.	G.V.H. CHIKUDZULIRE	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
90	1	Dzinja	43 HH (300)	1 B/hole required	-
91	2	Mkanda	57 HH (341)	1 B/hole required	1BH: Not Functional 1BH: Functional 1P.S.W.: Not Functional 1H.D.BH: Functional
92	3	Kadzani	72 HH (500)	1 B/hole required	1BH: Not Functional (Old)
93	4	Mkoko	81 HH (482)	1 B/hole required	1BH: Functional

S. No.	G.V.H. SINUMBE	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
94	1	Kafunde	100 HH (700)	1 B/hole required	-
95	2	Mpondamwala	76 HH (456)	1 B/hole required	-
96	3	Kathumbe	107 HH (642)	1 B/hole required	1BH: Not Functional
97	4	Zuwande	97 HH (582)	1 B/hole required	-

S. No.	G.V.H. CHINKHUNDA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
98	1	Chinkhunda Mnkawila	49 HH (340)	1 B/hole required	2BHs: Functional
99	2	Dzowole (Dzoole)	50 HH (344)	1 B/hole required	-
100	3	Kalonga	71 HH (426)	1 B/hole required	-
101	4	Kwenje	61 HH (366)	1 B/hole required	-
102	5	Chizula (Chidzula)	72 HH (490)	1 B/hole required	1BH: Not Functional (Old)
103	6	Semu	63 HH (369)	1 B/hole required	-
104	7	Khwema	78 HH (538)	1 B/hole required	-
105	8	Mdabwi I Bokola	65 HH (387)	1 B/hole required	-

S. No.	G.V.H. CHIMSOLO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
106	1	Mliwu (Mliu)	69 HH (470)	1 B/hole required	1BH: Not Functional (Old)
107	2	Chithangile (Chithangire)	57 HH (380)	1 B/hole required	1BH: Not Functional (Old)

S. No.	G.V.H. MASUMBA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
108	1	Manthalu	50 HH (347)	1 B/hole required	-
109	2	Chaponda	71 HH (423)	1 B/hole required	-
110	3	Manjawila	51 HH (349)	1 B/hole required	-
111	4	Chikalipo	68 HH (341)	1 B/hole required	-
112	5	Lendemani	99 HH (493)	1 B/hole required	-

S. No.	G.V.H. MPHUNDA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
113	1	Malumbila	64 HH (322)	1 B/hole required	-
114	2	Mkozomba	67 HH (336)	1 B/hole required	-
115	3	Mkanthama	71 HH (356)	1 B/hole required	-
116	4	Zakaliya (Zakalia)	62 HH (309)	1 B/hole required	-
117	5	Chipozongo	59 HH (297)	1 B/hole required	-
118	6	Palimtima	67 HH (400)	1 B/hole required	1P.S.W.: Functional
119	7	Makanga	59 HH (295)	1 B/hole required	-
120	8	Chimlota	61HH (307)	1 B/hole required	-
121	9	Mndulu	69 HH (343)	1 B/hole required	-

KHONGONI

S. No.	G.V.H. KHONGONI	VILLAGE NAME	Estimated POP In 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
1	1	Khongoni (A)	351	1 B/hole required	2BHs: Not Functional 1BH: Functional
2	2	Kambuyawa	650	1 B/hole required	-
3	3	Mbalame (A)	67 HH 303	1 B/hole required	1BH: Not Functional
4	4	Kanjanja	320	1 B/hole required	-
5	5	Kanzota	56 HH 240	1 B/hole required	-
6	6	Masitala - Maria	28 HH 320	1 B/hole required	-
7	7	Levi	300	1 B/hole required	-
8	8	Mweziwauma	70 HH 350	1 B/hole required	-
9	9	Mandelo-Mika	40 HH 320	1 B/hole required	-
10	10	Kachilikiza	350	1 B/hole required	-

S. No.	G.V.H. MSINDE	VILLAGE NAME	Estimated POP In 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
11	1	Benjamani	37 HH 300	1 B/hole required	-
12	2	Nkhombokombo	44 HH 300	1 B/hole required	-
13	3	Waya	90 HH 299	1 B/hole available	2BHs: Functional

S. No.	G.V.H. MATEKWE	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
14	1	Kantugwala-Chimpesi	56 HH 460	2 B/holes required	-
15	2	Mmbamwana	45 HH 300	1 B/hole required	-
16	3	Mkhuta	379	1 B/hole required	-
17	4	Kambudzi	989	1 B/hole available 2 B/holes required	1BH: Functional (but very old)
18	5	Chitindi	480	2 B/holes required	-
19	6	Salima	56 HH 447	B/hole needs rehab. 2 B/holes required	1BH: Not Functional
20	7	Kapudzama	95 HH 780	B/hole needs rehab. 2 B/holes required	2BHs: Not Functional (Old) 1BH: Functional 1H.D.BH: Functional
21	8	Chelonga	89HH 1058	B/hole needs rehab. 3 B/holes required	1BH: Functional
22	9	Chaipa-Mnjale	450	2 B/holes required	1BH: Not Functional (Old)
23	10	Mtabvu (Mutavu)	450	1 B/hole available 2 B/holes required	1BH: Functional
24	11	Imfa	500	1 B/hole available 2 B/holes required	1BH: Not Functional (Old)
25	12	Chithemba	380	B/hole needs rehab. 1 B/hole required	1BH: Functional (but very old)

S. No.	G.V.H. VIZIMBA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
26	1	Naferanji (Nafelanji)	480	1 B/hole available 1 B/hole required	1BH: Functional
27	2	Katugwa	350	1 B/hole required	-

S. No.	G.V.H. NYANGA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
28	1	Nyanga	426	2 B/holes required	-
29	2	Kalumbi	418	B/hole needs rehab. 2 B/holes required	1BH: Functional

S. No.	G.V.H. CHIPENI	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
30	1	Chipeni	333HH 2000	1 B/hole available 2 B/holes required	1BH: Not Functional
31	2	Gulumba (A)	107 HH 645	2 B/holes required	-
32	3	Sixpence/Nabuzi	123 HH 750	2 B/holes required	-
33	4	Masantchi/Salale/Chimbaka	142 HH 850	2 B/holes required	-
34	5	Williamu/Jasiteni/Nthochi	105 HH (525?)	2 B/holes required	-
35	6	Zamula/Jere	52 HH 307	1 B/hole required	-

S. No.	G.V.H. MKUWIRA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
36	1	Monjo-Mduluza	90 HH (210?) (450?)	2 B/holes required	-

S. No.	G.V.H. KASIYA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
37	1	Mbewa II ((B))	58 HH 345	1 B/hole required	2BHs: Functional
38	2	Chizewe	66 HH 300	1 B/hole required	-
39	3	Mwachipula	62 HH 372	1 B/hole required	-
40	4	Kakhutantaya-Kalitsilo	83 HH 500	2 B/holes required	-
41	5	Nthala-Gomani	63 HH 380	1 B/hole required	-
42	6	Mtswati	78 HH 478	2 B/holes required	-

S. No.	G.V.H. MTSWATI	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
43	1	Mafuta	50 HH (200?)	1 B/hole required	-
44	2	Pashane Nkhulange	70 HH (350?)	1 B/hole required	-

S. No.	G.V.H. MALENGA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
45	1	Mndimbanezo-Chimbalu	70 HH 331	1 B/hole required	-

S. No.	G.V.H. MANGILIRA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
46	1	Mangilira (Mangirira)	205 HH 1230	B/hole needs rehab. 3 B/holes required	1BH: Functional
47	2	Mthumba (Thumba)	96 HH 579	2 B/holes required	-
48	3	Zokoto	124 HH 748	2 B/holes required	-
49	4	Kalama (B)	112 HH 670	B/hole needs rehab. 1 B/hole required	1BH: Not Functional (Old)
50	5	Nthondo II - Chimbidzi	50 HH 300	1 B/hole required	1BH: Not Functional (Old)
51	6	Mazongoti-Thekenya	51 HH 306	2 B/holes required (1 to share)	-
52	7	Kaluzi-Lamuele	52 HH 314	B/hole needs rehab. 1 B/hole required	1BH: Functional (but very old)
53	8	Galeta Daimoni Chulu	57 HH 341	1 B/hole required (to share among 3 Villages)	-

S. No.	G.V.H. JAUZALE	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
54	1	Kabudula	57 HH (390)	Broken B/hole 1 B/hole required	1BH: Not Functional

S. No.	G.V.H. MSTINDO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
55	1	Ziyendammanja	70 HH (350)	1 B/hole required	-

S. No.	G.V.H. MADZONGA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
56	1	Madzonga	117 HH (700)	2 B/holes available 1 B/hole required	1BH: Functional
57	2	Mgulumula	11 HH (460)	1 B/hole required	1BH: Not Functional (Old)
58	3	Mnkhunyungu	71 HH (430)	Broken B/hole water quality not good. 1 B/hole required	-
59	4	Chikweteza	56 HH (333)	1 B/hole required	1BH: Not Functional (Old)
60	5	Mlamba - Makina	89 HH (535)	2 B/holes required	-
61	6	Mwadzimbi	110 HH (660)	2 B/holes required	-
62	7	Chimphepo	57 HH (340)	1 B/hole required	-

S. No.	G.V.H. NDALAMA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
63	1	Njombiro Chiuzeni II	59 HH (300?)	1 B/hole required	-
64	2	Chibwalo	41 HH (306)	1 B/hole required	-
65	3	Kalipande	42 HH (300)	1 B/hole required	-
66	4	Kachipanda	42 HH (301)	1 B/hole required	-

S. No.	G.V.H. BONDO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
67	1	Bondo	56 HH (365)	1 B/hole required	1H.D.BH: Functional

S. No.	G.V.H. CHIMTOLO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
68	1	Chikwa	40 HH (300)	1 B/hole required	-
69	2	Kazambala	41 HH (315)	1 B/hole required	-

S. No.	G.V.H. CHIGOWO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
70	1	Chigowo	41 HH (306)	1 B/hole required	1BH: Functional
71	2	Kaphiri	51 HH (450)	1 B/hole required	1BH: Not Functional
72	3	Kamtengo	47 HH (360)	1 B/hole required	-
73	4	Timoti	191 HH (360?)	1 B/hole required	-
74	5	Chadzunda	58 HH (450)	2 B/holes required	-
75	6	Loti	43 HH (370)	1 B/hole required	-
76	7	Chinjili	39 HH (340)	1 B/hole required	-

S. No.	G.V.H. KANJEZA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
77	1	Thema	83 HH (500)	2 B/holes required	-
78	2	Nkhoka	73 HH (435)	1 B/hole required	-
79	3	Chilowa (B)	78 HH (478)	2 B/holes required	1BH: Not Functional
80	4	Katsano	81 HH (488)	2 B/holes required	-

S. No.	G.V.H. SAKALI	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
81	1	Sambo/Chimtem wende	57HH (300?)	1 B/hole required	-

S. No.	G.V.H. KAWALIKA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
82	1	Kawalika	70 HH (320)	(Climax broken) 1 B/hole required.	1BH: Not Functional
83	2	Mwase	50 HH (350)	1 B/hole required	-
84	3	Mitala	60 HH (360)	1 B/hole required	1W.S.W.: Not Functional
85	4	Msema	69 HH (345)	(Climax broken) 1 B/hole required.	1BH: Not Functional (Old)
86	5	Chilufu	72 HH (360)	1 B/hole required	-
87	6	Kadyalu	62 HH (372)	1 B/hole required	-
88	7	Chibondo	56 HH (335)	1 B/hole required	-
89	8	Chimombo II	50 HH (250)	1 B/hole required	-

S. No.	G.V.H. MAKOWA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
90	1	Makowa	95 HH (589)	B/hole needs rehab. 1 B/hole required	1BH: Not Functional
91	2	Mpaya	98 HH (586)	2 B/holes required	-
92	3	Kasi Tomo (Kasitomu)	82 HH (492)	2 B/holes required	-
93	4	Mpondamwala	74 HH (446)	2 B/holes required	-
94	5	Kasalika	61 HH (364)	1 B/hole required	-
95	6	Tumeyo	65 HH (392)	2 B/holes required	-
96	7	Kawodlera I	72 HH (431)	B/hole needs rehab. 1 B/hole required	-
97	8	Mapondera	60 HH (359)	1 B/hole required	-
98	9	Chawina	80 HH (474)	1 B/hole required	-
99	10	Chizeze	58 HH (347)	1 B/hole required	-
100	11	Mangani	58 HH (347)	1 B/hole required	-
101	12	Kuthengo	54 HH (322)	1 B/hole required	-
102	13	Mkhumbira	61 HH (367)	1 B/hole required	-
103	14	Kaodzera II (Kaodzela)	82 HH (493)	2 B/holes required	1BH: Not Functional (Old)
104	15	Ngalize	54 HH (322)	1 B/hole required	-
105	16	Chimpala	58 HH (346)	1 B/hole required	-
106	17	Kamapalira	50 HH (298)	1 B/hole required	-
107	18	Dzonzi	61 HH (364)	1 B/hole required	-
108	19	Chadzunda	76 HH (455)	1 B/hole required	-
109	20	Mikili	54 HH (324)	1 B/hole required	-
110	21	Thauzeni	54 HH (336)	1 B/hole required	-
111	22	Jeke	53 HH (319)	1 B/hole required	-
112	23	Bwanali	53 HH (316)	1 B/hole required	-
113	24	Kasawa	49 HH (294)	1 B/hole required	-
114	25	Mafola	66 HH (395)	1 B/hole required	-

S. No.	G.V.H. MALEMBO	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
115	1	Sapulayi	86 HH (516)	1 B/hole required	-

S. No.	G.V.H. MWANDA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
116	1	Mwanda	259?	1 B/hole required	-
117	2	Msampha	230?	1 B/hole required	-
118	3	Kameta	240?	1 B/hole required	-
119	4	Mabutao/Jezika male	255?	1 B/hole required	-

S. No.	G.V.H. NJAKWA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
120	1	Mazengera	84 HH (418)	1 B/hole required	-
121	2	Kakolowelco	51 HH (306)	B/hole needs rehab.	1BH: Not Functional

S. No.	G.V.H. KAPANGALIKA	VILLAGE NAME	Estimated POP in 2004	Boreholes Required	Existing Water Points (Water Point Mapping Survey)
122	1	Mdatsekako	54 HH (320)	1 B/hole required	-
123	2	Kachera	65 HH (400)	1 B/hole required	-
124	3	Changwe	68 HH (410)	1 B/hole required	-
125	4	Chimphako	50 HH (300)	1 B/hole required	-
126	5	Mkwinda	54 HH (330)	1 B/hole required	-
127	6	Msungata	69 HH (370)	1 B/hole required	-
128	7	Khofi	63 HH (380)	1 B/hole required	-
129	8	Makwembe	60 HH (381)	1 B/hole required	-
130	9	Phetera	60 HH (302)	1 B/hole required	-
131	10	Mwambakulu	65 HH (400)	1 B/hole required	-
132	11	Mwamulu	69 HH (360)	1 B/hole required	-
133	12	Nkhawa	52 HH (320)	1 B/hole required	-

< Abbreviations >

S. No.: Serial Number,
G.V.H.: Group Village Head,
E.A.: Enumuration Area,
POP: Population,
BH: Borehole,
P.S.W.: Protected Shallow Well,
H.D.BH: Hand Dug Borehole (Vonder Well),
W.S.W.: Shallow Well with Windlass,
Old: Well Age more than 30 years

<Explanation of Draft Final Report>

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR GROUNDWATER DEVELOPMENT IN LILONGWE WEST
IN THE REPUBLIC OF MALAWI
(EXPLANATION ON DRAFT REPORT)

In October 2004, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Groundwater Development in Lilongwe West (hereinafter referred to as "the Project") to the Republic of Malawi (hereinafter referred to as "Malawi"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult with the Government of Malawi on the components of the draft report, JICA sent to Malawi the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Kyoji Mizutani, Resident Representative, Malawi Office, JICA, from April 21 to 26, 2005.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Lilongwe, April 26, 2005

Mr. Kyoji Mizutani
Leader
Draft Report Explanation Team
Japan International Cooperation Agency
Japan

Mr. Sydney M. N. Mainala
Director of Water Resources
Ministry of Water Development
Republic of Malawi

ATTACHMENT

1. Components of the Draft Report

The Government of Malawi agreed and accepted in principle the components of the draft report explained by the Team.

However, the Team explained that the justification of the procurement of a drilling rig and supporting vehicles should be reexamined after taking the accident mentioned below into account.

2. Japan's Grant Aid scheme

The Malawian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Malawi as explained by the Team and described in Annex-5 of the Minutes of Discussions signed by both parties on July 5, 2004.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Malawi by July 2005.

4. Other relevant issues

4-1. The traffic accident for the rig procured in the Project for Development of Groundwater in Lilongwe-Dedza

The Malawian side reported that the drilling rig procured in the Project for Development of Groundwater in Lilongwe-Dedza had been damaged by a traffic accident occurred in the beginning of April. The rig was being sent to Zomba to deploy for a groundwater development project and overturned when it tried to avoid a collision. The Malawian side explained that an assessment of the damage would be done in the next week and based on it a report would be prepared to submit to competent authorities of the government. The Malawian side promised to repair under the responsibility of the Malawian Government at any cost because of the following reasons;

1) The rig must be used in the Project,
2) There are so many requests to construct boreholes from local people and authorities,
3) The rig is the newest and the most reliable drilling equipment under the control of the government, and
4) The rig has been already handed over to the Malawian Government from the Japanese Government.

The Malawian side also promised to take the following measures,

1) The Ministry of Water Development will report to JICA Malawi Office every month on the progress of repair,
2) The Ministry will retrain its operators and submit a progress report of training to JICA, and
3) The Ministry will revise the procedure for deployment of equipment.

4-2. Project components

Main components of the project are shown in Annex-1.

However, the Team explained that taking into account the accident mentioned above, whether the procurement of the new drilling rig and supporting vehicles would be included in the Project or not should be reexamined among the Japanese side.

The Malawian side emphasized the importance of sanitation. The Team recognized it and explained that the sanitation could be emphasized in the health and hygiene education which was included in the CBM activities, though provision of sanitary facilities would not be included in the Japanese cooperation.

4-3. Undertakings of the Malawian side

The Malawian side will take the necessary measures, as described in Annex-2, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

Especially following items were emphasized by the Team and agreed by the Malawian side:

(1) Preparation of access roads

The following five villages should improve access roads before commencement of borehole construction through the CBM program. The Team explained that the improvement work would be minor operation without necessity of heavy equipment.

<TA Kalolo>	
Chilembwe	Leveling of an access road
Mandindi	Widening of an access road to 3 m
Chingona (B)	Widening of an access road to 3 m
Lawudani	Widening of an access road to 3 m
<TA Khongoni>	
Kadyalu	Leveling of an access road

(2) Preparation of well construction sites

Well construction sites will be decided based on intention of villagers and results of geophysical survey and should be cleared and leveled by villagers.

(3) Preparation of land for warehouse, stockyard and parking

In the Namitete Unit, 2,500m^2 of land should be secured and cleared for warehouse, stockyard and parking before the commencement of preparatory work.

(4) Lending the equipment procured in the Project for Development of Groundwater in Lilongwe-Dedza

The following equipment should be attached to the Japanese side:

1) Truck mounted drilling rig	1 unit
2) Truck mounted high pressure air compressor	1 unit
3) Well development and pumping test equipment	1 lot
4) Cargo truck with 3-ton crane	1 unit
5) Fuel tank	1 unit
6) Water tank	2 units

The drilling rig mentioned above should be repaired by the Malawian side. In case it is not prepared, the one procured in the Rural Water Supply Project in the West of Mzimba District should be furnished. Availability of the rig will be examined by the Japanese side by September 2006 at the latest. The Team commented that if the Malawian side failed to provide the rig, the number of boreholes in the Project would be reduced inevitably.

(5) Staff and personnel expenses

The following staff should be allocated to the Project and personnel expenses including daily allowance and travel cost should be borne by the Malawian side:

1) Project coordinators from the Ministry of Water Development;
2) Operating staff of equipment from the Borehole Construction Fund; and
3) Staff to implement CBM program from the Ministry of Water Development, Ministry of Health, Ministry of Gender and Community Services.

(6) Coordination with related organizations, NGOs and other donors

Coordination with Lilongwe District, NGOs like Inter Aide and Water Supply & Sanitation Collaborative Council, and donors working for the water supply and sanitation sector is especially important.

KM

4-4. Ownership of the Malawian side to the CBM program

The Team emphasized that the Malawian side should strengthen ownership to the CBM program by securing a sufficient budget and ensuring continuity, and that the allocation of staff and personnel expenses for the CBM program would be necessary requirement to implement the Project.

The Team also explained its policy that the Japanese side would not bear daily allowance, travel cost or other expenses of villagers necessary for attending CBM trainings. In case that villagers demand allowance and fail to turn out to CBM training, such a village will be ruled out from the Project.

The Malawian side understood the policy of the Japanese side.

4-5. Proper use of equipment

The Team requested the Malawian side to ensure that the equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project, reserving sufficient budget for operation cost and staff.

4-6. Draft detailed specification of the equipment

The Team handed one copy of the draft detailed specification of the equipment to Mr. Sydney M. Mainala, Director of Water Resources, Ministry of Water Development. Both sides agreed that this draft specification was confidential and should not be duplicated or released to any outside parties.

ANNEX-1 : Main components of the project

(1) Construction of boreholes

296 boreholes including apron, drain and washing slab for 234 villages

(2) Procurement of equipment

- For Borehole Drilling

1) Drilling rig (truck mounted, 4 x 4)	1 unit
2) High pressure air compressor (truck mounted, 4 x 4)	1 unit
3) Borehole development equipment with truck (4 x 4)	1 unit
4) Pumping test equipment	1 lot
5) Cargo truck with 3-ton crane (4 x 4)	2 unit
6) Pick-up type light vehicle (single cabin, 4 x 4)	1 unit
7) Pick-up type light vehicle (double cabin, 4 x 4)	1 unit
8) Geo-electric survey equipment	1 unit

- For Research and Monitoring

9) Motorcycle	3 units
10) Global positioning system (GPS)	2 units
11) Desktop computer for database	1 unit

(3) Technical assistance

1) Improving ability of local administrations for CBM programs

2) CBM training for Water Point Committees

3) Improving a local maintenance system by introducing area mechanics

ANNEX-2 : Undertakings of the Malawian Side

1. To prepare access roads to the villages;
2. To prepare well construction sites in the villages;
3. To prepare land for warehouse, stockyard and parking in the premises of Namitete Unit;
4. To attach the existing equipment including one set of drilling rig;
5. To allocate staff to participate in the Project and ensure personnel expenses;
6. To coordinate with related organizations, NGOs and other donors;
7. To provide necessary data and information;
8. To bear commissions, namely advising commissions of an Authorization to Pay (A/P) and payment commissions, to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement (B/A);
9. To exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in Malawi with respect to the supply of the products and services under the verified contracts;
10. To ensure prompt unloading and customs clearance of the construction materials and equipment purchased or brought under the Japan's Grant Aid at ports of disembarkation in Malawi;
11. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into Malawi and stay therein for the performance of their work;
12. To ensure necessary staff and budget to operate and maintain the equipment purchased under the Japan's Grant Aid;
13. To ensure that the facilities constructed and equipment purchased under the Japan's Grant Aid be maintained and used properly and effectively for the Project;
14. To bear all the expenses, other than those covered by the Japan's Grant Aid, necessary for the Project;
15. To keep and manage tools and spare parts procured by the Japan's Grant Aid properly;
16. To ensure participation of Malawian staff to the borehole construction works in the course of borehole construction works;
17. To implement the CBM program to ensure proactive operation and maintenance of water supply facilities by the villages; and
18. To construct fence, drain and infiltration pit for the water supply facilities through material and labor contribution by villagers.

KM

APPENDIX 5. COST ESTIMATION BORNE BY THE RECIPIENT COUNTRY

5. COST ESTIMATION BORNE BY THE RECIPIENT COUNTRY

Description	Amount (MK)
1. Levelling for Camp Site in Namitete Unit	200,000
2. Work Cost and Allowance of BCF Staff for Drilling Works	5,965,000
－FY2005/2006	0
Salary and Allowance	0
Insurances	0
－FY2006/2007	697,000
Salary and Allowance	667,000
Insurances	30,000
－FY2007/2008	3,619,000
Salary and Allowance	3,499,000
Insurances	120,000
－FY2008/2009	1,649,000
Salary and Allowance	1,589,000
Insurances	60,000
3. Personnel Cost for Implementation of CBM	6,218,000
－FY2005/2006	662,000
－FY2006/2007	1,356,000
－FY2007/2008	3,392,000
－FY2008/2009	808,000
4.Improvement of Access Road	N.A.
5.Construction of Fences and Soak Pit for Borehole	N.A.
6.Managing Cost for Project Implementation	N.A.
TOTAL	12,383,000

* Estimated in December 2004

APPENDIX 6. OTHER RELEVANT DATA

6-1 Target Villages and Borehole Drilling Plan
6-2 Evaluation Results of Target Villages
6-3 Results of Socio-economic Survey for Target Villages
6-4 Results of Geophysical Prospecting Survey
6-5 Results of Water Quality Test
6-6 Existing Borehole List

T.A.Kalolo

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
1.1	Kansengwa	LW 1-1	45		○	
1.2		LW 1-2	45		○	
1.3		LW 1-3	45		○	
2.1	Dzuluwanda	LW 1-4	70		○	
2.2		LW 1-5	70		○	
3.1	Chidzenje (Zikaonga)	LW 1-6	45		○	
3.2		LW 1-7	45		○	
4	Kamangira	LW 1-8	45		○	
5	Guli-guli	LW 1-9	50			○
6.1	Nkhwambala	LW 1-10	50		○	
6.2		LW 1-11	50		○	
7	Chiziko	LW 1-12	45		○	
8	Nkhata	LW 1-13	46			○
9	Kampala	LW 1-14	45			○
10.1	Chisenga	LW 1-15	45			○
10.2		LW 1-16	45			○
11	Mthiko	LW 1-17	45			○
12	Mnkhowe	LW 1-18	45			○
13	Mchilawankhondo	LW 1-19	45			○
14	Chisikwa	LW 1-20	45			○
15.1	Chibungo	LW 1-21	46			○
15.2		LW 1-22	46			○
15.3		LW 1-23	46			○
15.4		LW 1-24	46			○
15.5		LW 1-25	46			○
16	Muyula	LW 1-26	46			○
18.1	Gome	LW 1-27	45			○
18.2		LW 1-28	45			○
19.1	Mpingo II	LW 1-29	43			○
19.2		LW 1-30	43			○
20	Kabwana	LW 1-31	46			○
21	Madika	LW 1-32	46			○
22	Mzungu	LW 1-33	70			○
24	Mnjeza / *Mutsekanjira*	LW 1-34	45			○
25	Chituwi	LW 1-35	45			○
26	Chikumbutsi	LW 1-36	45			○
27.1	Chilembwe	LW 1-37	45			○
27.2		LW 1-38	45			○
28	Kanyoni	LW 1-39	45			○
29	Chitapangombe	LW 1-40	45			○

T.A.Kalolo

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
30	Kumtsizi	LW 1-41	50			○
31	Kamkuwe	LW 1-42	46			○
32	Nsinsinja	LW 1-43	45			○
33	Mandindi	LW 1-44	45			○
34	Ngalazuka	LW 1-45	45			○
35	Kamatila	LW 1-46	45			○
36.1	Dambo	LW 1-47	37			○
36.2		LW 1-48	37			○
37.1	Makula(A)(B)(C)	LW 1-49	45		○	
37.2		LW 1-50	45		○	
37.3		LW 1-51	45		○	
37.4		LW 1-52	45		○	
38.1	Mizati(A)(B)	LW 1-53	45		○	
38.2		LW 1-54	45		○	
39	Chipira Msanga	LW 1-55	47		○	
40	Masekese	LW 1-56	45		○	
41	Chipira Kakoma(A)	LW 1-57	55		○	
42	Guliguli 1	LW 1-58	35		○	
43.1	Chamoto	LW 1-59	45		○	
43.2		LW 1-60	45		○	
45	Geremani	LW 1-61	66		○	
46	Mkuwira	LW 1-62	45		○	
47	Nyanda	LW 1-63	33		○	
48	Muzayani	LW 1-64	44		○	
49	Chingona(B)	LW 1-65	44		○	
50.1	Mzokoto	LW 1-66	45		○	
50.2		LW 1-67	45		○	
51	Lawudani	LW 1-68	45		○	
52	Kalongopywera	LW 1-69	44		○	
53	Mugulula	LW 1-70	45		○	
54	Mtsinambuto/Kalata	LW 1-71	50		○	
55	Chadza	LW 1-72	50		○	
56.1	Mawulana/Mukuwanba	LW 1-73	45		○	
56.2		LW 1-74	45		○	
57	Ntchisi	LW 1-75	30		○	
58.1	Mchawa	LW 1-76	45		○	
58.2		LW 1-77	45		○	
59.1	Mlinga	LW 1-78	45		○	
59.2		LW 1-79	45		○	
60	Chingondo	LW 1-80	35		○	
62	M'bangombe	LW 1-81	50		○	

T.A.Kalolo

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
63.1	Mlera	LW 1-82	44		○	
63.2		LW 1-83	44		○	
64.1	Nyozwe / *Mikiyere*	LW 1-84	45			○
64.2		LW 1-85	45			○
65	Sungamanja	LW 1-86	45			○
66	Mapira	LW 1-87	45			○
67	Kango	LW 1-88	46			○
68	Chigwasa	LW 1-89	46			○
69	Chapota	LW 1-90	46			○
70.1	Chilomo	LW 1-91	46			○
70.2		LW 1-92	46			○
72	Kangulu	LW 1-93	45			○
73	Chimbwala	LW 1-94	40			○
74	Sinumbe (Sinumbe TC)	LW 1-95	46			○
75.1	Sosola	LW 1-96	45			○
75.2		LW 1-97	45			○
76	Jamu	LW 1-98	45			○
77	Sankhulani	LW 1-99	45			○
78	Dzama	LW 1-100	45	○		
79	Yotamu	LW 1-101	46	○		
80	Kanyopola	LW 1-102	46	○		
81	Chafuta	LW 1-103	46	○		
82	Jonasi	LW 1-104	70	○		
83	Chinkhata	LW 1-105	45	○		
84	Kwazani	LW 1-106	45	○		
85	Makoka	LW 1-107	45	○		
86	Kalichelo	LW 1-108	46	○		
87	Mthyothyo	LW 1-109	46	○		
88	Chilima	LW 1-110	46	○		
89	Lusha	LW 1-111	30	○		
90.1	Dzinja	LW 1-112	43			○
90.2		LW 1-113	43			○
90.3		LW 1-114	43			○
90.4		LW 1-115	43			○
91	Mkanda	LW 1-116	45		○	
92.1	Kadzani	LW 1-117	50		○	
92.2		LW 1-118	50		○	
93.1	Mkoko	LW 1-119	45		○	
93.2		LW 1-120	45		○	
94	Kafunde	LW 1-121	30			○
95	Mpondamwala	LW 1-122	45			○

T.A.Kalolo

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
96	Kathumba	LW 1-123	45			○
97	Zuwande	LW 1-124	45			○
98	Mnkawila	LW 1-125	45		○	
99	Dzowole	LW 1-126	46		○	
100	Kolonga	LW 1-127	35		○	
101	Kwenje	LW 1-128	45		○	
102	Chizula	LW 1-129	45		○	
103	Senu	LW 1-130	45		○	
104.1	Khwema	LW 1-131	46		○	
104.2		LW 1-132	46		○	
105	Mdabwi	LW 1-133	46		○	
106.1	Mliwu	LW 1-134	30		○	
106.2		LW 1-135	30		○	
107.1	Chithangile	LW 1-136	50		○	
107.2		LW 1-137	50		○	
108	Manthalu	LW 1-138	45		○	
109	Chaponda	LW 1-139	45		○	
110	Manjawila	LW 1-140	42		○	
111	Chikalipo	LW 1-141	50		○	
112	Lendemani	LW 1-142	45		○	
113	Malumbila	LW 1-143	46		○	
114	Mkozomba	LW 1-144	46		○	
115	Mkanthama	LW 1-145	46		○	
116	Zakalya	LW 1-146	60		○	
117	Chipozongo	LW 1-147	46		○	
118	Palimtima	LW 1-148	46		○	
119	Makanga	LW 1-149	50		○	
120	Chimloto	LW 1-150	46		○	
121	Mndulu(Mthondo B)	LW 1-151	46		○	
Average			45.6			
Total				12	78	61

T.A.Khongoni

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
3	Mbalame(A)	LW 2-1	46	○		
4	Kanjanja	LW 2-2	45	○		
5	Kanzota	LW 2-3	45	○		
6	Masitala-Maria	LW 2-4	46	○		
7	Levi	LW 2-5	45	○		
8	Mweziwauma	LW 2-6	46	○		
9	Mandelo-Mika	LW 2-7	45	○		
10	Kachilikiza	LW 2-8	46		○	
11	Benjamani	LW 2-9	70	○		
12	Nkhombokombo	LW 2-10	45	○		
13.1	Waya	LW 2-11	50	○		
13.2		LW 2-12	50	○		
13.3		LW 2-13	50	○		
14	Kantugwala-Chimpesi	LW 2-14	37		○	
15	Mnbamwana	LW 2-15	37		○	
16	Mkhuta	LW 2-16	37		○	
17	Kambudzi	LW 2-17	50		○	
21	Chalonga					
23	Mtabvu					
24	Imfa					
18	Chitindi	LW 2-18	46		○	
19	Salima	LW 2-19	30		○	
20	Kapudzama	LW 2-20	31		○	
22.1	Chaipa-Mnjale	LW 2-21	46		○	
22.2		LW 2-22	46		○	
26	Naferanji	LW 2-23	47		○	
27	Katugwa	LW 2-24	46		○	
28.1	Nyanga	LW 2-25	55		○	
28.2		LW 2-26	55		○	
30	Chipeni	LW 2-27	46		○	
31.1	Gulumba(A)	LW 2-28	31		○	
31.2		LW 2-29	31		○	
32.1	Sixpence/Nabuzi	LW 2-30	31			○
32.2		LW 2-31	31			○
33.1	Masantchi/Salale/Masantchi	LW 2-32	46			○
33.2		LW 2-33	46			○
34.1	Williamu/Jasiteni/Nthochi	LW 2-34	46		○	
34.2		LW 2-35	46		○	
35.1	Zamula/Jere	LW 2-36	46		○	
35.2		LW 2-37	46		○	
36.1	Monjo / Mduluza	LW 2-38	46		○	
36.2		LW 2-39	46		○	
37	Mbewa II	LW 2-40	43		○	
38	Chizewa	LW 2-41	46		○	
39	Mwachipula	LW 2-42	49		○	

T.A.Khongoni

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
40.1	Kakhutantaya Kalitsilo	LW 2-43	46		○	
40.2		LW 2-44	46		○	
41	Gomani / Nthala	LW 2-45	46			○
42.1	Mtswati	LW 2-46	60		○	
42.2		LW 2-47	60		○	
43	Mafuta	LW 2-48	46			○
44	Nkhulange / Pashane	LW 2-49	46			○
45	Mndimbanzo-Chimbalu	LW 2-50	40		○	
46.1	Mangila	LW 2-51	43		○	
46.2		LW 2-52	43		○	
47.1	Mthumba	LW 2-53	46		○	
47.2		LW 2-54	46		○	
48	Zokoto	LW 2-55	46		○	
49	Kamala	LW 2-56	46		○	
50	Nthondo II - Chimbidzi	LW 2-57	46		○	
51	Mazongoti-Thekenya	LW 2-58	46		○	
52	Kaluzu-Lauele	LW 2-59	46		○	
53.1	Daimoni-Chulu-Gelata	LW 2-60	46		○	
53.2		LW 2-61	46		○	
55	Ziyendammanja	LW 2-62	46		○	
57	Mgulumula	LW 2-63	46			○
58	Mnkhunyungu	LW 2-64	46			○
59	Chikweteza	LW 2-65	46			○
60.1	Mulamba / Makina	LW 2-66	46			○
60.2		LW 2-67	46			○
61.1	Mwadzimbi	LW 2-68	55			○
61.2		LW 2-69	55			○
62.1	Chimphepo	LW 2-70	46			○
62.2		LW 2-71	46			○
63.1	Njombiro / Chiuzeni II	LW 2-72	46			○
63.2		LW 2-73	46			○
64	Chibwalo	LW 2-74	46		○	
65	Kalipande	LW 2-75	46		○	
66	Kachipanda	LW 2-76	46			○
67	Bondo	LW 2-77	59		○	
68	Chikwa	LW 2-78	45		○	
69	Kazambala	LW 2-79	45		○	
71	Kaphiri	LW 2-80	45		○	
72	Kamtengo	LW 2-81	45		○	
73	Timoti	LW 2-82	45		○	
74	Chadzunda	LW 2-83	45		○	
75	Loti	LW 2-84	45		○	
76	Chinjili	LW 2-85	45		○	
77	Thema	LW 2-86	45		○	
78	Nkhoka	LW 2-87	45		○	

T.A.Khongoni

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
79.1	Chilowa	LW 2-88	33		○	
79.2		LW 2-89	33		○	
80	Katsano	LW 2-90	46		○	
81	Chimtemwende/Sambo	LW 2-91	46			○
83	Mwase	LW 2-92	45		○	
84	Milala	LW 2-93	45		○	
86	Chilufu	LW 2-94	45		○	
87	Kadyalu	LW 2-95	45		○	
88	Chibondo	LW 2-96	45		○	
89.1	Chimombo II	LW 2-97	43		○	
89.2		LW 2-98	43		○	
90	Makowa	LW 2-99	50			○
91.1	Mpaya	LW 2-100	46			○
91.2		LW 2-101	46			○
92	Kasi Tomo	LW 2-102	46			○
93	Mpondamwala	LW 2-103	46			○
94	Kasalika	LW 2-104	50			○
95.1	Tumeyo	LW 2-105	45			○
95.2		LW 2-106	45			○
97	Mapandera	LW 2-107	46			○
98	Chawina	LW 2-108	46			○
99	Chizeze	LW 2-109	46			○
100	Mangani	LW 2-110	45			○
101	Kuthengo	LW 2-111	46			○
102	Mkhumbira	LW 2-112	46			○
103	Kaodzara II	LW 2-113	80			○
104	Ngalze	LW 2-114	45		○	
105	Chimpala	LW 2-115	45			○
106	Kampalira	LW 2-116	46			○
107	Dzonzi	LW 2-117	46			○
108	Chadzunda	LW 2-118	45			○
109	Mikili	LW 2-119	46			○
110	Thauzeni	LW 2-120	46			○
111	Jeke	LW 2-121	45			○
112	Bwanali	LW 2-122	46			○
113	Kasawa	LW 2-123	46			○
114	Mafora	LW 2-124	46			○
115.1	Sapulayi	LW 2-125	45			○
115.2		LW 2-126	45			○
116	Mwanda	LW 2-127	50			○
117	Msampha	LW 2-128	45			○
118	Kameta	LW 2-129	45		○	
119	Mabutao/Jazikamale	LW 2-130	45			○
120	Magengera	LW 2-131	50		○	

T.A.Khongoni

No	Name of Village	BH No.	Provisional Drilling Depth(m)	Phase-wise		
				1	2	3
121	Kakoloweko	LW 2-132	50		○	
122	Mdatsekako	LW 2-133	45			○
123	Kachera	LW 2-134	45			○
124	Changwe	LW 2-135	37			○
125	Chimphako	LW 2-136	45			○
126	Mkwinda	LW 2-137	30		○	
127.1	Msungata	LW 2-138	46		○	
127.2		LW 2-139	46		○	
128	Khofi	LW 2-140	45		○	
129	Makwembe	LW 2-141	40		○	
130	Phetera	LW 2-142	45		○	
131	Mwanbakulu	LW 2-143	67		○	
132	Mwamulu	LW 2-144	45			○
133	Nkhawa	LW 2-145	50		○	
Average			45.8			
Total				12	78	55

6-2(1) Condition of requested village and borehole plan

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
T.A.	KALOLO																						
1	Kansengwa	1,004	3	Y						3	45		3		C	0	0	3	0	14	0.282	33	23.232
2	Dzuluwanda	600	2	Y						2	70		2		C	0	0	2	0	14	1.388	33	23.127
3	Chidzenje (Zikaonga)	1,354	3	Y		1		1		2	45		2		C	0	0	2	0	13	59.450	33	23.252
4	Kamangira	340	1	Y						1	45		1		C	0	0	1	0	13	58.767	33	22.824
5	Guli-guli	365	1	Y						1	50			1	C	0	0	1	0	13	*58.562*	*33*	*24.216*
6	Nkhwambala	1,070	3	Y	1			1		2	50		2		C	0	0	2	0	14	1.355	33	24.404
7	Chiziko	400	1	Y					1	1	45		1		C	0	0	1	0	14	1.352	33	24.385
8	Nkhata	381	1	Y					1	1	46			1	A	1	0	0	0	13	59.595	33	25.971
9	Kampala	365	1	Y					1	1	45			1	C	0	0	1	0	14	0.900	33	28.763
10	Chisenga	550	2	Y						2	45			2	C	0	0	2	0	14	1.260	33	28.947
11	Mthiko	390	1	Y						1	45			1	C	0	0	1	0	14	1.092	33	29.700
12	Mnkhowe	464	1	Y						1	45			1	C	0	0	1	0	14	1.267	33	29.915
13	Mchilawankhondo	350	1	Y						1	45			1	C	0	0	1	0	14	0.316	33	28.527
14	Chisikwa	1,300	3	Y	1	1	1	3		1	45			1	C	0	0	1	0	14	0.437	33	28.536
15	Chibungo	3,150	7	Y	1	1	1	3		5	46			5	A	5	0	0	0	13	57.786	33	27.329
16	Muyula	494	1	Y			1	1		1	46			1	A	1	0	0	0	13	59.065	33	26.877
17	Phulamazila	1,200	3	N	1			1	2	0				0	(C)	0	0	0	0	13	55.748	33	28.269
18	Gome	530	2	Y						2	45			2	C	0	0	2	0	13	59.008	33	28.581
19	Mpingo II	1,320	3	Y	1			1		2	43			2	A	2	0	0	0	13	59.946	33	26.790
20	Kabwana	745	2	Y		1		1		1	46			1	A	1	0	0	0	13	56.916	33	27.586
21	Madika	267	1	Y						1	46			1	A	1	0	0	0	13	56.945	33	26.277
22	Mzungu	427	1	Y					1	1	70			1	A	1	0	0	0	13	56.982	33	26.663
23	Mngongona / *Gundula*	469	1	Y	(1) Quantity & Taste is not good	1		1		0				0	(A)	0	0	0	0	13	58.834	33	27.900
24	Mnjeza / *Mutsekanjira*	436	1	Y						1	45			1	C	0	0	1	0	13	58.168	33	28.641
25	Chituwi	379	1	Y			1	1		1	45			1	C	0	0	1	0	13	56.706	33	29.633
26	Chikumbutsi	132	1	Y						1	45			1	C	0	0	1	0	13	56.589	33	29.917
27	Chilembwe	600	2	Y						2	45			2	C	0	0	2	0	13	57.349	33	28.813
28	Kanyoni	446	1	Y						1	45			1	C	0	0	1	0	13	56.812	33	29.282
29	Chitapangombe	257	1	Y						1	45			1	C	0	0	1	0	13	56.554	33	29.800
30	Kumtsizi	360	1	Y						1	50			1	C	0	0	1	0	13	59.601	33	28.739
31	Kamkuwe	350	1	Y						1	46			1	A	1	0	0	0	13	58.460	33	26.963
32	Nsinsinja	294	1	Y					1	1	45			1	C	0	0	1	0	13	58.905	33	29.295
33	Mandindi	295	1	Y						1	45			1	C	0	0	1	0	13	58.705	33	30.755
34	Ngalazuka	450	1	Y						1	45			1	C	0	0	1	0	14	0.429	33	30.040
35	Kamatila	800	2	Y	1		1	2		1	45			1	C	0	0	1	0	13	58.412	33	31.041

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S(° ')		E(° ')	
36	Dambo	1,000	2	Y			1	1		2	37			2	C	0	0	2	0	13	57.563	33	31.094
37	Makula(A)(B)(C)	2,000	4	Y						4	45		4		C	0	0	4	0	14	3.006	33	20.700
38	Mizati(A)(B)	600	2	Y						2	45		2		C	0	0	2	0	14	3.931	33	21.758
39	Chipira Msanga	421	1	Y						1	47		1		C	0	0	1	0	14	2.529	33	20.425
40	Masekese	170	1	Y						1	45		1		C	0	0	1	0	14	2.393	33	22.008
41	Chipira Kakoma(A)	430	1	Y						1	55		1		C	0	0	1	0	14	1.960	33	21.266
42	Guliguli 1	445	1	Y						1	35		1		C	0	0	1	0	14	3.497	33	21.116
43	Chamoto	1,112	3	Y	1			1		2	45		2		C	0	0	2	0	14	5.702	33	24.024
44	Kaziputa	422	1	Y	1			1		0			0		(C)	0	0	0	0	14	4.451	33	22.475
45	Geremani	480	1	Y						1	66		1		A	1	0	0	0	14	2.980	33	23.237
46	Mkuwira	606	2	Y		1		1		1	45		1		D	0	0	0	1	14	7.570	33	24.546
47	Nyanda	340	1	Y						1	33		1		D	0	0	0	1	14	8.067	33	23.402
48	Muzayani	409	1	Y						1	44		1		D	0	0	0	1	14	7.737	33	22.980
49	Chingona(B)	240	1	Y						1	44		1		D	0	0	0	1	14	6.512	33	24.347
50	Mzokoto	768	2	Y						2	45		2		D	0	0	0	2	14	6.894	33	25.103
51	Lawudani	176	1	Y						1	45		1		D	0	0	0	1	14	7.948	33	24.677
52	Kalongopywera	450	1	Y						1	44		1		D	0	0	0	1	14	8.239	33	23.486
53	Mugulula	400	1	Y						1	45		1		D	0	0	0	1	14	7.286	33	25.851
54	Mtsinambuto/Kalata	250	1	Y						1	50		1		C	0	0	1	0	14	6.874	33	26.345
55	Chadza	700	2	Y	1			1		1	50		1		D	0	0	0	1	14	5.827	33	22.769
56	Mawulana/Mukuwanba	570	2	Y						2	45		2		D	0	0	0	2	14	6.581	33	23.346
57	Ntchisi	342	1	Y						1	30		1		D	0	0	0	1	14	6.829	33	23.047
58	Mchawa	517	2	Y						2	45		2		C	0	0	2	0	14	4.895	33	23.027
59	Mlinga	609	2	Y						2	45		2		C	0	0	2	0	14	5.009	33	22.769
60	Chingondo	380	1	Y						1	35		1		C	0	0	1	0	14	4.737	33	23.978
61	Chipanga	248	1	Y	1			1		0			0		(D)	0	0	0	0	14	9.797	33	21.984
62	M'bangombe	322	1	Y						1	50		1		D	0	0	0	1	14	10.095	33	22.785
63	Mlera	502	2	Y						2	44		2		D	0	0	0	2	14	10.019	33	22.676
64	Nyozwe / *Mikiyere*	939	2	Y						2	45			2	C	0	0	2	0	13	52.865	33	22.090
65	Sungamanja	450	1	Y						1	45			1	C	0	0	1	0	13	52.372	33	22.087
66	Mapira	373	1	Y					1	1	45			1	C	0	0	1	0	13	53.223	33	22.735
67	Kango	155	1	Y						1	46			1	B	0	1	0	0	13	52.418	33	23.256
71	Gwani (5 min walk from Kango)	75		Y						0	46				(B)	0	0	0	0	13	52.367	33	23.409
68	Chigwasa (2 min walk from Chilomo)	402	1	Y						1	46			1	B	0	1	0	0	13	53.254	33	23.838
69	Chapota	403	1	Y					1	1	46			1	B	0	1	0	0	13	53.668	33	24.010

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
70	Chilomo (2 min walk from Chigwasa)	750	2	Y					1	2	46			2	B	0	2	0	0	13	53.344	33	23.878
72	Kangulu	372	1	Y					1	1	45			1	C	0	0	1	0	13	53.367	33	21.820
73	Chimbwala	216	1	Y						1	40			1	C	0	0	1	0	13	53.151	33	21.182
74	Sinumbe	290	1	Y				0		1	46			1	B	0	1	0	0	13	54.287	33	23.892
75	Sosola	488	1	Y						2	45			2	C	0	0	2	0	13	53.915	33	20.981
76	Jamu	326	1	Y						1	45			1	C	0	0	1	0	13	53.626	33	20.852
77	Sankhulani	360	1	Y						1	45			1	C	0	0	1	0	13	54.000	33	20.080
78	Dzama	440	1	Y			1	1		1	45	1			C	0	0	1	0	13	50.899	33	16.667
79	Yotamu	280	1	Y						1	46	1			B	0	1	0	0	13	51.615	33	17.730
80	Kanyopola	180	1	Y						1	46	1			B	0	1	0	0	13	51.613	33	17.845
81	Chafuta	345	1	Y						1	46	1			B	0	1	0	0	13	53.281	33	17.395
82	Jonasi	440	1	Y						1	70	1			B	0	1	0	0	13	51.469	33	17.428
83	Chinkhata	429	1	Y						1	45	1			C	0	0	1	0	13	50.886	33	16.650
84	Kwazani	148	1	Y						1	45	1			C	0	0	1	0	13	53.655	33	19.701
85	Makoka	374	1	Y						1	45	1			B	0	1	0	0	13	53.940	33	18.349
86	Kalichelo	440	1	Y						1	46	1			B	0	1	0	0	13	52.536	33	19.282
87	Mthyothyo	465	1	Y						1	46	1			B	0	1	0	0	13	52.939	33	18.476
88	Chilima	290	1	Y						1	46	1			B	0	1	0	0	13	53.159	33	18.184
89	Lusha	356	1	Y						1	30	1			B	0	1	0	0	13	53.510	33	18.126
90	Dzinja	1,600	4	Y						4	43			4	C	0	0	4	0	13	56.443	33	22.373
91	Mkanda	300	1	Y						1	45		1		C	0	0	1	0	13	57.166	33	22.071
92	Kadzani	510	2	Y			1	1		2	50		2		C	0	0	2	0	13	55.867	33	18.834
93	Mkoko	2,000	4	Y	1	1	1	3		2	45		2		C	0	0	2	0	13	55.174	33	20.609
94	Kafunde	201	1	Y						1	30			1	C	0	0	1	0	13	54.836	33	23.383
95	Mpondamwala	430	1	Y						1	45			1	C	0	0	1	0	13	55.440	33	23.725
96	Kathumba	500	1	Y					1	1	45			1	C	0	0	1	0	13	54.018	33	22.929
97	Zuwande	200	1	Y						1	45			1	C	0	0	1	0	13	55.785	33	22.330
98	Mnkawila	225	1	Y						1	45		1		C	0	0	1	0	14	2.281	33	29.353
99	Dzowole	403	1	Y						1	46		1		B	0	1	0	0	14	2.755	33	29.385
100	Kolonga	411	1	Y						1	35		1		B	0	1	0	0	14	2.832	33	30.199
101	Kwenje	254	1	Y						1	45		1		C	0	0	1	0	14	1.758	33	29.384
102	Chizula	360	1	Y			1	1		1	45		1		C	0	0	1	0	14	1.451	33	28.593
103	Senu	246	1	Y						1	45		1		A	1	0	0	0	14	2.833	33	28.859
104	Khwema	549	2	Y						2	46		2		A	2	0	0	0	14	2.741	33	29.322
105	Mdabwi	165	1	Y						1	46		1		A	1	0	0	0	14	3.321	33	29.108
106	Mliwu	970	2	Y			1	1		2	30		2		A	2	0	0	0	14	6.508	33	32.757
107	Chithangile	513	2	Y			1	1		2	50		2		A	2	0	0	0	14	4.296	33	30.532

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
108	Manthalu	142	1	Y						1	45		1		C	0	0	1	0	14	6.986	33	28.093
109	Chaponda	143	1	Y						1	45		1		C	0	0	1	0	14	7.671	33	28.438
110	Manjawila	330	1	Y						1	42		1		D	0	0	0	1	14	7.836	33	26.560
111	Chikalipo	260	1	Y						1	50		1		B	0	1	0	0	14	6.458	33	29.124
112	Lendemani	289	1	Y						1	45		1		C	0	0	1	0	14	6.399	33	27.686
113	Malumbila	295	1	Y						1	46		1		B	0	1	0	0	14	4.792	33	29.007
114	Mkozomba	379	1	Y						1	46		1		B	0	1	0	0	14	5.820	33	28.896
115	Mkanthama	320	1	Y						1	46		1		B	0	1	0	0	14	4.586	33	28.498
116	Zakalya	327	1	Y						1	60		1		A	1	0	0	0	14	4.097	33	28.944
117	Chipozongo	280	1	Y						1	46		1		B	0	1	0	0	14	4.517	33	28.098
118	Palimtima	395	1	Y						1	46		1		B	0	1	0	0	14	4.856	33	26.941
119	Makanga	282	1	Y						1	50		1		B	0	1	0	0	14	5.333	33	27.039
120	Chimloto	256	1	Y						1	46		1		B	0	1	0	0	14	4.208	33	27.441
121	Mndulu(Mthondo B)	260	1	Y			1	1		1	46		1		A	1	0	0	0	14	1.932	33	26.640
	TOTAL OF KALOLO	60,824	170		11	7	13	31	12	151	45.6	12	78	61									

A : Pg - Quartzo-feldospathic granulite and gneiss or biotite gneiss with graphite (Include high iron content layer) Expected success rate 60%
B : Pg - Quartzo-feldospathic granulite and gneiss or biotite gneiss with graphite Expected success rate 90%
C : P - Quartzo-feldospathic granulite and gneiss or biotite gneiss Expected success rate 90%
D : Md, Ml - Dzalanyama Granite / Lifuchere Schist (Mica quartz schist) Expected success rate 80%

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
T.A.	KHONGONI																						
1	Khongoni (A)	351	1	Y	1		1	2		0		0			(B)	0	0	0	0	13	51.123	33	22.363
2	Kambuyana	404	1	Y		1		1		0		0			(B)	0	0	0	0	13	49.737	33	19.883
3	Mbalame(A)	303	1	Y						1	46	1			B	0	1	0	0	13	49.560	33	17.882
4	Kanjanja	289	1	Y						1	45	1			B	0	1	0	0	13	49.339	33	18.550
5	Kanzota	350	1	Y						1	45	1			C	0	0	1	0	13	48.409	33	17.477
6	Masitala-Maria	450	1	Y						1	46	1			B	0	1	0	0	13	49.006	33	17.939
7	Levi	280	1	Y						1	45	1			B	0	1	0	0	13	49.970	33	20.282
8	Mweziwauma	600	2	Y		1		1		1	46	1			B	0	1	0	0	13	48.821	33	20.078
9	Mandelo-Mika	285	1	Y						1	45	1			C	0	0	1	0	13	47.558	33	15.995
10	Kachilikiza	300	1	Y						1	46		1		B	0	1	0	0	13	50.508	33	20.920
11	Benjamani	234	1	Y						1	70	1			C	0	0	1	0	13	49.965	33	16.305
12	Nkhombokombo	300	1	Y						1	45	1			C	0	0	1	0	13	48.352	33	16.214
13	Waya	2,000	4	Y	1			1		3	50	3			C	0	0	3	0	13	46.073	33	18.785
14	Kantugwala-Chimpesi	1,120	3	Y						3			3		A	0	0	0	0	13	50.842	33	24.378
15	Mnbamwana			Y												3	0	0	0	13	50.757	33	24.366
16	Mkhuta			Y							37					0	0	0	0	13	50.213	33	24.895
17	Kambudzi	2,144	5	Y	1			4		1			1		A	0	0	0	0	13	53.669	33	24.828
21	Chalonga			Y	1											1	0	0	0	13	52.979	33	24.894
23	Mtabvu			Y	1											0	0	0	0	13	53.336	33	25.156
24	Imfa			Y		1					50					0	0	0	0	13	53.959	33	24.412
18	Chitindi	480	1	Y						1	46		1		A	1	0	0	0	13	50.614	33	24.374
19	Salima	594	2	Y	1			1		1	30		1		A	1	0	0	0	13	50.631	33	24.838
20	Kapudzama	850	2	Y		1	2	3		1	31		1		A	1	0	0	0	13	51.799	33	24.819
22	Chaipa-Mnjale	596	2	Y			1	1		2	46		2		A	2	0	0	0	13	52.752	33	25.595
25	Chintenba	419	1	Y	1			1		0			0		(A)	0	0	0	0	13	52.472	33	25.595
26	Naferanji	751	2	Y	1			1		1	47		1		A	1	0	0	0	13	50.366	33	22.796
27	Katugwa	380	1	Y						1	46		1		A	1	0	0	0	13	50.375	33	23.030
28	Nyanga	1,027	3	Y	1			1		2	55		2		B	0	2	0	0	13	50.125	33	22.135
29	Kalumbi	495	1	Y		1		1		0			0		(B)	0	0	0	0	13	49.840	33	21.896
30	Chipeni	334	1	Y				0		1	46		1		A	1	0	0	0	13	48.926	33	23.255
31	Gulumba(A)	750	2	Y				0		2	31		2		A	2	0	0	0	13	48.447	33	23.463
32	Sixpence/Nabuzi	780	2	Y				0		2	31			2	A	2	0	0	0	13	47.606	33	23.058
33	Masantchi/Salale/Masantchi	942	2	Y				0		2	46			2	A	2	0	0	0	13	47.436	33	22.804
34	Williamu/Jasiteni/Nthochi	570	2	Y				0		2	46		2		A	2	0	0	0	13	49.061	33	22.977

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
35	Zamula/Jere	650	2	Y				0		2	46		2		A	2	0	0	0	13	48.755	33	22.671
36	Monjo / Mduluza	551	2	Y				0		2	46		2		A	2	0	0	0	13	46.718	33	22.089
37	Mbewa II	345	1	Y				0		1	43		1		A	1	0	0	0	13	45.642	33	22.157
38	Chizewa	285	1	Y				0		1	46		1		B	0	1	0	0	13	45.510	33	21.062
39	Mwachipula	365	1	Y				0		1	49		1		B	0	1	0	0	13	44.860	33	21.006
40	Kakhutantaya Kalitsilo (1km east of Kakhutantaya)	749	2	Y				0		2	46		2		A	2	0	0	0	13	44.927	33	22.946
41	Gomani / Nthala	376	1	Y				0		1	46			1	A	1	0	0	0	13	45.928	33	23.097
42	Mtswati	600	2	Y				0		2	60		2		A	2	0	0	0	13	45.635	33	22.288
43	Mafuta(created in 1998)	513	2	Y	1			1		1	46			1	A	1	0	0	0	13	45.427	33	23.839
44	Nkhulange / Pashane	350	1	Y				0		1	46			1	A	1	0	0	0	13	45.152	33	24.857
45	Mndimbanzo-Chimbalu	456	1	Y			1	1		1	40		1		C	0	0	1	0	13	42.526	33	18.343
46	Mangila	1,230	3	Y		1		1		2	43		2		B	0	2	0	0	13	42.421	33	19.245
47	Mthumba	549	2	Y				0		2	46		2		B	0	2	0	0	13	41.540	33	20.133
48	Zokoto	1,000	2	Y		1		1		1	46		1		B	0	1	0	0	13	43.152	33	21.751
49	Kamala	1,000	2	Y		1		1		1	46		1		B	0	1	0	0	13	43.694	33	20.544
50	Nthondo II - Chimbidzi	364	1	Y				0		1	46		1		B	0	1	0	0	13	41.815	33	20.308
51	Mazongoti-Thekenya	460	1	Y				0		1	46		1		B	0	1	0	0	13	43.701	33	20.713
52	Kaluzu-Lauele	751	2	Y		1		1		1	46		1		B	0	1	0	0	13	41.726	33	20.216
53	Daimoni-Chulu-Gelata	815	2	Y				0		2	46		2		B	0	2	0	0	13	41.895	33	20.098
54	Kabudula	390	1	Y	1			1		0			0		(B)	0	0	0	0	13	40.010	33	24.848
55	Ziyendammanja	350	1	Y				0		1	46		1		B	0	1	0	0	13	41.643	33	23.390
56	Madzongo	650	2	Y	1	1		2		0			0		(A)	0	0	0	0	13	46.089	33	23.935
57	Mgulumula (attached to Madzonga)	230	1	Y				0		1	46			1	A	1	0	0	0	13	46.059	33	23.878
58	Mnkhunyungu (attached to Chikweteza)	325	1	Y				0		1	46			1	A	1	0	0	0	13	46.420	33	24.019
59	Chikweteza (attached to Mnkhunyungu)	350	1	Y			1	1		1	46			1	A	1	0	0	0	13	46.413	33	23.780
60	Mulamba / Makina	651	2	Y				0		2	46			2	A	2	0	0	0	13	46.854	33	22.969
61	Mwadzimbi	660	2	Y				0	1	2	55			2	A	2	0	0	0	13	45.994	33	25.136
62	Chimphepo	606	2	Y				0		2	46			2	A	2	0	0	0	13	47.037	33	23.506
63	Njombiro / Chiuzeni II	817	2	Y				0		2	46			2	A	2	0	0	0	13	43.365	33	25.238
64	Chibwalo	150	1	Y				0		1	46		1		A	1	0	0	0	13	44.238	33	22.540
65	Kalipande	242	1	Y				0		1	46		1		B	0	1	0	0	13	41.822	33	22.436
66	Kachipanda	365	1	Y				0		1	46			1	A	1	0	0	0	13	43.622	33	25.031
67	Bondo	228	1	Y				0		1	59		1		C	0	0	1	0	13	39.335	33	19.077

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
68	Chikwa	315	1	Y				0		1	45		1		C	0	0	1	0	13	40.237	33	21.318
69	Kazambala	400	1	Y				0		1	45		1		C	0	0	1	0	13	40.409	33	21.210
70	Chigowo	400	1	Y	1			1		0				0	(C)	0	0	0	0	13	38.433	33	22.244
71	Kaphiri	450	1	Y			1	1		1	45		1		C	0	0	1	0	13	38.576	33	22.159
72	Kamtengo 2000, separated from Chigowo	360	1	Y				0		1	45		1		C	0	0	1	0	13	38.662	33	21.931
73	Timoti 2000, separated from Chigowo	180	1	Y				0		1	45		1		C	0	0	1	0	13	39.451	33	23.687
74	Chadzunda 2000, separated from Kaphiri	340	1	Y				0		1	45		1		C	0	0	1	0	13	38.812	33	22.085
75	Loti 2000, separated from Kaphiri	370	1	Y				0		1	45		1		C	0	0	1	0	13	38.623	33	22.093
76	Chinjili 2000, separated from Kaphiri	350	1	Y				0		1	45		1		C	0	0	1	0	13	38.761	33	21.892
77	Thema	500	1	Y				0		1	45		1		C	0	0	1	0	13	37.931	33	22.569
78	Nkhoka	478	1	Y				0		1	45		1		C	0	0	1	0	13	40.233	33	21.682
79	Chilowa	504	2	Y			1	1		2	33		2		B	0	2	0	0	13	40.841	33	21.789
80	Katsano	490	1	Y				0		1	46		1		B	0	1	0	0	13	40.640	33	21.998
81	Chimtemwende/Sambo	350	1	Y				0		1	46			1	B	0	1	0	0	13	40.286	33	26.949
82	Kawalika	310	1	Y		1		1		0				0	(C)	0	0	0	0	13	37.034	33	22.808
83	Mwase	283	1	Y				0		1	45		1		C	0	0	1	0	13	36.110	33	23.297
84	Milala	389	1	Y				0		1	45		1		C	0	0	1	0	13	35.933	33	23.398
85	Msewa	350	1	Y		1		1		0				0	(C)	0	0	0	0	13	35.564	33	23.522
86	Chilufu (1 min walk from Kawalika)	215	1	Y				0		1	45		1		C	0	0	1	0	13	37.008	33	22.762
87	Kadyalu	372	1	Y				0		1	45		1		C	0	0	1	0	13	35.681	33	22.267
88	Chibondo	335	1	Y				0		1	45		1		C	0	0	1	0	13	35.823	33	24.229
89	Chimombo II (separated from I Sept. 03)	691	2	Y				0		2	43		2		C	0	0	2	0	13	36.945	33	21.401
90	Makowa	562	2	Y		1		1		1	50			1	B	0	1	0	0	13	38.404	33	27.183
91	Mpaya	600	2	Y				0		2	46			2	B	0	2	0	0	13	39.295	33	26.913
92	Kasi Tomo	474	1	Y				0		1	46			1	B	0	1	0	0	13	38.997	33	26.934
93	Mpondamwala	446	1	Y				0		1	46			1	B	0	1	0	0	13	37.764	33	27.153
94	Kasalika	450	1	Y				0		1	50			1	B	0	1	0	0	13	37.307	33	26.775
95	Tumeyo	837	2	Y				0		2	45			2	C	0	0	2	0	13	36.920	33	26.547
96	Kawodzera I	431	1	Y	1			1		0				0	(B)	0	0	0	0	13	38.897	33	25.924
97	Mapandera	359	1	Y				0		1	46			1	B	0	1	0	0	13	38.460	33	26.302
98	Chawina	335	1	Y				0		1	46			1	B	0	1	0	0	13	38.864	33	27.022
99	Chizeze	347	1	Y				0		1	46			1	B	0	1	0	0	13	38.180	33	27.274

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
100	Mangani	226	1	Y				0		1	45			1	C	0	0	1	0	13	37.420	33	26.375
101	Kuthengo	375	1	Y				0		1	46			1	B	0	1	0	0	13	38.785	33	25.955
102	Mkhumbira	367	1	Y				0		1	46			1	B	0	1	0	0	13	38.307	33	27.190
103	Kaodzara II	490	1	Y				0		1	80			1	B	0	1	0	0	13	39.100	33	25.561
104	Ngalze	416	1	Y				0		1	45		1		C	0	0	1	0	13	38.602	33	23.907
105	Chimpala 2000, separated from	350	1	Y				0		1	45			1	C	0	0	1	0	13	38.612	33	25.530
106	Kampalira	198	1	Y				0		1	46			1	B	0	1	0	0	13	39.642	33	26.835
107	Dzonzi	336	1	Y				0		1	46			1	B	0	1	0	0	13	37.857	33	26.559
108	Chadzunda 2003, separated from Kaozera II vill.	174	1	Y				0		1	45			1	C	0	0	1	0	13	39.172	33	24.952
109	Mikili	330	1	Y				0		1	46			1	B	0	1	0	0	13	37.943	33	27.175
110	Thauzeni 2001, Separated from Makowa	330	1	Y				0		1	46			1	B	0	1	0	0	13	38.618	33	26.128
111	Jeke	361	1	Y				0		1	45			1	C	0	0	1	0	13	36.875	33	26.420
112	Bwanali	480	1	Y				0		1	46			1	B	0	1	0	0	13	38.579	33	26.209
113	Kasawa	313	1	Y				0		1	46			1	B	0	1	0	0	13	38.821	33	25.929
114	Mafora	472	1	Y				0		1	46			1	B	0	1	0	0	13	38.537	33	27.144
115	Sapulayi	516	2	Y				0		2	45			2	C	0	0	2	0	13	35.481	33	26.138
116	Mwanda	259	1	Y				0		1	50			1	C	0	0	1	0	13	35.009	33	25.735
117	Msampha	230	1	Y				0		1	45			1	C	0	0	1	0	13	35.505	33	24.602
118	Kameta	470	1	Y				0		1	45		1		C	0	0	1	0	13	37.057	33	23.939
119	Mabutao/Jazikamale	425	1	Y				0		1	45			1	C	0	0	1	0	13	36.740	33	24.835
120	Magengera 2001, Separated from Kazumba Vill.	418	1	Y				0		1	50		1		C	0	0	1	0	13	34.680	33	23.839
121	Kakoloweko	524	2	Y		1		1		1	50		1		C	0	0	1	0	13	33.713	33	23.780
122	Mdatsekako	320	1	Y				0		1	45			1	C	0	0	1	0	13	32.176	33	25.968
123	Kachera	270	1	Y				0		1	45			1	C	0	0	1	0	13	32.196	33	25.910
124	Changwe	410	1	Y				0		1	37			1	C	0	0	1	0	13	33.035	33	25.997
125	Chimphako	405	1	Y				0		1	45			1	C	0	0	1	0	13	32.279	33	25.675
126	Mkwinda	345	1	Y				0		1	30		1		B	0	1	0	0	13	32.331	33	24.630
127	Msungata	585	2	Y				0		2	46		2		B	0	2	0	0	13	32.148	33	24.123

Vilg no.	Village Name	Population	BH needed	Willing to Pay	Existing BH				Protect Shallow Well	New BH plan	Depth	Phase			Possibility of High Iron Contain					GPS information			
		(person)	Pcs		Operation	Broken (reparable)	Broken (not reparable)	total			m	1	2	3	Class	A	B	C	D	S (° ')		E (° ')	
128	Khofi	314	1	Y				0		1	45		1		B	0	1	0	0	13	31.958	33	24.095
129	Makwembe	250	1	Y				0		1	40		1		C	0	0	1	0	13	32.216	33	23.881
130	Phetera	302	1	Y				0		1	45		1		C	0	0	1	0	13	32.467	33	23.392
131	Mwanbakulu	400	1	Y				0		1	67		1		B	0	1	0	0	13	32.330	33	24.681
132	Mwamulu	380	1	Y				0		1	45			1	C	0	0	1	0	13	32.744	33	25.198
133	Nkhawa	126	1	Y				0		1	50		1		C	0	0	1	0	13	33.323	33	24.443
	TOTAL OF KHONGONI	61,241	173		14	14	8	36		145	44.7	12	78	55									

A : Pg - Quartzo-feldospathic granulite and gneiss or biotite gneiss with graphite (Include high iron content layer) Expected success rate 60%
B : Pg - Quartzo-feldospathic granulite and gneiss or biotite gneiss with graphite Expected success rate 90%
C : P - Quartzo-feldospathic granulite and gneiss or biotite gneiss Expected success rate 90%
D : Md, Ml - Dzalanyama Granite / Lifuchere Schist (Mica quartz schist) Expected success rate 80%

GROUND TOTAL	122,065	343		25	21	21	67	12	296		24	156	116										

Condition of exsting borehole of the target village - 1

	No.	village	G.V.H.	BH No.	No.of water point mapping	latitude	longitude	condition of BH	establish year	pump and borehole condition D : Depth (m)	Condition of management of water point C : Water Point Committee T:Pump Reparation Training M : Money collection system MK/M･F : Malawi kwacha/Month･Family
1	1．3	Chidzenja (Zikaonga)	Kalolo	?	206_02_031	?	?	broken	1972	afridev / possible to rehabilitate	
2	1･6	Nkhwambela	Kalolo	DP 65	206_02_045	14 ° 01.302 ′	33 ° 24.338 ′	working	1974	afridev / rehabilitated on 1992(?)	C : Exist
3	1･14	Chisikwa	Nyemba	S.M.150	206_02_286?	14 ° 00.176 ′	33 ° 28.713 ′	broken	1977	climax / impossible to rehabilitate	
4	1･14	Chisikwa	Nyemba	DP55	206_02_064?	14 ° 00.346 ′	33 ° 28.602 ′	broken	?	afridev / possible to rehabilitate	
5	1･14	Chisikwa	Nyemba	EU WDC H no.5?	206_02_285	14 ° 00.358 ′	33 ° 28.649 ′	working	2001	afridev	
6	1･15	Chibungo	Chibungo	?	206_02_230	13 ° 57.786 ′	33 ° 27.329 ′	broken	1967	Inside Admarc / Climax	
7	1･15	Chibungo	Chibungo	?				broken		near GVH house / Climax	
8	1･15	Chibungo	Chibungo	?				working			
9	1･16	Muyula	Chibungo	BHFC21	206_02_216	13 ° 58.968 ′	33 ° 26.829 ′	broken	1974	impossible to rehabilitate because of water quality	
10	1･17	Phulamazira	Chibungo	R 13	206_02_228	13 ° 55.663 ′	33 ° 28.335 ′	working	1970	afridev / There is another well.	C : Exist
11	1･19	Mpingo (B)	Chibungo	LFP 28	206_02_129	13 ° 59.853 ′	33 ° 26.679 ′	working	EU 2000	afridev / reparation on Dec 2004.	C : Exist
12	1･20	Kabwana	Chibungo	FC 22	206_02_139 ?	13 ° 56.896 ′	33 ° 27.625 ′	broken	1974	afridev / possible to rehabilitate	C : Exist
13	1･23	Mngongona	Chibungo	?	?	?	?	broken	?	possible to rehabilitate	
14	1･25	Chituwi	Chituwi	FC 24	?	13 ° 56.732 ′	33 ° 29.503 ′	broken	?	afridev / broken from 1976 / impossible to rehabilitate	
15	1．35	Kamatila	Mphamba (Chimwala)	MPP/2/038	206_02_247	13 ° 58.412 ′	33 ° 31.041 ′	working	2000	afridev / good condition	C : Exist M : Exist
16	1．35	Kamatila	Mphamba (Chimwala)	DP 59				broken	1970	climax / broken from 1985	
17	1･36	Dambo	Mphamba	DP 58	206_02_338	13 ° 57.541 ′	33 ° 31.086 ′	broken	1971	climax / impossible to rehabilitate	C : None
18	1･43	Chamoto	Chakuzamutu	CDC/01/EU/028	206 02 184	14 ° 05.582 ′	33 ° 24.027 ′	working	EU 2002	afridev / D: 30m.	C : None T: None M: None
19	1･44	Kaziputa	Chakuzamutu		206 02 012	14 ° 04.403 ′	33 ° 22.479 ′	working		afridev	C : Exist T: Exist M:20MK/M･F
20	1･46	Mkuwira	Mkuwira	No. 26	206 02 110	14 ° 07.570 ′	33 ° 24.546 ′	broken	EU 2001	afridev / broken from 2003 /D :42m / possible to rehabilitate	C : Exist T: Exist
21	1･55	Chadza	Chadza			14 ° 05.827 ′	33 ° 22.769 ′	working	EU 2000	afridev / poor construction	C : Exist T: Exist (by MICA) M : 10MK/M･F
22	1･61	Chipanga	Chipanga	CDC/EU/022	206 02 104	14 ° 09.797 ′	33 ° 21.984 ′	working	EU 2002	afridev	C : Exist T: Exist (by Karaliya) M:10MK/2M･F
23	1･78	Dzama	Dzama	GK 222	206 02 332	13 ° 50.899 ′	33 ° 16.667 ′	broken	1994	impossible to rehabilitate	C : Exist T: None
24	1･92	Kadzani	Chikudzulire	FC 96	206 02 069	13 ° 55.826 ′	33 ° 18.822 ′	broken	1981	climax / broken from 1989 / impossible to rehabilitate	

Condition of exsting borehole of the target village - 2

	No.	village	G.V.H.	BH No.	No.of water point mapping	latitude	longitude	condition of BH	establish year	pump and borehole condition D : Depth (m)	Condition of management of water point C : Water Point Committee T:Pump Reparation Training M : Money collection system MK/M･F : Malawi kwacha/Month･Family
25	1･93	Mkoko	Chikudzulire	DC149 (Mkoko School)	206 02 072	13 ° 55.081 ′	33 ° 20.680 ′	broken	1972	aquadev / broken from 2003 / rehabilitation is depending on the spare parts procurement.	
26	1･93	Mkoko	Chikudzulire	RB 9	206 02 074	13 ° 55.118 ′	33 ° 20.782 ′	broken	1980	climax / impossible to rehabilitate	
27	1･93	Mkoko	Chikudzulire	FC 82 (Nyanja ADMARC)	206 02 073	13 ° 54.987 ′	33 ° 20.798 ′	working	1987	climax	
28	1･102	Chizula	Chinkhunda			14 ° 01.451 ′	33 ° 28.593 ′	broken		impossible to rehabilitate	
29	1･106	Mliu	Chimsolo	X 25	206 02 191	14 ° 06.571 ′	33 ° 32.849 ′	broken	1970	climax / broken from 1989 / impossible to rehabilitate because of water quality	
30	1･107	Chithangile	Chimsolo	G 14	206 02 120	14 ° 04.296 ′	33 ° 30.532 ′	broken	1971	climax / impossible to rehabilitate	
31	1･121	Mndulu (Mthondo B)	Mphunda	C 34	206 02 201	14 ° 01.957 ′	33 ° 26.594 ′	broken	1977	climax / broken from 1985 / impossible to rehabilitate because of water quality	
32	2･1	Khongoni A	Khongoni	NBC 011	206 06 008	13 ° 51.142 ′	33 ° 22.368 ′	broken	MASAF	afridev / WL:13.70m, D:43.25m / impossible to rehabilitate。	
33	2･1	Khongoni A	Khongoni	LPP 22 (Chilobwa Court)	206 06 007	13 ° 51.089 ′	33 ° 22.465 ′	working		afridev / broken from Oct 2004 / possible to rehabilitate	
34	2･2	Kambuyana	Khongoni	DM 23	206 06 051	13 ° 49.737 ′	33 ° 19.883 ′	broken	1976	climax / broken from 1998 / possible to rehabilitate	C : Exist (before)
35	2･8	Mweziwauma	Khongoni			13 ° 48.821 ′	33 ° 20.078 ′	broken	1970	limani / broken from 1999 / possible to rehabilitate	
36	2･13	Waya	Msinde	FC 116 CU	206 06 058	13 ° 46.094 ′	33 ° 18.865 ′	working	1971	afridev	C : Exist T : Exist(by NGO,no tools) M : 50MK/trouble･F, (2000MK per each reparation)
37	2･17	Kambudzi	Matelwe	FC 86	206_06_040	13 ° 53.669 ′	33 ° 24.828 ′	working	1974	afridev	C : Exist T : Exist M : collect by each reparation
38	2･19	Salima	Matelwe	NBC 013	206_06_053	13 ° 50.631 ′	33 ° 24.838 ′	working	MASAF 2000	afridev	C : Exist M : collect by each reparation 400MK/M･F
39	2･20	Kapudzama	Matelwe	RB 6	206_06_055			broken	1970	afridev	C : Exist

Condition of exsting borehole of the target village - 3

	No.	village	G.V.H.	BH No.	No.of water point mapping	latitude	longitude	condition of BH	establish year	pump and borehole condition D : Depth (m)	Condition of management of water point C : Water Point Committee T:Pump Reparation Training M : Money collection system MK/M･F : Malawi kwacha/Month･Family
40	2･20	Kapudzama	Matelwe		206_06_030	13 ° 51.799 ′	33 ° 24.819 ′	working	DANIDA 2002	afridev	
41	2･20	Kapudzama	Matelwe	KB 242				broken		afridev	C : None
42	2･21	Chalonga	Matelwe	FC 89	206_06_037	13 ° 52.979 ′	33 ° 24.894 ′	working		afridev	C : Exist
43	2･22	Chaipa (-Mnjale)	Matelwe		206_06_035	13 ° 52.752 ′	33 ° 25.595 ′	broken	World Vision. 1974	Climax / impossible to rehabilitate	C : None
44	2･23	Mtabvu	Matelwe	No.24	206_06_038	13 ° 53.336 ′	33 ° 25.156 ′	working	EU 2000	afridev	C : Exist
45	2･24	Imfa	Matelwe	FC 85	206_06_041	13 ° 53.959 ′	33 ° 24.412 ′	broken	1974	afridev	C : Exist M : 10MK/M･F
46	2･25	Chintemba	Matelwe	FC 83	206_06_033	13 ° 52.472 ′	33 ° 25.595 ′	working	1970	afridev	
47	2･26	Naferanji	Vizinba	NBC 008	206 06 010	13 ° 50.366 ′	33 ° 22.796 ′	working	MASAF 1998	afridev	C : Exist T: Exist M : Exist
48	2･28	Nyanga	Nyanga	RB 32	206 06 013	13 ° 50.125 ′	33 ° 22.135 ′	working		afridev	C : None
49	2･29	Kalumbi	Nyanga	NBC 019	206 06 014	13 ° 49.840 ′	33 ° 21.896 ′	broken	MASAF 1996	afridev / broken from Dec 2004 / possible to rehabilitate	C : Exist T: None M : 20MK/M･F remain100MK
50	2･43	Mafuta	Mtswati	DP 127/ CU	206_02_327?	13 ° 45.371 ′	33 ° 23.806 ′	working	1993	afridev	C : Exist
51	2･45	Malenga (Mndinbanazo-Chimbalu)	Malenga	** 122 (Chipwanya)				broken		climax	
52	2･46	Mangilira	Mangilira	SB/07/430	206_06_104	13 ° 42.421 ′	33 ° 19.245 ′	broken	3K 2000	afridev	
53	2･48	Zokoto	Mangilira	DM 16		13 ° 42.152 ′	33 ° 20.133 ′	broken		afridev / broken from Nov 2004	
54	2･49	Kalama	Mangilira	L 292	206_06_101	13 ° 43.694 ′	33 ° 20.544 ′	broken	1968	afridev	
55	2･52	Kaluzi (-Lamuele)	Mangilira	RM 48	206_06_105	13 ° 41.726 ′	33 ° 20.216 ′	broken	1970	afridev / broken from 2003 / possible to rehabilitate	C : Exist
56	2･54	Kabudula	Jauzale	CL 427	206 06 081	13 ° 40.010 ′	33 ° 24.848 ′	working	MASAF 1998	afridev	C : Exist T: Exist M : 20MK/M･F, remain3,000MK
57	2･56	Madzonga	Maczonga	UBC 029	206_06_077	13 ° 46.089 ′	33 ° 23.935 ′	working	MASAF 2000	afridev	
58	2･56	Madzonga	Madzonga	DP 128, CU	-	13 ° 46.151 ′	33 ° 23.995 ′	broken	1993	afridev / broken from Jun 2004 / possible to rehabilitate	

Condition of exsting borehole of the target village - 4

	No.	village	G.V.H.	BH No.	No.of water point mapping	latitude	longitude	condition of BH	establish year	pump and borehole condition D : Depth (m)	Condition of management of water point C : Water Point Committee T:Pump Reparation Training M : Money collection system MK/M･F : Malawi kwacha/Month･Family
59	2･59	Chikweteza	Madzonga	DP 125	206_06_080	13 ° 46.38 ′	33 ° 23.916 ′	broken	1971	impossible to rehabilitate because of water quality	
60	2･70	Chigowo	Chigowo	SB/07/323	206_06_212	13 ° 38.433 ′	33 ° 22.244 ′	working	MASAF 2000	afridev	C : Exist
61	2･71	Kaphiri	Chigowo		206_06_211	13 ° 38.576 ′	33 ° 22.159 ′	broken	1970	afridev / broken from 1987	
62	2･79	Chilowa(B)	Kanjeza	E 317	206_06_112	13 ° 40.841 ′	33 ° 21.789 ′	broken		climax / impossible to rehabilitate	C : None
63	2･82	Kawalika	Kawalika		206_06_213	13 ° 37.093 ′	33 ° 22.641 ′	broken		climax / possible to rehabilitate(?)	
64	2･85	Msema	M'Nkhadze	06-214	206_06_214	?	?	broken	1972	climax / broken from 2001 / possible to rehabilitate	
65	2･90	Makowa	Makowa	DM 13	206 06 208	13 ° 38.404 ′	33 ° 27.183 ′	broken		afridev / broken from 2002 / possible to rehabilitate	C : Exist T: Exist M : None
66	2･96	Kawodzera I	Makowa	E 278	206 06 231	13 ° 38.897 ′	33 ° 25.924 ′	broken		afridev / broken from 2001 / possible to rehabilitate	C : Exist T: Exist M : None
67	2･121	Kakoloweko	Kasoni(Njakwa)	DM 9	206_06_221	13 ° 33.713 ′	33 ° 23.78 ′	broken	1970'	bush pump	C : None

Total consumption (L/day person)
Target villager : 755 (effective : 642 / lack : 105 / invalid : 8)

		Maximum	(L/day person)	No.	Effective percent(%)	0 25 50 75 100
River/ Dambo	effective		less than 10L	8	5.5	
			10～15L	15	10.3	
			15～20L	15	10.3	
			20～25L	28	19.2	
		●	25～30L	32	21.9	
			30～40L	29	19.9	
			more than 40L	19	13.0	
			Total	146	100.0	
	lack		System lack	34		
	Total			180		
Shallow well (Unprotected)	effective		less than 10L	12	2.9	
			10～15L	26	6.4	
			15～20L	50	12.3	
			20～25L	69	17.0	
		●	25～30L	103	25.3	
			30～40L	97	23.8	
			more than 40L	50	12.3	
			Total	407	100.0	
	lack		System lack	46		
	Total			453		
Shallow well (Protected)	effective		less than 10L	3	9.7	
			10～15L	2	6.5	
			15～20L	4	12.9	
			20～25L	2	6.5	
		●	25～30L	9	29.0	
			30～40L	7	22.6	
			more than 40L	4	12.9	
			Total	31	100.0	
	lack		System lack	3		
	Total			34		
Borehole	effective		less than 10L	6	10.3	
			10～15L	5	8.6	
			15～20L	7	12.1	
			20～25L	11	19.0	
		●	25～30L	12	20.7	
		●	30～40L	12	20.7	
			more than 40L	5	8.6	
			Total	58	100.0	
	lack		System lack	22		
	Total			80		

Drinking & Cooking (L/day person)
Targer villager : 755 (effective : 647 / lack : 100 / invalid : 8)

		Maximum	(L/day person)	No.	Effective percent(%)	0 25 50 75 100 125 150 175 200
River/ Dambo	effective		less than 5L	18	12.1	
		●	5～10L	62	41.6	
			10～15L	31	20.8	
			15～20L	15	10.1	
			20～25L	16	10.7	
			more than 25L	7	4.7	
			Total	149	100.0	
	lack		System lack	31		
	Total			180		
Shallow well (Unprotected)	effective		less than 5L	31	7.6	
		●	5～10L	179	43.8	
			10～15L	127	31.1	
			15～20L	39	9.5	
			20～25L	21	5.1	
			more than 25L	12	2.9	
			Total	409	100.0	
	lack		System lack	44		
	Total			453		
Shallow well (Protected)	effective		less than 5L	5	16.1	
		●	5～10L	9	29.0	
			10～15L	6	19.4	
			15～20L	2	6.5	
			20～25L	6	19.4	
			more than 25L	3	9.7	
			Total	31	100.0	
	lack		System lack	3		
	Total			34		
Borehole	effective		less than 5L	8	13.8	
		●	5～10L	24	41.4	
			10～15L	15	25.9	
			15～20L	7	12.1	
			20～25L	1	1.7	
			more than 25L	3	5.2	
			Total	58	100.0	
	lack		System lack	22		
	Total			80		

Answer from villager in requested village

		Maximum		No.	Effective percent(%)	
Necessity of water supply facility	effective	●	necessary	726	99.9	necessary 726 (99.9%)
			not necessary	1	0.1	
			total	727	100.0	
	lack		lack	36		
	Total			763		not necessary 1 (0.1%)
Willingness to pay for water charge	effective	●	Yes	662	97.5	Yes 662 (97.5%)
			No	17	2.5	
			total	679	100.0	
	lack		lack	84		
	Total			763		No 17(2.5%)
Max. allowable charge per 20L	effective		20 Tambala	54	55.7	
			50 Tambala	149	153.6	
			Mk1	148	152.6	
			Mk1.50	60	61.9	
		●	Mk2	150	154.6	
			More	82	84.5	
			total	643	100.0	
	lack		lack	120		
	Total			763		
Max. allowable monthly charge	effective		Mk5	128	18.0	
			Mk10	123	17.3	
		●	Mk20	163	22.9	
			Mk30	59	8.3	
			Mk40	34	4.8	
			Mk50	155	21.8	
			More	50	7.0	
			total	712	100.0	
	lack		lack	51		
	Total			763		
If elected as a WPC member, are you ready to participate in a CBM training session without allowance from the project?	effective	●	Yes	750	98.8	Yes 750 (98.8%)
			No	9	1.2	
			total	759	100.0	
	lack		lack	4		
	Total			763		No 9 (80.8%)

Satisfaction with water quantity in dry season

			No.	Effective percent(%)	
River/ Dambo	effective	Sufficient	27	16.5	Sufficient 27 (16.5%)
		Insufficient	137	83.5	
		Total	164	100.0	
	lack	System lack	16		
	Total		180		Insufficient 137(83.5%)
Shallow well (Unprotected)	effective	Sufficient	68	16.2	Sufficient 68 (16.2%)
		Insufficient	353	83.8	
		Total	421	100.0	
	lack	System lack	32		
	Total		453		Insufficient 353(83.8%)
Shallow well (Protected)	effective	Sufficient	4	12.5	Suffcient 4 (12.5%
		Insufficient	28	87.5	
		Total	32	100.0	
	lack	System lack	2		
	Total		34		Insufficient 28(87.5%)
Borehole	effective	Sufficient	25	35.2	Sufficient 25 (35.2%)
		Insufficient	46	64.8	
		Total	71	100.0	
	lack	System lack	9		
	Total		80		Insufficient 46(64.8%)

Satisfaction with water quantity in rainy season
Target villager : 755 (effective : 642 / lack : 105 / invalid : 8)

			No.	Effective percent(%)	
River/ Dambo	effective	Sufficient	34	19.2	Sufficient 34 (19.2%)
		Insufficient	143	80.8	
		Total	177	100.0	
	lack	System lack	3		
	Total		180		Insufficient 143(80.8%)
Shallow well (Unprotected)	effective	Sufficient	107	23.9	Sufficient 107 (23.9%)
		Insufficient	341	76.1	
		Total	448	100.0	
	lack	System lack	5		
	Total		453		Insufficient 341(76.1%)
Shallow well (Protected)	effective	Sufficient	7	23.3	Sufficient 7 (23.3%)
		Insufficient	23	76.7	
		Total	30	100.0	
	lack	System lack	4		
	Total		34		Insufficient 23(76.7%)
Borehole	effective	Sufficient	32	41.6	Sufficient 32 (41.6%)
		Insufficient	45	58.4	
		Total	77	100.0	
	lack	System lack	3		
	Total		80		Insufficient 45(58.4%)

Satisfaction with water quality in rainy season

		Maximum	evaluation	No		Effective percent(%)
River/ Dambo	effective	●	good	37		22.7
			salty	31		19.0
			iron taste	24		14.7
			colored	24		14.7
			other	6		3.7
			salty & colored	6		3.7
			iron taste & colored	29		17.8
			salty, iron taste & colored	6		3.7
			Total	163		100.0
	lack		System lack	17		
	total			180		
Shallow well (Unprotected)	effective	●	good	147		33.9
			salty	40		9.2
			iron taste	42		9.7
			colored	88		20.3
			other	11		2.5
			salty & colored	13		3.0
			iron taste & colored	82		18.9
			salty, iron taste & colored	11		2.5
			Total	434		100.0
	lack		System lack	19		
	total			453		
Shallow well (Protected)	effective	●	good	22		64.7
			salty	1		2.9
			iron taste	6		17.6
			colored	3		8.8
			other	0		0.0
			salty & colored	2		5.9
			iron taste & colored	0		0.0
			salty, iron taste & colored	0		0.0
	total		Total	34		100.0
Borehole	effective	●	good	63		81.8
			salty	3		3.9
			iron taste	4		5.2
			colored	2		2.6
			other	2		2.6
			salty & colored	1		1.3
			iron taste & colored	0		0.0
			salty, iron taste & colored	2		2.6
			Total	77		100.0
	lack		System lack	3		
	total			80		

Satisfaction with water quality in dry season

		Maximum	evaluation	No		Effective percent(%)
River/ Dambo	effective	●	good	35		24.5
			salty	23		16.1
			iron taste	27		18.9
			colored	18		12.6
			other	6		4.2
			good but iron taste	7		4.9
			salty & colored	9		6.3
			iron taste & colored	0		0.0
			salty, iron taste & colored	18		12.6
			Total	143		100.0
	lack		System lack	37		
	total			180		
Shallow well (Unprotected)	effective	●	good	138		34.2
			salty	37		9.2
			iron taste	46		11.4
			colored	81		20.0
			other	10		2.5
			good but iron taste	28		6.9
			salty & colored	32		7.9
			iron taste & colored	0		0.0
			salty, iron taste & colored	32		7.9
			Total	404		100.0
	lack		System lack	49		
	total			453		
Shallow well (Protected)	effective	●	good	24		72.7
			salty	1		3.0
			iron taste	4		12.1
			colored	2		6.1
			other	0		0.0
			good but iron taste	2		6.1
			salty & colored	0		0.0
			iron taste & colored	0		0.0
			salty, iron taste & colored	0		0.0
			Total	33		100.0
	lack		System lack	1		
	total			34		
Borehole	effective	●	good	57		81.4
			salty	2		2.9
			iron taste	3		4.3
			colored	2		2.9
			other	2		2.9
			good but iron taste	1		1.4
			salty & colored	0		0.0
			iron taste & colored	0		0.0
			salty, iron taste & colored	3		4.3
			Total	70		100.0
	lack		System lack	10		
	total			80		

Answer from village master in requested village

		Maximum	evaluation	No		Effective percent(%)	
Willingness of preparatory contribution (Mk10,000)	effective	●	Yes	250		99.2	Yes 250 (99.2%)
			No	2		0.8	
			Total	252		100.0	
	lack		System lack	2			
	total			254			No 2 (0.8%)
Willingness to open bank account	effective	●	Yes	243		97.2	Yes 243 (97.2%)
			No	7		2.8	
			Total	250		100.0	
	lack		System lack	4			
	total			254			No 7 (2.8%)
Existence of WPC	effective	●	Yes	159		64.4	Yes 159 (64.4%)
			No	88		35.6	
			Total	247		100.0	
	lack		System lack	7			
	total			254			No 88 (35.6%)
Willingness to pay for water charge	effective	●	Yes	248		99.6	Yes 248 (99.6%)
			No	1		0.4	
			Total	249		100.0	
	lack		System lack	5			
	total			254			No 1 (0.4%)
Way of collection	effective	●	Decided	184		72.7	Decided 184 (72.7%)
			Not vet	69		27.3	
			Total	253		100.0	
	lack		System lack	1			
	effective			254			Not yet 69 (27.3%)
Measure to pay water charge (20L)	effective		measured rate	28		14.3	measured rate 28 (14.3%)
			flat rate	168		85.7	
			Total	196		100.0	
	lack		System lack	58			
	total			254			flat rate 168 (85.7%)
Monthly payment	effective		Mk2	2		1.0	
			Mk5	13		6.8	
			Mk10～20	39		20.4	
		●	Mk20～30	62		32.5	
			Mk30～40	14		7.3	
			Mk40～50	29		15.2	
			Mk60～70	4		2.1	
			Mk70～80	2		1.0	
			Mk80	1		0.5	
			Mk100	9		4.7	
			Mk200	10		5.2	
			Mk300	5		2.6	
			Mk400	2		1.0	
			Total	191		100.0	
	lack		System lack	63			
	total			254			
Do you think if community pay allowance to WPC members on CBM training?	effective	●	Yes	242		98.8	Yes 242 (98.8%)
			No	3		1.2	
			Total	245		100.0	
	lack		System lack	9			
	total			254			No 3 (1.2%)
Existence of water supply facility	effective		Yes	53		21.5	Yes 53 (21.5%)
		●	No	193		78.5	
			Total	246		100.0	
	lack		System lack	8			
	total			254			No 193 (78.5%)
Current condition of water supply facility	effective	●	Function	29		51.8	Function 29 (51.8%)
			Not Function	27		48.2	
			Total	56		100.0	
	lack		System lack	198			
	total			254			Not function 27 (48.2%)
Type of water supply facility	effective		shallow well with pump	11		20.8	shallow well with pump 11 (20.8%)
		●	Borehole with pump	42		79.2	
			Total	53		100.0	
	lack		System lack	201			
	total			254			borehole with pump 42 (79.2%)
Payment for reparation (10,000Mk per year)	effective	●	possible	248		99.2	possible 248 (99.2%)
			impossible	2		0.8	
			Total	250		100.0	
	lack		System lack	4			
	total			254			impossible 2 (0.8%)
Necessity of borehole with pump	effective	●	Necessary	241		97.2	not necessary 1.2%
			Preferable	4		1.6	preferable 1.6%
			Not necessary	3		1.2	
			Total	248		100.0	
	lack		System lack	6			
	total			254			not necessary 97.2%

6-3(2) Socio-economic Survey (Headman)

No.	District	Village Name	Population						Primary School	Health Centre	Water Point Committee								Exsistiong Water Supply Facility						Necessity of Water Supply Facility (borehole) with Pump
			General census of 1998				Evolution 2004				Establishment	Year of Establishment	Operation and Maintenance		Charge for water		Community participation		Exsisting Water Supply Facility	Functional	Type				
			No. of Households	Men	Wo-men	Total	Popu-lation	No.of Households					Willing to pay the fee	Way of Collection	Willingness of Preparatory Contribution (10,000KM)	Willingness to Open a Bank Account	Do you think that your community can afford necessary allowance for WPC members to participate in CBM	Willingness to Contribute to Construction			Exsistiong Shallow well with pump or Borehole with pump	Exsistiong shallow Well with Pomp		Exsistiong Borehole with Pomp	
																						Depth(m)	Pump Type	Pump Type	
17	KALOLO	Guliguli						98	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
18	KALOLO	Chipochongo	42	42	17	21	38	59	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
21	KALOLO	Chisikwa (A)						247	No	Yes	Yes	Nov 2004	Yes	Not yet	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
22	KALOLO	Mchira wa Nkhondo						52	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
59	KALOLO	Chapota	113	113	169	217	386	105	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
76	KALOLO	Maulana	51	51	24	27	51	51	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
83	KALOLO	Chingondo						70	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
106	KALOLO	Chinkhata	62	62	166	192	338	64	Yes	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
120	KALOLO	Dzoole						59	Yes	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
121	KALOLO	Chigwasa						90	No	Yes	Yes		Yes	Not yet	Yes		Yes	Yes	No						Necessary
125	KALOLO	Chafuta	43	43	19	21	40	63	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
126	KALOLO	Mnjeza II						63	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
127	KALOLO	Gome						78	No		Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No		Shallow well with pump	9.00	handpump		Necessary
130	KALOLO	Chilima						38	Yes	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
166	KALOLO	Sinsinja	56	56	42	40	82	76	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
167	KALOLO	Mlera						66	No	Yes	Yes			Not yet	Yes	Yes	Yes	Yes	No						Necessary
168	KALOLO	Dambo						81	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No	No	Borehole with pump		Climax		Necessary
184	KALOLO	Mzokoto						125	Yes	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
192	KALOLO	Phulamazila						200	No	Yes	Yes		No	Not yet	No	No	No	No	Yes	Yes	Borehole with pump		Afridev		Other
195	KALOLO	Kumtsizi						70	No	No	No	2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
209	KALOLO	Sosola	32	32	77	91	168	79	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
210	KALOLO	Jamu						66	Yes	Yes	No			Not yet	Yes	Yes	Yes	Yes	No						Necessary
217	KALOLO	Mzungu	67	67	30	37	67	67	Yes	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	Yes	No	Shallow well with pump	18.00			Necessary
26	KALOLO	Makanga	40	40	15	25	40	52	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
48	KALOLO	Mandindi	44	44	44	90	134	44	No	No	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
50	KALOLO	Chikalipo	50	50	90	60	150	50	No	No	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
103	KALOLO	Dzama	96	96	160	280	440	96	Yes	Yes			Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borehole with pump				Necessary
107	KALOLO	Makoka	65	65	123	236	359	65	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
206	KALOLO	Chithangile	96	96	169	192	361	79	No	No	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	Yes	No				Climax	Necessary
211	KALOLO	Chizula						74	No	No	Yes		Yes	Decided	Yes	Yes	Yes	No	No						Necessary
13	KALOLO	Kampala	16	16	7	11	17	16	No	Yes	No	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
41	KALOLO	Kanyoni	31	31	47	67	114	64	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
51	KALOLO	Kathumba	70	70	220	280	500	70	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump				Necessary
52	KALOLO	Zuwande	70	70	80	120	200	70	No	No	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
54	KALOLO	Kangulu	126	126	370	486	756	89	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Shallow well with pump	7.00			Necessary
57	KALOLO	Mnyanda	234	234	348	674	1042	234	Yes	No	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
171	KALOLO	Chadza						105	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
193	KALOLO	Yotamu						47	No	Yes	No	2005	Yes	Decided	Yes		Yes	Yes	No						Necessary
197	KALOLO	Chamoto	36	36	181	287	468	170	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
204	KALOLO	Khema						89	No	No	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
214	KALOLO	Chubungo						398	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borehole with pump			Climax	Necessary
219	KALOLO	Muyala	125	125			456	125	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No					Necessary
221	KALOLO	Kamatila						50	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						No
241	KALOLO	Mkathama						60	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						No
40	KALOLO	Kamkuwe	57	57	179	196		158	Yes	No	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
43	KALOLO	Chituwi						45	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
196	KALOLO	Chipanga	45	45	30	50	80	45	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
203	KALOLO	Manjawira	42	42	27	50	77	42	Yes	Yes	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
213	KALOLO	Lusha	54	54	175	200	375	33	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
1	KALOLO	Midzati	100	100	40	60	100	56	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
2	KALOLO	Dzuluwanda	450	450	220	250	470	110	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
15	KALOLO	Makala	58	58	120	152	372	89	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
23	KALOLO	Mdaula/ Mudulu						67	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
25	KALOLO	Chimulota						49	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
27	KALOLO	Jeremani	67	67	124	156	280	58	Yes	Yes	Yes	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
30	KALOLO	Masekesa	28	28	49	16	65	35	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
31	KALOLO	M'gulula	40	40	40	175	215	82	Yes	Yes	Yes		Yes	Decided	Yes	No	Yes	Yes	No						Necessary
42	KALOLO	Nyozwe	33	33	45	60	105	33	Yes	Yes	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
45	KALOLO	Chitapang'ombe						33	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
46	KALOLO	Chakumbutsa						41	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
65	KALOLO	Laudani	40	40	16	24	40	40	Yes	Yes	Yes	Feb 2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
66	KALOLO	Kalongopyera	82	82	32	50	82	82	Yes	Yes	Yes	Apr 2005	Yes	Decided	Yes	No	Yes	Yes	No						Necessary
68	KALOLO	Chibwala	40	40	44	56	100	56	No	Yes	Yes	Dec	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
70	KALOLO	Kalichero	37	37	25	35	60	37	Yes	Yes	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
87	KALOLO	Chidzenje	210	210	400	500	900	130	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
91	KALOLO	Ntchisi	50	50	162	180	342	72	No	Yes	Yes	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No						
123	KALOLO	Kaziputa	54	54	53	48	101	97	No	Yes	Yes		Yes	Decided	Yes		Yes	Yes	Yes	Yes					Necessary
132	KALOLO	Semu						42		Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary

No.	District	Village Name	Population						Primary School	Health Centre	Water Point Committee								Exsistiong Water Supply Facility						Necessity of Water Supply Facility (borehole) with Pump
			General census of 1998				Evolution 2004				Establishment	Year of Establishment	Operation and Maintenance		Charge for water		Community participation		Exsisting Water Supply Facility	Functional	Type				
			No. of Households	Men	Wo-men	Total	Popu-lation	No.of Households					Willing to pay the fee	Way of Collection	Willingness of Preparatory Contribution (10,000KM)	Willingness to Open a Bank Account	Do you think that your community can afford necessary allowance for WPC members to participate in CBM	Willingness to Contribute to Construction			Exsistiong Shallow well with pump or Borehole with pump	Exsistiong shallow Well with Pomp		Exsistiong Borehole with Pomp	
																						Depth(m)	Pump Type	Pump Type	
134	KALOLO	Mkanda						56	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
172	KALOLO	Mngongonda	188	188				251	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
194	KALOLO	Sankhulani						64	Yes		No	2004	Yes	Decided	Yes	Yes	Yes	No							Necessary
199	KALOLO	Mpingo II	120	120				420	No		Yes		Yes	Decided	Yes	Yes	Yes		Yes	Yes	Borehole with pump			Afridev	Necessary
200	KALOLO	Kadzani	75	75	30	50	80	75	Yes	No	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
202	KALOLO	Kwenje						56	Yes	No	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
207	KALOLO	Mkoko						48	Yes	Yes	No	2004	Yes	Decided	Yes	Yes			Yes	No	Borehole with pump			Afridev	Necessary
212	KALOLO	M'bang'ombe						53	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Climax	Necessary
216	KALOLO	Gulani						31	No	No	No	Dec2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
222	KALOLO	Ngalazuka	45	45				76	No	No	No	Nov2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
223	KALOLO	Kango						51	No	No	No	Jan2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
225	KALOLO	Mliwu						191	Yes	Yes	No	Dec2004	Yes	Decided	Yes	Yes	Yes	Yes	Yes	No				Climax	Necessary
226	KALOLO	Chinkhunda Nkhwanila						53	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
242	KALOLO	Kansengwa						120	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
69	KALOLO	Sungama	55	55	35	70	105	55	Yes	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
201	KALOLO	Kalonga	68	68	30	70	100	68	Yes	Yes	Yes	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
11	KALOLO	Nkhwambala	225	225	101	124	225	296	No	Yes			Yes	Decided	Yes	Yes	Yes		Yes	Yes	Shallow well with pump	24.00		Afridev	Necessary
24	KALOLO	Chisenga	100	100	40	54	94	30			No	Nov2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
44	KALOLO	Kafunde	93	93	64	100	164	93	No	No	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
49	KALOLO	Sinumbe	220	220	800	1200	2000	220	Yes	Yes	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
105	KALOLO	Mthyothyo	75	75	52	66	128	96	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
205	KALOLO	Mpondamwala	46	46	49	62	110	70	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
208	KALOLO	Bokola-Mdabwi						83	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
7	KALOLO	Lendemani	10	10	5	14	19	16	No	Yes	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
39	KALOLO	Chilembwe	36	36	54	52	106	56	Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
67	KALOLO	Mchawa	45	45	149	245	394	90	No	Yes	Yes	Nov	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
89	KALOLO	Kanyopola	22	22	41	54	95	41	Yes	No	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
215	KALOLO	Chaponda	17	17	38	50	88	33	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
227	KALOLO	Dzinja	27	27	117	129	246	47	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
5	KALOLO	Nkhata	90	90	105	120	225	157	No	Yes	Yes	2005	Yes	Decided	Yes	Yes	Yes	Yes	No		Shallow well with pump				Necessary
20	KALOLO	Mtima	75	75	26	30	56	60	Yes	Yes			Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump				Necessary
29	KALOLO	Mtsinambuto-Kalata	50	50	45	55	100		No	Yes	Yes	Nov2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
38	KALOLO	Ching'ona	35	35	312	312	624	42	Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Other
71	KALOLO	Jonas	52	52	40	60	100	58	Yes	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
104	KALOLO	Kwezani	16	16	115	68	148	28	No	No	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
198	KALOLO	Madika	58	58	70	95	165	42	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
220	KALOLO	Manthalu	39	39				39	No	No	Yes		Yes	Not yet	Yes	Yes	Yes		No						Necessary
243	KALOLO	Guli-Guli (B)						48	Yes	Yes	Yes		Yes	Decided	Yes	Yes	No	Yes	No						Necessary
28	KALOLO	Chipira Msan	99	99	163	187	350	117	No	Yes	Yes	Jan 2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
37	KALOLO	Mkuwira	175	175	160	182		119	No	Yes	Yes	Jan 2004	Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
218	KALOLO	Kabwana	79	79	50	89		89	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borehole with pump			Climax	Necessary
14	KALOLO	Malumbila	62	62	62	80	142	124	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
3	KALOLO	Chiziko	84	84	30	54	84	89	No	Yes	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
122	KALOLO	Mapira	34	34	32	38	70	44	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Shallow well with pump	7.00			Necessary
19	KALOLO	Zakaliya						68	No	Yes	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
4	KALOLO	Kamangira	172	172	160	155	687	72	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
6	KALOLO	Chipira kakoma	185	185	240	166	400		Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Other
8	KALOLO	Mkhozomba	124	124	70	61	131	105	Yes	Yes				Decided	Yes	Yes	Yes	Yes	No						Necessary
12	KALOLO	Mnkhowe	28	28	370	100	508	370	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
53	KALOLO	Chilomo	213	213	580	584	1164	81	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
55	KALOLO	Muzayani	83	83	149	260	409	83	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
10	KALOLO	Mthiko						55	Yes	Yes	Yes	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
63	KALOLO	M`milinga	103	103	89	89	880	89	No	No	Yes	Feb 2001	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
32	KHONGONI	Kanjanja	70	70	26	34	60	76	No	Yes	No	Nov 2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
34	KHONGONI	Mbalame	68	68	34	34	68	128	Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
56	KHONGONI	Kambuzi	105	105	200	250	450	105	Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump			Afridev	Necessary
58	KHONGONI	Mtavu	35	35	62	59	121	35	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No		Borehole with pump			Afridev	Necessary
74	KHONGONI	Zamula/ Jere			45	45		46	No	No	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
75	KHONGONI	Williamu/Jasiteni/Nthochi						68	No	Yes	No	Nov 2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
77	KHONGONI	Monjo Mduluza					65	76	Yes	No	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
82	KHONGONI	Masanji						121	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes							Necessary
84	KHONGONI	Masitala	35	35			300		No	No	Yes		Yes	Not yet											
88	KHONGONI	Kalama	36	36	36	36		36	Yes	No	Yes				Yes	Yes	Yes		Yes	No					
100	KHONGONI	Nthondo	23	23	50	56	106	82	Yes	No	Yes	Nov 2004	Yes	Not yet	Yes	Yes	Yes		No						Necessary
101	KHONGONI	Ziyendammanja						75	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
113	KHONGONI	Chibondo						57	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
114	KHONGONI	Katsano						83	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
115	KHONGONI	Msema					526	70	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	Yes	Yes	Borehole with pump				Necessary

No.	District	Village Name	Population						Primary School	Health Centre	Water Point Committee								Exsistiong Water Supply Facility						Necessity of Water Supply Facility (borehole) with Pump
			General census of 1998				Evolution 2004				Establishment	Year of Establishment	Operation and Maintenance		Charge for water		Community participation				Type				
			No. of Households	Men	Wo-men	Total	Popu-lation	No.of Households					Willing to pay the fee	Way of Collection	Willingness of Preparatory Contribution (10,000KM)	Willingness to Open a Bank Account	Do you think that your community can afford necessary allowance for WPC members to participate in CBM	Willingness to Contribute to Construction	Exsisting Water Supply Facility	Functional	Exsistiong Shallow well with pump or Borehole with pump	Exsistiong shallow Well with Pomp		Exsistiong Borehole with Pomp	
																						Depth(m)	Pump Type	Pump Type	
116	KHONGONI	Mpondamwala	36	36			46	74	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
117	KHONGONI	Chizewe						66	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
118	KHONGONI	Chimpala						58	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
119	KHONGONI	Chizeze						58	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
124	KHONGONI	Chitindi	54	54	31	33	64	69	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
135	KHONGONI	Bwanali						53	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
136	KHONGONI	Mazengera						84	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
139	KHONGONI	Mwanda					243	81	No	Yes	No	2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
140	KHONGONI	msapha						42	No	Yes	No	2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
141	KHONGONI	Nthala-Gomani						64	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
142	KHONGONI	mapondera					264	60	No	Yes	No		Yes	Not yet	Yes	Yes			No						Necessary
143	KHONGONI	mpaya						98	No	Yes	Yes	Dec 2004	Yes	Not yet	Yes	Yes	Yes		No						Necessary
144	KHONGONI	mbewa II	46	46				58	No	Yes	No	Dec2005	Yes	Not yet	Yes	Yes			No						Necessary
145	KHONGONI	Khombokombo						77	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
146	KHONGONI	Kazambala						61	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
148	KHONGONI	Kachere						35	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
175	KHONGONI	Mandelo/Mika						40	No	No	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
185	KHONGONI	Jeke	58	58	58	58	116	62	No	Yes	No	2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
186	KHONGONI	Kasalika	61	61	61	61	122	70	No	Yes	No	2004	Yes	Not yet	Yes	Yes	Yes		No						Necessary
236	KHONGONI	Sambo						72	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
240	KHONGONI	Mnthumba					182	96	No	Yes	No		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
244	KHONGONI	Mikili						54	No		Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
245	KHONGONI	Kaphiri	200	200				51	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
246	KHONGONI	Mdatsekako						54	No	Yes	No	Jan2005	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
251	KHONGONI	Mnkhunyungu						67	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	Yes	No	Shallow well with pump	45.00	Malda		Necessary
78	KHONGONI	Nyanga	307	307	504	600		304	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No	No	Borechole with pump			Afridev	
90	KHONGONI	Kambuyawa	33	33	33	29	62	68	No	Yes	Yes	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No	No	Borechole with pump			Climax	Necessary
95	KHONGONI	Kaluzi	27	27	100	150	250	57	No	Yes	No	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump			Afridev	Necessary
99	KHONGONI	Zokoto	36	36	147	173	380	145	Yes	Yes	Yes		Yes	Decided	Yes	No	Yes	Yes	No						Necessary
156	KHONGONI	Changwe						68	No	No	No		Yes	Decided		Yes	Yes	Yes	No						No
190	KHONGONI	Makawa						321	Yes	No	Yes		Yes	Decided	Yes	Yes			No						Necessary
224	KHONGONI	Kakoloweko	70	70	70	70	140		No	Yes	No	Dec2004	Yes	Decided	Yes	Yes	Yes								Necessary
247	KHONGONI	Mwadzimbi						110	No	No	No		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Shallow well with pump		Malda		Necessary
72	KHONGONI	Naferanji	88	88	88	88	176	112	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Shallow well with pump		Climax		Necessary
73	KHONGONI	Naferanji	67	67	67	67	134		Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump			Climax	Necessary
79	KHONGONI	Kalumbi	78	78	240	225		88	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No	No	Borechole with pump			Afridev	Necessary
93	KHONGONI	Daimoni	57	57	200	141	59	57	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						No
94	KHONGONI	Mwezi wauma	80	80	130	210	340	187	No	No	Yes	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
109	KHONGONI	Kapuzama	95	95	95	95	190	112	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No					Necessary
150	KHONGONI	Mwamulu						75	No	No	No	Dec2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
151	KHONGONI	Thauzeni	29	29	150	170	320	45	No	No	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
174	KHONGONI	Kalipande	41	41	41	41	82	35	No	No	No	2004	Yes	Decided	Yes	Yes	Yes		No						Necessary
176	KHONGONI	Kameta	50	50	25	25	50	60	No	No	No	2004	Yes	Decided	Yes	No	Yes		No						Necessary
178	KHONGONI	Chadzunda	15	15	15	15	30	30	No	No	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
188	KHONGONI	Chilufu						85	Yes	Yes	Yes		Yes	Decided	Yes	Yes	No	No	No						Necessary
191	KHONGONI	Nkhawa						32	Yes	Yes	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
233	KHONGONI	Mkwinda						49	No	Yes	No	Dec2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
238	KHONGONI	Kadyalu						65	No	Yes	No	Nov2004	Yes	Decided	Yes	Yes		Yes	No						Necessary
239	KHONGONI	Mwambakulu						50	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
248	KHONGONI	Imfa						28	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump				Necessary
252	KHONGONI	Mgumula						99	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
257	KHONGONI	Madzonga							No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borechole with pump			Afridev	Necessary
147	KHONGONI	Msungata			45	60	105	70	Yes	Yes	Yes	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
33	KHONGONI	Kachilikiza	18	18	28	42	70	51	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
64	KHONGONI	Waya	38	38	60	180	24	56	Yes	No			Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borechole with pump			Afridev	Necessary
88	KHONGONI	Kanzota						72	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
102	KHONGONI	Mwachipula	70	70	65	70	135	70	No		No	Nov 2004	Yes	Decided	Yes	Yes	Yes		No						Necessary
112	KHONGONI	Sixpence					520	78	Yes		No	2004	Yes	Decided	Yes	Yes	Yes		No						Necessary
131	KHONGONI	Chimphako						45	Yes	No	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
138	KHONGONI	Chigowo						38	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes						Necessary
149	KHONGONI	Khofi			50	75	125	58	Yes	Yes	No	2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
153	KHONGONI	Mafola	26	26	175	220	395	66	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
158	KHONGONI	Kawodzera II	62	62	69	84	215	82	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
159	KHONGONI	Dzonzi	100	100	100	100	200	120	No	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
162	KHONGONI	Sapulaye	37	37	37	37	74	86	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
177	KHONGONI	Tumeyo	65	65	65	65	130	260	No	No	Yes	2004	Yes	Decided	Yes	Yes	Yes	No	No						Necessary
179	KHONGONI	Mkumbila	61	61	195	204	399	69	No	Yes	Yes	2003	Yes	Decided	Yes	Yes	Yes	Yes	No						
180	KHONGONI	Mangani	38	38	38	136	74	48	No	Yes	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary

No.	District	Village Name	Population						Primary School	Health Centre	Water Point Committee								Exsistiong Water Supply Facility						Necessity of Water Supply Facility (borehole) with Pump
			General census of 1998				Evolution 2004						Operation and Maintenance		Charge for water		Community participation				Type				
			No. of Households	Men	Women	Total	Population	No.of Households			Establishment	Year of Establishment	Willing to pay the fee	Way of Collection	Willingness of Preparatory Contribution (10,000KM)	Willingness to Open a Bank Account	Do you think that your community can afford necessary allowance for WPC members to participate in CBM	Willingness to Contribute to Construction	Exsisting Water Supply Facility	Functional	Exsistiong Shallow well with pump or Borechole with pump	Exsistiong shallow Well with Pomp		Exsistiong Borehole with Pomp	
																						Depth(m)	Pump Type	Pump Type	
181	KHONGONI	Malata/Timoti	25	25	24	22	46	30	No	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
182	KHONGONI	Chikwa	65	65	65	65	130	65	No	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
183	KHONGONI	Thema	31	31	24	26	50	83	No	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
187	KHONGONI	Kantengo	45	45	120	240	360	45	No	Yes	Yes	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
230	KHONGONI	Chimombo	100	100	100	100	200	164	No	Yes	No	Nov2004	Yes	Decided	Yes	Yes	Yes								Necessary
235	KHONGONI	Kasawa						54	No	No	No	Dec2004	Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump			Afridev	Necessary
255	KHONGONI	Chikweteza						47	No	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump			Afridev	Necessary
257	KHONGONI	Katugwa						54	No	Yes	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
258	KHONGONI	Chimbaru Mndimbanazo	42	42	42	42	84	60	No	Yes	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
258	KHONGONI	Mlamba						93	Yes	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
133	KHONGONI	Njombilo	50	50	50	50	100	62	No	Yes	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
256	KHONGONI	Bondo						35	Yes	No	Yes	2001	Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borechole with pump			Afridev	Necessary
60	KHONGONI	Chaipam`njare	112	112	122	149	271	112	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump			Climax	Necessary
111	KHONGONI	Kasitomu						35	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
229	KHONGONI	Butawo	70	70	62	109	171		No	No				Decided	Yes	Yes		No							Necessary
250	KHONGONI	M'bamwana						45	No	Yes	No	Jan2005	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
259	KHONGONI	Mtswati						71	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
35	KHONGONI	Levi						64	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
232	KHONGONI	Chawina						25	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	No	No						Necessary
163	KHONGONI	Phetera	18	18	25	40	65	60	No	Yes	No	2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
169	KHONGONI	Kachiponda	85	85	50	51	106	69	No	No	No	2004	Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
231	KHONGONI	Makwembe						34	No	Yes	No		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
234	KHONGONI	Chibwalo						48	No	Yes	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	No						Necessary
61	KHONGONI	Chithemba	120	120	90	102	192	126	Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borechole with pump			Afridev	Necessary
108	KHONGONI	Salima	72	72	72	72	144	72	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No	No	Borechole with pump			Climax	Necessary
129	KHONGONI	Kantugwala	39	39	35	87	157	39	No	Yes	Yes	2003	Yes	Decided	Yes	Yes	Yes	Yes	No		Shallow well with pump				Necessary
152	KHONGONI	Mwase	42	42	62	71	133	42	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
165	KHONGONI	Ngalize						54	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
173	KHONGONI	Kamapalila	15	15	15	15	30	35	No	No	No	2004	Yes	Decided	Yes	Yes		No	No						Necessary
189	KHONGONI	Kawalika						73	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
237	KHONGONI	Mangilira					280	205	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borechole with pump			Afridev	Necessary
253	KHONGONI	Chalonga						410	No	No	Yes		Yes	Not yet	Yes	Yes	Yes	Yes	Yes	No	Borechole with pump			Afridev	Necessary
254	KHONGONI	Chimphepo						85	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
47	KHONGONI	Khongoni	33	33	29	34	63	33	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No	Shallow well with pump	18.00			Necessary
92	KHONGONI	Kakhutantaya	300	300	330	333	663	83	No	Yes	No	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
110	KHONGONI	Mzongoti	47	47	47	47	94	47	No		No	Nov 2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
154	KHONGONI	Kuthengo	50	50	140	185	320	58	No	No	No	2004	Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
155	KHONGONI	Chinjili	28	28	48	52	100	52	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
164	KHONGONI	Nkhoka						46	No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
228	KHONGONI	Milala	78	78	175	207	377	88	No	Yes	No	Dec2004	Yes	Decided	Yes	Yes	Yes	Yes							
249	KHONGONI	Kambudzi						141	Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	Yes	Borechole with pump			Afridev	Necessary
62	KHONGONI	Benjamini	45	45	35	35	115	37	No	No	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
81	KHONGONI	Gulumba	116	116	116	116			Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes		Yes						Necessary
97	KHONGONI	Mafuta	50	50	26	35		50	Yes	Yes	Yes		Yes	Decided	No	No	Yes	Yes	No						Necessary
98	KHONGONI	Kabudula	75	75	70	62	107	1430	Yes	No			Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
80	KHONGONI	Chipeni	192	192	200	145			Yes	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	Yes	No					Necessary
157	KHONGONI	Loti	43	43	150	200	393	43	No	No	Yes		Yes	Decided	Yes	Yes	Yes	No	No						Necessary
160	KHONGONI	Kawozela I	74	74	60	96	230	72	No	No	Yes		Yes	Decided	Yes	No									Necessary
96	KHONGONI	Pashane	70	70	30	35	135		No	Yes	Yes		Yes	Decided	Yes	Yes	Yes	Yes	No						Necessary
161	KHONGONI	Chadzunda	39	39	200	180	419	49	Yes	No	Yes		Yes	Decided	Yes	Yes	Yes	No	No						Necessary

6-3(3) Socio-economic Survey (Villager)

No	District	Water Usage: Rainy Season: Water Source	Rainy Season: Distance to Source	Rainy Season: Frequency	Rainy Season: Times a Day	Rainy Season: Type of Pump	Rainy Season: Main Transport	Dry Season: Water Source	Dry Season: Distance to Source	Dry Season: Frequency	Dry Season: Times a Day	Dry Season: Type of Pump	Dry Season: Main Transport	Need of WS Facility	Expections	Hygiene & Sanitation: Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Socio-Economic Situation: Familly: No. of persons/family	Familly: Occupation	Familly: Side Job	Money Income: Main Occupation	Money Income: Sub Job	Expenditure
1	Kalolo	Protected SW	100	Every day	6	Draw Well	On foot	Protected SW	100	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	8	Agriculture Labour	Wage Earner	50,000	10,000	24,650
3	Kalolo	U-p SW	150	Every day	5		On foot	U-p SW	150	Every day	5		On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	4	Agriculture	Agriculture	25,000	15,000	16,735
5	Kalolo	U-p SW	200				On foot	U-p SW	200				On foot	Yes	Saving Time	Always	Other	Cup	Always wash with soap or ash	Toilet	Dysentery, Eye disease and Skin dise	5	Agriculture	Agriculture	26,000	10,000	89,530
7	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	Spring	10	Every day	2		On foot	Yes	Saving Time	Always	Bucket	Cup	Always wash with soap or ash	Toilet			Agriculture	Agriculture			11,100
13	Kalolo	U-p SW	500	Every day	3	Draw Well	On foot	U-p SW	5	Every day	2	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Two Cups	Always	Toilet		3	Agriculture				3,160
14	Kalolo	U-p SW	60	Every day	7	Draw Well	On foot	U-p SW	60	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Two Cups	Always	Toilet	Cholera	7	Agriculture	Merchant	9,000	10,000	7,290
15	Kalolo	Protected SW	50	Every day	6	Draw Well	On foot	Protected SW	50	Every day	2	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Two Cups	Always	Toilet	Cholera	5	Agriculture		2,500		2,020
16	Kalolo	U-p SW	80	Every day	3	Draw Well	On foot	River/ Dambo	80	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Sometimes	Toilet	Skin Disease	6	Agriculture	Agriculture Labour	34,000		7,100
22	Kalolo	Protected SW	500	Every day	8	Draw Well	On foot	U-p SW	500	Every day	8	Draw Well	On foot	Yes	Saving Time	Normally	Bucket	Cup	Always	Toilet		2	Agriculture	Agriculture	15,000	10,000	3,060
24	Kalolo	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10		On foot	Yes	Saving Time	Never	Other	Dipper	Always	Toilet	dysentery and skindisease	5	Agriculture	Agriculture			18,550
25	Kalolo	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Always	Toilet		3	Agriculture	Agriculture	30,000	10,000	26,500
26	Kalolo	U-p SW	500	Every day	7	Draw Well	On foot	U-p SW	500	Every day	7	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Other	Wage Earner	2,400	13,000	42,150
27	Kalolo	U-p SW	300	Every day	2	Draw Well	On foot	U-p SW		Every day	2	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	4	Agriculture	Agriculture Labour	2,000	1,500	2,700
28	Kalolo	U-p SW	400	Every day	3	Draw Well	On foot	U-p SW	400	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot	Other	Seldom	Toilet	Diarrhoea and Eye Disease	4	Agriculture	Agriculture Labour	500	5,000	2,750
29	Kalolo	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	8	Agriculture Labour	Agriculture	4,000	1,000	18,100
30	Kalolo	U-p SW	300	Every day	9	Draw Well	On foot	U-p SW	300	Every day	9	Draw Well	On foot	Yes	Saving Time	Normally	Bucket	Cup	Always	Toilet	Dysentery	3	Agriculture	Agriculture	5,000	3,000	14,410
31	Kalolo	Protected SW	100	Every day	6	Draw Well	On foot	U-p SW	10	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Pot	Two Cups	Always wash with soap or ash	Toilet	Cholera	8	Agriculture	Other	38,000		11,760
32	Kalolo	U-p SW	100	Every day	9	Draw Well	On foot	Protected SW	100	Every day		Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Two Cups	Always	Toilet	Eye Disease	6	Agriculture		15,000		9,385
33	Kalolo	U-p SW	150	Every day	8	Draw Well	On foot	U-p SW	150	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Two Cups	Always	Toilet		2	Agriculture	Wage Earner	10,000	4,500	40,150
34	Kalolo	U-p SW	150	Every day	8	Draw Well	On foot	U-p SW	150	Every day	6	Draw Well	On foot	Yes	Saving Time	Always	Pot	Two Cups	Always	Toilet	Cholera	6	Agriculture		4,000		8,120
35	Kalolo	U-p SW	100	Every day	12	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Saving Time	Never	Pot	Two Cups	Always	Toilet		6	Civil Servant	Agriculture	5,000	56,000	24,080
36	Kalolo	U-p SW	200	Every day	9	Draw Well	On foot	U-p SW	10	Every day	9	Draw Well	On foot	Yes	Saving Time	Never	Pot	Two Cups	Always	Toilet	Diarrhoea	4	Agriculture Labour	Agriculture Labour	4,000	9,000	15,945
40	Kalolo	U-p SW	200	Every day		Draw Well	On foot	U-p SW	2	Every day		Draw Well	On foot	Yes	Saving Time	Always	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea, Cholera and Eye disease	8			15,000	1,000	21,500
41	Kalolo	U-p SW	200	Every day	8	Draw Well	On foot	U-p SW	20	Every day	8	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Two Cups	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Breeder	Agriculture	5,000	2,000	12,100
42	Kalolo	U-p SW	150	Every day	3	Draw Well	On foot	U-p SW	14	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	9	Agriculture	Agriculture	10,000	5,000	27,500
43	Kalolo	River/ Dambo	105	Every day	6	Draw Well	On foot	River/ Dambo	105	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	Dysentery	2	Agriculture	Agriculture			825
44	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	Spring	115	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot with filte	Cup	Sometimes	Toilet	diarrhoea and dysentery	3	Agriculture	Agriculture Labour	21,000	200	6,350
45	Kalolo	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Dysentery	3	Agriculture		2,000	3,000	1,200
46	Kalolo	River/ Dambo	200	Every day	4	Draw Well	On foot	River/ Dambo	200	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea		Agriculture	Agriculture	26,000		36,550
47	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	River/ Dambo	200	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease		Agriculture	Agriculture	40,000		84,000
48	Kalolo	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Bucket	Cup	Always		Diarrhoea		Agriculture	Agriculture Labour	12,000	2,000	3,800
50	Kalolo	Borehole	100	Every day	5	Hand Pum	On foot	Borehole	100	Every day	5	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin disease		Agriculture		6,350		7,610
51	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes		Never	Pot	Two Cups	Always	Toilet	Diarrhoea	6	Agriculture	Agriculture	8,000	6,000	
52	Kalolo	Protected SW	150	Every day	4		On foot	Protected SW	150	Every day	4		On foot	Yes		Never	Bucket	Cup	Always	Toilet	Diarrhoea	2	Wage Earner	Agriculture	4,000	7,000	
53	Kalolo	U-p SW	100	Every day	8		On foot	U-p SW	100	Every day	8		Bicycle	Yes		Never	Bucket	Two Cups	Always	Toilet	Eye Disease	8	Agriculture		35,000	5,000	
59	Kalolo	Protected SW	300	Every day	3	Draw Well	On foot	Protected SW	30	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Never		Diarrhoea		Agriculture	Merchant	13,500	15,000	
61	Kalolo	U-p SW	100	Every day	1	Draw Well	On foot	U-p SW	10	Every day	2	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Other	Diarrhoea		Agriculture	Agriculture	10,000		
62	Kalolo	Protected SW	200	Every day	6	Draw Well	On foot	U-p SW	2	Every day	6	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Always	Other	Dysentery, Eye disease and Skin dise	5	Agriculture	Agriculture	8,000		
63	Kalolo	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	10	Every day	3		On foot	Yes	Secure Quality	Never	Pot with filte	Cup	Always	Toilet		3	Agriculture	Agriculture	5,000		8,900
64	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot		Secure Quality	Always	Pot	Cup	Always	Toilet	Skin Disease	7	Agriculture	Agriculture			8,250
65	Kalolo	U-p SW	60	Every day	3	Draw Well	On foot	U-p SW	60	Every day	3	Draw Well	On foot		Secure Quality	Never	Bucket	Cup	Always	Toilet	Eye Disease	5	Agriculture Labour	Agriculture Labour	1,700	2,900	5,900
66	Kalolo	U-p SW	300	Every day	3	Draw Well	On foot	U-p SW	300	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Other	Dysentery, Eye disease and Skin dise	6	Agriculture	Agriculture	8,500		6,900
67	Kalolo	U-p SW	100	Every day	9	Draw Well	On foot	U-p SW	10	Every day	9	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always wash with soap or ash	Toilet	Diarrhoea, Cholera and Eye disease	6	Agriculture	Other	15,000	2,000	12,630
68	Kalolo	U-p SW	200	Every day	6			U-p SW	200	Every day	6			Yes	Secure Quality	Always	Pot		Always	Toilet		6	Agriculture	Wage Earner	23,000	11,000	
69	Kalolo	U-p SW	300	Every day	10	Draw Well	On foot	U-p SW	300	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	6	Agriculture	Agriculture	5,000	5,000	33,550
70	Kalolo	River/ Dambo	100	Every day	8	Draw Well	On foot	River/ Dambo	100	Every day	8	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Eye Disease		Agriculture	Merchant	1,000	7,000	
71	Kalolo	U-p SW		Every day	2	Draw Well	On foot	U-p SW		Every day	2	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Never	Toilet	Eye Disease		Agriculture	Merchant			
72	Kalolo	River/ Dambo	200	Every day	3	Draw Well	On foot	River/ Dambo	200	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Eye Disease		Agriculture		62,000		
73	Kalolo	U-p SW	300	Every day		Draw Well	On foot	U-p SW	300	Every day		Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Dysentery		Agriculture	Merchant	3,000	5,000	2,130
74	Kalolo	U-p SW	300	Every day		Draw Well	On foot	U-p SW	300	Every day		Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Other	Skin Disease		Agriculture	Merchant	500	10,000	4,686
76	Kalolo	U-p SW	400	Every day		Draw Well	On foot	U-p SW	400	Every day		Draw Well	On foot		Secure Quality	Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Eye Disease		Agriculture	Merchant		5,000	3,100
77	Kalolo	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day		Draw Well	On foot	Yes	Saving Time	Never	Other	Cup	Always	Toilet		3	Agriculture	Agriculture	28,000		
78	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes		Never	Bucket	Two Cups	Sometimes	Toilet	cholera and eye disease	5	Agriculture	Agriculture	10,000	2,000	23,000
80	Kalolo	River/ Dambo	125	Every day	3	Draw Well	On foot	River/ Dambo	125	Every day	3	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always wash with soap or ash	Toilet	Dysentery	6	Agriculture	Agriculture Labourer		2,000	
84	Kalolo	U-p SW	200	Every day	11	Draw Well	On foot	U-p SW	20	Every day	11	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	6	Agriculture	Agriculture			14,800
85	Kalolo	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always wash with soap or ash	Toilet	Dysentery, Eye disease and Skin dise	6	Agriculture	Agriculture	9,000		4,250
86	Kalolo	Protected SW	90	Every day	1	Draw Well	On foot	Protected SW	90	Every day	1	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	5	Agriculture	Agriculture	3,000	1,000	
87	Kalolo	Protected SW	100	Every day	2	Draw Well	On foot	Protected SW	100	Every day	2	Draw Well	On foot	Yes	Saving Time	Always	Bucket	Cup	Always	Toilet		2	Agriculture	Agriculture	1,000	200	
88	Kalolo	Protected SW	200	Every day	4	Draw Well	On foot	Protected SW	200	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin dise	6	Agriculture	Agriculture	50,000	2,000	
94	Kalolo	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Skin Disease	4	Agriculture				2,745
95	Kalolo	Protected SW	200	Every day	8	Draw Well	On foot	U-p SW	25	Every day	9	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always wash with soap or ash	Toilet	Dysentery	3	Agriculture				1,412
96	Kalolo	U-p SW	105	Every day	2	Draw Well	On foot		105	Every day		Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	5	Agriculture		8,000		14,696
98	Kalolo	U-p SW	500	Every day	16	Draw Well	On foot	U-p SW	500	Every day	11	Draw Well	On foot	Yes	Saving Time	Always	Pot	Two Cups	Always	Toilet	typhoid & skin diseases	6	Agriculture	Agriculture Labour	2,000	3,000	25,220
99	Kalolo	River/ Dambo	600	Every day	5	Draw Well	On foot	River/ Dambo	600	Every day	5	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Two Cups	Always	Toilet	Skin Disease	5	Agriculture		7,000		9,180
100	Kalolo	River/ Dambo	400	Every day	8	Draw Well	On foot	River/ Dambo	400			Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Two Cups	Always	Toilet	Eye Disease	4	Agriculture		70,000		32,940
104	Kalolo	U-p SW	100	Every day	8	Draw Well	On foot	U-p SW	100	Every day	8	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	Dysentery	3	Agriculture		4,000		10,650
105	Kalolo	U-p SW	600	Every day	6	Draw Well	On foot	U-p SW	600	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	typhoid & skin diseases	5	Agriculture	Agriculture Labour	18,000	15,000	27,310
107	Kalolo	U-p SW	70	Every day	8	Draw Well	On foot	U-p SW	70	Every day	8	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Two Cups	Always	Toilet	cholera & skin diseases	6	Agriculture		7,000		7,410
108	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	Protected SW	200	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture	Agriculture	44,000	5,000	20,714
109	Kalolo	River/ Dambo	400	Every day	6	Draw Well	On foot	River/ Dambo	400	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	3	Agriculture	Breeder	8,000	7,000	18,570
113	Kalolo	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	4	Agriculture	Agriculture	9,000		
117	Kalolo	U-p SW	800	Every day	4	Draw Well	On foot	U-p SW				Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet		4	Agriculture	Agriculture	5,000		
119	Kalolo	U-p SW	300	Every day	8	Draw Well	On foot	U-p SW	2	Every day	8	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Garden	Dysentery	9	Agriculture		10,000		30,300
129	Kalolo	River/ Dambo	100	Every day	7	Draw Well	On foot	River/ Dambo	1000	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Never	Toilet	typhoid & skin diseases	8	Agriculture	Agriculture	5,000	1,200	12,120
130	Kalolo	River/ Dambo	100	Every day	4	Draw Well	On foot	River/ Dambo	100	Every day	4	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot with filte	Cup	Sometimes	Toilet	Eye diseases & skin diseases	6	Agriculture Labour	Agriculture Labour	2,000	1,000	12,417
131	Kalolo	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	10	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Other	Cup	Sometimes	Toilet		7	Agriculture	Agriculture	110,000	20,000	16,250
132	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea, Cholera and Eye disease	6	Agriculture	Agriculture	42,000	10,000	30,170
134	Kalolo	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture	Breeder	30,000	14,000	1,895

No	District	Water Usage													Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
139	Kalolo	U-p SW	80	Every day	10	Draw Well	On foot	U-p SW	80	Every day	10	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Sometimes	Toilet	Diarrhoea	10	Agriculture		15,000		3,359
140	Kalolo	U-p SW	200	Every day	5		On foot	U-p SW	200	Every day			On foot	Yes	Secure Quality											
141	Kalolo	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture Labourer		2,000		1,955
142	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Sometimes	Toilet	Diarrhoea, Cholera and Eye disease	8	Agriculture	Agriculture	10,000		3,665
143	Kalolo	U-p SW	400	Every day	8	Draw Well	On foot	U-p SW	40	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Garden	Dysentery, Eye disease and Skin dise	8	Agriculture Labourer		10,000		2,470
144	Kalolo	U-p SW	200	Every day	7	Draw Well	On foot	U-p SW	200	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	4	Agriculture	Agriculture	20,000		3,490
193	Kalolo	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	5	Agriculture	Agriculture	2,000	500	
216	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea	6	Agriculture	Agriculture	11,300	1,000	
217	Kalolo	U-p SW	50	Every day	8	Draw Well	On foot	U-p SW	50	Every day	8	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Always	Garden	Diarrhoea, Cholera and Eye disease	8	Agriculture		15,850		
233	Kalolo	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	40	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Two Cups	Sometimes		Diarrhoea and Skin disease	8	Agriculture	Agriculture	7,000	300	6,070
238	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	10	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always wash with soap or ash	Toilet	Diarrhoea	5		Agriculture	15,000	2,000	9,600
265	Kalolo	U-p SW	200		6	Draw Well	On foot	U-p SW	20	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	4	Agriculture		15,000		8,050
266	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	U-p SW	200	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always		Skin Disease	7	Agriculture	Merchant	20,000		6,840
282	Kalolo	U-p SW	200	Every day	7	Draw Well	On foot		200	Every day	7	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Typhoid	5	Agriculture	Merchant	10,000		11,730
351	Kalolo	U-p SW	150	Every day	3	Other	On foot	U-p SW	15	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	3	Wage Earner		2,000		2,010
355	Kalolo	U-p SW	80	Every day	4	Draw Well	On foot	U-p SW	80	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea	3	Agriculture Labourer		7,000		1,645
356	Kalolo	U-p SW	60	Every day	5	Draw Well	On foot	U-p SW	60	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye Disease	7	Agriculture		3,000		3,300
357	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Sometimes	Toilet	Diarrhoea	4	Agriculture	Agriculture	19,000		
360	Kalolo	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture Labourer		3,000		4,750
361	Kalolo	U-p SW	800	Every day	4	Draw Well	On foot	U-p SW	800	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Sometimes	Toilet	cholera and eye disease	6	Agriculture Labourer	Agriculture	28,000	50,000	2,660
362	Kalolo	U-p SW	120	Every day	6	Draw Well	On foot	U-p SW	120	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	4	Agriculture Labourer		25,000		2,970
364	Kalolo	River/ Dambo	400	Every day	4	Other	On foot	River/ Dambo	400	Every day	4	Other	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	2	Agriculture		48,000		34,700
365	Kalolo	River/ Dambo	850	Every day	4	Other	On foot	River/ Dambo	850	Every day	4	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture Labourer		15,000		6,850
366	Kalolo	U-p SW	300	Every day	8	Draw Well	On foot	U-p SW	300	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Other	Cup	Sometimes	Toilet	dysentery and skindisease	7	Agriculture	Agriculture	5,000	2,000	3,300
367	Kalolo	U-p SW	200	Every day	6	Draw Well	On foot	U-p SW	200	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Bucket	Cup	Always	Toilet	Diarrhoea	5	Agriculture	Agriculture	15,000	2,000	
368	Kalolo	U-p SW	50	Every day	3	Draw Well	On foot	U-p SW	50	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Never	Toilet	Cholera	4	Agriculture		4,000		
369	Kalolo	U-p SW	250	Every day	6	Draw Well	On foot	U-p SW	25	Every day	6	Draw Well	On foot		Secure Quality	Never	Bucket	Cup	Never	Toilet	Diarrhoea	5	Agriculture		25,000		
371	Kalolo	U-p SW	70	Every day	10	Draw Well	On foot	River/ Dambo	100	Every day	10	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Always	Toilet	cholera and eye disease	8	Agriculture	Agriculture Labour	20,000	2,000	4,100
372	Kalolo	U-p SW	400	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet		8	Agriculture		18,000		11,000
373	Kalolo	U-p SW	400	Every day	6	Draw Well	On foot	U-p SW	700	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	9	Agriculture		100,000		7,100
374	Kalolo	River/ Dambo	500	Every day	5	Draw Well	On foot	River/ Dambo	500	Every day	5	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Dipper	Always	Toilet	Diarrhoea	5	Agriculture	Agriculture	35,000	56,000	
375	Kalolo	U-p SW	800	Every day	6	Draw Well	On foot	U-p SW	800	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Eye Disease	5	Agriculture Labourer		60,000		5,885
376	Kalolo	U-p SW	600	Every day	5	Draw Well	On foot	U-p SW	600	Every day	5	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Always	Toilet	Eye Disease	6	Agriculture Labourer		200,000		2,815
377	Kalolo	U-p SW	400	Every day	3	Draw Well	On foot	U-p SW	400	Every day	3	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	4	Agriculture Labourer		6,000		1,475
378	Kalolo	River/ Dambo	850	Every day	6		On foot	River/ Dambo	850	Every day	6		On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Garden	Diarrhoea	4	Agriculture		2,000		1,880
379	Kalolo	River/ Dambo	300	Every day	4		On foot	River/ Dambo	300				On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet		8	Agriculture		15,000		1,500
380	Kalolo	River/ Dambo	500	Every day	4		On foot	River/ Dambo	500	Every day	4		On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	4	Agriculture		6,000		1,350
383	Kalolo	U-p SW	800	Every day	3	Draw Well	On foot	U-p SW	800	Every day	3	Draw Well	On foot	Yes	Saving Time	Normally	Bucket	Cup	Always	Toilet	Diarrhoea	5	Agriculture		900		3,240
384	Kalolo	U-p SW	500	Every day	4	Draw Well	On foot	U-p SW	500	Every day	4	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Dipper	Always	Toilet	Diarrhoea	3	Agriculture		12,000		1,534
385	Kalolo	River/ Dambo	200	Every day	8	Draw Well	On foot	Other	200	Every day	8	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Two Cups	Always	Toilet	Diarrhoea	7	Agriculture	Agriculture	50,000		148,070
386	Kalolo	River/ Dambo	1000	Every day	5		On foot							Yes	Saving time and secure quality	Never	Pot	Two Cups	Sometimes	Toilet	Skin Disease	5	Agriculture		38,000		13,700
387	Kalolo	U-p SW	150		9	Draw Well	On foot	U-p SW	150	Every day	9	Draw Well	On foot	Yes	Saving time and secure quality	Always	Bucket	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture	Agriculture	16,000		12,830
388	Kalolo	U-p SW	80	Every day	6	Draw Well	On foot							Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	9	Agriculture				1,325
389	Kalolo	River/ Dambo	500	Every day	4	Draw Well	On foot	River/ Dambo		Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	4	Agriculture		30,000	12,000	2,630
392	Kalolo	U-p SW	500	Every day	9	Draw Well	On foot	U-p SW	150	Every day	9	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Dipper	Sometimes	Toilet	Dysentery	4	Agriculture	Agriculture	5,000	1,500	2,910
394	Kalolo	River/ Dambo	600	Every day	4	Draw Well	On foot		600	Every day	4		On foot	Yes	Secure Quality	Never	Other	Cup	Sometimes	Garden	Diarrhoea	5	Agriculture	Agriculture	20,000	800	1,560
395	Kalolo	U-p SW	100	Every day	5	Draw Well	On foot							Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture				1,425
398	Kalolo	U-p SW	300	Every day	4	Draw Well	On foot	U-p SW	300	Every day	4	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never		Cup	Sometimes	Toilet		3	Agriculture	Agriculture	6,000	2,000	3,300
399	Kalolo	U-p SW	600	Every day	3	Draw Well	On foot	U-p SW	600	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Garden	Diarrhoea	4	Agriculture		13,000	700	1,585
400	Kalolo	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	9	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	9	Agriculture Labourer		120,000		4,860
401	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	River/ Dambo	400	Every day	4	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Sometimes	Toilet		5	Agriculture Labourer		72,000	30,000	3,775
402	Kalolo	U-p SW	50	Every day	7	Draw Well	On foot	U-p SW	50	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	7	Agriculture	Agriculture	200,000		31,810
403	Kalolo	River/ Dambo	400	Every day	6	Draw Well	On foot	River/ Dambo	400	Every day	6		On foot	Yes	saving time, lighten labour & secure quality	Normally	Bucket	Cup	Always	Toilet	Diarrhoea	6	Agriculture	Agriculture	25,000		12,600
404	Kalolo	U-p SW	200	Every day	8	Draw Well	On foot	U-p SW	200	Every day	8	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture				12,575
405	Kalolo	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	7	Agriculture	Agriculture	120,000	5,000	14,050
406	Kalolo	U-p SW	500	Every day	5	Draw Well	On foot	U-p SW	500	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Other	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin dise	7	Agriculture	Agriculture	10,000	2,000	7,335
411	Kalolo	U-p SW	100		4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot		Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin dise	3	Agriculture	Agriculture	10,000		2,920
412	Kalolo	U-p SW	70	Every day	5	Draw Well	On foot	U-p SW	70	Every day	5	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Skin Disease	9	Agriculture		5,000		5,045
413	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200		5	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Dysentery	4	Agriculture		10,000		15,425
416	Kalolo	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	3	Agriculture	Agriculture	10,000		3,579
417	Kalolo	U-p SW	50	Every day	8	Draw Well	On foot	U-p SW	50		8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	7	Agriculture		9,000		2,900
418	Kalolo	U-p SW	60	Every day	5	Draw Well	On foot		60	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture		40,000		3,100
419	Kalolo	U-p SW	300	Every day	7	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never		Dipper	Sometimes	Toilet	Dysentery, Eye disease and Skin dise	3	Agriculture	Agriculture	2,800		5,950
420	Kalolo	River/ Dambo	150	Every day	3	Draw Well	On foot	River/ Dambo	150	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture				23,375
421	Kalolo	River/ Dambo	200	Every day	4		On foot	River/ Dambo	200	Every day	4		On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Garden	Diarrhoea	6	Agriculture		10,000		22,000
422	Kalolo	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	1	Agriculture	Agriculture	3,000		3,520
423	Kalolo	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day		Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Agriculture	3,500		5,039
424	Kalolo	U-p SW	50	Every day	4	Draw Well	On foot	U-p SW	50	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Diarrhoea	5	Agriculture	Agriculture	10,000	10,000	11,015
425	Kalolo	U-p SW	100	Every day	8	Draw Well	On foot	U-p SW	100	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Skin disease	4	Agriculture	Agriculture	6,000		5,329
426	Kalolo	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	9	Agriculture	Agriculture	7,000		5,824
427	Kalolo	River/ Dambo	400	Every day	4	Draw Well	On foot	River/ Dambo	400	Every day	4	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Dipper	Sometimes	Toilet	Dysentery, Eye disease and Skin dise	3	Agriculture	Agriculture	500	100	5,360
428	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot		100	Every day	4	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Skin Disease	4	Agriculture	Agriculture	18,000		7,640

No	District	Water Usage													Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
429	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	8	Agriculture	Agriculture	2,000		5,900
430	Kalolo	U-p SW	250	Every day	4	Draw Well	On foot							Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea	2	Agriculture				8,279
431	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	6	Agriculture	Agriculture	3,000		8,950
449	Kalolo	U-p SW	900	Every day	4	Draw Well	On foot	U-p SW	900	Every day		Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	6	Agriculture		4,800		5,450
450	Kalolo	U-p SW	200	Every day	10	Draw Well	On foot	U-p SW	200	Every day	10	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	A dipper and a c	Sometimes	Toilet	diarrhoea and dysentery and skin dise	6	Agriculture	Agriculture	10,000	2,000	8,550
451	Kalolo	U-p SW	152	Every day	8		On foot		152	Every day	8		On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea	9	Agriculture		24,000		650
452	Kalolo	River/ Dambo	400	Every day	6	Draw Well	On foot	River/ Dambo	400	Every day	6	Draw Well	On foot	Yes	Saving Time	Never		A dipper and a c	Never	Toilet	Diarrhoea	5	Agriculture	Agriculture	2,000	1,000	1,360
453	Kalolo	U-p SW	300	Every day	4	Draw Well	On foot	U-p SW	300	Every day	4	Draw Well	On foot	Yes		Never	Bucket	Cup	Sometimes	Garden	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture	Agriculture	5,000	4,000	3,030
455	Kalolo	U-p SW	70	Every day	8		On foot							Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Dysentery	5	Agriculture		10,000		1,171
456	Kalolo		100	Every day	5		On foot		100	Every day	5		On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Agriculture	17,000		55,500
457	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5		On foot	Yes	Lighten Labour	Never		Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture	Agriculture	10,000	2,000	
458	Kalolo		100	Every day	10		On foot		100	Every day	10		On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Two Cups	Always	Toilet	Diarrhoea	11	Agriculture	Agriculture	80,000		96,500
461	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	secure quality & less expenses	Never	Bucket	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture	Agriculture	5	150	465
462	Kalolo	U-p SW	500	Every day	5	Draw Well	On foot		500	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture		10,000		4,700
463	Kalolo	U-p SW	700		8	Draw Well	On foot	U-p SW	700		8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	3	Agriculture		20,000		12,950
464	Kalolo	River/ Dambo	400	Every day	5	Draw Well	On foot	River/ Dambo	400	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Sometimes	Toilet	Eye Disease	6	Agriculture	Agriculture	8,000	1,000	25,500
465	Kalolo	River/ Dambo	100	Every day	6	Draw Well	On foot	River/ Dambo	100	Every day	6	Draw Well	On foot	Yes	Saving Time	Always	Bucket	Cup	Sometimes	Toilet	Dysentery	5	Agriculture	Agriculture	35,000	12,000	43,250
466	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot		200	Every day	4	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Diarrhoea	6	Agriculture	Agriculture	10,000	8,000	5,110
467	Kalolo	U-p SW	50	Every day	15	Draw Well	On foot	U-p SW	50	Every day	15	Draw Well	On foot	Yes		Never		Cup	Sometimes	River	Diarrhoea and Eye Disease	5	Agriculture	Agriculture	10		11,930
468	Kalolo	River/ Dambo	350	Every day	2	Draw Well	On foot	River/ Dambo	350	Every day	2	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Sometimes	Toilet	dysentery and skindisease	9	Agriculture	Agriculture	30,000		9,600
469	Kalolo	River/ Dambo	200	Every day	3	Draw Well	On foot	River/ Dambo	200	Every day	3	Draw Well	On foot	Yes	Other	Never	Other	Cup	Sometimes	Other	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	1	Agriculture	Agriculture	6,000	1,000	9,050
470	Kalolo	River/ Dambo	200	Every day	4	Draw Well	On foot	River/ Dambo	200	Every day	4	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Cup	Always	Toilet		3	Agriculture	Agriculture	2,000	250	3,150
471	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye Disease	3	Agriculture	Agriculture	4,000	1,000	3,660
472	Kalolo	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	400	Every day		Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Typhoid	3	Agriculture		3,000	1,000	1,190
473	Kalolo	U-p SW	700	Every day	4	Draw Well	On foot	U-p SW	700	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Dysentery	5	Agriculture	Agriculture	7,000	2,000	4,500
474	Kalolo	U-p SW	100	Every day	2	Draw Well	On foot	U-p SW	100	Every day	2	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture	Agriculture	4,000	1,000	1,316
475	Kalolo	U-p SW	80	Every day	2	Draw Well	On foot	U-p SW	80	Every day	2	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Agriculture	35,000	600	2,242
476	Kalolo	U-p SW	50	Every day	4	Draw Well	On foot	U-p SW	50	Every day	4	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	9	Agriculture	Agriculture	600	400	49,625
506	Kalolo	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Two Cups		Other		5	Agriculture		18,000		2,510
507	Kalolo	U-p SW	200	Every day	8	Draw Well	On foot	U-p SW	200	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Seldom	Toilet		4	Agriculture		45,000		2,685
508	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	10	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Never	Toilet		4	Agriculture		36,000		3,579
509	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	U-p SW	200	Every day	4	Draw Well	On foot	Yes		Never	Pot	Cup	Always	Toilet	Diarrhoea	3	Agriculture		100,000		3,200
510	Kalolo	River/ Dambo	250	Every day	2		On foot							Yes	Saving time and secure quality	Never	Pot with filte	Dipper	Always wash with soap or ash	Toilet	Dysentery	2	Agriculture		10,000		2,745
511	Kalolo	River/ Dambo	500	Every day	7		On foot							Yes	Saving time and secure quality	Never	Pot	Cup	Always	Other	Diarrhoea	8	Agriculture		80,000		20,300
512	Kalolo	U-p SW	400	Every day	7	Draw Well	On foot	U-p SW	400	Every day	7	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	8	Agriculture	Agriculture	80,000	7,000	8,040
513	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes		Never	Bucket	Cup	Always	Toilet	Diarrhoea	5	Agriculture		15,000		3,750
514	Kalolo		400	Every day	3		On foot		400	Every day	3		On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea	3			18,000		14,400
524	Kalolo	U-p SW	50	Every day	4	Draw Well	On foot	U-p SW	50	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always		Skin Disease		Agriculture		50,000		
544	Kalolo	River/ Dambo	200	Every day	3		On foot		200	Every day	3		On foot	Yes	Secure Quality	Always	Bucket	Cup	Always		Diarrhoea and Eye Disease	5	Agriculture		45,000		
556	Kalolo	River/ Dambo	500	Every day	4	Draw Well	On foot	River/ Dambo	500	Every day	4	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Dipper	Always wash with soap or ash	Toilet	Diarrhoea	10	Agriculture	Agriculture	30,000		
558	Kalolo	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	3	Agriculture		50,000		
565	Kalolo	River/ Dambo	800	Every day	7	Other	On foot	River/ Dambo	800	Every day	7	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery	5	Agriculture Labourer		49,000		1,870
566	Kalolo	U-p SW	50	Every day	3	Draw Well	On foot	U-p SW	50	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	8	Agriculture		12,000		1,520
569	Kalolo	U-p SW	110	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Dysentery	2	Agriculture	Agriculture			2,400
570	Kalolo	U-p SW	250	Every day	8	Draw Well	On foot	U-p SW	25	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture	Agriculture	23,000		4,500
571	Kalolo	U-p SW	300	Every day	9	Draw Well	On foot	U-p SW	300	Every day	9	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	9	Agriculture Labourer		4,000	2,000	3,000
572	Kalolo	River/ Dambo	200	Every day	3		On foot	River/ Dambo	200	Every day	5		On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery	4	Agriculture		25,000		2,260
573	Kalolo	U-p SW	70	Every day	4	Draw Well	On foot	U-p SW	150	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	2	Agriculture				3,600
574	Kalolo	U-p SW	250	Every day	5	Draw Well	On foot	U-p SW	250	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot with filte	Dipper	Always wash with soap or ash	Toilet	Eye Disease	5	Agriculture				2,800
578	Kalolo	River/ Dambo	800	Every day	3	Other	On foot	River/ Dambo	800	Every day	5	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	6	Agriculture Labourer		9,000		670
579	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	5		Agriculture Labour	40,000		1,525
580	Kalolo	Protected SW	50	Every day	4	Draw Well	On foot	Protected SW	50	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	5	Agriculture Labourer		9,000		825
581	Kalolo	U-p SW	70	Every day	6	Draw Well	On foot	U-p SW	70	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	10	Agriculture		240,000		14,250
582	Kalolo	U-p SW	200	Every day	10	Draw Well	On foot	U-p SW	200	Every day	10	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases		Agriculture		19,000		3,773
584	Kalolo	U-p SW	90	Every day	5	Draw Well	On foot	U-p SW	90	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	dysentery and skindisease	4	Agriculture Labourer		15,000		1,825
585	Kalolo	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture Labourer		10,000		1,475
586	Kalolo	U-p SW	250	Every day	4	Draw Well	On foot	U-p SW	250	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	diarrhoea and dysentery	5	Agriculture Labourer		20,000		24,262
587	Kalolo	River/ Dambo	215	Every day	4	Other	On foot	River/ Dambo	215	Every day	4	Other	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Dysentery	4	Agriculture	Agriculture	25,000		10,200
588	Kalolo	River/ Dambo	150	Every day	10		On foot	River/ Dambo	150	Every day	10	Other	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	13	Agriculture	Agriculture	28,000	3,000	2,210
589	Kalolo	River/ Dambo	200	Every day	8		On foot	River/ Dambo	200	Every day	9	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture		32,000		2,375
595	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet	dysentery and skindisease	5	Agriculture	Agriculture	7,000	1,000	6,030
596	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	3	Agriculture	Agriculture	20,000	5,000	7,300
597	Kalolo	U-p SW	300	Every day	7	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot	Yes	Secure Quality	Normally	Bucket	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture	Agriculture	20,000	1,000	1,315
598	Kalolo	River/ Dambo	300	Every day	4		On foot	River/ Dambo	300	Every day	6	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery	6	Agriculture				3,995
599	Kalolo	River/ Dambo	200	Every day	6		On foot	River/ Dambo	200	Every day	6	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture				3,250
600	Kalolo	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease		Agriculture	Agriculture	9,000		3,670
602	Kalolo	U-p SW	70	Every day	6	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Agriculture	100,000	1,000	4,320
603	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	3	Agriculture		9,000		1,025
604	Kalolo	U-p SW	400	Every day	8	Draw Well	On foot	U-p SW	400		8		On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture		4,000		3,850
605	Kalolo	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	4	Agriculture	Agriculture	11,000	2,000	5,800
606	Kalolo	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	5	Agriculture	Agriculture	10,000	2,000	5,100
607	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye Disease	2	Agriculture		5,000		3,200
608	Kalolo	U-p SW	500	Every day	4	Draw Well	On foot	U-p SW	500	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	10	Agriculture		30,000		9,100
609	Kalolo		400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Dipper	Always wash with soap or ash	Garden	Diarrhoea	6	Agriculture		4,000		2,300

No	District	Water Usage														Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
613	Kalolo	U-p SW	150	Every day	4	Draw Well	On foot	U-p SW	150	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	6	Agriculture		170,000		4,250
614	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture		30,000		5,300
615	Kalolo	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	400	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	10	Agriculture		40,000		4,300
616	Kalolo	U-p SW	60	Every day	3	Draw Well	On foot	U-p SW	60	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture		9,000		5,400
617	Kalolo	River/ Dambo	600	Every day	4	Other	On foot	U-p SW	300	Every day	4	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	5	Agriculture	Agriculture	25,000	12,000	40,700
618	Kalolo	River/ Dambo	400	Every day	6	Other	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	5	Agriculture	Agriculture	18,000		3,300
619	Kalolo	U-p SW	700	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Dipper	Always	Toilet	Skin Disease	3	Agriculture		10,000		6,550
620	Kalolo	U-p SW	700	Every day	4	Draw Well	On foot	U-p SW	700	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Dipper	Always	Toilet	dysentery and skindisease	6	Agriculture	Merchant	40,000	4,000	14,990
621	Kalolo	U-p SW	100	Every day	8	Draw Well	On foot	Spring	700	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Dipper	Always wash with soap or ash	Toilet	Dysentery, Eye disease and Skin dise	6	Agriculture		15,000		14,470
622	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	150	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	6	Agriculture		20,000		4,500
623	Kalolo	U-p SW	150	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	6	Agriculture		6,000		3,050
624	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	170	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Always	Pot	Dipper	Always	Toilet	Diarrhoea	6	Agriculture		15,000		5,750
631	Kalolo	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	400	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	3	Agriculture Labourer		44,000		1,580
632	Kalolo	U-p SW	150	Every day	6	Draw Well	On foot	U-p SW	150	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture		49,000		2,995
633	Kalolo	U-p SW	100	Every day	4		On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	3	Agriculture		6,000		1,600
634	Kalolo	U-p SW	800	Every day	4	Draw Well	On foot	U-p SW	800	Every day	4	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	5	Agriculture		5,000		2,925
635	Kalolo	U-p SW	600	Every day	4	Draw Well	On foot	U-p SW	600	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	11	Agriculture Labourer		11,000		2,750
636	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	U-p SW	200	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	8	Agriculture		80,000		4,600
637	Kalolo	U-p SW		Every day	5	Draw Well	On foot	U-p SW		Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Other	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	8	Agriculture		180,000		6,245
638	Kalolo	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	8	Agriculture		10,000		2,380
639	Kalolo	U-p SW	900	Every day	4	Draw Well	On foot	U-p SW	900	Every day	4	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Cup	Sometimes	Toilet	Skin Disease	4	Agriculture Labourer		8,000		1,490
640	Kalolo	River/ Dambo	250	Every day	5	Other	On foot	River/ Dambo	250	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Sometimes	Garden	Dysentery, Eye disease and Skin dise	5	Agriculture Labour	Agriculture Labour	7,000	4,000	2,075
641	Kalolo	U-p SW	100	Every day	4		On foot	U-p SW	100	Every day	4		On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	5	Agriculture Labour	Agriculture Labour	80,000	6,000	1,745
645	Kalolo	U-p SW	200	Every day	4	Draw Well	On foot	Protected SW	200	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	5	Agriculture Labour	Agriculture Labour	144,000	5,000	20,714
646	Kalolo	U-p SW	600	Every day	6	Draw Well	On foot	U-p SW	600	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	typhoid & skin diseases	5	Agriculture Labour	Agriculture Labour	118,000	115,000	27,310
651	Kalolo	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	5	Agriculture Labourer		5,000		1,510
652	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	8	Agriculture Labourer		40,000		4,970
653	Kalolo	U-p SW	600	Every day	4	Draw Well	On foot	U-p SW	600	Every day	4	Draw Well	On foot			Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	6	Agriculture Labour	Agriculture Labour	49,000		1,675
654	Kalolo	River/ Dambo	400	Every day	6	Draw Well	On foot	U-p SW	400	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	3	Agriculture Labour	Breeder	8,000	7,000	1,850
660	Kalolo	River/ Dambo	350	Every day	7	Draw Well	On foot	River/ Dambo	250	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Pot	Two Cups	Always	Toilet	Diarrhoea, eye and skin diseases	9	Agriculture	Wage Earner	1,500	15,000	3,150
664	Kalolo	River/ Dambo	600	Every day	5	Draw Well	On foot	River/ Dambo	600	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, Cholera and Eye disease	14	Agriculture		180,000		
686	Kalolo	U-p SW	100	Every day	15	Draw Well	On foot	U-p SW	100	Every day	15	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Other	Diarrhoea and Eye Disease	8	Agriculture	Agriculture	15,000	6,000	3,746
688	Kalolo	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Bucket	Cup	Always	Toilet	Diarrhoea	10	Agriculture		20,000		4,924
691	Kalolo	River/ Dambo	200	Every day	12	Draw Well	On foot	River/ Dambo	200	Every day	12	Draw Well	On foot	Yes	Saving time and secure quality	Never	Other	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	11	Agriculture	Agriculture	7,500		4,000
692	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100			Draw Well		Yes	Secure Quality	Never	Pot with filte	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	6			21,000		4,800
693	Kalolo	U-p SW	300	Every day	8	Draw Well	On foot	U-p SW	300	Every day	8	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	4	Agriculture	Agriculture	10,000		13,100
694	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Never	Other		4	Agriculture		15,000		3,250
695	Kalolo	River/ Dambo	600	Every day	5	Draw Well	On foot	River/ Dambo	500		5		On foot	Yes		Never	Bucket	Cup	Never	Other			Agriculture		17,000		3,779
705	Kalolo	U-p SW	50	Every day	5	Draw Well	On foot	U-p SW	50	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Dysentery	9	Agriculture Labour	Agriculture	75,000		8,690
706	Kalolo	U-p SW	90	Every day	4	Draw Well	On foot	U-p SW	90	Every day	4	Draw Well	On foot	Yes	Less Expense	Always	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture		15,000		4,050
707	Kalolo	Protected SW	200	Every day	7	Draw Well	On foot	Protected SW	200	Every day	8	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	7	Agriculture	Agriculture Labour	15,000		6,050
708	Kalolo	U-p SW	50	Every day	9	Draw Well	On foot	U-p SW	50	Every day	9	Draw Well	On foot	Yes	Secure Quality	Never	Other	Cup	Sometimes	Toilet	Eye diseases & skin diseases	6	Agriculture	Agriculture	9,000		1,940
709	Kalolo	U-p SW	80	Every day	6	Draw Well	On foot	U-p SW	80	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Other	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	6	Agriculture	Agriculture	22,000		1,140
710	Kalolo	U-p SW	60	Every day	8	Draw Well	On foot	U-p SW	60	Every day	8	Draw Well	On foot	Yes	Secure Quality	Always	Other	Cup	Always	Toilet	dysentery and skindisease	5	Agriculture	Agriculture	50,000	5,000	7,650
711	Kalolo	U-p SW	150	Every day	3	Draw Well	On foot	U-p SW	150	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Never		Cholera	4	Agriculture		17,000		2,040
712	Kalolo	U-p SW	300	Every day	5	Draw Well	On foot	Spring	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Normally	Bucket	Cup	Always	Toilet	Eye Disease	3	Agriculture	Agriculture	40,000	2,000	2,700
713	Kalolo	Protected SW	500	Every day	15	Draw Well	On foot	Protected SW	500	Every day	15	Draw Well	On foot			Never	Pot	Two Cups	Always	Toilet	Eye diseases & skin diseases	7	Agriculture		6,000		4,600
714	Kalolo	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet			Agriculture	Agriculture	9,000		3,100
715	Kalolo	U-p SW	200	Every day	6	Draw Well	On foot	U-p SW	200	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	A dipper and a c	Always	Toilet	Diarrhoea and Skin disease	6	Agriculture	Agriculture	30,000	5,000	3,900
716	Kalolo	U-p SW	400	Every day	6	Draw Well	On foot	U-p SW	400	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	4	Agriculture	Agriculture	50,000		6,650
717	Kalolo	River/ Dambo	300	Every day	6		On foot	River/ Dambo	300	Every day			On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Civil Servant		80,000	50,758
718	Kalolo	River/ Dambo	400	Every day	6		On foot	River/ Dambo	400	Every day	6		On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Agriculture	42,000	2,000	5,208
719	Kalolo	River/ Dambo	400	Every day	5		On foot	U-p SW	400	Every day	5		On foot	Yes	saving time, lighten labour & secure quality	Never	Pot with filte	Cup	Always	Toilet	Diarrhoea		Agriculture		32,000		
720	Kalolo	U-p SW	200	Every day	4		On foot	U-p SW	200	Every day	4		On foot	Yes	Saving time and secure quality	Normally	Pot	Two Cups	Always	Toilet	dysentery and skindisease	6	Agriculture	Wage Earner	50,000	4,000	4,950
722	Kalolo	U-p SW	100	Every day	6		On foot	U-p SW	100	Every day	6		On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet		8	Civil Servant	Agriculture	5,000		5,254
723	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Saving Time	Always	Other	Cup	Sometimes	Toilet	Eye Disease	6	Agriculture	Agriculture	2,000	700	4,450
724	Kalolo	U-p SW	500	Every day	4	Draw Well	On foot	River/ Dambo	200	Every day			On foot	Yes	Secure Quality	Never	Pot	Cup	Seldom	Other	Diarrhoea	6	Agriculture	Agriculture	15,000	4,500	17,900
725	Kalolo	River/ Dambo	100	Every day	10	Draw Well	On foot	River/ Dambo	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always wash with soap or ash	Toilet	Diarrhoea	4	Agriculture	Merchant	15,000	6,000	
726	Kalolo	River/ Dambo	100	Every day	10	Draw Well	On foot	River/ Dambo	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet	Diarrhoea	7	Agriculture		67,000		
727	Kalolo	River/ Dambo	120	Every day	7	Draw Well	On foot	River/ Dambo	100	Every day	7	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Two Cups		Toilet	Diarrhoea	5	Agriculture		45,000		
731	Kalolo	U-p SW	200	Every day	6		On foot	U-p SW	1000	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Always wash with soap or ash	Toilet	dysentery and skindisease	7	Agriculture				
737	Kalolo	River/ Dambo	400	Every day	4		On foot	River/ Dambo	400	Every day	8		On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	8	Agriculture		40,000		29,700
738	Kalolo	River/ Dambo	600		8		On foot	River/ Dambo	600	Every day	8		On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Always	Toilet	Diarrhoea	4		Agriculture	12,000		9,400
739	Kalolo	River/ Dambo	600	Every day	10		On foot	River/ Dambo	400	Every day	10		On foot	Yes		Never	Bucket	Cup	Always	Toilet	Diarrhoea	6	Agriculture		60,000		20,850
740	Kalolo	River/ Dambo	200	Every day	5		On foot		20	Every day	5		On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease		Agriculture	Agriculture			5,400
741	Kalolo	River/ Dambo	50	Every day	10		On foot	River/ Dambo	50	Every day	10		On foot	Yes	Lighten Labour	Always	Bucket	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	8	Agriculture	Agriculture	40,000		52,400
742	Kalolo	River/ Dambo	300	Every day	4		On foot	River/ Dambo	300	Every day			On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet		4	Agriculture	Agriculture	10,000		13,300
744	Kalolo	Borehole	400	Every day	4	Draw Well	On foot	Borehole	400	Every day	4	Draw Well	On foot	Yes		Never	Pot	Cup	Sometimes	Toilet	diarrhoea and dysentery and skin dise	4	Agriculture Labour	Other	14,000	17,000	1,260
746	Kalolo	U-p SW	50	Every day	8	Draw Well	On foot	U-p SW	50	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	4	Agriculture	Agriculture	6,700	800	20,300
747	Kalolo	U-p SW	400	Every day	6		On foot	U-p SW	400	Every day	6		On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea		Agriculture	Agriculture	15,000		28,700
748	Kalolo	U-p SW	50	Every day	10	Draw Well	On foot	U-p SW	50	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	9	Agriculture	Agriculture	15,000	2,000	13,600
749	Kalolo	River/ Dambo	200	Every day	5		On foot	River/ Dambo	200	Every day	5		On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always		Diarrhoea		Agriculture	Merchant	40,000	10,000	46,300
750	Kalolo	River/ Dambo	50	Every day	10		On foot	U-p SW	50	Every day	10		On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea		Agriculture	Civil Servant	60,000	55,200	89,500

No	District	Water Usage													Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
751	Kalolo	River/ Dambo	150	Every day	4		On foot	River/ Dambo	150	Every day	4		On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Cup	Always	Other	Diarrhoea		Agriculture	Agriculture	200,000		59,000
752	Kalolo	River/ Dambo	500	Every day	5		On foot	River/ Dambo	500	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea		Agriculture	Agriculture	50,000		90,000
753	Kalolo	U-p SW	100	Every day	6		On foot	U-p SW	100	Every day	6		On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease		Agriculture	Agriculture	10,000		26,000
754	Kalolo	River/ Dambo	500	Every day	5		On foot	River/ Dambo	500	Every day	5		On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Diarrhoea		Agriculture	Agriculture	20,000		35,000
743	Kalolo	Borehole	100	Every day	6	Hand Pum	On foot	Borehole	100	Every day	6	Hand Pum	On foot			Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture Labourer		30,000		2,400
745	Kalolo	Borehole	300	Every day	4	Hand Pum	On foot	Borehole	300	Every day	4	Hand Pum	On foot	Yes	Lighten Labour	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	10	Agriculture Labourer		18,000		3,250
755	Kalolo	Borehole	300	Every day	5	Hand Pum	On foot	Borehole	300	Every day	5		On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet		3	Agriculture	Agriculture	50,000		72,200
756	Kalolo	Borehole	500	Every day	6	Hand Pum	On foot	Borehole	500	Every day	6	Hand Pum	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet			Agriculture		17,700		57,200
757	Kalolo	Borehole	600	Every day	5	Hand Pum	On foot	Borehole	500	Every day	5	Hand Pum	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always	Toilet		9	Agriculture	Agriculture	15,000		43,500
2	Kalolo	Borehole	300	Every day	4	Hand Pum	On foot	Borehole	300	Every day	4	Hand Pum	On foot	Yes	Saving time and secure quality	Never	Bucket	Two Cups	Sometimes	Toilet	Diarrhoea, Cholera and Eye disease	6	Agriculture Labourer	Agriculture Labourer			22,350
4	Kalolo	Borehole	500	Every day	5	Hand Pum	On foot	Borehole	500	Every day	5	Hand Pum	On foot	Yes	Saving Time	Never	Other	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	8	Agriculture	Agriculture	8,000	3,000	4,250
6	Kalolo	Borehole	300	Every day		Hand Pum	On foot	Borehole	300	Every day		Hand Pum	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Dysentery	4	Agriculture	Civil Servant	10,000	5,500	25,950
8	Kalolo	Protected SW	170	Every day	2	Hand Pum	On foot	Spring	17	Every day	6	Hand Pum	On foot		Saving Time	Always	Pot	Cup	Always	Toilet	Eye Disease	7	Agriculture	Agriculture	5,000	1,000	28,510
9	Kalolo	Protected SW	70	Every day	2	Hand Pum	On foot	Spring	10	Every day	2	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Dipper	Always	Toilet	Diarrhoea	9	Agriculture	Agriculture	2,000		19,050
10	Kalolo	Borehole	100	Every day	7	Hand Pum	On foot	Borehole	100	Every day	7	Hand Pum	On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Two Cups	Always	Toilet	Skin Disease	5	Agriculture		40,000		29,300
11	Kalolo	Borehole	500	Every day	6	Hand Pum	On foot	Borehole	50	Every day	6	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Two Cups	Always	Toilet	Eye Disease	5	Agriculture		60,000		25,690
12	Kalolo	Borehole	100	Every day	7	Hand Pum	On foot	Borehole	100	Every day	17	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Two Cups	Always	Toilet	Diarrhoea, Cholera and Eye disease	6	Agriculture		10,000		25,120
20	Kalolo	Borehole	400	Every day	2	Hand Pum	On foot	Borehole	400	Every day	2	Hand Pum	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery	7	Agriculture	Merchant	2,000	2,000	1,670
21	Kalolo	U-p SW	1000	Every day	6	Draw Well	Bicycle	U-p SW	1000	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Never	Toilet	cholera and eye disease	6	Agriculture Labourer	Breeder	70,000	21,000	46,450
23	Kalolo	Protected SW	300	Every day	15	Draw Well	On foot	U-p SW	300	Every day	15	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	dysentery and skindisease	6	Agriculture	Agriculture	10,000		2,200
49	Kalolo	Borehole		Every day	4	Hand Pum	On foot	Borehole		Every day	4	Hand Pum	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet			Agriculture	Merchant	26,500	20,000	7,600
57	Kalolo	Borehole	100	Every day	2	Hand Pum	On foot	Borehole	100	Every day	2	Hand Pum	On foot	Yes		Never	Pot with filte	Two Cups	Sometimes	Toilet	Dysentery, Eye disease and Skin disease		Agriculture	Merchant	11,000	1,500	
58	Kalolo	Borehole	250	Every day	3	Hand Pum	On foot	Borehole	250	Every day	3	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Cup	Sometimes	Toilet	Skin Disease		Agriculture	Merchant	7,500	15,000	
60	Kalolo	Borehole	300	Every day	2	Hand Pum	On foot	Borehole	300	Every day	3	Hand Pum	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Eye Disease		Agriculture		8,250		
75	Kalolo	Borehole	500	Every day		Hand Pum	On foot	Borehole	500	Every day		Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Skin Disease		Agriculture	Merchant	18,000	1,500	4,650
97	Kalolo	Borehole	100	Every day		Hand Pum	On foot	Borehole	100	Every day		Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Skin Disease	6	Agriculture				
106	Kalolo	U-p SW	400	Every day	6	Draw Well	On foot	U-p SW	400	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Dipper	Always	Toilet	Diarrhoea and Eye Disease	8	Agriculture	Agriculture	2,000	4,000	20,040
126	Kalolo	Borehole	50	Every day	6	Hand Pum	On foot							Yes	Saving Time	Always	Bucket	Cup	Always	Toilet	dysentery and skindisease	6	Agriculture		9,000		17,850
127	Kalolo	Borehole	150	Every day	4	Hand Pum	On foot							Yes	Saving Time	Never	Bucket	Cup	Always	Toilet	Eye Disease	4	Agriculture		35,000		49,150
128	Kalolo	Borehole		Every day	6	Hand Pum	On foot							Yes	Saving Time	Never	Bucket	Cup	Always	Toilet	Skin Disease	7	Agriculture		4,000		7,775
352	Kalolo	Borehole	100	Every day	4	Hand Pum	On foot	Borehole	100	Every day	4	Hand Pum	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always	Toilet	Diarrhoea	3	Agriculture	Other	5,000		1,150
353	Kalolo	Borehole	100	Every day	5	Hand Pum	On foot	Borehole	100	Every day	5	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Cup	Always	Toilet	Eye Disease	3	Agriculture		15,000		4,430
354	Kalolo	Borehole	50	Every day	9	Hand Pum	On foot	Borehole	50	Every day	9	Hand Pum	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always	Toilet	Cholera	4	Agriculture		5,000		1,150
358	Kalolo	Borehole	500	Every day	4	Hand Pum	On foot	Borehole	500	Every day	4	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	4	Agriculture Labourer		15,000		15,700
359	Kalolo	Borehole	100	Every day	5	Hand Pum	On foot	Borehole	100	Every day	5	Hand Pum	On foot	Yes		Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea	3	Agriculture Labourer	Agriculture	15,000		7,325
363	Kalolo	U-p SW	500	Every day	5	Hand Pum	On foot	U-p SW	500	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	3	Agriculture	Agriculture	15,000		33,818
370	Kalolo	Borehole	600	Every day	5	Hand Pum	On foot	Borehole	500	Every day	5	Hand Pum	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea		Agriculture		20,000		
382	Kalolo	Borehole	1000	Every day	10	Hand Pum	On foot	Borehole			10		On foot	Yes	Saving Time	Never	Pot	Two Cups	Always	Toilet		8	Agriculture		12,000		3,200
390	Kalolo	Borehole	200	Every day	9	Hand Pum	On foot	Borehole	200	Every day	9	Hand Pum	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Two Cups	Always	Toilet		4			96,000	96,000	242,200
391	Kalolo	Borehole	200	Every day	7	Hand Pum	On foot	Borehole	200	Every day	7	Hand Pum	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Agriculture	70,000		104,800
393	Kalolo	Borehole	200	Every day	7	Hand Pum	On foot	River/ Dambo	200	Every day	7	Hand Pum	On foot	Yes	Lighten Labour	Never		Cup	Sometimes	Toilet	Diarrhoea	7	Agriculture	Agriculture	2,000	1,500	3,060
407	Kalolo	Borehole	800	Every day	6	Hand Pum	On foot	U-p SW	800	Every day	6	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	8	Agriculture	Agriculture	20,000		21,970
408	Kalolo	Borehole	200	Every day	11	Hand Pum	On foot	Borehole	200	Every day	11	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Skin Disease	9	Agriculture	Agriculture	125,000		23,400
409	Kalolo	Borehole	500	Every day	5	Hand Pum	On foot	Borehole	500	Every day	5	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Cup	Always wash with soap or ash	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	12	Agriculture	Agriculture	100,000		17,800
410	Kalolo	Borehole	200	Every day	8	Hand Pum	On foot	Borehole	200	Every day	8	Hand Pum	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Sometimes	Toilet	Eye diseases & skin diseases		Agriculture	Agriculture	19,000		7,420
414	Kalolo	Borehole	100	Every day	10	Hand Pum	On foot	Borehole	100	Every day	10	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Cup	Sometimes	Toilet		10	Agriculture	Agriculture	22,000		13,450
415	Kalolo	Borehole	100	Every day	5	Hand Pum	On foot	Borehole	100	Every day	5	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea	5	Agriculture	Agriculture	3,500		5,360
454	Kalolo	Borehole	70	Every day	6	Hand Pum	On foot							Yes	Saving Time	Normally	Pot with filte	Two Cups	Always wash with soap or ash	Toilet		3	Agriculture	Merchant	30,000		33,800
543	Kalolo	Borehole	70	Every day	6	Hand Pum	On foot							Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	8	Agriculture		50,000		21,700
545	Kalolo	Borehole	40	Every day	7	Hand Pum	On foot		40	Every day	7	Hand Pum	On foot	Yes	Lighten Labour	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture		15,000		
557	Kalolo	Borehole	300	Every day	3	Hand Pum	On foot							Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Eye Disease	7	Agriculture		50,000		14,680
559	Kalolo	Borehole	200	Every day	7	Hand Pum	On foot	Borehole	200	Every day	7	Hand Pum	On foot	Yes	Lighten Labour	Normally	Pot	Two Cups	Always	Toilet		5	Agriculture	Breeder	50,000	15,000	17,000
561	Kalolo	Borehole	400	Every day	3	Hand Pum	On foot	Borehole	400	Every day	3	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Cup	Always	Toilet		3	Agriculture		7,500		4,700
583	Kalolo	Borehole	250	Every day	4	Hand Pum	On foot	Borehole	250	Every day	6	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	12	Agriculture		21,000		14,980
703	Kalolo	Borehole	400	Every day	10	Hand Pum	On foot	Borehole	400	Every day	10	Hand Pum	On foot			Never	Pot with filte	Cup	Sometimes	Toilet	Diarrhoea	6	Agriculture	Agriculture	20,000	2,000	
704	Kalolo	U-p SW	100	Every day	5	Hand Pum	On foot	Borehole	100	Every day	5	Hand Pum	On foot	Yes	Less Expense	Never	Bucket	Cup	Sometimes	Other	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture	Agriculture	30,000	10,000	9,620
721	Kalolo	U-p SW	70	Every day	6	Hand Pum	On foot	Borehole	70	Every day	6	Hand Pum	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Merchant	15,000	7,000	4,100
79	Kalolo	U-p SW	60	Every day	6	Draw Well	On foot	U-p SW	60	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always wash with soap or ash	Toilet	Skin Disease	9	Agriculture	Agriculture		15,000	31,145
92	Kalolo	River/ Dambo	105	Every day	2	Draw Well	On foot	River/ Dambo	105	Every day	2	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Skin Disease	3	Agriculture		3,000		1,875
93	Kalolo	River/ Dambo	125	Every day	4	Draw Well	On foot	River/ Dambo	125	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	Skin Disease	12	Agriculture				9,460
17	Kalolo	River/ Dambo	100	Every day	10		On foot	Protected SW	70	Every day	4	Draw Well	Bicycle	Yes	Saving Time	Never	Pot	Cup	Always wash with soap or ash	Toilet	Dysentery	5	Agriculture	Agriculture Labour	9,000	5,000	1,750
18	Kalolo	U-p SW	60	Every day	3	Draw Well	On foot	River/ Dambo	25	Every day	3		On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Skin Disease	4	Agriculture	Civil Servant			930
19	Kalolo	Borehole	300	Every day		Hand Pum	On foot	Borehole	300	Every day		Hand Pump		Yes	Other	Always	Pot	Cup	Always	Toilet	diarrhoea and dysentery	6	Agriculture		30,000		11,250
648	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Eye Disease	3	Civil Servant		8,000		3,475
649	Kalolo	U-p SW	200	Every day	6	Draw Well	On foot	U-p SW	200	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Cup	Sometimes	Toilet	Eye Disease	6	Agriculture Labourer		300,000		2,950
650	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture Labour	Agriculture Labour	10,000	5,000	2,025
642	Kalolo	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes		Never	Pot	Cup	Always	Garden	Diarrhoea, eye and skin diseases	4	Agriculture Labour	Agriculture Labour	8,000	6,000	1,190
643	Kalolo	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture Labour	Agriculture Labour	30,000	15,000	2,175
644	Kalolo	U-p SW	500	Every day	6	Draw Well	On foot	U-p SW	500	Every day	6	Draw Well	On foot	Yes	secure quality & less expenses	Never	Pot	Cup	Sometimes	Garden	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	14	Agriculture Labourer		45,000		3,560
797	Kalolo	Borehole	100	Every day	4	Hand Pum	On foot	Borehole	100	Every day	4	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	2	Agriculture	Agriculture	20,000		7,020
798	Kalolo	U-p SW	300	Every day	4	Draw Well	On foot	U-p SW	300	Every day	4	Draw Well	On foot		Secure Quality	Never	Bucket	Cup	Never	Toilet			Agriculture		20,000		
0	Khongor	River/ Dambo	1000	Every day	5		On foot	River/ Dambo	1000	Every day	5		On foot	Yes	Saving time and secure quality	Always	Pot with filte	Dipper	Always	Toilet	Diarrhoea	7	Agriculture	Merchant	14,000		
81	Khongor	U-p SW	60	Every day		Draw Well	On foot	U-p SW	60	Every day		Draw Well	On foot	Yes		Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	8	Agriculture		20,000		17,150
82	Khongor	U-p SW	60	Every day	2	Draw Well	On foot	U-p SW	60	Every day		Draw Well	On foot			Never	Bucket	Cup	Always	Toilet	cholera and eye disease	3	Agriculture		10,000		6,325
83	Khongor	U-p SW	400	Every day		Draw Well	On foot	U-p SW	40	Every day		Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	10	Agriculture		20,000		18,750

No	District	Water Usage													Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
89	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	30	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	2	Agriculture	Agriculture	5,000	3,000	
90	Khongor	U-p SW	200	Every day	2	Draw Well	On foot	U-p SW	200	Every day	2	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye Disease	2			10,000	8,000	
91	Khongor	U-p SW	500	Every day	5	Draw Well	On foot	U-p SW	500	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always wash with soap or ash	Toilet	cholera and eye disease	6			18,000	1,000	
101	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	13	Agriculture Labour	Other	10,000	1,000	15,075
102	Khongor	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	diarrhoea and dysentery and skin dis	10	Agriculture Labour	Other	6,000	7,000	14,590
110	Khongor	River/ Dambo	125	Every day	4	Draw Well	On foot		170	Every day	6	Hand Pum	On foot	Yes		Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	6	Agriculture		16,000		1,070
112	Khongor	River/ Dambo	90	Every day	5		On foot	Borehole	100	Every day	6	Hand Pum	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	7	Agriculture		280,000		4,775
114	Khongor	Other	600	Every day	15	Draw Well	On foot	Other	6	Every day	15	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always	Toilet	Diarrhoea and Eye Disease	6	Agriculture		11,000		
115	Khongor	Other	200	Every day	5	Draw Well	On foot	River/ Dambo	200	Every day	5	Draw Well	On foot	Yes	Saving Time	Normally	Pot with filte	Two Cups	Sometimes	Toilet	Diarrhoea and Eye Disease	11	Agriculture	Merchant	7,000	15,000	
116	Khongor	Other	100	Every day	3	Draw Well	On foot	River/ Dambo	1000	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Sometimes	Other	Dysentery, Eye disease and Skin dis	2	Agriculture				
118	Khongor	U-p SW	100	Every day	7	Draw Well	On foot							Yes	Secure Quality	Never	Bucket	Cup	Always	Other	Eye Disease	4	Agriculture		20,000		2,940
120	Khongor	Other	50	Every day	3	Draw Well	On foot	Other	50	Every day	1	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Always wash with soap or ash	Garden	Skin Disease	6	Agriculture	Merchant	500	800	
121	Khongor	Other	70	Every day	3	Draw Well	On foot	Other	100	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Sometimes	Toilet		2	Agriculture	Merchant	7,000	7,000	
122	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes		Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dis	2	Agriculture	Agriculture	5,000		490
123	Khongor	U-p SW	100	Every day	5	Draw Well	On foot							Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	typhoid & skin diseases	7	Agriculture		20,000		9,300
124	Khongor	U-p SW	400	Every day	5	Draw Well	On foot	Other	400	Every day	3	Draw Well	On foot	Yes	Saving Time	Never		Cup	Never	Toilet	Diarrhoea and Eye Disease	2	Agriculture	Agriculture	2,000	24,000	
135	Khongor	Other	100	Every day	10	Draw Well	On foot	Other	100	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Dysentery, Eye disease and Skin dis	10	Agriculture		24,000		
136	Khongor	Other	200	Every day	3	Draw Well	On foot	Other	200	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Seldom	Toilet	Diarrhoea and Skin disease	7	Agriculture		10,000		
137	Khongor	River/ Dambo	500	Every day	6	Draw Well	On foot	River/ Dambo	500	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Eye Disease	4	Agriculture	Other	10	10	
138	Khongor	River/ Dambo	400	Every day	6	Draw Well	On foot	River/ Dambo	400	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Sometimes	Toilet	Dysentery	11	Agriculture		1,500		
145	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin dis	5	Agriculture	Agriculture	10,000	200	1,880
146	Khongor	U-p SW	100	Every day	8	Draw Well	On foot	U-p SW	100	Every day	8	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin dis	8	Agriculture	Agriculture	5,000	200	2,760
147	Khongor	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Sometimes	Toilet	Dysentery, Eye disease and Skin dis	9	Agriculture	Agriculture	15,000	200	2,000
148	Khongor	U-p SW	300	Every day	3	Draw Well	On foot	U-p SW	300	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye Disease	5	Agriculture	Agriculture	3,000	200	2,950
149	Khongor	U-p SW	600	Every day	4	Draw Well	On foot	U-p SW	600	Every day	4	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always		Diarrhoea	5	Agriculture		10,000		
150	Khongor	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye Disease	5	Agriculture	Agriculture	22,000	400	
151	Khongor	U-p SW	300	Every day	5		On foot		30	Every day	7		On foot	Yes	Secure Quality	Never	Pot	Cup	Never	Garden	Diarrhoea and Eye Disease	7	Agriculture		20,000	3,000	7,845
152	Khongor	U-p SW	400	Every day	9	Draw Well	On foot		4	Every day	9		On foot	Yes	Less Expense	Always		Two Cups	Always	Toilet	Diarrhoea and Eye Disease	8	Agriculture	Merchant	20,000	2,000	52,355
153	Khongor	U-p SW	250	Every day	6		On foot	U-p SW	25	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Never	Toilet	Diarrhoea and Eye Disease	5	Agriculture		15,000		5,850
154	Khongor	U-p SW	250	Every day	4	Draw Well	On foot	Protected SW	30	Every day	4			Yes	Secure Quality	Never	Pot	Cup	Always	Garden	Eye Disease	4	Agriculture		8,000	2,000	2,540
155	Khongor	U-p SW	150	Every day	4	Draw Well	On foot	U-p SW	15	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Garden	Diarrhoea and Eye Disease	4	Agriculture		500		5,565
156	Khongor	River/ Dambo	200	Every day	6	Draw Well	On foot		200	Every day	6	Draw Well	On foot	Yes		Never	Pot	Two Cups	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture		55,000	15,000	52,850
157	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Dysentery, Eye disease and Skin disease		Agriculture		15,000		
158	Khongor	U-p SW	300	Every day	10	Draw Well	On foot	U-p SW	300	Every day	10	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Two Cups	Never	Toilet	dysentery and skindisease	11	Agriculture	Agriculture	180	20,000	
159	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	20	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Skin disease	11	Agriculture		87		
160	Khongor	U-p SW	200	Every day	4	Draw Well	On foot	U-p SW	200	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Two Cups	Never	Toilet	Diarrhoea and Skin disease	6	Agriculture	Merchant	30,000	19	
161	Khongor	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye Disease	5	Agriculture	Agriculture	10,000	1,000	
162	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5		On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye Disease	5	Agriculture	Agriculture	8,000	200	
163	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot with filte	Cup	Always	Toilet		5	Agriculture	Agriculture	10,000	1,000	
164	Khongor	U-p SW	400	Every day	10	Draw Well	On foot	U-p SW	400	Every day	10	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup		Toilet	Dysentery, Eye disease and Skin dis	6	Agriculture	Agriculture	25,000	400	
165	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye Disease		Agriculture	Agriculture	10,000	4,000	
166	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Two Cups	Never	Toilet	dysentery and skindisease	9	Agriculture		8,000	300	
167	Khongor	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot with filte	Cup	Always	Toilet		7	Agriculture	Agriculture	5,000	1,000	
168	Khongor	U-p SW	300	Every day	4	Draw Well	On foot	U-p SW	300	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Dipper	Sometimes	Toilet	Eye Disease	7	Agriculture	Wage Earner		5,000	1,130
169	Khongor	U-p SW	200	Every day	8	Draw Well	On foot	U-p SW	200	Every day	8		On foot	Yes	Secure Quality	Normally	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture		80,000		7,160
170	Khongor	Other	100	Every day	5	Draw Well	On foot	Other	100	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	5	Agriculture	Merchant	11,000	9,000	
171	Khongor	U-p SW	300	Every day	2	Draw Well	On foot	U-p SW	30	Every day	2	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	dysentery and skindisease	9	Agriculture	Agriculture	12,000	300	
172	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	Eye Disease	3	Agriculture		80,000		
173	Khongor	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW		Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Dipper		Toilet	Eye diseases & skin diseases	8	Agriculture	Agriculture	18,000	400	
174	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	4	Agriculture	Agriculture	30,000	200	
175	Khongor	Borehole	100	Every day	10		On foot	Borehole	100	Every day	10		On foot	Yes	Saving time and secure quality	Never	Pot with filte	Cup	Always	Toilet			Agriculture	Agriculture	30,000		
176	Khongor	River/ Dambo	900	Every day	3	Draw Well	On foot	River/ Dambo	900	Every day	3	Draw Well	On foot	Yes	Saving Time	Always	Pot with filte	Cup	Always wash with soap or ash		dysentery and skindisease	7	Agriculture		4,550		
180	Khongor	Borehole	100	Every day	10	Draw Well	On foot	River/ Dambo	100	Every day	10	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea		Agriculture	Agriculture	42,000		
184	Khongor	River/ Dambo	200	Every day	3	Draw Well	On foot	River/ Dambo	200	Every day	3	Draw Well	On foot	Yes		Normally	Pot with filte	Cup	Always	Toilet	dysentery and skindisease	8	Agriculture		5,000		
185	Khongor	River/ Dambo	600	Every day	4	Draw Well	On foot	River/ Dambo	600	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Skin disease	4	Agriculture		13,000		
186	Khongor	River/ Dambo	100	Every day	2	Draw Well	On foot	River/ Dambo	100	Every day	2	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Always wash with soap or ash	Toilet	Skin Disease	3	Agriculture		9,000		
187	Khongor	River/ Dambo	200	Every day	5	Draw Well	On foot	River/ Dambo	200	Every day	5	Draw Well	On foot	Yes		Normally	Pot with filte	Two Cups	Never	Toilet	Diarrhoea, Cholera and Eye disease	8	Agriculture	Agriculture	5,000		
188	Khongor	River/ Dambo	500	Every day	4	Draw Well	On foot	River/ Dambo	500	Every day	4	Draw Well	On foot	Yes		Never	Pot with filte	Two Cups	Never	Toilet	dysentery and skindisease	12	Agriculture		30,000		
189	Khongor	River/ Dambo	600	Every day	3	Draw Well	On foot	River/ Dambo	600	Every day	3	Draw Well	On foot	Yes	Saving Time	Always	Pot with filte	Cup	Always wash with soap or ash	Toilet	dysentery and skindisease	6	Agriculture		5,000		
190	Khongor	River/ Dambo	700	Every day	10	Draw Well	On foot	River/ Dambo	700	Every day	10	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Never	Toilet	cholera and eye disease	12	Agriculture				
191	Khongor	River/ Dambo	300	Every day		Draw Well	On foot	River/ Dambo	300	Every day		Draw Well	On foot	Yes		Normally	Bucket	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	8		Agriculture	1,000		
192	Khongor	River/ Dambo	800	Every day	6	Other	On foot							Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	10	Agriculture		30,000		
194	Khongor	River/ Dambo	700	Every day		Other	On foot	River/ Dambo	700	Every day		Other	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	3	Agriculture		10,000		
195	Khongor	U-p SW	100	Every day	10	Draw Well	On foot							Yes	saving time, lighten labour & secure quality	Normally	Bucket	Cup	Always	Toilet	Diarrhoea and Skin disease	9	Agriculture		30,000		
196	Khongor	U-p SW	700	Every day	5	Draw Well	On foot	U-p SW	700	Every day	5	Draw Well	On foot	Yes		Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery	8	Agriculture		19,000		4,370
197	Khongor	U-p SW	800		5	Draw Well	On foot	U-p SW	800			Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture		28,000		3,750
198	Khongor	U-p SW	900	Every day	4	Draw Well	On foot	U-p SW	900	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet		4	Agriculture		1,000		1,060
199	Khongor	U-p SW	900	Every day	4	Draw Well	On foot	U-p SW	900	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Wage Earner			1,150
200	Khongor	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	40	Every day	5	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	5	Agriculture	Agriculture	20,000	1,000	
201	Khongor	U-p SW	150	Every day	6		On foot	U-p SW	15	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Always	Toilet	Eye diseases & skin diseases	4	Agriculture	Wage Earner	1,800	18,000	
202	Khongor	Protected SW	500	Every day	10	Draw Well	On foot	U-p SW	5	Every day	10	Hand Pum	On foot			Never	Pot	Cup	Always	Toilet	Eye Disease	3	Agriculture		36,000		
203	Khongor	River/ Dambo	200	Every day	2	Draw Well	On foot	River/ Dambo	200	Every day	2	Hand Pum	On foot	Yes	Saving Time	Normally	Bucket	A dipper and a c	Always	Garden	Diarrhoea	6	Agriculture		2,500	6,000	
204	Khongor	River/ Dambo	300	Every day	3	Draw Well	On foot	River/ Dambo	300	Every day	3	Draw Well		Yes	Saving Time	Always	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture	Agriculture	10,000	2,000	
205	Khongor	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea	6	Agriculture	Agriculture	40,000		
206	Khongor	Borehole	100	Every day	3	Draw Well	On foot	Borehole	100	Every day	3	Motor Pum	On foot	Yes		Always	Bucket	Cup	Always wash with soap or ash	Garden	Eye Disease	2	Agriculture	Agriculture	300	100	
207	Khongor	River/ Dambo	200	Every day	5	Draw Well	On foot	River/ Dambo	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Garden		12	Agriculture	Agriculture	6,000	500	
208	Khongor	River/ Dambo	100	Every day	5	Draw Well	On foot	River/ Dambo	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dis	6	Agriculture	Agriculture	1,000	100	
209	Khongor	Protected SW	200	Every day	3	Draw Well	On foot	Protected SW	200	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye Disease	4	Agriculture	Agriculture	1,000	200	
210	Khongor	Borehole	100	Every day	2	Draw Well		Borehole	100	Every day	2	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye Disease	2			1,000	100	
211	Khongor	River/ Dambo	100	Every day	8		On foot	River/ Dambo	100		8		On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Garden	Eye diseases & skin diseases	6			1,000	100	
213	Khongor	U-p SW	100	Every day	3	Draw Well	On foot				3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet	Diarrhoea	5	Agriculture	Wage Earner	15,000	12,000	
214	Khongoni		50	Every day	10		On foot							Yes	Secure Quality	Never	Pot	Cup	Always	Garden	Diarrhoea	5	Agriculture	Wage Earner	4,000	5,000	

No	District	Water Usage														Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
218	Khongor	U-p SW	500	Every day	3	Draw Well	On foot							Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Cholera	5	Agriculture	Agriculture	10,000	2,000	2,800
219	Khongor	U-p SW	50	Every day	8	Draw Well	On foot							Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Skin Disease	5	Agriculture	Agriculture	21,000	10,000	4,700
220	Khongor	U-p SW	150	Every day	13	Draw Well	On foot							Yes	Secure Quality	Never	Bucket	Cup	Always	Garden	Skin Disease	2	Agriculture		2,000		2,250
221	Khongor	U-p SW	400	Every day	6	Draw Well	On foot							Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	4	Agriculture		15,000		
222	Khongor	River/ Dambo	500	Every day	3	Motor Pum	On foot							Yes	Secure Quality	Always	Pot	Two Cups	Always	Toilet	Typhoid	9	Agriculture	Agriculture	9,000	12,000	9,000
226	Khongor	U-p SW	110	Every day	6	Draw Well	On foot						On foot	Yes	Lighten Labour	Normally	Pot	Cup	Always	Toilet	Skin Disease	4	Agriculture	Merchant	3,000	18,900	2,010
227	Khongor	U-p SW	300	Every day	4	Draw Well	On foot	U-p SW	300	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture		6,000		
228	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	4	Agriculture	Agriculture Labour	9,000	2,000	3,945
231	Khongor	River/ Dambo	300	Every day	5	Draw Well	On foot	River/ Dambo	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Two Cups	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture	Agriculture	70,000	6,000	12,662
232	Khongor	River/ Dambo	220	Every day	5	Draw Well	On foot	River/ Dambo	220	Every day	5	Draw Well	On foot	Yes	Saving Time	Always	Bucket	Two Cups	Always wash with soap or ash	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture	Agriculture	8,000	21,000	21,475
234	Khongor	U-p SW	700	Every day	4	Draw Well	On foot	U-p SW	7	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always wash with soap or ash	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture		2,000	1,000	6,850
235	Khongor	River/ Dambo	100	Every day	3	Draw Well	On foot	River/ Dambo	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Dipper	Always	Garden	cholera and eye disease	7	Agriculture		500	2,000	3,255
236	Khongor	U-p SW	60	Every day	7	Draw Well	On foot	U-p SW	60	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Garden	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6		Agriculture	50,000	35,000	17,660
237	Khongor	River/ Dambo	200	Every day	2	Draw Well	On foot	River/ Dambo	200	Every day	2	Draw Well	On foot	Yes		Always	Pot with filte	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	6	Agriculture	Agriculture		5,000	6,250
239	Khongor	U-p SW	100	Every day	12		On foot	U-p SW	10	Every day	12	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always wash with soap or ash	Toilet	Diarrhoea, Cholera and Eye disease	14	Agriculture		250,000		80,700
240	Khongor	River/ Dambo	200	Every day	3	Draw Well	On foot	River/ Dambo	200	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Dipper	Always	Toilet	Diarrhoea	4	Agriculture		9,000	8,000	13,063
241	Khongor	River/ Dambo	400	Every day	4		On foot	River/ Dambo	400	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Dipper	Always wash with soap or ash	Toilet	Cholera	6	Agriculture		30,000		10,972
242	Khongor	River/ Dambo	200	Every day	5	Draw Well	On foot	River/ Dambo	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet	Eye Disease	6	Agriculture		8,000	12,000	15,440
244	Khongor	Protected SW	100	Every day	3	Draw Well	On foot	Protected SW	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet		6	Agriculture	Agriculture	8,000	200	
246	Khongor	Protected SW	150	Every day	4	Draw Well	On foot	Protected SW	15	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	8	Agriculture	Agriculture	10,000	500	
247	Khongor	Protected SW	150	Every day	3	Draw Well	On foot	Protected SW	15	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet		4	Agriculture	Agriculture	5,000	200	
248	Khongor	Protected SW	100	Every day	6	Draw Well	On foot	Protected SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	9	Agriculture	Agriculture	6,000	1,000	
249	Khongor	U-p SW	500	Every day	5	Draw Well	On foot	U-p SW	500	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Dipper	Always	Toilet	Dysentery, Eye disease and Skin dise	8	Agriculture	Merchant		4,000	
250	Khongor	River/ Dambo	700	Every day	5	Draw Well	On foot	River/ Dambo	700	Every day	5	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Sometimes	Toilet	Eye Disease	8	Agriculture	Merchant	20,000		11,950
251	Khongor	River/ Dambo	300	Every day	10	Draw Well	On foot	River/ Dambo	300	Every day	10	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	River	Diarrhoea and Eye Disease	4	Agriculture		7,000		4,160
252	Khongor	River/ Dambo	500	Every day	10		On foot		500	Every day	10		On foot			Always	Pot with filte	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture		1,000		1,200
253	Khongor	River/ Dambo	300	Every day	6	Draw Well	On foot	River/ Dambo	300	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Two Cups	Always wash with soap or ash	Toilet	dysentery and skindisease	5	Agriculture		18,000		
254	Khongor	River/ Dambo	600	Every day	10		On foot	River/ Dambo	600	Every day	10		On foot	Yes	Saving Time	Always	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Skin disease	4	Agriculture		13,000		
255	Khongor	U-p SW	200	Every day	10	Draw Well	On foot	U-p SW	200	Every day	10	Draw Well	On foot	Yes	Saving Time	Always	Bucket	Two Cups	Always wash with soap or ash		Eye Disease	6	Agriculture	Agriculture Labour	2,000	4,000	
256	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	10	Every day	4	Draw Well	On foot			Never	Pot	Cup	Always	Toilet	Dysentery	8	Agriculture		28,000		5,150
257	Khongor	U-p SW	500	Every day	6	Draw Well	On foot	U-p SW	500	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	3	Agriculture		5,000		950
258	Khongor	U-p SW	200	Every day	7	Draw Well	On foot	U-p SW	200	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea	5	Agriculture		10,000		4,650
259	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes		Never	Pot	Cup	Always	Toilet	Diarrhoea	3	Agriculture		15,000		3,100
260	Khongor	U-p SW	100	Every day	12	Draw Well	On foot	U-p SW	10	Every day	12	Draw Well	On foot	Yes		Never	Bucket	Cup	Always	Toilet	Skin Disease	7	Agriculture	Agriculture	8,000		3,550
261	Khongor	River/ Dambo	700	Every day	4	Draw Well	On foot	River/ Dambo	700	Every day	4	Draw Well	On foot	Yes	Saving Time	Normally	Bucket	Cup	Never		Eye Disease	4	Agriculture	Merchant	10,000	800	2,490
262	Khongor	River/ Dambo	100	Every day	3		On foot	River/ Dambo	60	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture	Merchant	27,000	700	8,345
263	Khongor	U-p SW	900	Every day	4	Draw Well	On foot	U-p SW	900		4	Draw Well	On foot	Yes	Saving Time	Never	Pot	Dipper	Sometimes		diarrhoea and dysentery and skin dise	8	Agriculture		3,000		1,110
264	Khongor	U-p SW	900	Every day	5	Draw Well	On foot	U-p SW	900	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	3	Agriculture		64,000		1,880
267	Khongor	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	400	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	5			12,000		1,315
268	Khongor	U-p SW	500	Every day	6	Draw Well	On foot	U-p SW	500	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Dipper	Sometimes	Toilet	Diarrhoea	5	Agriculture		21,000		1,215
269	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	diarrhoea and dysentery	4	Agriculture		21,000		1,274
270	Khongor	U-p SW	600	Every day	8	Draw Well	On foot	U-p SW	600	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	3			11,000		1,335
271	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot with filte	Cup	Sometimes	Toilet	Diarrhoea	4	Agriculture		40,000		1,650
272	Khongor	U-p SW	50	Every day	3	Draw Well	On foot	U-p SW	50	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	8	Agriculture		15,000		
273	Khongor	River/ Dambo	1000	Every day	3	Draw Well	On foot	River/ Dambo	1000	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never		Diarrhoea	3	Agriculture		5,000		
274	Khongor	U-p SW	100	Every day	7	Draw Well	On foot	River/ Dambo	10	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Diarrhoea and Eye Disease	10	Agriculture		25,000		
275	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Diarrhoea and Eye Disease	7	Agriculture				
276	Khongor	River/ Dambo	1200	Every day	2	Draw Well	On foot	River/ Dambo	1200	Every day	2	Draw Well	On foot	Yes	Saving Time	Normally	Pot with filte	Cup	Never	Toilet	Diarrhoea and Eye Disease	6	Agriculture		4,000		
277	Khongor	River/ Dambo	1000	Every day	5	Draw Well	On foot	River/ Dambo	1000	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	Dysentery, Eye disease and Skin dise	6	Agriculture				
278	Khongor	River/ Dambo	400	Every day	7	Draw Well	On foot	River/ Dambo	400	Every day	7	Draw Well	On foot	Yes		Normally	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Eye Disease	5	Agriculture		40,000		
279	Khongor	River/ Dambo	300	Every day	3	Draw Well	On foot	River/ Dambo	300	Every day	3	Draw Well	On foot	Yes		Never	Bucket	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Eye Disease	2	Agriculture		9,000	9,000	
280	Khongor	River/ Dambo	600	Every day	4	Draw Well	On foot	River/ Dambo	600	Every day	4	Draw Well	On foot	Yes		Never	Pot with filte	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Eye Disease	5	Agriculture		15,000		
281	Khongor	River/ Dambo	800	Every day	3	Draw Well	On foot	River/ Dambo	800	Every day	3	Draw Well	On foot	Yes		Never	Pot with filte	Cup	Never	Toilet	Diarrhoea and Eye Disease	6	Agriculture		10,000		
283	Khongor	River/ Dambo	1000	Every day	4	Draw Well	On foot	River/ Dambo	1000	Every day	4	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Never	Toilet	Diarrhoea and Eye Disease	4	Agriculture		12,000		
284	Khongor	River/ Dambo	400	Every day	3	Draw Well	On foot	River/ Dambo	400	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always wash with soap or ash		diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture		4,000		
285	Khongor	River/ Dambo	100	Every day	10	Draw Well	On foot	River/ Dambo	100	Every day	10	Draw Well	On foot	Yes	Saving Time	Never	Pot	Dipper	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture	Agriculture	2,000	5,000	
286	Khongor	U-p SW	70	Every day	5	Draw Well	On foot	U-p SW	70	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	6	Agriculture	Agriculture Labour	25,000	2,000	19,545
287	Khongor	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye Disease	3	Agriculture	Agriculture	10,000	200	
288	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	10	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye Disease	5	Agriculture	Agriculture	17,000	100	
289	Khongor	U-p SW	200	Every day	8	Draw Well	On foot	U-p SW	200	Every day	8	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Sometimes		Diarrhoea	4	Agriculture	Agriculture Labourer		5,000	
290	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	10	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye Disease	7	Agriculture	Agriculture	1,000	200	
291	Khongor	U-p SW	200	Every day	10	Draw Well	On foot	U-p SW	20	Every day	10	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	6	Agriculture		30,000		7,850
292	Khongor	River/ Dambo	100	Every day	3	Draw Well	On foot	River/ Dambo	100	Every day	3	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Always	Pot with filte	Cup		Toilet	Diarrhoea and Skin disease	4	Agriculture	Agriculture	10,000		10,750
293	Khongor	River/ Dambo	300	Every day	3	Draw Well	On foot	River/ Dambo	1000	Every day	3	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	9	Agriculture	Agriculture	150,000		38,700
294	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	20	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture		30,000	2,000	8,050
295	Khongor	U-p SW	200	Every day	6	Draw Well	On foot	U-p SW	23	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Bucket	A dipper and a c	Always	Toilet	Diarrhoea	9	Agriculture		2,000	6,000	2,715
296	Khongor	Protected SW	500	Every day	8	Draw Well	On foot	Protected SW	5	Every day	8	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	cholera and eye disease	3	Agriculture	Agriculture	22,000	1,000	4,400
297	Khongor	U-p SW	100	Every day	10	Draw Well	On foot	Protected SW	10	Every day	10	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Skin disease	10	Agriculture	Agriculture	30,000		9,450
298	Khongor	River/ Dambo	200	Every day	8	Draw Well	On foot	River/ Dambo	200	Every day	8	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Normally	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	9	Agriculture	Agriculture	20,000		3,400
299	Khongor	River/ Dambo	400	Every day	1	Draw Well	On foot	River/ Dambo	400	Every day	1	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	4	Agriculture		20,000		4,400

No	District	Water Usage													Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
300	Khongor	River/ Dambo	1000	Every day	2	Draw Well	On foot	River/ Dambo	1000	Every day	2	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	2	Agriculture		10,000		6,250
301	Khongor	River/ Dambo	700	Every day	12	Draw Well	On foot	River/ Dambo	700	Every day	12		On foot	Yes	saving time, lighten labour & secure quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	10	Agriculture	Agriculture	20,000		2,400
302	Khongor	U-p SW	200	Every day	6	Draw Well	On foot	U-p SW	20	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture		5,000	500	5,460
303	Khongor	U-p SW	80	Every day	7	Draw Well	On foot	U-p SW	80	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Two Cups	Always	Toilet		8	Agriculture		12,000	30,000	8,970
304	Khongor	U-p SW	50	Every day	11	Draw Well	On foot	U-p SW	50	Every day	11	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	8	Agriculture		100,000		24,700
305	Khongoni		100	Every day	2	Draw Well	On foot	Protected SW	100	Every day	2	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	4	Agriculture	Agriculture	9,000	1,000	
306	Khongor	Borehole	100	Every day	2	Draw Well	On foot	Borehole	10	Every day	2	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye Disease	5	Agriculture	Agriculture	25,000	1,000	
307	Khongor	Protected SW	100	Every day	5	Draw Well	On foot	Protected SW	100	Every day	5		On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye diseases & skin diseases	5	Agriculture	Agriculture	85,000		
308	Khongor	U-p SW	100	Every day	7	Draw Well	On foot	Protected SW	10	Every day	7	Motor Pum	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Cholera	5	Agriculture	Agriculture	5,000	200	
310	Khongor	River/ Dambo	150	Every day	3		On foot	River/ Dambo	150	Every day	3		On foot	Yes		Never	Bucket	Cup	Always	River	Diarrhoea and Eye Disease	7	Agriculture		10,000		
311	Khongor	U-p SW	50	Every day	6	Draw Well	On foot		50	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Never	Toilet	Diarrhoea and Eye Disease	4	Agriculture		12,000		
312	Khongor	U-p SW	150	Every day	6	Draw Well	On foot	U-p SW	150	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Garden	Diarrhoea and Skin disease	5	Agriculture		39,000		
313	Khongor	U-p SW	80	Every day	15		On foot	U-p SW	80	Every day	15		On foot	Yes		Never	Pot	Cup	Always	Other	Diarrhoea and Eye Disease	8	Agriculture		6,000		
314	Khongor	U-p SW	50	Every day	8	Draw Well	On foot	U-p SW	50	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Agriculture Labour	1,000	6,000	
315	Khongor	River/ Dambo	100	Every day	2		On foot	River/ Dambo	100	Every day	2		On foot	Yes		Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	12	Agriculture		100,000		
316	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Sometimes	Toilet	Eye diseases & skin diseases	5	Agriculture	Agriculture	5,000	5,000	11,500
317	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot		Secure Quality	Always	Pot	Cup	Sometimes	Toilet	cholera and eye disease	5	Agriculture	Agriculture	900	900	12,600
318	Khongor	U-p SW	400	Every day	5	Draw Well	On foot	U-p SW	400	Every day	5	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	cholera and eye disease	9	Agriculture	Agriculture	5,000	5,000	13,300
319	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	cholera and eye disease	9	Agriculture	Agriculture	9,000	9,000	10,630
320	Khongor	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet		2	Agriculture	Agriculture	9,000	9,000	8,700
321	Khongor	U-p SW	300	Every day	8	Draw Well	On foot	U-p SW	300	Every day	8		On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea, Cholera and Eye disease	5	Agriculture	Agriculture	12,800		7,700
322	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Cholera	7	Agriculture	Agriculture	9,000	9,000	14,100
323	Khongor	U-p SW	200	Every day	4		On foot		200	Every day	4	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Skin Disease	7	Agriculture	Agriculture	1,000	1,000	8,100
324	Khongor	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	9	Agriculture	Agriculture	12,000	12,000	16,800
325	Khongor	U-p SW	900	Every day	4	Draw Well	On foot	U-p SW	900	Every day	4	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	7	Agriculture	Agriculture	1,800		55,963
326	Khongor	U-p SW	600	Every day	6	Draw Well	On foot	U-p SW	600	Every day	6	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always		Dysentery	5	Agriculture	Merchant	5,000	5,520	3,210
327	Khongor	U-p SW	800	Every day	3	Draw Well	On foot	River/ Dambo	800	Every day	4	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	13	Agriculture		2,150		
328	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Eye Disease	9	Wage Earner	Agriculture	1,000	30,000	4,390
329	Khongor	River/ Dambo	300	Every day	5	Draw Well	On foot	River/ Dambo	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Dipper	Always	Toilet	cholera and eye disease	4	Agriculture	Agriculture	60,000	20,000	25,000
330	Khongor	River/ Dambo	300	Every day	6	Other	On foot	River/ Dambo	300	Every day	6	Other	On foot	Yes	Secure Quality	Always	Pot	Dipper	Always	Toilet	Diarrhoea and Skin disease	2	Agriculture	Agriculture	50,000	20,000	19,250
331	Khongor	Protected SW	100	Every day	3	Draw Well	On foot	Protected SW	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Skin Disease	6	Agriculture	Agriculture	11,000	500	3,000
332	Khongor	U-p SW	800	Every day	6	Draw Well	On foot	U-p SW						Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	8	Agriculture		50,000		
333	Khongor	U-p SW	200	Every day	8	Draw Well	On foot	U-p SW	200	Every day	8					Never	Pot	Dipper	Sometimes	Toilet	Eye Disease	5	Agriculture		62,000		
334	Khongor	U-p SW	200	Every day	7	Draw Well	On foot	U-p SW	200	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture	Wage Earner		4,000	1,045
335	Khongor	U-p SW	500	Every day	5	Draw Well	On foot	U-p SW	500	Every day	5	Draw Well	On foot			Never	Pot	Dipper	Sometimes	Toilet	Diarrhoea	5	Agriculture	Wage Earner	6,000	4,000	950
336	Khongor	U-p SW	500	Every day	4	Draw Well	On foot	U-p SW	500	Every day	4	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Dipper	Sometimes	Toilet		1			20,000		2,970
337	Khongor	Borehole	200	Every day	10	Hand Pum	On foot	Borehole	200	Every day	10	Hand Pum	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet		10	Agriculture	Agriculture	80,000	2,000	28,300
340	Khongor	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Cholera	7	Agriculture	Agriculture	5,000	3,000	1,220
341	Khongor	U-p SW	300	Every day	7	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	3	Agriculture	Agriculture	27,000		16,400
342	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	6	Agriculture		26,000		16,270
343	Khongor	U-p SW	50	Every day	4	Draw Well	On foot	U-p SW	50	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet		2	Agriculture	Merchant	60,000	1,008	21,590
345	Khongor	U-p SW	800	Every day	3	Draw Well	On foot	U-p SW	800	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always		diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	9	Agriculture		2,000		800
346	Khongor	U-p SW	600	Every day	5	Draw Well	On foot	U-p SW	600	Every day	5	Draw Well	On foot	Yes	Lighten Labour	Normally	Pot	Dipper	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture		15,000		1,790
347	Khongor	U-p SW	700	Every day	4	Draw Well	On foot	U-p SW	700	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	5	Agriculture	Merchant		3,000	1,160
348	Khongor	U-p SW	150	Every day	7	Draw Well	On foot	U-p SW	150	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Garden		7	Agriculture		15,000		36,980
432	Khongor	U-p SW	400	Every day	6	Draw Well	On foot	U-p SW	10	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always	Toilet	Diarrhoea and Skin disease	5	Agriculture		8,000		
433	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	40	Every day	6	Draw Well	On foot	Yes		Always	Bucket	Two Cups	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture			25,000	
434	Khongor	River/ Dambo	1000	Every day	7	Draw Well	On foot	River/ Dambo	1000	Every day	7	Draw Well	On foot	Yes	Saving Time	Always	Pot with filte	Dipper	Always wash with soap or ash	Toilet	Diarrhoea and Skin disease	9	Agriculture		10,000		
435	Khongor	U-p SW	50	Every day	20	Draw Well	On foot	U-p SW	50	Every day	20	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases		Agriculture		30,000		11,100
437	Khongor	Borehole	900	Every day	6	Draw Well	On foot	Borehole	900	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet		8	Agriculture				
438	Khongor	Protected SW	150	Every day	3		On foot		150				On foot	Yes	Saving Time	Always	Pot	Cup	Always	Garden	diarrhoea and dysentery and skin dise	4	Agriculture		3,000	2,000	3,000
439	Khongor	U-p SW	70	Every day	6	Draw Well	On foot	U-p SW	70	Every day	6	Draw Well	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always	Toilet		2	Agriculture	Wage Earner	20,000		9,700
440	Khongor	U-p SW	70	Every day	14		On foot		70	Every day	5	Draw Well	On foot	Yes		Never	Bucket	Two Cups	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture	Agriculture	8,000		5,325
441	Khongor	River/ Dambo	100	Every day	3	Draw Well	On foot	River/ Dambo	100	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Two Cups	Always	Toilet	Diarrhoea and Eye Disease	9	Agriculture	Agriculture	96,000	25,000	4,635
442	Khongor	U-p SW	200	Every day	4		On foot	U-p SW	200	Every day	10	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	4	Agriculture		22,000		12,000
443	Khongor	River/ Dambo	300	Every day	3		On foot	River/ Dambo	300	Every day	5		On foot	Yes	Saving Time	Never	Pot	Two Cups	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Wage Earner	25,000	15,000	12,700
444	Khongor	River/ Dambo	200	Every day	5		On foot	River/ Dambo	100	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	5	Agriculture	Merchant	35,000	5,000	27,850
445	Khongor	River/ Dambo	200	Every day	4		On foot	River/ Dambo	200	Every day			On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	6	Agriculture	Agriculture	84,000	35,000	21,260
446	Khongor	River/ Dambo	150	Every day	6		On foot	U-p SW	100				On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always	Toilet	Diarrhoea, Cholera and Eye disease	6		Agriculture	15,000	500	7,370
447	Khongor	River/ Dambo	200	Every day	3		On foot	River/ Dambo	200	Every day	4		On foot	Yes	Saving Time	Always	Pot	Two Cups	Always	Toilet	Diarrhoea, Cholera and Eye disease	8	Agriculture		8,000	500	11,975
448	Khongor	River/ Dambo	200	Every day	7		On foot	River/ Dambo	300	Every day	6		On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always	Toilet	Diarrhoea, Cholera and Eye disease	8	Agriculture		12,000	1,200	9,790
477	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	2	Agriculture		7,000		340
478	Khongor	U-p SW	150	Every day	4	Draw Well	On foot	U-p SW	150	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always	Toilet	Diarrhoea	8	Agriculture		2,000		64,833
479	Khongor	U-p SW	500	Every day	7	Draw Well	On foot	U-p SW	500	Every day	7	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Always	Toilet	Eye Disease	5	Agriculture	Agriculture	40,000	2,000	3,125
480	Khongor	U-p SW	80	Every day	6	Draw Well	On foot	U-p SW	80	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea	8	Agriculture	Wage Earner	10,000	5,000	20,270
481	Khongor	River/ Dambo	400	Every day	6	Draw Well	On foot	River/ Dambo	400	Every day	6	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	dysentery and skindisease	5	Agriculture	Wage Earner	22,000	7,000	28,100
482	Khongor	River/ Dambo	450	Every day	7	Draw Well	On foot	River/ Dambo	450	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Toilet	Eye Disease	6	Agriculture	Wage Earner	35,000	1,500	13,220
483	Khongor	River/ Dambo	500	Every day	5	Draw Well	On foot	River/ Dambo	500	Every day	5	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet		9	Agriculture	Wage Earner	35,000	5,000	23,050
484	Khongor	River/ Dambo	300	Every day	3	Draw Well	On foot	River/ Dambo	300	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Skin Disease	7	Agriculture		50,000		27,450
485	Khongor	River/ Dambo	200	Every day	4	Draw Well	On foot	River/ Dambo	200	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	5	Agriculture	Merchant	4,000	5,000	16,150
486	Khongor	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	40	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	4	Agriculture	Merchant	19,000	3,600	16,050
487	Khongor	U-p SW	50	Every day	3	Draw Well	On foot		50	Every day	3	Draw Well	On foot	Yes	Saving Time	Always	Pot with filte	Cup	Never	Toilet	Diarrhoea and Eye Disease	5	Agriculture		8,000		6,630
488	Khongor	U-p SW	200	Every day	3	Draw Well	On foot		200	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Two Cups	Never	Toilet	Dysentery, Eye disease and Skin dise	5	Agriculture	Wage Earner	5,000	3,000	7,420
489	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot with filte	Cup	Always	Garden	Diarrhoea and Eye Disease	3	Agriculture	Merchant	7,000	5,000	10,230
490	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Merchant	48,000	2,500	46,350
491	Khongor	River/ Dambo	500	Every day	7	Draw Well	On foot	River/ Dambo	500	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	8	Agriculture	Merchant	30,000	10,000	28,750
492	Khongor	U-p SW	50	Every day	10	Draw Well	On foot	U-p SW	50	Every day	10	Draw Well	On foot	Yes	Secure Quality	Normally	Bucket	Cup	Always	Toilet	Diarrhoea	7	Agriculture	Merchant	20,000	10,000	21,200
493	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Two Cups	Always	Toilet	Diarrhoea	4	Merchant	Agriculture	15,000	20,000	

No	District	Water Usage													Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
494	Khongoni		100	Every day	5	Draw Well	On foot		100	Every day	5	Draw Well	On foot	Yes	Saving Time	Never	Bucket	Cup	Never	Toilet	Diarrhoea and Eye Disease	6	Agriculture		3,000		3,550
495	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot with filte	Cup	Always	Garden	Eye diseases & skin diseases	8	Agriculture	Agriculture	15,000	600	10,200
496	Khongor	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet		6	Agriculture	Wage Earner	9,000	2,000	9,665
497	Khongor	U-p SW	100	Every day	8	Draw Well	On foot	U-p SW	100	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	9	Agriculture		27,000		23,950
498	Khongor	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	10	Agriculture		10,000		9,850
499	Khongor	U-p SW	100	Every day	18	Draw Well	On foot	U-p SW	100	Every day	18	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Always	Toilet	Diarrhoea	17	Agriculture		100,000		39,100
500	Khongor	River/ Dambo	200	Every day	6	Draw Well	On foot	River/ Dambo	200	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet		5	Agriculture		100,000		52,200
501	Khongor	River/ Dambo	600	Every day	4	Draw Well	On foot	River/ Dambo	600	Every day	3	Draw Well	On foot	Yes		Never	Pot with filte	Cup	Never		dysentery and skindisease	6	Agriculture		2,000		1,620
502	Khongor	U-p SW	100	Every day	8	Draw Well	On foot	U-p SW	100	Every day	8	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Agriculture	45,000		11,840
504	Khongor	U-p SW	500	Every day	4	Draw Well	On foot								saving time, lighten labour & secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	8	Agriculture				
505	Khongor	River/ Dambo	500	Every day	15		On foot								saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	17	Agriculture		5,000		
516	Khongor	Borehole	300	Every day	6	Hand Pum	On foot	Borehole	300	Every day	6	Hand Pum	On foot	Yes	Saving time and secure quality	Never	Pot	Two Cups	Always	Toilet	Eye diseases & skin diseases	5	Agriculture	Agriculture	25,000	700	1,145
517	Khongor	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Eye Disease	8	Agriculture		30,000		2,925
518	Khongor	U-p SW	300	Every day	7	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot		Secure Quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	4	Agriculture	Agriculture	4,000	1,000	3,500
519	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	5	Agriculture	Agriculture	3,000	100	1,900
520	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	8	Agriculture	Agriculture	4,000	100	750
521	Khongor	U-p SW	700	Every day	4	Draw Well	On foot	U-p SW	700	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Eye diseases & skin diseases	4	Agriculture	Agriculture	9,000	300	1,900
522	Khongor	U-p SW	200	Every day	6	Draw Well	On foot	U-p SW	200	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	10	Agriculture	Agriculture	3,000	1,000	1,850
523	Khongor	U-p SW	300	Every day	7	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot		Secure Quality	Always	Bucket	Cup	Sometimes	Toilet	Eye diseases & skin diseases	8	Agriculture	Agriculture	12,000	400	3,000
525	Khongor	River/ Dambo	400	Every day	2	Draw Well	On foot	River/ Dambo	400	Every day	2	Draw Well	On foot	Yes		Never	Pot with filte	Cup	Never	Toilet	dysentery and skindisease	6	Agriculture		10,000		
526	Khongor	River/ Dambo	400	Every day	2	Draw Well	On foot		400					Yes	Saving Time	Never	Pot with filte	Cup	Never		Dysentery, Eye disease and Skin dise	3	Agriculture		6,000		
527	Khongor	River/ Dambo	600	Every day	4	Draw Well	On foot	River/ Dambo	600	Every day	4	Draw Well	On foot	Yes	Saving Time	Normally	Pot with filte	Cup	Never		Dysentery, Eye disease and Skin dise	3	Agriculture		6,000		
528	Khongor	River/ Dambo	1100	Every day	3	Draw Well	On foot	River/ Dambo	600	Every day	3	Draw Well	On foot	Yes	Saving Time	Never	Pot with filte	Dipper	Never	Toilet	Diarrhoea and Eye Disease	7	Agriculture		400,000		
529	Khongor	U-p SW	300	Every day	8	Draw Well	On foot	U-p SW	30	Every day	8	Draw Well	On foot	Yes	Lighten Labour	Normally	Pot with filte	Cup	Always	Toilet	Eye Disease	12	Agriculture		45,000		
530	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	1000	Every day	5	Draw Well	On foot	Yes	Saving Time	Always	Pot with filte	Two Cups	Never	Toilet	Dysentery, Eye disease and Skin dise	8	Agriculture		15,000		
531	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot			Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	3	Agriculture				
532	Khongor	U-p SW	200	Every day	3	Draw Well	On foot								saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	3	Agriculture				
533	Khongor	River/ Dambo	200	Every day	3		On foot							Yes		Never	Pot	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	1	Agriculture				
534	Khongor	U-p SW	50	Every day	6	Draw Well	On foot							Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease	4	Agriculture				
536	Khongor	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	10	Every day	3	Draw Well	On foot			Never	Bucket	Two Cups	Never	Toilet	Eye Disease	4	Agriculture		3,000		
537	Khongor	U-p SW	300	Every day	3	Draw Well	On foot	U-p SW	300	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	4	Agriculture	Merchant	85,000	48,000	61,900
538	Khongor	U-p SW	200	Every day	20	Draw Well	On foot	U-p SW	200	Every day	20	Draw Well	On foot	Yes		Never	Pot	Cup		Toilet	Diarrhoea and Skin disease	14	Agriculture	Agriculture			
539	Khongor	River/ Dambo	300	Every day	5	Draw Well	Cart							Yes		Always	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	11	Agriculture		20,000		30,700
540	Khongor	River/ Dambo	100	Every day	6		On foot							Yes		Never	Pot	Cup	Always	Toilet							
541	Khongor	River/ Dambo	500	Every day	10		On foot	River/ Dambo	500	Every day	10		On foot	Yes		Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	8	Agriculture		10,000		6,750
542	Khongor	River/ Dambo	500	Every day	7		On foot		500	Every day	7		On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture	Agriculture	20,000		5,000
547	Khongor	River/ Dambo		Every day	6		On foot								saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Skin disease	19	Agriculture		20,000		
548	Khongor	River/ Dambo	500	Every day	6		On foot									Normally	Pot	Cup		Toilet	Diarrhoea, eye and skin diseases	7	Agriculture	Agriculture	30,000		
549	Khongor	River/ Dambo	100	Every day	4		On foot	River/ Dambo	100	Every day	4		On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet	Diarrhoea, eye and skin diseases	7	Agriculture		2,000		
550	Khongor	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Lighten Labour	Always	Bucket	Cup		Toilet	Eye diseases & skin diseases	7	Agriculture	Agriculture		2,000	2,310
551	Khongor	River/ Dambo	400	Every day	4	Draw Well	On foot		400	Every day	4	Draw Well	On foot	Yes	Secure Quality	Always	Bucket	Cup	Always	Garden	Dysentery	2	Agriculture	Agriculture Labour	1,500	3,600	
553	Khongor	U-p SW	50	Every day	5	Draw Well	On foot	U-p SW	400	Every day	5	Draw Well	On foot	Yes	Lighten Labour	Normally	Pot with filte	Cup	Always	Toilet	Diarrhoea	8	Agriculture		10,000		
562	Khongor	U-p SW	50	Every day	2	Draw Well	On foot	U-p SW	50	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	7	Agriculture Labourer		30,000		3,440
563	Khongor	River/ Dambo	300	Every day	3	Other	On foot							Yes	Saving time and secure quality	Always	Pot	Cup	Always	Toilet	dysentery and skindisease	10	Agriculture Labourer		35,000		4,375
564	Khongor	U-p SW	120	Every day	4	Draw Well	On foot	U-p SW	120	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	4	Agriculture Labourer		9,000		2,100
575	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet		7	Agriculture	Agriculture	210,000		1,350
576	Khongor	U-p SW	300	Every day	7	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	7	Agriculture		40,000		6,100
577	Khongor	U-p SW	400	Every day	4	Draw Well	On foot	U-p SW	400	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot with filte	Cup	Sometimes	Toilet		4	Agriculture		60,000		1,715
590	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day		Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	9	Agriculture Labourer		20,000		2,700
591	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	7	Agriculture Labourer		25,000		6,669
592	Khongor	U-p SW	120	Every day	5	Draw Well	On foot	River/ Dambo	150	Every day	7	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	Dysentery	8	Agriculture Labourer		25,000		9,960
610	Khongor	U-p SW	200	Every day	4	Draw Well	On foot	U-p SW	200	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	4	Agriculture		10,000		4,600
611	Khongor	U-p SW	500	Every day	5	Draw Well	On foot	U-p SW	500	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	9		Agriculture	10,000		5,100
612	Khongor	U-p SW	300	Every day	4	Draw Well	On foot	U-p SW	300	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	8	Agriculture		200,000		4,400
625	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	U-p SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	5	Agriculture		20,000		2,500
626	Khongor	River/ Dambo	350	Every day	3	Other	On foot	River/ Dambo	350	Every day	5	Other	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Dysentery, Eye disease and Skin dise	8	Agriculture Labourer		45,000		6,570
627	Khongor	U-p SW	100	Every day	7	Draw Well	On foot	U-p SW	100	Every day	7	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always wash with soap or ash	Toilet	Eye Disease	13	Agriculture	Agriculture	90,000	2,000	5,600
628	Khongor	U-p SW	700	Every day	3	Draw Well	On foot	U-p SW	700	Every day	3	Draw Well		Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	6	Agriculture		20,000		4,700
629	Khongor	U-p SW	700	Every day	4	Draw Well	On foot	U-p SW	700	Every day	4	Draw Well		Yes	Saving time and secure quality	Never	Pot with filte	Cup	Always	Toilet	Diarrhoea	5	Agriculture		30,000		3,900
630	Khongor	U-p SW	100	Every day	8	Draw Well	On foot	U-p SW	100	Every day	8	Draw Well		Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	9	Agriculture		10,000		3,500
655	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	secure quality & less expenses	Never	Bucket	Cup	Sometimes	Toilet	Diarrhoea, eye and skin diseases	6	Agriculture		30,000		2,315
656	Khongor	U-p SW	1000	Every day	3	Draw Well	On foot	U-p SW	1000	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Sometimes	Toilet	Eye diseases & skin diseases	7	Agriculture		50,000		1,750
657	Khongor	U-p SW	800	Every day	2	Draw Well	On foot	U-p SW	800	Every day	2	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	10	Agriculture		120,000		3,740
661	Khongor	U-p SW	300	Every day	4	Draw Well	On foot		300	Every day	4	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Two Cups	Always	Toilet	Eye Disease	4	Agriculture	Agriculture	10,000	700	4,790
662	Khongor	U-p SW	200	Every day	7	Draw Well	On foot	U-p SW	200	Every day	7	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet		4	Agriculture		30,000		1,079
663	Khongor	U-p SW	700	Every day	5	Draw Well	On foot	U-p SW	700	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	9	Agriculture		7,000		
665	Khongor	U-p SW	300	Every day	2	Draw Well	On foot	U-p SW	300	Every day	7	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	5	Agriculture	Agriculture	10,000	200	11,000
666	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well		Yes	Secure Quality	Normally	Pot	Cup	Sometimes	Toilet	Eye diseases & skin diseases	7	Agriculture	Agriculture	15,000		11,000
667	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	7	Agriculture	Agriculture	3,000		10,750
668	Khongor	Protected SW	170	Every day	6	Draw Well	On foot	U-p SW	170	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Pot	Cup	Always	Toilet		9	Agriculture		48,000		10,500
669	Khongor	U-p SW	200	Every day	3	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	7	Agriculture Labourer				6,105
670	Khongor	U-p SW	250	Every day	5	Draw Well	On foot		250	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Eye Disease	11	Agriculture		40,000		5,037
671	Khongor	River/ Dambo	70	Every day	3		On foot	River/ Dambo	70	Every day	3		On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	7	Agriculture	Agriculture	21,000	1,000	8,401
672	Khongor	U-p SW	50	Every day	12	Draw Well	On foot	U-p SW	50	Every day		Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases		Agriculture	Agriculture	20,000	300	1,200
673	Khongor	U-p SW	40	Every day	8	Draw Well	On foot	U-p SW	40	Every day	8	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup									
674	Khongor	U-p SW	100	Every day	5	Draw Well	On foot	U-p SW	100	Every day	5	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye Disease	7	Agriculture	Agriculture	3,000	100	2,440
675	Khongor	River/ Dambo	400	Every day	6	Draw Well	On foot	River/ Dambo	400	Every day	6	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot with filte	Cup	Always	Toilet	Diarrhoea, eye and skin diseases	5	Agriculture	Merchant	10,000		1,700
676	Khongor	U-p SW	200	Every day	5	Draw Well	On foot	U-p SW	200	Every day	5	Draw Well	On foot	Yes		Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	6	Agriculture	Agriculture	56,000	1,000	10,750

No	District	Water Usage														Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
677	Khongor	U-p SW	50	Every day	8	Draw Well	On foot	U-p SW	50	Every day	8	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	8	Agriculture	Agriculture	250,000	100	12,500
678	Khongor	U-p SW	100	Every day	3	Draw Well	On foot	U-p SW	100	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Eye diseases & skin diseases	7	Agriculture	Agriculture	32,000	200	27,100
682	Khongor	U-p SW	80	Every day	9	Draw Well	On foot	U-p SW	80	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always wash with soap or ash	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	10	Agriculture	Agriculture	20,000	2,000	4,350
683	Khongor	U-p SW	500	Every day	3	Draw Well	On foot	U-p SW	500	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Other	Cup	Sometimes	Toilet	Eye diseases & skin diseases	5	Agriculture	Agriculture	70,000		7,080
684	Khongor	U-p SW	500	Every day	2	Draw Well	On foot	U-p SW	500	Every day	7	Draw Well	On foot	Yes	Saving Time	Never	Other	Cup	Sometimes	Toilet	dysentery and skindisease	5	Agriculture		89,000		6,275
685	Khongor	U-p SW	300	Every day	10	Draw Well	On foot	U-p SW	300	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never		Two Cups	Always wash with soap or ash	Toilet	diarrhoea and dysentery	8	Agriculture	Agriculture	120,000		4,916
687	Khongor	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	saving time, lighten labour & secure quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea	2	Agriculture		50,000		3,100
689	Khongor	U-p SW	200	Every day	15	Draw Well	On foot	U-p SW	200	Every day	15	Draw Well	On foot	Yes	Saving time and secure quality	Normally	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	11	Agriculture	Agriculture	5,000		2,650
690	Khongor	U-p SW	500	Every day	6	Draw Well	On foot	U-p SW	500	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet		3	Agriculture		14,000		2,450
696	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Secure Quality	Normally	Pot	Cup	Sometimes	Toilet	Diarrhoea	4			20,000		8,085
697	Khongor	U-p SW	800	Every day	10	Draw Well	On foot	U-p SW	800	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Never	Other		5	Agriculture		22,000		4,345
698	Khongor	U-p SW	200	Every day	10	Draw Well	On foot	U-p SW	200	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Never	Other		10	Agriculture		90,000		4,820
699	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Never	Toilet	Diarrhoea	12	Agriculture		95,000		4,790
700	Khongor	U-p SW	300	Every day	6	Draw Well	On foot	U-p SW	300	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Other	Other	Sometimes	Toilet	typhoid & skin diseases	6	Agriculture	Agriculture	80,000		8,800
701	Khongor	U-p SW	500	Every day	5	Draw Well	On foot	U-p SW	500	Every day	5	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Dipper	Sometimes	Toilet	Dysentery, Eye disease and Skin dise	7	Agriculture		10,000		3,700
702	Khongor	U-p SW	300	Every day	5	Draw Well	On foot	U-p SW	300	Every day	5	Draw Well	On foot	Yes	Saving time and secure quality	Always	Other	Cup	Sometimes	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	9	Agriculture		25,000		3,550
728	Khongor	River/ Dambo	1000	Every day	5	Draw Well	On foot	River/ Dambo	100	Every day	5	Draw Well	On foot	Yes		Always	Pot	Cup	Always	Toilet		8	Agriculture		30,000		
729	Khongor	U-p SW	100	Every day	4	Draw Well	On foot	River/ Dambo	500	Every day	8		On foot	Yes	Saving time and secure quality	Always	Pot	Two Cups	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture		6,000		
732	Khongor	U-p SW	20	Every day	6	Draw Well	On foot	U-p SW	20	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never		Cup	Always	Toilet	Diarrhoea	3	Agriculture		15,000	1,500	
733	Khongor	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea	10	Agriculture	Merchant	400,000	8,000	
734	Khongor	U-p SW	100	Every day	3		On foot	River/ Dambo	1000	Every day	4		On foot	Yes	Lighten Labour	Always	Pot	Cup	Sometimes	Toilet	diarrhoea and dysentery	3	Agriculture		20,000		
735	Khongor	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	10	Agriculture		50,000		
736	Khongor	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea	10	Agriculture	Agriculture	60,000		
761	Khongor	River/ Dambo	100	Every day	16	Draw Well	On foot	River/ Dambo	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea	7	Agriculture		50,000		4,600
762	Khongor	River/ Dambo	100	Every day	4	Draw Well	On foot	River/ Dambo	100	Every day	7	Draw Well	On foot	Yes	Secure Quality	Normally	Bucket	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	9	Agriculture				5,358
763	Khongor	River/ Dambo	100	Every day	6	Draw Well	On foot	River/ Dambo	100	Every day	6	Draw Well	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet		4	Agriculture	Merchant	30,000		4,425
764	Khongor	U-p SW	100	Every day	20	Draw Well	On foot	U-p SW	50	Every day	16	Hand Pum	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Eye Disease	15	Agriculture		200,000		12,967
766	Khongor	U-p SW	10	Every day	12	Draw Well	On foot	U-p SW	10	Every day	12	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	7	Agriculture		10,000		2,450
767	Khongor	River/ Dambo	500	Every day	4	Draw Well	On foot	River/ Dambo	500	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Sometimes	Toilet	Diarrhoea	6	Agriculture	Agriculture	52,000		4,625
768	Khongor	River/ Dambo	600	Every day	3	Draw Well	On foot	River/ Dambo	600	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	5	Agriculture	Agriculture	30,000		1,645
769	Khongor	River/ Dambo	700	Every day	4	Draw Well	On foot	River/ Dambo	700	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Two Cups	Sometimes	Toilet	diarrhoea and dysentery and skin dise	11	Agriculture	Agriculture	50,000		3,300
772	Khongor	River/ Dambo	1000	Every day	6	Draw Well	On foot	River/ Dambo	1000	Every day	6	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	5	Agriculture	Agriculture	8,000		4,150
773	Khongor	U-p SW	50	Every day	6	Draw Well	On foot	U-p SW	50	Every day	6	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	4	Agriculture	Agriculture	30,000		3,400
774	Khongor	U-p SW	100	Every day	10	Draw Well	On foot	U-p SW	100	Every day	10	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Two Cups	Always	Toilet	Skin Disease		Agriculture				
775	Khongor	U-p SW	100	Every day	6	Draw Well	On foot	U-p SW	100	Every day	6	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	6	Agriculture		2,000		
776	Khongor	River/ Dambo	800	Every day	3	Draw Well	On foot	River/ Dambo	800	Every day	3	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea and Skin disease	5	Agriculture	Agriculture	18,000		2,609
777	Khongor	River/ Dambo	900	Every day	4	Draw Well	On foot	River/ Dambo	900	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea and dysentery and skin dise	8	Agriculture	Agriculture	45,000		4,134
778	Khongor	River/ Dambo	800	Every day	3	Draw Well	On foot	River/ Dambo	800	Every day	3	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea and dysentery and skin disease		Agriculture	Agriculture	20,000		2,460
780	Khongor	Borehole	1000	Every day	4	Hand Pum	On foot	Borehole	1000	Every day	4	Hand Pum	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	11	Agriculture		75,000		
781	Khongor	U-p SW	30	Every day	6	Draw Well	On foot	U-p SW	30	Every day	6	Draw Well	On foot	Yes	Secure Quality	Normally	Pot with filte	Two Cups	Always	Toilet		6	Agriculture	Agriculture	20,000		2,058
782	Khongor	River/ Dambo	600	Every day	3	Draw Well	On foot	River/ Dambo	600	Every day	3	Draw Well	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Sometimes	Toilet	diarrhoea and dysentery and skin dise	5	Agriculture	Agriculture	25,000		3,245
783	Khongor	Protected SW	400	Every day	3	Draw Well	On foot	Protected SW	400	Every day	3	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Sometimes	Toilet	diarrhoea and dysentery and skin dise	6	Agriculture		32,000		3,742
784	Khongor	Protected SW	100	Every day	4	Draw Well	On foot	Protected SW	100	Every day	4	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet		6	Agriculture	Agriculture	245,000		13,658
785	Khongor	River/ Dambo	200	Every day	8	Hand Pum	On foot	River/ Dambo	200	Every day	8	Hand Pum	On foot	Yes	Saving time and secure quality	Always	Pot	A dipper and a c	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture		8,000		
786	Khongor	River/ Dambo	100	Every day	9	Hand Pum	On foot	River/ Dambo	100	Every day	9	Hand Pum	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	3	Agriculture	Agriculture	23,000		
787	Khongor	River/ Dambo	100	Every day	4	Draw Well	On foot	River/ Dambo	100	Every day	4	Draw Well	On foot	Yes	Saving time and secure quality	Never	Pot	Cup	Always	Toilet	Diarrhoea, eye and skin diseases		Agriculture	Merchant	16,000		
788	Khongor	U-p SW	10	Every day	10	Draw Well	On foot	U-p SW	10	Every day	10	Draw Well	On foot	Yes	Saving time and secure quality	Never	Bucket	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases		Agriculture	Agriculture	5,000		
789	Khongor	Borehole	400	Every day	3	Hand Pum	On foot	Borehole	400	Every day	3	Hand Pum	On foot	Yes	Saving Time	Always	Bucket	Cup	Always	Toilet			Agriculture	Merchant	4,000		
790	Khongor	U-p SW	15	Every day	3	Draw Well	On foot	U-p SW	15	Every day	3	Draw Well	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	4	Agriculture		13,000		750
791	Khongor	River/ Dambo	300	Every day	4	Draw Well	On foot	River/ Dambo	300	Every day	4	Draw Well	On foot	Yes	Secure Quality	Normally	Bucket	Cup	Always	Toilet	diarrhoea and dysentery and skin disease		Other	Agriculture	40,000	25,000	
792	Khongor	River/ Dambo	400	Every day	3	Draw Well	On foot	River/ Dambo	400	Every day	3	Draw Well	On foot	Yes	Secure Quality	Always	Pot with filte	Two Cups	Always wash with soap or ash	Toilet	diarrhoea and dysentery and skin disease		Agriculture		150,000		
793	Khongor	River/ Dambo	400	Every day	5	Draw Well	On foot	River/ Dambo	400	Every day	5	Draw Well	On foot	Yes	Lighten Labour	Never	Bucket	Cup	Always wash with soap or ash	Toilet	Diarrhoea and Eye Disease		Agriculture		99,000		
794	Khongor	U-p SW	120	Every day	12	Draw Well	On foot	U-p SW	120	Every day	12	Draw Well	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	8	Agriculture		30,000		4,800
795	Khongor	U-p SW	50	Every day	3	Draw Well	On foot	U-p SW	50	Every day	1	Draw Well	On foot	Yes	Secure Quality	Always	Pot	Cup	Always	Toilet	Diarrhoea	2	Agriculture		20,000	6,000	1,650
796	Khongor	River/ Dambo	50	Every day	10	Draw Well	On foot	River/ Dambo	50	Every day	10	Draw Well	On foot	Yes	secure quality & less expenses	Never	Bucket	Cup	Always	Toilet	Diarrhoea		Agriculture		15,000	6,000	5,100
70	Khongor	Borehole	500	Every day	3	Hand Pum	On foot	Borehole	500	Every day	3	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	8	Agriculture	Agriculture	22,000		2,425
436	Khongor	Borehole	200	Every day	7	Hand Pum	On foot	Borehole	200	Every day	7	Hand Pum	On foot	Yes		Always	Pot	Cup	Sometimes	Toilet	Eye Disease	8	Agriculture	Agriculture	10,000	1,000	
765	Khongor	Borehole	100	Every day	5	Hand Pum	On foot	Borehole	100	Every day	5	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea	3	Agriculture	Agriculture	10,000	1,000	1,317
771	Khongor	Borehole	500	Every day	5	Hand Pum	On foot	Borehole	800	Every day	5	Hand Pum	On foot	Yes	Saving Time	Normally	Bucket	Cup	Always	Toilet	Eye Disease	6	Agriculture	Merchant	20,000	5,000	
779	Khongor	Borehole	20	Every day	8	Hand Pum	On foot	Borehole	20	Every day	8	Hand Pum	On foot	Yes	Secure Quality	Never	Pot	Cup	Sometimes	Toilet	Diarrhoea	4	Agriculture		17,000		3,671
103	Khongor	Borehole	300	Every day	6	Hand Pum	On foot	Borehole	300	Every day	6	Hand Pum	On foot	No		Never	Pot with filte	Cup		Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	8	Civil Servant	Civil Servant	28,000	14,000	7,100
111	Khongor	Borehole	50	Every day	4	Hand Pum	On foot	Borehole	50	Every day	5	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Sometimes	Toilet	Skin Disease		Agriculture		17,000		8,105
177	Khongor	Borehole	75	Every day	6	Hand Pum	On foot	Borehole	75	Every day	8	Hand Pum	On foot	Yes	Saving Time	Always	Pot	Cup	Always	Toilet	Diarrhoea and Eye Disease	7	Agriculture				1,245
178	Khongor	Borehole	125	Every day	4	Hand Pum	On foot	Borehole	125	Every day	6	Hand Pum	On foot	Yes	Saving Time	Never	Pot with filte	Cup	Always	Toilet	Eye diseases & skin diseases	7	Agriculture		34,000		1,835
179	Khongor	Borehole	140	Every day	3	Hand Pum	On foot	Borehole	140	Every day	3	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always wash with soap or ash	Toilet		3	Agriculture		13,000		2,935
181	Khongor	Borehole	100	Every day	10	Hand Pum	On foot	Borehole	100	Every day	10	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea		Agriculture	Agriculture	29,000		
182	Khongor	Borehole	100	Every day	15	Hand Pum	On foot	Borehole	100	Every day	10	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	Diarrhoea, Cholera and Eye disease		Agriculture	Agriculture	40,000		
183	Khongor	Borehole	100	Every day	10	Hand Pum	On foot	Borehole	100	Every day	10	Hand Pum	On foot	Yes	saving time, lighten labour & secure quality	Never	Pot	Cup	Always	Toilet	dysentery and skindisease	7	Agriculture	Agriculture	80,000		
223	Khongor	Borehole	200	Every day	5	Hand Pum	On foot	Borehole	200	Every day	5	Hand Pum	On foot	Yes	Secure Quality	Always	Pot	Cup	Sometimes	Toilet	Eye Disease	5	Agriculture	Agriculture	18,000	5,000	10,340
224	Khongor	Borehole	300	Every day	6	Hand Pum	On foot	Borehole	300	Every day	6	Hand Pum	On foot	Yes	secure quality & less expenses	Never	Bucket	Dipper	Sometimes	Toilet	dysentery and skindisease	7	Agriculture	Agriculture	5,000	200	6,220
225	Khongor	Borehole	200	Every day	7	Hand Pum	On foot	Borehole	200	Every day	7	Hand Pum	On foot	Yes	Saving Time	Normally	Bucket	Dipper	Sometimes	Toilet	Dysentery	8	Agriculture	Agriculture	5,000	1,000	8,410
229	Khongor	U-p SW	700	Every day	8	Hand Pum	On foot	U-p SW	7	Every day	8	Hand Pum	On foot	Yes	Secure Quality	Always	Pot	Two Cups	Always	Toilet	Eye Disease	7			6,000	400	6,055
230	Khongor	U-p SW	400	Every day	8	Hand Pum	On foot	U-p SW	4	Every day	8	Hand Pum	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	4	Agriculture	Agriculture	5,000		2,570
243	Khongor	Protected SW	500	Every day	10	Hand Pum	On foot	Protected SW	5	Every day	7	Hand Pum	On foot	Yes	Secure Quality	Never	Bucket	Two Cups	Always wash with soap or ash	Toilet	Eye Disease	3	Agriculture		10,000	6,000	20,426
245	Khongor	Borehole	300	Every day	7	Hand Pum	On foot	Borehole	30	Every day	2	Hand Pum	On foot	Yes	Secure Quality	Always	Pot with filte	Cup	Always	Toilet	Skin Disease	7	Agriculture	Agriculture	11,000	500	
309	Khongor	U-p SW	100	Every day	5	Hand Pum	On foot	U-p SW	100	Every day		Hand Pum	On foot	Yes	Secure Quality	Never	Bucket	Cup	Always	Toilet	Diarrhoea and Eye Disease	13	Agriculture	Agriculture Labour	10,000		19,455
338	Khongor	Borehole	900	Every day	4	Hand Pum	On foot	Borehole	900	Every day	4	Hand Pum	On foot	Yes	Saving Time	Never	Pot	Cup	Always	Toilet	diarrhoea and dysentery and skin dise	6	Agriculture		4,000		1,470
339	Khongor	Borehole	300	Every day	5	Hand Pum	On foot	Borehole	300	Every day	5	Hand Pum	On foot	Yes	Lighten Labour	Never	Pot	Cup	Always	Toilet	Skin Disease	5	Agriculture		300,000		1,900
344	Khongor	Borehole	350	Every day	1	Hand Pum	On foot	Borehole	350	Every day	1	Hand Pum	On foot	Yes		Never	Pot	Cup	Always	Toilet	diarrhoea, dysentry, typhoid, cholera, eye and skin diseases	7	Agriculture		10,000		32,360

No	District	Water Usage														Hygiene & Sanitation						Socio-Economic Situation					
		Rainy Season						Dry Season						Need of WS Facility	Expections	Boiling Drinking Water	Storage of Water	Scooping Water	Washing Hands before Eat	Excretion Place	Previous Illness	Family			Money Income		Expenditure
		Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpo	Water Source	Distance to Source	Frequency	Times a Day	Type of Pump	Main Transpor									No. of persons/family	Occupation	Side Job	Main Occupation	Sub Job	
515	Khongor	Borehole	300	Every day	2	Hand Pum	On foot	Borehole	300	Every day	2	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Two Cups	Always	Toilet	Skin Disease	4	Agriculture	Agriculture	15,000	0	81,917
758	Khongor	Protected SW	40	Every day	7	Hand Pum	On foot	Spring	40	Every day	7	Hand Pum	On foot	Yes	Saving Time	Never	Bucket	Two Cups	Sometimes	Toilet	Skin Disease		Agriculture		6,000		833
759	Khongor	Protected SW	30	Every day	6	Hand Pum	On foot	Protected SW	30	Every day	6	Hand Pum	On foot	Yes	Secure Quality	Never	Pot	Cup	Always	Toilet	Diarrhoea	3	Agriculture				866
760	Khongor	Protected SW	20	Every day	4	Hand Pum	On foot	Protected SW	20	Every day	3	Hand Pum	On foot	Yes	Saving Time	Normally	Pot	Two Cups	Always	Toilet		3	Agriculture		13,560		987

6-4 (1) Location for Geophysical Prospecting Survey

	T.A.	S/N	NAME		Location S Lat.		Location E Long.		Geology Type	Resistivity (Ω-m)	Depth to Base Rock (m)	BH Reference	VEScurve Type	S/N
1	KALOLO	**61**	Chipanga		14	9.708	33	22.105	Md	160	35		D	**61**
2	KALOLO	**62**	Mbang'ombe	a	14	10.102	33	22.765	Md	180	45	C28	D	**62**
3	KALOLO	**62**	Mbang'ombe	b	14	10.090	33	22.719	Md	260	36		D	**62**
4	KALOLO	**47**	Nyanda		14	8.056	33	23.269	Ml	260	28		B	**47**
5	KALOLO	**54**	Mtsina / Kalata	a	14	7.006	33	26.182	Ml	180	38		A	**54**
6	KALOLO	**54**	Mtsina / Kalata	b	14	6.897	33	26.306	Ml	140	16		B	**54**
7	KALOLO	**55**	Chadza		14	5.862	33	22.676	Ml	180	45		A	**55**
8	KALOLO	**57**	Ntchisi		14	6.958	33	23.068	Ml	165	25		B	**57**
9	KALOLO	**2**	Dzuluwanda	a	14	1.349	33	23.068	P	110	65		A	**2**
10	KALOLO	**2**	Dzuluwanda	b	14	1.351	33	23.077	P	80	55		A	**2**
11	KALOLO	**5**	Guliguli (B)		13	58.512	33	24.192	P	120	45		A	**5**
12	KALOLO	**6**	Nkhwambela		14	1.302	33	24.338	P	90	45	DP65	A	**6**
13	KALOLO	**17**	Phulamazira		13	55.663	33	28.335	P	60	40	R13(IR13?)	A	**17**
14	KALOLO	**30**	Kumtsizi		13	59.552	33	28.628	P	120	45		A	**30**
15	KALOLO	**36**	Danbo		13	57.541	33	31.086	P	106	32	RM58	A	**36**
16	KALOLO	**38**	Mizati		14	3.884	33	21.744	P	34	40		A	**38**
17	KALOLO	**39**	Chiipila Sanga	a	14	2.563	33	20.310	P	120	42		A	**39**
18	KALOLO	**39**	Chiipila Sanga	b	14	2.532	33	20.393	P	260	35		A	**39**
19	KALOLO	**41**	Chiipila Kakoma		14	1.969	33	21.277	P	40	50		A	**41**
20	KALOLO	**42**	Guliguli (A)		14	3.563	33	20.982	P	90	30		B	**42**
21	KALOLO	**60**	Chingondo		14	4.697	33	23.906	P	35	30		A	**60**
22	KALOLO	**73**	Chimbwala		13	53.139	33	21.170	P	30	35		A	**73**
23	KALOLO	**90**	Dzinja		13	56.423	33	22.352	P	120	38		A	**90**
24	KALOLO	**92**	Kadzoni		13	55.823	33	18.821	P	38	45	FC96	A	**92**
25	KALOLO	**94**	Kafunde		13	54.839	33	23.848	P	120	25		B	**94**
26	KALOLO	**100**	Kalonga		14	2.736	33	30.248	P	90	30		A	**100**
27	KALOLO	**103**	Semu		14	2.807	33	28.884	P	186	40		B	**103**
28	KALOLO	**109**	Chaponda		14	7.770	33	28.431	P	55	40		A	**109**
29	KALOLO	**19**	Mpingo (II)		13	59.853	33	26.679	Pg	50	38	LFP28	C	**19**
30	KALOLO	**22**	Mzungu		13	56.923	33	26.578	Pg	100	65		C	**22**
31	KALOLO	**23**	Mngongonda		13	58.934	33	27.775	Pg	30	65		C	**23**
32	KALOLO	**45**	Geremani		14	2.847	33	23.267	Pg	52	61		C	**45**
33	KALOLO	**82**	Jonasi		13	51.414	33	17.466	Pg	25	65		C	**82**

	T.A.	S/N	NAME		Location				Geology	Resistivity	Depth to Base Rock	BH Reference	VEScurve	S/N
					S Lat.		E Long.		Type	(Ω-m)	(m)		Type	
34	KALOLO	**89**	Lusha		13	53.493	33	18.144	Pg	50	20		C	**89**
35	KALOLO	**106**	Mliu		14	6.572	33	32.850	Pg	65	20	X25	C	**106**
36	KALOLO	**107**	Chithangile		14	4.347	33	30.528	Pg	22	45		C	**107**
37	KALOLO	**111**	Chikalipo		14	6.409	33	29.214	Pg	260	45		C	**111**
38	KALOLO	**116**	Zakaliya		14	4.096	33	28.938	Pg	60	55		C	**116**
39	KALOLO	**119**	Makanga		14	5.336	33	27.026	Pg	95	45		C	**119**
1	KHONGONI	**4**	Kanjanja		13	44.361	33	18.633	P	67	40		A	**4**
2	KHONGONI	**11**	Benjamani		13	49.923	33	16.242	P	130	65		A	**11**
3	KHONGONI	**13**	Waya		13	46.108	33	18.860	P	70	45	FC116	A	**13**
4	KHONGONI	**16**	Mkhata		13	50.213	33	24.895	P	120	32		A	**16**
5	KHONGONI	**37**	Mbewa (II)		13	45.695	33	22.116	P	60	38		B	**37**
6	KHONGONI	**45**	Malenga	a	13	42.379	33	18.506	P	32	35		A	**45**
7	KHONGONI	**45**	Malenga	b	13	42.432	33	18.303	P	50	35		A	**45**
8	KHONGONI	**67**	Bondo		13	39.117	33	19.578	P	81	54	RM49	A	**67**
9	KHONGONI	**69**	Kazambala	a	13	40.398	33	21.247	P	65	40		A	**69**
10	KHONGONI	**69**	Kazambala	b	13	40.421	33	21.178	P	80	35		A	**69**
11	KHONGONI	**70**	Chigowo		13	38.436	33	22.201	P	34	30	SB/07/323	A	**70**
12	KHONGONI	**79**	Chilowa		13	40.841	33	21.789	P	79	28	E317	A	**79**
13	KHONGONI	**82**	Kawalika		13	37.093	33	22.641	P	55	48		A	**82**
14	KHONGONI	**85**	Msema	a	13	35.609	33	23.461	P	120	35		A	**85**
15	KHONGONI	**85**	Msema	b	13	35.406	33	23.386	P	240	35		A	**85**
16	KHONGONI	**89**	Chimonbo (II)	a	13	36.987	33	21.155	P	120	38		A	**89**
17	KHONGONI	**89**	Chimonbo (II)	b	13	37.016	33	21.324	P	150	16		A	**89**
18	KHONGONI	**103**	Kaodzera (B)		13	39.090	33	25.558	P	74	75		A	**103**
19	KHONGONI	**116**	Mwanda		13	35.065	33	25.767	P	100	45		A	**116**
20	KHONGONI	**120**	Magengera		13	34.680	33	23.839	P	22	45		A	**120**
21	KHONGONI	**121**	Kakoloweko		13	33.713	33	23.780	P	90	45	DM9	A	**121**
22	KHONGONI	**124**	Changwe		13	32.971	33	26.003	P	55	32		A	**124**
23	KHONGONI	**128**	Khofi	a	13	31.943	33	24.113	P	40	40		A	**128**
24	KHONGONI	**128**	Khofi	b	13	31.938	33	24.003	P	60	32		B	**128**
25	KHONGONI	**129**	Makwenbe	a	13	32.302	33	23.702	P	30	34		B	**129**
26	KHONGONI	**129**	Makwenbe	b	13	32.298	33	23.760	P	29	35		B	**129**
27	KHONGONI	**133**	Nkhawa	a	13	32.426	33	24.578	P	40	45		A	**133**

	T.A.	S/N	NAME		Location				Geology Type	Resistivity (Ω-m)	Depth to Base Rock (m)	BH Reference	VEScurve Type	S/N
					S Lat.		E Long.							
28	KHONGONI	**133**	Nkhawa	b	13	32.354	33	24.744	P	120	24		A	**133**
29	KHONGONI		Kasiya Sch.		13	46.486	33	22.769	Pg	32	35	B/H	C	
30	KHONGONI	**1**	Khongoni (A)		13	51.090	33	22.466	Pg	20	40	LFP22	C	**1**
31	KHONGONI	**7**	Levi		13	49.970	33	20.265	Pg	43	40		C	**7**
32	KHONGONI	**19**	Salima		13	50.631	33	24.838	Pg	35	25	NBC013	C	**19**
33	KHONGONI	**20**	Kapudzama		13	52.072	33	24.750	Pg	80	26	DANIDA	C	**20**
34	KHONGONI	**23**	Mtabvu		13	53.336	33	25.156	Pg	65	25	No.24	C	**23**
35	KHONGONI	**24**	Imfa (Chiputu)		13	53.842	33	24.441	Pg	90	45	UBD025	C	**24**
36	KHONGONI	**26**	Naferanje		13	50.383	33	22.861	Pg	65	42	NBC008	C	**26**
37	KHONGONI	**28**	Nyanga		13	50.035	33	22.043	Pg	42	50	RB32	C	**28**
38	KHONGONI	**31**	Gulumba		13	48.507	33	23.481	Pg	62	26		C	**31**
39	KHONGONI	**32**	Sixpence / Nabuzi		13	47.566	33	23.102	Pg	36	26		C	**32**
40	KHONGONI	**39**	Mwachipula		13	44.881	33	21.005	Pg	45	44		C	**39**
41	KHONGONI	**42**	Mtswati		13	45.381	33	23.750	Pg	65	55		C	**42**
42	KHONGONI	**46**	Mangilira		13	42.421	33	19.245	Pg	120	38	SB/07/430	C	**46**
43	KHONGONI	**56**	Madzonga		13	46.090	33	23.888	Pg	32	30	UBC029	C	**56**
44	KHONGONI	**61**	Mwadzimbi	a	13	46.009	33	25.089	Pg	58	50		C	**61**
45	KHONGONI	**61**	Mwadzimbi	b	13	46.045	33	25.008	Pg	45	50		c	**61**
46	KHONGONI	**90**	Makowa		13	38.312	33	27.252	Pg	30	45	DM13	C	**90**
47	KHONGONI	**94**	Kasalika		13	37.371	33	26.808	Pg	40	45		C	**94**
48	KHONGONI	**123**	Kachera		13	32.226	33	25.965	Pg	86	40		C	**123**
49	KHONGONI	**126**	Mkwinda		13	32.426	33	24.578	Pg	140	20		C	**126**
50	KHONGONI	**131**	Mwanmbakulu	a	13	32.292	33	24.574	Pg	30	62		C	**131**
51	KHONGONI	**131**	Mwanmbakulu	b	13	32.354	33	24.744	Pg	60	55		C	**131**
52	KHONGONI		Mbewa		13	39.931	33	19.207	P	140	45	DM17	A	

6-4 (2) Results of Geophysical Prospecting Survey

T.A. Kalolo

No.	Village	Results of Vertical Electric Survey			Results of Horizontal Electric Survey		BH No.
		Resistivity of Aquifer (Ω-m)	Boundary of base rock (m)	Types of VES curve	Apparent Resistivity (Ω-m)	Types of HES curve	
2(a)	Dzuluwanda	80	55	A	99～200	b	
2(b)	Dzuluwanda	110	65	A			
5	Guliguli (B)	120	45	A			
6	Nkhwambela	90	45	A			DP65
17	Phulamazira	60	40	A			R13
19	Mpingo (II)	50	38	C			LFP28
22	Mzungu	100	65	C			
23	Mngongonda	30	65	C			
30	Kumtsizi	120	45	A			
36	Danbo	106	32	A			RM58
38	Mizati	34	40	A			
39(a)	Chiipila Sanga	120	42	A	80～300	c	
39(b)	Chiipila Sanga	260	30	B			
41	Chiipila Kakoma	40	50	A	16～60	d	
42	Guliguli (A)	90	30	B	55～200	d	
45	Geremani	52	61	C			
47	Nyanda	260	28	B	280～900	c	
54(a)	Mtsina / Kalata	120	35	A	60～310	c,d	
54(b)	Mtsina / Kalata	480	45	B			
55	Chadza	180	45	A			
57	Ntchisi	165	25	B	120～240	b	
60	Chingondo	35	30	A			
61	Chipanga	160	35	D	200～900	d	
62(a)	Mbang'ombe	180	45	D	169～320	b	C28
62(b)	Mbang'ombe	260	36	D			
73	Chimbwala	30	35	A			
82	Jonasi	25	65	C			
89	Lusha	45	25	C			
90	Dzinja	120	38	A			
92	Kadzoni	38	45	A			FC96
94	Kafunde	120	25	B			
100	Kalonga	90	30	A			
103	Semu	280	40	B			
106	Mliu	65	20	C			X25
107	Chithangile	22	45	C			
109	Chaponda	55	40	A	35～84	b	
111	Chikalipo	260	45	C			
116	Zakaliya	60	55	C			
119	Makanga	95	45	C			

T.A.Khongoni

No.	Village	Results of Vertical Electric Survey			Results of Horizontal Electric Survey		BH No.
		Resistivity of Aquifer (Ω-m)	Boundary of base rock (m)	Types of VES curve	Apparent Resistivity (Ω-m)	Types of HES curve	
1	Khongoni (A)	20	40	C			LFP22
4	Kanjanja	60	40	A			
7	Levi	43～50	40	C			
11	Benjamani	110	65	A			
13	Waya	70	45	A			FC116
16	Mkhata	55	25	B			
19	Salima	35	25	C			NBC013
20	Kapudzama	80	26	C			DANIDA
23	Mtabvu	65	25	C			No.24
24	Imfa (Chiputu)	90	45	C			UBD025
26	Naferanje	65	42	C			NBC008
28	Nyanga	42	50	C			RB32
31	Gulumba	62	26	C			
32	Sixpence / Nabuzi	36	26	C			
37	Mbewa (II)	60	38	A			
39	Mwachipula	45	44	C			
42	Mtswati	80	42	C			
45(a)	Malenga	32	35	A	42～140	d	
45(b)	Malenga	50	35	A			
46	Mangilira	120	38	C			SB/07/430
56	Madzonga	32	30	C			UBC029
61(a)	Mwadzimbi	45	50	C	33～76	b	
61(b)	Mwadzimbi	58	50	C			
67	Bondo	81	54	A			RM49
69(a)	Kazambala	65	40	A	39～160	b	
69(b)	Kazambala	80	35	A			
70	Chigowo	30	34	A			SB/07/323
79	Chilowa	76	28	A			E317
82	Kawalika	55	48	A			
85(a)	Msema	120	35	A	28～180	c	
85(b)	Msema	240	35	A			
89(a)	Chimonbo (II)	120	38	A	33～580	c	
89(b)	Chimonbo (II)	150	16	B			
90	Makowa	30	45	C			DM13
94	Kasalika	40	45	A	46～70	a	
103	Kaodzera (B)	74	75	A			
116	Mwanda	100	45	A			
120	Magengera	22	45	A			
121	Kakoloweko	90	45	A			DM9
123	Kachera	86	40	A			
124	Changwe	55	32	A			
126	Mkwinda	140	18	C			
128(a)	Khofi	40	40	A	7.4～300	c	
128(b)	Khofi	60	32	A			
129(a)	Makwenbe	30	34	A	22～62	b	
129(b)	Makwenbe	29	35	A			
131(a)	Mwanmbakulu	30	62	C	31～97	b	
131(b)	Mwanmbakulu	60	55	C			
133(a)	Nkhawa	40	45	A	38～220	c	
133(b)	Nkhawa	120	24	B			
	Kasiya Sch.	34	32	C			B/H
	Mbewa	140	45	A			DM17

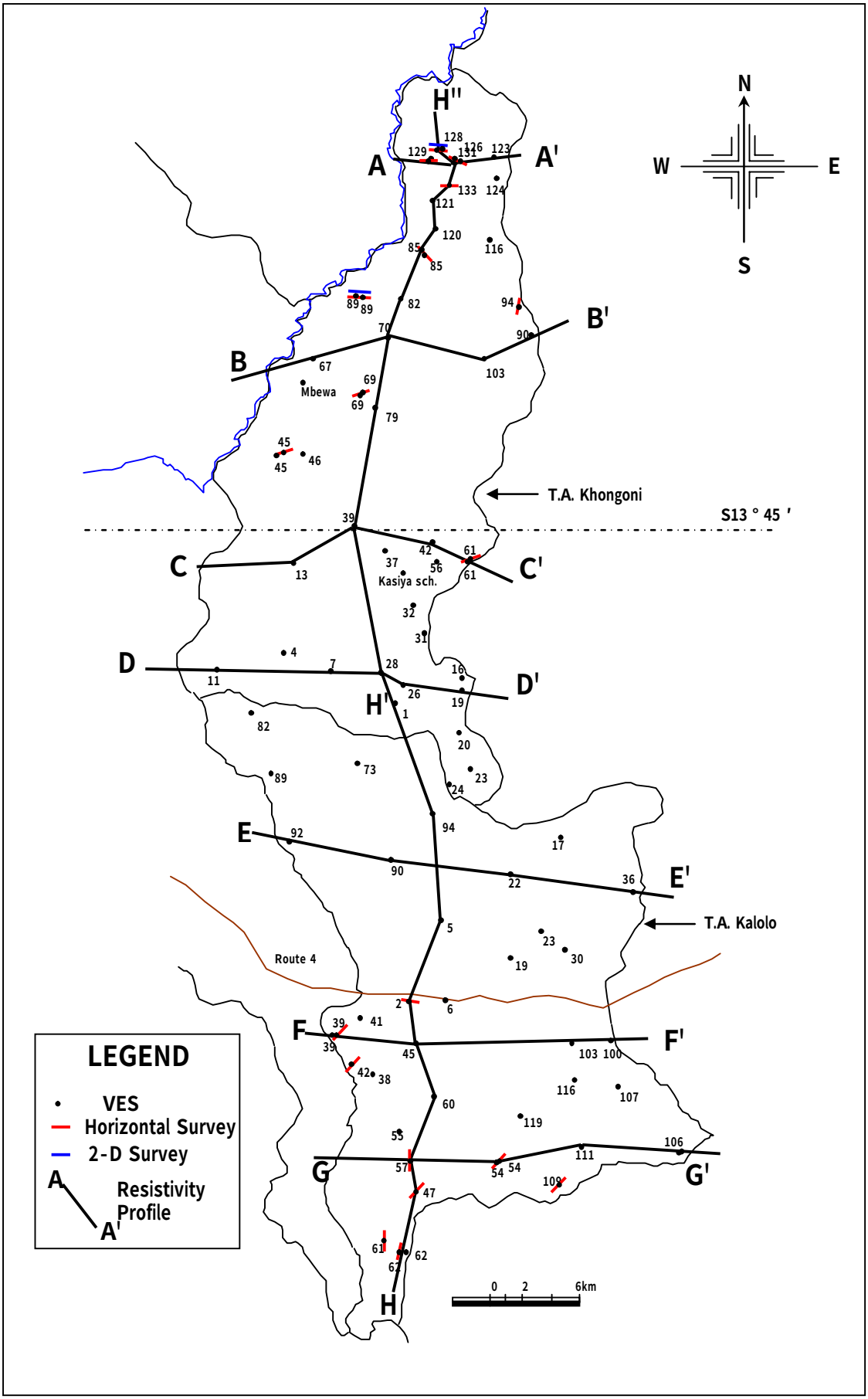
Result of VES: VES curve classification

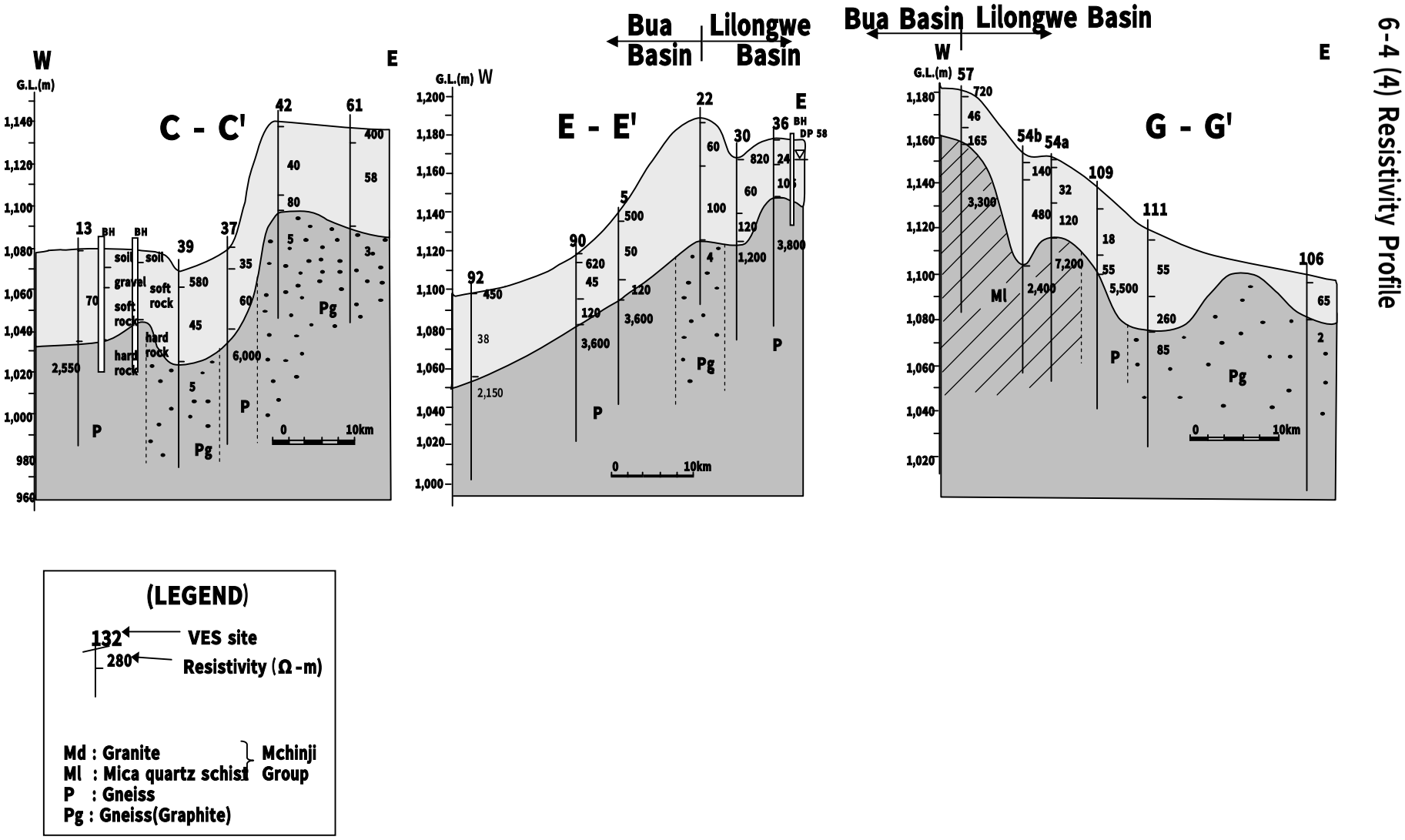
Type	Characteristic
A	Distribution area of P/Ml layer. Bottom and top layer show high resistivity.Intermadeate layers show relatively low value.
B	Distribution area of P/Ml layer. Base rocks appear more shallower than Type-A.
C	This area may have graphite inside the P layer area. Resistivity of the last layer show low value.
D	Distribution area of Md layer. Similar to type A. Resistivity of aquifer is high.

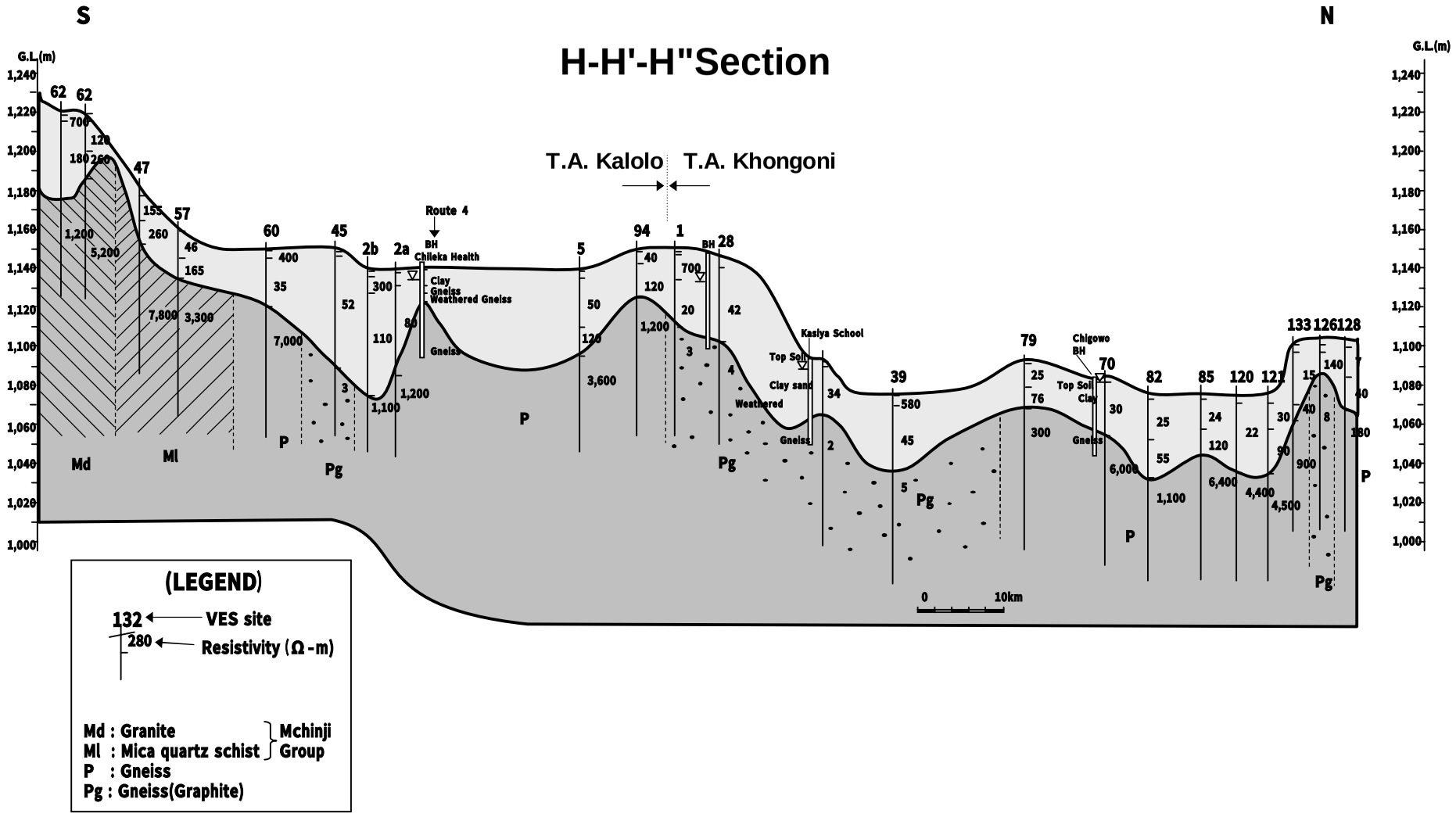
Result of HES: HES curve classification

Type	Characteristic
a	smooth
b	curves with small ups and downs
c	increasing or decreasing monotonously
d	curves with large ups and downs

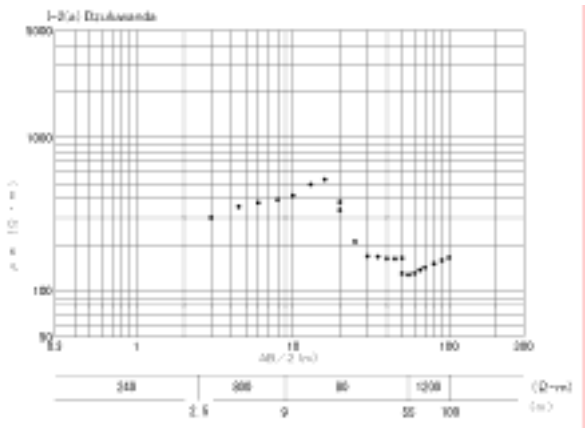
6-4 (3) Location Map for Geophysical Prospecting Survey

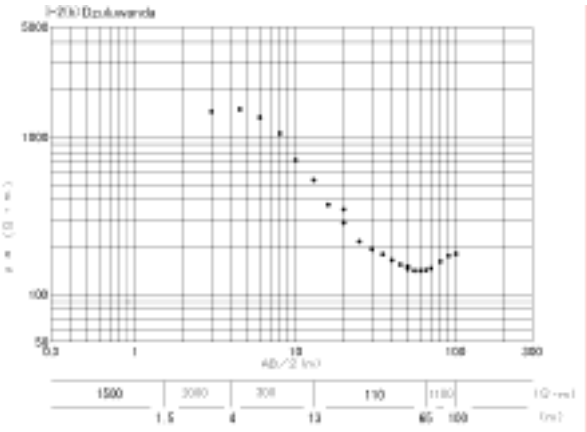


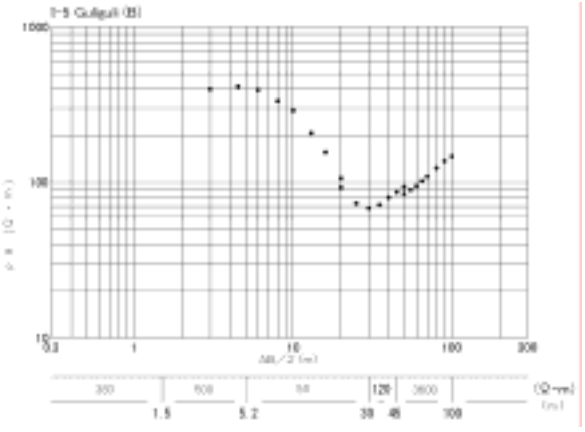

C - C'
W
E
G.L.(m)
soil
gravel
soft rock
hard rock
BH
P
Pg
0
10km
E - E'
Bua Basin
Lilongwe Basin
G.L.(m) W
E
DP 58
G - G'
Bua Basin Lilongwe Basin
W
E
G.L.(m)
Ml
(LEGEND)
VES site
Resistivity (Ω-m)
Md : Granite
Ml : Mica quartz schist
P : Gneiss
Pg : Gneiss(Graphite)
Mchinji Group

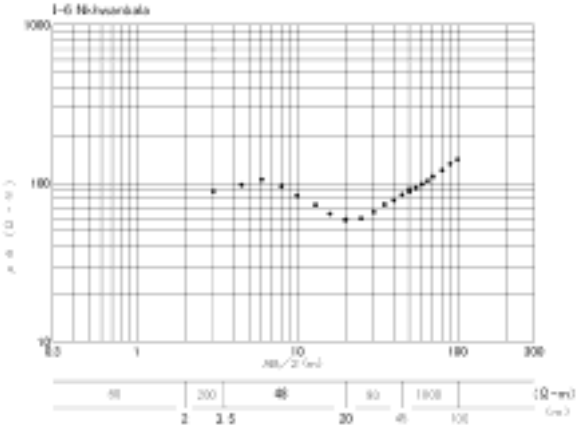

S
N
H-H'-H"Section
G.L.(m)
T.A. Kalolo
T.A. Khongoni
Route 4
BH
Chileka Health
Clay
Gneiss
Weathered Gneiss
Gneiss
BH
Kasiya School
Top Soil
Clay sand
Weathered
Gneiss
Chigowo
BH
Top Soil
Clay
Gneiss
Md
Ml
P
Pg
0
10km
(LEGEND)
132 VES site
280 Resistivity (Ω-m)
Md : Granite
Ml : Mica quartz schist
Mchinji Group
P : Gneiss
Pg : Gneiss(Graphite)

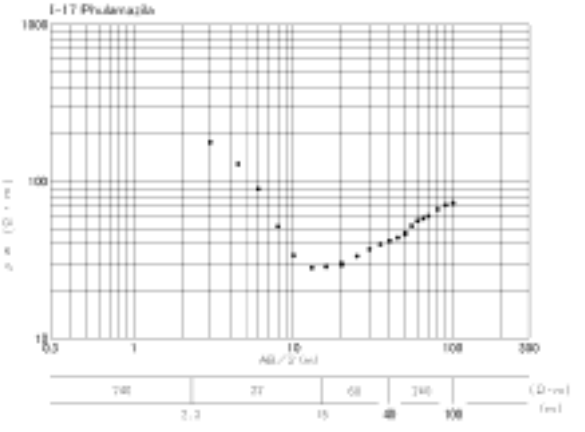
6-4 (5) Results of Geophysical Prospecting Survey

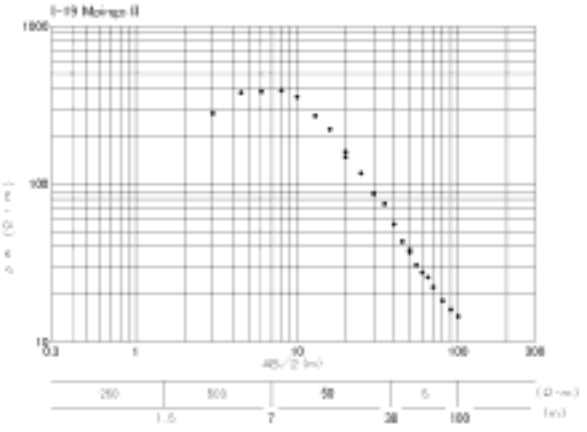


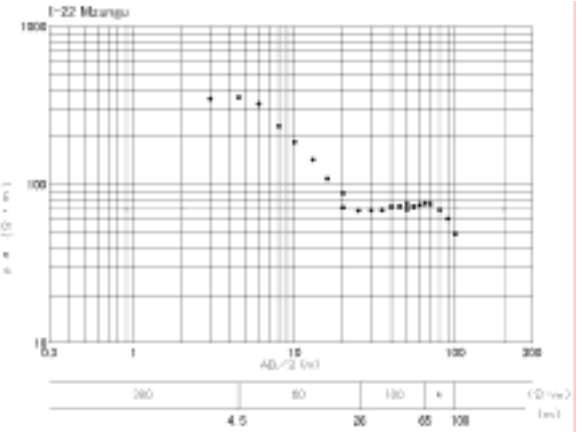


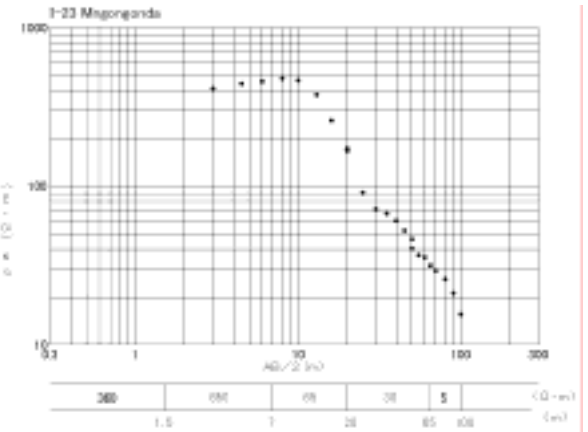


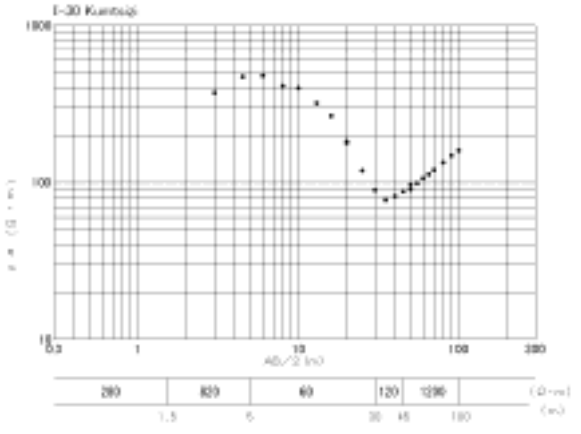


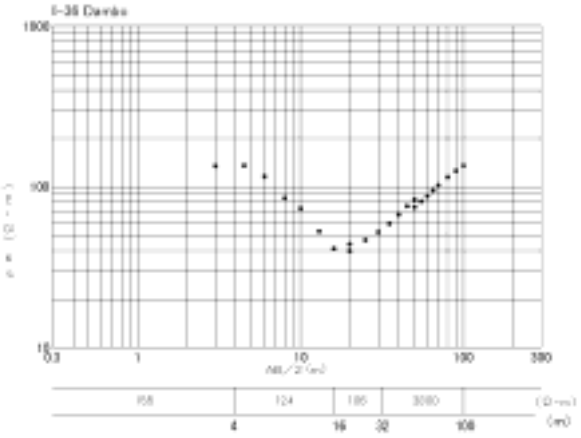


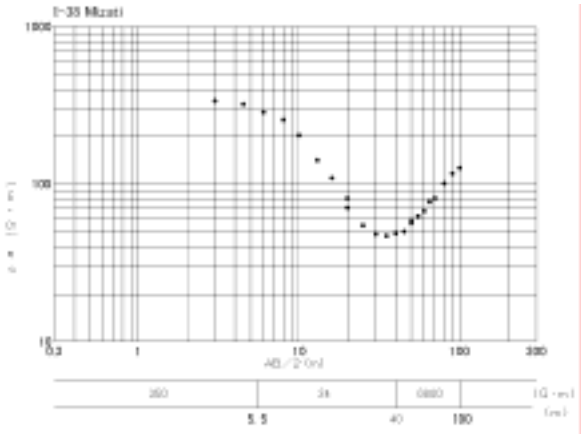


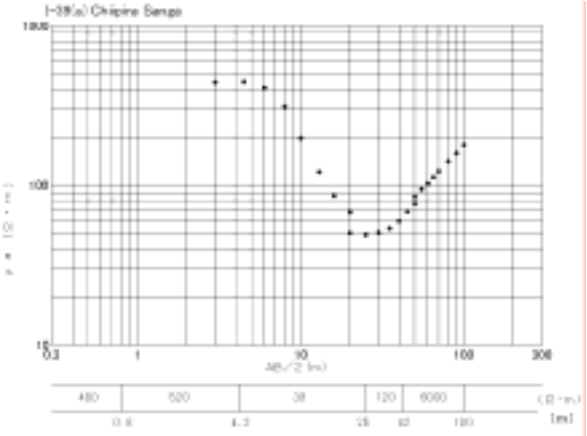


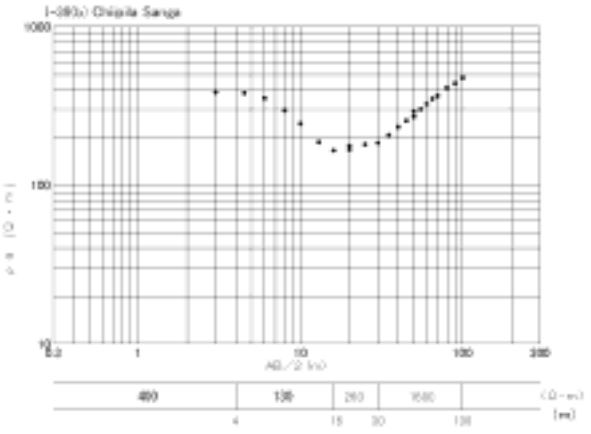


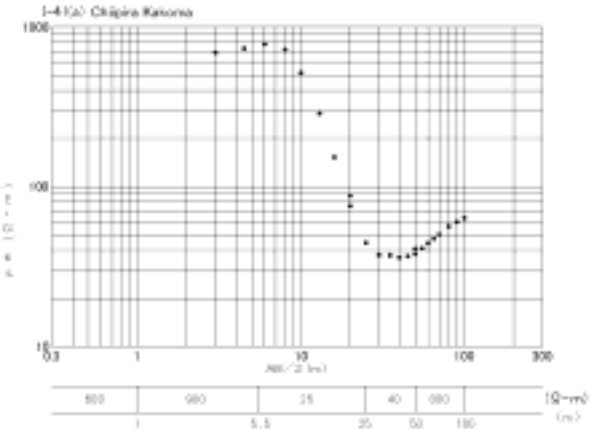

I-30 Kuntsuji
1000
100
10
0.3
1
10
100
300
AB/2 (m)
280
820
60
120
1290
(Ω-m)
1.5
5
30
45
180
(m)

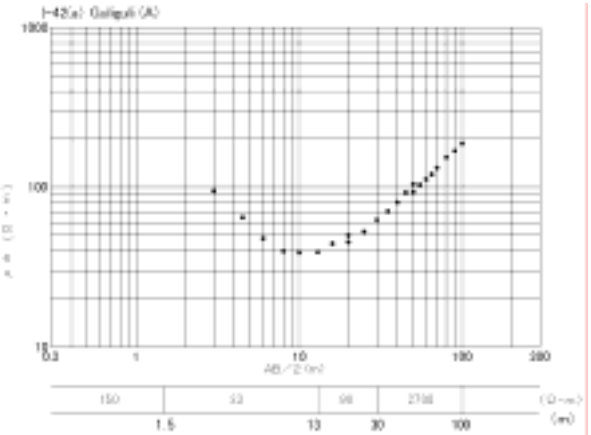

I-36 Dambo
1000
100
10
0.3
1
10
100
300
AB/2 (m)
958
124
185
3080
(Ω-m)
4
16
32
108
(m)

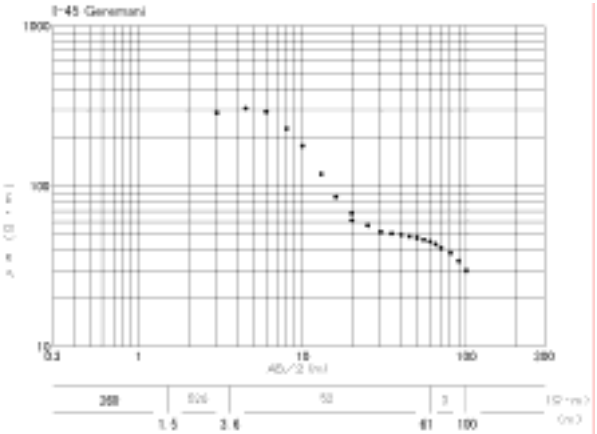

I-35 Mizati
1000
100
10
0.3
1
10
100
300
AB/2 (m)
360
34
6880
(Ω-m)
5.5
40
180
(m)

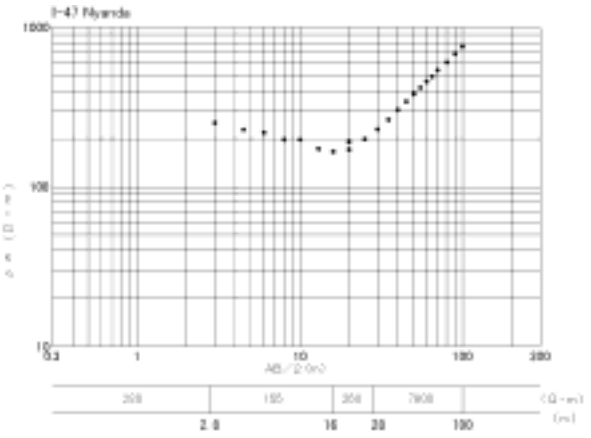

I-39(a) Chipire Senga
1000
100
10
0.3
1
10
100
300
AB/2 (m)
480
520
38
120
6080
(Ω-m)
0.8
4.3
25
82
180
(m)

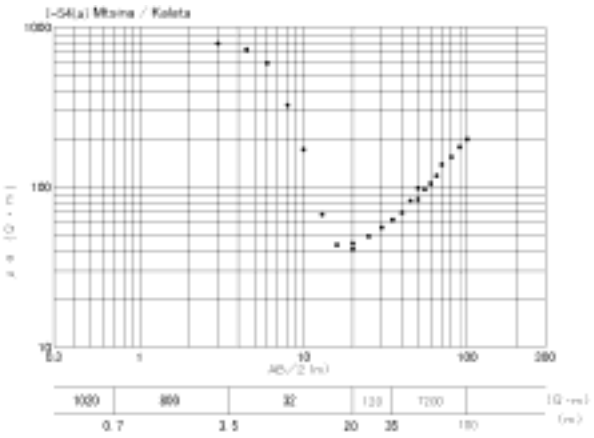

I-39(b) Chipile Senga
1000
100
10
0.3
1
10
100
300
AB/2 (m)
480
138
260
9580
(Ω-m)
4
15
30
138
(m)

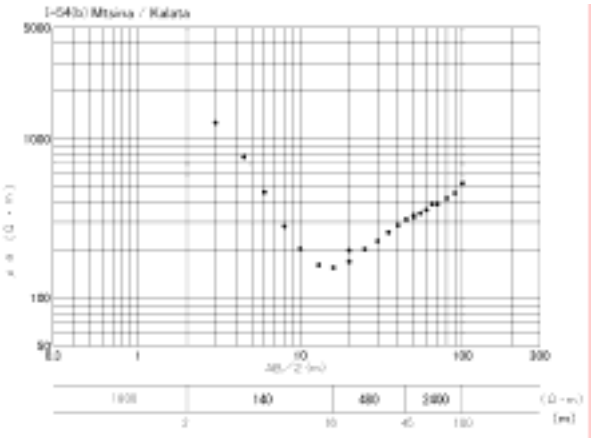

I-41(a) Chipire Kaiyona
1000
100
10
0.3
1
10
100
300
AB/2 (m)
800
980
35
40
980
(Ω-m)
1
5.5
25
50
180
(m)

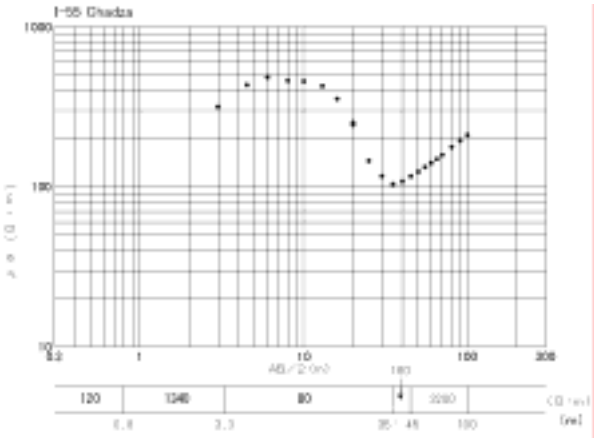

I-42(a) Gallguli (A)
1000
100
10
0.3
1
10
100
300
AB/2 (m)
150
32
98
2780
(Ω-m)
1.5
13
30
100
(m)

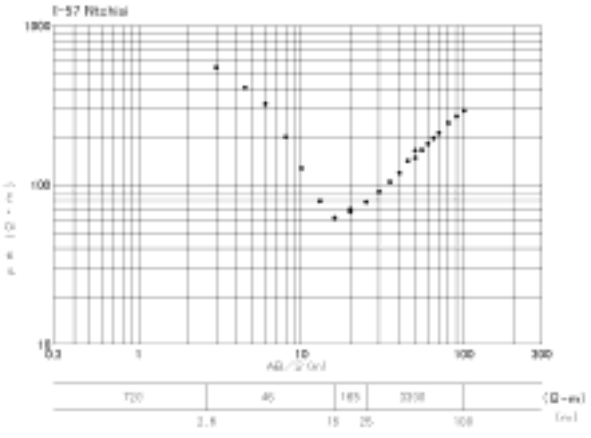

I-45 Genemani
1000
100
10
0.3
1
10
100
300
AB/2 (m)
388
526
52
3
(Ω-m)
1.5
3.6
61
100
(m)

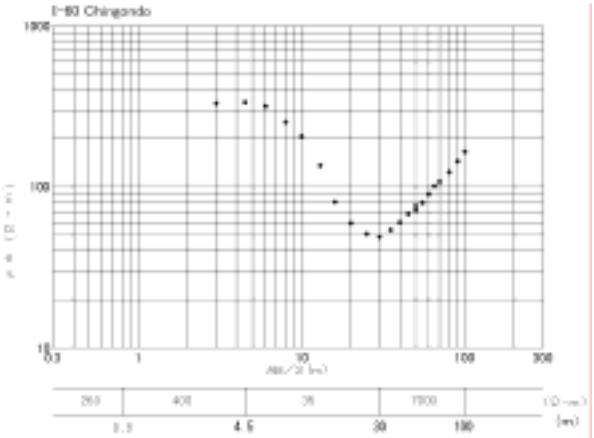

I-47 Nyanda
AB/2 (m)

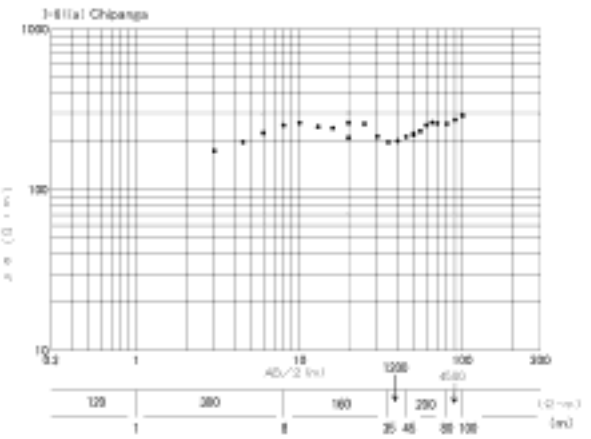

I-54(a) Mtsima / Kaleta
AB/2 (m)

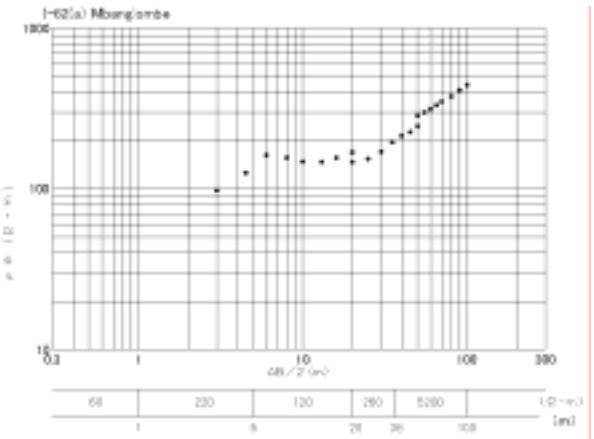

I-54(b) Mtsima / Kalata
AB/2 (m)

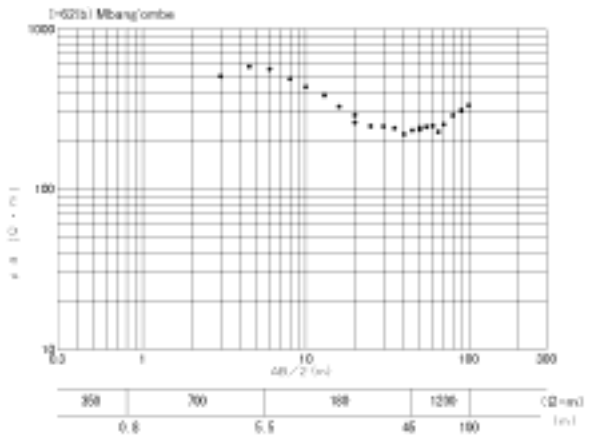

I-55 Chadza
AB/2 (m)

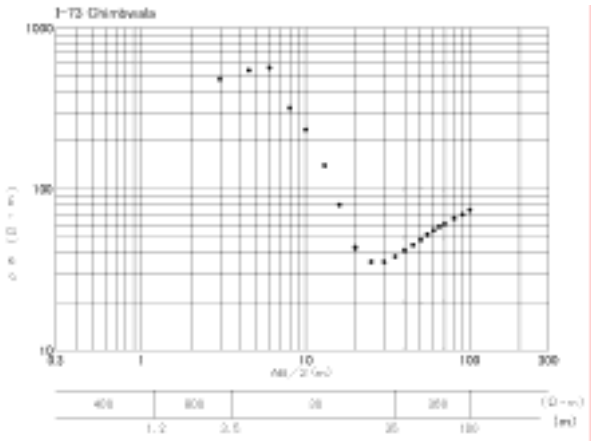

I-57 Ntchisi
AB/2 (m)

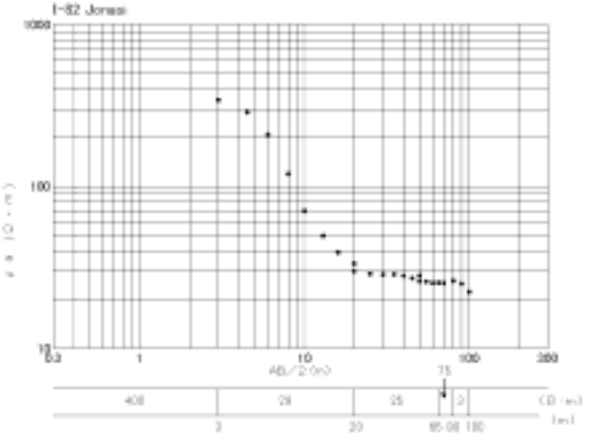

I-60 Chingondo
AB/2 (m)

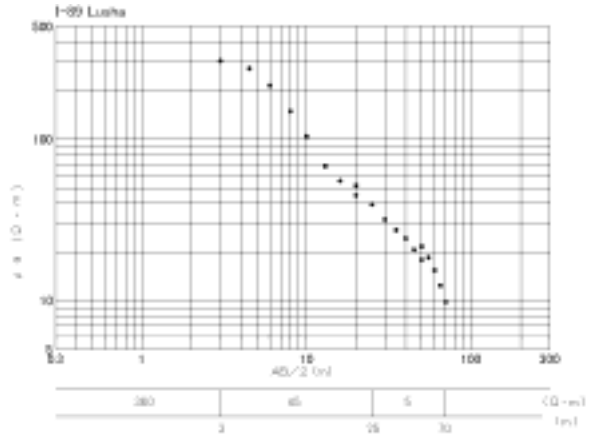

I-61(a) Chipanga
AB/2 (m)

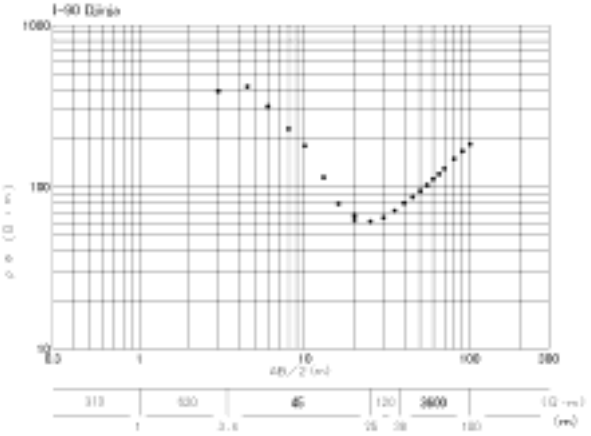

I-62(a) Mbang'ombe
AB/2 (m)

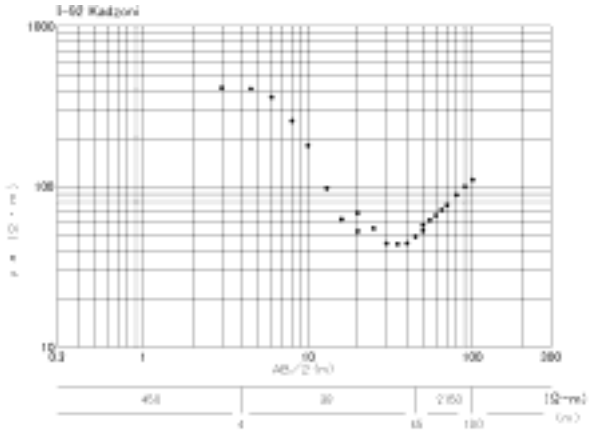

I-62(b) Mbang'ombe
1000
100
10
0.3
1
10
100
300
AB/2 (m)
350
700
188
1200
(Ω-m)
0.6
5.5
45
180
(m)

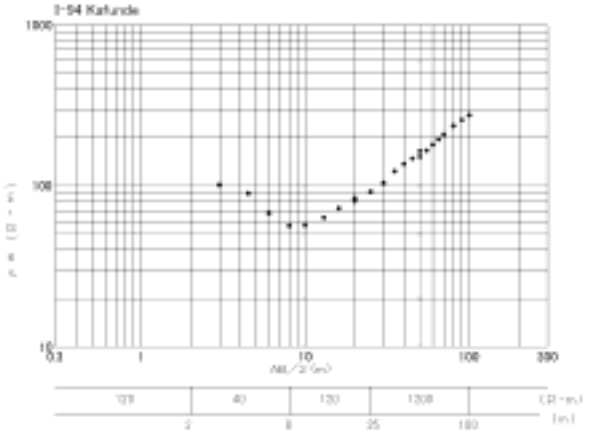

I-73 Chimbwala
1000
100
10
0.3
1
10
100
300
AB/2 (m)
(Ω-m)
(m)

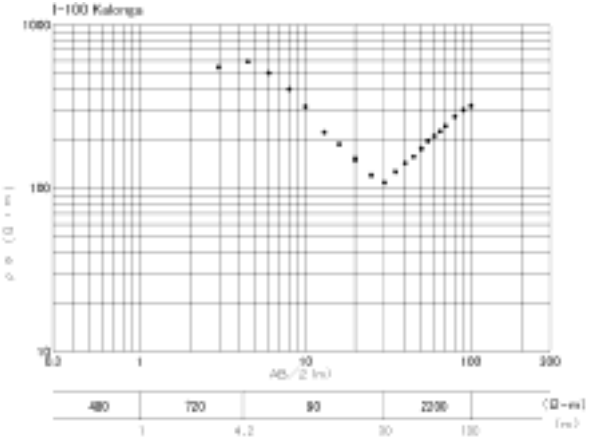

I-82 Jonas
1000
100
10
0.3
1
10
100
300
AB/2 (m)
75
408
29
25
2
(Ω-m)
3
20
65 98 180
(m)

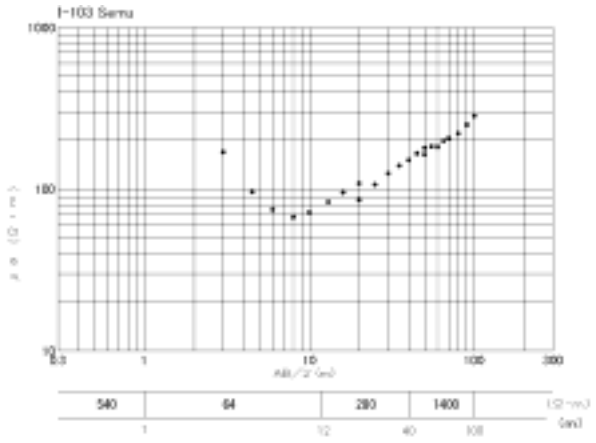

I-89 Lusha
1000
100
10
0.3
1
10
100
300
AB/2 (m)
280
65
5
(Ω-m)
3
25
30
(m)

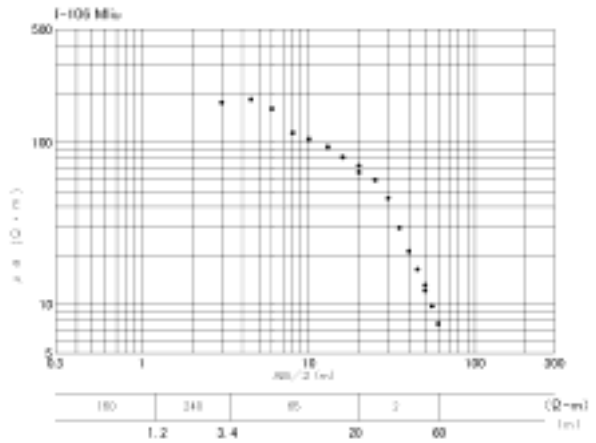

I-90 Djinja
1000
100
10
0.3
1
10
100
300
AB/2 (m)
313
530
45
120
3600
(Ω-m)
1
3.5
25
38
180
(m)

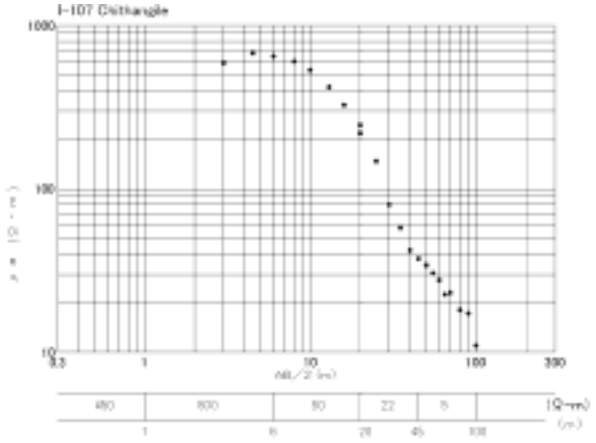

I-93 Kadzoni
1000
100
10
0.3
1
10
100
300
AB/2 (m)
458
30
2150
(Ω-m)
4
65
180
(m)

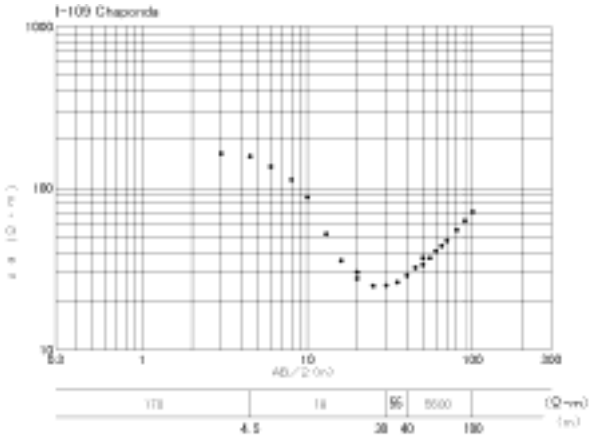

I-94 Kafunde
1000
100
10
0.3
1
10
100
300
AB/2 (m)
129
40
120
1200
(Ω-m)
2
8
25
180
(m)

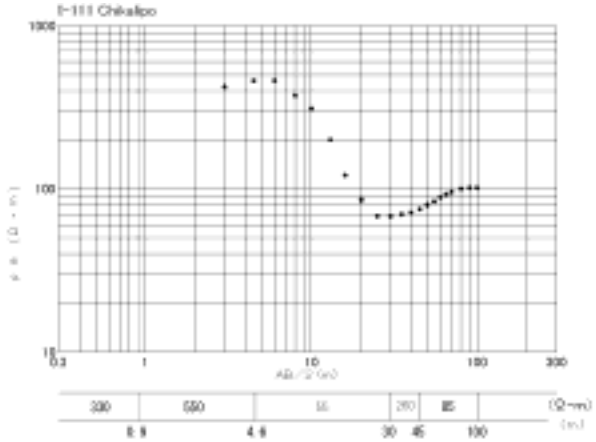

I-100 Kalonga
1000
100
10
0.3
1
10
100
300
AB/2 (m)
480
720
90
2200
(Ω-m)
1
4.2
30
180
(m)

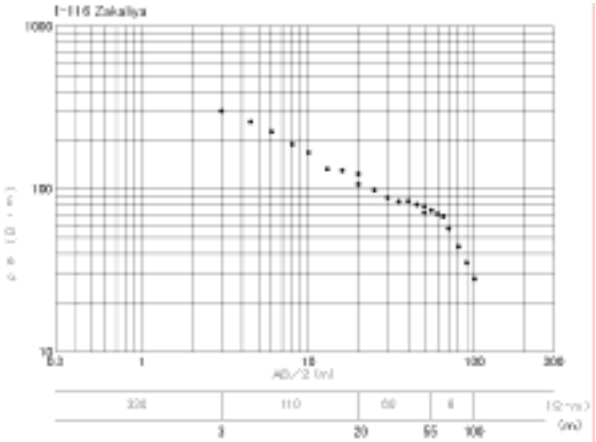

I-103 Semu
ρa (Ω・m)
AB/2 (m)
540
64
280
1400
(Ω-m)
(m)

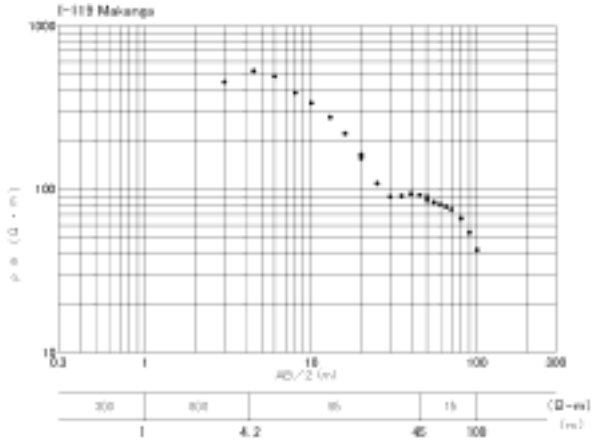

I-106 Milo
ρa (Ω・m)
AB/2 (m)
180
340
85
3
(Ω-m)
1.2
3.4
20
60
(m)

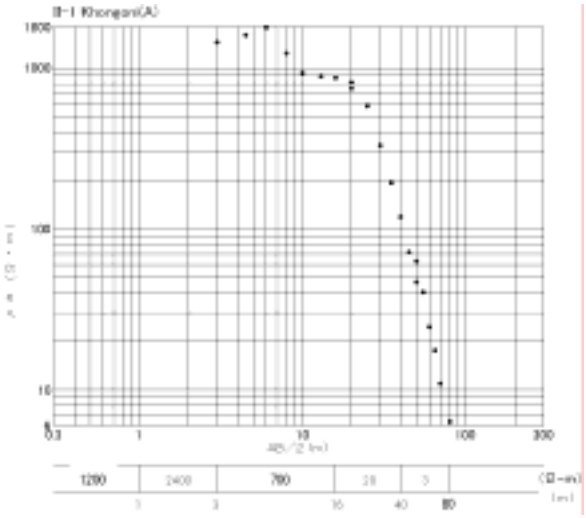

I-107 Chitharigile
ρa (Ω・m)
AB/2 (m)
480
800
80
22
5
(Ω-m)
(m)

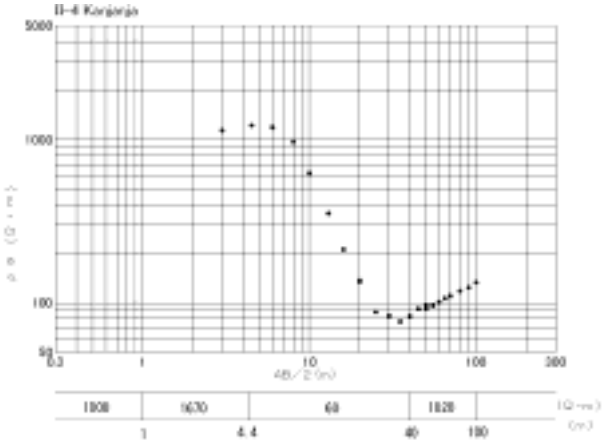

I-109 Chaponda
ρa (Ω・m)
AB/2 (m)
178
18
55
5500
(Ω-m)
4.5
30
40
180
(m)

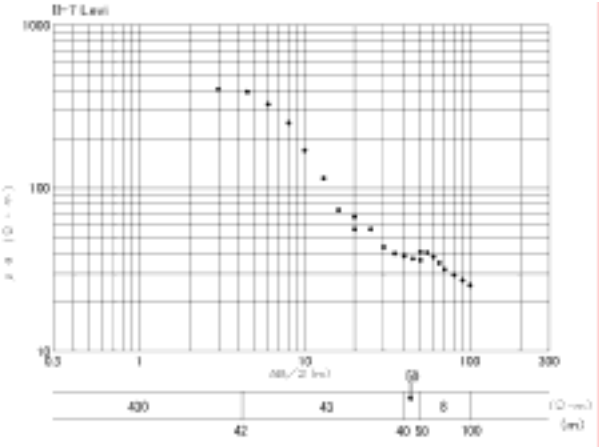

I-111 Chikalipo
ρa (Ω・m)
AB/2 (m)
330
550
85
(Ω-m)
0.9
4.6
30
45
100
(m)

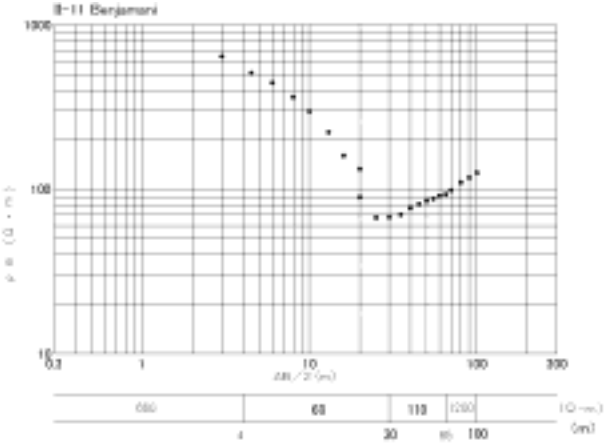

I-116 Zakallya
ρa (Ω・m)
AB/2 (m)
328
110
(Ω-m)
3
20
55
100
(m)

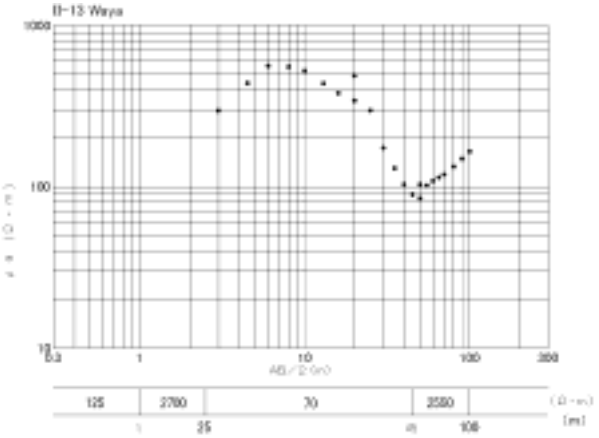

I-119 Malanga
ρa (Ω・m)
AB/2 (m)
300
800
85
15
(Ω-m)
1
4.2
45
300
(m)

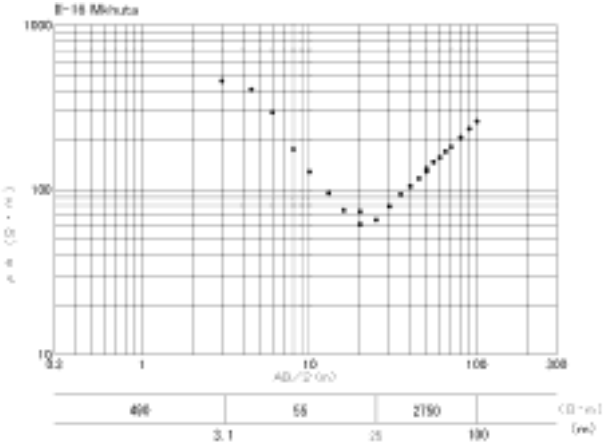

B-1 Khongoni(A)
1800
1000
100
10
5
0.3
1
10
100
300
AB/2 (m)
1200
2400
700
28
3
(Ω-m)
3
3
16
40
80
(m)

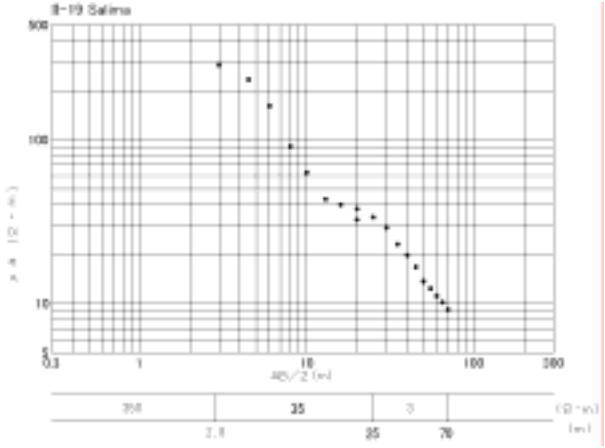

B-4 Konjanja
5000
1000
100
50
0.3
1
10
100
300
AB/2 (m)
1900
1630
60
1820
(Ω-m)
1
4.4
40
100
(m)

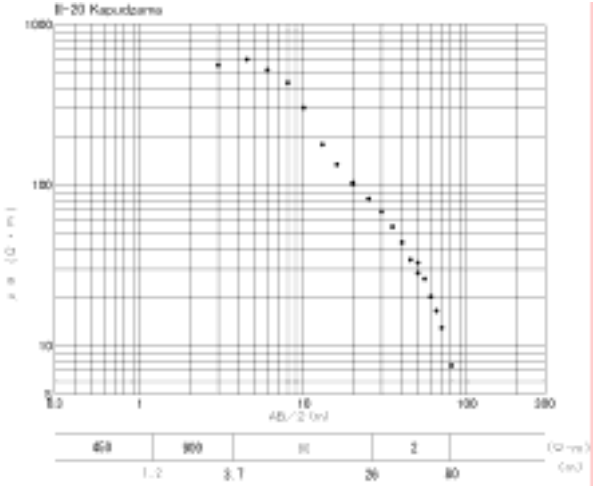

B-7 Lavi
1000
100
10
0.3
1
10
100
300
AB/2 (m)
400
43
6
(Ω-m)
42
40 50
100
(m)

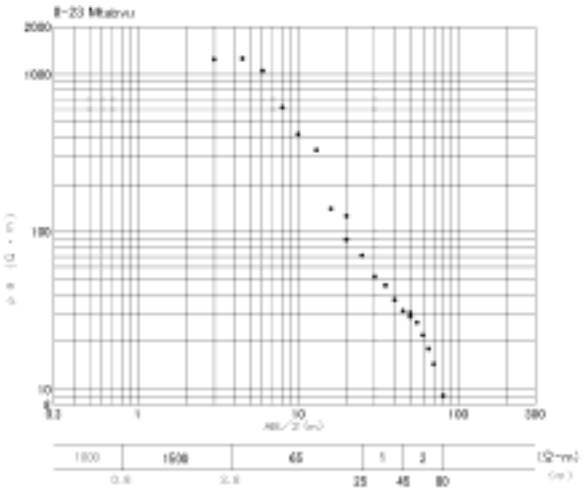

B-11 Benjamani
1000
100
10
0.3
1
10
100
300
AB/2 (m)
660
60
110
1200
(Ω-m)
4
30
80
100
(m)

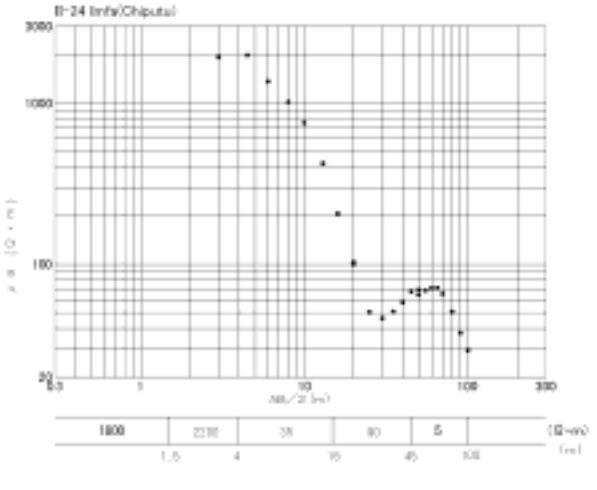

B-13 Waya
1000
100
10
0.3
1
10
100
300
AB/2 (m)
125
2700
70
2550
(Ω-m)
1
25
80
100
(m)

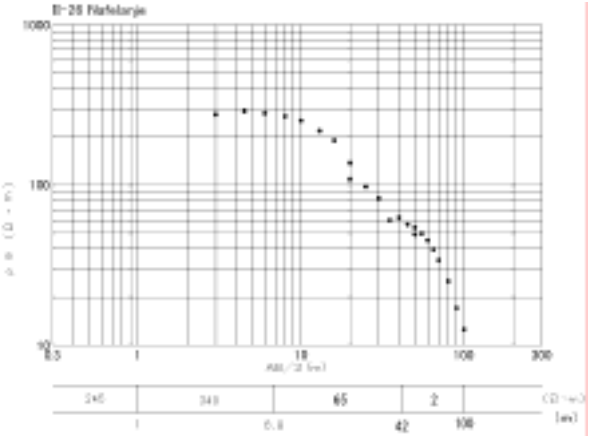

B-16 Mkhuta
1000
100
10
0.3
1
10
100
300
AB/2 (m)
490
55
2750
(Ω-m)
3.1
25
100
(m)

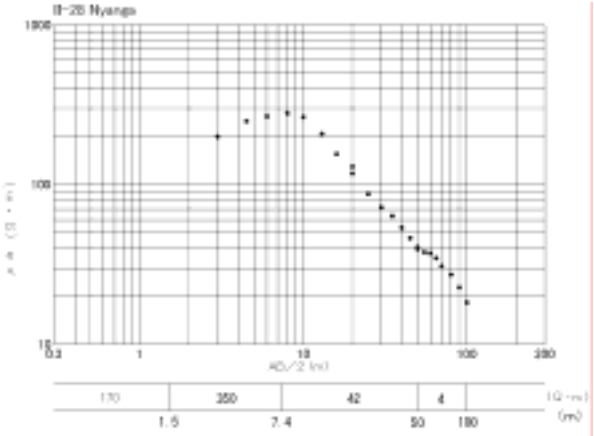

B-19 Salima
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
350
35
3
(Ω-m)
2.8
35
70
(m)

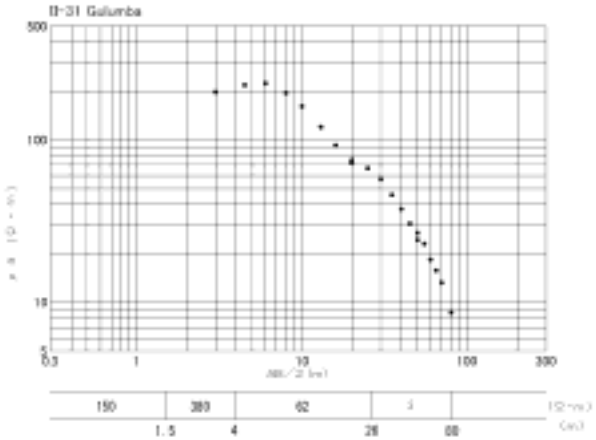

B-20 Kapudzama
1000
100
10
5
0.3
1
10
100
300
AB/2 (m)
450
800
60
2
(Ω-m)
1.2
8.7
20
80
(m)

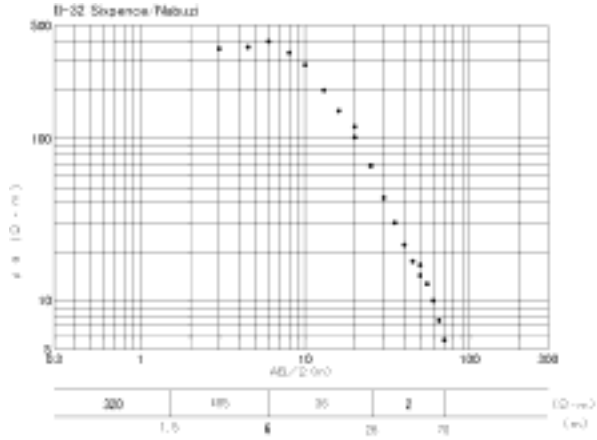

B-23 Mtatvu
2080
1080
180
10
0.3
1
10
100
300
AB/2 (m)
1800
1508
65
5
3
(Ω-m)
0.8
2.8
25
45
80
(m)

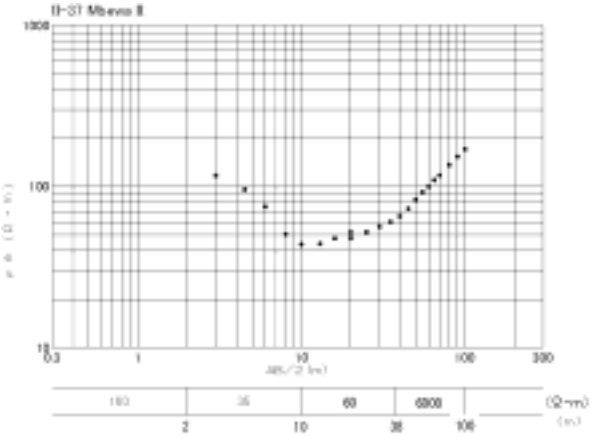

B-24 Imfa/Chiputsi
3080
1080
180
20
0.3
1
10
100
300
AB/2 (m)
1800
2230
38
80
5
(Ω-m)
1.5
4
15
45
100
(m)

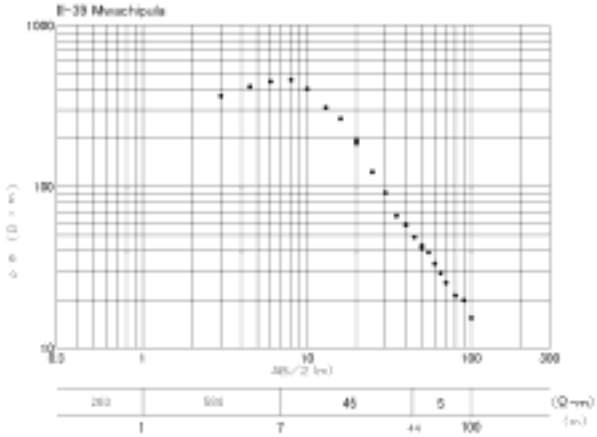

B-26 Nafelanje
1080
180
10
0.3
1
10
100
300
AB/2 (m)
245
340
65
2
(Ω-m)
1
6.8
42
100
(m)

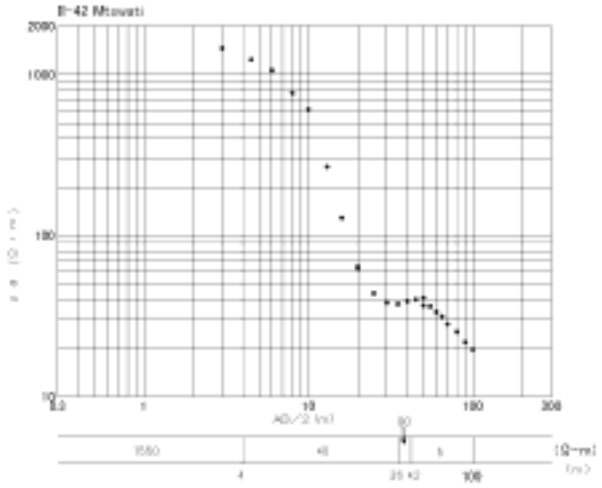

B-28 Nyanga
1808
100
10
0.3
1
10
100
300
AB/2 (m)
130
350
42
4
(Ω-m)
1.5
7.4
50
180
(m)

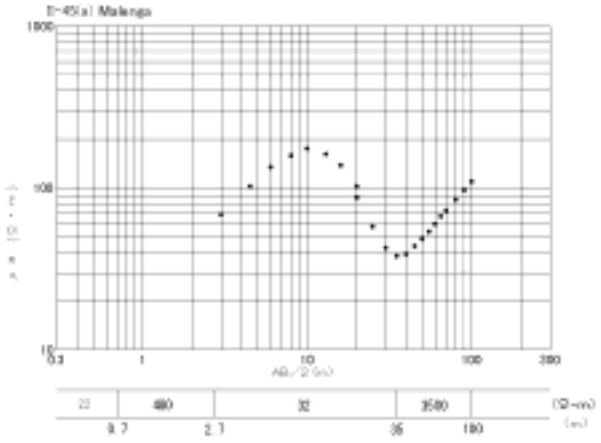

B-31 Gulumba
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
150
380
62
3
(Ω-m)
1.5
4
28
68
(m)

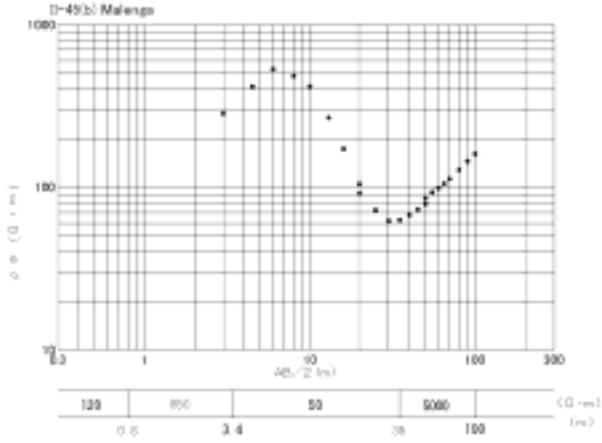

B-32 Sixpence/Ndouzi
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
320
185
35
2
(Ω-m)
1.5
6
28
70
(m)

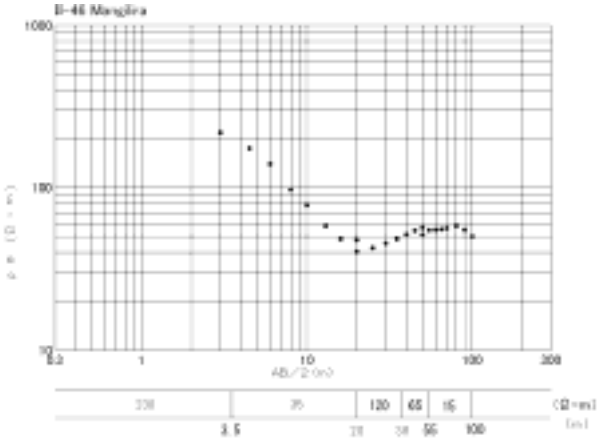

B-37 Mbewa II
1000
100
10
0.3
1
10
100
300
AB/2 (m)
180
35
60
6800
(Ω-m)
2
10
38
100
(m)

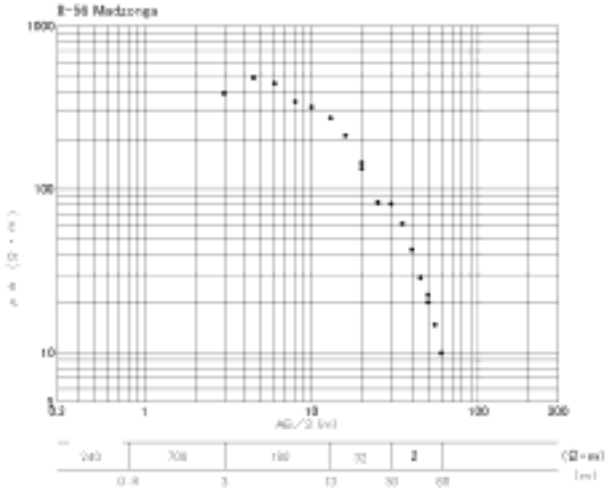

B-39 Mwachipula
1080
180
10
0.3
1
10
100
300
AB/2 (m)
280
500
45
5
(Ω-m)
1
7
44
100
(m)

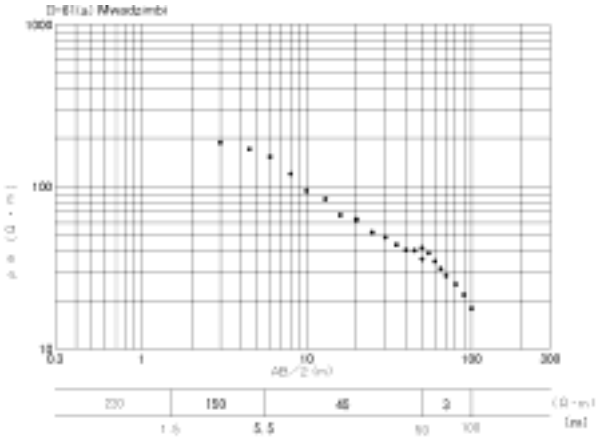

D-42 Mtowati
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

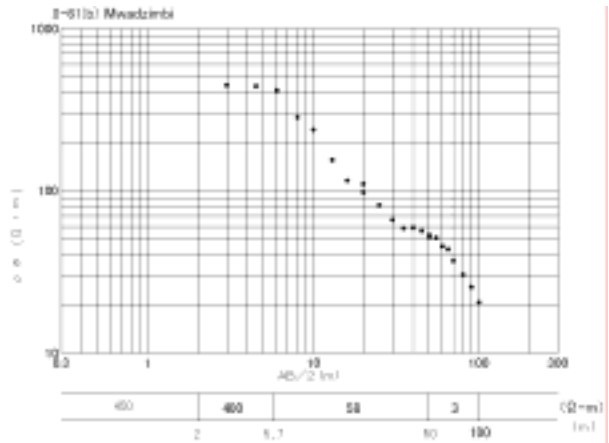

D-45(a) Malenga
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

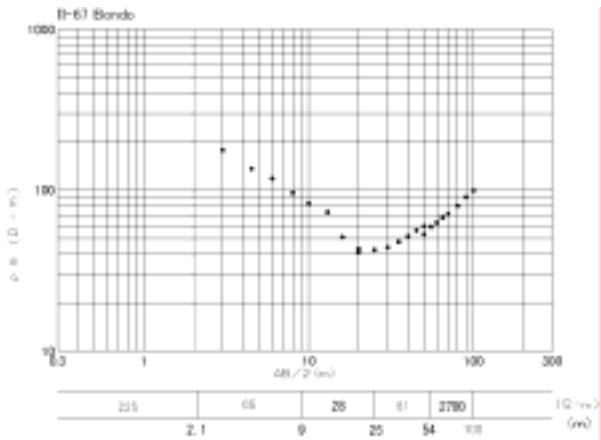

D-45(b) Malenga
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

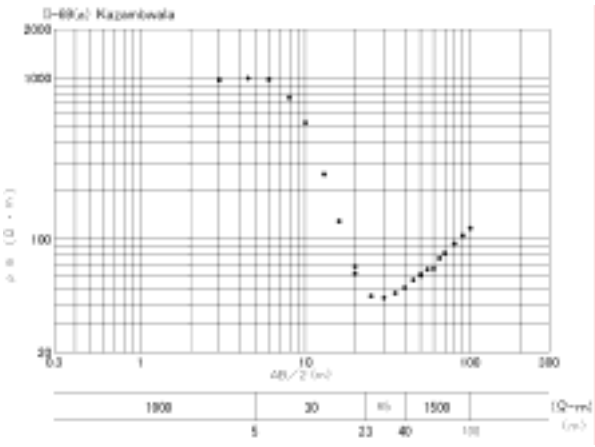

D-46 Mangilira
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

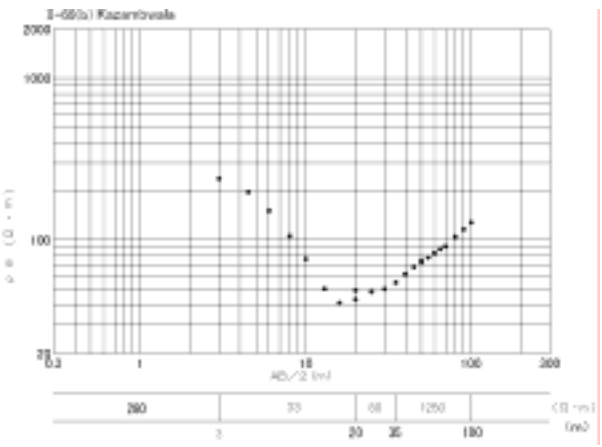

D-58 Madzonga
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

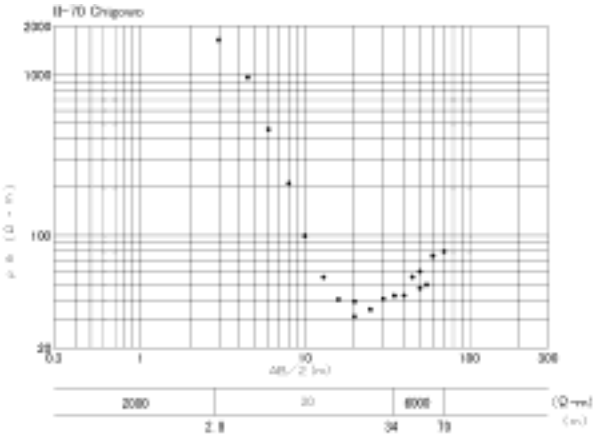

D-61(a) Mwadzimbi
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

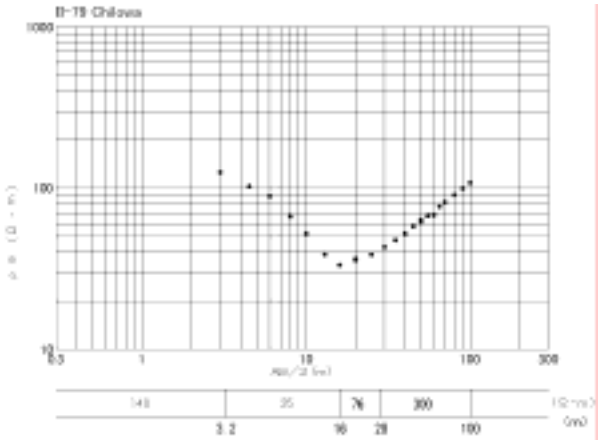

D-61(b) Mwadzimbi
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

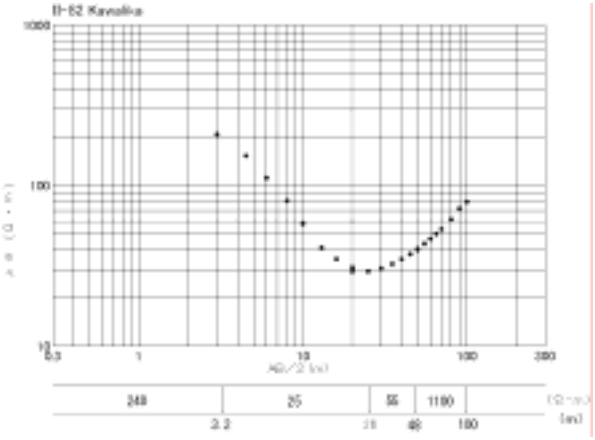

D-63 Bondo
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

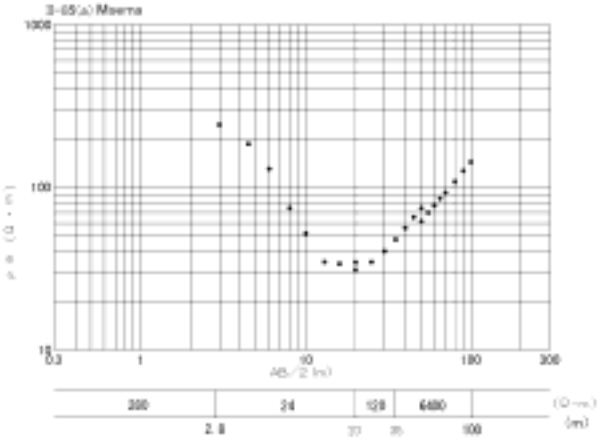

D-69(a) Kazambwala
ρa (Ω・m)
AB/2 (m)
1000
30
1500
(Ω-m)
(m)

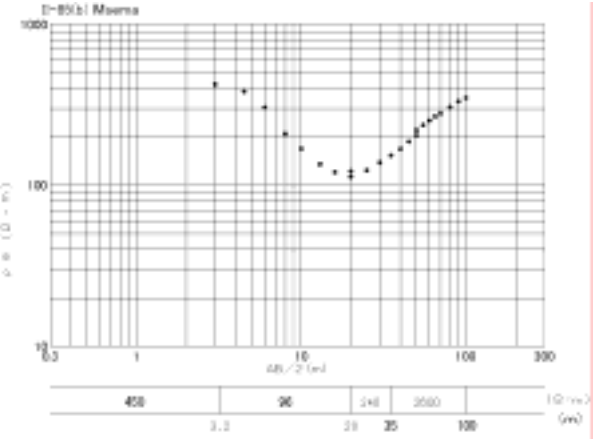

D-69(b) Kazambwala
ρa (Ω・m)
AB/2 (m)
260
(Ω-m)
(m)

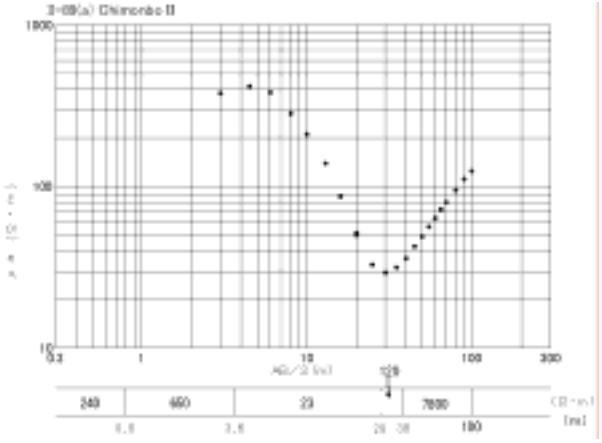

D-70 Chigoro
ρa (Ω・m)
AB/2 (m)
2000
30
6000
(Ω-m)
(m)

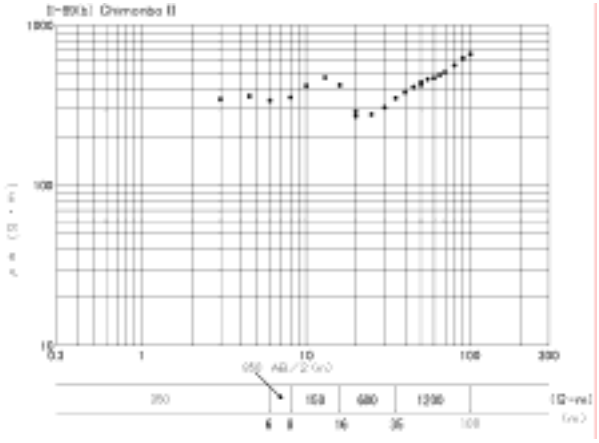

D-71 Chilowa
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

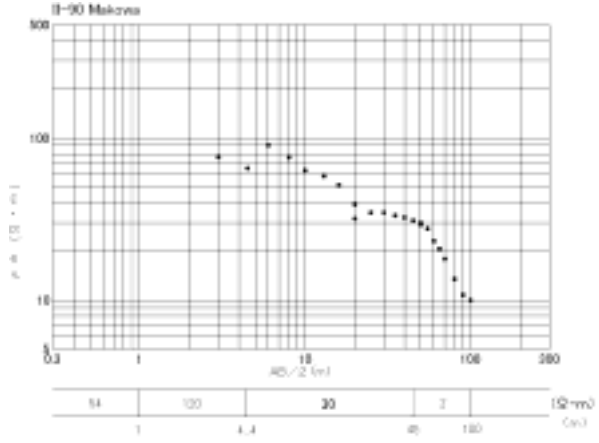

D-62 Kavalika
ρa (Ω・m)
AB/2 (m)
240
25
1180
(Ω-m)
(m)

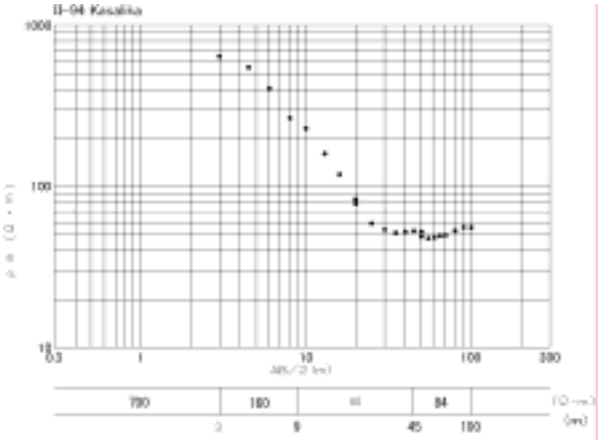

D-65(a) Mwema
ρa (Ω・m)
AB/2 (m)
300
24
6480
(Ω-m)
(m)

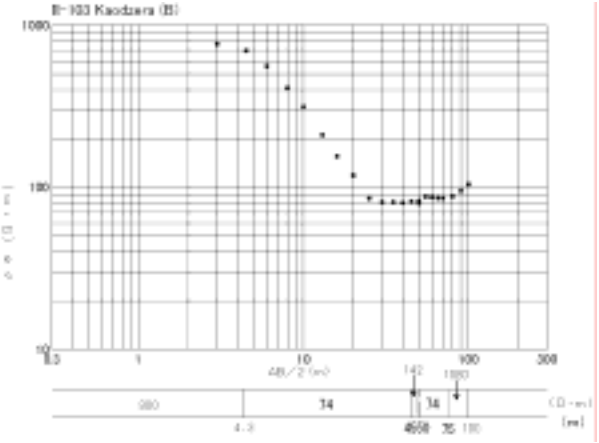

D-65(b) Mwema
ρa (Ω・m)
AB/2 (m)
450
96
(Ω-m)
(m)

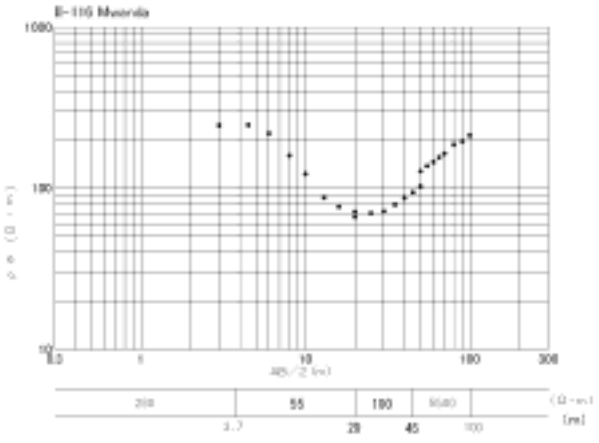

D-69(a) Chimombo II
ρa (Ω・m)
AB/2 (m)
240
460
23
7600
(Ω-m)
(m)

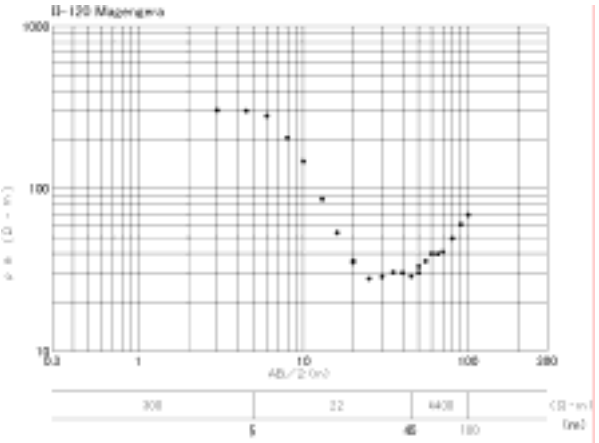

B-90(b) Chimombo II
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
350
168
680
1300
(Ω-m)
(m)

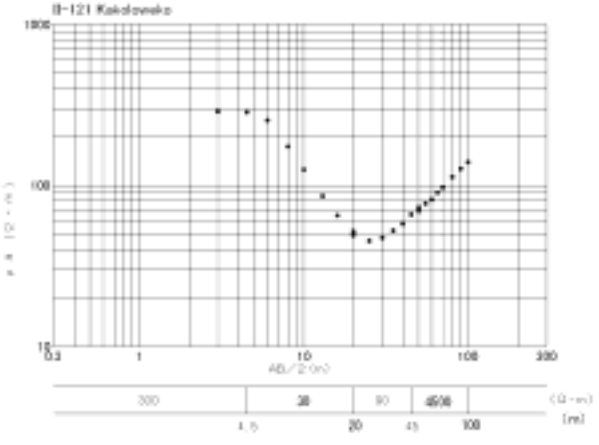

B-90 Makawa
300
100
10
5
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
(Ω-m)
(m)

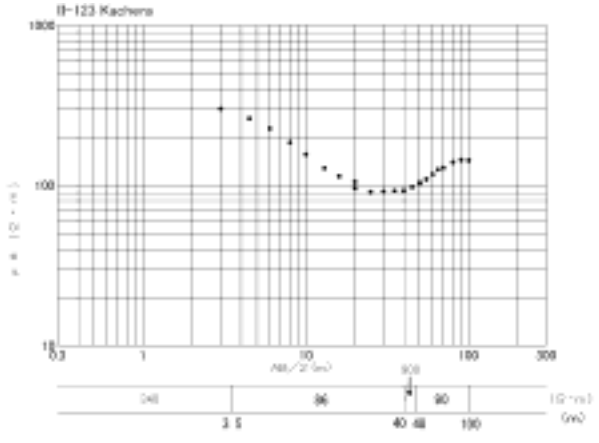

B-94 Kasalika
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
780
180
84
(Ω-m)
(m)

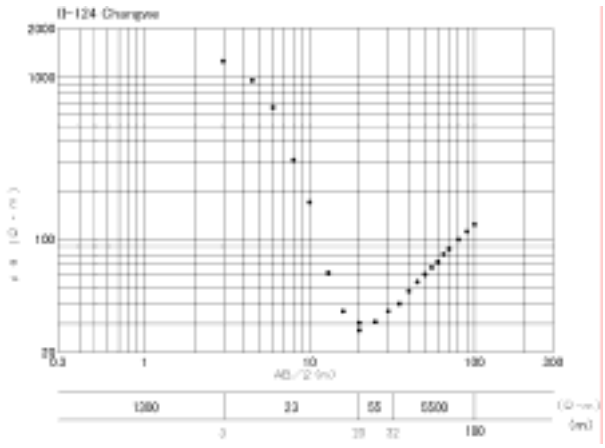

B-103 Kaodzera (B)
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
142
1000
280
74
34
(Ω-m)
(m)

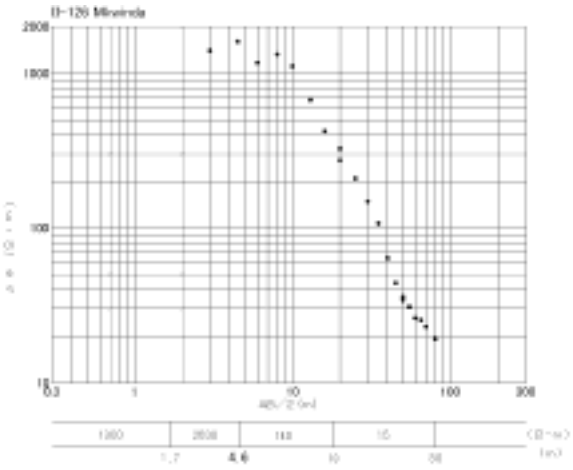

B-116 Mwanda
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
200
55
180
(Ω-m)
(m)

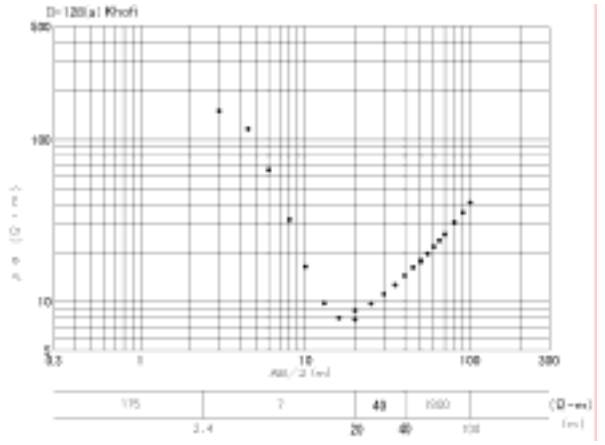

B-130 Magengeya
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
308
22
(Ω-m)
(m)

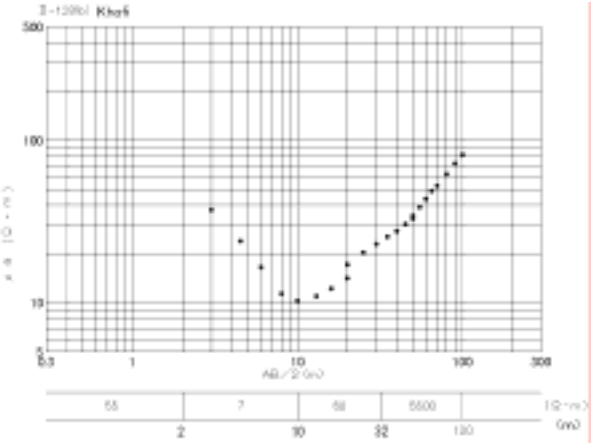

B-121 Kakolowaka
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
300
38
90
(Ω-m)
(m)

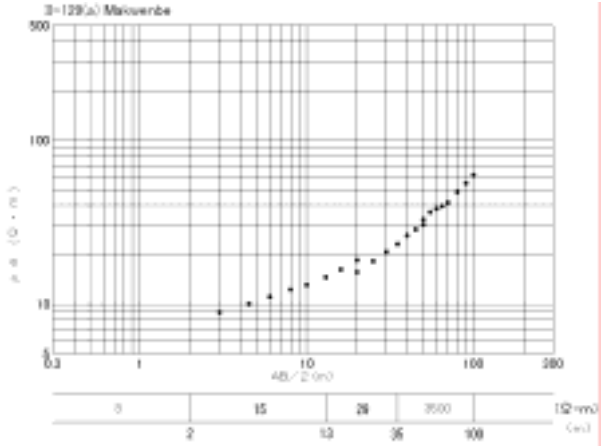

B-123 Kachere
1000
100
10
0.3
1
10
100
300
ρa (Ω・m)
AB/2 (m)
908
240
86
90
(Ω-m)
(m)

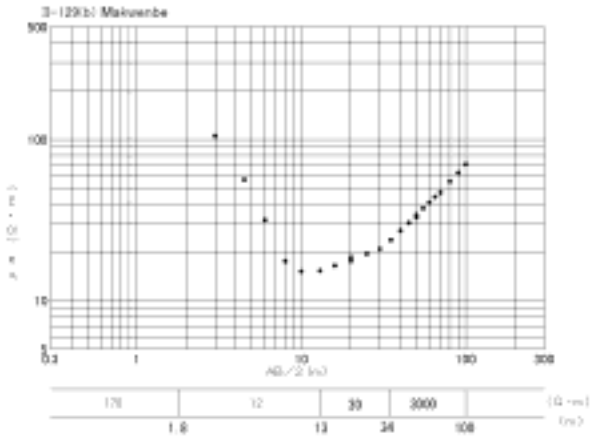

D-124 Changaw
1000
100
10
0.3
1
10
100
300
AB/2 (m)
1280
33
55
5500
(Ω-m)
3
28
32
180
(m)

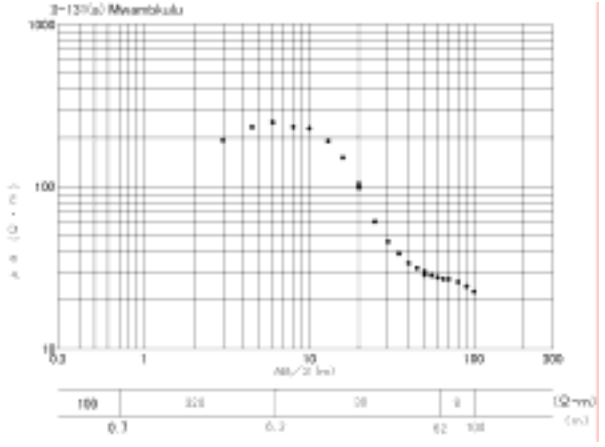

D-126 Mwanda
2000
1000
100
10
0.3
1
10
100
300
AB/2 (m)
1280
2000
110
15
(Ω-m)
1.7
4.6
10
58
(m)

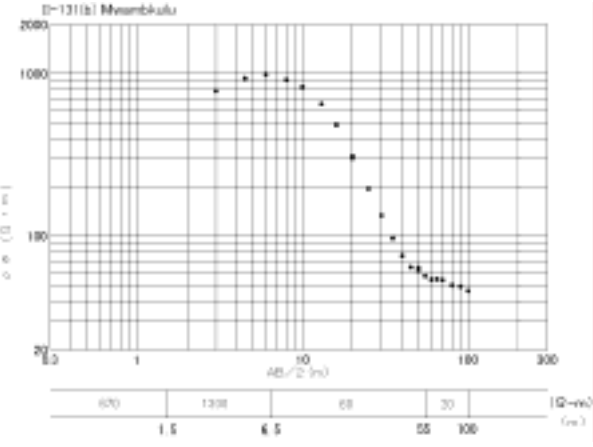

D-128(a) Khofi
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
175
7
49
1000
(Ω-m)
2.4
20
40
100
(m)

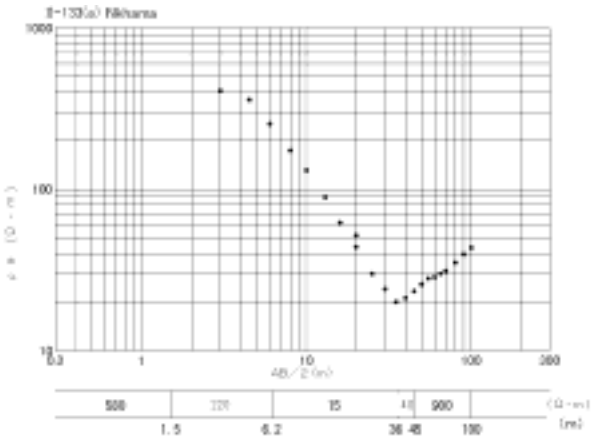

D-128(b) Khofi
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
55
7
58
5500
(Ω-m)
2
10
32
120
(m)

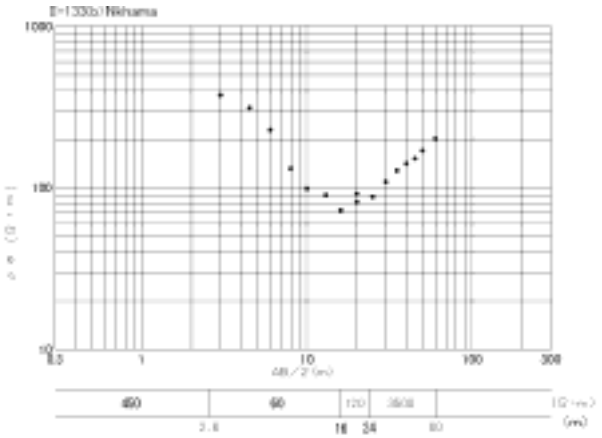

D-129(a) Makwemba
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
8
15
28
3500
(Ω-m)
2
13
35
100
(m)

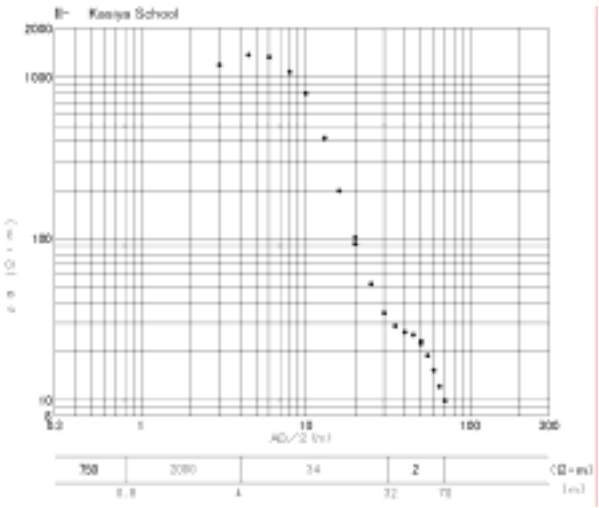

D-129(b) Makwemba
500
100
10
5
0.3
1
10
100
300
AB/2 (m)
170
12
39
3000
(Ω-m)
1.8
13
34
100
(m)

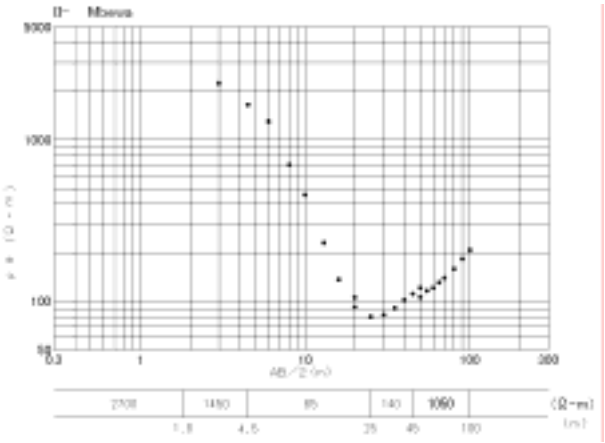

D-130(a) Mwambokulu
1000
100
10
0.3
1
10
100
300
AB/2 (m)
100
328
38
9
(Ω-m)
0.7
6.2
62
100
(m)


D-131(b) Mwambokulu
2000
1000
100
10
0.3
1
10
100
300
AB/2 (m)
670
1300
68
20
(Ω-m)
1.5
6.5
55
100
(m)


D-133(a) Nkhama
AB/2 (m)
ρa (Ω・m)
500
320
15
900
1.5
6.2
36
100

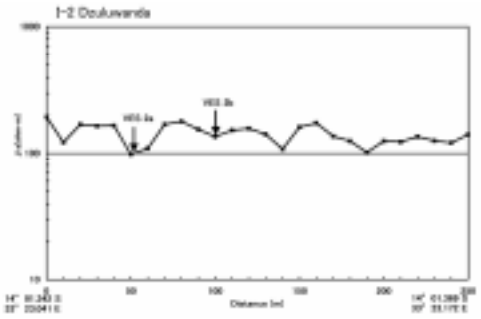

D-133(b) Nkhama
AB/2 (m)
ρa (Ω・m)
650
60
3600
18
24
80

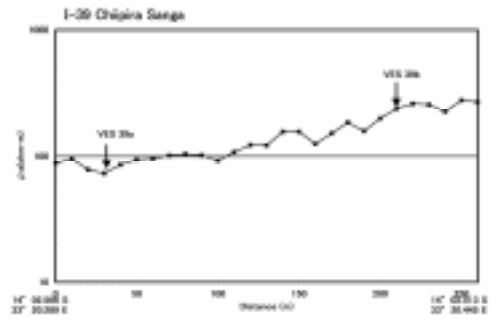

B- Kasaya School
AB/2 (m)
ρa (Ω・m)
750
2080
34
2
0.8
4
32
70

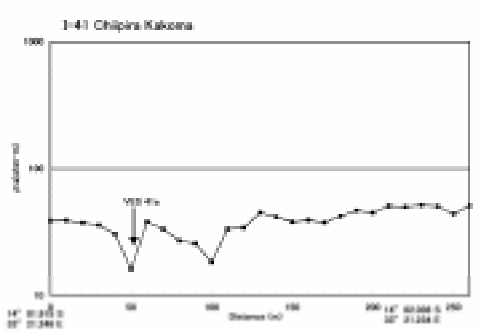

D- Mbewa
AB/2 (m)
ρa (Ω・m)
2700
1450
85
140
1060
1.8
4.5
25
45
180

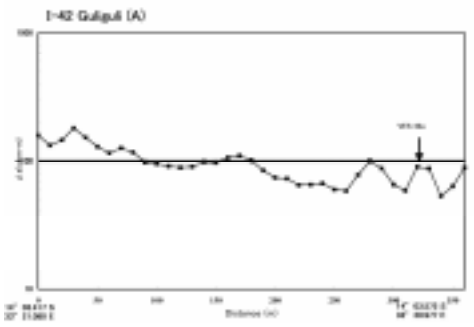
6-4(6) Horizontal Survey

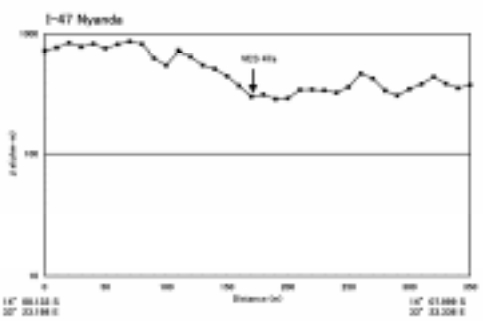
T.A.Kalolo

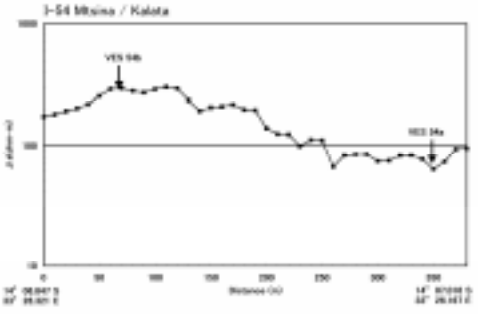


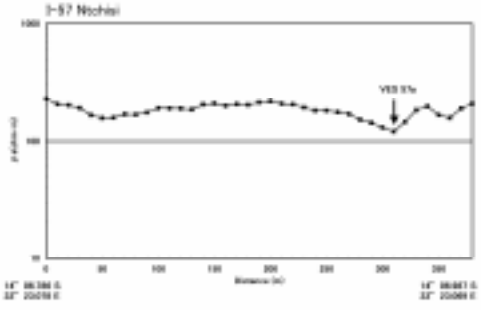


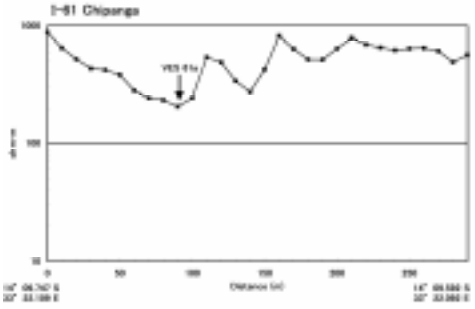


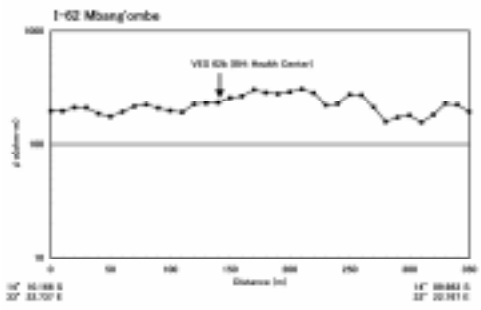


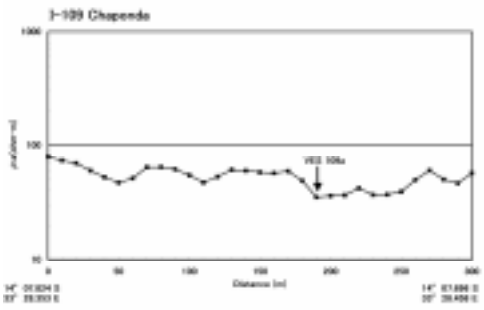




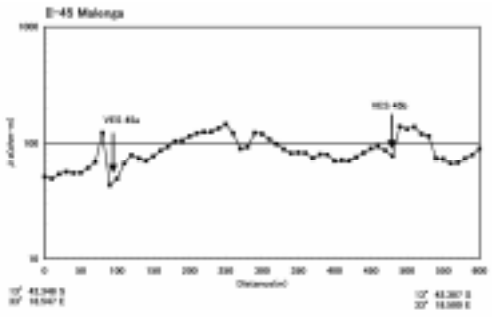


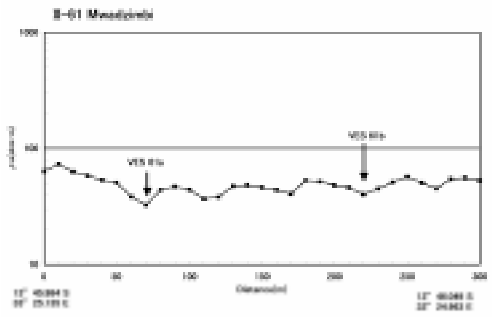


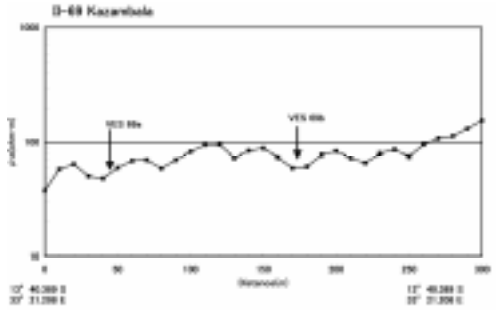

I-62 Mbang'ombe
VES 62b (BH: Kouth Center)
Distance (m)

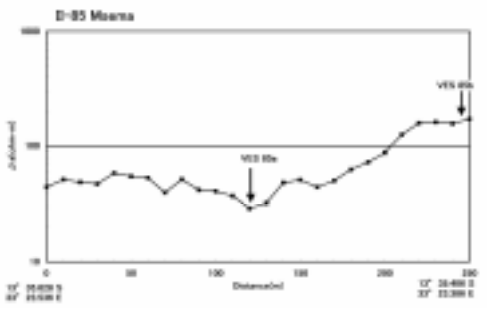

I-109 Chapendo
VES 109a
Distance (m)

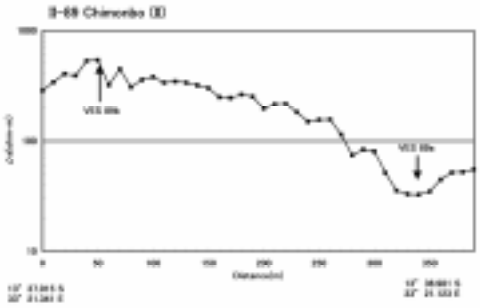
T.A.Khongoni

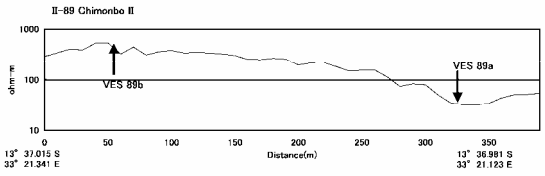

II-45 Malonga
VES 45a
VES 45b
Distance(m)

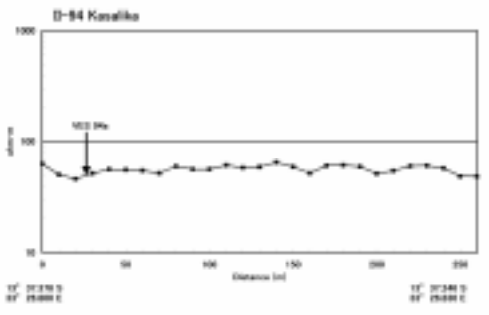

II-61 Mwadzombi
VES 61a
VES 61b
Distance(m)

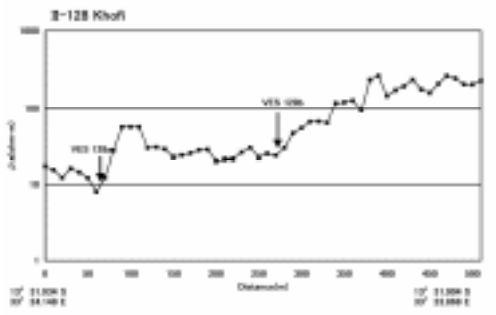

II-68 Kazambale
VES 68a
VES 68b
Distance(m)

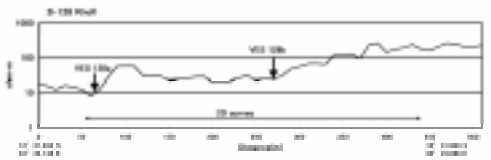

II-85 Msama
VES 85a
VES 85b
Distance(m)

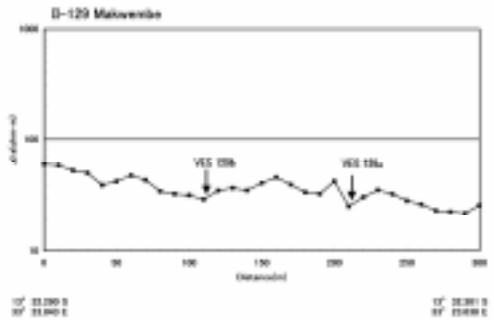

II-69 Chimonbo (II)
VES 69a
VES 69b
Distance(m)

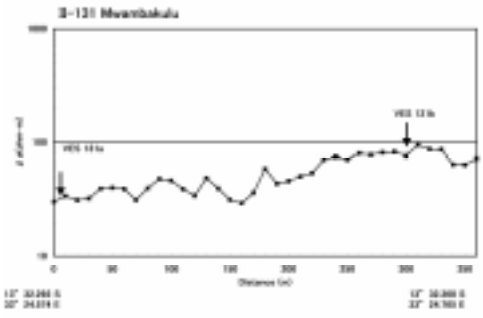

II-89 Chimonbo II
VES 89a
VES 89b
ohm-m
Distance(m)
13° 37.015 S
33° 21.341 E
13° 36.981 S
33° 21.123 E

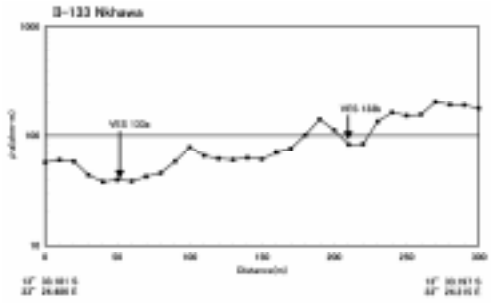

B-84 Kavalika


B-128 Khofi

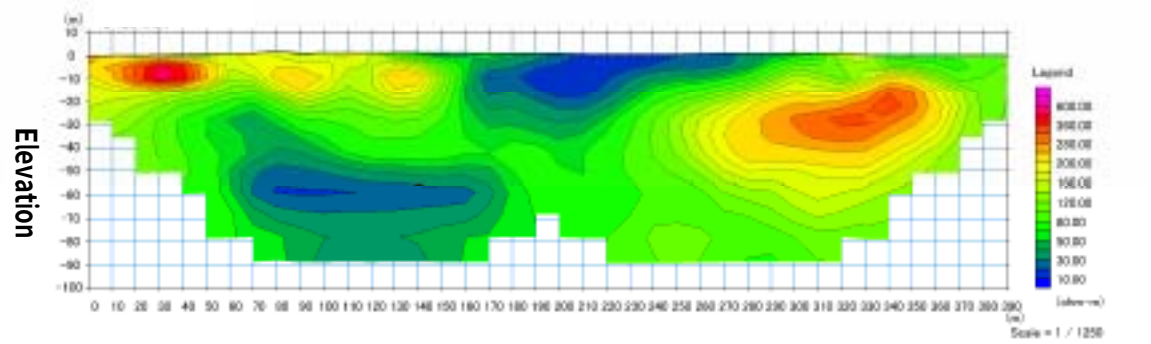



B-129 Makwemba

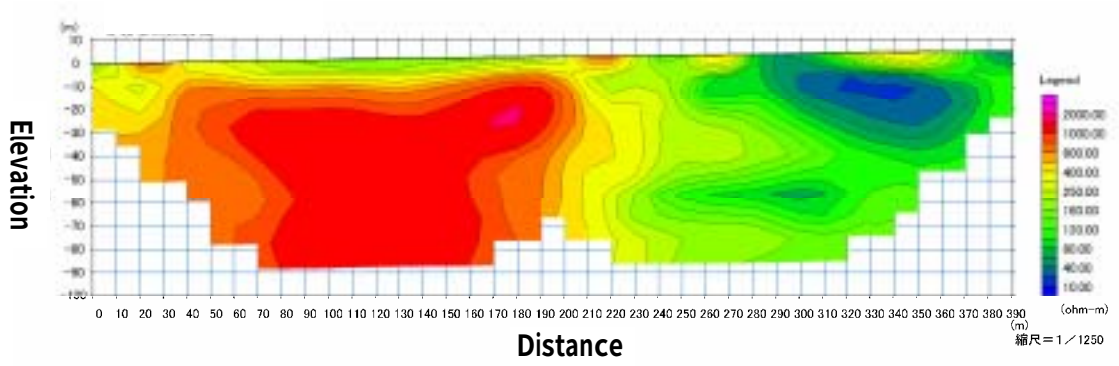

B-131 Mwantabakulu


B-133 Nkhawa

6-4(7) 2-D Survey



T.A.Khongoni No.128 Khofi



T.A. Khongoni No.89 Chimombo II

6-5 (1) Water Quality Test Results at Site

	Location						Data sampled	Type of source	Temp.	Colour	Turbidity	Taste	Odor	PH	EC	F	NO^3	NO^2	Total Fe	Mn	Bacteria (Count /100ml)	Coliform Group (Count /100ml)	Remarks **WL**:static Water Level **D**:Depth
	TA	GVH	Village	No.	Latitude	Longitude									(μs/cm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)			
1	KHONGONI	Msinde	Msinde		S13 ° 48.496	E33 ° 16.322	'04.11.03	BH	24.8	clear	none	none	none	6.06	173.7	0.2	1>	0.02>	0.2>	0.5>	none	none	
2	KHONGONI	Khongoni	Mazinga		S13 ° 48.227	E33 ° 16.904	'04.11.03	SW	24.3	white	slightly	none	none	6.50	178.0	0.2	1	0.02	0.2>	0.5>	existed	existed	
3	KHONGONI	Kapangalika	Kanpangalika		S13 ° 32.358	E33 ° 25.595	'04.11.04	BH	24.8	clear	none	none	none	7.84	525.0	0.2	1>	0.02>	0.2>	0.5>	slightly existed	none	
4	KHONGONI	Kasoni	Chivina		S13 ° 32.028	E33 ° 23.808	'04.11.04	SW	27.7					6.85	365.0	1	1	0.02>	0.2>	0.5>	slightly existed	slightly existed	
5	KHONGONI	Mabtao	Mabutao / Jezikamale	2-119	S13 ° 36.740	E33 ° 24.835	'04.11.05	SW	23.3	clear	none	none	none	6.28	257.0	0.1	10	0.05	0.2>	0.5>	none	existed	WL 8.70m, D 8.90m breaching powder once per 2 weeks
6	KHONGONI	Kawalika	Kawalika	2-82	S13 ° 37.074	E33 ° 22.808	'04.11.05	PSW	25.4					6.52	172.8	0.2	1>	0.02>	0.2>	0.5>	existed	existed	
7	KHONGONI	Chigowo	Chigowo	2-70	S13 ° 38.433	E33 ° 22.244	'04.11.06	BH	26.3	clear	none	slightly Fe	none	6.39	287.0	0.1	2	0.02>	0.2>	0.5>	none	none	
8	KHONGONI	Makowa	Kawodzera 2	2-96	S13 ° 38.897	E33 ° 25.924	'04.11.08	SW	24.3	clear	none	none	none	6.08	206.0	0.1	1>	0.02>	0.2>	0.5>	existed	existed	
9	KHONGONI	Jauzela	Kabudura	2-54	S13 ° 40.010	E33 ° 24.848	'04.11.08	BH	24.1	clear	none	none	slightly Fe	5.59	80.0	0.6	15	0.02>	1.5	0.5>	slightly existed	existed	
10	KHONGONI	Bondo	Bondo School	2-67	S13 ° 39.117	E33 ° 19.578	'04.11.08	BH		clear	none	none	none			0.8	1>	0.02>	1.5	0.5>			
11	KHONGONI	Madzonga	Madzonga	2-56	S13 ° 46.089	E33 ° 23.935	'04.11.09	BH	25.8	clear	none	oily	none	5.85	512.0	0.6	1>	0.02>	10	0.5>	slightly existed	none	
12	KHONGONI	Kasiya	Kasiya		S13 ° 45.540	E33 ° 22.222	'04.11.10	BH	26.6	clear	none	slightly Fe		6.35	510.0	1	1.5	0.04	2	0.5>	slightly existed	none	
13	KHONGONI	Khongoni	Chenjerani		S13 ° 51.292	E33 ° 22.531	'04.11.10	SW	23.5	clear	none	none	none	5.72	62.0	0.2	3	0.02>	0.2>	0.5>	existed	slightly existed	WL 7.15m, D 8.15m breaching powder once per 2 months
14	KHONGONI	Visimba	Naferanji	2-26	S13 ° 50.366	E33 ° 22.796	'04.11.11	BH	24.7	clear	none	none	Fe	6.41	182.0	1	1>	0.02	8	0.5>	none	slightly existed	
15	KHONGONI	Mtswati	Mafuta	2-43	S13 ° 45.371	E33 ° 23.806	'04.11.11	BH	26.6	clear	none	none	slightly Fe	6.43	236.0	0.1	1	0.02>	0.2>	0.5>	none	none	
16	KHONGONI	Msinde	Benjamani	2-11	S13 ° 49.965	E33 ° 16.305	'04.11.12	SW	23.2	white	slightly	none	none	6.27	68.8	0.1	1>	0.02>	0.2>	0.5>	existed	slightly existed	
17	KHONGONI	Msinde	Waya	2-13	S13 ° 46.094	E33 ° 18.865	'04.11.12	BH	25.3	clear	none	none	none	6.53	117.0	0.1	5	0.02>	0.2>	0.5>	none	none	
18	KHONGONI	Sinumbe	Sinumbe	2-74	S13 ° 54.454	E33 ° 23.931	'04.11.12	BH	25.4	clear	none	none	none	6.77	273.0	0.2	1>	0.02>	0.2>	0.5>	slightly existed	slightly existed	
19	KHONGONI	Matekwe	Kapudzama	2-20	S13 ° 50.842	E33 ° 24.378	'04.11.12	BH	26.4	clear	none	bitter	none	6.78	1,130.0	1.2	1>	0.02>	10<	0.5	none	none	Colour changes to white after 12 hours, brown after 36 hours (Nobody uses this water)
20	KALOLO	Lemwe	Lemwe		S13 ° 53.018	E33 ° 20.450	'04.11.13	PSW		clear	none	slightly bitter	none			0.4	45<	0.05	0.4	0.5>	none	none	
21	KALOLO	Kalolo	Chiziho	1-7	S14 ° 00.216	E33 ° 24.897	'04.11.13	PSW	26	clear	none	none	none	6.64	393.0	0.2	20	0.02	0.2>	0.5>	slightly existed	slightly existed	
22	KALOLO	Lemwe	Kalichelo	1-86	S13 ° 52.536	E33 ° 19.282	'04.11.15	SW	23.4	clear	none	none	none	6.79	140.0	0.2	4	0.02>	0.2>	0.5>	existed	existed	
23	KALOLO	Chikudzulire	Mkoko	1-93	S13 ° 54.987	E33 ° 20.798	'04.11.16	BH	23.5	clear	none	none	none	7.18	-	0.1	1>	0.02>	0.2>	0.5>	slightly existed	none	
24	KALOLO	Sinumbe	Kangulu	1-72	S13 ° 53.367	E33 ° 21.820	'04.11.16	PSW	26.1	clear	none	none	none	7.00	382.0	0.2	45	0.02	0.2>	0.5>	existed	slightly existed	
25	KALOLO	Chibungo	Phulamazila	1-17	S13 ° 55.624	E33 ° 28.540	'04.11.17	BH	24.2	clear	none	none	none	6.02	244.0	0.2	8	0.02>	0.2>	0.5>	none	none	mica infusion
26	KALOLO	Chibungo	Kabwana	1-20	S13 ° 56.896	E33 ° 27.625	'04.11.17	PSW	24.3	clear	none	slightly salty	none	6.01	274.0	0.2	2	0.02>	0.2>	0.5>	existed	slightly existed	
27	KALOLO	Chakuzamutu	Kaziputa	1-44	S14 ° 04.403	E33 ° 22.479	'04.11.17	BH	24.5	clear	none	none	slightly Fe	7.21	404.0	0.2	1>	0.02>	0.2>	0.5>	none	none	slightly brown colour after 16 hours
28	KALOLO	Chadza	Chamoto	1-43	S14 ° 05.582	E33 ° 24.027	'04.11.17	BH	22.9	clear	none	none	none	7.33	297.0	0.2	1>	0.02>	0.2>	0.5>	none	none	
29	KALOLO	Chipanga	Chipanga	1-61	S14 ° 09.797	E33 ° 21.984	'04.11.18	BH	24.4	clear	none	none	none	6.54	154.0	0.2	8	0.02>	0.2>	0.5>	none	none	
30	KALOLO	Chadza	Chadza	1-55	S14 ° 05.827	E33 ° 22.769	'04.11.18	BH	24.4	clear	none	none	none	7.06	308.0	0.2	1>	0.02>	0.2>	0.5>	none	none	mica infusion
31	KALOLO	Chibungo	Mngongona	1-23	S13 ° 58.937	E33 ° 27.819	'04.11.18	BH	26.1	clear	none	slightly salty	none	6.65	236.0	0.1	2	0.02>	0.2>	0.5>	none	none	
32	KALOLO	Mkuwira	Chingona	1-49	S14 ° 06.512	E33 ° 24.347	'04.11.19	Sw	21.7	white	slightly	none	none	7.49	151.0	0.1	1	0.02>	0.2>	0.5>	existed	existed	
33	KALOLO	Mkuwira	Nyanda	1-47	S14 ° 08.067	E33 ° 23.402	'04.11.19	SW	21.5	white	slightly	none	none	6.92	180.0	0.2	5	0.02>	0.2>	0.5>	existed	slightly existed	
34	KALOLO	Mkuwira	Luwudani	1-51	S14 ° 07.948	E33 ° 24.677	'04.11.19	SW	22.5	white	slightly	none	none	6.74	182.0	0.2	7	0.02>	0.2>	0.5>	existed	existed	
35	KALOLO	Masumba	Masumba		S14 ° 06.831	E33 ° 29.127	'04.11.20	BH	24.7	clear	none	none	none	7.13	362.0	0.2	1>	0.02>	0.2>	0.5>	none	none	mica infusion
Water Development Tentative Standard																5	100	-	3	1.5			
WHO Guide line																1.5	50	-	0.3	0.5			

	Location						Data sampled	Type of source	Temp.	Colour	Turbidity	Taste	Odor	PH	EC	F	NO^3	NO^2	Total Fe	Mn	Bacteria	Coliform Group	Remarks
	TA	GVH	Village	No.	Latitude	Longitude									(μs/cm)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(Count /100ml)	(Count /100ml)	**WL**:static Water Level **D**:Depth
36	KALOLO	Mphunda	Chimlota	1-120	S14 ° 04.208	E33 ° 27.441	'04.11.20	SW	23.5	white	dark	none	none	6.84	195.0	0.2	2	0.02>	0.2>	0.5>	existed	slightly existed	
37	KALOLO	Mphunda	Chamsanda		S14 ° 04.107	E33 ° 27.283	'04.11.20	PSW		none	none	none	none	7.26	375.0	0.2	40	0.2	0.2>	0.5>	slightly existed	none	completion on 11th Nov 2004, WL2.50m, D9.30m
38	KALOLO	Chibungo	Kumtsizi	1-30	S13 ° 59.617	E33 ° 28.739	'04.11.20	PSW	26.7	white	slightly	none	none	6.00	91.4	0.2	4	0.02>	0.2>	0.5>	existed	existed	
39	KALOLO	Chinkhunda	Mdabwi	1-105	S14 ° 04.085	E33 ° 29.188	'04.11.22	SW	24	white	slightly	none	none	6.25	133.0	0.1	3	0.02>	0.2>	0.5>	slightly existed	slightly existed	
40	KALOLO	Chinkhunda	Kalonga	1-100	S14 ° 02.832	E33 ° 30.199	'04.11.22	SW	23.5	white	slightly	none	none	7.54	262.0	0.1	15	0.05	0.2>	0.5>	none	none	
41	KALOLO	Chinkhunda	Dzowole	1-99	S14 ° 02.755	E33 ° 29.385	'04.11.22	SW	24.5	white	slightly	none	none	7.34	180.0	0.1	7	0.02	0.2>	0.5>	none	none	
42	KALOLO		School		S14 ° 01.645	E33 ° 26.887	'04.11.23	BH	23.8	clear	slightly	none	slightly Fe	6.19	149.0	0.2	1>	0.02>	0.2>	0.5>	none	none	near 1-121/mica infusion
43	KALOLO	Mphunda	Chikankheni		S14 ° 03.578	E33 ° 28.610	'04.11.23	BH	23.7	clear	none	none	none	6.67	488.0	0.1	1>	0.02	0.2>	0.5>	none	none	near 1-116/mica infusion
44	KALOLO	Chimsolo	Chimsolo		S14 ° 06.727	E33 ° 32.502	'04.11.23	BH	23.4	clear	none	none	slightly Fe	6.34	257.0	1	1>	0.02	3	0.5>	none	none	neighbouring to 1-106
45	KALOLO		Msundwe TC		S14 ° 01.365	E33 ° 28.841	'04.11.24	BH	25.4	clear	none	none	none	6.53	113.7	0.2	1.5	0.02	0.2>	0.5>	none	none	
46	KALOLO	Chimwala	Kamatila		S13 ° 58.427	E33 ° 31.043	'04.11.24	BH	26.6	clear	none	none	none	6.55	263.0	0.1	1	0.02	0.2>	0.5>	slightly existed	none	
Water Development Tentative Standard																5	100	-	3	1.5			
WHO Guide line																1.5	50	-	0.3	0.5			

6-5(2) Water Quality Test Results in Laboratry

LAB No.	DATE SAMPLED	MAP SHEET/GRID REF.	LOCATION	TYPE OF SOURCE	pH	EC (μs/cm)	Col (TAC)	Smel	TURB (NTU)	Cl^- (mg/l)	SO_4^{2-} (mg/l)	NO_3^--N (mg/l)	HNO_2^- (mg/l)	F^- (mg/l)	Na^+ (mg/l)	K^+ (mg/l)	Ca^{++} (mg/l)	Mg^{++} (mg/l)	Fe^{++} (mg/l)	Mn^{++} (mg/l)	T.H ($CaCO_3$) (mg/l)	As (mg/l)	Cd (mg/l)	Cr (mg/l)	B (mg/l)	*Faecal coliform* (Count/100 ml)	*Faecal streptococci* (Count/100 ml)
1	2004/11/24	S13°32 E33°24	Khofi	SW	6.6	676	>70	Muddy smell	690	28.1	9.3	0.1	<0.01	0.75	33	7.2	69.2	19	20.5	0.88	287	0.002	0.002	0.008	0.07	12,220	450
2	2004/11/24	S13°37 E33°24	Malenbo School	BH	5.8	410	<2.0	—	1	7.5	57	<0.01	<0.01	0.68	14.4	3	42.4	0.1	0.13	0.1	160	<0.001	0.001	<0.001	0.07	0	0
3	2004/11/24	S13°37 E33°25	Vunguti	SW	5.7	315	<2.0	—	14	16.1	0.1	0.1	<0.01	0.75	10.1	2.7	36	11.2	0.22	0.3	136	<0.001	<0.001	0.001	0.076	1,710	2,100
4	2004/11/24	S13°42 E33°19	Mangirira	BH	5.7	400	10	—	6	10.1	62.8	0.2	0.01	0.39	10.3	5	40.8	12.8	0.6	0.2	155	<0.001	0.001	<0.001	0.079	8	6
5	2004/11/24	S13°42 E33°24	Kamange.D.Tunk	BH	5.7	440	>70	Oily smell	110	8.4	98.7	<0.01	<0.01	0.71	17.4	5.8	33.2	11.7	13.6	0.29	155	0.001	0.003	<0.001	0.1	0	0
6	2004/11/24	S13°46 E33°24	Madzonga	BH	5.2	470	30	—	40	8.4	96.7	<0.01	<0.01	0.76	16.1	5.5	41.6	17	7.6	0.31	187	<0.001	0.002	<0.001	0.06	0	0
7	2004/11/24	S13°48 E33°18	Khasu Sckool	BH	6.1	460	10	—	2	11.8	53.2	0.1	<0.01	0.74	15.4	6.9	54.4	9.7	2.1	0.26	179	<0.001	0.001	<0.001	0.045	0	0
8	2004/11/24	S13°49 E33°21	Chungu	SW	5.7	120	4	—	10	7.5	2.4	0.1	<0.01	0.68	8.3	1.5	12	2.4	0.06	0.27	39	0.003	<0.001	<0.001	0.08	2,110	510
9	2004/11/25	S13°58 E33°27	Chibungo School	BH	5.3	120	4	—	1	6.7	0.5	0.1	<0.01	0.76	5.9	1.8	12.2	5.3	0.19	0.24	52	<0.001	<0.001	<0.001	0.04	0	0
10	2004/11/25	S13°56 E33°24	Mpama	PSW	5.5	330	2	—	<1.0	9.3	48.8	0.1	<0.01	0.81	13	2.3	42	5.3	0.06	0.32	126	<0.001	0.001	<0.001	0.08	0	0
11	2004/11/25	S13°53 E33°25	Chalonga	BH	5.7	550	10	—	3	11	101.9	0.2	0.01	0.79	17	4.5	59.2	14.6	0.3	0.38	208	<0.001	0.002	<0.001	0.07	0	0
12	2004/11/25	S13°53 E33°22	Mtongola	BH	7.6	480	3	Fishy smell	3	9.3	63	<0.01	<0.01	0.65	6.7	1.4	50.8	22.4	0.41	0.3	219	<0.001	<0.001	<0.001	0.04	8	0
13	2004/11/25	S13°53 E33°21	Lemwe	PSW	7.9	650	2	—	2	19.5	5.6	1.7	0.02	0.31	16.8	13.6	78	21.2	0.23	0.3	282	<0.001	<0.001	<0.001	0.05	0	4
14	2004/11/25	S13°37 E33°24	Kalolo	PSW	6.2	510	15	—	3	9.3	58.3	<0.01	<0.01	0.64	8.7	4.1	57.2	16	2.2	1.9	212	<0.001	<0.001	<0.001	0.01	24	0
15	2004/11/25	S14°01 E33°24	Chitopola	BH	5.7	400	<2.0	Oily smell	<1.0	6.7	8	<0.01	<0.01	0.5	5.9	1.8	60.8	10.7	0.03	0.35	195	<0.001	<0.001	<0.001	0.06	0	0
16	2004/11/25	S14°04 E33°23	Malikebu	PSW	6.1	300	>70	—	60	14.4	7.9	0.2	0.01	0.57	10.9	5.8	33.2	9.7	0.23	0.42	123	0.001	<0.001	<0.001	<0.01	4,250	1,816
17	2004/11/25	S14°07 E33°22	Mbuto	BH	6.3	350	4	—	2	13.5	2.1	<0.01	<0.01	0.66	11	6.3	43.2	9.7	0.15	0.29	148	<0.001	<0.001	<0.001	<0.01	16	2
18	2004/11/25	S14°08 E33°28	Kaphira School	BH	6	280	<2.0	—	<1.0	11	3.3	<0.01	<0.01	0.65	5.8	1.9	31.6	11.2	2	0.34	128	<0.001	0.001	0.006	<0.01	256	2
19	2004/12/2	S14°01 E33°27	Nthondo	BH	5.6	140	2	—	5	9.6	19.4	<0.01	<0.01	0.66	6.5	2.8	12.8	3.4	0.03	0.43	46	<0.001	<0.001	<0.001	<0.01	0^*	0^*
20	2004/11/25	S14°04 E33°30	Kanjila School	BH	5.1	250	<2.0	—	<1.0	10.6	2.7	<0.01	<0.01	0.82	6.6	1.3	28.4	10.3	0.01	0.45	113	<0.001	<0.001	<0.001	<0.01	0	0
Water Development Tentative Standard					6.0～9.5	—	50	—	25	750	800	110	—	3	500	—	250	200	3	1.5	800	0.05	0.01	—	—	50	
WHO Guide line					6.5～8.5	—	15	—	—	250	250	50	—	1.5	200	—			0.3	0.5	500	0.01	0.003	0.05	0.3	0	

6-5(3) Interim Drinking Water Quality Standard for Rural Untreated Water Supply (Ministry of Water Development)

	PARAMETER	UNITS	LEVELS
Chemical and Physical Parameter	Arsenic	mg/l	0.05
	Cadmium	mg/l	0.01
	Cyanide	mg/l	0.05
	Fluoride	mg/l	3.0
	Lead	mg/l	0.05
	Nitrate	mg/l	100
	Selenium	mg/l	0.01
	Calcium	mg/l	250
	Magnesium	mg/l	200
	Chloride	mg/l	750
	Aluminum	mg/l	0.5
	Copper	mg/l	2.0
	Hardness($CaCO_3$)	mg/l	800
	Colour	TCU	50
	Sodium	mg/l	500
	Iron	mg/l	3.0
	Manganese	mg/l	1.5
	Total Dissolved Solids	mg/l	2,000
	Electric Conductivity	µS/cm	3,500
	Sulphate	mg/l	800
	Zinc	mg/l	15
	pH Value		
	Minimum	pH units	6.0
	Maximum	pH units	9.5
	Turbidity	NTU	25
Organism	Faecal (Thermotolerant) Coliform and other coliform organisms		
	(a) Untreated Water	Count per 100ml	50
	(b) Unpiped Water	Count per 100ml	50

Note :
Interim standard have been set, the issue of relaxations by Ministry of Water Development, for the areas (mainly rural untreated water supply) where meeting the national standards is not possible.

The relaxations are set for a fixed period of time and may be revised from time to time by Ministry of Water Development in order to keep abreast of progress in consultation with Ministry of Health, Malawi Bureau of Standard and Environmental Affairs Department.

6-6 (1) Existing Borehole Data (TA. Khongoni & TA. Kalolo, LILONGWE DISTRICT)

BH NO	LOCALITY	Northing	Easting	TA	DEPTH (m)	W/STRUCK (m)	W/LEVEL (m)	Year/ mm/ day	YIELD (L/min)	GEOLOGY
L 147	Kaliopa	586	527	Kalolo	12.14		9.15	1955/11/15	39.5	surface deposit, Weathered rock
G 114	Mbwatalika	616	552	Kalolo	32.03	14.42	10.64	1952/5/1	54.7	Sanday clay, Horublende gneiss
FC 23	Mkaliwafa	540	587	Kalolo	45.75	12.26	4.57	1971/7/21	34.2	Graveiiy collorvim, Gneiss & Quartzite.
FC 25	Ngongonda	502	544	Kalolo	45.75	18.30	3.96	1974/8/17	102.2	Gravelly colluvim, Gneiss
FC 22	Kabwana	477	582	Kalolo	45.75	18.00	5.49	1971/8/18	1955.3	Gravelly Collivium, Gneiss, Quarzite
RB 22	Phakamazira	511	603	Kalolo	56.42	8.40	6.10	1972/1/28	22.8	Collivium, Basement gneiss
DP 59	Kamatira	556	555	Kalolo	45.75	12.20	6.10	1971/8/24	91.2	Collivium, Quarzite
DP 58	Dambo	559	559	Kalolo	45.73	15.24	12.19	1971/8/27	68.4	Gravel, Gneiss
X 144	Nkhwangwa	592	552	Kalolo	45.00	9.15	6.10	1971/11/3	102.2	Basement gneiss, Quarzite
DP 57	Dambo/Msamphe	543	571	Kalolo	56.69	9.14	4.57	1971/8/17	136.8	Unconsolidate, Gneiss
E 331	Thumba	587	626	Kalolo	37.51	11.59	2.75	1964/9/4	54.7	subsoil & rubble, Clayy and sands, Decomposed gneiss
Y 134	Chimongo	515	594	Kalolo	45.75	24.40	4.54	1971/4/4	68.4	Collivium, Quarzite, basement gneiss
E 199	Ngongonda	676	606	Kalolo	31.41	9.15	4.88	1958/7/6	68.4	Sand and Clay.
FC 28	Sambira	567	569	Kalolo	54.90	21.35	7.92	1971/8/20	19.4	Sanday Collivium, Basement gneiss
Y 144	Chisembele	603	601	Kalolo		9.14	1.52	1971/3/19	68.4	sendiments
X 137	Kachela	564	564	Kalolo	45.73	9.14	1.52	1971/3/19	68.4	Colluvium , Gneiss
A 19	Nyankwa	519	677	Kalolo	22.88	19.83	11.29	1961/3/25	54.7	Sanday clays, Decomposed gneiss
X 144	Nkhwangwa	591	550	Kalolo	45.75	9.15	6.10	1971/11/3	102.2	Colluvium & Basement gneiss, Quartzite.
RB 21	Palamu	486	617	Kalolo	39.65	12.20	6.10	1971/12/16	38.0	Colluvium, Basement gneiss
Y 136	Kanyambe schl	554	625	Kalolo	51.85	12.20	7.63	1971/4/21	152.0	Colluvium, Gneiss & quartzite
RB 33	Kssamu	383	732	Khongoni	45.75		10.67	1972/2/15	19.4	Collivium, Quarrtzite, Decomposed gneiss
RB 34	Mtsilo	389	748	Khongoni	42.70		9.15	1972/11/2	97.7	Collivium, Quartzite, Basement gneiss
RM 30	Mndoliro	398	618	Khongoni			1.52	1972/10/2	54.7	Collivium, Solid gneiss
RB 32	Nyanga	397	708	Khongoni	48.80		10.64	1972/1/26	102.2	Collivium, Unconsolidated, Sediments
RB 35	Mkuwira	398	765	Khongoni	45.75		8.54	1972/4/2	136.8	Collivium, Basement gneiss
RB 29	Tsinkha	359	647	Khongoni	42.70		6.10	1972/1/2	24.3	Collivium, Basement gneiss
GU 224	Kasiya L.E.A School	416	777	Khongoni	45.75		4.59	1978/9/4	91.2	Collivum, Soft weathered rock
RM 49	Mwala Unit Centre	832	873	Khongoni	61.00		7.32	1975/7/25	30.4	Sand, Weathered rock, Gneiss
RM 53	Malembo Unit centre	448	949	Khongoni	45.75		3.66	1975/7/30	34.2	Weathered rock, Quartzite
RM 47	Kasiya Unit centre	397	777	Khongoni	61.00		6.10	1975/7/30	48.6	Unconsolidated sediments, Quartzites, Basement gneiss
FC 99	Nalikwangwala	473	740	Khongoni	48.80		6.10	1972/2/17	22.8	Collivium, Basement gneiss
FC 116	Waya School	340	782	Khongoni	45.75		21.35	1972/3/14	27.4	Collivium, Basement gneiss
RB 144	Mudi Estate	315	803	Khongoni	61.00		18.30	1972/3/10	54.7	Collivium, Basement gneiss
DP 124	Vizimba	408	717	Khongoni	45.75		7.63	1972/6/16	97.7	Collivium, Gneiss
DP 125	Chiketeza/Madzanga	443	775	Khongoni	36.60		9.15	1972/5/29	39.1	Collivium, Solid gneiss
DP 127	Mgwata	428	793	Khongoni	36.60		4.58	1972/5/18	64.6	Collivium, Solid gneiss
DP 128	Madzanga	432	778	Khongoni	61.00		3.05	1972/5/13	45.6	Collivium, Basement gneiss
DP 154	Chimimba	417	819	Khongoni	45.75		6.10	1972/6/5	39.5	Collivium, Basement gneiss

BH NO	LOCALITY	Northing	Easting	TA	DEPTH (m)	W/STRUCK (m)	W/LEVEL (m)	Year/ mm/ day	YIELD (L/min)	GEOLOGY
DP 126	Kasiya	400	790	Khongoni	45.75		3.05	1971/12/4	45.6	Collivium, Quartzite, Basement gneiss
DP 103	Chipala Etsate	366	678	Khongoni	45.75		6.71	1972/2/28	193.3	Collivium, Basement gneiss
PM 50	Lambwe	300	708	Khongoni	48.80		12.20	1975/8/19	72.2	weathered rock
RM, 50	Kamanga	441	857	Khongoni	61.00		7.93	1975/8/21	91.2	Gravelly weathered rock, Basement gneiss
RM 48	Kaluzi	364	864	Khongoni	45.75		4.57	1975/3/9	30.4	Gravelly weathered rock, Quartzite, Basement gneiss
DM 31	Kanyanja	315	735	Khongoni	45.75		7.63	1976/7/24	36.8	Weathered rock, Quartzite
DM 19	Pamawa	329	819	Khongoni	45.75		4.27	1976/6/8	209.0	Unconsolidated sediments, Quartzites
DM 23	Kambunyama	355	715	Khongoni	45.75		3.36	1976/7/23	209.0	Weathered rock, Gneiss
DM16	Zokoto	390	841	Khongoni	61.00		21.35	1976/6/9	136.8	Docomposed Quartzite, Gneiss
DDM 20	Kangunje	325	782	Khongoni	45.75		7.63	1976/7/20	34.2	Strong conglomerate formation, Gneiss
DM 21	Chimbwi	315	779	Khongoni	45.75		7.32	1976/7/30	12.9	Decomposed gneiss, Solid Basement Gneiss
SM 79	Chadzuka	342	493	Khongoni	45.75		5.18	1976/9/27	79.4	Gravelly weathered rock, Basement gneiss
SB/07/333	Kazingatchire			Khongoni	36.00		3.54	1999/7/11	3.2	0-1,Top soil; 1-3,Clay; 3-10,Sandy soil; 10-36,Mud
SB/07/332	Dzuwa School			Khongoni	40.00		4.36	1999/7/13	3.5	0-1,Top soil; 1-3,Clay; 3-10,Sandy soil; 10-36,Mud;Soft Granite
SB/07/430	Mangilira			Khongoni	30.00		3.28	1999/9/4		0-3,Clay soil; 3-10,Stoneygravel; 10-30,Black hard rock
SB/07/429	Sapulayi School			Khongoni	30.00		4.79	1999/9/5		0-5,Clay soil; 5-10,Soft rock; 10-25,Granite; 25-30,Black hard rock
SB/07/322	Silasi			Khongoni	45.00		4.14	1999/2/1	3.3	0-1,Top soil; 1-9,Clay; 9-12,Sand; 12-16,Weathered granite; 16-45,Granite
SB/07/318	Mudi T/C			Khongoni	45.00		4.98	1999/2/6	5.0	0-1,Top soil; 1-8,Clay; 8-12,Sand; 12-38,Consolidated sand; 38-46,Granite
SB/07/323	Chigowo			Khongoni	45.00		2.76	1999/2/8	2.5	0-1,Top soil; 1-3,Clay; 3-45, Gneiss
SB/07/317	Chifuka School			Khongoni	45.00		6.04	1999/2/5	0.5	0-1,Top soil; 1-9,Clay; 9-29,Gneiss; 29-35,Weathered granite; 35-45,Granite
SB/07/319	Kasiya Primary Sch.			Khongoni	49.00		4.59	1999/1/26	2.3	0-1,Top soil; 1-9,Clay; 9-11,Sand; 11-44,Weathered granite; 44-49,Granite
SB/07/320	Chilaka			Khongoni	45.00		5.45	1999/1/30	1.2	0-1,Top soil; 1-12,Clay; 11-15,Sand; 15-2344,Weathered granite; 23-45,Granite
SB/07/326A	Kanyambwe Sch.			Kalolo	45.00		6.17	1999/2/10	1.5	0-1,Top soil; 1-18,Clay; 18-23,Weathered granite; 23-45,Granite
SB/07/313	Msundwe Trading C.			Kalolo	52.00		11.00	1999/2/12	1.4	0-1,Top soil; 1-11,Clay; 11-30,Gneiss: 30-44,Weathered granite; 44-52,Granite
SB/07/314	Bwemba			Kalolo	48.00		3.48	1999/2/19	1.1	0-1,Top soil; 1-19,Clay; 19-27,Gneiss: 27-42,Weathered granite; 42-48,Granite

BH NO	LOCALITY	Northing	Easting	TA	DEPTH (m)	W/STRUCK (m)	W/LEVEL (m)	Year/ mm/ day	YIELD (L/min)	GEOLOGY
SB/07/315	Chileka Health C.			Kalolo	45.00		5.80	1999/2/24	2.7	0-1,Top soil; 1-9,Clay; 9-13,Gneiss; 13-17,Weathered granite; 17-45,Granite
SB/07/328	Malunje School			Kalolo	40.00		8.08	1999/6/11	14.6	0-3,Claysoil; 3-10,Soft rock; 10-25,Rock; 25-40,Soft rock mud
SB/07/329	Dyuku			Kalolo	36.00		3.40	1999/6/12	20.5	0-3,Claysoil; 3-9,Gravel mixed with mud; 9-27,Rock; 27-36,Soft rock
SB/07/286	Chituwi			Kalolo	36.00		1.00	1999/6/21	9.2	0-3,Claysoil; 3-10,Stoney gravel; 10-36,Soft rock mud
SB/07/326B	Mchepa			Kalolo	36.00		3.57	1999/6/26	6.9	0-5,Claysoil; 5-10,Stoney gravel; 10-30,Rock; 30-36, Stoney gravel
SB/07/330	Chimphangu			Kalolo	36.00		6.14	1999/6/22	4.2	0-5,Claysoil; 5-10,Stoney gravel; 10-30,Granite; 30-36,Black granitel
SB/07/325	Chikhudzullire			Kalolo	36.00		5.98	1999/7/18	3.1	0-1,Top soil; 1-3,Clay; 3-10,Sandy soil; 10-36,Gravel mixed with mud

6-6(2) Water Point mapping survey results (T.A. Kalolo)

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_001	538893	8450100	Namitete Police station	mechanic borehole	Climax	functional	1111	Government	unknown
206_02_002	539263	8449990	Mphandula School	mechanic borehole	Afridev	functional	2001	EU	HEAD WORKS
206_02_003	539095	8450063	Zatheka	shallow well with hand pump	Malda	functional	1995	self_help	Local artisans
206_02_004	538572	8450052	Namitete Mosque	mechanic borehole	Afridev	not functional	1998	Randella	unknown
206_02_005	540802	8449794	Chimwaza	shallow well with hand pump	Afridev	functional	2002	Inter Aide	Inter Aide
206_02_006	540870	8449696	Chimwaza	mechanic borehole	Afridev	functional	2002	MASAF	Government
206_02_007	541309	8448687	Chaola	shallow well with hand pump	Malda	not functional	1994	Gvt	Hospital
206_02_008	541339	8448525	Chaola	shallow well with hand pump	Malda	functional	2000	Gvt	Hospital
206_02_009	540953	8447394	Chakuzamutu	mechanic borehole	Afridev	functional	2002	Government	unknown
206_02_010	540750	8447022	Chakuzamutu School	mechanic borehole	Afridev	functional	2000	EU	CHITSIME
206_02_011	541382	8445867	Malikebu	shallow well with hand pump	Afridev	functional	2002	Inter Aide	Inter Aide
206_02_012	540534	8444190	Kaziputa	mechanic borehole	Afridev	functional	2002	Government	unknown
206_02_013	539489	8444785	Sckalanje	shallow well with hand pump	Afridev	functional	2002	Inter Aide	Inter Aide
206_02_014	538712	8445318	Mseru	mechanic borehole	Afridev	functional	1994	unknown	unknown
206_02_015	538412	8445325	Mseru	mechanic borehole	Afridev	functional	2000	Proscarp	unknown
206_02_016	538650	8445132	Mseru	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_017	538599	8449921	Namitete Market	mechanic borehole	Afridev	functional	2002	M. Parliement	unknown
206_02_018	541611	8450149	Chileka Health centre	mechanic borehole	Afridev	functional	2000	Government	unknown
206_02_019	541782	8450186	Chileka CDSS	mechanic borehole	Climax	functional	1997	Government	Government
206_02_020	541774	8450297	Chileka CDSS	mechanic borehole	Afridev	functional	1997	unknown	Co
206_02_021	541589	8450384	Kalolo School	mechanic borehole	Climax	functional	1972	Government	Government
206_02_022	542382	8451334	Kamtsalira	mechanic borehole	Afridev	functional	1999	MASAF	Government
206_02_023	542242	8449996	Chileka	mechanic borehole	Afridev	functional	1963	Government	unknown
206_02_024	542210	8449917	Chileka	mechanic borehole	Afridev	functional	2002	Government	CHITSIME
206_02_025	542338	8449651	Chileka Market	mechanic borehole	Afridev	functional	2001	Government	Karaliya
206_02_026	542578	8449830	Chileka ADMARC	mechanic borehole	Aquadev	functional	1995	ADMARC	unknown
206_02_027	542667	8450402	Chitopola	mechanic borehole	Afridev	functional	2000	EU	unknown
206_02_028	542359	8451524	Kalolo	mechanic borehole	Afridev	functional	1999	unknown	unknown
206_02_029	542186	8451674	Kalolo	mechanic borehole	Afridev	functional	1998	unknown	unknown
206_02_030	542068	8452064	Kasengwa	mechanic borehole	Afridev	functional	1998	unknown	unknown
206_02_031	542055	8453008	Chizenje	mechanic borehole	Afridev	functional	1972	Government	unknown
206_02_032	542291	8451672	Kalolo Court	mechanic borehole	Climax	not functional	1974	Government	Government
206_02_033	545933	8452092	Kamazi School	mechanic borehole	Afridev	functional	1999	EU	unknown
206_02_034	546230	8452263	Mtali	mechanic borehole	Afridev	not functional	1972	unknown	Government

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_035	544818	8451897	Chiziko	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_036	545341	8450244	Ndebvu	mechanic borehole	Afridev	functional	1998	MASAF	unknown
206_02_037	545538	8450208	Ndebvu School	mechanic borehole	Afridev	functional	1999	EU	Sengo Africa
206_02_038	545276	8450061	Ndebvu	shallow well with hand pump	Malda	not functional	1994	Hospital	Hospital
206_02_039	545261	8450026	Ndebvu	mechanic borehole	Afridev	functional	1998	MASAF	Government
206_02_040	545110	8449800	Ndebvu	mechanic borehole	Afridev	functional	1998	MASAF	Government
206_02_041	544819	8450026	Ndebvu	mechanic borehole	Afridev	functional	1998	MASAF	Government
206_02_042	543957	8448642	Chisindo	mechanic borehole	Afridev	functional	1998	MASAF	Government
206_02_043	542468	8448616	Matekwe	mechanic borehole	Afridev	functional	1994	MASAF	Government
206_02_044	542304	8448655	Matekwe	mechanic borehole	Afridev	functional	2002	MASAF	CHITSIME
206_02_045	543886	8449902	Nkwambala	mechanic borehole	Afridev	functional	1111	Government	Government
206_02_046	543568	8447781	Mtika	mechanic borehole	Afridev	functional	1968	Government	Government
206_02_047	543826	8446594	Mapiri	shallow well with hand pump	Malda	not functional	1998	Gvt	Hospital
206_02_048	543889	8446523	Mapiri	mechanic borehole	Afridev	functional	2000	MASAF	CHITSIME
206_02_049	543182	8446671	Chisaka	mechanic borehole	Afridev	functional	2000	MASAF	CHITSIME
206_02_050	537846	8454617	Namitondo	mechanic borehole	Afridev	functional	1998	unknown	unknown
206_02_051	541708	8447739	Chidzala	mechanic borehole	Afridev	functional	2000	EU	CHITSIME
206_02_052	541728	8447846	Chidzala	shallow well with hand pump	Malda	not functional	1995	Gvt	Hospital
206_02_053	542883	8445781	Msipu	mechanic borehole	Afridev	functional	1992	Government	Scheme
206_02_054	543733	8444919	Chimkuyu	mechanic borehole	Afridev	not functional	1980	Government	Scheme
206_02_055	543265	8446713	Kafinya School	mechanic borehole	Afridev	functional	1999	EU	CHITSIME
206_02_056	545335	8445797	Kamuloza	mechanic borehole	no pump	not functional	1971	Government	unknown
206_02_057	545428	8445570	Kamundaya	mechanic borehole	Afridev	functional	1998	unknown	unknown
206_02_058	538817	8452130	Kakuyu	mechanic borehole	Climax	not functional	1962	Government	unknown
206_02_059	537914	8454652	Sikanawawe	shallow well with hand pump	Afridev	functional	1998	self_help	Self help
206_02_060	537823	8454149	St Gabriels Hospital	mechanic borehole	Afridev	functional	1111	unknown	Hospital
206_02_061	538516	8454299	Namitete School	mechanic borehole	Climax	not functional	1992	Gvt	Hospital
206_02_062	540122	8454423	Namitondo	mechanic borehole	Aquadev	functional	1982	Government	unknown
206_02_063	540143	8454490	Namitondo	mechanic borehole	no pump	not functional	1111	Government	unknown
206_02_064	540428	8455366	Chisikwa	mechanic borehole	Afridev	not functional	1994	unknown	unknown
206_02_065	543219	8456212	Kapunula School	mechanic borehole	Afridev	functional	1111	Government	unknown
206_02_066	543567	8454784	Guliguli	shallow well with hand pump	Malda	not functional	1999	Government	Government
206_02_067	537420	8455451	Msangwa	mechanic borehole	Afridev	functional	1971	Government	unknown
206_02_068	534930	8457754	Sichongo	shallow well with hand pump	no pump	not functional	9999	Inter Aide	Inter Aide

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_069	533982	8460016	Kadzani	mechanic borehole	no pump	not functional	1973	NationalWDP	Government
206_02_070	535681	8458953	Njoka	shallow well with hand pump	Afridev	functional	1995	Gvt	Hospital
206_02_071	536029	8460754	Sabvala	shallow well with hand pump	Malda	not functional	1996	Gvt	Hospital
206_02_072	537321	8461381	Nkoko School	mechanic borehole	Aquadev	functional	1992	Government	unknown
206_02_073	537527	8461540	Nyanja ADMARC	mechanic borehole	Climax	functional	1987	Government	Government
206_02_074	537497	8461312	Mkoko	mechanic borehole	no pump	not functional	1980	unknown	unknown
206_02_075	538193	8460304	Chimono	mechanic borehole	Afridev	functional	1999	EU	unknown
206_02_076	538524	8460323	Chipakapaka	mechanic borehole	no pump	not functional	1981	Government	Government
206_02_077	538617	8459498	Fisi	mechanic borehole	no pump	not functional	1976	unknown	unknown
206_02_078	538558	8457651	Chimtawa	shallow well with hand pump	no pump	not functional	1994	Embassy	Hospital
206_02_079	538756	8457649	Khunkhu	mechanic borehole	Afridev	not functional	1999	MASAF	unknown
206_02_080	538802	8457718	Khunkhu	shallow well with hand pump	no pump	not functional	1994	Embassy	Hospital
206_02_081	538828	8458069	Kaponda	shallow well with hand pump	no pump	not functional	1994	Gvt	Hospital
206_02_082	539431	8457773	Tchila	shallow well with hand pump	no pump	not functional	1994	Gvt	Hospital
206_02_083	539684	8457502	Mkanda	shallow well with hand pump	no pump	not functional	1993	Embassy	Hospital
206_02_084	540031	8457077	Kuwani	shallow well with hand pump	Malda	functional	1994	Gvt	Hospital
206_02_085	540116	8456387	Chitukula	shallow well with hand pump	Malda	not functional	1994	Gvt	Hospital
206_02_086	538987	8457647	Chiqudzulire School	mechanic borehole	Afridev	functional	1999	unknown	unknown
206_02_087	538927	8457582	Chikudzulire School	mechanic borehole	Afridev	functional	1998	British Council	unknown
206_02_088	539697	8456920	Chikudzulire	shallow well with hand pump	no pump	not functional	1991	Embassy	Hospital
206_02_089	539521	8440054	Mbuto	mechanic borehole	Afridev	functional	1998	Government	Local artisans
206_02_090	539938	8439559	Chawantha	mechanic borehole	Afridev	functional	1111	Government	Government
206_02_091	539841	8439440	Chawantha School	mechanic borehole	Afridev	functional	1988	World Vision	unknown
206_02_092	540095	8439637	Kamazi DEC	mechanic borehole	Afridev	functional	2002	Danida	unknown
206_02_093	538035	8441524	Chifuka	mechanic borehole	Afridev	not functional	1976	Government	Government
206_02_094	537988	8441806	Chiulambo	mechanic borehole	Afridev	functional	2001	Danida	unknown
206_02_095	538239	8441190	Magada School	mechanic borehole	Afridev	functional	1999	EU	unknown
206_02_096	538989	8441129	Mgomo	shallow well with hand pump	Malda	not functional	1989	World Vision	unknown
206_02_097	537668	8437907	Chilowe	shallow well with hand pump	Malda	not functional	1998	World Vision	unknown
206_02_098	537458	8437835	Chinyerere School	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_099	537194	8437486	Mfuti	shallow well with hand pump	Afridev	not functional	2002	Inter Aide	Inter Aide
206_02_100	537580	8435936	Wiliam	shallow well with hand pump	Malda	not functional	1989	World Vision	Drilling Co
206_02_101	537612	8435895	Wiliam	mechanic borehole	Afridev	functional	1998	Private	unknown
206_02_102	539458	8435548	Chalemba School	mechanic borehole	Afridev	functional	1999	MASAF	unknown

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_103	540945	8433724	Mbang'ombe H/Centre	mechanic borehole	Climax	functional	1993	Embassy	Construction
206_02_104	539623	8434313	Chipanga	mechanic borehole	Afridev	functional	2002	Government	Karaliya
206_02_105	539442	8437024	Mchadza	mechanic borehole	Afridev	functional	2001	MASAF	unknown
206_02_106	539855	8439598	Chawantha	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_107	540097	8437753	Chipukwa	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_108	542106	8439119	Chicha	shallow well with hand pump	Malda	not functional	1989	World Vision	Drilling Co
206_02_109	542218	8439149	Chicha	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_110	544035	8438144	Mkuwira	mechanic borehole	Afridev	functional	2001	Government	Karaliya
206_02_111	538513	8441352	Chiseka	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_112	538791	8439484	Kamanzi	mechanic borehole	Aquadev	functional	1987	World Vision	unknown
206_02_113	553469	8448849	Mzobwe School	mechanic borehole	Afridev	functional	1999	EU	unknown
206_02_114	553655	8448723	Mzobwe Church	mechanic borehole	Climax	not functional	1973	Government	Government
206_02_115	553248	8448725	Mzobwe School	mechanic borehole	Afridev	not functional	1993	ution	Other
206_02_116	553109	8447560	Chinkhunda	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_117	552967	8447643	CHINKhunda	mechanic borehole	Afridev	functional	1998	Government	Government
206_02_118	554517	8445956	Kanjila	mechanic borehole	Afridev	functional	1111	Government	Government
206_02_119	554555	8445628	Kanjila School	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_120	555034	8444266	Chitangire	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_121	553607	8443418	Maliwa	mechanic borehole	Climax	not functional	1960	Government	Government
206_02_122	552816	8450323	Nyemba	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_123	553238	8450397	Mukunya	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_02_124	553652	8450253	Kadyaudzu	mechanic borehole	Afridev	functional	1970	Government	Government
206_02_125	553773	8451262	Chidya	shallow well with hand pump	Malda	not functional	1988	Government	Government
206_02_126	553779	8451255	Chidya	windlass well	no pump	not functional	1111	Government	Government
206_02_127	554143	8451480	Nathando	shallow well with hand pump	Malda	not functional	1982	Government	Government
206_02_128	554221	8451590	Nathando	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_02_129	554512	8451956	Mpingo	mechanic borehole	Afridev	functional	2000	EU	unknown
206_02_130	554638	8451944	Mpingo	shallow well with hand pump	Malda	not functional	1988	Government	Government
206_02_132	555322	8454387	Mutembe	shallow well with hand pump	Malda	not functional	1988	World Vision	unknown
206_02_133	555309	8454405	Gedi	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_134	551667	8453173	Kachedwa	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_135	551722	8452991	Kutsizi	shallow well with hand pump	Malda	not functional	1987	Government	Government
206_02_136	551560	8454122	Gome	shallow well with hand pump	Malda	not functional	1987	Government	Government
206_02_137	551597	8455534	Mutsekanjira	mechanic borehole	Afridev	functional	2001	EU	unknown

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_138	548003	8457881	Mzungu	shallow well with hand pump	Malda	functional	1977	Government	Government
206_02_139	549786	8457988	Kabwana	mechanic borehole	Afridev	not functional	1974	Government	Government
206_02_140	538313	8458080	Kachingwe	shallow well with hand pump	Malda	not functional	1111	Gvt	Hospital
206_02_141	537922	8457934	Msomphoka	shallow well with hand pump	Malda	not functional	1994	Gvt	Hospital
206_02_142	540359	8458994	Jinja	shallow well with hand pump	Malda	not functional	1994	Gvt	Hospital
206_02_143	542888	8457693	Kapunula	mechanic borehole	Climax	not functional	1970	Government	Government
206_02_144	545911	8459133	Mtolonga	mechanic borehole	Afridev	not functional	1970	Government	Government
206_02_145	545945	8457884	Songole	windlass well	no pump	not functional	1938	Government	Government
206_02_146	547064	8458043	Kanjawala	mechanic borehole	Afridev	functional	1970	Government	Government
206_02_147	546464	8460081	Santhe School	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_02_148	546291	8459981	Kalolo School	mechanic borehole	Aquadev	not functional	1111	ution	Other
206_02_149	546532	8460185	Santhe	mechanic borehole	Afridev	functional	1991	Government	Government
206_02_150	546031	8460225	Santhe	mechanic borehole	Afridev	functional	1952	Government	Government
206_02_151	544601	8442690	Madzi	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_152	544780	8442037	Kambafodya	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_153	546061	8442220	Ching'ona	mechanic borehole	Afridev	functional	1972	Government	Government
206_02_154	545090	8441271	Mwase School	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_155	545032	8441069	Chipwanya	mechanic borehole	Afridev	functional	2000	EU	PL Drillers
206_02_156	544963	8440873	Chipwanya	mechanic borehole	Afridev	functional	1971	Government	Government
206_02_157	546803	8444590	Mzoonde	mechanic borehole	Afridev	functional	1969	Government	Government
206_02_159	547527	8444058	Mkutuwa	shallow well with hand pump	Malda	functional	1994	Gvt	Hospital
206_02_160	548414	8444116	Ming'ong'o H/Centre	mechanic borehole	Climax	functional	1111	Government	unknown
206_02_161	548394	8443585	MINg'ong'o Ag.	mechanic borehole	Afridev	not functional	1111	Government	Government
206_02_162	548576	8443187	Palimtima	shallow well with hand pump	Malda	functional	1987	Gvt	Hospital
206_02_163	548824	8443145	Mlekhu	mechanic borehole	Climax	not functional	1971	Government	unknown
206_02_164	550402	8443301	Madetsa	mechanic borehole	Afridev	functional	2001	EU	Karaliya
206_02_165	551489	8443403	Mchiliko	shallow well with hand pump	Afridev	functional	2002	Inter Aide	Inter Aide
206_02_166	551567	8445685	Chikankheni	mechanic borehole	Afridev	functional	2000	EU	unknown
206_02_167	551803	8445640	Mchepa	mechanic borehole	Afridev	not functional	1999	MPs	unknown
206_02_168	551428	8447073	Bwemba	mechanic borehole	Afridev	not functional	1999	MPs	unknown
206_02_169	550082	8449108	Madzi	mechanic borehole	Afridev	not functional	1111	Government	Government
206_02_170	549015	8441090	Chatimba	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_171	548489	8441189	Gundamtengo	shallow well with hand pump	Malda	not functional	1982	Health Center	Health Centre
206_02_172	551717	8440398	Chimphangu	mechanic borehole	Afridev	functional	1999	MPs	unknown

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_173	551723	8440304	Nyemba	mechanic borehole	Afridev	not functional	1960	Government	Government
206_02_174	550218	8441090	Chimombo	shallow well with hand pump	Malda	functional	1994	Red Cross	Health Centre
206_02_175	549847	8441237	Tambala	shallow well with hand pump	Malda	not functional	1994	Red Cross	Health Centre
206_02_176	552428	8439663	Msumba	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_177	551814	8438216	Gundula	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_178	549462	8437785	Kaphira School	mechanic borehole	Afridev	functional	1991	UNICEF	unknown
206_02_179	548036	8446544	Matunduluzi	mechanic borehole	Afridev	functional	1976	Government	Government
206_02_180	549976	8446188	Mandala	mechanic borehole	Afridev	not functional	1972	Government	Government
206_02_181	549461	8444281	Mphunda	mechanic borehole	Afridev	functional	1967	Government	Government
206_02_182	547157	8437667	Jolamu	mechanic borehole	Afridev	functional	2002	MPs	Karaliya
206_02_183	544642	8439859	Msuza	mechanic borehole	Afridev	functional	1998	Government	Government
206_02_184	543306	8442014	Chamoto	mechanic borehole	Afridev	functional	2002	EU	Karaliya
206_02_185	546237	8442013	Mwase	shallow well with hand pump	Malda	not functional	1981	Government	Health Centre
206_02_186	556762	8441881	Mkanda	mechanic borehole	Afridev	not functional	1111	Government	Government
206_02_187	556742	8442091	Mkanda	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_188	557327	8443811	Dama	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_189	557389	8443904	Dama	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_190	556985	8441765	Mkanda School	hand drilled borehole	Afridev	functional	1997	MASAF	unknown
206_02_191	559183	8440152	Mliwu	mechanic borehole	Climax	not functional	1970	Government	Government
206_02_192	558548	8439863	Chimsolo	mechanic borehole	Afridev	not functional	1998	Government	Government
206_02_193	558525	8439806	Chimusolo	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_195	558117	8442644	Laimu	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_196	546263	8448774	Katimba	shallow well with hand pump	Malda	not functional	1995	Gvt	Hospital
206_02_197	546507	8448140	Nkhokota	mechanic borehole	Afridev	functional	2002	EU	Karaliya
206_02_198	546458	8447323	Chalusa	mechanic borehole	Afridev	functional	1960	Government	Government
206_02_199	546529	8447044	Chalusa School	mechanic borehole	Afridev	functional	1997	MASAF	unknown
206_02_200	546299	8446816	Kukatondo	shallow well with hand pump	Malda	functional	1996	Health Center	Health Centre
206_02_201	547932	8448719	Nthondo	mechanic borehole	Climax	not functional	1977	Government	Government
206_02_202	548352	8448932	Nthondo H/Centre	mechanic borehole	Climax	not functional	1989	Government	Construction
206_02_203	548099	8447934	Simoni	shallow well with hand pump	Malda	functional	1995	Gvt	Hospital
206_02_204	548546	8449648	Nthondo TC	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_02_205	549008	8450056	Sendeza Estate	mechanic borehole	Climax	functional	1973	Private	Government
206_02_206	551707	8449679	Munyatsa	mechanic borehole	Afridev	functional	2001	EU	unknown
206_02_207	551910	8449768	Chisenga	mechanic borehole	Climax	not functional	1983	Government	Government

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_208	552457	8449462	MSUNdwe TC	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_209	552244	8449521	Msundwe TC	mechanic borehole	Afridev	functional	2000	EU	unknown
206_02_210	552098	8449772	Msundwe Mkt	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_211	552451	8449661	Msundwe Church	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_212	551843	8449518	Khani	mechanic borehole	Afridev	not functional	1960	Government	Government
206_02_213	551581	8449507	Chizula	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_214	546582	8453144	Nkhata	shallow well with hand pump	Malda	not functional	1989	Government	Government
206_02_215	548132	8452567	Mpingo	mechanic borehole	Afridev	not functional	1998	Government	Government
206_02_216	548274	8454172	Muyala	mechanic borehole	Afridev	not functional	1974	Government	Government
206_02_217	548136	8451212	Mphunda	shallow well with hand pump	Malda	functional	1995	Gvt	Hospital
206_02_218	548480	8450989	Mphunda	shallow well with hand pump	Malda	not functional	1994	Gvt	Hospital
206_02_219	549169	8451345	Nkhanda	shallow well with hand pump	Malda	not functional	1999	Government	Water Boring
206_02_220	550080	8454242	Gundula	mechanic borehole	Afridev	functional	2001	Proscarp	unknown
206_02_221	550242	8454223	Mungongonda	mechanic borehole	Afridev	not functional	1111	Government	Government
206_02_222	550288	8454059	Gundula	shallow well with hand pump	Malda	not functional	2000	Proscarp	unknown
206_02_223	551597	8455536	Munjedza	mechanic borehole	Afridev	not functional	2001	EU	unknown
206_02_224	552038	8455998	Shangula	mechanic borehole	Afridev	not functional	1998	Government	Government
206_02_225	551886	8456643	Malunje School	mechanic borehole	Afridev	not functional	1999	Government	Government
206_02_226	551544	8456697	Phale	mechanic borehole	Afridev	functional	1998	Government	Government
206_02_227	549726	8458020	Kabwana	mechanic borehole	Afridev	not functional	1974	Government	Government
206_02_228	551090	8460288	Phulamazira	mechanic borehole	Climax	not functional	1970	Government	Government
206_02_229	551504	8460334	Phulamazira	shallow well with hand pump	other	not functional	1111	Government	Government
206_02_230	549125	8456372	Chibungo	mechanic borehole	Climax	not functional	1967	Government	Government
206_02_231	548658	8455946	Chibungo School	mechanic borehole	Afridev	functional	1993	Government	Government
206_02_232	548651	8456174	Chilaza EPA	mechanic borehole	Climax	functional	1972	Project	Drillers
206_02_233	548082	8455347	Chituwi	mechanic borehole	Afridev	functional	1999	MASAF	unknown
206_02_237	551686	8451959	Chisikwa Vetenary	mechanic borehole	Climax	not functional	1973	Government	Government
206_02_238	552172	8452121	Mphamba	mechanic borehole	Afridev	functional	2000	EU	unknown
206_02_239	552578	8453181	Chimwala	mechanic borehole	Afridev	not functional	1999	MASAF	unknown
206_02_240	552594	8453169	Chimwala	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_241	552631	8453464	Kumusongwe	mechanic borehole	Afridev	functional	1999	EU	unknown
206_02_242	552625	8454119	Mtoso	mechanic borehole	Afridev	not functional	1971	Government	Government
206_02_243	552422	8454745	Khuta	mechanic borehole	Afridev	functional	1999	EU	unknown
206_02_244	553584	8454033	Chatsala School	mechanic borehole	Afridev	functional	1992	World Vision	World Vision

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_245	555406	8455287	Mdzole	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_246	555772	8455240	Kamatila	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_247	555885	8455168	Kamatila	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_284	547224	8454842	Ntchentche	mechanic borehole	Afridev	not functional	1999	Government	Government
206_02_285	551568	8451620	Chisikwa	mechanic borehole	Afridev	functional	2000	EU	unknown
206_02_286	551479	8451649	Chisikwa	mechanic borehole	Afridev	not functional	1973	Government	Government
206_02_301	548146	8460936	Chipeni	windlass well	no pump	not functional	1111	Government	Government
206_02_302	542508	8460273	Ngoma	mechanic borehole	Climax	not functional	1960	Government	Government
206_02_303	544582	8460417	Masula	mechanic borehole	Afridev	functional	1972	Government	Government
206_02_304	544783	8461704	Sani	mechanic borehole	Afridev	not functional	1993	Government	Government
206_02_305	543093	8462518	Sinumbe School	mechanic borehole	Afridev	not functional	1999	EU	unknown
206_02_306	543097	8462629	Sinumbe School	mechanic borehole	Afridev	not functional	1970	Government	Government
206_02_307	543144	8462357	Chiwe School	mechanic borehole	Afridev	functional	2002	Danida	unknown
206_02_308	542951	8462708	Chiwe H/Centre	mechanic borehole	Climax	functional	1994	World Vision	World Vision
206_02_309	542731	8465032	Likanga	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_310	539659	8465346	Mtanda School	mechanic borehole	Afridev	functional	1998	Government	Government
206_02_311	539951	8466574	Chisuka	mechanic borehole	Afridev	not functional	1973	Government	Government
206_02_312	539117	8466018	Mkuwamba	shallow well with hand pump	Malda	not functional	1986	World Vision	World Vision
206_02_313	539617	8465423	Mtanda School	shallow well with hand pump	Malda	not functional	1986	World Vision	World Vision
206_02_314	539196	8465063	Mtongola	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_02_315	541226	8463201	Kathumba	mechanic borehole	Climax	not functional	1980	Government	Government
206_02_316	541034	8462750	Sinumbe	windlass well	no pump	not functional	1938	Government	Government
206_02_317	541322	8462355	Sinumbe	mechanic borehole	Climax	not functional	1974	Government	Government
206_02_318	539818	8461651	Mtoliro	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_319	537371	8464034	Kachele	mechanic borehole	Afridev	functional	1972	Government	Government
206_02_320	537109	8465152	Lemwe Clinic	mechanic borehole	Climax	functional	2001	MASAF	unknown
206_02_321	536980	8465059	Lemwe	shallow well with hand pump	Malda	not functional	1986	World Vision	World Vision
206_02_322	536917	8465164	Lemwe	shallow well with hand pump	Malda	not functional	1980	Gvt	Hospital
206_02_323	535976	8464706	Mwajuma	mechanic borehole	Climax	functional	1974	Government	Government
206_02_324	535241	8463670	Tongozala	mechanic borehole	Afridev	functional	1971	Government	Government
206_02_325	533573	8463052	Chiwete (B)	mechanic borehole	Afridev	functional	1999	MASAF	unknown
206_02_326	533156	8463299	Chiwete (B)	shallow well with hand pump	Malda	functional	1987	Gvt	Hospital
206_02_327	534324	8465955	Mafuta	mechanic borehole	Afridev	functional	1974	Government	Government
206_02_328	533973	8467629	Felankhope	mechanic borehole	Afridev	functional	2001	MASAF	unknown

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_02_329	535187	8466036	Phewa	windlass well	no pump	not functional	1938	Government	Government
206_02_330	538810	8463657	Nene	shallow well with hand pump	Afridev	functional	2002	Inter Aide	Inter Aide
206_02_331	531730	8467911	Chimsewu	mechanic borehole	Afridev	not functional	1978	Government	Government
206_02_332	530683	8468471	Dzama School	mechanic borehole	Afridev	not functional	1984	Government	Government
206_02_333	528862	8467014	Mtapa	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_334	529804	8465765	Malingamawa	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_335	530039	8465592	Msokoneza	mechanic borehole	Climax	not functional	1981	Government	Government
206_02_336	530099	8465425	Msokoneza	mechanic borehole	Afridev	functional	2001	MASAF	unknown
206_02_337	532225	8464622	Kabungwe	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_338	556045	8456812	Dambo	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_339	554428	8456958	Msampha	mechanic borehole	Afridev	not functional	1977	Government	Government
206_02_340	553746	8458613	Chakumbutsa	shallow well with hand pump	Afridev	not functional	9999	Inter Aide	Inter Aide
206_02_341	554115	8458672	Mkaliwafa	mechanic borehole	Afridev	not functional	1971	Government	Government
206_02_342	554987	8459138	Dyuku	mechanic borehole	Afridev	not functional	1999	MASAF	unknown
206_02_343	554828	8459787	Katsumwa School	mechanic borehole	Afridev	functional	1972	Government	Government
206_02_344	556306	8461398	Chankondo	mechanic borehole	Afridev	functional	1972	Government	Government
206_02_345	556381	8461396	Chankondo	mechanic borehole	Afridev	not functional	1998	Government	Government
206_02_346	555545	8462575	Kanyambwe	mechanic borehole	Afridev	functional	1998	Government	Government
206_02_347	555408	8462390	Kanyambwe	mechanic borehole	Afridev	functional	1970	Government	Government
206_02_348	553212	8462214	Chiwambo	mechanic borehole	Afridev	functional	1971	Government	Government
206_02_349	552705	8461573	Kanyambwe	mechanic borehole	Afridev	functional	1999	unknown	unknown
206_02_350	552319	8460816	Chilowa	mechanic borehole	Climax	functional	1971	Government	Government
206_02_351	552114	8460071	Chipumi	mechanic borehole	Afridev	functional	1992	Government	Government
206_02_352	551544	8459321	Chimongo	mechanic borehole	Climax	not functional	1971	Government	Government
206_02_353	551635	8457133	Chituwi	mechanic borehole	Climax	not functional	1972	Government	Government
206_06_006	541534	8466790	Kansawa	mechanic borehole	Afridev	functional	1999	MASAF	unknown
206_99_001	542623	8460141	Malemia	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_002	543878	8460063	Mpama	hand drilled borehole	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_003	541121	8463297	Kathumba	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_004	536215	8464690	Tsinkha	hand drilled borehole	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_005	536979	8463331	Luwinga	shallow well with hand pump	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_006	537024	8462262	Chikata	shallow well with hand pump	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_007	539211	8464608	Chikunga	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_008	539980	8464473	Chiunjira	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_99_009	539446	8450148	Namitete Tc	mechanic borehole	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_010	539627	8449877	Namitete Sec School	mechanic borehole	Afridev	functional	1999	EU	unknown
206_99_011	540104	8456110	Mkantho	hand drilled borehole	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_012	542270	8451797	Kalolo	shallow well with hand pump	Malda	functional	1997	Private	Private
206_99_013	548379	8449331	Kachiswe School	mechanic borehole	Afridev	functional	2003	MASAF	MASAF
206_99_014	553985	8439699	Ndavayani	mechanic borehole	Afridev	functional	2003	Government	Government
206_99_015	539626	8447173	Kasenza	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_016	550196	8441820	Khondowe Estate	shallow well with hand pump	Afridev	functional	2003	Private	Private
206_99_017	545621	8437485	Mwase	shallow well with hand pump	Malda	not functional	1989	UNHCR	unknown
206_99_018	539746	8439198	Gezani	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_019	539664	8439115	Mkumba	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_020	539769	8439693	Chawantha	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_021	539909	8439973	Chivuta	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_022	537987	8437677	Khwazomba	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_023	537587	8438005	Chilowe	shallow well with hand pump	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_024	537195	8439507	Maliyana	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_025	540019	8437822	Chipukwa	shallow well with hand pump	Afridev	functional	2003	Inter Aide	Inter Aide
206_99_026	537572	8455560	Msangwa	hand drilled borehole	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_027	536770	8456056	Kachiguya	hand drilled borehole	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_028	534511	8458395	Kapudzama	hand drilled borehole	no pump	not functional	9999	Inter Aide	Inter Aide
206_99_029	534451	8458671	Jeke	hand drilled borehole	no pump	not functional	9999	Inter Aide	Inter Aide
206_99_030	534162	8459565	Chidakula	hand drilled borehole	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_031	528954	8467793	Mchepela	shallow well with hand pump	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_032	529958	8469106	Dzama	hand drilled borehole	no pump	not functional	9999	Inter Aide	Inter Aide
206_99_033	541333	8462487	Sinumbe	hand drilled borehole	Afridev	functional	2004	Inter Aide	Inter Aide
206_99_034	558821	8440041	Magombani	hand drilled borehole	no pump	not functional	9999	Inter Aide	Inter Aide

6-6(3) Water Point mapping survey results (T.A. Khongoni)

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_06_041	544106	8463468	Imfa	mechanic borehole	Afridev	not functional	1974	Government	Government
206_06_042	544105	8463657	Chiputu	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_040	544774	8463773	Kambudzi	mechanic borehole	Afridev	functional	1974	Government	Government
206_06_039	544340	8464471	Silombe	mechanic borehole	Climax	not functional	1974	Government	Government
206_06_038	545381	8464546	Mtavu	mechanic borehole	Afridev	functional	2000	EU	unknown
206_06_036	546367	8465152	Amoni	shallow well with hand pump	Malda	not functional	1996	World Vision	World Vision
206_06_037	544727	8465341	Chalonga (A)	mechanic borehole	Afridev	functional	1111	Government	Government
206_06_035	546184	8465644	Chaipa	mechanic borehole	Climax	not functional	1974	World Vision	World Vision
206_06_034	545572	8466121	Sewera	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_033	545412	8466172	Chithemba	mechanic borehole	Afridev	functional	1970	Government	Government
206_06_031	544629	8466826	Kapudzama School	hand drilled borehole	Afridev	functional	1997	EU	World Vision
206_06_030	544651	8466896	Kapudzama School	mechanic borehole	Afridev	functional	2002	Danida	unknown
206_06_032	544780	8466926	Kapudzama School	mechanic borehole	Afridev	functional	1995	unknown	unknown
206_06_029	544345	8466970	Ng'ombe Agric	mechanic borehole	Climax	not functional	1974	Government	Government
206_06_001	540373	8467202	Chikunkhulira	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_002	539828	8467389	Kabanga	mechanic borehole	Afridev	not functional	1999	MASAF	unknown
206_06_055	544763	8467517	Kapudzama	mechanic borehole	Afridev	not functional	1970	Government	Government
206_06_004	540405	8467961	Majiga	mechanic borehole	Afridev	functional	1111	Government	Government
206_06_005	540416	8468332	Majiga School	mechanic borehole	Afridev	functional	1998	MASAF	unknown
206_06_003	539738	8468446	Galang'ombe	mechanic borehole	Afridev	functional	1998	MASAF	unknown
206_06_009	540532	8468483	Chilobwe Dispensary	mechanic borehole	Climax	functional	2001	MASAF	unknown
206_06_008	540364	8468633	Khongoni	mechanic borehole	Afridev	not functional	1998	MASAF	unknown
206_06_007	540545	8468719	Chilobwe court	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_011	541940	8468806	Jentala	mechanic borehole	Climax	not functional	1981	World Vision	World Vision
206_06_012	543237	8469098	Mpani	mechanic borehole	Afridev	not functional	1964	Government	Government
206_06_052	543911	8469249	Matekwe (B)	mechanic borehole	Climax	not functional	1971	Government	Government
206_06_053	544832	8469564	Salima	mechanic borehole	Afridev	not functional	2000	MASAF	unknown
206_06_054	544784	8469763	Kaphukira	mechanic borehole	Climax	not functional	1970	Government	Government
206_06_010	541266	8470027	Nafelanji	mechanic borehole	Afridev	functional	1998	MASAF	unknown
206_06_066	529925	8470610	Stambo	mechanic borehole	Climax	not functional	1111	Government	Government
206_06_013	539782	8470680	Nyanga	mechanic borehole	Afridev	not functional	1963	Government	Government
206_06_014	539630	8470898	Kalumbi	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_067	530185	8471026	Chibwazi	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_06_043	537830	8471154	Kakhumate	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_051	535796	8471302	Kambuyana	mechanic borehole	Climax	not functional	1974	Government	Government
206_06_015	540811	8471558	Vizimba	mechanic borehole	Afridev	not functional	1964	Government	Government

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_06_068	531951	8471780	Mbalame ADMARC	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_047	536540	8472347	Kambuyana School	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_06_046	537257	8472562	Ching'anga	mechanic borehole	Afridev	functional	2002	World Vision	World Vision
206_06_016	542154	8472664	Chipeni	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_050	537694	8472731	Katiyi	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_044	538359	8472986	Kosamu	mechanic borehole	Afridev	functional	1111	Government	Government
206_06_045	538485	8473375	Kosamu	windlass well	other	not functional	1111	OTHER	Other
206_06_064	529485	8473520	Msinde	mechanic borehole	Afridev	functional	1996	MASAF	unknown
206_06_065	529393	8473647	Msinde	mechanic borehole	Climax	not functional	1974	Government	Government
206_06_017	540066	8473779	Chifuka Shool	mechanic borehole	Afridev	functional	2000	Danida	unknown
206_06_069	530541	8474008	Mazinga	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_048	537550	8474095	Chateka	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_070	532200	8474240	Khasu School	mechanic borehole	Afridev	functional	1111	Government	Government
206_06_063	529227	8474431	Mazinga	mechanic borehole	Afridev	functional	2002	MASAF	unknown
206_06_071	538899	8474623	Mtsilo (A)	mechanic borehole	Climax	not functional	1974	Government	Government
206_06_056	536176	8475462	Dickson	mechanic borehole	Malda	functional	1996	Health Center	Health Centre
206_06_062	531028	8475730	Chipandevu	shallow well with hand pump	Malda	not functional	1997	Health Center	Health Centre
206_06_049	537362	8475766	Zenga	mechanic borehole	Afridev	not functional	1987	World Vision	World Vision
206_06_018	539766	8476658	Mkuwila (B)	mechanic borehole	Climax	not functional	1962	Government	Government
206_06_057	534822	8476704	Kangunje	mechanic borehole	Afridev	functional	1974	Government	Government
206_06_027	541103	8477219	Kasiya School	mechanic borehole	Afridev	functional	1111	MASAF	unknown
206_06_028	541082	8477297	Chateka	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_019	539702	8477391	Khongoni H/Centre	mechanic borehole	Afridev	functional	1998	Government	Other
206_06_080	543089	8477394	Chikweteza	mechanic borehole	Afridev	not functional	1971	Government	Government
206_06_079	543331	8477402	Nkhunyungu	shallow well with hand pump	Malda	not functional	1996	Health Center	Health Centre
206_06_020	539709	8477471	Khongoni H/Centre	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_021	539663	8477669	Kasiya	mechanic borehole	Climax	not functional	1984	Government	Government
206_06_078	543230	8477827	Mgulumula	mechanic borehole	Afridev	not functional	1972	Government	Government
206_06_059	532975	8477892	Waya School	mechanic borehole	Afridev	functional	1998	MASAF	unknown
206_06_077	543120	8477942	Madzonga	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_058	534067	8477945	Waya	mechanic borehole	Afridev	functional	1971	Government	Government
206_06_060	532487	8477984	Chimbwi (B)	mechanic borehole	Afridev	functional	1971	Government	Government
206_06_022	539530	8478099	Kasiya	mechanic borehole	Afridev	functional	1999	MASAF	unknown
206_06_061	531395	8478215	Chabvunga	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_023	539495	8478236	Kasiya	mechanic borehole	Afridev	functional	2000	MASAF	unknown

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_06_024	539319	8478263	Kasiya ADMARC	mechanic borehole	Climax	not functional	1973	Government	Government
206_06_025	540049	8478382	Kasiya Police	mechanic borehole	Afridev	functional	1963	Government	Government
206_06_026	540247	8478387	Kasiya School	mechanic borehole	Afridev	functional	1997	MASAF	unknown
206_06_072	538371	8478489	Mchonjo	mechanic borehole	Afridev	functional	2001	MASAF	unknown
206_06_094	544435	8478629	Kanjuluwende	mechanic borehole	Climax	not functional	1970	Government	Government
206_06_073	540032	8478951	Kasiya	mechanic borehole	Afridev	functional	1972	Government	Government
206_06_076	542892	8479259	Mtsati	mechanic borehole	Afridev	not functional	1974	Government	Government
206_06_082	545041	8479897	Nyanda	mechanic borehole	Aquadev	not functional	1961	Government	Government
206_06_074	542161	8480157	Chilaka	mechanic borehole	Afridev	functional	2000	unknown	unknown
206_06_075	540832	8480305	Kakhwesi	mechanic borehole	Afridev	functional	1999	unknown	unknown
206_06_100	538431	8480978	Kasanda	mechanic borehole	Afridev	not functional	1970	Government	Government
206_06_095	544969	8481691	Mtawuka	mechanic borehole	Climax	not functional	1969	Government	Government
206_06_096	541702	8481774	Chimimba (A)	mechanic borehole	Afridev	not functional	1968	Government	Government
206_06_099	539649	8481968	Chipeta	windlass well	other	not functional	1111	Government	Government
206_06_102	532999	8481979	Pabwe	mechanic borehole	Afridev	not functional	1976	Government	Government
206_06_101	537060	8482356	Kalama	mechanic borehole	Afridev	not functional	1968	Government	Government
206_06_103	532892	8482368	Tonde	mechanic borehole	Climax	not functional	1111	Government	Government
206_06_097	540516	8482702	Mtande	mechanic borehole	Afridev	functional	2000	Proscarp	unknown
206_06_098	539275	8483357	Mtoso School	mechanic borehole	Afridev	functional	1992	Government	Government
206_06_118	543119	8483881	Mandindi	mechanic borehole	Afridev	not functional	1998	Government	CHITSIME
206_06_117	543783	8483988	Kachele	mechanic borehole	Afridev	not functional	1998	Government	CHITSIME
206_06_119	546956	8484470	Kamzimbi (A)	mechanic borehole	Climax	not functional	1111	Government	Government
206_06_121	546930	8484699	Mkutuwa	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_104	534755	8484715	Mangirira	mechanic borehole	Afridev	functional	2000	unknown	unknown
206_06_120	547254	8484753	Kamzimbi School	mechanic borehole	Afridev	not functional	1999	MASAF	unknown
206_06_116	544043	8485523	Kamange	mechanic borehole	Afridev	functional	1978	Government	Government
206_06_110	539069	8485859	Mdzuma	mechanic borehole	Afridev	not functional	1998	unknown	CHITSIME
206_06_105	536514	8485992	Kaluzi (A)	mechanic borehole	Afridev	functional	1970	Government	Government
206_06_122	544753	8486062	Chinthuta	windlass well	other	not functional	1111	Government	Government
206_06_106	534203	8486305	Chilembwe	windlass well	other	not functional	1111	unknown	unknown
206_06_109	538005	8486842	Nthondo (A)	mechanic borehole	Climax	not functional	1969	Government	Government
206_06_115	543980	8486853	Jawuzale	mechanic borehole	Afridev	not functional	1998	Government	CHITSIME
206_06_113	542885	8487574	Msindo	mechanic borehole	Afridev	functional	1998	unknown	CHITSIME
206_06_112	539287	8487643	Chilowa	mechanic borehole	Climax	not functional	1111	Government	Government
206_06_114	543137	8487820	Mtsindo	mechanic borehole	Afridev	not functional	1978	Government	Government

ID water point	EastingX	NorthingY	village site	water source	pump type	condition	construction date	funds	services
206_06_107	534388	8488323	Mbewa (B)	mechanic borehole	Afridev	functional	2002	Germany Embassy	Chilembe Drilling Co
206_06_209	546891	8488496	Sakali	mechanic borehole	Afridev	not functional	1970	Government	Government
206_06_111	538393	8488539	Chimtolo	mechanic borehole	Afridev	not functional	1998	unknown	CHITSIME
206_06_210	548860	8488980	Sakali	mechanic borehole	Afridev	functional	1998	MPs	CHITSIME
206_06_081	544921	8489131	Kabudula	mechanic borehole	Afridev	not functional	1998	MASAF	unknown
206_06_108	534702	8489303	Mbewa (B)	mechanic borehole	Afridev	functional	1111	Government	Government
206_06_218	535212	8490060	Vunguti	shallow well with hand pump	Malda	functional	1999	Proscarp	unknown
206_06_217	534468	8490293	Bondo	hand drilled borehole	Malda	functional	1999	Proscarp	unknown
206_06_219	535366	8490771	Bondo School	mechanic borehole	Afridev	functional	1111	Government	Government
206_06_231	546730	8491134	Kaodzela	mechanic borehole	Afridev	not functional	1972	Government	Government
206_06_211	539949	8491556	Kaphiri	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_212	540105	8492049	Chigowo	mechanic borehole	Afridev	functional	2000	MASAF	unknown
206_06_230	544571	8492251	Mbetayasamba	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_208	549235	8492269	Makowa	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_206	543509	8494005	Malembo School	mechanic borehole	Afridev	functional	2002	Germany Embassy	Chilembe Drilling Co
206_06_207	543407	8494054	Malembo School	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_123	544901	8494342	Malembo School	mechanic borehole	Afridev	functional	2002	Germany Embassy	Chilembe Drilling Co
206_06_232	544802	8494471	Malembo H/Centre	motorised standpipe	other	functional	2003	Netherlands Gvt	unknown
206_06_213	541124	8494553	Kawalika	mechanic borehole	Climax	not functional	1111	Government	Government
206_06_203	545052	8494728	Malembo	mechanic borehole	Afridev	not functional	1970	Government	Government
206_06_204	546081	8494893	Salamba	mechanic borehole	Afridev	not functional	1990	unknown	unknown
206_06_205	545775	8494970	Mbvunguti	mechanic borehole	Climax	not functional	1968	Government	Government
206_06_215	541995	8496745	Milala	windlass well	other	not functional	1111	Government	Government
206_06_216	543696	8497320	Kazumba School	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_214	542421	8497351	Msema	mechanic borehole	Climax	not functional	1972	Government	Government
206_06_220	543359	8498666	Kazumba	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_229	544394	8499206	Therere	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_228	545086	8499669	Njakwa School	mechanic borehole	Afridev	not functional	1111	Religious_institution	unknown
206_06_227	545115	8499721	Chazozoma School	mechanic borehole	Afridev	not functional	1999	Religious_institution	unknown
206_06_221	542978	8500753	Kakoloweko	mechanic borehole	Afridev	not functional	1111	Government	Government
206_06_223	544333	8503166	Sendwe School	mechanic borehole	Climax	not functional	1970	Government	Government
206_06_226	546247	8503322	Kapangalika	mechanic borehole	Afridev	not functional	1998	Government	Government
206_06_222	542944	8503850	Chivina	shallow well with hand pump	Afridev	functional	2002	Inter Aide	Inter Aide
206_06_225	546763	8506932	Dzuwa School	mechanic borehole	Afridev	functional	2000	Germany Embassy	unknown
206_06_224	543425	8507791	Kazingatchire	mechanic borehole	Afridev	not functional	2000	MASAF	unknown

7. REFERENCES

№	Name of Data	Type	Collected Data	Data Prepared by Specialist	Data Prepared by JICA	Publishing Organization	Remarks
1	Strategic Plan 2003 - 2006	Copy	○			Ministry of Water Development	
2	Devolution of Functions to Assemblies Guidelines and Standards	Copy	○			Ministry of Water Development	
3	1998 Malawi Population and Housing Census; Population Projections Report 1999 – 2023	Book	○			National Statistical Office	
4	Madzi Ndi Moyo presentation Lilongwe District – Malawi TAs Kalolo, Khongoni, Kabudula, Malili, Njewa: April 2004	Copy	○			Inter Aide	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