

APPENDICES

APPENDIX-1 Member List of the Study Team

1st Field Survey

Name	Assignment	Affiliation
(1) Mr. Mitsuaki Furukawa	Team Leader	Deputy Resident Representative JICA Tanzania Office
(2) Mr. Kenichiro Kobayashi	Project Coordinator	First Project Management Division Grant Aid Management Department, JICA
(3) Mr. Yoshitaka HAMANAKA	Chief Consultant / Management, Operation and Maintenance Planner	Japan Techno Co., Ltd.
(4) Mr. Yusuke ANDO	Water Supply Planner	Japan Techno Co., Ltd.
(5) Mr. Ryotaro MIYAUCHI	Hydrogeologist	Japan Techno Co., Ltd.
(6) Mr. Toshimichi NAGANUMA	Hydrogeologist	Japan Techno Co., Ltd.
(7) Mr. Jyunichi SASAKI	Geophysical Surveyor	Japan Techno Co., Ltd.
(8) Ms. Kiyoko Takamizawa	Cost Estimation / Procurement Planner	Japan Techno Co., Ltd.

2nd Field Survey

Name	Assignment	Affiliation
(1) Mr. Yoshitaka HAMANAKA	Team Leader/Management, Operation and Maintenance Planner	Japan Techno Co., Ltd.
(2) Mr. Takashi EBIHARA	Water Supply Planner I	Japan Techno Co., Ltd.
(3) Mr. Koji MIYAUCHI	Water Supply Planner II	Japan Techno Co., Ltd.
(4) Mr. Ryotaro MIYAUCHI	Hydrogeologist	Japan Techno Co., Ltd.
(5) Ms. Kiyoko Takamizawa	Cost Estimation /Procurement Planner	Japan Techno Co., Ltd.

Explanation on Draft Basic Design Study

Name	Assignment	Affiliation
(1) Ms. Keiko Yamamoto	Team Leader	Senior Advisor, JICA
(2) Mr. Eiichiro CHO	Project Coordinator	Deputy Director, First Project Management Division, Grant Aid Management Department, JICA
(3) Mr. Yoshitaka HAMANAKA	Chief Consultant /Management, Operation and Maintenance Planner	Japan Techno Co., Ltd.
(4) Mr. Ryotaro MIYAUCHI	Hydrogeologist	Japan Techno Co., Ltd.
(5) Mr. Takashi EBIHARA	Water Supply Planner	Japan Techno Co., Ltd.

APPENDIX-2 Study Schedule

1st Field Survey

No.	Date		Itinerary
1	4/8	Sat.	Leave Tokyo(JICA)/ Arrive at Dar Es Salaam (Chief Consultant, Hydrogeologist I, Cost Estimation)
2	4/9	Sun.	Arrive at Dar Es Salaam (JICA)
3	4/10	Mon.	Courtesy Call on JICA, EOJ
4	4/11	Tue.	Meeting with MOW (Explanation on Inception Report)
5	4/12	Wed.	Site Survey (Arusha)
6	4/13	Thu.	Site Survey (Hanang)
7	4/14	Fri.	Meeting with Regional and District Water Engineers
8	4/15	Sat.	Site Survey (Manyoni)
9	4/16	Sun.	Internal Meeting, Transfer to Dodoma
10	4/17	Mon.	Transfer to Dar Es Salaam)
11	4/18	Tue.	Meeting with MOW (M/D)
12	4/19	Wed.	Signing of Minutes of Discussion
13	4/20	Thu.	Meeting with MOW, Reporting to EOJ
14	4/21	Fri.	Internal Meeting, Leave Dar Es Salaam (JICA)
15	4/22	Sat.	Internal Meeting
16	4/23	Sun.	Internal Meeting
17	4/24	Mon.	Internal Meeting
18	4/25	Tue.	Internal Meeting
19	4/26	Wed.	Internal Meeting, Data Collecting
20	4/27	Thu.	Meeting with MOW, Data Collecting
21	4/28	Fri.	Meeting with JICA, Data Collecting
22	4/29	Sat.	Transfer
23	4/30	Sun.	Meeting with Arusha Regional Water Engineer
24	5/1	Mon.	Site Survey (Hanang)
25	5/2	Tue.	Site Survey (Hanang / Singida)
26	5/3	Wed.	Site Survey (Hanang / Igunga)
27	5/4	Thu.	Site Survey (Hanang / Manyoni)
28	5/5	Fri.	Site Survey (Hanang / Singida)
29	5/6	Sat.	Site Survey (Hanang)
30	5/7	Sun.	Site Survey (Hanang)
31	5/8	Mon.	Meeting with DWE (Hanang) / Arrive at Kilimanjaro (Water Supply Planner II)
32	5/9	Tue.	Meeting with DWE (Singida Rural) / Site Survey (Hanang)
33	5/10	Wed.	Meeting with DWE (Igunga) / Site Survey (Hanang)
34	5/11	Thu.	Meeting with DWE (Manyoni) / Site Survey (Hanang)
35	5/12	Fri.	Site Survey (Hanang / Singida) / Transfer to Dodoma
36	5/13	Sat.	Site Survey (Hanang / Singida) / Transfer to Dar Es Salaam
37	5/14	Sun.	Site Survey (Hanang / Singida)
38	5/15	Mon.	Site Survey (Hanang / Singida) / Reporting to JICA and EOJ
39	5/16	Tue.	Site Survey (Hanang / Singida) / Arrive at Kilimanjaro (Geophysical Survey)
40	5/17	Wed.	Site Survey (Hanang)
41	5/18	Thu.	Site Survey (Hanang / Singida)
42	5/19	Fri.	Site Survey (Hanang / Singida)
43	5/20	Sat.	Site Survey (Hanang / Singida)
44	5/21	Sun.	Site Survey (Hanang / Singida)
45	5/22	Mon.	Site Survey (Hanang / Singida / Igunga)

No.	Date		Itinerary
46	5/23	Tue.	Site Survey (Singida / Manyoni / Igunga)
47	5/24	Wed.	Site Survey (Singida / Manyoni / Igunga)
48	5/25	Thu.	Site Survey (Singida / Igunga)
49	5/26	Fri.	Site Survey (Singida / Manyoni / Igunga)
50	5/27	Sat.	Site Survey (Singida / Manyoni / Igunga)
51	5/28	Sun.	Site Survey (Singida / Manyoni / Igunga / Arusha)
52	5/29	Mon.	Site Survey (Singida / Manyoni / Igunga) / Transfer to Dar Es Salaam
53	5/30	Tue.	Site Survey (Singida / Manyoni) / Reporting to JICA, Meeting with MOW
54	5/31	Wed.	Site Survey (Singida) , Internal Meeting /Data Collecting
55	6/1	Thu.	Site Survey (Manyoni / Igunga) / Data Collecting
56	6/2	Fri.	Site Survey (Manyoni / Igunga) / Reporting to JICA
57	6/3	Sat.	Site Survey (Manyoni / Igunga) / Leave Dar Es Salaam (Hydrogeologist , Cost Estimation)
58	6/4	Sun.	Site Survey (Manyoni / Igunga)
59	6/5	Mon.	Site Survey (Manyoni / Arusha)
60	6/6	Tue.	Site Survey (Manyoni) / Transfer to Dar Es Salaam
61	6/7	Wed.	Site Survey (Manyoni)
62	6/8	Thu.	Site Survey (Singida / Manyoni)
63	6/9	Fri.	Site Survey (Singida / Manyoni) / Reporting to JICA
64	6/10	Sat.	Site Survey (Arusha) / Leave Kilimanjaro (Geophysical Survey)
65	6/11	Sun.	Site Survey (Arusha)
66	6/12	Mon.	Site Survey (Arusha)
67	6/13	Tue.	Site Survey (Arusha) / Arrive at Kilimanjaro (Water Supply Planner)
68	6/14	Wed.	Site Survey (Arusha)
69	6/15	Thu.	Site Survey (Arusha)
70	6/16	Fri.	Site Survey (Arusha) , Internal Meeting
71	6/17	Sat.	Site Survey (Hanang / Arusha)
72	6/18	Sun.	Site Survey (Hanang)
73	6/19	Mon.	Site Survey (Hanang)
74	6/20	Tue.	Site Survey (Hanang)
75	6/21	Wed.	Site Survey (Singida / Igunga)
76	6/22	Thu.	Site Survey (Singida / Igunga)
77	6/23	Fri.	Site Survey (Singida)
78	6/24	Sat.	Site Survey (Singida / Igunga)
79	6/25	Sun.	Site Survey (Singida / Manyoni)
80	6/26	Mon.	Site Survey (Manyoni / Dodoma)
81	6/27	Tue.	Site Survey (Manyoni/ Dodoma)
82	6/28	Wed.	Site Survey (Manyoni) / Transfer to Dar Es Salaam
83	6/29	Thu.	Transfer to Dodoma / Data Collecting
84	6/30	Fri.	Transfer to Dar Es Salaam / Data Collecting
85	7/1	Sat.	Internal Meeting, Data Analysis
86	7/2	Sun.	Internal Meeting, Data Analysis
87	7/3	Mon.	Reporting to MOW, Data Collecting and Analysis
88	7/4	Tue.	Reporting to JICA and EOJ
89	7/5	Wed.	Leave Dar Es Salaam (Chief Consultant, Water Supply Planner, Hydrogeologist II)
90	7/6	Thu.	Arrive at Tokyo

2st Field Survey

No.	Date		Itinerary
1	9/28	Thu.	Leave Tokyo (Team Leader, Hydrogeologist, Cost Estimation)
2	9/29	Fri.	Arrive at Dar Es Salaam
3	9/30	Sat.	Preparation, Arrange for Site Survey
4	10/1	Sun.	Internal Meeting
5	10/2	Mon.	Meeting with JICA and MOW, Courtesy Call on EOJ
6	10/3	Tue.	Meeting with MOW
7	10/4	Wed.	Transfer to Arusha
8	10/5	Thu.	Site Survey (Hanang)
9	10/6	Fri.	Site Survey (Hanang)
10	10/7	Sat.	Site Survey (Hanang)
11	10/8	Sun.	Site Survey (Hanang)
12	10/9	Mon.	Site Survey (Igunga)
13	10/10	Tue.	Site Survey (Igunga)
14	10/11	Wed.	Site Survey (Igunga)
15	10/12	Thu.	Site Survey (Igunga)
16	10/13	Fri.	Site Survey (Manyoni)
17	10/14	Sat.	Site Survey (Manyoni)
18	10/15	Sun.	Site Survey (Manyoni)
19	10/16	Mon.	Site Survey (Manyoni)
20	10/17	Tue.	Site Survey (Singida)
21	10/18	Wed.	Site Survey (Singida)
22	10/19	Thu.	Site Survey (Singida)
23	10/20	Fri.	Site Survey (Singida) / Arrive at Kilimanjaro (Water Supply Planner II)
24	10/21	Sat.	Meeting with District Water Engineer
25	10/22	Sun.	Site Survey (Arusha)
26	10/23	Mon.	Site Survey (Arusha) / Transfer to Dar Es Salaam)
27	10/24	Tue.	Site Survey (Hanang) / Meeting with MOW, Reporting to JICA
28	10/25	Wed.	Site Survey (Hanang) / Leave Dar Es Salaam (Chief Consultant, Hydrogeologist)
29	10/26	Thu.	Site Survey (Hanang)
30	10/27	Fri.	Site Survey (Hanang)
31	10/28	Sat.	Site Survey (Hanang)
32	10/29	Sun.	Site Survey (Hanang)
33	10/30	Mon.	Site Survey (Singida)
34	10/31	Tue.	Site Survey (Singida)
35	11/1	Wed.	Site Survey (Singida) / (Arusha)
36	11/2	Thu.	Site Survey (Singida) / Transfer to Dar Es Salaam)
37	11/3	Fri.	Site Survey (Singida) / Data Collecting and Analysis
38	11/4	Sat.	Site Survey (Singida) / Data Collecting and Analysis
39	11/5	Sun.	Site Survey (Igunga) / Leave Dar Es Salaam (Cost Estimation)
40	11/6	Mon.	Site Survey (Igunga)
41	11/7	Tue.	Site Survey (Igunga)
42	11/8	Wed.	Site Survey (Igunga)
43	11/9	Thu.	Site Survey (Igunga)
44	11/10	Fri.	Site Survey (Igunga)
45	11/11	Sat.	Site Survey (Igunga)
46	11/12	Sun.	Site Survey (Singida)
47	11/13	Mon.	Site Survey (Manyoni)

No.	Date		Itinerary
48	11/14	Tue.	Site Survey (Manyoni)
49	11/15	Wed.	Site Survey (Manyoni)
50	11/16	Thu.	Site Survey (Manyoni)
51	11/17	Fri.	Site Survey (Manyoni)
52	11/18	Sat.	Site Survey (Manyoni)
53	11/19	Sun.	Site Survey (Manyoni)
54	11/20	Mon.	Site Survey (Dodoma)
55	11/21	Tue.	Transfer to Dar Es Salaam)
56	11/22	Wed.	Meeting with MOW, Data Analysis
57	11/23	Thu.	Meeting with MOW, Data Analysis
58	11/24	Fri.	Data Analysis
59	11/25	Sat.	Data Analysis
60	11/26	Sun.	Leave Dar Es Salaam (Water Supply Planner I, II)

Explanation on Draft Basic Design Study

No.	Date		Itinerary
1	4 月 11 日	Wed.	Arrive at Dar Es Salaam, Courtesy Call on EOJ and JICA
2	4 月 12 日	Thu.	Courtesy Call on MWLD
3	4 月 13 日	Fri.	Transfer (Dar Es Salaam Arusha)
4	4 月 14 日	Sat.	Meeting with DWE, Visit Defluoridation Research Station
5	4 月 15 日	Sun.	Transfer (Arusha Dar Es Salaam)
6	4 月 16 日	Mon.	Meeting with MWLD
7	4 月 17 日	Tue.	Signing of Minutes of Discussions
8	4 月 18 日	Wed.	Reporting to EOJ and JICA, Leave Dar Es Salaam

EOJ: Embassy of Japan

JICA: Japan International Cooperation Agency

MOW: Ministry of Water

MWLD: Ministry of Water and Livestock Development

APPENDIX-3 List of Parties Concerned in the Recipient Country

① 1st Field Survey

1. Embassy of Japan in Tanzania

Mr. Keitaro Sato	Ambassador
Mr. Akio Egawa	Minister
Mr. Kenji Yoshioka	First Secretary
Mr. Tomohiko Taminato	Second Secretary

2. JICA Tanzania Office

Mr. Shinya Nakai	Resident Representative
Mr. Mitsuaki Furukawa	Deputy Resident Representative
Mr. Kaoru Suzuki	Assistant Resident Representative
Mr. Fabian M. Chilumba	Chief Programme Officer

3. Ministry of Water

Prof. Idris A. Mtulia	Permanent Secretary
Mr. Christopher N. Sayi	Director of Rural Water Supply
Mr. Kwizingile	Assistant Director of Rural Water Supply
Mr. Gabriel K. Lwakabare	Project Coordinator
Mr. Ismail A.G. Mwaka	Assistant Project Coordinator
Mr. Elisamebe C. Mziray	Assistant Director (O&M)
Mr. L. Kongola	Chief Hydrogeologist, Dodoma

4. Regional Water Engineer

Mr. J. AKONAA Y	Arusha Regional Water Engineer
Mr. D. KAMARA	Singida Regional Water Engineer
Mr. A. ALLIY	Tabora Deputy Regional Water Engineer

5. District Water Engineer

Mr. G. MFUKO	Hanang District Water Engineer
Mr. C. MWAIHOJO	Singida Rural District Water Engineer
Mr. A. KUSENHA	Manyoni District Water Engineer
Mr. F. MAGOLINYA	Igunga District Water Engineer

6. Drilling and Dam Construction Agency

Dr. A.H. Mohamed	Managing Director
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7. Ngurdoto Defluoridation Research Station

Mr. Gedfrey Mkongo	Chief Researcher
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Explanation on Draft Basic Design Study

1. Embassy of Japan in Tanzania
 - Mr. Keitaro Sato Ambassador
 - Mr. Naoki Ito Second Secretary
2. JICA Tanzania Office
 - Mr. Sumio Aoki Resident Representative
 - Mr. Kaoru Suzuki Assistant Resident Representative
 - Ms. Deborahali Suugusia Programme Officer
3. Ministry of Water and Livestock Development
 - Mr. B. A. Mahiza Permanent Secretary
 - Mr. C. N. Sayi Director of Rural Water Supply Division
 - Mr. L. R. E. Kongola Assistant Director of Water Supply Division
 - Mr. R. N. T. Kwizigile Assistant Director of Design Supervision
 - Mr. E. C. Mziray Assistant Director of Operation and Maintenance
 - Mr. J. A. Mukumwa Assistant Director of Construction Monitoring
 - Ms. N. S. Kemikimba Executive Engineer of Water Laboratory
 - Ms. R. F. Kilua Executive Engineer of Design Supervision
3. Regional Water Engineer
 - Mr. J. AKONAAAY Arusha Regional Water Engineer
 - Mr. D. KAMARA Singida Regional Water Engineer
 - Mr. M. KUZENZA Tabora Regional Water Engineer
4. District Water Engineer
 - Mr. G. MFUKO Hanang District Water Engineer
 - Mr. C. MWAIHOJO Singida Rural District Water Engineer
 - Mr. A. KUSENHA Manyoni District Water Engineer
 - Mr. Y. KAYYE Igunga District Water Engineer
5. Ngurdoto Defluoridation Research Station
 - Mr. Gedfrey Mkongo Chief Researcher

APPENDIX - 4 (1) MINUTES OF DISCUSSION ON BASIC DESIGN STUDY

Minutes of Discussions
on
The Basic Design Study
on
The Project for the Rural Water Supply Project in Hanang,
Singida Rural, Manyoni and Igunga Districts
in
The United Republic of Tanzania

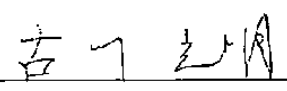
In response to a request from the Government of the United Republic of Tanzania (hereinafter referred to as 'Tanzania'), the Government of Japan decided to conduct a Basic Design Study on the Project for the Rural Water Supply Project in Hanang, Singida Rural, Manyoni and Igunga Districts (hereinafter referred to as "the Project"), and entrusted the study to Japan International Cooperation Agency (hereinafter referred to as 'JICA').

JICA sent to Tanzania the Basic Design Study Team (hereinafter referred to as 'the Team'), which is headed by Mr. Mitsuaki Furukawa, Deputy Resident Representative, JICA Tanzania Office, and is scheduled to stay in the country from the 8th April to the 5th July, 2000.


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

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

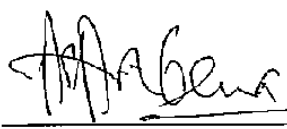
Dares Salaam, 19th April, 2000



Mr. Mitsuaki Furukawa
Leader
Basic Design Study Team
Japan International Cooperation Agency



Prof. Idris A. Mtulia
Permanent Secretary
Ministry of Water
Tanzania



Mr. P. J. Mbena
Commissioner for External Finance
Ministry of Finance

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 rural areas by providing potable water through construction of water supply facilities.

2. Responsible and Implementing Organization

Responsible organization : Ministry of Water

Implementing organization :

Ministry of Water

Arusha Region and Hanang District

Singida Region and Singida Rural District, Manyoni District

Tabora Region and Igunga District

3. Site of the Project

The two hundred eighty four (284) villages listed in Annex-1 have been confirmed as the candidate sites to be surveyed for the Project.

4. Items requested by the Government of Tanzania

After discussions with the team, the items described in Annex-2 were finally requested by the Tanzanian side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Basic Policies of Cooperation

Both parties agreed to the criteria for the Site Selection as listed in Annex-3. However, after the site survey and analysis in Japan, the Project sites to be aided by Japanese Grant will be determined from the sites listed in Annex-1 by Japanese side.

6. Japan's Grant Aid Programme

The Tanzanian side has understood the system and characteristics of Japan's Grant Aid Programme as described in Annex-4 by the Team.



7. Necessary measures to be taken by the Tanzanian side

The Tanzanian side will take the necessary measures, as described in Annex-5, for smooth implementation of the Project on condition that the Japanese Grant Aid is extended.

8. Further Schedule of the Study

- a. The consultants will proceed the further study in Tanzania until 5th July, 2000.
- b. JICA will prepare the Basic Design Study Report in English and dispatch a mission in order to explain its contents in (or around) September 2000.
- c. In case the contents of the report is accepted in principle by the Government of Tanzania, JICA will complete the final report and send it to the Tanzanian side by December 2000.

9. Other relevant issues

Both parties agreed that WHO standard is used as the water quality standard of this project. Tanzanian side proposed that Tanzania Government standard should be used for the project, because the project areas have been suffered from water shortage for domestic uses and the problems should be solved urgently. Japanese side explained that the project granted under the Japan's Grant Aid must be planed according to worldwide standard.



YANANG DISTRICT & SINGIDA RURAL DISTRICT

HANANG DISTRICT			
No.	Village Name	Sub Vil.	Pop. 1997
1	Mulbedaw	5	3596
2	Pangrada	3	580
3	Damel	3	774
4	Laharaga	4	1.818
5	Gawidu	4	1.801
6	Garawia	4	4.438
7	Bassodesh	5	1.992
8	Hibadaw	3	3.007
9	Mwangsa	7	3.229
10	Wandela	5	420
11	Gitanuwias	4	1.471
12	Gidika	3	1.348
13	Dumbeta	3	1.370
14	Dima	6	2.190
15	Gisambalang	3	1.626
16	Waraga	2	1.021
17	Mureto	6	1.388
18	Diloda	5	1.385
19	Mingenyi	4	2.424
20	Isiponges	3	1.494
21	Mara	4	1.976
22	Gidohabbeg	5	2.290
23	Endasaboghechan	3	2.290
24	Hidet	4	2.000
25	Bassothungang	5	1.480
26	Sirod	6	1.870
27	Matangarinu	3	2.280
28	Simbay	7	621
29	Gidagharabuk	4	618
30	Masakta	7	3.584
31	Lambo	4	2.390
32	Masqaroda	5	2.504
33	Gelasum	4	1.126
	TOTAL	143	62.501

SINGIDA RURAL DISTRICT												
No.	Village Name	Sub V/L	Pop. 1997	No.	Village Name	Sub V/L	Pop. 1997	No.	Village Name	Sub V/L	Pop. 1997	
1	Ikungi	8	2,646	44	Igombe	5	2,049	88	Mvae	5	4,033	
2	Ichuka	8	3,256	45	Mososa	2	1,421	89	Makhandi	5	3,125	
3	Uiyampiti	7	2,103	46	Mgungwa	4	2,183	90	Kinyafayi	5	2,514	
4	Matongo	5	2,897	47	Ufana	4	1,380	91	Mwanyonye	5	3,060	
5	Muungano	3	1,444	48	Iyumbu	8	2,724	92	Ikanoda	5	2,409	
6	Matate	10	3,138	49	Ireyia	7	2,608	93	Miughuda	6	3,934	
7	Mahambi	6	1,360	50	Mwasutanga	5	1,357	94	Msimimhi	4	3,549	
8	Issuna	8	3,303	51	Minko	10	3,910	95	Mdilu	7	2,819	
9	Choda	5	1,325	52	Malolo	6	3,048	96	Mwasaya	7	3,463	
10	Mkiva	6	1,827	53	Mughanga	6	2,318	97	Mgamu	6	4,093	
11	Nkubi	6	2,159	54	Mcambaa	6	2,755	98	Mipilo	8	4,221	
12	Samaka	10	3,502	55	Kipota	4	1,716	99	Mangida	5	3,351	
13	Ujate	4	1,631	56	Nduu	4	1,992	100	Setinga	7	2,705	
14	Kipumbuko	6	2,208	57	Minyanya	5	4,034	101	Chata	6	3,638	
15	Mkinya	5	1,662	58	Kiwi	10	3,893	102	Msanje	7	4,180	
16	Mang'onyi	3	2,102	59	Makuro	5	2,568	103	Mgori	7	1,640	
17	Tupendare	3	1,570	60	Chalunyangu	5	2,454	104	Mkhola	8	2,379	
18	Mwau	5	4,039	61	Mipiti	6	4,043	105	Suphana	10	2,693	
19	Sambaru	3	1,223	62	Mpoku	6	3,216	106	Uyampanda	4	1,270	
20	Bania	10	3,814	63	Matumbo	6	3,090	107	Mughunga	4	1,195	
21	Iseku	5	1,797	64	Mkenge	6	2,389	108	Iduanugunga	6	3,356	
22	Nkoiwe	7	3,006	65	Miyaru	6	2,437	109	Ngitiru	7	3,995	
23	Uyungwe	7	2,234	66	Ughandi 'B'	6	2,501	110	Mwighanji	7	2,938	
24	Chungu	9	2,986	67	Nkwae	4	1,899	111	Iteia	6	5,249	
25	Minyughe	5	2,225	68	Laghamida	7	2,849	112	Pohama	9	3,175	
26	Misake	7	2,810	69	Msimko	10	3,658	113	Mungaa	7	2,532	
27	Muhariri	6	2,829	70	Nlorodo	6	1,473	114	Mwingira	5	2,163	
28	Mnyange	3	1,838	71	Masi	7	3,513	115	Kinku	4	2,517	
29	Mpetu	7	1,330	72	Senene Mfuru	5	1,071	116	Kimbwi	4	2,318	
30	Matyuku	4	1,691	73	Madamigha -	5	3,679	117	Uyamitumbi	5	2,809	
31	Utahro	5	2,832	74	Mrama	4	4,382	118	Misughaa	6	1,427	
32	Izalanga	3	838	75	Mwehango	4	1,851	119	Masule	6	1,218	
33	Kitutu	8	2,453	77	Miwakti	5	2,307	120	Sakaa	6	1,410	
34	Meambu	4	1,827	78	Itanka	4	2,263	121	Mhane	6	1,860	
35	Nkunikhana	4	2,084	79	Sekouture	5	2,280	122	Nkundi	6	2,092	
36	Wibia	8	2,238	80	Kinyeto	5	3,991	123	Siuyu	4	2,530	
37	Msimi	5	5,580	81	Nkundu	4	2,367	124	Uyunkanya	6	2,466	
38	Msungwa	5	3,379	82	Mkimbil	4	1,883	125	Nkungukhendo	3	2,298	
39	Kirindaa	4	3,794	83	Minyaa	3	2,158	126	Ntundu	5	2,245	
40	Mhang'ana	5	2,972	84	Igauri	5	1,795	127	Ntewa	7	3,437	
41	Mtunduru	5	4,481	85	Nkonge	4	2,380	128	Mampando	6	2,824	
42	Mwaru	7	2,368	86	Mhnamo	4	4,392	129	Ligwa	4	2,258	
43	Mlandala	5	2,516	87	Merya	5	4,590	130	Mwisi	4	2,038	
TOTAL											728	339,791

MANYONI DISTRICT

No.	Village Name	Sub V/L	Pop. 1997	No.	Village Name	Sub V/L	Pop. 1997
1	Manyoni	11	5,209	37	Mbwa	6	1,856
2	Kipondoda	10	5,210	38	Mwiboo	4	2,934
3	Mwanzi	2	1,333	39	Makutupora	9	1,365
4	Muhala	3	2,256	40	Makanda	3	1,422
5	Mdunundu	3	1,703	41	Mangasai	5	1,421
6	Mitoo	4	893	42	Kitalalo	3	1,425
7	Mkwese	5	2,630	43	Kintulu	5	1,430
8	Kinangali	4	2,912	44	Luella	7	3,130
9	Aghondi	0	1,027	45	Udima	5	1,710
10	Mabondeni	4	589	46	Nkonko	3	2,555
11	Njiri	0	751	47	Mpola	5	1,489
12	Kamanyanga	0	1,449	48	Numbi	5	2,224
13	Idodyandole	5	2,250	49	Ohkela	3	2,152
14	Mbugani	6	2,172	50	Chidamasuku	2	1,081
15	Kashangyu	3	862	51	Wiramila	2	889
16	Idji Mimi	4	8,256	52	Hela	5	3,425
17	Doroto	4	1,410	53	Sasio	6	3,724
18	Kitaraka	4	1,574	54	Chikonbo	1	3,751
19	Sanjaranda	5	2,183	55	Iseske	2	971
20	Gurungu	3	1,471	56	Simbangu	3	1,164
21	Kitopeni	3	2,032	57	Igamadete	4	2,048
22	Ipande	4	2,483	58	Mpapa	5	1,837
23	Muhanga	5	1,660	59	Sanza	3	2,634
24	Damwelu	3	1,350	60	Nlope	4	2,545
25	Kalandu	3	4,988	61	Chichoho	3	1,327
26	Kilagata	1	896	62	Ikasi	5	1,118
27	Kayui	3	1,479	63	Msemambo	3	2,658
28	Makale	3	2,899	64	Saranda	3	2,788
29	Makale	3	2,074	65	Londoni	2	1,205
30	Rungwa	3	1,857	66	Hika	1	487
31	Mwamagembe	3	1,793	67	Kilimunde	6	1,247
32	Kitanula	2	410	68	Solva	5	1,709
33	Maweni	3	1,741	69	Sukamachela	6	3,169
34	Mvumi	3	1,298	70	Maji	5	2,314
35	Mgali	5	2,347	71	Sasajila	2	1,017
36	Chikuyu	5	2,762	72	Makasuku	2	1,031
TOTAL				TOTAL			
				287 147,358			

IGUNGA DISTRICT

No.	Village Name	Sub V/L	Pop. 1997	No.	Village Name	Sub V/L	Pop. 1997
1	Matinge	10	4,536	28	Kirungu	6	2,555
2	Buchenjegele	10	3,842	27	Mwandhimji	7	2,827
3	Mondo	10	2,517	28	Mwamapuli	5	2,331
4	Mwashiku	10	2,279	29	Mwajunga	0	1,375
5	Nyulu	4	2,023	30	Migongwa	10	2,082
6	Imaillo	5	2,354	31	Ntobo	5	2,720
7	Mwasunguho	3	1,543	32	Mwamioli	4	2,031
8	Ohomachankola	8	6,460	33	Mwabubele	5	1,885
9	Chibiso	4	2,499	34	Itunduru	6	3,557
10	Eulanganjiwa	8	4,061	35	Kagongwa	3	1,507
11	Ziba	10	4,923	36	Mwabaraturu	9	4,768
12	Ibologero	10	4,643	37	Mwayunge	0	3,112
13	Bulumbela	0	2,274	38	Nyandekwa	4	3,166
14	Ndembezi	9	5,293	39	Usongo	4	2,463
15	Ntigu	0	1,496	40	Itale	4	2,170
16	Khangili	0	3,176	41	Nanga	7	2,424
17	Moyofuke	7	1,817	42	Kaunbu	6	3,181
18	Nkanga	10	6,321	43	Buliyangombe	6	3,327
19	Ulaya	9	2,453	44	Icogo	4	1,351
20	Ugaka	5	2,495	45	Bukoko	5	2,445
21	Mwakabuta	5	1,855	46	Ipumbulya	7	2,932
22	Ikungupina	4	1,392	47	Itumba	0	1,239
23	Igorib	9	4,425	48	Lugubu	0	1,231
24	Mwagala	4	1,933	49	Surawizi	0	2,092
25	Kalanzale	5	1,618	50	Nkuriti	6	4,689
TOTAL				278 142,698			

Annex-2 List of Requested Items

1. Facility Construction

- 1) Borehole equipped with handpump
- 2) Borehole equipped with solar-pump
- 3) Level-2 System
- 4) Replacement of pumping equipment of the existing facilities

2. Equipment Supply

- 1) Pickup Trucks
- 2) Workshop Equipment
- 3) Water Analysis Kit
- 4) Office Equipment
- 5) Tools

Annex-3 Criteria for the Site Selection

1. Give a priority to the sites, which have potential for water resource development (e.g. quantity, quality etc.).
2. Give a priority to the sites, which will be necessary to relieve water shortage.
3. Give a priority to the sites, which have capability for operation and maintenance.
4. Proper access road must exist in order to carry construction materials and equipment into each project site.
5. On each project site, there shall be no foreseen natural and environmental or social hazards which endangers the workers safety during the construction.



Annex-4 Japan's Grant Aid Programme

1. Grant Aid Procedures

a. Japan's Grant Aid Program is executed through the following procedures.

- Application (A request made by the recipient country)
- Study (Basic Design Study conducted by JICA)
- Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)
- Determination of Implementation (Exchange of Notes between the Governments of Japan and the recipient country)

b. Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study) using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study Report prepared by JICA, and the results are then submitted to the Cabinet for an approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and recipient country.

Finally, for the implementation of the project, JICA will assist the recipient country in such matters as preparing tenders, contract and so on.

2. Basic Design Study

a. Contents of the study

The aim of the Basic Design Study (hereafter referred to as "the Study") conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- a) Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- c) Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- d) Preparation of a basic design of the Project.
- e) Estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whether measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

b. Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by

interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consultant firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

a. Grant Aid

The Grant Aid Programme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

b. Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

c. Period

"The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

d. Purchase of the Products and or Services

Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely, consulting, constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

e. Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

f. Undertakings required of the Government of the Recipient Country
(As described in ANNEX 5)

g. Proper Use

The recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

h. Re-export

The products purchased under the Grant Aid should not be re-exported from the recipient country.

i. Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized bank in Japan (hereinafter referred to as "the

Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

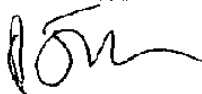
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.



Annex-5 Necessary Measures to be taken by the Tanzanian side

The following necessary measures should be taken by the Tanzanian side on condition that the Grant Aid by the Government of Japan is extended to the Project:

1. To provide data and information necessary for the Project.
2. To prepare the land for the Project and secure the authority to build facilities.
3. To secure the water rights for the communities in the project.
4. To provide proper access road to the Project area, if necessary.
5. To remove existing facilities, if necessary.
6. To bear commissions to the Japanese bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commission.
7. To ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid.
8. To provide warehouse for storage of spare parts and other equipment procured by the Project.
9. To undertake incidental outdoor works such as security of the sites, if necessary.
10. To exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Tanzania with respect to the supply of the products and services under the verified contracts.
11. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Tanzania and stay therein for the performance of their work in accordance with the relevant laws and regulations of Tanzania.
12. To provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary.
13. To maintain and use properly and effectively the facilities constructed and the equipment provided under the Project.
14. To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.
15. To assign the necessary staff and secure the necessary budget for operation and maintenance of the equipment purchased under the Grant Aid.



**APPENDIX - 4 (2) MINUTES OF DISCUSSIONS ON THE EXPLANATION
OF DRAFT BASIC DESIGN STUDY**

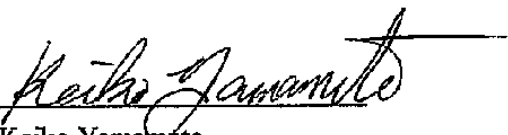
MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY ON
THE PROJECT FOR THE RURAL WATER SUPPLY PROJECT IN HANANG, SINGIDA
RURAL, MANYONI AND IGUNGA DISTRICTS
IN
THE UNITED REPUBLIC OF TANZANIA
(EXPLANATION ON DRAFT FINAL REPORT)

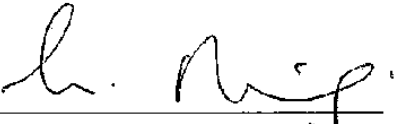
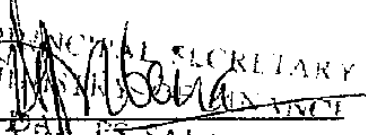
In April 2000, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on THE PROJECT FOR THE RURAL WATER SUPPLY PROJECT IN HANANG, SINGIDA RURAL, MANYONI AND IGUNGA DISTRICTS (hereinafter referred to as "the Project") to the United Republic of Tanzania (hereinafter referred to as "Tanzania"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft final report of the study.

In order to explain and to consult Tanzanian side on the components of the draft final report, JICA sent to Tanzania the Draft Final Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Ms. Keiko Yamamoto, Senior Advisor, JICA, from April 11 to April 18 2001.

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

Dar es Salaam, April 17, 2001


Keiko Yamamoto
Leader,
Basic Design Study Team ,
Japan International Cooperation Agency


Bakari A. Mahiza
Permanent Secretary,
Ministry of Water and Livestock
Development,
Tanzania

For **PERMANENT SECRETARY**
MINISTRY OF WATER AND LIVESTOCK DEVELOPMENT
DAR ES SALAAM
P. J. Mbena
Commissioner for External Finance
Ministry of Finance
Tanzania

ATTACHMENT

1. Components of the Draft Final Report

The Tanzanian side agreed and accepted in principle the components of the draft final report explained by the Team. After discussions with the Team, the Tanzanian side finally confirmed the items described in Annex-I (Annex-I-1 :Facilities, Annex-I-2:Equipmet).

2. Japan's Grant Aid scheme

The Tanzanian side understands the Japan's Grant Aid Scheme and the necessary measures including budget allocation to be taken by the Government of Tanzania as explained by the Team based on the draft final report and Annex-4 and Annex-5 of the Minutes of Discussions signed by both parties on April 19, 2000.

3. Schedule of the Study

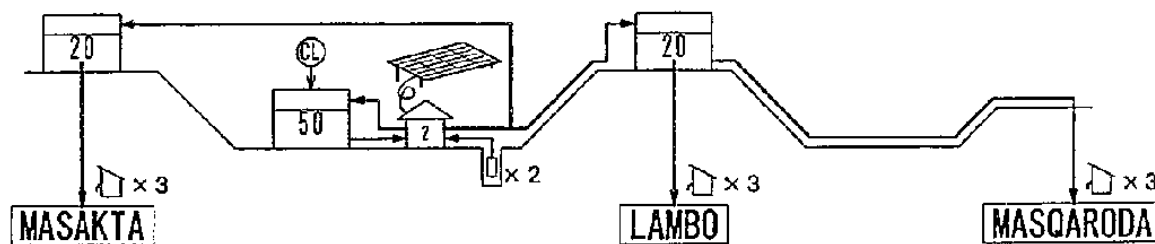
JICA will complete the final report in accordance with the confirmed items and send it to Tanzania by August 2001.

4. Other relevant issues

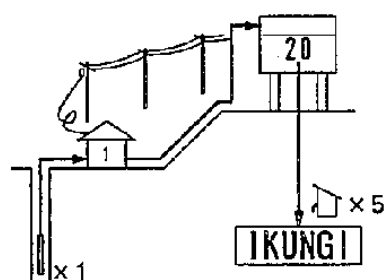
- (1) Tanzanian side explained that Ministry of Water was reorganized to Ministry of Water and Livestock Development in November ,2000.
- (2) Tanzanian side requested that the rest of six(6) sites which are not affected by fluoride should be included in the Project. Japanese side responded that it is necessary first to confirm proper operation and maintenance for one water supply system in each district.
- (3) Tanzanian side requested to add vehicle and truck into equipment list. Japanese side explained that it is difficult because of Japanese grant aide's guideline.
- (4) Tanzanian side requested the consultant services as "Soft-component" as follows;
 - a) Capacity building on operation and maintenance
 - 1) Promotion of community participation
 - 2) Sanitation and hygiene education
 - 3) Operation ,management and maintenance of the water supply system
 - 4) Training of district water engineering staff
 - b) Fluoride reduction support at Katesh ,Hanang district.
- (5) Tanzanian side understood the important role of district water engineers and community participation for the sustainability of the Project.
- (6) In addition to "Soft-component", Tanzanian side requested to support fluoride removal activity under JICA's cooperation. Japanese side expressed to convey the request to related organizations in Japan.
- (7) Both sides agreed that the design of the facilities and equipment list in draft final report are confidential and should not be duplicated or released to any outside parties.

CONCEPTUAL DESIGN OF 4 WATER SUPPLY SYSTEMS IN HANANG, SINGIDA RURAL, IGUNGA AND MANYONI

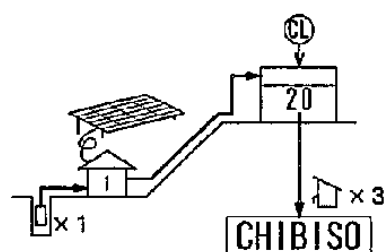
Hanang



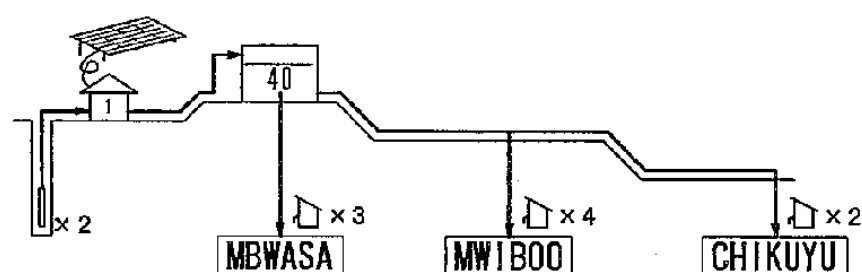
Singida Rural



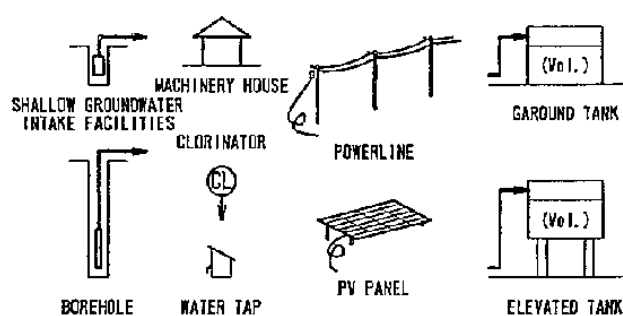
Igunga

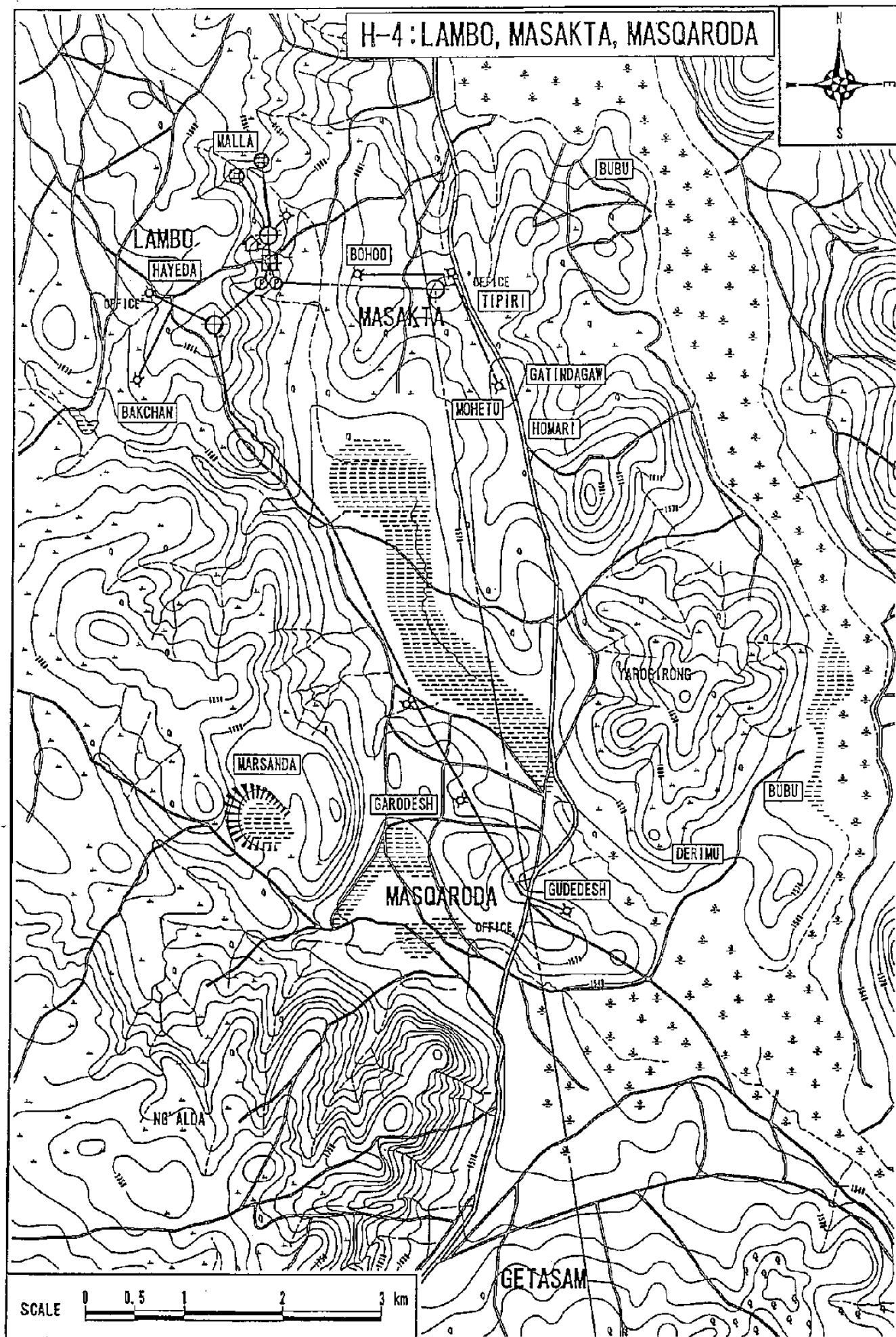


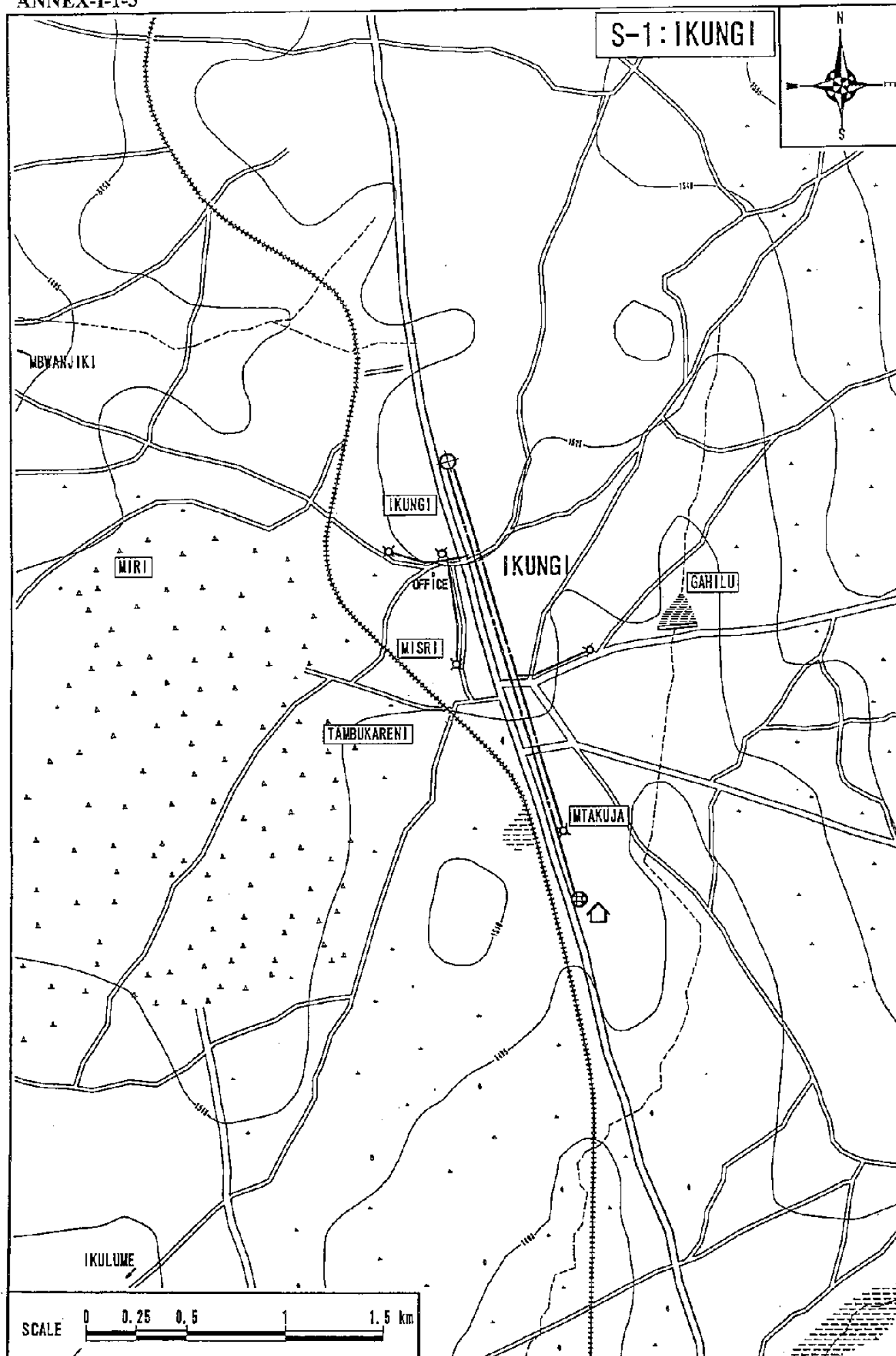
Manyoni

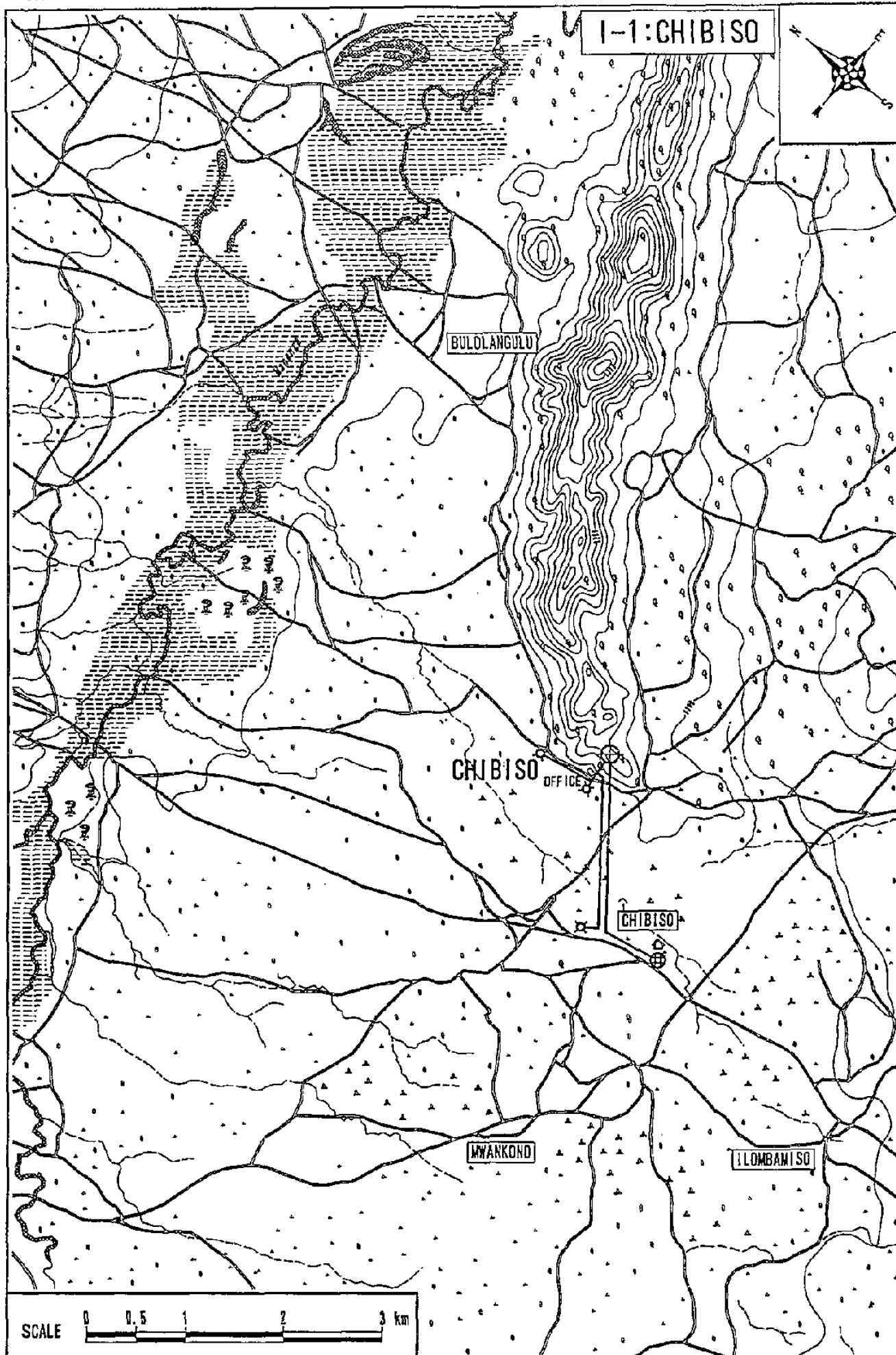


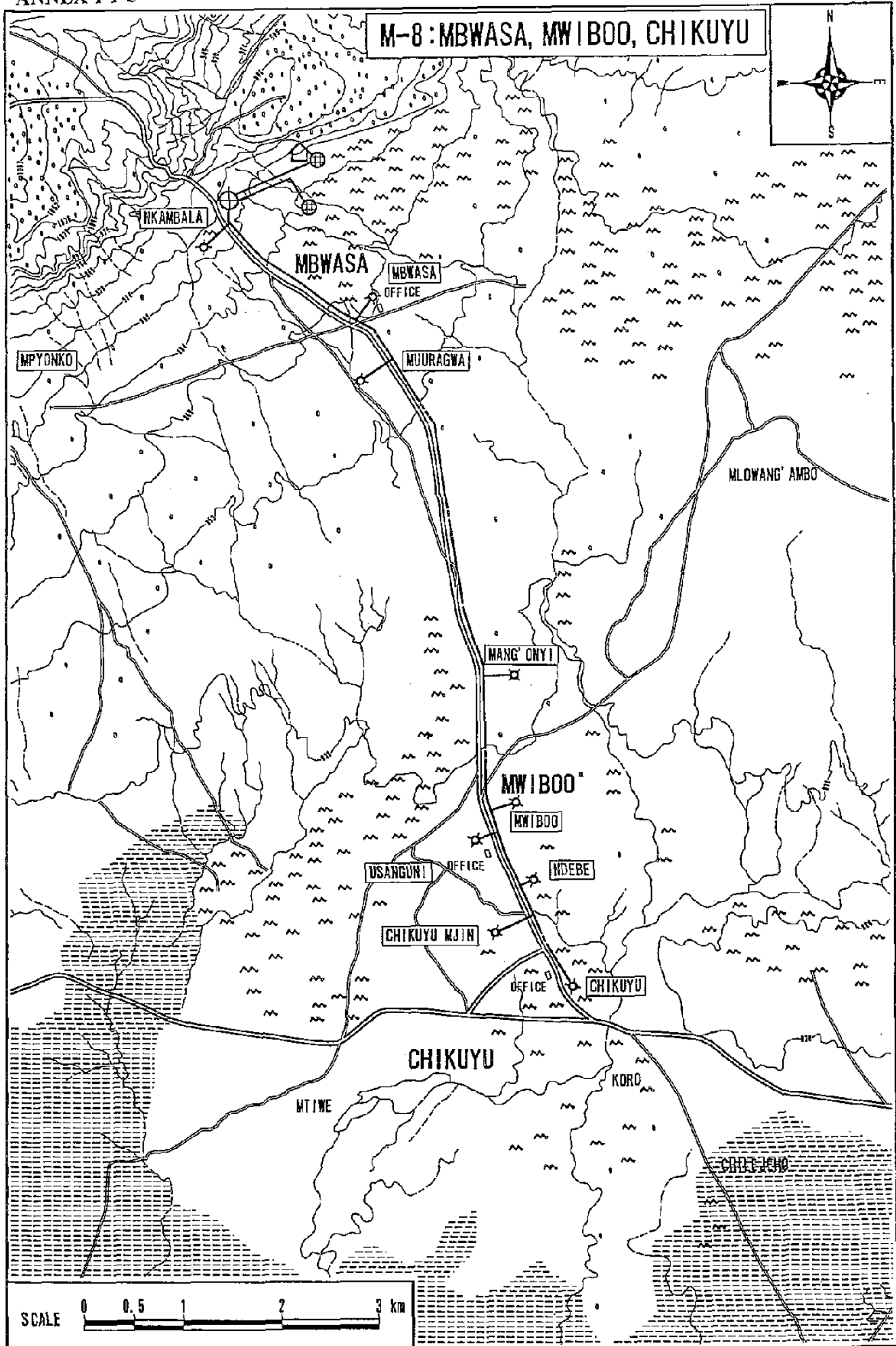
District	SOURCE	RESERVER TYPE
Hanang	SHALLOW GROUNDWATER INTAKE FACILITIES x2	GROUND TANK x3
Singida Rural	BOREHOLE x1	ELEVATED TANK x1
Igunga	SHALLOW GROUNDWATER INTAKE FACILITIES x1	GROUND TANK x1
Manyoni	BOREHOLE x2	GROUND TANK x1











ANNEX-I-2

LIST OF EQUIPMENT

a. Equipment for the O&M in District levels (District Water Engineer's Office)

	Description / Purpose	Qty	Remarks
a. Motorcycle	Off road type / Routin inspection of the facilities	4	One for each District
b. Tools for O&M (for plumbing and relating works)	Electric welder, maintenance tools, electric appliances (bolt threading machine, etc.), shovel, safety tools	4	One for each District
c. Water quality testers	Water quality tester (for Fe, Cl, NO3, residual chlorine, etc.), EC meter, pH meter, water level meter	4	One for each District
d. Radio set	For the communications from water supply systems	4	One for each District
e. Warehouse	Container type	4	One for each District
f. Others	Megaphone	4	One for each District

b. Equipment for the O&M of water supply facilities (Water Station)

a. Motorcycle	Off road type / Routin inspection of the facilities	4	One for each system
b. Bicycle	For collection of water fees and community awareness activities	26	One for each water point
c. Tools for O&M (for plumbing and relating works)	Maintenance tools (for valve, tap), shovel, safety tools, etc.	4	One for each system
d. Equipment for community participation and hygiene education	Laminator, office tools (stationery, etc.)	4	One for each system
e. Radio set	For the communications to district water engineer's office	4	One for each system
f. Water level meter	To measure the water level	4	One for each water source

c. Equipment for removal of fluoride activities (Hanang District Water Engineer's Office)

a. Motorcycle	Off road type / Site visit (Data collection)	1	
b. Water quality testers	Water test kits, Ion meter (F,pH), stirrer, flask, beaker, chemicals, etc.	1	
c. Equipment for hygiene education (activities for research and advertisement)	Computer, printer, megaphone, etc.	1	
d. Equipment to produce bone charcoal	Furnace for charcoal, crusher, sieve, etc.	1	
e. Warehouse	Container type	1	

APPENDIX-5 Cost Estimation Borne by the Recipient Country

The costs to be borne by the Tanzania side are (1) personnel expenses and related costs for counterparts involved in water supply construction, operation and maintenance awareness programs, and activities on fluoride removal ; and (2) costs for making connections from the main power line and preparation of the land area for the construction works.

Description	
Personnel expenses for Counterparts	Approx. 8,640,000Tsh
Costs for power line connection and preparing land for construction	Approx. 2,000,000Tsh
Total	Approx. 10,640,000Tsh

APPENDIX-6 Other Relevant Data

- (1) Results of 1st Field Survey (Fluoride Value)**
- (2) Water Quality Analysis of 2nd Field Survey**
- (3) Daylight Hours and Solar Irradiation
in Project Areas**
- (4) Layout Plan of Water Supply System in 6 Areas
Daylight Hours and Solar Irradiation**
- (5) Result of Village Survey**
- (6) Result of House Hold Survey in Project Areas**
- (7) Proposal on the Soft Component Programme**

PPENDIX-6(1) Results of 1st Field Survey in Hanang District (Fluoride Value)

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey				Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	pH	
1	6	Garawja	4,438	wh	0.99	107.90	7.14	bh
	2	Dang'aida	580	wh	5.00			
	10	Wandela	420	wh	1.75			
2	8	Hirbadaw	3,007	wh	0.48	17.20	6.70	bh
	9	Mwanga	3,229	wh	3.00			
3	26	Sirop	1,870	bh	0.40	45.70	6.85	bh
4	31	Lambo	2,390	wh	0.63	72.20	6.83	sw
	30	Masakta	3,584	sp	2.70			
	32	Masqaroda	2,504	bh	8.10			
5	7	Bassodesh	1,992	Dam	1.10	7.88	7.88	dam
				bh	2.30			
6	16	Waranga	1,021	wh	0.23	36.30	6.36	sw
7	29	Gidagharabuk	618	R	0.49	30.80	8.36	sw BuBu River
8	4	Laghanga	1,818	dam	1.32	16.27	8.20	dam
				dam	2.00			
	3	Dajamet	774	no water source				
	5	Gawidu	1,801	wh	5.60			
9	25	Bassotughang	1,480	lake	0.64	28.80	8.50	lake
	21	Mara	1,976	bh	2.30			
	22	Gidahababeig	2,290	bh	5.00			
	24	Hidet	2,000	sw	5.10			
10	15	Gisambalang	1,626	wh	0.51	26.40	7.22	sw
11	23	Endasaboghechan	2,290	wh	0.33	17.30	6.44	sw
12	27	Matangarinu	2,280	wh	0.60	29.20	7.16	sw
13	14	Dirma	2,190	wh	0.52	17.00	7.06	sw
14	13	Dumbeta	1,370	wh	1.56	22.10	8.12	sw
15	28	Simbay	621	wh	1.22	13.18	10.00	sw
16	18	Diloda	1,385	wh	0.43	60.10	5.99	sw
17	1	Mulbadaw	3,696	wh	2.40	8.63	98.60	-
				R	5.00	11.36	9.22	
18	11	Gatanuwas	1,471	dam	4.30	34.90	8.30	-
19	12	Gidika	1,348	wh	2.10	130.30	10.68	-
20	17	Murero	1,388	wh	4.80	296.20	7.77	-
21	19	Mingenyi	2,424	dam	2.10	278.00	8.88	-
22	20	Ishponga	1,494	wh	7.00	132.10	7.05	-
23	33	Getasum	1,126	wh	6.50	86.80	10.88	-

wh:water hole
bh:borehole

R:River
ch:charco

sp:spring
sw:shallow well

PPENDIX-6(1) Results of 1st Field Survey in Singida Rural District (Fluoride Value)

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey			Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	
1	1	Ikungi	2,646	bh	0.62	72.20	bh
2	10	Mkiwa	1,827	bh	0.51	59.00	bh
3	21	Isseku	1,797	bh	0.40	130.00	bh
4	37	Msimi	5,580	sw	0.16	14.20	bh
5	113	Mungaa	2,532	bh	0.31	34.30	bh
6	117	Unyamighumbi	2,809	bh	0.29	38.40	bh
7	8	Issuna	3,303	dam	0.32	12.00	sw, bh
8	30	Matyuku	1,691	bh	0.40	126.00	bh
				bh	1.70	286.00	bh
9	38	Msungwa	3,379	se	0.16	15.60	bh
10	45	Msosa	1,421	wh	0.89	77.00	bh
11	104	Mkhola	2,379	sp	0.57	85.00	sp
				sw	2.30	87.00	sp
12	105	Sughana	2,693	sp	0.58	41.00	sp
13	12	Samaka	3,502	sw	0.12	33.90	sw, bh
14	16	Mang'onyi	2,102	wh	1.00	81.00	-
15	19	Sambaru	1,273	sp	8.70	350.00	-
				wh	1.00	20.00	-
16	22	Nkoiree	3,006	wh	1.21	67.00	sw
17	23	Unyangwe	2,234	sw	0.13	26.00	sw
18	24	Chungu	2,996	sw	0.50	102.10	sw
19	25	Minyughe	2,225	sw	1.18	148.70	sw
20	27	Muhintiri	2,929	wh	0.86	36.00	sw
21	31	Utaho	2,832	sw	0.09	7.00	sw
						35.00	sw
22	33	Kituntu	2,453	sw	0.52	24.00	sw
				sp	0.52	30.00	sw
23	34	Msambu	1,827	sw	0.14	6.00	sw
24	35	Nkuninkana	2,094	sw	0.33	25.30	sw
25	36	Wibia	2,238	sw	0.40	37.00	-
26	39	Kintandaa	3,794	sw	0.01	19.25	sw
27	40	Mnang'ana	2,972	sw	0.08	21.00	sw
28	41	Mtunduru	4,481	sw	0.09	19.21	sw
29	43	Mlandala	2,516	wh	0.36	18.97	sw
30	44	Igombwe	2,049	wh	1.00	79.50	sw
31	46	Mgungira	2,183	wh	0.43	52.80	sw
32	47	Ufana	1,390	wh	0.35	17.48	sw
33	50	Mwasutianga	1,357	sw	0.20	66.70	sw
34	86	Mghamo	4,392	sw	0.13	25.70	sw
35	90	Kinyagigi	2,514	sw	3.80	19.16	sw
36	101	Ghata	3,638	sw	1.05	12.70	sw
37	106	Unyampana	1,270	sp	0.46	17.00	sw
				sw	0.16	35.00	sw
38	107	Mughunga	1,195	wh	0.47	45.00	sw
39	114	Minyinga	2,163	sw	0.57	46.40	sw
40	115	Kinku	2,517	sw	0.14	272.00	sw
41	116	Kimbwi	2,318	sw	0.34	43.80	sw
				dam	2.00	86.10	
42	123	Siuyu	2,530	sw	0.04	9.90	sw
43	124	Unyankanya	2,466	sw	0.05	22.00	-
44	2	Ighuka	3,256	sw	0.12	16.40	sw
				R	2.80	117.00	sw
45	6	Matare	3,198	sw	0.55	28.70	sw
46	7	Mahambe	1,360	sw	0.24	43.40	sw
47	13	Ujaire	1,631	sw	0.22	43.40	sw
48	17	Tupendane	1,570	wh	0.10	98.90	sw
49	20	Ihanja	3,814	sw	0.08	16.00	sw
50	29	Mpetu	1,320	wh	0.35	14.00	sw

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey			Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	
51	32	Isalanda	838	sp	0.80	29.00	sw
				sw	0.57	25.00	sw
				bh	4.00	128.00	sw
52	52	Malolo	3,048	wh	0.67	102.80	sw
53	55	Kijota	1,716	sw	0.37	57.00	sw
54	74	Mrama	4,382	wh	0.66	31.70	sw
55	80	Kinyeto	3,991	sw	0.16	31.80	sw
56	81	Ntunduu	2,367	sw	0.77	11.20	sw
57	83	Minyaa	2,158	sw	0.78	15.90	sw
58	84	Igauri	1,795	wh	0.93	38.10	sw
59	85	Ntonge	2,380	sw	0.13	37.70	sw
60	3	Ulyampiti	2,103	wh	2.10	70.70	-
61	4	Matongo	2,897	bh	3.80	77.40	-
				sw	3.00	380.00	-
				sp	7.60	102.70	-
62	5	Muongano	1,444	sp	1.40	49.20	-
				sw	2.30	82.30	-
63	9	Choda	1,325	bh	0.99	214.00	bh
64	11	Nkuhi	2,199	bh	2.60	102.80	-
65	14	Kipumbuiko	2,208	sw	1.50	78.00	-
				R	3.90	107.00	-
66	15	Mkinya	1,662	sw	1.60	18.30	-
67	18	Mwau	4,039	wh	2.30	27.70	-
68	26	Misake	2,810	wh	2.00	45.40	
69	28	Mnyange	1,838	wh	2.30	121.00	-
70	42	Mwaru	2,368	bh	2.00	163.40	-
71	48	Iyumbu	2,724	wh	1.70	39.30	-
72	49	Irisya	2,608	sw	0.08	390.00	-
73	51	Mtinko	3,910	bh	5.00	205.00	-
74	53	Mughanga	2,318	wh	1.86	172.80	-
75	54	Mpambaa	2,756	wh	1.86	142.20	-
76	56	Nduu	1,992	WH	2.00	50.70	-
77	57	Minyenye	4,034	wh	5.00	242.00	-
78	58	Ikiwu	3,803	wh	4.70	24.70	-
79	59	Makuro	2,568	wh	4.60	75.10	-
80	60	Ghalunyangu	2,454	wh	2.00	88.40	-
81	61	Mpipiti	4,043	wh	5.00	215.00	-
82	62	Mpoku	3,216	wh	2.00	11.05	-
83	63	Matumbo	3,090	sw	2.80	92.40	-
84	64	Mkenge	2,389	wh	5.00	95.30	-
85	65	Migugu	2,437	wh	5.00	26.40	-
86	66	Ughandi 'B'	2,501	wh	5.00	132.40	-
87	67	Nkwae	1,899	wh	5.00	17.57	-
88	68	Laghanida	2,849	bh	5.00	232.00	-
89	69	Misinko	3,658	bh	5.00	121.00	-
90	70	Ntondo	1,473	bh	6.70	84.20	-
91	71	Msisi	3,513	wh	5.00	96.90	-
92	72	Senene Mfuru	1,071	bh	5.00	214.00	-
93	73	Madamigha	3,679	wh	5.00	140.00	-
94	75	Mwahango	1,851	wh	2.90	20.80	-
95	76	Ilongero		wh	2.00	34.70	-
96	77	Mwakiti	2,307	dam	5.90	26.50	-
97	78	Itanka	2,263	wh	5.00	40.80	-
98	79	Sekoutuure	2,280	sw	0.77	30.00	-
99	82	Mkimbii	1,883	sw	0.48	42.10	-
100	87	Merya	4,590	bh	5.00	31.60	-
101	88	Mvae	4,033	wh	5.00	98.30	-
102	89	Makhandi	3,125	sw	0.70	174.20	-
103	91	Mwanyonye	3,060	sw	2.00	32.60	-

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey			Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	
104	92	Ikanoda	2,409	wh	5.00	167.70	-
105	93	Mjughuda	3,934	wh	5.00	120.60	-
106	94	Msimimihi	3,549	wh	5.00	100.10	-
107	95	Mdilu	2,819	wh	3.30	103.30	-
108	96	Mwasauya	3,463	wh	4.80	96.60	-
109	97	Mgamu	4,093	wh	5.00	165.00	-
110	98	Mipilo	4,221	bh	5.00	117.30	-
111	99	Mangida	3,351	wh	4.20	157.80	-
112	100	Sefunga	2,705	wh	1.05	127.20	-
113	102	Msange	4,180	bh	5.00	120.90	-
114	103	Mgori	1,640	dam	2.50	103.00	-
115	108	Nduamughanga	1,356	wh	5.00	70.00	-
116	109	Ngimu	3,995	wh	5.00	47.90	-
117	110	Mwighanji	2,938	wh	5.00	183.70	-
118	111	Itaja	5,249	ch	5.00	33.90	-
119	112	Pohama	3,175	dam	2.00	9.24	-
120	118	Misughaa	1,427	bh	2.60	156.60	-
121	119	Msule	1,218	wh	1.20	59.10	-
122	120	Sakaa	1,410	wh	0.15	30.90	-
123	121	Mnane	1,860	wh	5.00	26.70	-
124	122	Nkundi	2,092	wh	0.13	74.70	-
125	125	Nkunguakihendo	2,298	wh	2.00	13.10	-
126	126	Ntuntu	2,245	sw	0.21	25.20	-
127	127	Ntewa	3,437	wh	0.10	10.40	-
128	128	Mampando	2,824	wh	2.00	221.00	-
129	129	Lighwa	2,258	sw	0.17	56.30	-
130	130	Mwisi	2,038	sw	0.05	38.90	-

R:River
ch:charco

sp:spring
sw:shallow well

PPENDIX-6(1) Results of 1st Field Survey in Manyoni District (Fluoride Value)

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey			Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	
1	1	Manyoni	5,209	bh	0.76	70.00	bh
				bh	0.95	261.00	bh
				bh	2.40	400.00	bh
2	3	Mwanzi	1,333	bh	0.41	100.00	bh
3	4	Muhala	2,256	bh	0.76	70.00	bh
				sw	0.60	16.00	bh
4	6	Mitoo	893	bh	0.59	99.00	bh
5	9	Aghondi	1,027	bh	0.77	62.00	bh
6	15	Kashangu	862	sp	0.16	8.00	bh
				bh	1.00	79.00	bh
7	17	Doroto	1,410	bh	0.50	164.00	bh
				-	0.51	261.00	bh
				bh	0.39	147.00	bh
8	21	Kitopeni	2,032	bh	0.53	138.00	bh
				bh	1.25	90.00	bh
9	24	Damwelu	1,350	bh	0.54	122.20	bh
10	25	Mgandu	4,988	bh	0.20	142.30	bh
11	27	Itagata	1,479	bh	1.57	256.00	bh
				bh	0.15	32.00	bh
				sp	-	40.00	bh
12	28	Kayui	2,899	bh	0.27	76.30	bh
13	29	Makale	2,074	bh	0.07	41.50	
14	37	Mbwasa	1,866	bh	0.93	113.00	bh
15	46	Nkonko	2,655	bh	1.27	182.00	bh
16	65	Londoni	1,205	bh	0.31	80.00	bh
17	5	Mdunundu	1,703	wh	0.15	10.00	bh
18	8	Kinangali	2,912	wh	0.39	19.00	sw
19	11	Njirii	751	wh	0.18	75.00	sw
20	12	Kamenyanga	1,449	sw	0.31	24.00	sw
21	20	Gurungu	1,471	wh	1.93	133.00	sw
				wh	0.24	51.10	sw
22	26	Kalangali	696	wh	0.04	12.80	sw
23	39	Makutupora	1,365	sp	0.23	153.00	sw
				dam	0.77	16.00	sw
				sp	0.98	60.00	sw
24	53	Sasilo	3,734	wh	0.41	37.00	-
25	54	Chikombo	3,751	bh	2.00	433.00	-
26	56	Simbanguru	1,164	wh	0.44	26.00	sw
27	7	Mkwese	2,630	wh	0.81	55.00	-
				bh	0.32	243.00	-
28	10	Mabondeni	599	wh	3.00	27.00	-
29	33	Maweni	1,741	wh	0.33	10.00	sw
30	34	Mvumi	1,298	wh	0.75	19.00	-
31	35	Ngaiti	2,347	sw	0.41	108.00	sw
32	38	Mwiboo	2,934	sp	0.57	47.00	sw
				wh	1.30	47.00	sw
33	40	Makanda	1,422	wh	0.84	53.00	sw
34	41	Mangasai	1,421	wh	0.51	58.00	sw
35	42	Kitalalo	1,425	wh	0.32	29.00	sw
36	43	Kintinku	1,430	sw	0.23	15.00	-
				dam	0.49	8.00	-
37	44	Lusilile	3,130	bh	4.30	450.00	-
38	50	Chidamsulu	1,081	wh	0.72	28.00	-
39	57	Igwamadete	2,048	wh	0.23	7.00	-
40	60	Ntope	2,545	wh	0.73	68.00	-
41	2	Kipondoda	5,210	bh	2.40	400.00	

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey			Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	
42	13	Idodyandole	2,250	bh	1.55	-	-
43	14	Mbugani	2,172	bh	1.18	217.00	-
44	16	Itigi Mjini	8,258	bh	1.56	220.00	-
				sp	0.86	180.00	-
				bh	1.81	240.00	-
				sw	0.53	256.00	-
				-	0.20	340.00	-
45	18	Kitaraka	1,574	bh	0.19	244.00	-
				sw	0.53	243.00	-
46	19	Sanjaranda	2,183	sw	1.20	265.00	-
				bh	0.20	238.00	-
				bh	0.20	270.00	-
47	22	Ipande	2,488	bh	2.00	147.00	-
48	23	Muhanga	1,660	bh	2.00	678.00	-
49	30	Rungwa	1,857	wh	0.08	4.00	-
				dam	0.15	13.00	-
50	31	Mwamagembe	1,793	wh	0.32	20.00	-
51	32	Kitanula	410	wh	0.17	15.00	-
52	36	Chikuyu	2,762	sp	1.88	171.10	-
53	45	Udimaa	1,710	bh	2.00	180.00	-
				bh	1.43	340.00	-
54	47	Mpola	1,489	bh	2.10	136.00	-
55	48	Ntumbi	2,224	wh	0.34	230.00	-
56	49	Chikola	2,152	bh	4.10	153.00	-
57	51	Winamila	889	wh	1.18	205.00	-
58	52	Heka	3,425	bh	1.19	255.00	-
59	55	Isseke	971	bh	1.82	150.00	-
60	58	Mpapa	1,837	bh	6.20	205.00	-
61	59	Sanza	2,634	bh	1.93	266.00	-
62	61	Chicheho	1,327	wh	1.00	30.00	-
63	62	Ikasi	1,118	bh	2.00	323.00	-
64	63	Msemembo	2,658	wh	5.00	57.20	-
65	64	Saranda	2,768	bh	0.50	82.80	-
66	66	Hika	467	wh	5.00	53.80	-
67	67	Kilimatinde	1,247	-	2.70	239.00	-
68	68	Solya	1,709	bh	2.10	105.70	-
				wh	0.41	94.70	-
69	69	Sukamahela	3,169	bh	2.00		-
70	70	Majiri	2,314	ch	1.00		-
71	71	Sasajila	1,017	wh	0.43	73.00	-
72	72	Makasuku	1,031	wh	0.53	26.00	-

R:River
ch:charco

sp:spring
sw:shallow well

PPENDIX-6(1) Results of 1st Field Survey in Igunga District (Fluoride Value)

No.	Requested Site No.	Site Name	Population (1997)	Data from the 1st Field Survey				Proposed Water Source
				Sampling Source	F (mg/l)	EC (mS/m)	pH	
1	9	Chibiso	2,499	wh	0.20	20.60	6.24	sw
2	26	Kinungu	2,555	wh	0.64	83.10	7.86	sw
	28	Mwamapuli	2,331	wh	0.64			
3	45	Bukoko	2,445	wh	0.20	19.50	6.00	sw
4	46	Ipumbulya	2,932	wh	0.87	46.50	7.41	sw
5	48	Lugubu	1,231	wh	0.15	15.60	6.62	sw
	47	Itumba	1,239	wh	0.39			
6	5	Ngulu	2,023	sw	1.57	86.10	6.98	sw
	6	Imalilo	2,354	ch	0.85			
	31	Ntobo	2,720	ch	0.31			
	33	Mwabubele	1,885	ch	0.22			
7	10	Bulangamilwa	4,061	wh	0.35	106.10	7.22	sw
8	13	Bulumbela	2,274	wh	0.53	39.10	6.60	sw
9	16	Kitangili	3,176	wh	0.06	15.60	6.19	sw
10	20	Ugaka	2,495	wh	0.15	29.00	6.31	sw
11	21	Mwakabuta	1,855	wh	0.15	14.40	5.65	sw
12	22	Ikunguipina	1,392	wh	0.47	18.00	5.76	sw
13	35	Kagongwa	1,307	wh	0.45	50.60	7.95	sw
14	40	Itale	2,170	wh	0.16	23.50	6.58	sw
15	1	Matinje	4,536	ch	0.43	15.60	8.52	ch
16	2	Buchenjegele	3,842	ch	0.58	33.00	8.14	ch
17	3	Mondo	2,517	ch	0.59	23.40	10.03	ch
18	4	Mwashiku	2,279	wh	1.39	54.40	8.40	ch
19	7	Mwansugho	1,543	ch	0.14	22.20	7.07	ch
20	11	Ziba	4,923	bh	7.90	154.60	7.30	ch
21	12	Ibologero	4,643	bh	9.20	145.20	7.30	ch
22	15	Ntigu	1,496	wh	1.53	86.00	7.55	ch
23	17	Moyofuke	1,817	bh	4.10	217.30	7.04	ch
24	23	Igurubi	4,425	ch	0.68	56.20	6.78	ch
25	24	Mwagala	1,933	ch	1.45	40.60	9.10	ch
26	25	Kalangale	1,618	wh	5.30	189.10	8.85	ch
27	27	Mwandihimiji	2,827	ch	1.05	83.10	7.86	ch
28	29	Mwajilunga	1,375	wh	5.90	36.00	7.94	ch
29	32	Mwamloli	2,031	ch	0.22	15.80	9.18	ch
30	34	Itunduru	3,557	ch	0.13	8.30	7.47	ch
31	36	Mwabaraturu	4,768	ch	0.13	15.80	9.18	ch
32	38	Nyandekuwa	3,166	sw	5.10	106.70	7.53	ch
33	39	Ussongo	2,463	bh	5.80	106.00	7.14	ch
34	42	Kaumbu	3,181	ch	0.52	23.60	7.40	ch
35	49	Sungwizi	2,692	wh	0.08	16.10	8.15	ch
36	50	Nguriti	4,689	wh	0.20	39.50	5.33	ch
37	37	Mwayunge	3,112	Dam	1.26	31.70	8.61	Igunga Township
38	8	Chomachankola	6,460	wh	0.23	66.00	6.52	Rehabitation by TZ Government
39	14	Ndembezi	5,293	sw	0.17	15.80	5.84	Existing Water Supply Facility
40	18	Nkinga	6,321	Dam	0.24	26.50	8.60	Existing Water Supply Facility
41	19	Ulaya	2,453	Dam	0.24	26.50	8.60	Existing Water Supply Facility
42	30	Migongwa	2,092	Dam	1.26	31.70	8.61	Existing Water Supply Facility
43	41	Nanga	2,424	Dam	1.26	31.70	8.61	Existing Water Supply Facility
44	43	Bulyangombe	3,327	Dam	1.26	31.70	8.61	Existing Water Supply Facility
45	44	Igogo	1,951	Dam	1.26	31.70	8.61	Existing Water Supply Facility

wh:water hole

bh:borehole

R:River

ch:charco

sp:spring

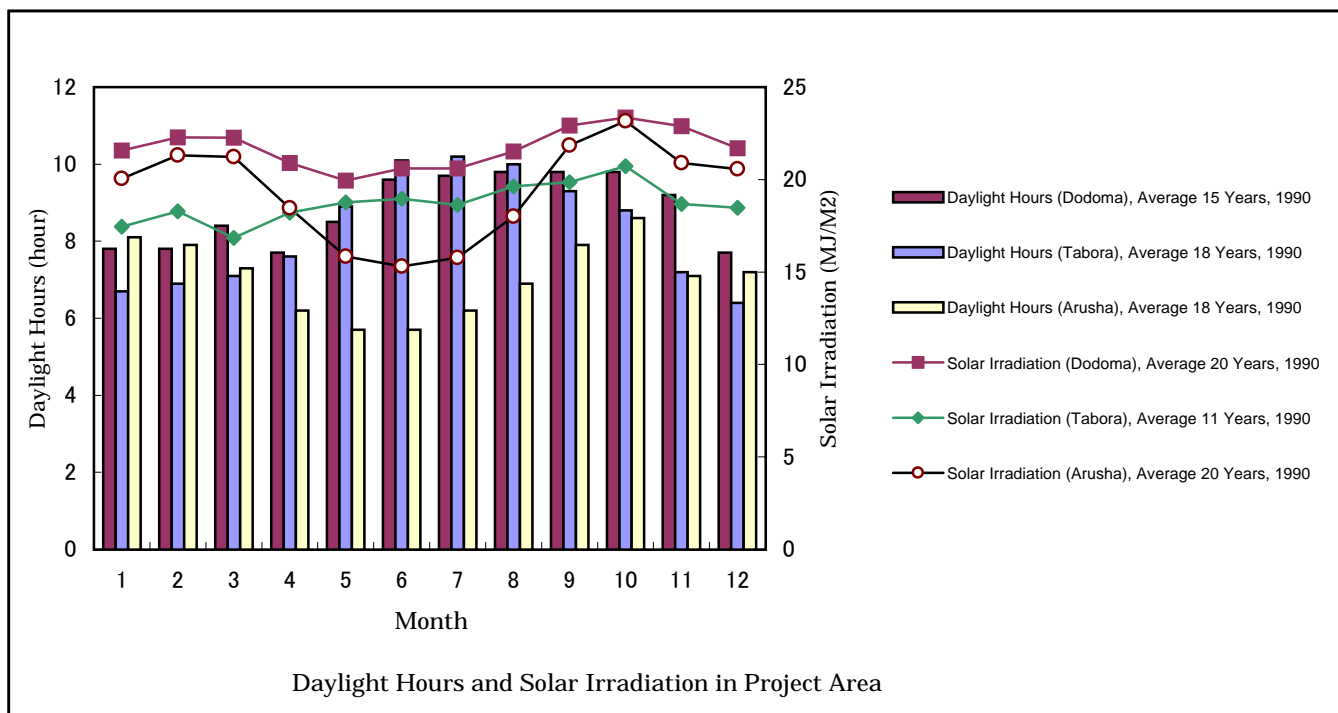
sw:shallow well

APPENDIX-6(2) Water Quality Analysis of 2nd Field Survey

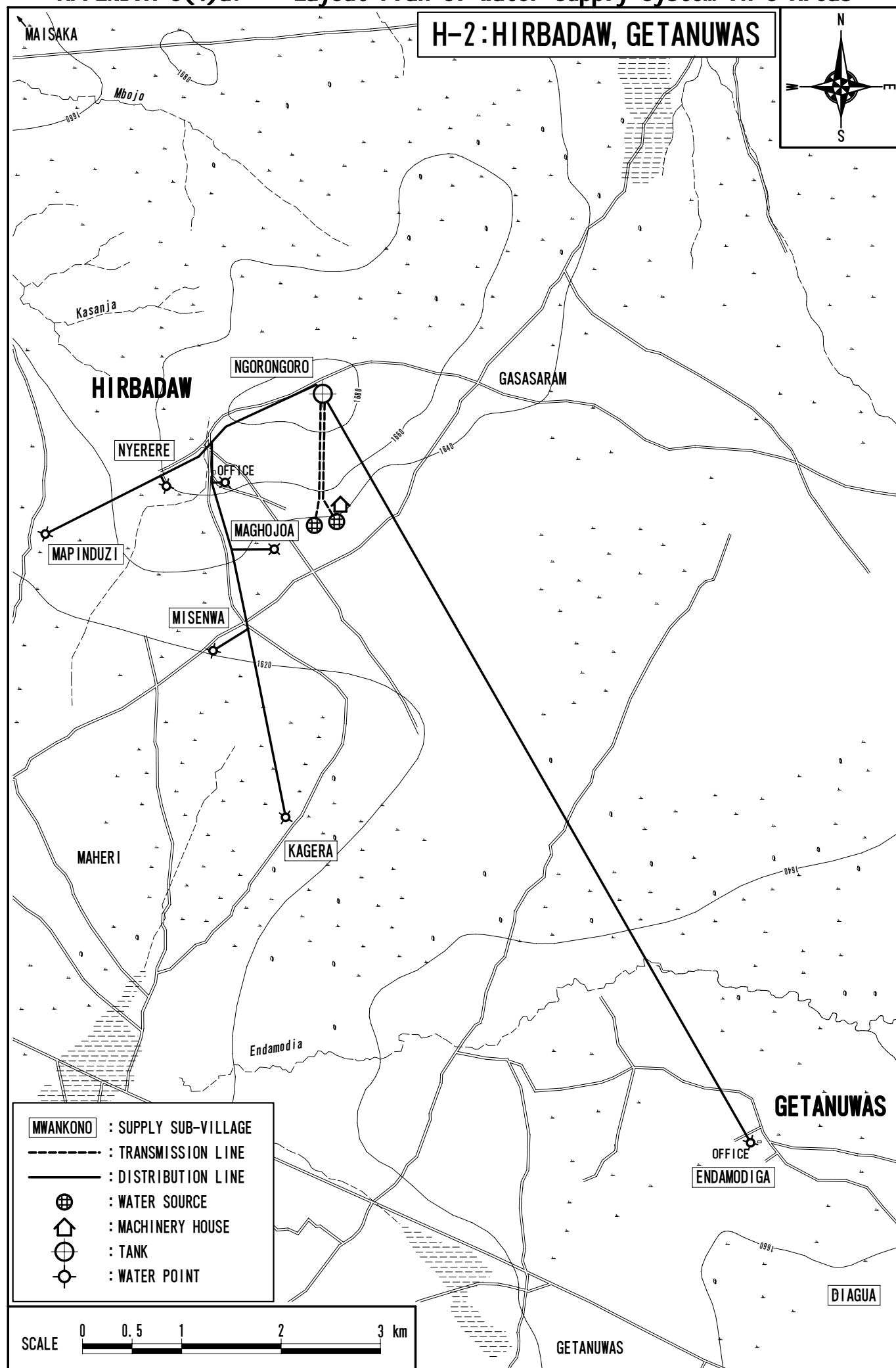
Water Source No.	Location	Type of Water Source	Temperature ()	pH	EC (mS/m)	NO2 (mg/L)	NO3 (mg/L)	NH3 (mg/L)	Ca (mg/l)	Mg (mg/l)	Total Hardness (mg/l)	Cl (mg/l)	SO4 (mg/l)	F (mg/l)	Fe (mg/l)	Cr (mg/l)	Zn (mg/l)	Mn (mg/l)	Cu (mg/l)	Pb (mg/l)	Se (mg/l)	Na (mg/l)	Cd (mg/l)	CN (mg/l)	Ba (mg/l)	As (mg/l)	Hg (mg/l)	
M-1	Mwanzi	BH	28.2	6.4	109.4	0.02	10	0	35.2	0.4	90	1029.5	12	0.6	0.29	Nil	0.18	0.01	Nil	Nil	Nil	755.3	Nil	Nil	Nil	Nil	Nil	
M-2	Muhahala	BH	26.7	6.8	76.2	0.02	10	0.1	42.8	18.7	184	62.5	34.4	0.6	0.05	Nil	0.11	0.01	Nil	Nil	Nil	46.9	Nil	Nil	Nil	Nil	Nil	
M-3	Mitoo	BH	28.4	6.7	95.0	0	127.6	0	55.6	10.2	181	266.3	43	0.4	0.34	Nil	0.45	0.004	Nil	Nil	Nil	76.3	Nil	Nil	Nil	Nil	Nil	
M-4	Damwelu	BH	24.5	6.6	107.4	0	45	0	46	9.4	154	468.6	60	0.8	0.7	Nil	0.13	0.003	Nil	Nil	Nil	105.6	Nil	Nil	Nil	Nil	Nil	
M-5	Makale	BH	24.8	5.0	39.5	0.02	45	0.1	32.4	11.9	130	468.6	62	0.5	0.22	Nil	0.04	Nil	Nil	Nil	Nil	106	Nil	Nil	Nil	Nil	Nil	
M-6	Itagata	SW	24.4	6.6	41.6	0	10	0	6.4	5.8	40	80.9	31	0.5	0.6	Nil	0.05	0.01	Nil	Nil	Nil	49.3	Nil	Nil	Nil	Nil	Nil	
M-7	Kayui	BH	25.2	6.3	69.9	0	20	0.2	22	3.8	71	145.5	26	0.5	0.23	Nil	0.09	0.004	Nil	Nil	Nil	81.4	Nil	Nil	Nil	Nil	Nil	
M-8	Mbwasia	BH	29.8	7.9	99.1	0	0.1	0	14.4	4.3	54	202.3	113	0.9	0.4	Nil	0.21	0.005	Nil	Nil	Nil	929.9	Nil	Nil	Nil	Nil	Nil	
S-1	Ikungi	BH	28.4	7.3	75.0	0.2	10	0.1	56	20.7	225	22.7	21	1.2	0.2	Nil	0.43	Nil	Nil	Nil	Nil	49.7	Nil	Nil	Nil	Nil	Nil	
S-2	Isseku	BH	28.4	6.5	129.7	0.1	10	0.1	70.8	29.1	312	1118.2	70.1	1.1	0.4	Nil	0.62	0.008	Nil	Nil	Nil	103.4	Nil	Nil	Nil	Nil	Nil	
S-3	Msimi	BH	25.4	5.7	17.0	0.05	1	0	2	1.4	11	269.8	20	0.3	0.8	0.02	0.15	0.02	Nil	Nil	Nil	28.5	Nil	Nil	Nil	Nil	Nil	
S-4	Mungaa	BH	28.3	6.8	40.2	0.1	1	1	12	2.1	39	51.1	7	1.4	11.02	Nil	0.06	10.321	Nil	Nil	Nil	24.6	Nil	Nil	Nil	Nil	Nil	
S-4	Unyamighumbi	BH	29.7	7.2	39.4	0	105.6	0.1	18.8	7.5	78	110	14	0.6	0.6	Nil	0.18	0.003	Nil	Nil	Nil	59.2	Nil	Nil	Nil	Nil	Nil	
S-6	Msungwa	SW	24.4	8.0	118.3	0	0	1	60.4	28.9	270	191.7	12	2.6	0.49	Nil	0.44	0.3	Nil	Nil	Nil	185.1	Nil	Nil	Nil	Nil	Nil	
S-7	Mkhola	SP	29.2	7.1	77.7	0.02	0	0.1	40.8	12.6	154	372.7	35	0.6	0.5	Nil	0.16	0.2	Nil	Nil	Nil	638.1	Nil	Nil	Nil	Nil	Nil	
H-1	Garawja	SW	19.1	6.9	146.5	0.5	10	0.2	93.2	45.2	419	923	8	0.6	19.55	Nil	0.16	9.95	Nil	Nil	Nil	428.6	Nil	Nil	Nil	Nil	Nil	
H-2	Hirbadaw	BH	24.8	6.7	91.1	0	5	0.1	69.6	34.7	317	169.8	13	1.2	0.7	Nil	0.04	0.003	Nil	Nil	Nil	59.2	Nil	Nil	Nil	Nil	Nil	
I-1	Chibiso	SW	29.2	7.1	104.4	0.02	0	0.2	14	3.8	51	539.6	124	1.2	4.68	Nil	0.09	0.74	Nil	Nil	Nil	185.1	Nil	Nil	Nil	Nil	Nil	
I-2	Kinungu	SW	29.3	7.7	122.4	0.1	2	0	44.8	2.8	122	241	70	1.2	1.03	Nil	0.004	0.5	Nil	Nil	Nil	638.6	Nil	Nil	Nil	Nil	Nil	
I-3	Ipumbulya	SW	27.3	8.4	126.6	0.2	2	0.5	22.4	6	81	234.3	Nil	3.9	9.95	Nil	0.08	1.375	Nil	Nil	Nil	428.6	Nil	Nil	Nil	Nil	Nil	
I-4	Lugubu	BH	29.2	6.9	24.6	0.1	2	0.1	18.4	3.1	59	42.6	0.6	0.7	2.3	Nil	0.05	1.99	Nil	Nil	Nil	38.5	Nil	Nil	Nil	Nil	Nil	
I-5	Lugubu	SW	28.7	6.8	27.0	0	1	0	10.4	3.4	40	390	7	1.3	1.8	Nil	0.22	0.001	Nil	Nil	Nil	46.2	Nil	Nil	Nil	Nil	Nil	
H-3	Sirop	BH	28.8	6.6	60.8	0	10	0	38	0.9	99	1136	13	0.2	0.1	Nil	0.09	0.001	Nil	Nil	Nil	58.3	Nil	Nil	Nil	Nil	Nil	
M-8	Mkwese	BH	25.9	7.1	62.3	0.02	0	0.1	50	9.9	166	713.5	10	0.6	2.1	Nil	0.13	1.1	Nil	Nil	Nil	42.8	Nil	Nil	Nil	Nil	Nil	
M-5	Magandu	SW	25.0	6.2	85.7	0.02	20	0	4.4	9.4	50	216.5	9	0.7	0.3	Nil	0.06	0.02	Nil	Nil	Nil	47.2	Nil	Nil	Nil	Nil	Nil	
H-4	Lambo	SW	23.8	7.0	59.3	0.02	1	0.1	45.6	17.4	185	88.7	13	0.9	9.06	Nil	0.15	0.01	Nil	Nil	Nil	39.3	Nil	Nil	Nil	Nil	Nil	
S-4	Minyinga	SW	23.0	6.7	30.4	0.02	10	0	36	0.2	91	46.1	14	0.8	0.2	Nil	0.12	0.01	Nil	Nil	Nil	22.2	Nil	Nil	Nil	Nil	Nil	
S-4	Kimbwi	SW	24.5	6.5	40.6	0.02	20	0.2	23.2	4.8	78	71	14	0.9	0.3	0.003	0.005	0.003	Nil	Nil	Nil	27.6	Nil	Nil	Nil	Nil	Nil	
M-8	Mbwasia No.1	BH	25.0	7.4	109.7	0.2	4.4	0	48.4	13.6	177	39	133	1.3	Nil	Nil	0.06	0.001	Nil	Nil	Nil	155.5	Nil	Nil	Nil	Nil	Nil	
		BH	24.8	7.6	107	0.2	4.4	0	25.2	5.1	84	42.6	20	0.9	Nil	Nil	0.01	0.01	Nil	Nil	Nil	98	Nil	Nil	Nil	Nil	Nil	
			SW	23.7	6.9	45	0.1	44	0.1	31.1	6.3	105	37.6	20	0.6	0.5	Nil	Nil	0.01	Nil	Nil	24.9	Nil	Nil	Nil	Nil	Nil	
		SW	25.3	7.3	58	0	Nil	0	48	9.9	161	39.7	24	1.5	0.9	0.9	Nil	0.05	0.03	Nil	Nil	Nil	63.5	Nil	Nil	Nil	Nil	Nil
M-6	Itogata	SW	24.5	6.8	105	0.02	15.4	0.2	52.4	10.9	176	667.4	13	1.4	0.8	Nil	0.12	0.01	Nil	Nil	Nil	147	Nil	Nil	Nil	Nil	Nil	
Standard																												
WHO Guideline					-	3	50	1.5	-	-	-	250	250	1.5	0.3	0.05	3	0.5	2	0.01	0.01	0.01	200	0.003	0.07	0.7	0.01	0.001
Tanzania				6.5 - 9.2		100	100		-	-	600	800	600	8	1	0.05	15	1.5	3	0.01	0.05	-	-	0.05	0.2	1	0.05	-
Japan				5.8 - 8.6		10	10		300	300	300	200	-	0.8	3	0.05	1	0.05	1	0.05	0.01	0.01	200	0.01	0.01	-	0.01	0.0005

BH: Borehole SW: Shallow Well SP: Spring

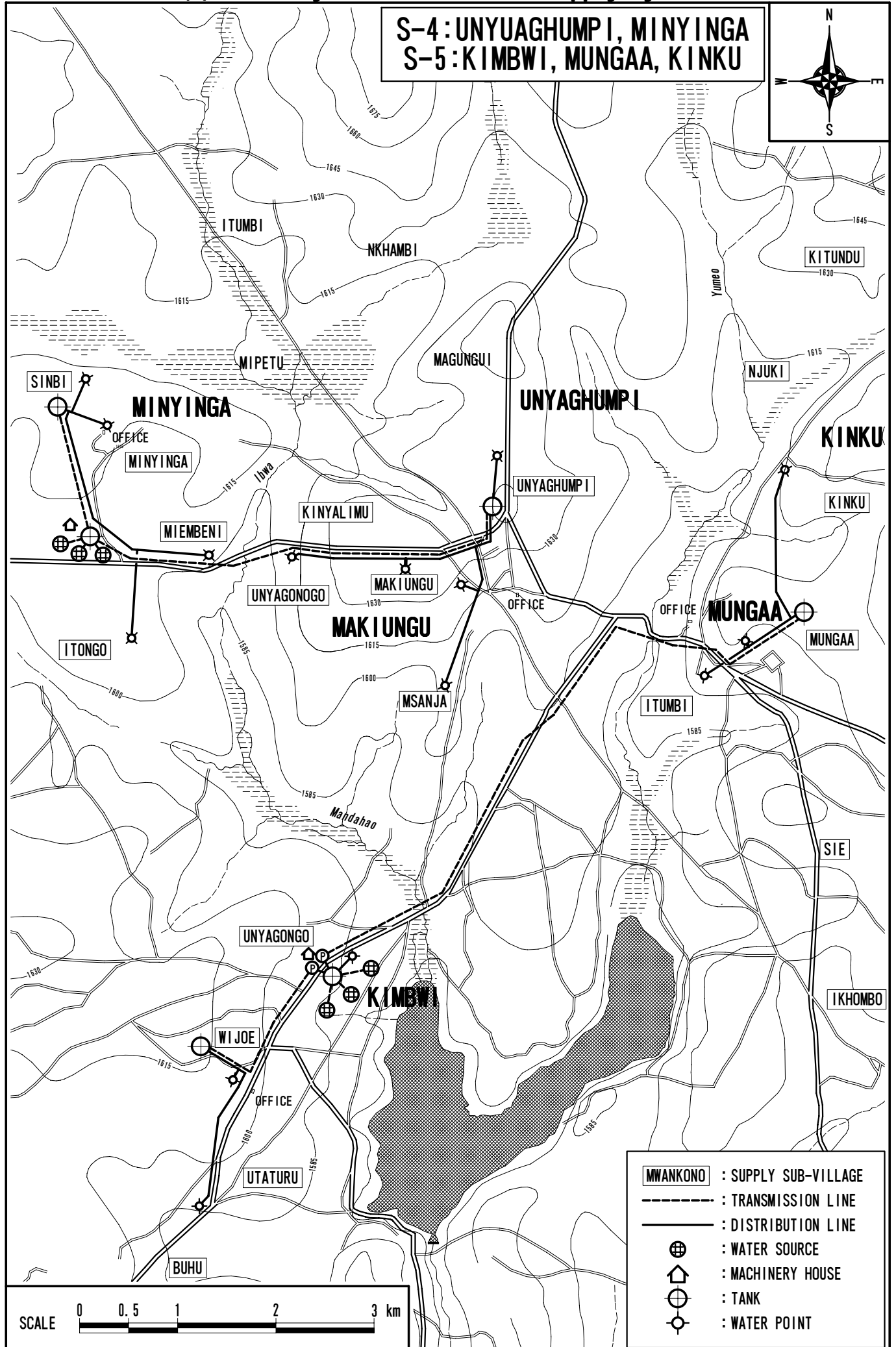
APPENDIX-6(3) Daylight Hours and Solar Irradiation in Project Area



APPENDIX-6(4)a. Layout Plan of Water Supply System in 6 Areas

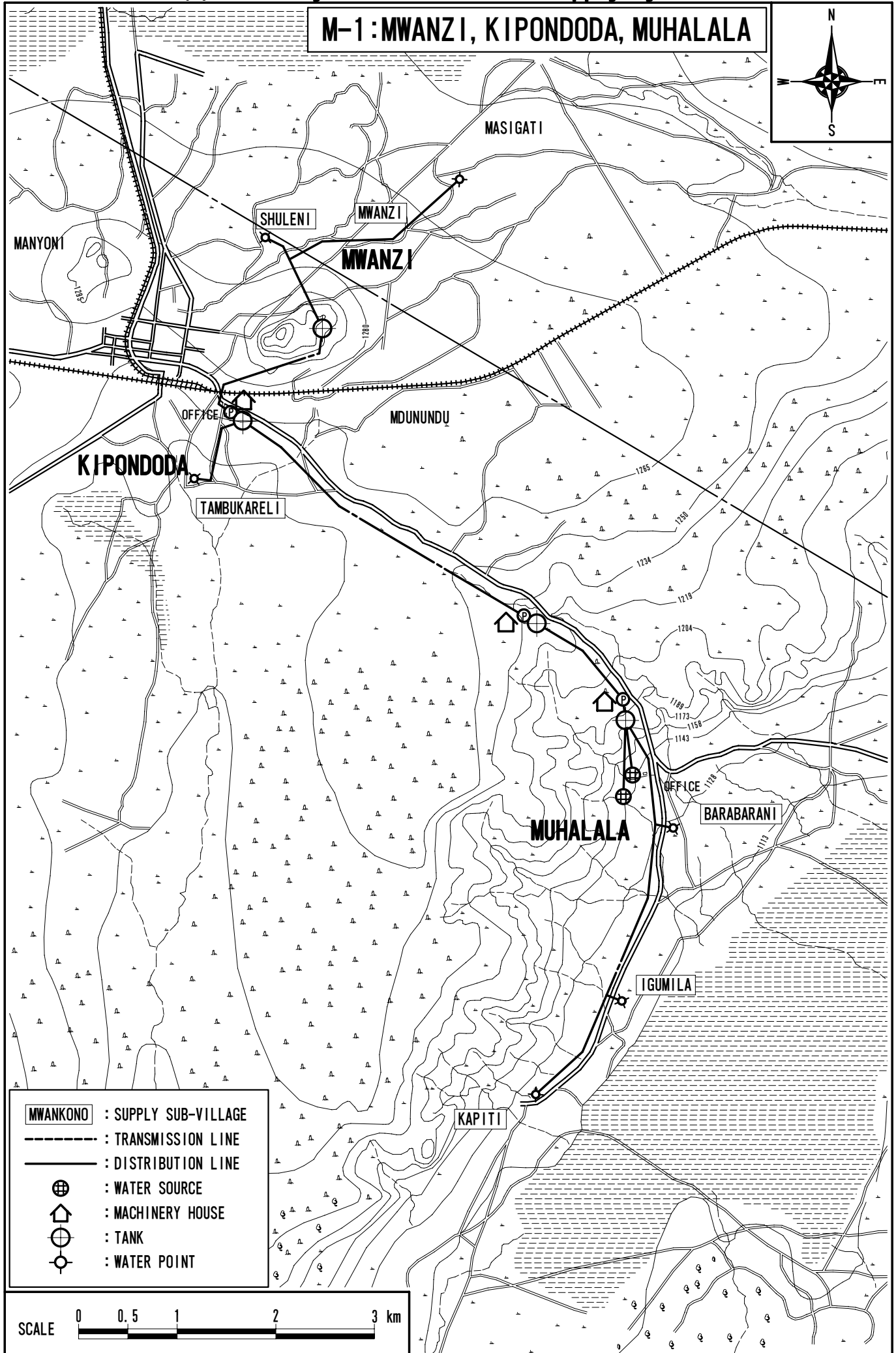


APPENDIX-6(4)b. Layout Plan of Water Supply System in 6 Areas

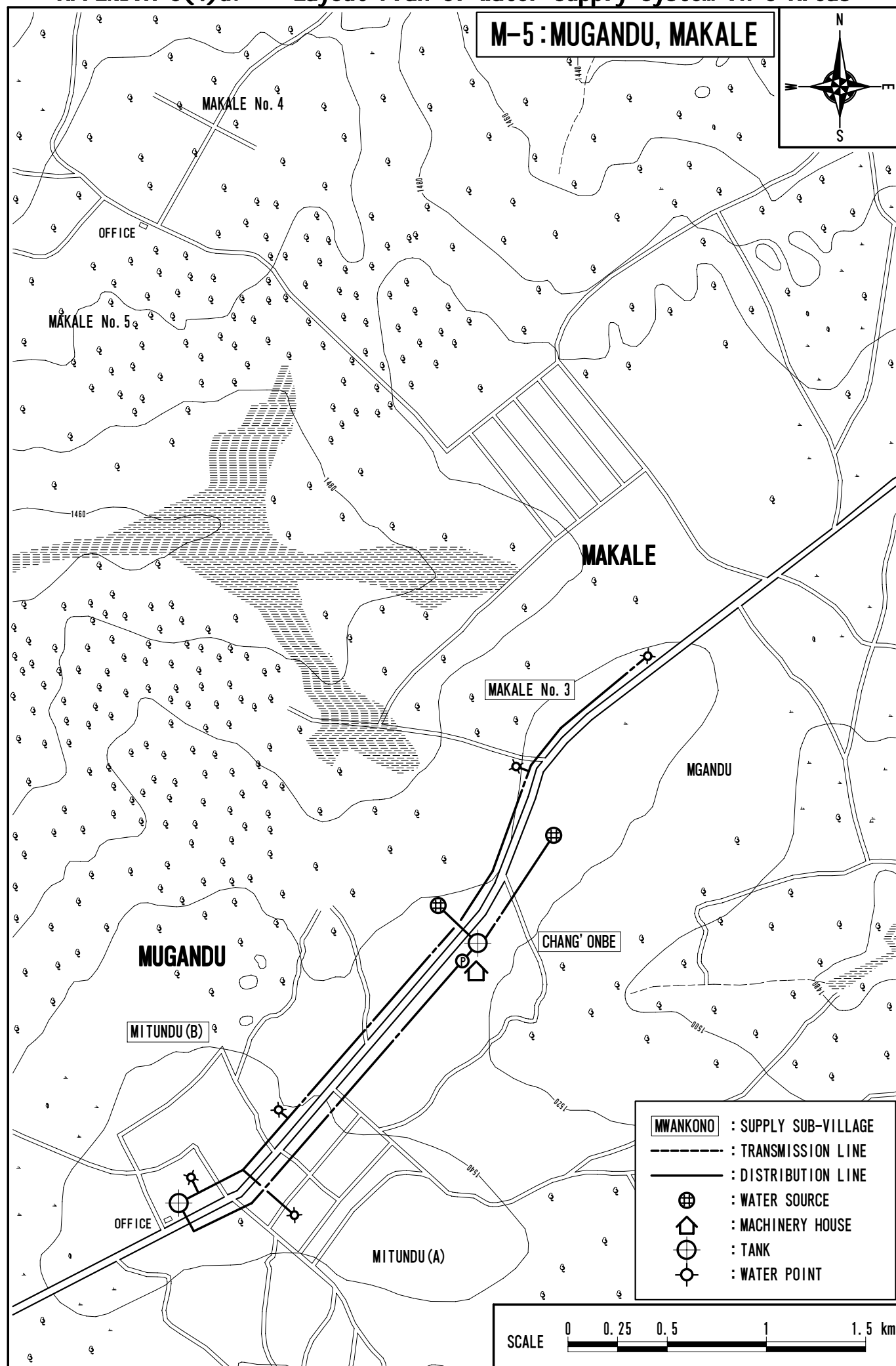


APPENDIX-6(4)c. Layout Plan of Water Supply System in 6 Areas

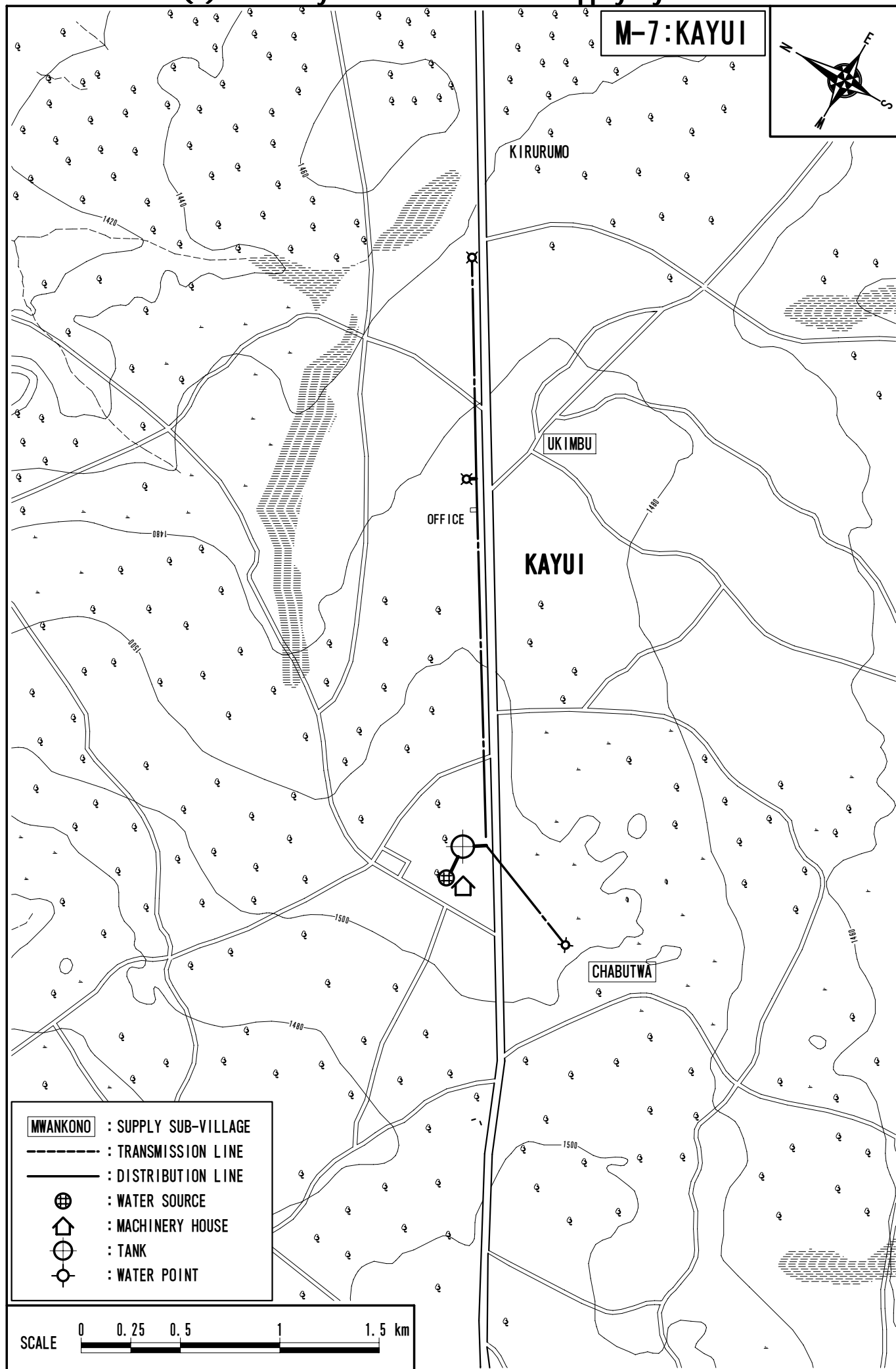
M-1: MWANZI, KIPONDODA, MUHALALA



APPENDIX-6(4)d. Layout Plan of Water Supply System in 6 Areas



APPENDIX-6(4)e. Layout Plan of Water Supply System in 6 Areas



APPENDIX-6(5)a. Village Survey Sheet

VILLAGE SURVEY SHEET

Village Number		Name of Site				
District		Province				
(<input type="checkbox"/> L-1-1 <input type="checkbox"/> L-1-3 <input type="checkbox"/> L-2 <input type="checkbox"/> L-1-1-R <input type="checkbox"/> L-1-2-R <input type="checkbox"/> Charco)						
1. General Information						
1) Population (Total) _____		Male _____	Female _____			
2) Number of Households _____		4) Name of Village Chief _____				
3) Number of Family Member _____						
2. Public Facilities						
1) Primary School Number of Schools _____ Number of Students _____		3) Medical Facilities <input type="checkbox"/> Hospital <input type="checkbox"/> Health Center <input type="checkbox"/> Maternal and Child Health Center <input type="checkbox"/> Dispensary <input type="checkbox"/> Other				
2) Other Educational Facilities Number of Schools _____ Number of Students _____						
4) Village Health Committee <input type="checkbox"/> Organized <input type="checkbox"/> Willing to Organize <input type="checkbox"/> Not Willing to Organize						
5) Public Facilities <input type="checkbox"/> Church <input type="checkbox"/> Cooperative Society <input type="checkbox"/> Mosque <input type="checkbox"/> Administrative Bureau <input type="checkbox"/> Market <input type="checkbox"/> Other Public Facilities <input type="checkbox"/> Shop						
6) Electricity Electricity Charge _____ Tsh/month/family Power Cut Frequency <input type="checkbox"/> Never <input type="checkbox"/> Often <input type="checkbox"/> Usually <input type="checkbox"/> No Electricity						
3. Agricultural Condition						
1) Major Crops <input type="checkbox"/> Maize <input type="checkbox"/> Beans <input type="checkbox"/> Wheat <input type="checkbox"/> Rice <input type="checkbox"/> Groundnuts <input type="checkbox"/> Cotton <input type="checkbox"/> Coffee <input type="checkbox"/> Others						
2) Number of Livestock Cows _____ Goats _____ Donkeys _____ Chickens _____ Others _____						
4. Hydrogeological Condition						
1) Water Quantity <input type="checkbox"/> Sufficient <input type="checkbox"/> Uncertain (Dry Season) <input type="checkbox"/> Not Sufficient						
2) Water Quality <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Salty <input type="checkbox"/> Nasty (Taste)						
§ Water Quality Analysis						
pH	EC	F	SO ₄	NH ₄ -N	NO ₃ -N	NO ₂ -N
Turb.	DO	T_Hard.	Fe	COD	Coliform	Bacteria
§ Fluorosis Cases Number of Dental Fluorosis _____ Number of Skeletal Fluorosis _____						
3) Distance from Village to Water Source _____ km <input type="checkbox"/> Appropriate (>3km) <input type="checkbox"/> Acceptable <input type="checkbox"/> Far						
4) Topography <input type="checkbox"/> Mountainous <input type="checkbox"/> Undulating <input type="checkbox"/> Flats <input type="checkbox"/> Wetlands <input type="checkbox"/> Appropriate for facility <input type="checkbox"/> Not Appropriate						
5. Water Supply Situation						
1) Water Supply Situation <input type="checkbox"/> Sufficient <input type="checkbox"/> Acceptable <input type="checkbox"/> Not Sufficient (Drinking/Domestic Use) (Drinking Only)						
2) Number of Water Facilities Borehole _____ Dug Well _____ Dam _____ Spring _____ Water Hole _____ Other () _____						
3) Type of Major Water Facilities <input type="checkbox"/> Borehole <input type="checkbox"/> Dug Well <input type="checkbox"/> Dam <input type="checkbox"/> Spring <input type="checkbox"/> Water Hole <input type="checkbox"/> Other () _____						

VILLAGE SURVEY SHEET

4) Facility Situation			
Borehole	<input type="checkbox"/> Hand Pump	<input type="checkbox"/> Wind Pump	<input type="checkbox"/> Solar Pump
	<input type="checkbox"/> Engine Pump	<input type="checkbox"/> Motor Pump	
Specification Pump (lit × m) Engine / Genelator (HP/kVA)			
<input type="checkbox"/> Appropriate	<input type="checkbox"/> Need to be Rehabilitated	<input type="checkbox"/> Abandoned	
<input type="checkbox"/> Remote Place	<input type="checkbox"/> Poor Water Quality	< Constructed by _____ in _____ >	
Dug Well	<input type="checkbox"/> Bucket	<input type="checkbox"/> Hand Pump	<input type="checkbox"/> Other ()
<input type="checkbox"/> Appropriate	<input type="checkbox"/> Need to be Rehabilitated	<input type="checkbox"/> Abandoned	
<input type="checkbox"/> Remote Place	<input type="checkbox"/> Poor Water Quality	< Constructed by _____ in _____ >	
Other Facilities ()			
<input type="checkbox"/> Appropriate	<input type="checkbox"/> Need to be Rehabilitated	<input type="checkbox"/> Abandoned	
<input type="checkbox"/> Remote Place	<input type="checkbox"/> Poor Water Quality	< Constructed by _____ in _____ >	
5) Water Vendor			
Number of Water Vendors _____		<input type="checkbox"/> None	
Vending Price _____	Tsh/20lit	<input type="checkbox"/> Low Price	<input type="checkbox"/> High Price
Frequency _____	times/week	<input type="checkbox"/> Stable Supply	<input type="checkbox"/> Unstable Supply
6) Other Donors Project			
Name of Organization _____		Project Year _____	
<input type="checkbox"/> Borehole	<input type="checkbox"/> Dug Well	<input type="checkbox"/> Dam	<input type="checkbox"/> Spring
<input type="checkbox"/> Well Operation	<input type="checkbox"/> Poor Operation	<input type="checkbox"/> Other ()	
<input type="checkbox"/> Under Implementation	<input type="checkbox"/> Under Planning	<input type="checkbox"/> None	
6. Sanitation Situation			
1) Sanitation Situation			
<input type="checkbox"/> Sufficient	<input type="checkbox"/> Acceptable	<input type="checkbox"/> Not Sufficient	
2) Number of Sanitation Facilities _____			
<input type="checkbox"/> None			
3) Type of Toilet			
<input type="checkbox"/> Septic Tank Toilet	<input type="checkbox"/> Ventilated Pit Latrine	<input type="checkbox"/> Pit Latrine	
4) Household Waste			
<input type="checkbox"/> Collected and Disposed	<input type="checkbox"/> Burnt at Home	<input type="checkbox"/> Thrown Away	
5) Water borne Disease			
<input type="checkbox"/> Little Cases	<input type="checkbox"/> Many Cases		
< <input type="checkbox"/> Cholera	<input type="checkbox"/> Typhoid	<input type="checkbox"/> Dysentery	<input type="checkbox"/> Unknown >
7. Operation & Maintenance			
1) Village Water Committee			
<input type="checkbox"/> In Action	<input type="checkbox"/> Not in Action		
<input type="checkbox"/> Organized	<input type="checkbox"/> Willing to Organize	<input type="checkbox"/> Not Willing to Organize	
2) Female Participation in VWC			
<input type="checkbox"/> More than 50%	<input type="checkbox"/> Less Than 50%		
3) Village Water Fund			
<input type="checkbox"/> Established	(Account _____ Tsh)	<input type="checkbox"/> None	
4) Water Users Group			
<input type="checkbox"/> In Action	<input type="checkbox"/> Not in Action		
<input type="checkbox"/> Organized	<input type="checkbox"/> Willing to Organize	<input type="checkbox"/> Not Willing to Organize	
5) Water Fee _____ Tsh/20lit			
<input type="checkbox"/> Capable to pay (in Cash)	<input type="checkbox"/> Capable to pay (in Crops/Livestocks)	<input type="checkbox"/> Difficult to Pay	
6) Local Mechanic			
<input type="checkbox"/> Available	<input type="checkbox"/> Someone can Repair	<input type="checkbox"/> Not Available	
7) Operation & Maintenance			
<input type="checkbox"/> Willing to Maintain	<input type="checkbox"/> Not Willing to Maintain		
8. Construction Condition			
1) Access Road for Rig			
<input type="checkbox"/> Accessible (All Year)	<input type="checkbox"/> Accessible (Dry Season Only)	<input type="checkbox"/> Not Accessible	
2) Community Cooperation for Construction			
<input type="checkbox"/> Cooperative	<input type="checkbox"/> Not Cooperative		

VILLAGE SURVEY SHEET

9. Water Facility Design Data			
1) Water Fetching Extent of Village _____ km× _____ km Average Distance to Water Facilit _____ km <input type="checkbox"/> No Water Facility Quantity of Fetching _____ buckets(20lit)/day Frequency _____ times/day			
2) Water Tank in Village _____ m ³ <input type="checkbox"/> Concrete Tank <input type="checkbox"/> Steel Panel Tank <input type="checkbox"/> Polythene Tank <input type="checkbox"/> Unglazed Pot <input type="checkbox"/> Other () <input type="checkbox"/> None			
3) Water Container in House <input type="checkbox"/> One Container for All Us _____ lit <input type="checkbox"/> Plastic Buckets <input type="checkbox"/> Metal Cooking Pot <input type="checkbox"/> Unglazed Pot <input type="checkbox"/> Oil Drum <input type="checkbox"/> Polythene Tank <input type="checkbox"/> Other () <input type="checkbox"/> Different Containers for Drinking/Domestic Use Drinking & Cooking _____ lit <input type="checkbox"/> Plastic Buckets <input type="checkbox"/> Metal Cooking Pot <input type="checkbox"/> Unglazed Pot <input type="checkbox"/> Oil Drum <input type="checkbox"/> Polythene Tank <input type="checkbox"/> Other () Domestic Use _____ lit <input type="checkbox"/> Plastic Buckets <input type="checkbox"/> Metal Cooking Pot <input type="checkbox"/> Unglazed Pot <input type="checkbox"/> Oil Drum <input type="checkbox"/> Polythene Tank <input type="checkbox"/> Other ()			
4) Water Consumption Quantity of Consumption _____ buckets(20lit)/day <input type="checkbox"/> Cooking _____ lit/day <input type="checkbox"/> Washing Body _____ lit/day <input type="checkbox"/> Drinking _____ lit/day <input type="checkbox"/> Washing Dishes _____ lit/day <input type="checkbox"/> Watering Crops _____ lit/day <input type="checkbox"/> Washing Cloths _____ lit/day <input type="checkbox"/> Feeding Livestocks _____ lit/day			
5) Drinking Water <input type="checkbox"/> Borehole <input type="checkbox"/> Shallow Well <input type="checkbox"/> Water Hole <input type="checkbox"/> Dam / Lake <input type="checkbox"/> Rain Water <input type="checkbox"/> Other () <input type="checkbox"/> Boil <input type="checkbox"/> Unboil			
6) Domestic Water <input type="checkbox"/> Borehole <input type="checkbox"/> Shallow Well <input type="checkbox"/> Water Hole <input type="checkbox"/> Dam / Lake <input type="checkbox"/> Rain Water <input type="checkbox"/> Other () <input type="checkbox"/> Boil <input type="checkbox"/> Unboil			
7) Chloride Availability <input type="checkbox"/> Sodium of Lime Availabl <input type="checkbox"/> Sodium Chloride (Salt) Availa <input type="checkbox"/> Not Available			
10. Water Facility Preferred			
1) Water Source <input type="checkbox"/> Borehole <input type="checkbox"/> Dug Well <input type="checkbox"/> Dam <input type="checkbox"/> Spring <input type="checkbox"/> Water Hole <input type="checkbox"/> Rain Water <input type="checkbox"/> Other ()			
2) Water Intake Facilities <input type="checkbox"/> Hand Pump <input type="checkbox"/> Wind Pump <input type="checkbox"/> Solar Pump <input type="checkbox"/> Engine Pump <input type="checkbox"/> Other ()			
3) Water Supply Facilities <input type="checkbox"/> Hand Pump <input type="checkbox"/> Water Tank <input type="checkbox"/> Pipe Line / Domestic Point			
4) Transportation from Water Source <input type="checkbox"/> Walk _____ km _____ lit/time <input type="checkbox"/> Bicycle _____ km _____ lit/time <input type="checkbox"/> Ox Cart _____ km _____ lit/time <input type="checkbox"/> Tank Truck _____ km _____ lit/time			

APPENDIX-6(5)b.

Result of Village Survey : Hanang District

No.	General Information						Public Facilities			Number of Livestocks			Hydrogeological Condition			Water Supply Situation					Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (bucket/time)	Drinking & Cooking (lit/family)	Drinking (lit/family)	Treatment
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km²/km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility				Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic	Operation & Maintenance					
1	Bassotu	Mulbadaw	5,549	655	Leopold Peter	10*6	1	400	Organzed	2,800	1,950	20	Salty	30	6	Not sufficient	Borehore	Dam	Spring	WaterHole	-	-	yes	yes	-	In Action	<50%	-	Available	Willing	6	2	40	20	Unboil
2		Dang'aida	2,900	300	Emanuel Amsi	10*8	1	290	Organzed	4,000	2,000	600	Salty	2,500	8	Not sufficient	Water Hole				-	-	yes	yes	-	Willing	-	-	Available	Willing	8	2	40	10	Boil/Unboil
3	Laghanganga	Dajamet	2,892	280	Raphaeli Gwandu	25*20	1	273	Organzed	2,073	1,078	550	-	30	15	Not sufficient					500	yes	yes	yes	-	Willing	<50%	200,000	Available	Willing	15	1	40	15	Boil/Unboil
4		Laghanganga	2,450	430	Daudi Sambaa	6*5	1	445	Organzed	1,800	1,320	66	-	312	5	Not sufficient	Dam				-	-	yes	yes	-	Willing	<50%	50,000	Available	Willing	5	1	20	20	Unboil
5		Gawidu	2,004	330	Faustini Benedict	11*12	1	431	Organzed	3,130	2,113	59	Salty	501	5	Not sufficient	Dam	Water Hole			50	-	yes	yes	-	In Action	-	200,000	None	Willing	5	2	20	10	Boil/Unboil
6	Bassodesh	Garawja	6,159	600	Michael Bayo	8*23	1	445	Organzed	7,000	2,000	200	Acceptable	-	12	Not sufficient	Water Hole				-	yes	yes	yes	-	In Action	>50%	400,000	Available	Willing	12	1		10	Boil/Unboil
7		Bassodesh	1,800	650	Filipo Shauri Sule	40*7	2	640	Organzed	80,000	12,000	200	Salty	-	15	Not sufficient	Borehore	Dam	Water Hole		-	-	yes	yes	-	In Action	>50%	250,000	Available	Willing	15	1	20	10	Boil/Unboil
8	Hirbadah	Hirbadaw	5,570	537	Juma Mughuna	12*8	1	470	Organzed	2,400	1,000	50	Good	557	5	Not sufficient	Borehore	Dug Well			5	-	yes	yes	-	In Action	<50%	120,000	Available	Willing	5	1	40	45	Unboil
9		Mwanga	5,470	547	Zakaria Joseph	16*14	2	387	Organzed	4,055	3,456	218	Salty	1,300	11	Not sufficient	Borehore	Water Hole			-	yes	yes	yes	-	In Action	>50%	-	Available	Willing	-	2	40	-	Unboil
10	Gatanuwas	Wandela	2,220	418	Israel Bura	20*18	1	296	Organzed	2,625	265	300	Acceptable	20	10	Not sufficient	Dug Well	Water Hole			5	yes	yes	yes	-	In Action	>50%	400,000	None	Willing	10	1	20	10	Unboil
11		Gatanuwas	3,011	560	Emanuel Nada	13*10	1	412	Organzed	3,702	2,420	240	Nasty	-	5	Not sufficient	Dam				5	-	yes	yes	-	In Action	>50%	5,700	Available	Willing	5	2	50	20	Boil/Unboil
12		Gidika	2,450	420	Zakaria Gishinde	8*7	1	352	Organzed	2,427	1,410	700	Salty	980	5	Not sufficient	Dug Well				-	-	yes	yes	-	In Action	>50%	7,000	Available	Willing	5	2	40	20	Boil/Unboil
13	Mogitu	Dumbeta	4,000	400	Patrick Petro	14*14	1	400	None	2,000	5,000	1,000	Good	-	6	Not sufficient	Katesh Pipe				-	-	-	-	-	In Action	>50%	100,000	Someone	Willing	6	1	30	20	Unboil
14	Nangwa	Dirma	2,013 (98)	422	Joseph Gapchojiga	21*16	1	345	Organzed	6,000	651	186	Acceptable	-	10-15	-	Water Hole				200	-	-	yes	-	In Action	<50%	180,000	Available	Willing	8	-	20	10	Unboil
15	Gisambalang	Gisambalang	2,050	340	Ramadani Shabani	16*11	2	891	Organzed	1,070	200	340	-	-	8	Not sufficient	Water Hole				-	-	yes	yes	Bilharz	In Action	>50%	111,000	None	Willing	8	1	20	10	Unboil
16		Waranga	1,600	270	Fransis O.D.Saktay	8*12	1	240	Organzed	450	600	20	Acceptable	-	8	Not sufficient	Water Hole				-	-	yes	yes	-	In Action	>50%	120,000	None	Willing	7	1	10	10	Unboil
17	Balangdalau	Murero	3,850	600	Festo Darema	17*12	1	307	Organzed	2,630	1,148	148	-	5	8	Not sufficient	Water Hole	Spring			-	yes	yes	yes	-	In Action	<50%	-	None	Willing	8	1	20	10	Unboil
18		Diloda	3,000	370	Idi Sintoo	13*11	1	70	Organzed	1,580	2,195	58	Acceptable	20	5	Not sufficient	Water Hole				-	-	-	yes	-	Organized	>50%	-	None	Willing	5	2	40	20	Unboil
19	Gehanduu	Mingenyi	2,500	500	Martine Ilonga	28*10	1	130	Willing	2,890	2,440	40	Acceptable	-	15	Not sufficient	Dam				-	-	-	yes	-	Willing	<50%	-	None	Willing	-	1	30	10	Boil/Unboil
20		Ishponga	3,900	390	Joseph Mwiru	13*16	1	425	Organzed	2,408	1,320	168	Salty	60	5	Not sufficient	Water Hole				20	-	yes	yes	-	Organized	<50%	170,000	Available	Willing	5	1	20	10	Unboil
21	Measkron	Mara	3,500	435	Leons Marma	6*4	1	480	Organzed	952	1,012	97	Salty	1,200	3	Not sufficient	Borehore	Dug Well	Water Hole	River	-	-	yes	yes	-	In Action	>50%	180,000	Available	Willing	3	2	40	10	Unboil
22	Gidahababeig	Gidahababeig	2,209	313	Hassan Huibagiroi	10*13	1	482	Organzed	1,885	1,368	208	Salty	1,500	7	Not sufficient	Dug Well	Dam	Water Hole		-	-	yes	yes	-	In Action	<50%	-	None	Willing	7	2	30	20	Unboil
23		Endasaboghechan	1,347	202	F.P. Quawanea	7*16	1	71	Willing	-	-	-	-	-	7	Not sufficient	Water Hole	River			-	-	yes	yes	-	Willing	<50%	50,000	None	Willing	7	2	40	10	Unboil
24	Hidet	Hidet	6,395	270	Charles Gogo	8*7	1	446	Organzed	1,860	1,445	220	Salty	5,000	6	Not sufficient	Dug Well	Water Hole			100	-	yes	yes	-	Not in Action	<50%	-	None	Willing	8	2	20	-	Unboil
25		Bassotughang	2,622	300	Faustini Bura Tlae	6*4.5	1	472	Organzed	1,301	957	94	-	850	5	Not sufficient	Water Hole	Dam			-	-	yes	yes	-	Organized	<50%	70,000	None	Willing	5	8	20	5	Unboil
26	Sirop	Sirop	2,004	420	Hamis M.Kiwangwa	20*17	1	512	Organzed	2,090	1,426	150	Good	-	10	Not sufficient	Borehore	Water Hole			-	-	yes	yes	-	Willing	-	-	None	Willing	10	1	20	20	Unboil
27		Matangarinu	2,654	250	Ramadani Majengo	10*15	1	340	Organzed	1,120	927	80	Salty	-	6	Not sufficient	Dug Well	Water Hole			-	-	-	yes	-	In Action	<50%	100,000	None	Willing	6	1	40	15	Unboil
28	Simbay	Simbay	3,575	340	Frabian Darema	25*15	1	334	Organzed	2,024	2,070	180	-	-	12	Not sufficient	Water Hole				-	-	yes	yes	-	Organized	>50%	220,000	None	Willing	12	1	30	20	Unboil
29		Gidagharabuk	2,100	210	Amani Hassan	12*15	1	191	Organzed	2,100	3,150	420	-	-	12	Not sufficient	Water Hole	River			-	-	yes	yes	-	Willing	-	-	None	Willing	12	1	20	10	Unboil
30	Masakta	Masakta	2,600	545	Athuman Samdiya	9*7	1	869	Organzed	1,486	900	74	Salty	500	4	Not sufficient	Borehore	Dug Well	Water Hole		50	-	yes	yes	-	In Action	>50%	50,000	None	Willing	4	2	40	10	Unboil
31		Lambo	2,066	337	Mathias Dagharo	10*13	1	361	Willing	724	704	50	Good	-	10	Not sufficient	Water Hole				-	-	yes	yes	-	In Action	<50%	220,000	None	Willing	10	2	20	10	Unboil
32	Masqaroda	Masqaroda	2,896	477	Michel Lori	15*20	1	585	Organzed	3,840	1,875	220	Salty	300	5	Not sufficient	Borehore	Dug Well	Spring	River	-	-	yes	yes	-	In Action	>50%	250,000	Someone	Willing	5	2	60	20	Boil/Unboil
33		Gelasum	1,606	260	Jackson Lagwene	3*6	1	355	Organzed	1,041	406	69	-	550	4	Not sufficient	Water Hole				-	-	yes	yes	-	Organized	>50%	50,000	None	Willing	-	-	-	-	Unboil

APPENDIX-6(5)b.

Result of Village Survey : Singida Rural District

No.	General Information						Public Facilities			Number of Livestocks			HydrogeologicalCondition			WaterSupplySituation							Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (bucket/hne)	Drinking & Cooking (lit/family)	Drinking (lit/family)	Treatment
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km²km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility							Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic					
1	Ikungi	Ikungi	3,186	702	Ha misi Muhomi	3*4	1	857	Organized	1,662	1,777	6	Salty	50	2	Not sufficient	Borehole	Dug Well	Dam	Water Hole	Wind Mill		20	yes	yes	yes	-	In action	<50%	45,000	Available	Willing	2	2	40	20	Unboil
2		Ighuka	2,214	505	Hamisi Muhomi	5.5*2.5	1	518	Organized	1,779	2,283	10	Acceptable	25	4	Not sufficient	Dug Well	Water Hole					10	yes	yes	yes	-	-	<50%	32,000	-	Willing	4	2	40	20	Unboil
3		Ulyampiti	1,421	275	Stephen Mtyana	8*13	1	444	Organized	1,300	50	50	Salty	500	5	Not sufficient	Borehole	Dug Well	Water Hole				-	-	yes	yes	-	Organized	<50%	22,581	Available	Willing	5	2	40	20	Unboil
4		Matongo	4,225	601	Juma S. kisuda	13*19	1	539	Organized	3,058	2,884	41	Salty	2,120	6	Not sufficient	Borehole	Spring	Water Hole	Shallow wells			-	yes	yes	yes	-	Willing	-	12,000	Available	Willing	6	2	-	20	Boil/Unboil
5		Muungano	1,275	116	John Tandu	5*9	-	-	Organized	360	170	2	Salty	200	4	Not sufficient	Dug Well	Spring	Water Hole				-	-	yes	yes	-	In action	<50%	9,000	Available	Willing	4	3	40	20	Unboil
6		Matare	3,900	564	-	12*12	1	456	Organized	3,025	2,016	78	Salty	20	6	Not sufficient	Dug Well	Water Hole	River				-	-	yes	yes	-	In action	<50%	20,000	Available	Willing	6	1	30	15	Unboil
7		Mahambe	2,716	221	John Tandu	5*6	1	326	Organized	1,014	301	-	Salty	-	4	Not sufficient	Dug Well	Water Hole					-	-	yes	yes	-	-	<50%	9,440	Available	Willing	4	2	30	15	Unboil
8	Issuna	Issuna	4,000	637	Simon Labia	15*40	2	638	Organized	4,010	700	50	Salty	10	6	Not sufficient	Dug Well	Dam	Water Hole				-	-	yes	yes	-	Willing	-	245,000	Available	Willing	6	2	40	20	Unboil
9		Choda	1,706	160		10*15	1	222	Organized	1,216	842	44	Salty	-	2	Not sufficient	Borehole	Dug Well	Water Hole				-	-	yes	yes	-	In action	>50%	260,000	Available	Willing	2	3	30	15	Unboil
10		Mkiwa	2,000	400	Elifoo Samson	20*30	1	365	Organized	4,000	2,800	80	Acceptable	-	2.5	Not sufficient	Dug Well	Spring	Water Hole				-	yes	yes	yes	-	In action	>50%	224,679	Available	Willing	2.5	3	40	20	Unboil
11		Nkuhi	2,530	590	Emanuel Aoron	12*26	-	478	Organized	2,635	1,350	76	Acceptable	-	12	Not sufficient	Borehole	Dam	Water Hole	Wind Mill			-	-	yes	yes	-	In action	>50%	300,000	Available	Willing	12	1	40	20	Unboil
12	Dung'unyi	Samaka	3,264	630	Joseph P Ambros	6*13	1	429	Organized	2,158	1,489	13	Salty	47	5	Acceptable	Dug Well	Spring	Water Hole	Shallow wells			-	-	yes	yes	-	Not in action	-	20,000	Available	Willing	5	3	40	20	Unboil
13		Ujaire	1,800	240	John Ntandu	6*6	1	400	Organized	1,040	670	20	Salty	-	3	Not sufficient	Dug Well	Spring	Water Hole	River			-	-	yes	yes	-	In action	>50%	12,000	Available	Willing	3	2	30	15	Unboil
14		Kipumbuko	1,840	283	Jumanne Nkhangaa	5*8	1	450	Organized	1,538	1,531	28	Salty	250	3.5	Not sufficient	Dug Well	Dam	Water Hole				-	-	-	-	-	In action	<50%	202,500	Available	Willing	3.5	3	40	15	Unboil
15		Mkinya	2,015	270	John Hupa	3*4.5	-	-	Organized	1,177	1,008	2	Salty	-	2	Not sufficient	Dug Well	Spring	Water Hole				-	-	yes	yes	-	In action	<50%	295,000	Available	Willing	2	5	40	15	Unboil
16	Mang'onyi	Mang'onyi	2,230	420	Fundi Hassan	4*15	1	632	Organized	1,632	631	26	Salty	446	6	Not sufficient	Borehole	Water Hole	River				-	-	yes	yes	-	In action	>50%	119,000	Available	Willing	6	1	30	15	Unboil
17		Tupendane	1,876	326	Fundi Hassan	8*15	-	-	Organized	1,030	721	53	Salty	130	6	Not sufficient	River						-	-	yes	yes	-	Not in action	-	-	None	Willing	6	1	40	15	Unboil
18		Mwau	4,592	656	Juma L Ramadhni	12*15	1	720	Organized	2,468	1,883	14	Acceptable	Few	4	Sufficient	Water Hole						-	-	-	yes	-	In action	<50%	103,000	Available	Willing	4	1-2	-	20	Unboil
19		Sambaru	2,100	236	Masudi Hassani	20*22.4	1	260	Organized	1,800	677	32	Acceptable	Few	3	Sufficient	Borehole						-	yes	-	yes	-	-	>50%	50,000	None	Willing	-	3	-	20	Boil
20	Ihanja	Ihanja	4,264	510	Said Juma	10*4	1	387	Organized	1,877	1,967	5	Acceptable	5	2	Not sufficient	Dug Well	Spring	Water Hole	River			50	-	yes	yes	-	In action	>50%	-	Available	Willing	2	4	40	20	Unboil
21		Isseku	1,692	291	Isaya Shaban	5*9	1	483	Organized	821	880	4	Acceptable	7	4	Not sufficient	Borehole	Dug Well	Dam	Spring	Water Hole	River	-	-	yes	yes	-	In action	<50%	50,000	Available	Willing	4	2	40	20	Unboil
22		Nkoiree	3,345	467	Abdiha Ahungu	10*7	1	439	Organized	2,365	3,502	20	Salty	-	3	Not sufficient	Dug Well	Water Hole	River				-	-	yes	yes	-	In action	>50%	2,280	Available	Willing	3	3	30	20	Unboil
23		Unyangwe	1,860	359	Salum Hassan Madohola	10*15	1	345	Organized	1,375	1,250	2	Salty	465	3	Not sufficient	Dug Well	Dam	Spring	Water Hole			-	-	yes	yes	-	In action	>50%	-	Available	Willing	3	2	40	15	Unboil
24		Chungu	3,102	445	Hamisi R Mwaya	6*4	1	595	Organized	2,766	2,442	57	Salty	-	7	Not sufficient	Dug Well	Water Hole	River				-	-	yes	yes	-	Not in action	-	-	Available	Willing	7	2	40	20	Unboil
25	Minyughe	Minyughe	3,276	546	Nelson d Kiwes	5*7	-	-	Organized	2,288	1,900	12	Salty	20	1	Not sufficient	Dug Well	Spring	Water Hole	River			-	-	yes	yes	-	In action	<50%	11,000	Available	Willing	1	4	40	20	Unboil
26		Misake	5,054	870	Haji Saidi Hamisi	15*9	2	790	Organized	5,446	3,000	24	Salty	10	2	Not sufficient	Water Hole	River					-	-	yes	yes	-	In action	<50%	13,000	Available	Willing	2	3	40	20	Unboil
27	Muhintiri	Muhintiri	6,251	563		15*8	1	480	Organized	3,197	1,256	21	Acceptable	-	5	Not sufficient	Dug Well	Water Hole	Swamp				100	-	yes	yes	-	In action	<50%	280,000	Available	Willing	5	2	50	25	Unboil
28		Mnyange	1,250	150	Rhamadani Mambala	7*15	1	200	Organized	1,250	750	20	Salty	40	6	Not sufficient	Spring	Water Hole	River				-	-	yes	yes	-	Not in action	-	-	Available	Willing	6	2	30	15	Unboil
29		Mpetu	1,685	300	John Mkindo	10*5.5	1	312	Organized	2,056	1,658	14	Salty	-	5	Not sufficient	Dug Well	Dam	Water Hole	River			20	-	yes	yes	-	In action	<50%	238,000	Available	Willing	5	1	40	20	Unboil
30	Puma	Matyuku	1,994	450	Mustapha Ghumpy	8*10	1	341	Organized	1,587	2,320	20	Acceptable	-	1	Not sufficient	Borehole	Dug Well	Spring	Water Hole			-	-	yes	yes	-	In action	<50%	12,000	Available						

No.	General Information						Public Facilities			Number of Livestocks			HydrogeologicalCondition			WaterSupplySituation								Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (bucket/time)	Drinking & Cooking (lit/family)	Drinking (lit/family)	Treatment		
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km*km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility							Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic	Operation & Maintenance							
46	Mgungira	Mgungira	240	218	Chares Nlugwa	14*10	1	150	-	6,870	3,425	280	Good	-	5	Not sufficient	Water Hole	Ponds						-	-	yes	-	-	Not in action	<50%	-	Someone	Willing	5	12	5	40	Boil/Unboil		
47		Ufana	1,080	54	Mwendesha Gengwa	10*15	1	128	Organized	11,000	7,800	34	Acceptable	Few	7	Not sufficient	Water Hole							-	-	-	-	-	Willing	-	-	None	Willing	7	2	-	10	Unboil		
48		Iyumbu	1,903	197	Mohamed Athumani	35*10	1	257	Organized	3,629	1,686	20	Good	-	5	Not sufficient	Water Hole							-	-	yes	yes	-	Not in action	<50%	-	Someone	Willing	5	5	-	20	Unboil		
49	Irisya	Irisya	2,643	350	Hassan Jumanne Ndia	12*8	1	411	Organized	2,395	2,616	17	Accept/Salty	Many	3	Not sufficient	Dug Well	Dam	Water Hole						-	-	yes	-	-	Not in action	<50%	-	Someone	Willing	3	3	15	10	Boil/Unboil	
50		Mwasutianga	2,024	361	Ramadhani H Kiduka	5*7	1	351	Organized	2,350	4,620	24	Good	-	3	Not sufficient	Dug Well	Charco							-	-	yes	-	-	Organized	<50%	24,000	Someone	Willing	3	2	-	10	Boil/Unboil	
51	Ntinko	Ntinko	4,776	603	Athumani A Mhado	13*8	1	553	Organized	707	608	40	Acceptable	Many	3	Not sufficient	Dug Well	Ponds						100	-	-	-	-	Organized	<50%	140,000	Someone	Willing	3	7	60	20	Boil/Unboil		
52		Malolo	3,500	300	Saidi A Msinda	4*7	1	700	Organized	872	710	54	Acceptable	Some	3	Not sufficient	Spring	Water Hole							-	-	yes	yes	-	Willing	<50%	208,518	Someone	Willing	3	5	40	20	Boil/Unboil	
53		Mughanga	2,102	467	Elinywesia Sima	2*9	1	615	Willing	1,157	1,194	88	Accept/Salty	Some	6	Not sufficient	Seasonal River							-	yes	-	yes	-	Willing	<50%	228,053	Someone	Willing	6	4	40	20	Boil		
54		Mpambaa	2,160	407	Joshua Y Senge	7*5	1	280	Organized	1,406	1,029	65	Salty	Some	2	Not sufficient	Dug Well	Water Hole							-	yes	yes	yes	-	Willing	-	68,368	Someone	Willing	2	5	40	20	Boil	
55		Kijota	1,913	320	Omari S Wawa	3*5	1	736	Willing	587	529	30	Acceptable	-	2-3	Acceptable	Dug Well	Ponds							-	-	yes	-	-	Organized	>50%	-	Someone	Willing	2	5	40	20	Boil	
56		Nduu	2,487	330	Juma Saleh Mnkaji	4.5*2.25	1	736	Organized	1,307	1,349	95	Acceptable	-	1	Not sufficient	Dug Well	Water Hole							-	-	-	-	-	Organized	<50%	45,500	Someone	Willing	1	7	60	20	Boil	
57		Minyenye	3,802	624	Emmanuel Mwimo	5*7	2	758	Organized	2,202	2,865	154	Accept/Salty	Some	3	Acceptable	Dug Well	Water Hole							-	-	-	-	-	Organized	>50%	25,000	Someone	Willing	3	6	60	40	Boil	
58		Ikiwu	5,688	714	Hamisi M Kinanga	13*11	1	700	Organized	1,253	1,380	189	Accept/Salty	Some	4	Not sufficient	Dug Well	Water Hole							-	-	-	-	-	Organized	<50%	152,000	Someone	Willing	4	8	60	20	Boil/Unboil	
59	Makuro	Makuro	2,800	300	Ramadhan Matembe	7*5	1	810	Willing	3,600	4,500	150	Accept/Salty	Some	3	-	Borehole	Spring							-	yes	-	yes	-	Organized	>50%	111,000	None	Willing	3	4	40	20	Boil	
60		Ghalunyangu	2,600	324	Abrahamani L Mahundi	7.5*5	1	418	Organized	908	1,020	150	Acceptable	Some	2	Not sufficient	Borehole	Dam	Water Hole						-	yes	yes	yes	-	In action	>50%	478,212	Someone	Willing	2	6	40	20	Boil	
61		Mpipiti	5,680	550	Hassan Bakari Mbaruk	3*6	1	778	Organized	2,554	1,385	380	Accept/Salty	Some	1	Acceptable	Dug Well								-	yes	-	-	-	Willing	<50%	200,000	Someone	Willing	1	5	40	20	Boil	
62		Mpoku	3,248	376	Joseph Yunga	8*3	1	653	Organized	1,660	713	67	Accept/Salty	Some	1	Not sufficient	Dug Well	Water Hole							-	-	-	yes	-	Willing	-	242,000	Someone	Willing	1	4	40	20	Boil/Unboil	
63		Matumbo	3,216	429	Athumani Linja	7*6	1	527	Willing	726	987	53	Accept/Salty	-	1-2	Not sufficient	Dug Well	Water Hole							-	-	-	yes	-	Willing	>50%	127,000	Someone	Willing	2	5	40	20	Boil	
64		Mkenge	4,095	360	Saidi Abdalah	9*13	1	460	Organized	859	625	45	Acceptable	-	4	Not sufficient	Dug Well	Water Hole							-	-	yes	yes	-	Organized	>50%	242,580	Someone	Willing	4	4	40	20	Boil	
65		Migugu	5,225	380	Shaabani S. Makimbu	5*3	1	-	Organized	1,087	769	110	Salty	-	5	Not sufficient	Dug Well	Water Hole							-	-	-	yes	-	In Action	<50%	114,000	Someone	Willing	-	5	40	20	Boil	
66	Ughandi	Ughandi 'B'	2,520	409	Yusuf S Kwimba	8*5	1	509	Organized	1,070	826	23	Acceptable	Some	1	Not sufficient	Dug Well	Water Hole							-	-	-	-	-	Not in Action	>50%	30,000	Someone	Willing	1	6	40	20	Boil	
67		Nkwae	3,936	336	Salum Ngeni Kitiku	10*8	1	349	Organized	2,096	2,211	13	Acceptable	Few	3	Not sufficient	Borehole	Seasonal River							-	-	yes	yes	-	Willing	>50%	250,000	Someone	Willing	3	2	-	20	Unboil	
68		Laghanida	2,832	491	Adam Omari Njiku	7*6	1	416	Organized	4,851	2,455	59	Acceptable	Some	2	Not sufficient	Dug Well	Water Hole							-	-	yes	yes	-	Not in Action	<50%	233,705	Someone	Willing	2	2	40-100	5	Boil/Unboil	
69		Misinko	3,742	743	Yusur Isay Isango	8*10	1	680	Organized	4,400	3,400	70	Acceptable	Many	3	Not sufficient	Dug Well	Water Hole							-	-	-	-	-	Willing	-	-	Someone	Willing	3	3	30	20	Unboil	
70		Ntondo	2,663	190	Ramadhani A Mdigida	3*15	1	360	Willing	1,221	1,425	11	Accept/Salty	Many	2	Not sufficient	Borehole	Dug Well	Water Hole							-	-	yes	yes	-	Not in Action	-	55,513	Someone	Willing	2	2	-	5	Unboil
71		Msisi	3,290	450	Joseph Sima	15*5	1	575	Organized	1,906	1,958	19	Accept/Salty	Many	0.2-0.5	Not sufficient	Borehole	Dug Well	Water Hole							-	-	yes	yes	-	Not in Action	<50%	113,733	Someone	Willing	0.2	2	20	10	Boil/Unboil
72		Senene Mfuru	1,648	186	J M Ulaya	15*110	1	270	Organized	566	612	8	Accept/Salty	-	5	Not sufficient	Dug Well	Water Hole							-	-	-	-	-	Not in Action	<50%	14,000	None	Willing	5	4	40	20	Boil	

No.	General Information						Public Facilities			Number of Livestocks			HydrogeologicalCondition			WaterSupplySituation							Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (buckel/time)	Drinking & Cooking (lit/family)	Drinking (lit/family)	Treatment		
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km*km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility							Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic						Operation & Maintenance	
92	Ikhanoda	Ikhanoda	2,750	310	Jeremia Senge	4*4	1	504	Willing	2,010	1,786	36	Salty	Some	1-2	Not sufficient	Borehole	Ponds	Local Wells		-			-	-	-	yes	-	Willing	<50%	67,000	Someone	Willing	1-2	6	3	20	Boil	
93		Mjughuda	4,050	540	Erasto Mkese	6*6	1	638	Organized	2,066	1,300	125	Acceptble	Some	0.5	Acceptable	Dug Well	Local wells		-			-	yes	yes	-	-	Willing	>50%	20,000	Someone	Willing	0.5	5	40	20	Boil		
94		Msimimihi	4,350	571	Elisha Nyonyi	5*7	1	717	Willing	1,076	910	65	Acceptable		-	2	Acceptable	Dug Well		-		-	-	-	yes	-	-	Willing	<50%	10,000	Someone	Willing	2	5	40	20	Unboil		
95		Mdilu	2,527	250	Evarist Majawa	10*8	1	591	Organized	1,714	904	87	Acceptable	Some	2	Not sufficient	Borehole	Spring				Traditional Wells				yes	yes	yes	-	Not in Action	-	20,000	Someone	Willing	2	5	40	20	Boil
96		Mwasauya	3,950	960	Joely Irunde	8*15	1	629	Organized	1,505	800	95	Acceptable		-	1-5	Not sufficient		-	-		Traditional Wells			-	-	yes	-	-	Not in Action	-	20,000	Someone	Willing	1-5	4	40	20	Boil
97		Mgamu	5,640	540	MartinL.Sima	4*5	1	834	Willing	2,326	1,695	100	Salty	Some	1	Not sufficient		-	-			Traditional Wells				-	yes	yes	-	Not in Action	-	200,000	Someone	Willing	1	12	60	20	Boil
98	Maghojoa	Mipilo	5,422	520	Anthony Churi	15*15	1	830	Organized	2,112	3,263	120	Salty		-	2-8	Not sufficient	Borehole	-			Traditional Wells			-	-	yes	-	-	Organized	<50%	160,000	Someone	Willing	2-5	6	40	20	Boil
99		Mangida	2,979	491	Juma Kitadu	5*5	1	458	Organized	800	557	60	Salty		-	2	Acceptable	Borehole	-		-		-	-	yes	yes	yes	-	Organized	<50%	180,941	Someone	Willing	2	3	40	220	Boil	
100		Sefunga	4,172	640	Petro Mwanga	8*15	1	257	Organized	1,025	1,250	20	Salty	Some	6	Not sufficient		-	-		-	-			-	yes	-	-	Organized	>50%	85,000	None	Willing	6	4	40	20	Boil	
101		Ghata	4,200	504	Idd Ramadhani	4*2.5	1	500	Willing	1,410	1,048	225	Salty		-	7	Not sufficient		-	Dam		-	-		-	yes	-	-	-	In Action	<50%	280,000	Someone	Willing	7	3	-	10	Boil
102		Msange	4,455	560	Nathanael G. Hango	15*5	2	861	Organized	1,700	970	100	Acceptable		-	3-7	Undulating	Borehole	Dam		-	-				-	yes	yes	-	In Action	>50%	503,324	Someone	Willing	7-5	4	40	20	Boil
103	Mgori	Mgori	1,483	364	Mohamed Mohamed	10*7	1	302	Organized	478	1,363	33	Salty		-	1		Borehole	Dug Well		-	Traditional Wells			-	-	yes	-	-	In Action	<50%	115,075	Someone	Willing	1	3	-	5	Boil
104		Mkholo	2,149	447	Hamisi J. Sainga	15*10	1	469	Organized	840	1,592	-		-	Maany	5	Not sufficient		-	Dug Well		-	-		-	-	yes	yes	-	In Action	<50%	102,000	Someone	Willing	5	2	-	5	Unboil
105		Sughana	2,047	343	Stephano Senge	7*9	1	415	Organized	559	1,820	65	Salty	Many	0.4	Acceptable	Borehole	Dam	Spring	Water Hole				-	-	-	yes	-	Organized	<50%	20,000	Someone	Willing	0.4	4	-	20	Boil	
106		Unyampanda	1,288	259	Richard Luhi	19*10	1	430	Organized	778	540	27		-	Few	2.5	Not sufficient	Dug Well	Water Hole		-	-			-	-	-	yes	-	Willing	<50%	131,000	None	Willing	10	2.5	40	20	Unboil
107		Mughunga	1,225	268	Wilson Tandu	7*10	-	-	Organized	794	539	50	Good		-	5	Acceptable	Spring	Ponds		-	-			-	-	yes	yes	-	Willing	<50%	30,000	None	Willing	5	2	-	10	Boil
108		Nduamughanga	1,663	228	Msafiri Gani	23*30	1	296	Willing	3,664	4,272	38	Good		-	7	Not sufficient	Borehole	Water Hole	Spring		-			-	-	yes	yes	-	Organized	>50%	54,000	Someone	Willing	7	3	20	10	Unboil
109	Ngimu	Ngimu	2,438	455	Marco Almas	9*6	1	470	Organized	1,200	608	30	Acceptable	Few	4	Not sufficient	Borehole	Water Hole		-	-			-	-	yes	yes	-	Organized	>50%	14,000	None	Willing	4	1	-	5	Boil	
110		Mwighanji	2,754	458	Omarl Bakari	11*6	1	700	Organized	2,100	2,700	20	Salty	Many	5	Not sufficient	Borehole	Dug Well		-	-			-	-	yes	yes	-	Not in Action	<50%	12,000	Someone	Willing	5	2	20	10	Boil	
111		Itaja	3,690	765	Elieza Labisu	10*9	2	966	Organized	507	631	42	Good		-	5	Not sufficient	Borehole	Water Hole		-	-			-	-	yes	yes	-	Organized	>50%	70,000	None	Willing	5	3	25	15	Boil
112		Pohama	3,148	524	Gabriel Ituka	7*5	1	512	Organized	1,583	1,118	4	Salty	Few	5	Not sufficient	Dug Well	Water Hole		-	-			-	-	yes	yes	-	Organized	>50%	121,000	Someone	Willing	5	3	30	10	Boil	
113	Mungaa	Mungaa	2,027	473	Joseph Ghuliku	6*8	1	617	Organized	1,395	1,333	3	Acceptable		-	2	Sufficient	Dug Well	Dam	Water Hole		-			-	-	yes	-	-	In Action	<50%	11,405	Someone	Willing	2	1	-	10	Unboil
114		Minyinga	1,960	361	John Vicent	7*7	1	515	Organized	1,244	1,759	25	Acceptable		-	0.5	Sufficient	Dug Well	Water Hole		-	-			-	-	yes	-	Organized	>50%	1,900	Someone	Willing	0.5	1	-	10	Unboil	
115		Kinku	2,502	270	Silvanus Simba	13*10	1	538	Organized		-	-	Acceptable		-	1	Sufficient	Dug Well		-	-	Water Hole			-	-	-	-	Organized	50%	30,000	None	Willing	1	1	-	15	Unboil	
116		Kimbwi	2,380	316	Thomas Mkhotya	8*7	1	520	Organized	845	751	16	Acceptable		-	4	Sufficient	Borehole	Dug Well	Water Hole		-			-	-	-	-	Organized		-	Someone	Willing	1	1	-	15	Unboil	
117		Unyamighumbi	3,388	597	Daniel Muro	8*10	1	302	Willing	979	883	-	Acceptable		-	1	Sufficient	Borehole	Dug Well	Spring	Water Hole				50	-	-	-	Malaria	In Action	<50%	12,400	None	Willing	1	1	-	20	Unboil
118	Misughaa	Misughaa	1,481	321	JumanneMwenu	4*8	1	445	Organized		-	-	Acceptable		-	3	Sufficient	Water Hole		-	-	-			-	-	yes	yes	-	In Action	>50%	219,307	Someone	Willing	3	1	-	20	Unboil
119		Msule	1,330	222	paschal Mikindu	11*11	1	156	Organized	1,333	1,271	54	Acceptable	Few	2	Not sufficient	Water Hole		-	-	-			-	-	-	yes	-	In Action	<50%	128,490	None	Willing	2	1	-	20	Boil/Unboil	
120		Sakaa	1,250	348	Patric Nkhondeya	10*14	-	-	Organized	709	1,520	6	Acceptable	Few	4	Not sufficient	Water Hole		-	-	-			-	-	-	yes	-	In Action	>50%	280,363	None	Willing	4	1	-	20	Unboil	
121		Mnane	2,135	305	Shabani Gway	5*13	1	377	Organized	1,220	869	7	Acceptable	Few	3	Sufficient	Borehole	Dug Well		-	Water Hole				-	-	-	-	-	In action	>50%	200,000	Someone	Willing	3	1	-	20	Unboil
122		Nkundi	2,013	308	Adriano Ntandu	15*8	1	356	Organized	552	517	9	Acceptable	Few	1	Not sufficient	Spring	Water Hole		-	-	-			-	-	yes	yes	-	Willing		-	None	Willing	1	1	-	15	Boil
123	Siuyu	Siuyu	3,220	446	Michael Ghuliku	3.5*6	1	625	Organized	508	34	2,230	Acceptable	Few	2	Sufficient	Borehole	Dug Well	Water Hole		-			-	-	yes	yes	-	In action	<50%	80,000	Someone	Willing	2	1	-	20	Unboil	
124		Unyankanya	3,215	554	Laurent Mghana	3*6	1	444	Organized	280	1,570	76	Acceptable		-	2	Sufficient	Dug																					

APPENDIX-6(5)b.

Result of Village Survey : Manyoni District

No.	General Information						Public Facilities			Number of Livestocks			Hydrogeological Condition			Water Supply Situation					Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (bucket/time)	Drinking & Cooking (lit/family)	Drinking (lit/family)	Treatment
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km²/km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility				Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic	Operation & Maintenance					
1	Manyoni	Manyoni	11,050	1,841	Jumanne Mayeye	2.5*1.5	1	1,474	Organized	328	332	-	Acceptable	-	0.1	Not sufficient	Borehole	Water Hole			100	-	yes	yes	-	Organized	<50%	80,000	Available	Willing	0.5	3	80	20	Boil
2		Kipondoda	6,306	1,120	James Maturu	8*3.5	1	1,008	Organized	989	-	11	Acceptable	-	1.0	Acceptable	Borehole	Water Hole			100	-	yes	yes	-	Organized	<50%	20,000	Available	Willing	1	6	60	10	Boil
3		Mwanzi	1,740	435	George Mshomari	2*1.5	1	270	Organized	71	88	-	Acceptable	-	2	Acceptable	-				-	-	yes	yes	-	Willing	<50%	149,925	None	Willing	1	2	20	5	Boil
4		Muhala	2,160	307	Mathew Ndaki	16*9	1	308	Organized	2,146	953	37	Acceptable	-	2.5	Acceptable	Dug Well	Water Hole			-	-	yes	yes	-	Organized	<50%	15,421	Available	Willing	2.5	2	15	10	Unboil
5		Mdunundu	724	145	Salum Mateche	12*8	-	-	Willing	532	350	25	Acceptable	-	2	Acceptable	Water Hole				-	-	-	yes	-	Organized	-	14,000	Available	Willing	2	3	20	10	Unboil
6		Mitoo	728	146	Wilbad Kitiku	7*3	1	115	Willing	345	625	6	Acceptable	-	0.5	Acceptable	Borehole				-	-	yes	yes	-	Organized	<50%	95,000	None	Willing	0.5	4	30	10	Boil
7		Mkwese	3,630	605	Jonas Masaka	7*3.5	1	458	Willing	1,632	413	15	Acceptable	-	1	Acceptable	Borehole	Water Hole			-	-	yes	yes	-	Willing	<50%	-	None	Willing	1	3	20	10	Boil
8		Kinangali	3,525	587	Leonard Ntandi	8*6	1	350	Organized	2,792	2,257	114	Acceptable	-	2	Acceptable	Water Hole				-	-	yes	yes	-	Willing	<50%	-	None	Willing	2	3	20	10	Boil
9	Aghondi	Aghondi	1,027	171	Khatibu Ally	8*6	1	120	Willing	240	170	16	Acceptable	-	5	Acceptable	Borehole				-	-	yes	yes	-	Willing	-	-	Available	Willing	5	3	20	10	Unboil
10		Mabondeni	546	88	Fransis Marco	5*2.5	1	117	Organized	350	180	20	Acceptable	-	0.5	Acceptable	Water Hole				-	-	yes	yes	-	Willing	-	-	None	Willing	0.5	3	20	10	Boil
11		Njirii	1,200	200	Cosmas Muna	10*8	1	231	Organized	1,430	60	15	Acceptable	-	1	Acceptable	Water Hole				-	-	yes	yes	-	Willing	<50%	-	None	Willing	1	3	20	10	Boil
12		Kamenyanga	1,846	263	Mbaruku Mrisho	8*6	1	372	Organized	1,500	1,000	12	Acceptable	-	1.5	Acceptable	Dug Well	Water Hole			-	-	yes	yes	-	Organized	>50%	85,600	Available	Willing	1.5	3	20	10	Unboil
13	Idodyandole	Idodyandole	2,085	298	PaUlo Mchelemi	5*2	1	309	Organized	1,656	2,230	61	Salty	-	5	Acceptable	Borehole	Water Hole			-	-	yes	yes	-	Organized	<50%	46,553	None	Willing	1.5	3	20	10	Boil
14		Mbugani	1,861	187	Saidi Mgongole	4*4	1	177	Organized	2,920	1,247	7	Acceptable	-	1.5	Acceptable	Borehole				-	-	-	-	-	Organized	>50%	137,000	Available	Willing	1.5	3	20	10	Unboil
15		Kashangu	600	150	Ally Ghula	4*4	1	227	Willing	750	284	33	Acceptable	-	1.5	Acceptable	Borehole	Spring			-	-	yes	yes	-	Willing	>50%	13,000	None	Willing	1.5	3	25	10	Boil
16	Itigi	Itigi Mjini	4,399	716	Hassan Omar	16*5	2	1,193	Organized	1,980	751	4	Salty	-	1	Not sufficient	Borehole	Dam	Water Hole		50	-	yes	yes	-	In Action	>50%	240,000	Available	Willing	1	4	60	30	Unboil
17		Doroto	1,680	211	Wilson Lameck	8*8	1	180	Organized	2,080	1,800	40	Accept/Salty	-	8	Not sufficient	Borehole	Water Hole			-	-	yes	yes	-	In Action	>50%	170,000	Available	Willing	8	1	60	40	Unboil
18		Kitaraka	1,500	230	William Galahenga	25*20	1	176	Organized	2,000	2,500	20	Salty	-	15	Not sufficient	Borehole	Water Hole			-	-	yes	yes	-	In Action	<50%	124,000	Available	Willing	15	1	60	30	Unboil
19	Sanjaranda	Sanjaranda	2,113	446	Festo Iloghwe	5*5	1	555	Organized	2,139	1,173	2	Acceptable	-	1	Acceptable	Borehole	Water Hole			-	-	yes	yes	-	Organized	>50%	660,000	Available	Willing	1	4	20	10	Boil
20		Gurungu	1,209	208	Yaredi Hema	8*6	1	295	Organized	3,000	2,500	16	Acceptable	-	1.5	Acceptable	Water Hole				-	-	yes	yes	-	Organized	>50%	36,000	Available	Willing	1.5	3	20	10	Boil
21		Kitopeni	2,504	270	Chritopher L Kiwango	10*10	1	246	Organized	2,240	1,571	20	Acceptable	-	2	Acceptable	Borehole	Water Hole			-	-	yes	yes	-	Organized	>50%	121,000	Available	Willing	2	3	20	10	Boil
22	Ipande	Ipande	2,130	260	Elias Lifa Gombo	6*4	1	246	-	4,400	1,300	-	Acceptable	-	2	Acceptable	Borehole				-	-	yes	yes	-	Organized	>50%	500,000	None	Willing	2	3	20	10	-
23		Muhanga	4,850	539	Stephen Dugu	13*8	1	224	Willing	3,750	1,500	30	Acceptable	-	1.5	Acceptable	Borehole	Dug Well			-	-	yes	yes	-	Organized	<50%	974,000	Available	Willing	1.5	4	20	10	Boil
24		Damwelu	1,240	146	Daniel Manyika	16*12	1	150	Organized	1,063	121	4	Acceptable	-	2.5	Acceptable	Borehole				-	-	yes	yes	-	Organized	>50%	900,000	None	Willing	2.5	2	10	5	Boil
25	Mgandu	Mgandu	7,235	1,053	Fredrick Saimon Anania	8*16	2	923	Organized	1,399	1,053	11	Acceptable	-	1.5	Not sufficient	Borehole	Dug Well			-	-	yes	-	-	In Action	>50%	73,000	Available	Willing	0.25	1	-	20	Unboil
26		Kalangali	1,800	370	Eduing Kapago	5*1.5	1	214	Organized	420	160	6	Acceptable	-	7	Not sufficient	Water Hole				-	-	-	-	-	In Action	<50%	870,000	None	Willing	1	1	-	20	Unboil
27		Itagata	2,758	475	Musa Bakari	28*40	1	312	Organized	3,147	913	7	Salty	-	5	Not sufficient	Borehole	Dug Well	Water Hole	River	-	-	yes	yes	-	In Action	>50%	154,000	Available	Willing	5	2	80	40	Unboil
28		Kayui	2,690	550	Mose Mdemwa Maskini	7*24	1	370	Organized	3,726	1,906	-	Acceptable	-	2	Not sufficient	Borehole	Dug Well			-	-	-	-	-	In Action	<50%	30,000	Someone	Willing	2	1	-	20	90% Unboil
29		Makale	2,260	450	Juma Ali Manyota	5*30	1	474	Organized	1,693	515	-	Acceptable	-	2	Not sufficient	Borehole	Dug Well	Water Hole		-	-	yes	-	-	In Action	>50%	98,086	Available	Willing	2	1	-	20	Unboil
30	Rungwa	Rungwa	2,000	359	Wilson I Ngaigembe	5*8	1	273	Organized	150	30	-	Good	-	3	Not sufficient	Borehole	Water Hole			-	-	yes	yes	-	Organized	<50%	570,000	Someone	Willing	3	2	-	5	Boil/Unboil
31		Mwamagembe	1,815	355	Edward L Wakugnda	15*7	1	273	Willing	10	15	-	Good	-	1	Acceptable	Borehole	Dug Well	Spring	Water Hole	-	-	yes	yes	-	Willing	>50%	300,000	Someone	Willing	1	5	40	20	Unboil
32		Kitanula	382	106	Bashiri Hibu	20*20	1	117	Organized	-	11	-	Good	-	1	Not sufficient	Water Hole				-	-	yes	yes	-	Organized	>50%	58,000	Someone	Willing	1	5	40	20	Unboil
33	Maweni	Maweni	2,841	343	Ezekiel Sajilo Ibupa	8*8	1	308	Organized	2,845	1,560	62	Acceptable	-	2	Acceptable	Water Hole				100	-	yes	yes	-	Organized	>50%	258,124	Available	Willing	1.5	2	10	5	Boil
34		Mvumi	1,472	198	Stephano Paul	6*5	1	269	Organized	2,565	2,000	120	Acceptable	-	1.5	Acceptable	Dug Well				-	-	-	yes	-	Organized	>50%	48,000	Available	Willing	1.5	4	30	10	Boil
35		Ngaiti	2,676	382	Donat M Mdamu	15*10	1	512	Organized	4,714	2,713	203	Acceptable	-	1	Acceptable	Dug Well				-	-	yes	yes	-	Organized	>50%	47,050	Available	Willing	1	4	20	10	Boil
36	Chikuyu	Chikuyu	4,550	498	Jhon Exavery	18*10	1	1,042	Organized	773	1,202	19	Acceptable	-	1.5	Acceptable	Dug Well	Water Hole			-	-	yes	yes	-	Organized	-	60,808	Available	Willing	1.5	4	20	10	Boil
37		Mwasa	1,646	371	michel Hoya	8*8	1	337	Organized	1,941	1,887	52	Acceptable	-	2	Acceptable	Borehole	Water Hole			-	-	yes	yes											

No.	General Information						Public Facilities			Number of Livestocks			Hydrogeological Condition			Water Supply Situation				Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (buckets/time)	Drinking & Cooking (lit/family)	Drinking (lit/family)	Treatment		
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km²/km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility				Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic						Operation & Maintenance	
40	Makanda	Makanda	3,175	420	Jumne shaban	17°12'	1	400	Organized	4,581	2,408	76	Acceptable	-	3	Acceptable	Water Hole				50	-	yes	yes	-	Willing	<50%	-	Available	Willing	3	2	20	10	Boil	
41		Magasai	3,004	333	John chanzi	20°8'	1	230	Willing	2,944	1,070	9	Acceptable	-	1	Acceptable	Water Hole				-	-	yes	yes	-	Willing	<50%	-	None	Willing	1	3	20	10	Boil	
42		Kitalalo	1,918	320	Severini Mtinya	15°10'	1	308	Organized	2,832	1,750	76	Acceptable	-	1	Acceptable	Water Hole				-	-	yes	yes	-	Organized	<50%	-	None	Willing	1	2	20	5	Boil	
43	Kintinku	Kintinku	3,020	426	Shabani Abasi	13°5'	1	374	Organized	157	154	-	Acceptable	-	2.5	Acceptable	Dug Well				70	-	yes	yes	-	Organized	>50%	-	Available	Willing	2.5	3	20	10	Boil	
44		Lusille	4,656	718	Laurent Mdeje Lannder	12°5'	1	430	Organized	2,008	1,056	21	Acceptable	-	2	Acceptable	Dug Well				70	-	yes	yes	-	Organized	>50%	45,050	Available	Willing	2	2	10	5	Boil	
45		Udimaa	1,884	285	Joseph Njamasi	10°6'	1	278	Organized	2,902	1,194	46	Acceptable	-	2	Acceptable	Dug Well	Water Hole				-	-	yes	yes	-	Organized	>50%	29,000	None	Willing	2	2	10	5	Unboil
46	Nkonko	Nkonko	1,878	205	Michael Paulo Nyankota	16°9'	1	264	Organized	1,500	640	20	Acceptable	-	1.5	Acceptable	Borehole	Water Hole				-	-	yes	yes	-	Organized	>50%	500,000	Available	Willing	1.5	4	20	10	Boil
47		Mpola	2,115	419	Eliudi Lenard	9°5'	1	191	Organized	3,445	1,139	88	Acceptable	-	2	Acceptable	Borehole	Water Hole				-	-	yes	yes	-	Organized	>50%	104,086	None	Willing	2	2	20	5	Unboil
48		Ntumbi	2,873	411	Joseph Mafunde	18°15'	1	268	Organized	3,600	6,000	400	Acceptable	-	7	Acceptable	Water Hole				100	-	yes	yes	-	Organized	>50%	850,800	None	Willing	7	3	20	7	Boil	
49	Chikola	Chikola	6,340	704	Jonas Kasomo	2.5°1.5'	1	454	Organized	4,381	3,000	30	Acceptable	-	1	Acceptable	Borehole	Dug Well				-	-	yes	yes	-	Organized	<50%	30,000	Available	Willing	1	4	40	10	Boil
50		Chidamsulu	1,508	215	Asheri M.Saguti	10°4'	-	-	Organized	952	1,453	17	Acceptable	-	1	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Organized	<50%	73,000	Available	Willing	1.5	4	20	10	Boil
51		Winamila	1,644	274	Anderson Msinjili	8°6'	1	105	Organized	1,600	920	20	Acceptable	-	1	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Willing	-	-	None	Willing	1	3	20	10	Boil
52	Heka	Heka	6,877	1,119	John Lazaro	11°8'	1	520	Organized	3,050	1,418	31	Acceptable	-	1.5	Acceptable	Borehole	Water Hole	-	-	-	-	-	yes	yes	-	Organized	>50%	10,000	Available	Willing	1.5	3	20	10	Boil
53		Sasilo	10,335	1,033	Emanuel M.Ndida	24°14'	1	405	Organized	7,809	6,522	184	Acceptable	-	1	Acceptable	-	Water Hole			50	-	yes	yes	-	Willing	<50%	-	None	Willing	1	3	30	10	Unboil	
54		Chikombo	1,438	206	Yustas M.Chikoti	15°5'	1	143	Organized	1,473	1,140	30	Acceptable	-	4	Acceptable	Borehole	Water Hole	-	-	-	-	-	yes	yes	-	Organized	<50%	20,900			4	2	10	5	Unboil
55	Isseke	Isseke	992	198	Augustino P.Augustino	10°7'	1	170	Organized	160	370	-	Acceptable	-	1	Acceptable	Borehole	-	-	-	-	-	-	yes	-	Organized	-	200,000	Available	Willing	1	5	20	10	Unboil	
56		Simbanguuru	1,700	250	Godfrey Sumbali	28°12'	1	234	Organized	2,900	800	-	Acceptable	-	0.5	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Organized	<50%	-	Available	Willing	0.5	5	25	10	Boil
57		Igwamadele	2,850	407	Stanley Mponko	18°8'	1	279	Organized	1,166	818	26	Acceptable	-	1	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Willing	<50%	-	Available	Willing	1	3	20	10	Boil
58	Sanza	Mpapa	2,000	400	Emanuel Maganjira	12°10'	1	372	Organized	1,796	592	35	Acceptable	-	1	Acceptable	-	Water Hole	Dug Well	-	-	-	-	yes	yes	-	Organized	>50%	800,000	Available	Willing	1	4	40	10	Boil
59		Sanza	2,883	684	Sebastian J.Nyambuya	3°3'	1	-	Organized	1,690	1,423	17	Acceptable	-	0.5	Acceptable	-	Water Hole				-	-	yes	yes	-	Willing	<50%	-	Available	Willing	0.5	4	20	10	Boil
60		Nlope	2,756	606	Martin Mang'unda	8°8'	1	356	Organized	1,316	1,706	36	Acceptable	-	-	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Organized	>50%	-	Available	Willing	1	3	20	10	Boil
61		Chicheho	1,800	320	Mathias M.Matereka	12°6'	-		Organized	703	457	17	Acceptable	-	5	Acceptable		Water Hole	-	-	50	-	yes	yes	-	Organized	>50%	-	None	Willing	5	3	20	5	Boil	
62	Makuru	Ikasi	1,600	270	Zakaria M. Msalali	7°3'	1	325	Organized	1,500	800	40	Acceptable	-	2	Acceptable	-	Water Hole	Spring		50	-	yes	yes	-	Organized	>50%	30,000	Someone	Willing	2	3	20	10	Boil	
63		Msemembo	2,119	353	Onesmo Mwaja	27°20'	1	440	Organized	1,200	184	42	Acceptable	-	1.5	Acceptable	Borehole	Water Hole	-	-	-	-	-	yes	yes	-	Organized	>50%	50,000	Someone	Willing	1.5	3	20	10	Boil
64		Saranda	6,661	951	Frenky Seti	8°6'	1	418	Organized	726	934	17	Acceptable	-	2	Acceptable	Borehole	-	Spring	-	-	-	-	yes	yes	-	Organized	<50%	45,681	None	Willing	2	3	20	10	Unboil
65		Londoni	1,436	283	Hamisi Ramadhani	18°10'	1	249	Organized	250	150	15	Acceptable	-	10	Acceptable	Borehole	-	-	-	-	-	-	yes	yes	-	Organized	<50%	100,000	None	Willing	4	3	20	10	Unboil
66	Kilimatinde	Hika	713	142	Paulo Guat	15°7'	1	124	Organized	794	348	19	Acceptable	-	1	Sufficient	-	Water Hole	Spring	-	-	-	-	yes	yes	-	Willing	-	-	Available	Willing	1	5	30	20	Unboil
67		Kilimatinde	1,355	334	Haruni A.Hoya	20°17'	1	267	Organized	37	49	-	Acceptable	-	3	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Organized	<50%	350,000	Available	Willing	3	2	20	6	Boil
68		Solya	1,816	259	Godwin Mhumpa	7°6'	1	305	Organised	617	589	16	Acceptable	-	1	Acceptable	-	Water Hole	-	-	-	-	-	yes	yes	-	Organised	>50%	24,000	Available	Willing	1	2	20	10	Boil
69		Sukamahela	3,070	560	Stephen Mgusi	5°4'	1	359	Organised	408	519	19	Acceptable	-	2	Acceptable	Borehole	Water Hole	-	-	-	-	-	yes	yes	-	Organised	<50%	45,000	Available	Willing	2	4	20	10	UnBoil
70	Majiri	Majiri	4,021	668	Laurent Cosmas	13°8'	1	343	Organised	3,020	2,200	70	Acceptable	-	4	Acceptable	-	Water Hole	Dam	-	100	yes	yes	yes	-	Organised	<50%	150,000	None	Willing	4	2	15	5	Boil	
71	Sasajila	Sasajila	1,061	176	Roman Chisoza	8°5'	1	220	Organised	701	634	15	Acceptable	-	2	Acceptable	-	Water Hole				-	-	yes	yes	-	Organised	<50%	-	None	Willing	2.5	2	20	5	Boil
72		Makasuku	1,550	250	Lazaro Sakawa	15°8'	1	220	Organised	1,391	1,840	42	Acceptable	-	5	Acceptable	-	Water Hole	-	-	100	-	yes	yes	-	Organised	<50%	38,000	None	Willing	5	2	10	5	Boil	

APPENDIX-6(5)b.
Result of Village Survey : Igunga District

No.	General Information						Public Facilities			Number of Livestocks			HydrogeologicalCondition			WaterSupplySituation			Water Vendor	Water Borne Disease				OPERATION & MAINTENANCE					Distance to Water Facility (km)	Quantity of Fetching (bucket/hme)	Drinking (lit/family)	Treatment		
	Ward	Name of Village	Population (2000)	Number of Households	Name of Village Chief	Extent of Village (km*km)	Primary School	Primary School Students	Village Health Committee	Cows	Goats	Donkeys	Water Quality	Dental Fluorosis	Distance from Village (km)	Water Supply Situation	Major Water Facility			Vending Price (Tsh/20lit)	Cholera	Typhoid	Dysentery	Other	Village Water Committee	Female Participation	Village Water Fund (Tsh)	Local Mechanic					Operation & Maintenance	
1	Mwashinku	Matinje	2,350	407	Simon Shimbi	7*7	1	250	Willing	2,800	1,700	34	Acceptable	Many	22	Not sufficient	Water Hole			100-200	yes	-	-	yes	-	Willing	-	-	None	Willing	-	-	30	Unboil
2		Buchenjegele	3,600	420	Bunela Jilala	12*6	1	350	Willing	5,600	3,220	76	Acceptable	-	10	Not sufficient	Water Hole			100-200	-	-	-	-	Willing	-	-	None	Willing	-	-	30	Unboil	
3		Mondo	2,653	366	Fransis J. Isabili	10*10	1	342	Organised	1,721	221	31	Acceptable	Many	7	Not sufficient	-			100	-	-	-	yes	-	Not in action	<50%	-	Available	Willing	-	-	30	Boil/Unboil
4		Mwashiku	2,560	350	Sillas Shema	15*17	1	350	Willing	2,100	870	40	Acceptable	Few	13	Not sufficient	Water Hole			-	-	-	yes	yes	-	Willing	-	-	None	Willing	-	-	40	Unboil
5	Ngulu	Ngulu	2,267	256	Vincent Mbilo	5*4	1	348	Organised	1,382	900	5	Acceptable	Few	1	Sufficient	Water Hole			-	-	-	-	yes	-	Organised	>50%	20,000	None	Willing	1	1	30	Unboil
6		Imalilo	2,656	332	Jared Enock	7*8	1	300	Organised	1,922	1,473	16	Acceptable	Few	7	Sufficient	Water Hole			100	-	-	-	-	-	Organised	<50%	20,000	None	Willing	7	2	40	Boil/Unboil
7		Mwansugho	1,584	176	Makonda Lukeresha	5*10	1	271	Organised	1,400	1,112	7	Acceptable	-	8	Not sufficient	Dam	Water Hole		100	-	-	-	yes	-	Organised	>50%	20,000	None	Willing	-	2/20	20	Unboil
8	Chomachankola	Chomachankola	7,176	1,161	Hussein Athumani	8*7	2	948	Willing	2,406	1,792	55	Acceptable	Few	4	Not sufficient	Borehole	Dam		50	-	yes	-	-	Malaria	Willing	-	-	Available	Willing	4	2	20	Boil/Unboil
9		Chibiso	2,610	435	Lusangija Nyanda	8*9	1	407	Willing	3,150	2,420	25	Acceptable	-	5	Not sufficient	Water Hole			-	-	-	yes	-	Willing	-	-	None	Willing	-	-	30	Unboil	
10		Bulangamiliwa	4,250	600	Baina Tungu	7*8	2	-	Organised	-	-	-	Salty	Few	6	Not sufficient	Water Hole			-	-	-	-	-	-	In Action	<50%	3,000,000	None	Willing	-	-	30	Unboil
11	Ziba	Ziba	6,391	623	Desderi Mwandu	15*10	1	342	Organised	2,998	1,722	6	Acceptable	Few	2	Not sufficient	Dug Well			-	-	-	-	-	-	Not in action	<50%	40,000	Someone	Willing	-	-	20	Boil/Unboil
12		Ibologero	9,681	738	Jeremia J.Mabanda	Km 205	2	638	Organised	-	-	-	Acceptable	Few	6	Not sufficient	Dug Well			-	-	yes	yes	-	-	Willing	-	-	Someone	Not willing	6	1	30	Unboil
13		Bulumbela	3,500	500	Mohamed Nkala	8*12	1	262	Willing	2,564	1,800	8	Salty	Few	4	Not sufficient	-			-	-	-	yes	-	Willing	-	-	None	Willing	-	-	30	Unboil	
14	Ndembezi	Ndembezi	5,073	725	Simon Heta	5*7	1	369	Organised	3,644	2,003	8	Acceptable	Few	4	Not sufficient	Dam			50-100	-	-	-	yes	-	In Action	<50%	123,000	Someone	Willing	-	-	30	Unboil
15		Nligu	1,542	147	Machibya Nsimbila	6*7	1	218	Organised	791	462	10	Salty	Few	3	Not sufficient	Water Hole			-	-	-	-	yes	-	Organised	<50%	9,000	None	Willing	-	-	30	Unboil
16		Kitangili	2,988	477	Athuman Seleman	7*7	1	284	Organised	1,605	661	4	Acceptable	Few	4	Not sufficient	Dam	Water Hole		-	-	yes	-	-	-	Organised	<50%	20,000	Available	Willing	-	-	30	Unboil
17		Moyofuke	1,742	250	Maganga Makiula	5*7	1	265	Organised	1,304	636	8	Salty	Few	4	Not sufficient	Water Hole			-	-	-	-	yes	-	In Action	<50%	15,000	Someone	Willing	-	-	30	Unboil
18	Nkinga	Nkinga	8,968	710	Januari Matunya	9*8	1	948	Organised	1,897	866	6	Salty	Few	4	Not sufficient	Dug Well	Dam		100	-	yes	yes	-	-	-	>50%	345,000	Someone	Willing	-	-	30	Unboil
19		Ulaya	4,030	343	Abdalaziz Nasor	7*8	1	370	-	2,497	1,260	-	Acceptable	-	7	Not sufficient	Dam	Water Hole	-	-	-	-	-	yes	-	In Action	<50%	10,000	Available	Willing	-	-	40	Unboil
20		Ugaka	3,100	400	Kened Simbila	5*5	1	350	Organised	4,500	1,020	2	Salty	Few	3	Not sufficient	Water Hole	-	-	100	-	-	-	-	-	Organised	<50%	10,000	None	Willing	-	-	20	Boil/Unboil
21		Mwakabuta	2,400	246	Charles Kabatila	17*6	1	255	Willing	1,300	330	20	Acceptable	-	2	Not sufficient	Water Hole	-	-	-	-	-	-	-	-	Willing	-	-	None	Willing	-	-	40	Unboil
22	Igurubi	Ikunguipina	2,568	180	Paulo Usongo	13*12	1	230	Organised	1,245	238	20	Acceptable	-	7	Not sufficient	Dug Well	-	-	-	-	-	-	yes	Malaria	Willing	<50%	-	None	Willing	-	-	30	Unboil
23		Igurubi	3,869	657	Abdallah Mohamed	20*15	1	63	Organised	2,346	1,283	11	Acceptable	-	4	Not sufficient	Dam	-	-	50-100	yes	-	-	yes	-	Willing	<50%	-	Available	Willing	2	6	20	Boil/Unboil
24		Mwagala	1,101	250	Gimbishi Kamuli	12*17	1	270	Organised	1,084	822	13	Acceptable	-	11	Not sufficient	Water Hole	-	-	-	yes	-	-	yes	-	Willing	<50%	-	None	Willing	11	2	15	Unboil
25		Kalangale	1,303	173	Wino Bundala	15*18	1	274	Organised	1,147	726	6	Acceptable	-	5	Not sufficient	Water Hole	-	-	-	-	yes	-	yes	-	Willing	<50%	-	None	Willing	5	4	20	Unboil
26	Kinungu	Kinungu	2,500	380	Antony Adriano	6*4	1	417	Organised	2,174	651	10	Acceptable	Few	5	Not sufficient	Water Hole			-	-	yes	-	yes	-	Willing	-	-	None	Willing	5	3	20	Unboil
27		Mwandihimiji	3,010	430	Masunga J.Ngasa	3*6	2	480	Willing	2,196	511	16	Acceptable	Few	2	Not sufficient	Water Hole	Dam		-	-	-	-	-	-	In Action	<50%	3,000,000	None	Willing	2	5	30	Boil/Unboil
28		Mwamapuli	2,660	380	Mwandu Mhoja	8*10	1	264	Willing	1,628	398	12	Acceptable	Few	7	Not sufficient	Water Hole	-	-	100	-	-	-	yes	-	Willing	<50%	-	None	Willing	7	1	15	Boil/Unboil
29		Mwajilunga	1,220	155	Martin Nchimani	4*7	1	248	Willing	1,076	297	13	Acceptable	Few	2	Not sufficient	Water Hole	River		-	-	yes	-	yes	-	Willing	-	-	None	Willing	2	2	30	Boil/Unboil
30	Mwamashiga	Migongwa	2,360	337	Daniel Ng'umbo	7*10	1	288	Organised	1,124	840	120	Acceptable	Few	6	Not sufficient	Water Hole	-	-	100	yes	-	-	-	-	-	-	-	Someone	Willing	6	2	20	Unboil
31	Ntobo	Ntobo	1,927	220	Kuya Masanja	15*9	2	499	Organised	2,700	2,000	40	Acceptable	Few	3	Not sufficient	Water Hole	Dam		-	-	yes	-	yes	-	-	-	-	None	Willing	-	1	20	Boil/Unboil
32		Mwamloli	2,550	210	Joseph Gogadi	5*5	1	250	Organised	2,000	2,200	20	Acceptable	Few	13	Not sufficient	Water Hole	-	-	-	yes	-	-	yes	-	Organised	<50%	-	None	Willing				

APPENDIX-6(6)a. Household Survey Sheet

HOUSEHOLD SURVEY SHEET

Interviewers Name		Date of Interview	
Village Name		Sub-Village name	
District		Village Number	
Name of Respondent		Name of Household Head	
Sex		Sex	
Age		Age	
Relationship to Household Head		Duration of living in this village	

1. Family Size - Persons Resident in the Household

1) Number of member _____ persons Male _____ Female _____

Adult men ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

Adult women ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

Own children ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

Other children ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

Why do 'Other' adults live with?

Why do 'Other' children live with?

2) Living outside for whom financially responsible ☐ Yes _____ ☐ No

Support them ☐ Regularly ☐ When need arises ☐ Other ()

3) Family planning decisions

☐ Husband alone ☐ Wife alone ☐ Joint decision

4) Childbirth within past two years

☐ Yes ⇒ ⇒ (Related any local or national event? ☐ Yes _____ ☐ No)

Name of woman	Current age	Date of recent childbirth	Previous childbirth date	Interval

☐ No

☐ Don't know

5) Number of school age children (age 6-18)

Own children ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

Orphans ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

Dependants ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More ()

6) Number of school age children (age 6-18) who are not in school

Own children ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More () Why ?

Orphans ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More () Why ?

Dependants ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ More () Why ?

Who was involved in making decisions about schooling ☐ Father ☐ Mother ☐ Other ()

2. Assets - Household and Business

1) Assets / Owner

☐ Electricity _____ ☐ Cupboard _____ ☐ Bicycle _____

☐ Television _____ ☐ Sofa _____ ☐ Telephones _____

☐ Radio _____ ☐ Dining table _____ ☐ House, rooms _____

☐ Cassette Player _____ ☐ Chair _____ ☐ Land _____

☐ Refrigerator _____ ☐ Bed _____ ☐ Cattle _____

☐ Electric Cooker _____ ☐ Kitchen Utensils _____ ☐ Livestocks _____

2) Business / Owner

☐ Owns shop or kiosk _____ ☐ Wheelbarrow _____

☐ Rents shop or kiosk _____ ☐ Stocks for business _____

☐ Equipment for business _____ ☐ Other () _____

3) Savings {Q: Does anyone save money?} <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ How many members save money in individual bank account? _____ How many members are part of a saving group/association? _____ Save in any other ways _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No ⇒ ⇒ Why not? _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Don't know </div>		
4) Emergency Funds {Q: Does family have enough cash for health care costs if someone gets sick? } <div style="margin-left: 20px;"> <input type="checkbox"/> Yes </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No ⇒ ⇒ How does family meet the needs for money to pay for care? _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Don't know </div>		
5) Control of Income {Q: Do you control the use of any income you earn? } <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ Certain financial responsibilities within the family <input type="checkbox"/> Yes _____ <input type="checkbox"/> No _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div>		
6) Borrowing and Lending {Q: does anyone of this household ever lend money to anyone else? } <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ Most common reasons for lending money _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div>		
{Q: does this household ever need to borrow money for any reason? / from friends, relatives, banks etc. } <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ Most common place for borrowing money _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div>		
3. Food - Type of Meals		
1) Number of meals per day _____		
2) Type of meals What time? What type?		
Breakfast _____ _____		
Lunch _____ _____		
Supper _____ _____		
Other meals _____ _____		
Person decides the type of food <input type="checkbox"/> Husband <input type="checkbox"/> Wife <input type="checkbox"/> Joint <input type="checkbox"/> Other ()		
Person purchases food every day <input type="checkbox"/> Husband <input type="checkbox"/> Wife <input type="checkbox"/> Joint <input type="checkbox"/> Other ()		
3) Alcohol <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ Who? _____ How much? _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Don't know </div>		4) Tabacco <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ Who? _____ How much? _____ </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Don't know </div>
4. Livelihood Trends		
1) Increase in Resources or Improvement in Livelihood within past year <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ <input type="checkbox"/> Inheritance <input type="checkbox"/> Gift <input type="checkbox"/> Profit <input type="checkbox"/> Wages <input type="checkbox"/> Other () </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Don't know </div>		
2) Setbacks or Shocks in Livelihood within past year <div style="margin-left: 20px;"> <input type="checkbox"/> Yes ⇒ ⇒ <input type="checkbox"/> Death of family member <input type="checkbox"/> Severe illness of member <input type="checkbox"/> Property Grabbing <input type="checkbox"/> Robbery, theft or vandalism <input type="checkbox"/> Fire, natural destruction <input type="checkbox"/> Other () </div> <div style="margin-left: 20px;"> <input type="checkbox"/> No </div> <div style="margin-left: 20px;"> <input type="checkbox"/> Don't know </div>		
3) Household income last month _____		Household income last year _____
4) Overall household livelihood rating <div style="margin-left: 20px;"> <input type="checkbox"/> Going up <input type="checkbox"/> Staying level <input type="checkbox"/> Going down </div> Reasons for this _____		
5) Self-ranking of overall household well-being category <div style="margin-left: 20px;"> <input type="checkbox"/> Richest <input type="checkbox"/> Near good, Upper middle <input type="checkbox"/> Near poor, low middle <input type="checkbox"/> Poorest </div>		

HOUSEHOLD SURVEY SHEET

5. Water Source

1) Major Water Source for Drinking

☐ Borehole ☐ Shallow well ☐ Dam ☐ Spring ☐ Water hole ☐ Other ()

Distance to Water Source _____ km

☐ Appropriate ☐ Acceptable ☐ Far

Water Quantity ☐ Sufficient ☐ Uncertain (Dry Season) ☐ Not Sufficient

Water Quality ☐ Good ☐ Acceptable ☐ Salty ☐ Nasty

Type of Ownership

☐ Village ☐ Community ☐ Household ☐ Neighbours ☐ Other ()

2) Major Water Source for Domestic Use

☐ Borehole ☐ Shallow well ☐ Dam ☐ Spring ☐ Water hole ☐ Other ()

Distance to Water Source _____ km Time taken to water source _____ min

Time taken to fetch water _____ min

☐ Appropriate ☐ Acceptable ☐ Far

Water Quantity ☐ Sufficient ☐ Uncertain (Dry Season) ☐ Not Sufficient

Water Quality ☐ Good ☐ Acceptable ☐ Salty ☐ Nasty

Type of Ownership

☐ Village ☐ Community ☐ Household ☐ Neighbours ☐ Other ()

3) Water source for drinking and Domestic Use are the same?

☐ Yes

☐ No ⇒ ⇒ Why different?

☐ Don't know

4) Water source during Rainy season and Dry season are the same?

☐ Yes

☐ No ⇒ ⇒ (Water source for Drinking) (Water source for Domestic use)
 Rainy season _____ km _____ km
 Dry season _____ km _____ km

☐ Don't know

5) Facilities Situation

Type of Facilities (Constructed by _____ in _____)

☐ Borehole ☐ Shallow well ☐ Dam ☐ Spring ☐ Other ()

Type of Equipment

☐ Bucket ☐ Hand Pump ☐ Wind Pump ☐ Solar Pump ☐ Engine /Moter Pump

Supply Facilities

☐ Hand Pump ☐ Water Tank + Tap ☐ Pipeline + Domestic Point

Facility Situation

☐ Appropriate ☐ Need to be Rehabilitated ☐ Abandoned

☐ Remote Place ☐ Poor Water Quality ☐ Stolen ()

Reason for the situation

6) Water Vendor

☐ Yes ⇒ ⇒ Number of Water Vendors _____

Frequency _____ times/week

☐ Daily Supply ☐ Stable Supply ☐ Unstable Supply

How much water do the household buy from vendor _____ lit/day or week

Vending Price _____ Tsh/20lit

☐ Low Price ☐ Affordable ☐ High Price

How much is the good Price? _____ Tsh/20lit

Transportation of Vendors

☐ Bicycle ☐ Wheelbarrow ☐ Ox Cart ☐ Vehicle

☐ None

HOUSEHOLD SURVEY SHEET

6. Water Use

1) Water Fetching

- ☐ Women always ☐ Women and Children always ☐ Men always
☐ Women sometimes ☐ Children sometimes ☐ Men sometimes
☐ Women, Men and Children ☐ Pay someone to fetch ☐ Other ()

Quantity of Fetching _____ buckets(20lit)/day

Frequency _____ times/day

2) Water Storage in Household

Store separately or same container for all use?

- ☐ All different containers ☐ Drinking water different ☐ Cooking water different
☐ Drinking, cooking together ☐ All together

Why do you store water in different container or in same container for all use?

How to store water / For how long? _____ days

Drinking Water ☐ Boil ☐ Filtrate ☐ Untreat ☐ Not store

Containers type

- ☐ Plastic Buckets ☐ Metal Cooking Pot ☐ Unglazed Pot
☐ Oil Drum ☐ Polythene Tank ☐ Other ()

Total _____ lit

Cooking Water ☐ Boil ☐ Filtrate ☐ Untreat ☐ Not store

Containers type

- ☐ Plastic Buckets ☐ Metal Cooking Pot ☐ Unglazed Pot
☐ Oil Drum ☐ Polythene Tank ☐ Other ()

Total _____ lit

Washing and Bathing ☐ Boil ☐ Filtrate ☐ Untreat ☐ Not store

Containers type

- ☐ Plastic Buckets ☐ Metal Cooking Pot ☐ Unglazed Pot
☐ Oil Drum ☐ Polythene Tank ☐ Other ()

Total _____ lit

3) Water Consumption in Rainy Season

Quantity of Consumption _____ buckets(20lit)/day

- ☐ Cooking _____ lit/day ☐ Washing Body _____ lit/day
☐ Drinking _____ lit/day ☐ Washing Dishes _____ lit/day
☐ Watering Crops _____ lit/day ☐ Washing Cloths _____ lit/day
☐ Feeding Livestocks _____ lit/day

4) Water Consumption in Dry Season

Quantity of Consumption _____ buckets(20lit)/day

- ☐ Cooking _____ lit/day ☐ Washing Body _____ lit/day
☐ Drinking _____ lit/day ☐ Washing Dishes _____ lit/day
☐ Watering Crops _____ lit/day ☐ Washing Cloths _____ lit/day
☐ Feeding Livestocks _____ lit/day

5) Water Use Extention { Q: Would you extend your water use if possible?}

- ☐ Yes ⇒ ⇒ Hou much more; ☐ No

Quantity of Consumption _____ buckets(20lit)/day

- ☐ Cooking _____ lit/day ☐ Washing Body _____ lit/day
☐ Drinking _____ lit/day ☐ Washing Dishes _____ lit/day
☐ Watering Crops _____ lit/day ☐ Washing Cloths _____ lit/day
☐ Feeding Livestocks _____ lit/day

Which purpose would you extend your water use most?

HOUSEHOLD SURVEY SHEET

7. Water Facilities, Operation & Maintenance

<p>1) Water Fee {Q: Are you supposed to pay for water?}</p> <p><input type="checkbox"/> Yes ⇒ ⇒ To whom ?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Village Water Committee <input type="checkbox"/> Water Vender <input type="checkbox"/> Other ()</p> <p>Do you actually pay?</p> <p><input type="checkbox"/> Yes ⇒ ⇒ _____ Tsh/month _____ Tsh/20lit</p> <p><input type="checkbox"/> No ⇒ ⇒ Why not?</p> <p><input type="checkbox"/> No</p>
<p>2) Clean & Safe Water {Q: Do you think people have to pay for clean water?}</p> <p><input type="checkbox"/> Yes ⇒ ⇒ Why?</p> <p><input type="checkbox"/> No ⇒ ⇒ Why not?</p>
<p>3) Water Facility {Q: Do you want a water facility which supplies clean water?}</p> <p><input type="checkbox"/> Yes ⇒ ⇒ Are you willing to pay for clean water?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Yes ⇒ ⇒ _____ Tsh/month _____ Tsh/20lit</p> <p style="padding-left: 40px;"><input type="checkbox"/> No ⇒ ⇒ Why not?</p> <p><input type="checkbox"/> No</p>
<p>4) Water Supply Facilities</p> <p><input type="checkbox"/> Hand Pump <input type="checkbox"/> Water Tank + Tap / Watering Post <input type="checkbox"/> Pipe Line + Domestic Point</p> <p>How far from your house hold? _____ m</p>
<p>4) Transportation from Water Source</p> <p><input type="checkbox"/> Walk _____ km _____ lit/time</p> <p><input type="checkbox"/> Bicycle _____ km _____ lit/time</p> <p><input type="checkbox"/> Wheelbarrow _____ km _____ lit/time</p> <p><input type="checkbox"/> Ox Cart _____ km _____ lit/time</p>
<p>5) Water User Group (Q: Do you want to share one water point with other HH?)</p> <p><input type="checkbox"/> Yes ⇒ ⇒ With how many? <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> More ()</p> <p>With whom?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Neighbors <input type="checkbox"/> Friends <input type="checkbox"/> Sub-villgers <input type="checkbox"/> Villagers <input type="checkbox"/> Other ()</p> <p><input type="checkbox"/> No ⇒ ⇒ Why not?</p>
<p>6) Operation & Maintenance {Q: Do you think people have to take care of water facility?}</p> <p><input type="checkbox"/> Yes ⇒ ⇒ What to do?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Every day <input type="checkbox"/> Once/week <input type="checkbox"/> Once/month <input type="checkbox"/> Once/year</p> <p>Are you willing to participate?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes ⇒ Why?</p> <p><input type="checkbox"/> No ⇒ ⇒ Why not?</p>

8. Sanitation Situation

<p>1) Own latrine facility</p> <p><input type="checkbox"/> Yes ⇒ ⇒ <input type="checkbox"/> Pit latrine <input type="checkbox"/> VIP latrine <input type="checkbox"/> Septic Tank Toilet <input type="checkbox"/> Other ()</p> <p>How Many families share thr latrine? _____ families</p> <p><input type="checkbox"/> No ⇒ ⇒ <input type="checkbox"/> bush <input type="checkbox"/> Public latrin <input type="checkbox"/> Share neighbors <input type="checkbox"/> Other ()</p>
<p>2) Washing hands in the day</p> <p><input type="checkbox"/> After using toilet <input type="checkbox"/> Before/after eating food <input type="checkbox"/> After cleaning the house</p> <p><input type="checkbox"/> After washing babies nappy <input type="checkbox"/> After gardening <input type="checkbox"/> Other ()</p>
<p>3) Why do you wash your hands?</p> <p>How do you wash your hands?</p> <p style="padding-left: 40px;"><input type="checkbox"/> With soap <input type="checkbox"/> Without soap <input type="checkbox"/> From a basin <input type="checkbox"/> Pouring from a cup</p>
<p>4) Waste Water {Q: What do you do with waste water?}</p>
<p>5) Household Waste</p> <p><input type="checkbox"/> Collected and disposed <input type="checkbox"/> Burnt at household <input type="checkbox"/> Thrown away <input type="checkbox"/> Other ()</p>

APPENDIX-6(6)b. Result of Household Survey in Project Area

Hanang District

A total of nine villages were surveyed in Hanang District

Contents of Survey	Results
General	<p>Hanang district in Arusha region is mainly comprised of livestock keepers and farmers. The area has many Masai, Barbaig the area has many Masai and Barbaig people who are considered as the major livestock keepers in Hanang District and all over the country. However, there are other tribes like the Mbulu, Nyaturu and Nyiramba who live in this district also engage themselves in livestock keeping and agricultural practices.</p>
Water Condition	<p>Water is the main problem in all the nine villages, which were surveyed in the district. Some villages like Wandela and Garawja have no water sources and therefore walk long distances to water sources in other villages. Even for those villages that have water sources, the water quality and quantity are very poor.</p> <p>In such a situation the salty water is only used for construction purposes. Salty water sources have been abandoned because of being unfit for human consumption. Nevertheless, due to water shortage the salty water is sometimes used for washing, cooking and even for drinking. Water from local water holes is used for all purposes including livestock feeding and washing activities all performed at the sources. Therefore, the sources are not well maintained causing most of them to have nasty water.</p> <p>The study has revealed that a large number of people in Hanang do not know the importance of using clean and safe water. Water that is used for drinking, cooking and washing purposes is from the same source. The study also found out that water for all uses is kept in one container and drinking water is rarely boiled. Few villagers interviewed claim to keep their drinking water in a different container particularly in an immigrated pot so as to make it cold.</p> <p>Some human activities and particularly livestock keeping practices have caused environmental destruction in many water sources where livestock are fed. Other activities that cause environmental degradation and destruction to water sources are agricultural practices. These include activities such as deforestation, which in turn affect the water sources negatively.</p>
Sanitation	<p>Although a big number of households that were surveyed own pit latrines, sanitation situation was observed to be very poor. In some areas where a water source is about 6 hours walk, washing of body, clothes and other cleanliness is considered unimportant. Some villagers interviewed admit to wash their bodies at most once a week during dry season due to water shortage. They also very rarely wash their clothes and sometimes limit themselves in drinking water.</p>

Traditional Practices	As per cultural tradition, women and children have the role of fetching water. But in acute shortage, sometimes men participate or help in water fetching. Decision making at village level is made by the household head i.e. man. In all the nine surveyed villages, the top village government leaders such as the Chairmen, VEOs, Secretaries and Treasurers are men. Few women are included in the village government leadership just as committee members. It is also a custom that men own household assets like house, land, radio, furniture, bicycle and oxcart. There are some rare cases whereby women own houses, which were built by themselves or wives as single parents. Men own livestock and agricultural products while women own kitchen utensils and chickens.
VWC, VWF, Water Contribution and Fee	<p>Out of the surveyed villages, seven have formed their VWCs and only two were pending. The village governments in 1990s formed these. The amount of money in the VWF accounts ranges from Tshs.5, 000/= to 400,000/=.</p> <p>In all nine FGDs conducted in Hanang district, the villages are ready to pay Tsh.20/= per bucket of 20 liters of water. As for water contribution all villages are willing to pay for operation and maintenance of water facility. Therefore, they all suggested each household to contribute a total of between Tshs.1,000/= and 5,000/= per year. Both conclusions were reached after a discussion that was followed by voting to have consensus. Although some villagers were willing to contribute much more money for water per year rather than paying per bucket, the conclusion for paying per bucket was agreed by majority.</p>
Water Facilities and Sources	Major water sources for Hanang people are seasonal rivers, rain and springs. Many villagers get their water direct from these sources and a few villages have water facilities. For example in Masakta and Masqaroda villages, people fetch water from Hand Pump facilities found in some sub villages. Other village like Hirbadaw, Garawja and Wandela do not have any water facility, so, people from these villages fetch water from other villages like Iramba District Singida Region. To reduce the water problem some villages decided to construct their water facilities particularly water trough (lambo) for harvesting rainwater. This helps them to have water during dry season. The construction of the trough forced the villagers of Wandela and Getanuwas to contribute Tsh.10, 000/= per household. So, they are ready to ready to contribute even more than that for any water facility in their village.
Public Facilities	Each village surveyed in this district has a primary school and religious services basically catering for Moslems and Christians. Some villages have dispensaries while others do not have. Such villages like Wandela, Garawja and Danga'ida get MCH services once a month from Hydom Hospital. The dispensaries only cater for minor treatment and major complications are referred to Hydom or other hospitals.
Problems	Shortage and/or lack of water facilities is the major problem in all nine villages, which were surveyed. Most of the schools experience shortage of teachers and/or classrooms. Some villages lack medical services and those with such services experience shortage of medical personnel and medication. Poor transport system is a big problem especially during the rainy season when the roads become too rough to be used. Therefore, there is a problem of transport especially during rainy season when patients are referred to other hospitals for further treatment.

Singida Rural District

A total of twelve villages were surveyed in Singida Rural District

Contents of Survey	Results
General	Singida Rural District in Singida Region is not very rich in crop production and livestock keeping practices although these are the main sources of income for majority of the community members. Their infertile soil and weather condition result into low and/or poor agriculture products. There are few civil servants and traders in different commodities.
Water Condition	As in other districts of the study area, Singida Rural District experiences water problem. The area is dry with few water sources and this results to insufficient water for the people. In most of the surveyed villages much time is use not only to go to the water facilities or sources but also waiting in long queues to get the water.
Sanitation	The Interviews showed that most of the households surveyed have pit latrines. Nevertheless, there are cases whereby more than one household uses one pit latrine when an extended family lives in one compound. Washing hands in most cases is before and after eating food. Very few people interviewed have admitted washing their hands after using toilet. Household waste is collected and disposed or thrown away in the fields.
Traditional Practices	While men own the household assets and big businesses like shops or kiosks; women own kitchen utensils and petty business such as local brewing. The husband is always the head of the household and if he is not around the first son takes over his responsibilities. Eating in the family is in a special way whereby men (husband and sons) are given all the food first to eat while the women (wife and daughters) wait for their turn. When the men are done the left over is then given to the women to eat and if it is insufficient they (women) have to cook their food again. This is a Nyaturu tradition, which is to date being practiced in some of the communities surveyed.
VWC, VWF, Water Contribution and Fee	<p>Some villages have formed VWCs as directed in the April 2000 study while others have not VWFs exist but most villagers are not aware of the amount of money available. The amount which was relieved by the village government leadership ranges from Tsh.10, 000/= to 159,000/= in only 8 villages and the remaining 3 villages do not have VWF bank accounts.</p> <p>Water contribution in the 12 surveyed villages was set at household level per annual. This contribution to be in the bank account was suggested to be between Tshs.1, 000/= and 5,000/= per household. Water fee which is the buying price per bucket of 20 litres was set between Tshs.10/= to 20/=. Out of 12 villages only 5 decided on Tsh.10/= while 5 agreed on Tsh. 20/= per bucket of 20 litres and only 2 villages think that villagers won't be willing to pay for water because it is not a familiar thing.</p>

Water Facilities and Sources	<p>Compared to the selected villages in Hanang and Igunga districts, Singida Rural District is better supplied with water facilities. Some villages have water facilities such as Hand Pumps, Wind Mills and Water Tanks that were built by donors. These donors are Tanzanian Christian Refugees Services (TCRS) and other religious institutions like missionaries and some individual religious leaders. All these facilities are at present owned by the villages, which are fully responsible for their operation and maintenance. While most of the hand pump facilities have insufficient or lack water during the dry season, others are either broken or have been stolen. Sometimes the windmills have insufficient water due to insufficient wind and some are broken. There was one pump engine used to supply water in Makiungu and Unyaghumpi villages but the facility was broken. The villagers failed to repair it so, it has been rented to an individual villager who repaired it and is now selling water to the villagers at 20/= per bucket of 20 litres. The money he collects is used for its operation and maintenance costs as well as paying a tax of Tsh.4, 000/= daily to the village.</p> <p>Another village that had a pump engine supplying water to different Domestic Point (DP) was Iseke. This facility was supplying water to a nearby village Ihanja but later the pipelines were stolen/cut by unknown people. Therefore, Ihanja village has no access to this facility and now they are using local water holes. Water from local waterholes is used for all purposes and in most cases washing clothes and feeding animals is done at the sources. Such activities contribute to destruction of the water sources thus causing environmental degradation.</p>
Public Facilities	<p>Each village surveyed has a primary school and religious institutions such as Mosques and Churches. In some villages there are dispensaries owned by the government and in other village like Makiungu have hospitals owned by missionaries. Accessibility to medical services by either private or government is based on fees. The fee is paid in two different ways; one is that a household of between 5 and 7 people is to pay Tshs.10, 000/= for annual service or Tshs.1, 000/= per service per person.</p>
Problems	<p>Water is a crucial problem in all the surveyed villages in this district. Famine is also a problem that has been caused by poor agricultural production due to drought. Roads are rough and some villages are difficult to reach in rainy seasons. Some of the sub villages are very far like in Ikungi village (about 9km) from the village center, which causes poor communication between the sub villagers and the village government leaders.</p>

Manyoni District

A total of eleven villages were surveyed in Manyoni District

Contents of Survey	Results
General	Manyoni District in Singida Region also depends on agriculture and livestock keeping for its income. In this district there are many civil servants such as teachers, district council employees, medical personnel, Tanzania Telecommunication Company Limited (TTCL) employees and other employees in Non-Governmental Organizations (NGOs). In addition, there are many petty and big businesses like shops, kiosks, hotels, guesthouses and carpentry. The district has a big population of a variety of tribes such as Nyaturu, Nyiramba, Sukuma, Gogo and Nyakyusa.
Water Condition	Although there are water facilities in all eleven surveyed villages, water availability is a major burning issue in this district. The available water facilities have insufficient water for members of the communities. In addition, most of the water facilities are very far from the villages. In some villages local water holes are the major water facilities or sources for the villages.
Sanitation	At least each household was found to have a pit latrine though not in very good structural and cleanliness condition. Hand washing is normally performed before and after eating and not after using the pit latrine. Household waste are either collected and disposed or thrown away in the fields as manure.
Traditional Practices	Worshiping is conducted in special protected areas such as in particular mountains, forests and graves of former chiefs or important elders. People believe that cutting of trees or digging in such places can generally cause negative impact to the society or to a specific individual concerned. Therefore, one has to ask permission from the ancestors by performing traditional rites, which include praying and slaughtering of an animal commonly a sheep.
VWC, VWF, Water Contribution and Fee	Out of all the eleven (11) surveyed villages, ten (10) have formed their VWCs although three of them are not active. As for VWF, two (2) villages have not yet established their Village Water Fund (VWF) bank accounts. The amount in the VWF bank accounts range from Tshs.13, 031/= to 700,000/=. All surveyed villages agreed to contribute for water at household level per year and set the amount to be contributed at between Tshs.1,000/= and 2,000/= per annum. Although water fee was seen to be a new thing but the majority of the villagers agreed to pay for water. Decision on water fee ranges from Tshs.10/= to 20/= per bucket of 20 litres. While only 2 villages agreed on Tshs.Sh.10/= all nine (9) villages agreed on Tshs.20/= per bucket.
Public Facilities	Each of the eleven villages has primary school and religious services. Other services are communication and transport, dispensaries, milling machines, courts and secondary schools in only (2) two villages.
Problems	The main problems in this district are water and famine, which are caused by drought. There are many beggars mostly lepers along the Dodoma - Mwanza highway and also in the streets in Manyoni Township. Through observation a total of about 40 to 50 beggars were seen daily from Solya to Sukumahela village along Manyoni - Dodoma road. The majority of villagers use local water holes with low water quality and quantity.

Igunga District

A total of two villages were surveyed in Igunga District

Contents of Survey	Results
General	Generally, the district is rich in agriculture production and livestock keeping practices. In these villages, Sukuma is the main tribe and other few tribes like Nyamwezi and Nyaturu. Agriculture and livestock keeping practices are the main sources of income for most community members. Crops produced are millet, maize and sweet potatoes for food and cotton for cash.
Water Condition	The two villages have seasonal rivers from which the villagers are able to get water during the dry season. Chibiso village is divided into four sub villages. Two (2) sub villages Ilolanguru and Mwankono fetch water from river Mananga during the rainy season. In the dry season the villagers dig local water holes in the riverbed. The other two sub villages Ilombambiso and Chibiso fetch water from local water holes from the same river at Mwanahanga in Mwankono sub village. The second village Kinungu depends on river Kinungu that is between 15 minutes to two (2) hours walk for the villagers.
Sanitation	Many of the households that were interviewed own pit latrines that are used by more than one family. In general sanitation situation is not very good due to insufficient water. Household wastes are thrown away in the field as manure.
Traditional Practices	Since the majority of the villagers met in the two villages are Sukuma, the taboos mentioned here are of their tribe. In these two villages there are many extended families because a young married man and his spouse have to stay with his parents before moving to his place or house. This period of staying with parents after getting married can be up to five years. Keeping many cattle is a sign of wealth and these are used for bride price. They sell their cattle only when in need and hardly keep bank accounts.
VWC, VWF, Water Contribution and Fee	Each of the two villages has formed a village water committee (VWC) each with six (6) members two (2) of them being women. One village Kinungu has not established a bank account for its VWF while the other, Chibiso has an account of Tshs.67,000/= as its VWF. Contribution for water in the two villages was agreed to be at household level and set at Tshs.2,000/= per annum. Water fee was set at Tshs.10/= in one village Chibiso and Tshs.30/= per bucket of 20 litres for Kinungu village.
Public Facilities	Each village has one primary school with buildings that are in very poor condition especially for Chibiso. Other services in Kinungu village are shops, kiosks, dispensaries, cooperative union and religious services. As for Chibiso village, the only available service is the primary school whose buildings are in very poor condition. This village gets other public services from a neighboring village Chomachinkola.

Problems	<p>Shortage and/or lack of water facilities is a crucial problem in these two villages. Most of the community members use local water holes, which are dug in the seasonal rivers or valleys. One of the villages i.e. Chibiso has no religious service and therefore its people get such service in another village which is approximately 8 kilometers. Another problem is poor transport system especially during heavy rainy seasons whereby the roads become very rough. The selected villages are very far from the district headquarters and thus lack easy communication. Diseases like cholera, typhoid and dysentery that are caused by using unsafe water, are among the major problems facing these two villages. The villages do not have any income generating activity and hence rely on tax collected for their village income.</p>
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PPENDIX-6(7) Proposal on the Soft Component Programme

The Rural Water Supply Project in Hanang, Singida Rural, Manyoni and Igunga Districts in the United Republic of Tanzania

Proposal on Soft Component Programme

1. Background

Developable water resources are limited in the Project area, since the surface water and groundwater have serious problems in water quality, such that the water is exceedingly contaminated with fluorine of which concentration levels highly exceed WHO guideline for drinking water quality. Thus, the Project aims to develop limited water sources to provide as many target communities as possible with safe water, but limited supply.

In order to distribute safe water to a number of communities from the limited number of developable water sources, it is necessary to adopt level-2 type of water supply that enables to share the limited water source with a number of communities. The point source option by which a borehole is fitted with a hand pump is the requested design of the Tanzanian side, but this is not a realistic measure to achieve the purpose. In the Project, the level-2 type of design is adopted, which enables the provision of water to a larger area from the limited water sources.

However, consideration shall be given to the situation regarding operation and maintenance of existing water supply facilities in the Project area. It is observed that the water supply facility fitted with a hand pump, of which maintenance costs are relatively inexpensive and operation is technically simple, are abandoned in many cases without any maintenance after the breakdown. Furthermore, the operating rate of level-2 facilities amounts to only 12.5%, which stays at an extremely low rate. It is due to not only the unwillingness of the users to pay for the services provided, but also the lack of sense in ownership and non-existence of a community-based operation and maintenance system.

Moreover, as a distinctive problem in the Project area, it is also observed that most of the community is unconscious on the relationship between consumption of safe water and effect on one's health. Most of the residents rely on their water sources of shallow wells and water hole. Those residents are not conscious about relationship between the water borne diseases such as diarrhoea and contaminated water. To make matters worse, the large population has consumed highly fluorine-contained water, which is odourless but affects one's health. Without understanding the importance of safe water, the community has less motivation and willingness to participate in operation and maintenance of the water supply facilities constructed.

With less willingness of the communities to participate in operation and maintenance of facilities

and lack of sense in ownership of the facilities that is amplified by less consciousness of health and sanitation, the operating rate of water supply facilities in the Project area has been extremely low. For the sustainable operation and maintenance of the facilities to be constructed under the Project, it is indispensable to establish a system that facilitates positive participation of the community in operation and maintenance of the water supply facilities, improving the consciousness of the target community (i.e. users of the facilities to be constructed) on health and sanitation, understanding on the importance of safe water, and the sense of ownership.

In addition, it is essential that the communities distinguish the water source from shallow wells/water holes and supply facilities to be constructed under the Project in accordance with its usage for drinking and other purposes, since the amount of provision by the supply facilities is limited to 5 l/day/person only for drinking and cooking purposes, while the community must continue the consumption of water from shallow wells/water holes for the other purposes such as washing and bathing.

The Water Policy (1991), which is the sector policy of Tanzania, introduces such concepts as community participation, cost sharing by the community in operation and maintenance, and health and sanitation, as important strategies in the sector development. The establishment of Water Committees, which consists of the community members, and the Water Fund is introduced in the country with support from donor organisations and NGOs. However, the Tanzanian side seems to have difficulties in human resources and funds to make such efforts by itself. Taking consideration on those situations, supporting programs to establish and reinforce community-based organisations as well as to implement health education, shall be introduced in the Project as the “soft component” programme. In the implementation of the soft component programme, the consistency of the programme with the Water Policy shall be considered.

[Selection of Target Community]

For the realization of sustainable impact expected by the construction of the water supply system under the Project, it is indispensable to establish community-based operation and maintenance systems. However, the establishment of a relevant management system for the water supply facilities to be constructed under the Project is expected to be difficult. Thus, the following specific objectives through the implementation of the soft component programme shall be comprehensively achieved:

- Promotion of health and sanitation

- Understanding of health hazards caused by water with a high fluoride content

- Improvement in sense of ownership of water supply facilities

- Establishment of a water supply system which includes a fee collection system

- Improvement of willingness to participate regarding the objectives listed above

The Project, with introduction of the “Soft Component Programme”, facilitates participation and

sensed ownership of the target community implementing relevant activities and health education prior to the construction stage. However, the final selection of the target communities shall be made in the Detail Design stage, appraising the willingness of the communities to participate and sense ownership through observing the progress made for the establishment of Water Committees and accumulated amount in the Water Committee Fund. Those communities shall be excluded from the target of the collaboration in the Project that have risks from the viewpoints of sustainability as well as potential for establishment of community-based operation and maintenance systems, even after implementing the activities to promote participation and health consciousness to an extent and for some period prior to the construction stage.

The establishment of a management system for the Project depends largely on initiatives and contribution of the District Water Engineer Office. Thus, a short-term workshop training shall be provided under the soft component programme for the staff of the District Water Engineer Office to improve their capacity in management of the water supply systems.

The details of the management system and structure of the water supply system is described in the latter parts.

2. Purpose (please refer to the Project Design Matrix [PDM])

There are several factors considered for the causes that the large number of water supply facilities are abandoned without any maintenance and repair. Those factors are considered as follows:

- 1) Lack of sensed ownership and willingness to participate in operation and maintenance of the water supply facilities including willingness to bear the operation and maintenance cost.
- 2) Less health and sanitation consciousness, in particular, for the relationship between consumption of safe water and health and sanitation impact.
- 3) Inadequate technology transfer to the communities regarding operation and maintenance of water supply systems

For securing the sustainability of the effects by constructing the water supply system under the Project, there needs appropriate countermeasures for those negative factors.

Outputs expected through the implementation of the Soft Component Programme are as follows, although the details are described in the following sections:

- 1) Willingness to participate and sense of ownership is enhanced
- 2) Health and sanitation consciousness is improved
- 3) Community-based operation and maintenance system and supporting system by the water agencies are established.

With realization of those outputs expected through the implementation of the Soft Component Programme, the Project aims for “the community to continue to consume safe water utilizing

the water supply system in a sustainable manner, although the quantity of water is limited”.

3. Output

1) Willingness to participate and sense of ownership is enhanced

It is a precondition for the construction of the water supply facilities that the community gives its expression of willingness to receive the water supply facilities prior to the construction. Through the implementation of activities to facilitate participation and sense of ownership to an extent and for some period prior to the construction, communities are expected to realize the benefits and conveniences of having water supply facilities and necessity to establish community-based operation and maintenance system for the sustainable utilization of the facilities. The final selection of the target communities is made by evaluating the willingness to participate and sensed ownership by the assessment of progress made in forming Water Committees and accumulating amounts in the Water Committee Fund.

2) Health and sanitation consciousness are improved

The communities are expected to realize the risks on one's health through consumption of contaminated water from existing water sources. It is expected, in particular, that the communities fully realise the fact that consumption of the highly fluorine-contained water for drinking affects one's health in the Project area where consumption of fluorine-contained water is prevailed, while it is also expected that the communities realize other health risks of water-borne diseases by consuming contaminated water. Subsequently, it is anticipated that the felt needs of communities for having water supply facilities are enhanced. In the Project area where the felt needs of the community for the construction of new water supply facilities are low, it is required to enhance the expectation for the facilities to be constructed and willingness to participate in operation and maintenance of the facilities, through improving consciousness of the communities.

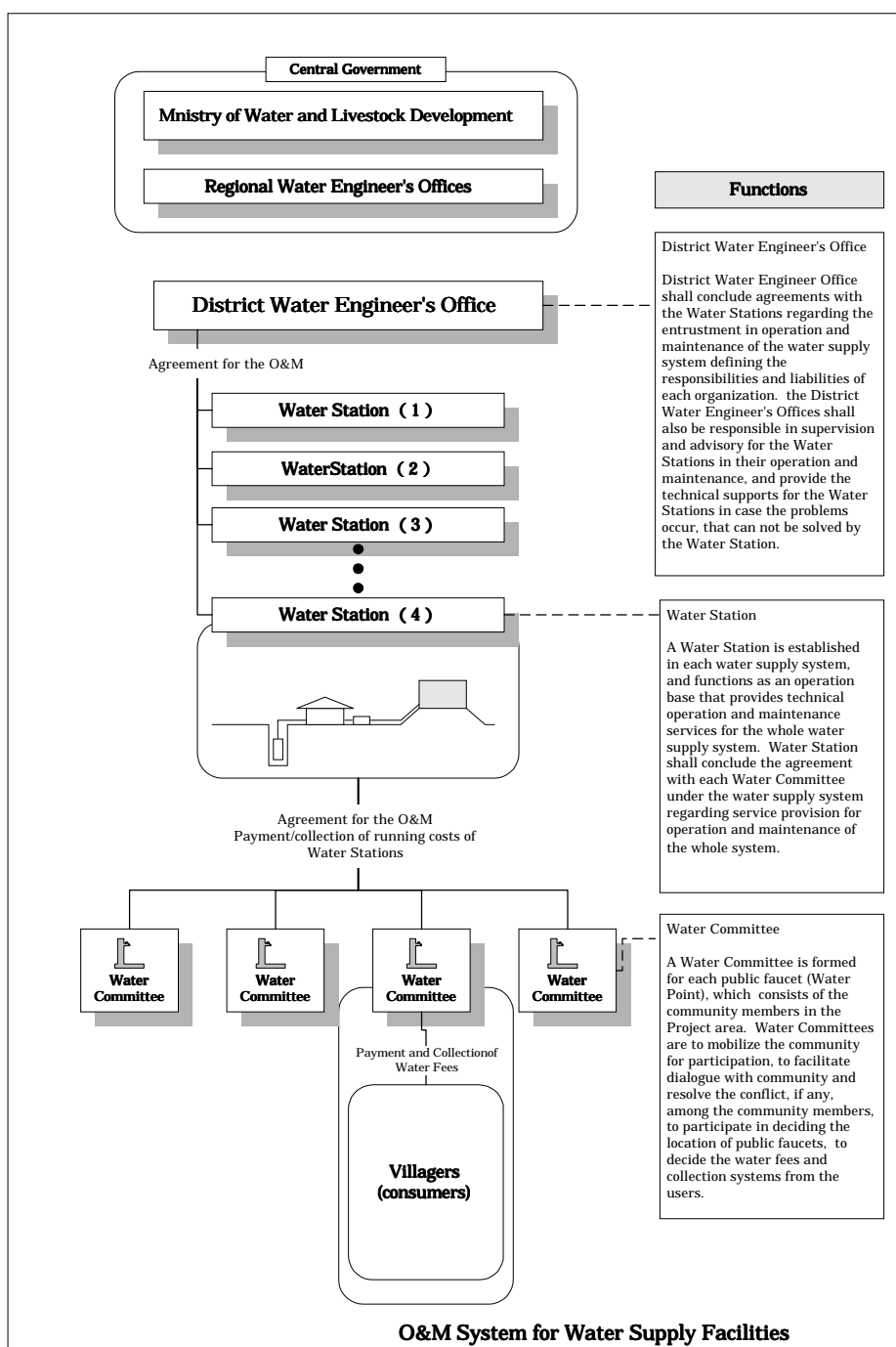
3) Community-based operation and maintenance system and supporting system by the water agencies are established

The lack of a community-based operation and maintenance system and back-up system by the water agency is one of the largest factors that hinders the sustainability of existing water supply facilities. In the Project, through the implementation of the Soft Component Programme, a community-based operation and maintenance system and supporting system by the water agencies are established.

In addition, the concept of a financial self-supporting system, which is generally employed in the management of the piped water supply schemes is employed in order to secure the sustainability of the Project. Distinction shall be made between the supplier and consumers of the services, and the prime concept shall be taken that the supplier secure the sustainable

provision of services while the consumers bear the operation and maintenance costs. Involvement of the private sector and NGOs is considered for the realization of the concept that the consumers bear the full cost of operation and maintenance and pay for the services provided.

The diagram below shows the conceptual framework for the operation and maintenance of the water supply system to be constructed under the Project. The expected roles and responsibilities of each organization are described further below:



Water Committee

A Water Committee is formed for each public faucet (water point), which consists of the community members in the Project area. Although Water Committees nominally exist in each target community in consistence with the Water Policy, most of them are neither functioning nor performing the expected roles and responsibilities. In case plural communities share one public faucet, existing Water Committees are reorganized into one.

The expected roles and responsibilities of the Water Committee are 1) to mobilize the community for participation, 2) to facilitate dialogues with communities and resolve conflicts, if any, among the community members, 3) to participate in deciding the location of public faucets, 4) to decide the amount to be charged as water fee and collection systems from the users (including measures taken for the socially underprivileged), 5) to control and provide preventive maintenance on the facilities, and 6) to take an intermediate role to convey messages relating to health and sanitation to the community members. In addition, a Water Committee takes the role to facilitate fee collection from users, and pay collected water fees to the Water Station for operation and maintenance of the water supply system, with concluding an agreement with the Water Station regarding the service provision in operation and maintenance of the whole system.

Water Station

A Water Station is established in each water supply system, and functions as an operation base that provides technical operation and maintenance services for the whole water supply system. The Water Station shall conclude an agreement with each Water Committee under the water supply system regarding service provision for operation and maintenance of the whole system. In addition, the Water Station collects water fees from each Water Committee in accordance with the quantity of water consumed from each public faucet, of which collected fees can be utilized for operation and maintenance of the whole water supply system.

Water Stations are established under the supervision and responsibility of the District Water Engineer Office during the period when the workshop training is provided to the Office staff to improve their capacity for the management of the water supply system. In the establishment of the Water Station, the employment of the private sector and NGOs is considered as option to make distinction between service provider and community-based consumer organization for improving financially a self-supporting system of the water supply system that secures sustainability in operation and maintenance of the system, taking consideration on the public nature of the water supply service. The District Water Engineer Office gives considerations in determination of water charges from the community and collection system, and the Water Station performs its accountability for

the user community and District Water Engineer Office.

District Water Engineer Office

A District Water Engineer Office shall conclude the agreement with the Water Station regarding the entrustment in operation and maintenance of the water supply system defining the responsibilities and liabilities of each organization. The District Water Engineer Office shall be also responsible for supervision and guidance to the Water Station in its operation and maintenance, and provide the technical support for the Water Station in case problems that cannot be solved by the Water Station occur. Each Water Station is provided with authorization through the selection process by the District Water Engineer Office and/or the District authority.

- 4) Capacity of the communities and water agencies in operation and maintenance of water supply system are developed

The relevant technology and related knowledge concerning the operation and maintenance of water supply systems are transferred to each organization described above to secure sustainability of the system in each Project site after hand-over. Regular monitoring shall be further conducted to resolve problems to be identified relating to the operation and maintenance and to improve the health and sanitation consciousness among the communities.

4. Activity

Detailed activities to be implemented under the Soft Component Programme are as follows:

Each activity involved in the Soft Component Programme is implemented at relevant stages in the implementation of the Project. After conducting activities to enhance community participation and health awareness at each target community to some extent and period, the final selection of target communities shall be made and facilities are constructed at the selected communities.

In the Project sites under Phase 1 of the Project, however, it is impracticable to conduct activities for facilitation of community participation and health consciousness prior to the construction stage. Thus, the sites are selected from communities whose awareness and willingness to participate are relatively higher, and relevant activities to promote community participation and health awareness are implemented along with the construction work under the Project. It shall be noted that the continuous implementation of activities are required not only prior to the construction stage but also during construction and after hand-over of facilities to the communities.

Activity 0) Reinforcement of management, operation and maintenance system of the District Water Engineer Office for the water supply project

[Outline and effects of activity]

Staff of individual District Water Engineer Office shall be provided with skill-up training as they

play a central role for the operation and maintenance of the water supply system. The Project aims at taking initiatives in order to improve various problems that occur in Tanzania regarding the operation and maintenance of facilities as well as rural water supply projects.

0-1) Task force establishment (Preparatory working committee)

[Outline and effects of activity]

Task forces shall be established within District Water Engineer Offices to prepare the establishment of Water Stations.

[Target]

Staff of each District Water Engineer Office

[Period of activity]

1 day × 4 Districts

[Output]

Pre-committee establishment memorandum

0-2) Technology transfer to task force (Preparatory working committee) 1 (Technical aspects)

[Outline and effects of activity]

Operational procedures at water supply systems to be constructed under the Project and expected accidents and breakdowns shall be reviewed to prepare measures within the task forces. Necessary technical information is reviewed and technical liaison flows with Water Stations are listed up to create a flow chart.

[Target]

Staff of each District Water Engineer Office

[Period of activity]

7 days × 4 Districts

[Output]

Meeting record, liaison organisation flow chart, accident measure flow chart, relevant lists

0-3) Technology transfer to task force (Preparatory working committee) 2 (Administrative aspects)

[Outline and effects of activity]

The implementation structure of the Project is prepared. The expected functions of the Water Committees are reviewed and such administrative technology as operation and maintenance of water supply services is reinforced at the Water Stations. The importance of cooperation among the three parties is emphasised to perform fully its responsibility as the supervisory organisation.

[Target]

Staff of each District Water Engineer Office

[Period of activity]

7 days × 4 Districts

[Output]

Meeting record, Blueprint of accounting record, Pre-document agreement with Water Station

0-4) Technology transfer to task force (Preparatory working committee) 2 (Field OJT)

[Outline and effects of activity]

Confirm the current situation and assess the problems at existing water supply facilities and other sites which are located relatively close to each District Water Engineer Office.

[Target]

Staff of each District Water Engineer Office

[Period of activity]

2 days × 4 Districts

[Output]

Report of inspection

0-5) Workshops for task force (Preparatory working committee)

[Outline and effects of activity]

Workshops are provided for the task force to accumulate technical knowledge to operate more effectively. PCM and PRA are introduced for problems analysis and strategies regarding water supply planning are developed and shared.

[Target]

Staff of each District Water Engineer Office

[Period of activity]

1 day × 4 Districts

[Output]

Workshop report

Activity 1) Training of local staff (Community Development Worker, and Health Extension Worker)

[Outline and effects of activity]

Workshops should be conducted as training for the local staff who are employed under the Project to conduct activities at the field level, in order for the concepts and significance of the Soft Component Programme and details of activities involved to be understood by the local staff. Techniques employed in facilitation of community participation and health education are transferred to the local staff. Targeted local staff are categorized to community development worker and health extension workers, and workshop trainings for acquiring conceptual framework and facilitation tools for community participation are provided to both community development workers and health extension workers, while training regarding community-based operation and maintenance and training regarding health education are provided afterwards to the community development workers and health extension workers respectively, to deepen the understanding of each expertise.

[Target]

Local staff to be employed under the Project

Community development workers (4 persons)

Health extension workers (4 persons)

[Period of activity]

21 days

[Output]

Report of workshop training

Activity 2) Mobilization of stakeholders

2-1) Stakeholder meeting, targeting authorities of District, Ward, Village

[Outline and effects of the activity]

Meetings are held targeting authorities of District, Ward, and Village to explain the background and outline of the Project, and to make the participants understand the significance of the Project through dialogues and discussions with the implementing agency and Japanese Consultant. The request for collaboration in each stage for smooth implementation of the Project is made to the stakeholders.

[Period and term of activity]

Period: prior to the construction

Term: 1 day × 4 Districts

[Output]

Record/Minutes of meeting, and list of participants

2-2) Meeting, targeting heads, community leaders, and knowledgeable persons of target sub-village

[Outline and effects of the activity]

Meetings are held for the heads, community leaders, and knowledgeable persons (i.e. teachers and so forth) of target sub-villages to explain the concept and outline of the Project. In the meeting, participatory methods are utilized to analyse the cause and effect of the problems relating to water and sanitation. Subsequently, it is expected that the participants realize the benefits and conveniences of having water supply facilities to be constructed under the Project and provide collaboration in arrangement of meetings with community members and so forth in the implementation of the Programme.

[Period and term of activity]

Period: prior to the construction

Term: 1.0 days × sub village

[Output]

Activity report, certificate of activity completion signed by the sub-village head

Activity 3) Explanation of outline and concept of the Project to the community members

[Outline and effects of activity]

Sub-village level meetings are held to make all community members understand the background, outline, and significance of the Project, utilizing visual materials to help understanding of the participants. Visual materials that depict causes and effects of problems relating to water and

sanitation are utilized to facilitate dialogue with participants and subsequently awareness on the significance of the Project. Through the meeting, the community members are expected to be mobilized towards the participation and collaboration in the implementation of the Project. Explanation is also given to the community members to clarify the roles and responsibilities of each organization involved in the management, operation and maintenance of the water supply system constructed under the Project (i.e. District Water Engineer Office, Water Station, and Water Committee). Through the meeting, the preparative committee for establishment and/or re-organization of the Water Committee is formed. The preparative committee shall be composed of the community members facilitating the participation of female members.

[Period and term of activity]

Period: prior to the construction

Term: 1 day / sub-village

[Output]

Activity report, certificate of activity completion signed by the sub-village head

Activity 4) Community research / Baseline survey

[Outline and effects of the activity]

A community research shall be conducted as baseline study to collect data and information that can be utilized for monitoring and evaluation during and after the implementation of the Project. Information and data collected through the community research / baseline survey are mainly general information regarding socio-economic situation and use of water and health/sanitation situation. In the community research / baseline survey, the participatory methods are introduced, such as community mapping, health/transect walk, key indicator building, ranking, diagram making, and group discussion. Through implementing those participatory methods in the community research/baseline survey, the information and data required is collected, while the villagers' views and preferences in present use of water and awareness on health/sanitation are grasped that can be reflected on the design of further activities to promote participation and health/sanitation consciousness. Gender consideration shall be given in the implementation of those research activities dividing the group into male and female, if it is seemed necessary.

[Period and term of activity]

Period: prior to the construction

Term: 3 day / sub-village

[Output of activity]

Baseline survey report

Activity 5) Activities to promote participation and health/sanitation awareness at sub-village level

5-1) Sub-Village meeting

[Outline and effects of activity]

Through holding the sub-village meetings with community members, the problems relating to

water and sanitation are identified, causes and effects of the problems are analysed, and action plans to resolve the problems are made with the community, using participatory methods. Considerations and measures are taken in the meeting to facilitate the participation and expression of opinion from female members. Several kinds of campaign utilising visual materials are conducted in the focal points of the sub-village to enhance the sense of ownership and willingness of participation in operation and maintenance of the water supply facilities including willingness to pay for the services provided. During the implementation of the activity, progress made for the formation of a preparative committee for the establishment of the Water Committee is confirmed, and clarifications of roles and responsibilities for the community in operation and maintenance of the facilities is made, in particular, the responsibility to bear the costs for operation and maintenance. Necessity to accumulate certain amounts as a water fund as precondition for the collaboration in the construction of the water supply facilities are repeatedly explained to the community and consensus is expected to be built among community members. The amount necessary and its item of expense for the operation and maintenance of water supply system are explained in a understandable manner to the community and the cost borne by the community are clarified in this stage. In principle, a water charge is collected from the Water Committee in accordance with the amount of consumption measured by a meter on the facilities. However, depending on the local situation, introduction of a fixed charge is also considered and introduced.

[Period and term of activity]

Period: prior to the construction

Term: 3 days / sub-village

[Output]

Activity report, certificate of activity completion signed by the sub-village head

5-2)-1 Health/Sanitation Education

[Outline and effects of activity]

A health and sanitation education is conducted at sub-villages of the Project area to improve the health and sanitation consciousness of community members, who are less aware of the relationship between consuming contaminated water and health impact. Through conducting health and sanitation education, it is expected that the community members appreciate the safe water provided by the water supply facilities to be constructed under the Project, thus, the willingness to participate in operation and maintenance of the facilities is enhanced. In the health and sanitation education, faecal-oral transmission route of water and sanitation related water-borne diseases is explicated using visual materials and enhancing dialogue with community members. Participatory methods, such as three pile story, story with gap, and pocket chart, are utilized to make community members aware of the health and sanitation related problems and understand the preventive hygiene behaviour. Implementation of health and sanitation education at primary schools located in the Project area using the "Child to Child" approach is also considered, which can expect the spread of hygiene behaviour from child to child and also child to parents.

5-2)-2 Activities to enhance community participation

[Outline and effects of activity]

The activities to enhance further the willingness to participate and sense of ownership are implemented in each sub-village under the Project area. Using participatory methods in the implementation of the activities, the community members are involved in the process of participation and facilitated by themselves to identify the problems relating to water and sanitation, analyse the causes and effects of the problems, and find solutions by making their action plans. It is also expected through the activities that the community members fully understand the requirements for the community members in operation and maintenance and system in user fee collection with help of visual materials to be developed. Then, the problems that can be possibly anticipated in the operation and maintenance of the facilities are identified and its causes and effects are analysed with the community members, which is followed by action plan making. In addition, community's understandings on necessity to bear the cost for operation and maintenance are reinforced, and the progress made for accumulating the Water Fund is confirmed. The final selection of sub-villages to be targeted under the Project is made in the Detail Design Study, evaluating the progress in accumulating the Water Fund.

[Period and term of activity]

Period: prior to the construction

Term: 3 days / sub-village

[Output]

Activity report, certificate of activity completion signed by the sub-village head

5-3) Formation / Reorganization of Water Committee

[Outline and effects of activity]

Meetings are held with community members of each targeted sub-village to discuss and facilitate understanding on roles and responsibilities, rules and bylaws, and membership of the Water Committee. Once the consensus of the community members on those issues are made, election of Water Committee members are conducted through the democratic process governed by the community (some number of members shall be female). The discussed and agreed items through the process in the formation of the committee are written and utilized as basis to make rules and bylaws of the Committee in further activities. A Water Committee is formed for each public faucet to be constructed under the Project. In case that a facility is utilized by more than one community, a joint Water Committee is formed, of which members are composed of representatives from each community.

[Period and term of activity]

Period: prior to the construction

Term: 1 day / sub-village

[Output]

Activity report, member's list of Water Committee, basis of rules and bylaws of Water Committee

5-4) Capacity building of Water Committee

A series of workshop trainings are provided to the Water Committee members to improve their capacity in operation and maintenance of the water supply facility. Roles and responsibility of each committee members are clarified, and rules and bylaws of the committee are made. Technical training for preventive maintenance of the facilities, fee collection, management of the Water Committee fund are also provided. With adequate discussion with committee members, amount to be charged for the users (i.e. community members) as water fee and collection methods are decided. Options in rating and collection are well informed to the committee members, and the most suitable option is taken through the decision making by the committee. Participatory workshop trainings are also provided to the committee members to obtain the participatory skills in conducting health education, facilitating communication and dialogue with community members, taking leadership, resolving conflicts among users, and so forth.

[Period and term of activity]

Period: prior to the construction

Term: 1 day / sub-village

[Output]

Activity report, certificate of activity completion signed by the sub-village head

Activity 6) Reinforcement of operation and maintenance system and follow-up / monitoring activity

[Outline and effects of activities]

The follow-up activities at sub-village level are conducted to investigate the situation in operation and maintenance, and use of the water supply facilities after the completion of the construction. In case any problems are identified, appropriate countermeasures shall be taken. The follow-up workshop trainings are provided to the Water Committee and Water Station, if necessary, for reinforcement of operation and maintenance system, problem solving skill, and implementation of health and sanitation education. Continuous health education is given to the communities. Also, the monitoring activities are undertaken to measure the impact of the Project, comparing the baseline data that was collected in the Community Research (Activity 3).

[Period and frequency of activity]

Period: After the completion of the facilities

Term: 2 times / month/ sub-village

[Output]

Activity report, monitoring report, certificate of activity completion signed by the sub-village head

Activity 6) Establishment of Water Station, provision of guidance and technology transfer in operation and maintenance of water supply system

[Outline and effects of activity]

A Water Station is established in each water supply system, and functions as the operation base to

provide technical operation and maintenance services for the whole water supply system. The costs required for the sustainable provision of operation and maintenance services by the station are borne by the water fee that is collected from the users and paid to the Station.

[Establishment of Water Station and Technology Transfer]

In the establishment of the Water Station, employment of local NGOs, mission churches, and private sector are considered to secure the sustainability, which enhance the relationship and distinction between service provider and consumer. In the selection process of the organization that run the Water Station, public advertisement is announced on the media such as newspaper and radio, as well as the information and recommendation of the District Water Engineer Office are considered. Qualification in experiences and management capacity shall be posed for the organization making application for the selection. Those qualifications shall be determined through discussion with the District Water Engineer Office. The selected organization shall conclude the agreement with the District Water Engineer Office and/or District authorities regarding entrustment in operation and maintenance of the water supply facilities with clarification of responsibilities and liabilities of each organization.

The selected organizations are provided with training workshops to develop the capacity in operation and maintenance of the water supply system.

Technical skills in operation and maintenance of the water supply system are transferred by the District Water Engineer Office and the Japanese engineering consultant as part of supervision services provided under the Project.

5. Input

Human resources input required for the implementation of the Soft Component Programme (i.e. total man-months of Japanese and local consultants) are: 1) Japanese consultants (Community Development, and Institutional Development and Management), 2) local consultant (Community Development, and Institutional Development and Management), and 3) local staff (Community Development Workers, and Health Extension Staff). The qualifications and job requirements of the personnel are as follows:

Human resources input and term/period of each activity

Activity	Target	Period	Human Resources Input
0. Reinforcement of Management, Operation and Maintenance System			
0-1) Formation of task force (preparatory working committee)	Staff of District Water Engineer Office	1 day / District	Japanese consultant (Institutional Development and Management) (Community Development)
0-2) Technology transfer to the task force (technical aspects)		7 days / District	
0-3) Technology transfer to the task force (administrative aspects)		7 days / District	Local consultant (Institutional Development and Management) (Community Development)
0-4) Technology transfer to the task force (Field OJT)		2 days / District	
0-5) Workshop for task force		1 day / District	
1. Training of local staff (community development worker, and health extension worker)	Local staff Community development workers Health extension workers	21 days	Japanese consultant (Community Development) Local consultant (Community Development)
2. Mobilization of stakeholders			
2-1) Stockholders' meeting	Authorities of Districts, Wards, and Villages	1 day / District	Japanese consultant Local consultant
2-2) Meeting with sub-village heads and key persons	Heads, community leaders, knowledgeable persons of target sub-villages	1 day / District	Japanese consultant Local consultant Local staff
3. Explanation of outline and concept of the Project to the community members	Each target community of sub-villages	1 day / sub-village	Local consultant Local staff
4. Community research / Baseline survey	Target sub-villages	3 days / sub-village	Japanese consultant Local consultant Local staff
5. Promotion of community participation and health education			
5-1) Sub-village meeting	Community members of target sub-villages	1 day / sub-village	Local Consultant Local staff
5-2) Promotion of community participation and Health education		3 days / sub-village	
5-3) Formation / reorganization of Water Committees	Water Committee members of each target sub-village	1 day / sub-village	
5-4) Capacity building of Water Committees		3 days / sub-village	
6. Follow-up and monitoring	Target sub-villages and Water Stations	2 days / month / sub-village	Local consultant Local staff

Time Schedule

Activity 1 ~ 4 : Prior to the construction stage

Activity 5: Prior to and during the construction stage

Activity 6: After the construction stage

- Two Japanese consultants (Community Development, and Institutional Development and Management) supervise the activities to promote community participation and health education, as well as activities relating to the establishment and capacity building of Water Stations. The Japanese consultants also take responsibility to make reports to and coordinate with Japanese institutions concerned.
- Counterpart staff from each District Water Engineer Office take part in the Soft Component Programme and supervise the activities.
- Two local consultants (Community Development, and Institutional Development and Management) manage the plans and activities of the Programme to be implemented at field level by the local staff under supervision of Japanese consultants. In case that the Japanese consultants are not in the country, the local consultants are responsible for reporting to and coordination with the implementation agencies.
- Those local staff (Community Development Workers, Health Extension Staff), who have field experiences and speciality in the relevant fields of activities, shall be employed. The local staff implement the activities involved in the Programme at field level. Community Development Workers and Health Extension Staff shall make teams and implement the activities.

B) Soft component programme for defluoridation support

a. Needs and problems

The contents of the project were greatly altered from the original request, as nearly all water sources in the project area contain high concentration of fluoride. The Government of Tanzania started to investigate water sources with regard to fluoride, and has sought measures ever since, but no effective solution has yet been found. At present, Tanzania's drinking water standard (temporary) allows 8.0 mg/l. This value is far higher than that of the WHO guidelines, 1.5 mg/l. This unfavourable standard set by the Government of Tanzania implies the severity of the problem. Many cases of health hazards due to the high concentration of fluoride have been reported in the project area, so that measures need to be taken expeditiously.

As such, the Government of Tanzania requested the Government of Japan to support activities of the Ngurdoto Defluoridation Research Station in Arusha (under the supervision of the Ministry of Water and Livestock) for which the results can be reflected in the Project. Concretely, defluoridation pilot tests aiming at practical operation will be conducted at Katesh in Hanang. The Ngurdoto Defluoridation Research Station has conducted research on defluoridation techniques for drinking water in rural areas, whose outcomes partly show some potential for practical use. However, continuous pilot tests need to be conducted to foster the techniques in the project area. Japan's aid is requested to support the enhancement of such pilot tests.

b. Expected outputs

As stated above, with high concentrations of fluoride at nearly all water sources in the project area, effective measures on defluoridation are indispensable for improvement of drinking water supply. This means that support through the soft component for Tanzanias' activities in terms of defluoridation will provide data which are useful for defluoridation projects in the future. In other words, outputs (direct outputs) obtained through introduction of the soft component programme can expand the scale of pilot tests from a sole station, the Ngurdoto Defluoridation Research Station in Arusha, to the project area at Katesh such that useful data for future projects can be obtained.

c. Activities

1) Feasibility for practical use of bone charcoal

Bone charcoal is regarded as one of the defluoridation materials. Optimal conditions for operation will be examined among the options that include further development of feasible methods with bone charcoal as well as other methods tested at the Ngurdoto Defluoridation Research Station in Arusha. Moreover, in view of sustainability and regional constraints, appropriate manufacturing methods and a market circulation of bone charcoal will be

considered.

2) Conditions for activities implementation

Activities need to fulfil the following conditions considering the effects of the project and the current situation of the project area.

- a) Only the materials whose defluoridation effects are reported, and which are possible to be obtained in Tanzania will be included. In case that a material is difficult for integration into an established system, it will be deleted from the options.
- b) Drinking water is exclusively the target of defluoridation and thus simple methods that can be practiced at each household will be given priority. In case it is anticipated that treatment at boreholes is profitable in the future due to characteristics of water sources and beneficiaries, this option will also be considered.

3) Selection of project support area

The activities described above will be implemented in part of the Project area at Katesh and its surrounding area in Hanang District. The Water Engineers Office at Katesh and nearby villages will be the focal points.

4) Concrete activities

Activities will be divided into the former half, Phase 1 and the latter half, Phase 2. The activities will be elaborated in the following section.

Phase1

Activity 0: Training for Water Engineers

0-1) Support for Phase 1 activity planning and coordination for implementation as well as awareness campaign for water quality.

(Activity outline: direct outputs)

In Phase 1 support will be given to activity planning and preparation for the plan implementation. Awareness campaigns will be given in order to re-establish general knowledge and understanding of water quality.

(Target group)

Water Engineers and Water Engineers Office staff

(Duration of activity)

20 days

(Outputs)

Activity report and awareness campaign report

0-2) Gathering and processing information about defluoridation

(Activity outline: direct outputs)

Information and research results that the Ngurdoto Defluoridation Research Station in

Arusha possesses will be reviewed to confirm the current status of their knowledge. Furthermore, the understanding will play a significant role for practical defluoridation pilot tests. Magnesite, red soil, bone charcoal and other materials had already been tested for defluoridation at the Station in Arusha, so the experiment methods and their results will be analysed.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

20 days

(Outputs)

Existing information survey report

Activity 1: Information gathering for a system development

1-1) Water quality analysis (including defluoridation analysis)

(Activity outline: direct outputs)

Water quality including fluoride will be analysed, and further technology transfer to Water Engineers and Water Engineers staff will be undertaken.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

10 days

(Outputs)

Analysis results report

1-2) Procurement of bone charcoal materials

(Activity outline: direct outputs)

Various research results on defluoridation in northern Tanzania will be referred to, including those at the domestic level (drinking water for household use), and the capacity of listed materials will be tested. The existing information of those materials in terms of defluoridation capacity will be confirmed. The market circulation of bone charcoal materials for pilot tests will be surveyed and the procurement routes will be established.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

10 days

(Outputs)

Survey report

1-3) Bone charcoal manufacture and absorption test

(Activity outline: direct outputs)

Bone charcoal will be manufactured at the Water Engineers Office in Katesh and the manufacturing process will be reviewed. To investigate the capacity for defluoridation, the water treatment flow will be preset with respective defluoridation materials. In particular, possible systems at the domestic level and its optimal conditions for operation will be studied. For this purpose, absorption tests with bone charcoal in use will be conducted and further technology transfer to Water Engineers and Water Engineers staff will be undertaken.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

115 days

(Outputs)

Survey report and test records

1-4) Absorption test with defluoridation materials other than bone charcoal

(Activity outline: direct outputs)

Absorption test with defluoridation materials other than bone charcoal will be conducted at the Water Engineers Office in Katesh.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

100 days

(Outputs)

Survey report and test records

Activity 2: System development

2-1) Data compilation

(Activity outline: direct outputs)

The data obtained through activity 1 will be organized and the results will be compiled.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

15 days

(Outputs)

Phase 1 activity report

2-2) Planning for Phase 2

(Activity outline: direct outputs)

Support is given to Water Engineers and Water Engineers Office staff with regard to planning of defluoridation system development, installation and operation.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

15 days

(Outputs)

Phase 2 activity plan

Phase 2

Activity 3: System installation and operation

(Activity outline: direct outputs)

Support is given for implementation of practical pilot tests for defluoridation system installation and operation. Detailed tasks are as follows:

- Select target villages and households
- Install the system in the target households and make explanations to the users
- Instruct the users on operation and maintenance of the equipment such as exchange of filter materials
- Record the introduction process and the data

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

280 days

(Outputs)

Activity records

Activity 4: Evaluation

4-1) Data evaluation

(Activity outline: direct outputs)

The data from tests will be processed and compiled, and the data obtained in Phase 2 will be evaluated.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

20 days

(Outputs)

Activity report for Phase 2

4-2) Overall activity evaluation

(Activity outline: direct outputs)

The overall activities throughout Phase 1 and 2 will be evaluated and the results will be summarised in a final report.

(Target group)

Water Engineers and Water Engineers Office staff.

(Duration of activity)

10 days

(Outputs)

Final report

Project Design Matrix (PDM)

Project Title: The Rural Water Supply Project in Hanang, Singida Rural, Manyoni and Igunga Districts in the United Republic of Tanzania

Project Duration: Aug. 2001 ~ March 2004

Target Area: Hanang, Singida Rural, Manyoni and Igunga Districts

Target Group: Communities in the target area

Date of entry: April 2001 (Version: 1.0)

Target Group: Communities in the target area				Date of entry: April 2001 (version: 1.0)
Narrative Summary		Objectively Verifiable Indicator	Means of Verification	Important Assumption
Overall Goal <input type="checkbox"/> Regional master plan of water sector in the target area is developed, including plans and strategies for improvement of water qualities		<input type="checkbox"/> Regional master plan of water sector is developed and implemented	<input type="checkbox"/> Regional master plan developed	
Project Purpose <input type="checkbox"/> Consumption of safe water, although the amount is limited, is sustained by the target communities		1. More than 70% of target population keeps consumption of water from facilities at 5l/day/person after the construction of water supply system 2. Operation and maintenance of water supply system is undertaken and the system is in operation after the construction	<input type="checkbox"/> Monitoring report, operation and maintenance reports	
Output 1. Safe water, although the amount of provision is limited, is provided in the target area through the water supply system constructed 2. Equipment and materials necessary for the operation and maintenance of water supply system constructed is procured and utilized <u>Output expected by the implementation of Soft Component Programme</u> 3. Sense of ownership among the target community towards water supply system constructed is increased 4. Health consciousness among the target population is improved 5. Community-based organization and system for operation and maintenance is established, as well as supporting system of implementing agency 6. Capacity of target communities and implementing agency on operation and maintenance of water supply system is improved		1-1. Water supply system, which enable the water provision for more than 70% of target community, is constructed in 2005 1-2. Water resource, of which quality satisfies WHO standard, is developed 2. Equipment and material necessary for operation and maintenance is continuously utilized 3-1. Water Committees are formed 3-2. Memorandum of understandings is concluded between Water Committee and Water Station 3-3. Water Committee Fund is reserved to a certain amount 4-1. Water Committee Fund is reserved to a certain amount 4-2. Large number of target population attend the workshop for health education 4-3. Large number of target population understand the route of water borne diseases 4-4. Large number of target population recognize the harmful influence of fluorine-contained water 5. Water Committee and Water Station are established 6-1. Operation and maintenance is undertaken after the commission of water supply system 6-2. Operation of water supply system is sustained after the commission	1-1. Completion report, population survey report, pumping test report 1-2. Water quality analysis report 2. Progress report, operation and maintenance report 3. Soft component programme report, memorandum, water committee fund 4. Soft component programme report 5. Memorandum, operation and maintenance report 6. Operation and maintenance report, monitoring report	<input type="checkbox"/> Water quality, as obtained in the basic design study, continues to satisfy the WHO standard <input type="checkbox"/> Target communities satisfied with the amount of water provided by the water supply facilities constructed
Activity 1-1. Make water supply plan through basic design and detail design studies 1-2. Develop the water resources and construct water supply system in the target area 2. Procure equipment and materials necessary for operation and maintenance of water supply system <u>Activities to be implemented under the Soft Component Programme</u> 3-1. Train local staff (community development workers, and health extension staff) 3-2. Implement activities to promote community participation 3-3. Assess the willingness and capability of the target community for participation, and select target community for the collaboration 3-4. Promote Water Committee Fund in the target communities 3-5. Implement health education in the target communities 3-6. Form and reorganize Water Committees 3-7. Transfer the technology necessary for the management, operation and maintenance of water supply system to Water Committees and implementing agencies 3-8. Conduct monitoring for promotion of community participation, health education, and operation and maintenance		Input <u>Japanese Side</u> Human resources: Basic design study team, detail design team, consultant for supervision Equipment and materials: Equipment and materials for operation and maintenance Project cost: Construction costs, procurement costs, implementation cost of Soft Component Programme <u>Tanzanian Side</u> Human resources: Counterpart staff Land: Sites for facilities to be constructed Local costs		Pre-Conditions <input type="checkbox"/> Target communities express the willingness to receive the water supply system <input type="checkbox"/> Custom clearance is smoothly undertaken without any delay <input type="checkbox"/> Water Station is established by District Water Engineer Office <input type="checkbox"/> Staff provided with skill-up training continue their duties (Technology is transferred to the water station)

Project Design Matrix (PDM)

Defluoridation activities supported by Soft Component Programme

Project Title : in Hanang, Singida Rural, Manyoni and Igunga Districts in the United Republic of Tanzania

Project Term : Aug. 2001 – March 2004

Date : April, 2001

Target Group : Ministry of Water and Livestock Development

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption
Overall Goal To effect the Water supply project including water quality improvement in future	Planning and execution of water supply project in this area	Water Supply Project in this area	
Project Purpose Provide data which are useful for defluoridation (Domestic level) projects in the future	Defluoridation pilot tests (Domestic level) will be conducted at Katesh in Hanang	Report, data, records	
Output 1. Confirmation of most appropriate method for defluoridation system at the present time for the project in Katesh 2. Install the defluoridation equipment in the target households and make explanation to users in Hanang district 3. The test data will be processed and compiled. Data obtained will be kept at Ministry of Water and Livestock Development	1-1. Various research results on defluoridation 1-2. implementation of practical pilot tests for defluoridation system installation and operation 2. To use the defluoridation equipment in the target households and make explanation to users in Hanang district 3. The test data will be processed, compiled and kept on file.	<input type="checkbox"/> Report, data, records	The defluoridation research station will cooperate in this project. The households will use the defluoridation equipment in the project.
Activities 1. Various research results on defluoridation 2. Support is given to Water Engineers and Water Engineers Office staff with regard to planning of defluoridation system development. 3. The data obtained through the pilot tests will be compiled and the results will be analysed. 4. Implementation of practical pilot tests for defluoridation system installation and operation.	Input <u>Japanese Side</u> Equipment and Materials for pilot test Human Resources: Consultant, Contractors Implementation Cost <u>Tanzanian Side:</u> Human Resources: Counterpart Local Cost: Personnel expense for counter part		Preconditions The defluoridation research station continues working. Policy on fluoride remain unchanged

APPENDIX-7 References

Title	Issued	Publisher
Tanzania National Water Resources Management Policy (Draft)	1999	Ministry of Water
Draft Urban Water Supply and Sewerage Policy Component of the National Water Policy	1999	Ministry of Water
Rural Water Policy (Draft)	1999	Ministry of Water
Implementation Manual (Draft)/ Rural Water Supply and Sanitation Project (Learning and Innovation Loan)	1999	Ministry of Water
Impact of Reorganization on the Water Section in the Regions: Annual Water Experts Conference-AICC, Arusha	1998	Eng. G. S. Kaduri, REW-Mbeya
Design Manual for Water Supply and Waste Water Disposal: Second Draft: Volume I	1997	Ministry of Water
Technical Note on the Design and Construction of Small Earth Dams	1997	Ministry of Agriculture
Water Supply Design Manual Chapter 3 Water Quality	1986	Ministry of Lands, Water, Housing and Urban Development
Tanzania Sensa 1988 – 1988 Population Census: Preliminary Report	1988	Bureau of Statistics, Ministry of Finance
1:250,000 Topographical Map Nzega (Sheet SB-36-3)		Surveys and Mapping Division, Tanzania
1:250,000 Topographical Map Singida (Sheet SB-36-4)		Surveys and Mapping Division, Tanzania
1:250,000 Topographical Map Manyoni (Sheet SB-36-8)		Surveys and Mapping Division, Tanzania
1:250,000 Topographical Map Rungwa (Sheet SB-36-11)		Surveys and Mapping Division, Tanzania
1:125,000 Topographical Map Itigi (Sheet No.140)		Surveys and Mapping Division, Tanzania
1:125,000 Topographical Map Ikungi (Sheet No.122)		Surveys and Mapping Division, Tanzania
1:125,000 Topographical Map Manyoni (Sheet No.141)		Surveys and Mapping Division, Tanzania
1:125,000 Topographical Map Iluma (Sheet No.160)		Surveys and Mapping Division, Tanzania
1:500,000 Geological Map The Lake Victoria Gold Fields		Ministry of Energy and Mineral, Geology Division
1:250,000 Geological Map Tanganyika Territory (Sheet No.29)		Ministry of Energy and Mineral, Geology Division
1:125,000 Geological Map Hanang (Sheet No.84)		Ministry of Energy and Mineral, Geology Division
1:125,000 Geological Map Tanganyika (Sheet No.81)		Ministry of Energy and Mineral, Geology Division