

Table E-4 (2) SOIL TEST SUMMARY REGISTER

SITE No.	S.M. No.	SAMPLE No.	DESCRIPTION	S _w	COMPACTION				GRAVING				CASSAGRANDE				PARAMETERS				DISPERSION			PERMEA			CONSOLIDATION			REMARKS					
					kg/m ³	W _p %	W _L %	U _c %	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm
V-3-3 (MAGUDU)		43	TP-1 0-15	CH	100.93	17.73	2.4	1501	1501	751	10	1.2	2.65	31	156	261	1.51	195	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5	7.8	
		44	30	SC	100.96	16.9	64	150	144				2.65	14	133	19	1.81	615	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	16.6		
		45	TP-3 0-1.5	CH	100.53	18.2	60	152	151				2.63	28	53	25	1.31	430	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	16.6		
		46	30	SC	100.95	18.4	64	150	144				2.65	16	134	18	1.11	670	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	16.6		
		47	TP-4 0-1.0	CH	100.97	17.73	166	153					2.62	26	53	127	1.31	1600	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	18.0		
		48	20	SC	100.95	16.7	59	139	137				2.62	11	31	120	1.71	405	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8		
		49	TP-5 0-1.5	SC	100.99	16.7	70	145	141				2.66	20	34	14	1.2	800	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5		
		50	30	SC	100.98	16.7	70	149	146				2.63	23	40	17	1.0	1050	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	16.1		
VII-H2 (MABVT)		51	TP-5 0-1.0	CH	100.98	16.7	70	150	149				2.66	26	54	25	1.61	1475	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3		
		52	20	CH	100.97	16.7	70	150	148				2.65	26	54	26	1.61	1770	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	11.9		
		53	SAND SAMPLE										2.65																						
		54	TP-1 0-1.5	CL	100.99	16.7	70	150	149				2.67	21	46	125	1.51	1490	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.4	
		55	30	ML	100.97	16.7	70	150	149				2.65	15	43	128	1.81	1095	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.5	
		56	TP-2 0-1.5	CH	100.99	16.7	70	150	149				2.66	31	60	129	1.41	2285	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.7	
		57	30	SC	100.98	16.7	70	150	149				2.65	19	43	124	1.91	990	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	
		58	TP-3 0-1.5	CL	100.99	16.7	70	150	149				2.72	19	39	120	1.51	1095	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.7	
	59	30	CL	100.97	16.7	70	150	149				2.70	19	39	120	1.51	995	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.7		
	60	TP-4 0-1.5	CH	100.98	16.7	70	150	149				2.67	32	61	129	1.41	1690	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.9		
	61	30	MH	100.99	16.7	70	150	149				2.65	25	56	131	1.61	1520	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.8		
	62	TP-5 0-1.5	CL	100.98	16.7	70	150	149				2.66	21	47	126	1.51	1385	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4		
	63	30	CL	100.98	16.7	70	150	149				2.63	23	48	129	1.61	1300	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.7		
	64	TP-5 0-1.5	CH	100.97	16.7	70	150	149				2.73	28	57	129	1.41	1755	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.2		
	65	30	ML	100.98	16.7	70	150	149				2.76	15	48	133	2.51	795	N.D.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5		
	66	SAND SAMPLE																																	

Table E-5 (1) SODIC DISPERSION TEST

1. Emmerson Crumb Method -

(Visual) assessment of dispersion cloud of soil particles in a 1 milli-equivalent per litre solution of sodium hydroxide and in plain distilled water, after one hour.

2. Pinhole Method -

Flow rate and discolouration of distilled water passing through a 1mm hole in a re-moulded specimen contained in a test cell - only used if both Emmerson Crumb tests show positive.

3. Results -

	<u>Emmerson Crumb</u>		<u>Pinhole</u>
	<u>NaOH</u>	<u>Distilled Water</u>	
<u>1-2-1</u>			
TP 1 @ 1.0	Slight	Non Dispersive	-
TP 1 @ 2.0	Medium	Non Dispersive	-
TP 2 @ 1.0	Non Dispersive	Non Dispersive	-
TP 2 @ 1.5 (or 2.0)	Non Dispersive	Non Dispersive	-
TP 3 @ 1.0	Very Slight	Non Dispersive	-
TP 3 @ 2.0	Medium	Non Dispersive	-
TP 4 @ 1.0	Non Dispersive	Non Dispersive	-
TP 4 @ 2.0	Very Slight	Non Dispersive	-
TP 5 @ 1.0	Medium	Non Dispersive	-
TP 5 @ 1.5	Medium	Slight	-
<u>11-1-6</u>			
TP 1 @ 1.5	Slight	Non Dispersive	-
TP 1 @ 3.0	Slight	Non Dispersive	-
TP 2 @ 1.5	High	Non Dispersive	-
TP 2 @ 3.0	Very High	Slight	-
TP 3 @ 1.5	Very Slight	Non Dispersive	-
TP 3 @ 3.0	Very Slight	Non Dispersive	-
TP 4 @ 1.5	Medium	Non Dispersive	-
TP 5 @ 1.5	Medium	Very Slight	-
TP 5 @ 3.0	Medium/High	Non Dispersive	-

Table E-5 (2) SODIC DISPERSION TEST

3. Results - continued

	Emmerson Crumb		Pinhole
	NaOH	Distilled Water	
<u>11-2-1</u>			
TP 1 @ -	Medium	Slight/Medium	Slight to Non Dispersive
TP 1 @ 1.5	Medium	Slight/Medium	Slight to Non Dispersive
TP 2 @ 1.5	Very Slight	Non Dispersive	-
TP 2 @ 3.0	Medium	Medium	-
TP 3 @ 1.5	Non Dispersive	Non Dispersive	-
TP 3 @ 3.0	Medium/High	Medium/High	Very Slight to Non Dispersive
TP 3 @ 3.0	Very Slight	Non Dispersive	-
TP 4 @ 1.5	Very Slight	Non Dispersive	-
TP 4 @ 3.0	Non Dispersive	Non Dispersive	-
TP 5 @ 1.5	High	High	Dispersive
TP 5 @ 3.0	High	High	Dispersive
<u>IV -4-10</u>			
TP 1 @ 1.0	High	Non Dispersive	-
TP 1 @ 2.0	Medium	Very Slight	-
TP 1 @ 3.0	Slight/Medium	Very Slight	-
TP 2 @ 1.0	Slight	Non Dispersive	-
TP 2 @ 2.0	Medium/High	Non Dispersive	-
TP 2 @ 3.0	Slight/Medium	Very Slight	-
TP 3 @ 1.0	Medium	Slight	-
TP 3 @ 2.0	Medium	Slight	-
TP 3 @ 3.0	Slight	Slight	-

Table E-5 (3) SODIC DISPERSION TEST

3. Results - continued

	Emmerson Crumb		Pinhole
	NaOH	Distilled Water	
<u>V-3-3</u>			
TP 1 @ 1.5	Slight	Non Dispersive	-
TP 1 @ 3.0	High	Non Dispersive	-
TP 3 @ 1.0	High	Non Dispersive	-
TP 3 @ 2.5	High	Non Dispersive	-
TP 4 @ 1.0	Non Dispersive	Non Dispersive	-
TP 4 @ 2.0	Medium	Non Dispersive	-
TP 5 @ 1.5	Slight/Medium	Non Dispersive	-
TP 5 @ 3.0	High	Non Dispersive	-
TP 6 @ 1.0	Slight	Non Dispersive	-
TP 6 @ 2.0	Slight	Non Dispersive	-
<u>VII-1-12</u>			
TP 1 @ 1.5	Slight	Non Dispersive	-
TP 1 @ 3.0	Slight	Non Dispersive	-
TP 2 @ 1.5	Slight	Non Dispersive	-
TP 2 @ 3.0	High	Non Dispersive/ Slight	-
TP 3 @ 1.5	Medium	Non Dispersive	-
TP 3 @ 3.0	Medium	Non Dispersive	-
TP 4 @ 1.5	Medium	Non Dispersive	-
TP 4 @ 3.0	Slight	Non Dispersive	-
TP 5 @ 1.5	Non Dispersive	Non Dispersive	-
TP 5 @ 3.0	Slight	Non Dispersive	-
TP 6 @ 1.5	Slight	Non Dispersive	-
TP 6 @ 3.0	Slight	Non Dispersive	-

Table E-6(1) TRIAL PIT LITHOLOGICAL LOGS

MUSAVAREMA
(1-2-1)

TP1	0.00 - 0.15	Top soil, yellow-grey, fine to medium sand.
	0.15 - 2.00	Gneiss, yellow, highly to completely weathered, very fine to medium grained, with quartz pebbles, friable. End of Hole.
TP2	0.00 - 0.20	Top soil, light brown, fine to medium sand.
	0.20 - 1.30	Gneiss, orange-yellow, highly to completely weathered, with kernels of highly weathered gneiss, generally friable.
	1.30 - 3.00	Gneiss, yellow, highly weathered, medium to coarse grained, moderately friable. End of Hole.
TP3	0.00 - 0.20	Top soil, grey brown, silty sand.
	0.20 - 0.85	Sand, brown, fine to coarse.
	0.85 - 1.60	Gneiss, yellow-grey, highly weathered, fine to coarse grained, friable. End of Hole.
TP4	0.00 - 0.15	Top soil, yellow-brown, fine to medium sand.
	0.15 - 1.30	Sand, fine to medium and silt, orange-red, with some quartz pebbles.
	1.30 - 2.00	Gneiss, yellow-brown, highly weathered, fine to coarse grained, moderately friable. End of Hole.
TP5	0.00 - 0.15	Top soil, light brown, fine to very coarse sand.
	0.15 - 0.45	Gneiss, brown, completely weathered, fine to very coarse grained.
	0.45 - 1.80	Gneiss, yellow-grey, highly weathered, fine to very coarse grained, moderately friable. End of Hole.

Table E-6(2) TRIAL PIT LITHOLOGICAL LOGS

GARANJE
Chinyamatuwe
(II-1-6)

TP1	0.00 - 0.16	Top soil, grey, fine to medium sand.
	0.16 - 0.45	Sand, brown, very coarse, and pebbles.
	0.45 - 1.06	Gneiss, orange- grey, completely weathered, very fine to medium grained, very friable.
	1.06 - 2.60	Gneiss, pink- yellow to yellow- grey, highly weathered, fine to coarse grained, moderately friable. End of Hole.
TP2	0.00 - 0.26	Top soil, grey, silty sand.
	0.26 - 0.70	Sand, grey- yellow, fine to medium grained.
	0.70 - 1.35	Gneiss, grey- yellow, completely weathered, fine to very coarse grained, very friable.
	1.35 - 2.50	Gneiss, pale yellow, highly weathered, fine to very coarse grained, friable. End of Hole.
TP3	0.00 - 0.25	Top soil, orange, silty sand.
	0.25 - 0.60	Pebbly sand, red, with quartz pebbles and some small boulders.
	0.60 - 3.00	Clay silt, red, with some coarse sand grains in patches. Colour more yellow downward. End of Hole.
TP4	0.00 - 1.90	Gneiss, yellow- orange, highly weathered, medium to very coarse grained, moderately friable. End of Hole
TP5	0.00 - 0.75	Sand, light orange, fine to very coarse grained, with minor pebbles and some boulders.
	0.75 - 0.95	Pebbly sand, light orange.
	0.95 - 2.50	Gneiss, yellow- grey, highly weathered, friable. End of Hole.

Table E-6(3) TRIAL PIT LITHOLOGICAL LOGS

MASHOKO
(II-2-1)

TP1	0.00 - 0.70	Sand, pink, very coarse, and gravel.
	0.70 - 2.80	Gneiss, orange- red, highly weathered, moderately friable. End of Hole.
TP2	0.00 - 0.80	Top soil, red, fine to coarse sand.
	0.80 - 1.10	Pebbles and cobbles in sandy clay, chocolate- red.
	1.01 - 2.80	Gneiss, highly to completely weathered, yellow to yellow- red, fine to coarse grained, very friable. End of Hole.
TP3	0.00 - 1.90	Sandy clay, chocolate red, with pebbles of light grey, highly weathered gneiss.
	1.90 - 3.00	Sandy clay, yellow. End of hole.
TP4	0.00 - 0.80	Top soil, black, fine sand and silt.
	0.80 - 1.55	Sandy clay, orange, with small patches of completely weathered gneiss.
	1.55 - 2.20	Gneiss, yellow- grey, completely weathered, fine to coarse grained, friable. End of Hole.
TP5	0.00 - 0.50	Silty sand, grey.
	0.50 - 0.90	Sandy silt, orange- grey, with some medium sand.
	0.90 - 3.00	Sandy clay, grey- brown, uniform, with some small patches of highly weathered gneiss in upper 300mm. End of Hole.

Table E-6(4) TRIAL PIT LITHOLOGICAL LOGS

MUNJANGANJA
(IV-4-10)

TP1	0.00 - 2.90	Gneiss, orange, completely weathered, very fine to fine grained, with some very small pebbles, friable. Equivalent to silty sand. Single horizon only. End of Hole.
TP2	0.00 - 0.83	Gneiss, orange brown, completely weathered, very fine to very coarse grained, friable; equivalent to sandy silt with pebbles.
	0.83 - 2.10	Gneiss, grey, completely weathered, very fine to medium grained, with sub- rounded pebbles, friable; equivalent to sandy clay. End of Hole.
TP3	0.00 - 1.50	Gneiss, yellow- grey, completely weathered, fine to medium grained with silty matrix, friable; equivalent to sandy silt.
	1.50 - 2.80	Gneiss, orange- grey, highly weathered, very fine to coarse grained, moderately friable. End of Hole.

Table E-6(5) TRIAL PIT LITHOLOGICAL LOGS

MAGUDU

(V-3-3)

TP1	0.00 - 0.15	Top soil, grey brown, fine to medium sand.
	0.15 - 1.55	Sandy clay, red, showing ferruginous nodules.
	1.55 - 2.70	Gneiss, highly weathered, pale grey to yellow-grey, fine to medium grained, friable. End of Hole.
TP3	0.00 - 0.20	Top soil, light brown, fine to medium sand with pebbles.
	0.20 - 1.05	Sand, orange brown, fine, with silt and pebbles.
	1.05 - 3.00	Gneiss, highly weathered, yellow-grey, friable, with patches of light brown sandy clay. End of Hole.
TP4	0.00 - 0.30	Top soil, brown-grey, fine to medium sand.
	0.30 - 1.70	Sand, orange, fine to medium, becoming slightly silty downwards.
	1.70 - 3.00	Sand, fine to medium, and silt, brown-grey, with small pebbles of quartz and feldspar. End of Hole.
TP5	0.00 - 0.10	Top soil, brown-grey, fine to medium sand.
	0.10 - 0.90	Sand, red-orange, fine to medium, with pebbles of highly weathered gneiss.
	0.90 - 1.60	Gneiss, completely weathered, and sand, mixed.
	1.60 - 2.60	Gneiss, pale yellow, highly weathered, moderately friable. End of Hole.
TP6	0.00 - 0.15	Top soil, grey brown, fine to medium sand.
	0.15 - 0.90	Clayey sand, orange-red.
	0.90 - 1.80	Gneiss, brown, completely weathered, fine to coarse grained, with pebbles of highly weathered gneiss.
	1.80 - 3.00	Gneiss, highly weathered, very pale grey, fine to coarse grained, with some clay. End of Hole.

Table E-6(6) TRIAL PIT LITHOLOGICAL LOGS

BOTA
(VII-1-12)

TP1	0.00 - 0.15	Top soil, brown- grey, fine to coarse sand.
	0.15 - 3.00	Sandy clay, orange, reasonably uniform. End of Hole.
TP2	0.00 - 0.15	Top soil, brown- grey, fine to coarse sand.
	0.15 - 2.80	Sandy clay, orange, reasonably uniform, with some minor cobbles of quartz. End of Hole
TP3	0.00 - 0.05	Top soil, grey- orange, fine to medium sand.
	0.05 - 0.85	Sandy clay, orange- red, with very coarse sand grains and gravel.
	0.85 - 2.17	Gneiss, pink- yellow, highly weathered, fine to very coarse grained, moderately friable at top, becoming less so downward. Some finer- grained patches of darker red colour. End of Hole.
TP4	0.00 - 0.15	Top soil, brown- grey, fine to coarse sand.
	0.15 - 3.00	Sandy clay, orange, with common very coarse sand grains and some pebbles and cobbles of gneiss. End of Hole.
TP5	0.00 - 0.10	Top soil, grey brown, fine sand.
	0.105 - 1.30	Sandy clay, orange- red, reasonably uniform.
	1.30 - 2.90	Sandy clay, yellow- brown, with some pebbles and cobbles of moderately weathered gneiss and bands of orange, highly weathered gneiss. End of Hole.

ANNEX-F SOCIO-ECONOMY AND RURAL WATER SUPPLY

Contents	Page
F.1 Summary of Social Situation	F-1
F.2 Interpretation of Social Survey	F-7
F.3 Results of Social Survey	F-10
1) Musaverema (I-2-1)	F-11
2) Chinyamatumwa (II-1-6)	F-15
3) Mashoko (II-2-1)	F-22
4) Munjanganja (IV-4-10)	F-26
5) Magudu (V-3-3)	F-30
6) Mabvute (VII-1-12)	F-34

F.1. Summary of Social Situation

With respect to social situations in the six study areas, data and information were obtained through social survey conducted in July in 1987. The items and results of the survey are described in F.2 and F.3, respectively.

Based on the results of the survey, the social situations in the wards related to the study areas are summarized as follows.

1) Musaverema (I-2-1)

The study area is located in the Ward No.2 of Matibi I C.L. The population density is 44 persons per sq.km, which is higher than the average of 38 persons per sq.km in Matibi I. However, Ward 2 of Matibi I C.L. is regarded as a thinly populated area as compared with the other communal lands in the Province. The centres of this ward are Matibi Mission located in the northwest of the ward and Musaverema adjacent to the dam site. In Matibi Mission, hospital and post service are available. On the other hand, Musaverema has the primary and secondary schools, storers and a dip-tank.

The road network is poorly provided except for the road connecting Neshuro R.S.C. and Matibi Mission. At present the road between Masvosva located in the southeast of the ward and Matibi Mission is under construction as one of the food for work programmes.

Since both of the surface water and groundwater are scarce in this ward, the water supply situation is very poor. The boreholes and protected wells are utilized as main water sources in the wet season, but most of them come to dry up in the dry season. As a result, the majority of inhabitants manage to get water by digging the riverbeds of Musaverema River. A number of farmers wash clothes and bathe in the rivers. But they can use water flowing in Musaverema River for only two months from December to January because of no running water in the other months. Under the circumstances, people have to use the water stored in the pools around the rivers and/or the sluggish water in Runde River. Such water utilization causes schistosomiasis to a large extent in this area.

As for cooperatives movement and community activity, two cooperatives registered by Ministry of cooperative were established in this ward. One is a communal garden group, the other a uniform making group. Besides, several community groups like a poultry keeping group are organized with the help of community development workers and other governmental staff concerned. Community activity can be said to be comparatively active in this ward. At present, the programmes, namely the gully reclamation and brick moulting of pre-school facilities have been carried out. Together with the road construction project mentioned above. Local need for development is stressed on the provision of the water supply and irrigation facilities. This explains that water resources development would be most important for the development of this ward.

2) Chinyamatumwa (II-1-6)

The dam site is located on Chinyamatumwa River, the border between Ward 6 and Ward 14 in Bikita C.L. The population density of this ward is approximately 100 persons per sq.km, remarkably higher than this communal land's average of 52. Three business centres, viz. Mutikizizi in Ward 6 and Mujiche and Negavano in Ward 14 exist and there is a clinic in Negavano but no clinic in Ward 6. The inhabitants in Ward 6 get health service at Negavano Clinic and/or Makuvaza Clinic.

As for road network, two main rural roads traverse this ward, one connecting Bikita R.S.C. and Negavano B.C. via Mujiche B.C. and the other Makuvaza R.S.C. and Mutikiziz B.C. There is no north-south road linking between Ward 6 and Ward 14 so that Ward 6 and Ward 14 don't have a close relationship with each other in economic activity.

This area is rich in surface water resources such as streams and springs from the viewpoint of the water supply situation of the whole communal lands in the Province. However, there are few number of sanitary water sources such as boreholes and protected wells. Most of streams and individual wells dry up this year (1987) due to the severe drought. As a result, a number of farmers are getting water by digging the riverbeds of Chinyamatuma River and others. Three small size dams were constructed in Ward 6, being utilized mainly for livestock use. In recent years, inland

fishery began to be introduced therein. A number of the individual and communal gardens are observed near the streams but most of them are not cultivated at present because of the lack of water resulting from the drought.

As for communication, telephone service is available only in Mutikizizi B.C. However, the lack of post service and shortage of telephone are the matter of little concern for the inhabitants because the access road to Bikita R.S.C. is in good condition.

With respect to rural development, an emphasis is placed on the construction of irrigation facilities and the improvement of marketing and transportation system as well. In Ward 6 the establishment of health facility is desired because of no clinic at present.

3) Mashoko (II-2-1)

The study area is located in Ward 2 of Matsai C.L. The population density of this ward is 37 persons per sq.km. The lack of water resources hinders agricultural production and rural lives of the farmers in this area. For the purpose of improvement of social infrastructure, about 20 boreholes/wells, four primary schools, two secondary schools and two health facilities were established centering on Mukanga B.C. and Mashoko Mission. Mashoko Mission adjacent to the dam site is a densely populated area with four boreholes thereby.

Although the water supply situation for domestic use has been improved, the water supply for livestock still depends on the small size dams located five to ten km from the mission. The small size dams were already implemented in Mukanga B.C. and Matsai B.C. belonging to the neighboring ward. Hence the dam construction in the vicinity of Mashoko Mission is strongly desired among the inhabitants. The small size dam is under construction in Tafadzwa VIDCO as a food for work programme to supply water for livestock and gardening. Thus, the project of which main component is the medium size dam is recognized as the development project aiming at not only introducing irrigated agriculture but also improving the social environment.

As for community activity, a number of different types of community groups are organized. A cotton group is found in response to the characteristic of agriculture of this area. The marketing and transportation facilities poorly provided are found to be a constraint for rural development together with the scarce water resources.

4) Munjanganja (IV-4-10)

The study area is situated in Ward 26 of Gutu C.I., having the population density of about 60 persons per sq.km. The characteristics of social condition of this area are the well distributed educational facilities and water supply situation in good condition. There exist six primary schools and two secondary schools. The communal people are using streams and individual wells as water sources for domestic and livestock use throughout the year. A number of farmers are cultivating their individual gardens.

Community activity is not performed well, and any food for work programme has not implemented yet though two programmes are proposed. As for the existing projects, the grazing improvement project has been executed and the livestock introduction project is ongoing under the cooperation of West Germany. Both of these two projects would encourage livestock production in this area.

According to local need for development, special emphasis is put upon the projects to solve the problems in economic activity, viz. the improvement of road network, the promotion of agricultural loan (A.F.C.) and the improvement of marketing and transportation facilities. It is, therefore, anticipated that the projects aiming to increase farm income are desired more strongly among the farmers than the projects for improving the social welfare .

5) Magudu (V-3-3)

The study area is located in Dowa 6 Ward of Nyajena C.L. The population density is 70 persons per sq.km, which is approximately equal to the average density of 65 in the Nyajena C.L. The road which passes through the irrigable area, connecting Renco Mine and Chiredzi gives good access to other wards and districts. However, there exists no centre of commercial activity but a few stores near Magudu Primary School in this ward. This ward has no health facilities and Magudu Primary School is as the sole educational facility.

The water supply is a big problem in this ward because of scarce surface water resources and the lack of boreholes and protected wells. To date, four boreholes/protected wells were provided. However, two of them are out of order at present and one is not favorable for domestic use due to its salty quality. For these reasons, a number of people are using water in Mutilikwe River not only for livestock use but also for domestic use.

There is no community group in activity and the existing projects are less in number as compared with the other study wards. Local intention for development is stressed on the improvement of social infrastructure such facilities as boreholes, schools and clinics.

6) Mavbute (VII-1-12)

The study area is located in Dzoro North Ward of Ndanga C.L. The dam site is situated about nine km last from Chivanva R.S.C., the centre of the transportation in the south of Ndanga C.L. as a connection point between Jerera D.S.C. and Chiredzi. Dzoro North Ward has a close relationship with Chivanva in both social and economic aspects. The population density of this ward is very high with 98 persons per sq.km. It leads to decrease the grazing land in acreage. The commercial centres of this ward are Mavbute B.C. adjacent to the dam site and Muzondidya B.C. in the south of the ward.

Rural water supply situation is good owing to a number of springs. In addition, several wells have been provided throughout the ward under

cooperation of Switzerland. As for communication and health service, they are available in Chivanva R.S.C.

A number of different types of community groups are under operation now and WADCO is positively strengthening community development. The cotton groups are organized in order to purchase a tractor by saving part of money to be obtained through the sale of cotton, cash crop produced by the farmers belonging to the group. WADCO has a great interest in purchasing a tractor which is expected to lower labour requirements for agricultural practice and the transport of agricultural products and materials, etc. It is expected that the Government would subsidise for the purchase of a tractor.

F.2. Interpretation of Socio-economic Survey

F.2.1. Objectives

In order to study social impacts generating from the project, socio-economic survey has been conducted in the wards related to the six (6) areas selected for the feasibility study.

F.2.2. Methodology

1) Survey Area

A survey with respect to social situations on the selected six sites has, in principle, been carried out at ward level taking into account the following.

- a) Prior to the survey, data and Information regarding demography were expected to be available at ward unit on all the six sites. In this survey, the existing relevant data have been collected from local official concerned.
- b) The selected six sites have the proposed irrigation areas of 34 to 74 ha in size in the Inventory Study Stage. Assuming that 0.1 ha is allotted to one beneficial farmer, the total beneficial farmers would count, at least, more than 300. In general, one village is made of about 100 households and one ward forms about 600. Therefore, data of ward unit would be more respondent to social situation in the selected area because farmers in several villages can participate in the Project.

- c) On the other hand, when the Project is materialized, not only farmers living in a ward including the proposed irrigation area, but also those in other nearby wards would take part in the Project. However, the farmers in a ward where the dam and/or irrigated area is located, are deemed to be selected as new irrigators in the Project preferentially, and would occupy the majority of beneficiaries. In addition, there is no definite difference in social situation among neighbouring wards.

For the reasons mentioned above, the survey areas were determined as follows.

<u>Dam Name</u>	<u>District</u>	<u>C.L.</u>	<u>Ward</u>
1. Musaverema	Mwenezi	Matibi No. 1	9
2. Chinyamatumwa	Bikita	Bikita	6, 14
3. Mashoko	Bikita	Matsai	2
4. Munjanganja	Gutu	Gutu	26
5. Magudu	Masvingo	Nyajena	Dowa 6
6. Mabvute	Gutu	Ndanga	Dzoro North (Nyamutake)

Among the above six survey areas, the Chinyamatume and Mabvute dam sites are located on the border between two wards. As to Chinyamatumwa, two wards, namely Ward 6 and Ward 14 in Bikita C.L. have been surveyed. Regarding Mabvute, however, unfortunately an Agritex extension worker is not assigned at present in Nyamutake Ward so that data and information have been obtained only about Dzoro North Ward.

2) Survey Items

In order to gain an understanding of the social aspects on the selected six sites, data and information with respect to the following items have been obtained through interviews with local staff concerned during the field survey period in the Phase-II study based on the questionnaire prepared.

Items	Interviewees
1. Boundaries of Wards, Villages on the Maps (1:50 000)	Regional Agritex Staff
2. Population & Number of Households	Agritex Extension Worker (E.W) Councillor
3. Land Use & Cropping Area	E.W.
4. WADCO Members	E.W., Councillor
5. Status of Boreholes & Wells	MEWRD Provincial Staff D.D.F. E.W., Councillor
6. Status of Schools	Ministry of Education Provincial Staff
7. Status of Health Facilities & Commonest Diseases	Ministry of Health Provincial Staff
8. Agricultural Facilities	E.W., Councillor
9. Social Services	E.W., Councillor
10. Status of Cooperative & Pre-Cooperative	Community Development Worker, E.W., Councillor
11. Existing Development Plan	Councillor, E.W.
12. Local Need for Rural Development	Councillor, E.W.

On the basis of the result of the interview, the field observation was conducted in centering on the proposed irrigation area of each project.

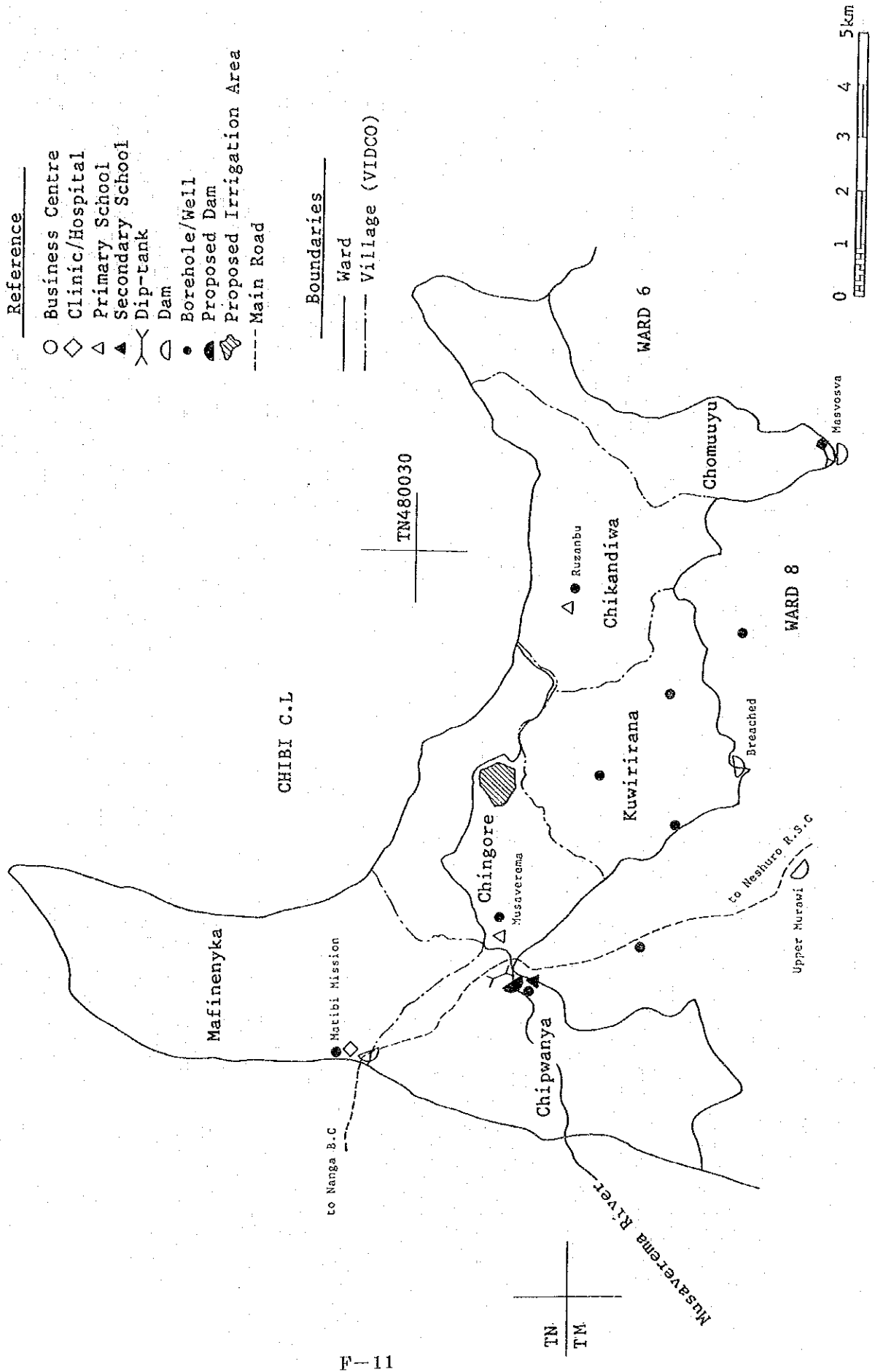
The area of wards and villages (VIDCOs) were given by measuring the maps (1:50 000) on which wards and villages had been demarcated at Regional Extension offices.

F.3 Results of Social Survey

<u>Dam Name</u>	<u>Study Ward</u>
1) Musaverema	Matibi No.1 C.L. No.9 Ward
2) Chiyamatunwa	Bikita C.L. No.6 and No.14 Wards
3) Mashoko	Mashoko C.L. No.2 Ward
4) Munjanganja	Gutu C.L. No.26 Ward
5) Magudu	Nyajena C.L. Dowa 6 Ward
6) Mabvute	Ndanga C.L. Dzoro North Ward

Social Infrastructure Map

(1) Musaverema MATIBI No. 1 C. L, WARD 9



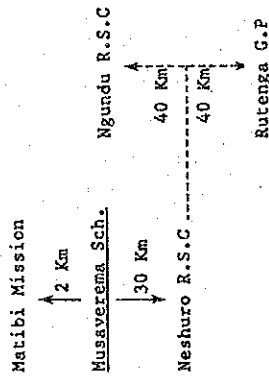
(1) Summary of Social Situation - Musaverema

District: Maenezi C.L: Matibi No. 1 Ward: 9
 Dam Site: Chipwanya Village
 Irrigation Area: Chingore Village

1) Area, Population and Number of Households

Village (VIDCO)	Area (ha)	No. of Households	Population Density (Persons per sq.km)	Household Size (Persons)
1. Chipwanya	1 550	800	51.6	8.9
2. Mafinika	1 940	792	40.8	10.8
3. Kuvirana	1 230	650	52.8	9.3
4. Chingore	1 260	753	60.0	7.3
5. Chikandiwa	1 230	516	42.0	7.1
6. Chemuuyu	1 070	490	45.8	6.5
Total	8 280	4 001	48.3	8.2

2) Transportation



3) Health

(a) Clinic / Hospital

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Matibi Mission	Nil	6	3	4	N.A

(b) Commonest Cases of Morbidity

• Matibi Mission Hospital

Diseases	1985	1986	Percentage of Cases in 1986 (Z)
1. Sexually transmitted Diseases	301	763	5.0
2. Schistosomiasis	986	1 469	9.7
3. Malaria	62	130	0.9
4. Diarrhoea	162	N.A	-
5. Eye Infections	145	454	3.0
6. Skin Infections	132	443	2.9
7. Malnutrition	152	166	1.1
8. Urinary Tract Infections	108	318	2.1
Total	Not Available	15 213	100.0

4) School (As of 1986)

No.	Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil	Classroom per Pupil
<u>Primary School</u>						
1.	Musaverema	1 186	28	27	1:42	1:44
2.	Ruzanbu*	162	4	4	1:41	1:41
Total		1 348	32	31	1:42	1:43
*.....as of 1984						
<u>Secondary School</u>						
1.	Musaverema	179	6	N.A	1:30	-

Most farmers take cattle to Muchingwizi Dam or Masvosva Dam all the year around. There are a few gardens in this ward. Some of farmers living in Ward 9 are taking part in the taguta garden adjacent to Upper Muravi Dam in Ward 8.

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	Musaverema (Chipwanya Village)
(b) Cattle Sale Pens	Nil (the nearest one - Neshuro)
(c) Sub-depot of G.M.B	Nil (Transport to Mataga in Midland Province by Private Dealers)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS	No. of PWS Population per sq.km. per PWS	Remarks
(1) Borehole	4	0.05	1 000 One is out of function.
(2) Protected Well	5	0.06	800 Additional three wells under construction.

(b) Water Supply Situation

Utilization	Main Water Source	
	Wet Season	Dry Season
Domestic Use	Borehole, Protected Well	Borehole, Riverbed Digging
Livestock	Muchingwizi Dam, Musaverema River	Muchingwizi Dam,
Gardening	Musaverema River	(no operation)

Not only surface water sources but also ground water resources are scarce in this ward. In the wet season, boreholes and unprotected wells with pumps are used as water sources for domestic use. However, all wells come to dry up in the dry season so that boreholes become the sole sanitary water sources. Yield of boreholes are insufficient to meet local people's requirements. Therefore, most of people dig a riverbed for water and use its water even for drinking after boiling it.

Water runs in Musaverema River for only two months from December to January. In the other months, people have to use stagnant and sluggish water for laundry and bathing. Such water utilization has caused schistosomiasis and other water-borne diseases to a large extent.

7) Social Services

- (a) Electricity Matibi Mission
- (b) Post -do-
- (c) Telephone Nil (Neshuro R.S.C)

8) Local Organization

- (a) WADCO Members

Position	No.	Position	No.
Councillor	1	Veterinary Extension Worker	1
AgriTex Extension Worker	1	Head Man (Traditional)	1
Health Worker	6	Headmaster of School	3
Community Development Worker	1	Committee Member	12

(b) Community Activities

Kind	No. of Membership	Remarks
Uniform making	1	15 Registered by Ministry of Cooperative, Matibi Mission
Communal Garden	1	25 Registered by Ministry of Cooperative, 0.5 ha (size), Matibi mission
Poultry keeping	1	25 Musaverema School
Hardware	1	10 to sell farm equipment, Matibi Mission
Taguta Garden	1	Upper Mulawi Dam (ward 8)
Adult Literacy Group	some	

9) Development Plan

(a) Existing Project

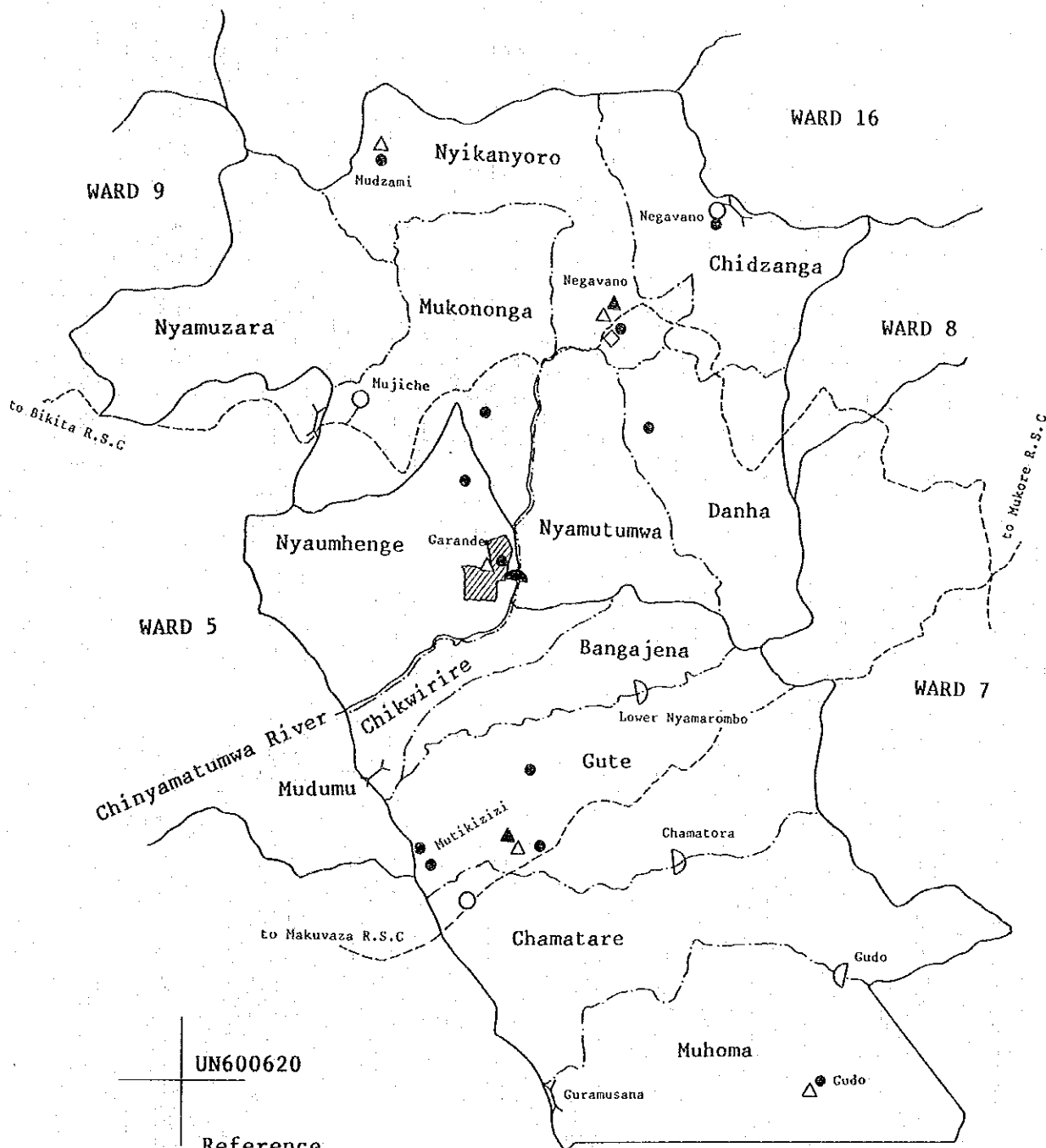
Kind	Location	Remarks
1. Gully Reclamation	Chingore	Food for Work Programme
2. Brick Moulding		-do-
-Pre-school	All villages	
-School	3 Villages	
3. Road Construction	Mavosva	-do-
	Matibi Mission	

(b) Local Need for Rural Development

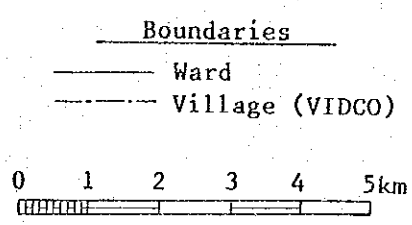
Priority	Local Need
A	Improvement of Marketing and Transportation System Irrigation Facilities Technical and Special Training Improvement of Water Supply Facilities
B	Provision of Credit (A.F.C Loan) Encouragement of Cooperative Agricultural Advice Improvement Road Network
C	Improvement of Schooling Facilities Improvement of Health Facilities Promotion of Agricultural Inputs

Social Infrastructure Map

(2) Chinyamatumwa BIKITA C. L, WARD 6&14



- Reference**
- Business Centre
 - ◇ Clinic/Hospital
 - △ Primary School
 - ▲ Secondary School
 - ⊗ Dip-tank
 - D Dam
 - Borehole/Well
 - ▨ Proposed Dam
 - ▨ Proposed Irrigation Area
 - Main Road



(2) Summary of Social Situation - Chinoyamatumba (1/2)

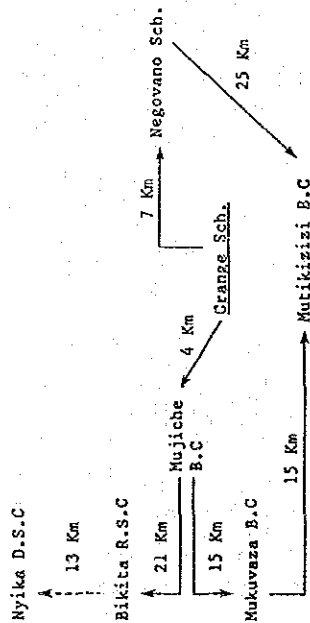
District: Bikita C.L.: Bikita Ward: 6
 Dam Site: Nyaumbenge Village
 Irrigation Area: Nyaumbenge Village

1) Area, Population and Number of Households

Village (VIDCO)	Area (ha)	Population	No. of Households	Density (Persons per sq.km)	Household Size (Persons)
1. Nyaumbenge	1 140	803	175	70.4	4.6
2. Chikwirire	370	668	163	180.5	4.1
3. Bangajema	630	737	188	117.0	3.9
4. Cuta	1 840	1 559	229	84.7	6.8
5. Chamatate	1 700	2 072	299	121.9	6.9
6. Muhoma	1 620	1 379	192	85.1	7.2
Total	7 300	7 218	1 246	98.9	5.8

Note, Data of population and No. of Households... of 1987

2) Transportation



3) Health

(a) Clinic / Hospital

* There is no clinic in Ward 6 and people in Ward 6 are getting health care at Negovano Clinic in Ward 14 and/or Makuwaza Clinic in Ward 5. The status of Makuwaza Clinic is given below.

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Makuwaza	Nil	3	3	1	2

(b) Commonest Cases of Morbidity

* Makuwaza Clinic

Diseases	No. of Cases 1985	No. of Cases 1986	Percentage of Cases in 1986 (%)
1. Sexually transmitted Diseases	477	553	3.3
2. Schistosomiasis	595	213	1.3
3. Malaria	570	506	3.0
4. Diarrhoea	783	1 672	10.0
5. Eye Infections	730	487	2.9
6. Skin Infections	184	261	1.6
7. Malnutrition	41	74	0.4
8. Urinary Tract Infections	104	142	0.8
Total	Not Available	16 713	100.0

4) School (As of 1986)

No.	Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil Ratio	Classroom per Pupil Ratio
<u>Primary School</u>						
1.	Carande	608	15	15	1:41	1:41
2.	Gudo	350	9	9	1:39	1:39
3.	Mutikizizi	769	19	19	1:40	1:40
	Total	1 727	43	43	1:40	1:40

Secondary School

1.	Mutikizizi	484	17	7	1:28	1:69
----	------------	-----	----	---	------	------

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	1. Mudumu, 2. Garamasana
(b) Cattle Sale Pens	Nil (the nearest one is of Makuwaza in Ward 5)
(c) Sub-depot of G.M.B	Nil (directly to Nyika Depot by Private Dealers in Mutikizizi B.C)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS	No. of PWS Population per sq. km	per PWS	Remarks
(1) Borehole	7	0.10	1 301	
(2) Protected Well				

(b) Water Supply Situation

Utilization	Main Water Source	
	Wet Season	Dry Season
Domestic Use	Borehole, Unprotected Well	Borehole, Riverbed Digging
Livestock Gardening	Stream, Spring, Dam	Mujiche River, Dam (no operation)

There are five boreholes in this ward. The boreholes and unprotected wells provided near streams are the main water sources for domestic use. In the dry season, most of wells dry up so that the majority of inhabitants have to dig a riverbed more than two metres in depth for domestic water.

The villagers tend to take cattle to the streams and springs adjacent to their houses in the wet season. In the dry season, most of them convert these water sources to the dams and Mujiche River.

Some of these are forced to walk more than five Km for watering cattle.

There exist three taguts gardens and three communal gardens which are cultivated near streams. But only two gardens among the six are now brought under cultivation because of drought.

9) Development Plan

(a) Existing Project	Kind	Location	Remarks
1. Bridge Construction	-do-	Muhoma Nyaumbenge	Food for Work Programme
2. -do-	-do-		-do-

(b) Local Need for Rural Development

Priority	Local Need
A	Improvement of Health Facilities Improvement of Road Network Irrigation Facilities Improvement of Marketing and Transportation System
B	Improvement of Water Supply Facilities Encouragement of Cooperative Activities Provision of Credit (A.F.C Loan)
C	Technical and Special Training Promotion of Agricultural Inputs Supply Improvement of Schooling Facilities

7) Social Services

(a) Electricity	Nil
(b) Post	Nil (the nearest one - Bikita R.S.C)
(c) Telephone	Mutirikizizi (3)

8) Local Organization

(a) WADCO Members	Position	No.	Position	No.
Councillor		1	Veterinary Extension Worker	1
AgriTex Extension Worker		1	Chief (Traditional)	1
Health Worker		3	Headmaster of School	1
Community Development Worker		1	Committee Member	12

(b) Community Activities

Kind	No. of Membership	Remarks
Dress Making	1	Mutirikizizi, under planning
Community Hall	1	-do-, under construction
Pre-school	2	-do-, Gudo
Saving Club	3	
Adult Literacy Group	Many	
Tagata Garden	3	Nyaumbenge, Guts, Chamatara (operation)
Communal Garden	3	Gate (2), Muhoma (operation)

(2) Summary of Social Situation - Chinyamatumwa (2/2)

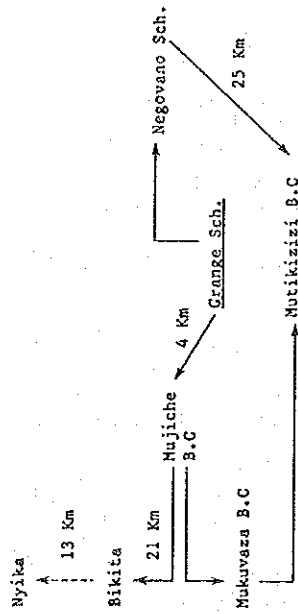
District: Bikita C.L: Bikita Ward: 14
 Dam Site: Nyamatumwa Village
 Irrigation Area: Nil

1) Area, Population and Number of Households

Village (VIDCO)	Area Population (ha)	No. of Households	Population Density (Persons per sq.km)	Household Size (Persons)
1. Nyamatumwa	800	N.A	137.6	
2. Danha	960	164	113.0	6.6
3. Chidzanga	950	1 057	111.3	
4. Nyikanyoro	1 190	N.A	74.2	- N.A -
5. Mukononga	1 310	862	65.8	
6. Nyamuzara	1 180	1 602	135.8	
Total	6 390	(990)	103.1	(6.6)

Note, Population and No. of households as of 1985
 ()estimated

2) Transportation



3) Health

(a) Clinic / Hospital

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Negovano	Nil	2	3	Nil	3

(b) Commonest Cases of Morbidity

• Negovano Clinic

Diseases	No. of Cases		Percentage of Cases in 1986 (%)
	1985	1986	
1. Sexually transmitted Diseases	286	295	3.6
2. Schistosomiasis	339	330	4.1
3. Malaria	405	224	2.8
4. Diarrhoea	347	747	9.2
5. Eye Infections	374	309	3.8
6. Skin Infections	134	60	0.7
7. Malnutrition	56	81	1.0
8. Urinary Tract Infections	127	77	0.9
Total	8 110	8 110	100.0

4) School (As of 1986)

No.	Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil Ratio	Classroom per Pupil Ratio
<u>Primary School</u>						
1.	Mudzani	761	20	19	1:38	1:40
2.	Negovano	1 027	26	25	1:40	1:41
	Total	1 788	46	44	1:39	1:41
<u>Secondary School</u>						
1.	Negovano	406	14	14	1:29	1:29

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	1. Mujiche, 2. Negavano
(b) Cattle Sale Pens	Nil (the nearest one is of Makuvaža in Ward 5)
(c) Sub-depot of G.M.B	Nil (directly to Nyika Depot by Private Dealers in Chomuyu and Negovano)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS per sq. km.	Population per PWS	Remarks
(1) Borehole	5	0.08	1 313
(2) Protected Well			

(b) Water Supply Situation

Utilization	Main Water Source	
	Wet Season	Dry Season
Domestic Use	Unprotected Well, Spring	Riverbed Digging, Spring
Livestock Gardening	Stream, Spring	Mujiche River, Spring (no operation)

There is sufficient surface water sources such as springs and streams in this ward. Most of villagers fetch water from such surface sources and individual unprotected wells in the wet season (Dec.-May). However, most of individual wells dry up in the dry season (Jun.-Nov.) and people seek for water, digging a riverbed. Some of people utilize the borehole for domestic use. But they have to travel for long distance because there are five boreholes in this Ward.

As to livestock water, streams are used as main water sources in the wet season, while Mujiche River and Springs in the dry season.

There are two taguta gardens and many individual gardens in this ward by fetching water from streams. In normal years, most of them are brought under cultivation even in the dry season but a few gardens are cultivated this year, due to drought.

7) Social Services

- (a) Electricity Nil
- (b) Post Nil (the nearest one - Bikita R.S.C)
- (c) Telephone Nil (the nearest one - Makuvaža in Ward 5)

8) Local Organization

(a) MADCO Members

Position	No.	Position	No.
Councillor	1	Community Development Worker	1
AgriTex Extension Worker	1	Chief (Headman, Traditional)	1
Health Worker	1	Headmaster of School	2
Woman's Worker	1	Committee Member	12

(b) Community Activities

Kind	No. of Membership	Remarks
Marketing Supply	1	Registered by Ministry of Cooperative, Negovano
Pre-school	5	One Pre-school is now under construction.
Community Hall	1	Negavano, under construction
Dress Making	1	Chomuyu
Adult Literacy School	3	
Dam	1	Danba
Taguta garden	2	50 Nyamazara (0.4 ha), Danba (0.4 ha)

9) Development Plan

(a) Existing Project

Kind	Location	Remarks
1. Planned Village Settlement	Danha	implemented by Agritex
2. Brick moulding	Chomayu	Community Hall, Pre-School
3. Gully reclamation	Negavano	Food for Work Programme
4. Brick Moulding	-do-	Clinic

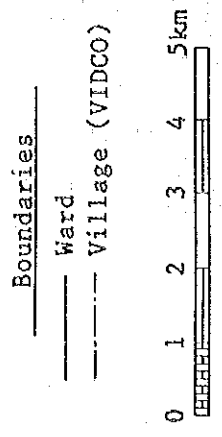
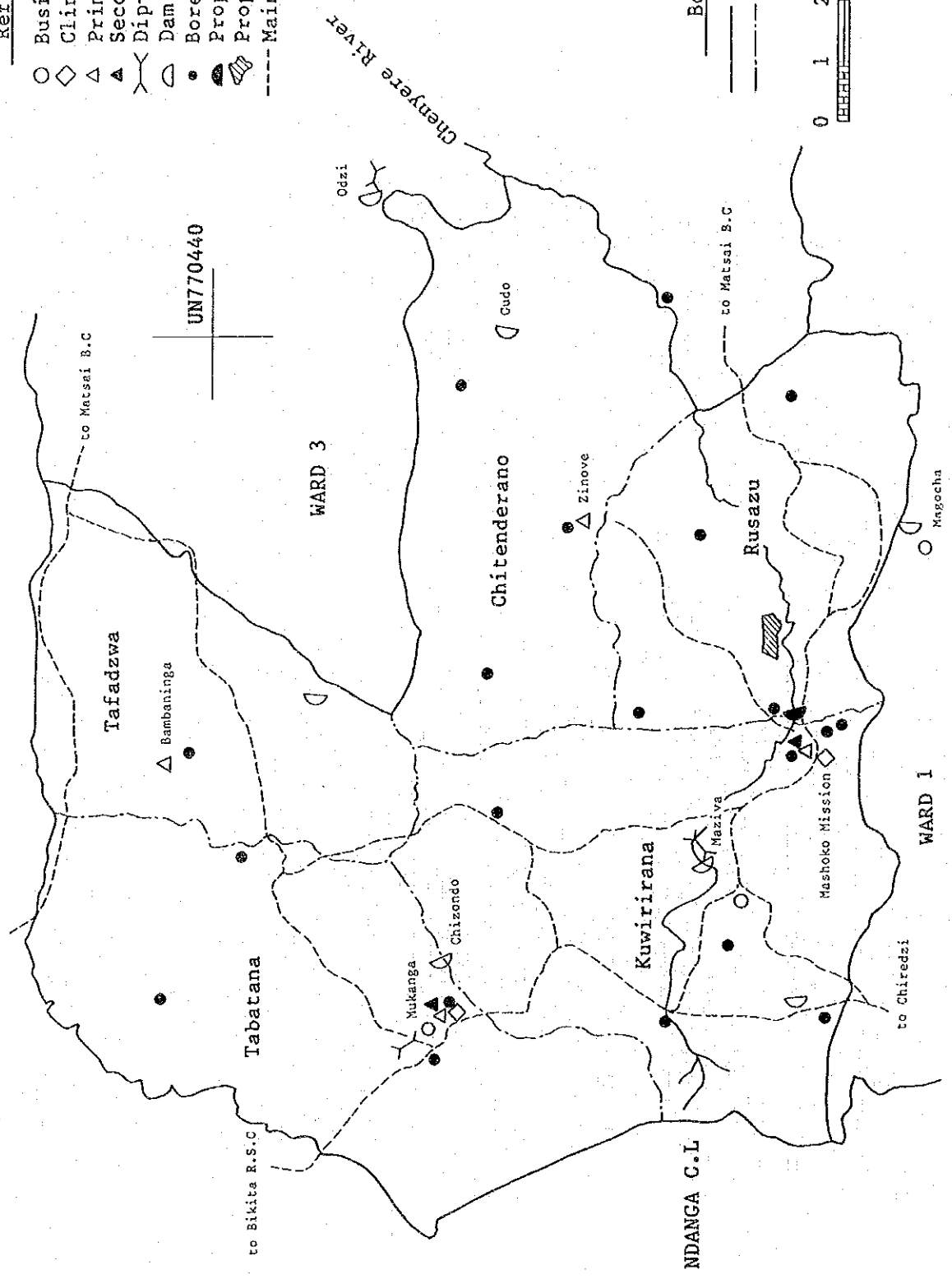
(b) Local Need for Rural Development

Priority	Local Need
A	Improvement of Water Supply Facilities Irrigation Facilities Technical and Special Training Improvement of Marketing and Transportation System
B	Encouragement of Cooperative Improvement of Grazing Land Promotion of Agricultural Inputs Supply
C	Improvement of Health Facilities Improvement of Road Network Improvement of Schooling Facilities

Social Infrastructure Map

(3) Mashoko MATSAI C. L, WARD 2

- Reference
- Business Centre
 - ◇ Clinic/Hospital
 - △ Primary School
 - ▲ Secondary School
 - ⊗ Dip-tank
 - ◐ Dam
 - Borehole/Well
 - ◑ Proposed Dam
 - ▨ Proposed Irrigation Area
 - Main Road



(3) Summary of Social Situation - Mashoko

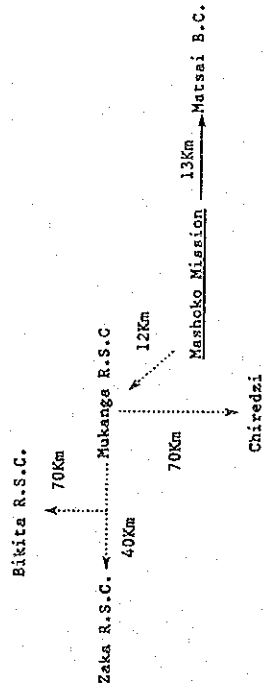
District: Bikita C.L: Matsai Ward: 2
 Dam Site: Rusazu Village
 Irrigation Area: Rusazu Village

1) Area, Population and Number of Households

Village (V.D.G.O)	Area (ha)	Population	No. of Households	Population Density (Persons per sq.km)	Household Size (Persons)
1. Tabatana	3 790	1 206	163	31.8	7.4
2. Tafadzwa	2 430	1 212	256	49.9	4.7
3. Kuvirirana	4 030	1 354	250	33.6	5.4
4. Rusazu	2 460	1 160	260	47.2	4.5
5. Chitenderano	3 170	943	246	29.7	3.8
Total	15 880	5 875	1 175	37.0	5.0

Note, Population and No. of Households.....as of 1985

2) Transportation



3) Health

(a) Clinic / Hospital

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Mashoko Mission	2	18	21	Nil	120
Mukanga	Nil	2	2	Nil	3

(b) Commonest Cases of Morbidity

* (1) Mashoko Mission and (2) Mukanga Clinic

Diseases	1985		1986		Percentage of Cases in 1986
	(1)	(2)	(1)	(2)	
1. Sexually transmitted Diseases	470	587	270	3.1	4.6
2. Schistosomiasis	920	986	120	4.5	2.0
3. Malaria	1 086	758	105	3.5	1.8
4. Diarrhoea	534	621	219	2.8	3.7
5. Eye Infections	119	337	164	1.5	2.8
6. Skin Infections	38	37	35	0.2	0.6
7. Malnutrition	76	90	39	0.4	0.7
8. Urinary Tract Infections	15	160	118	0.7	2.0
Total		21 938	5 896	100.0	100.0

Note, Mukanga Clinic was established in 1986.

4) School (As of 1986)

No.	Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil Ratio	Classroom per Pupil Ratio
<u>Primary School</u>						
1.	Mukanga	877	20	21	1:44	1:42
2.	Bambaninga	394	10	10	1:39	1:39
3.	Mashoko Mission	841	21	20	1:40	1:41
4.	Zindove	454	10	11	1:45	1:41
	Total	2 566	61	62	1:42	1:41
<u>Secondary School</u>						
1.	Chizonzo (Mukanga)	580	17	10	1:34	1:58
2.	Mashoko Mission	673	24	16	1:28	1:42
	Total	1 253	41	26	1:31	1:48

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	1. Mukanga (Tabatana VIDCO), 2. Maziwa (Kuwirirana VIDCO)
(b) Cattle Sale Pens	Nil (the nearest one - Matsai in Ward 3)
(c) Sub-depot of G.M.S	1. Mashoko Mission (Transport to Jerera depot or Chiredzi)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS	No. of PWS Population per sq. km	Remarks
(1) Borehole	19	0.12	One for Mission. Some of them are not functioning.
(2) Protected Well			

(b) Water Supply Situation

Utilization	Main Water Source	
	Wet Season	Dry Season
Domestic Use	Borehole	Borehole
Livestock	River, Dam	Dam, Borehole
Gardening	River	Borehole

Borehole is the sole water source for domestic use.

This area is meagerly endowed with surface water sources such as springs and streams. For only two months (Dec.-Jan.) a year, people can take cattle to rivers for watering. In February, however, all the rivers stop flowing. Cattle can drink water at the pools provided near the rivers by April. During the other months (Mar.-Nov.), farmers are forced to take cattle to dams located far from their houses.

There are three communal gardens and several individual gardens in this ward. Most of them are not being operated at present. But some of them are being cultivated by drawing water from the boreholes though the councillor prevents people from using water from the boreholes for gardening.

7) Social Services

- a) Electricity Nil
- b) Post Mashoko Mission
- (c) Telephone -40-

8) Local Organization

Position	No.	Position	No.
Councillor	1	Headmaster of School	1
Agriext Extension Worker	1	Home Economics Workers	1
Health Worker	5	Chief (Traditional)	1
Health Extension Assistant	1	Committee Member	12

(b) Community Activities

Kind	No. Membership	Remarks
Poultry Sales	1	1. Mashoko Mission,
Community Hall	2	2. Mukanga (under Construction)
Tagata Garden	1	Maizivei (0.125ha)
Communal Garden	3	Mukanga (0.375ha)
Pre-schools	4	Masukuta (0.11ha)
Pre-school Hall	4	Chitenderano (0.375ha)
Uniform Making	1	under Construction
Saving Club	2	Matsai Store
Cotton Association	1	60 Matsai Store, Bamberinga
Coat Programme under French Government	1	jointing with Ward 3
Adult Literacy Class	6	5 Breeding Goat

9) Development Plan

(a) Existing Project

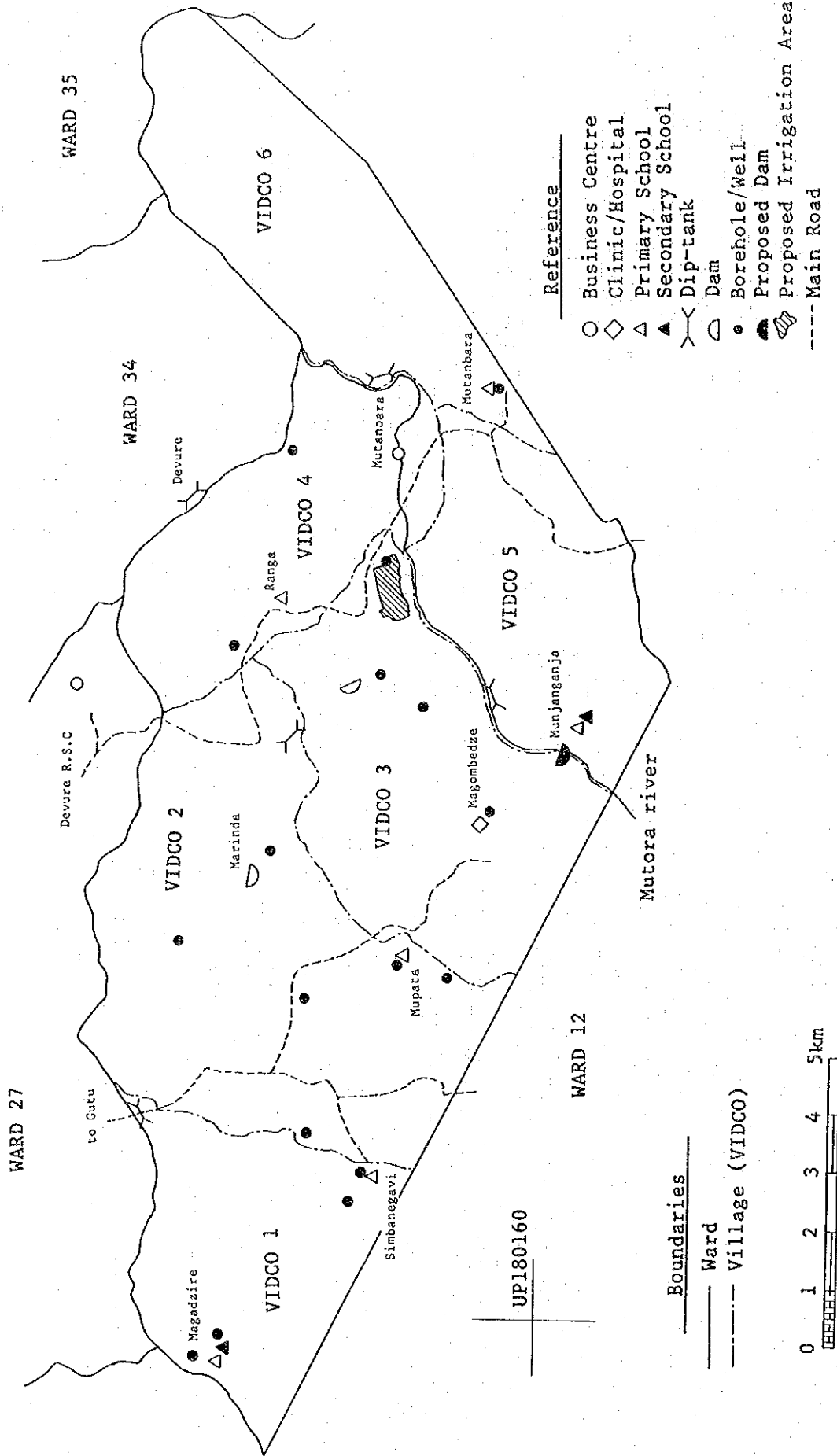
Kind	Location	Remarks
1. Grazing Scheme	Tabatana VIDCO	1987- under planning
2. Cam Plant	Mashoko, Mukanga, Bamberinga	Food for Work Programme
3. Dam Construction	Magwidi (Tafadzwa VIDCO)	Food for Work Programme
4. Brick Moulding	Mashoko Mission (Civic Hall), Mugomberi (Kwirana VIDCO, Civic Hall), Mukanga (Clinic),	
5. Gully Reclamation	Jere (Tabatana VIDCO), Maparo (Tafadzwa VIDCO)	Food for Work Programme
6. Goat Improvement	by French Government	

(b) Local Need for Rural Development

Priority	Local Need
A	Improvement of Water Supply Facilities Irrigation Facilities Improvement of Marketing and Transportation System
B	Encouragement of Cooperative Improvement of Road Network Promotion of Agricultural Inputs Supply
C	Technical and Special Training Provision of Credit (A. F. C. Loan) State subsidies

Social Infrastructure Map

(4) Munjanganja GUTU C. L, WARD 26



(4) Summary of Social Situation - Munjanganja

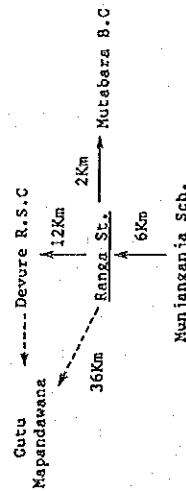
District: Gutu C.L.: Gutu Ward: 26
 Dam Site: VIDCO 5
 Irrigation Area: VIDCO 3

1) Area, Population and Number of Households

Village (VIDCO)	Area (ha)	No. of Households	Population Density (Persons per sq.km)	Household Size (Persons)
1. VIDCO 1	1 600	N.A	57.1	5.8
2. VIDCO 2	3 570	350	46.2	5.5
3. VIDCO 3	2 390	202	80.8	5.5
4. VIDCO 4	1 710	250	47.6	4.7
5. VIDCO 5	1 610	162		
6. VIDCO 6	1 840	N.A		
Total	12 720	(964)	(57.0)	(5.5)

Note, ()..... excluding figures of VIDCO 1 and VIDCO 6
 Population and No. of Households.....as of 1986

2) Transportation



3) Health

(a) Clinic / Hospital

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Magombeze	Nil	2	4	Nil	2

(b) Commonest Cases of Morbidity

• Magombeze Clinic

Diseases	No. of Cases		Percentage of Cases in 1986 (%)
	1985	1986	
1. Sexually transmitted Diseases	249	359	7.0
2. Schistosomiasis	330	324	6.4
3. Malaria	36	9	0.2
4. Diarrhoea	85	191	3.8
5. Eye Infections	186	190	3.7
6. Skin Infections	94	137	2.7
7. Malnutrition	188	91	1.8
8. Urinary Tract Infections	26	85	1.7
Total		5 093	100.0

4) School. (As of 1986)

No. Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil Ratio	Classroom per Pupil Ratio
<u>Primary School</u>					
1. Magadzire	378	10	10	1:38	1:38
2. Shimanegavi	402	10	10	1:40	1:40
3. Mupata	331	7	8	1:47	1:41
4. Ranga	438	11	11	1:40	1:40
5. Munjanganja	605	16	15	1:38	1:40
6. Mutanbara	264	6	7	1:44	1:38
Total	2 418	60	61	1:40	1:40
<u>Secondary School</u>					
1. Magadzire	406	14	11	1:29	1:37
2. Munjanganja	235	8	6	1:29	1:39
Total	641	22	17	1:29	1:38

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	1. Magadzire (VIDCO 1) 2. Ranga (VIDCO 4) 3. Munjanganja (VIDCO 5) 4. Mutanbara (VIDCO 6)
(b) Cattle Sale pens	Nil
(c) Sub-depot of C.M.B	Nil (Transport to Sub-depot in State Land)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS per sq. Km.	No. of PWS Population per PWS	Remarks
(1) Borehole	17	0.13	>300
(2) Protected Well			

(b) Water Supply Situation

Utilization	Main Water Source	
	Wet Season	Dry Season
Domestic Use	Borehole, Individual Well	Borehole, Individual Well
Livestock	Stream, River, Dam	Stream, River, Dam
Gardening	Stream, River	Stream, River

This area is rich in surface water. People can fetch water from unprotected wells which are provided near streams for home consumption and use water from streams for laundry and bathing all the year around. Most of boreholes in this ward were constructed in 1983-1984 season when all rivers and individual wells dried up due to severe drought.

The majority of farmers can take cattle to streams and rivers near their houses for watering in both wet and dry seasons.

About half of farms are planting vegetables on their individual gardens by carrying water from streams or wells.

7) Social Services

(a) Electricity	Nil	
(b) Post	Nil	(the nearest one - Gutu)
(c) Telephone	Nil	(the nearest one - Devure)

8) Local Organization

(a) WADCO Members	Position	No.	Position	No.
Councillor	1	Family Planning Worker	1	
Agriext Extension Worker	1	Chiefs	1	
Health Worker	1	Teachers of School	12	
Clinic Staff	6	Committee Member		
Health Assistant	1			

(b) Community Activities

Kind	No.	Membership	Remarks
Input Supply	1	12	Registered by Ministry of Cooperative, Mutabara
Uniform Making	2	36	One is registered by Ministry of Cooperative Ranga Sch.
Bakery	1	20	for local consumption
Dams	4	150	for watering cattle and vegetable gardens
Tagata/Communal Garden	2		1. Munjanganja (0.1 ha) 2. Ranga Sch.
Grazing Improvement	1		Murwisi

9) Development Plan

(a) Existing Project

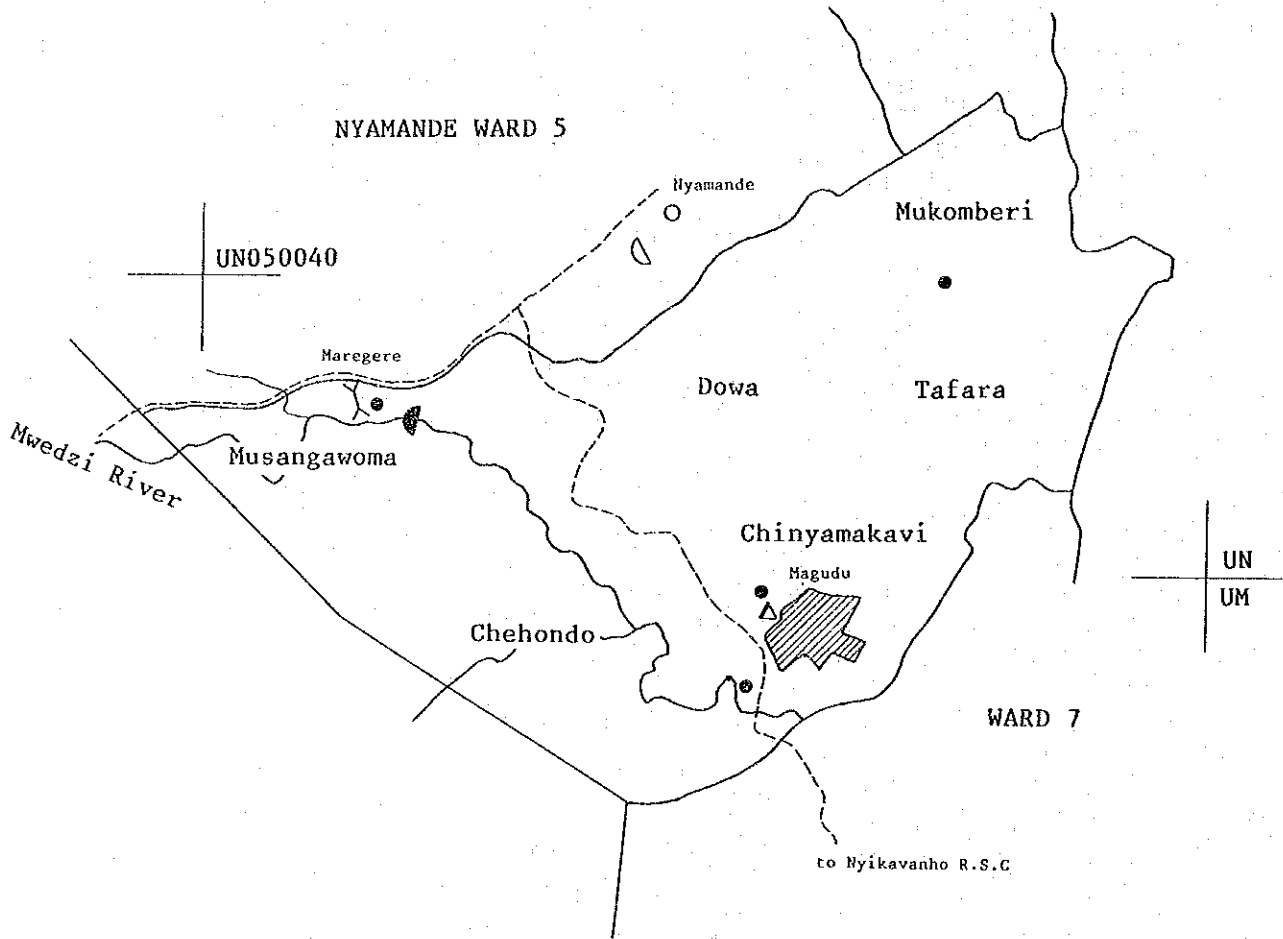
Kind	Location	Remarks
1. Grazing Scheme	Murwisi (VIDCO 4)	7 Sites, total area: 221 ha 1986-10~ under west Germany's Cooperation 1987~
2. GUTAI Programme		Food for Work Programme, under planning
3. Gully Reclamation	Murwisi	- do -
4. Brick Moulding	Magomedze clinic	

(b) Local Need for Rural Development

Priority	Local Need
A	Improvement of Road Network (including construction of bridge) Improvement of Marketing and Transportation System Encouragement of Cooperative Provision of Credit (A.F.C. Loan)
B	Irrigation Facilities Improvement of Grazing Land Improvement of Schooling Facilities
C	Promotion of Agricultural Inputs Supply Improvement of Water Supply Facilities Improvement of Health Facilities

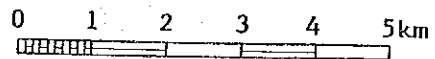
Social Infrastructure Map

(5) Magudu NYAJENA C. L, DOWA WARD 6



Reference

- Business Centre
- ◇ Clinic/Hospital
- △ Primary School
- ▲ Secondary School
- ⋈ Dip-tank
- ◐ Dam
- Borehole/Well
- ◑ Proposed Dam
- ▨ Proposed Irrigation Area
- Main Road



Boundaries

- Ward
- - - Village (VIDCO)

(5) Summary of Social Situation - Magudu

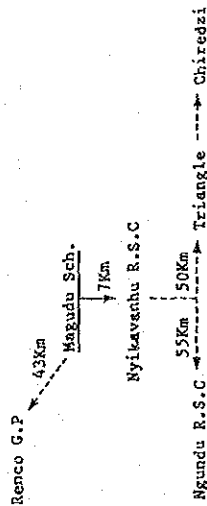
District: Masvingo C.L: Nyajena Ward: Dowa 6 (31)
 Dam Site: Musangawoma Village
 Irrigation Area: Chinyamakavi Village

1) Area, Population and Number of Households

Village (VIDCO)	Area Population Households (ha)	No. of Households	Population Density (Persons per sq.km)	Household Size (Persons)
1. Chinyamakavi				
2. Dowa				
3. Chehondo	- Not Available -			
4. Tafara				
5. Musangawoma				
6. Mukomberi				
Total	6 150	4 592	74.7	7.4

Note, Population and No. of Households.....as of 1985

2) Transportation



3) Health

(a) Clinic / Hospital

There is no clinic in this ward. The nearest one is Nyikavanhu Clinic in Ward 7, next to Dowa Ward 6.

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Nyikavanhu	Nil	2	2	1	5

(b) Commonest Cases of Morbidity

• Nyikavanhu Clinic (located in Ward 7)

Diseases	No. of Cases		Percentage of Cases in 1986 (%)
	1985	1986	
1. Sexually transmitted Diseases	1 103	1 060	10.1
2. Schistosomiasis	420	633	6.0
3. Malaria	200	177	1.7
4. Diarrhoea	696	866	8.3
5. Eye Infections	387	562	5.4
6. Skin Infections	192	282	2.7
7. Malnutrition	186	167	1.6
8. Urinary Tract Infections	243	235	2.2
Total		10 469	100.0

4) School (As of 1986)

No.	Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil Ratio	Classroom per Pupil Ratio
<u>Primary School</u>						
1.	Magudu	886	23	22	1:39	1:40
<u>Secondary School</u>						
1.	Nyamande	318	9	4	1:35	1:80

Note: There is no secondary school in this ward. Children are going to Nyamande Secondary School in Ward 30(Nyamande Ward 5).

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	1. Maregere (Musangawoma VADCO)
(b) Cattle Sale Pens	Nil (the nearest one - Nyajona, 35 Km toward north)
(c) Sub-depot of G.M.B	Nil (the nearest one - Musvovi near Renco * G.M.B Depot - Nandi in Chiredzi)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS per sq.-km.	No. of PWS Population per PWS	Remarks
(1) Borehole	4	0.07	1 148 One of these is out of order.
(2) Protected Well			

(b) Water Supply Situation

Utilization	Wet Season	Main Water Source	Dry Season
Domestic Use	Borehole, Mutilikwe River	Borehole, Riverbed Digging, Mutilikwe River	
Livestock Gardening	Mutilikwe River, Stream (no operation)	Mutilikwe River (no operation)	

Surface water is scarce in this area. Despite poor water resource, only four boreholes were so far, established. They don't satisfy local people's need. Some have a problem about its water quality which is saltish, not suitable for drinking. Others have a problem about their yield which is insufficient in meeting local people's requirements.

Water runs in Mwedzi River only after raining during two months (Dec.-Jan.) a year. Besides two months, people get water by digging a riverbed for domestic use. Under the circumstances, people utilize water drawn from Mutilikwe River not only for laundry and bathing but also for drinking. Some of those, what is worse, drink its water without boiling.

The majority of farmers carry their cattle to Mutilikwe River all the year around. There are a few gardens in this area so that the farmers have to buy vegetables imported from other areas for their consumption even in the wet season.

7) Social Services

a) Electricity	Nil
b) Post	Nil (Masving Town)
(c) Telephone	Nil

8) Local Organization

(a) WADCO Members

Position	No.	Position	No.
Councillor	1	Chief	1
Agritex Extension Worker	1	Women's Adviser	1
Health Worker	1	District Chairman	1
Veterinary Extension Worker	1	Committee Member	12

(b) Community Activities

- Nil -

9) Development Plan

(a) Existing Project

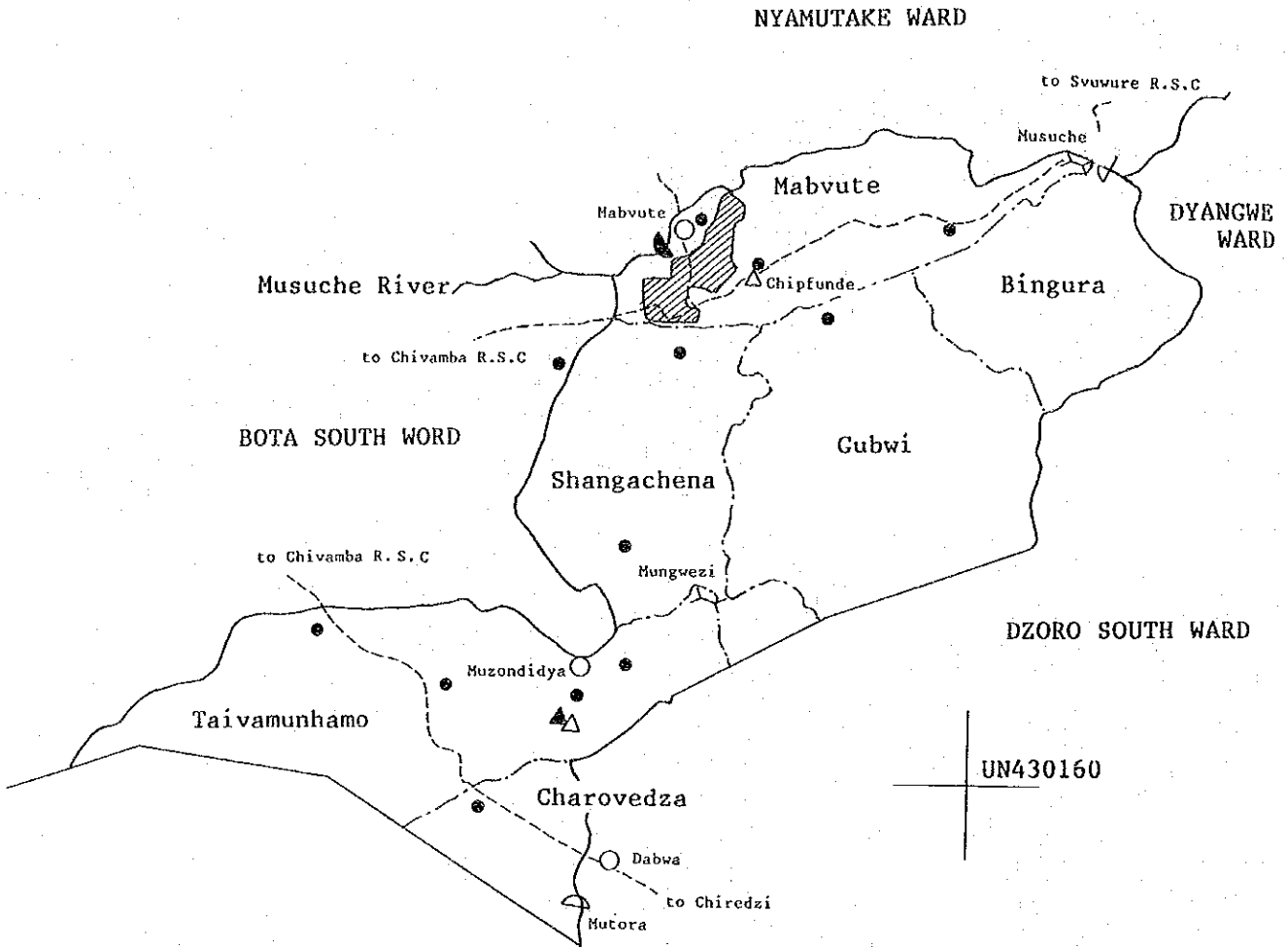
Kind	Location	Remarks
1. Dam Construction		Under planning as Food for Work Programme
2. Weir construction		- do -
3. Brick moulding	Magudu Sch.	- do -

(b) Local Need for Rural Development

Priority	Local Need
A	Irrigation Facilities Improvement of Water Supply facilities Improvement of Schooling Facilities Improvement of Health Facilities
B	Encouragement of Cooperative Technical and Special Training Improvement of Marketing and Transportation System
C	Promotion of Agricultural Inputs Supply Provision of Credit (A.F.C Loan) State Subsidies

Social Infrastructure Map

(6) Mabvute NDANGA C. L, DZORO NORTH WARD

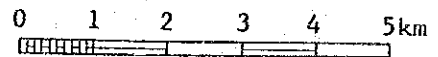


Reference

- Business Centre
- ◇ Clinic/Hospital
- △ Primary School
- ▲ Secondary School
- >X Dip-tank
- ∩ Dam
- Borehole/Well
- ◐ Proposed Dam
- ▨ Proposed Irrigation Area
- Main Road

Boundaries

- Ward
- - - Village (VIDCO)



(6) Summary of Social Situation - Mabwe

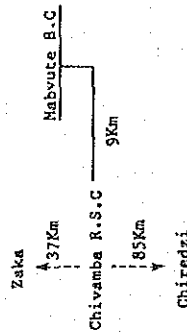
District: Zaka C.I.: Ndanga Ward: Dzoro North
 Dam Site: Mabwe Village
 Irrigation Area: Mabwe Village

1) Area, Population and Number of Households

Village (VIDCO)	Area (ha)	No. of Households	Population Density (Persons per sq.km)	Household Size (Persons)
1. Bingura	750	946	126.1	N/A
2. Mabwe	960	802	83.5	
3. Gubwi	1 500	868	57.9	7.0
4. Taivumhano	1 500	1 382	92.1	
5. Shangachena	1 110	1 276	115.0	7.1
6. Charovedza	340	581	170.9	7.0
Total	6 160	5 885 (840)	95.0	(7.0)

Note, Population and No. of Households.....as of 1985
 ().....estimated

2) Transportation



3) Health

(a) Clinic / Hospital

Name	No. of Doctors	No. of Nurses	No. of Assistants	No. of Other Staff	No. of Beds
Bota	-	1	3	-	8

There is no clinic in Dzoro North Ward. People in this Ward get health services at Bota Clinic in Bota North Ward.

(b) Commonest Cases of Morbidity

* Bota Clinic (located in Bota North Ward)

Diseases	No. of Cases 1985	No. of Cases 1986	Percentage of Cases in 1986 (Z)
1. Sexually transmitted Diseases	279	429	5.1
2. Schistosomiasis	251	657	7.9
3. Malaria	212	75	0.9
4. Diarrhoea	492	666	8.0
5. Eye Infections	275	315	3.8
6. Skin Infections	201	198	2.4
7. Malnutrition	150	96	1.1
8. Urinary Tract Infection	69	135	1.6
Total		8 357	100.0

4) School (As of 1986)

No. Name	No. of Pupils	No. of Teachers	No. of Classrooms	Teacher per Pupil	Classroom per Pupil
<u>Primary School</u>					
1. Chipfunde	689	16	15	1:43	1:46
2. Muzondidya	1 469	38	36	1:39	1:41
Total	2 158	54	51	1:40	1:42
<u>Secondary School</u>					
1. Muzondidya	385	22	12	1:27	1:49

5) Agricultural Facilities

Facilities	Location
(a) Dip-tank	1. Musuche (Mabute VIDCO), Mungwezi (Taivamunhamo)
(b) Cattle Sale Pens	Nil (the nearest one - Chivamba)
(c) Sub-depot of G.M.B	Nil (Transport to Jerera by Private Dealer in Mabvute B.C)

There are six taguta gardens and many individual gardens but a few gardens are being cultivated at present.

7) Social Services

(a) Electricity	Nil
(b) Post	Nil (Chivamba R.S.C)
(c) Telephone	Nil (-do-)

6) Rural Water Supply

(a) Primary Water Supply Source (PWS)

Source	No. of PWS	No. of PWS Population per sq. km	per PWS	Remarks
(1) Borehole	5	0.08	1 171	One is not used for domestic use.
(2) Protected Well	6	0.10	976	Sponsored by Switze Hand

(b) Water Supply Situation

Utilization	Wet Season		Dry Season	
	Wet Season	Dry Season	Wet Season	Dry Season
Domestic Use	Borehole, Protected Well, Spring	Borehole, Riverbed Digging	Borehole, Riverbed Digging	Borehole, Riverbed Digging
Livestock	Stream, Spring, Musuche River	Spring,	Spring,	Spring,
Gardening	Stream, River			

There are five boreholes in Drozo North Ward. One of them are not being used for drinking due to its inferior quality. One well and five wells were established under the cooperation of Switzerland in 1985 and 1986, respectively. But the all wells are not being operated now because of drought this year.

The majority of people are using "mafuku" (digging riverbed) and springs as water sources for domestic use except for boreholes. This area has a lot of springs which are used as main water sources for watering cattle all through the year.

8) Local Organization

(a) WADCO Members

Position	No.	Position	No.
Councillor	1	Headman (Traditional)	1
Agriext Extension Worker	1	Headmaster of School	3
Health Worker	3	Committee Member	12
Community Development Worker	1		

(b) Community Activities

Kind	No. Membership	No. of Membership	Remarks
Uniform Making	2	23	Chipfunde, Kuzondidya
Taguta Garden	6		Muzondidya
Poultry Keeping	1		-do-, Chipfunde
Saving Club	1		-do-, -do-
Marketing Supply	2		-do-, -do-
Pre-school	1		-do-, -do-
Adult Literacy Group	2		-do-, -do-
Cotton Group	2		-do-, -do-

9) Development Plan

(a) Existing Project

Kind	Location	Remarks
1. Gam Tree Project	All VIDCOs	implemented in 1986
2. Dam Construction	Mavbate	Food for Work Programme
3. Gully Reclamation	Mavbure, Bingura Gubwi	-do-
4. Road Construction	Shangachena	-do-
5. Cash Crop and Introduction of Tractor	Whole Ward	Coordinated by WADCO

(b) Local Need for Rural Development

Priority	Local Need
A	State Subsidies (for Introduction of Tractor) Promotion of Agricultural Inputs Irrigation Facilities Improvement of Marketing and Transportation System
B	Improvement of Health Facilities Encouragement of Cooperative Improvement of Grazing Land Improvement of Schooling Facilities
C	Improvement of Road Network Technical and Special Training Improvement of Water Supply Facilities Provision of Credit (A.F.C Loan)

ANNEX G. COST ESTIMATES AND PROJECT COST

CONTENTS		PAGE
G-1.	Quantities of Construction Works	G- 1
G-2.	Unit Construction Cost	G- 5
G-3.	Construction Schedule	G-18
G-4.	Construction Cost	G-24
G-5.	Engineering and Administration Cost	G-56
G-6.	Operation and Maintenance Cost	G-62

LIST OF TABLES		PAGE
Table G-1.	Quantity of Dam Construction	G- 1
G-2.	Quantity of Water Conveyance Facilities	G- 2
G-3.	Quantity of Field Consolidation Works	G- 3
G-4.	Basic Unit Rate and Unit Construction Cost	G- 7
G-5.	Unit Construction Cost of Field Consolidation Works	G-10
G-6.	Foreign and Local Components	G-12
G-7.	Basic Price of Construction Materials	G-13
G-8.	Basic Wage Rate	G-14
G-9.	Hiring Rate of Construction Machinery	G-15
G-10.	Construction Schedule	G-18
G-11.	Construction Cost	G-26
G-12.	Engineering and Administration Cost	G-56
G-13.	Cost of Consulting Services	G-60
G-14.	Annual Cost of O & M	G-62
G-15.	Basis of Fuel Costs	G-69
G-16.	Operation, Maintenance and Replacement Costs	G-70

G-1. Quantities of Construction Works

Table G-1. QUANTITY OF DAM CONSTRUCTION

Name of Dam		UNIT	HUSAVEREHA	CHINYARATUHMA	HASHOKO.	HUNJANGANJA	HAGUDU	HABVUTE		
Item			I-2-1	II-1-6	II-2-1	IV-4-10	V-3-3	VI-1-12		
D a m	Excavation	Clearing & Grubbing	ha	5.0	2.1	3.0	2.4	2.0	2.4	
		Stripping	cu.m	24,400	10,700	12,000	11,800	9,900	11,700	
		Soft	cu.m	46,000	23,900	36,000	26,900	31,600	47,700	
		Impervious (Core)	cu.m	50,000	37,200	35,000	41,600	36,300	47,600	
		Semi-pervious(Shell)	cu.m	125,000	122,400	115,000	102,700	99,000	99,600	
	Embankment	Stone Pitching (Dry Pitching)	cu.m	5,000	1,400	3,000	2,900	3,900	5,800	
		Filter	Chimney (Vertical)	cu.m	5,500	4,300	5,500	5,000	3,600	4,700
			Sand Blanket (Horizontal)	cu.m	--	--	1,000	--	--	--
		Pervious Toe (Rock fill)	cu.m	2,000	800	2,500	600	1,800	1,000	
		Sodding	sq.m	16,800	8,300	11,900	9,800	8,900	9,200	
		Grouting	m	770	1,480	1,035	930	530	1,390	
		S i l i c e	Excavation	Clearing & Grubbing	ha	2.4	1.6	2.0	5.0	1.0
	Stripping			cu.m	11,900	8,000	7,500	22,400	4,400	6,800
	Soft			cu.m	14,000	42,600	31,200	74,000	15,000	25,600
Hard	cu.m			3,800	100	1,500	200	900	5,300	
Apron Dry Pitching	cu.m		470	420	900	860	2,000	--		
Stone Masonry (plain concrete)	Sill		cu.m	200	150	240	610	200	40	
	Apron		cu.m	160	160	370	320	440	--	
	total		cu.m	360	310	610	930	640	40	
	Masonry Wall		cu.m	1,000	620	860	520	1,440	320	
	Sill		cu.m	110	330	560	1,370	760	--	
	Chute		cu.m	--	400	800	700	200	300	
total	cu.m		1,110	1,350	2,220	2,590	2,400	620		
O b j e c t	Excavation Soft		cu.m	60	120	70	70	130	200	
	Reinforced Concrete		cu.m	53	69	50	50	77	96	
	Sluice Valve	No	1 (φ 250)	1 (φ 300)	1 (φ 200)	1 (φ 250)	1 (φ 300)	1 (φ 400)		
	Butterfly or * Submerged Valve	No	1 (φ 150)	* 1 (φ 200)	1 (φ 100)	1 (φ 150)	1 (φ 200)	* 1 (φ 250)		
	Conduit Pipe	m	56 (φ 250, t=6.6)	73 (φ 300, t=6.9)	66 (φ 200, t=5.8)	51 (φ 250, t=6.6)	81 (φ 300, t=6.9)	83 (φ 400, t=7.0)		
	Screen	No	1 (1.6×1.28)	1 (1.6×1.34)	1 (1.6×1.22)	1 (1.6×1.28)	1 (1.6×1.34)	1 (1.6×1.45)		

Table G-2

Quantity of Water Conveyance Facilities

1. CANAL WORKS (GRAVITY SYSTEM)

Item No. of Project	Clearing ha	Stripping m ³	Embankment m ³	Excavation m	C. Flume (B ^m × H ^m × L ^m)	φ 600 RC Pipe			Sand Bed. m ³	Concrete					Gravel Pavement m ²
						siphon m	Road Cross. m	Total m		Drop	siphon	R. CROSS.	Water Supply	Total m ³	
I - 2 - 1	2.8	11200	30440	4170	0.4 × 0.35 × 5600	65.4	8.0	73.4	370	—	1.5	0.6	25.6	27.7	22400
II - 2 - 1	0.4	1600	6700	340	0.25 × 0.20 × 800	—	—	—	41	9.3	—	—	—	9.3	3200
IV - 4 - 10	2.4	9440	26410	4180	0.4 × 0.35 × 4720	52.0	—	52.0	312	3.7	1.5	—	21.9	27.1	18900
V - 3 - 3	4.0	15880	54830	3750	0.5 × 0.35 × 7940	42.5	16.0	58.5	603	13.5	1.5	1.2	32.9	49.1	31800

2. PUMP AND PIPELINE SYSTEM

Item Project	Pumps & Generators sets	Pump House m ²	Pipeline		Earth Work			
			Dia. mm	Length m	Clearing ha	Excavation m ²	Backfill m ²	Sand Bed m ³
II - 1 - 6	3	260	300	870	0.2	2500	2160	280
VII - 1 - 12	3	280	400	860	0.2	2330	1990	280

3. NIGHT STORAGE RESERVOIR

Item NO. of Project	Clearing ha	Stripping m ³	Excavation m ³	Embankment m ³	Steel pipe m	Concrete Flume m	RC Φ 600 pipe m	Sand Bed m ³	Concrete m ³	Fencing m
I - 2 - 1	0.04	740	3310	2610	—	141	26	—	1.7	281
II - 1 - 6	0.04	740	2620	2820	137	—	11	44	1.7	273
II - 2 - 1	0.02	420	970	2350	—	107	26	—	1.7	213
IV - 4 - 10	0.04	740	2610	2980	—	137	26	—	1.7	273
V - 3 - 3	0.05	980	3470	3420	—	159	26	—	1.7	318
VII - 1 - 12	0.07	1310	3120	4330	177	—	11	56	1.7	354

Table G-3. Quantities of Field Consolidation Works
(2-1)

Description	Unit	Musaverema (I-2-1)	Chinyamatumba (II-1-6)	Mashoko (II-2-1)	Munjanganja (IV-4-10)	Magudu (V-3-3)	Mabvute (VIII-1-12)
1. Land Grading Works							
1) Clearing and grubbing	ha	43	4	2	4	6	9
2) Land levelling	ha	36.2	34.7	15.2	33.3	51.1	70.5
3) Deep ploughing	ha	36.2	34.7	15.2	33.3	51.1	70.5
2. Distribution Canal							
1) Concrete canal							
TypeA 700 x 500	m	-	-	-	-	-	2 250
TypeB 600 x 450	m	-	-	-	-	1 450	300
TypeC 500 x 400	m	850	1 200	-	1 150	850	250
TypeD 500 x 350	m	950	-	-	1 200	400	1 800
TypeE 400 x 350	m	550	1 200	1 450	150	1 950	950
TypeF 350 x 300	m	3 400	3 000	500	2 400	3 850	5 650
Total	m	5 750	5 400	1 950	4 900	8 450	11 200
2) Drop structure							
TypeA 1000 x 800	No.	-	-	-	-	-	60
TypeB 900 x 1250	No.	-	-	-	-	15	24
TypeC 800 x 1200	No.	4	4	-	4	25	20
TypeD 800 x 1150	No.	29	-	-	36	12	144
TypeE 700 x 1150	No.	17	72	0	5	59	76
TypeF 650 x 1100	No.	21	180	0	72	114	452
Total	No.	71	256	0	117	225	776
3) Box (off-take)							
TypeA 1000 x 800	No.	-	-	-	-	-	21
TypeB 900 x 750	No.	-	-	-	-	14	4
TypeC 800 x 700	No.	14	14	-	12	4	2
TypeD 800 x 650	No.	5	-	-	6	2	14
TypeE 700 x 650	No.	4	11	7	1	11	9
TypeF 650 x 600	No.	5	3	-	2	1	8
Total	No.	28	28	7	21	32	58

(2-2)

Description	Unit	Musaverema (I-2-1)	Chinyamatumwa (II-1-6)	Mashoko (II-2-1)	Munjanganja (IV-4-10)	Magudu (V-3-3)	Mabvute (VI-1-12)
4) Road crossing							
TypeA (TypeA canal)	No.	-	-	-	-	-	18
TypeB (TypeB canal)	No.	-	-	-	-	13	1
TypeC (TypeC canal)	No.	6	8	-	8	1	2
TypeD (TypeD canal)	No.	1	-	-	-	-	4
TypeE (TypeE canal)	No.	3	3	3	1	3	1
TypeF (TypeF canal)	No.	4	6	-	-	2	4
Total	No.	14	17	3	9	19	30
3. Drainage Canal							
1) Drainage canal	m	7 700	6 200	3 500	6 400	9 600	14 500
2) Road crossing	No.	32	27	6	18	18	41
3) Erosion control wear	No.	460	370	0	190	290	1 160
4. Farm Road							
1) Trunk road	m	4 100	5 700	2 000	4 200	5 700	8 500
2) Lateral road	m	2 500	3 300	1 300	2 900	4 500	7 200
3) Access road	m	1 500	-	1 000	700	-	-
5. Farming Facilities							
1) Farm store	sq.m	100	100	80	100	150	150
2) office	sq.m	50	50	50	50	50	50
3) Multi-purpose room	sq.m	100	100	100	100	100	100
4) Living quarter	sq.m	100	100	100	100	100	100
5) Blair latrine	No.	8	7	4	7	11	15
6) Fence	m	3 000	4 500	2 200	3 650	4 250	8 400
7) Gate	No.	5	8	5	6	6	11

G-2. Unit Construction Cost

(1) Basic Unit Rate

The respective basic unit rates of work items are decided based on the rates stated in "Preliminary Cost Estimate" and the current rates collected in the last field investigation.

The rise in prices since November 1985 till August 1987 is considered as follows:

- compound 1.5% per month by the end of 1985.
- compound 1.0% per month in 1986 and 1987.

Therefore, the percentage of rise in prices in August 1987 is estimated at 23.9%, which was compared with that of November 1985.

(2) Unit Construction Cost

Since the construction work which falls under the jurisdiction of MEWRD is carried out by contract, the unit construction cost is decided as follows:

$$UCC = B.U.R \times 1.25$$

where,

UCC : Unit Construction Cost in contract basis.

BUR : Basic Unit Rate

25% : General overhead and profit of contractor

The cost of field consolidation works will also be estimated on contract base in accordance with the AGRITEX's request.

The unit construction costs of major items are listed in Table G-1.

(3) Contingencies

Both the physical contingency and contingency for price escalation in the future are described in "Condition of Cost Estimation" in the Main Report. These contingencies are not included in the construction cost, and are listed separately as "Physical Contingencies" and "Price Contingencies".

(4) Foreign and Local Currency Components

The foreign and local components in respective basic rates are shown in Table G-6.

(5) Basic Price

The market prices of construction materials, basic wage rate and hiring rate of construction machinery are listed in the following respective tables together with aforementioned unit construction cost and the foreign and local components.

- Basic Unit Rate and Unit Construction Cost
- Basic Rate of Construction Material
- Basic Wage Rate
- Hiring Rate of Construction Machinery.

Table G-4. Basic Unit Rate and Unit Construction Cost

(A) Dam

<u>Description</u>	<u>Unit</u>	<u>B.U.R</u> (Z\$)	<u>U.C.C.</u> (Z\$)
Dam Work			
Clearing and grubbing	ha	3,000	3,750
Stripping	cu.m	1.0	1.5
Excavation (soft)	cu.m	3.5	4.5
Excavation (hard rock)	cu.m	27.0	34.0
Trimming	sq.m	5.5	7.0
Fill (core)	cu.m	5.0	6.5
Fill (shell)	cu.m	4.0	5.0
Toe Drain (Rockfill)	cu.m	18.5	23.0
Filter (Horizontal)	cu.m	8.0	10.0
Filter (Vertical)	cu.m	16.0	20.0
Riprap (Dry pitching)	cu.m	22.0	27.5
Sodding	sq.m	3.0	4.0
Grout work	m	66.5	83.0
Spillway Work			
Clearing and grubbing	ha	3,000	3,750
Stripping	cu.m	1.0	1.5
Excavation (soft)	cu.m	3.6	4.5
Excavation (hard rock)	cu.m	27.0	34.0
Plain concrete	cu.m	155.0	194.0
Masonry wall	cu.m	68.0	85.0
Riprap (dry)	cu.m	22.0	27.5
Trimming (covered by concrete)	sq.m	43.0	54.0

Intake Work

Excavation (soft)	cu.m	3.5	4.5
Excavation (hard rock)	cu.m	27.0	34.0
Reinforced concrete	cu.m	270.0	340.0
Reinforcement	ton	1,150	1,440
Screen and other miscellaneous metal	kg	2.0	2.5

(B) Water Conveyance Facilities and N/S Reservoir

<u>Description</u>	<u>Unit</u>	<u>B.U.R</u> (Z\$)	<u>U.C.C.</u> (Z\$)
(1) Gravity System			
Clearing and grubbing	ha	3,000	3,750
Excavation (soft)	cu.m	3.0	3.5
Excavation (hard rock)	cu.m	27.0	34.0
Fill (canal & road)	cu.m	3.2	4.0
Trimming	sq.m	5.5	7.0
Supply and Installation of R.C. Pipe			
° ϕ 600 mm	m	50.0	63.0
Sand bed	cu.m	15.0	18.5
Concrete work of related structure	cu.m	270.0	340.0
Guard house	sq.m	250.0	315.0
Gravel pavement (t=15 cm)	sq.m	4.0	5.0

(2) Installation of Pipeline

° Trench Excavation (soft)	cu.m	1.2	1.5	
° Fill and backfill	cu.m	1.6	2.0	
° Sand bed	cu.m	15.0	18.5	
° Pipe installation	m	3.2	4.0	
° Concrete works of related structure	cu.m	270.0	340.0	including forms and re-bar
Pump house	sq.m	300.0	375.0	

(3) Night Storage Reservoir

Clearing and grubbing	ha	3,000	3,750	
Stripping	cu.m	1.0	1.5	
Excavation (soft)	cu.m	3.5	4.5	
Fill	cu.m	4.0	5.0	
Sodding	sq.m	3.0	4.0	
Supply and installation of pipe and valves (Z\$/m per mm)	l set	0.85	1.05	
Concrete works	cu.m	270.0	340.0	including forms and re-bar
Stone pitching	sq.m	8.0	10.0	

Table G-5. Unit Construction Cost of Field Consolidation Works by AGRITEX (by contract)

<u>Description</u>	<u>Unit</u>	<u>B.U.R</u> (Z\$)	<u>U.C.C.</u> (Z\$)	
(1) Land Grading Works				
° Clearing and grubbing	ha	3,000	3,750	by bulldozer D-8
° Land levelling work (earth moving, levelling and ridge preparation)	ha	430	537	including plant hire of motor grader
° Deep plowing work	ha	70	88	
(2) Distribution Canal				
° Concrete canal				
Type A, 700 x 500	m	45	56	Concrete canal
Type B, 600 x 450	m	40	50	work includes
Type C, 500 x 400	m	35	44	supply and instal-
Type D, 500 x 350	m	33	41	lation of precast
Type E, 400 x 350	m	30	37	flume, fill of
Type F, 350 x 300	m	25	31	soil
° Drop structure (all types)	No.	133	166	Drop structure includes concrete work, earthwork and trimming work.
° Box (off-take) (all types)	No.	163	204	Box includes con- crete work, earth work and miscel- laneous metal works
° Road crossing	No.	600	750	

(3) Drainage Canal

° Drainage canal	m	9	11
° Road crossing	No.	600	750
° Erosion control weir	No.	77	96

(4) Farm Road

° Trunk road	m	18.5	23.0 including gravel pavement
° Lateral road	m	14.5	18.0 -do-
° Branch road	m	4.5	5.5 no pavement
° Access road	m	18.5	23.0 same as trunk road

(5) Farming Facilities

° Farm store	sq.m	200	250
° Office	"	300	375
° Multi-purpose room	"	300	375
° Living quarter	"	250	312
° Blair latrines	No.	250	312
° Fence	m	2.8	3.5
° Gate	No.	350	438

Table G-6. Foreign and Local Components

<u>Description</u>	<u>Foreign Portion (%)</u>	<u>Local Portion (%)</u>
1. Cement	60	40
2. Reinforcement	80	20
3. Fuel and Oil	55	45
4. Construction Machinery	80	20
5. Truck and Vehicle	75	25
6. Depreciation for Machinery	100	0
7. Repair of Machinery	70	30
8. Maintenance of Machinery	0	100
9. Timber, Lumber	20	80
10. Explosive	80	20
11. Large Pump, Gate, Valve, etc.	95	5
12. Electrical Control Facilities	95	5
13. Metal and Steel Product	75	25
14. Labour	0	100
15. Taxes and Bonding Charge	0	100
16. Contractors Profit	50	50
17. Facilities for Supervision	60	40
18. Engineering Service	50	50

Table G-7. Basic Price of Construction Material

(Unit: Z\$)

<u>Description</u>	<u>Unit</u>	<u>Cost (Z\$)</u>
Cement	50 kg/bag	7.5
Natural gravel	cu.m	8.0 not screened
" "	cu.m	20.0 screened
Crusher run	cu.m	30.0 not screened
" "	cu.m	105.0 screened
Sand	cu.m	12.5
Reinforcing steel	ton	950.0
Brick	1000 pcs.	150.0
Gasoline	liter	1.15
Diesel oil	liter	0.63
Lubricant	liter	2.0
Structural steel	ton	1,800

Table G-8. Basic Wage Rate (as of 1986)

	<u>Rate/Day</u> (Z\$)
Labourer	9
Skilled Labourer	14
Foreman	65
Carpenter	30
Mason	20
Plasterer	20
Pipe Fitter	20
Mechanic	60
Electrician	60
Welder	50
Operator	25
Assistant Operator	15
Driver	20
Guard, Gatekeeper	12

Table G-9. Hiring Rate of Construction Machinery

Source: PLANT HIRE (JAN. 1987 - DEC. 1987)
PRICE ORDER AND TENDERED RATES SCHEDULES

TENDER NO. RDS 19 OF 1986
MINISTRY OF TRANSPORT
GOVERNMENT OF ZIMBABWE

<u>Machine</u>		<u>Spec.</u>	<u>Unit</u>	<u>Rate</u> (Z\$)	Fuel	<u>Remarks</u>
					<u>Consumption</u> (l/hr)	
Bulldozer	CAT.	D8	Hr	150.0	29	
Bulldozer	CAT.	D7	Hr	100.0	27	
Motor Scraper	TS.	TS14B	Hr	120.0	48	
"	CAT.	621	Hr	140.0	50	
Motor Grader	CAT.	120G	Hr	45.0	19	
"	"	12F	Hr	45.0	19	
"	"	KOMATSU 650R	Hr	60.0	25	
Excavator	JCB	3C	Hr	45.0	12	
"	"	5C	Hr	60.0	18	
"	"	7C	Hr	70.0	18	
"	"	8C	Hr	80.0	19	
"	CAT	225	Hr	115.0	21	
Front End Loader	CAT	922	Hr	42.0	12	
"	"	950	Hr	72.0	23	
"	"	966B	Hr	80.0	25	
"	"	988B	Hr	235.0	48	
"	"	992	Hr	331.0	82	
"	KOMATSU	W60	Hr	54.0	15	

<u>Machine</u>		<u>Spec.</u>	<u>Unit</u>	<u>Rate</u> (Z\$)	<u>Fuel</u> <u>Consumption</u> (l/hr)	<u>Remarks</u>
Truck	LEYLAND	384	Hr	17.0	11	
"	F/FERG	175	Hr	23.0	11	
"	FIAT	850	Hr	33.0	12	
"	BUFFALO	D100	Hr	40.0	13	
Water Bowser	NISSAN	8m ³	Hr	23.0	10	
"	NISSAN	10m ³	Hr	33.0	12	
"	LEYLAND	15m ³	Hr	53.0	14	
"	LEYLAND	20m ³	Hr	72.0	14	
Self Prop. Pneum. Roller						
	CALLION 9 WHL	10/12t	Hr	26.0	5	
Steel Wheeled Flat Roller						
"	A/B VX CALL	10/22t	Hr	40.0	8	
"	BROSS B110	7/14t	Hr	20.0	7	
"	A/B FLAT	10/12t	Hr	27.0	7	
"	R/M 3 WHL	10/12t	Hr	24.0	7	
Vibratory Roller						
	CAT.	14.9 t	Mon.	5,500	7	
	A/B	5 t	Mon.	1,700	6	
	DYNAPAC CA25	11 t	Mon.	2,000	6	
	TOWED	8.5 t	Mon.	1,500	6	
	BOMAG BW615	0.8 t	Mon.	800	5	
	BW905	1.3 t	Mon.	600	5	
	S/PROP	10 t	Mon.	3,000	7	
Super Compactor						
	QUADCNO 35-50	50t	Mon.	1,500	11	
	FERGUSON TOWED	50t	Mon.	2,000	12	

<u>Machine</u>	<u>Spec.</u>	<u>Unit</u>	<u>Fuel</u>		<u>Remarks</u>
			<u>Rate</u> (Z\$)	<u>Consumption</u> (l/hr)	
Concrete Mixer					
WINGATE	175L	Mon.	770	1.5	
	330L	Mon.	1,320	2	
	400L	Mon.	2,000	3	
	21/14	Mon.	2,500	3	
Compressor					
ATCOPCO	115CFM	Hr	20.0	2	Mon. Z\$880
"	200CFM	Hr	20.0	2	Mon. 1,430
HOCMAN	370CFM	Hr	25.0	2.5	Mon. 2,310
Drilling Machine					
		Mon.	4,000	2	
Grout Plant					
	1 m ³	Mon.	2,000	1.5	

Table G-10(1) Construction Schedule of MUSAVEREMA (I - 2 - 1) Project

Description	Unit	Quantity	1990												1991																												
			COMMENCEMENT						COMPLETION						COMMENCEMENT						COMPLETION																						
			M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D									
1. Site Preparation and Temporary Works	L.S.	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
2. Dam & Reservoir																																											
• Clearing & stripping	ha	5.0																																									
• Excavation	cu.m	46,000																																									
• Grout curtain	m	770																																									
• Embankment (core)	cu.m	50,000																																									
• " " (shell)	cu.m	125,000																																									
• Filter drain	cu.m	5,500																																									
• Riprap & stone works	cu.m	7,000																																									
3. Spillway																																											
• Stripping & Excavation	cu.m	29,700																																									
• Concrete, masonry, riprap	cu.m	1,930																																									
4. Water Intake & Outlet																																											
• Excavation & pipe installation	set	1																																									
• Concrete	cu.m	58																																									
• Valve & mechanical parts	set	1																																									
• O & M and Guard house	sq.m	20																																									
5. Water Conveyance Facilities																																											
• Canal Construction	m	5,630																																									
• Night storage reservoir	NO.	1																																									
6. Field Consolidation Works																																											
• Land grading works	ha	36																																									
• Canal and farm facilities	set	1																																									

Table G-10 (2)

Construction Schedule of CHINYAMATUMWA (II - 1 - 6) Project

Description	Unit	Quantity	1990												1991											
			COMMENCEMENT						COMPLETION						COMMENCEMENT						COMPLETION					
			M	J	J	A	S	O	N	D	J	F	M	A	M	A	M	J	J	A	S	O	N	D		
1. Site Preparation and Temporary Works	L.S.	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
2. Dam & Reservoir																										
• Clearing & stripping	ha	2.1																								
• Excavation	cu.m	23,900																								
• Grout curtain	m	1,480																								
• Embankment (core)	cu.m	37,200																								
• " " (shell)	cu.m	122,400																								
• Filter drain	cu.m	4,300																								
• Riprap & stone works	cu.m	2,200																								
3. Spillway																										
• Stripping & Excavation	cu.m	50,700																								
• Concrete, masonry, riprap	cu.m	2,080																								
4. Water Intake & Outlet																										
• Excavation & pipe installation	set	1																								
• Concrete	cu.m	69																								
• Valve & mechanical parts	set	1																								
5. Water Conveyance Facilities																										
• Pump Station	sq.m	260																								
• Installation of Pump, equipment	set	1																								
• Pipeline Construction	m	870																								
• Night storage reservoir	NO.	1																								
6. Field Consolidation Works																										
• Land grading works	ha	35																								
• Canal and farm facilities	set	1																								

Table G-10(3)

Construction Schedule of MASHOKO (II - 2 - 1) Project

Description	Unit	Quantity	1990												1991											
			M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
1. Site Preparation and Temporary Works	L.S.	-	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>COMPLETION</p> <p>-----</p> </div> <div style="width: 48%;"> <p>COMPLETION</p> <p>-----</p> </div> </div>																							
2. Dam & Reservoir																										
• Clearing & stripping	ha	3.0																								
• Excavation	cu.m	36,000																								
• Grout curtain	m	1,035																								
• Embankment (core)	cu.m	35,000																								
• " " (shell)	cu.m	115,000																								
• Filter drain	cu.m	6,500																								
• Riprap & stone works	cu.m	5,500																								
3. Spillway																										
• Stripping & Excavation	cu.m	40,200																								
• Concrete, masonry, riprap	cu.m	3,730																								
4. Water Intake & Outlet																										
• Excavation & pipe installation	set	1																								
• Concrete	cu.m	50																								
• Valve & mechanical parts	set	1																								
• O & M and Guard house	sq.m	20																								
5. Water Conveyance Facilities																										
• Canal Construction	m	810																								
• Night storage reservoir	NO.	1																								
6. Field Consolidation Works																										
• Land grading works	ha	15																								
• Canal and farm facilities	set	1																								

Table G-10 (4)

Construction Schedule of MUNJANGANJA (N-4-10) Project

Description	Unit	Quantity	1990												1991																																				
			COMMENCEMENT						COMPLETION						COMMENCEMENT						COMPLETION																														
			M	J	J	A	S	O	N	D	J	F	M	A	M	A	M	J	J	A	S	O	N	D																											
1. Site Preparation and Temporary Works	L.S.	-	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
2. Dam & Reservoir																																																			
• Clearing & stripping	ha	2.4																																																	
• Excavation	cu.m	26,900																																																	
• Grout curtain	m	930																																																	
• Embankment (core)	cu.m	41,600																																																	
• " " (shell)	cu.m	102,700																																																	
• Filter drain	cu.m	5,000																																																	
• Riprap & stone works	cu.m	3,700																																																	
3. Spillway																																																			
• Stripping & Excavation	cu.m	96,600																																																	
• Concrete, masonry, riprap	cu.m	4,380																																																	
4. Water Intake & Outlet																																																			
• Excavation & pipe installation	set	1																																																	
• Concrete	cu.m	50																																																	
• Valve & mechanical parts	set	1																																																	
• O & M and Guard house	sq.m	20																																																	
5. Water Conveyance Facilities																																																			
• Canal Construction	m	4,720																																																	
• Night storage reservoir	NO.	1																																																	
6. Field Consolidation Works																																																			
• Land grading works	ha	33																																																	
• Canal and farm facilities	set	1																																																	

Table G-10 (5)

Construction Schedule of MAGUDU (V-3-3) Project

Description	Unit	Quantity	1990												1991											
			COMMENCEMENT						COMPLETION						COMMENCEMENT						COMPLETION					
			M	J	J	A	S	O	N	D	J	F	M	A	M	A	M	J	J	A	S	O	N	D		
1. Site Preparation and Temporary Works	L.S.	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
2. Dam & Reservoir																										
• Clearing & stripping	ha	2.0																								
• Excavation	cu.m	31,600																								
• Grout curtain	m	530																								
• Embankment (core)	cu.m	36,309																								
• " (shell)	cu.m	99,000																								
• Filter drain	cu.m	3,600																								
• Riprap & stone works	cu.m	5,700																								
3. Spillway																										
• Stripping & Excavation	cu.m	20,300																								
• Concrete, masonry, riprap	cu.m	5,040																								
4. Water Intake & Outlet																										
• Excavation & pipe installation	set	1																								
• Concrete	cu.m	77																								
• Valve & mechanical parts	set	1																								
• O & M and Guard house	sq.m	20																								
5. Water Conveyance Facilities																										
• Canal Construction	m	7,940																								
• Night storage reservoir	NO.	1																								
6. Field Consolidation Works																										
• Land grading works	ha	51																								
• Canal and farm facilities	set	1																								

Table G-10(6)

Construction Schedule of MABVUTE (VI-1-12) Project

Description	Unit	Quantity	1990												1991											
			COMMENCEMENT						COMPLETION						1991											
			M	J	J	A	S	O	D	J	F	M	A	M	J	J	A	S	O	N	D					
1. Site Preparation and Temporary Works	L.S.	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
2. Dam & Reservoir																										
• Clearing & stripping	ha	2.4																								
• Excavation	cum	47,400																								
• Grout curtain	m	1,390																								
• Embankment (core)	cum	47,600																								
• " (shell)	cum	99,600																								
• Filter drain	cum	4,700																								
• Riprap & stone works	cum	6,800																								
3. Spillway																										
• Stripping & Excavation	cum	37,700																								
• Concrete, masonry, riprap	cum	660																								
4. Water Intake & Outlet																										
• Excavation & pipe installation	set	1																								
• Concrete	cum	96																								
• Valve & mechanical parts	set	1																								
5. Water Conveyance Facilities																										
• Pump Station	sq.m	280																								
• Installation of Pump, equipment	set	1																								
• Pipeline Construction	m	860																								
• Night storage reservoir	NO.	1																								
6. Field Consolidation Works																										
• Land grading works	ha	71																								
• Canal and farm facilities	set	1																								

G-4. Construction Cost

(1) Summary

The cost consists of the following items:

Construction Cost of MEWRD

(A) Dam Work

- (1) Preparatory work
- (2) Foundation treatment
- (3) Dam embankment
- (4) Spillway
- (5) Intake facilities

(B) Water Conveyance Facilities

- (1) Preparatory work
- (2) Canal work or pump & pipeline works
- (3) Night storage reservoir

Construction Cost of AGRITEX

(C) Field Consolidation Works

- (1) Preparatory work
- (2) Land grading works
- (3) Distribution canal
- (4) Drainage canal
- (5) Farm road
- (6) Farming facilities

The cost of 6 projects are listed on the table in Main report.

(2) Breakdown

The detailed construction cost of respective work items are shown in the following tables for each project.

Every cost of respective work items is shown separating into foreign and local currency portions.