

ANNEX B. METEOROLOGY AND HYDROLOGY

Contents	Page
Table B-1 Meteorological Stations	B-1
B-2 Evaporation Stations	B-2
B-3 Rainfall Station Network (operated over 30 yr.s) (1) ~ (4)	B-3
B-4 River Gauging Stations (1) ~ (3)	B-7
B-5 Observed Sediment Yield	B-10
B-6 Water Right Related to Proposed Dam Sites	B-11
B-7 MAR and CV of Hydrological Subzones	B-12
Figure B-1 Reservoir Yield Curve	B-12
B-2 Hydrological Subzones and Potential Dam Sites	B-13
B-3 Mean Annual Rainfall	B-14
B-4 Mean Annual Evaporation	B-15
B-5 Mean Annual Sediment Yield	B-16
B-6 Rainfall and Evaporation Stations	B-17
B-7 Hydrological Subzones and River Gauging Stations	B-18

Table B-1 Meteorological Stations

Ref. No.	Name of Station	Location			Date Opened	Observed Data			Remarks			
		Lat.	Long.	Alt. ^m		R.	E.	T. H. W. S.				
EE/15	Makoholi	19°50'S	30°47'E	1,204	Jul. 64	0	0	0	0	0	0	
EE/20	Masvingo	20°04'S	30°52'E	1,094	Mar. 74	0	0	0	0	0	0	
	Zaka	20°20'S	31°28'E	774	Sep. 49	0	0	0	0	0	0	
EE/17	Buffalo Range	21°01'S	31°35'E	429	Apr. 67	0	0	0	0	0	0	
EE/23	Middle Sabi	20°13'S	32°23'E	479	Oct. 77	0	0	0	0	0	0	Manicaland Province
BE/4	Beitbridge	20°13'S	30°00'E	456	Jun. 59	0	0	0	0	0	0	Matabeleland Province

Note: Observed Data

R..... Rain (mm)

E..... Evaporation (mm)

T..... Temperature (c°)

H..... Relative Humidity (%)

W..... Wind speed (knot/Hr.)

S..... Sunshine Hour (HR.)

Table B-2 Evaporation Stations

Ref. No.	Name of Stations	Lat.	Long.	Altitude m	Date opened	Remarks
EE/4	Umshandige Dam	20°09'S	30°38'E	950	Sep. 58	Hydro. Station
EE/6	Gwenoro Dam	19°46'S	29°53'E	1140	Oct. 58	Hydro. Station
EE/8	Kyle Dam	20°15'S	31°02'E	1050	Feb. 62	Hydro. Station
EE/11	Chisumbanje	20°48'S	32°14'E	421	May 61	Met. Station
EE/13	Esquillingwe Weir	20°51'S	31°18'E	460	Feb. 63	Hydro. Station
EE/14	Bangala Dam	20°42'S	31°14'E	560	Jun. 63	Hydro. Station
EE/15	Makoholi	19°50'S	30°47'E	1204	Jul. 64	Met. Station
EE/17	Buffalo Range	21°01'S	31°35'E	429	Apr. 67	Met. Station
EE/19	Masvingo P.W.E. Office	20°04'S	30°49'E	1080	Feb. 74	Hydro. Station
EE/20	Masvingo	20°04'S	30°52'E	1094	Mar. 74	Met. Station
EE/21	Manjirenji Dam	20°38'S	31°37'E	540	Jan. 75	Hydro. Station
EE/22	Triangle Research Station	21°01'S	31°25'E	416	Oct. 70	Met. Station
EE/23	Middle Sabi	20°13'S	32°23'E	479	Oct. 77	Met. Station
BE/4	Beitbridge	20°13'S	30°00'E	456	Jun. 59	Met. Station

Table B-3 (1) Rainfall Station Network (operated over 30 yr.s)

Recorder No.	Station Name	Lat.	Long.	Alt. ^m	First Record
384	MNENE MISSION	20°38'	30°03'	1100	NOV. 38
386	ZVISHAVANE	2019	3004	980	NOV. 21
401	SHURUGWI, RAIL	1940	2959	1450	JAN. 10
404	SHURUGWI, GAOL	1940	3000	1440	SEP. 02
408	DONGA	1947	3007	1200	OCT. 51
415	NESHURO	2057	3039	600	DEC. 43
417	LUNDI, RHINO HOTEL	2055	3049	580	NOV. 29
429	MAKONESE IRRIGATION	2014	3017	860	APR. 52
442	MASHAVA	2003	3029	1100	OCT. 24
443	GATHS MINE	2002	3031	1160	FEB. 30
444	CHIBI	2019	3029	940	DEC. 12
446	KING MINE	2006	3032	1100	OCT. 21
449	CHIBI MISSION	2021	3032	940	AUG. 38
452	UMSHANDIGE DAM	2009	3038	1000	DEC. 36
453	UMSHANDIGE CATCHMENT	2003	3039	1020	MAR. 45
455	MAYO FARM	1954	3038	1100	JUL. 38
460	CHENDEBVU DAM	2039	3041	700	APR. 52
461	NGOMAHURU HOSPITAL	2026	3044	820	APR. 28
462	COTOPAXI RANCH	2011	3044	970	JUL. 33
463	CAMBRIA	2005	3044	1100	OCT. 21
465	GOKOMERE MISSION	1958	3046	1160	JAN. 12
470	MASVINGO, GAOL	2005	3050	1090	NOV. 1898
471	COPOTA SCHOOL	1957	3051	1130	APR. 39
473	MASVINGO, RAIL	2005	3051	1070	JUL. 14
475	BRUCEHAME	2011	3050	1140	JAN. 16

Table B-3 (2) Rainfall Station Network (operated over 30 yr.s)

Recorder No.	Station Name	Lat.	Long.	Alt. m	First Record
478	CHARAMBIRA	20°19'	30°51'	1200	JAN. 48
481	MAKORSI R.R. CHIHUKU	2039	3053	680	OCT. 34
482	SIKATO	2014	3054	1060	JUL. 32
483	MURABGWE	2025	3055	960	SEP. 49
485	MORGENSTER MISSION	2018	3056	1180	OCT. 07
486	GREAT ZIMBABWE	2016	3056	1100	OCT. 21
494	VICTORIA SOUTH	2026	3057	900	JAN. 39
500	WARE'S FARM	2004	3100	1090	JUL. 40
515	NHEMA	1939	3011	1220	OCT. 32
533	HOLY CROSS MISSION	1934	3035	1350	MAR. 51
534	ST. JOSEPH'S MISSION	1944	3038	1220	SEP. 38
535	CHAKA	1932	3041	1380	FEB. 39
537	DRIEFONTEIN MISSION	1925	3042	1510	OCT. 06
542	MAKOHOLI	1950	3047	1200	MAR. 43
546	CHATSWORTH, RAIL	1938	3050	1380	FEB. 37
555	ZIMUTU TOWNSHIP	1953	3053	1200	NOV. 32
556	SERIMA MISSION	1931	3053	1470	OCT. 51
557	SURAT	1938	3055	1340	AUG. 36
558	GURAJENA	1945	3053	1260	NOV. 52
563	LAUDER	1937	3100	1370	JUN. 46
570	NUANETSI R., LUNDI	2100	3108	420	JAN. 18
575	NUANETSI R., MTILIKWE	2103	3118	430	SEP. 21
582	CROWN RANCH	2054	3133	480	DEC. 52
594	LONE STAR	2103	3153	400	OCT. 51
608	MUCHIBWA	2035	3111	640	JAN. 52

Table B-3 (3) Rainfall Station Network (operated over 30 yr.s)

Recorder No.	Station Name	Lat.	Long.	Alt.	First Record
614	JICHIDZA MISSION	20°17'	31°14'	1050 ^m	NOV. 18
623	ZINGWENA	2036	3116	600	OCT. 53
624	NYAKUNUWA	2025	3119	740	JUL. 51
627	FAVERSHAM	2043	3122	500	JAN. 52
629	ST. ANTHONY'S MISSION	2024	3126	740	DEC. 52
630	VUKURURU	2023	3119	1040	DEC. 53
631	ZAKA	2020	3128	770	JUL. 23
632	SVUURE	2033	3132	600	NOV. 50
638	RUWARE RANCH	2045	3139	440	JAN. 38
642	MUKARO MISSION	1945	3108	1330	OCT. 47
644	FUNGIDZA HILL	1948	3111	1340	DEC. 47
650	EASTDALE RANCH	1925	3056	1520	NOV. 52
661	PUMUSHANA MISSION	2001	3131	1190	JUL. 10
663	NYAGAMBO	2016	3132	800	JUL. 51
667	BIKITA, MUSHANDURE	2011	3138	840	OCT. 50
668	BIKITA, POLICE	2005	3137	970	JUL. 23
672	PANGANAYI	2023	3141	670	SEP. 53
673	SILVEIRA MISSION	2002	3142	1100	JAN. 35
676	MASHOKO	2029	3145	700	OCT. 50
679	BIKITA, GANGARE	1956	3148	910	OCT. 50
680	BIKITA, MAKORE	2008	3150	710	OCT. 50
682	CHIREMWAREMWA	2027	3151	600	JUL. 53
693	GUTU	1938	3109	1390	DEC. 04
696	GUTU MISSION	1939	3113	1300	JUL. 38
713	BUHERA	1919	3126	1190	AUG. 51

Table B-3 (4) Rainfall Station Network (operated over 30 yr.s)

Recorder No.	Station Name	Lat.	Long.	Alt. m	First Record
723	ALHEIT MISSION	19°43'	31°38'	1020	JUL. 12
824	DEVULI RANCH H.Q.	2008	3206	600	NOV. 21
828	HUMANI RANCH	2027	3213	450	MAY 38
837	BIRCHENOUGH BRIDGE	1958	3220	500	DEC. 35
848	NEW YEAR'S GIFT	2006	3234	790	OCT. 25
855	ZANGAMA	1933	3207	780	JAN. 72
877	NYANYADZI IRRIGATION	1946	3225	540	OCT. 41
879	HOT SPRINGS RESORT	1939	3229	620	AUG. 32
882	UMVUMVUMVU	1933	3230	640	DEC. 52
1802	LIEBIG'S R., MAKALALI	2144	2958	590	NOV. 12
1803	BEITBRIDGE	2213	3000	460	JAN. 22
1812	LIEBIG'S R., SOVELELE	2100	2956	800	NOV. 19
1815	LIEBIG'S R., MJINGWE	2114	2956	720	JUL. 51
1822	LIEBIG'S R., LAMULAS	2140	3011	580	JUL. 12
1827	LIEBIG'S R., MILENDE	2119	3017	660	NOV. 18
1833	MWENEZI, D.A.	2125	3043	490	JUL. 26
1834	NUANETSI R.H.Q.	2131	3047	460	APR. 16
1838	CHIKWARAKWARA	2220	3105	230	JUN. 58
1864	MDAGATI	2137	3123	420	APR. 56

NOTE: Lat. ---- Latitude (° "S)
 Long. -- Longitude(° "E)
 Alt. ---- Altitude (EL. m.)

Recorder No.	Catchment
384~644	Runde River
650~882	Sabi River
1802~1864	Limpopo River

Table B-4(1) River Gauging Stations (Recorder)

Ref. No.	No. of River	Catchment (km ²)	Name of Recorder Station	Lat.	Long.	Date Opend	Remarks
E.85	Chache	135	Cheche Triangle Regeneration Flumes	21°05' S	31°25' E	Apr. 62	
E.87	Makari	11.1	Makari Triangle Regeneration Flume	21°05' S	31°25' E	Apr. 62	
E.101	Tokwe	7700	Tokwe Weir	21°03' S	31°10' E	Nov. 65	
E.108	Chiredzi	1040	Chiredzi Manjirenji Dam U/S Flumes	20°29' S	31°32' E	Sep. 66	
E.111	Shasha	1620	Shasha Mushwe Flumes	19°58' S	30°28' E	Dec. 66	
E.112	Tokwe	1200	Tokwe Eghanya Flumes	20°01' S	30°24' E	Dec. 66	
E.114	Roswa	197	Roswa Turgwe Flume	20°10' S	31°16' E	Jan. 67	Not listed in Hydro. Summaries
E.115	Turgwe	223	Turgwe Roswa Flume	20°10' S	31°36' E	Feb. 67	
E.117	Ngezi	1090	Ngezi Mushwe Flume and L/F Notch	19°55' S	30°27' E	Dec. 67	
E.133	Lundi	5390	Ingesi Flumes	20°37' S	30°27' E	May 70	
E.142	Chiredzi	2460	R/B Canal Pick-up Weir	20°55' S	31°38' E	Nov. 72	
E.143	Tokwe	4250	Austral Dam	20°08' S	30°27' E	Dec. 72	
E.145	Chiredzi	-	R/B Canal Pick-up By Pass	20°55' S	31°40' E	Apr. 73	Not listed in Hydro. Summaries
E.153	Umshangashi	146	Makoholi Dam U/S Flume	19°49' S	30°44' E	Dec. 73	- do -
E.154	Umshangashi	155	Makoholi Dam U/S Flume	19°49' S	30°45' E	Dec. 73	- do -
E.159	Murerezi	181	U/S Chiredzi Confluence	20°30' S	31°36' E	Sep. 75	- do -
E.160	Turgwe	977	Turgwe Mujichi	20°22' S	31°52' E	Oct. 75	Gauge Post Only

* Listed Recorder stations are operated by MEWRD as of October 1986.

Table B-4(2) River Gauging Stations (Recorder)

Ref. No.	Name of River	Catchment (km ²)	Name of Recorder Station	Lat.	Long.	Date Opened	Remarks
E.2	Umshangashi	541	Umshangashi Waterworks Weir	20°03' S	30°51' E	Jul. 28	
E.4	Umtilikwe	803	Umtilikwe Esquilingwe Weir	20°51' S	31°18' E	Aug. 49	Same location with E.36
E.6	Umtilikwe	3980	Umtilikwe Kyle Dam D/S G/W	20°15' S	31°02' E	Dec. 49	Not listed in Hydro. Summary
E.17	Chiredzi	1700	Chiredzi Ruware Ranch G/W	20°46' S	31°38' E	Oct. 52	- do -
E.36	Umtilikwe	803	Umtilikwe Esquilingwe Weir D/S G/W	20°51' S	31°18' E	Nov. 57	- do -
E.40	Umtibekwe	285	Little Utebekwe Mt. Gougai G/W	19°49' S	30°03' E	Nov. 58	- do -
E.44	Bevumi	114	Bevumi Kyle Dam U/S G/W	20°10' S	31°08' E	Jul. 59	
E.45	Umtilikwe	847	Umtilikwe Kyle Dam U/s Flume	20°05' S	31°04' E	Sep. 59	
E.48	Msali	365	Msali Kyle Dam U/S G/W	20°06' S	31°05' E	Nov. 59	
E.49	Popotekwe	1010	Popotekwe Kyle Dam U/S G/W	20°07' S	31°01' E	Dec. 59	
E.51	Umtilikwe	1980	Umtilikwe Bangala Dam D/S Flumes	20°45' S	31°14' E	Jan. 60	
E.54	Mpopinyani	212	Mpopinyani Kyle Dam U/S G/W	20°08' S	30°54' E	Aug. 60	
E.69	Umshagashi	938	Umshagashi Kyle Dam U/S G/W	20°07' S	30°52' E	Dec. 60	
E.70	Mzero	101	Mzero G/W	20°20' S	30°56' E	Jan. 61	Gauge Post only
E.74	Lundi	2300	Lundi Tokwe Confluence	21°08' S	31°16' E	Dec. 61	
E.83	Lundi	17100	Control Section and L/F Weir				
			Lundi Tokwe Confluence U/S	21°10' S	31°12' E	Apr. 62	
			Control Section and L/F G/W				
E.84	Tokwe	7950	Tokwe Lundi Confluence U/S	21°08' S	31°16' E	May 62	
			Control Section and L/F G/W				

Table B-4(3) River Gauging Stations (Gauge Post)

Ref. No.	Name of River	Catchment (km ²)	Name of Recorder Station	Lat.	Long.	Date Opened	Remarks
52	Chiredzi	2,920	Chiredzi Sarvo L/F Nothc	21°01'S	31°45'E	Jan. 1966	
85	Musokwesi	75.1	Mapanzure Weir D/S	20°28'S	30°51'E	Sep. 1970	
87	Roswa	64.3	Mutungura Flume	19°59'S	31°34'E	Nov. 1970	
140	Musokwesi	32.2	Musokwesi Mapanzure Dam	20°23'S	30°50'E	Jan. 1976	
141	Musokwesi	-	Musokwesi Mapanzure Dam Outlet	20°23'S	30°51'E	Jan. 1976	
147	Munende	38.7	Turramurra Weir D/S	19°40'S	31°08'E	Dec. 1976	
148	Munende	32.7	Turramurra Weir U/S	19°40'S	31°07'E	Aug. 1978	

* Data Availability of listed gauge post stations are not confirmed.

Table B-5 Observed Sediment Yield

<u>No.</u>	<u>Name of catchment</u>	<u>Area(km²)</u>	<u>Sediment (ton/km²/annum)</u>	<u>Observed by</u>
1.	Kyle	3989	60	Interconsult A/S ¹⁾
2.	Manjirenji	1536	319	- do -
3.	Ruti	2615	333	- do -
4.	Bangala	1839	232	- do -
5.	Nyaru Shangwe	108	704	- do -
6.	Siya	518	300	- do -
7.	Banga	38	12	- do -
8.	Mapanzure	43	526	- do -
9.	Chikwedziwa	205	45	- do -
10.	Dowe	52	306	- do -
11.	Demba	10	681	- do -
12.	Makoholi	154	10	- do -
13.	Austral Weir	4250	350	MEWRD ²⁾
14.	Rinette Weir	6000	270	MEWRD

NOTE: 1) Mean Annual Sediment Yield listed from NO. 1 to 12 is derived from the report of "Soil and Water Conservation".

2) Sediment Yield of No. 13 and 14 is derived from the paper of "Sediment Storage requirements for reservoirs" reported by T.C. KABELL in July, 1984.

Table B-6 WATER RIGHT RELATED TO PROPOSED DAM SITES

Communal Land	No.	(Proposed Dam site) Name	River	(Water Right)		Distance to dam site	Remarks
				Map Ref.	No.		
Bikita	II-1-5	Mundzani	(T) Mujiche	ES 3(b)	13192	0.3 km	1 l/s (for 3.0 ha)
Bikita	II-1-8	Beta	Chinyamakava	ES 3	9578/9258	6.	
Masvingo	V-1-1	Munango	Mutiwazizi	ET2 (b)	3672	0.3	For 80 acres
Masvingo	V-1-2	Musingarabwe	Govorove	ET1 (a)	10915	8.	24,000 m ³ /yr. (168m ³ /day)
Mtlikwe	V-2-4	Chatikubo	Chihobvu	EUT2 (b)	12412	3.	20 l/s. (when Bangala overflowed)
Chivi	VI-1-1	Chirogwe	Save	EL2 (b)ii	6676	18.	For 5.5 acres thr. Yr.
Chivi	VI-1-8	Nyamakwe	Nyamakwe	ET2 (b)	11056/11711	4.	24,000m ³ /yr. (at Tokwe Riv.)
"	"	"	"	"	4743	5.	For 66 acres thr. yr. (at Tokwe Riv.)
Ndanga	VII-1-5	Nemakau	Kakorwe	EC2 (a)	10421	5.	5,000m ³ /yr. (at Chiredzi River)
(WATER CONTROL AREA in Kyle Catchment)							
Chikuwanda	IV-1-1	Mutema	(T) Popoteke				
Chikuwanda	IV-1-2	Gabriel	(T) Mtlikwe				
Chikuwanda	IV-1-3	Chimedza	Sango				
Chikuwanda	IV-1-4	Mukaro	Mazere				
Serima	IV-3-1	Gondongwe	Popoteke				
Serima	IV-3-2	Vushe	Chinyika				
Zimutu	V-4-1	Marongera	Matiringandi				
Zimutu	V-4-2	Macheke	Macheke				
Zimutu	v-4-3	Mahoto	Makurumidzi				

NOTE: (T) ----- Tributary

Figure B-1 Reservoir Yield Curves

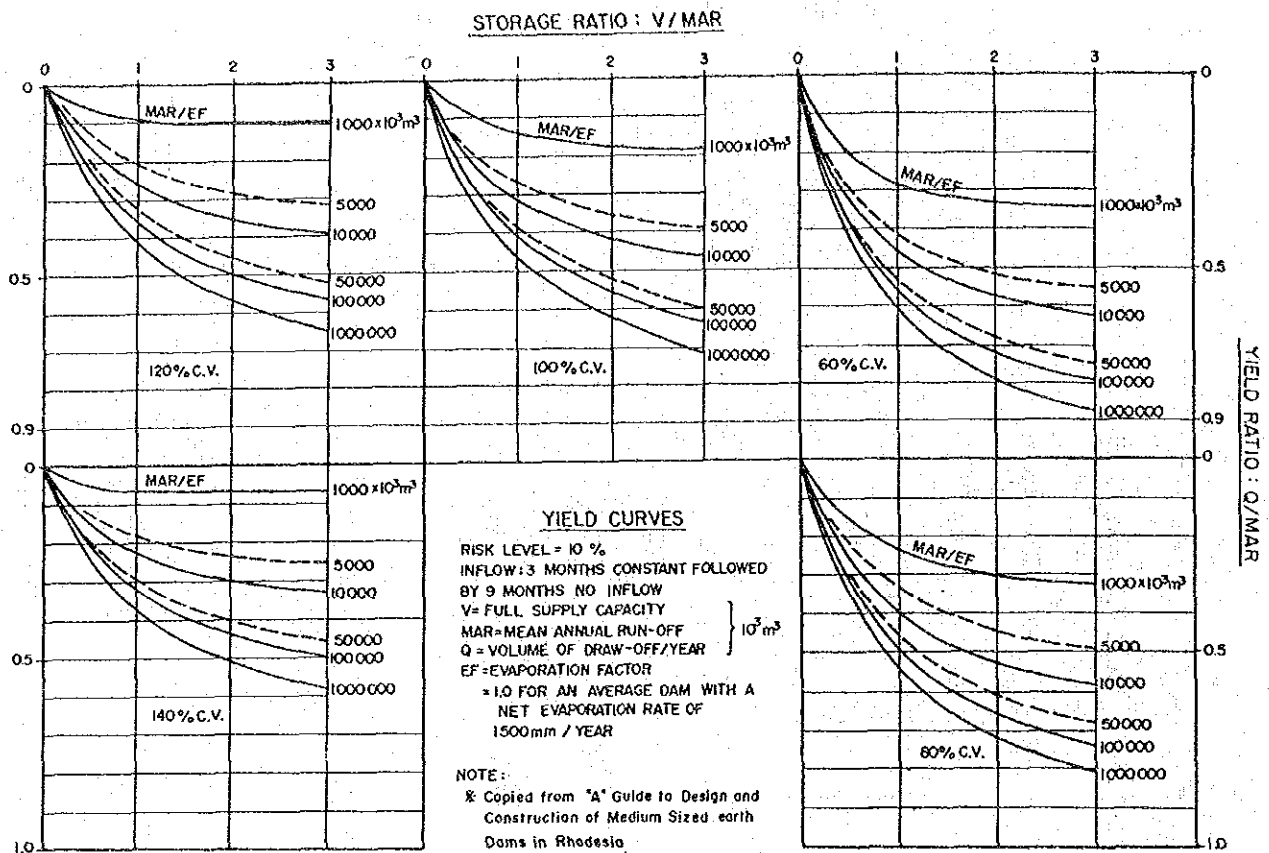


Table B-7 MAR and CV of Hydrological Subzones

'E' Zone				'E' Zone			
SUB ZONE	CATCHMENT	MAR (mm)	CV (%)	SUB ZONE	CATCHMENT	MAR (mm)	CV (%)
EC1	Lower Chiredzi	35	120	UT1	Lower Umtilikwe	40	120
C2	Upper "	107	85	UT2	Mid Umtilikwe	130	90
L1	Lower Lundi	12	150	UT3	Umshagashe	75	110
L2	Lundi	30	120	UT4	Popotekwe	110	95
L3	"	20	130	UT5	Upper Umtilikwe	100	100
L4	"	45	120				
S1	Mkasini	20	140	'B' Zone			
S2	Lower Sabi	10	150	SUB ZONE	CATCHMENT	MAR (mm)	CV (%)
S3	Turgwe	50	100	BB1	Lower Bubybe	4	160
S4	Devuli	50	110	B2	Mid Bubybe	8	150
S5	Nyazwidzi	90	100	L3	Upper Insiza	1	200
T1	Lower Tokwa	100	100	N1	Lower Nuanetsi	6	160
T2	Tokwa	30	120	N2	Mid Nuanetsi	28	130
T3	Shashe	105	95				
T4	Ngesi	115	95				
T5	Upper Tokwa	120	90				

NOTE: MAR = Mean Annual Runoff, CV = Coefficient of Variation

Figure B-2 Hydrological Subzones and Potential Dam Site

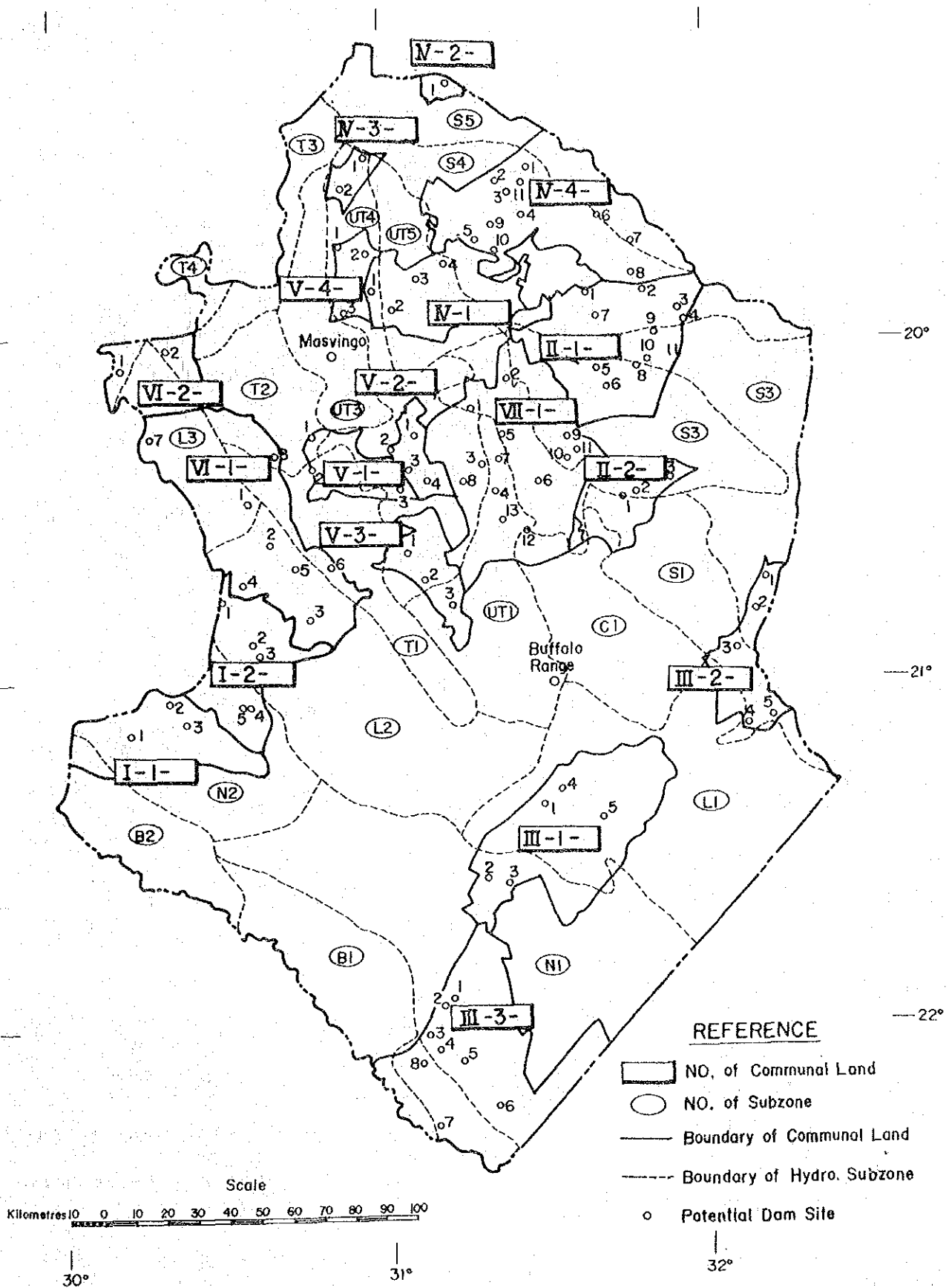
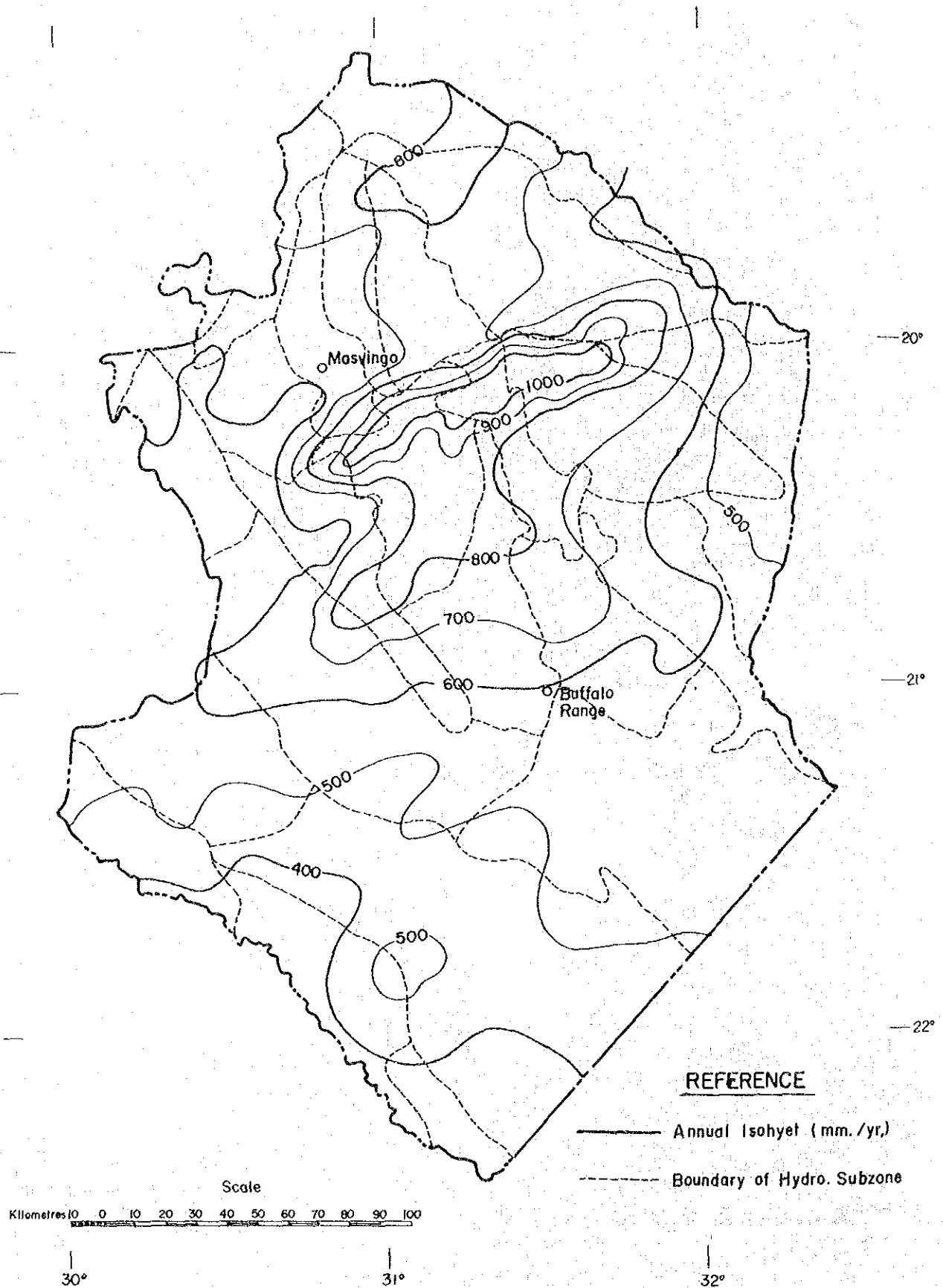
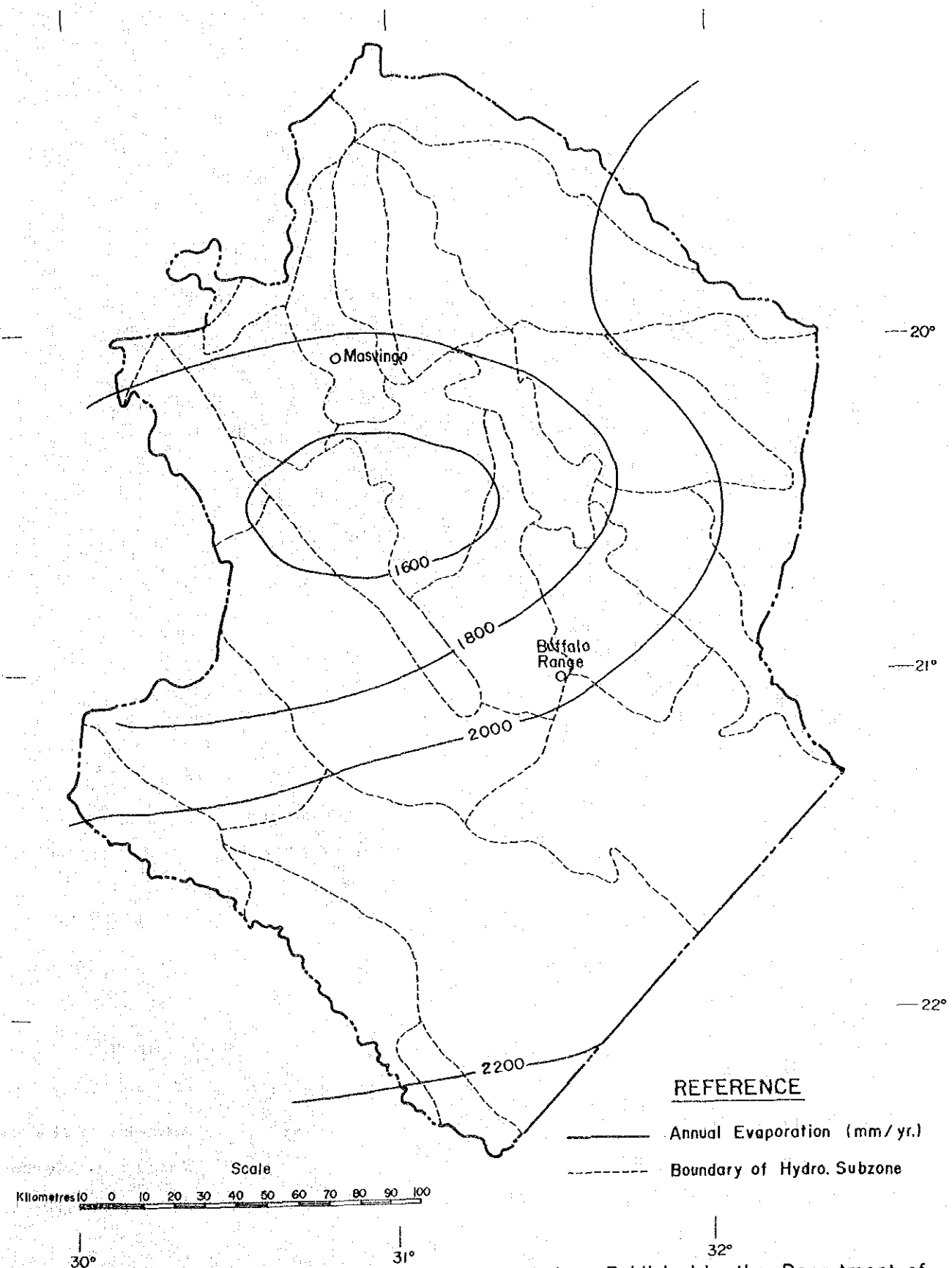


Figure B-3 Mean Annual Rainfall



NOTE : Copied from the Map of Mean Annual Rainfall Compild by the Department of Meteorological Services (Second Edition 1984)

Figure B-4 Mean Annual Evaporation



NOTE : Copied from the Climate Handbook of Zimbabwe Published by the Department of Meteorological Services

Figure B-5 Mean Annual Sediment Yield

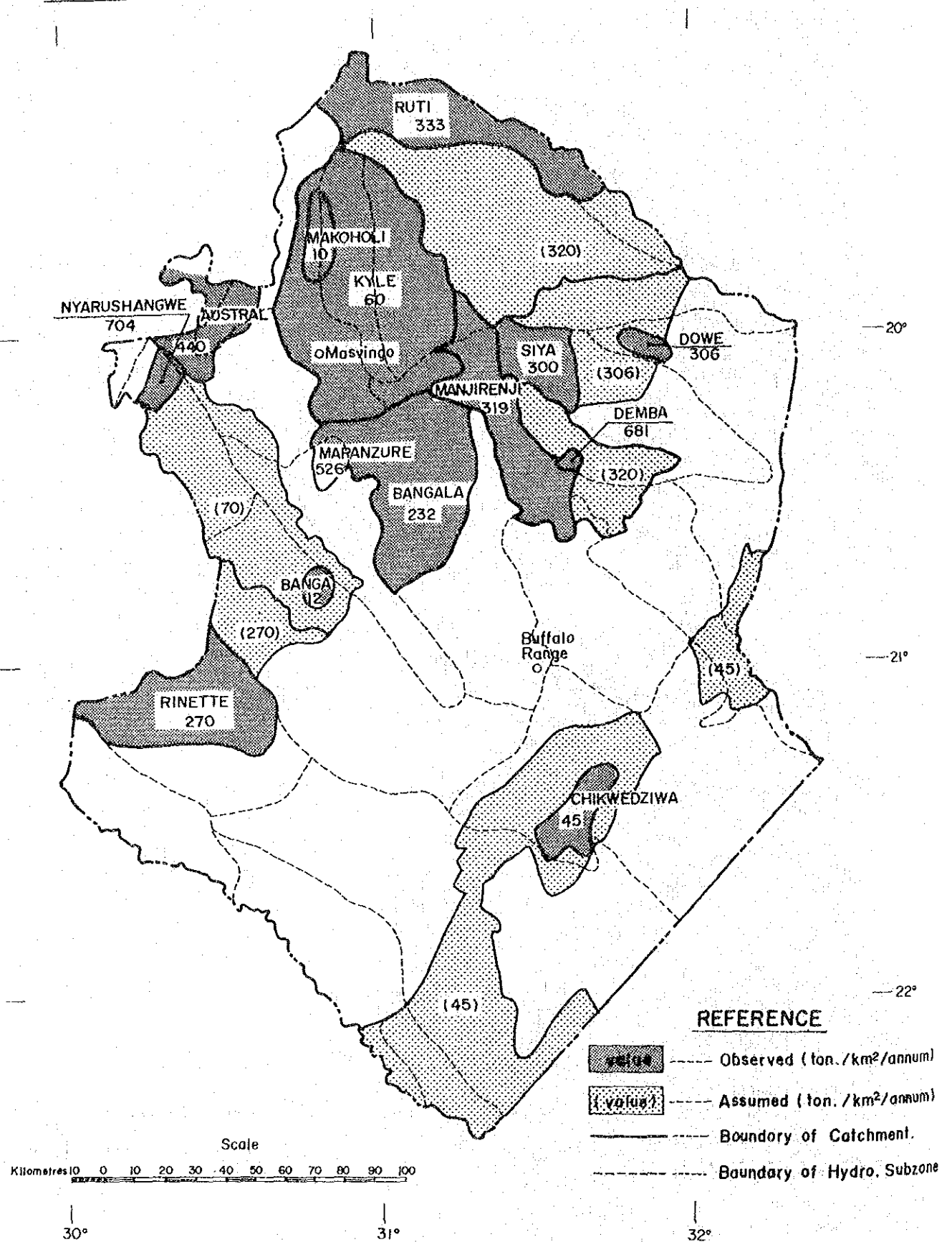
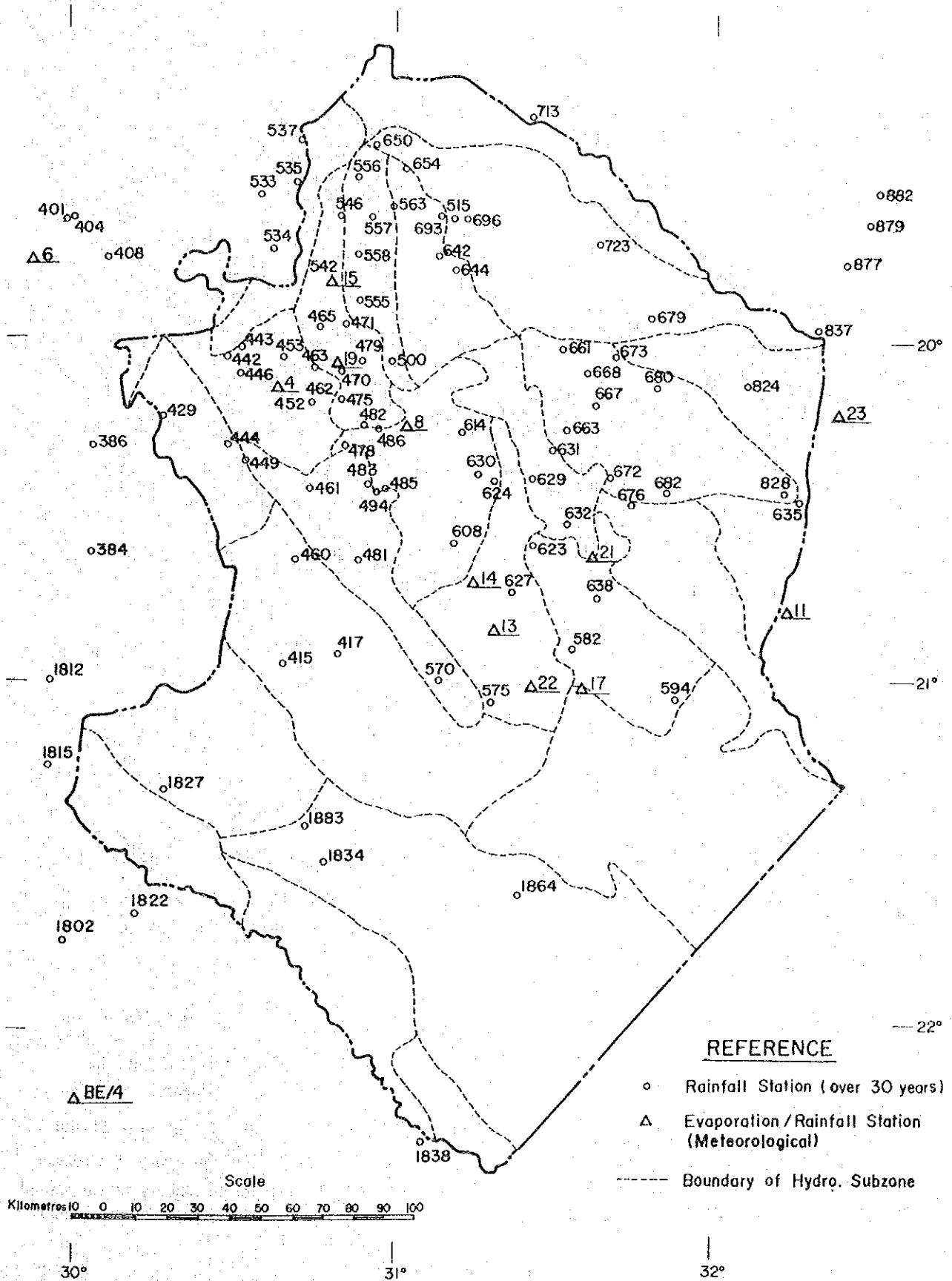
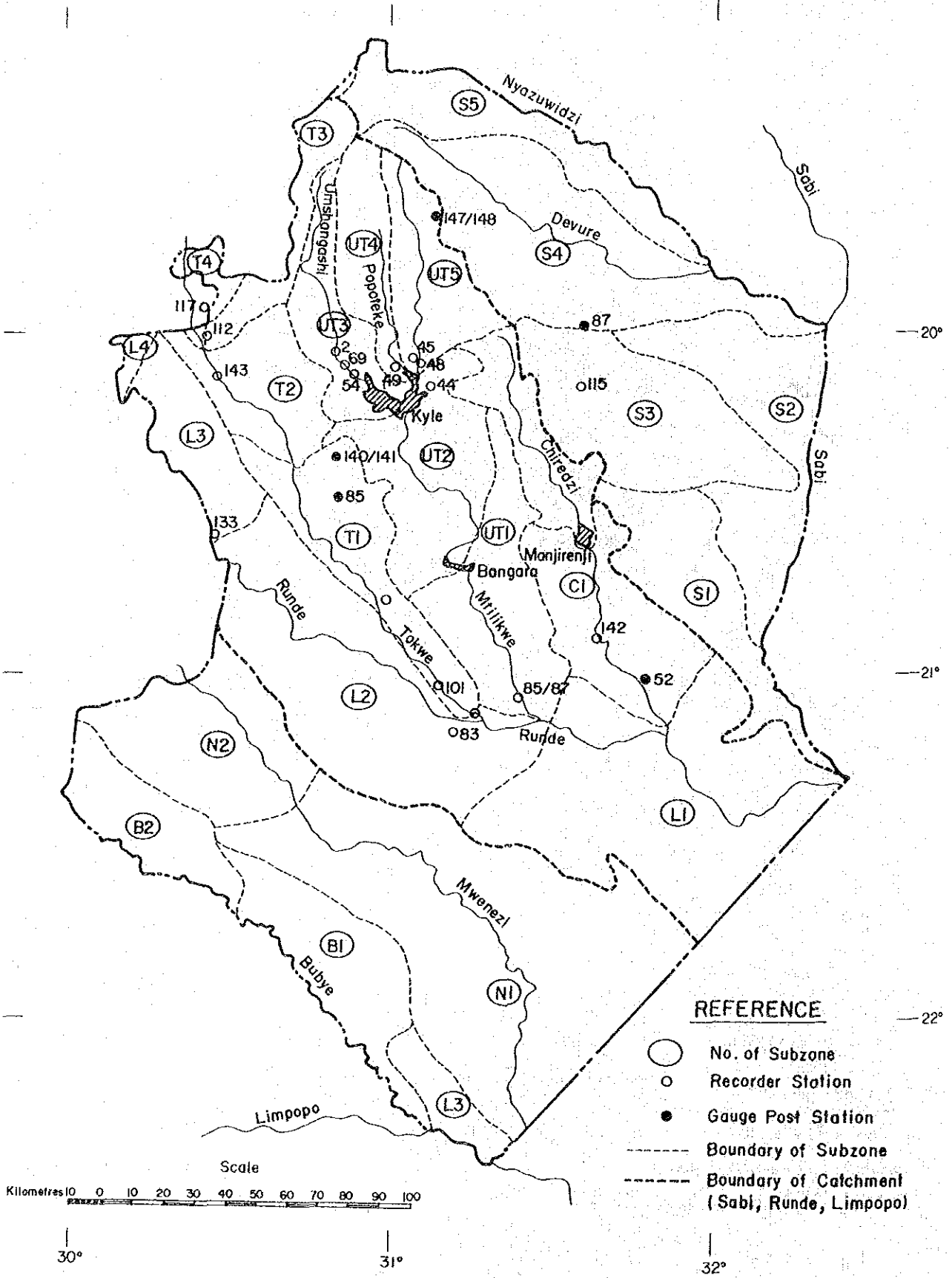


Figure B-6 Rainfall (over 30 years) and Evaporation Stations



NOTE : No. of Stations are referred in Table B-2 and B-3

Figure B - 7 Hydrological Subzones and River Gauging Stations



ANNEX-C, SOIL, LAND USE AND AGRICULTURE

	Contents	Page
Table	C-1 Yearly Production Trends of Maize	C-1
	C-2 Yearly Production Trends of Sorghum	C-2
	C-3 Yearly Production Trends of Groundnuts	C-2
	C-4 Total Crop Area and Area under Irrigation (non-perennial crops)	C-3
	C-5 Production in Irrigation Projects in Communal Lands, Zimbabwe	C-4
	C-6 Yearly Production Trends in Main Crops in Communal Lands, Masvingo	C-6
	C-7 Yearly Production Trends in Communal Lands by District, Masvingo	C-7
	C-8 Land Usage and Crop Production under Irrigated Areas in Communal Lands, Masvingo (1982/83)	C-8
	C-9 Situation of Existing Small Scale Irrigation Schemes in Masvingo	C-9
	C-10 Farming Situation of Existing Irrigation Schemes in Masvingo	C-10
	C-11 Standard Agricultural Input by Agritex	C-11
	C-12 Crop Production Programme in Communal Lands, Masvingo	C-12
	C-13 Number of Livestock	C-13
	C-14 Utilization of Farm Produced Grains	C-14
	C-15 Estimates Drought Relief Performances in Masvingo	C-15
	C-16 Amount of Sales from Communal Farmers to Masvingo G.M.B.	C-16

	Contents	Page
Table C-17	Grain Marketing Board: Prices	C-17
C-18	Retail Prices in Masvingo Markets	C-18
C-19	Retail Prices (in Masvingo town) of Agricultural Input	C-19
C-20	Origin of Grain Deliveries (1985/86 season) in Bags	C-19
C-21	Yield of with and without Irrigation per ha	C-20
Figure C-1	Map of Natural Region	C-25
C-2	Map of Soil Classification in Communal Lands	C-26
C-3	Map of drought Damage	C-27
C-4	Map of Current Yield Levels	C-28

Table C-1 Yearly Production Trends Of Maize

Crop Year	Commercial Area			Communal Area ⁴⁾			Total Production		
	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha
1970 ~ 71	840	272	2.9	246	611	0.4	1,086	903	1.2
71 ~ 72	1,400	284	4.6	455	672	0.7	1,855	976	1.9
72 ~ 73	1,762	387	5.2	555	665	0.8	2,317	1,002	2.3
73 ~ 74	810	315	2.6	145	475	0.3	955	790	1.2
74 ~ 75	1,634	311	5.2	470	725	0.6	2,104	1,036	2.0
75 ~ 76	1,328	278	4.8	435	725	0.6	1,763	1,003	1.8
76 ~ 77	1,288	257	5.0	550	760	0.7	1,838	1,017	1.8
77 ~ 78	1,213	64	4.6	400	600	0.7	1,613	864	1.9
78 ~ 79	1,178	273	4.3	450 33	700	0.6	1,628 877	973	1.7
79 ~ 80 ⁵⁾	722 ⁵⁾ 745	149 ⁵⁾	4.8 ⁵⁾	420 67	600	0.7	1,142 813	749	1.4
80 ~ 81	911 ⁵⁾ 1,790	228 ⁵⁾	4.0 ⁵⁾	600 288	900	0.7	1,511 1,078	1,128	1.3
81 ~ 82	1,833 1,075	364	5.8	1,000 316	1,000	1.0	2,833 1,391	1,364	2.1
82 ~ 83	1,213 478	316	3.8	595 136	1,100	0.5	1,808 614	1,416	1.3
83 ~ 84	625 584	284	2.2	285 316	1,050	0.3	910 900	1,334	0.7
84 ~ 85	- 1,002	-	-	- 773	-	-	- 1,775	-	-
85 ~ 86	-	-	-	-	-	-	-	-	-

Sources : Central Statistical Office, and where double figures appear, down-column ones taken from Aqrítex News, March, 1986.

1) In thousand tons, 2) Sawn area in thousand hectares, 3) Ton/ha, 4) Estimates,

5) Refers to large scale commercial farms only.

1) ~ 3) all the figures were rounded.

Table C-2 Yearly Production Trends of Sorghum

Crop Year	Commercial Area			Communal Area ⁴⁾			Total Production		
	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha
1970 ~ 71	6.9	26.8	0.4	65.3	198.8	0.3	72.2	235.6	0.3
71 ~ 72	7.6	12.3	0.6	136.5	242.4	0.6	145.0	254.7	0.6
72 ~ 73	19.9	14.3	1.4	120.1	240.0	0.6	140.0	254.3	0.6
73 ~ 74	27.9	30.5	0.9	22.8	122.0	0.2	50.7	152.5	0.3
74 ~ 75	14.0	13.6	1.0	150.0	275.1	0.5	164.0	288.5	0.6
75 ~ 76	5.6	5.0	1.1	105.0	210.0	0.5	110.6	215.0	0.5
76 ~ 77	14.3	7.1	2.3	120.0	235.1	0.5	134.3	242.2	0.6
77 ~ 78	15.2	6.5	2.4	36.0	90.0	0.4	51.2	96.5	0.5
78 ~ 79	16.2	7.7	2.1	57.0	120.0	0.5	73.2	127.7	0.6
79 ~ 80	18.9 ⁵⁾	7.6 ⁵⁾	2.5 ⁵⁾	30.0	76.0	0.4	48.9	83.6	0.6
80 ~ 81	16.3 ⁵⁾	6.8 ⁵⁾	2.4 ⁵⁾	66.0	120.0	0.6	42.3	126.8	0.6
81 ~ 82	25.1	9.3	2.7	100.0	200.0	0.5	121.1	209.3	0.6
82 ~ 83	17.4	8.2	2.1	50.0	200.0	0.3	67.4	208.2	0.3
83 ~ 84	7.5	7.7	1.0	44.0	280.0	0.2	51.5	287.7	0.2

Source : Central Statistical Office

Remarks: 1) ~ 5) are the same as in the table for maize.

Table C-3 Yearly Production Trends of Groundnuts

Crop Year	Commercial Area			Communal Area ⁴⁾			Total Production		
	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha	Production ¹⁾ ton	Area ²⁾ ha	Yield ³⁾ t/ha
1970 ~ 71	6.5	21.4	0.4	30.0	244.8	0.1	36.5	266.2	0.1
71 ~ 72	12.6	18.2	0.7	16.2	216.0	0.1	28.8	234.2	0.1
72 ~ 73	18.2	19.2	0.9	16.5	220.5	0.1	34.7	239.7	0.1
73 ~ 74	10.2	21.1	0.5	10.2	200.0	0.1	20.4	221.1	0.1
74 ~ 75	18.1	19.8	0.9	187.3	290.0	0.6	205.4	309.8	0.7
75 ~ 76	17.3	20.6	0.8	110.0	310.0	0.4	127.3	330.6	0.4
76 ~ 77	19.5	17.8	1.1	172.9	325.0	0.5	192.4	342.8	0.6
77 ~ 78	11.2	15.3	0.7	129.7	275.0	0.4	140.9	290.3	0.5
78 ~ 79	12.7	13.4	1.0	100.9	200.0	0.5	113.6	213.4	0.5
79 ~ 80	7.5 ⁵⁾	3.2 ⁵⁾	2.3	100.0	240.0	0.4	107.5	243.2	0.3
80 ~ 81	10.7 ⁵⁾	3.8 ⁵⁾	2.8	67.0	175.0	0.4	77.7	178.8	0.4
81 ~ 82	18.8	12.9	1.5	100.0	300.0	0.3	118.8	312.9	0.4
82 ~ 83	16.4	11.9	1.4	95.0	240.0	0.4	111.4	251.9	0.4
83 ~ 84	9.2	10.7	0.9	22.5	180.0	0.1	31.7	190.7	0.2

Source: Central Statistical Office

Remarks: 1) ~ 5) are the same as in the table for maize.

Table C-4 Total Crop Area and Area under Irrigation (non-perennial crops)

Year	Commercial Land			Communal Land		
	Total Area Sown(ha) (1)	Irrigated Area (ha) (2)	(2)/(1) (%)	Total Area Sown(ha) (3)	Irrigated Area (ha) (4)	(4)/(3) (%)
1978	542 169	151 698	27.9	1 072 400	4 863	0.4
1979	574 832	154 806	28.5	763 900	3 371	0.4
1981	601 340	158 328	26.3	1 568 400	4 711	0.3
1982	585 010	165 405	28.2	1 613 100	4 168	0.3
1983	548 421	143 845	26.2	1 580 400	4 003	0.3

Note: Data of 1980 are not available due to Independence War.

Source: Agritex

Table C-5 (a) Production in Irrigation Projects
in Communal Lands, Zimbabwe (1/6)

Item	1978	1979	1981	1982	1983
<u>Maize</u>					
Plotholders (Farmer)	3 298(100.0)	2 278(69.0)	3 631(110.0)	3 585(108.9)	3 924(118.9)
Area Sown (ha)	1 475(100.0)	1 285(87.1)	1 713(116.1)	1 813(122.9)	1 832(124.2)
Production (t)	10 053(100.0)	7 327(72.8)	11 001(109.4)	10 852(107.9)	5 931(58.9)
Yield (kg/ha)	6 817(100.0)	5 704(83.6)	6 424(94.2)	5 987(87.8)	3 238(47.4)
Quantities Sold (t)	2 933<29.1>	2 536<34.6>	3 781<34.3>	3 784<34.8>	1 732<29.2>
Fertilizers Applied (t)	614{416}	432{336}	662{386}	638{351}	642{349}
<u>Cotton</u>					
Plotholders (Farmer)	1 210(100.0)	697(57.6)	1 175(97.1)	641(52.9)	918(75.8)
Area Sown (ha)	797(100.0)	464(58.2)	583(73.1)	239(29.9)	408(51.1)
Production (t)	1 243(100.0)	955(76.8)	981(98.9)	430(34.5)	569(45.7)
Yield (kg/ha)	1 560(100.0)	2 059(165.6)	1 681(107.7)	1 796(115.1)	1 397(89.5)
Quantities Sold (t)	1 243<100.0>	954<99.9>	978<99.6>	428<99.9>	569<100.0>
Fertilizers Applied (t)	276{346}	173{372}	191{327}	79{330}	134{328}
<u>Wheat</u>					
Plotholders	1 285 (100.0)	1 008 (78.4)	1 156 (89.9)	932 (72.5)	623 (48.4)
Area Sown (ha)	371 (100.0)	337 (90.8)	328 (88.4)	290 (78.1)	183 (49.3)
Production (t)	958 (100.0)	751 (78.3)	617 (64.4)	453 (47.2)	300 (31.3)
Yield (kg/ha)	2 582 (100.0)	2 226 (86.2)	1 878 (72.7)	1 563 (60.5)	1 639 (63.4)
Quantities Sold (t)	645 <67.3>	326 <43.6>	298 <48.2>	191 <42.1>	140 <46.6>
Fertilizers Applied (t)	205 {526}	155 {460}	157 {479}	98 {338}	78 {426}
<u>Groundnuts (unshelled)</u>					
Plotholders	296 (100.0)	180 (60.8)	373 (126.0)	353 (119.2)	458 (154.7)
Area Sown (ha)	94 (100.0)	56 (59.5)	78 (82.9)	72 (76.5)	92 (97.8)
Production (t)	193 (100.0)	101 (52.3)	128 (66.3)	152 (78.7)	142 (73.5)
Yield (kg/ha)	2 054 (100.0)	1 793 (87.2)	1 636 (78.6)	2 107 (102.5)	1 548 (75.3)
Quantities Sold (t)	154 <79.7>	69 <68.3>	80 <62.5>	112 <73.6>	98 <69.0>
Fertilizers Applied	33 {351}	22 {392}	29 {371}	27 {375}	31 {336}
<u>Tomato</u>					
Plotholders	291 (100.0)	383 (131.6)	651 (233.7)	952 (327.1)	823 (282.8)
Area Sown (ha)	37 (100.0)	54 (145.9)	200 (540.5)	312 (843.2)	237 (640.5)
Production (t)		- Not Available -			
Yield (kg/ha)		- Not Available -			
Quantities Sold (t)	46 715	66 426	145 556	340 370	260 386
Fertilizers Applied (t)	29 {783}	36 {666}	81 {405}	114 {365}	99 {333}
<u>Sugarbean</u>					
Plotholders	1 959 (100.0)	1 544 (78.8)	2 194 (111.9)	2 007 (102.4)	1 852 (94.5)
Area Sown (ha)	1 674 (100.0)	1 329 (79.3)	1 503 (89.7)	1 152 (68.8)	821 (49.0)
Production (t)	2 024 (100.0)	1 592 (78.6)	1 782 (88.0)	1 378 (68.0)	570 (28.1)
Yield (kg/ha)	1 209 (100.0)	1 198 (99.0)	1 186 (98.0)	1 196 (98.9)	695 (57.4)
Quantities Sold (t)	1 798 <88.8>	1 419 <89.0>	1 521 <85.3>	1 127 <81.7>	407 <71.4>
Fertilizers Applied	367 {219}	257 {193}	356 {236}	243 {210}	181 {220}

Note: Data for 1980 are not available due to Independence War.

() --- Figures of the year 1978 correspond to 100.0.

< > --- Unit: %, Ratio of Quantities Sold to Production.

{ } --- Unit: kg/ha, Fertilizers Applied per ha.

Source: Agritex

Table C-5 (b) Production in Irrigation Projects
in Communal Lands, Zimbabwe

Item	1978	1979	1981	1982	1983
Seed Beans					
Plotholders (Farmer)	187 (100.0)	9 (4.8)	17 (9.0)	17 (9.0)	35 (18.7)
Area Sown (ha)	91 (100.0)	4 (4.3)	3 (3.2)	3 (3.2)	4 (4.3)
Production (t)	38 (100.0)	1 (2.6)	2 (5.2)	2 (5.2)	3 (7.8)
Yield (kg/ha)	416 (100.0)	361 (86.7)	960 (230.7)	846 (203.3)	- (-)
Quantities Sold (t)	37 <97.3>	1 <100.0>	2 <100.0>	- <- >	- <- >
Fertilizer Applied (t)	24 [263]	1 [250]	1 [333]	- [-]	- [-]
Barley Tobacco					
Plotholders	56 (100.0)	- (-)	60 (107.1)	- (-)	100 (178.5)
Area Sown (ha)	16 (100.0)	- (-)	24 (150.0)	- (-)	53 (331.2)
Production (t)	29 (100.0)	- (-)	53 (182.7)	- (-)	105 (362.0)
Yield (kg/ha)	1 811 (100.0)	- (-)	2 254 (124.4)	- (-)	1 966 (108.5)
Quantities Sold (t)	29 <100.0>	- <- >	52 <98.1>	- <- >	105 <100.0>
Fertilizers Applied	12 [750]	- [-]	19 [791]	- [-]	40 [754]
Other Vegetables					
Plotholders	-	-	-	913	1,327
Area sown (ha)	265 (100.0)	127 (47.9)	258 (97.4)	252 (95.1)	354 (133.6)
Values of Sales (Z\$)	209 598 (100.0)	81 165 (38.7)	332 911 (158.8)	258 142 (123.2)	609 983 (291.0)
Fertilizers Applied	212 [800]	76 [598]	194 [751]	153 [607]	239 [669]
Barley					
Plotholders	60 (100.0)	13 (21.6)	39 (65.0)	64 (106.6)	9 (15.0)
Area sown (ha)	24 (100.0)	4 (16.7)	5 (20.8)	19 (79.1)	3 (12.5)
Production (t)	40 (100.0)	9 (22.5)	14 (35.0)	42 (105.0)	3 (7.5)
Yield (kg/ha)	1 639 (100.0)	2 324 (142.0)	2 574 (157.0)	2 281 (139.1)	1 222 (74.5)
Quantities Sold (t)	27 <67.5>	7 <77.7>	13 <92.8>	35 <83.3>	1 <33.3>
Fertilizer Applied	9 [375]	2 [500]	4 [800]	7 [368]	1 [333]
Whole Crops					
Plotholders	4 105 (100.0)	3 478 (84.7)	4 315 (105.1)	3 986 (97.1)	4 622 (112.6)
Area Sown (ha)	4 868 (100.0)	3 845 (79.0)	4 709 (96.7)	4 167 (85.6)	4 001 (82.2)
Fertilizers Spplied (t)	1 791 [368]	1 283 [334]	1 700 [361]	1 365 [328]	1 647 [411]
Cultivated Farmers	4 161 (100.0)	3 478 (84.7)	4 376 (105.2)	4 050 (97.3)	4 734 (113.8)
Net Irrigated Area (ha)	2 810 (100.0)	1 750 (62.3)	2 718 (96.7)	2 431 (86.5)	2 824 (100.5)
Whole Winter Crops					
Plotholders	2 530 (100.0)	2 968 (117.3)	3 189 (126.0)	2 900 (114.6)	2 920 (115.4)
Irrigated Area (ha)	2 283 (100.0)	1 621 (71.0)	2 121 (92.9)	1 877 (82.2)	1 409 (61.7)
Whole Summer Crops					
Plotholders	4 030 (100.0)	3 250 (80.6)	4 270 (106.0)	3 955 (98.1)	4 510 (111.9)
Irrigated Area (ha)	2 580 (100.0)	1 750 (67.8)	2 590 (100.4)	2 292 (88.8)	2 594 (100.5)

Note: Data for 1980 are not available due to Independence War.

() --- Figures of the year 1978 correspond to 100.0.

[] --- Unit: kg/ha, Fertilizers Applied per ha.

Source: Agritex

Table C-6 Yearly Production Trends in Main Crops in Communal Lands, Masvingo

		1979	1980	1981	1982	1983	1984	1985
MAIZE	Area (ha)	235 000	238 200	275 600	270 000			249 899
	Prod. (ton)	127 909	50 300	233 200	17 000			202 486
	Yield (kg)	544	211	846	62			810
	Sales (kg)	-	200	9 500	2 000			56 144
SORGHUM	area (ha)	24 000	29 400	32 800	45 000			58 458
	Prod. (ton)	13 582	16 400	32 900	15 000			45 330
	Yield (kg)	565	557	1 003	333			391
	Sales (kg)	136	200	900	2 000			22 867
GR.NUTS	Area (ha)	127 900	11 300	89 200	80 000			49 729
	Prod. (ton)	43 000	17 400	37 000	19 000			23 638
	Yield (kg)	336	1 539	414	237			457
	Sales (kg)	3 863	1 200	2 500	2 000			6 841
SOYA B.	Area (ha)	45	120	150	150			92
	Prod. (ton)	14	50	90	50			35
	Yield (kg)	303	416	600	333			375
	Sales (kg)	-	10	35	-			3
COTTON	Area (ha)	140	150	400	1 000			2 134
	Prod. (ton)	150	125	300	1 000			1 934
	Yield (kg)	1 071	833	750	1 000			906
	Sales (kg)	150	125	300	1 000			1 934

Note and Unit :

Area : Planted area (ha)

Prod : Crop production (tonnes)

Yield : Yield per hectare (kg)

Source: Central Statistical Office

Table C-7 Yearly Production Trends in Communal Lands
by District, Masvingo (1/2)

District Crop	(unit: ton)										TOTAL				
	MWENEZI	BIKITA	CHIREZI	GUTU	MASVINGO	CHIVI	ZAKA	MWENEZI	BIKITA	CHIREZI		GUTU	MASVINGO	CHIVI	ZAKA	TOTAL
MAIZE															
1981/82	9909	34764	312	50618	23681	22700	31882	173865							
1982/83	0	405	0	0	0	0	0	405							
1983/84	0	14740	4352	24161	13869	3455	21718	82295							
1984/85	6382	25901	5938	69024	23925	30710	38875	200755							
	[7500]	[26815]	[10000]	[74386]	[24388]	[42227]	[42762]	[228078]							
SORGHUM															
1981/82	6000	639	2264	1672	1435	5290	2644	19944							
1982/83	0	114	23	0	0	0	0	137							
1983/84	0	1801	9322	560	1020	455	2192	15350							
1984/85	8006	3666	17087	4727	2199	7897	1757	45339							
	[8000]	[4525]	[15000]	[3262]	[2517]	[10850]	[4715]	[48869]							
MEUNGA															
1981/82	2455	176	0	8586	1304	1344	3049	16914							
1982/83	0	24	0	0	0	0	0	24							
1983/84	0	4483	76	2760	763	5455	1273	14810							
1984/85	4358	16253	1308	28993	1838	14854	1026	68630							
	[11400]	[8098]	[1500]	[8454]	[1986]	[18155]	[2821]	[52414]							
RAPOKO															
1981/82	109	691	0	10222	1863	1738	3136	17759							
1982/83	0	1	0	0	0	0	0	1							
1983/84	0	2822	38	21016	794	382	2217	27269							
1984/85	366	5168	615	20126	6987	6467	7047	55776							
	[1575]	[2148]	[250]	[10254]	[5698]	[10162]	[12920]	[43007]							
GROUNDNUTS															
1981/82	300	1760	6	2698	2239	4757	7000	18760							
1982/83	0	32	0	0	0	0	0	32							
1983/84	0	440	91	2647	763	13	739	4693							
1984/85	1682	3401	4241	5255	2110	1362	6653	24704							
	[1378]	[3933]	[2500]	[4476]	[4225]	[1820]	[15120]	[32002]							

Source: Agritex Note: Figures in brackets show hectares cropped in 1984/85.

Table C-8 Land Usage and Crop Production under Irrigated Areas
in Communal Lands, Masvingo (1982/83)

(unit: kg/ha)

Crop	No. of Plot-holders	Area Planted	Pro-duction	Yield Per Hectare	Sales		Crop Retained	Ferti-lizer Used
					No. of Plot-holders	Quantity Sold		
		hectares	tonnes	kg		tonnes	tonnes	tonnes
CONTROLLED CROPS :								
Maize grain	543	112	242	2 160	104	53	189	76
Green mealies	409	57	...	...	400	229 958a	...	55
Wheat	*	-	-	*	-	-	-	-
Cotton	92	38	41	1 080	91	41	-	12
Groundnuts(unshelled)	110	15	15	1 027	45	9	7	8
Burley tobacco								
Sorghum	*	-	-	*	*	-	-	-
Soya beans(threshed)	-	-	-	-	-	-	-	-
OTHER GRAIN CROPS :								
Rapoko	-	-	-	-	-	-	-	-
VEGETABLES :								
Sweet potatoes	*	-	...	...	*	*	...	-
Tomatoes	82	10	...	...	82	24 456a	...	8
Onions	*	-	...	...	*	*	...	-
Potatoes	*	-	...	...	*	*	...	-
Other vegetables	376	48	...	...	372	127 127a	...	31
OTHER CROPS :								
Edible beans	158	18	22	1 217	96	13	9	5
Bean seed	-	-	-	-	-	-	-	-
Suger cane	*	-	-	-	*	*	*	-
Other crops n.e.s.	*	-	-	-	-	-	-	-
TOTAL	833	300	...	...	557	...	...	195

a : Value of sales in dollars.

Source : AGRITEX Report

Note: Data for only six project existed in 1982

Table C-9 Situation of Existing Small Scale Irrigation Schemes in Masvingo

District	Scheme	Area Irrigated (ha)		No. of plot-holders	Allotment Area per Farm (ha)	Irrigation Condition			Introduced Crops
		Already Developed	Possible Reexploitation			Source	Security	Conveyance	
1. Sangwe	St. Joseph	15	76	112	0.13	river	fair	pumping	vegetable, soyabean, maize
2. - do -	Gudo Pool	11	30	-	-	sand abstraction	fair	pumping	- do -
3. Matibi No.1	Manjinji	35	80	70	0.57	under-ground	good	pumping	vegetable, soyabean, green maize
4. - do -	Chilonga	120	100	225	0.53	river	fair	pumping	maize, vegetable
5. Sangwe	Rupangwani	6	-	43	0.15	river	fair	pumping	cotton, vegetable, maize
6. Chivi	Banga	45	45	42	0.13	dam	good	gravity	maize, beans, vegetable
7. - do -	Makonese	65	20	359	0.16	dam	good	pumping	- do -
8. - do -	Musvugwa	59	16	554	0.10	river	good	pumping	- do -
9. Masvingo	Mapanzure	48	1.7	259	0.14	weir	good	gravity	- do -
Total		404	338.7	1664	0.20				

Note: As of 1983 (but the column "already developed" was updated to 1986. Mushandiko scheme was omitted.

Source: Agritex

Table C-10 Farming Situation of Existing Irrigation Schemes in Masvingo

Project Name:	Mapanzure			Chilonga			Banga			
1. Yield of Introduced Crops (t/ha)										
	<u>Crops</u>			Irrigated	dryland	Irrigated	dryland	Irrigated	dryland	
1) Maize	2.5~10.5(6.9)			1.2~2.7(1.9)	3.2~6.0(4.6)			-	-	
2) Groundnut	2.5~5.0 (3.9)			-	- (0.8)			-	-	
3) Tomato	2.0~3.2 (2.6)			- (0.73)	-			N.A.	-	
4) Sugar beans	1.0~2.0 (1.5)			- (0.55)*	-			-	(1.6)	
5) Rapoko	-			- (0.45)	-			-	-	
6) Cotton	-			-	- (1.1)			-	-	
7) Green maize	-			-	-			(5560)**	(1.6)	
2. No. of Beneficial Farmers:										
	276			207			350			
3. No. of Waiting Farmers:										
	460			400			455			
4. Distribution of per Farm Allotment (estimated) ha/Harmer										
	0.1 190	0.2 59	0.3 18	0.2 35	0.3 24	0.4 40	0.1 200	0.2 150	0.3 50	
	0.4 5	0.5 2	0.6 2	0.5 16	0.6 16	0.7 14				
				0.8 10	0.9 4	1.0 48				
5. Returns from 0.1 ha (Z\$/0.1 ha)										
	Gross Income		Net Income		Gross Income		Net Income		Gross Income	
1) Green Maize	760		650		1050		900		-	
2) Tomato	2500		2150		560		475		900	
3) Cabbage Leaf									1000	
4) Winter Grain									50***	
									820	
									845	
									820	
									45***	
6. Stock Amount per Farm (kg/farm/year)										
	<u>Crops</u>									
1) Maize	720~800			-			820			
2) Groundnuts	60~200			-			70			
3) Other Grain	45~180			Sorghum 700			-			
7. Dryland Area per Farm (ha)										
	2.4			7~10			N.A.			
8. Water charge + participating Fee (Z\$)										
	14.5 Z\$/0.1 ha +2 Z\$/farm			14.5 Z\$/0.1 ha +2 Z\$/farm			14.5 Z\$/0.1 ha +2 Z\$/farm			

Note: Average yields in brackets * figure for Banbara beans (Nyimo) N.A. not available

** in cobs *** beans

Source: Interview at the site

Table C-11. Standard Agricultural Input by Agritex

	Seeds kg/ha	Fertilizers kg/ha		
		comp.	A.N.	others
Maize		Comp. D		
(dry)	25	200	100	
(irri.)	40	500	350	
Groundnuts				Gypsum
(dry)	100			200
(irri.)	100			200
Sugar beans		Comp. C		
(dry)	75	150	100	
(irri.)				
Soya Beans		Comp. L		
(dry)	70	200-300		
(irri.)	70	300		
Wheat		Comp. D		
(dry)	-	-	-	
(irri.)	125	600	300	
Cotton		Comp. L		
(dry)	25	200	100	
(irri.)	30	300	100	
Tomato		Comp. S		Potassium Sulphate
(dry)	-	-	-	
(irri.)	0.25	1000-1500	100×2-	100×2-
	in seed bed			
Cabbage		Comp. S		
(dry)	-	-	-	
(irri.)	0.25	1000	100×2	
	in seed bed			
Onion		Comp. S		
(dry)	-	-	-	
(irri.)	8	1000	100	
	(or 2-3 in seed bed)			

Notes : dry : under dry faming
 irri. : under irrigation
 A.N. : Ammonium Nitrate

comp. : Compound fertilizer
 N : P : K
 C 6 17 15
 D 8 14 7
 L 5 18 10
 S 6 17 6

Source : AGRITEX handbook and examples of existing schemes

Table C-12 Crop Production Programme in Communal Lands, Masvingo

	Bench Mark 1984/85	Target 1985/86	Achieved 1985/86	Target 1986/87
Maize				
a)	155 318	121 312	141 760	150 939
b)	225 582	180 150	212 332	222 040
c)	18	23	8.5	14.4
Sorghum				
a)	50 987	75 373	38 950	44 851
b)	77 848	102 511	64 652	76 700
c)	11	25	5.7	10.6
Mhunga				
a)	22 998	24 315	37 690	38 227
b)	32 938	30 724	39 749	57 918
c)	8	13	5.9	9.2
Rapoko				
a)	33 968	36 437	41 538	58 972
b)	52 775	34 456	43 578	55 203
c)	9	13	5	10.4
Ground nuts				
a)	40 550	32 668	38 741	56 523
b)	26 070	26 909	44 010	48 917
c)	11	19	3.3	7
Sunflowers				
a)	1 327	2 843	3 742	6 684
b)	1 318	2 625	2 462	8 722
c)	7.5	15	5.5	10
Soyabeans				
a)	145	222	159	214
b)	81	156	78.4	107.5
c)	4	10	3.3	4.8
Cotton				
a)	1 790	2 350	1 826	2 775
b)	1 858	2 870	1 905	2 432
c)	842	1 134	747.8	969
Oriental Tobacco				
a)	678	824	316	1 209
b)	72.5	97	55.5	125.7
c)	860	900	350.2	538.2

Note: Bench mark means standard figures attainable within a short period

a) number of farmers by the majority of farmers.

b) planted area (ha)

c) yield per hectare (bags, but kg for cotton and oriental tobacco)

Source: AGRITEX data

Table C-13 Number of Livestock

(Unit: Head)

<u>Communal Land</u>	<u>Cattle</u>	<u>Sheep</u>	<u>Goats</u>	<u>Pigs</u>	<u>Donkeys</u>	<u>No. of Stock Owners</u>
MWENEZI						
Maranda	14417	1260	16376	150	2630	2211
Matibi I	15658	611	11165	203	2275	2503
Total	30075	1871	27541	353	4905	4714
BIKITA						
Bikita	79471	5482	24115	3275	2110	13380
Matsai	15679	643	1816	97	115	2871
Total	95150	6125	25931	3822	2225	15251
CHIREDZI						
Sangwe	16226	1127	1560	321	125	1410
Matibi II	32890	1264	2492	261	621	2144
Sengwe	12916	208	777	67	601	944
Total	62032	2599	4829	649	1347	4498
GUTU						
Serima	9202	240	1539	218	340	1651
Denhere	4071	255	1367	9	351	641
Chikwanda	31965	2761	9320	302	1291	6936
Gutu	78612	10308	31101	414	3269	17872
Total	123850	13564	43327	943	5251	27100
MASVINGO						
Zimutu	8935	717	3434	60	207	1515
Mutilikwe	15834	1347	5985	721	701	2484
Masvingo	20528	2161	6465	635	1106	5042
Nyajena	25875	486	4272	89	1230	3726
Total	71172	4711	20156	1505	3244	12767
CHIVI						
Chivi ^{*1/}	78228	2967	10016	4387	8490	15304
ZAKA						
Ndanga	113380	14872	37308	8053	4808	17085
Grand Total	573887	46709	175108	19712	30207	96732

Source: Masvingo Provincial Development Plan (1985-1990)

Note: ^{*1/} including Mashava C.L

Table C-14 Utilization of Farm Produced Grains

(Unit: million Z\$)

Year	Communal Lands			Commercial Lands			Production Share		
	Total Production value (1984 price)	Sales to B.M.B.	Home Consump- tion	Total	Value of Production (1984 price)	D.O. Production (1980 price)	Price Deflater	Commund Lands %	Commercial Lands %
1975	4579	266	686	952	3627	5734	633	20 ⁸	28 ⁰
1976	4914	282	902	1084	3830	5777	663	22 ¹	26 ⁰
1977	4994	220	840	1060	3934	5711	689	21 ²	20 ⁸
1978	4849	225	519	743	4098	5637	727	15 ³	30 ²
1979	5123	169	855	1023	4100	5266	779	20 ⁰	16 ⁶
1980	7115	289	1171	1460	5655	5655	1000	20 ⁵	19 ⁸
1981	10215	795	1851	2646	7569	6104	1240	25 ⁹	30 ⁰
1982	10800	846	1867	2713	8087	6140	1317	25 ¹	31 ²
1983	9691	687	978	1665	8026	5388	1490	17 ²	41 ³
1984	12500	1282	1396	2678	9822	5849	1679	21 ⁴	47 ⁹

Source: Quarterly Digest of Statistics, June, 1986

Table C-15 Estimated Drought Relief Performances in Masvingo (1/3)

District	Item	1982	1983	1984	1985	Total	Average
I. MWENEZI	1. Amount (1000 bags)						
	1) Maize & Meal ^{*1/}	18	88	67	21	194	67.5 (kg/person/year)
	2) Sugarbean & Groundnuts ^{*2/}	12	1	-	-	13	
	2. Received Persons (1000 persons)						
	1) Adults	69	228	199	74	570	24.8 (times/person/year)
2) Children	152	392	417	151	1112		
II. BIKITA	1. Amount (1000 bags)						
	1) Maize & Meal	9	136	34	7	186	35.0 (kg/person/year)
	2) Sugarbean & Groundnuts	2	4	0	2	8	
	2. Received Persons (1000 persons)						
	1) Adults	32	340	108	38	518	10.4 (times/person/year)
2) Children	62	667	218	81	1028		
III. CHIREDEZI	1. Amount (1000 bags)						
	1) Maize & Meal	17	81	32	5	135	39.1 (kg/person/year)
	2) Sugarbean & Groundnuts	0	2	1	1	4	
	2. Received Persons (1000 persons)						
	1) Adults	20	209	121	37	387	13.1 (times/person/year)
2) Children	24	358	225	54	661		
IV. GUTU	1. Amount (1000 bags)						
	1) Maize & Meal ^{*1/}	9	153	15	9	186	23.6 (kg/person/year)
	2) Sugarbean & Groundnuts ^{*2/}	1	2	0	3	6	
	2. Received Persons (1000 persons)						
	1) Adults	30	331	171	80	612	9.8 (times/person/year)
2) Children	32	615	371	159	1177		
V. MASVINGO	1. Amount (1000 bags)						
	1) Maize & Meal	18	125	27	9	179	33.5 (kg/person/year)
	2) Sugarbean & Groundnuts	2	1	0	4	7	
	2. Received Persons (1000 persons)						
	1) Adults	46	293	194	48	581	14.3 (times/person/year)
2) Children	103	611	397	88	1199		
VI. CHIVI	1. Amount (1000 bags)						
	1) Maize & Meal	38	151	89	17	295	46.5 (kg/person/year)
	2) Sugarbean & Groundnuts	2	2	0	2	6	
	2. Received Persons (1000 persons)						
	1) Adults	89	403	347	244	1083	4.5 (times/person/year)
2) Children	182	609	602	163	1556		
VII. ZAKA	1. Amount (1000 bags)						
	1) Maize & Meal	9	129	36	7	181	29.3 (kg/person/year)
	2) Sugarbean & Groundnuts	1	5	0	-	6	
	2. Received Persons (1000 persons)						
	1) Adults	28	428	96	48	600	9.7 (times/person/year)
2) Children	36	538	147	59	780		
Total	1. Amount (1000 bags)						
	1) Maize & Meal	118	863	300	75	1356	35.3 (kg/person/year)
	2) Sugarbean & Groundnuts	20	17	1	12	50	
	2. Received Persons (1000 persons)						
	1) Adults	314	2232	1236	569	4351	13.3 (times/person/year)
2) Children	591	3790	2377	755	7513		

NOTES: ^{*1/} ----- 1 bag = 91 kg ^{*2/} ----- 1 bag = 50 kg

Source: Ministry of Social Services, Masvingo

Table C-16 Amount of Sales from Communal Farmers to Masvingo C.M.B (2/2)

Year	I. MWENEZI							V. MASVINGO								
	Cotton	Maize	Sorghum	C.Nuts	Soyabean	Sunflower	Rapoko	Cotton	Maize	Sorghum	C.Nuts	Soyabean	Sunflower	Mhunga	Rapoko	
1981/2	15	17	0	1	0	-	-	1196	14	1	1	0	-	-	-	
1983/4	17	6	3	0	0	1	0	52	613	112	0	0	2	174	3	
1984/5	49	1302	5109	2	1	49	26	232	10342	152	39	0	24	181	556	
1985/6	38	1324	1907	0	0	167	12	152	3741	34	11	0	198	52	249	
II. BIKITA																
1981/2	2114	55	7	12	0	-	-	296	95	0	0	0	-	-	-	
1983/4	102	662	367	1	2	27	251	67	21	127	0	0	16	4	3	
1984/5	282	12087	2418	171	1	42	996	368	18353	2415	41	0	169	3010	972	
1985/6	254	3451	18	24	6	105	260	144	968	41	1	0	308	381	164	
III. CHIREZI																
1981/2	6	12	0	0	0	-	-	4283	9	27	40	0	-	-	-	
1983/4	18	2	9	0	0	3	0	134	991	209	0	1	4	76	45	
1984/5	153	4403	1607	15	20	22	1341	422	15369	184	237	1	15	226	751	
1985/6	89	65	105	1	0	63	494	362	6106	28	16	0	32	159	230	
IV. GUTU																
1981/2	1702	79	0	3	0	-	-	9612	1898	35	57	0	-	-	-	
1983/4	4	679	874	0	1	13	174	394	2974	827	1	4	66	679	72	
1984/5	27	25281	550	91	7	51	3000	1533	87137	12435	596	30	342	8780	4604	
1985/6	443	12797	65	14	2	67	1232	1482	28452	2385	67	8	940	2591	2023	
Total																
1981/2								9612	1898	35	57	0	-	-	-	-
1983/4								394	2974	827	1	4	66	679	72	
1984/5								1533	87137	12435	596	30	342	8780	4604	
1985/6								1482	28452	2385	67	8	940	2591	2023	

Note: 1982/83 data are not available due to heavy drought.

" - " means "not yet controlled in 1981/82."

Source: Agriflex, Masvingo

Table C-17 Grain Marketing Board: Prices

(Unit: Zs/t)

Crop	Grade	Producer Price	Levies (%)		Minimum Price Payable by Coop Union Approved Buyers Aug. 1, 1985	Selling Price from
			Coop Union	Approved Buyers		
White Maize	A	180.00	172.80		222.00	
	B	178.15	170.95	0.7	222.00	
	C	176.25	169.05	0.7	218.00	
	D	156.25	149.05		-	
Yellow Maize	A	153.00	149.80		222.00	
	B	151.40	144.20	0.7	222.00	
	C	149.85	142.65	0.7	218.00	
	D	132.80	125.60		-	
Sorghum	A	180.00	172.80		239.00	
	B	168.00	160.80	0.7	239.00	
	C	153.00	146.40	0.7	226.00	
	D	140.65	133.45		-	
Wheat	As	300.00	288.60		323.50	
	Bs	297.70	286.30	1.0	321.00	
	Cs	295.35	283.95	0.5	318.50	
	Ds	288.50	277.10		310.00	
	U	225.00	213.60		-	
Muhga	A	250.00	240.00	0	281.00	
	B	230.00	220.00		-	
Rapoko	A	300.00	288.00	0	365.00	
	B	275.00	263.00		-	
Soyabean	A	357.00	343.56		417.10	
	B	340.00	326.56	1.5	361.50	
	C	292.50	279.06		-	
Coffee	1	2,640.00	-	1.0	-	
	2	2,530.00	-		-	
Sunflower	AA	340.00	327.20		358.50	
	BA	323.60	310.20	1.5	337.30	
	CA	277.95	265.15		287.35	
	SB	-	-		420.00	
Sugarbeans	A	450.00	432.00		600.00	
	B	420.00	402.00		-	
Local Rice	-	400.00	-	-	527.00	
	-	-	-	-	-	
Groundnuts (Shelled)	A1	750.00	720.00		-	
	A2	736.15	706.15		-	
	A3	722.25	692.25		-	
	A4	708.40	678.40		-	
HPS	B1	685.45	655.45	1.5	990.00	
	B2	671.60	641.60		960.00	
	B3	657.70	627.70		930.00	
EM	-	-	-	-	900.00	
	-	-	-	-	840.00	
Groundnuts (Unshelled)	C1	656.25	626.25		720.00	
	C2	530.70	500.70		-	
Groundnuts (Unshelled)	A1	487.50	468.00		-	
	A2	478.50	459.00		-	
	A3	469.50	450.00		-	
	A4	460.50	441.00	1.5	-	
B1	445.55	426.05		-		
	B2	436.55	417.75		-	
	B3	427.50	408.00		-	
C1	426.60	407.10		-		
	C2	344.95	325.45		465.00	

Source: G.M.B. Masvingo

Table-C-18 Prices in Masvingo Markets

(Unit: Z\$)

Item	Unit	Retail Price	Item	Unit	Retail Price
Onion	1 kg b.	1.00~1.20	Chicken (1 fowl)	125 kg	3.49~3.00
Cabbage	1 kg	1.00	Split Peas	500 g	1.90
Brinjal	1 kg s.	1.00~1.60	Bird eye Chillies	100 g	0.81
Tomato	2 kg s.	1.00	Crushed Chillies	100 g	1.52
Pumpkin	1 nos.b.	2.00~1.75	Piri Piri	75 g	1.17
Sweetmelon	1 nos.b.	150~2.00	Madras Curry Powder	90 g	0.82
Papaya	1 nos.	0.60~1.00	Lettuce	1 nos.b	0.26
Orange	1 nos.	0.20	Cucumber	1 nos.b	0.30
Peach	1 nos.s.	0.05	Parsley	1 bundle	1.40
Green maize	1 nos.s.	0.25~0.20	Asparagus	1 bundle	0.10
d.o. roasted	1 nos.	0.30	Beetroot	1 nos.b.	0.35
d.o. boiled	1 nos.	0.30	Fish(bream)	1 kg	5.99
Giant kale	1 bundle	0.30~0.10	(bottle nose)	0.5 kg	5.99
Potato	1 kg	1.00	Pork(topside)	1.5 kg	8.00
Sweet potato	1 nos.b	0.20~0.12	Beef	1 kg	4.00
Challot	1 bundle	0.20	Beef(choice)	1 kg	5.90
Banana	1 nos.s.	0.10			
Mango	1 nos.b.	0.55~0.60	Note: b: big		
Lemon	1 nos.b.	0.15	s: samll		
Groundnuts	0.5 kg	1.00			
Banana beans	0.5 kg	1.00			
Suar beans	0.5 kg	1.00			
Boiled egg	1 nos.s.	0.20~0.15			
Chilly fresh	1 bundle,s	0.05			
Chilly powder	1 pkt.	0.02			
Sugarcane	1 stalk	0.70			
Ochra (nelele)	0.5 kg	2.00			
(NATURAL FRUITS)	(5 nos.s)	(0.10)			
Mashuke (fig.)	0.2 kg	0.30			
Matamba(m. apple)	1 nos.	0.10			
Avocado	1 nos.	0.40			

Table C-21 Yield of with and without irrigation per ha

(Unit: ton)

Name	Dam No.	Irrigable Area (ha)	Topo-graphy	Soil	Without Project				With Project						
					Yield ton per hectare				Yield per hectare						
					Maize	Rapoko	Sorghum	Mhunga	Maize	nuts	Sugar	Beans	Tomato	Cotton	
					0.18	0.24	-	0.24	-	Dc	5.0	2.5	2.7	2.3	8
BATANAI															
Cheshauga	I-1-1	3.7	Undu-lated	LS-SL	0.18	0.24	-	0.24	-	Dc	5.0	2.5	2.7	2.3	8
Sipala	I-1-2	4.2	Plateau	SL	0.27	0.36	-	0.36	-	Db	6.0	2.7	3.0	2.5	12
Dengenya	I-1-3	2.8	Undu-lated	SCL-SL	0.27	0.36	-	0.36	-	Cb	8.0	3.0	3.5	2.7	16
Musaverema	I-2-1	40.1	Compl-i-cated	SCL	0.24	-	-	0.48	0.61	Ca	9.0	3.5	4.0	3.0	20
Zvirikure	I-2-2	22.4	Undu-lated	SL	0.24	-	-	0.48	0.61	Da	7.0	3.0	3.5	2.7	16
Cingami	I-2-3	13.9	Slightly sloping	L-C	0.24	-	-	0.48	0.61	Ca	9.0	3.5	4.0	3.0	20
Mushava	I-2-4	1.5	Undu-lated	SL-L	0.24	-	-	0.48	0.61	Ca	9.0	3.5	4.0	3.0	20
Boyi	I-2-5	4.1	Sloping	SCL-CL	0.24	-	-	0.48	0.61	Ca	9.0	3.5	4.0	3.0	20
BIKITA															
Muruwira	II-1-1	16.0	Undu-lated	SCL	0.96	-	1.13	-	1.09	Aa	9.0	3.5	4.0	3.0	20
Mudukutwa	II-1-2	12.2	Undu-lated	SCL	0.96	-	1.13	-	1.09	Aa	9.0	3.5	4.0	3.0	20
Mutsinzwa	II-1-3	20.4	Undu-lated	SL	0.72	-	0.85	-	0.82	Bb	6.0	2.7	3.0	2.5	12
Maranganyika	II-1-4	12.2	Very compl-i-cated	SL	0.72	-	0.85	-	0.82	Bb	6.0	2.7	3.0	2.5	12
Mudzami	II-1-5	15.4	Compl-i-cated	SL	0.72	-	0.85	-	0.82	Bb	6.0	2.7	3.0	2.5	12
Chinyamatumba	II-1-6	38.8	Steep slope	SL-L	0.96	-	1.13	-	1.09	Aa	9.0	3.5	4.0	3.0	20
Chanyau	II-1-7	23.9	Slightly sloping	SCL-CL	0.96	-	1.13	-	1.09	Aa	9.0	3.5	4.0	3.0	20
Beta	II-1-8	20.3	Steep slope	SL	0.72	-	0.85	-	0.82	Bb	6.0	2.7	3.0	2.5	12
Chikuku	II-1-9	21.4	Generally level	SL	0.72	-	0.85	-	0.82	Bb	6.0	2.7	3.0	2.5	12
Chigumisirwa	II-1-10	18.8	Compl-i-cated	SL	0.96	-	1.13	-	1.09	Ba	7.0	3.0	3.5	2.7	16
Boora	II-1-11	16.2	Undu-lated	SL	0.72	-	0.85	-	0.82	Bb	6.0	2.7	3.0	2.5	12

Name	Dam No.	(ha) Irrigable Area	Topo- graphy	Without Project				With Project								
				Yield ton per hectare		Proposed Cropping Pattern	Yield per hectare									
				Maize	Rapoko nuts		Ground nuts	Sugar beans	Tomato	Cotton						
		Soil	Maize	Rapoko nuts	Sorghum Mhunga	Maize	Ground nuts	Wheat	beans	Tomato	Cotton					
GUTU	Chisadza	17.7	Flat	SL-L	0.73	0.49	0.27	-	-	Aa	9.0	3.5	4.0	3.0	2.0	-
	Mukaro	7.4	Slightly sloping	SL	0.55	0.37	0.20	-	-	Bb	6.0	2.7	3.0	2.5	1.2	-
	Chimombe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Gondongwe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vushe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chinyika	8.5	Flat	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-
	Chatikobo	20.6	Slightly sloping	CL	0.73	0.37	-	-	0.49	Aa	9.0	3.5	4.0	3.0	2.0	-
	Muruta	11.6	Slightly un- dulated	LS	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-
	Mutero	22.7	Flat	LS	0.37	0.19	-	-	0.25	Bc	5.0	2.5	2.7	2.3	0.8	-
	Sinbanegavi	28.1	Undu- lated	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-
	Mushangwe	4.1	Flat	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-
	Chingai	3.3	Gentle slope	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-
Mutanda	12.9	Slightly sloping	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-	
Mukuro	11.2	Steep slope	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	2.5	1.2	-	
Munjanganja	34.4	Flat	SCL-CL	0.73	0.37	-	-	0.49	Aa	9.0	3.5	4.0	3.0	2.0	-	
Masunda	2.1	Undu- lated	SL	0.55	0.28	-	-	0.37	Bb	6.0	2.7	3.0	3.0	1.2	-	
MASVINGO	Munongo	0.7	Flat	SCL	1.21	0.73	0.67	-	-	Aa	9.0	3.5	4.0	3.0	2.0	-
	Musingarabwe	14.5	Flat	LS-SL	0.91	0.55	0.50	-	-	Bb	6.0	2.7	3.0	3.0	1.2	-
	Matsikidzi	77.2	Compli- cated	LS-SL	1.21	0.73	0.67	-	-	Ba	7.0	3.0	3.5	2.7	1.6	-
	Makwawa	31.4	Flat	CL	1.56	0.91	1.07	-	-	Aa	9.0	3.5	4.0	3.0	2.0	-
	Yzeze	45.6	Undu- lated	SL	1.20	0.70	0.80	-	-	Bb	6.0	2.7	3.0	2.5	1.2	-
	Majiri	43.8	Very compli- cated	SL	1.20	0.70	0.80	-	-	Bb	6.0	2.7	3.0	2.5	1.2	-

Name	Dam No.	Irrigable Area (ha)	Topography	Soil	Without Project			With Project						
					Yield ton per hectare			Yield per hectare						
					Maize	Rapoko nuts	Sorghum	Maize	Ground nuts	Sugar	Wheat	beans	Tomato	Cotton
Dam No.	Area (ha)	Topography	Soil	Maize	Rapoko nuts	Sorghum	Maize	Ground nuts	Sugar	Wheat	beans	Tomato	Cotton	
ZAKA														
Nemakau	VII-1-5	27.6	Undulated	LS-SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12
Siyawarewa	VII-1-6	25.3	Flat	SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12
Manjeru	VII-1-7	15.5	Undulated	SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12
Chenya	VII-1-8	84.9	Steep slope	SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12
Maraire	VII-1-9	13.8	Compliated	SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12
Chivamba	VII-1-10	29.8	Slightly sloping	SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12
Fuve	VII-1-11	58.6	Slightly sloping	SL	0.55	0.36	0.30	-	Bc	6.0	2.7	3.0	2.5	12
Mavute	VII-1-12	74.4	Steep slope	I-CL	0.73	0.48	0.40	-	Aa	9.0	3.5	4.0	3.0	20
Mujena	VII-1-13	49.6	Compliated	LS-SL	0.55	0.36	0.30	-	Bb	6.0	2.7	3.0	2.5	12

Figure C-1 MAP OF Natural Region

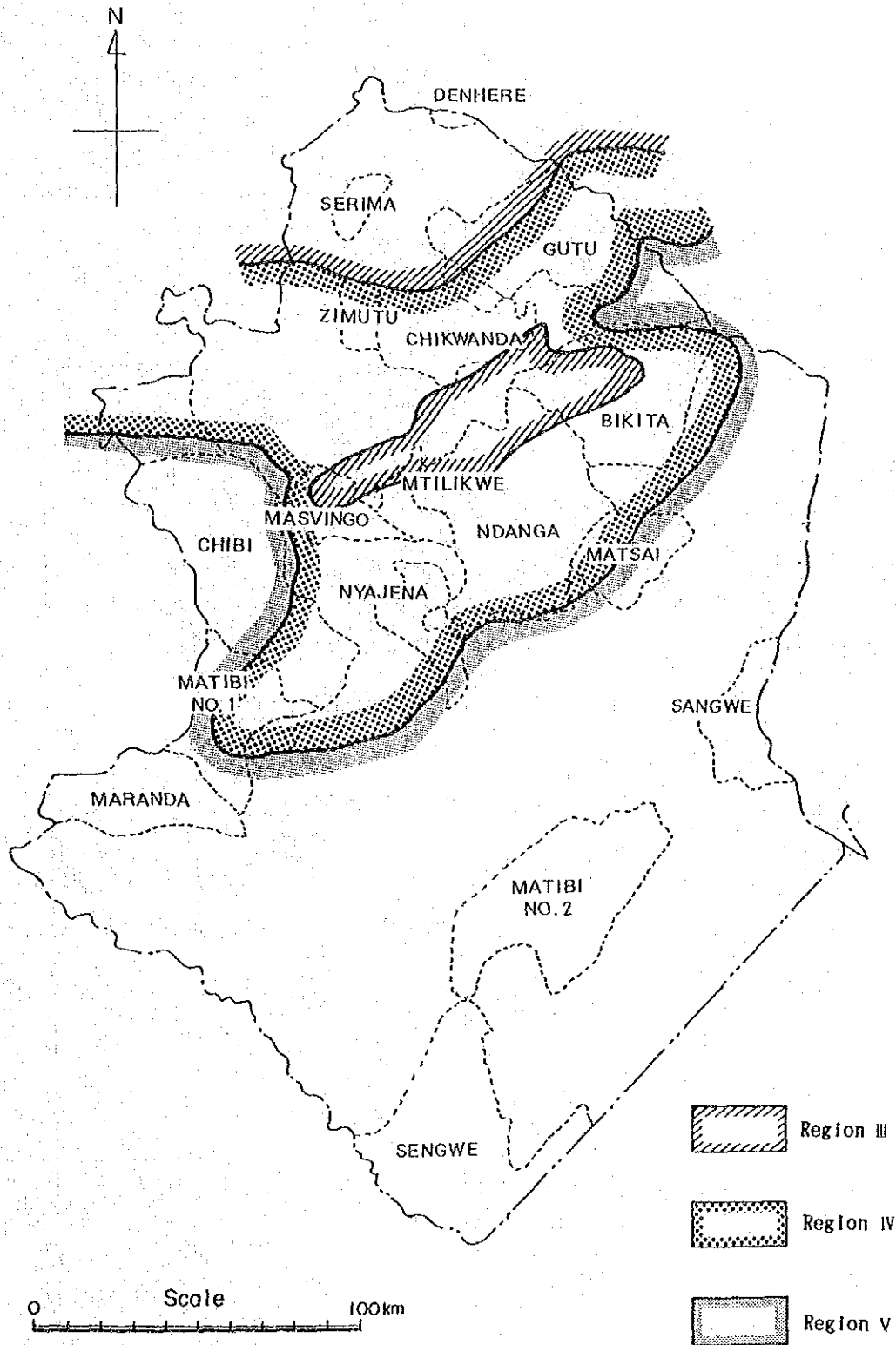


Figure C-2 MAP OF Soil Classification in Communal Lands

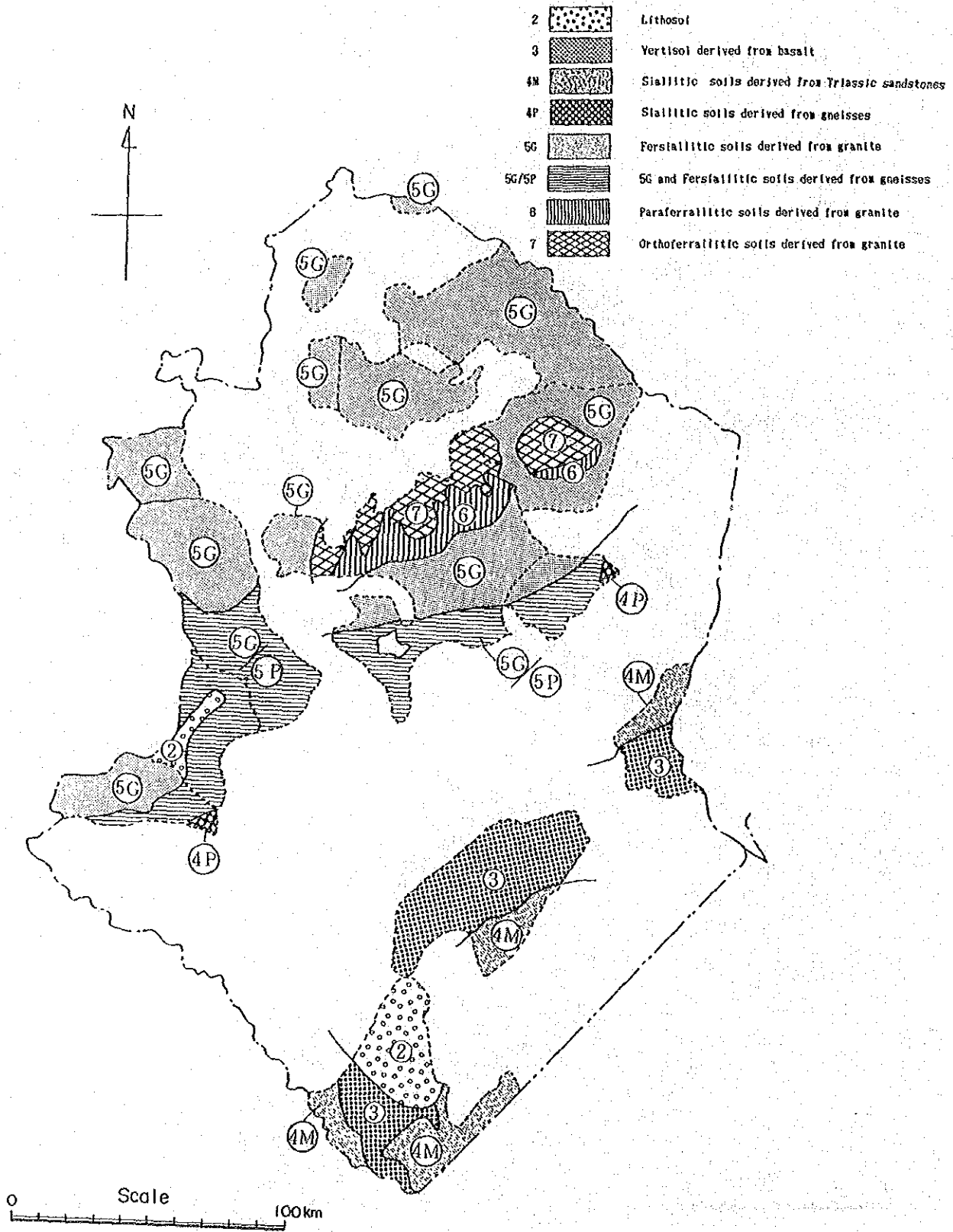
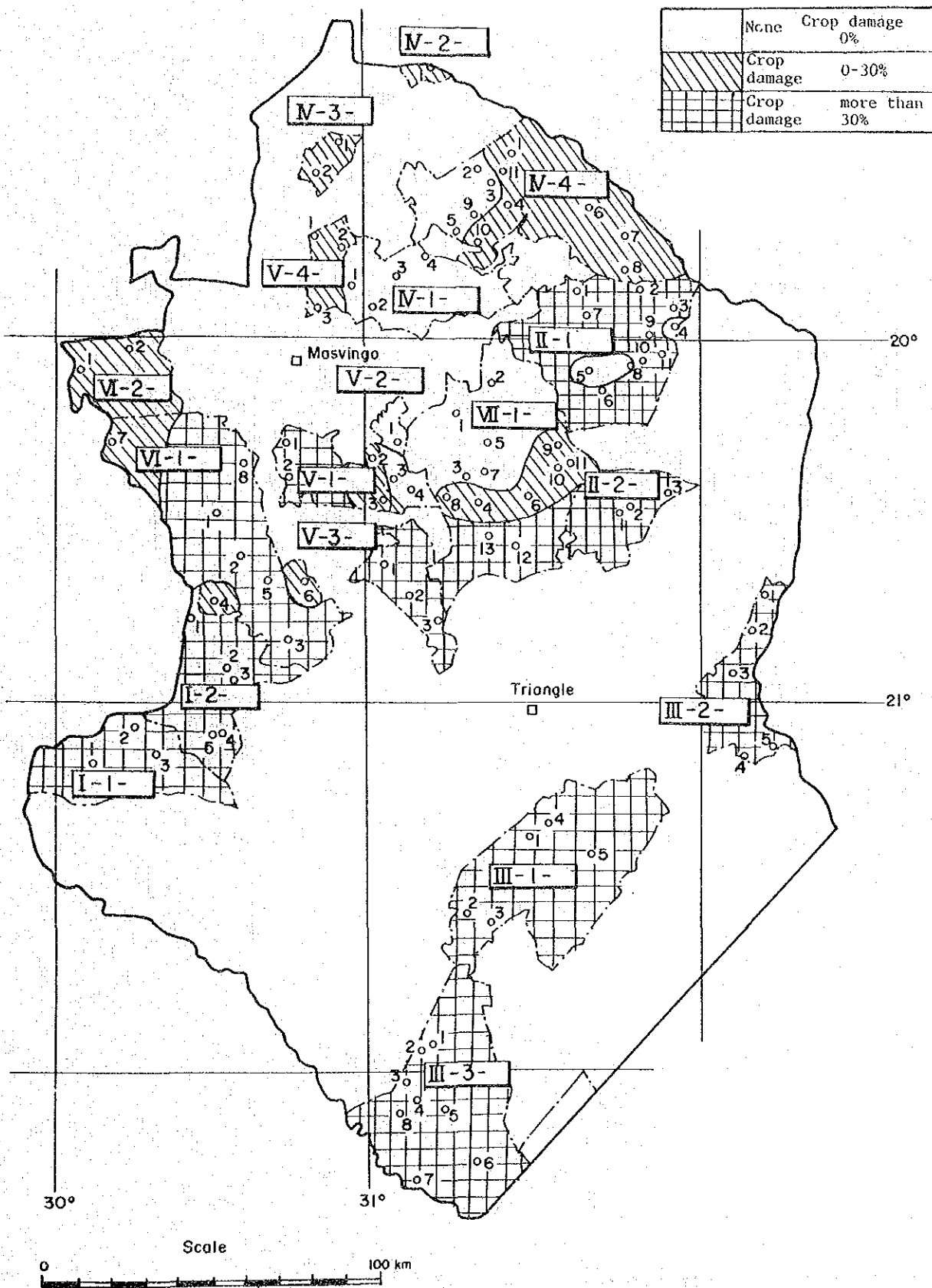
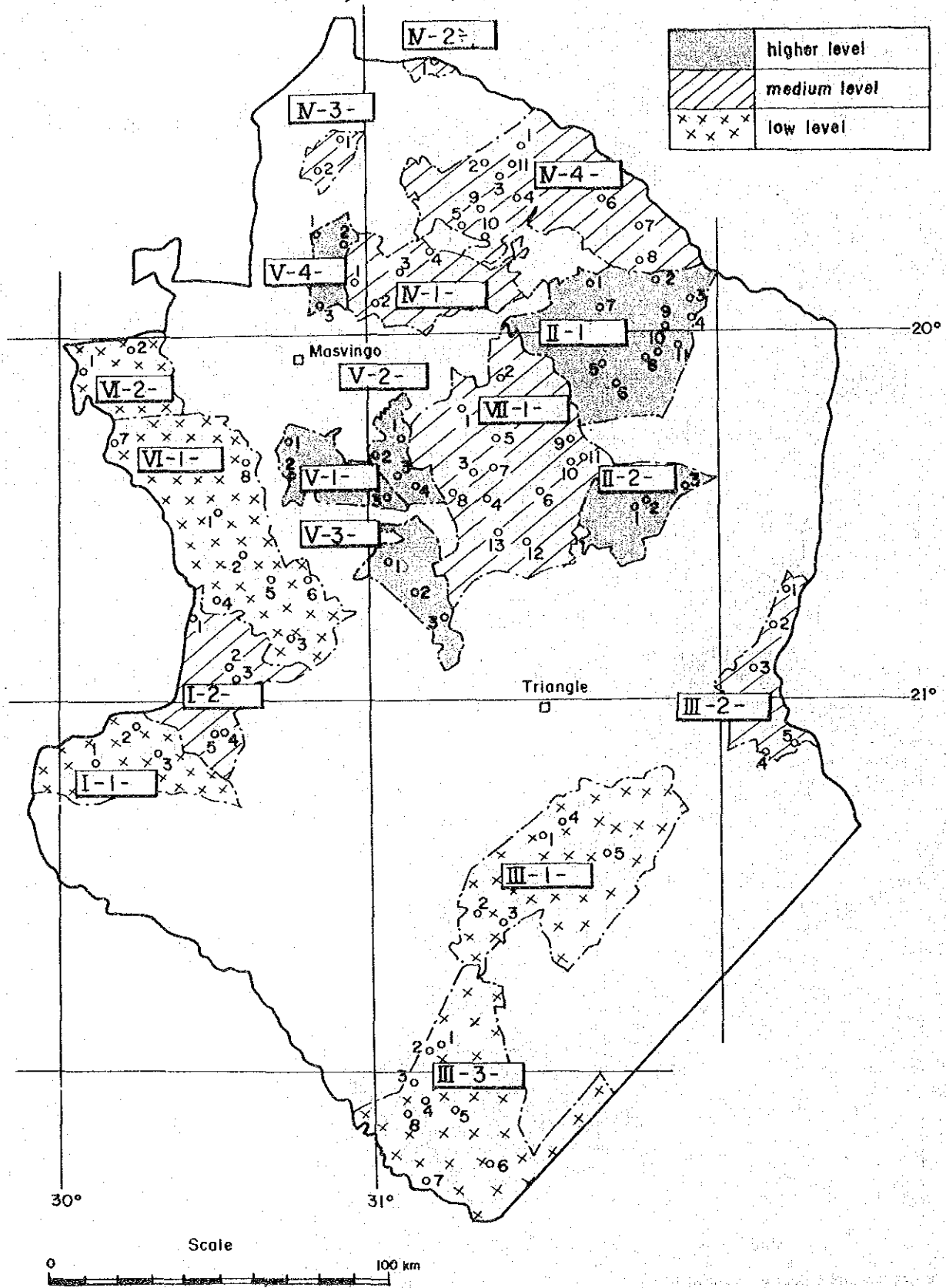


Figure C - 3
MAP OF DROUGHT DAMAGE



Note: c.f. Chapter 3.6.2 and 3.8.2 Drought damages distribution differs from year to year, but this map shows only an overall distribution patterns in 1985.

Figure C-4
MAP OF CURRENT YIELD LEVELS
 (Dryland Only)



Note: c.f. Chapter 3.6.1 and 3.6.2 This map only shows overall yield levels of maize by region.

ANNEX D. IRRIGATION

Contents	Page
Table D-1 Irrigation Water Requirements Area 4	D-1
D-2 Irrigation Water Requirements Area 5	D-2
D-3 Net Irrigation Water Requirements Weighted for Acreage	D-3
D-4 Design Data of Canal	D-4
D-5 Design Data of Night Storage Reservoir	D-5
D-6 Design Data of Pump Facilities	D-6
D-7 Type of Irrigation Facilities (1) ~ (3)	D-7
Figure D-1 Standard Cross Section of Canal and Road	D-4
D-2 Section of Night Storage Reservoir	D-5

Table D- 1 Irrigation Water Requirements Area 4¹⁾

	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
Pan Evaporation ²⁾ (Eo), mm	113	155	201	230	190	170	179	145	151	132	110	99	1,885
Reliable Rainfall ³⁾ -N80% mm	0	2	13	15	58	122	89	80	49	18	9	3	458
Effective Reliable Rainfall ⁴⁾ , mm	0	0	13	15	50	95	69	58	40	14	0	0	
Crop Coefficients ⁵⁾ (Et/Eo)													
Maize	-	-	0.3	0.7	1.0	0.95	0.85	0.8	-	-	-	-	
Grundnuts	-	-	-	0.5	0.5	0.9	0.8	0.6	0.6	-	-	-	
Wheat	0.9	0.9	0.8	-	-	-	-	-	-	-	0.4	0.6	
Sugar bean	-	-	-	-	-	-	-	0.2	0.5	0.9	0.7	-	
Vegetable	0.3	0.5	0.7	0.7	0.5	-	0.3	0.5	0.7	0.7	0.5	-	
Crop Evapotranspiration (Et), mm													
Maize	-	-	60	161	190	162	152	116	-	-	-	-	841
Grundnuts	-	-	-	115	95	153	143	87	91	-	-	-	684
Wheat	102	140	161	-	-	-	-	-	-	-	48	60	511
Sugar bean	-	-	-	-	-	-	-	29	76	119	84	-	308
Vegetable	34	78	141	161	95	-	54	73	106	92	60	-	894
Net IWR with Effective Reliable Rainfall, mm													
Maize	-	-	47	146	140	67	83	58	-	-	-	-	541
Grundnuts	-	-	-	100	45	58	74	29	51	-	-	-	357
Wheat	102	140	148	-	-	-	-	-	-	-	48	60	498
Sugar bean	-	-	-	-	-	-	-	0	36	105	84	-	225
Vegetable	34	78	128	146	45	-	0	15	66	78	60	-	650

Notes

- 1) Area of Similar Irrigation Requirement (Agritex Irrigation Handbook).
Area 4 - Bikita, Gutu, Masvingo, Chivi and Zaka Districts.
- 2) Pan Evaporation is at Makaholi Experimental Station.
- 3) Reliable Rainfall defined as amount of rainfall exceeded in 4 years out of 5.
- 4) Effective Reliable Rainfall is estimated by the evapotranspiration/precipitation ratio method (USDA 1969).
- 5) Crop Coefficients is applied Agritex Irrigation Handbook.

Table D- 2 Irrigation Water Requirements Area 5¹⁾

	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
Pan Evaporation ²⁾ (Eo), mm	114	157	209	249	227	213	210	161	170	141	124	101	2,076
Reliable Rainfall ³⁾ -N80% mm	2	4	8	24	48	82	86	87	40	14	10	4	409
Effective Reliable Rainfall ⁴⁾ , mm	0	0	0	24	47	72	75	68	35	11	8	0	
Crop Coefficients⁵⁾ (Et/Eo)													
Maize	-	-	0.3	0.7	1.0	0.45	0.85	0.8	-	-	-	-	
Grundnuts	-	-	-	0.5	0.5	0.9	0.8	0.6	0.6	-	-	-	
Wheat	0.9	0.9	0.8	-	-	-	-	-	-	-	0.4	0.6	
Sugar bean	-	-	-	-	-	-	-	0.2	0.5	0.9	0.7	-	
Vegetable	0.3	0.5	0.7	0.7	0.5	-	0.3	0.5	0.7	0.7	0.5	-	
Crop Evapotranspiration (Et), mm													
Maize	-	-	63	174	227	202	179	129	-	-	-	-	974
Grundnuts	-	-	-	125	114	192	168	97	102	-	-	-	798
Wheat	103	141	167	-	-	-	-	-	-	-	50	61	522
Sugar bean	-	-	-	-	-	-	-	32	85	127	87	-	331
Vegetable	34	79	146	174	114	-	63	81	119	99	62	-	971
Net IWR with Effective Reliable Rainfall, mm													
Maize	-	-	63	150	181	130	104	61	-	-	-	-	689
Grundnuts	-	-	-	101	68	120	93	29	67	-	-	-	478
Wheat	103	141	167	-	-	-	-	-	-	-	42	61	514
Sugar bean	-	-	-	-	-	-	-	0	50	116	79	-	245
Vegetable	34	79	146	150	68	-	0	13	84	88	54	-	716

Notes

- 1) Area of Similar Irrigation Requirement (Agritex Irrigation Handbook).
Area 5 - Batanai and Gaza Komanani districts.
- 2) Pan Evaporation is at Chisumbanje Experimental Station.
- 3) Reliable Rainfall defined as amount of rainfall exceeded in 4 years out of 5.
- 4) Effective Reliable Rainfall is estimated by the evapotranspiration/precipitation ratio method (USDA 1969).
- 5) Crop Coefficients is applied Agritex Irrigation Handbook.

Table D-3 Net Irrigation Water Requirements Weighted for Acreage
(mm/year)

	IWR ¹⁾	NIWR ²⁾ (Area 4)		IWR	NIWR (Area 5)	
		A	B		C	D
(Summer)						
Maize	541	325	271	689	413	379
Groundnuts	357	71	143	478	143	191
Vegetable	431	86	43	477	48	24
(Winter)						
Wheat	498	199	199	514	257	283
Sugar bean	225	90	90	245	98	98
Vegetable	219	44	44	239	24	12
Total	-	815	790	-	983	987

Notes

- 1) IWR -- Net Irrigation Water Requirement with Effective Reliable Rainfall.
- 2) NIWR- Net Irrigation Water Requirement weighted for acreage.
- 3) Cropping Pattern

Crop	Cropping Pattern (%)			
	A ¹⁾	B ¹⁾	C ²⁾	D ²⁾
(Summer)				
Maize	60	50	60	55
Groundnuts	20	40	30	40
Vegetable	20	10	10	5
(Winter)				
Wheat	40	40	50	55
Sugar bean	40	40	40	40
Vegetable	20	20	10	5

Notes

- 1) Cropping Pattern A and B -- Area 4 (Bikita, Gutu, Masvingo, Chivi and Zaka districts)
- 2) Cropping Pattern C and D -- Area 5 (Batanai and Gaza Komanani districts)

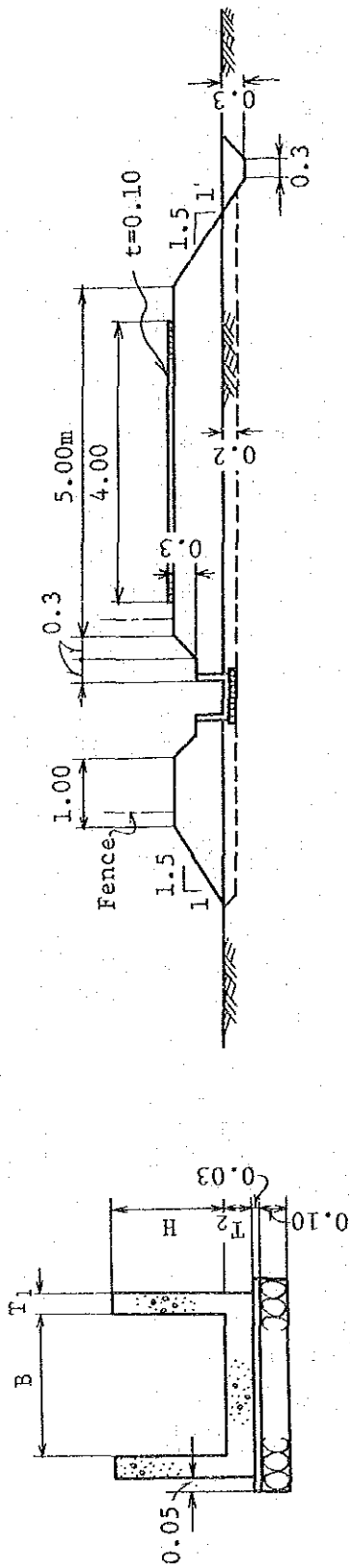


Figure D-1 Standard Cross Section of Canal and Road

Table D-4 Design Data of Canal per Meter

Type	Q (l/sec)	B (m)	H (m)	T ₁ (m)	T ₂ (m)	Concrete (Reinforced) (m ³)	Rainforce- ment (kg)	Concrete (Mass) (m ³)	Crusher Run (m ³)	Excavation (stripping) ment (m ³)	Embank- ment (m ³)	Training Fencing (m ²)	Training Fencing (m)
A	20	0.25	0.20	0.08	0.10	0.073	1.8	0.015	0.451	2.0	5.5	2.5	2
B	40	0.35	0.30	0.08	0.10	0.097	2.4	0.018	0.461	2.1	6.5	2.8	2
C	60	0.40	0.35	0.08	0.10	0.112	2.8	0.020	0.466	2.1	6.9	3.0	2
D	80	0.50	0.35	0.08	0.10	0.122	3.1	0.023	0.476	2.1	6.9	3.0	2
E	100	0.50	0.40	0.08	0.10	0.130	3.3	0.023	0.476	2.2	7.6	3.2	2
F	150	0.60	0.45	0.08	0.10	0.148	3.7	0.026	0.486	2.2	8.0	3.4	2

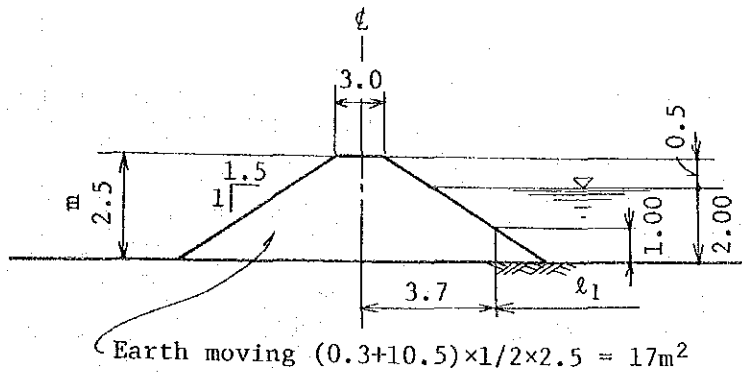


Figure D-2 Section of Night Storage Reservoir

Table D-5 Design Data of Night Storage Reservoir

Type	N.S.R. (Capacity) (m ³)	l_1 (m)	L ($l_1+7.4$) $\times 4$ (m)	Earth Moving $17 \times L$ (m ³)	Earth Moving (Z\$)	Spill way (Z\$)	Inlet Outlet (Z\$)	Total Cost (Z\$)
A	1 000	22.4	79.2	1 346	6 700	1 000	19 000	27 000
B	3 000	38.4	184.4	3 135	15 700	1 000	22 000	39 000
C	6 000	54.8	248.8	4 229	21 100	1 000	22 000	45 000
D	9 000	67.1	298.0	5 066	25 300	1 000	22 000	49 000
E	12 000	77.5	339.6	5 773	28 900	2 000	25 000	56 000
F	15 000	86.6	376.0	6 392	32 000	2 000	25 000	59 000
G	18 000	94.9	409.2	6 956	34 800	3 000	28 000	66 000
H	21 000	102.5	439.6	7 473	37 400	3 000	28 000	69 000

[Note] Earth Moving 5 Z\$/m³

On-Farm-Facility

$105\ 310 \times 1.015/45.9 = 2\ 329/\text{ha}$ Total = 4 000 Z\$/ha

$(129\ 483 - 10\ 500) \times 1.015/70 = 1\ 725/\text{ha}$

Land Grading 150 Z\$/ha = 200 Z\$/ha

Cleaving and Grubbing $150 \times 1.20 = 200$ Z\$/ha

Type A 4 000 Z\$/ha Type B 4 200 Z\$/ha Type C 4 400 Z\$/ha

DAM NO.	I-1-2
Q(L/S)=	7.80
PUMP 2-SETS PARALLEL	
DIA(MM)=	65
P-LINE(MM)=	100
L(KM)=	1.00
VP(M/S)=	1.17
VL(M/S)=	0.99
H1(M)=	19.00
TH(M)=	42.41
ENGINE 2-SETS PARALLEL	
HP PER 1 =	8.97
EFFCY=	0.36

DAM NO.	II-1-1
Q(L/S)=	41.20
PUMP 2-SETS PARALLEL	
DIA(MM)=	125
P-LINE(MM)=	200
L(KM)=	1.20
VP(M/S)=	1.67
VL(M/S)=	1.31
H1(M)=	2.00
TH(M)=	23.09
ENGINE 2-SETS PARALLEL	
HP PER 1 =	18.05
EFFCY=	0.52

DAM NO.	II-1-6
Q(L/S)=	100.00
PUMP 2-SETS PARALLEL	
DIA(MM)=	200
P-LINE(MM)=	350
L(KM)=	1.00
VP(M/S)=	1.59
VL(M/S)=	1.03
H1(M)=	28.00
TH(M)=	35.04
ENGINE 2-SETS PARALLEL	
HP PER 1 =	58.34
EFFCY=	0.60

DAM NO.	I-1-3
Q(L/S)=	7.80
PUMP 2-SETS PARALLEL	
DIA(MM)=	65
P-LINE(MM)=	100
L(KM)=	0.70
VP(M/S)=	1.17
VL(M/S)=	0.99
H1(M)=	21.00
TH(M)=	37.85
ENGINE 2-SETS PARALLEL	
HP PER 1 =	8.01
EFFCY=	0.36

DAM NO.	II-1-2
Q(L/S)=	31.40
PUMP 2-SETS PARALLEL	
DIA(MM)=	100
P-LINE(MM)=	200
L(KM)=	1.20
VP(M/S)=	1.99
VL(M/S)=	0.99
H1(M)=	12.00
TH(M)=	25.35
ENGINE 2-SETS PARALLEL	
HP PER 1 =	15.46
EFFCY=	0.51

DAM NO.	II-1-7
Q(L/S)=	61.60
PUMP 2-SETS PARALLEL	
DIA(MM)=	150
P-LINE(MM)=	250
L(KM)=	0.90
VP(M/S)=	1.74
VL(M/S)=	1.25
H1(M)=	25.00
TH(M)=	36.96
ENGINE 2-SETS PARALLEL	
HP PER 1 =	41.20
EFFCY=	0.55

DAM NO.	I-2-3
Q(L/S)=	38.80
PUMP 2-SETS PARALLEL	
DIA(MM)=	100
P-LINE(MM)=	200
L(KM)=	1.70
VP(M/S)=	2.46
VL(M/S)=	1.23
H1(M)=	22.00
TH(M)=	48.30
ENGINE 2-SETS PARALLEL	
HP PER 1 =	35.76
EFFCY=	0.52

DAM NO.	II-1-3
Q(L/S)=	52.60
PUMP 2-SETS PARALLEL	
DIA(MM)=	125
P-LINE(MM)=	250
L(KM)=	0.50
VP(M/S)=	2.14
VL(M/S)=	1.07
H1(M)=	7.00
TH(M)=	12.86
ENGINE 2-SETS PARALLEL	
HP PER 1 =	12.50
EFFCY=	0.54

DAM NO.	IV-4-1
Q(L/S)=	21.90
PUMP 2-SETS PARALLEL	
DIA(MM)=	80
P-LINE(MM)=	150
L(KM)=	0.80
VP(M/S)=	2.17
VL(M/S)=	1.23
H1(M)=	11.00
TH(M)=	28.97
ENGINE 2-SETS PARALLEL	
HP PER 1 =	12.61
EFFCY=	0.50

DAM NO.	I-2-5
Q(L/S)=	11.40
PUMP 2-SETS PARALLEL	
DIA(MM)=	65
P-LINE(MM)=	125
L(KM)=	1.00
VP(M/S)=	1.71
VL(M/S)=	0.92
H1(M)=	14.00
TH(M)=	30.42
ENGINE 2-SETS PARALLEL	
HP PER 1 =	8.51
EFFCY=	0.40

DAM NO.	II-1-4
Q(L/S)=	31.40
PUMP 2-SETS PARALLEL	
DIA(MM)=	100
P-LINE(MM)=	200
L(KM)=	3.00
VP(M/S)=	1.99
VL(M/S)=	0.99
H1(M)=	22.00
TH(M)=	53.05
ENGINE 2-SETS PARALLEL	
HP PER 1 =	32.35
EFFCY=	0.51

DAM NO.	IV-4-8
Q(L/S)=	33.20
PUMP 2-SETS PARALLEL	
DIA(MM)=	100
P-LINE(MM)=	200
L(KM)=	1.20
VP(M/S)=	2.11
VL(M/S)=	1.05
H1(M)=	23.00
TH(M)=	37.63
ENGINE 2-SETS PARALLEL	
HP PER 1 =	24.16
EFFCY=	0.51

 DAM NO. IV-4-9
 Q(L/S)= 28.90
 PUMP 2-SETS PARALLEL
 DIA(MM)= 100
 P-LINE(MM)= 200
 L(KM)= 0.90
 VP(M/S)= 1.83
 VL(M/S)= 0.91
 H1(M)= 10.00
 TH(M)= 19.13
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 10.80
 EFFCY= 0.51

 DAM NO. V-2-2
 Q(L/S)= 117.50
 PUMP 2-SETS PARALLEL
 DIA(MM)= 200
 P-LINE(MM)= 350
 L(KM)= 2.00
 VP(M/S)= 1.86
 VL(M/S)= 1.22
 H1(M)= 36.00
 TH(M)= 52.38
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 98.85
 EFFCY= 0.62

 DAM NO. V-4-1
 Q(L/S)= 25.80
 PUMP 2-SETS PARALLEL
 DIA(MM)= 100
 P-LINE(MM)= 200
 L(KM)= 1.50
 VP(M/S)= 1.64
 VL(M/S)= 0.82
 H1(M)= 37.00
 TH(M)= 48.79
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 24.78
 EFFCY= 0.50

 DAM NO. V-1-2
 Q(L/S)= 37.40
 PUMP 2-SETS PARALLEL
 DIA(MM)= 100
 P-LINE(MM)= 200
 L(KM)= 0.90
 VP(M/S)= 2.38
 VL(M/S)= 1.19
 H1(M)= 9.00
 TH(M)= 22.80
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 16.32
 EFFCY= 0.52

 DAM NO. V-2-3
 Q(L/S)= 112.90
 PUMP 2-SETS PARALLEL
 DIA(MM)= 200
 P-LINE(MM)= 350
 L(KM)= 1.30
 VP(M/S)= 1.79
 VL(M/S)= 1.17
 H1(M)= 28.00
 TH(M)= 38.50
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 70.47
 EFFCY= 0.61

 DAM NO. VI-1-1
 Q(L/S)= 9.50
 PUMP 2-SETS PARALLEL
 DIA(MM)= 65
 P-LINE(MM)= 125
 L(KM)= 0.60
 VP(M/S)= 1.43
 VL(M/S)= 0.77
 H1(M)= 9.00
 TH(M)= 16.90
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 4.14
 EFFCY= 0.38

 DAM NO. V-1-3
 Q(L/S)= 198.90
 PUMP 2-SETS PARALLEL
 DIA(MM)= 250
 P-LINE(MM)= 450
 L(KM)= 1.10
 VP(M/S)= 2.02
 VL(M/S)= 1.25
 H1(M)= 32.00
 TH(M)= 39.92
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 109.58
 EFFCY= 0.72

 DAM NO. V-2-4
 Q(L/S)= 111.10
 PUMP 2-SETS PARALLEL
 DIA(MM)= 200
 P-LINE(MM)= 350
 L(KM)= 1.30
 VP(M/S)= 1.76
 VL(M/S)= 1.15
 H1(M)= 19.00
 TH(M)= 32.58
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 58.89
 EFFCY= 0.61

 DAM NO. VI-1-4
 Q(L/S)= 3.40
 PUMP 2-SETS PARALLEL
 DIA(MM)= 65
 P-LINE(MM)= 65
 L(KM)= 1.00
 VP(M/S)= 0.51
 VL(M/S)= 1.02
 H1(M)= 28.00
 TH(M)= 67.90
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 7.19
 EFFCY= 0.32

 DAM NO. V-2-1
 Q(L/S)= 80.90
 PUMP 2-SETS PARALLEL
 DIA(MM)= 150
 P-LINE(MM)= 300
 L(KM)= 1.30
 VP(M/S)= 2.28
 VL(M/S)= 1.14
 H1(M)= 12.00
 TH(M)= 23.78
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 33.36
 EFFCY= 0.57

 DAM NO. V-3-2
 Q(L/S)= 171.10
 PUMP 2-SETS PARALLEL
 DIA(MM)= 250
 P-LINE(MM)= 400
 L(KM)= 1.20
 VP(M/S)= 1.74
 VL(M/S)= 1.36
 H1(M)= 7.00
 TH(M)= 17.88
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 44.36
 EFFCY= 0.68

 DAM NO. VI-1-6
 Q(L/S)= 9.30
 PUMP 2-SETS PARALLEL
 DIA(MM)= 65
 P-LINE(MM)= 125
 L(KM)= 0.50
 VP(M/S)= 1.40
 VL(M/S)= 0.75
 H1(M)= 29.00
 TH(M)= 35.63
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 8.61
 EFFCY= 0.38

 DAM NO. VI-1-7
 Q(L/S)= 16.50
 PUMP 2-SETS PARALLEL
 DIA(MM)= 80
 P-LINE(MM)= 150
 L(KM)= 0.70
 VP(M/S)= 1.64
 VL(M/S)= 0.93
 HI(M)= 6.00
 TH(M)= 16.04
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 5.72
 EFFCY= 0.46

 DAM NO. VII-1-5
 Q(L/S)= 71.10
 PUMP 2-SETS PARALLEL
 DIA(MM)= 150
 P-LINE(MM)= 250
 L(KM)= 1.00
 VP(M/S)= 2.01
 VL(M/S)= 1.44
 HI(M)= 39.00
 TH(M)= 55.65
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 70.09
 EFFCY= 0.56

 DAM NO. VII-1-12
 Q(L/S)= 191.70
 PUMP 2-SETS PARALLEL
 DIA(MM)= 250
 P-LINE(MM)= 400
 L(KM)= 1.10
 VP(M/S)= 1.95
 VL(M/S)= 1.52
 HI(M)= 45.00
 TH(M)= 57.12
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 153.05
 EFFCY= 0.71

 DAM NO. VI-2-2
 Q(L/S)= 3.60
 PUMP 2-SETS PARALLEL
 DIA(MM)= 65
 P-LINE(MM)= 65
 L(KM)= 0.90
 VP(M/S)= 0.54
 VL(M/S)= 1.08
 HI(M)= 20.00
 TH(M)= 59.92
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 6.67
 EFFCY= 0.32

 DAM NO. VII-1-6
 Q(L/S)= 65.20
 PUMP 2-SETS PARALLEL
 DIA(MM)= 150
 P-LINE(MM)= 250
 L(KM)= 0.90
 VP(M/S)= 1.84
 VL(M/S)= 1.32
 HI(M)= 13.00
 TH(M)= 26.12
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 30.57
 EFFCY= 0.55

 DAM NO. VII-1-13
 Q(L/S)= 127.80
 PUMP 2-SETS PARALLEL
 DIA(MM)= 200
 P-LINE(MM)= 350
 L(KM)= 1.10
 VP(M/S)= 2.03
 VL(M/S)= 1.32
 HI(M)= 67.00
 TH(M)= 78.10
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 157.06
 EFFCY= 0.63

 DAM NO. VII-1-1
 Q(L/S)= 140.70
 PUMP 2-SETS PARALLEL
 DIA(MM)= 200
 P-LINE(MM)= 400
 L(KM)= 1.30
 VP(M/S)= 2.36
 VL(M/S)= 1.13
 HI(M)= 27.00
 TH(M)= 36.33
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 81.65
 EFFCY= 0.66

 DAM NO. VII-1-10
 Q(L/S)= 76.00
 PUMP 2-SETS PARALLEL
 DIA(MM)= 150
 P-LINE(MM)= 300
 L(KM)= 0.80
 VP(M/S)= 2.17
 VL(M/S)= 1.08
 HI(M)= 16.00
 TH(M)= 23.27
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 31.26
 EFFCY= 0.57

 DAM NO. VII-1-2
 Q(L/S)= 75.80
 PUMP 2-SETS PARALLEL
 DIA(MM)= 150
 P-LINE(MM)= 300
 L(KM)= 2.10
 VP(M/S)= 2.14
 VL(M/S)= 1.07
 HI(M)= 23.00
 TH(M)= 39.19
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 52.08
 EFFCY= 0.56

 DAM NO. VII-1-11
 Q(L/S)= 151.00
 PUMP 2-SETS PARALLEL
 DIA(MM)= 200
 P-LINE(MM)= 400
 L(KM)= 2.00
 VP(M/S)= 2.40
 VL(M/S)= 1.20
 HI(M)= 39.00
 TH(M)= 52.86
 ENGINE 2-SETS PARALLEL
 HP PER 1 = 120.11
 EFFCY= 0.66

Table D-7 (1) Type of Irrigation Facilities

Name of Dam	No. of Dam	Canal I	Distance		Loss Head		Residual Head (m)	Total Flow Q (ℓ/sec)	Canal Type	Pipe Dia. (mm)	N.S.R	
			Canal (km)	Pipe (km)	Canal (m)	Pipe (m)					Type	Type
Cheshanga	I-1-1	1/400	4.2	0.3	1.5	2.5	0	20	A	150	A	C
Sipala	I-1-2	Pump									A	C
Dengenya	I-1-3	Pump									A	C
Musaverema	I-2-1	1/400	1.7	0.2	4.3	0.8	2.9	80	D	300	D	C
Zvirikure	I-2-2	1/400	2.2	0.2	5.5	1.1	0.4	60	C	250	B	B
Chingami	I-2-3	Pump									B	A
Mushava	I-2-4	1/300	2.3	0.2	7.7	1.7	1.6	20	A	150	A	C
Boyi	I-2-5	Pump									A	C
Murwira	II-1-1	Pump									B	C
Musukutwa	II-1-2	Pump									B	C
Mutsinzwa	II-1-3	Pump									B	C
Maranganyika	II-1-4	Pump									B	C
Mundzami	II-1-5	1/400	1.4	0.1	3.5	0.8	4.7	40	B	200	B	C
Chinyamatunwa	II-1-6	Pump									C	B
Chanyau	II-1-7	Pump									C	C
Beta	II-1-8	1/400	2.8	0.2	7.7	1.5	26.8	40	B	200	B	B
Chikuku	II-1-9	1/500	2.8	0.2	5.6	1.5	0	40	B	200	B	B
Chigumisirwa	II-1-10	1/400	2.6	0.1	6.5	0.8	0.7	40	B	200	B	B
Boora	II-1-11	1/400	1.9	0.1	4.8	0.8	1.4	40	B	200	B	C
Mashoko	II-2-1	1/400	1.3	0.1	3.3	0.8	8.9	40	B	200	B	A
Zindove	II-2-2	1/300	1.1	0.1	3.7	0.9	7.4	20	A	150	B	A
Mafaune	II-2-3	1/400	3.8	0.2	9.5	0.4	1.1	20	A	200	A	B
Majijimba	III-1-1	1/300	0.9	0.1	3.0	0.9	2.1	6	A	150	A	A
Chanyenga	III-1-2	1/600	2.7	0.1	4.5	0.9	0.6	20	B	150	A	A
Mnsgati	III-1-3	1/400	0.7	0.1	1.8	0.2	0	20	A	200	A	A

Table D-7 (2) Type of Irrigation Facilities

Name of Dam	No. of Dam	Distance		Loss Head		Residual Head (m)	Total Head (m)	Total Flow Q (l/sec)	Canal Type	Pipe Dia. (mm)	N.S.R. Type	Field Type
		Canal (km)	Pipe (km)	Canal (m)	Pipe (m)							
Malisanga	III-1-4	1/1000	5.6	0.2	5.6	0.4	6	20	B	200	A	A
Chingelelani	III-1-5	----	-	-	-	-	-	-	-	-	-	-
Chisakwasi	III-2-1	1/400	0.5	0.1	1.3	0.8	3	40	B	200	B	A
Chegwama	III-2-2	1/400	1.9	0.1	4.8	0.2	5	20	A	200	A	A
Chompimbi	III-2-3	-----	-	-	-	-	-	-	-	-	-	-
Chitsa	III-2-4	1/300	2.0	0.1	6.7	0.9	11	20	A	150	A	A
Chitsazani	III-2-5	----	-	-	-	-	-	-	-	-	-	-
Dunezo	III-3-1	----	-	-	-	-	-	-	-	-	-	-
Shavani	III-3-2	1/300	2.3	0.2	7.7	0.9	16	20	A	150	A	A
Malibangwe	III-3-3	1/300	1.5	0.1	5.0	0.8	13	20	A	150	A	B
Gezani	III-3-4	1/300	2.3	0.2	7.7	1.7	13	20	A	150	A	A
Chomonga	III-3-5	----	-	-	-	-	-	-	-	-	-	-
Mangezi	III-3-6	1/300	3.2	0.1	7.7	1.7	18	20	A	150	A	A
Grootvlei	III-3-7	----	-	-	-	-	-	-	-	-	-	-
Thinana	III-3-8	----	-	-	-	-	-	-	-	-	-	-
Mutema	IV-1-1	----	-	-	-	-	-	-	-	-	-	-
Cabriel	IV-1-2	1/500	2.5	0.2	5.0	1.1	7	60	C	250	C	C
Chimedza	IV-1-3	1/500	2.3	0.1	4.6	0.8	6	40	B	200	B	C
Mukaro	IV-1-4	1/300	0.9	0.1	3.0	0.8	6	20	A	150	B	C
Chimombe	IV-2-1	----	-	-	-	-	-	-	-	-	-	-
Condongwe	IV-3-1	----	-	-	-	-	-	-	-	-	-	-
Vushe	IV-3-2	----	-	-	-	-	-	-	-	-	-	-
Chinyika	IV-4-1	Pump	-	-	-	-	-	-	-	-	B	A
Chatikobo	IV-4-2	1/400	2.7	0.3	6.8	2.3	16	40	B	200	B	A
Maruta	IV-4-3	1/300	2.5	0.2	8.3	1.7	14	20	A	150	B	B

Table D-7 (3) Type of Irrigation Facilities

Name of Dam	No. of Dam	Canal I	Distance		Loss Head		Residual Head (m)	Total Head (m)	Total Flow Q (k/sec)	Canal Type	Pipe Dia. (mm)	N.S.R. Type	Field Type
			Canal (km)	Pipe (km)	Canal (m)	Pipe (m)							
Motero	IV-4-4	1/400	1.9	0.1	3.8	0.8	0.4	5	40	B	200	C	A
Sinhagavi	IV-4-5	1/400	1.3	0.1	3.3	0.6	7.1	11	60	C	250	C	C
Mushagwe	IV-4-6	1/300	3.3	0.2	11.0	1.7	2.3	15	20	A	150	A	C
Chingai	IV-4-7	1/300	3.7	0.3	12.4	2.6	8.0	23	20	A	150	A	B
Mutanda	IV-4-8	Pump										B	A
Mokuro	IV-4-9	Pump										B	C
Munjanganja	IV-4-10	1/400	3.9	0.3	9.8	1.6	2.6	14	60	C	250	C	A
Masunda	IV-4-11	1/300	2.4	0.2	8.0	0.4	0.6	9	20	A	200	A	B
Munongo	V-1-1	1/300	0.7	0.1	2.4	0.8	6.8	10	20	A	150	A	C
Musingarabwe	V-1-2	Pump										B	A
Marsikidzi	V-1-3	Pump										E	C
Makwawa	V-2-1	Pump										C	A
Uzeze	V-2-2	Pump										D	B
Majiri	V-2-3	Pump										D	C
Chatikubo	V-2-4	Pump										D	A
Maramwidza	V-3-1	---										-	-
Fusira	V-3-2	Pump										E	C
Magudu	V-3-3	1/400	5.6	0.4	14.0	2.3	7.7	24	100	E	300	D	A
Marongera	V-4-1	Pump										B	C
Nacheka	V-4-2	1/400	2.3	0.1	5.8	0.8	2.4	9	40	B	200	B	C
Mahoto	V-4-3	1/500	4.7	0.3	0.4	0.8	0.8	11	40	B	250	B	C
Chirongwe	VI-1-1	Pump										A	B
Nemavuzhe	VI-1-2	1/700	3.4	0.2	4.9	0.4	0.7	6	20	B	200	A	C
Madzivire	VI-1-3	1/400	2.8	0.2	7.0	1.7	0.3	9	20	A	150	A	B
Musuvovi	VI-1-4	Pump										A	B

Table D-7 (4) Type of Irrigation Facilities

Name of Dam	No. of Dam	Canal I	Distance		Loss Head		Residual Head (m)	Total Head (m)	Flow Q (l/sec)	Canal Type	Pipe Dia. (mm)	N.S.R. Type	Field Type
			Canal (km)	Pipe (km)	Canal (m)	Pipe (m)							
Magwari	VI-1-5	1/500	3.3	0.2	6.6	0.4	0	7	20	B	200	A	C
Zifunzi No.2	VI-1-6	Pump										A	C
Takavarasha	VI-1-7	Pump										A	A
Nyamkwe	VI-1-8	1/300	2.3	0.2	7.7	1.7	2.6	13	20	A	150	B	A
Mukovoriri	VI-2-1	1/400	5.6	0.4	14.0	0.8	1.2	16	20	A	200	A	B
Nadangombe	VI-2-2	Pump										A	B
Zishiri	VII-1-1	Pump										D	A
Chida	VII-1-2	Pump										C	A
Veza	VII-1-3	1/400	1.8	0.2	4.5	1.1	0.4	6	60	C	250	C	B
Zinguo	VII-1-4	1/400	1.8	0.2	4.5	1.1	0.4	6	40	B	200	B	B
Nemakau	VII-1-5	Pump										C	B
Siyawareva	VII-1-6	Pump										C	A
Manjern	VII-1-7	1/400	3.2	0.3	8.0	2.2	0.8	11	40	B	200	C	B
Chenyu	VII-1-8	1/500	2.8	0.2	5.6	1.2	0.2	7	150	F	350	F	B
Maraire	VII-1-9	1/400	2.4	0.2	6.0	1.5	0.5	8	40	B	200	B	C
Chiyamba	VII-1-10	Pump										C	C
Fuve	VII-1-11	Pump										D	C
Mabvuti	VII-1-12	Pump										E	C
Mujena	VII-1-13	Pump										D	C

ANNEX E. DAM AND RESERVOIR

Contents	Page
Table E-1 Major Features of Dam (1) ~ (3)	E-1 ~ 3

Table E-1 (1) Major Features of Dam

Dist.	Name of Dam	Dam No.	Map Ref. (1/50000)	Coordinate of Dam Site	Catchment Area (km ²)	Elevation of Dam Site (m)		Volume of Reservoir (10 ³ m ³)		Height (m)	Length (m)	Embankment (m ³)	Grout (m)	Spillway		
						Dam Site	F.W. (m)	L.W. (m)	EFFER. (10 ³ m ³)					DEAD (10 ³ m ³)	Weir Conc. (m ³)	Chute L. (m)
BATANAI	Cheshauga	I-1-1	2130A1	TM098583	14.9	662	674	640	60	14	400	79 000	0	156	65	0
	Sipala	I-1-2	2130A2	TM213688	22.5	616	626	1440	90	12	1000	75 000	300	207	86	50
	Dengenya	I-1-3	2130A2	TM291604	21.3	594	602	550	90	10	600	65 000	0	195	81	0
	Musaverema	I-2-1	2030B3	TN397011	131.0	672	680	4260	520	10	1000	105 000	250	609	254	50
	Zvirikure	I-2-2	2030D3	TM500868	25.0	620	635	2450	100	17	510	199 000	0	217	90	0
	Chingami	I-2-3	2030D3	TM528822	36.2	592	602	1160	140	12	600	102 000	0	274	114	0
	Kushava	I-2-4	2130B1	TM479671	9.9	597	604	710	40	9	500	41 000	0	120	50	0
	Boyi	I-2-5	2130B1	TM459669	23.8	583	590	1710	100	9	280	29 000	0	212	88	50
	Muruwira	II-1-1	1931D3	UP591022	20.6	910	925	650	90	17	800	145 000	425	195	81	50
	Musukurwa	II-1-2	1931D4	UP772038	9.2	833	845	510	40	14	520	104 000	0	112	47	0
BIKITA	Mutsinzwa	II-1-3	1931D4	UN872960	23.2	761	775	660	110	16	600	120 000	400	207	86	100
	Maranganyika	II-1-4	1931D4	UN907926	15.9	793	808	520	70	17	310	81 000	850	163	68	0
	Mundzami	II-1-5	2031B1	UN628769	11.6	802	818	380	50	18	300	93 000	450	135	56	100
	Chinyamatumawa	II-1-6	2031B1	UN654702	16.4	736	752	2370	80	18	400	115 000	900	163	68	0
	Chanyau	II-1-7	2031B1	UN618871	10.0	993	1009	1290	50	18	650	133 000	0	120	50	150
	Beta	II-1-8	2031B2	UN747784	30.8	786	802	520	140	18	450	104 000	450	250	104	0
	Chikuku	II-1-9	2031B2	UN807871	27.0	810	826	1040	120	18	310	93 000	450	228	95	80
	Chigumisirwa	II-1-10	2031B2	UN791799	16.3	778	791	1430	70	15	600	81 000	0	163	68	0
	Boora	II-1-11	2031B2	UN825814	16.1	750	766	1130	70	18	660	161 000	900	163	68	200
	Mashoko	II-2-1	2031B4	UN709346	27.2	644	656	890	130	14	450	63 000	700	228	95	150
GAZA KOMANANI	Zindove	II-2-2	2031B4	UN740375	10.6	627	640	880	50	15	300	49 000	750	128	53	0
	Mafaune	II-2-3	2031B4	UN855398	34.6	555	562	340	160	9	500	31 000	500	269	112	0
	Majjimba	III-1-1	2131A4	UM433376	84.3	395	398	930	60	5	1000	35 000	250	464	193	100
	Chanyenga	III-1-2	2131C2	UM241122	40.7	437	442	260	30	7	700	26 000	0	298	124	200
	Mpagari	III-1-3	2131C2	UM306103	41.6	423	430	1130	30	9	650	48 000	0	302	126	200
	Maizanga	III-1-4	2131B3	UM490413	55.0	380	383	540	40	5	1000	33 000	0	357	149	400
	Chingelelani	III-1-5	2131B3	UM617308	282.0	386	391	510	190	7	1000	58 000	0	212	88	500
	Chisakwasi	III-2-1	2032C1	VN159097	115.5	408	415	1570	80	9	500	63 000	250	563	235	100
	Chegwama	III-2-2	2032C3	VN115005	9.7	430	436	590	10	8	530	60 000	0	120	50	100
	Chompimbi	III-2-3	2032C3	VM050892	13.5	408	415	410	10	9	450	45 000	250	150	63	0
Chitsa	III-2-4	2132A1	VM092649	3.8	380	385	230	10	7	1000	57 000	250	64	27	0	
Chitsazani	III-2-5	2132A1	VM122640	60.4	370	375	440	40	7	1000	69 000	0	378	158	150	
Dunezo	III-3-1	2131C3	UL132736	13.8	472	479	400	10	9	350	31 000	500	150	63	150	

Table E-1 (2) Major Features of Dam

Dist.	Name of Dam	Dam No.	Map Ref. (1/50000)	Coordinate of Dam Site	Catchment Area (km ²)	Elevation of			Volume of		Dam			Spillway			
						Damsite (m)	F.W. (m)	L.W. (m)	EFFET. (10 m)	DEAD (10 m)	Height (m)	Length (m)	Embankment (m)	Grout (m)	Q (m ³ /s)	Waier Conc. (m)	Chute L. (m)
GAZA KOMANANI	Shavani	III-3-2	2131C3	UL09707	30.0	474	482	476	880	20	10	580	84 000	0	245	102	50
	Malibangwe	III-3-3	2231A1	UL050614	38.5	398	406	401	820	30	10	480	50 000	250	288	120	100
	Gezani	III-3-4	2231A1	UL092573	21.8	360	367	363	330	20	9	360	32 000	250	201	84	150
	Chonnanga	III-3-5	2231A1	UL162540	25.0	304	311.5	307	330	20	9.5	330	38 000	250	217	90	200
	Mangezi	III-3-6	2231A2	UL286392	20.6	231	235.5	233	200	10	6.5	520	46 000	250	195	81	50
	Grootvlei	III-3-7	2231A3	UL086321	39.5	217	220	218	200	30	5	1000	60 000	250	293	122	50
	Thinana	III-3-8	2231A1	UL023528	25.0	404	411	406	380	20	9	580	44 000	0	217	90	0
	Mutema	IV-1-1	1930D4	TP887008	28.3	1156	1168	1160	1020	30	14	400	82 000	0	234	98	0
CUTU	Gabriel	IV-1-2	1931C3	TN948971	22.7	1153	1163	1155	2180	20	12	1000	162 000	0	207	86	0
	Chimedza	IV-1-3	1931C3	UP008031	11.8	1215	1224	1216	1760	10	11	240	55 000	0	135	56	0
	Mukaro	IV-1-4	1931C3	UP108108	7.2	1302	1311.5	1304	1240	10	11.5	730	82 000	288	96	40	200
	Chimombe	IV-2-1	1931A3	UP127694	7.0	1221	1236	1226	1400	30	17	700	94 000	0	95	40	0
	Condongwe	IV-3-1	1930B4	TP838653	16.4	1406	1422	1411	1160	20	18	280	105 000	0	164	68	50
	Vushe	IV-3-2	1930D2	TP783355	23.9	1384	1400	1387	2640	20	18	900	155 000	0	212	88	0
	Chinyika	IV-4-1	1931C2	UP374420	33.4	1103	1110	1109	240	160	9	630	39 000	250	260	108	50
	Chatikobo	IV-4-2	1931C2	UP277385	17.5	1149	1160	1154	1310	80	13	650	82 000	0	176	73	0
	Maruta	IV-4-3	1931C2	UP322333	13.0	1093	1107	1099	1630	60	16	1000	237 000	0	143	60	0
	Mutero	IV-4-4	1931C2	UP362272	17.5	1068	1080	1071	2340	80	14	580	121 000	0	176	73	0
	Sinbanegavi	IV-4-5	1931C2	UP208185	32.8	1200	1211	1206	1090	160	13	1000	132 000	0	260	108	0
	Mushangwe	IV-4-6	1931D1	UP624271	18.5	970	977	975	260	90	9	600	37 000	500	182	76	50
	Chingai	IV-4-7	1931D2	UP735184	9.9	899	905	901	530	50	8	1000	92 000	5000	120	50	100
	Mucanda	IV-4-8	1931D4	UP226091	10.4	842	855.5	847	1320	50	15.5	800	177 000	0	120	50	300
	Mukuro	IV-4-9	1931C2	UP263228	219.0	1121	1130	1130	130	1040	11	600	62 000	0	777	324	0
	Munjanjanja	IV-4-10	1931C4	UP278155	52.8	1134	1150	1144	990	250	18	850	133 000	0	349	146	0
Masunda	IV-4-11	1931C2	UP355375	3.1	1097	1105	1099	440	10	10	590	61 000	0	56	23	0	
MASVINGO	Munongo	V-1-1	2030B4	TN680540	15.3	898	907	905	180	120	11	210	45 000	0	156	65	0
	Musingarabwe	V-1-2	2030B4	TN694443	9.5	863	878	871	690	70	17	730	142 000	0	120	50	0
	Marsikidzi	V-1-3	2031A3	TN969386	48.7	744	760	748	4100	170	18	570	147 000	0	333	139	0
	Makwawa	V-2-1	2031A3	UN019346	16.0	862	878	868	650	50	18	310	53 000	0	163	68	100
	Uzese	V-2-2	2031A3	TN945503	11.0	861	877	864	1860	40	18	380	104 000	0	128	53	0
	Majiri	V-2-3	2031A3	UN004438	20.7	699	715	707	1280	70	18	250	81 000	0	195	81	0
	Chatikobo	V-2-4	2031A3	UN065396	20.5	675	691	681	1680	70	18	360	90 000	0	195	81	0
	Maramwidze	V-3-1	2031C1	TN981184	15.0	733	749	739	1350	50	18	370	120 000	0	156	65	0

Table E-1 (3) Major Features of Dam

Dist.	Name of Dam	Dam No.	Map Ref. (1/50000)	Coordinate of Dam site	Catchment A (km ²)	Elevation of		Volume of		Dam			Spillway				
						Dam site (m)	F.W. (m)	L.W. (m)	EFFET (10 ³ m ³)	DEAD (10 ³ m ³)	Height (m)	Length (m)	Embankment (m ³)	GROUT (m)	Q (m ³ /s)	Weir Conc. (m ²)	Chute L. (m)
MADRAS	Fusira	V-3-2	2031C1	UN041091	30.8	556	572	563	2890	110	18	600	152 000	5400	249	104	0
	Magadu	V-3-3	2031C3	UN143006	41.9	514	529	519	5630	150	17	450	129 000	0	307	128	0
	Marongera	V-4-1	1930D2	TF776174	11.4	1255	1266	1258	1400	10	13	550	101 000	0	128	53	0
	Macheke	V-4-2	1930D4	TF850143	29.2	1217	1225	1219	1180	30	10	500	42 000	0	239	100	100
	Mahoto	V-4-3	1930D4	TN768959	23.4	1139	1148	1141	1260	20	11	1000	121 000	0	207	86	0
TAMIL NADU	Chirongwe	VI-1-1	2030D1	TN473312	13.8	808	820	811	790	10	14	590	79 000	0	150	63	0
	Nemvuzhe	VI-1-2	2030D1	TN558195	19.2	735	740	836	330	20	7	700	36 000	500	182	76	0
	Madzivire	VI-1-3	2030D4	TN682955	21.3	603	611	609	50	20	10	880	33 000	0	195	81	0
	Musuvovi	VI-1-4	2030D1	TN477081	5.9	670	677	672	360	10	9	400	33 000	500	85	35	0
	Magwari	VI-1-5	2030D1	TN619121	15.0	675	683	678	500	20	10	1000	57 000	0	156	65	0
	Zifunzi No.2	VI-1-6	2030D2	TN724116	6.4	670	677	671	320	10	9	45	5 000	250	90	38	0
	Takavarasha	VI-1-7	2030A4	TN171525	30.4	811	818	814	470	30	9	720	44 000	250	245	102	0
	Nyamakwe	VI-1-8	2030B3	TN552488	8.7	819	830	822	620	10	13	700	68 000	0	112	47	0
	Mukovotiri	VI-2-1	2030A1	TN065775	9.8	922	930	926	590	100	10	360	45 000	0	120	50	0
	Nadangombe	VI-2-2	2030A2	TN209819	4.4	986	994.5	990	350	30	10.5	500	54 000	263	70	29	100
	Zishiri	VII-1-1	2031A2	UN201648	14.0	1027	1043	1033	1600	70	18	320	84 000	0	150	63	0
	Chida	VII-1-2	2031A2	UN317732	20.0	969	985	977	350	90	18	220	83 000	450	188	78	0
	Veze	VII-1-3	2031A4	UN254470	18.3	749	765	754	1440	60	18	270	128 000	0	176	73	0
Zinguo	VII-1-4	2031A4	UN285370	9.3	669	685	675	930	40	18	420	110 000	900	115	48	0	
Nemakau	VII-1-5	2031A4	UN303557	10.6	797	810	801	1100	50	15	560	118 000	0	128	53	100	
Siyavarewa	VII-1-6	2031A4	UN423388	16.2	687	698	692	1030	70	13	360	65 000	0	163	68	0	
Manjeru	VII-1-7	2031A4	UN291471	8.5	727	740	731	1010	30	15	450	65 000	0	108	45	100	
Chenyu	VII-1-8	2031A4	UN197404	25.1	671	687	676	4410	90	18	1000	220 000	0	217	90	100	
Maraire	VII-1-9	2031B3	UN520545	8.7	712	727	718	940	40	17	380	81 000	850	110	46	100	
Chivamba	VII-1-10	2031B3	UN515488	18.5	701	713	704	1860	90	14	700	113 000	0	179	75	0	
Zuve	VII-1-11	2031B3	UN552490	48.1	675	688	681	2560	230	15	580	89 000	0	329	137	0	
Mabvute	VII-1-12	2031C2	UN388234	31.1	630	645	635	2780	150	17	530	99 000	850	249	104	100	
Mujena	VII-1-13	2031C2	UN306265	35.9	605	621	613	1560	140	18	270	87 000	450	274	114	50	

