## **CHAPTER 2**

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Water Pollution Control Master Plan for the Upper Manyame River Basin

## SECTION 3 ENVIRONMENTAL MANAGEMENT AND WATER POLLUTION STATUS

## 3.5 Water Pollution Status in the Study Area



Table 3.5.1 Guideline for Safe Sampling in Zimbabwe

- 1. Take care when sampling from:
- fast-flowing rivers
- deep lakes
- contaminated water
- 2. Avoid direct skin contact with the water:
- wear a plastic gauntlet which covers the hand and lower arm
- wear long plastic boots
- wipe outside of bottle or sampler with cloth soaked in disinfectant
- 3. When sampling simultaneously for microbiological and chemical analyses, the microbiological sample should be taken first as this will reduce the risk of contamination being introduced at the sampling point.
- 4. Hold sampling bottle by the lower part and submerge it to about 30cm or to mid-depth.
- In streams, stand facing upstream with bottle in front of you. Never sample close to the bank.
- When sampling from a bridge, attach a weight to the bottle and lower it with a string.
- 5. Proper labeling of samples is essential; labels should be water proof and include.
- time, date and location; sampler's name: any preservative added; and type of analysis required.



Table 3.5.2 Summary of Water Quality Data of Upper Manyame River Basin by CHDW (Year 1995)

<b>7/</b> 3ໝ	(ath) sesassassid	#DIV/0!	#DIV/0!	#D[V/0]	0.77	0.9	0.83	0.33	0.00	0.24	0.0	7 0 0	3.0°	0.23	0.72	0.39	#DIV/0!	#DIV/0!	#DIV/01	#DIV/01	#DIV/0!	#DIV/0!	0.10	90.0	0.09	0.08	0,10	0.09
J\\ga	(94) fiorl	#DIA/0;			4.27	3.54	3.8	0.51	0.48	050	0.15	0.95	0.35	0.18	4.47		#DIV/0!	#DIV/0i	#D!V/0i	-0/Λ[Ω#	#DIV/01	#DIV/0!	0.25	0.41	0.31	0.85	0.95	0.89
<b>J</b> .&m	nsgez O borlossid	#DIV/0!	4.48	4.48	1.65	3.30	2.48	5.94	7.53	6.47	4.39	1.75	3.86	5.13			#DIV/0i		5.88	#DIV/0!	6.18	6.18	7.81	4.20	6.61	0.20	#DIV/0!	0.20
பு/த்ய	olkniq20diq	#DIV/0!	0.09	0.09	0.51	0.35	0.43	1.21	0.35	0.93		15.0		0.33	Ç	0.33	#DIV/0		0.37	#DIV/0!	1.63	1.63	2.00	0.15	1.39		5.10	
-	econtraff faioT	#DIV/0		50.0	110.0	100.0	105.0		70.0	88.3		20.0		1.44.0		148.0	#DIV/0	45.0	15.0	10/\IG#	85.0		153.0	125.0	143.7	133.3	145.0	137.2
w5/Su	Electric Conductivity	#DIV/0!		130.0	0.00€	0.00£		572.5	300.0	481.7	367.5	200.0	334.0	710.0		753.3	#DIV/0;	202.5		#DIV/0!	545.0	545.0	582.5	750.0	638.3	920.0	930.0	923.3
<b>7/3</b> m	T-Alkalinity	#DIV/0!	130.0	130.0	130.0	140.0	135.0	80.0	390.0	183.3	127.5	70.0	116.0	110.0		123.3	#DIV/0!	135.0	135.0	#DIA/Oi	130.0	130.0	145.0	210.0	166.7	415.5	315.0	382.0
-	Hq	#DIV/0!	7.17	7.17	92.9	6.59	6.68	6.93	6.71		68'9		7.13	2.0	7.49	7.19	10/∧IQ#	7.26	7.26	10/AIG#		7.39		7.10	7.01	7.02	6.97	7.00
1⁄8ள	อโหาโป้	#DIV/0!	0.007	0.007	0.012	0.020	0.016	0.029	0.021	0.026	0.067	0.021	0.057	0.013	0.005	0.010	#DIA/01	0.017	0.017	10/AIG#	0.047	0.047	0.070		0.052		0.069	0.461
Л∕தள	Sitric	#DIV/0!	0.140 #DIV/0!	0/AJQ# 0+1 0	0.170 #DIV/0!	#DIV/0!	#DIV/0!	0.003	i0/AIG#	0.003	0.112	0.015	0,093	0.00	#DIV/0!	0.004	I0//\JC#	#DIV/0!	#DIV/0!	#DIV/0!	0.552	0.552	0.027	0.028	0.027	0,609	0.390	0.536
J\&m	nagontik sinominA	#DIV/0!	0.140	0.140	0.170	3.000	1.585	0.080	0.250	0.123	0.648	0 200	0.558	#DIV/0i	#DIV/0!	#DIV/0!	#DIV/0!	0.180	0.180	10/AIQ#	4.325	4.325	0.100	0.270	0,168	73.000	32.350	59.450
T/\$m	Chloride	#DIV/0!	14.4	14.4	39.0	17.0	28.0	35.0	30.0	33.3	75.0	19.0	63.8	101.0	87.0	96.3	#DIV/0!	15.4	15.4	#DIV/0!	79.4	79.4	50.5	77.5	59.5		0.08	100.7
uiđđ	Oxygen Absorbed	10/VIC#	6.55	6.55	1 60	12.8	7.25	1.60	3.55	2.25	4.20	6.20	99.4	3.80	18.60	8.80	#DIV/0!	6.25	6.25	#DIV/0:	14.30	14.30	1.73	8.50	3.98	24.06	13.80	20.64
.Сер/ <sub>с</sub> ка	Нон	ŀ	•		ŀ	,	٠	·	ŀ	•	ŀ	<u> </u> .	Ŀ	Ŀ	•	•	Ŀ	Ŀ	Ŀ	ŀ	•	•	Ŀ	Ŀ	Ľ	ŀ	•	•
	रक्तभी	Ave	Avc	A.V.	A V	A	Ave	Ave	Ave	A V	A V	A	Avc	Ave	Avc	Avc	Ave	A.K.	A	Avc.	AVC	Ave	Avc	Š	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	AVC	Avc	Avc
	Season	Dry	Rain	Total	5	Sain	Total	Ď Ó	Rain	Total	Š	Sain	Total	Š	8ain	Total	Day	E.	Total	S <sub>2</sub> C	Rain	Total	Ğ	Rain	Total	Š	Rain	Total
	tnio <b>T</b> olqmr2		Upstream			Pelow Seke Dam			Newroad Bridge	-B		Skyline Bridge			Below Lake Chivero						Widdroad			Above Works			Below Works	
	soibott valet Bodics	Manyame River															Musitari River			Riiwa River			Nyatsime River					

Note: #DIV/0! indicates that there is no data available to calculate.

Table 3.5.2 Summary of Water Quality Data of Upper Manyame River Basin by CHDW (Year 1995) (cont'd)

un <sub>3</sub> \qa\	Season Items Flow O23gen Absorbed	Dry Ave 26.50	Avc 4.90	Avc 15.70	Avc 4.80	Rain Ave 3.60	Total Ave 4.20	Dry Ave 16.87	Rain Ave 6.60	Ave 1	Dry Ave 9.17	Rain Ave 3.70	Total Ave 7.80	Dry Avc 3.10	Rain Ave 4.80	Total Ave 3.95	Dry   Ave 2.50	Ave.	Total Ave 3.05	Dry Ave 2.80	Rain Avc 4,43		-	$\vdash$	Avc.	Avc.	-	Avc.	Avc.	Avc.	Total Avc 10.53
Agm Agm	Chloride Ammonia Mitrogen	19.0 0.340	L		261.0 0.650	45.0 11.500	153.0 6.075	83.0 2.833	37.0 13.000	71.5 5.375	63.0 0.213	37.0 #DIV/01	56.5 0.213		51.0 0.297	66.0 0.402	77.3 0,403		72.5 0.553	81.0 0.395	65.0 0.277	73.0 0.324	80.3 0.125	69.7 0.270	75.0 0.173	85.0 1.100		İ			135.7 7.400
Jgn Jgn	Shiriid Sisviid	4DIV/0! 0.006	#DIV/0  0,016	i0/AIC#	(0/128 #DIV/0)	0.005 0.027	0.067 0.027	0.035 0.076	0.006 0.009	5 0.028 0.053	5 0.008 0.014	#DIV/0! 0.015	3 0.008 0.015	7 0.077 0.041	7 0.008 0.020	870.0 6700 0	3 0,146 0.002	0.074	3 0.110 0.036	5 0.099 0.034	7 0,084 0,018		0.019	0,0070 0.048	0.049	0.031					010.0   519.0   0
-	Кq	6.48			6.22	4,43	5.33	6.78	5,48	6.45	68.9	6.16	6.71	7.10		6.83	7.20		7.03	7.34		7.14		7.12	7.26	7.32	7.05	3 7.18	7.40		7 42
J\&m mɔ\2u	T-Alkalinity Sleetric Licetric	140.0 290.0	30.0 130.0		60.0 1000.0	#DIV/0: 1860.0	60.0 1430.0	113.3 836.7		90.0 1115.0		10.00	92.5 1075.0			135.0 675.0	196.7 790.0		163.3 755.0	190.0 813.3	136.7 666.7	163.3 740.0	166.7 793.3	113.3 613.3	140 0 703 3	173.3 813.3	123.3 716.7	148.3 765.0	285.0 1115.0	270.0 1250.0	280.0 1160.0
-	eesandraM laioT	0.50	0.05 0		0.0001 0	0.058 0.		.71 842.0		l		.0 240.0	0.415.0			.0 359.5					7 291.7			.3 296.7	3 368.0	.3 444.0	7.7 286.7	.0 365.3	0.35.0		566.7
7/8m	Photografe	0.04	0.20	0.12	0.21	2.20	1.21	1.70		2.49	0.16	0.24	0.19	0.17	0.8	0.56	0.76	0.29	0.52	0.13	0.58	0.35	0.28	25.0	0.38	0.40	09'0	0.50	0.71	1.65	1.02
Agm Agm	Dissolved Oxygen	0.75 #DIV/0!	4.35 #DIV/0!	2.55 #DIV/0!	5.50 #DIV/0!	6.95 #DIV/0!	6.23 #DIV/0!	0.45 #DIV/0!		0.45 #DIV/0'		3.95 #DIV/0	3.78 #DIV/0!	L	3.23 #DIV/01	2.18 #DIV/0!					2.73 #DIV/01	2.98 #DIV/01	5.15 #DIV/0!	4.63 #DIV/0!	4.84 #DIV/0!	3.12 #DIV/0!	3.67 #DIV/0!	3.39 #DIV/0'	4.70 #DIV/0!		4.25 #DIV/0'
	Manganese (Mn)	i0/AIG#	! #DIV/0!						-	~			#DIV/01	-+					_						#DIV/0	10/VIC# 10	10/AIG# 10	)'   #DIV/0!	0/AIQ# (0		io/AIG# ic

Note: #DIV/0! indicates that there is no data available to calculate.

Summary of Water Quality Data of Upper Manyame River Basin by CHDW (Year 1995) (cont'd) Table 3.5.2

	Public Water Bodies	Marimba River					1						_[			_1		•	
	Jaio¶ Alqms2		Bulawayo RD			Westwood RD			Kambuzuma RD	Ì		Above Crow,			Below Crow.			At Lake	
	1002.89.Z	λίΩ	Rain	Total	Ω̈́	Rain	Total	Š	Rain	105	À	Rain	Total	č	Rain	ਰੂਟ	À	Rain	Total
	tmo)I	Avc.	Avc.	Avc.	Ave.	Avc.	Avc.	Avc.	Avc.	Avc.	Ave.	Avc.	Ave	Avc.	Avc.	Ş.	Avc.	Avc.	Ave.
(ep/en	Flor	-	•	-	•	•	-	-	•	۱	•	•	-	-	+	-	-	+	•
wdd	bedroedA neggzO	7.07	3,10	5.48	6.20	9.60	6.36	3.67	4.65	4.06	5.43	8.75	92.9	5.83	9.50	7.30	2.60	6.75	5.37
J\gm	Spirold)	81.7	98.0	88.2	103.0	110.0	105.8	83	105.0	8.66	117.0	112.0	115.0	143.0	151.0	146.2		161.0	1463
ப⁄§ம	nagoriik sinommA	0.200	#DIV/0!	0.200	0.315	0.285	0.300	0.860	0.975	0.937	0.260	#DIV/0!	0.260	0.490	0.190	0.415	#DIV/0!	0.290	0.290
ղ/ <del>ያ</del> ա	Withte	0.023	0.007	0.015	#DIV/0!	0.012	0.012	0.030	0.016	0.020	0.036	0.008	0.022	0.033	0.024	0.030	#DIV/0!	0.030	0.030
J\gm	hitrate	0.029	0.009	0.022	0.012	0.014	0.013	0.011	0.015	0.012	0.047	0.014	0.034	0.046	0.018	0.035	0.020	0.015	0.017
-	Hq	7.25	7.24	7.25	7.17	400'	7.14	7,30		7.27	7.46	7.36	7.42	7.54	7.59	7.56	7.64	7.61	7.62
J\gm	VifallalfA-T	140.0	170.0	152.0	236.7	225.0	232.0	220.0		209.0	220.0	220.0		266.7	230.0	252.0	370.0		293.3
mə\8u	Electric Conductivity	666.7		732.0	886.7	Ī	940.0	848.3		885.0	0.026	950.0	0.026	1096.7	1205.0		1010.0	1252.5	1171.7
•	ezonbrail fatoT	186.7	200.0	192.0	253.3	240.0	248.0	210.0	205.0	208.0	210.0	247.5	225.0	200.0	215.0	206.0	230.0	215.0	220 0
7/8w	Ріюзріваєс	0.23	0.25	0.24	0.0	2.70	1.62	1.17	0.55	0.92	0.95	0.53	0.78	0.71	0.52	0.64	0.41	0.82	0.68
J\gm	nag (z O barloszi C	6.12	5.63	5.92	4.38	5.00	4.54	4.94	8.	4.56	5.20	3.78	4.63	6.27	5.33	5.89	6.50	5.75	909
J\gm	(Fe)	#DIV/O	#DIV/0!	i0/AIC#	#DIV/0!	i0/AIQ#	io/Alq#	#DIV/0!	#DIV/0!	#DIV/0!	10/AIQ#	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0i	6 00 #DIV/01
A'gm	(ald) əsəasyasld	#DIV/0	0/AIQ#	0/AIC#	0/AIC#	%IQ#	0/AIQ#	0/AIQ#	#DIV/0	#DIV/0	#DIV/0	#DIV/0	0/AIG#	%IQ#	#DIV/0	#DIV/0	#DIV/0	#DIV/0	W/11U#

Note: #DIV/0! indicates that there is no data available to calculate.

Table 3.5.2 Summary of Water Quality Data of Upper Manyame River Basin by CHDW (Year 1995) (cont'd)

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	Public Water Bodics	Seke Dam			<u> </u>			Lake Chivero	_				•				Lake Manyame					
	Sample Point		Top			Bottom			Top	. !		Middle			Bottom			Top			Bottom	
	noze32	λί Ω		Total	ł	┢	Total			Total	νίΩ	-	Total	Dry	Rain	Total	<b>├</b> ~~	Rain	Total	Dry		I
	Sm3)[	Avc.	Avc.	Avc.	Ave	Ave.	Avc.	Avc	Avc.	Ave.	Avc.	Avc.	Avc.	Avc.	Ave.	Avc.	À Ç	Avc.	Avc.	Ave	Avc	
Хер/ <sub>€</sub> ш	rol1		,	-	,	٦	•	•	•	•	·	•	•	•	•	•	ŀ	•	•	•	•	
ಬರೆದ	Oxygen Absorbed	#DIV/0!	5.60	8.8	#DIV/0!	17.40	17.40	7.20	5.60	29.9	5.90	6.70	6.17	6.00	7.70	6.57	#DIV/0:	#DIV/01	#DIV/0!	10/AIQ#	#DIV/0!	20,000
7∕தள்	Chloride	#DIV/0i	13.0	13.0	#DIV/0!	13.0	13.0	83.0	87.0	84.3	85.0	89.0	86.3	85.0	91.0	87.0	#D1V/0!	#DIV/0!	#DIV/0!	#DIA/0i	#DIV/0!	
J\gm	69gorli// sinommA	#DIV/0!	0.050	0.050	10//\JC#	0.440	0.440	0.085	001.0	060.0	0.105	0.105	0.105	0.245	0.110	0.200	#DIV/0;	10/AIQ#	IO/AIG#	10//\IQ#	#DIV/0!	
J\gm	sintiN	0/AIQ#		0.007	뉱	0.003	0.003	0.013	0.004	0.010	0.014	0.007	0.011	0.032	0.007	0.024	#DIV/0!		i0/AIG#	10/AIG#		
J\\gai	Hitrate	#DIV/0!	0.003	0000	#DIV/oi	0.001	0.001	L.	0.002	0.014	0.010	0.002	0.007	910.0	100.0	0.011	#DIV/0!	#DIV/0! #DIV/0!	0/AIG#	10/AIQ#	#DIV/0! #DIV/0!	
_	Ħq	#DIV/0!	7.67	7.67	10/AIQ#	6.85	6.85	L.	8.71	7.93	7.63	8.47	167	67.8	85.8	8.52	#DIV/0!	io/AIQ#	#DIV/0i	#DIV/0!	#DIV/0!	
പ⁄ളന	T-Alkalinity	#DIV/01	40.0	40.0	#DIV/0!	54.0	54.0	0.591	170.0	166.7	165.0	174.0	168.0	164.0	176.0	168.0	#DIV/0!	# <b>DIV</b> /0:	#DIV/01	#DIA/OI	#DIV/0!	_
ns/Su	Electric. Conductivity	#DIV/0!	#DIA/Oi	io/AIQ#	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIA/Oi	10/AJQ#	10/AIC# 1	#DIV/0!	#DIV/0!	i0/∧IC# (	10//\IQ#	#DIV/0!	i0/AIC#	#DIV/01	0/\JQ#	#DIV/0!	#D[V/0]	
-	Total Hardness	#DIA//0	36.0	36.0	#DIV/0!	40.0	40.0	126.0	140.0	130.7	127.0	140.0	131.3	130.0	132.0	130.7	10//\IQ#	10//\IQ#	10//\IC#	:0//\IC#	#D[V/0] #DIV/0!	
വ⁄8ബ	Phosphate	#DIV/0	90.0	90.0	#DIV/OI	0.18	0.18	0.41	0.40	0.40	0.25	0.64		87'0	0.38	15'0	IO/AIQ#	#DIV/0!	10//\IQ#	10/AIG#	#DIV/0!	
Agm	Dissolved Oxygen	#DIA/0i		#DIV/0!	#DIV/0!	0.18 #DIV/0!	10/AIQ#		0.40 #DIV/0!	#DIV/ol	i0/AIG#	#DIV/0!	0.38 #DIV/01	10/AIG#	#DIV/0!	10/AIG#	#DIV/0	#DIV/0!	#DIV/0!	10/AIG#	#DIV/0!	1
J/3u:	(Fe)	#DIA/0i	1.02	1.02	#DIV/0!	2.33	2.33	0.13	0.16	0.14	0.09	0.16	0.11	0.34	0.50	0.39	10/AIG#	i0/AIG#	i0/AIG#	10/AIQ#	#DIV/0!	
J\gm	Manganese (Ma)	0/AIQ#	÷.0	0.48	#DIV/0	0.64	0.64	0.0	0.07	0.0	0.11	0.07	0.10	0.02	0.0	0.02	#DIA/0	0/AIQ#	#DIA/0	#DIV/0!	#DIV/0	1011

Note: #DIV/0! indicates that there is no data available to calculate.

Table 3.5.3 Summary of Water Quality Data of Manyame River

			m3/day	wdd	mg/l	₩ mg/l	mg/l	mg/i		mg/l	uS/cm		mg/l	//Sm	l/gm	mg/l
Sample Point	Sampling Year	ltems	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	Ha	T-Alkalinity	Electric Conductivity uS/cm	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)
below	1991	Min. Ave. Max.	-	1.20 1.20 1.20	11.0 11.0 11.0	0.090 0.090 0.090	0.000 #DIV/0! 0.000	0.000 #DIV/0! 0.000	7.15 7.15 7.15	30.0 30.0 30.0	132.0 132.0 132.0	50.0 50.0 50.0	0.012 0.012 0.012	5.70 5.70 5.70		0.03 0.03 0.03
	1992	Min. Ave. Max.	-	3.00 3.10 3.20	15.0 17.5 20.0	0.120 0.128 0.135	0.000 #DIV/0! 0.000	0.040 0.040 0.040	7.81 7.84 7.86	90.0 120.0 150.0	190.0 250.0 310.0	97.5 115.0	0.012 0.016 0.020	5.60 6.50 7.40	0.61 0.69 0.77	0.19 0.22 0.24
!	1993	Min. Ave. Max.	-	0.80 4.25 9.00	9.0 14.5 21.0	0.055 0.079 0.115	0.008 0.008 0.008	0.014 0.054 0.144	6.49 6.94 7.54	40.0 55.0 70.0	100.0 133.3 200.0	32.0 39.7 46.0	0.020 0.069 0.148	5.20 6.48 8.80	0.50 1.80 3.40	0.25 0.34 0.43
	1994	Min. Ave. Max.	-	1.00 3.00 7.00	3.6 15.7 27.0	0.110 0.655 1.860	0.000 #DIV/0! 0.000	0.014 0.043 0.100	6.86 7.14 7.69	44.0 84.0 130.0	180.0 243.3 290.0	28.0 52.0 80.0	0.032 0.378 0.760	3.50 4.93 6.10	1.00 2.64 5.52	0.20 0.64 1.00
	1995	Min. Ave. Max.		1.60 2.90 4.20	39.0 63.0 87.0	0.170 0.175 0.180	0.000 #DIV/0! 0.000	0.012 0.012 0.012	6.76 6.86 6.96	80.0 105.0 130.0	220.0 260.0 300.0		0.220 0.365 0.510	1.65 2.38 3.10	4.27 4.27 4.27	0.77 0.77 0.77
	1996	Min. Ave. Max.	- - -	11.00 11.95 12.90	13.0 15.0 17.0	3.000 3.000 3.000	0.000 #DiV/0! 0.000	0.020 0.020 0.020	6.59 6.82 7.05	50.0 95.0 140.0	150.0 225.0 300.0	70.0 85.0 100.0		3.30 4.75 6.20	1.01 2.27 3.54	0.03 0.46 0.90
NEW RO	1991	Min. Ave. Max.	-	1.60 2.55 4.80	16.0 32.5 45.0	0.050 0.233 0.450	0.012 0.020 0.033	0.002 0.006 0.011	6.91 7.13 7.40 7.05	50.0 345.0 1210.0 50.0	150.0 187.5 250.0 140.0	32.0 41.8 51.0 27.0	0.036 0.128 0.400 0.042	2.00 2.65 3.10 3.30	0.13 0.70 1.03 0.07	0.10 0.20 0.32 0.05
	1992	Min. Ave. Max.	-	2.80 4.49 8.80	27.0 39.6 51.0 27.0	0.165 1.571 3.350 0.060	0.015 0.071 0.170	0.003 0.115 0.404 0.019	7.22 7.53 6.63	75.1 92.0 30.0	251.4 370.0 140.0	41.1 50.0 36.0	0.161 0.630 0.040	5.17 7.10 0.10	0.67 2.35 0.16	0.20 0.46 0.05
	1993	Min. Ave. Max.	-	1.60 7.48 25.00 2.00	38.0 74.0 5.9	20.489 100.000 0.260	0.013 0.462 1.350 0.011	0.019 0.071 0.124 0.010	7.03 7.76 6.99	151.6 550.0 36.0	432.5 1140.0 160.0	57.0	0.147	1.96 3.50 5.40	0.60 1.03 0.38	0.22 0.40 0.06
	1994	Min. Ave. Max. Min.	- - -	3.35 4.00 1.20	31.3 67.4 33.0	3.420 8.000 0.020	0.011 0.011 0.003	0.065 0.164 0.006	7.33 7.82 6.68	59.0 90.0 40.0	183.3 200.0 200.0	32.0 38.0 45.0	0.250 0.580 0.030	6.75 8.90 2.95	1.01 1.61 0.05	0.11 0.17 0.04
4	1995	1	-	2.00 3.80 5.30	39.7	0.110 0.200 0.250	0.003 0.008 0.012 0.000	0.025	6.87 7.06 6.61	73.3 100.0	481.7 1200.0 150.0	87.5 120.0	0.824	5.28 8.30	0.40 0.64	0.26
	1996	•	-	10.85 16.40 5.60	16.0	0.250 0.250 0.380	#D(V/0! 0.000 0.020	0.019 0.019 0.016	6.85 7.09 6.81	370.0 700.0	175.0 200.0 250.0	65.0 80.0	0.426	8.08 10.15	0.75 0.91	0.14 0.14
SKYLINE	1991	•	-	14.00 27.20 3.20	40.5	1.645 4.300 0.195	0.137 0.350 0.040	0.029 0.055 0.014	7.50 7.95 6.82	305.0 710.0	675.0 1400.0 100.0	60.3 97.0		3.97 5.10		0.14 0.24
	1992	ľ	-	8.77 16.80 4.80	87.7	1.744	0.138 0.350 0.065	0.175 0.530 0.044	7.34 7.74 6.88	281.1 452.0	822.9 1360.0 100.0	106.6 140.0	1.412 3.940 0.480	4.77 7.90	0.46 1.34	0.08 0.13
	1993	Ave. Max. Min.	-   <u>-</u>	7.20 10.20 1.40	48.2	6.387 28.000 0.900	0.491 1.580 0.100	0.077 0.140 0.008	7.38 7.88 7.26	196.4 372.0	580.0 950.0 450.0	73.3 104.0	1.200 2.480 0.036	4.08 6.00	0.45 0.87	0.06 0.11 0.03
	1994	l l	<u>  -</u>	6.80 13.00 0.90	42.3	15.635 30.000 0.280	0.240 0.360 0.017	0.638 1.452 0.010	7.55 7.81 6.66	186.0 340.0	676.7 930.0 210.0	57.7 80.0 44.0	1.261 2.960 1.020	4.60 7.40 1.10	1.34 0.03	0.13 0.20 0.02
	1995		-   <u>-</u>	4.84 7.40 6.20	67.8 107.0 9.0	1.338	0.094 0.250 0.003	0.055 0.143 0.003	7.10	130.0 40.0	338.0 590.0 140.0	105.0 50.0	2.158 3.800 0.180	7.00 1.75	0.35 0.95	
	1996	Ave. Max.	<b>i</b> -	6.50 6.80	14.0 19.0	0.200 0.200	0.012 0.015	0.012 0.021			170.0 200.0		0.258 0.336			0.04 0.04

Table 3.5.3 Summary of Water Quality Data of Manyame River (cont'd)

			m³/day	mdd	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L	mg/L	mg/L
Sample Point	Sampling Year	tems!	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	Hd	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)
at Manyame	1992	Min. Ave.	•	2.40 3.70	53.0 59.8	0.050 0.790	0.016 0.029	0.005 0.013	7.40 7.65	78.0 100.0	500.0 552.5	95.0 100.8	0.030 0.035	3.40 7.25	0.11	0.06 0.31
at manyamo	1002	Max.		5.80	84.0	1.540	0.043	0.018	7.79	120.0			0.042	10.10		0.84
		Min.	-	0.40	33.0	0.040	0.008	0.023	7.25	80.0	220.0	82.0		7.10	0.09	0.01
	1993	Ave.	-	2.72	46.2	0 246	0.008	0.040	7.59	89.2	356.0		0.049	8.72	0.60	0.15
		Max.	-	4.80	59.0	0.740		0.055	8.09	100.0	450.0		0.100	10.00		0.35
		Min.	-	2.20	52.0	0.120	0.004	0.008	6.98	80.0	450.0	0.1	0.044	1.25	80.0	0.14
	1994	Ave.	-	3.56	66.2	0.228	0.032	0.044	7.08	101.4	515.0	82.7	0.993	4.11 8.20	0.55 0.96	0.60
		Max.	-	5.00	87.0	0.490	0.060	0.110	7.19 6.88	135.0 100.0	560.0 560.0		3.900 0.130	1.00	0.07	1.06 0.09
	1995	Min. Ave.	-	2.60 7.82	55.0 84.3	0.140 0.145	0.004 0.015	0.003	7.12	125.0	721.7		0.761	3.70	1.83	
	1883	Max.		18.60		0.150	0.013	0.003	7.49	150.0		260.0		7.00	5.09	4.40
		Min.		5.80	51.0	0.120	0.000	0.000	6.73	150.0	390.0		0.100	5.55	1.24	0.12
	1996	Ave.		5.80	51.0	0.120	#DIV/0!	#DIV/0!	6.73	150.0	390.0	3	0.100	5.55	1.24	0.12
<u> </u>	L	Max.		5.80	51.0	0.120	0.000	0.000	6.73	150.0	390.0	120.0	0.100	5.55	1.24	0.12

Table 3.5.4 Summary of Water Quality Data of Musitwi River, Manyame River Upstream

			m³/day	mdd	mg/L	mg/.	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Year	items	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	Ąd	T-Alkalinity	Electric Conductivity uS/cm	Total Hardness	Phosphate	Dissolved Oxygen
MUSITWI	1991	Min. Ave. Max.		1.00 2.80 4.20	4.0 5.5 7.0	0.050 0.283 0.720	0.005 0.005 0.005	0.011 0.025 0.050	6.40 7.25	36.0 44.0 60.0	90.0 95.5 102.0	26.0 27.3 30.0	0.020 0.223 0.800	5.60 7.63
	1992	Min. Ave. Max.		1.20 1.73 2.20	10.0 22.3 32.0	0.100 0.115 0.130	0.000 #DIV/0! 0.000	0.024	6.99 7.23	52.0 84.0	130.0 240.0	50.0 64.3 75.0	0.024 0.618 1.640	3.90 4.87
	1993	Min. Ave. Max.	- -	3.00 4.90 6.80	19.0 40.0 61.0	0.200 0.200 0.200	0.009 0.009 0.009	0.013 0.051 0.089		70.0 75.0 80.0	100.0 102.5 105.0	22.0 29.0 36.0	0.050 0.105 0.160	4.40
	1994	Min. Ave. Max.	-	4.00 8.80 17.20	11.0 17.0 23.0	0.240 6.413 11.000	0.005 0.005 0.005	0.011 0.015 0.020	6.69 6.96	60.0	90.0 276.7	30.0 78.3 150.0	0.210 0.517	4.40 6.45 8.50
	1995	Min. Ave. Max.	•	5.30 5.30 5.30	19.9 19.9 19.9	0.000 #DIV/0! 0.000	0.000 #DIV/0! 0.000	0.016 0.016 0.016	7.40 7.40	220.0 220.0 220.0	325.0 325.0	30.0 30.0 30.0	0.680 0.680 0.680	5.85 5.85 5.85
	1996	Min. Ave. Max.	-	7.20 7.20 7.20	11.0 11.0 11.0	0.180 0.180 0.180	0.000 #DIV/0! 0.000	0.017		50.0 50.0 50.0	80.0 80.0 80.0	60.0 60.0 60.0	0.050 0.050 0.050	5.90 5.90 5.90
Manyame(US)	1991	Min. Ave. Max.	•	1.80 2.55 3.00	4.0 7.5 13.0	0.090 0.140 0.170	0.005 0.008 0.011	0.003 0.058 0.160	6.54 7.20	55.0 78.3 130.0	110.0 152.3 210.0	40.0 46.3 57.0	0.020 0.083 0.230	4.00 6.25 8.10
	1992	Min. Ave. Max.	1	2.00 2.10 2.20	7.0 16.0 25.0	0.100 0.100 0.100	0.000 #DIV/0! 0.000	0.028 0.028 0.028	7.13 7.22	56.0 83.0 110.0	120.0 125.0 130.0	50.0 57.5 65.0	0.100 0.125 0.150	4.30 4.75 5.20
	1993	Min. Ave. Max.	- -	1.60 3.68 5.20	6.0 26.4 77.0	0.180 0.207 0.250	0.039 0.039 0.039	0.040 0.069 0.124	6.80	50.0 78.0 100.0	75.0 128.0 195.0	36.0 54.0 74.0	0.080 0.153 0.280	1.10 3.92 6.50
	1994	Min. Ave. Max.	-	2.60 3.87 5.00	17.0 19.7	0.150 1.875	0.000 #DIV/0! 0.000	0.010 0.113	6.55 6.94	80.0 90.0	100.0 133.3	30.0 56.7	0.140 0.190	4.80 5.47
	1995	Min. Ave.	-	1.70 3.80	11.0 15.4	0.000 #DIV/01	0.016 0.016	0.066 0.066	6.93 7.04	90.0 150.0	195.0	70.0 70.0	0.014 0.075	1.30 2.38
	1996	Max. Min. Ave.		7.20 7.20	9.0 9.0	0.000 0.140 0.140	0.016 0.000 #DIV/0I		7.19 7.19	50.0 50.0	80.0 80.0		0.136 0.050 0.050	5.50 5.50
L	L	Max.		7.20	9.0	0.140	0.000	0.007	7.19	50.0	80.0	30.0	0.050	5.50

Table 3.5.5 Summary of Water Quality Data of Ruwa River

			m³/day	mdd	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Year	Items	© Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	Нd	T-Alkalinity	Electric Conductivity uS/cm	Total Hardness	Phosphate	Dissolved Oxygen
		Min.	0	2.20	20.0	0.10	0.008	0.008	6.45	50.0	170.0	32.0	0.10	1.0
WIDD RD	1991	Ave.	#DIV/0!	3.80	36.3	0.16	0.008	0.014	6.87	50.7	243.3	44.0	0.16	2.1
}		Max.	0	6.20	64.0	0.22		0.019	7.10	52.0	360.0	64.0	0.26	3.0
) i		Min.	0	4.40	40.0	0.08	0.013	0.002	6.75	80.0	190.0	75.0	0.12	0.3
<b>!</b>	1992	Ave.	#DIV/0!	7.65	88.8	2.42	0.017	0.032	6,95	1		83.8	0.37	1.1
1		Max.	0	11.60	125.0	9.20	0.020			150.0		90.0	0.48	1.9
<u> </u>		Min.	0	2.40	25.0	0.11	0.010	0.010	6.88	60.0	95.0	38.0	0.11	2.3
]	1993	Ave.	#DIV/0!	7.88	61.4	27.38	0.015	0.098	7.18	124.0		69.6	0.44	5.2
		Max.	0	13.20	93.0	135.00	0.020			210.0		136.0		7.0
		Min.	Ŋ	1.40	33.0	0.11	0.006	0.059	6.70	50.0	140.0	37.0	0.12	1.5
	1994	Ave	#DIV/0!	5.60	39.0	1.71	0.006	0.353	7.06	90.0	226.3	63.0	0.62	4.4
		Max.	0	12.00	47.0	3.30	0.006			110.0		90.0	1.74	6.8
1 1		Min.	0	5.40	67.0	2.20	0.090	0.026			460.0	86.0	1.44	4.6
	1995	Ave.	#DIV/0!	12.50	103.4	5.35	0.595			175.0		103.0		5.3
		Max.	0	19.60	139.9	8.50	1.100		7.64	~~~~	950.0			6.0
1 1		Min.	0	9.00	19.0	0.15	0.003	0.014	7.14	40.0	140.0	50.0	0.50	6.4
	1996	Ave.	#DIV/0!	9.00	19.0	0.15	0.003		7.14	40.0	140.0	50.0	0.50	6.4
		Max.	0	9.00	19.0	0.15	0.003	0.014	7.14	40.0	140.0	50.0	0.50	6.4

Table 3.5.6 Summary of Water Quality Data of Nyatsime River (Upstream and Downstream of Zengeza STW)

			m³/day	mad	mg/L	mg/L	130 E	19°F		₩%,	uS/cm		mg/L	Z E	mg/L	mg/L
Sample Point	Sampling Year	tems.	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Natrae	Nitrate	Ţ.	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)
Upstream of STW	1991	Min. Ave.	•	3 20 3.67	5.0 9.7	0.080 2.808	0 000 #D!V/0	0 000 #DIV/0!	6.85 7.33	40.0 41.7	80.0 88.3	26.0 40.5	0.022 0.051	3.40 5.33	1.66 5.72	0.02 0.05
	L	Max.	<u>.</u>	4 60	15.0	8 250	0.000	0.000	7.77	45.0	95.0	55.0	0.100	6.50	7.86	0 07
	1992	M∩.	-	2 60 37.53	11.0 30.3	0.200 8.855	0.005	0.023 0.027	6.82 7.06	44.0 134.7	40.0 320.0	22.0	0.080	3.90	3.06 9.94	0.12
	1992	Ave. Max.		104.80	420	26,000	0.005	0.027	7.30	310.0	790.0	52.0 100.0	2.189 6.400	4.20 4.70	23 26	0.69 1.76
		Min.	-	2 80	90	0.085	0.006	0.050	6.86	30.0	50.0	20 0	0.080	0.60	1.17	0.02
	1993	Ave.	-	6 07	157	2.468	0.033	0.190	7.28	66.7	375.0	29.5	0 200	3.45	1.78	0.02
•	L	Max.	_	10.40	210	4.850	0 060	0.470	7.62	110.0	700.0	39.0	0 320	6.30	2 38	0.02
		Min.	-	0.40	18	0.190	0.775	0.007	7.02	44.0	150.0	24.0	0.092	1.80	0.72	0.04
İ	1994		-	7.60	27.7	12.464	0.775	0.297	7.46	143.0	503.3	36 0	0.482	5.33	1.84	0.14
	ļ	Max		21.00	79.0	49.000	0.775	1.075	8 21	420.0	1170.0	45.0	1.010	8.50	2.73	0.34
	1995	Min	-	1.00	41 0 65.5	0.030	0.006	0.031	6.62	90.0	290.0	85.0	0.034	3.00	0.09	0.02
	1993	Ave. Max.		5 25 14 20	1220	6.408 31.500	0.039	0.062 0.107	7.05 7.41	186.7 350.0	683 3 1200.0	143.7 262.0	2 546 7.200	6 23 9.00	0.21 0.51	0.10 0.23
	<b> </b>	Min.	1	2 80	23.0	0 300	0.007	0.107	6.79	60.0	300.0	80.0	0 040	5.40	0.32	0.03
	1996	Ave	_ [	3.10	28.0	0 300	0.017	0 003	6.92	65.0	350.0	850	0.110	605	0.53	0.03
		Max.		3.40	33.0	0 300	0.028	0 005	7.04	70.0	400.0	90.0	0.180	6.70	0.73	0.03
		Min.	-	10 60	21.0	2 050	0.035	0 016	7.20	1400	320.0	30.0	0 310	0.60	0.55	0 02
Downstream	1991	Ave	- 1	21 90	65.0	8.463	0.635	0.502	8.17	4425	990.0	96.7	2 190	0.65	2 24	0.05
STW		Max.	-	36 60	110.0	19.750	1.250	1.420	9.07	800 0	1650 0	140.0	5.400	0.70	5.21	0.10
		Min.	-	2 80	10.0	0 140	0.015	0 066	6 98	40 0	80.0	46.0	0.084	2.50	0.07	0.08
	1992	Ave.	-	23.77	79.6	25.834	1.199	0.152	7.76	447.7	889.3	93.1	4.915	3.15	1.16	021
		Max.		40.40	137.0	60,000	3.400	0 270	8 65	860.0	1855.0	141.0	13.800	3.80	3.54	0.32
	1993	Min.		4 80 17 84	3.0 51.2	0 230 27.275	0.007 0.384	0 018 0.047	6.89 7.67	30.0	60.0	23.0	0 200	0.10	0.16	0.06
	1933	Max.		39 20	97.0	100.00	1.350	0.047	8.99	336.4 732.0	822.5 1600.0	88.0 118.0	2.547 7.040	2 90 5 00	0.69 1.64	0.33 0.87
	<u> </u>	Min.		2 80	4.5	10.000	0.005	0.048	6.91	86.0	850 0	38.0	0 650	1.40	0.75	0 04
,	1994	Ave.	_	13 80	64.6	33.625	0.406	0.618	7.31	306.5	1030 0	86.3	5.078	1.80	1.83	0.11
,		Max.	-	33.00	99.7	58.000	1.475	1.405	7.67	530.0	1190.0	121.0	12.040	2.40	3.74	0.18
		Min.		8.00	49.0	1.800	0 029	0.010	6.72	90.0	550.0	100.0	0.560	0.20	0.04	0.05
	1995	Ave.	-	21.01	1137	59 300	0 537	0 603	7.03	383.7	983.3	145.5	7.230	1.33	0.65	0.08
		Max	<u>-</u>	26.70	159.0	79.000	0.760	1.695	7.21	590.0	1650.0	230.0	11 200	3 60	1 54	0.11
	l	Min.	-	5 80	23.0	2.700	0 019	0.003	6.73	80.0	210.0	60.0	0.500	0.00	1.06	0.10
	1996	Ave	-	11 20	39 0	16.350	0.036	0.010	7.08	115.0	410.0	75.0	1.700	#DiV/0!	1.46	0.13
L	L	Max		16 60	55 0	30.000	0.052	0.017	7.43	150.0	610.0	90.0	3 200	0.00	1.85	0.16

Table 3.5.7 Summary of Water Quality Data of Mukuvisi River

					· · · · · · · · · · · · · · · · · · ·							151 KIY		
	,		m³/day	mdd	mg/L	mg/L	J/6m	mg/L		mg/L	ms/sm		mg/L	mg/L
Sample Point	Sampling Year	Items	Flow	Oxygen Absorbed	Chioride	Ammonia Nitrogen	Nitrite	Nitrate	Hd.	T-Alkalinity	Electric	Total Hardness	Phosphate	Dissolved Oxygen
Mutare RD	1990	Min. Ave. Max	-	1.00 1.10 1.20	5.0 8.0 11.0	0.000 #DIV/0! 0.000	0.000 #DIV/0! 0.000	0.007 0.012 0.017	6.18 6.34 6.50	20.0 20.0 20.0	20.0 30.0 40.0	54.0 102.0 150.0	0.01 0.02 0.04	0.60 3.05 5.50
1	1991	Min.	-	1.20 2.10 4.00	4.0 7.3 13.0	0.080 0.168 0.220	0.000 #DIV/0! 0.000	0.031 0.046 0.068	6.26 6.51 6.72	40.0 55.8 84.0	40.0 73.5 140.0	130.0 297.5 750.0	0.02 0.04 0.06	1.30 1.83 2.10
	1992	Min.	-	1.80 4.72 8.40	18.0 40.2 61.0	0.130 0.235 0.470	0.009 0.084 0.360	0.001 0.019 0.052	6.83 7.36 9.06	30.0 91.2 170.0	35.0 502.0 1200.0	80.0 102.4 134.0	0.05 0.12 0.20	0 50 3.58 6.40
	1993	Min.	-	3 20 8.83 17.00	9.0 13.3 17.0	0.120 0.232 0.330	0.005 0.005 0.005	0.010 0.030 0.050	5.93 6.42 6.84	6.0 67.0 140.0	70.0 102 5 125.0	29.0 62.8 120.0	0.01 0.09 0.23	1.00 2.95 4.90
ļ	1994	Min. Ave. Max.	-	1.80 3.96 6.40	25.0 59.8 143.0	0.110 0.728 1.580	0.010 0.042 0.074	0.013 0.178 0.600	6.21 6.47 6.62	40.0 87.5 150.0	79.0 239.8 350.0	80.0 162.0 360.0	0.14 0.28 0.72	0.80 2.33 3.70
	1995	Min.	-	7.60 17.05 26.50	19.0 28.0 37.0	0.110 0.225 0.340	0.000 #DIV/0! 0.000	0.006 0.113 0.220	6.48 6.68 6.87	120.0 130.0 140.0	290.0 295.0 300.0	95.0 97.5 100.0	0.04 0.05 0.06	0.75 1.18 1.60
,	1996	Min. Ave. Max	-	4.90 4.90 4.90	361.0 361.0 361.0	0.120 0.120 0.120	0.000 #DIV/0! 0.000	0.016 0.016 0.016	6.63 6.63 6.63	30.0 30.0 30.0	130.0 130.0 130.0	50.0 50.0 50.0	0.20 0.20 0.20	4.35 4.35 4.35
L.Kariba	1990	Min. Ave. Max		1.00 1.80 2.60	10.0 30.5 51.0	1.020 2.130 3.240	0.005 0.010 0.014	0.035 0.035 0.035	3.60 3.65 3.70	0.0 #D(V/0! 0.0	460.0 630.0 800.0	1100.0 1565.0 2030.0	0.26 1.55 2.84	7.60 8.10 8.60 4.20
	1991	Max	-	1.40 2.25 3.60	10.0 26.8 43.0	0.500 1.215 1.700	0.007 0.053 0.098	0.010 0.422 1.550	3.76 4.47 6.12	10.0 10.0 10.0	430.0 727.5 950.0	145.0 641.3 2000.0 350.0	0.12 0.31 0.66 0.07	6.63 8.00 5.80
	1992	Max	-	1.60 2.00 2.40	37.0 47.3 66.0	1 260 4 820 8 200	0.006 0.013 0.025	0.017 0.078 0.129	3.30 4.48 5.91	20.0 20.0 20.0 0.0	103.0 1276.0 2500.0 179.0	570.0 860.0 170.0	0.18 0.30 0.37	7.37 9.20 3.50
	1993	Max	-	2.00 3.60 4.40	27.0 43.8 63.0	0.300 2.008 4.700	0.006 0.011 0.016	0.022 0.333 0.610	3.46 3.77 4.22 2.60	#D\V/0! 0.0	1253.8 1650.0 1050.0	731.0 1100.0 152.0	2.28 5.32 0.01	6.00 7.50 0.10
	1994	Min. Ave. Max.	1-	2.20 11.93 28.00	67.0 174.0 247.0 169.0	1.840 9.223 15.200 0.650	0.008 0.015 0.025 0.008	0.005 0.187 0.750 0.067	3.30 5.34 4.13	#DIV/0! 0.0 60.0			0.87	4.15 7.50 3.60
	1995	Min. Ave. Max. Min.	<u> </u>	4.80 5.10 5.40 3.60	215.0 261.0 45.0	3.875 7.100 11.500	0.068 0.128 0.005	0.067 0.067 0.027	5.18 6.22 4.43	60.0 60.0	687.5 1000.0 1860.0	1030.0 1060.0 830.0	0.61 1.00 2.20	4.55 5.50 6.95
	1996		<u>  :</u>	3.60 3.60 0.80	45.0 45.0 14.0	11.500 11.500 1.600	0.005 0.005 0.006	0.027 0.027 0.003	4.43 4.43 3.53	#DIV/0' 0.0 4.0	1660.0 1660.0 128.0	830.0 830.0 400.0	2.20 2.20 0.06	6 95 6 95 0 10
Msasa RD	1990		Ŀ	3.00 5.20 2.40	40.5 67.0 35.0	1.640 1.680 1.050	0.008 0.009 0.005	0.017 0.030 0.021	4 24 4.95 3.36	4.0 4.0 0.0	204.0 280.0 330.0	870.0 1340.0 155.0	0.45 0.84 0.06	2.30 4.50 0.30
	1991	1	Ŀ	5.40 9.40 10.40	44.8 61.0 37.0	8.325 23.000 0.300	0.013 0.021 0.013	0.627 2.400 0.001	3.81 4.28 6.52	#DIV/0! 0.0 98.0	412.5 530.0 590.0	1113.8 1590.0 194.0	0.73 2.12 0.38	1.88 4.10 1.80
	1992	Max Min.	-	17.15 21.60 3.20	54.5 83.0 35.0	0.693 1.500 0.015	0.013 0.013 0.005	0.005 0.008 0.018	6.86 7.38 3.55	159.5 230.0 20.0	747.5 1100.0 205.0 905.0	253.5 280.0 264.0 463.2	0.58 0.76 0.19 1.59	2 30 3.00 1.80 2.77
		Ave Max Min.	<del>  :</del>	13.30 24.80 6.60	68.2 117.0 47.0	14.669 65.000 0.390	0.028 0.070 0.005	0.207 0.430 0.040 0.110	5.20 6.67 3.48 5.77	35.0 60.0 80.0 100.0	2000.0 450.0 830.0	650.0 50.0 273.0	4.52 0.01 2.31	3.40 0.10 0.70
	1994	Ave. Max		19.00 38.80	77.1 119.0	3.090 8.300	0.014 0.028	0.110	6.84	120.0	1800.0	3	7.40	1.30

Table 3.5.7 Summary of Water Quality Data of Mukuvisi River (cont'd)

<u></u>			<b>∂</b>	l		Τ .	Γ	·	<u> </u>	IVZUKU	·	<u> </u>	I	T
			m³/day	Edd	mg/L	1/8	120	mg/L		ag.	uS/cm		mg/L	mg/L
			一		<del></del>	1		<del></del>		<del></del>				
٠.	<u>ت</u>			Oxygen Absorbed		Ammonia Nıtrogen						8	ĺ	Dissolved Oxygen
oin!	\ Ke			8	ļ	ž			<u> </u>	≥	<i>≩</i>	g g	g.	Ιğ
다. 알	gij			ر اء م	8	S Sign		5	1		ည်း	ra T	튵	<u>8</u>
Sample Point	Sampling Year	tems	시	δλ	Chloride	Ě	Nitrite	Nitrate	·	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	88
<u>"</u>	Ö	≝ Min.	Œ.	2 20	81.0	0.420	0.010	0.001	<u>表</u> 6.70	70.0	直 O 660.0	146.0	0.06	0.25
	1995	Ave	_	13.20	84.5	2.565	0.034	0.052	6.86	122.5	608.8	671.5	2 08	0.45
		Max		25.60	89.0	6 200	0.049	0.150	7.10	160.0	1000.0	2200.0	3 22	0.65
	1996	Min. Ave.	-	6.60 6.60	37.0 37.0	13.000 13.000	0.006 0.006	0.009	5. <b>48</b> 5. <b>48</b>	20.0 20.0	1950.0 1950.0	260.0 260.0	4.84 4.84	0.00 #DiV/0!
}	1320	Max.		6.60	37.0	13.000	0.006	0.009	5.48	20.0	1950.0	260.0	4.84	0.00
		Min.	-	0.60	19.0	0.090	0.000	0.025	6.28	12.0	132 0	400.0	0.09	5.40
Widd RD	1990	Ave. Max	-	0.90 1.20	31.0 43.0	0.090 0.090	#DIV/0! 0.000	0.025 0.025	6.50 6.72	27.0 42.0	146.0 160.0	425.0 450.0	0.18 0.26	6 30 7.20
		Min.		1.00	25.0	0.070	0.014	0.016	5.33	36.0	170.0	540.0	0.02	3.20
	1991	Ave.	-	1.60	33 5	0.627	0.014	0.075	6.29	49.0	275.3	747.5	0.05	4.53
}		Max. Min.	-	2.00 4.00	52.0 34.0	1.720 0.110	0.014	0.190 0.010	6.74 6.72	61.0 62.0	375.0 660.0	1100 0 175.0	0.12 0.14	5.60 0.40
	1992	Ave.	-	6.47	47.0	0.120	0.008	0.010	6.80	80.7	776.7	265.0	0.14	1.33
j		Max		11.00	55.0	0.130	0.008	0.045	6.86	100.0	870.0	335.0	0.29	3.10
	1993	Min.	-	0.80 1.84	35.0 57.0	0.013 5.253	0.018 0.054	0.022 0.581	5.05 5.75	2.0 38.0	155.0 621.0	170.0 431.4	0.07 0.20	3.00 3.40
	1933	Ave. Max	-	3.00	97.0	16 200	0.090	1.910	6.86	100.0	1320.0	1050.0	0.44	3.80
		Min.		2.00	37.0	0.430	0.006	0.024	3.77	30.0	550.0	60.0	0 22	1.80
	1994	Ave	-	3.93 7.40	75.0 123.0	4,804 15.000	0.132 0.380	0.162	5.99	68.0 110.0	1000.0	360.0 700.0	1,08 1,60	3.18
		Max. Min.	-	2.00	57.0	0.160	0.006	0.420 0.001	6.83 6.45	40.0	1450.0 650.0	190.0	0.09	4.00 1.70
	1995	Ave.	-	7.38	70.0	1.210	0.008	0.148	6.78	100.0	1225.0	475.0	0.15	2.65
		Max.	<u> -</u> :	14.70	91.0	4.200	0.010	0.550	7.11	140.0	2200.0	1000.0	0.24	3.60
	1996	Min. Ave.	<u>-</u>	3.70 3.70	37.0 37.0	0.000 #DIV/0!	0.000 #DIV/0!	0.015 0.015	6.16 6.16	10.0 10.0	700.0 700.0	240.0 240.0	0.24 0.24	3.95 3.95
		Max	<u>.</u>	3.70	37.0	0.000	0.000	0.015	6.16	10.0	700.0	240.0	0.24	3.95
Monte ald DD	1990	Min.	-	1.20 1.30	23.0	0.320	0.023	0.009	6.02	20.0	148.0	425.0	0.06	2.90 4.35
Hartfield RD	1830	Ave. Max		1.40	32.0 41.0	0.490 0.660	0.042 0.060	0.028 0.046	6.40 6.77	61.0 102.0	164 0 180.0	487.5 550.0	0.07 0.07	5.80
		Min.		1.60	42.0	0.360	0.044	0.014	6.35	45.0	200.0	590.0	0.02	1.30
	1991	Ave.	٠ ا	2 25 3.20	49.8	0.820	0.096	0.039	6.84	109.3	303.5	667.5	0.16	3.08 4.80
		Max. Min.	<del> -:-</del>	2.40	65.0 59.0	1.120 0.220	0.180 0.038	0.086 0.010	7.07 7.15	144.0 158.0	478.0 560.0	790.0 161.0	0.37 0.04	0.30
	1992	Ave.	-	2.76	63.8	1.095	0.072	0.011	7.25	175.6	712.0	251.6	0.12	084
		Max.	<u>  :                                   </u>	3.40	70.0	1.740	0.095	0.014	7.34	200.0	1000.0	500.0	0 20	1.60
	1993	Min. Ave.	_	0.80 2.23	47.0 64.3	0.430 3.755	0.008 0.059	0.010 0.426	5.98 6.74	12.0 98.7	550.0 722 5	176.0 299.0	0.05 0.14	1.00 3.25
		Max		3.60	101.0	12.800	0.160	1.440	7.24	190.0	1260.0	450.0	0.44	4.70
	1994	Min. Ave	-	1.60 5.40	47.0 64.0	0.240 4.720	0.006 0.097	0.044 0.244	6.41	50.0 113.3	160.0 640.0	110.0 282.2	0.04 0.45	0.30 2.85
	1334	Max.	[ ]	14.80	87.0	19.500	0.390	1.110	6.79 7.22	200.0	1100.0	460.0	1.32	4.50
	465-	Min.		2.40	15.0	0.200	0.008	0.005	6.31	50.0	190.0	70.0	0.02	0.50
	1995	Ave. Max	[ ]	4.18 6.00	70.3 89.0	2.535 13.000	0.066 0.120	0.026 0.075	6.97 7.34	139.2 230.0	708.3 1000.0	363.7 1000.0	0.54 1.65	1.69 2.80
		Min.	-	3.00	49.0	0.200	0.002	0.003	5.97	30.0	460.0	240.0	0.17	5.00
	1996	Ave.	-	3.55	59.0	0.235	0.005	0.009	6 24	60.0	555.0	245.0	0.17	5.38
		Max. Min.	-	4.10 3.40	69.0 30.0	0.270 0.480	0.008	0.014 0.052	6.50 6.98	90.0 60.0	650.0 154.0	250.0 480.0	0.18	5.75 3.80
Crpps RD	1990	Ave.		3.40	35.5	0.485	0.454	0.052	7.05	91.0	157.0	520.0	0.06	4.35
		Max		3.40	41.0	0.490	0.810	0.060	7.12	122 0	160.0	560.0	0 24	4.90
,	1991	Min. Ave		2.00 3.10	25.0 38.8	0.100 0.753	0.072 0.095	0.016 0.084	6.75 7.07	70.0 125.0	150.0 184.8	500.0 570.0	0.01 0.22	1.60 3.53
		Max.	[.]	5.20	46.0	1.260	0.120	0.064	7.01 7.21	170.0	260.0	660.0	0.22	4.50
	4000	Min.	7	2.40	46.0	0.290	0.027	0.004	7.38	124.0	600.0	128.0	0.02	1.10
	1992	Ave. Max.	<u>-</u>	3.32 4.60	62 2 71.0	0.606 0.870	0.065 0.088	0.076 0.154	7.47 7.57	146.8 160.0	674.0 750.0	195.0 300.0	0.14 0.40	2.84 4.30
L		******			L	0.010	0.000	V. 101	1.01	100.0	700.0	VVV.0	<u> </u>	7.50

Table 3.5.7 Summary of Water Quality Data of Mukuvisi River (cont'd)

			m³/day	m da_	mg/L	mg/L	mg/L	mg/l-	<u></u>	mg/L	ms/sn		mg/L	mg/L
Point	g Year			Oxygen Absorbed		Ammonia Nitrogen				nity	távity	Total Hardness	nate	Dissolved Oxygen
Sample Point	Sampling Year	tems	Flow	Oxygen	Chloride	Ammon	Nitrite	Nitrate	ቪ	T-Alkalınity	Electric Conductivity		Phosphate	
	1993	Min. Ave. Max	•	1 20 2 73 4 20	53.0 61.0 73.0	1.400 3.433 10.000	0.032 0.075 0.145	0.015 0.325 0.890	6.46 7.23 7.68	24.0 110.7 180.0	450.0 641.7 1130.0	180 0 254.8 405.0	0.04 0.20 0.88	4.30 5.12 6.10
į	1994	Min. Ave. Max	-	2.60 9.27 40.00	57.0 82.5 155.0	0.440 14.623 49.000	0.017 0.105 0.290	0.076 0.237 0.810	6.40 6.99 7.27	60.0 110.0 160.0	550.0 679.0 920.0	38 0 215.5 345.0	0.04 0.59 2.22	1.70 3.65 4.90
(	1995	Min. Ave.	- <u>-</u> -	1.80 3.00	63.0 77.5	0.090 2.002	0.030 0.156 0.285	0.002 0.044 0.090	6.94 7.10 7.26	100.0 180.0 250.0	650 0 771.7 1000.0	160.0 364.2 1000.0	0 02 0.53 2 20	0.30 2.15 2.80
	1996	Max Min. Ave.	-	4.80 2.90 3.80	93.0 25.0 36.0	9.000 0.310 0.385	0.005 0.009	0.009 0.012	6 50 6.60	40.0 50.0 60.0	200.0 425.0 650.0	80.0 155.0 230.0	0.14 1.73 3.32	5.00 6.00 7.00
Boshoff RD	1990	Max Min. Ave.	- - -	4.70 0.60 1.70	47.0 27.0 32.5	0.460 0.370 0.375	0.013 0.050 0.085	0.015 0.030 0.031	6.69 6.99 7.11	60.0 102.0	146.0 153.0	440.0 505.0	0.08 0.11 0.13	5.00 5.40 5.80
	1991	Max. Min. Ave.	- -	2.80 2.20 2.55	38.0 15.0 35.5	0.380 0.090 0.375	0.120 0.020 0.086	0.032 0.001 0.064	7.23 6.98 7.20	144.0 65.0 118.8	160.0 150.0 176.5	570.0 510.0 562.5	0.02 0.09	3.50 4.23
;	1992	Max. Min. Ave.	-	3.00 1.40 3.04	43.0 43.0 61.6	0.960 0.310 0.365	0.150 0.004 0.053	0.110 0.008 0.014	7.30 7.38 7.48	152.0 128.0 155.6	240.0 550.0 626.0	630.0 131.0 177.0	0.23 0.06 0.28	5.40 2.00 3.12
	1993	Max. Min. Ave.	- -	5.40 1.20 2.50	71.0 53.0 60.0	0.420 0.800 2.545	0.074 0.007 0.094	0.020 0.013 0.280	7.60 6.49 7.12	170.0 24.0 120.7	670.0 480.0 608.3	260.0 170.0 308.0	0.70 0.03 0.22	3.60 4.00 4.68
	1994	Max. Min. Ave.	-	3.60 2.40 3.70	67.0 67.0 87.0	8.700 0.660 19.228	0.220 0.034 0.101	0.680 0.030 0.138	7.57 0.18 5.85	60.0 143.3	1050 0 490.0 737.0	500.0 36.0 206.8	0.74 0.09 2.06	5.60 1.60 3.06
į		Max. Min.	-	5 20 2 00 6 52	135.0 47.0 77.3	95.000 0.250 0.622	0.270 0.043 0.133	0.330 0.013 0.027	7.25 6.73 7.32	280.0 90.0 175.0	980 0 510 0 756 7	310.0 150 0 363 5	11.10 0.06 0.35	4.00 1.45 2.64
	1995	Max. Min.	-	21.00 3.50	103.0 23.0	1.600 0.110	0.250 0.006	0.054 0.005 0.013	7.84 6.63 6.69	230 0 40.0 65.0	1000.0 200.0 425.0	1000.0 110.0 170.0	1.55 0.10 0.36	3.70 4.80 4.95
	1996	Max. Min.	- -	3.55 3.60 0.60	34.0 45.0 27.0	0 200 0 290 0.120	0.017 0.028 0.490	0.020	6.75 6.26	90.0 14.0	650 0 160.0 166.0	230.0 475.0 562.5	0.62 0.12 0.22	5.10 6.30 6.55
Beatrice RD	1990	Ave. Max. Min.	-	0.70 0.80 1.80	36.0 45.0 15.0	0.120 0.120 0.080	0.490 0.490 0.059	0.068 0.104 0.011	6.84 7.41 5.96	61.0 108.0 10.0	172.0 154.0	650.0 520.0	0.32	6.80 3.30
	1991	Ave. Max. Min.	-	2 20 2 60 2 20	35.0 43.0 39.0	0.367 0.940 0.100	0.080 0.100 0.006	0.038 0.080 0.006	7.07 7.52 7.17	96.0 134.0 120.0	219.8 340.0 525.0	640 0 870 0 132 0	0.57 0.99 0.08	5.93 7.40 1.90
	1992		<u>-</u>	4.44 7.40 1.80	53.8 77.0 41.0	0.165 0.230 0.120	0.007 0.008 0.041	0.011 0.023 0.009	7.49 7.68 6.82	144.0 190.0 32.0	597.0 740.0 390.0	182 2 262 0 170.0	0.25 0.72 0.04	3.34 4.30 4.40
	1993		-	3.30 7.40 1.60	52.0 65.0 47.0	0.660 2.120 0.250	0.155 0.320 0.011	0.222 0.580 0.006	7.34 7.75 6.66	110.3 240.0 20.0	553.3 840.0 450.0	242.5 400.0 34.0	0.49 1.23 0.04	5.92 7.70 1.20
	1994		-	5.90 15.20 2.10	79.7 131.0 59.0	5.420 17.600 0.120	0.094 0.250 0.006	0.099 0.239 0.007	7.17 7.53 7.04	142.0 250.0 70.0	581.0 780.0 340.0	277.3 800.0 148.0	0.81 1.84 0.11	3.98 7.50 1.75
	1995	Ave. Max.	<u> </u>	5.77 11.00	78.7 107.0 37.0	0.173 0.270 0.150	0.049 0.173 0.006	0.040 0.097 0.001	7.47 8.02 6.80	150.0 210.0 40.0	715.8 1000.0 570.0	367 2 1000.0 100.0	0.31 0.62 0.58	4 78 7.00 6 80
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1996	<u>Max</u>	-  -  -	1.30 2.05 2.80	49.0 61.0	0.150 0.150	0.022 0.038	0.009 0.016	6.87 6.93	50.0 60.0 22.0	585.0 600.0 144.0	145.0 190.0 550.0	0.60 0.62 0.05	7.15 7.50 2.50
Amatinda	1990	Min. Ave. Max		2 60 3 20 3.80	26.0 35.5 45.0	0.120 0.230 0.340	0.015 0.019 0.022	0.005 0.028 0.050	6.66 6.93 7.20	63.0 104.0	152.0 160.0	687.5 825.0	0.16 0.27	4.60 6.70

Table 3.5.7 Summary of Water Quality Data of Mukuvisi River (cont'd)

			m³/day	mdd	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Year	tems	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	9 10.032	0.007	Hd	T-Alkalinity	Electric	SOTotal Hardness	Phosphate	Dissolved Oxygen
	1991	Min. Ave. Max	· -	2.40 2.70 3.20	15.0 63.0 142.0	0.250 0.433 0.640	0.032 0.081 0.130	0.007 0.035 0.090	5.80 7.25 8.78	10.0 99.0 150.0	155.0 208.3 360.0	500.0 687.5 850.0	0.12 0.88 1.88	1.50 1.78 2.30
:	1992	Min. Ave. Max	-	2.60 4.88 7.20	72.0 77.8 89.0	0.170 0.443 0.710	0.007 0.028 0.058	0.006 0.015 0.037	7.32 7.46 7.57	150 0 172 0 220 0	540.0 680.0 850.0	150.0 181.0 275.0	0.23 0.41	0.40 1.98 3.20
	1993	Min.	-	1.40 3.43 6.00	43.0 62.3 73.0	0.160 0.282 0.490	0.006 0.042 0.120	0.004 0.210 0.880	6.95 7.24 7.52	40.0 131.7 330.0	450.0 510.0 600.0	150.0 210.3 350.0	0.64 0.10 0.54 1.23	1.50 3.70 5.20
	1994	Min. Ave. Max	-	4 20 9.87 17.60	57,0 98.5 152.0	0.150 3.290 8.800	0.010 0.140 0.250	0.038 0.167 0.380	6.77 7.04 7.42	30.0 116.7 230.0	360.0 538.0 740.0	30.0 242.5 620.0	0.06 1.23 4.54	2.10 4.08 5.20
	1995	Min. Ave. Max.	-	1.80 6.52 15.00	27.0 81.7 127.0	0 240 1 180 2 200	0.010 0.040 0.080	0.005 0.018 0.041	6.87 7.30 7.58	50.0 161.7 260.0	650.0 788.3 1000.0	152.0 367.8 1000.0	0.12 0.52 1.59	0.45 2.69
	1996	Min.		1.00 2 10 3.20	49.0 57.0 65.0	0.100 0.150 0.200	0.023 0.027	0.014 0.014 0.014 0.014	6.88 6.88	60.0 65.0	560.0 560.0	170.0 195.0	0.05 0.46	5.30 5.40 5.95
At Manyame	1990	Min. Ave.	•	4.20 4.70	33.0 36.5	1.840 1.900	0.031 0.085 0.473	0.264 0.367	5.88 7.08 7.18	70.0 76.0 107.0	560.0 120.0 123.0	500.0 605.0	0.88 0.01 0.07	6.50 2.70 2.90
	1991	Max. Min. Ave.	•	5 20 6 20 8 25	40.0 60.0 76.8	1.960 1.940 8.635	0.860 0.005 0.093	0.470 0.007 0.041	7.27 6.92 7.30	138.0 110.0 177.5	126.0 108.0 147.0	710.0 750.0 772.5	0.13 0.52 0.91	3.10 1.30 3.05
	1992	Max. Min. Ave.	- -	11.00 2.60 6.04	91.0 83.0 119.6	21.000 0.700 6.820	0.320 0.057 0.229	0.140 0.001 0.063	7.49 7.45 7.61	220.0 140.0 194.0	220.0 600.0 938.0	820.0 132.0 163.0	1.48 1.03 1.31	5.80 0.70 2.06
	1993	Max Min. Ave.	 - -	10 20 3.80 8.63	137.0 61.0 69.7	18.000 0.740 9.090	0.350 0.004 0.113	0.200 0.011 0.127	7.95 7.17 7.46	260 0 70.0 195.0	1180,0 490.0 726.7	220.0 138.0 204.2	1.82 0.57 2.31	3 <u>20</u> 1.90 3 23
	1994	Max. Min. Ave	-	14 80 5.80 11.40	111.0 67.0 114.5	19.000 1.369 15.293	0.210 0.015 0.158	0.290 0.018 0.103	7.65 7.08 7.30	270.0 100.0 191.7	1050.0 330.0 698.0	450.0 20.0 156.7	1.16 1.68	4.70 0.90 2.88
	1995	Max Min Ave.	- <del>-</del> -	7.50 11.10	207.0 109.0 129.0	28.500 5.000 9.800	0.450 0.250 0.615	0.230 0.004 0.406	7.59 7.23 7.52	280.0 270.0 282.5	1060.0 1050.0 1132.5	215.0 150.0 462.5	2.82 0.18 1.11	5.40 3.80 4.25
	1996	Max. Min. Ave	-		149.0 0.0 #DIV/0!	17.000 0.000 #DIV/0!	0.980 0.000 #OIV/0!	1.200 0.000 #DIV/0!	7.80 0.00 #DIV/0!	300.0 0.0 #DIV/0!	1250.0 0.0 #DIV/0!	1100.0 0.0 #DIV/0!	1.65 0.00 #DIV/0!	4.70 0.00 #DIV/0!
		Max		0.00	0.0	0.000	0.000	0.000	0.00	0.0	0.0	0.0	0.00	0.00



	,		m³/day	mad	mg/L	mg/L	mg/L	mg/L		mg/L	ms/sm		mg/L	mg/L
Sample Point	Sampling Year	ltems	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	Hd	T-Alkalinity	Electric Conductivity uS/cm	Total Hardness	Phosphate	Dissolved Oxygen
Bulawayo RD	1989	Min. Ave. Max.	-	2.60 2.60 2.60	19.0 19.0 19.0	0.090 0.090 0.090	0.005 0.005	0.003 0.003 0.003	7.32 7.32		360.0 360.0 360.0	130.0 130.0 130.0	0.06	5.20 5.20 5.20
	1990	Min. Ave. Max.	-	3.20 6.10 9.00	15.0 29.0 43.0	0.360 0.360 0.360	0.020 0.020 0.020	0.026 0.036 0.045	7.19 7.24 7.28	80.0 160.0 240.0	220.0 390.0 560.0	110.0 195.0 280.0	0.02 0.09 0.16	5.50 6.20 6.90
	1991	Min. Ave. Max.	•	0.40 2.90 5.00	15.0 28.8 40.0	0.110 0.125 0.140	0.012 0.020	0.001 0.108 0.410	7.63 7.83	201.3 270.0	280.0 432.5 510.0	140.0 210.0 244.0	0.05 0.06	5.50 7.13 8.20
	1992	Min. Ave. Max.	•	1.60 3.37 5.20	27.0 36.7 54.0	0.100 0.130 0.160	0.019 0.035	0.004 0.122 0.415	8.10	227.1 280.0	500.0 550.0 590.0	195.0 247.6 290.0	0.14 0.52	3.70 5.53 7.70
	1993	Min. Ave. Max.		1.00 4.51 9.40	13.0 36.3 73.0	0.120 0.173 0.250	0.007 0.008	0.032 0.042 0.060	7.66 7.93	240.0	150.0 349.3 450.0	130.0 308.4 980.0	0.33 1.41	4.80 6.29 7.70
	1994	Min. Ave. Max.	-	2.40 3.70 5.00	19.0 39.5 57.0	0.130 0.588 1.860		0.084	7.33 7.64	40.0 138.0 200.0	175.0 401.3 560.0	66.0 170.3 245.0	0.24	4.60 6.10 7.50
	1995	Min. Ave. Max.		2.40 5.44 9.00	53.0 83.0 117.0	0.150 0.200 0.250	0.023	0.009 0.024 0.048	7.24 7.56		590.0 704.0 860.0	180.0 190.0 210.0	0.60	5.05 5.88 6.90
	1996	Min. Ave. Max.	-	2.10 2.35 2.60	37.0 58.0 79.0	0.110 0.110 0.110	0.002 0.005 0.007		7.28 7.42	160.0	460.0 630.0 800.0	190.0 195.0 200.0	0.26 0.40	5.90 6.35 6.80
Westwood RD	1989	Min. Ave. Max.		5.40 5.40 5.40	42.0 42.0 42.0	2.900 2.900 2.900	0.011 0.011 0.011	0.006 0.006 0.006	7.40	190.0	560.0 560.0 560.0	160.0 160.0 160.0	0.55	1.10 1.10 1.10
	1990	Min. Ave. Max.		6.80 7.70 8.60	21.0 44.0 67.0	1.440 1.440 1.440	0.127	0.018 0.038 0.058	7.22 7.35	180.0 250.0	780.0	180.0 220.0 260.0	0.53 0.71	2.40 2.40 2.40
	1991	Min. Ave. Max.	, , ,	1.20 9.35 24.60	30.0 50.8 74.0	0.130 2.788 8.800	0.008 0.025	0.001 0.051	7.25 7.48	210.0 236.5	460.0	235.0 239.0	0.01 0.55	1.40 3.87
	1992	Min.		5.80 14.14 25.80	76.0 169.0	0.140 1.510 5.840	0.007 0.062	0.003 0.035	7.36 7.66	208.0 310.3		208.0 304.7	0.63 1.98	0.60 4.53
	1993	Min.	-	1.80 8.34 25.60	31.0 61.4 99.0	0.450	0.006 0.548	0.008 0.250	6.88 7.39	150.0 203.1	450.0 657.0	170.0 248.9	0.05 0.55	0.60
	1994	Min. Ave. Max	-	4.00 7.60 11.80	17.0 70.0 99.0	0.120 0.308	0.005	0.010 0.031	7.01 7.23	70.0 192.5	215.0 645.0	82.0 200.5 260.0	0.43 0.96	
	1995	Min. Ave. Max	-	2.20 5.56 12.60	69.0 100.6	0.160 0.300 0.410	0.012 0.012	0.010 0.012	7.08 7.20	200.0 238.0	770.0 920.0	120.0 228.0	0.48 1.46	2.25 4.54
	1996	Min. Ave. Max.	•	2.80 5.45 8.10	53.0 74.0 95.0	0.160 0.245	0.009	0.008 0.011	7.01 7.06	140.0 195.0	600.0 775.0	200.0 210.0	0.56 0.98	4.80 4.80





Table 3.5.8 Summary of Water Quality Data of Marimba River (cont'd)

			m³/day	ധർർ	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Year	tems	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	Hd	T-Alkalinity	Electric Conductivity uS/cm	Total Hardness	Phosphate	Dissolved Oxygen
Kambuzuma RD	1989	Min. Ave.		5.60 5.60	42.0 42.0	1.240 1.240	0.150 0.150	0.020 0.020	7.48 7.48	170.0 170.0	560.0 560.0	280.0 280.0	0.70	1.50 1.50
	1990	Max. Min. Ave. Max.	•	5.60 4.60 7.90 11.20	42.0 21.0 40.0 59.0	1.240 2.160 2.160 2.160	0.058 0.119 0.180	0.212	7.38 7.57	170.0 100.0 170.0 240.0	560.0 475.0 607.5 740.0	280.0 150.0 195.0 240.0	0.36 0.36 0.36	1.50 0.50 1.75 3.00
	1991	Min. Ave. Max.	- -	1.00 5.10 7.60	35.0 57.8 90.0	0.250 0.730 0.980	0.028	0.001 0.060 0.220	7.60	267.5	580.0 715.0 920.0	210.0 226.5 241.0	0.43	1.30 3.18 4.60
	1992	Min. Ave. Max.	•	3.80 10.34 27.20	64.0 135.4 221.0	0.150 1.911 5.600	0.016	0.003 0.028 0.054		184.0 294.0 350.0	700.0 1295.7 2400.0	209.0 297.7 486.0	0.16 0.91 1.84	0.21 2.29 6.50
	1993	Min. Ave. Max.	•	2.20 4.94 8.60	30.0 53.9 81.0	0.150 1.812 4.500	0.011 0.114	0.007 0.212 0.630	7.10 7.41	120.0 191.4 280.0	350.0 562.9 760.0	144.0 218.4 290.0	0.04 0.56	0.30 2.56 5.70
	1994	Min. Ave. Max.	, ,	2.60 6.55 10.80	29.0 64.0 117.0	0.350 0.955 1.540	0.005 0.028	0.011	7.09 7.23	110.0 196.0 264.0	300.0 585.0 710.0	112.0 205.5 265.0	0.40 0.86	0.60 2.20 4.00
	1995	Min. Ave.	-	0.50 3.66	69.0 96.6	0.090 0.797	0.012 0.021		7.18 7.28	185.0 225.0	760.0 859.0	190.0 208.0 230.0	0.24 0.90	3.15 4.83 6.20
	1996	Max. Min. Ave. Max.		7.70 2.60 3.55 4.50	53.0 69.0 85.0	1.440 0.180 0.345 0.510	0.011 0.021	0.006 0.006 0.006	7.02 7.14	120.0 160.0	990.0 460.0 675.0 890.0	160.0	0.36 0.55	1.80 2.18 2.55
Above Crow.	1989	Min.	7	15.20 15.20 15.20	130.0 130.0 130.0	0.540 0.540 0.540	0.083 0.083		7.61 7.61	200.0	1200.0 1200.0 1200.0	270.0 270.0	0.50 0.50	2.00 2.00 2.00
	1990	Min.		8.20 11.10	27.0 82.0	0.320 0.335	0.040 0.064	0.022 0.034	7.48 7.64	180.0 215.0	540.0	160.0 220.0	0.16 0.33	4.50 4.85
	1991	Min.	1 1 1	3.40 7.45	65.0 93.5 131.0	0.130 0.945	0.014 0.056	0.017 0.137	7.41 7.71	120.0 229.5	330.0 755.0 1150.0	220.0 393.8	0.21 0.67	0.80 4.75 7.60
	1992	Min.		4.00 9.86 22.60	65.0 129.7	0.110 2.670	0.005 0.090	0.005 0.056	7.20 7.73	200.0 296.3	650.0 1124.3 1500.0	195.0 240.1	0.58 0.73	2.00 4.27 7.70
	1993	Min.	1 1	4.40 7.17 9.40	42.0 92.6 143.0	0.140 1.030	0.013 0.026	0.006 0.075	7.45 7.69		350.0 685.7	144.0 226.3 300.0	0.26 0.67	3.50 4.91 6.30
	1994	Min.		4.40 9.50 17.40	51.0 108.0 147.0	0.800 1.615	0.010 0.044	0.002 0.097	7.28 7.49	120.0 211.0	375.0	116.0 239.0	0.65 1.04	1.50 4.05 6.00
	1995	Min.	-	4.00 5.22 7.90	85.0 114.2 157.0	0.110 0.255	0.008 0.038	0.011 0.043	7.26 7.43	210.0 220.0	850.0 942.0 1100.0	200.0 217.0	0.22 0.82	1.75 5.70 7.65
	1996	Min.	-	5.70 9.25 12.80	67.0 78.0	0.940 0.940	0.005 0.028	0.001 0.016	7.20 7.29	100.0 165.0 230.0	480.0 690.0	180.0 210.0	0.56 0.73	0.45 3.33





Table 3.5.8 Summary of Water Quality Data of Marimba River (cont'd)

			m³/day	mdd	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
te od	Sampling Year			Oxygen Absorbed		Ammonia Nitrogen				linity	Electric Conductivity uS/cm	Total Hardness	Phosphate	Dissolved Oxygen
Sample Point	Sampli	Items	Flow	Oxyge	Chloride		Nitrite	Nitrate	F.	T-Alkalinity				
Below Crow.	1989	Min. Ave. Max.		11.80 11.80 11.80	72.0 72.0 72.0	0.920 0.920 0.920	0.100	0.105 0.105 0.105	7.67 7.67 7.67	210.0	750.0 750.0 750.0	280.0 280.0 280.0	0.54 0.54 0.54	1.90 1.90 1.90
	1990	Min. Ave.		5.40 7.50	51.0 84.0	0.180 0.265	0.029 0.050	0.038 0.061 0.083	7.58 7.67	150.0 200.0	575.0 842.5 1110.0	150.0 225.0 300.0	0.08 0.23 0.37	4.30 4.75 5.20
	1991	Max. Min. Ave.	- ·	9.60 1.00 5.10	117.0 35.0 57.8	0.350 0.250 0.730	0.013 0.028	0.001 0.060	7.40 7.60	210.0 267.5	580.0 715.0	210.0 226.5	0.19 0.43	1.3( 3.1)
	1992	Max. Min. Ave.	-	7.60 5.40 9.83	90.0 100.0 141.3	0.980 0.760 3.421	0.020	0.220 0.032 0.359	7.46	200.0		241.0 140.0 195.6	0.24	4.6 1.4 4.2
		Max. Min.	-	22.20 4.00	191.0 63.0	12.500 0.360	0.200 0.020	1.500 0.014	7.89 7.61	270.0 150.0	1580.0 470.0	384.0 160.0	5.20 0.06	6.50 4.40
	1993	Ave. Max. Min.	-	8.06 12.80 5.40	90.9 145.0 53.0	2.367 7.500 0.560	0.110	0.091 0.160 0.010	7.93	340.0	731.4 960.0 450.0	237.4 316.0 130.0		4.9 6.7 5.1
	1994	Ave. Max.	-	10.65 21.40	112.5 139.0	4.660 10.600	0.188 0.405	0.055 0.168	7.57 7.75	197.0 288.0	831.3 1090.0	218.8 320.0	1.04 1.30	5.9 7.6 4.4
	1995	Min. Ave. Max.	- -	2.60 6.60 10.40	113.0 140.2 169.0	0.200 0.463 0.980	0.030	0.029 0.040 0.062	7.54	230.0 260.0 300.0		200.0 210.0	0.75 1.60	6.1 7.5
	1996	Min. Ave.	-	4.80 8.75 12.70	59.0 101.0 143.0		0.045	0.005 0.013 0.020	7.47	120.0 165.0 210.0	480.0 840.0 1200.0	170.0 195.0 220.0	0.59	4.6 5.1 5.7
At Lake	1989	Max. Min. Avə.	<u></u> -	11.80 11.80	71.0 71.0	0.860 0.860	0.152 0.152	0.023 0.023	7.79 7.79	210.0 210.0	840.0 840.0	160.0 160.0	0.26 0.26	4.9 4.9
	1990	Max. Min. Ave.	-	11.80 5.40 7.30	54.0 92.0	0.860 0.150 0.255	0.062 0.067	0.008 0.027	7.73 7.79	210.0 150.0 190.0	620.0 865.0		0.04 0.22	5.8 6.6
		Max. Min.	<u>-</u>	9.20 7.20	130.0 81.0	0.360	0.072	0.045 0.008	7.84 7.73	230.0 230.0	1110.0 740.0	160.0	0.47	3.2
	1991	Ave. Max. Min.	:	21.00	162.0 116.0	16.000 0.190	0.430	0.330 0.003	7.95 7.56	410.0 196.0	1025.0 1310.0 900.0	212.0 136.0	4.08 0.55	6.4 1.6
	1992	i	-	7.60 15.20 4.00	146.4 171.0 41.0	3.346 11.500 0.250	0.132	0.496	8.18	290.0	1146.4 1540.0 102.0	180.0	4.66	4.8 8.4 5.0
	1993	Ave. Max.		7.83 10.40	107.9 171.0	1.041 4.200	0.113 0.230	0.126 0.370	7.85 8.31	221.7 330.0	612.4 820.0	177.3 226.0	0.71 1.24	6.1 8.5
	1994	Min. Ave. Max.		5.40 7.80 10.20	106.0	0.100 1.003 2.840	0.073 0.150	0.080 0.158	7.72 7.92	190.0 228.5 260.0	815.0 910.0	142.0 199.3 225.0	1.30 1.56	
	1995	Min. Ave.	-	2.60 6.23	117.0 148.3	0.240 0.240	0.016 0.016	0.018 0.021	7.49 7.63	280.0 323.3	1010.0 1193.3 1350.0	180.0 213.3	0.63	6.1 6.4 6.8
	1996	Max. Min. Ave.	<u>-</u>   -	6.10 6.80	89.0	0.600	0.043	0.010	7.31 7.52	140.0	470.0 812.5	200.0	0.88	4.7

Table 3.5.9 Summary of Water Quality Data of Seke Dam

			m³/day	r.cdd	mg/L	me/L	mo/L	mo/L		JQE.	mS/cm		mg/L	me/L	mg/t	mg/L	movit	HQL.
			. <u>.</u> E_		<u>. E</u>		<u>. E</u> .	E		Ε.	3		_ E		<u></u>		₹	<u>_</u> _
ţ	agr.			Oxygen Absorbed		Ammonia Nitrogen					2	3		Desoived Oxygen		Manganese (Mn)	(9)	
g g	pu <sub>l</sub>			A A		Paie 1			į	t)	کِ <u>ک</u>	, S	Phosphate	) 18	<u>@</u>	Į į	<u>)</u>	ğ
Sample Point	Sampling Year	sme;	Flow	Š.	Chlonde	Ě	Nitrite	Nitrate	£	T-Alkalinity	Electric Conductivity	Total Hardness	8 €	8	Iron (Fe)	Z, e	Calcium (Ca)	Albuminoid
		Min.	Ö	0.60	4 00	0 003	0.001	0.007	6 94	240	0 0 \$0(√0!	15 0 16.7	0 004 0 029	0.0 #D(V/0!	0.20 0.41	0 03 6 04	10 00 11.67	0.05 0.17
Тор	1986	Ave Max.	#DIV/0!	1.82 2.80	4 83 7 00	0 074 0 300	0 003 0 005	0.042 0.119	7.30 7.82	25.8 28.0	00	180	0.080	00	0.56	0 07	13.00	027
l	1997	Min. Ave.	0 #DIV:0!	2.40 3.40	400 533	0.060 0.200	0.000 #D(V:0!	0.010 0.020	6.91 7.14	24 0 26 3	0.0 #DIV/0!	18.0 18.7	0 004 0 031	0.0 #D(V/0/	0:14 0:53	0.04 0.08	13 00 13 33	0.17 0.23
		Max. Min	0	4 20 0 00	7.00	0.340	0.000	0 030	7.39	28.0 0.0	0.0	20.0	0.080	0.0	0.74	0.15	14.00	0.26
ŀ	1988	Ave	#DIV/0!	#DIV/01	#DIV/0!	#D(V/0!	#D/V∕O	#O!V/0!	\$DIV/0*	#DIV/04	#DIV/0!	#DIV/O!	#D(V/0! 0 000	#D(V/0! 0.0	#DiV/0⁴ 0.00	#0(V/0) 0.00	#D(\/\0!	#D(V/09
ŀ		Mak. Min.	0	0.00	0.00	0 000	0.000	0.000	000	00	0.0	00	0.000	0.0	000	000	0.00	000
ŀ	1989	Ave. Max.	#DĭV/O! 0	#D(V/0! 0.00	#0(V/0! 0 00	#DIV/0! 0.000	#DIV/0! 0 000	#2(V:0)	\$D(V/0!	#D(V:0! 0:0	#DIV/0!	#D(V/O! 0.0	#DIV/0! 0.000	#9(V/0! 0,0	#DIV/0! 0.00	#DIV/0! 0.00	#D(V/O! 0 00	#0(V/0)
Ì	1990	Min. Ave.	Ø #DfV/Q!	100 280	12 00 13.50	0 030 0 035	0.010 0.010	0.050	7.11 7.19	25 0 27.5	0 0 #DIV/0!	15.0 15.0	0 040 0 055	0.0 #DIV:0!	0.34 0.36	0.02 0.04	10 00 10 00	0.22 0.23
ļ		Max.	0	4 60	15 00	0.040	0.010	0.020	7 26	30 0	00	150	0.070	00	0.38	0.06	10.00	024
	1991	Min. Ave.	#DIV:0	2 80 3 53	6.00 7.00	0.050 0.197	0.002 0.004	0.005 0.006	7.06 7.49	28 0 30 0	#DIV/0!	19.0 23.0	0.026 0.042	0.0 #DiV/0!	0.24 0.34	0.05 0.09	12 00 16 33	0.13 0.80
,		Max. Min.	0	4 60 3.40	8 00 10.00	0.470	0.010	0.006	7.81 7.15	32 0 34 0	00	30 D 24 O	0.050	00	0.40	0.11	25 00 9 00	0.37
	1992	Ave Max.	#DIV/0!	4 07 4 80	15.00 18.00	0 303 0 550	0.010	0 014 0 020	7.47 7.76	37.3 44.0	#DIV/0! 0.0	31 3 42 0	0 212 0 380	#01V:0! 0.0	1.22 2.78	0.16 0.25	10 67 12.00	0.55 0.72
		Min.	0	0.00	0.00	0.000	0.000	0 000	0.00	00	00	00	0.000	0.0	0.00	0.00	0.00	0 00
į	1993	Ave. Max.	#DIV₁0! 0	#DIV10! 0.00	#0(V/0° 0.00	#0(V/6! 0 000	#DiV/0! 0.000	#D(V:0/	#DIV/0! 0.00	<b>#</b> DiV 0!	#DIV/0!	#DIV/0!	#D(V:0!	#D(V/0!	0.00	#0[V/0! 0.00	#DiV:0! 0.00	#D(V/0!
1	1994	Min. Ave.	0 #0!V:0!	0.00 #D(V:0!	0.00 #D(V.05	0.000 #D(V/0!	0.000 #D(V:01	0.000 ≱D(V/0!	0 00 #DIV/0!	0.0 #D(V/0!	0.0 \$0!√/0!	0 0 #ĐĪV/0!	0 000 #DiV:0:	0 0 #DIV/0!	0.00 #2(V/0!	0.00 #DIV/0!	#DiV:'0!	0:00 #∂!V/0!
1		Max.	0	000	0.00	0 000	0.000	0.000	000	0.0	00	00	0.000	00	0.00	0.00	0.00	0 00
	1995	Min. Ave.	#DIV:0:	#D(V/0!	#DiV:0!	#D(V/O)	#D(V/0!	#D(V/0!	#DIV:01	#DiV/O	#DIV/0!	#DIV/0!	#DIV/Of	#DIV/0!	#0(V/0 <sup>i</sup>	#DIV/0!	#DIV/0!	#D(V/05
		Max.	0	0 00 5 60	13.00	0 000	0 000	0.000	0.00 7.67	0.0 40 0	00	0.0 36.0	0.000	00	0 00 1 02	0.00	0.00 26.00	0.60
	1956	Ave. Max.	#DiV/0! 0	5.60 5.60	13.00 13.00	0.050 0.050	0.002	0.003	7.67 7.67	40.0 40.0	#O(V/0! 0.0	36.0 36.0	0.060	#0[V/0! 0.0	1.02 1.02	0.43 0.48	26 00 26 00	0.11 0.11
0.0	1000	Min.	0	1.40	400	0 005	0.001	0.008	6 52	22 0 25.5	0.0 <b>≴</b> D(V/0!	16.0 19.2	0 008 0 042	0.0 #DIV/0!	0.07 0.70	0.02 0.13	9.00 12.83	0.04 0.17
8ettem :	1986	Ave Max.	<b>\$</b> Ð(V/0! 0	2 08 3 20	4.83 7.00	0 067 0 115	0 003 0 006	0.058 0.160	6.88 7.30	28 0	0.0	24.0	0.140	0.0	1.56	0.25	17.00	023
	1987	Min. Ava.	O ≢D(V/O!	2.60 4.80	4 00 5.33	0 060	#9(V:0:	0 010 0 035	6.45 6.88	26.0 27.0	0.0 a #D(V/0!	18 0 19.0	0.008   0.061	0.0 #D(V/0!	0.83 2.11	0.08 0.21	14.00 14.33	0.21 0.32
		Max.	0	8 20 0.00	7.00 0.00	0.100	0.000	0 000	7 28 0 00	28 O	0.0	20.0	0.160	0.0	3.93 0.00	0.34	15 00 0.00	0.40
	1388	Аув.	<b>#</b> D₹V/0!	#017/0!	#DIV:0!	#DIV/01	#D/V/0!	#DIV:0!	#DfV/0!	#DIV'0!	#DIV:0!	#DIV/O!	#DIV/0! 0.000	#DIV/0! 0.0	#DIV:0:	#DIV/0! 0.00	#D(V/0! 0.00	#DIV/05 0.00
ŀ		Max.	0	0.00	0.00	0 000	0 000	0.000	0.00	00	00	00	0.000	0.0	0.00	0 00	0.00	0.00
ŀ	1939	Ave.	#ÐfV/04 -0	#D(V/O)	#0fV/0! 0.00	#D(\//0! 0.000	#D(V/0! 0.000	#DIV:0! 0.000	#DIV/0! 0.00	#0ïV:0\ 0.0	#DIV/0! 0.0	#Ð(V/O! 0.0	#D(V:0) 0.000	#D(V:0!	#DIV/0! 0.00	#DIV/0! 0.00	#D(V/0! 0.00	#DIV/05 0.00
	1990	Min. Ave.	0 #0(V)0(	3 20 17.90	15 00 15 50	0.090 0.195	0.010 0.010	0.040 0.040	6.14 6.48	26 0 26 5	0 0 #DIV/0!	14.0 15.5	0.060 0.075	0.0 #D(V/0!	13 89	0 25 1,45	10 00	1.06 1.25
		Max	0	32 60 32.00	16.00 7.00	0.300	0.010	0 040	6.81 6.57	27.0 30.0	0.0	17.0 35 0	0 090	0.0	14.00 3.17	2.64 1.64	12.00 20.00	1.41 1.83
	1991	Min. Ave.	#D!V:0*	93.00	9 50	0.713	0 003	0 005	6.60	47.5	#DIV:0!	47.5	0.060	#D(V/0!	6.10	1.88	30.00	3.42
}		Mac Min.	0	154.00 42.00	12 00	0.725 1.320	0 000	0 005	6 62 6.46	65.0 40.0	0.0	60 0 35 0	0.140	0.0	9.03 35 22	2.06 2.44	40 00 20 00	5.00 4.00
į	1592	Ave.	#DIV:0!	42 00 42 00	18.00 18.00	1.320 1.320	#DiV:0! 0 000	0.010	6.46 6.46	40 0 40 0	#DIV/0!	35.0 35.0	0.140 0.140	#DIV/0! 0.0	36 22 36 22	2.44 2.44	20.00 20.00	4.00 4.00
ł	1622	Min.	0	0.00	0.00	0 000	0 000	0 000	000	0.0	00	00	0 000	0.0 #D(V/0!	0.00 #DIV/0!	0.00 #DIV/0	0.00 #DIV/0!	0.00 ≱0i√′0!
	1993	Max.	#D(V:0! 0	#DIV/01 0.00	#D(V.0) 0 00	#D(V*0! 0 000	#DiV:0:	#DIV/01 0 000	#D(V:0)	#DIV:0/	#DIV/0!	#D(V/01	0.000	00	0.00	0.00	0.00	0.00
	1994	Min Ave	0 #D(V:0!	#DIV′0⁄	#DIV:0!	#DiV:0!	0 000 DIV/0!	#D(V/0!	0.00 #D(V/O!	#O!V:O!	#0!V:0!	00 #DIY/G!	0 000 } #0(V/0!	0 0 #DiV/0!	0.00 #DIV:0!	0.00 #DIV/0!	0.00 #0/V10 <b>%</b>	#0iV:0!
		Max. Min.	0	0.00	0.00	0.000	0 000	0 000	0.00	0.0	00	00	0 000	0.0	0.00	0.00	0.00	0.00
	1995	Ave	#DIV′0!	#DIV/O!	#DIV/0!	#D(V/O	#DIV:0!	#DiV/0!	#D(V:0!	#DIV:01	#OIV/Of	≢ĐIV/O!	#D(V/0!	#D(V/0!	#01V:0!	#DIV-0*	#0(√/0! 0:00	#DIV:0! 0.00
		Max. Min.	0	17.40	13 00	0.000	0 003	0.001	6 85	00 540	0.0	400	0.000 0.176	0.0	2.33	0 64	24.00	0 62
,	1936	Ave. Max.	#DIV:0! 0	17.40 17.40	13 00 13 00	0.440 0.440	0 003	0.001 0.001	6 85 6 85	54.0 54.0	#D(V/0!	40 0 40 0	0.176 0.176	#DIV;0! 0.0	2 33 2.33	0.64 0.64	24.00 24.00	0.62 0.62

Table 3.5.10 Summary of Water Quality Data of Lake Chivero

			È	_	ر _		ر	و ج		ر	Ę		2	4	7	٦,	٦	₹
			m³/day	E dd	mg/L	- B	12 12	79		mg/L	mS/cm		J/6w	mg/L	mg/L	mg/L	mg/L	√gm √
Sample Point	Sampling Year	Items	Flow	Oxygen Absorbed	Chionde	Ammonia Narogen	Nitrite	Nitrate	H <sub>4</sub>	T-Alkalınty	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	iron (Fe)	S Manganese (Mn)	을 Calcium (Ca)	0.51
Top	1986	Min. Ave.	0 #DIV/01	1 80 2 56	14 0 15.4	0.01 0.04	0 001	0 010 0 032	7.60 8.39	45 0 47.6	0 0 #0iV/0!	45 0 48 2	003	0 0 #DiV/0!	0,10 0.15	0.04	32 00	027
100	1303	Max.	0	3 20	16.0	0.10	0 004	0.063	8.70	50.0	0.0	52 0 42 0	0.04	00	0.25 0.06	0.06	33 00 30 00	027 027
	1987	Min. Ave.	0 #DĭV/0!	1.60 2.50	19.0 19.5	0 01 0 02	0.000 #DIV/0!	0.007	7.69 7.91	54 0 54 0	#DIV:0!	450	0.03	#D(V.0!	0 03	003	32 00	0.27
	L	Mac	0	3.40 0.00	200	0.02	0.000	0 000	8.12 0.00	54.0 0.0	0.0	48 0 0.0	0.05	00	0.10	003	0.00	0.00
	1968	Min. Ave	#D(V/0!	#DiV/0!	#DIV/0i	\$O!∆\oi	#DIV/0	#D(V/O	#DIV/O!	#DIV/01	\$D(V/0'	#DIV 0!	#DIV:01	#DIV/01	#D(V/0!	#D(V/0!	≇DIV/0₁	0.00
	<u> </u>	Max. Min.	0	000	0.0	0.00	0 000	0.000	0.00	0.0	00	0.0	0.00	0.0	0.00	000	0.00	0.00
	1989	Ave.	≢DIV/0!	#D(V/0!	#D(V/01	#D(V/O!	#D(V/0!	#0IV/0!	#DIV/0!	#D(V/O!	#01V/0!	#DIV/O	#D(V/0!	#DIV/01	#DIV/O!	#D(V:01	#D(V/0!	000
		Max. Min.	0	0.00 3.40	0.0 28.0	000	0.000	0 000	0.00 6.73	660	00	00 580	0.00	0.0	0.00	000	000 3200	0.00
:	1990	Ave.	#D(V/O!	3.40	28.0	0.05	#DIV/0!	0 010	6.73	66.0	#DIV/0!	580	0.02	#DIV/0!	0.25 0.25	0.05 0.05	32 00 32 00	0.17 0.17
		Max. Min.	0	3.40	28.0 32.0	0 05	0.000	0.010	6,73 7.50	73 0	00	58 0 60 0	0.02	0.0	0.08	0.03	18 00	0.41
	1991	Ave.	#OIV/O!	4.33	37.2	0.15	0 0008	0 007	7.94	85 2	#DIV/0!	696 800	011 0.17	#DIV/0!	0.19 0.34	0.04 0.06	37.80 50.00	0.41 0.41
	_	Max.	0 -	3 50	41.0 35.0	0.58	0.015	0.012	9.40 8.65	105 0 109 0	0.0	820	0.04	0.0	0.13	0.07	42 00	0.37
	1992		#DIV/0!	403	460 6≅0	0.18 0.39	0.006 0.007	0 034	9,03 9.36	1187 1350	#DIV/0!	85.7 92.0	0.14 0.22	#DIV/0! 0.0	0.17 0.23	0.08	47.00 50.00	0.37 0.37
	<del> </del>	Max. Min.	0	480 280	68.0 81.0	0.39	0.007	0 020	954	160 0	00	106 0	0 23	0.0	021	0.02	52 00	0.88
	1993	Ave. Max	#D(V/0!	2.80	81.0 81.0	021 021	#D(V/0!	0 020	9.54 9.54	160.0 160.0	#DIV/0!	106 0 106 0	0 23 0 23	#DIV/0! 0.0	021 021	002	52 00 52 00	0.83 88.0
	}	Min.		9.40	£90	024	0 000	0 010	900	140 0	00	960	0.12	0.0	0.14	005	6400	0.40
	1994	Ave. Max.	#21V/0!	9.70	109.0 149.0	0.30	#DIV:0!	0 050	9.06 9.12	1425 1450	#D(V/0!	1030	0.18 0.24	#ĐiV/0′ 0 0	059 104	011 017	67.00 70.00	0.40 0.40
		Min.	0	1.80	620	0.05	0 002	0 002	702	148 0	00	1080	0.11	0.0	0.10	0.02	69.00	0.50
	1995	Ave. Mac	#0(V/0! 0	5.10 8 20	76.3 89.0	0.11 .	0.007	0.010	8 28 8 71	158 3 172.0	#D(V/0! 0.0	121.7 140.0	0.47 0.97	#0!V/01 0.0	0.18 0.26	0.05	75.17 84.00	0 50 0 50
	1	Min.	0	080	14.0	0 02	0 007	0 010	7 28	450	00	46.0	0.00	0.0	0 07	0.04	31.00 32.00	0.18 0.18
Middle	1966	Ave. Max.	#DIV/0!	1.96 2.80	150 16.0	010 025	0.008	0.063	7.38 7.45	48 8 55 0	#D(V/05	49.4 52.0	0.02 0.04	#D(V/0!	0 16 0.37	0.14 0.40	33.00	0.18
		Min.	0	3.60	180	0.68	0 604	0 010	689	60.0	00	60.0	0.07	0.0	0.46 0.62	0.80 0.87	32 00 33.00	0 22 0 22
	1937	Ave. Max	#D(V:0!	4 20 4 80	19.0 20.0	069 070	0.004	0 011	7.44 7.99	620 640	#D(V/0)	62.0 64.0	60 0 83 0	#DIV/0!	0.78	094	34.00	0 22
,		Min.	0	0.00	00	0.00	0 000	0 000	0 00	00	0.0 #D(V/0)	0.0 *0IV:0'	0.00 #⊕iV/0!	0.0 #DIV/0!	0.00 #DIV:01	0.00 #D(V/0!	0.00 #D(V/0!	0 00
	1968	Ave.	#D(V/0! 0	#D(V/0) 0.00	#DiV/0! 0.0	#D(V/0! 0.00	#DIV:0! 0.000	#DIV.0!	#DIV/01 0.00	≇D(V/O	00	00	0.00	0.0	0.00	0.00	0.00	0.00
	4600	Min.	0	0.00	00	0.00	0.000 #DIV/0!	0 000 #D(V/0!	0.00 #0(V/0)	0.0 #D(V/0)	00 #D(V/0!	0.0 #DiV/0!	0.00 #DIV:0¹	0 0 #0(V)O!	#D(V/0°	0:00 ≇D(V/0:	0.00 #D(V/0!	0.00
	1989	Ave.	#D(V/0! 0	#D!V/0! 0.00	#D(V/0! 0.0	#DIV/0! 0.00_	0.000	0.000	0.00	00	0.0	0.0	0.00	00	0.00	000	0.00	0.00
	1,000	Min.		380	28 0 28 0	0.05 0.06	0.000 #DIV/0!	0.010	7.01 7.01	68.0 68.0	0:0 #DIV/0!	56 0 56 0	0.02 0.02	0.0 #8IV/05	0.60	0.08	30 00 30 00	0 21 0 21
	1990	Max.	#Đ(V/0	3 80 3 80	280	0.05	0.000	0.010	7.01	68.0	0.0	560	0.02	0.0	0.60	0.08	30 00	0.21
	1001	Min.	0	3.40 3.93	31.0 36.7	0.05	0.004	0.010	7.28 7.86	76.0 81.0	0.0 ≢DiV/0!:	580 665	0.04	0.0 #DIV/0!	0.10 0.57	0.01 0.08	32.00 38.00	0 25 0 25
1	11981	Max.	#D(V/01	4.40	399	1.03	0.011	0.013	892	850	0.0	740	023	00	1.07	0 16	42.00	0.25
1	[,,,,	Min.	0 ≱DiV:0	4 20 4 50	30 0 44.3	0.04 0.17	0.007 0.007	0,002	7.99 872	111.0 119.0	0.0 #DiV/0!	83.0 87.0	0.15 0.18	#DIV:0!	0.21	0 02 0 06	44 00 47.33	0.45 0.45
1	1337	Max.	0	4.80	68.0	0.40	0.007	0.077	9.12	134.0	00	94.0	0.20	0.0	0.43	0.11	49 00	0.45
	1900	Min.	0 #DiV/0!	3 80 3 80	87.0 87.0	0 20 0 20	0.003	0.017 0.017	927	150.0 150.0	0.0 #D(V(0)	106.0 106.0	0 23 0 23	#D(V/0!	070	001	52 00 52 00	080
	1500	Max.	0	3 80	87.0	0.20	0.003	0 017	9 27	150 0	0.0	106.0	9.23	00	0.70	0.01	52 00	0.80
!	1004	Min.	0 #D(V/0!	6 00 6 50	67.0 118.0	0.06 0.18	0 010	0.003	8.70 8.87	130.0	0.0 #D(V/0¹	108.0 112.0	0.12 0.14	#0iV/0	0.01	0.04 0.16	69 00	0.42 0.42
	337	Mex	0	7.00	169.0	0.29	0 010	0 090	9 03	1480	00	116.0	0.15	0.0	1.09	028	72 00	0.42 0.55
	1995	Min. Ave	0 #D(V'0!	3 80 5 60	64.0 80.8	0.06 0.14	0.003	0.001 0.016	6.78 7.94	96.0 150.2	. 00 #DiV-0!	1120 1227	0.02 0.49	#DIV/0!	0.07	004	69.00 75.17	0.55
1	1	Max		6.80	93.0	0 22	0 020	0.070	8 67	174.0	0.0	1400	1.08	0.0	0.53	018	84 00	0.55

Table 3.5.10 Summary of Water Quality Data of Lake Chivero (cont'd)

			m³/day	wdd,	mg/L	mg/L	John Harde	age/L		Jour Labor	uS/cm		J/ou	76E	19th	mg/L	mg/L	mg/L
Sample Point	Sampling Year	items	Flow	Oxygen Absorbed	Chlonde	Ammonia Narogen	Nitrite	Nitrate	Ŧ	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Albuminoid
Sottom	1986	Min. Ave Max.	0 #D(V/0! 0	0 00 #DiV/0! 8 00	0 0 #DIV/0! 0.0	0 00 #D(V/0!	0.000 #DIV/0! 0.000	0.000 #DiV/0! 0.000	#01V/0!	0.0 #DIV/0! 0.0	0.0 #DiV:0! 0.0	00	0.00 ≇0!V/0! 0.00	0 0 #DIV:0! 0 0	0.00 #DIV:0/ 0.00	0.00 #DIV/0! 0.00	#D(V:0:	0.00 0.00 0.00
	1987	Min. Ave. Max.	Ö	0.00 #DIV/0! 0.00	0.0	0.00 #DiV/01 0.00	0 000 #D(V/0!	0 000 #DIV:0! 0 000	0.00 #D(V/O) 0.00	0.0 #DtV/0! 0.0	0.0 #D(V/0! 0.0	0.0 #DiV/0' 0.0	0.00 #DIV/01 0.00	0.0 #DiV/0! 0.0	0.00 #DIV/0! 0.00	0.00 #D(V/0! 0.00	0.00 #DIV/0! 0.00	0 00 0 00 0.00
	1988	Min. Ave.	0 #DiV/O'	<b>\$</b> D!∆\0,	0 0 #DIV:01	0 00 #D(V/0!	0.000 #DIV/0!	0.000 #DIV:0!	0.00 #DIV/0!	0.0 <b>≇</b> DiV/0!	0.0 #DIV:0!	0.0 #D(V/0!	0 00 #DiV/0!	0.0 #D(V/O	0 00 #DIV/0!	0.00 #DiV/0!	0 00 #0(V/0!	0.00 0.00
	1983	Max. Min. Ave.		0.00 0.00 #D(V/O)	0.0 0.0 #DiV:0!	0.00 0.00 #DIV/0!	0.000 0.000 #DIV/0!	0.000 #DIV/0!	0.00 0.00 #O(V/O!	0 0 0 0 #D(V/0!	0.0 0.0 #D(V/Q/	0.0 0.0 #DIV/0!	0.00 0.00 #DIV/0!	0.0 0.0 #DIV/0!	0.00 0.00 #D(V/0!	0.00 #D(V/O	0.00 ₽DiV/0°	0.00 0.00 0.00
	1990	Max. Min. Ave	0 0 #D(V/0!	0.00 0.00 #DiV/0!	00 00 #D(V/0!	0.00 0.00 #DIV/01	0 000 0 000 #D(V:0!	\$DIA'0.	0 00 0 00 #D(V/0!	0.0 0.0 #DIV/0!	0.0 0.0 #DIV/0!	00 00 #D(V/O	0.00 0.00 #D(V/0!	*D!∆⁄O; 0.0	0.00 0.00 #D(V/0!	0.00 0.00 #DIV/0!	0.00 0.00 #DIV/0!	000 000 000
	1991	Max. Min. Ave.	0 0 #D(V/0:	0.00 0.00 #D(V/O:	0 0 #D(V/0!	0.00 \$0IV/0	0 000 0 000 #DIV:0!	0.000 0.000 ≱D(V/0:	0.00 0.00 ≢DIV/0!	0.0 0.0 #DIV/0!	0.0 0.0 #DIV/0!	0.0 0.0 #DiV/0!	0.00 0.00 #DiV/0!	0.0 0 0 #DIV/0:	0.00 0.00 #DIV/0!	0.00 0.00 #DIV/G!	0.00 0.00 ≢D(V/0:	000 000 000
	1992	Max Min. Ave	0 0 #D!V/0:	0.00 0.00 #D(V:0)	0.0 #D!V0!	000	0 000 0 000 #DIV/0	0.000 0.000 #DiV/0!	0.00	00	00 #0₹V/0¹	0.0 0.0 #DIV/0!	0.00	0.0	0.00 0.00 #D:V:0!	000	0.00 0.00 #DiV/0!	0.00 0.00 0.00
		Max Min.	0	0.00	00	0.00	0 000	0000	0.00	0.0	00	0.0	0.00	0.0	000 000	0 00	000	0.00
	1993	Max. Min.	#D(V/0! 0 0	#DiV/0! 0.00 11.40	#DIV/0! 0.0 77.0	#DIV/01 0.00 0.34	#DIV/0! 0 000 0 030	#DIV:01 0 000 0 184	#DIV/0! 0.00 8.10	0.0 144.0	#D(V/O1	#DIV:0: 0.0 120.0	#D(V/0! 0.00 0.15	#DIV/0! 0.0	#D(V/0! 0.00 2.15	#DIV/0: 0.00 0.21	#DIV:01 0.00 68.00	0.00 0.00 0.45
	1994	Ave Max. Min.	#8IV/0! 0 0	11.40 11.40 500	77.0 77.0 64.0	034 034 0.11	0 030 0 030 0 004	0184 0184 0001	8.10 8.10 7.81	144.0 144.0 152.0	#DIV/01 0.0	120 0 120 0 114 0	0.15 0.15 0.34	#D(V/0! 0.0	2 15 2.15 0 13	0.21 0.21 0.04	68 00 68 00 70 00	0.45 0.45 0.50
	1995	Ave. Max.	#DIV/0! 0	8.15 18.20	77.8 93.0	036 060	0.015 0.040	0 016 0 060	8 38 8 74	160.8 176.0	≢0ĭV/0! 0.0	123 0 136 0	0.72 1.26	#D(V/0! 0:0	1.17 5.32	0.12 0.24	78.67 88.00	0.50 0.50



Table 3.5.11 Summary of Water Quality Data of Lake Manyame

			m³/day	Ę.	J/o	mo/L	1/86	1/2		عوا ع	us/cm		mo/L	ma/L	mø/L	عود	9 1	ğ
Sample Point	Sampling Year	¥		Oxygen Absorbed	Chloride	Ammonia Nitrogen in		Nfrate		T-Alkalinty	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)	Calcum (Ca)	Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion Popularion
Peg.	3	tems.	<u>r</u> §				Number		7.50	<u>}</u> 53.0	<u> </u>	<u>₽</u> 500	0.010	<u>ō</u>	<u>≚</u> 007	004	22 00	0.17
Тор	1956	Min. Avə.	0 #D(V:0!	2 (O 2 70	10.00	0.010 0.014	0 002	0.011	7.84	55.5	#Q(V/01	51.0	0 014	#D(V/Q!	0.14	0.05	24 75	0 22
100		Max	. 0	3.40	12.00	0 020	0.005	0 100	8 04	59 0 59 0	00	52 0 50 0	0.010	00	022	0.08	26 00 22 00	027
ſ	.007	Min.	0 #0(∀/0!	2 20 2 50	12 00 15 25	0.100 0 t43	0.000 ≢DîV.0⁴	0 020	7.70 7.84	68.8	#O!V/0!	550	0.177	#DiV/0	018	0.11	25.50	035
į	1987	Ave.	0	300	22 00	0 200	0.000	0.072	7.98	82 0	00	62 O	0 500	00	0.30	018	28 00	0.54
ſ		Min.	0	0 00 #0/V/0!	0.00 #D(V/0!	0 000 € #DfV/0*	0 000 #D(V:0!	0.000 #DIV/0!	0.00 #DIV/0!	0.0 ≰DiV/0!	#DIV/0!	#6IV:0	#DIV/0*	#DIV:0!	#01V/0	#DIV/O!	#D(V/0!	#DIV/O!
- [	1388	Ave. Max	#D(V/0!	0.00	000	0 000	0.000	0 000	0.00	00	0.0	00	0 000	0.0	0.00	0.00	0.00	0.00
ı		Min.	Ö	0.00	0.00	0 000 ≴D(V/0I	€0(V/0)	0.000 #DŧV/0!	0.00 #0/V/0!	#0!V;0!	0.0 #D(V:0!	0.0 #DiV/0!	0.000   #DIV/0!	0.0 #D(V:0!	#D(V′0!	#0!V/0!	101/0	#OIV/O!
- 1	1989	Ave Max.	#OIV/0! 0	#D!V/0!	#D{V/0 <sup>1</sup> 0.00	0,000	0.000	0 000	0.00	0.0	0.0	00	0 000	00	000	0.00	24 00	0.00
ĺ		Min.	0	3.40	30.00	0 030	0 000	0.000 #0IV/0!	695 695	890 890	0.0 #D(V/0!	64.0 64.0	0 040	0.0 #DIV/0!	0.19 0.19	005	24 00	0.17
l	1990	Ave.	#D(V/0! 0	3.40 3.40	30.00 30.00	0.030	\$0(V/0!	0.000	695	89 0	00	64.0	0.040	00	0.19	0.06	24 00	0.17
į		Min.	0	200	8.00	0 065	0.014	0 010	7.60	740	0.0	650 730	0.100 0.193	0.0 #D(V/0/	0 02	0.04	26.00 32.00	0.15 0.18
	1991	Ave.	<b>#0!√</b> 0!	2 27	23 50 38 00	0 074 0 085	0 014 0 014	0.016 0.022	7.86 8.15	81.3 87.0	#D(V/0!	800	0.193	0.0	019	0.09	40 00	021
		Max.	0	2.60	22 00	0 000	0 012	0.052	8 66	94.0	00	88.0	0 042	00	0.26	0.39	35 00 35 00	0.42 0.42
	1992	Ave.	#D(V/0!	260	22 00	0.060	0.012	0.052	8 66	94.0 94.0	#DIV:0! 0.0	88.0 83.0	0.042	#DIV/0! 0:0	026	039	35.00	0.42
		Max. Min.	0	0.00	22.00	0.060	0 012	0.052	8.06 0.00	00	0.0	00	0.000	00	0.00	0.00	0.00	0 00
	1993	Ave.	#DIV:0	#DiV:0!	#D(V/O!	#D(V/0!	#D(V:0!	#DIV/0!	#D(V·O	#DIV/04	#D(V/0!	#DIV:01	#DIV:0!	#D(V/0!	#DIV:0!	#DIV:09	#DIV/0! 0.00	#D(V:0!
		Max.	<u> </u>	0.00	0.00	0 000	0.000	0 000	0.00	0.0	0.0	00	0.000	0.0	000	0.00	0 00	000
	1994	Mia. Ave.	0 #D(V/0!	0.00 #D(V/0!	0.00 #D(V/0!	#D[V:0?	#DIV:0!	#D(V/0!	#DiV:0:	#DIV:05	#D(V/0!	#D(V/O!	#DIV/0!	#D(V/0		#0IV:0!	#D(V/0!	<b>\$</b> O!V:0⁴
	1354	Max.	0	0.00	0.00	0.000	0.000	0 000	0.00	0.0	- 88-	0.0	0 000	0.0	0.00	0.00	0 00	0.00
	1005	Min.	0	#0fV/0!	0.00 #DIV/0	#DIV:0!	0000 th	0.000 #DIV/05	0.00 #0IV/0!	0.0 #D(V:0!	#DIV/0!	#D(V/0!	#DIV/01	#DIV/0!		#DIV/0!	#D(V:0!	<b>\$</b> D(V/0!
	1995	Ava Max.	\$D!V/0!	0.00	0.00	0 000	0.000	0 000	0.00	0.0	00	0.0	0 000	00	0 00	0.00	40.00	0.40
		Man.	0	3.60	23.00	0.145	0.003	0.006	7.19 7.19	660	0.0 #D(V;0!	80.0 80.0	0.080	0.0 #Đ[V/0!	025	032	40 00	0.40
	1996	Ave. Max.	#D(V/0! 0	360	23.00	0.145 0.145	0.003	0.006 0.006	7.19	66.0	00	800	0.080	0.0	0 25	0 32	40 00	0.40
	l	Min.	6 6	2.40	10 00	0 015	0.002	0 019	7.70	55 0	0.0	50.0	0.008	0.0 #DIV/0!	0.40	0.10	23 00 25 67	0 25 0 28
8ottom	1986		#DIV/O	2 93	11.33	0 042	0.003	0 058 0 128	7 92 8.10	57.0 58.0	#D(V/0!	51 3 52 0	0 030	0.0	0.50	0.12	23.00	0.32
		Max. Min.	0	3.40 4.00	13.00	0 250	0.004	0.020	7.34	600	00	51.0	8000	0.0	0.12	0.26	24 00	0 22
	1987		#DIV/0!	6 27	14.00	0 303	0.004	0.038	7.44	65.7	#DIV.Q	53.7 58.0	0 269	#D(V/0!	2.58 8.63	0.69 1.44	25 33 28 00	100
'	<b> </b>	Max. Min.	0	9.60	15.00	0 360	0 000	0.070	7.57 0.00	74.0	00	0.0	0 000	00	0.00	0.00	0.00	0.00
	1998		#DIV/O	#DIV/0!	#D(V/0!	#DIV.O	#D(V/0!	#DIV/0!	#DIV/0!	#D/V/0!	#DIV/O!	#DIV/0:	#DIV/0:	#DIV/0! 0.0	#DIV/0! 0.00	#DIV/0! 0.00	#D/V/0! 0.00	#DiV/0! 0.00
	<u> </u>	Max.	0_	000	0.00	0 000	0.000	0 000	000	00	0.0	00	0.000	0.0	000	0 00	0.00	0.00
	1989	Min. Ave.	0 #0(V:0!	0 00 #DIV/0!	0.00 #DIV/0!	#DIV/O	#0IV/0!	#D(V/0!	#DIV/0!	#D!V/0!	#D(V:0!	#DIV/05	#DIV/0!	#5(V/O!	#0!V/0	#D(V/0!	#D(V:0:	\$0\Vi0t 0.00
		Max.	0	0.00	0.00	0.000	0.000	0 000	0.00	0.0	0.0	00	0.000	0.0	000	000	0.00	0.00
	1000	Min. Ave.	0 #0(V/0)	0.00 #DIV/0!	#0!V/0!	0 000 #DiV/0!	0.000 #DIV/0!	0.000 #D(V/0)	#DIY/0!	#Ð(¥/ <b>0</b> !	#DIV/0!	#DIV/0!	#017/01	#DIV/0!	#DIV/0!	#DIV/0!	#DIV:0!	<b>#</b> D(V/O)
	L 330	Max.	0	0.00	0.00	0 000	0.000	0.000	0.00	0.0	00	0.0	0.000	0.0	0.00	000	0.00	0.00
		Min.	0	0.00	#DIV/0!	#D(V/O)	#DIV/0!	0.000 #D(V/0!	0.00 #0/V/0!	0.0 #D(V/0!	#Đ(V/0f		#D(V/0!			#DIV/9!	#D(V/0⁴	#DIV/0!
	1991	Ave.	\$D(V/0! 0	#D(V/0!	0 00	0.000	0000	0.000	0.00	00	00	0.0	0 000	0.0	0.00	0.00	0.00	000
İ		Min.	0	0.00	0.00	0.000	0 000	0.000 #DIV:0!	#D(V/O!	0 0 #D(V:0!	#D(V/O!	#D(V/0!	#DIV/0!	#D(V:0!	#DIV:0!	#DIV/01	#0/V/0f	#DIV/0!
	1992	Ave. Max.	#DIV/0I	#DIV/0! 0.00	#DIV/0! 0.00	#DIV/0!	8D(V/0)	0.000	0 00	00	00	00	0.000	60	0.00	000	0.00	000
}	<u> </u>	Min.	0	000	0.00	0 000	0 000	0 000	0.00	00	0.0	0.0	0 000	0.0 #D(V/05	0.00 #DIV:0!	0.00 #DIV/0!	#DiV/0!	#D(V/01
	1993	Ave.	#D(V:0)			#D(V:0! 0.000	#0!V/0! 0.000	#D(V/0! 0 000	#D(V:0!	#O[V/0! 0.0	#D(V/O)	#DIV/09	#DIV:05	00	0.00	0.00	0.00	000
		Max.	0	000	0.00	0000	0000	0.000	0 00	0.0	00	00	0 000	0.0	000	0 00 #00/r0t	#D(V/O	0.00 #DIV/0!
1	1934	Ave.	#D(V/0	#00//0!	#D(V/0!	#0(7/0)	#DIV/0!	\$DIV/0!	#D(V/05 0.00	#ĐÍV/0² 0.0	#D(V:0!	#DIV/0!	#DIV/05 0.000	#DIV:0!	#D(V:0:	#0:V:0! 0.00	0.00	0.00
	<u> </u>	Max. Min.	0-	000	0.00	0.000	0 000	0 000	0.00	0.0	00	00	0.000	00	000	0.00	0.00	0.00
]	1995	1	#DIV/0		#DIV/0!	#D:V/0!	#D(V/0!	#07V/0!	<b>₽</b> DIV/0!					#DIV:0!	#0(V:0) 0:00	#D(V/0!	#0(V/0)	0 00 0 00
1	L.	Max	0	0.00	0.00	0.000	0 000	0.000	0.00	0.0	00	00	0.000	00	000	0.00	0.00	0.00
	1996	Min. Ave.	0 ≢DiV:0	0 00 #0(V/0!	0.00 #D(V:0)			#DIV/0!	#DIV/O!	#D(V/0!	#O(V/0!	#D(V/0!	#DIV:0!	#DiV/0!		#DIV/0!	#0!V/0!	
	1	Max		0.00	0.00	0 000	0.000	0.000	0.00	0.0	00	0.0	0 000	00	000	0.00	0.00	0 00

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Table 3.5.12 Water Quality Data of Manyame River

		m3/day	Ead	mg/l	)-ge	l/ɓw	∥⁄6₩		mg/i	uS/cm		mg/l	mg/I	mg/l	J/g⊞
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chlonde	Ammonia Nitrogenimg/l	Nitrite	Nitrate	Ha	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen mg/f	Iron (Fe)	Manganese (Mn)
below	9/1/91			MPLES				<u> </u>	ļ	<u> </u>		<b>.</b>		ļ., <u>.</u>	
NEW RD	9/1/91	-	4.80	16.0	0.050		<u> </u>	<u> </u>	50.0		32.0			1.03	0.32
SKYLINE	9/1/91		11,60	18.0	4.300	SIK	0.019	0.81	90.0	250.0	40.0	0.530	2.00	0.90	0.20
below	9/4/91		NO SA	WPLES		ļ		<del> </del>			ļ	<del> </del>	<del> </del> -		
NEW RD	9/4/91		1.80	45.0	0.140	0.0115	0.0015	7.07	60.0	160.0	34.0	0.036	2.50	0.96	0.10
SKYLINE	9/4/91	•	5.60	15.0	0.380				90.0			0.664	5.10		
below	2/7/91	-	1.20	11.0	0.090		TR	7.15	30.0	132.0	50.0		5.70	0.56	0.03
NEW RD	2/7/91	-	2.00	24.0	0.290		TR	7.40	60.0	190.0	50.0		3.00	0.13	
SKYLINE	2/7/91		11.60	44.0	0.700	0.042	0.016	7.95	330.0	790.0	70.0	1.000	4.80	0.55	0.11
below	8/10/91		NO CA	MPLES		<del> </del>		ļ	ļ	ļ		ļ	ļ	ļ	ļi
NEW RD	8/10/91		1.60	45.0	0.450	0.033	NIL	7.14	1210.0	250.0	51.0	0.036	3.10	0.69	0.24
SKYLINE	8/10/91		27.20	85.0	1.200	0.033			710.0		97.0			0.88	
	0.10101		-1.20	- 90.0	1.200	0.020	0.020	1.10	110.0	1400.0	37.0	1.200	11112	0.00	0.23
below	14/1/92	•	3.20	20.0	0.120	NIL	NIL	7.86	90.0	190.0	80.0	0.020	7.40	0.77	0.24
NEW RD	14/1/92	-	2.80	27.0	0.370	0.015	0.003		70.0	180.0	50.0	0.042	4.10	0.95	
SKYLINE	14/1/92		3.20	12.0	0.245	NIL	0.020	6.82	40.0	100.0	50.0	0.184	4.00	1.34	NIL
	=14455														
below	7/4/92		3.00	15.0	0.135		0.040		150.0	310.0		0.012	5.60	0.61	0.19
NEW RD SKYLINE	7/4/92 7/4/92	<u>-</u>	3.20 10.80	30.0 62.0	9.500	0.030	0.060		60.0	4		0.044 0.780	3.30	0.10	
OKTERNE	114/32	<u>-</u> -	10.60	02.0	9.500	0.040	0.110	1.23	280.0	010.0	30.0	0.760	4.40	IVIL	NIL.
below	7/7/92	-	NO SA	MPLES						<u> </u>					
NEW RD	7/7/92	-	3.00	30.0	3.350	NIL	0.015	7.22	50.0	210.0	35.0	0.630	5.70	0 25	0.09
SKYLINE	7/7/92	-	6.20	58.0	0.195	0.350	0.014	7.38	220.0			2.000	4.80	0.23	0.13
·															
below	8/9/92			MPLES											
NEW RD	8/9/92		3.60	47.0	3.200	0.130	0.404		92.0	330.0		0.044		0.19	0.46
SKYLINE	8/9/92		8.40	97.0	0.320	0.130	0.045	7.08	266.0	1120.0	111.0	0.260	4.40	0.03	0.04
below	9/10/92		NO SA	MPLES		<del></del>		ļ							
NEW RD	9/10/92		8.80		0.920	0.170	0.130	7 53	90.0	340.0	50.0	0.150	6.70	0.07	0.05
SKYLINE	9/10/92	-		113.0	0.760		0.530								NIL
												,			
below	15/11/92			MPLES											
NEW RD	15/11/92	•	4.80		0.440	0.050	0.110		88.0	370.0		0.080	4.10	0.78	0.32
SKYLINE	15/11/92		12.80	131.0	0.960	0.130	0.470	7.74	390.0	390.0	140.0	1.968	6.30	0.24	0.06
below	15/12/92		NO SA	MPLES											
NEW RD	15/12/92			41.0	2.550	0.029	0.081	730	76.0	140.0	27.0	0.136	7.10	2.35	0.13
SKYLINE	15/12/92			141.0	0.230	0.025	0.035						1.60	0.47	
								<del></del>			*****	3.310		V.41	- 11-
below	15/1/93		5.20	9.0	0.070		0.028		70.0			0.148	5.20	-	-
NEW RD	15/1/93		4.80	27.0			0.1235		40.0	-		0.244	2.30	-	-
SKYLINE	15/1/93	_:_	6.40	17.0	1.400	STR	0.044	6.88	50.0	-		0.480	3.80	-	-
L				<u> </u>		L	L	لــــا		<u> </u>					

Table 3.5.12 Water Quality Data of Manyame River (cont'd)

		m3/day	шdd	mg/l	mg/l	mg/l	ng∕!		mg/I	ms/sm		mg/l	l/gm	l/ĝm	mg/l
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen mg/l	Nitrite	Nitrate	i,td	7-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen mg/l	Iron (Fe)	Manganese (Mn)
below	21/4/93	-	9.00	9.0	0.055	0.008	0.014	6.49	40.0	100.0	41.0	0.020	5.90	1.50	0.43
NEW RD	21/4/93	-	3.80	29.0	0.295	0.024	0.019	6.66	30.0	150.0	38.0	0.158	2.30	1.03	0.21
SKYLINE	21/4/93	-	4.80	19.0	2.200	0.065	0.071	6.97	50.0	100.0	23.0	0.640	3.80	0.87	NIL
								7.54		400.0	22.4	0.040	8.80	0.50	NIII
below	13/7/93		0.80	19.0	0.075		0.144	7.54	50.0	100.0 140.0	32.0 36.0	0.040	1.60	0.31	0.05
NEWRD	13/7/93		1.60	27.0	0.090		0.120	6.63	70.0 220.0	470.0	72.0		1.10	0.49	0.03
SKYLINE	13/7/93	-	6.00	49.0	0.245	0.110	0.078	7.58	220.0	410.0	12.0	2.400	1.10	0.73	0.00
h alam	11/9/93		NO SA	MPLES											
below NEW RD	11/9/93		25.00	74.0	100.000	1.350	NII	7.76	550.0	1140.0	118.0		0.10	0.16	NIL
SKYLINE	11/9/93		8.60	64.0	28.000	1.580			290.0	800.0	94.0	•	5.70	0.06	0.03
SKILINE	1110100		0.00	01.0		1.000									
below	29/11/93		2.00	21.0	0.115	NIL	0.030	7.12	60.0	200.0	46.0	-	6.00	3.40	0.25
NEW RD	29/11/93		2.20	33.0	2.000	TR	0.020	7.25	68.0	300.0	36.0	-	3.50	0.90	0.40
SKYLINE	29/11/93	-	10.20	92.0	0.090	0.210	0.140	7.60	372.0	950.0	104.0	-	6.00	0.37	0.11
														4.00	
below	8/3/94	<u> </u>	1.40	3.60	0.110		0.025		44.0		28.0	0.032	6.10	1.00	
NEW RD	8/3/94	-	3.80	5.85	2.000		0.010		40.0		28.0	0.144	5.40	1.61	
SKYLINE	8/3/94		1.40	6.00	0.900	0.100	0.008	7.26	44.0		32.0	0.036	4.30	1.15	IIK
				40.0	0.440	Atal	0.100	7.69	72.0	260.0	48.0	0.040	4.50	1.31	0.20
below	5/7/94		1.00	13.0 29.0	0.110	NIL	0.164		36.0	190.0	38.0	0.092	6.90	1.51	0.06
NEW RD	5/7/94 5/7/94	<u> </u>	2.00 3.00	33.0	4.640	0.188	1.452	7.81	160.0	450.0	61.0	1.348	0.50	0.20	0.03
SKYLINE	3///94	- <u>-</u> -	3.00	33.0	4.040	0.100	3,702	7.07	100.0	- 100.5		10200			
below	13/9/94		2.60	19.0	0.540	TR	0.034	6.86	90.0	180.0	-	0.680	5.60	2.72	1.00
NEW RD	13/9/94	-	3.60	23.0	0.260		0.060		70.0	160.0	-	0.184	8.90	0.38	0.17
SKYLINE	13/9/94	<del>-</del>	9.80	73.0	30.000	0.360	1.040		340.0	930.0		2.960	6.20	0.65	0.20
01112	10,010.1											<u></u>		<del></del>	
below	8/11/94		7.00	27.0	1.860	TR	0.014	7.00	130.0	290.0	80.0	0.760	3.50	5.52	0.71
NEW RD	8/11/94	Ŀ	4.00	67.4	8.000	0.011	0.025		90.0	200.0	30.0	0.580	5.80		0.104
SKYLINE	8/11/94	<u> </u>	13.00	57.0	27.000	0.310	0.050	7.40	200.0	650.0	80.0	0.700	7.40	1.34	0.152
	ļ	ļ				070	70	000	00.0	220.0	75.0	0.220	3.10		
below	17/1/95	<u> </u> :_	4.20	87.0	0.180		TR 0.013	6.96	80.0 40.0	200.0		0.060	3.00	<u> </u>	
NEW RD	17/1/95	ļ.:	3.80		0.200 4.100				70.0	220.0	50.0		1.10	•	<u> </u>
SKYLINE	17/1/95	ļ	7.40	39.0	4.100	0.020	0.010	0.00	10.0		00.0		<u> </u>		
below	11/4/95	<u>-</u> -	1.60	39.0	0.170	NIL	0.012	6.76	130.0	300.0	110.0	0.510	1.65	4.27	0.77
NEW RD	11/4/95	<del>  -</del> -	1.50	G			0.035		70.0	200.0	50.0	0.060	2.95	0.31	0.07
SKYLINE		•	3.40				0.042	7.05	130.0	370.0	65.0	1.020	5.60	0.07	0.05
	1	†										ļ	<b> </b>	ļ	<b></b>
below	15/6/95	Ŀ	NO S/	MPLIN		ļ	ļ	<u> </u>		 	1.55 -			0.50	A 70
NEW RD	15/6/95	Ē	1.50			TR	0.015			1200.0				0.58	
SKYLINE	15/6/95	Ŀ	0.90	57.0	0.480	0.017	0.061	6.66	130.0	210.0	50.0	2.150	1.25	0.35	0.02
		ļ			<u>L</u>	ļ	<b> </b>	ļ		<b> </b>	<b> </b> -	<b>!</b>			<del> </del>
below	1/8/95	<u>  -</u>		AMPLIN		0.000	0.050	0.70	400.0	2400	120.0	0.960	5.20	0.64	0.15
<b>NEW RO</b>	1/8/95	<u>l:</u>	1.20									2.000		<del></del>	†
SKYLINE	1/8/95	1	- ~ ~	107.0	1.520	0.250	0.020	16 70	1.5.00.	Lenni	ייירוון	171911		, ,,,,,	

Table 3.5.12 Water Quality Data of Manyame River (cont'd)

		m3/day	шdd	mg/l	mg/l	mg/l	₩§/I		пgл	uS/cm		mg/!	l/6m	mg/I	mg/l
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogenmg/l	Nitrite	Nitrate	Hď	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)
below	26/9/95	-	NO SA	MPLIN	G										
NEW RD	26/9/95	•	2.20	37.0	0.100		0.006		80.0	650.0	100.0		7.30		
SKYLINE	26/9/95	-	6.90	83.0	0.310	0.132	0.143	7.16	120.0	300.0	44.0	3.800	3.70	-	
below	7/11/95		NO SA	MPLIN											
<b>NEW RD</b>	7/11/95	-	1.80	39.0	TR	NIL	0.023	6.81	80.0	400.0	90.0	0.036	4.90	0.05	0.04
SKYLINE	7/11/95		NO S/	MPLIN	G										<del> </del>
	0/4/00		40.00	47.0	3.000	Kill	0.020	6.59	140.0	300.0	100.0	0.352	3.30	3.537	0.896
below	2/1/96		12.90	17.0	0.250		0.019		700.0	200.0	50.0	0.672			
NEW RD	2/1/96		5.30	21.0	0.200			8.07	70.0	200.0	50.0	0.336	1.75		
SKYLINE	2/1/96	<u> </u>	6.20	19.0	0.200	0.0145	0.021	0.07	70.0	200.0	00.0	0.500			
below	2/4/96		11.00	13.0	STR	STR	TR	7.05	50.0	150.0	70.0	0.300	6.20	1.01	0.03
NEW RO	2/4/96	-	16.40			TR	TR	7.09		150.0	80.0	0.180			
SKYLINE	2/4/96		6.80		STR	0.009			40.0	140.0	65.0	0.180	4.50	1.34	NIL.

Table 3.5.12 Water Quality Data of Manyame River (cont'd)

		m³/day	E dd	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen mg/L	Nitrite	Nitrate	Ha	0.87Alkalinity	Electric Conductivity	Total Hardness	Phosphate	0. Dissolved Oxygen	Iron (Fe)	즈 Manganese (Mn)
at Manyame	25/8/92	-	2.40	53.0	0.050	STR	0.005	7.65	78.0	500.0	95.0	0.042	10.10	NIL	NIL
at Manyame	25/9/92		5.80	59.0	TR	STR	STR	7.76	90.0	540.0	100.0	0.030	7.50	0.11	0.24
at Manyame	29/10/92		3.00	63.0	0.780	0.016	0.017	7.79	120.0	620.0	106.0	0.032	8.00	0.39	0.64
at Manyame	22/12/92		3.60	64.0	1.540	0.043	0.018	7.40	112.0	550.0	102.0	0.036	3.40	0.21	0.06
at Manyame	22/1/93		4.80	57.0	0.065	0.008	0.045	7.25	80.0	440.0	136.0	0.046	8.80	2.04	0.35
at Manyame	29/4/93		0.40	33.0	0.130	TR	0.055	7.38	90.0	220.0	82.0	0.016	7.80	0.16	0.09
at Manyame	19/7/93		2.60	37.0	0.740	NIL.	0.037	7.54	80.0	340.0	110.0	0.100	9.90	0.09	0.01
at Manyame	23/9/93		2.00	59.0	0.040	TR	0.023	8.09	100.0	330.0	100.0	0.050	10.00	0.11	0.10
at Manyame	2/12/93		3.80	45.0	0.255	NIL	TR	7.68	96.0	450.0	110.0	0.032	7.10	0.60	0.20
at Manyame	15/3/94		4.00	54.0	0.145	0.004	0.008	7.19	80.0	-		0.060	3.10	0.37	TR
at Manyame	28/6/94	-	2.20	87.0	0.490	0.060		6.98	90.0	450.0	122.0	0.044	5.10		-
at Manyame	2/8/94	•	2.20	52.0	0.155	NIL	0.047	7.13	102.0	510.0	0.1	3.900	1.25	0.96	
at Manyame	11/10/94	-	5.00	55.0	0.120	NIL	0.110	7.04	100.0	560.0	<u> </u>	0.160	2.90	0.77	1.06
at Manyame	6/12/94		4.40	83.0	STR	NIL	0.010	7.05	135.0	540.0	126.0	0.800	8.20	0.08	0.14
at Manyame	3/1/95		8.20	77.0	0.150	NIL	TR	6.98	140.0	810.0	260.0	0.500	1.00	0.62	4.40
at Manyame	30/1/95		3.90	55.0	0.140	0.036	0.013	7.30	110.0	560.0	128.0	0.130	5.20	0.42	0.12
at Manyame	20/2/95	-	8.40	85.0	TR	0.007	0.003	6.88	130.0	700.0	140.0	2.520	1.90	5.09	0.10
at Manyame	28/6/95	-	2.60	79.0	TR	0.004	0.012	6.98	100.0	670.0	150.0	0.520	3.25	0.07	0.09
at Manyame	29/8/95		5.20	123.0	TR	NIL	0.013	7.10	120.0	750.0	138.0	0.136	7.00	0.29	0.36
at Manyame	24/10/95	-	18.60	87.0	TR	STR	0.005	7.49	150.0	840.0	156.0	NIL	3.85	4.47	0.72
at Manyame	30/4/96	-	5.80	51.0	0.120	STR	TR	6.73	150.0	390.0	120.0	0.100	5.55	1.24	0.12

Samuel.

Table 3.5.13 Water Quality Data of Musitwi River, Manyame River Upstream

		m³/day	mad	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen mg/L	Nitrite	Nitrate	Нd	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen mg/L
MUSITWI	29/1/91	-	1.00	6.00	0.050		0.011	6.40	40.0	90.00	26.0	0.040	5.60
MANYAME(US)	29/1/91		2.60	7.00	0.170	0.005	0.003	6.54	55.0	130.00	42.0	0.050	5.40
MUSITWI	23/4/91		4.20	5.00	0.080	NIL	0.015	7.16	40.0	90.00	26.0	0.020	5.70
MANYAME(US)	23/4/91		2.80	6.00	0.090		0.011	7.45		110.00	40.0	0.020	7.50
MUSITWI	16/7/91	-	2.00	4.00	Ϋ́R	TR	TR	7.42	36.0	100.00	30.0	0.030	7.90
MANYAME(US)	16/7/91		1.80	4.00		TR	TR	7.53		159.00	57.0	0.030	8.10
MUSITWI	22/10/91	-	4.00	7.00	0.720		0.050			102.00		0.800	11.30
MANYAME(US)	22/10/91		3.00	13.00	0.160	0.011	0.160	7.28	130.0	210.00	-	0.230	4.00
MUSITWI	18/1/92			32.00	0.100		TR	7.46		130.00	50.0	0.024	6.00
MANYAME(US)	18/1/92		2.00	7.00	0.100	NIL	TR	7.31	56.0	120.00	50.0	0.100	4.30
MUSITWI	19/5/92	-		25.00		TR	0.024	7.24		430.00		0.190	4.70
MANYAME(US)	19/5/92		2.20	25.00	TR	TR	0.028	7.13	110.0	130.00	65.0	0.150	5.20
MUSITWI	28/7/92	-	1.80	10.00	0.130	NIL	0.030	6.99	120.0	160.00	68.0	1.640	3.90
MANYAME(US)	28/7/92	-			NO SA	MPLE							
MUSITWI	1/9/92	•			NO SA								
MANYAME(US)	1/9/92				NO SA	MPLE							
MUSITWI	1/10/92	-			NO SA	MPLE							
MANYAME(US)	1/10/92	-			NO SA	MPLE							
MUSITWI	7/5/93	-			NO SA	MPLE							
MANYAME(US)	7/5/93	-	3.60	9.00	0.190	NIL	0.058	6.82	50.0	75.00	36.0	0.088	3.90
MUSITWI	29/7/93				NO SA								
MANYAME(US)	29/7/93		1.60	17.00	TR	NIL	0.124	7.31	100.0	130.00	54.0	0.080	6.50
MUSITWI	4/8/93	i		61.00			0.089			100.00		0.050	5.20
MANYAME(US)	4/8/93		4.60	77.00	0.180	STR	0.074	7.05	50.0	100.00	56.0	0.096	5.00
MUSITWI	14/10/93			19.00			0.0125			105.00		0.160	4.40
MANYAME(US)	14/10/93		3.40	23.00	TR	0.039	0.049	6.98	100.0	195.00	74.0	0.220	3.10
MUSITWI	13/12/93	-			NO SA	MPLE							
MANYAME(US)	13/12/93		5.20	6.00	0.250	NIL	0.040	6.80	90.0	140.00	50.0	0.280	1.10

Table 3.5.13 Water Quality Data of Musitwi River, Manyame River Upstream

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Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen mg/L	Nitrite	Nitrate	Нq	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen mg/L
MUSITWI	24/3/94		4.00	23.00		TR	0.020		100.0	90.00	30.0	0.210	4.40
MANYAME(US)	24/3/94		5.00	21.00	3.600	TR	0.010	6.55	90.0	100.00	30.0	0.150	4.80
MUSITWI	19/7/94	-			NO SAMPLE								
MANYAME(US)	19/7/94	•			NO SA	MPLE							
											Ì		
MUSITWI	8/9/94	-	5.20	17.00		NIL	0.015		60.0	120.00	55.0	L	8.50
MANYAME(US)	8/9/94		2.60	17.00	STR	NIL	0.0875	6.92	80.0	150.00	65.0	0.140	6.80
MUSITWI	2/11/94	-	17.20	11.00	8.000	0.005	0.011			620.00		0.720	
MANYAME(US)	2/11/94	-	4.00	21.00	0.150	STR	0.240	7.36	100.0	150.00	75.0	0.280	4.80
MUSITWI	3/3/95				NO SA			,					
MANYAME(US)	3/3/95		1.70	11.00	TR	0.016	0.066	6.93	90.0	210.00	70.0	0.014	1.30
·													
MUSITWI	22/5/95	-			NO SA							ļ	
MANYAME(US)	22/5/95	-			NO SA	MPLE	ļ						
										225 23			
MUSITWI	6/12/95	<u> </u>	5.30	19.85		TR	0.016				30.0	0.680	5.85
MANYAME(US)	6/12/95	<u>-</u>	5.90	19.85	TR	NIL	TR	7.14	210.0	180.00	70.0	0.136	3.45
												0.050	500
MUSITWI	27/2/98		7.20	11.00	0.160	NIL	0.017	7.11	50.0	80.00	60.0		5.90
MANYAME(US)	27/2/96	-	7.20	9.00	0.140	NIL	0.007	7.19	50.0	80.00	30.0	0.050	5,50

Table 3.5.14 Water Quality Data of Ruwa River

		m³/day	mdd	mg/L	mg/L	mg/t	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen mg/L	Nitrite	Nitrate	Нα	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen  mg/L
WIDD RD	29/1/91	-	6.20	25.00	0.220	0.008	0.008	6.45	50.0	170.00	32.0	0.260	3.00
WIDD RD	23/4/91		3.00	20.00	0.100	NIL	0.019	7.05	50.0	200.00	36.0	0.100	1.00
WIDD RD	16/7/91	-	2.20	64.00	TR	TR	TR	7.10	52.0	360.00	64.0	0.110	2.30
WIDD RD	22/10/91					NO SA	MPLE						
WIDD RD	18/1/92		11.60	72.00	9.200	0.020	0.060	7.25	144.0	690.00	75.0	0.400	1.70
WIDD RD	19/5/92	-	4.40	40.00	0.190	0.013	0.002	6.75	80.0	190.00	90.0	0.120	1.90
WIDD RD	28/7/92		4.40	118.00	0.210	NIL	0.030	6.83	150.0	600.00	81.0	0.480	0.40
WIDD RD	1/9/92		10.20	125.00	0.080	NIL	0.036	6.95	140.0	650.00	89.0	0.470	0.30
WIDD RD	1/10/92					NO SA	MPLE						
WIDD RD	7/5/93		6.40	25.00	0.2	NIL	0.120	7.15	60.0	95.00	38.0	0.112	7.00
WIDD RD	29/7/93		2.40	37.00	0.110	NIL.	0.120	7.28	70.0	180.00	42.0	0.360	5.80
WIDD RD	4/8/93		6.80	67.00	0.210	0.010	0.160	7.35	100.0	150.00	52.0	0.280	5.80
WIDD RD	14/10/93		10.60	85.00	1.380	TR	0.0780	6.88	180.0	500.00	136.0	1.300	NIL
WIDD RD	13/12/93	<u>.</u>	13.20	93.00	135.0	0.02	0.010	7.24	210.0	500.00	80.0	0.160	2.30
WIDD RD	24/3/94		4.40	33.00	3.300	STR	TR	6.70	100.0	140.00	37.0	0.140	5.90
WIDD RD	19/7/94		1.40	37.00	STR	STR	0.800	7.02	50.0	260.00	50.0	0.472	1.50
WIDD RD	8/9/94		4.60	47.00	STR	0.006	0.059	6.74	100.0	275.00	90.0	1.740	3.50
WIDD RD	2/11/94	-	12.00	39.00	0.110	STR	0.200	7.79	110.0	230.00	75.0	0.120	6.80
WIDD RD	3/3/95		5.40	67.00	2.200	0.09	0.026	7.02	130.0	460.00	86.0	1.436	4.60





Table 3.5.14 Water Quality Data of Ruwa River (cont'd)

		m³/day	mdd	mg/L	mg/L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen	Nitrite	Nitrate	на	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen
WIDD RD	22/5/95	-				NO SA	MPLE						
WIDD RD	6/12/95	-	19.60	139.85	8.500	1.100	0.080	7.64	220.0	950.00	120.0	2.760	5.95
WIDD RD	27/2/96	<del>  -</del>	9.00	19.00	0.150	0.0033	0.014	7.14	40.0	140.00	50.0	0.500	6.40

Table 3.5.15 Water Quality Data of Nyatsime River (Upstream and Downstream of Zengeza STW)

	<del>,</del>	_	<del></del>		r	T	<del>,</del>	·	<del></del>	<del></del>		·	γ	·	<del></del>
		m³/day	E	mg/L	mg/L	78	Age.		mg/L	uS/cm		T OF	뒿	Age Age	mg/L
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chloride	Ammonia Nitrogen mg/L	Nitrite	Nitrate	Fd	T-Alkalinity	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	Iron (Fe)	Manganese (Mn)
Upstream of STW	9/1/91	Ŀ	4.60	5.00	0.095		STR	6.85		80.0		0.030			
Downstream of STW	9/1/91	<u>  -</u>	12 80	21.00	8 250	0 620	1.420	7.20	140 0	390.0	<u>  -:-</u>	0.310	0.70	2 23	0.05
Harter of CTM	0/4504	H		45.00	0.000	<del> </del>	าร		1				2 40	l- <u></u> ,	
Upstream of STW Downstream of STW	9/4/91 9/4/91	H	3 20 10 60	15.00 35.00	0.080 2.050		0.016	7.77		90.0 320.0		0.100 0.350			0.02
DOWNSDEATH OF OTHE	3/4/31	╂╌╢	10.00	33.00	2.030	IIV'L	0.010	0.54	130.0	320.0	300	0.350	0 00	0.21	0.03
Upstream of STW	2/7/91	l-	3 20	9 00	8.250	TR	TR	7.37	45.0	95 0	55 0	0.022	6.50	1.66	0.07
Downstream of STW	2/7/91	-	27.60	94.00								1		0.55	<b>}</b>
									1				1	1	
Upstream of STW	8/10/91		DRY								Ī				
Downstream of STW	8/10/91	<u> </u> -	36.60	110.00	3 800	1 250	NIL	7.48	800.0	1600.0	140.0	5.400	NIL	0.97	0.02
							ļ				<u> </u>			ļ	ļ
Upstream of STW	14/1/92	-	104.80	42.00	26 000		TR	7.30			100.0	6.400			
Downstream of STW	14/1/92		2 80	10.00	0.140	NIL.	TR	7.15	50.0	80.0	60.0	0.084	3 80	3.54	0.08
Upstream of STW	7/4/92		2 60	38 00	0 365	NIL	0.030	6.82	50.0	40.0	220	0.088	2 60	3.06	0.12
Downstream of STW	7/4/92		15.40	37.00	14 250		NIL	7.88		600.0		2 500		1.53	
			10.70		14 200	1415	:::: <u>-</u>	1.00	200.0	000.0		2 300	1,47,5	1.00	1 0.52
Upstream of STW	7/7/92	-	NO SAME	LES			l		<b> </b> -					<del> </del> -	
Downstream of STW	7/7/92	-	40.40	106 00	4.600	0.710	NIL	8 16	630 O	480 0	77.0	7.280	NIL	0 37	NIL
Upstream of STW	8/9/92	<u> </u> -	NO SAME												
Downstream of STW	8/9/92	-	34.80	119.00	50.000	1.850	0.066	7.89	664.0	1855.0	141.0	3.000	NIL	0.07	0 21
Upstream of STW	9/10/92	-	NO SAME	) Ce			<b>}</b>	<b> </b>	ļ		<b> </b>		ļ		ļ
Downstream of STW	9/10/92		23.40	137.00	51.000	3.400	A lit	0.65	690.0	1700.0	1200	7.140	NIII	0.56	0.20
Dominated to Cr	DITCIDE	Н	20.40	757.00	31.000	3.460	INC	0.03	030.0	1700.0	130.0	7.140	11172	0.30	<u> </u>
Upstream of STW	15/11/92	١.	NO SAME	LES							ļ		<del> </del>		<u> </u>
Downstream of STVV	15/11/92	-	37.60	137.00	60.000	0 020	0.270	7.64	860.0	1390.0	138.0	13.800	NIL	0.72	0 22
Upstream of STW	15/12/92	-	5 20	11.00	0.200	0 005	0.023		44.0	130 0	34.0	0.080			
Downstream of STW	15/12/92	-	12.00	11.00	0.850	0.0145	0.119	6 98	40 0	120.0	46.0	0.600	2.50	1.36	NIL
Upstream of STW	15/1/93	H	10.10		4.050		0.470	7.00	122.						ļ
Downstream of STW	15/1/93	-	10.40 4.80	21.00 3.00	4.850 0.870	0 000	0.470 0.0855		110.0 40.0	<del></del>		0.320			
DOWNSDEAM OF GTTT	1011100	┢┤	4.00	3.00	0.010	0.0003	0.0000	0 09	400			0.200	3.00		
Upstream of STW	21/4/93	1-1	5.00	9.00	0.085	0 006	0.051	6 86	30.0	50.0	20.0	0 200		2 38	Na
Downstream of STW	21/4/93	1	5.60			0 007	0.046	7.14	30.0	60.0		0.400	5 00	1.64	
									I						
Upstream of STW	13/7/93	Ŀ	2.80	17.00		NiL	0.050	7.35	60.0	700.0	39.0	0 080			0.02
Downstream of STW	13/7/93	I۱	14.60	69.00		0.170	0.018	7.56	330.0	490.0	93.0	7.040	Nir	0 25	0.06
Upstream of STW	15/9/93	<b> </b>	NO SAME	N E0		<u> </u>	<b> </b>	}				<u> </u>			
Downstream of STW	15/9/93	-	25.00	74.00	100.000	1.350	NIII	7 70	550.0	1140.0	1100		0.10	0.16	0.06
COMISSION OF OT A	10/3/33		23.00	74.00	100.000	1.330	INIL	7.70	550.0	1140.0	110.0		0.10	0.10	0.00
Upstream of STW	29/11/93	-	NO SAME	LES				ļ						-	
Downstream of STW	29/11/93		39 20	97.00	8.000	NIL	0.040	8.99	732.0	1600.0	1180	-	NIL	0.70	0.87
Upstream of STW	8/3/94	Ŀ	0.40	1 80	0.365		0.007		48.0		24.0		5.00	2.73	
Downstream of STW	8/3/94	-	2 80	4 50	10.000	0.090	0.048	6.91	86.0		380	0.650	2 40	1.75	TR
Upstream of STW	5/7/94	$\vdash$	2 00	12.62	0.400	<b>1</b> 161	0.000	<u> </u>		405.5	20.0	0.000	7.50		<u> </u>
Downstream of STW	5/7/94	님	9.40	13 00 99.70	0.190 58.000	1.475	0.087		44.0 530.0	190 0 1190.0	39.0		8 50	1.86 0.75	0.04
2 Strictledin of O   W	S11134	H	3.40	33.10	30.000	1.473	1.403	<del>  "</del>	330.0	1180.0	141.0	12.040	1.00	0.(3	<u>U. 15</u>
Upstream of STW	13/9/94		21.00	79.00	49.000	0.775	1.075	7.49	420 0	1170.0		1.010	1.80	0.72	0.05
Downstream of STW	13/9/94		10 00	87.00	22 500				180.0	850 0		6.680		3.74	
L															
		_													





Table 3.5.15 Water Quality Data of Nyatsime River (Upstream and Downstream of Zengeza STW) (cont'd)

		m-/day	Eldd	mg/L	₽ L	mg/L	mg/L		mg/L	uS/cm		mg/L	mg/L	mg/L	mg/L
Sample Point	Sampling Date	Flow	Oxygen Absorbed	Chlonde	Ammonia Nitrogen r	Ntrite	Ntrate	Ha	T-Alkalinfty	Electric Conductivity	Total Hardness	Phosphate	Dissolved Oxygen	iron (Fe)	Manganese (Mn)
Upstream of STW	8/11/94		7.00	17.00	0.300		0.019	7.13	60.0	150.0	450	0.660	6.00	2.03	
Downstream of STW	8/11/94	-	33.00	67.00	44.000	0.005	0.915	7.67	430.0	1050.0	100.0	0.940	NIL	1.07	0.04
Upstream of STW Downstream of STW	17/1/95 17/1/95	~	10.40 8.00	69.00 101.00	31.500 1.800	0.095 0.029	0.063 0.585			670 0 570 0	90.0 110.0	7.000 0.560			-
Upstream of STW Downstream of STW	11/4/95 11/4/95		1.60 25.40	47.00 49.00	0.030 62 000	0.006 0.630	0.091 1.695		90.0 400.0	290.0 990.0	85.0 111.0	7 200 0 720			
Upstream of STW Downstream of STW	15/6/95 15/6/95	:	1.10 20 25	41.00 93.00	TR 79.000	0.015 0.690			110.0 112.0	360.0 550.0	150.0 100.0	0.150 10.300		0.10 0.16	
Upstream of STW Downstream of STW	1/8/95		1.00 26.70	45.00 123.00	0.160 72.000	0.018	0.032 NJL		160.0 560.0	480.0 1440.0	115 0 180.0	0.630 11.200		0.51 0.85	0 23 0.11
Upstream of STW Downstream of STW	26/9/95 26/9/95	•	3.20 23.90	69.00 159.00	0.110 79.000	0.068	0.107 0.0100		220.0 590.0		262.0 142.0		5.20 0.20		
Upstream of STW  Downstream of STW	7/11/95 7/11/95		14 20 21.80	122.00 157.00	0 240	0 029	0.031	7.41	350.0	1100.0 1650.0		0.264 10.000		0.09	0.09 0.10
Upstream of STW  Downstream of STW	2/1/96 2/1/96		2.80 5.80	33.00 23.00	0.300 2.700	0 0275		6.79	70.0 80.0	400 0 210 0	900			<u> </u>	0.028 0.104
Upstream of STW Downstream of STW	2/4/96 2/4/96		3.40 16.60	23.00 55.00	STR	0.007 0.052	0.002	7.04	60.0 150.0	300.0 610.0		0.180 3.200		0.32 1.06	