

Table 3.5.37 Water Quality Data of Donnybrook STW No.1 (POND)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen	
Raw	20/12/93	390	7.93	13.0	-	147.20	-	181.0	12.6	145.0	-	-	-	680.0	14.2	-	-	
Effluent				No Sample				-										
Raw	5/1/94	510	7.94	11.0	-	80.80	300.0	153.0	140.0	180.0	-	-	-	470.0	19.2	-	-	
Effluent			7.47	TR	-	54.00	5.0	117.0	70.0	85.0	NIL	-	-	500.0	4.6	-	NIL	
Raw	7/2/94	480	7.41	10.0	-	117.60	1,120.6	125.0	4.0	-	-	-	-	450.0	13.2	-	-	
Effluent			7.68	TR	-	70.80	95.6	99.0	1.2	NIL	TR	-	-	390.0	5.8	-	NIL	
Raw	2/3/94	460	8.00	7.0	-	80.00	160.6	125.0	80.0	-	-	-	-	430.0	6.8	-	-	
Effluent			7.55	TR	-	31.20	10.6	89.0	62.0	NIL	NIL	-	-	360.0	8.3	-	-	
Raw	8/4/94	420	8.26	10.0	-	135.20	600.4	145.0	300.0	-	-	-	-	580.0	16.0	-	-	
Effluent			7.73	TR	-	34.80	45.4	105.0	94.0	NIL	NIL	-	-	440.0	10.2	-	-	
Raw	5/5/94	-	8.18	16.0	-	148.00	860.1	143.0	164.0	-	-	-	-	640.0	25.0	-	-	
Effluent			8.03	TR	-	33.60	6.1	99.0	69.0	NIL	NIL	-	-	440.0	5.4	-	-	
Raw	6/6/94	410	7.89	13.0	-	160.00	720.3	161.0	148.0	-	-	-	-	610.0	15.2	-	-	
Effluent			8.14	TR	-	33.20	15.3	103.0	63.0	-	STR	-	-	230.0	6.3	-	0.6	
Raw	8/7/94	420	8.05	13.0	-	140.00	840.3	147.0	116.0	-	-	-	-	710.0	17.0	-	-	
Effluent			7.77	TR	-	26.40	30.5	117.0	79.0	-	-	-	-	560.0	13.5	-	NIL	
Raw	9/8/94	410	8.21	12.0	-	140.80	541.4	197.0	200.0	-	-	-	-	690.0	12.0	-	-	
Effluent			7.80	TR	-	33.60	(16.4)	135.0	86.0	-	0.1	-	-	610.0	12.6	-	NIL	
Raw	2/9/94	420	7.67	13.0	-	87.20	82.0	147.0	84.0	-	-	-	-	500.0	14.4	-	-	
Effluent			7.82	TR	-	29.60	27.0	135.0	74.0	-	0.1	-	-	580.0	10.9	-	NIL	
Raw	4/10/94	440	8.07	14.0	-	132.20	1,161.0	177.0	196.0	-	-	-	-	700.0	17.2	-	-	
Effluent			7.52	TR	-	50.40	221.0	141.0	83.0	-	NIL	-	-	610.0	16.8	-	NIL	
Raw	4/11/94	340	7.47	8.0	-	96.80	320.5	137.0	112.0	-	-	-	-	390.0	13.2	-	-	
Effluent			7.77	TR	-	39.60	35.5	143.0	78.0	-	NIL	-	-	550.0	12.4	-	NIL	
Raw	2/11/94	320	7.55	12.0	-	120.00	860.8	163.0	88.0	-	-	-	-	460.0	13.3	-	-	
Effluent			7.89	TR	-	38.00	50.8	147.0	51.0	-	STR	-	-	510.0	11.9	-	NIL	
Raw	6/1/95	350	7.12	14.0	-	86.40	561.3	137.0	78.0	-	-	-	-	320.0	11.3	-	-	
Effluent			7.65	TR	-	26.40	86.3	153.0	59.0	-	NIL	-	-	430.0	10.4	-	NIL	
Raw	1/2/95	360	7.33	18.0	-	180.00	1,280.2	147.0	138.0	-	-	-	-	480.0	15.9	-	-	
Effluent			7.36	TR	-	47.20	120.2	137.0	65.0	-	NIL	-	-	470.0	10.1	-	NIL	
Raw	6/3/95	360	7.54	16.0	-	173.20	1,061.1	183.0	178.0	-	-	-	-	660.0	20.6	-	-	
Effluent			7.57	TR	-	33.40	203.5	131.0	78.0	-	NIL	-	-	510.0	11.6	-	NIL	
Raw	6/4/95	340	7.80	16.0	-	168.00	790.5	207.0	178.0	210.0	-	-	-	790.0	28.4	-	-	
Effluent			7.65	TR	-	29.20	8.0	135.0	73.0	88.0	NIL	-	-	610.0	21.4	-	NIL	
Raw	8/5/95	370	7.79	24.0	-	155.20	1,070.4	237.0	160.0	195.0	-	-	-	680.0	16.8	-	-	
Effluent			7.49	TR	-	16.60	42.9	145.0	72.0	90.0	NIL	-	-	650.0	3.2	-	NIL	
Raw	1/6/95	330	8.60	30.0	-	190.40	1,820.4	277.0	190.0	240.0	-	-	-	820.0	23.2	-	-	
Effluent			7.81	TR	-	36.00	90.4	162.0	84.0	98.0	NIL	-	-	642.0	12.4	-	NIL	
Raw	6/7/95	410	8.39	18.0	-	156.40	-	257.0	178.0	250.0	-	-	-	830.0	11.0	-	-	
Effluent			7.88	TR	-	31.20	-	167.0	79.0	150.0	NIL	-	-	670.0	6.5	-	NIL	
Raw	3/8/95	350	7.69	11.0	-	132.00	1,100.9	211.0	190.0	230.0	-	-	-	780.0	31.6	-	-	
Effluent			7.33	TR	-	28.80	105.9	167.0	54.0	83.0	NIL	-	-	780.0	17.6	-	NIL	
Raw	4/9/95	380	7.34	18.0	-	174.80	982.7	225.0	146.0	180.0	-	-	-	630.0	20.4	-	-	

Table 3.5.37 Water Quality Data of Donnybrook STW No.1 (POND) (cont'd)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Effluent			7.78	TR	-	31.20	262.7	189.0	95.0	110.0	NIL	-	-	700.0	14.8	-	0.5
Raw	4/10/95	380	7.90	12.0	-	153.60	500.7	215.0	14.0	215.0	-	-	-	760.0	20.0	-	-
Effluent			7.83	TR	-	44.40	257.7	257.0	77.0	105.0	NIL	-	-	700.0	15.0	-	NIL
Raw	3/11/95	400	8.25	4.0	-	97.60	960.7	181.0	102.0	122.0	-	-	-	470.0	15.8	-	-
Effluent			8.59	TR	-	46.00	205.7	207.0	82.0	110.0	NIL	-	-	740.0	16.6	-	NIL
Raw	1/12/95	410	7.63	3.6	-	64.00	-	173.0	90.0	126.0	-	-	-	420.0	8.0	-	-
Effluent			7.79	TR	-	25.60	-	201.0	53.0	98.0	0.2	-	-	650.0	11.2	-	NIL
Raw	2/2/96	540	7.51	3.0	-	58.80	741.2	129.0	86.0	84.0	-	-	-	370.0	11.1	-	-
Effluent			7.73	10.0	-	27.00	61.2	117.0	59.0	39.0	TR	-	-	460.0	10.9	-	1.1
Raw	12/3/96	610	7.17	3.6	-	63.60	751.3	85.0	80.0	87.0	-	-	-	290.0	8.0	-	-
Effluent			7.68	TR	-	30.80	141.3	101.0	56.0	70.0	TR	-	-	380.0	9.4	-	NIL
Raw	11/4/96	460	7.58	20.6	-	152.00	940.1	191.0	63.0	400.0	-	-	-	660.0	17.4	-	-
Effluent			7.15	TR	-	39.00	5.1	105.0	58.0	235.0	STR	-	-	450.0	7.8	-	NIL
Raw	3/5/96	480	7.96	20.0	-	138.00	820.6	201.0	80.0	385.0	-	-	-	540.0	9.3	-	-
Effluent			7.52	1.0	-	27.60	40.6	121.0	88.0	65.0	NIL	-	-	450.0	6.7	-	NIL

Table 3.5.38 Water Quality Data of Donnybrook STW No.2 (POND)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MS Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	13/1/94	-	6.65	4.0	-	30.40	720.3	189.0	94.0	121.0	-	-	-	450.0	13.8	-	-
Effluent			8.04	TR	-	41.20	160.3	285.0	68.0	86.0	TR	-	-	450.0	10.2	-	NIL
Raw	14/2/94	1,420	7.36	20.0	-	144.00	961.4	148.0	142.0	-	-	-	-	484.0	20.4	-	-
Effluent			7.66	TR	-	23.60	141.4	115.0	60.0	-	NIL	-	-	416.0	10.8	-	NIL
Raw	10/3/94	-	7.56	3.0	-	72.00	-	69.0	140.0	-	-	-	-	530.0	4.6	-	-
Effluent			6.50	TR	-	24.00	-	61.0	86.0	-	0.1	-	-	310.0	1.6	-	NIL
Raw	11/4/94	1,400	7.68	6.0	-	160.00	1,020.8	72.0	188.0	-	-	-	-	560.0	12.7	-	-
Effluent			7.74	TR	-	32.00	180.8	59.0	100.0	-	STR	-	-	480.0	14.9	-	NIL
Raw	11/5/94	1,460	7.63	12.0	-	152.80	1,180.1	217.0	158.0	-	-	-	-	700.0	10.9	-	-
Effluent			7.99	0.2	-	32.00	45.1	201.0	61.0	-	NIL	-	-	600.0	5.9	-	NIL
Raw	14/6/94	1,420	7.57	20.0	-	169.60	500.1	197.0	188.0	-	-	-	-	740.0	-	-	-
Effluent			7.03	TR	-	29.60	5.1	115.0	72.0	-	0.1	-	-	540.0	16.0	-	1.0
Raw	15/7/94	1,390	8.28	16.0	-	154.40	920.9	199.0	178.0	-	-	-	-	720.0	17.8	-	-
Effluent			7.92	TR	-	33.60	60.9	129.0	85.0	-	STR	-	-	570.0	11.5	-	0.6
Raw	17/8/94	1,430	8.02	22.0	-	152.00	-	215.0	192.0	-	-	-	-	810.0	18.0	-	-
Effluent			7.66	TR	-	20.80	-	129.0	95.0	-	0.1	-	-	620.0	15.2	-	NIL
Raw	15/9/94	1,440	7.61	17.0	-	131.20	1,160.8	203.0	248.0	-	-	-	-	620.0	21.8	-	-
Effluent			7.80	TR	-	40.80	50.8	143.0	82.0	-	STR	-	-	550.0	16.4	-	4.0
Raw	10/10/94	1,270	7.40	2.4	-	79.20	360.2	131.0	132.0	-	-	-	-	390.0	8.9	-	-
Effluent			7.87	TR	-	19.60	160.2	147.0	88.0	-	0.1	-	-	540.0	8.4	-	NIL
Raw	11/11/94	1,280	7.28	30.0	-	184.00	440.7	127.0	118.0	-	-	-	-	300.0	13.8	-	-
Effluent			7.98	TR	-	46.80	145.7	152.0	82.0	-	NIL	-	-	620.0	10.0	-	-
Raw	7/12/94	1,340	6.94	2.0	-	47.20	1,240.3	147.0	112.0	-	-	-	-	490.0	11.4	-	-
Effluent			7.75	TR	-	38.80	185.3	161.0	61.0	-	NIL	-	-	610.0	9.2	-	NIL
Raw	13/1/95	1,350	7.80	32.0	-	172.00	1,100.2	205.0	232.0	-	-	-	-	630.0	11.8	-	NIL
Effluent			8.01	TR	-	35.20	95.2	147.0	90.0	-	NIL	-	-	540.0	11.6	-	-
Raw	9/2/95	1,340	7.04	30.0	-	178.40	980.7	207.0	194.0	-	-	-	-	690.0	7.4	-	-
Effluent			7.40	TR	-	37.20	15.7	137.0	71.0	-	NIL	-	-	510.0	7.2	-	NIL
Raw	21/3/95	1,320	7.41	38.0	-	174.00	1,560.9	201.0	200.0	380.0	-	-	-	740.0	21.8	-	-
Effluent			7.62	TR	-	29.00	48.4	135.0	60.0	102.0	0.1	-	-	580.0	12.0	-	NIL
Raw	16/5/95	1,200	7.89	40.0	-	174.00	1,130.4	263.0	182.0	800.0	-	-	-	900.0	11.8	-	-
Effluent			7.74	TR	-	13.40	22.6	119.0	67.0	100.0	TR	-	-	620.0	8.2	-	NIL
Raw	9/6/95	1,160	7.71	40.0	-	171.20	960.2	267.0	19.4	268.0	-	-	-	800.0	11.4	-	-
Effluent			7.62	TR	-	28.00	57.7	167.0	77.0	92.0	NIL	-	-	760.0	7.6	-	NIL
Raw	14/6/95	1,320	7.85	38.0	-	182.80	1,240.5	257.0	192.0	280.0	-	-	-	800.0	19.0	-	-
Effluent			7.56	TR	-	27.40	48.0	179.0	86.0	108.0	NIL	-	-	710.0	16.2	-	NIL
Raw	10/8/95	1,360	7.74	10.0	-	123.20	740.6	250.0	176.0	-	-	-	-	750.0	-	-	-
Effluent			7.53	TR	-	46.20	35.6	190.0	104.0	-	TR	-	-	780.0	-	-	NIL
Raw	8/9/95	1,320	7.17	8.0	-	113.60	500.1	207.0	138.0	156.0	-	-	-	520.0	11.4	-	-
Effluent			7.73	TR	-	33.60	5.1	201.0	100.0	102.0	NIL	-	-	740.0	8.4	-	NIL
Raw	13/10/95	1,340	7.54	0.8	-	43.60	690.3	153.0	66.0	76.0	-	-	-	410.0	12.6	-	-
Effluent			8.01	TR	-	30.80	182.8	219.0	89.0	104.0	STR	-	-	810.0	13.0	-	NIL
Raw	6/11/95	1,320	6.27	22.0	-	172.00	722.4	177.0	96.0	202.0	-	-	-	360.0	11.6	-	-

Table 3.5.38 Water Quality Data of Donnybrook STW No.2 (POND) (cont'd)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (ccf)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Effluent			7.73	TR	-	37.60	372.4	210.0	94.0	148.0	0.1	-	-	720.0	8.0	-	0.7
Raw	11/12/95	1,340	6.62	6.0	-	168.40	1,001.2	175.0	122.0	164.0	-	-	-	270.0	14.8	-	-
Effluent			7.76	TR	-	31.00	291.2	199.0	70.0	140.0	0.4	-	-	630.0	1.6	-	NIL
Raw	4/1/96	1,230	7.20	TR	-	40.00	211.4	137.0	84.0	100.0	-	-	-	310.0	24.4	-	-
Effluent			7.79	TR	-	29.80	301.4	175.0	72.2	110.0	TR	-	-	560.0	25.2	-	NIL
Raw	9/2/96	1,520	7.81	1.8	-	29.20	121.1	55.0	38.0	57.0	-	-	-	250.0	4.7	-	-
Effluent			7.91	TR	-	20.80	71.1	121.0	40.0	68.0	TR	-	-	350.0	11.7	-	1.6
Raw	20/3/96	1,480	7.17	4.0	-	27.20	30.2	67.0	48.0	50.0	-	-	-	200.0	4.8	-	-
Effluent			7.68	TR	-	16.60	25.2	97.0	56.0	61.0	0.1	-	-	430.0	9.0	-	0.8
Raw	17/4/96	1,430	6.34	10.0	-	70.80	300.0	95.0	78.0	92.0	-	-	-	300.0	10.1	-	-
Effluent			7.09	TR	-	21.20	75.0	123.0	40.0	60.0	TR	-	-	380.0	8.9	-	0.5
Raw	9/5/96	1,420	7.17	20.0	-	88.80	-	157.0	150.0	165.0	-	-	-	320.0	4.0	-	-
Effluent			7.71	TR	-	12.80	-	133.0	70.0	71.0	0.2	-	-	500.0	3.6	-	0.4

Table 3.5.39 Water Quality Data of Donnybrook STW No.3 (POND)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (ccf)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	27/1/94	1,620	8.09	8.0	-	103.20	761.5	307.0	160.0	-	-	-	-	570.0	14.5	-	-
Effluent			7.91	0.8	-	21.20	106.5	191.0	38.0	-	TR	-	-	370.0	8.5	-	NIL
Raw	22/2/94	1,440	8.30	10.0	-	120.00	741.9	125.0	128.0	-	NIL	-	-	520.0	13.8	-	-
Effluent			7.64	TR	-	12.00	-	93.0	34.0	-	NIL	-	-	310.0	8.0	-	NIL
Raw	18/3/94	1,410	8.32	12.0	-	140.00	740.3	145.0	208.0	-	-	-	-	640.0	14.1	-	-
Effluent			7.68	TR	-	18.40	75.3	89.0	42.0	-	NIL	-	-	320.0	6.5	-	NIL
Raw	19/4/94	1,430	8.20	16.0	-	172.80	1,120.7	149.0	166.0	-	-	-	-	640.0	14.4	-	-
Effluent			7.77	TR	-	18.80	120.7	95.0	44.0	-	0.0	-	-	380.0	6.0	-	NIL
Raw	20/5/94	1,420	8.37	9.0	-	144.80	980.0	171.0	124.0	-	-	-	-	680.0	14.0	-	-
Effluent			7.66	TR	-	21.20	150.0	107.0	45.0	-	0.1	-	-	380.0	6.0	-	NIL
Raw	23/6/94	1,410	8.52	11.0	-	161.60	540.1	219.0	208.0	-	-	-	-	640.0	26.6	-	-
Effluent			7.93	TR	-	16.00	15.1	105.0	51.0	-	TR	-	-	420.0	12.6	-	2.1
Raw	21/7/94	1,420	5.67	24.0	-	144.80	1,061.5	217.0	170.0	-	-	-	-	530.0	10.1	-	-
Effluent			8.16	STR	-	27.20	31.5	137.0	56.0	-	NIL	-	-	330.0	5.6	-	0.9
Raw	24/8/94	1,410	8.27	21.2	-	143.20	980.6	207.0	180.0	-	-	-	-	700.0	10.5	-	-
Effluent			7.70	3.0	-	52.80	195.6	125.0	80.0	-	0.1	-	-	520.0	9.3	-	NIL
Raw	21/9/94	1,400	7.89	12.0	-	106.40	841.5	177.0	134.0	-	-	-	-	600.0	15.1	-	-
Effluent			7.67	TR	-	37.20	76.5	137.0	68.0	-	TR	-	-	500.0	13.1	-	NIL
Raw	26/10/94	1,390	7.71	4.0	-	80.00	541.3	137.0	118.0	-	-	-	-	430.0	12.9	-	-
Effluent			7.65	TR	-	36.00	191.3	141.0	48.0	-	0.2	-	-	460.0	10.1	-	NIL
Raw	14/11/94	1,360	7.92	20.0	-	159.20	1,081.0	150.0	180.0	-	-	-	-	1,450.0	16.3	-	-
Effluent			7.93	TR	-	35.60	71.0	147.0	65.0	-	NIL	-	-	1,080.0	12.1	-	NIL
Raw	15/12/94	1,340	7.68	22.0	-	127.20	1,000.9	149.0	94.0	-	-	-	-	650.0	12.8	-	-
Effluent			7.72	TR	-	33.60	105.9	145.0	56.0	-	0.1	-	-	440.0	10.6	-	NIL
Raw	16/1/95	1,400	7.98	32.0	-	132.00	1,320.2	249.0	192.0	-	-	-	-	780.0	17.1	-	-
Effluent			7.31	TR	-	31.20	230.2	135.0	40.0	-	NIL	-	-	430.0	12.6	-	NIL
Raw	22/2/95	1,360	8.06	18.0	-	158.00	900.2	213.0	152.0	-	-	-	-	700.0	15.0	-	-
Effluent			7.66	TR	-	19.00	117.7	111.0	16.0	-	NIL	-	-	380.0	7.9	-	NIL
Raw	27/3/95	1,350	8.20	14.0	-	171.60	1,130.6	205.0	174.0	225.0	-	-	-	790.0	22.0	-	-
Effluent			7.76	TR	-	34.60	230.6	123.0	42.0	53.0	nil	-	-	430.0	7.8	-	NIL
Raw	21/4/95	-	7.83	26.0	-	136.00	740.3	205.0	142.0	170.0	-	-	-	730.0	22.0	-	-
Effluent			7.42	2.0	-	37.20	15.3	137.0	43.0	125.0	STR	-	-	430.0	7.8	-	NIL
Raw	24/5/95	1,220	8.34	32.0	-	126.80	-	237.0	170.0	270.0	-	-	-	800.0	26.0	-	-
Effluent			7.93	TR	-	32.40	-	181.0	35.0	69.0	TR	-	-	440.0	12.9	-	NIL
Raw	22/6/95	1,180	8.09	28.0	-	102.40	1,120.2	221.0	168.0	320.0	-	-	-	740.0	18.0	-	-
Effluent			7.92	TR	-	53.20	55.2	141.0	49.0	88.0	NIL	-	-	410.0	9.5	-	2.9
Raw	20/7/95	1,340	8.25	20.0	-	129.20	680.1	300.0	188.0	280.0	-	-	-	700.0	18.0	-	-
Effluent			7.80	TR	-	29.00	30.1	160.0	84.0	72.0	TR	-	-	700.0	10.2	-	NIL
Raw	25/8/95	1,400	8.30	11.2	-	68.80	1,260.3	437.0	225.0	380.0	-	-	-	720.0	24.5	-	-
Effluent			7.86	TR	-	40.00	195.3	447.0	94.0	126.0	NIL	-	-	560.0	18.0	-	1.0
Raw	14/9/95	1,400	7.45	2.4	-	35.60	811.4	155.0	100.0	75.0	NIL	-	-	490.0	10.8	-	-
Effluent			7.72	TR	-	42.00	131.4	177.0	48.0	58.0	TR	-	-	420.0	4.0	-	NIL
Raw	20/10/95	1,360	8.98	10.0	-	118.00	812.0	203.0	124.0	172.0	-	-	-	620.0	11.6	-	-

Table 3.5.39 Water Quality Data of Donnybrook STW No.3 (POND) (cont'd)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Effluent			8.94	TR	-	57.40	194.5	182.0	35.0	57.0	0.1	-	-	600.0	7.4	-	NIL
Raw	9/11/95	1,380	7.98	20.0	-	162.40	862.6	240.0	90.0	196.0	-	-	-	632.0	14.8	-	-
Effluent			8.48	TR	-	59.60	197.6	210.0	27.0	84.0	NIL	-	-	516.0	11.2	-	NIL
Raw	15/12/95	1,400	7.39	15.0	-	74.40	431.1	167.0	118.0	124.0	-	-	-	440.0	8.5	-	-
Effluent			7.50	TR	-	46.80	118.6	161.0	48.0	55.0	TR	-	-	480.0	11.7	-	NIL
Raw	12/1/96	1,420	8.91	7.0	-	71.20	390.3	129.0	86.0	124.0	-	-	-	350.0	8.5	-	-
Effluent			7.58	TR	-	26.40	100.3	161.0	52.0	71.0	TR	-	-	490.0	10.3	-	15
Raw	19/2/96	1,720	7.43	12.0	-	70.40	361.9	129.0	60.0	136.0	-	-	-	410.0	16.5	-	-
Effluent			7.31	TR	-	55.20	21.9	91.0	29.0	44.0	TR	-	-	290.0	9.5	-	NIL
Raw	22/3/96	1,620	7.41	18.0	-	125.60	960.4	81.0	40.0	60.0	-	-	-	340.0	13.2	-	-
Effluent			7.22	TR	-	23.60	320.4	117.0	27.0	32.0	STR	-	-	250.0	4.5	-	1.5
Raw	19/4/96	1,420	7.65	14.0	-	96.80	NIL	127.0	120.0	105.0	-	-	-	380.0	7.9	-	-
Effluent			7.53	TR	-	21.60	NIL	101.0	35.0	380.0	STR	-	-	280.0	6.3	-	2.1
Raw	15/5/96	1,440	7.71	18.0	-	81.20	-	117.0	118.0	155.0	-	-	-	290.0	12.7	-	-
Effluent			7.35	TR	-	22.80	-	123.0	42.0	59.0	NIL	-	-	430.0	10.9	-	NIL

Table 3.5.40 Water Quality Data of Donnybrook STW No.4 (POND)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	31/1/94	2,510	8.25	9.0	-	116.80	1,041.5	123.0	88.0	-	-	-	-	400.0	16.5	-	-
Effluent			7.74	TR	-	22.00	161.5	83.0	37.0	-	STR	-	-	340.0	7.9	-	NIL
Raw	28/2/94	2,440	8.22	8.0	-	130.40	921.3	115.0	142.0	-	-	-	-	450.0	-	-	-
Effluent			7.76	TR	-	18.80	281.3	79.0	4.8	-	TR	-	-	330.0	7.1	-	NIL
Raw	29/3/94	2,460	7.96	7.0	-	120.80	700.9	101.0	94.0	-	-	-	-	430.0	13.9	-	-
Effluent			7.60	TR	-	23.60	120.9	83.0	43.0	-	NIL	-	-	330.0	8.1	-	NIL
Raw	25/4/94	2,420	8.08	14.0	-	136.00	820.6	109.0	104.0	-	-	-	-	450.0	24.6	-	-
Effluent			7.63	TR	-	29.20	175.6	107.0	49.0	-	NIL	-	-	350.0	5.3	-	NIL
Raw	27/5/94	2,480	8.35	6.0	-	139.20	1,140.4	147.0	96.0	-	-	-	-	490.0	9.8	-	-
Effluent			7.51	TR	-	33.20	190.4	91.0	53.0	-	STR	-	-	430.0	8.8	-	NIL
Raw	27/6/94	2,480	8.24	10.0	-	152.00	761.0	155.0	144.0	-	-	-	-	540.0	24.8	-	-
Effluent			7.74	TR	-	36.80	146.0	109.0	50.0	-	STR	-	-	440.0	10.1	-	NIL
Raw	25/7/94	2,480	8.27	26.0	-	174.00	1,021.4	147.0	170.0	-	-	-	-	780.0	28.4	-	-
Effluent			7.72	TR	-	44.80	226.4	153.0	55.0	-	TR	-	-	450.0	11.4	-	NIL
Raw	24/8/94	2,500	8.16	5.2	-	98.40	800.6	148.2	60.0	-	-	-	-	500.0	16.7	-	-
Effluent			7.68	TR	-	44.00	20.6	117.0	79.0	-	TR	-	-	500.0	13.5	-	NIL
Raw	26/9/94	2,480	8.06	20.0	-	156.00	1,161.5	181.0	188.0	-	-	-	-	570.0	20.0	-	-
Effluent			7.63	TR	-	38.00	236.5	119.0	73.0	-	0.1	-	-	480.0	13.0	-	NIL
Raw	31/10/94	2,530	7.94	7.0	-	117.60	701.6	159.0	180.0	-	-	-	-	600.0	13.2	-	-
Effluent			7.30	TR	-	44.00	156.6	131.0	44.0	-	0.1	-	-	450.0	11.6	-	NIL
Raw	29/11/94	2,400	7.76	10.0	-	149.60	881.3	157.0	134.0	-	-	-	-	540.0	14.9	-	-
Effluent			7.45	0.2	-	51.60	166.3	137.0	14.0	-	NIL	-	-	530.0	10.5	-	NIL
Raw	28/12/94	2,340	7.31	4.5	-	95.20	901.4	143.0	100.0	-	-	-	-	410.0	15.7	-	-
Effluent			7.54	TR	-	40.40	156.4	137.0	51.0	-	NIL	-	-	390.0	6.4	-	NIL
Raw	23/1/95	2,360	7.77	12.0	-	124.00	961.0	147.0	70.0	-	-	-	-	400.0	7.2	-	-
Effluent			7.37	TR	-	32.80	161.0	101.0	30.0	-	NIL	-	-	350.0	4.1	-	NIL
Raw	24/2/95	2,310	8.08	14.0	-	137.60	860.7	173.0	120.0	-	-	-	-	560.0	19.2	-	-
Effluent			7.66	TR	-	31.20	85.7	117.0	45.0	-	0.1	-	-	400.0	9.2	-	NIL
Raw	29/3/95	2,280	7.84	10.0	-	141.20	1,040.8	147.0	176.0	268.0	-	-	-	560.0	14.8	-	-
Effluent			7.14	TR	-	46.40	95.8	123.0	57.0	69.0	NIL	-	-	390.0	8.4	-	NIL
Raw	27/4/95	2,260	7.82	15.0	-	157.60	680.5	177.0	138.0	160.0	-	-	-	650.0	6.1	-	-
Effluent			7.64	TR	-	55.60	133.0	137.0	49.0	50.0	NIL	-	-	440.0	8.1	-	NIL
Raw	31/5/95	2,190	8.29	18.0	-	121.20	920.1	197.0	130.0	185.0	-	-	-	660.0	17.8	-	-
Effluent			7.77	TR	-	44.60	45.1	137.0	50.0	74.0	TR	-	-	540.0	9.6	-	NIL
Raw	30/6/95	2,500	8.15	24.0	-	160.60	-	233.0	180.0	350.0	-	-	-	760.0	17.0	-	-
Effluent			7.45	TR	-	41.60	-	145.0	69.0	130.0	NIL	-	-	690.0	8.5	-	NIL
Raw	28/7/95	2,310	7.37	5.0	-	134.60	-	207.0	160.0	148.0	-	-	-	560.0	13.3	-	-
Effluent			6.98	0.8	-	38.60	-	157.0	50.0	72.0	0.1	-	-	500.0	10.1	-	NIL
Raw	31/8/95	2,310	8.00	10.0	-	128.40	420.4	261.0	56.0	210.0	-	-	-	560.0	11.8	-	NIL
Effluent			7.48	TR	-	51.20	2.0	197.0	63.0	92.0	NIL	-	-	530.0	11.0	-	0.5
Raw	21/9/95	2,310	7.99	8.0	-	143.20	620.2	267.0	170.0	310.0	-	-	-	650.0	12.4	-	NIL
Effluent			7.65	TR	-	46.20	32.7	187.0	53.0	114.0	TR	-	-	570.0	10.3	-	NIL
Raw	30/10/95	2,310	7.62	8.0	-	130.00	1,071.6	241.0	128.0	180.0	-	-	-	670.0	15.2	-	-

Table 3.5.40 Water Quality Data of Donnybrook STW No.4 (POND) (cont'd)

Sample Point	Sampling Date	Flow	pH	Settleable Solid (ccf)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Effluent			7.36	3.0	-	27.60	269.1	181.0	60.0	92.0	TR	-	-	540.0	7.4	-	NIL
Raw	22/11/95	2,310	7.42	10.0	-	146.00	1,001.5	199.0	88.0	192.0	-	-	-	540.0	18.4	-	-
Effluent			7.47	TR	-	61.20	281.5	193.0	33.0	94.0	NIL	-	-	570.0	12.8	-	1.9
Raw	25/1/96	2,400	7.42	-	-	54.40	51.3	129.0	66.0	84.0	-	-	-	280.0	7.8	-	-
Effluent			7.84	-	-	41.80	18.7	121.0	34.0	60.0	NIL	-	-	330.0	8.2	-	NIL
Raw	26/2/96	2,610	7.41	12.0	-	93.60	351.2	107.0	56.0	87.0	-	-	-	320.0	10.2	-	-
Effluent			7.72	TR	-	33.80	56.2	87.0	30.0	48.0	STR	-	-	310.0	5.7	-	NIL
Raw	28/3/96	1,430	7.26	9.0	-	90.40	280.1	105.0	76.0	108.0	-	-	-	350.0	9.7	-	-
Effluent			7.38	TR	-	46.00	50.1	87.0	32.0	54.0	STR	-	-	300.0	6.0	-	NIL
Raw	22/4/96	2,500	6.93	14.0	-	125.20	660.1	125.0	98.0	138.0	-	-	-	350.0	11.5	-	-
Effluent			6.65	TR	-	40.80	55.1	97.0	42.0	62.0	STR	-	-	300.0	4.2	-	NIL



Table 3.5.41 Water Quality Data of Marlborough STW (POND)

Sample Point	Sampling Date	Flow (m <sup>3</sup> /day)	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	26/1/94	-	6.96	0.4	-	8.40	181.1	103.0	13.5	-	-	-	-	170.0	1.0	-	-
Effluent			9.08	TR	-	16.80	51.1	127.0	0.3	-	0.2	-	-	150.0	1.6	-	1.0
Raw	23/2/94	-	7.25	1.4	-	26.40	240.2	71.0	16.0	-	-	-	-	220.0	-	-	-
Effluent			8.97	TR	-	28.40	20.2	43.0	0.4	-	0.1	-	-	180.0	2.3	-	0.9
Raw	23/3/94	-	7.49	8.0	-	62.00	280.7	57.0	81.5	-	-	-	-	310.0	5.5	-	-
Effluent			9.10	TR	-	19.40	45.7	39.0	0.4	-	0.0	-	-	270.0	2.8	-	0.7
Raw	20/4/94	-	7.71	16.0	-	124.80	701.5	71.0	59.0	-	-	-	-	320.0	7.2	-	-
Effluent			9.43	TR	-	18.40	31.5	47.0	NIL	-	0.0	-	-	170.0	0.9	-	2.2
Raw	18/5/94	-	7.37	16.0	-	160.80	800.2	65.0	47.0	-	-	-	-	330.0	9.1	-	-
Effluent			9.56	TR	-	22.40	15.2	47.0	1.4	-	0.0	-	-	190.0	1.1	-	2.2
Raw	29/6/94	-	7.76	1.6	-	34.40	200.8	77.0	36.5	-	-	-	-	290.0	5.0	-	-
Effluent			9.16	TR	-	20.60	15.8	67.0	0.2	-	TR	-	-	210.0	1.9	-	4.7
Raw	22/7/94	-	7.95	0.6	-	9.60	180.6	67.0	33.0	-	-	-	-	350.0	5.3	-	-
Effluent			9.20	TR	-	19.40	(5.6)	69.0	STR	-	0.1	-	-	210.0	3.2	-	7.9
Raw	10/8/94	-	7.19	0.8	-	15.20	140.5	87.0	30.0	-	-	-	-	340.0	3.7	-	-
Effluent			8.84	TR	-	16.40	35.5	47.0	0.2	-	0.1	-	-	140.0	2.9	-	5.5
Raw	19/9/94	-	7.28	10.0	-	184.00	620.7	107.0	72.0	-	-	-	-	400.0	9.2	-	-
Effluent			9.23	TR	-	16.60	8.7	97.0	0.3	-	STR	-	-	330.0	2.3	-	9.6
Raw	21/10/94	-	7.01	4.0	-	48.80	401.6	97.0	48.0	-	-	-	-	240.0	7.9	-	-
Effluent			8.56	TR	-	22.40	181.6	101.0	10.0	-	0.4	-	-	290.0	4.8	-	5.7
Raw	28/11/94	-	2.48	3.0	-	39.20	411.3	93.0	33.5	-	-	-	-	NIL	6.3	-	NIL
Effluent			9.12	TR	-	26.40	106.3	113.0	12.0	-	0.2	-	-	230.0	3.1	-	3.0
Raw	5/12/94	-	7.48	18.0	-	88.80	680.7	113.0	38.5	-	-	-	-	250.0	5.2	-	-
Effluent			9.09	TR	-	21.00	120.7	117.0	10.5	-	0.4	-	-	260.0	1.2	-	1.9
Raw	30/1/95	-	7.58	3.8	-	48.80	600.8	111.0	34.5	-	-	-	-	330.0	6.4	-	-
Effluent			8.77	TR	-	18.40	155.8	107.0	8.0	-	0.0	-	-	220.0	2.0	-	2.8
Raw	28/2/95	-	7.29	0.6	-	16.40	10.8	79.0	28.5	-	-	-	-	350.0	3.8	-	-
Effluent			8.56	TR	-	19.40	35.8	75.0	10.0	-	0.0	-	-	220.0	2.4	-	2.2
Raw	20/3/95	-	7.42	5.0	-	30.40	460.2	105.0	46.5	56.0	-	-	-	370.0	6.5	-	-
Effluent			8.47	TR	-	15.40	48.7	89.0	8.0	25.0	0.4	-	-	260.0	3.7	-	1.1
Raw	12/4/95	-	7.30	0.8	-	6.80	100.4	77.0	20.5	37.0	-	-	-	270.0	2.6	-	-
Effluent			7.72	TR	-	10.40	20.4	127.0	13.5	27.0	0.7	-	-	290.0	1.2	-	NIL
Raw	3/5/95	-	7.28	TR	-	26.80	270.4	120.0	25.0	39.0	-	-	-	260.0	5.0	-	-
Effluent			8.49	TR	-	20.30	17.6	110.0	15.5	24.0	0.4	-	-	300.0	2.2	-	2.0
Raw	7/6/95	-	7.30	8.0	-	52.40	240.4	127.0	45.5	70.0	-	-	-	330.0	6.6	-	-
Effluent			7.39	TR	-	31.60	45.4	137.0	10.0	23.0	4.2	-	-	420.0	7.1	-	7.3
Raw	12/7/95	-	7.46	1.2	-	24.80	30.2	137.0	35.5	55.0	-	-	-	310.0	5.8	-	-
Effluent			8.41	TR	-	33.40	67.7	125.0	9.0	22.0	0.3	-	-	340.0	6.7	-	4.2
Raw	18/8/95	-	7.04	TR	-	10.40	531.4	101.0	44.5	54.0	-	-	-	290.0	7.3	-	NIL
Effluent			7.47	TR	-	33.00	191.4	165.0	15.0	51.0	9.4	-	-	350.0	6.1	-	5.1
Raw	11/9/95	-	7.33	60.0	-	107.20	336.7	105.0	26.0	89.0	-	-	-	310.0	12.0	-	NIL

Table 3.5.41 Water Quality Data of Marlborough STW (POND) (cont'd)

Sample Point	Sampling Date	Flow (m <sup>3</sup> /day)	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Effluent			7.81	TR	-	12.80	136.7	132.0	35.0	61.0	TR	-	-	440.0	10.6	-	NIL
Raw	18/10/95	-	7.29	8.0	-	68.80	496.3	144.0	52.0	67.0	-	-	-	380.0	12.0	-	-
Effluent			7.61	TR	-	24.90	138.8	157.0	38.0	42.0	NIL	-	-	420.0	10.0	-	1.7
Raw	15/11/95	-	7.40	11.0	-	83.20	242.7	151.0	60.0	78.0	-	-	-	440.0	7.0	-	-
Effluent			7.45	TR	-	18.80	92.7	173.0	27.0	60.0	TR	-	-	460.0	6.4	-	0.7
Raw	7/12/95	-	7.50	2.8	-	70.40	180.8	137.0	50.0	73.0	-	-	-	360.0	8.0	-	-
Effluent			7.74	TR	-	19.20	11.8	147.0	29.0	40.0	NIL	-	-	420.0	4.8	-	NIL
Raw	24/1/96	-	7.45	3.8	-	38.00	131.0	77.0	34.0	67.0	-	-	-	300.0	5.0	-	-
Effluent			7.65	TR	-	13.20	56.0	111.0	21.0	35.6	0.1	-	-	320.0	4.5	-	0.7
Raw	15/2/96	-	6.85	0.8	-	4.80	131.0	39.0	22.0	28.0	-	-	-	200.0	0.8	-	-
Effluent			7.24	TR	-	7.60	56.0	51.0	18.0	20.0	0.1	-	-	250.0	3.1	-	0.5
Raw	6/3/96	-	7.16	8.0	-	8.00	NIL	27.0	25.0	27.0	-	-	-	160.0	3.8	-	-
Effluent			7.58	TR	-	10.60	220.4	43.0	25.0	31.0	NIL	-	-	250.0	2.6	-	NIL
Raw	15/4/96	-	6.42	12.0	-	56.00	421.3	69.0	65.0	74.0	-	-	-	340.0	5.8	-	-
Effluent			7.37	TR	-	8.80	11.3	61.0	29.0	32.0	0.1	-	-	230.0	3.1	-	0.5

Table 3.5.42 Water Quality Data of Hatcliffe STW (OD)

Sample Point	Sampling Date	Flow (m <sup>3</sup> /day)	Tp	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	Chloride	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	12/1/94	-	8.07	120	5200	77.60	600.0	112.0	141.0	-	-	-	259.0	350.0	12.8	1,468.3	-
Effluent			7.27	TR	75.0	35.40	180.0	76.0	84.0	NIL	NIL	-	235.0	370.0	7.0	444.4	-
Raw	9/2/94	-	7.98	11.0	770.0	111.20	660.3	62.0	-	-	-	-	113.0	300.0	5.6	1,442.7	-
Effluent			7.50	0.2	103.0	33.60	300.3	51.0	-	NIL	NIL	-	99.0	240.0	4.0	371.5	-
Raw	9/3/94	-	8.05	8.0	830.0	120.00	620.7	72.0	-	-	-	-	113.0	360.0	13.0	1,865.4	-
Effluent			7.52	TR	103.0	30.80	280.7	60.0	-	NIL	NIL	-	97.0	310.0	7.0	457.7	-
Raw	6/4/94	-	8.25	9.0	768.0	127.20	680.8	96.0	-	-	-	-	131.0	360.0	10.8	1,565.0	-
Effluent			7.43	TR	88.0	37.00	290.8	61.0	-	NIL	NIL	-	107.0	340.0	8.0	377.4	-
Raw	4/5/94	-	8.30	10.0	790.0	145.60	580.1	98.0	-	-	-	-	117.0	390.0	14.8	1,724.1	-
Effluent			7.33	TR	102.0	35.20	250.1	65.0	-	NIL	NIL	-	93.0	240.0	7.8	360.2	-
Raw	15/6/94	-	8.59	24.0	2,370.0	156.00	500.1	156.0	-	-	-	-	189.0	590.0	19.6	2,091.2	-
Effluent			7.98	TR	160.0	35.20	110.1	44.0	-	0.1	NIL	-	107.0	390.0	5.2	372.6	-
Raw	13/7/94	-	8.54	12.0	604.0	106.60	621.0	136.0	-	-	-	-	217.0	410.0	15.2	1,384.6	-
Effluent			7.61	TR	118.0	39.20	351.0	47.0	-	NIL	TR	-	117.0	540.0	7.2	373.1	-
Raw	31/8/94	-	8.36	16.0	760.0	44.00	821.1	88.0	-	-	-	-	179.0	440.0	20.4	1,724.8	-
Effluent			7.69	TR	120.0	42.20	151.1	63.0	-	NIL	NIL	-	129.0	350.0	9.2	414.7	-
Raw	23/9/94	-	8.22	14.0	792.0	120.00	582.4	104.0	-	-	-	-	157.0	500.0	8.4	1,697.8	-
Effluent			7.34	0.4	108.0	82.00	282.4	50.0	-	NIL	NIL	-	117.0	410.0	9.0	470.2	-
Raw	27/10/94	-	7.98	20.0	690.0	136.80	1,161.0	172.0	-	-	-	-	186.8	680.0	12.4	2,357.4	-
Effluent			7.48	TR	250.0	35.60	-	75.0	-	NIL	NIL	-	127.0	370.0	7.4	403.0	-
Raw	18/11/94	-	8.37	16.0	590.0	153.00	501.2	98.0	-	-	-	-	217.0	530.0	20.8	1,322.5	-
Effluent			7.50	TR	130.0	31.40	531.2	45.0	-	NIL	NIL	-	143.0	360.0	7.0	355.1	-
Raw	23/12/94	-	8.08	18.0	700.0	148.00	-	190.0	-	-	-	-	208.0	500.0	10.3	-	-
Effluent			7.60	TR	300.0	29.60	-	70.0	-	NIL	NIL	-	150.0	380.0	7.8	-	-
Raw	9/1/95	-	7.24	18.0	670.0	172.00	1,160.2	88.0	800.0	-	-	-	117.0	320.0	9.2	1,792.8	-
Effluent			7.29	TR	189.0	27.40	305.2	86.0	220.0	NIL	NIL	-	127.0	520.0	6.4	123.5	-
Raw	20/7/95	-	8.09	20.0	1,200.0	111.60	1,001.5	186.0	500.0	-	-	-	193.0	570.0	21.2	2,695.5	-
Effluent			7.26	TR	660.0	33.10	249.0	79.0	160.0	NIL	NIL	-	137.0	330.0	8.2	460.9	-
Raw	13/3/95	-	7.83	14.0	844.0	63.20	751.4	84.0	96.0	-	-	-	129.0	470.0	11.6	1,735.5	-
Effluent			6.93	TR	212.0	43.50	251.4	49.0	61.0	NIL	NIL	-	127.0	380.0	7.0	710.7	-
Raw	19/4/95	-	7.99	18.0	432.0	118.00	381.9	84.0	195.0	-	-	-	117.0	590.0	23.2	1,206.9	-
Effluent			6.91	TR	-	45.00	(13.1)	50.0	67.0	NIL	NIL	-	161.0	1,390.0	7.8	532.6	-
Raw	17/5/95	-	7.70	15.0	530.0	122.20	784.7	160.0	196.0	-	-	-	223.0	560.0	21.6	1,600.8	-
Effluent			7.16	TR	116.0	39.90	265.7	60.0	88.0	NIL	NIL	-	151.0	410.0	8.8	438.7	-
Raw	14/6/95	-	7.19	24.0	610.0	116.80	460.8	72.0	-	-	-	-	153.0	340.0	21.2	-	-
Effluent			7.85	TR	79.0	16.70	98.3	64.0	-	NIL	NIL	-	139.0	490.0	7.6	-	-
Raw	26/7/95	-	7.88	14.0	1,100.0	23.50	470.1	102.0	152.0	-	-	-	257.0	380.0	20.8	1,778.7	-
Effluent			6.92	TR	398.0	29.00	135.1	78.0	89.0	NIL	NIL	-	147.0	450.0	4.8	719.4	-
Raw	17/8/95	-	8.23	30.0	114.0	128.00	490.6	118.0	450.0	-	-	-	285.0	770.0	27.2	1,666.7	-
Effluent			7.37	TR	296.0	49.20	233.1	52.0	210.0	NIL	NIL	-	177.0	440.0	11.0	934.1	-
Raw	27/9/95	-	7.97	20.0	748.0	131.60	703.5	120.0	160.0	-	-	-	253.0	560.0	9.6	1,616.8	-
Effluent			7.32	3.0	670.0	47.50	173.5	68.0	90.0	NIL	NIL	-	207.0	530.0	5.0	1,578.9	-
Raw	26/10/95	-	7.72	23.0	610.0	126.60	492.2	162.0	220.0	-	-	-	187.0	420.0	21.2	1,582.0	-
Effluent			7.25	TR	135.0	45.50	232.2	58.0	180.0	NIL	NIL	-	167.0	440.0	7.4	539.0	-
Raw	23/11/95	-	7.80	18.0	900.0	125.60	808.6	100.0	120.0	-	-	-	185.0	480.0	10.8	1,652.2	-
Effluent			7.33	TR	77.0	42.80	382.6	68.0	71.0	TR	NIL	-	143.0	450.0	8.2	513.0	-
Raw	29/12/95	-	7.93	22.0	730.0	151.60	-	136.0	168.0	-	-	-	185.0	550.0	16.0	1,380.0	-
Effluent			7.23	TR	126.0	45.50	-	75.0	77.0	STR	NIL	-	153.0	360.0	9.0	576.0	-

Table 3.5.42 Water Quality Data of Hatcliffe STW (OD) (cont'd)

Sample Point	Sampling Date	Flow (m <sup>3</sup> /day)	pH	Settleable Solid (cc/f)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Ammonia Nitrogen	Kjeldahl Nitrogen	Nitrite	Nitrate	MB Stability (days)	Chloride	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	18/1/96	-	7.87	19.0	160.0	126.40	761.9	110.0	152.0	-	-	-	175.0	490.0	10.8	1,631.4	-
Effluent			7.21	TR	178.0	44.10	351.9	62.0	71.0	NIL	STR	-	131.0	450.0	7.5	542.4	-
Raw	29/2/96	-	8.06	-	1,028.0	138.00	850.2	130.0	206.0	-	-	-	161.0	650.0	17.6	2,075.1	-
Effluent			7.05	-	630.0	86.60	440.2	61.0	90.0	NIL	NIL	-	119.0	410.0	7.4	924.9	-
Raw	14/3/96	-	8.25	24.0	480.0	170.60	781.7	100.0	230.0	-	-	-	155.0	470.0	26.8	1,265.3	-
Effluent			7.58	TR	250.0	51.50	551.7	46.0	91.0	NIL	NIL	-	107.0	320.0	10.4	183.6	-
Raw	25/4/96	-	8.26	20.0	1,530.0	152.80	810.0	154.0	156.4	-	-	-	197.0	510.0	16.0	1,960.8	-
Effluent			8.04	TR	112.0	72.60	310.0	75.0	92.0	NIL	NIL	-	107.0	300.0	6.2	68.3	-
Raw	17/5/96	-	7.99	28.0	924.0	66.00	-	116.0	175.0	-	-	-	175.0	480.0	14.8	2,022.1	-
Effluent			7.13	TR	154.0	42.00	-	44.0	49.0	NIL	NIL	-	107.0	280.0	8.0	404.4	-

Table 3.5.43 Water Quality Data of Zengeza STW (TF)

Sample Point	Sampling Date	Flow (Total / TF / BNR)	pH	Settleable Solid (cc/l)	Suspended Solid	Oxygen Absorbed (PV)	Biochemical Oxygen Demand	Chloride	Kjeldahl Nitrogen	Ammonia Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand
Raw	7/3/95	-	6.70	28.0	-	106.4	840.0	120.0	-	26.0	-	-	-	-	-	-
Tilcor		-	6.10	9.0	-	90.4	960.0	112.0	-	34.0	-	-	-	-	-	-
Effluent		-	7.50	5.0	-	37.2	130.0	84.0	-	34.0	1.00	5.20	4	-	-	-
Raw	21/3/95	-	6.80	16.0	-	105.6	980.0	104.0	-	11.0	-	-	-	-	-	-
Tilcor		-	6.70	11.0	-	96.8	1,060.0	108.0	-	42.0	-	-	-	-	-	-
Effluent		-	7.30	5.0	-	46.8	180.0	100.0	-	51.0	1.20	TR	1	-	-	-
Raw	4/4/95	-	6.50	14.0	-	81.6	720.0	76.0	-	37.0	-	-	-	-	-	-
Tilcor		-	6.10	12.0	-	92.0	920.0	88.0	-	46.0	-	-	-	-	-	-
Effluent		-	7.50	4.0	-	41.2	180.0	104.0	-	51.0	NIL	NIL	1	-	-	-
Raw	20/4/95	-	6.80	19.0	-	85.6	810.0	132.0	-	38.0	-	-	-	-	-	-
Tilcor		-	6.30	6.0	-	84.8	1,010.0	150.0	-	29.0	-	-	-	-	-	-
Effluent		-	7.40	5.0	-	48.0	175.0	120.0	-	54.0	1.44	1.60	4	-	-	-
Raw	7/5/95	-	7.20	16.0	-	88.0	720.0	120.0	-	40.0	-	-	-	-	-	-
Tilcor		-	7.20	6.2	-	84.0	910.0	152.0	-	60.0	-	-	-	-	-	-
Effluent		-	8.30	5.0	-	39.6	105.0	128.0	-	44.0	1.84	TR	-	-	-	-
Raw	16/5/95	-	6.80	18.0	-	90.4	800.0	152.0	-	41.0	-	-	-	-	-	-
Tilcor		-	6.60	13.0	-	89.6	860.0	144.0	-	32.0	-	-	-	-	-	-
Effluent		-	7.30	5.0	-	40.0	130.0	120.0	-	58.0	1.16	3.70	3	-	-	-
Raw	30/5/95	-	6.90	13.0	-	91.2	78.0	104.0	-	47.0	-	-	-	-	-	-
Tilcor		-	6.40	15.0	-	56.4	900.0	136.0	-	7.0	-	-	-	-	-	-
Effluent		-	7.80	3.8	-	34.2	117.5	132.0	-	47.0	TR	4.10	-	-	-	-
Raw	27/6/95	-	7.00	20.0	-	100.8	960.0	152.0	-	64.0	-	-	-	-	-	-
Tilcor		-	7.00	6.2	-	75.2	960.0	156.0	-	64.0	-	-	-	-	-	-
Effluent		-	7.20	2.4	-	32.0	195.0	156.0	-	76.0	0.60	2.00	1	-	-	-
Raw	11/7/95	-	6.90	14.0	-	96.0	660.0	156.0	-	46.0	-	-	-	-	-	-
Tilcor		-	6.00	4.0	-	105.6	1,200.0	184.0	-	50.0	-	-	-	-	-	-
Effluent		-	7.20	1.4	-	35.6	130.0	168.0	-	80.0	3.00	TR	-	-	-	-
Raw	25/7/95	-	7.10	4.0	-	122.4	1,200.0	176.0	-	75.0	-	-	-	-	-	-
Tilcor		-	6.70	7.0	-	113.6	1,200.0	168.0	-	68.0	-	-	-	-	-	-
Effluent		-	7.60	2.0	-	46.8	110.0	168.0	-	68.0	2.16	1.20	-	-	-	-
Raw	8/8/95	-	7.20	32.0	-	120.0	1,080.0	158.0	-	42.0	-	-	-	-	-	-
Tilcor		-	6.80	41.0	-	172.0	1,080.0	162.0	-	46.0	-	-	-	-	-	-
Effluent		-	7.80	2.4	-	44.0	152.3	160.0	-	88.0	3.70	1.30	-	-	-	-
Raw	22/8/95	-	6.90	22.0	-	109.6	1,200.0	156.0	-	46.0	-	-	-	-	-	-
Tilcor		-	7.40	13.0	-	120.0	1,300.0	162.0	-	43.0	-	-	-	-	-	-
Effluent		-	7.80	2.2	-	37.2	120.0	180.0	-	74.0	1.96	8.6	-	-	-	-
Raw	3/10/95	-	7.40	22.0	-	108.0	1,450.0	176.0	-	60.0	-	-	-	-	-	-
Tilcor		-	6.80	14.0	-	92.0	1,800.0	160.0	-	32.0	-	-	-	-	-	-
Effluent		-	7.60	3.4	-	39.0	205.0	180.0	-	59.0	0.76	TR	1	-	-	-
Raw	17/10/95	-	7.20	37.0	-	104.8	1,550.0	180.0	-	56.0	-	-	-	-	-	-
Tilcor		-	6.20	620.0	-	12,600.0	21,500.0	-	-	-	-	-	-	-	-	-
Effluent		-	7.60	3.6	-	49.8	315.0	172.0	-	48.0	3.68	8.00	-	-	-	-
Raw	31/10/95	-	7.20	18.0	-	110.8	950.0	164.0	-	38.0	-	-	-	-	-	-

Table 3.5.43 Water Quality Data of Zengeza STW (TF) (cont'd)

Sample Point	Sampling Date	Flow (Total / TF / BNR)	PH	Settleable Solid (col)	Suspended Solid	Oxygen Absorbed (PV)	Biochemical Oxygen Demand	Chloride	Kjeldahl Nitrogen	Ammonia Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand
Tilcor		-	6.60	32.0	-	138.4	1,800.0	180.0	-	62.0	-	-	-	-	-	-
Effluent		-	7.80	5.2	-	39.2	100.0	174.0	-	41.0	4.10	15.20	-	-	-	-
Raw	14/11/95	-	7.20	18.0	-	89.6	775.0	168.0	-	178.0	-	-	-	-	-	-
Tilcor		-	7.20	22.0	-	108.8	400.0	188.0	-	48.0	-	-	-	-	-	-
Effluent		-	7.80	3.2	-	34.0	190.0	176.0	-	49.0	4.48	11.00	3	-	-	-
Raw	28/11/95	-	6.50	30.0	-	143.2	1,950.0	196.0	-	92.0	-	-	-	-	-	-
Tilcor		-	6.40	38.0	-	276.0	2,500.0	304.0	-	186.0	-	-	-	-	-	-
Effluent		-	7.50	0.2	-	30.0	110.0	164.0	-	52.0	5.80	10.00	-	-	-	-
Raw	12/12/95	-	6.00	32.0	-	109.0	840.0	84.0	-	30.0	-	-	-	-	-	-
Tilcor		-	6.10	58.0	-	154.4	1,990.0	120.0	-	66.0	-	-	-	-	-	-
Effluent		-	6.80	0.8	-	13.4	125.0	96.0	-	16.0	3.70	9.40	-	-	-	-
Raw	9/1/96	-	7.10	19.0	-	14.4	930.0	156.0	-	57.0	-	-	-	-	-	-
Tilcor		-	7.20	15.0	-	126.4	1,240.0	204.0	-	82.0	-	-	-	-	-	-
Effluent		-	7.20	1.2	-	27.2	67.5	160.0	-	35.0	1.36	17.00	-	-	-	-
Raw	6/2/96	-	7.30	18.0	-	88.0	800.0	108.0	-	37.0	-	-	-	-	-	-
Tilcor		-	6.30	14.0	-	86.4	830.0	128.0	-	38.0	-	-	-	-	-	-
Effluent		-	6.90	4.0	-	32.8	65.0	116.0	-	39.0	6.88	5.40	-	-	-	-
Raw	20/2/96	-	6.70	50.0	-	161.0	1,160.0	108.0	-	35.0	-	-	-	-	-	-
Tilcor		-	7.00	14.0	-	85.6	580.0	100.0	-	23.0	-	-	-	-	-	-
Effluent		-	7.40	1.2	-	28.0	65.0	104.0	-	30.0	1.44	5.20	-	-	-	-

Table 3.5.44 Water Quality Data of Ruwa STW (POND)

Sample Point	Sampling Date	Flow (m <sup>3</sup> /day)	pH	Settleable Solid (ccft)	Suspended Solid	Oxygen Absorbed	Biochemical Oxygen Demand	Chloride	Kjeldahl Nitrogen	Ammonia Nitrogen	Nitrite	Nitrate	MB Stability (days)	T-Alkalinity	Phosphate	Chemical Oxygen Demand	Dissolved Oxygen
Raw	27/10/94	-	-	15.0	-	64.00	660.0	-	-	28.5	-	-	-	-	46.0	-	4.8
Effluent		-	-	0.2	-	76.40	285.0	-	-	TR	NIL	TR	-	-	16	-	2.4
Raw	24/11/94	-	-	11.0	-	64.00	580.0	-	-	62.2	-	-	-	-	8.4	-	-
Effluent		-	-	TR	-	42.80	85.0	-	-	TR	0.1	1.0	-	-	3.2	-	1.8
Raw	22/12/94	-	-	13.0	-	64.00	460.0	-	-	26.0	-	-	-	-	4.8	-	-
Effluent		-	-	0.8	-	50.40	130.0	-	-	10.0	NIL	TR	-	-	5.2	-	1.4
Raw	19/1/95	-	-	10.0	-	29.60	220.0	-	-	18.2	-	-	-	-	4.0	-	-
Effluent		-	-	-	-	888.00	250.0	-	-	7.0	NIL	-	-	-	3.4	-	NIL
Raw	16/2/95	-	-	6.0	-	32.80	420.0	-	-	15.0	-	-	-	-	3.6	-	-
Effluent		-	-	TR	-	20.80	75.0	-	-	3.0	0.1	TR	-	-	1.6	-	3.6
Raw	16/3/95	-	-	12.0	-	60.80	380.0	-	-	23.2	-	-	-	-	3.6	-	-
Effluent		-	-	TR	-	6.00	30.0	-	-	TR	TR	TR	-	-	1.2	-	7.0
Raw	13/4/95	-	-	40.0	-	51.20	460.0	-	-	18.0	-	-	-	-	4.8	-	-
Effluent		-	-	TR	-	44.40	242.5	-	-	TR	NIL	TR	-	-	0.8	-	0.5
Raw	11/5/95	-	-	28.0	-	57.60	410.0	-	-	30.2	-	-	-	-	3.2	-	-
Effluent		-	-	0.2	-	24.20	75.0	-	-	2.7	NIL	TR	-	-	2.0	-	3.5
Raw	6/7/95	-	-	104.0	-	280.60	2,250.0	-	-	176.2	-	-	-	-	19.2	-	-
Effluent		-	-	TR	-	30.80	185.0	-	-	4.0	TR	TR	-	-	2.0	-	8.2
Raw	24/7/95	-	-	16.0	-	82.40	860.0	-	-	63.0	-	-	-	-	10.4	-	-
Effluent		-	-	TR	-	33.60	65.0	-	-	2.9	0.0	TR	-	-	2.8	-	9.8
Raw	29/9/95	-	-	0.6	-	24.00	510.0	-	-	31.0	-	-	-	-	3.6	-	-
Effluent		-	-	TR	-	13.00	47.5	-	-	TR	0.2	NIL	-	-	TR	-	12.6

Table 3.5.45 Location of Sampling Points and Sampling Number

Subject	No.	Location	Sampling Points
Rivers	R1	Manyame River	Upstream
	R2	do	New Road Bridge
	R3	do	Skyline Bridge
	R4	Nyatsime River	Before confluence to the Manyame River
	R5	Ruwa River	Before confluence to the Seke Dam
	R6	Mukuvisi River	Before confluence to the Lake Chivero
	R7	Marimba River	Before confluence to the Lake Chivero
	R8	Muzururu River	Before confluence to the Lake Manyame
	R9	Gwebi River	Before confluence to the Lake Manyame
Lakes /Dams	L1U	Seke Dam	After the inflow of the Manyame River (upper layer)
	L1L	do	After the inflow of the Manyame River (lower layer)
	L2U	do	Before the outflow to the Manyame River (upper layer)
	L2L	do	Before the outflow to the Manyame River (lower layer)
	L3U	Lake Chivero	After the inflow of the Manyame River (upper layer)
	L3L	do	After the inflow of the Manyame River (lower layer)
	L4U	do	After the inflow of the Marimba River (upper layer)
	L4L	do	After the inflow of the Marimba River (lower layer)
	L5U	do	Before the outflow to the Manyame River (upper layer)
	L5L	do	Before the outflow to the Manyame River (lower layer)
	L6U	Lake Manyame	Before the outflow to the Manyame River (upper layer)
	L6L	do	Before the outflow to the Manyame River (lower layer)
Factories	F1	Firle STW	Chibuku Brew
	F2	do	United Bottlers
	F3	do	Olivine Ind.
	F4	do	National Breweries
	F5	Firle STW	Olivine Ind.
	F6	do	Suncrest Chickens
	F7	do	Colgate Palmolive
	F8	do	Caps
	F9	do	Dullux
	F10	do	Imponente Tanning
	F11	do	Turnal Products
	F12	do	Aluminium Ind
	F13	do	Industrial Galv
	F14	do	W/Vale M. M. Ind.
	F15	do	Abercom Dry Co.
	F16	Crowborough STW	D. M. B.
	F17	do	ZSR
	F18	do	Colcom
	F19	do	National Foods
	F20	do	Lever Bro
	F21	do	Windmill (Pvt) Ltd
	F22	do	Lion Match
	F23	do	BICC Cafca
	F24	do	Zupco
	F25	do	Chloride Zim
	F26	Zengeza STW	Chibuku Brewer
	F27	do	Aroma Bakeries LTD



**Table 3.5.45 Location of Sampling Points and Sampling Number (cont'd)**

Subject	No.	Location	Sampling Points
Factories	F28	do	Dairboard
	F29	do	Food & Industrial
	F30	do	National Bakers Confectioners
	F31	do	Southern Granite
	F32	do	Star Chains Drives
	F33	do	Guard Alert
	F34	do	Zupco, Harare Division
	F35	do	GDC Hauliers LTD
	F36	Norton STW	Hunyani Paper & Packaging Ltd
	F37	do	Lucas
	F38	do	Norton Hospital
	F39	do	Dandy
	F40	do	Copro
	F41	Ruwa STW	Zim Freeze
	F42	do	Mega Pak/Bevcool/Filltech
	F43	do	National Rehabilitation Center
F44	do	Pyramid Products	
F45	do	Aurex	
STWs	T1	Firle	Inlet
	T2	do	Outlet (Trickling Filter)
	T3	do	Outlet (Anaerobic-aerobic)
	T4	Crowborough	Inlet
	T5	do	Outlet (Trickling Filter)
	T6	do	Outlet (Anaerobic-aerobic)
	T7	Donnybrook	Inlet
	T8	do	Outlet
	T9	Zengeza	Inlet
	T10	do	Outlet
	T11	Norton	Inlet
	T12	do	Outlet
	T13	Ruwa	Inlet
	T14	do	Outlet
Wells	W1	Imbgwa	Surrounding Area of Zengeza STW Irrigation Land
	W2	Imbgwa	Surrounding Area of Zengeza STW Irrigation Land
	W3	Imbgwa	Surrounding Area of Zengeza STW Irrigation Land
	W4	Marlborough	Surrounding Area of Marlborough STW Irrigation Land
	W5	Marlborough	Surrounding Area of Marlborough STW Irrigation Land

Table 3.5.46 Result of Water Quality Examination of Rivers

Sampling Number	Sampling Date	Weather	Water Temp.	pH	BOD mg/l	T-COD <sub>Cr</sub> mg/l	T-COD <sub>Mn</sub> mg/l	DO mg/l	SS mg/l	Cl <sup>-</sup> mg/l	EC uS/cm	Hardness -	T-N mg/l	NH <sub>4</sub> -N mg/l	NO <sub>2</sub> -N mg/l	NO <sub>3</sub> -N mg/l
R1	29-May-96	Sunny	19.8	6.65	1.1	28.4	4.0	7.0	31.2	7.0	60	40	0.80	0.13	STR	0.014
R2	29-May-96	Sunny	17.5	6.67	0.6	11.4	10.8	5.3	7.8	10.0	115	40	0.75	0.15	0.003	0.025
R3	29-May-96	Sunny	17.1	6.66	1.0	11.4	9.0	4.5	20.0	12.0	130	50	0.50	0.20	0.011	0.004
R4	29-May-96	Sunny	16.2	6.91	2.1	22.7	7.0	5.6	26.6	13.0	150	50	0.70	0.37	0.018	0.026
R5	29-May-96	Sunny	16.4	6.87	3.8	34.1	17.8	6.6	10.3	16.0	170	80	0.80	0.48	0.112	NIL
R6	29-May-96	Sunny	16.0	6.87	2.0	17.0	7.4	6.2	11.2	42.0	460	150	0.80	0.35	0.100	0.260
R7	29-May-96	Sunny	18.4	7.17	8.7	54.0	21.2	5.1	8.0	99.0	800	130	19.00	8.50	0.230	NIL
R8	29-May-96	Sunny	15.4	7.05	0.5	34.1	14.2	5.8	12.0	9.0	290	100	0.50	0.26	NIL	0.003
R9	29-May-96	Sunny	16.0	7.22	1.6	22.7	16.4	6.7	12.4	7.0	175	50	0.65	0.24	NIL	0.008

Sampling Number	T-P mg/l	PO <sub>4</sub> -P mg/l	Oil mg/l	Heavy Metals													Pesticide	
				Al mg/l	Cu mg/l	Hg mg/l	Zn mg/l	Pb mg/l	Ni mg/l	Fe mg/l	As mg/l	Cr <sup>6+</sup> mg/l	Cd mg/l	Atrazine mg/l	Captan mg/l	Chlorpyrifos mg/l		
R1	0.052	0.004	20	NIL	NIL	ND	0.19	NIL	0.07	0.16	NIL	NIL	0.02	NIL	ND	ND	ND	
R2	0.060	0.030	17	NIL	NIL	ND	0.02	NIL	0.03	NIL	NIL	NIL	0.04	NIL	ND	ND	ND	
R3	0.080	0.030	23	NIL	NIL	ND	0.02	NIL	NIL	0.21	NIL	NIL	0.04	NIL	ND	ND	ND	
R4	0.122	0.052	20	NIL	NIL	ND	0.10	NIL	NIL	0.08	NIL	NIL	0.03	NIL	ND	ND	ND	
R5	0.274	0.140	20	NIL	NIL	ND	0.07	NIL	0.02	0.24	NIL	NIL	0.03	NIL	ND	ND	ND	
R6	0.370	0.134	16	1.86	NIL	ND	0.06	NIL	0.04	2.64	NIL	NIL	NIL	NIL	ND	ND	ND	
R7	3.800	1.000	12	NIL	NIL	ND	0.04	NIL	0.04	0.22	NIL	NIL	NIL	NIL	ND	ND	ND	
R8	0.058	0.024	NIL	NIL	NIL	ND	0.06	NIL	NIL	0.08	NIL	NIL	NIL	NIL	ND	ND	ND	
R9	0.052	0.024	3	NIL	NIL	ND	0.02	NIL	NIL	0.03	NIL	NIL	NIL	NIL	ND	ND	ND	

Table 3.5.47 Result of Water Quality Examination of Lakes and Dams (First Time)

Sampling Number	Sampling Date	Weather	Water Temp.	pH	T-COD <sub>Cd</sub>		S-COD <sub>Md</sub>		DO	SS	Cl <sup>-</sup>	EC	Hardness	T-N	NH <sub>4</sub> -N	NO <sub>3</sub> -N
					mg/l	mg/l	mg/l	mg/l								
L1U	28-May-96	Clear	19.0	7.18	16.2	15.0	15.2	15.2	5.9	15.5	8.0	110	30	0.50	0.13	0.064
L1L	28-May-96	Clear	17.5	7.07	18.9	17.0	9.6	9.6	5.7	7.0	8.0	111	60	0.60	0.13	0.007
L2U	28-May-96	Clear	16.5	7.11	16.2	16.2	11.4	11.4	6.2	5.0	8.0	111	40	0.75	0.15	0.004
L2L	28-May-96	Clear	16.5	7.00	16.2	16.2	7.6	7.6	6.0	2.8	8.0	107	40	0.40	0.13	0.007
L3U	29-May-96	Clear	16.5	7.17	27.0	27.0	22.6	22.6	4.1	8.4	42.0	400	150	0.50	0.30	0.065
L3L	29-May-96	Clear	17.2	7.18	27.0	27.0	18.4	18.4	4.0	6.4	42.0	420	100	0.50	0.26	0.058
L4U	29-May-96	Clear	18.2	7.35	32.0	22.0	20.0	20.0	4.01	4.4	46.0	430	100	0.65	0.15	0.030
L4L	29-May-96	Clear	21.6	7.33	27.0	27.0	14.0	14.0	3.98	4.8	44.0	430	130	0.50	0.13	0.038
L5U	29-May-96	Clear	21.0	7.47	16.0	16.2	19.4	19.4	4.2	4.0	44.0	410	150	0.60	0.10	0.028
L5L	29-May-96	Clear	22.1	7.54	27.0	16.2	6.4	6.4	4.3	5.2	44.0	430	120	0.50	0.09	0.025
L6U	5-Jun-96	Clear	19.1	7.50	17.0	17.0	15.2	15.2	6.3	2.4	23.0	270	130	0.80	0.13	0.007
L6L	5-Jun-96	Clear	18.8	7.51	28.4	24.0	22.6	22.6	7.1	3.0	23.0	250	100	0.70	0.13	0.008

Sampling Number	NO <sub>3</sub> -N	T-P	PO <sub>4</sub> -P	Oil	Heavy Metals										Pesticide		
					Al	Cu	Hg	Zn	Pb	Ni	Fe	As	Cr <sup>6+</sup>	Cd	Atrazine	Captan	Chlorpyrifos
L1U	0.022	0.084	0.014	4.0	NIL	NIL	ND	0.10	NIL	0.03	0.50	NIL	NIL	0.01	ND	ND	ND
L1L	0.013	0.060	0.014	4.0	NIL	NIL	ND	0.14	NIL	0.03	0.60	NIL	NIL	0.02	-	-	-
L2U	0.008	0.112	0.014	2.0	NIL	NIL	ND	0.09	NIL	NIL	0.21	NIL	NIL	0.02	ND	ND	ND
L2L	0.002	0.076	0.014	NIL	NIL	ND	0.18	NIL	NIL	NIL	0.21	NIL	NIL	-	-	-	-
L3U	NIL	0.250	0.176	33.0	NIL	NIL	ND	0.16	NIL	0.02	0.13	NIL	NIL	NIL	ND	ND	ND
L3L	NIL	0.230	0.180	NIL	NIL	ND	0.16	NIL	NIL	0.02	0.12	NIL	NIL	NIL	-	-	-
L4U	NIL	0.254	0.228	NIL	NIL	ND	0.12	NIL	NIL	0.04	0.12	NIL	NIL	0.03	ND	ND	ND
L4L	NIL	0.240	0.220	NIL	NIL	ND	0.13	NIL	NIL	0.03	0.08	NIL	NIL	NIL	-	-	-
L5U	0.056	0.270	0.240	49.0	NIL	NIL	ND	0.13	NIL	0.03	0.20	NIL	NIL	NIL	ND	ND	ND
L5L	NIL	0.290	0.216	14.0	NIL	ND	0.10	NIL	NIL	0.03	0.13	NIL	NIL	NIL	-	-	-
L6U	0.042	0.030	0.010	2.0	NIL	0.02	0.19	NIL	NIL	0.04	0.28	NIL	NIL	NIL	ND	ND	ND
L6L	NIL	0.058	0.008	11.0	NIL	ND	0.16	NIL	NIL	0.04	0.20	NIL	NIL	NIL	-	-	-

Table 3.5.48 Result of Water Quality Examination of Lakes and Dams (Second Time)

Sampling Number	Sampling Date	Weather	Water Temp.	pH	T-COD <sub>Cl</sub> mg/l	S-COD <sub>Cl</sub> mg/l	S-COD <sub>Cr</sub> mg/l	T-COD <sub>Cr</sub> mg/l	S-COD <sub>Mn</sub> mg/l	DO mg/l	SS mg/l	Cl <sup>-</sup> mg/l	EC uS/cm	Hardness	T-N mg/l	NH <sub>4</sub> -N mg/l	NO <sub>2</sub> -N mg/l
L1U	10-Jun-96	Sunny	16.5	6.48	11.4	11.2	7.4	7.3	7.3	5.5	4.70	6.0	124	30	0.90	0.200	0.014
L1L	10-Jun-96	Sunny	16.2	6.46	22.7	19.9	6.0	6.0	6.0	5.7	5.70	8.0	122	40	1.10	0.230	0.002
L2U	10-Jun-96	Sunny	17.2	6.54	28.4	22.7	10.0	9.7	9.7	5.9	0.30	8.0	115	40	0.14	0.180	0.004
L2L	10-Jun-96	Sunny	16.8	6.64	35.0	27.0	8.2	6.0	6.0	5.4	0.30	8.0	97	30	0.75	0.170	0.003
L3U	7-Jun-96	Sunny	18.0	6.90	17.0	17.0	18.4	7.8	7.8	5.0	2.40	36.0	410	140	0.32	0.260	0.048
L3L	7-Jun-96	Sunny	17.7	7.13	17.0	17.0	18.4	8.2	8.2	4.7	2.40	38.0	410	120	0.24	0.180	0.038
L4U	7-Jun-96	Sunny	17.9	7.10	28.4	17.0	10.0	9.1	9.1	4.8	4.00	39.0	425	120	0.24	0.150	0.054
L4L	7-Jun-96	Sunny	17.8	7.02	22.7	22.7	10.0	9.5	9.5	5.2	4.25	40.0	420	120	0.16	0.130	0.016
L5U	7-Jun-96	Sunny	19.6	7.22	28.4	22.7	11.2	9.1	9.1	5.5	3.40	38.0	420	120	0.75	0.130	0.018
L5L	7-Jun-96	Sunny	18.7	7.27	34.0	19.9	10.4	10.4	10.4	6.0	2.00	39.0	400	100	1.15	0.130	0.027

Sampling Number	NO <sub>3</sub> -N mg/l	T-P mg/l	PO <sub>4</sub> -P mg/l	Oil mg/l	Heavy Metals												
					Al mg/l	Cu mg/l	Hg mg/l	Zn mg/l	Pb mg/l	Ni mg/l	Fe mg/l	As mg/l	Cr <sup>6+</sup> mg/l	Cd mg/l			
L1U	0.049	0.060	0.020	19.0	NIL	NIL	ND	0.08	NIL	NIL	0.03	0.03	NIL	NIL	0.02	0.02	0.02
L1L	NIL	0.070	0.026	17.0	0.6	NIL	ND	0.08	NIL	NIL	0.06	0.28	NIL	NIL	0.02	0.02	0.02
L2U	0.079	0.048	0.014	17.0	NIL	NIL	ND	0.13	NIL	NIL	0.04	0.26	NIL	NIL	0.03	0.03	0.03
L2L	0.004	0.050	0.022	19.0	NIL	NIL	ND	0.10	NIL	NIL	0.04	0.20	NIL	NIL	0.02	0.02	0.02
L3U	NIL	0.310	0.184	18.0	NIL	NIL	ND	0.09	NIL	NIL	0.04	0.13	NIL	NIL	0.02	0.02	0.02
L3L	0.017	0.232	0.172	18.0	NIL	NIL	ND	0.08	NIL	NIL	0.03	0.13	NIL	NIL	0.02	0.02	0.02
L4U	0.006	0.216	0.180	26.0	NIL	NIL	ND	0.05	NIL	NIL	NIL	0.16	NIL	NIL	0.02	0.02	0.02
L4L	NIL	0.340	0.192	11.0	NIL	NIL	ND	0.07	NIL	NIL	NIL	0.13	NIL	NIL	0.02	0.02	0.02
L5U	0.029	0.236	0.196	12.0	NIL	NIL	ND	0.06	NIL	NIL	0.03	0.76	NIL	NIL	NIL	NIL	NIL
L5L	0.054	0.372	0.200	12.0	NIL	NIL	ND	0.07	NIL	NIL	0.04	0.66	NIL	NIL	0.01	0.01	0.01

Table 3.5.49 Result of Water Quality Examination of Factories

Sampling Number	Sampling Date	Weather	Water Temp.	pH	BOD mg/l	T-COD <sub>Cr</sub> mg/l	T-COD <sub>Mn</sub> mg/l	DO mg/l	SS mg/l	Cl <sup>-</sup> mg/l	EC uS/cm	Hardness	T-N mg/l	NH <sub>4</sub> -N mg/l
F1	24/5/96	Clear	19.0	5.20	6,200	2,565	638	2.2	88	57.0	455	150.0	30.00	1.40
F2	24/5/96	Clear	20.0	4.81	190	4,320	642	4.6	784	95.0	700	150.0	13.00	128.00
F3	24/5/96	Clear	35.0	6.12	280	1,080	390	2.3	176	533.0	2,550	100.0	2.30	3.60
F4	24/5/96	Clear	27.8	4.81	1,360	3,780	752	4.8	308	73.0	2,000	100.0	40.00	2.40
F5	24/5/96	Clear	45.0	6.02	380	270	134	2.8	445	1,227.0	4,600	300.0	20.00	6.80
F6	27/5/96	Clear	14.0	6.32	2,500	2,295	172	6.5	320	46.0	1,060	130.0	48.00	29.00
F7	12/6/96	Clear	22.3	6.80	320	511	97	4.8	120	59.0	1,000	130.0	36.00	26.00
F8	24/5/96	Clear	27.5	7.41	240	227	67	4.0	135	57.0	770	80.0	45.00	35.00
F9	24/5/96	Clear	18.0	6.17	440	2,565	600	2.9	270	77.0	1,990	150.0	28.00	5.80
F10	27/5/96	Clear	19.0	7.17	550	2,700	466	4.6	1,230	12.0	16,500	1,870.0	220.00	190.00
F11	24/5/96	Clear	16.0	8.14	120	405	162	1.9	480	267.0	2,580	160.0	12.00	0.30
F12	27/5/96	Clear	18.0	10.27	220	742	76	6.5	46	63.0	1,210	90.0	15.00	NIL
F13	27/5/96	Clear	16.0	4.50	100	338	72	6.0	200	17.0	450	160.0	10.00	2.08
F14	24/5/96	Clear	27.3	6.74	230	270	38	2.9	700	77.0	1,500	230.0	18.00	0.34
F15	24/5/96	Clear	28.6	9.11	240	270	160	4.0	325	69.0	2,200	150.0	17.00	1.60
F16	23/5/96	Clear	22.3	5.77	1,900	2,160	458	3.4	595	5,647.0	15,000	8,500.0	12.50	3.30
F17	23/5/96	Clear	32.0	4.95	900	1,620	714	2.9	182	187.0	145	250.0	29.00	17.50
F18	23/5/96	Clear	26.1	4.21	1,200	3,240	858	4.5	756	4,922.0	15,000	180.0	152.00	0.25
F19	23/5/96	Clear	30.0	2.59	8,800	17,324	1,774	2.6	2,980	2,447.0	20,000	900.0	340.00	0.30
F20	23/5/96	Clear	39.1	5.86	950	10,800	1,504	2.2	3,920	852.0	5,500	150.0	23.50	0.33
F21	23/5/96	Clear	21.7	6.09	260	1,176	53	6.2	136	236.0	1,510	200.0	31.00	19.00
F22	23/5/96	Clear	20.5	6.75	140	135	142	6.0	186	132.0	2,000	460.0	15.50	0.18
F23	23/5/96	Clear	19.5	7.98	120	270	104	3.0	154	92.0	800	160.0	28.00	38.00
F24	24/5/96	Clear	19.7	7.43	300	1,136	112	4.0	390	47.0	600	150.0	13.50	3.30
F25	23/5/96	Clear	22.5	8.93	100	135	142	4.3	45	52.0	1,400	130.0	42.00	0.42
F26	22/5/96	Clear	25.6	4.96	1,300	2,835	648	2.5	620	77.0	850	150.0	2.45	0.36
F27	22/5/96	Clear	19.5	6.47	220	270	220	3.3	131	104.5	770	100.0	33.00	22.50
F28	22/5/96	Clear	21.5	3.16	540	135	114	6.1	35	47.0	1,125	150.0	2.40	0.23

Table 3.5.49 Result of Water Quality Examination of Factories (cont'd)

Sampling Number	Sampling Date	Weather	Water Temp.	pH	BOD mg/l	T-COD <sub>Cr.</sub> mg/l	T-COD <sub>Mn.</sub> mg/l	DO mg/l	SS mg/l	Cl <sup>-</sup> mg/l	EC uS/cm	Hardness	T-N mg/l	NH <sub>4</sub> -N mg/l
F29	22/5/96	Clear	29.6	3.90	12,800	11,664	1,638	3.2	3,210	277.0	1,750	350.0	265.00	21.00
F30	22/5/96	Clear	21.5	7.00	240	540	458	6.2	258	89.5	950	150.0	60.00	53.00
F31	22/5/96	Clear	19.5	8.91	12	6	2	6.5	94	469.5	1,950	600.0	1.90	TR
F32	22/5/96	Clear	19.0	6.05	150	600	142	4.0	150	57.0	640	110.0	25.00	2.50
F33	22/5/96	Clear	19.5	7.50	120	250	20	5.0	120	70.0	1,125	150.0	31.00	3.60
F34	22/5/96	Clear	17.5	8.17	270	900	238	2.2	158	64.5	640	100.0	2.65	TR
F35	22/5/96	Clear	21.4	8.54	160	810	296	3.4	480	67.0	1,450	110.0	3.65	0.27
F36	21/5/96	Clear	17.5	6.13	2,275	9,720	1,672	3.7	498	247.0	3,000	400.0	38.00	31.00
F37	21/5/96	Clear	18.0	2.61	510	7,560	704	5.3	402	52.0	3,000	175.0	19.75	4.80
F38	21/5/96	Clear	16.8	6.20	170	2,700	200	6.0	49	67.0	550	175.0	6.60	4.80
F39	21/5/96	Clear	17.0	4.76	882	6,400	800	3.6	232	117.0	800	110.0	115.00	35.00
F40	21/5/96	Clear	17.4	6.43	1,012	8,640	172	4.0	69	189.2	850	136.0	6.30	0.47
F41	27/5/96	Clear	15.1	6.36	12	1,350	152	2.4	270	23.0	600	170.0	21.00	7.60
F42	27/5/96	Clear	14.2	6.37	220	1,620	234	5.6	430	110.0	895	140.0	73.00	40.00
F43	27/5/96	Clear	18.7	6.86	100	270	20	3.6	30	15.0	345	130.0	19.00	4.70
F44	27/5/96	Clear	14.2	7.02	260	2,700	194	5.8	22,130	23.0	450	160.0	1.00	0.34
F45	27/5/96	Clear	17.2	7.08	100	1,755	176	3.8	398	82.0	1,100	170.0	30.00	19.50

Table 3.5.49 Result of Water Quality Examination of Factories (cont'd)

Sampling Number	NO <sub>2</sub> -N mg/l	NO <sub>3</sub> -N mg/l	T-P mg/l	PO <sub>4</sub> -P mg/l	Oil mg/l	Heavy Metals									
						Al mg/l	Cu mg/l	Hg mg/l	Zn mg/l	Pb mg/l	Ni mg/l	Fe mg/l	As mg/l	Cr <sup>6+</sup> mg/l	Cd mg/l
F1	0.007	NIL	17.70	1.250	62.0	1.14	0.24	ND	0.60	0.12	0.02	2.26	NIL	NIL	NIL
F2	0.950	4.300	2.40	0.450	36.0	1.57	0.06	ND	1.78	0.21	0.02	2.94	1.43	NIL	NIL
F3	NIL	1.500	0.08	0.007	92.0	1.86	0.03	ND	1.32	0.18	0.05	2.64	NIL	NIL	NIL
F4	NIL	NIL	16.70	2.450	17.0	0.86	0.06	ND	0.12	0.06	0.09	2.86	1.21	NIL	NIL
F5	0.009	NIL	8.50	1.125	12.0	1.00	0.17	ND	0.19	0.21	0.02	1.34	NIL	NIL	NIL
F6	NIL	NIL	9.80	5.900	NIL	0.71	0.06	ND	1.22	0.12	0.07	0.53	NIL	NIL	NIL
F7	NIL	NIL	12.60	7.500	15.0	NIL	NIL	ND	0.19	NIL	0.04	0.22	NIL	NIL	0.03
F8	NIL	NIL	4.60	1.500	25.0	NIL	NIL	ND	0.10	NIL	0.05	0.10	NIL	NIL	0.01
F9	TR	NIL	5.70	0.425	33.0	8.57	0.81	20.00	0.34	1.26	0.02	1.18	NIL	1.84	NIL
F10	NIL	NIL	3.90	0.210	27.0	1.43	0.12	ND	1.35	0.21	0.20	0.44	NIL	60.00	0.004
F11	0.006	NIL	1.50	0.150	14.0	10.29	0.30	ND	0.70	0.36	0.19	1.14	NIL	0.20	NIL
F12	0.020	NIL	1.10	0.016	6.0	75.00	0.01	ND	0.64	0.12	0.07	0.71	0.99	0.40	NIL
F13	0.016	NIL	1.00	0.010	3.0	2.29	0.03	ND	13.80	1.26	0.09	30.51	NIL	NIL	NIL
F14	0.003	NIL	46.20	1.200	4.0	NIL	0.07	ND	14.00	0.18	6.55	2.86	1.10	NIL	NIL
F15	0.012	NIL	14.10	1.250	29.0	1.71	0.12	ND	0.45	0.39	0.20	3.29	NIL	NIL	NIL
F16	TR	NIL	17.70	1.440	193.0	0.71	0.17	8.00	0.43	0.63	0.19	1.60	1.21	NIL	0.005
F17	NIL	NIL	14.70	0.520	9.0	0.57	0.21	ND	0.16	0.30	0.09	3.76	NIL	NIL	NIL
F18	0.540	TR	50.60	33.600	24.0	0.57	0.52	14.67	0.51	0.48	0.28	2.54	0.77	NIL	0.006
F19	NIL	NIL	112.00	19.200	1,516.0	2.29	0.08	12.00	10.27	0.54	0.19	10.39	NIL	NIL	0.13
F20	TR	NIL	11.30	0.880	2,248.0	1.29	1.11	7.33	0.22	0.24	0.20	4.90	0.88	NIL	0.002
F21	NIL	NIL	14.40	12.400	30.0	NIL	0.03	ND	0.96	NIL	0.03	1.17	NIL	NIL	NIL
F22	0.110	16.000	0.55	0.072	16.0	12.86	0.09	ND	7.40	0.18	0.02	2.56	0.66	6.52	NIL
F23	NIL	NIL	4.70	1.840	28.0	NIL	1.63	ND	0.42	0.18	NIL	0.99	0.77	0.12	NIL
F24	NIL	NIL	6.30	0.800	176.0	0.71	0.04	ND	0.88	NIL	NIL	1.32	NIL	NIL	NIL
F25	0.017	NIL	0.26	0.200	17.0	0.86	0.07	ND	0.28	0.36	0.05	3.71	0.66	NIL	NIL
F26	TR	NIL	24.60	12.200	74.0	NIL	0.08	ND	0.01	12.81	0.05	0.57	NIL	NIL	NIL
F27	NIL	NIL	5.30	1.840	54.0	0.43	0.07	ND	0.04	NIL	0.09	0.83	NIL	NIL	NIL
F28	0.024	56.000	4.20	1.300	37.0	NIL	0.07	14.67	0.07	0.18	0.05	0.79	NIL	NIL	NIL

Table 3.5.49 Result of Water Quality Examination of Factories (cont'd)

Sampling Number	NO <sub>2</sub> -N mg/l	NO <sub>3</sub> -N mg/l	T-P mg/l	PO <sub>4</sub> -P mg/l	Oil mg/l	Heavy Metals										
						Al mg/l	Cu mg/l	Hg mg/l	Zn mg/l	Pb mg/l	Ni mg/l	Fe mg/l	As mg/l	Cr <sup>6+</sup> mg/l	Cd mg/l	
F29	NIL	4.000	131.00	26.400	1,017.0	NIL	0.13	ND	0.61	0.27	0.19	2.19	0.66	NIL	NIL	
F30	NIL	NIL	6.20	4.600	418.0	1.14	0.08	ND	0.12	0.21	0.02	0.90	NIL	NIL	NIL	
F31	0.006	1.200	0.31	0.216	28.0	0.43	0.04	11.33	NIL	0.24	0.10	0.60	NIL	NIL	NIL	
F32	NIL	1.800	1.20	0.720	54.0	NIL	0.07	ND	0.76	0.24	0.34	2.99	1.32	NIL	NIL	
F33	NIL	NIL	1.00	1.500	17.0	NIL	0.01	ND	0.04	0.18	0.03	0.51	NIL	NIL	NIL	
F34	NIL	2.600	10.00	5.600	77.0	0.86	0.15	ND	0.21	0.15	0.10	1.76	NIL	NIL	NIL	
F35	NIL	3.600	53.20	15.200	99.0	2.57	0.22	ND	0.30	0.33	0.07	5.11	NIL	NIL	NIL	
F36	NIL	NIL	6.20	4.800	49.0	37.00	0.21	ND	0.45	0.36	0.14	6.47	NIL	NIL	NIL	
F37	NIL	NIL	9.60	4.800	30.0	1.14	0.20	ND	0.57	84.20	0.05	7.57	NIL	NIL	NIL	
F38	NIL	NIL	0.65	0.236	32.0	NIL	0.01	ND	0.24	0.99	0.03	1.43	NIL	NIL	NIL	
F39	NIL	NIL	2.88	0.880	37.0	NIL	0.01	ND	0.19	0.24	0.03	0.51	0.88	NIL	NIL	
F40	NIL	NIL	0.69	0.112	25.0	0.71	0.10	ND	0.41	0.57	0.10	1.19	0.88	NIL	NIL	
F41	NIL	NIL	2.40	1.600	23.0	6.43	0.03	ND	2.14	0.18	0.05	7.76	NIL	NIL	NIL	
F42	NIL	NIL	5.70	3.500	34.0	0.43	0.13	ND	1.02	0.18	0.02	1.14	NIL	NIL	NIL	
F43	NIL	NIL	1.10	0.660	20.0	1.57	0.02	ND	0.53	0.18	0.05	0.86	NIL	NIL	NIL	
F44	NIL	NIL	0.70	0.020	22.0	16.86	0.13	ND	1.45	12.33	0.02	3.29	NIL	0.12	NIL	
F45	NIL	NIL	13.90	0.028	142.0	2.43	0.35	14.67	1.47	2.73	0.05	5.14	NIL	0.32	0.002	



Table 3.5.50 Result of Water Quality Examination of STWs

Sampling Number	Sampling Date	Weather	Water Temp.	BOD mg/l	DO mg/l	T-COD <sub>Cr</sub> mg/l	T-COD <sub>Mn</sub> mg/l	pH	SS mg/l	Cl <sup>-</sup> mg/l	EC uS/cm	Hardness	T-N mg/l	NH <sub>4</sub> -N mg/l
T1	31-May-96	Sunny	21.2	1300	3.1	1136.0	181.0	6.62	660.0	97.0	845	170	50.0	39.0
T2	31-May-96	Sunny	21.3	210	5.0	653.0	103.6	6.76	210.0	113.0	1,050	150	57.0	30.0
T3	31-May-96	Sunny	19.6	8	7.1	56.8	13.0	7.17	5.0	83.0	830	130	1.4	NIL
T4	31-May-96	Sunny	19.5	610	2.8	1490.0	168.4	6.74	180.0	141.0	1,120	180	53.0	39.5
T5	31-May-96	Sunny	19.5	115	2.3	454.0	77.8	7.10	40.0	97.0	980	210	30.0	20.5
T6	31-May-96	Sunny	17.0	9	6.0	107.0	14.0	7.68	1.0	97.0	850	200	1.0	NIL
T7	30-May-96	Sunny	18.0	1120	2.7	1562.0	242.0	7.06	204.0	111.0	995	170	50.0	42.0
T8	30-May-96	Sunny	15.5	105	12.8	284.0	99.4	7.49	90.0	63.0	1,300	130	62.0	63.0
T9	22-May-96	Sunny	19.0	520	1.5	1080.0	418.0	6.92	300.0	110.0	1,250	160	115.0	64.0
T10	22-May-96	Sunny	18.0	130	3.8	540.0	266.0	7.21	134.0	114.5	1,300	160	119.0	70.0
T11	6-Jun-96	Sunny	20.6	540	0.8	767.0	142.0	6.95	290.0	80.0	855	190	47.0	33.5
T12	6-Jun-96	Sunny	18.5	30	5.1	233.0	84.0	7.10	76.0	67.0	810	200	29.0	9.4
T13	30-May-96	Sunny	18.9	260	2.8	284.0	86.4	7.13	70.0	61.0	820	120	32.0	23.0
T14	30-May-96	Sunny	16.0	55	13.5	142.0	73.4	7.28	31.0	51.0	600	150	21.0	13.5

Sampling Number	NO <sub>3</sub> -N mg/l	NO <sub>2</sub> -N mg/l	T-P mg/l	PO <sub>4</sub> -P mg/l	Oil mg/l	Heavy Metals										
						Al mg/l	Cu mg/l	Hg mg/l	Zn mg/l	Pb mg/l	Ni mg/l	Fe mg/l	As mg/l	Cr <sup>6+</sup> mg/l	Cd mg/l	
T1	NIL	NIL	4.800	1.10	113.0	NIL	NIL	ND	0.04	NIL	0.03	0.04	NIL	NIL	NIL	
T2	NIL	NIL	5.300	3.90	16.0	1.86	0.06	ND	0.05	NIL	0.04	2.09	NIL	NIL	NIL	
T3	0.37	4.6	1.480	0.80	3.0	NIL	0.05	ND	0.12	NIL	0.04	1.26	NIL	NIL	NIL	
T4	NIL	NIL	5.000	4.30	30.0	NIL	NIL	ND	0.10	0.77	NIL	0.80	NIL	NIL	NIL	
T5	NIL	NIL	5.700	2.40	7.0	NIL	0.05	ND	0.02	NIL	NIL	0.12	NIL	NIL	NIL	
T6	0.03	3.1	0.008	NIL	7.0	0.86	0.02	ND	0.04	NIL	NIL	2.42	NIL	NIL	0.02	
T7	0.10	NIL	1.880	1.80	27.0	NIL	NIL	ND	0.03	NIL	0.04	0.37	NIL	NIL	0.02	
T8	0.49	NIL	9.400	7.50	6.0	NIL	0.03	ND	0.04	NIL	0.03	0.20	NIL	NIL	0.03	
T9	NIL	NIL	17.400	10.00	53.0	0.57	0.06	ND	0.08	NIL	0.03	1.16	NIL	NIL	NIL	
T10	NIL	NIL	16.600	10.00	27.0	0.86	0.10	ND	0.25	0.24	0.02	1.83	NIL	NIL	NIL	
T11	NIL	NIL	4.600	2.70	27.0	3.13	0.11	ND	0.58	0.18	0.02	1.39	NIL	NIL	NIL	
T12	0.26	NIL	7.600	4.50	13.0	NIL	0.07	ND	0.03	NIL	0.03	0.20	NIL	NIL	NIL	
T13	NIL	NIL	2.520	1.92	24.0	0.86	0.07	ND	0.03	2.61	NIL	1.26	NIL	NIL	0.04	
T14	0.24	NIL	2.160	1.20	2.0	NIL	0.03	ND	0.08	0.61	NIL	0.26	NIL	NIL	NIL	

Table 3.5.51 Result of Water Quality Examination of Wells

Sampling Number	Sampling Date	Weather	Water Temp.	pH	T-COD <sub>Cr</sub>	T-COD <sub>Mn</sub>	DO	SS	Cl <sup>-</sup>	EC	Hardness	T-N	NH <sub>4</sub> -N	NO <sub>2</sub> -N	NO <sub>3</sub> -N
					mg/l	mg/l									
W1	4-Jun-96	Sunny	24.0	-	1.4	4.8	4.5	2.9	72.0	750	270	1.50	NIL	TR	0.170
W2	4-Jun-96	Sunny	18.4	7.02	5.7	NIL	5.8	0.5	13.0	300	130	1.35	NIL	NIL	0.080
W3	4-Jun-96	Sunny	23.3	6.49	17.0	2.2	1.1	0.1	36.0	510	200	1.20	NIL	0.008	0.097
W4	4-Jun-96	Sunny	21.0	7.01	5.7	NIL	3.4	4.7	54.0	770	300	1.20	NIL	STR	0.200
W5	4-Jun-96	Sunny	20.8	6.85	28.4	4.8	3.4	52.2	15.0	255	120	1.35	0.060	NIL	0.140

Sampling Number	T-P	PO <sub>4</sub> -P	Oil	Heavy Metals										Pesticide				
				Al	Cu	Hg	Zn	Pb	Ni	Fe	As	Cr <sup>6+</sup>	Cd	Atrazine	Captan	Chlorpyrifos		
W1	0.098	0.036	14.0	1.14	NIL	ND	0.12	NIL	1.21	NIL	1.21	NIL	NIL	NIL	NIL	ND	ND	ND
W2	0.054	0.014	2.0	NIL	NIL	ND	0.13	NIL	0.76	NIL	0.76	NIL	NIL	NIL	NIL	ND	ND	ND
W3	0.046	0.008	2.0	NIL	NIL	ND	0.13	NIL	0.81	NIL	0.81	NIL	NIL	NIL	NIL	ND	ND	ND
W4	0.104	0.032	2.0	NIL	NIL	ND	0.15	NIL	0.66	NIL	0.66	NIL	NIL	0.01	NIL	ND	ND	ND
W5	0.126	0.032	NIL	NIL	NIL	ND	0.10	NIL	0.95	NIL	0.95	NIL	NIL	0.03	NIL	ND	ND	ND

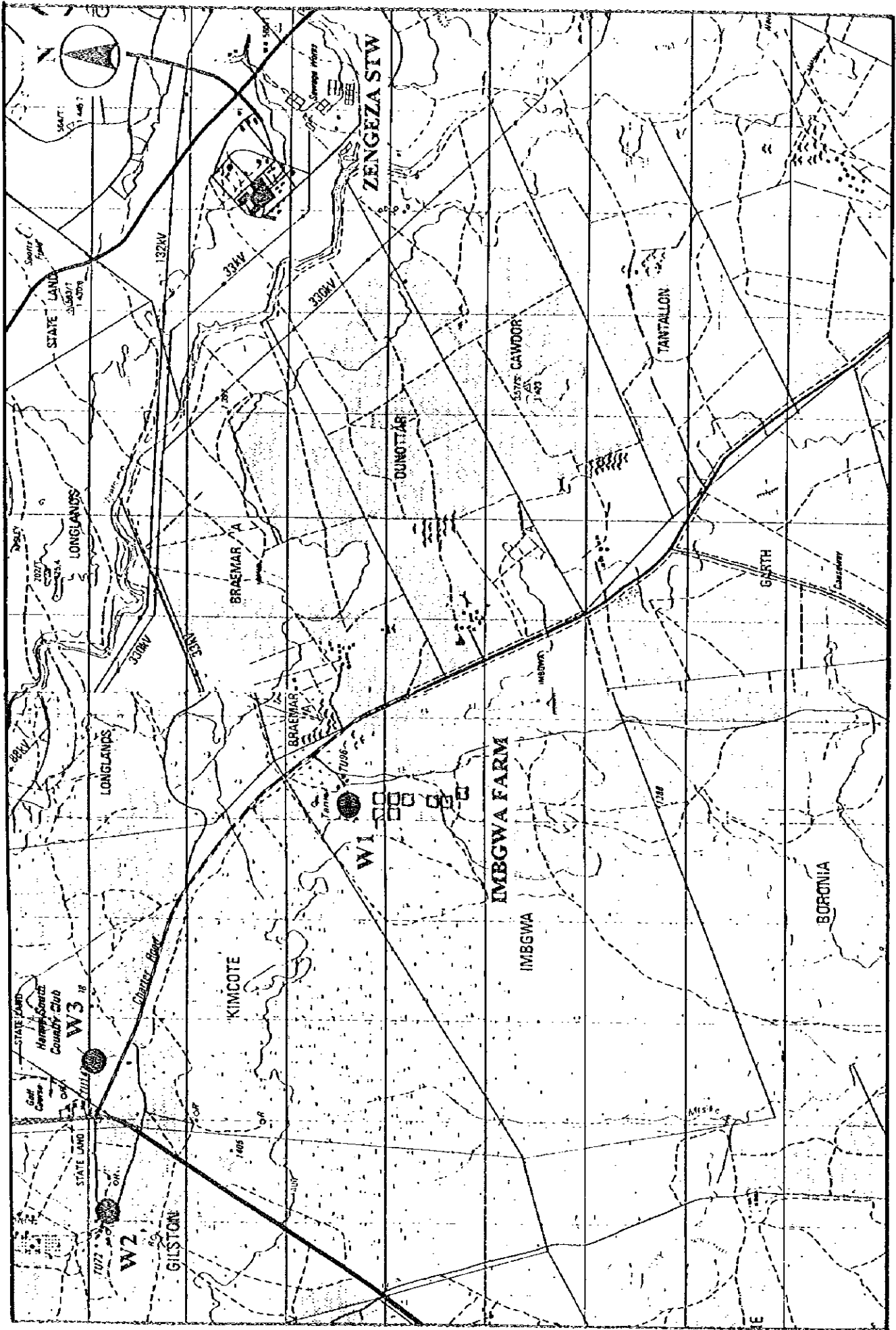


Figure 3.5.2 Well Water Sampling Point (1) S = 1/50,000

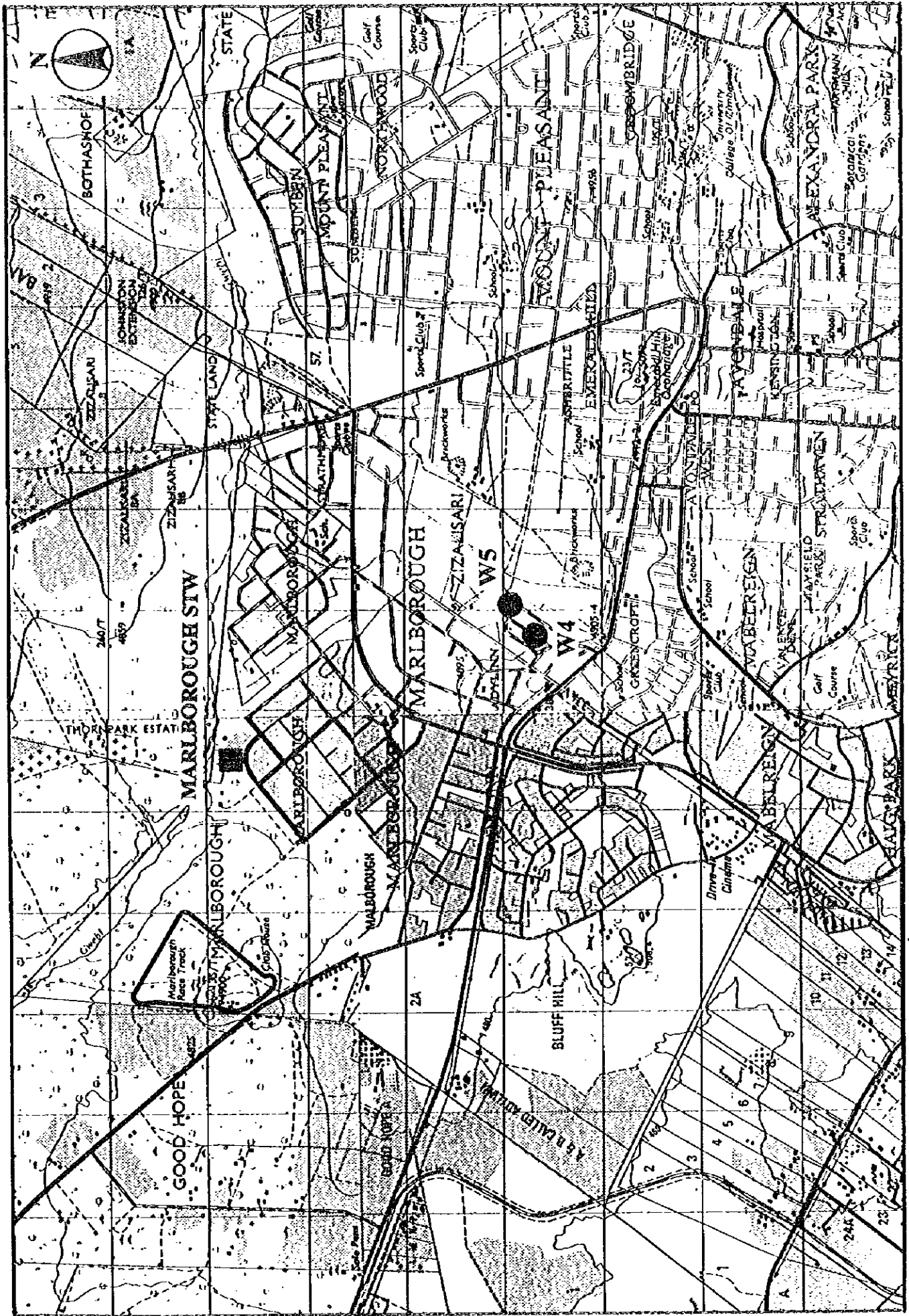


Figure 3.5.3 Well Water Sampling Point (2) S = 1/50,000



SECTION 7 WATER USE AND HYDROLOGICAL CONDITIONS OF THE WATER BODY THROUGH THE FUTURE

7.2 Hydrological Condition of the Rivers and Lakes

Table 7.2.1 Rainfall Observation Stations

Observation Station	Location		GL. above seawater level (m)	Observation Period
	South	East		Commencement Year
Kanyemba	15° 39'	30° 20'	340	1988-05-01
Banket Res. Station	17° 19'	30° 24'	1,244	1967-10-01
Chinhoyi	17° 22'	30° 13'	1,143	1928-08-01
Guruve	16° 39'	30° 42'	1,177	1931-07-01
Harare Belvedere	17° 50'	31° 01'	1,471	1897-04-01
Harare Airport	17° 55'	31° 06'	1,497	1956-07-01
Mvurwi	17° 02'	30° 51'	1,481	1961-11-02
Harare Kutsaga	17° 55'	31° 08'	1,479	1953-11-24
Rattray Arnold Res. Stn.	17° 40'	31° 13'	1,341	1980-12-01
Harare Res. Station	17° 48'	31° 03'	1,506	1964-10-01
Marondera Res. Stn. Irri.	18° 11'	31° 28'	1,631	1932-07-18

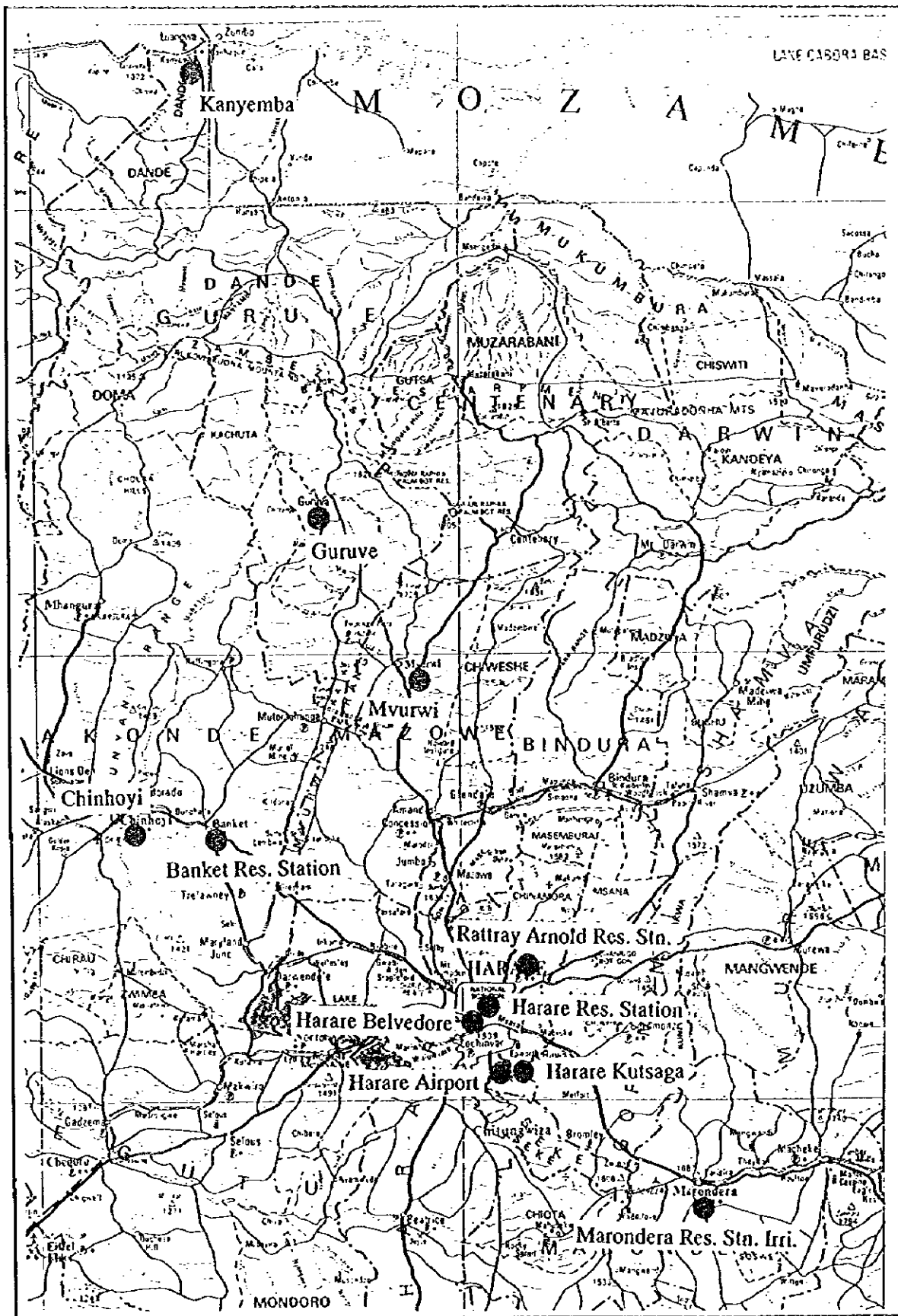


Figure 7.2.1 Location of Rainfall Observation Stations

Table 7.2.2 Monthly Rainfall

Unit: mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1963	196.6	348.2	49.5	52.1	0.0	0.0	0.0	0.0	0.0	162.6	14.7	91.4	915.1
1964	132.1	208.3	8.4	5.6	5.8	1.3	0.0	3.0	0.0	26.9	61.5	436.4	889.3
1965	283.7	52.1	26.7	0.0	0.8	0.0	0.0	0.0	13.5	23.9	89.9	197.1	687.7
1966	89.9	249.2	70.1	106.9	49.3	8.1	0.0	0.5	10.4	0.0	52.3	117.9	754.6
1967	248.2	234.2	102.9	4.3	2.8	11.4	0.0	63.0	1.3	28.2	49.3	141.7	887.3
1968	203.7	126.7	24.1	33.0	2.0	1.5	0.0	0.5	0.0	1.0	120.7	169.4	682.6
1969	187.5	61.0	108.5	161.3	3.8	0.0	0.0	0.0	17.3	148.8	22.4	428.2	1,138.8
1970	83.6	37.3	20.3	46.2	0.0	0.0	0.0	0.0	0.8	14.2	247.7	94.7	544.8
1971	132.3	129.8	59.9	42.2	34.3	1.8	0.0	0.0	10.6	45.5	98.3	103.9	658.6
1972	352.3	149.6	147.8	60.3	22.4	0.0	4.9	0.0	30.3	5.7	68.4	38.1	879.8
1973	193.4	22.8	106.5	24.5	2.4	0.0	0.4	0.0	4.7	52.0	214.3	309.0	930.0
1974	141.8	324.0	111.3	29.7	31.8	0.5	44.0	6.4	1.6	15.2	246.5	294.0	1,246.8
1975	115.2	348.4	44.5	67.7	0.0	0.5	0.0	0.0	0.1	47.5	51.3	111.7	786.9
1976	265.0	107.8	126.4	34.5	20.0	0.0	0.0	0.0	0.0	40.6	69.6	192.1	856.0
1977	101.8	385.4	286.2	16.2	0.0	0.0	0.0	2.6	29.0	14.8	108.7	160.0	1,104.7
1978	280.7	246.3	292.6	52.1	0.4	0.0	3.0	0.0	0.0	69.5	70.2	173.7	1,188.5
1979	161.7	67.0	94.5	11.6	0.0	0.0	0.0	0.5	0.0	14.3	157.5	245.0	752.1
1980	102.5	93.7	56.4	27.6	2.5	0.0	0.2	0.0	23.5	58.0	97.6	154.6	616.6
1981	140.8	394.5	178.9	46.4	1.5	0.0	0.0	0.0	15.6	64.3	63.9	157.8	1,063.7
1982	138.2	185.2	48.9	41.2	18.8	2.0	0.5	0.0	0.0	60.8	25.2	105.0	625.8
1983	115.9	57.0	66.5	5.3	4.3	3.7	4.6	1.8	0.0	18.4	41.3	126.8	445.6
1984	115.8	124.8	138.3	4.8	15.2	0.0	2.0	0.0	9.2	24.1	116.1	158.1	708.4
1985	379.1	170.8	172.8	2.1	1.2	0.0	8.3	0.0	5.3	50.7	28.5	274.8	1,093.6
1986	254.1	211.9	86.5	68.3	0.0	0.0	0.0	0.1	0.0	46.7	78.5	158.8	904.9
1987	122.9	115.7	68.4	0.0	2.4	0.0	0.0	0.0	2.0	18.2	0.5	326.6	656.7
1988	202.1	183.3	179.2	42.8	0.0	22.0	0.0	0.0	0.0	68.4	87.4	87.5	872.7
1989	246.7	205.4	66.6	15.6	0.0	0.0	0.0	7.9	0.0	0.0	114.7	50.3	707.2
1990	386.8	193.8	78.6	81.0	0.6	0.0	0.0	0.0	0.6	6.5	101.3	161.2	1,010.4
1991	153.0	156.4	94.3	0.6	0.8	0.0	0.0	0.0	3.0	38.5	73.4	180.2	700.2
1992	62.2	25.3	110.5	89.3	4.3	4.9	0.0	0.0	0.0	1.1	24.6	201.3	523.5
1993	158.9	321.2	134.0	65.2	0.0	0.0	0.4	3.8	6.2	19.5	123.5	158.6	991.3
1994	226.7	155.8	46.7	21.4	0.0	0.0	0.0	4.8	0.0	106.0	23.8	132.3	717.5
Average	186.7	177.9	100.2	39.4	7.1	1.8	2.1	3.0	5.8	40.4	85.7	179.3	829.4



**Table 7.2.3 (1) Monthly Run-off**

Manyame River Unit; x1000 m<sup>3</sup> / month

C81	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	23200	26700	12600	5330	1540	581	474	151	101	55	62	560	5946
1986	24900	25000	12700	12600	4370	1870	1150	440	178	99	35	1530	7073
1987	7010	5000	2740	634	231	129	139	144	189	154	3	415	1399
1988	6820	8890	15600	4700	2520	475	724	90	37	81	46	4090	3673
1989	6760	35700	14400	5540	2470	813	243	219	135	108	102	169	5555
1990	5160	26200	8730	9450	2780	1050	409	184	118	199	96	230	4551
1991	428	559	536	211	106	87	88	47	41	39	93	120	196
1992	81	13	25	13	6	0	0	0	0	0	226	29	33
1993	215	471	1320	1920	161	34	4	20	4	0	38	143	361
1994	6130	8360	3750	462	510	168	65	48	9	39	7	38	1632
Ave.	8070	13689	7240	4086	1469	521	330	134	81	77	71	732	3042

**Table 7.2.3 (2) Monthly Run-off**

Manyame River Unit; x1000 m<sup>3</sup> / month

C21	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	39700	79400	49700	12300	3740	1360	1120	434	179	92	447	8350	16402
1986	65200	70600	36200	39500	14800	6190	3030	1200	561	865	316	6920	20449
1987	14800	9350	3200	1420	93	0	0	0	0	0	0	9150	3168
1988	11900	29100	49100	10700	4100	1630	951	263	25	482	179	7880	9693
1989	1850	4380	72100	28700	11400	2850	1420	630	121	179	350	145	10344
1990	22300	60400	28200	15800	5740	2610	1430	739	297	51	426	1330	11610
1991	1850	4550	1510	354	145	32	0	0	0	0	1750	2010	1017
1992	1020	533	1570	124	1200	42	38	0	0	0	0	1700	519
1993	4060	11600	3920	5340	983	0	0	0	0	0	51	1740	2308
1994	16000	18000	8790	1190	765	272	285	133	96	409	337	603	3907
Ave.	17868	28791	25429	11543	4297	1499	827	340	128	208	386	3983	7941

**Table 7.2.3 (3) Monthly Run-off**

Mukuvisi River Unit; x1000 m<sup>3</sup> / month

C22	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	17900	16700	8860	2380	1360	1270	1140	639	588	778	786	4810	4768
1986	15100	15700	6220	5850	2300	1320	1090	913	650	912	825	4470	4613
1987	3760	2270	2470	979	495	834	483	592	377	590	422	6610	1657
1988	8200	7560	15300	3500	2170	1740	1780	1320	891	1890	1880	3060	4108
1989	4160	12300	7840	3900	1710	1490	1220	1490	1390	1360	1980	1900	3395
1990	14200	16600	5120	6730	3710	2250	1740	1770	1930	1960	2360	1590	4997
1991	0	0	0	0	0	0	0	0	0	2090	2430	4270	733
1992	2680	2280	2730	2140	3360	1620	1670	1290	1190	2050	1990	3380	2198
1993	4860	10800	6790	4190	2870	1410	1910	1860	2010	1770	2070	4470	3751
1994	9300	10200	9060	1860	1420	1480	1520	1560	1440	2270	2370	5200	3973
Ave.	8016	9441	6439	3153	1940	1341	1255	1143	1047	1567	1711	3976	3419

**Table 7.2.3 (4) Monthly Run-off**

Marimba River Unit: x1000 m<sup>3</sup> / month

C24	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	8410	14400	6210	1450	439	440	318	310	231	196	375	3790	3047
1986	17100	18400	4240	3840	1140	719	746	588	326	347	287	1770	4125
1987	2320	1940	855	356	295	304	431	350	290	230	103	2450	827
1988	5990	7230	9030	1370	840	682	757	526	300	103	129	304	2272
1989	3330	18000	5250	1510	665	661	741	721	412	305	477	713	2732
1990	878	905	1130	2080	1180	732	782	667	417	231	369	1260	886
1991	3210	2750	1100	387	350	449	492	403	288	502	656	1550	1011
1992	798	290	892	755	673	760	972	741	622	393	419	691	667
1993	1750	3720	1980	1340	873	638	616	332	342	377	717	2720	1284
1994	8150	4640	1890	666	543	386	676	699	203	943	976	2150	1827
Ave.	5194	7228	3258	1375	700	577	653	534	343	363	451	1740	1868

**Table 7.2.3 (5) Monthly Run-off**

Seke Dam Unit: x1000 m<sup>3</sup> / month

C3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	36100	66100	43300	8450	1200	195	144	0	10	0	0	769	13022
1986	52900	54200	26800	25000	10800	2460	1210	92	16	0	0	0	14457
1987	18400	11600	2160	707	37	22	50	105	0	26	22	136	2772
1988	1130	20100	37900	8180	2070	138	8	0	0	3	4	11	5795
1989	51	68000	24000	6280	1480	85	0	0	0	0	160	79	8345
1990	34	23600	10900	11900	1850	29	23	2	1060	448	16	0	4155
1991	202	0	90	25	6	38	22	0	686	84	78	449	140
1992	36	37	59	6	3	9	0	0	0	0	0	3	13
1993	15	27	2	0	0	0	0	15	0	46	4	2	9
1994	7	13500	5860	161	0	0	0	0	0	11	19	7	1630
Ave.	10888	25716	15107	6071	1745	298	146	21	177	62	30	146	5034

**Table 7.2.3 (6) Monthly Run-off**

Lake Chivero Unit: x1000 m<sup>3</sup> / month

C17	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	0	4760	8510	763	1	0	0	0	0	0	0	0	1170
1986	7740	13700	5150	5300	957	235	17	0	0	0	0	0	2758
1987	943	520	0	0	0	0	0	0	0	0	0	0	122
1988	0	11300	40500	13100	149	0	0	0	0	0	0	0	5421
1989	0	11000	6230	2650	297	0	0	0	0	0	0	0	1681
1990	48	12100	4870	8730	2470	80	0	0	0	0	0	0	2358
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	16	0	0	1
Ave.	873	5338	6526	3054	387	32	2	0	0	2	0	0	1351

**Table 7.2.3 (7) Monthly Run-off**

Lake Manyame Unit: x1000 m<sup>3</sup> / month

C89	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1985	621	41	17	-	775	5270	4720	7950	8620	6010	3030	7230	4026
1986	-	-	-	77300	16100	2320	2950	8420	9070	6610	4000	3580	14483
1987	4620	180	5770	3880	9640	9640	9340	10800	8120	5210	10700	3310	6768
1988	2290	782	128	537	5770	7760	8470	11100	8000	6230	8200	2120	5116
1989	1430	197	-	-	-	-	-	-	-	-	-	-	814
1990	-	-	687	23700	9870	6180	5820	5440	4650	4030	3380	3710	6747
1991	955	755	836	785	3580	2920	3670	3830	3980	2730	2700	2180	2410
1992	1720	1650	1180	1280	2090	2050	2680	2650	2600	2960	2790	2110	2147
1993	473	474	251	43	21	2830	2540	3050	3430	2710	2210	2290	1694
1994	1630	250	1110	1290	3100	3000	3180	3240	3020	2080	1620	4010	2294
Ave.	1717	541	1247	13602	5661	4663	4819	6276	5721	4286	4292	3393	4650

**Table 7.2.4 Change of Storage Volume in Lakes**

Unit: x 10<sup>6</sup> m<sup>3</sup>/year

	Yearly										Average	
	85	86	87	88	89	90	91	92	93	94	85/94	90/94
Lake Chivero	143	27	-105	73	-3	8	-5	-88	28	30	10.8	-5.4
Lake Manyame	284	0	-172	104	56	-16	-144	-96	-28	-56	-6.8	-68







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