

APPENDIX V

PHYSICO-CHEMICAL CHARACTERISTICS OF WATER SAMPLES COLLECTED FROM GRACE LAKE DURING 1977-78. All values are in g/m³ unless otherwise indicated. "NA" means analysis not done. Asterisk means concentration of dissolved metals.

[illegible]

APPENDIX V (continued)

CHARACTERISTICS	DATE	22/06/78	22/06/78	01/08/78	01/08/78	01/08/78	24/08/78	24/08/78	24/08/78
STATION		2	3	1	2	3	1	2	3
DEPTH (m)		0	0	0	0	0	0	0	0
Arsenic (Total)		0.048	0.048	<0.015	<0.018	0.015	0.005	0.010	0.016
Mercury (mg/m ³) (Total)		0.5	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Total)		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Copper (Total)		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lead (Total)		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc (Total)		0.02	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Cadmium (Total)		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002
Cobalt (Total)		<0.05	<0.05	<0.05	<0.05	<0.05	0.04	0.05	0.03
Iron (Total)		0.09	0.13	<0.03	0.04	0.03	0.08	0.04	0.05
Manganese (Total)		0.03	0.03	<0.02	<0.02	<0.02	NA	NA	NA
Magnesium (Total)		4.8	4.7	4.5	4.6	4.9	5.8	5.8	5.5
Calcium (Dissolved)		18	14	11	10	11	NA	NA	NA
Sodium (Dissolved)		5.2	5.0	4.2	4.4	4.7	NA	NA	NA
Potassium (Dissolved)		2.2	1.8	17	18	18	NA	NA	NA
Total Alkalinity		32	34	42	44	36	42	40	42
Total Hardness		51	51	66	68	64	60	62	64
Silica (Reactive)		NA	NA	NA	NA	NA	NA	NA	NA
pH		NA	NA	NA	NA	NA	NA	NA	NA
Nitrite (Dissolved)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate (Dissolved)		<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01
Total Phosphorus (Dissolved)		0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chloride (Dissolved)		9.4	6.9	6.5	6.5	7.3	7.3	7.3	7.3
Sulfate (Dissolved)		20	19	15	15	17	16	15	16
Total Carbon		23	21	21	8	13	24	22	23
Inorganic Carbon		6	7	21	8	13	9	9	11
Organic Carbon		17	14	22	8.5	13.5	15	13	12
Specific Conductance (µmho/cm)		NA	NA	151	116	116	144	144	144
Secchi disc (m)		2.0	2.0	2.0	NA	2.5	2.0	2.0	2.0
Temperature (°C)		14	14	17	17	17	15	15	15

APPENDIX V (continued)

CHARACTERISTICS	DATE	20/09/78	20/09/78	16/01/79	27/02/79	30/04/79
	STATION	1	3	2	2	2
	DEPTH (m)	0	0	0	0	0
Arsenic (Total)		0.016	0.019	0.027	0.013	0.005
Mercury (mg/m ³) (Total)		<0.2	<0.2	<0.2	0.2	NA
Nickel (Total)		<0.03	<0.03	0.06	0.03	0.03
Copper (Total)		<0.02	<0.02	<0.02	0.02	0.02
Lead (Total)		<0.005	<0.005	0.008	0.009	0.005
Zinc (Total)		<0.01	<0.01	0.07	0.01	0.01
Cadmium (Total)		<0.002	<0.002	<0.002	0.002	0.002
Cobalt (Total)		<0.05	<0.05	<0.05	0.05	0.05
Iron (Total)		0.04	0.04	0.13	0.02	0.08
Manganese (Total)		NA	NA	0.17	0.02	0.02
Magnesium (Total)		6.1	5.5	6.5	5.3	5.7
Calcium (Dissolved)		NA	NA	17	17.1	15.8
Sodium (Dissolved)		NA	NA	6.4	5.2	6.0
Potassium (Dissolved)		NA	NA	2.0	1.8	2.0
Total alkalinity		39	41	27	47	41
Total hardness		64	62	68	72	NA
Silica (Reactive)		1.0	0.8	N/A	NA	NA
Nitrite (Dissolved)		<0.01	<0.01	<0.01	0.01	0.01
Nitrate (Dissolved)		<0.01	<0.01	0.11	0.13	0.14
Total Phosphorus		0.02	0.03	0.03	0.04	0.02
Chloride (Dissolved)		12	8.8	17	8	7.8
Sulphate (Dissolved)		12	13	18	23	20
Total Carbon		25	24	20	23	23
Inorganic carbon		9	9	7	10	12
Organic carbon		16	15	13	13	11
Specific Conductance (µmho/cm)		130	128	N/A	NA	NA
Secchi disc (m)		2.5	3.0	N/A	NA	NA
pH		NA	NA	N/A	NA	NA
Temperature (°C)		10	11	0.0	0.0	0.0

APPENDIX IX

PHYSICO-CHEMICAL CHARACTERISTICS OF WATER SAMPLES COLLECTED FROM FRAME LAKE DURING 1977-78. All values are in g/m^3 unless otherwise indicated. "NA" means analysis not done. Asterisk indicates concentration of dissolved heavy metals.

CHARACTERISTICS	DATE	12/05/77	21/06/77	21/06/77*	26/04/78	30/05/78	30/05/78	30/05/78	30/05/78	02/08/78	02/08/78	02/08/78
	STATION	1	1	1	4	1	2	3	4	1	3	4
	DEPTH (m)	0	0	0	0	0	0	0	0	0	0	0
Arsenic (Total)		0.118	0.26	0.08	0.75	0.27	0.26	0.26	0.26	0.32	0.46	0.35
Mercury (mg/m^3) (Total)		0.3	<0.2	<0.03	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Total)		<0.03	<0.3	<0.2	<0.02	<0.02	0.03	0.03	0.03	0.03	<0.04	<0.03
Copper (Total)		<0.02	<0.02	0.003	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lead (Total)		0.003	0.034	0.02	0.019	<0.002	0.002	0.002	<0.02	<0.005	<0.005	<0.005
Zinc (Total)		<0.01	0.02	<0.002	0.03	0.01	<0.01	0.01	0.02	<0.01	<0.01	<0.01
Cadmium (Total)		<0.002	<0.002	<0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cobalt (Total)		<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (Total)		0.11	0.18	<0.02	0.23	NA	NA	NA	NA	0.04	0.03	<0.03
Manganese (Total)		0.16	0.04	15.0	1.21	0.16	0.21	0.16	0.15	0.03	0.03	0.03
Magnesium (Total)		6.2	NA	NA	36	14.4	15.1	14.8	14.5	14.0	14.0	13.0
Calcium (Dissolved)		14.6	37.4	NA	94	NA	NA	NA	NA	13.0	14.0	14.0
Sodium (Dissolved)		3.9	11.1	NA	26.7	37.0	40.0	37.6	36.2	13.0	16.0	16.0
Potassium (Dissolved)		2.1	4.6	NA	23	4.9	5.0	5.2	4.9	5.0	5.0	5.0
Total Alkalinity		50	107	NA	234	141	123	97	115	98	88	105
Total Hardness		56	133	NA	285	186	206	189	187	138	124	142
Silica (Reactive)		0.67	0.09	NA	1.2	NA	NA	NA	NA	NA	NA	NA
Nitrite (Dissolved)		<0.01	0.01	NA	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate (Dissolved)		<0.01	0.04	NA	0.01	0.03	0.05	0.07	0.03	<0.01	<0.01	<0.01
Total Phosphorus (Dissolved)		0.06	0.05	NA	0.05	0.04	0.06	0.06	0.06	0.04	0.05	0.05
Chloride (Dissolved)		6	11.10	NA	30	10	11.2	9.7	10.3	9.3	10.1	10.1
Sulphate (Dissolved)		8	34	NA	58	30	32	32	33	40	40	40
Total Carbon		25	51	NA	96	58	62	58	58	47	47	48
Inorganic carbon		12	24	NA	58	21	22	21	21	21.5	21	22
Organic carbon		NA	27	NA	38	37	40	37	37	25.5	26	26
Specific Conductance ($\mu\text{mho/cm}$)		NA	341	NA	675	290	315	315	320	271	271	300
Secchi disc (m)		NA	NA	NA	NA	1.5	1.0	1.5	2.5	2	2.5	2.0
pH		NA	NA	NA	6.6	6.7	6.7	6.8	6.6	NA	NA	NA
Temperature ($^{\circ}\text{C}$)		4	20	20	0	12	12	12	11	16	16	15

APPENDIX IX (continued)

CHARACTERISTICS	DATE	29/08/78	29/08/78	29/08/78
	STATION	1	3	4
	DEPTH (m)	0	0	0
Arsenic (Total)		0.43	0.48	<0.005
Mercury (mg/m ³) (Total)		<0.2	<0.2	<0.2
Nickel (Total)		<0.03	<0.03	<0.03
Copper (Total)		<0.02	<0.02	<0.02
Lead (Total)		<0.005	<0.005	<0.005
Zinc (Total)		<0.03	0.02	0.02
Cadmium (Total)		0.003	<0.002	<0.002
Cobalt (Total)		<0.05	<0.05	<0.05
Iron (Total)		0.04	<0.03	<0.03
Manganese (Total)		NA	NA	NA
Magnesium (Total)		18.5	19.2	7.8
Calcium (Dissolved)		NA	NA	NA
Sodium (Dissolved)		NA	NA	NA
Potassium (Dissolved)		NA	NA	NA
Total Alkalinity		94	96	96
Total Hardness		138	138	140
Silica (Reactive)		NA	NA	NA
pH		NA	NA	NA
Nitrite (Dissolved)		<0.01	<0.01	<0.01
Nitrate (Dissolved)		0.02	0.02	0.03
Total Phosphorus (Dissolved)		0.09	0.18	0.09
Chloride (Dissolved)		14.5	15	15
Sulfate (Dissolved)		40	39	40
Total Carbon		52	52	52
Inorganic carbon		22	23	24
Organic carbon		30	29	28
Specific Conductance (µmho/cm)		305	378	463
Temperature (°C)		14	14	14

APPENDIX XV

PHYSICO-CHEMICAL CHARACTERISTICS OF WATER SAMPLES COLLECTED FROM STOCK LAKE DURING 1977-78. All values are in g/m³ unless otherwise indicated. "NA" means analysis not done. Asterisk means concentration of dissolved metals.

CHARACTERISTICS	DATE STATION DEPTH (m)	12/05/77 1 0	21/06/77 1 0	21/06/77 2 0	29/05/78 1 0	29/05/78 2 0	22/06/78 1 0	22/06/78 2 0	09/08/78 1 0	09/08/78 2 0
Arsenic (Total)		0.195	0.13	0.04	0.080	0.070	0.10	0.101	0.14	0.14
Mercury (mg/m ³) (Total)		<0.02	<0.02	NA	<0.02	<0.02	0.5	0.5	<0.02	<0.02
Nickel (Total)		<0.03	<0.03	<0.03	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03
Copper (Total)		<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.02	<0.02
Lead (Total)		<0.002	0.007	<0.002	0.004	0.003	<0.005	<0.005	0.005	0.005
Zinc (Total)		<0.01	<0.01	0.03	<0.01	0.02	0.02	<0.01	0.01	0.01
Cadmium (Total)		<0.002	<0.002	0.01	0.006	<0.002	0.014	<0.002	<0.002	<0.002
Cobalt (Total)		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron (Total)		<0.02	<0.02	<0.02	NA	NA	0.07	0.05	0.04	0.04
Manganese (Total)		<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.03	NA	NA
Magnesium (Total)		7.5	NA	NA	7.2	4.2	6.8	6.8	6.0	6.3
Calcium (Dissolved)		30.9	23.2	NA	15.8	16.0	24	24	12	13
Sodium (Dissolved)		3.6	3.4	NA	7.1	7.2	4.5	4.2	2.8	2.8
Potassium (Dissolved)		2.2	2.1	NA	2.4	1.9	2.5	2.4	2.3	2.3
Total alkalinity		55	59	NA	67	26	NA	54	58	54
Total hardness		84	81	NA	114	85	NA	90	87	84
Silica (Reactive)		3.7	3.1	NA	NA	NA	NA	NA	NA	NA
Nitrite (Dissolved)		<0.01	<0.01	NA	<0.01	<0.01	NA	<0.01	<0.01	<0.01
Nitrate (Dissolved)		<0.01	<0.01	NA	<0.01	0.70	NA	<0.01	<0.01	<0.01
Total Phosphorus		0.07	0.02	NA	0.03	0.03	NA	<0.01	0.03	0.04
Chloride (Dissolved)		2.5	2.2	NA	2.2	4.6	NA	3.1	2.7	2.9
Sulphate (Dissolved)		19	22	NA	26	5	NA	3	26	27
Total Carbon		25	26	NA	25	24	NA	22	25	24
Inorganic carbon		12	13	NA	12	12	NA	12	14	12
Organic carbon		13	13	NA	13	12	NA	10	11	12
Specific Conductance (umho/cm)		NA	182	NA	161	161	428	402	159	159
Secchi disc (m)		NA	2.0	NA	NA	NA	2.5	3.0	3.0	2.0
pH		NA	NA	NA	6.4	7.4	NA	NA	NA	NA
Temperature (oC)		7	18	NA	7	7	14	14	18	18