
Appendices

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Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name		Units	Station WQ1							Station WQ2					
			1998-02-02, Depth = NA	1998-07-20 (1), Depth = NA	1998-07-20 (2), Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 16m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 6.5m	1999-08-12, Depth = Integrated
Conventional															
Alkalinity	mg/L	7	5	4	6	6	4	9	8	8	4	7	7	4	8
Colour (True)	TCU	ND	ND	ND	ND	ND	ND	5	5	ND	ND	ND	ND	ND	10
Conductivity	µS/cm	21	15	15	24	19	15	27	19	25	15	22	21	14	18
Hardness	mg/L	0.04	4	4	7	6	5	9	6	ND	4	7	7	5	5
pH	pH	6.83	6.78	6.84	6.45	6.33	6.5	6.7	6.7	6.87	6.88	6.6	6.28	6.4	6.7
Total Dissolved Solids	mg/L	25	<10	18	12	<10	19	<10	60	17	<10	14	15	18	70
Total Suspended Solids	mg/L	4	<3	<3	<3	5	<3	<3	<3	<3	<3	<3	<3	<3	3
Turbidity	NTU	0.4	0.4	0.5	ND	ND	1.8	0.22	0.45	0.3	0.6	ND	ND	0.6	0.25
Nutrient															
Ammonia	mg/L	0.026	0.003	0.002	0.021	0.016	0.032	0.026	<0.005	0.02	0.002	0.028	0.029	0.041	0.006
Dissolved Organic Carbon	mg/L	ND	ND	ND	ND	ND	3	4	ND	ND	ND	ND	ND	3	ND
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	0.009	0.008	<0.001	ND	ND	ND	ND	0.007	0.001
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	0.04	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	ND	<0.008	<0.008	<0.008	0.041	<0.008	0.038	0.009	ND	<0.008	<0.008	0.029	<0.008	<0.006
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	<0.002	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	<0.002	<0.002	<0.002	0.005	0.005	<0.002	0.004	0.005	<0.002	<0.002	0.004	0.004	<0.002	<0.001
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	0.24	0.31	<0.05	ND	ND	ND	ND	0.18	<0.05
Total Organic Carbon	mg/L	<1	2.8	3.6	3.9	3.2	3.1	5	4	ND	2.7	4.1	3	3.2	ND
Total Phosphorus	mg/L	0.008	0.005	<0.002	0.01	0.016	0.01	0.009	0.003	ND	0.01	0.011	0.016	0.009	0.002

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name	Units	Station WQ1								Station WQ2					
		1998-02-02, Depth = NA	1998-07-20 (1), Depth = NA	1998-07-20 (2), Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 16m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 6.5m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Major Ions															
Bicarbonate	mgCO ₃ /L	ND	ND	ND	5.7	5.7	ND	11	10	ND	ND	6.8	7.3	ND	10
Calcium	mg/L	1.52	0.95	0.93	1.46	1.45	1.13	2.13	1.38	1.81	0.93	1.64	1.76	1.06	1.28
Carbonate	mg/L	ND	ND	ND	ND	ND	ND	<5	<5	ND	ND	ND	ND	ND	<5
Chloride	mg/L	0.81	0.4	0.2	<0.2	<0.2	<0.2	<1	<1	0.72	0.6	0.2	<0.2	<0.2	<1
Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride	mg/L	ND	ND	ND	ND	ND	0.04	0.06	<0.05	ND	ND	ND	ND	0.04	<0.05
Hydroxide	mg/L	ND	ND	ND	ND	ND	ND	<5	<5	ND	ND	ND	ND	ND	<5
Magnesium	mg/L	0.79	0.48	0.5	0.69	0.61	0.58	0.88	0.58	0.94	0.49	0.78	0.69	0.57	0.54
Potassium	mg/L	0.68	0.4	0.4	0.52	0.49	0.32	0.74	0.43	0.78	0.4	0.58	0.49	0.33	0.41
Silica	mg/L	ND	ND	ND	ND	ND	ND	0.4	ND	ND	ND	ND	ND	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.74	0.45	0.46	0.61	0.52	0.45	1	0.6	0.94	0.47	0.7	0.57	0.46	0.6
Sulphate	mg/L	6	3	3	<3	<3	<3	2.46	1.38	4	4	<3	<3	<3	1.31
Dissolved Metals															
Aluminum	µg/L	3.1	2.2	3.2	<30	<30	<30	4.5	7.3	8.7	3.1	<30	<30	<30	7.3
Antimony	µg/L	0.4	0.3	0.3	0.6	0.6	1.5	0.14	<0.03	0.5	0.3	0.6	0.5	1.6	<0.03
Arsenic	µg/L	ND	ND	ND	<0.2	<0.2	<0.2	0.1	<0.03	ND	ND	<0.2	<0.2	<0.2	<0.03
Barium	µg/L	2.9	2	2	2.4	3	2	4.5	2.55	3.5	1.8	3.1	3.6	1.9	2.32
Beryllium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	0.1	<0.1	<0.1	<0.1	<0.2	<0.2
Bismuth	µg/L	0.1	0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.03	0.1	<0.1	<0.1	<0.1	<0.1	<0.03

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name	Units	Station WQ1								Station WQ2					
		1998-02-02, Depth = NA	1998-07-20 (1), Depth = NA	1998-07-20 (2), Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 16m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 6.5m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Dissolved Metals (cont.)															
Boron	µg/L	ND	ND	ND	ND	ND	ND	3	1	ND	ND	ND	ND	ND	1
Cadmium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Cesium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	µg/L	0.2	<0.2	0.2	0.3	0.3	<0.3	0.13	<0.06	0.3	<0.2	0.6	0.8	<0.3	<0.06
Cobalt	µg/L	0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1	<0.1
Copper	µg/L	2.1	0.5	0.5	0.7	0.6	0.5	3.2	<0.6	1.4	0.4	0.7	0.5	0.5	1.1
Iron	mg/L	<0.012	<0.02	<0.02	<0.02	<0.02	0.033	<0.005	0.016	<0.012	<0.02	<0.02	<0.02	0.037	0.005
Lead	µg/L	0.2	<0.2	0.2	0.2	<0.2	0.1	0.11	0.18	0.2	<0.2	0.2	0.2	1.4	0.09
Lithium	µg/L	1.2	0.8	0.8	1.1	0.9	0.9	1.4	0.7	1.5	0.8	1	0.8	0.9	0.6
Manganese	µg/L	0.4	<0.1	<0.1	0.5	7.1	0.2	0.8	3.1	0.4	<0.1	0.5	10	0.4	0.6
Mercury	µg/L	ND	ND	ND	<0.01	<0.01	<0.01	<0.02	<0.02	ND	ND	<0.01	<0.01	<0.01	<0.02
Molybdenum	µg/L	0.1	<0.1	0.1	<0.1	<0.1	0.2	0.08	<0.06	0.1	<0.1	<0.1	<0.1	0.1	<0.06
Nickel	µg/L	0.9	<0.1	0.1	0.3	0.3	0.2	3.72	0.13	0.5	<0.1	0.3	0.2	0.2	0.5
Rubidium	µg/L	ND	ND	ND	ND	ND	ND	2	<1	ND	ND	ND	ND	ND	<1
Selenium	µg/L	1	1	<1	<10	<10	<1	<0.1	<0.1	1	<1	<10	<10	<1	<0.1
Silver	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium	µg/L	9.3	5.7	5.8	7.4	7	5.6	11.3	9	11.2	5.9	9.1	9.5	5.6	7.9
Thallium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.03	0.1	<0.1	<0.1	<0.1	<0.1	<0.03
Titanium	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.3	ND	<0.1	0.1	<0.2	<0.2	<0.2	<0.3	<0.1
Uranium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Vanadium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	0.1	<0.1	<0.1	0.1	<0.1	<0.05
Zinc	µg/L	6.9	<0.5	1.6	<10	<10	<10	10.6	0.9	3	<0.5	<10	<10	<10	1.7

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name	Units	Station WQ1							Station WQ2						
		1998-02-02, Depth = NA	1998-07-20 (1), Depth = NA	1998-07-20 (2), Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 16m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 6.5m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Total Metals															
Aluminum	µg/L	6.3	7.2	7.5	<30	<30	<30	11.6	8.5	6.6	7.7	<30	<30	<30	9.2
Antimony	µg/L	0.3	0.7	0.6	0.6	0.5	<0.5	0.25	<0.03	0.3	0.5	0.6	0.4	<0.5	<0.03
Arsenic	µg/L	ND	ND	ND	<0.2	<0.2	<0.2	0.11	<0.03	ND	ND	<0.2	<0.2	<0.2	<0.03
Barium	µg/L	3	2.2	2.2	2.4	3.2	2	4.77	2.62	3.9	2.1	3.4	3.6	2	2.44
Beryllium	µg/L	<0.1	<0.1	<0.1	0.1	<0.1	<2	<0.2	<0.2	0.1	<0.1	<0.1	<0.1	<2	<0.2
Bismuth	µg/L	<0.1	0.1	<0.1	<0.1	<0.1	<0.4	ND	<0.03	<0.1	<0.1	<0.1	<0.1	<0.4	<0.03
Boron	µg/L	ND	ND	ND	ND	ND	ND	3	2	ND	ND	ND	ND	ND	1
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.3	<0.05
Cesium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.4	ND	<0.1	0.1	<0.1	<0.1	<0.1	<0.4	<0.1
Chromium	µg/L	0.3	0.6	1.3	<2	<2	<3	0.2	<0.06	0.3	0.2	<2	<2	<3	<0.06
Chromium (Hexavalent)	mg/L	ND	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	ND	ND
Chromium (Trivalent)	mg/L	ND	ND	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	0.1	0.1	0.1	0.2	0.2	<1	<0.1	<0.1	0.1	0.1	0.1	0.1	<1	<0.1
Copper	µg/L	2.3	0.8	1.4	0.7	0.7	<2	2.6	<0.6	1.3	0.7	0.7	0.5	<2	<0.6
Iron	mg/L	ND	0.03	0.02	<0.02	0.04	0.04	0.033	0.016	<0.012	0.03	<0.02	0.05	0.06	0.02
Lead	µg/L	0.3	<0.2	1.4	0.4	<0.2	2	0.21	0.18	0.2	1	0.4	<0.2	<1	0.08
Lithium	µg/L	1.2	0.9	0.8	1.2	1	<3	1.4	0.9	1.4	0.8	1	0.8	<3	0.7
Manganese	µg/L	3.8	3.4	3.4	2.1	13.5	3	3.1	3.6	3	4.6	2	14.1	4	4
Mercury	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02
Molybdenum	µg/L	0.1	0.1	0.1	<0.1	<0.1	<1	0.07	<0.06	0.1	0.1	<0.1	<0.1	<1	<0.06
Nickel	µg/L	1.1	0.2	0.1	0.3	0.4	<1	0.6	0.12	0.5	<0.1	0.3	0.2	<1	0.08
Rubidium	µg/L	ND	ND	ND	ND	ND	ND	2	<1	ND	ND	ND	ND	ND	<1

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name	Units	Station WQ1								Station WQ2					
		1998-02-02, Depth = NA	1998-07-20 (1), Depth = NA	1998-07-20 (2), Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 16m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 6.5m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Total Metals (cont.)															
Selenium	µg/L	<0.1	1	1	<10	<10	<10	<0.1	<0.1	<1	1	<10	<10	<10	<0.1
Silver	µg/L	ND	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1
Strontium	µg/L	10.9	5.9	5.7	7.3	7	6	11.3	9	13.3	6	9.3	9.5	6	8.3
Thallium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	ND	<0.03	<0.1	<0.1	<0.1	<0.1	<0.4	<0.03
Titanium	µg/L	0.5	<0.2	<0.2	<0.2	0.7	<3	ND	<0.1	0.2	<0.2	0.2	0.2	<3	<0.1
Uranium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.3	<0.05
Vanadium	µg/L	0.3	0.1	<0.1	<0.1	<0.1	<1	<0.05	<0.05	0.6	0.1	<0.1	<0.1	<1	<0.05
Zinc	µg/L	1.9	2.6	3.4	<10	<10	<10	19.3	0.9	3.3	0.9	<10	<10	<10	<0.8

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name		Units	Station WQ3						Station WQ4			Station WQ6			
			1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1999-03-24, Depth = 3m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m	1999-03-24, Depth = 2m	1999-03-24, Depth = 6m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Conventional															
Alkalinity	mg/L	7	4	6	4	9	7	6	5	6	6	5	4	6	
Colour (True)	TCU	ND	ND	ND	ND	<3	10	ND	ND	10	ND	ND	ND	10	
Conductivity	µS/cm	21	15	19	15	24	19	18	15	18	20	18	15	18	
Hardness	mg/L	ND	4	6	5	9	6	6	5	6	7	6	5	5	
pH	pH	6.81	6.75	6.7	6.4	6.8	6.7	6.45	6.49	6.6	6.7	6.54	6.45	6.5	
Total Dissolved Solids	mg/L	15	<10	<10	16	<10	30	13	19	<10	<10	<10	15	40	
Total Suspended Solids	mg/L	<3	<3	<3	7	<3	<3	3	<3	<3	<3	<3	<3	<3	
Turbidity	NTU	0.3	0.5	ND	0.5	<0.1	0.25	ND	0.4	0.3	ND	ND	0.7	0.2	
Nutrients															
Ammonia	mg/L	0.02	0.003	0.024	0.016	0.024	0.005	0.026	0.047	<0.005	0.031	0.025	0.086	<0.005	
Dissolved Organic Carbon	mg/L	ND	ND	ND	3	4	ND	ND	3	ND	ND	ND	4	ND	
Dissolved Phosphorus	mg/L	ND	ND	ND	0.008	<0.001	<0.001	ND	0.01	<0.001	ND	ND	0.012	<0.001	
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	<0.006	ND	ND	ND	ND	ND	ND	ND	ND	
Nitrate-N	mg/L	ND	<0.008	<0.008	<0.008	<0.006	<0.006	<0.008	<0.008	<0.006	<0.008	<0.008	<0.008	<0.006	
Nitrite-N	mg/L	ND	ND	ND	ND	<0.002	ND	ND	ND	ND	ND	ND	ND	ND	
Orthophosphate	mg/L	<0.002	<0.002	0.004	<0.002	0.001	0.001	0.004	<0.002	0.001	0.004	0.004	<0.002	<0.001	
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	0.17	0.25	0.39	ND	0.2	0.7	ND	ND	0.24	<0.05	
Total Organic Carbon	mg/L	ND	6.8	3.9	3.1	4	3	3.1	3	3	4.5	3.6	3.8	ND	
Total Phosphorus	mg/L	0.004	0.004	0.009	0.009	0.005	<0.001	0.01	0.008	<0.001	0.014	0.012	0.026	0.003	

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name		Units	Station WQ3						Station WQ4			Station WQ6			
			1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1999-03-24, Depth = 3m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m	1999-03-24, Depth = 2m	1999-03-24, Depth = 6m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Major Ions															
Bicarbonate	mgCO ₃ /L	ND	ND	5.6	ND	11	9	5.5	ND	8	5.9	5.2	ND	7	
Calcium	mg/L	1.4	0.97	1.35	1.21	2.02	1.34	1.33	1.11	1.32	1.52	1.34	1.23	1.26	
Carbonate	mg/L	ND	ND	ND	ND	<5	<5	ND	ND	<5	ND	ND	ND	<5	
Chloride	mg/L	0.61	0.3	<0.2	<0.2	<1	<1	<0.2	<0.2	<1	0.2	<0.2	0.2	<1	
Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Fluoride	mg/L	ND	ND	ND	0.04	0.06	<0.05	ND	0.04	<0.05	ND	ND	0.04	<0.05	
Hydroxide	mg/L	ND	ND	ND	ND	<5	<5	ND	ND	<5	ND	ND	ND	<5	
Magnesium	mg/L	0.77	0.5	0.66	0.58	0.84	0.57	0.61	0.58	0.57	0.73	0.64	0.56	0.57	
Potassium	mg/L	0.66	0.4	0.48	0.33	0.67	0.42	0.44	0.34	0.42	0.56	0.46	0.35	0.42	
Silica	mg/L	ND	ND	ND	ND	0.4	ND	ND	ND	ND	ND	ND	ND	ND	
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Sodium	mg/L	0.69	0.46	0.57	0.44	0.9	0.6	0.53	0.44	0.6	0.59	0.5	0.44	0.5	
Sulphate	mg/L	6	3	<3	<3	1.98	1.34	<3	<3	1.37	36	<3	<3	1.52	
Dissolved Metals															
Aluminum	µg/L	2.6	1.9	<30	<30	4.2	7.3	<30	<30	7.6	<30	<30	<30	10.3	
Antimony	µg/L	0.5	0.3	0.6	1.6	0.18	<0.03	0.5	1.6	<0.03	0.4	0.4	1.9	<0.03	
Arsenic	µg/L	ND	ND	<0.2	<0.2	0.1	<0.03	<0.2	<0.2	<0.03	<0.2	<0.2	<0.2	<0.03	
Barium	µg/L	2.8	2	2.2	2.1	3.5	2.4	2.5	1.9	2.3	2.6	2.4	2.2	2.4	
Beryllium	µg/L	0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	
Bismuth	µg/L	0.1	<0.1	<0.1	<0.1	ND	<0.03	<0.1	<0.1	<0.03	<0.1	<0.1	<0.1	<0.03	

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name		Units	Station WQ3						Station WQ4			Station WQ6			
			1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1999-03-24, Depth = 3m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m	1999-03-24, Depth = 2m	1999-03-24, Depth = 6m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Dissolved Metals (cont.)															
Boron	µg/L	ND	ND	ND	ND	2	1	ND	ND	1	ND	ND	ND	<1	
Cadmium	µg/L	0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	
Cesium	µg/L	0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	µg/L	0.2	0.7	0.3	<0.3	0.13	<0.06	0.8	<0.3	<0.06	0.5	0.4	<0.3	<0.06	
Cobalt	µg/L	0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	
Copper	µg/L	0.9	0.4	1.3	0.6	4.4	<0.6	0.7	0.5	<0.6	0.7	0.6	0.7	0.7	
Iron	mg/L	<0.012	<0.02	<0.02	0.041	<0.005	0.013	<0.02	<0.03	0.019	<0.02	<0.02	<0.03	<0.005	
Lead	µg/L	0.2	<0.2	0.3	0.4	0.11	0.07	0.3	0.2	<0.05	0.6	0.7	0.1	<0.05	
Lithium	µg/L	1.1	0.8	1.1	0.9	1.3	0.7	0.9	1	0.6	0.9	0.9	0.9	0.5	
Manganese	µg/L	0.3	<0.1	0.5	0.3	0.6	3	0.6	0.4	4.2	0.3	0.5	0.2	0.4	
Mercury	µg/L	ND	ND	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	
Molybdenum	µg/L	0.1	<0.1	0.1	<1	0.08	<0.06	<0.1	<1	<0.06	<0.1	<0.1	<1	<0.06	
Nickel	µg/L	0.3	0.1	0.3	0.2	0.94	0.09	0.2	0.2	0.09	0.3	0.3	0.3	0.61	
Rubidium	µg/L	ND	ND	ND	ND	1	<1	ND	ND	<1	ND	ND	ND	<1	
Selenium	µg/L	1	<1	<10	<1	<0.1	<0.1	<10	<1	<0.1	<10	<10	<1	<0.1	
Silver	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Strontium	µg/L	8.8	5.6	6.8	5.9	10.5	8.3	7.4	5.8	8	7.4	6.7	6	6.8	
Thallium	µg/L	0.1	<0.1	<0.1	<0.1	ND	<0.03	<0.1	<0.1	<0.03	<0.1	<0.1	<0.1	<0.03	
Titanium	µg/L	0.1	<0.2	<0.2	<0.3	ND	<0.1	<0.2	<0.3	<0.1	<0.2	<0.2	<0.3	<0.1	
Uranium	µg/L	0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.05	
Vanadium	µg/L	0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.05	0.1	<0.1	<0.1	<0.05	
Zinc	µg/L	1	<0.5	<10	<10	11.8	<0.8	<10	<10	<0.8	<10	<10	<10	1.6	

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name		Units	Station WQ3						Station WQ4			Station WQ6			
			1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1999-03-24, Depth = 3m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m	1999-03-24, Depth = 2m	1999-03-24, Depth = 6m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Total Metals															
Aluminum	µg/L	5.1	6.4	<30	<30	9.8	8	<30	<30	8.2	<30	<30	<30	ND	
Antimony	µg/L	0.4	0.5	0.5	<0.5	0.04	0.83	0.5	<0.5	<0.03	0.7	0.7	<0.5	ND	
Arsenic	µg/L	ND	ND	<0.2	<0.2	0.1	<0.03	<0.2	<0.2	<0.03	<0.2	<0.2	<0.2	ND	
Barium	µg/L	2.8	2.1	2.3	2	3.92	2.46	2.6	2	2.37	2.7	2.6	2	ND	
Beryllium	µg/L	<0.1	<0.1	<0.1	<2	<0.2	<0.2	<0.1	<2	<0.2	<0.1	<0.1	<2	ND	
Bismuth	µg/L	<0.1	<0.1	<0.1	<0.4	ND	<0.03	<0.1	<0.4	<0.03	<0.1	<0.1	<0.4	ND	
Boron	µg/L	ND	ND	ND	ND	2	1	ND	ND	1	ND	ND	ND	ND	
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.3	<0.05	<0.05	<0.1	<0.3	<0.05	<0.1	<0.1	<0.3	ND	
Cesium	µg/L	0.1	<0.1	<0.1	<0.4	ND	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.4	ND	
Chromium	µg/L	0.3	1.1	<2	<3	0.19	<0.06	<2	<3	<0.06	<2	<2	<3	ND	
Chromium (Hexavalent)	mg/L	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium (Trivalent)	mg/L	ND	ND	ND	ND	<0.005	ND	ND	ND	ND	ND	ND	ND	ND	
Cobalt	µg/L	0.1	<0.1	0.1	<1	<0.1	<0.1	0.1	<1	<0.1	0.2	0.1	<1	ND	
Copper	µg/L	2.2	0.7	0.7	<2	1.3	<0.6	0.6	<2	<0.6	1	2	<2	ND	
Iron	mg/L	0.016	0.03	<0.02	0.05	0.025	0.013	<0.02	<0.03	0.018	<0.02	<0.02	0.03	ND	
Lead	µg/L	<0.2	1	0.3	<1	0.35	0.11	0.7	<1	<0.05	0.8	0.8	<1	ND	
Lithium	µg/L	1.2	0.8	1.1	<3	1.3	0.7	0.9	<3	0.6	0.9	0.9	<3	ND	
Manganese	µg/L	2.8	3	2.3	3	3	3.1	2.8	4	4.3	3.2	4.6	4	ND	
Mercury	µg/L	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	ND	
Molybdenum	µg/L	0.1	0.1	<0.1	<1	0.08	<0.06	<0.1	<1	<0.06	<0.1	<0.1	<1	ND	
Nickel	µg/L	0.4	0.1	0.3	<1	0.42	0.14	0.3	<1	0.1	0.3	0.3	<1	ND	
Rubidium	µg/L	ND	ND	ND	ND	1	<1	ND	ND	<1	ND	ND	ND	ND	

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name	Units	Station WQ3						Station WQ4			Station WQ6			
		1998-02-02, Depth = NA	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1999-03-24, Depth = 3m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m	1999-03-24, Depth = 2m	1999-03-24, Depth = 6m	1999-08-12, Depth = Integrated	2001-07-22, Depth = 3m
Total Metals (cont.)														
Selenium	µg/L	<1	<1	<10	<10	<0.1	<0.1	<10	<10	<0.1	<10	<10	<10	ND
Silver	µg/L	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.3	ND
Strontium	µg/L	9.5	5.9	6.9	6	10.3	8.4	7.8	6	8.1	7.5	6.8	6	ND
Thallium	µg/L	<0.1	<0.1	<0.1	<0.4	ND	<0.03	<0.1	<0.4	<0.03	<0.1	<0.1	<0.4	ND
Titanium	µg/L	0.3	<0.2	<0.2	<3	ND	<0.1	<0.2	<3	<0.1	<0.2	0.3	<3	ND
Uranium	µg/L	<0.1	<0.1	<0.1	<0.3	<0.05	<0.05	<0.1	<0.3	<0.05	<0.1	<0.1	<0.3	ND
Vanadium	µg/L	0.1	<0.1	<0.1	<1	<0.05	<0.05	<0.1	<1	<0.05	<0.1	<0.1	<1	ND
Zinc	µg/L	2.9	2	<10	<10	8	1.4	<10	<10	<0.8	<10	<10	<10	ND

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

		Station WQ7						Station 29
Chemical Class / Chemical Name	Units	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 7m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1993-07-21, Depth = NA
Conventionals								
Alkalinity	mg/L	4	7	7	5	10	6	2.2
Colour (True)	TCU	ND	ND	ND	ND	5	10	<5
Conductivity	µS/cm	16	22	21	16	31	19	14.4
Hardness	mg/L	5	7	7	6	10	6	4
pH	pH	6.84	6.9	6.61	6.56	6.8	6.5	6.67
Total Dissolved Solids	mg/L	<10	<10	16	18	20	40	13
Total Suspended Solids	mg/L	<3	3	<3	<3	<3	<3	<3
Turbidity	NTU	0.5	ND	ND	0.6	0.2	0.25	0.6
Nutrients								
Ammonia	mg/L	0.004	0.028	0.026	0.038	0.027	<0.005	0.022
Dissolved Organic Carbon	mg/L	ND	ND	ND	4	4	ND	ND
Dissolved Phosphorus	mg/L	ND	ND	ND	0.012	0.002	0.003	ND
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	0.02	ND	ND
Nitrate-N	mg/L	<0.008	<0.008	0.012	<0.008	0.02	0.01	<0.008
Nitrite-N	mg/L	ND	ND	ND	ND	<0.002	ND	ND
Orthophosphate	mg/L	<0.002	0.004	0.004	<0.002	0.002	0.001	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	0.2	0.34	0.11	ND
Total Organic Carbon	mg/L	3.4	4.6	4	3.6	5	ND	ND
Total Phosphorus	mg/L	0.002	0.011	0.012	0.014	0.006	0.004	0.003

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

		Station WQ7						Station 29
Chemical Class / Chemical Name	Units	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 7m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1993-07-21, Depth = NA
Major Ions								
Bicarbonate	mgCO ₃ /L	ND	6.8	6.6	ND	12	8	ND
Calcium	mg/L	1	1.65	1.56	1.24	2.43	1.42	1
Carbonate	mg/L	ND	ND	ND	ND	<5	<5	ND
Chloride	mg/L	0.4	0.2	<0.2	<0.2	<1	<1	0.72
Cyanide	mg/L	ND	ND	ND	ND	ND	ND	<0.001
Fluoride	mg/L	ND	ND	ND	0.04	0.06	<0.05	ND
Hydroxide	mg/L	ND	ND	ND	ND	<5	<5	ND
Magnesium	mg/L	0.54	0.78	0.73	0.57	1.01	0.62	0.5
Potassium	mg/L	0.42	0.54	0.49	0.37	0.77	0.46	0.3
Silica	mg/L	ND	ND	ND	ND	0.6	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	0.09
Sodium	mg/L	0.44	0.62	0.55	0.45	1	0.6	0.5
Sulphate	mg/L	3	<3	<3	<3	2.74	1.79	<3
Dissolved Metals								
Aluminum	µg/L	5	<30	<30	<30	8	7.7	ND
Antimony	µg/L	0.3	0.6	0.8	0.9	0.11	0.06	ND
Arsenic	µg/L	ND	<0.2	<0.2	<0.2	0.1	<0.03	ND
Barium	µg/L	2.2	2.7	3.1	2.2	4.38	2.66	ND
Beryllium	µg/L	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	ND
Bismuth	µg/L	<0.1	<0.1	<0.1	<0.1	ND	<0.03	ND

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

		Station WQ7						Station 29
Chemical Class / Chemical Name	Units	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 7m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1993-07-21, Depth = NA
<i>Dissolved Metals (cont.)</i>								
Boron	µg/L	ND	ND	ND	ND	2	1	ND
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	ND
Cesium	µg/L	<0.1	<0.1	<0.1	<0.1	ND	<0.1	ND
Chromium	µg/L	0.4	0.3	0.3	<0.3	0.2	<0.06	ND
Cobalt	µg/L	<0.1	0.2	0.2	<0.1	<0.1	<0.1	ND
Copper	µg/L	0.4	0.8	0.6	0.9	1.5	1	ND
Iron	mg/L	<0.02	<0.02	<0.02	<0.03	<0.005	0.007	ND
Lead	µg/L	0.9	<0.2	<0.2	1.2	0.19	0.08	ND
Lithium	µg/L	0.7	1	0.8	1	1.4	0.6	ND
Manganese	µg/L	0.1	0.3	1	0.6	0.9	1	ND
Mercury	µg/L	ND	<0.01	<0.01	<0.01	<0.02	<0.02	ND
Molybdenum	µg/L	0.1	0.1	<0.1	<1	0.1	<0.06	ND
Nickel	µg/L	0.1	0.4	0.3	0.2	2.6	0.4	ND
Rubidium	µg/L	ND	ND	ND	ND	2	<1	ND
Selenium	µg/L	<1	<10	<10	<1	<0.1	<0.1	ND
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Strontium	µg/L	6	7.6	7.1	6.1	12.1	7.6	ND
Thallium	µg/L	<0.1	<0.1	<0.1	<0.1	ND	<0.03	ND
Titanium	µg/L	<0.2	<0.2	<0.2	<0.3	ND	<0.1	ND
Uranium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	ND
Vanadium	µg/L	0.1	<0.1	<0.1	<0.1	<0.05	<0.05	ND
Zinc	µg/L	0.6	<10	<10	<10	24.2	4.8	ND

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

		Station WQ7						Station 29
Chemical Class / Chemical Name	Units	1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 7m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1993-07-21, Depth = NA
Total Metals								
Aluminum	µg/L	14.1	<30	<30	<30	14.6	11.1	2.55
Antimony	µg/L	0.5	0.5	0.5	<0.5	0.05	<0.03	0.01
Arsenic	µg/L	ND	<0.2	<0.2	<0.2	0.12	<0.03	<0.3
Barium	µg/L	2.6	2.9	3.3	2	4.67	2.57	1.55
Beryllium	µg/L	<0.1	<0.1	<0.1	<2	<0.2	<0.2	<0.1
Bismuth	µg/L	<0.1	<0.1	<0.1	<0.4	ND	<0.03	<0.1
Boron	µg/L	ND	ND	ND	ND	2	<1	ND
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.3	<0.05	<0.05	ND
Cesium	µg/L	<0.1	<0.1	<0.1	<0.4	ND	<0.1	<0.1
Chromium	µg/L	<0.2	<2	<2	<3	0.23	<0.06	<0.2
Chromium (Hexavalent)	mg/L	ND	ND	ND	ND	<0.005	ND	ND
Chromium (Trivalent)	mg/L	ND	ND	ND	ND	<0.005	ND	ND
Cobalt	µg/L	0.1	0.1	0.2	<1	<0.1	<0.1	<0.1
Copper	µg/L	3.5	0.8	0.7	<2	1.4	0.6	0.25
Iron	mg/L	0.03	0.03	0.04	0.05	0.017	0.02	<0.02
Lead	µg/L	0.3	<0.2	0.2	<1	0.23	0.06	<0.2
Lithium	µg/L	0.8	1	1	<3	1.4	0.6	0.74
Manganese	µg/L	7.5	2.6	9	5	2.5	4.8	2.33
Mercury	µg/L	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
Molybdenum	µg/L	0.1	0.1	<0.1	<1	0.1	<0.06	0.02
Nickel	µg/L	0.2	0.4	0.3	<1	0.75	0.21	<0.1
Rubidium	µg/L	ND	ND	ND	ND	2	<1	ND

Appendix 1. Baseline water quality data collected from Snap Lake (1993-2001).

Chemical Class / Chemical Name	Units	Station WQ7						Station 29
		1998-07-20, Depth = NA	1999-03-24, Depth = 2m	1999-03-24, Depth = 7m	1999-08-12, Depth = Integrated	2001-03-16, Depth = NA	2001-07-22, Depth = 3m	1993-07-21, Depth = NA
Total Metals (cont.)								
Selenium	µg/L	<1	<10	<10	<10	<0.1	<0.1	<1
Silver	µg/L	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1
Strontium	µg/L	6.6	7.7	7.2	6	11.9	7.3	5.55
Thallium	µg/L	<0.1	<0.1	<0.1	<0.4	ND	<0.03	<0.1
Titanium	µg/L	0.1	0.2	0.2	<3	ND	<0.1	ND
Uranium	µg/L	<0.1	<0.1	<0.1	<0.3	<0.05	<0.05	<0.1
Vanadium	µg/L	0.1	<0.1	<0.1	<1	<0.05	<0.05	<0.1
Zinc	µg/L	2.2	<10	<10	<10	14.2	1.1	<0.5

NA = no depth information available; ND = no data

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station 37	Station 11	Station 23	Station 24			Station 26						
Chemical Class / Chemical Name	Units	1993-07-21, Depth = NA	1993-07-25, Depth = NA	1999-08-06, Depth = 2	1993-07-24, Depth = NA	1993-03-08, Depth = 2	1993-03-08, Depth = 5	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1) , Depth = 2	1999-08-06 (2) , Depth = 2	1999-08-06 (1), Depth = 5	1999-08-06 (2), Depth = 5
Conventional														
Alkalinity	mg/L	2.2	2.5	4.1	2.4	6.4	5.3	5.3	5.7	4.6	4	17.8	4	6.3
Colour (True)	TCU	<5	<5	<5	<5	<5	<5	<5	<5	<5	5	5	5	5
Conductivity	µS/cm	14.8	15.3	15.1	15.1	23.2	19.5	19.9	21.2	17.6	15.3	146	15.2	36.8
Conductivity (Field)	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Lab)	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hardness	mg/L	5	4.4	4.63	4.6	ND	ND	ND	ND	ND	4.83	4.73	4.7	4.8
pH	pH	6.59	6.58	6.57	6.59	6.67	6.7	6.7	6.77	6.49	6.59	6.75	6.5	6.73
pH (Field)	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Lab)	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Dissolved Solids	mg/L	17	12	10	14	19	<10	14	20	14	ND	16	13	21
Total Suspended Solids	mg/L	<3	<3	<3	<3	<3	<3	<3	<3	<3	ND	5	<3	7
Turbidity	NTU	0.5	0.4	0.7	0.5	0.4	0.8	1.1	1.2	1.6	0.6	0.7	0.6	0.5
Nutrients														
Ammonia	mg/L	0.003	<0.002	ND	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	0.029	ND	0.02	0.012	0.013	0.013	0.015	0.024	0.022	0.03	0.024
Dissolved Organic Carbon	mg/L	ND	ND	2.6	ND	ND	ND	ND	ND	ND	3	3	2.4	2.9
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate + Nitrite	mg/L	ND	ND	<0.008	ND	ND	ND	ND	ND	ND	<0.008	<0.008	0.009	<0.008
Nitrate-N	mg/L	<0.008	<0.008	<0.008	<0.008	0.037	0.017	0.009	<0.008	0.033	<0.008	<0.008	0.009	<0.008
Nitrite-N	mg/L	ND	ND	<0.008	ND	ND	ND	ND	ND	ND	<0.008	<0.008	<0.008	<0.008
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station 37	Station 11	Station 23	Station 24			Station 26						
Chemical Class / Chemical Name	Units	1993-07-21, Depth = NA	1993-07-25, Depth = NA	1999-08-06, Depth = 2	1993-07-24, Depth = NA	1993-03-08, Depth = 2	1993-03-08, Depth = 5	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1) , Depth = 2	1999-08-06 (2) , Depth = 2	1999-08-06 (1), Depth = 5	1999-08-06 (2), Depth = 5
Nutrients (cont.)														
Phosphate	mg/L	ND	ND	<0.002	ND	ND	ND	ND	ND	ND	<0.002	<0.002	<0.002	<0.002
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	2.8	ND	ND	ND	ND	ND	ND	3.3	3.2	3.4	3.3
Total Phosphorus	mg/L	0.003	0.002	0.004	0.004	0.007	0.007	0.005	0.011	0.004	0.008	0.008	<0.004	0.004
Major Ions														
Calcium	mg/L	1.2	1.1	1.03	1.2	1.89	1.49	1.42	1.51	1.25	1.06	1.04	1.06	1.05
Chloride	mg/L	0.99	0.37	<0.2	0.39	0.2	0.2	0.3	0.2	<0.2	0.3	<0.2	<0.2	0.2
Fluoride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	0.4	0.4	0.5	0.4	0.74	0.64	0.65	0.7	0.56	0.53	0.52	0.5	0.53
Potassium	mg/L	0.5	0.4	0.44	0.5	0.63	0.54	0.56	0.59	0.46	0.43	0.43	0.42	0.44
Silica	mg/L	ND	ND	0.18	ND	0.45	0.38	0.27	0.28	0.29	0.27	0.26	0.26	0.26
Silica, Reactive	mg/L	0.265	0.07	ND	0.138	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.5	0.5	0.49	0.5	0.62	0.59	0.65	0.68	0.52	0.48	0.48	0.49	0.49
Sulphate	mg/L	<3	<3	<3	<3	5	<3	3	<3	<3	<3	<3	<3	<3
Total Cyanide	mg/L	ND	ND	ND	ND	<0.002	<0.002	<0.002	0.003	<0.002	ND	ND	ND	ND
Dissolved Metals														
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station 37	Station 11	Station 23	Station 24			Station 26							
		1993-07-21, Depth = NA	1993-07-25, Depth = NA	1999-08-06, Depth = 2	1993-07-24, Depth = NA	1993-03-08, Depth = 2	1993-03-08, Depth = 5	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1) , Depth = 2	1999-08-06 (2) , Depth = 2	1999-08-06 (1), Depth = 5	1999-08-06 (2), Depth = 5	
Dissolved Metals (cont.)															
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Total Metals															
Aluminum	µg/L	4.57	6.54	<30	2.56	<10	<10	<10	<10	<10	<30	<30	<30	<30	
Antimony	µg/L	0.03	0.18	0.6	0.19	0.8	0.7	0.5	0.6	0.5	0.8	<0.5	<0.5	<0.5	
Arsenic	µg/L	<0.3	<0.3	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Barium	µg/L	1.64	1.58	2	1.65	2.7	2.3	1.9	2.1	2.1	2	2	2	2	
Beryllium	µg/L	<0.1	<0.1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<2	<2	<2	
Bismuth	µg/L	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	
Cadmium	µg/L	ND	ND	<0.3	ND	<0.01	<0.01	<0.01	0.02	<0.01	<0.3	<0.3	<0.3	<0.3	
Cesium	µg/L	<0.1	<0.1	<0.4	<0.1	0.02	0.01	0.01	0.01	0.01	<0.4	<0.4	<0.4	<0.4	
Chromium	µg/L	<0.2	0.25	<3	0.25	<0.1	<0.05	0.1	<0.1	<0.1	<3	<3	<3	<3	
Cobalt	µg/L	<0.1	<0.1	<1	<0.1	0.2	0.2	0.1	0.1	0.2	<1	<1	<1	<1	
Copper	µg/L	0.18	0.49	<2	0.43	0.9	0.7	0.6	0.7	0.6	<2	<2	<2	<2	
Iron	mg/L	<0.02	<0.02	<0.03	<0.02	0.024	<0.012	<0.02	<0.02	<0.02	<0.03	<0.03	0.04	<0.03	
Lead	µg/L	<0.2	<0.2	<1	<0.2	0.32	0.95	0.2	0.25	0.19	<1	<1	<1	<1	
Lithium	µg/L	0.7	0.96	<3	0.93	1.2	1.2	1.2	1.3	1	<3	<3	<3	<3	

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station 37	Station 11	Station 23	Station 24			Station 26						
Chemical Class / Chemical Name	Units	1993-07-21, Depth = NA	1993-07-25, Depth = NA	1999-08-06, Depth = 2	1993-07-24, Depth = NA	1993-03-08, Depth = 2	1993-03-08, Depth = 5	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1) , Depth = 2	1999-08-06 (2) , Depth = 2	1999-08-06 (1), Depth = 5	1999-08-06 (2), Depth = 5
Total Metals (cont.)														
Manganese	µg/L	2.5	1.36	1	2.66	3.3	1.8	1.2	1.1	13.4	4	4	4	5
Mercury	µg/L	ND	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	ND	ND	ND	ND
Molybdenum	µg/L	ND	0.03	<1	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<1	<1	<1
Nickel	µg/L	<0.1	0.32	<1	0.73	1.1	1.1	0.9	1.1	1.2	1	1	1	1
Selenium	µg/L	<1	<1	<10	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10
Silver	µg/L	<0.1	<0.1	<0.3	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.3	<0.3	<0.3	<0.3
Strontium	µg/L	7.86	6.76	6	5.64	8.6	7.3	7.8	8.3	6.9	6	6	6	6
Thallium	µg/L	<0.1	<0.1	<0.4	<0.1	<0.05	0.02	<0.05	<0.05	<0.05	<0.4	<0.4	<0.4	<0.4
Titanium	µg/L	ND	ND	<3	ND	0.06	0.07	<0.05	<0.05	<0.05	<3	<3	<3	<3
Uranium	µg/L	<0.1	<0.1	<0.3	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.3	<0.3	<0.3	<0.3
Vanadium	µg/L	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<1
Zinc	µg/L	<0.5	0.61	<10	0.52	<5	<5	<5	<5	<5	<10	<10	<10	<10

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station 26			Station 3		Station 52						
Chemical Class / Chemical Name	Units	1999-08-06 (1), Depth = 9	1999-08-06 (2), Depth = 9	1999-08-06 (3), Depth = 9	1999-03-10 (1), Depth = 3	1999-03-10 (2), Depth = 3	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10 (1), Depth = 5	1999-03-10 (2), Depth = 5	1999-03-10 (3), Depth = 5	1999-03-10 (1), Depth = 10	1999-03-10 (2), Depth = 10
Conventional													
Alkalinity	mg/L	4	4.2	4.1	5.8	5.7	3.9	3.9	4	4.1	4	3.7	4
Colour (True)	TCU	5	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity	µS/cm	15.7	15.7	15.4	21.6	21.7	15	15.1	14.9	15.3	15.4	14.8	15.1
Conductivity (Field)	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Lab)	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hardness	mg/L	4.64	5	4.39	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	6.46	6.58	6.58	6.62	6.65	6.6	6.6	6.59	6.73	6.68	6.68	6.64
pH (Field)	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Lab)	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Dissolved Solids	mg/L	19	26	11	21	19	22	34	18	19	32	23	23
Total Suspended Solids	mg/L	7	6	<3	<3	<3	<3	3	<3	4	3	<3	<3
Turbidity	NTU	0.5	0.7	0.6	0.9	1.5	0.3	0.4	0.7	0.4	0.4	0.5	0.6
Nutrient													
Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	0.019	0.02	<0.005	0.011	0.01	0.012	0.01	0.012	0.014	0.011	0.009	0.009
Dissolved Organic Carbon	mg/L	3.2	3.2	3.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate + Nitrite	mg/L	<0.008	<0.008	<0.008	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	<0.008	<0.008	<0.008	0.012	0.019	0.012	0.01	0.011	0.01	0.01	0.015	0.018
Nitrite-N	mg/L	<0.008	<0.008	<0.008	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station 26			Station 3		Station 52						
		1999-08-06 (1), Depth = 9	1999-08-06 (2), Depth = 9	1999-08-06 (3), Depth = 9	1999-03-10 (1), Depth = 3	1999-03-10 (2), Depth = 3	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10 (1), Depth = 5	1999-03-10 (2), Depth = 5	1999-03-10 (3), Depth = 5	1999-03-10 (1), Depth = 10	1999-03-10 (2), Depth = 10
Nutrients (cont.)													
Phosphate	mg/L	<0.002	<0.002	<0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	4.1	3.4	3.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.023	0.009	0.007	0.006	0.005	0.004	0.003	0.002	0.003	0.002	0.003	0.002
Major Ions													
Calcium	mg/L	1.05	1.13	1.05	1.52	1.53	1.01	1	1.01	1.07	1.07	1.02	1.02
Chloride	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	0.3	0.4
Fluoride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	0.49	0.53	0.43	0.74	0.74	0.53	0.53	0.54	0.54	0.54	0.53	0.54
Potassium	mg/L	0.42	0.42	0.43	0.63	0.63	0.46	0.46	0.46	0.47	0.47	0.45	0.45
Silica	mg/L	0.28	0.29	0.27	0.34	0.34	0.12	0.12	0.12	0.12	0.12	0.2	0.2
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.49	0.48	0.5	0.68	0.7	0.48	0.49	0.49	0.5	0.5	0.49	0.49
Sulphate	mg/L	<3	<3	<3	<3	4	<3	<3	<3	<3	<3	9	<3
Total Cyanide	mg/L	ND	ND	ND	0.005	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved Metals													
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station 26			Station 3		Station 52						
		1999-08-06 (1), Depth = 9	1999-08-06 (2), Depth = 9	1999-08-06 (3), Depth = 9	1999-03-10 (1), Depth = 3	1999-03-10 (2), Depth = 3	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10 (1), Depth = 5	1999-03-10 (2), Depth = 5	1999-03-10 (3), Depth = 5	1999-03-10 (1), Depth = 10	1999-03-10 (2), Depth = 10
Dissolved Metals (cont.)													
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals													
Aluminum	µg/L	<30	<30	<30	<10	<10	<10	<10	<10	<10	<10	<10	<10
Antimony	µg/L	<0.5	<0.5	<0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Arsenic	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Barium	µg/L	2	2	2	2.5	2.5	2	1.9	1.9	2	2.1	2.2	2.1
Beryllium	µg/L	<2	<2	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	µg/L	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	µg/L	<0.3	<0.3	<0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cesium	µg/L	<0.4	<0.4	<0.4	0.01	0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01
Chromium	µg/L	<3	<3	<3	0.2	0.2	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	0.1
Cobalt	µg/L	<1	<1	<1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	µg/L	<2	<2	<2	0.8	0.8	0.5	0.4	0.5	0.5	0.5	0.4	0.5
Iron	mg/L	0.04	0.03	<0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02
Lead	µg/L	<1	<1	<1	0.34	0.6	0.3	0.06	0.06	0.13	0.12	0.25	0.45
Lithium	µg/L	<3	<3	<2	1.5	1.5	1	1	1.1	0.9	1.1	0.9	1

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station 26			Station 3		Station 52						
		1999-08-06 (1), Depth = 9	1999-08-06 (2), Depth = 9	1999-08-06 (3), Depth = 9	1999-03-10 (1), Depth = 3	1999-03-10 (2), Depth = 3	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10 (1), Depth = 5	1999-03-10 (2), Depth = 5	1999-03-10 (3), Depth = 5	1999-03-10 (1), Depth = 10	1999-03-10 (2), Depth = 10
Total Metals (cont.)													
Manganese	µg/L	5	5	4	3.3	1.4	0.6	0.5	0.6	0.5	0.6	1	1
Mercury	µg/L	ND	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	µg/L	<1	<1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12
Nickel	µg/L	1	1	1	1	1.1	0.6	0.5	0.5	0.6	0.5	0.5	0.5
Selenium	µg/L	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silver	µg/L	<0.3	<0.3	<0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Strontium	µg/L	6	6	6	8.8	8.2	5.9	5.2	6	5.3	5.9	5.7	5.9
Thallium	µg/L	<0.4	<0.4	<0.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	<3	<3	<3	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08
Uranium	µg/L	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Vanadium	µg/L	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	µg/L	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1969-06-12, Depth = NA	1969-07-18, Depth = NA	1970-07-16, Depth = NA	1970-10-06, Depth = NA	1971-08-13, Depth = NA	1972-06-26, Depth = NA	1972-09-20, Depth = NA	1972-12-08, Depth = NA	1973-02-02, Depth = NA	1973-05-31, Depth = NA	1974-10-11, Depth = NA	1975-07-11, Depth = NA	1976-04-21, Depth = NA
Conventionals														
Alkalinity	mg/L	3.9	3.8	3.8	3.9	4.9	4.7	2.1	3.8	3.9	4.6	6.8	3.4	3.9
Colour (True)	TCU	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Lab)	µS/cm	15.6	14.4	14.2	19	16.8	17.1	14.7	21.2	13.5	17.1	15	11	17.4
Hardness	mg/L	5.8	5.3	4.9	5.4	5.3	5.1	2.2	4.8	7	5.4	6.1	8.7	10.2
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Lab)	pH	6.7	6.7	7	7	7.3	6.9	6.4	6.7	6.9	6.9	6.9	7	6.8
Total Dissolved Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Turbidity	NTU	0.5	0.8	1.3	0.8	1.8	0.9	3.7	0.9	0.4	0.5	0.3	1.2	2.7
Nutrients														
Ammonia	mg/L	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.014	0.007	0.007	0.009	<0.005	<0.001	0.05	0.01	<0.001	1	ND	0.023	0.01
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	ND	<0.002	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1969-06-12, Depth = NA	1969-07-18, Depth = NA	1970-07-16, Depth = NA	1970-10-06, Depth = NA	1971-08-13, Depth = NA	1972-06-26, Depth = NA	1972-09-20, Depth = NA	1972-12-08, Depth = NA	1973-02-02, Depth = NA	1973-05-31, Depth = NA	1974-10-11, Depth = NA	1975-07-11, Depth = NA	1976-04-21, Depth = NA
Nutrients (cont.)														
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	<0.5	1.28
Total Organic Carbon	mg/L	ND	ND	ND	ND	5	4	3	4	ND	1	3	ND	ND
Total Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.003	<0.005	0.005
Major Ions														
Calcium	mg/L	2.1	1.5	1.3	1.3	1.5	1.2	0.6	1.3	0.7	1.5	1.4	2.7	<1
Chloride	mg/L	0.3	<0.1	0.3	0.4	0.6	0.6	0.3	0.8	0.5	0.4	0.4	0.3	0.4
Fluoride	mg/L	<0.1	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	ND	<0.05	ND	0.02	<0.05
Magnesium	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium	mg/L	0.4	0.3	0.5	0.4	0.3	0.5	0.4	0.6	0.4	0.4	0.3	0.3	0.3
Silica	mg/L	0.2	0.1	0.8	0.1	<0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.1	0.15
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.5	0.4	0.6	0.4	0.5	<0.1	0.8	0.8	0.4	0.5	0.4	0.2	0.25
Sulphate	mg/L	1.3	1.6	<1	<1	<1	1.3	1.6	1.3	2.9	<1	1.5	<1	1
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Metals														
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1969-06-12, Depth = NA	1969-07-18, Depth = NA	1970-07-16, Depth = NA	1970-10-06, Depth = NA	1971-08-13, Depth = NA	1972-06-26, Depth = NA	1972-09-20, Depth = NA	1972-12-08, Depth = NA	1973-02-02, Depth = NA	1973-05-31, Depth = NA	1974-10-11, Depth = NA	1975-07-11, Depth = NA	1976-04-21, Depth = NA
Dissolved Metals (cont.)														
Copper	µg/L	ND	ND	ND	ND	1	2	3	3	ND	2	ND	ND	ND
Iron	mg/L	<0.001	<0.001	<0.001	0.02	0.08	<0.01	<0.05	<0.001	ND	<0.05	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	<1	<1	<1	<1	ND	<1	ND	ND	ND
Manganese	µg/L	ND	<10	ND	ND	<10	<10	<10	ND	ND	<10	ND	ND	ND
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND	5	22	3	4	ND	ND	ND	ND	ND
Total Metals														
Aluminum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1969-06-12, Depth = NA	1969-07-18, Depth = NA	1970-07-16, Depth = NA	1970-10-06, Depth = NA	1971-08-13, Depth = NA	1972-06-26, Depth = NA	1972-09-20, Depth = NA	1972-12-08, Depth = NA	1973-02-02, Depth = NA	1973-05-31, Depth = NA	1974-10-11, Depth = NA	1975-07-11, Depth = NA	1976-04-21, Depth = NA
Total Metals (cont.)														
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1976-07-22, Depth = NA	1976-09-30, Depth = NA	1977-04-04, Depth = NA	1977-05-25, Depth = NA	1977-08-18, Depth = NA	1977-09-29, Depth = NA	1978-09-05, Depth = NA	1979-06-27, Depth = NA	1979-08-08, Depth = NA	1979-11-20, Depth = NA	1980-02-04, Depth = NA	1980-05-08, Depth = NA	1980-06-19, Depth = NA
Conventional														
Alkalinity	mg/L	3.7	4	2.5	4.5	<1	4.89	4.6	<10	<10	<10	4	ND	5
Colour (True)	TCU	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	ND	ND	ND	ND	ND	ND	ND	15	18	ND	15.9	19	13
Conductivity (Lab)	µS/cm	14.5	15.4	13.8	14.3	14	15.1	16	19	14.4	26	18	ND	17
Hardness	mg/L	5.7	9.5	12.3	28.3	7.5	10.9	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.5	ND
pH (Lab)	pH	7.2	7.1	6.8	7.1	7.2	7.7	6.7	6.7	7.1	7.4	7	7	6.9
Total Dissolved Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	<1	1	<1	<1	2	1
Turbidity	NTU	1.7	2	5.5	2	5.5	1.6	0.2	3.7	<0.1	0.8	0.3	0.5	0.23
Nutrients														
Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	2	2	2	2	2	2	2
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	<0.003	<0.003	0.003	<0.003	<0.003	0.003	0.005
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.015	0.01	0.02	0.03	<0.01	0.01	<0.01	0.02	<0.01	0.04	0.02	0.01	0.01
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1976-07-22, Depth = NA	1976-09-30, Depth = NA	1977-04-04, Depth = NA	1977-05-25, Depth = NA	1977-08-18, Depth = NA	1977-09-29, Depth = NA	1978-09-05, Depth = NA	1979-06-27, Depth = NA	1979-08-08, Depth = NA	1979-11-20, Depth = NA	1980-02-04, Depth = NA	1980-05-08, Depth = NA	1980-06-19, Depth = NA
Nutrients (cont.)														
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	<0.1	0.45	0.9	1.1	<0.1	<0.1	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	1	3.5	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.005	<0.005	<0.005	<0.003	0.042	<0.003	<0.003	<0.003	0.003	0.003	<0.003	0.005	0.007
Major Ions														
Calcium	mg/L	1.2	2.7	3.7	8.2	2.4	4	0.8	1.8	0.9	1	1.2	1.5	1.5
Chloride	mg/L	0.5	0.25	0.4	0.4	0.2	0.45	0.3	0.4	0.4	0.4	0.5	0.5	0.4
Fluoride	mg/L	ND	0.04	<0.01	0.02	0.023	0.026	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Magnesium	mg/L	ND	ND	ND	ND	ND	ND	0.4	0.8	0.8	0.6	0.5	1.1	0.5
Potassium	mg/L	0.4	0.3	0.5	0.25	<0.1	0.48	0.4	0.4	0.4	0.4	0.5	0.5	0.4
Silica	mg/L	<0.1	<0.1	<0.1	0.23	0.1	0.1	<0.1	0.1	0.1	0.1	<0.1	0.1	0.1
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.5	0.3	0.5	0.5	0.6	0.6	0.4	0.6	0.5	0.5	0.6	0.5	0.6
Sulphate	mg/L	1	<1	1.6	1.4	<1	1.1	2	1.5	1.5	1.6	1	ND	1
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Metals														
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/L	ND	ND	ND	ND	ND	ND	<20	<20	<20	<20	<20	<20	<20

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1976-07-22, Depth = NA	1976-09-30, Depth = NA	1977-04-04, Depth = NA	1977-05-25, Depth = NA	1977-08-18, Depth = NA	1977-09-29, Depth = NA	1978-09-05, Depth = NA	1979-06-27, Depth = NA	1979-08-08, Depth = NA	1979-11-20, Depth = NA	1980-02-04, Depth = NA	1980-05-08, Depth = NA	1980-06-19, Depth = NA
Dissolved Metals (cont.)														
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.04	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<10	ND
Selenium	µg/L	ND	ND	ND	ND	ND	ND	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals														
Aluminum	µg/L													
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<50	50
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	<1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	3
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	<1
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<4	<4
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1												
Chemical Class / Chemical Name	Units	1976-07-22, Depth = NA	1976-09-30, Depth = NA	1977-04-04, Depth = NA	1977-05-25, Depth = NA	1977-08-18, Depth = NA	1977-09-29, Depth = NA	1978-09-05, Depth = NA	1979-06-27, Depth = NA	1979-08-08, Depth = NA	1979-11-20, Depth = NA	1980-02-04, Depth = NA	1980-05-08, Depth = NA	1980-06-19, Depth = NA
Total Metals (cont.)														
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	0.05	ND	<0.02	<0.02	<0.02	0.03
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	4
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<1	<1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8	3

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1980-07-30, Depth = NA	1980-09-16, Depth = NA	1981-06-24, Depth = NA	1981-07-22, Depth = NA	1983-06-10, Depth = NA	1983-07-11, Depth = NA	1983-08-24, Depth = NA	1983-11-24, Depth = NA	1984-03-21, Depth = NA	1984-07-05, Depth = NA	1984-09-26, Depth = NA
Conventionals												
Alkalinity	mg/L	2	3	4	4.7	4.5	5	4.5	13.2	6.1	6	4
Colour (True)	TCU	ND	ND	5	5	<5	<5	<5	<5	ND	5	5
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	13	15.5	13	16	15	16	20	16	16	12	15
Conductivity (Lab)	µS/cm	17.9	17	17.6	21	15.8	16.6	30	24.8	18.5	16	14.6
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	6.6	ND	ND	ND	ND	ND	7.4	7.6	7.3	6.8	ND
pH (Lab)	pH	6.9	7.3	6.6	7	6.9	7.1	7.2	7.6	7	7.6	7.2
Total Dissolved Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	<1	3	<1	ND	<1	1	2	<1	3	<1	<1
Turbidity	NTU	0.4	0.5	0.2	0.7	0.2	1	0.4	0.2	0.5	0.3	0.4
Nutrients												
Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	2	1	2.3	2.4	2.1	1.7	2.3	1.4	2.1	1.3	1.3
Dissolved Phosphorus	mg/L	<0.003	<0.003	<0.003	0.006	0.005	0.003	0.003	<0.003	<0.003	0.01	<0.003
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.03	<0.01	ND	<0.01	0.03	0.02	0.01	0.02	0.02	<0.01	<0.01
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1980-07-30, Depth = NA	1980-09-16, Depth = NA	1981-06-24, Depth = NA	1981-07-22, Depth = NA	1983-06-10, Depth = NA	1983-07-11, Depth = NA	1983-08-24, Depth = NA	1983-11-24, Depth = NA	1984-03-21, Depth = NA	1984-07-05, Depth = NA	1984-09-26, Depth = NA
<i>Nutrients (cont.)</i>												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	<0.003	<0.003	<0.003	0.009	0.007	0.003	0.016	0.009	0.016	0.01	0.01
<i>Major Ions</i>												
Calcium	mg/L	ND	1.8	1.1	1.7	1.4	1.2	1.8	4.9	59 ¹	1.5	1.9
Chloride	mg/L	0.6	0.4	0.4	0.5	<0.1	0.5	3.6	0.4	76.1 ¹	0.8	0.3
Fluoride	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	0.12 ¹	0.02	0.04
Magnesium	mg/L	ND	0.8	0.4	0.6	0.7	0.6	0.5	0.7	23 ¹	0.5	0.8
Potassium	mg/L	0.4	0.4	0.4	0.3	0.4	0.5	0.9	0.4	9.2 ¹	0.4	0.4
Silica	mg/L	0.1	<0.1	<0.1	0.3	0.2	0.3	0.3	0.09	13.6 ¹	0.1	0.1
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.5	0.5	0.3	0.4	0.7	0.5	3	0.5	47.4 ¹	0.5	0.6
Sulphate	mg/L	1	1	2	1	1.8	1.4	2.1	1.6	14.8 ¹	1	<1
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Dissolved Metals</i>												
Arsenic	µg/L	ND	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	ND	0.4	0.1	ND
Boron	µg/L	<0.5	<20	<20	<20	<20	<20	50	ND	<20	<20	<20

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1980-07-30, Depth = NA	1980-09-16, Depth = NA	1981-06-24, Depth = NA	1981-07-22, Depth = NA	1983-06-10, Depth = NA	1983-07-11, Depth = NA	1983-08-24, Depth = NA	1983-11-24, Depth = NA	1984-03-21, Depth = NA	1984-07-05, Depth = NA	1984-09-26, Depth = NA
Dissolved Metals (cont.)												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	<20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	ND	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals												
Aluminum	µg/L											
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	<50	<50	<50	<50	<50	50	<100	<100	<100	ND	<100
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1
Copper	µg/L	2	2	5	<1	1	<1	<1	8	4	4	1
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	<4	<4	<4	<4	<4	<4	<1	<1	<1	1	<1
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1980-07-30, Depth = NA	1980-09-16, Depth = NA	1981-06-24, Depth = NA	1981-07-22, Depth = NA	1983-06-10, Depth = NA	1983-07-11, Depth = NA	1983-08-24, Depth = NA	1983-11-24, Depth = NA	1984-03-21, Depth = NA	1984-07-05, Depth = NA	1984-09-26, Depth = NA
Total Metals (cont.)												
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	0.03	<0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	<2	2	<2	<2	<2	<2	2	2	<1	<1	3
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	<1	<1	<1	<1	<1	<1	<0.5	<0.5	1.2	ND	ND
Zinc	µg/L	1	19	<1	1	3	2	1	3	<1	2	<1

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1985-01-16, Depth = NA	1985-03-11, Depth = NA	1985-05-22, Depth = NA	1985-06-25, Depth = NA	1985-08-13, Depth = NA	1985-12-18, Depth = NA	1986-01-29, Depth = NA	1986-05-14, Depth = NA	1986-07-09, Depth = NA	1986-08-13, Depth = NA	1987-02-12, Depth = NA
Conventionals												
Alkalinity	mg/L	5.8	4.8	6	6.1	5.5	4.8	4.4	6.1	5	4.4	4.5
Colour (True)	TCU	5	<5	<5	<5	<5	5	<5	<5	<5	<5	<5
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	13	4.7	15.5	ND	ND	ND	ND	20	32	27	11
Conductivity (Lab)	µS/cm	14.9	16	15.7	16	16.6	22.5	15.4	18.2	16	15.4	15.4
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	ND	7.4	7.6	8.1	4.2	9	ND	6.6	7.1	7.6	7.27
pH (Lab)	pH	7.1	7	6.9	7	7.3	6.5	7	6.91	7.5	7.04	7.2
Total Dissolved Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1
Turbidity	NTU	0.33	0.7	0.5	0.2	0.2	0.2	0.5	0.2	0.4	0.2	0.24
Nutrients												
Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	1.7	0.8	1.7	1.4	1.4	2.4	2.3	2.1	1.6	1.9	1.8
Dissolved Phosphorus	mg/L	<0.003	<0.003	<0.003	0.003	0.003	<0.003	0.009	<0.003	<0.003	0.007	<0.003
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.03
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1985-01-16, Depth = NA	1985-03-11, Depth = NA	1985-05-22, Depth = NA	1985-06-25, Depth = NA	1985-08-13, Depth = NA	1985-12-18, Depth = NA	1986-01-29, Depth = NA	1986-05-14, Depth = NA	1986-07-09, Depth = NA	1986-08-13, Depth = NA	1987-02-12, Depth = NA
<i>Nutrients (cont.)</i>												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.016	<0.003	0.009	0.003	0.007	0.004	0.011	0.003	ND	ND	ND
<i>Major Ions</i>												
Calcium	mg/L	1.5	1.5	1	1.5	1.4	1.3	1.4	1.5	1.4	1.7	1.2
Chloride	mg/L	0.2	0.5	0.5	0.5	0.6	0.4	0.3	<0.1	0.4	0.7	0.4
Fluoride	mg/L	ND	0.04	0.05	0.03	0.02	0.02	0.01	0.02	0.02	0.05	0.03
Magnesium	mg/L	0.6	0.7	0.6	0.7	0.7	0.6	0.7	0.6	0.8	0.6	0.5
Potassium	mg/L	0.4	0.5	0.4	0.9	0.37	0.5	0.5	0.5	0.38	0.42	0.44
Silica	mg/L	0.09	0.33	0.1	0.2	0.12	0.08	0.08	0.17	0.09	0.08	0.06
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.6	0.6	0.5	0.5	0.5	0.6	0.7	0.6	0.4	0.5	0.5
Sulphate	mg/L	1	2	1.4	1.4	1.7	9	1.5	1.3	1.2	1.4	1.1
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Dissolved Metals</i>												
Arsenic	µg/L	0.3	0.2	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1	0.1
Boron	µg/L	10	<20	<20	20	<20	20	<20	30	<20	<20	<20

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1985-01-16, Depth = NA	1985-03-11, Depth = NA	1985-05-22, Depth = NA	1985-06-25, Depth = NA	1985-08-13, Depth = NA	1985-12-18, Depth = NA	1986-01-29, Depth = NA	1986-05-14, Depth = NA	1986-07-09, Depth = NA	1986-08-13, Depth = NA	1987-02-12, Depth = NA
Dissolved Metals (cont.)												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals												
Aluminum	µg/L											
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<100	<80	<80
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5
Copper	µg/L	2	<1	<1	<1	<1	<1	2	<1	<1	0.7	3.2
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	<1	<1	<1	<1	<1	<1	1	<1	<1	<0.7	<0.7
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1985-01-16, Depth = NA	1985-03-11, Depth = NA	1985-05-22, Depth = NA	1985-06-25, Depth = NA	1985-08-13, Depth = NA	1985-12-18, Depth = NA	1986-01-29, Depth = NA	1986-05-14, Depth = NA	1986-07-09, Depth = NA	1986-08-13, Depth = NA	1987-02-12, Depth = NA
Total Metals (cont.)												
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	0.5
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	ND	ND	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	µg/L	5	2	2	<1	1	3	6	<1	<1	0.8	1.3

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1987-05-20, Depth = NA	1987-07-07, Depth = NA	1987-09-23, Depth = NA	1988-01-15, Depth = NA	1988-05-12, Depth = NA	1988-07-28, Depth = NA	1988-09-07, Depth = NA	1989-03-02, Depth = NA	1989-06-07, Depth = NA	1989-08-30, Depth = NA	1990-02-11, Depth = NA
Conventional												
Alkalinity	mg/L	4.4	<0.1	5.2	4.4	4.2	4.5	4.7	4.3	5.12	3.9	3.7
Colour (True)	TCU	<5	<5	<5	<5	<5	5	7.5	5	<5	<5	5
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	14	19	28	12	16	14	ND	23	28	16	ND
Conductivity (Lab)	µS/cm	15.5	15.6	15.4	15.1	14.9	15.5	14.9	17.5	17.1	15.1	15.3
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	7.5	7.29	7.44	ND	6.6	7.12	6.64	7	ND	7.5	ND
pH (Lab)	pH	7.3	6.89	5.85	7.68	7.41	6.62	6.78	6.79	7.17	6.96	6.82
Total Dissolved Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Turbidity	NTU	0.2	0.16	0.37	0.19	0.5	0.14	0.14	0.2	0.13	0.2	0.2
Nutrients												
Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	1.8	2.2	2.6	1.9	2.72	2.78	1.94	2.09	2.12	2.15	1.99
Dissolved Phosphorus	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.01	0.01	<0.01	0.02	0.015	0.01	<0.01	0.017	0.017	<0.01	0.018
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1987-05-20, Depth = NA	1987-07-07, Depth = NA	1987-09-23, Depth = NA	1988-01-15, Depth = NA	1988-05-12, Depth = NA	1988-07-28, Depth = NA	1988-09-07, Depth = NA	1989-03-02, Depth = NA	1989-06-07, Depth = NA	1989-08-30, Depth = NA	1990-02-11, Depth = NA
Nutrients (cont.)												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Major Ions												
Calcium	mg/L	1.2	1.4	1.1	1.2	1.1	1.26	5.4	1.2	1.37	1.16	1.1
Chloride	mg/L	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.1	0.8	0.5	0.4
Fluoride	mg/L	0.02	0.02	0.03	0.03	0.02	0.01	0.02	0.03	0.04	0.03	0.04
Magnesium	mg/L	0.6	0.6	0.6	0.6	0.5	0.61	0.84	0.6	0.66	0.54	0.6
Potassium	mg/L	0.42	0.36	0.42	0.41	0.45	0.38	0.38	0.6	0.51	0.41	0.43
Silica	mg/L	0.08	0.11	0.1	0.07	0.08	0.1	0.12	0.12	0.15	0.11	0.13
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.6	0.4	0.5	0.5	0.55	0.44	0.44	0.5	0.6	0.45	0.51
Sulphate	mg/L	1.7	1.4	1.2	1.2	2	1	1.4	1.4	2.2	1.8	0.9
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Metals												
Arsenic	µg/L	<0.1	0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	µg/L	<20	<20	<20	<20	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1987-05-20, Depth = NA	1987-07-07, Depth = NA	1987-09-23, Depth = NA	1988-01-15, Depth = NA	1988-05-12, Depth = NA	1988-07-28, Depth = NA	1988-09-07, Depth = NA	1989-03-02, Depth = NA	1989-06-07, Depth = NA	1989-08-30, Depth = NA	1990-02-11, Depth = NA
Dissolved Metals (cont.)												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals												
Aluminum	µg/L											
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	<80	<80	<80	<80	<80	<80	<80	<80	120	<80	<80
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<0.1	0.1	0.3	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.3	<0.1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	µg/L	0.5	0.7	0.8	0.7	<0.5	0.8	1.1	0.6	0.6	<0.5	0.7
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	<0.7	<0.7	<0.7	1.1	<0.7	<0.7	0.8	<0.7	0.7	1.5	<0.7
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1987-05-20, Depth = NA	1987-07-07, Depth = NA	1987-09-23, Depth = NA	1988-01-15, Depth = NA	1988-05-12, Depth = NA	1988-07-28, Depth = NA	1988-09-07, Depth = NA	1988-03-02, Depth = NA	1989-06-07, Depth = NA	1989-08-30, Depth = NA	1990-02-11, Depth = NA
<i>Total Metals (cont.)</i>												
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	<0.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5	0.7	0.8	<0.5	<0.5
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	µg/L	0.6	2.4	1.5	1.4	0.7	0.7	1.6	1.2	2.4	1.1	0.9

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1990-05-14, Depth = NA	1990-07-19, Depth = NA	1990-09-05, Depth = NA	1991-01-30, Depth = NA	1991-07-29, Depth = NA	1991-08-28 (1), Depth = NA	1991-08-28 (2), Depth = NA	1991-08-28 (3), Depth = NA	1992-02-11, Depth = NA	1992-05-04, Depth = NA	1992-10-08, Depth = NA
Conventional												
Alkalinity	mg/L	5.2	4.6	5.3	6.6	4.1	5.1	4.4	4.4	4.3	4.9	5.4
Colour (True)	TCU	<5	5	<5	<5	<5	<5	<5	<5	<5	5	5
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	ND	10	ND	ND	10	10	10	10	ND	10	10
Conductivity (Lab)	µS/cm	16.4	15.8	16.1	15.9	16	15.4	15.4	15.4	15.6	16.9	15.1
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	7.3	7.5	ND	ND	7.07	7.52	7.44	7.44	ND	7.45	6.8
pH (Lab)	pH	7.2	6.91	6.84	7.46	6.34	6.84	6.84	6.84	6.1	6.83	6.95
Total Dissolved Solids	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Suspended Solids	mg/L	<1	<1	<1	<1	<1	1.2	<1	1.2	<1	<1	<1
Turbidity	NTU	0.1	0.26	0.12	0.16	0.32	0.56	0.43	0.48	0.16	0.33	0.08
Nutrients												
Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	2.15	2.06	1.91	2.01	1.99	2	1.89	2.01	2.05	2.17	2.09
Dissolved Phosphorus	mg/L	0.007	<0.002	<0.002	<0.002	0.002	0.003	0.003	0.003	0.003	0.004	0.003
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.016	0.01	<0.01	0.019	0.014	0.01	0.01	0.01	0.02	0.021	0.014
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1990-05-14, Depth = NA	1990-07-19, Depth = NA	1990-09-05, Depth = NA	1991-01-30, Depth = NA	1991-07-29, Depth = NA	1991-08-28 (1), Depth = NA	1991-08-28 (2), Depth = NA	1991-08-28 (3), Depth = NA	1992-02-11, Depth = NA	1992-05-04, Depth = NA	1992-10-08, Depth = NA
<i>Nutrients (cont.)</i>												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	ND	ND	ND	ND	0.005	0.007	0.006	0.006	0.005	0.004	0.004
<i>Major Ions</i>												
Calcium	mg/L	1.23	1.4	1.21	1.2	1.1	1.3	1.3	1.2	1.89	1.3	1.3
Chloride	mg/L	0.5	0.5	0.4	0.5	0.7	0.7	0.7	0.7	0.6	0.52	0.41
Fluoride	mg/L	0.06	0.04	0.04	0.05	0.03	0.03	0.02	0.02	0.07	0.02	0.01
Magnesium	mg/L	0.61	0.65	0.61	0.58	0.64	0.61	0.6	0.58	0.61	0.6	0.58
Potassium	mg/L	0.41	0.39	0.38	0.43	0.37	0.39	0.4	0.39	0.38	0.48	0.39
Silica	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.53	0.51	0.49	0.52	0.5	0.5	0.48	0.46	0.54	0.59	0.51
Sulphate	mg/L	1.7	1.5	1.9	1	0.6	1.4	0.9	1.3	1.4	1.5	1.5
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Dissolved Metals</i>												
Arsenic	µg/L	<0.1	<0.1	<0.1	0.1	0.2	0.1	0.2	0.2	<0.1	0.1	<0.1
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1990-05-14, Depth = NA	1990-07-19, Depth = NA	1990-09-05, Depth = NA	1991-01-30, Depth = NA	1991-07-29, Depth = NA	1991-08-28 (1), Depth = NA	1991-08-28 (2), Depth = NA	1991-08-28 (3), Depth = NA	1992-02-11, Depth = NA	1992-05-04, Depth = NA	1992-10-08, Depth = NA
Dissolved Metals (cont.)												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	<0.1	<0.1	0.1	0.1	0.3	0.1	0.1	0.1	<0.1	0.1	<0.1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals												
Aluminum	µg/L											
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80	<80
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	<0.5	<0.5	0.8	<0.5	<0.5	1.3	<0.5	0.8	<0.5	<0.5	<0.5
Copper	µg/L	0.5	<0.5	<0.5	<0.5	0.7	0.9	0.5	0.9	0.8	0.8	<0.5
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	0.7	1	<0.7	<0.7	0.8	1.1	<0.7	<0.7	1.6	0.8	<0.7
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1990-05-14, Depth = NA	1990-07-19, Depth = NA	1990-09-05, Depth = NA	1991-01-30, Depth = NA	1991-07-29, Depth = NA	1991-08-28 (1), Depth = NA	1991-08-28 (2), Depth = NA	1991-08-28 (3), Depth = NA	1992-02-11, Depth = NA	1992-05-04, Depth = NA	1992-10-08, Depth = NA
Total Metals (cont.)												
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	0.6	1.1	<0.5	<0.5	1.4	31.9	3.8	22.5	<0.5	<0.5	<0.5
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	µg/L	0.6	0.5	0.4	0.3	1.5	0.6	0.3	0.4	1.4	11.2	0.5

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1993-03-04 (1), Depth = NA	1993-03-04 (2), Depth = NA	1993-03-04 (3), Depth = NA	1993-07-13, Depth = NA	1993-08-21, Depth = NA	1994-01-21 (1), Depth = NA	1994-01-21 (2), Depth = NA	1994-01-21 (3), Depth = NA	1994-05-17, Depth = NA	1994-06-06, Depth = NA	1994-08-26 (1), Depth = NA
Conventionals												
Alkalinity	mg/L	4.5	4.6	4.4	4.7	ND	4.2	5.3	6	5.2	4.6	7.1
Colour (True)	TCU	5	5	5	<5	<5	5	<5	<5	<5	<5	6
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	ND	ND	ND	10	10	ND	ND	ND	10	ND	ND
Conductivity (Lab)	µS/cm	15.5	15.9	15.9	34.7	16.3	16.8	16.5	16.3	17.5	18.7	18.9
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	ND	ND	ND	6.73	6.4	ND	ND	ND	5.52	5.73	7.12
pH (Lab)	pH	6.98	6.75	6.77	ND	6.7	6.44	6.53	6.47	6.74	6.61	6.52
Total Dissolved Solids	mg/L	ND	ND	ND	24	<10	20	21	10	20	30	10
Total Suspended Solids	mg/L	<1	<1	<1	<3	4	<3	<3	<3	3	<3	<3
Turbidity	NTU	0.65	0.16	0.19	0.4	0.3	0.6	0.2	0.2	0.5	0.2	0.2
Nutrients												
Ammonia	mg/L	ND	ND	ND	0.006	0.004	0.02	0.02	0.022	0.01	0.001	0.03
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	1.96	1.96	2	2.2	2.21	1.7	1.4	1.3	2.5	2.4	3.4
Dissolved Phosphorus	mg/L	<0.002	0.002	0.004	0.011	<0.002	<0.002	<0.002	0.003	0.004	0.003	<0.002
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.022	0.022	0.022	ND	ND	ND	ND	ND	0.022	0.04	0.01
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1993-03-04 (1), Depth = NA	1993-03-04 (2), Depth = NA	1993-03-04 (3), Depth = NA	1993-07-13, Depth = NA	1993-08-21, Depth = NA	1994-01-21 (1), Depth = NA	1994-01-21 (2), Depth = NA	1994-01-21 (3), Depth = NA	1994-05-17, Depth = NA	1994-06-06, Depth = NA	1994-08-26 (1), Depth = NA
<i>Nutrients (cont.)</i>												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	<0.002	0.003	0.004	0.011	0.002	<0.002	0.004	0.005	0.004	0.004	<0.002
<i>Major Ions</i>												
Calcium	mg/L	1.2	1.2	1.2	1.3	ND	1.2	1.1	1	1.15	1.25	1.27
Chloride	mg/L	0.4	0.5	0.5	0.16	ND	0.44	0.44	0.43	0.49	0.47	0.38
Fluoride	mg/L	0.02	0.02	0.01	0.03	ND	0.03	0.03	0.02	0.02	0.02	0.02
Magnesium	mg/L	0.56	0.56	0.56	0.67	ND	0.63	0.59	0.58	0.57	0.59	0.64
Potassium	mg/L	0.43	0.44	0.43	0.4	ND	0.41	0.41	0.41	0.44	0.41	0.41
Silica	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.48	0.5	0.48	0.43	ND	0.46	0.46	0.46	0.49	0.47	0.46
Sulphate	mg/L	1.3	<0.2	<0.2	3.6	ND	1.6	1.6	1.8	1.7	1.5	1.3
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Dissolved Metals</i>												
Arsenic	µg/L	0.1	0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1993-03-04 (1), Depth = NA	1993-03-04 (2), Depth = NA	1993-03-04 (3), Depth = NA	1993-07-13, Depth = NA	1993-08-21, Depth = NA	1994-01-21 (1), Depth = NA	1994-01-21 (2), Depth = NA	1994-01-21 (3), Depth = NA	1994-05-17, Depth = NA	1994-06-06, Depth = NA	1994-08-26 (1), Depth = NA
Dissolved Metals (cont.)												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals												
Aluminum	µg/L				9	9	23	18	8	8	6	5
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	<80	<80	<80	2.5	2.4	2.5	2.4	2.3	2.4	2.2	2.2
Beryllium	µg/L	ND	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	0.1	0.1	0.1	ND	ND	ND	ND	ND	0.7	<0.1	<0.1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	<0.2	<0.2	0.3	0.3	<0.2	<0.2	<0.2	0.2
Cobalt	µg/L	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	µg/L	0.6	0.6	0.6	ND	ND	ND	ND	ND	1.2	0.5	0.5
Iron	mg/L	ND	ND	ND	0.012	0.01	0.014	0.01	0.003	0.004	0.005	0.022
Lead	µg/L	0.7	<0.7	<0.7	0.2	0.9	0.2	0.3	<0.2	0.2	<0.2	<0.2
Lithium	µg/L	ND	ND	ND	0.8	0.9	1	1	0.9	0.6	0.7	0.7

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1993-03-04 (1), Depth = NA	1993-03-04 (2), Depth = NA	1993-03-04 (3), Depth = NA	1993-07-13, Depth = NA	1993-08-21, Depth = NA	1994-01-21 (1), Depth = NA	1994-01-21 (2), Depth = NA	1994-01-21 (3), Depth = NA	1994-05-17, Depth = NA	1994-06-06, Depth = NA	1994-08-26 (1), Depth = NA
Total Metals (cont.)												
Manganese	µg/L	ND	ND	ND	0.9	0.8	1	0.4	0.4	1	0.9	1.8
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	µg/L	<0.5	0.5	0.5	0.7	0.6	0.5	0.6	0.5	<0.2	<0.2	0.5
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	ND	ND	ND	5.4	5.8	6.3	5.7	5.7	5.8	5.7	5.6
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	<0.5	<0.5	<0.5	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Zinc	µg/L	0.8	0.9	0.8	2.4	3.4	ND	4	1.2	9.2	0.8	0.4

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1994-08-26 (2), Depth = NA	1994-08-26 (3), Depth = NA	1994-11-15, Depth = NA	1995-01-31, Depth = NA	1995-05-05, Depth = NA	1995-06-09, Depth = NA	1995-09-19 (1), Depth = NA	1995-09-19 (2), Depth = NA	1995-09-19 (3), Depth = NA	1995-11-27, Depth = NA	1996-02-03, Depth = NA
Conventionals												
Alkalinity	mg/L	5	5.6	5	5	5.6	4.9	6.5	6.3	5.5	5.6	5.7
Colour (True)	TCU	5	5	5	5	<5	5	<5	<5	<5	5	<5
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	ND	10	10	10	12.2	11.9	14.7	14.7	14.7	10.6	ND
Conductivity (Lab)	µS/cm	17.7	18.9	16.1	18.2	18.9	19.7	15.5	17.7	15.8	15.6	16.6
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	7.12	7.12	6.95	7.24	6.86	7.07	7.2	7.2	7.2	6.6	ND
pH (Lab)	pH	6.87	6.52	6.68	6.59	6.35	6.32	6.71	6.87	6.88	6.66	6.77
Total Dissolved Solids	mg/L	13	13	19	11	<10	ND	<10	17	24	15	17
Total Suspended Solids	mg/L	<3	<3	<3	<3	4	<3	6	4	9	<3	<3
Turbidity	NTU	0.6	0.2	1.7	1.1	0.1	0.2	1	0.5	0.5	1.5	0.4
Nutrients												
Ammonia	mg/L	0.018	0.02	0.092	0.011	0.02	0.022	<0.005	0.006	0.006	0.024	0.048
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	3	3.3	1.8	2.1	2.4	2	2.2	2	2.2	2	2.5
Dissolved Phosphorus	mg/L	0.005	0.003	0.002	0.004	0.008	ND	0.003	0.004	0.003	0.003	0.003
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	<0.01	0.01	0.069	0.029	0.027	0.04	0.036	0.023	0.023	0.056	0.031
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1994-08-26 (2), Depth = NA	1994-08-26 (3), Depth = NA	1994-11-15, Depth = NA	1995-01-31, Depth = NA	1995-05-05, Depth = NA	1995-06-09, Depth = NA	1995-09-19 (1), Depth = NA	1995-09-19 (2), Depth = NA	1995-09-19 (3), Depth = NA	1995-11-27, Depth = NA	1996-02-03, Depth = NA
<i>Nutrients (cont.)</i>												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.006	<0.002	0.003	0.005	0.01	ND	0.003	0.004	0.005	0.004	0.003
<i>Major Ions</i>												
Calcium	mg/L	1.29	1.29	1.3	1.1	1.1	1.4	ND	1.23	1.22	1.2	1.23
Chloride	mg/L	0.35	0.38	0.4	0.49	0.43	0.42	0.42	0.43	0.43	0.4	0.48
Fluoride	mg/L	0.02	0.02	0.04	0.05	0.01	0.03	0.03	0.03	0.03	0.02	0.04
Magnesium	mg/L	0.65	0.65	0.57	0.58	0.58	0.67	0.61	0.61	0.62	0.59	0.62
Potassium	mg/L	0.4	0.41	0.41	0.46	0.48	0.43	0.44	0.44	0.45	0.43	0.49
Silica	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.49	0.46	0.43	0.53	0.53	0.45	0.44	0.52	0.53	0.45	0.55
Sulphate	mg/L	1.3	1.3	1.6	0.7	2.2	1.7	1.2	1.2	1.2	1.5	1.6
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Dissolved Metals</i>												
Arsenic	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1994-08-26 (2), Depth = NA	1994-08-26 (3), Depth = NA	1994-11-15, Depth = NA	1995-01-31, Depth = NA	1995-05-05, Depth = NA	1995-06-09, Depth = NA	1995-09-19 (1), Depth = NA	1995-09-19 (2), Depth = NA	1995-09-19 (3), Depth = NA	1995-11-27, Depth = NA	1996-02-03, Depth = NA
<i>Dissolved Metals (cont.)</i>												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	1.4	0.1	<0.1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Total Metals</i>												
Aluminum	µg/L	10	6	6	4	6	8	2	<2	<2	9	6
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	2.3	2.3	2.4	2.2	3.3	2.1	2.4	2.4	2.3	2.4	2.6
Beryllium	µg/L	<0.05	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	3	<0.2
Cobalt	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1
Copper	µg/L	0.6	0.5	0.9	0.4	0.4	0.7	0.5	0.5	0.5	0.6	0.8
Iron	mg/L	0.025	0.025	0.008	0.002	0.004	0.003	0.004	0.004	0.004	0.005	0.008
Lead	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.4
Lithium	µg/L	<0.1	0.7	1	1	0.8	0.9	0.9	0.8	0.9	0.9	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1994-08-26 (2), Depth = NA	1994-08-26 (3), Depth = NA	1994-11-15, Depth = NA	1995-01-31, Depth = NA	1995-05-05, Depth = NA	1995-06-09, Depth = NA	1995-09-19 (1), Depth = NA	1995-09-19 (2), Depth = NA	1995-09-19 (3), Depth = NA	1995-11-27, Depth = NA	1996-02-03, Depth = NA
Total Metals (cont.)												
Manganese	µg/L	2	2	0.7	0.4	0.7	0.6	0.6	0.5	0.5	0.4	0.6
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	µg/L	0.4	0.4	0.6	0.6	0.4	0.4	0.5	0.5	0.4	0.5	0.5
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium	µg/L	5.8	5.8	5.8	6.9	5.9	5.2	5.5	5.6	5.4	5.6	5.9
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	µg/L	0.3	0.3	1.6	0.4	0.2	0.2	0.4	0.2	0.3	1.3	1.8

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1996-06-18, Depth = NA	1996-09-16 (1), Depth = NA	1996-09-16 (2), Depth = NA	1996-09-16 (3), Depth = NA	1997-08-28, Depth = NA	1998-02-10, Depth = NA	1998-08-29, Depth = NA	1999-02-04, Depth = NA	1999-06-13, Depth = NA	2000-01-17, Depth = NA	2000-04-10, Depth = NA
Conventionals												
Alkalinity	mg/L	4.6	ND	ND	ND	4.6	3.63	4.1	4.2	5.8	4.6	4.2
Colour (True)	TCU	<5	<5	<5	<5	<5	<5	<5	ND	5	<5	5
Conductivity	µS/cm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity (Field)	µS/cm	16.1	15.7	15.7	15.7	14.3	10	15.8	10	24.5	14.1	14.4
Conductivity (Lab)	µS/cm	16.1	15.1	15.6	15.2	16.5	20.3	16.4	ND	19.9	20.4	16.1
Hardness	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	pH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	6.76	6.79	6.79	6.79	7.08	7.4	7.5	ND	ND	8.1	6.98
pH (Lab)	pH	6.95	7.01	7.02	6.99	7.03	6.97	6.76	ND	6.85	6.87	6.58
Total Dissolved Solids	mg/L	ND	11	<10	30	<10	<10	10	ND	13	26	16
Total Suspended Solids	mg/L	3	<3	<3	<3	3	<3	<3	ND	3	<3	<3
Turbidity	NTU	0.4	0.5	1.1	0.3	0.2	0.1	0.2	ND	5.2	1.5	0.5
Nutrients												
Ammonia	mg/L	0.012	0.015	<0.002	<0.002	0.008	0.079	0.008	ND	0.005	0.09	0.011
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	1.8	ND	ND	ND	ND	2.4	2.2	2.4	2.5	2.4	2.8
Dissolved Phosphorus	mg/L	<0.002	0.004	0.003	0.004	0.019	<0.002	0.002	ND	0.01	0.004	0.009
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.037	0.014	0.014	0.023	0.037	0.036	<0.008	ND	0.045	0.022	0.019
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1996-06-18, Depth = NA	1996-09-16 (1), Depth = NA	1996-09-16 (2), Depth = NA	1996-09-16 (3), Depth = NA	1997-08-28, Depth = NA	1998-02-10, Depth = NA	1998-08-29, Depth = NA	1999-02-04, Depth = NA	1999-06-13, Depth = NA	2000-01-17, Depth = NA	2000-04-10, Depth = NA
<i>Nutrients (cont.)</i>												
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.002	0.006	0.007	0.008	0.02	0.002	0.002	ND	0.011	0.012	0.009
<i>Major Ions</i>												
Calcium	mg/L	1.31	ND	ND	ND	ND	1.08	1.06	1.18	1.4	1.25	1.24
Chloride	mg/L	0.62	ND	ND	ND	0.82	0.46	0.52	0.43	0.66	0.66	0.74
Fluoride	mg/L	0.04	ND	ND	ND	ND	0.03	0.03	0.03	0.03	0.04	0.03
Magnesium	mg/L	0.65	ND	ND	ND	ND	0.55	0.536	0.58	0.715	0.63	0.63
Potassium	mg/L	0.41	ND	ND	ND	ND	0.57	0.43	0.58	0.58	0.57	ND
Silica	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.45	ND	ND	ND	ND	0.43	0.49	0.56	0.47	0.72	0.56
Sulphate	mg/L	1.7	ND	ND	ND	6.8	1.2	1.9	1.6	1.9	1.7	1.4
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
<i>Dissolved Metals</i>												
Arsenic	µg/L	<0.1	<0.1	0.1	<0.1	ND	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1996-06-18, Depth = NA	1996-09-16 (1), Depth = NA	1996-09-16 (2), Depth = NA	1996-09-16 (3), Depth = NA	1997-08-28, Depth = NA	1998-02-10, Depth = NA	1998-08-29, Depth = NA	1999-02-04, Depth = NA	1999-06-13, Depth = NA	2000-01-17, Depth = NA	2000-04-10, Depth = NA
Dissolved Metals (cont.)												
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	<0.1	<0.1	0.1	<0.1	ND	0.1	<0.1	<0.1	0.1	0.1	<0.1
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals												
Aluminum	µg/L	7	0.2	10	6	7	5	4	4	11	5	4
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	2.7	2.4	2.2	2.4	ND	2.3	2.2	2.2	2.9	2.5	2.5
Beryllium	µg/L	<0.05	<0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	ND	<0.1	0.1	0.1	0.5	<0.1	<0.1
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	<0.2	<0.2	6	0.7	ND	<0.2	<0.2	<0.2	0.2	0.3	<0.2
Cobalt	µg/L	<0.1	<0.1	<0.1	<0.1	ND	0.1	<0.1	<0.1	0.1	0.1	<0.1
Copper	µg/L	0.8	0.9	6	0.7	ND	0.7	0.6	0.5	1.4	1.5	0.7
Iron	mg/L	0.009	0.005	0.015	0.004	ND	0.002	0.007	0.003	0.02	0.005	0.004
Lead	µg/L	0.4	0.3	<0.2	0.3	ND	<0.2	0.3	<0.2	0.3	<0.2	<0.2
Lithium	µg/L	0.7	0.8	0.7	0.8	ND	0.9	0.9	0.9	0.3	0.7	1

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

		Station OA1										
Chemical Class / Chemical Name	Units	1996-06-18, Depth = NA	1996-09-16 (1), Depth = NA	1996-09-16 (2), Depth = NA	1996-09-16 (3), Depth = NA	1997-08-28, Depth = NA	1998-02-10, Depth = NA	1998-08-29, Depth = NA	1999-02-04, Depth = NA	1999-06-13, Depth = NA	2000-01-17, Depth = NA	2000-04-10, Depth = NA
Total Metals (cont.)												
Manganese	µg/L	1	0.6	0.6	0.6	ND	0.3	0.8	0.1	1.5	0.4	0.4
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Nickel	µg/L	0.5	0.6	0.4	0.7	ND	ND	0.6	0.5	0.9	0.5	0.5
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	<0.1	0.2	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Strontium	µg/L	5.7	5.6	5.3	5.6	ND	5.7	5.3	5.6	6	5.8	5.8
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	<0.1	<0.1	<0.1	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	µg/L	0.7	1.8	0.3	0.4	ND	<0.2	1.5	0.6	9.7	3.1	0.8

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station OA1				Station 43	Station 19	
		2000-06-17, Depth = NA	2000-08-23 (1), Depth = NA	2000-08-23 (2), Depth = NA	2000-08-23 (3), Depth = NA	1993-07-22, Depth = NA	1999-03-17 (1), Depth = 0	1999-03-17 (2), Depth = 0
Conventional								
Alkalinity	mg/L	6.2	4.2	4.2	4.2	30.5	5.6	5.3
Colour (True)	TCU	<5	<5	5	5	7	<5	<5
Conductivity	µS/cm	ND	ND	ND	ND	71.4	20.5	19.9
Conductivity (Field)	µS/cm	11.1	10	10	10	ND	ND	ND
Conductivity (Lab)	µS/cm	19.3	15.4	15.3	15.2	ND	ND	ND
Hardness	mg/L	ND	ND	ND	ND	34	ND	ND
pH	pH	ND	ND	ND	ND	7.72	6.75	6.75
pH (Field)	pH	6.92	7.4	7.4	7.4	ND	ND	ND
pH (Lab)	pH	6.9	6.96	6.94	6.94	ND	ND	ND
Total Dissolved Solids	mg/L	18	29	32	29	53	12	15
Total Suspended Solids	mg/L	<3	<3	<3	<3	<3	5	<3
Turbidity	NTU	0.7	0.1	0.1	0.1	0.5	2	2.1
Nutrients								
Ammonia	mg/L	0.034	<0.005	<0.005	<0.005	0.002	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	0.015	0.014
Dissolved Organic Carbon	mg/L	2.6	2.8	2.7	2.5	ND	ND	ND
Dissolved Phosphorus	mg/L	<0.002	<0.004	<0.004	0.004	ND	ND	ND
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	0.025	ND	<0.008	<0.008	0.051	0.014	0.029
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station OA1				Station 43	Station 19	
		2000-06-17, Depth = NA	2000-08-23 (1), Depth = NA	2000-08-23 (2), Depth = NA	2000-08-23 (3), Depth = NA	1993-07-22, Depth = NA	1999-03-17 (1), Depth = 0	1999-03-17 (2), Depth = 0
Nutrients (cont.)								
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.006	<0.004	<0.004	0.004	0.003	0.013	0.011
Major Ions								
Calcium	mg/L	1.49	1.25	1.25	1.26	7.3	1.32	1.38
Chloride	mg/L	0.44	0.39	0.39	0.39	0.77	0.3	1.2
Fluoride	mg/L	0.03	0.04	0.03	0.03	ND	ND	ND
Magnesium	mg/L	0.78	0.68	0.61	0.6	3.8	0.7	0.69
Potassium	mg/L	0.47	0.42	0.42	0.43	1.5	0.53	0.5
Silica	mg/L	ND	ND	ND	ND	ND	0.17	0.16
Silica, Reactive	mg/L	ND	ND	ND	ND	1.22	ND	ND
Sodium	mg/L	0.5	0.47	0.47	0.48	1.3	0.75	0.6
Sulphate	mg/L	ND	1.1	1	1.2	<3	4	3
Total Cyanide	mg/L	ND	ND	ND	ND	ND	<0.001	<0.001
Dissolved Metals								
Arsenic	µg/L	0.1	<0.1	<0.1	<0.1	ND	ND	ND
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station OA1				Station 43	Station 19	
		2000-06-17, Depth = NA	2000-08-23 (1), Depth = NA	2000-08-23 (2), Depth = NA	2000-08-23 (3), Depth = NA	1993-07-22, Depth = NA	1999-03-17 (1), Depth = 0	1999-03-17 (2), Depth = 0
<i>Dissolved Metals (cont.)</i>								
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	0.1	<0.1	<0.1	<0.1	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND
<i>Total Metals</i>								
Aluminum	µg/L	4	3	3	14	<0.5	<10	10
Antimony	µg/L	ND	ND	ND	ND	ND	0.4	0.5
Arsenic	µg/L	ND	ND	ND	ND	0.3	<0.2	<0.2
Barium	µg/L	2.7	2.2	2.2	2.5	5.13	2.6	2.7
Beryllium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1
Bismuth	µg/L	ND	ND	ND	ND	<0.1	<0.1	<0.1
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	ND	0.01	0.05
Cesium	µg/L	ND	ND	ND	ND	<0.1	<0.01	<0.01
Chromium	µg/L	<0.2	<0.2	<0.2	<0.2	0.47	0.2	0.2
Cobalt	µg/L	<0.1	1.2	1.2	1.4	<0.1	<0.1	<0.1
Copper	µg/L	1.2	0.4	0.4	0.7	0.21	0.7	0.9
Iron	mg/L	0.008	0.005	0.004	0.021	<0.02	0.06	0.05
Lead	µg/L	0.4	<0.2	<0.2	0.2	<0.2	0.16	0.12
Lithium	µg/L	0.9	0.7	0.7	0.8	0.52	0.9	0.9

Appendix 2. Baseline water quality data collected from Lockhart River (1969-2000).

Chemical Class / Chemical Name	Units	Station OA1				Station 43	Station 19	
		2000-06-17, Depth = NA	2000-08-23 (1), Depth = NA	2000-08-23 (2), Depth = NA	2000-08-23 (3), Depth = NA	1993-07-22, Depth = NA	1999-03-17 (1), Depth = 0	1999-03-17 (2), Depth = 0
Total Metals (cont.)								
Manganese	µg/L	0.7	0.5	0.5	1.1	0.71	0.9	1
Mercury	µg/L	ND	ND	ND	ND	ND	<0.01	<0.01
Molybdenum	µg/L	0.1	<0.1	<0.1	<0.1	0.09	0.05	<0.05
Nickel	µg/L	0.5	0.4	0.4	0.5	0.12	0.6	0.6
Selenium	µg/L	ND	ND	ND	ND	<1	<1	<1
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01
Strontium	µg/L	5.8	5.3	5.4	5.6	9.74	6.3	6.3
Thallium	µg/L	ND	ND	ND	ND	<0.1	<0.05	<0.05
Titanium	µg/L	ND	ND	ND	ND	ND	0.5	0.35
Uranium	µg/L	ND	ND	ND	ND	0.22	<0.05	<0.05
Vanadium	µg/L	<0.1	<0.1	<0.1	<0.1	0.15	0.1	<0.1
Zinc	µg/L	0.3	0.2	<0.2	0.5	<0.5	8	9

NA = no depth information available; ND = no data

¹ These data were excluded from the analysis (possible contamination).

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	North Lake						North Shore Lakes						
		<u>WQR10</u>	<u>WQR10</u>	<u>WQR11</u>	<u>WQR11</u>	<u>WQR12</u>	<u>WQR12</u>	<u>NL1</u>	<u>NL1</u>	<u>NL2</u>	<u>NL2</u>	<u>NL3</u>	<u>NL3</u>	<u>NL4</u>
		1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24, Depth = 2.5m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 2.2m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 4m	1999-08-12, Depth = Integrated	1999-08-12, Depth = Integrated
Conventionals														
Alkalinity	mg/L	9	9	8	8	9	8	11	5	11	5	7	5	4
Colour (True)	TCU	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Conductivity	µS/cm	32	30	27	26	29	26	50	7	40	7	19	27	19
Hardness	mg/L	11	11	9	9	10	9	18	6	15	5	7	10	7
pH	pH	6.7	6.45	6.72	6.53	6.69	6.57	ND	ND	ND	ND	ND	ND	ND
pH (Field)	pH	ND	ND	ND	ND	ND	ND	ND	7.2	ND	7.2	ND	7.3	7.5
pH (Lab)	pH	ND	ND	ND	ND	ND	ND	6.5	6.5	6.3	6.5	6.5	6.6	6.5
Total Dissolved Solids	mg/L	15	13	19	17	15	22	41	19	26	10	12	27	27
Total Suspended Solids	mg/L	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Turbidity	NTU	ND	ND	ND	ND	ND	ND	ND	0.7	ND	0.8	ND	0.9	0.7
Nutrients														
Ammonia	mg/L	0.025	0.029	0.025	0.026	0.021	0.024	0.053	0.024	0.036	0.091	0.04	0.033	0.072
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dissolved Organic Carbon	mg/L	ND	ND	ND	ND	ND	ND	ND	6	ND	4	ND	4	5
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	0.01	ND	0.012	ND	0.014	0.002
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	<0.008	0.012	<0.008	<0.008	<0.008	0.008	0.014	<0.008	0.026	<0.008	0.02	<0.008	<0.008
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	0.004	0.004	0.004	0.004	0.004	0.004	0.004	<0.002	0.004	0.003	0.004	<0.002	<0.002

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	North Lake						North Shore Lakes						
		<u>WQR10</u>	<u>WQR10</u>	<u>WQR11</u>	<u>WQR11</u>	<u>WQR12</u>	<u>WQR12</u>	<u>NL1</u>	<u>NL1</u>	<u>NL2</u>	<u>NL2</u>	<u>NL3</u>	<u>NL3</u>	<u>NL4</u>
		1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24, Depth = 2.5m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 2.2m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 4m	1999-08-12, Depth = Integrated	1999-08-12, Depth = Integrated
<i>Nutrients (cont.)</i>														
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	5	ND	ND	ND	ND	ND	ND	0.3	ND	0.2	ND	0.2	0.2
Total Organic Carbon	mg/L	ND	4.4	4	3.4	4.2	3.5	6.4	6.1	7.1	4.4	5.2	4.3	5.3
Total Phosphorus	mg/L	0.023	0.015	0.01	0.009	0.013	0.014	0.012	0.017	0.008	0.016	0.014	0.016	<0.004
<i>Major Ions</i>														
Bicarbonate	mgCO ₃ /L	9.3	9.2	8	7.5	8.5	7.5	11.3	ND	10.7	ND	6.8	ND	ND
Calcium	mg/L	2.54	2.54	2.12	2	2.26	1.96	3.6	1.1	3	1.1	1.5	1.9	1.2
Chloride	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.2	<0.2	<0.2	<0.2	<0.2
Fluoride	mg/L	ND	ND	ND	ND	ND	ND	ND	0.1	ND	0.1	ND	0.04	0.1
Magnesium	mg/L	1.15	1.05	0.97	0.88	1.03	0.9	2.3	0.7	1.7	0.5	0.7	1.2	0.8
Potassium	mg/L	0.95	0.8	0.82	0.71	0.87	0.72	1.3	0.4	1	0.3	0.4	0.8	0.5
Silica	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silica, Reactive	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	mg/L	0.83	0.7	0.72	0.63	0.77	0.64	1	0.5	1	0.5	0.7	0.5	0.5
Sulphate	mg/L	4	13	3	<3	4	3	8	3	5	3	3	3	3
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	North Lake						North Shore Lakes						
		WQR10	WQR10	WQR11	WQR11	WQR12	WQR12	NL1	NL1	NL2	NL2	NL3	NL3	NL4
		1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24, Depth = 2.5m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 2.2m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 4m	1999-08-12, Depth = Integrated	1999-08-12, Depth = Integrated
<i>Dissolved Metals</i>														
Aluminum	µg/L	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Antimony	µg/L	0.6	0.5	0.5	0.3	0.9	0.7	0.7	1.7	1	1.6	0.7	1.9	1.8
Arsenic	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Barium	µg/L	4.4	4.9	3.6	33.6	4.1	3.9	6.8	2.3	6.5	2.5	3.6	2.2	2.3
Beryllium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2	<0.2
Bismuth	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	0.6	<0.1	<0.1	<0.1
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cesium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	µg/L	1.1	0.8	<0.2	<0.2	0.2	0.2	<2	<0.3	1	<0.3	18.7	<0.3	0.5
Cobalt	µg/L	0.1	0.1	0.1	<0.1	0.2	0.1	0.2	<0.1	0.4	<0.1	0.2	<0.1	<0.1
Copper	µg/L	1	1	0.8	2.8	0.8	0.7	1.5	1	2.4	0.7	1.3	1.1	1.7
Iron	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.085	0.09	0.068	<0.02	0.072	0.063
Lead	µg/L	0.2	0.3	<0.2	0.2	0.2	0.2	0.4	0.1	0.9	0.2	0.7	0.8	1.3
Lithium	µg/L	1.5	1.2	1.2	1.2	1.3	1.1	1.7	1.2	1.9	1.2	1.2	1.3	1.4
Manganese	µg/L	0.3	3.5	0.1	0.7	0.2	0.4	13.9	0.7	28	0.8	0.8	1	0.9
Mercury	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	µg/L	0.1	<0.1	0.1	0.1	0.1	<0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.3
Nickel	µg/L	0.8	0.9	0.6	0.7	0.7	0.7	1.8	<0.1	1.7	0.1	0.3	0.7	0.7
Selenium	µg/L	<10	<10	<10	<10	<10	<10	<10	<1	<10	<1	<10	<1	<1
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	North Lake						North Shore Lakes						
		WQR10	WQR10	WQR11	WQR11	WQR12	WQR12	NL1	NL1	NL2	NL2	NL3	NL3	NL4
		1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24, Depth = 2.5m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 2.2m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 4m	1999-08-12, Depth = Integrated	1999-08-12, Depth = Integrated
<i>Dissolved Metals (cont.)</i>														
Strontium	µg/L	11.4	11.3	10.3	9.6	10.9	9.8	13.6	5.7	13.5	7.6	9.4	8	6.4
Thallium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.3	0.2	<0.3	0.2	<0.3	<0.3
Uranium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Vanadium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<i>Total Metals</i>														
Aluminum	µg/L	<30	<30	<30	<30	<30	<30	<30	<30	30	<30	30	<30	32
Antimony	µg/L	0.6	0.3	0.6	0.6	0.5	0.5	0.6	<0.5	0.5	<0.5	0.6	<0.5	<0.5
Arsenic	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Barium	µg/L	4.4	7.5	3.5	3.9	4.2	3.9	7.1	2	6.8	3	4	2	2
Beryllium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<0.1	<2	<0.1	<2	<2
Bismuth	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.4	<0.1	<0.4	<0.4
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.3	<0.1	<0.3	<0.3
Cesium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.4	<0.1	<0.4	<0.4
Chromium	µg/L	<2	<2	<2	<2	<2	<2	<2	<3	<2	<3	<2	<3	<3
Cobalt	µg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.3	<1	0.4	<1	0.2	<1	<1
Copper	µg/L	1.1	1.2	0.8	0.7	0.9	0.7	1.4	<2	2.3	<2	0.8	<2	<2
Iron	mg/L	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Lead	µg/L	0.3	<0.2	0.5	<0.2	0.9	<0.2	0.2	<1	0.3	<1	0.4	<1	<1

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	North Lake						North Shore Lakes						
		<u>WQR10</u>	<u>WQR10</u>	<u>WQR11</u>	<u>WQR11</u>	<u>WQR12</u>	<u>WQR12</u>	<u>NL1</u>	<u>NL1</u>	<u>NL2</u>	<u>NL2</u>	<u>NL3</u>	<u>NL3</u>	<u>NL4</u>
		1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24 (1), Depth = NA	1999-03-24 (2), Depth = NA	1999-03-24, Depth = 2.5m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 2.2m	1999-08-12, Depth = Integrated	1999-03-24, Depth = 4m	1999-08-12, Depth = Integrated	1999-08-12, Depth = Integrated
Total Metals (cont.)														
Lithium	µg/L	1.5	1.9	1.3	1.2	1.3	1.1	1.6	<3	1.9	<3	1.3	<3	<3
Manganese	µg/L	2.1	1	2	3.2	2	2.9	20.2	4	29.6	11	4.3	3	6
Mercury	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	µg/L	0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	<1	0.3	<1	0.2	<1	<1
Nickel	µg/L	0.8	1.3	0.7	0.6	0.7	0.6	1.9	<1	1.5	<1	0.2	<1	<1
Selenium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.3	<0.1	<0.3	<0.3
Strontium	µg/L	11.6	11.3	10.1	9.3	11.3	10	13.7	6	13.6	8	9.8	8	6
Thallium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.1	<0.4	<0.1	<0.4	<0.4
Titanium	µg/L	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	0.3	<3	0.3	<3	0.7	<3	<3
Uranium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.3	<0.1	<0.3	<0.3
Vanadium	µg/L	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	0.1	<1	<1
Zinc	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Downstream Lake				MacKay Lake					Aylmer Lake				
		<u>WQ5</u>	<u>WQ5</u>	<u>WQ5</u>	<u>WQ5</u>	<u>49</u>	<u>25</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>7</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		1999-03-24 (1), Depth = 2.3m	1999-03-24 (2), Depth = 2.3m	1999-08-12, Depth = Integrated	2001-07-11, Depth = NA	1993-07-20, Depth = NA	1993-07-20, Depth = NA	1999-03-11, Depth = 2m	1999-03-11, Depth = 5m	1999-03-11, Depth = 9m	1993-07-25, Depth = NA	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1), Depth = 2
Conventionals															
Alkalinity	mg/L	6	6.2	4	6	3.4	2.9	4.9	4.7	4.6	1.8	4.3	4.1	4.5	3.7
Colour (True)	TCU	ND	ND	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5	<5	5
Conductivity	µS/cm	21	21	19	21.7	15.6	14.8	16.1	15.9	15.4	14	16.7	20	17.6	14.3
Hardness	mg/L	7	7	5	6	6	5	ND	ND	ND	3.6	ND	ND	ND	4.3
pH	pH	ND	ND	ND	ND	6.61	6.49	6.86	6.72	6.72	6.52	6.65	6.68	6.67	6.61
pH (Field)	pH	6.5	ND	6.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (Lab)	pH	6.7	6.6	6.6	6.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Dissolved Solids	mg/L	15	15	12	20	17	16	24	21	16	11	17	30	31	18
Total Suspended Solids	mg/L	<3	4	4	<3	<3	<3	<3	<3	<3	4	<3	<3	<3	<3
Turbidity	NTU	ND	ND	0.6	0.2	0.5	0.5	0.3	0.3	0.3	0.5	1.3	0.9	0.1	0.5
Nutrients															
Ammonia	mg/L	0.019	0.015	0.041	<0.005	0.008	0.009	ND	ND	ND	<0.002	ND	ND	ND	ND
Ammonia-N	mg/L	ND	ND	ND	ND	ND	ND	0.006	0.006	0.006	ND	0.015	0.01	0.036	0.026
Dissolved Organic Carbon	mg/L	ND	ND	3	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	3
Dissolved Phosphorus	mg/L	ND	ND	0.01	<0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.008
Nitrate-N	mg/L	0.035	0.015	<0.008	0.065	<0.008	<0.008	0.009	0.009	0.01	<0.008	0.014	0.012	0.018	<0.008
Nitrite-N	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.008
Orthophosphate	mg/L	0.004	0.004	<0.002	<0.001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Downstream Lake				MacKay Lake					Aylmer Lake					
		WQ5	WQ5	WQ5	WQ5	49	25	22	22	22	7	4	4	4	4	
		1999-03-24 (1), Depth = 2.3m	1999-03-24 (2), Depth = 2.3m	1999-08-12, Depth = Integrated	2001-07-11, Depth = NA	1993-07-20, Depth = NA	1993-07-20, Depth = NA	1999-03-11, Depth = 2m	1999-03-11, Depth = 5m	1999-03-11, Depth = 9m	1993-07-25, Depth = NA	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1), Depth = 2	
Nutrients (cont.)																
Phosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<0.002	
Total Kjeldahl Nitrogen	mg/L	ND	ND	0.3	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Total Organic Carbon	mg/L	3.6	3.8	2.7	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.4	
Total Phosphorus	mg/L	0.011	0.009	0.008	0.001	0.004	0.004	<0.002	0.002	0.002	0.002	0.005	0.007	0.004	0.004	
Major Ions																
Bicarbonate	mgCO ₃ /L	6.3	6.2	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Calcium	mg/L	1.6	1.6	1.3	1.42	1.3	1.1	1.23	1.2	1.16	0.8	1.07	0.99	1.13	0.88	
Chloride	mg/L	0.2	0.2	0.8	<1	0.72	0.75	0.5	<0.2	<0.2	0.38	<0.2	<0.2	<0.2	<0.2	
Fluoride	mg/L	ND	ND	0.05	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Magnesium	mg/L	0.73	0.71	0.5	0.5	0.6	0.5	0.54	0.52	0.5	0.4	0.57	0.55	0.61	0.51	
Potassium	mg/L	0.54	0.53	0.3	0.37	0.6	0.4	0.45	0.45	0.43	0.4	0.51	0.48	0.54	0.44	
Silica	mg/L	ND	ND	ND	ND	ND	ND	0.2	0.15	0.17	ND	0.12	0.13	0.14	0.19	
Silica, Reactive	mg/L	ND	ND	ND	ND	0.102	0.08	ND	ND	ND	0.074	ND	ND	ND	ND	
Sodium	mg/L	0.67	0.67	0.56	0.9	0.3	0.3	0.57	0.55	0.54	0.4	0.57	0.51	0.57	0.47	
Sulphate	mg/L	<3	<3	<3	1.36	<3	<3	5	<3	4	<3	<3	<3	11	<3	
Total Cyanide	mg/L	ND	ND	ND	ND	ND	ND	<0.001	<0.001	<0.001	ND	<0.002	<0.002	<0.002	ND	

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Downstream Lake				MacKay Lake					Aylmer Lake					
		WQ5	WQ5	WQ5	WQ5	49	25	22	22	22	7	4	4	4	4	
		1999-03-24 (1), Depth = 2.3m	1999-03-24 (2), Depth = 2.3m	1999-08-12, Depth = Integrated	2001-07-11, Depth = NA	1993-07-20, Depth = NA	1993-07-20, Depth = NA	1999-03-11, Depth = 2m	1999-03-11, Depth = 5m	1999-03-11, Depth = 9m	1993-07-25, Depth = NA	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1), Depth = 2	
<i>Dissolved Metals</i>																
Aluminum	µg/L	<30	<30	<30	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Antimony	µg/L	0.5	0.4	1.6	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Arsenic	µg/L	<0.2	<0.2	<0.2	0.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Barium	µg/L	2.8	2.7	2	2.38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Beryllium	µg/L	<0.1	<0.1	<0.2	<0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Bismuth	µg/L	<0.1	<0.1	<0.1	<0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Boron	µg/L	ND	ND	ND	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cesium	µg/L	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	µg/L	1	0.6	<0.3	<0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cobalt	µg/L	0.1	<0.1	<0.1	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Copper	µg/L	0.7	0.7	0.6	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Iron	mg/L	<0.02	<0.02	<0.03	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Lead	µg/L	1.4	3	0.5	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Lithium	µg/L	1	0.9	1	0.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Manganese	µg/L	0.6	0.6	0.4	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Mercury	µg/L	<0.01	<0.01	<0.01	<0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Molybdenum	µg/L	<0.1	0.1	<1	<0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Nickel	µg/L	0.3	0.2	0.1	0.86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Selenium	µg/L	<10	<10	<1	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Downstream Lake				MacKay Lake					Aylmer Lake					
		WQ5	WQ5	WQ5	WQ5	49	25	22	22	22	7	4	4	4	4	
		1999-03-24 (1), Depth = 2.3m	1999-03-24 (2), Depth = 2.3m	1999-08-12, Depth = Integrated	2001-07-11, Depth = NA	1993-07-20, Depth = NA	1993-07-20, Depth = NA	1999-03-11, Depth = 2m	1999-03-11, Depth = 5m	1999-03-11, Depth = 9m	1993-07-25, Depth = NA	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1), Depth = 2	
<i>Dissolved Metals (cont.)</i>																
Strontium	µg/L	9	8.6	8.1	10.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Thallium	µg/L	<0.1	<0.1	<0.1	<0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Titanium	µg/L	<0.2	<0.2	<0.3	<0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Uranium	µg/L	<0.1	<0.1	<0.1	<0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Vanadium	µg/L	<0.1	<0.1	<0.1	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Zinc	µg/L	<10	<10	<10	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
<i>Total Metals</i>																
Aluminum	µg/L	<30	<30	<30	7	<0.5	0.78	<10	<10	<10	9.37	<10	<10	<10	<30	
Antimony	µg/L	0.5	0.6	<0.5	0.04	0.13	0.16	0.5	0.5	0.5	0.19	0.5	0.6	0.8	<0.5	
Arsenic	µg/L	<0.2	<0.2	<0.2	0.08	<0.3	<0.3	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	
Barium	µg/L	2.9	3	2	2.42	1.24	1.39	1.8	1.8	1.8	1.54	1.9	1.8	2.2	2	
Beryllium	µg/L	<0.1	<0.1	<2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<2	
Bismuth	µg/L	<0.1	<0.1	<0.4	<0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	
Cadmium	µg/L	<0.1	<0.1	<0.3	<0.05	ND	ND	0.05	<0.01	0.01	ND	<0.01	0.01	<0.01	<0.3	
Cesium	µg/L	<0.1	<0.1	<0.4	<0.1	<0.1	<0.1	0.01	<0.01	0.01	<0.1	<0.01	<0.01	0.01	<0.4	
Chromium	µg/L	<2	<2	<3	<0.06	<0.2	<0.2	0.2	<0.1	<0.1	0.22	0.2	0.8	0.6	<3	
Cobalt	µg/L	0.1	0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<1	
Copper	µg/L	0.8	0.8	<2	<0.6	0.21	0.25	0.5	0.5	0.3	0.66	0.6	0.6	0.6	<2	
Iron	mg/L	<0.02	<0.02	0.03	0.032	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	
Lead	µg/L	2.6	2.1	<1	<0.05	<0.2	<0.2	0.6	2.37	0.14	<0.2	0.47	0.1	0.53	<1	

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Downstream Lake				MacKay Lake					Aylmer Lake				
		<u>WQ5</u>	<u>WQ5</u>	<u>WQ5</u>	<u>WQ5</u>	<u>49</u>	<u>25</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>7</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
		1999-03-24 (1), Depth = 2.3m	1999-03-24 (2), Depth = 2.3m	1999-08-12, Depth = Integrated	2001-07-11, Depth = NA	1993-07-20, Depth = NA	1993-07-20, Depth = NA	1999-03-11, Depth = 2m	1999-03-11, Depth = 5m	1999-03-11, Depth = 9m	1993-07-25, Depth = NA	1999-03-10, Depth = 2	1999-03-10, Depth = 5	1999-03-10, Depth = 9	1999-08-06 (1), Depth = 2
Total Metals (cont.)															
Lithium	µg/L	1	1	<3	0.8	0.98	0.92	1	1	0.9	1.09	1.1	1.1	1.3	<3
Manganese	µg/L	2.2	2.2	3	3.1	1.62	0.88	0.7	0.6	0.8	2.28	0.9	0.9	1	2
Mercury	µg/L	<0.01	<0.01	<0.01	<0.02	ND	ND	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	ND
Molybdenum	µg/L	<0.1	<0.1	<1	0.06	ND	ND	<0.05	<0.05	<0.05	0.02	<0.05	<0.05	<0.05	<1
Nickel	µg/L	0.2	0.2	<1	0.14	0.16	0.32	0.4	0.3	0.3	0.73	0.6	0.6	0.7	<1
Selenium	µg/L	<10	<10	<10	0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
Silver	µg/L	<0.1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.3
Strontium	µg/L	9	9.1	8	10.3	6.35	6.3	7	6.3	6.3	5.52	6.5	6.1	6.6	5
Thallium	µg/L	<0.1	<0.1	<0.4	<0.03	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.4
Titanium	µg/L	0.2	<0.2	<3	<0.1	ND	ND	<0.05	<0.05	<0.05	0.4315	<0.05	<0.05	<0.05	<3
Uranium	µg/L	<0.1	<0.1	<0.3	<0.05	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.3
Vanadium	µg/L	<0.1	<0.1	<1	0.09	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
Zinc	µg/L	<10	<10	<10	<0.8	<0.5	<0.5	<5	<5	<5	0.89	<5	<5	<5	<10

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name		Aylmer Lake					Clinton Colder Lake		
		4	4	18	5	6	53	53	53
		1999-08-06 (2), Depth = 2	1999-08-06 (3), Depth = 2	1994-07-12, Depth = NA	1993-07-25, Depth = NA	1993-07-25, Depth = NA	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10, Depth = 5
Conventional									
Alkalinity	mg/L	10.2	3.7	3.5	2	0.4	4.3	4.3	4.2
Colour (True)	TCU	5	5	7	5	<5	<5	<5	<5
Conductivity	µS/cm	73.2	14.2	13.5	14.3	10.5	16.5	16.5	16.3
Hardness	mg/L	4.44	4.31	3.9	3.6	2.9	ND	ND	ND
pH	pH	6.74	6.55	6.72	6.5	6.34	6.66	6.56	6.66
pH (Field)	pH	ND	ND	ND	ND	ND	ND	ND	ND
pH (Lab)	pH	ND	ND	ND	ND	ND	ND	ND	ND
Total Dissolved Solids	mg/L	26	14	19	10	<10	42	32	31
Total Suspended Solids	mg/L	<3	11	<3	<3	<3	3	3	<3
Turbidity	NTU	0.7	0.6	0.9	0.4	0.4	0.3	0.6	1.3
Nutrient									
Ammonia	mg/L	ND	ND	0.008	0.016	0.004	ND	ND	ND
Ammonia-N	mg/L	0.03	0.033	ND	ND	ND	0.012	0.017	0.007
Dissolved Organic Carbon	mg/L	3	3	ND	ND	ND	ND	ND	ND
Dissolved Phosphorus	mg/L	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate + Nitrite	mg/L	<0.008	<0.008	ND	ND	ND	ND	ND	ND
Nitrate-N	mg/L	<0.008	<0.008	<0.008	0.044	<0.008	0.021	0.016	0.015
Nitrite-N	mg/L	<0.008	<0.008	ND	ND	ND	ND	ND	ND
Orthophosphate	mg/L	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name		Aylmer Lake					Clinton Colder Lake		
		4	4	18	5	6	53	53	53
		1999-08-06 (2), Depth = 2	1999-08-06 (3), Depth = 2	1994-07-12, Depth = NA	1993-07-25, Depth = NA	1993-07-25, Depth = NA	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10, Depth = 5
Units									
Nutrients (cont.)									
Phosphate	mg/L	<0.002	<0.002	ND	ND	ND	ND	ND	ND
Total Kjeldahl Nitrogen	mg/L	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/L	3.5	3.4	ND	ND	ND	ND	ND	ND
Total Phosphorus	mg/L	0.004	0.004	0.003	0.003	0.003	0.006	0.006	0.004
Major Ions									
Bicarbonate	mgCO ₃ /L	ND	ND	ND	ND	ND	ND	ND	ND
Calcium	mg/L	0.92	0.87	0.89	0.8	0.5	1.1	1.09	1.03
Chloride	mg/L	<0.2	<0.2	0.62	0.37	0.37	0.2	0.3	<0.2
Fluoride	mg/L	ND	ND	ND	ND	ND	ND	ND	ND
Magnesium	mg/L	0.52	0.52	0.4	0.4	0.4	0.58	0.59	0.56
Potassium	mg/L	0.44	0.45	0.4	0.4	0.4	0.52	0.52	0.5
Silica	mg/L	0.19	0.18	ND	ND	ND	0.12	0.11	0.1
Silica, Reactive	mg/L	ND	ND	0.221	0.07	0.087	ND	ND	ND
Sodium	mg/L	0.47	0.46	0.35	0.4	0.3	0.81	0.55	0.52
Sulphate	mg/L	<3	<3	<3	<3	<3	<3	<3	<3
Total Cyanide	mg/L	ND	ND	ND	ND	ND	<0.001	<0.001	<0.002

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Aylmer Lake					Clinton Colder Lake		
		4	4	18	5	6	53	53	53
		1999-08-06 (2), Depth = 2	1999-08-06 (3), Depth = 2	1994-07-12, Depth = NA	1993-07-25, Depth = NA	1993-07-25, Depth = NA	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10, Depth = 5
<i>Dissolved Metals</i>									
Aluminum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Barium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Beryllium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Boron	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Cesium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Copper	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Iron	mg/L	ND	ND	ND	ND	ND	ND	ND	ND
Lead	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Lithium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Manganese	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Molybdenum	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Silver	µg/L	ND	ND	ND	ND	ND	ND	ND	ND

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Aylmer Lake					Clinton Colder Lake		
		4	4	18	5	6	53	53	53
		1999-08-06 (2), Depth = 2	1999-08-06 (3), Depth = 2	1994-07-12, Depth = NA	1993-07-25, Depth = NA	1993-07-25, Depth = NA	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10, Depth = 5
<i>Dissolved Metals (cont.)</i>									
Strontium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Titanium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Uranium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	µg/L	ND	ND	ND	ND	ND	ND	ND	ND
<i>Total Metals</i>									
Aluminum	µg/L	<30	<30	16.08	7.38	9.47	<10	<10	<10
Antimony	µg/L	<0.5	<0.5	0.37	0.17	0.18	0.5	0.5	0.6
Arsenic	µg/L	<0.2	<0.2	<0.3	<0.3	0.6	<0.2	<0.2	<0.2
Barium	µg/L	2	2	1.96	1.68	1.36	2.1	2	2
Beryllium	µg/L	<2	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	µg/L	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	µg/L	<0.3	<0.3	ND	ND	ND	<0.01	<0.01	<0.01
Cesium	µg/L	<0.4	<0.4	<0.1	<0.1	<0.1	0.01	0.01	0.01
Chromium	µg/L	<3	<3	<0.2	0.26	<0.2	<0.1	0.3	0.3
Cobalt	µg/L	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	µg/L	<2	<2	0.55	0.6	0.54	0.5	0.5	0.6
Iron	mg/L	0.04	<0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Lead	µg/L	<1	<1	0.35	<0.2	<0.2	0.35	0.24	0.29

Appendix 3. Baseline water quality data collected from the Associated Waterbodies in the Lockhart River watershed (1993-2001).

Chemical Class / Chemical Name	Units	Aylmer Lake					Clinton Colder Lake		
		4	4	18	5	6	53	53	53
		1999-08-06 (2), Depth = 2	1999-08-06 (3), Depth = 2	1994-07-12, Depth = NA	1993-07-25, Depth = NA	1993-07-25, Depth = NA	1999-03-10 (1), Depth = 2	1999-03-10 (2), Depth = 2	1999-03-10, Depth = 5
Total Metals (cont.)									
Lithium	µg/L	<3	<3	0.79	1.1	0.92	1.2	1.2	1.1
Manganese	µg/L	3	3	2.6	1.34	3.32	0.8	0.8	0.8
Mercury	µg/L	ND	ND	ND	ND	ND	<0.01	<0.01	<0.01
Molybdenum	µg/L	<1	<1	0.04	0.02	ND	<0.05	<0.05	<0.05
Nickel	µg/L	<1	<1	0.41	0.6	0.46	0.7	0.7	0.6
Selenium	µg/L	<10	<10	<1	<1	<1	<1	<1	<1
Silver	µg/L	<0.3	<0.3	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01
Strontium	µg/L	5	6	4.77	5.75	4.16	6.4	6.4	6.4
Thallium	µg/L	<0.4	<0.4	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05
Titanium	µg/L	<3	<3	0.0005	0.3473	0.3329	<0.05	<0.05	<0.05
Uranium	µg/L	<0.3	<0.3	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05
Vanadium	µg/L	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	µg/L	<10	<10	<0.5	0.54	0.69	<5	<5	<5

NA = no depth information available; ND = no data

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Test Compound = CaCl ₂																	
Acute Studies																	
Fish - Non-salmonid																	
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	96-h	Static	Mortality		LC50	2,958			80-100	25	7.5-9		Unmeasured	CCME 2011	Mount <i>et al.</i> 1997
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	48-h	Static	Mortality		LC50	>4191			80-100	25	7.5-9		Unmeasured	CCME 2011	Mount <i>et al.</i> 1997
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	24-h	Static	Mortality		LC50	>4255			80-100	25	7.5-9		Unmeasured	CCME 2011	Mount <i>et al.</i> 1997
Invertebrate - Cladoceran																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	48-h		Mortality		LC50	1,169				25	7.5-9			CCME 2011	Mount <i>et al.</i> 1997
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	24-h		Mortality		LC50	1,444				25	7.5-9			CCME 2011	Mount <i>et al.</i> 1997
<i>Daphnia hyalina</i>	Water flea	adult avg length of 1.27 mm	48-h		Mortality		LC50	5,308			33	9.5-10.5	7.2	10.4	Unmeasured	CCME 2011	Baudouin and Scoppa 1974
<i>Daphnia magna</i>	Water flea	<24-h old	48-h		Mortality		LC50	1,770			80-100	20	7.5-9			CCME 2011	Mount <i>et al.</i> 1997
<i>Daphnia magna</i>	Water flea	<24-h old	24-h		Mortality		LC50	2,076			80-100	20	7.5-9			CCME 2011	Mount <i>et al.</i> 1997
Invertebrate - Planktonic Crustacean																	
<i>Cyclops abyssorum prealpinus</i>	Copepod	adult avg length of 0.62 mm	48-h		Mortality		LC50	12,385			33	9.5-10.5	7.2	10.4		CCME 2011	Baudouin and Scoppa 1974
<i>Eudiaptomus padanus padanus</i>	Copepod	adult avg length of 0.3 mm	48-h		Mortality		LC50	7,077			33	9.5-10.5	7.2	10.4		CCME 2011	Baudouin and Scoppa 1974

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Test Compound = NaCl																	
Acute Studies																	
Amphibian																	
<i>Lithibates pipiens</i> (previously <i>Rana pipiens</i>)	Leopard frog	tadpoles, Gosner stage 25	96-h	Static	Mortality		LC50	3,385							Measured	CCME 2011	Jackman 2010
<i>Lithibates sylvatica</i> (previously <i>Rana sylvatica</i>)	Wood frog	Gosner stage 25 - first active feeding stage	96-h	Static	Mortality		LC50	1,721			33				Measured	CCME 2011	Collins and Russell 2009
<i>Lithibates sylvatica</i> (previously <i>Rana sylvatica</i>)	Wood frog	tadpoles, Gosner stage 25	96-h	Static-renewal	Mortality		LC50	3,099				18.7-19.3			Unmeasured	CCME 2011	Sanzo and Hecnar, 2006
<i>Lithibates sylvatica</i> (previously <i>Rana sylvatica</i>)	Wood frog	tadpoles, Gosner stage 25	96-h	Static	Mortality		LC50	3,755							Measured	CCME 2011	Jackman 2010
<i>Pseudacris crucifer</i>	Spring Peeper	Gosner stage 25	96-h	Static	Mortality		LC50	2,830			33				Measured	CCME 2011	Collins and Russell 2009
<i>Pseudacris triseriata feriarum</i>	Chorus frog	72-h post-hatch	96-h	Static-renewal	Mortality		LC50	2,320			84.8	24.5-25.7	7.4-7.9		Measured	CCME 2011	Garibay and Hall 2004
<i>Pseudacris triseriata feriarum</i>	Chorus frog	<24-h post-hatch	96-h	Static-renewal	Mortality		LC50	3,506			84.8	24.5-25.7	7.4-7.9		Measured	CCME 2011	Garibay and Hall 2004
<i>Pseudacris triseriata feriarum</i>	Chorus frog	<24-h post-hatch	48-h	Static-renewal	Mortality		LC50	3,550			84.8	24.5-25.7	7.4-7.9		Measured	CCME 2011	Garibay and Hall 2004
<i>Pseudacris triseriata feriarum</i>	Chorus frog	72-h post-hatch	48-h	Static-renewal	Mortality		LC50	3,550			84.8	24.5-25.7	7.4-7.9		Measured	CCME 2011	Garibay and Hall 2004
<i>Rana catesbeiana</i>	Bullfrog	tadpoles, avg wet wt 1.2g, total length 4.5 to 5.5 cm	96-h	Static	Mortality		LC50	5,846			300	22.5	8.02	56	Measured	CCME 2011	Environ 2009

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Amphibian (cont.)																	
<i>Rana clamitans</i>	Green frog	Gosner stage 25	96-h	Static	Mortality		LC50	3,109			33				Measured	CCME 2011	Collins and Russell 2009
<i>Rana pipiens</i>	Northern leopard frog	eggs	96-h	Static	Mortality		LC50 ²	3,397			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana temporaria</i>	Common frog	Gosner stage 8/9, early/mid cleavage, embryonic stage egg capsules	96-h	Static	Mortality	Mortality of Gosner stage 20/21 related to initial number of st. 8/9 embryos	LC47.6	3,140				19-22	7.2-7.5		Measured	CCME 2011	Viertel 1999
<i>Ambystoma maculatum</i>	Spotted salamander	1.74 ± 0.08 g	96-h	Static	Mortality		LC50	1,178			33				Measured	CCME 2011	Collins and Russell 2009
<i>Bufo americanus</i>	American toad	Gosner stage 25	96-h	Static	Mortality		LC50	3,926			33				Measured	CCME 2011	Collins and Russell 2009
Fish - Non-salmonid																	
<i>Anguilla anguilla</i>	Common eel		24-h		Mortality		LC0	12,132								CCME 2011	Buchmann <i>et al.</i> 1992 (In Bright and Addison 2002)
<i>Anguilla rostrata</i>	American eel	glass eel stage	96-h	Static	Mortality		LC50	10,846								CCME 2011	Hinton and Eversole 1978 (In Nagpal <i>et al.</i> 2003 and In Evans and Frick 2001)
<i>Anguilla rostrata</i>	American eel	black eel stage	96-h	Static	Mortality		LC50	13,012			40-48	22±1	7.2-7.6	30-35		CCME 2011	Hinton and Eversole 1979
<i>Cyprinella leedsi</i>	Bannerfin Shiner	12-d old, total length 0.9 to 1.3 cm	96-h	Static-renewal	Mortality		LC50	6,070			296	21.5	7.98	85	Measured	CCME 2011	Environ 2009
<i>Gambusia affinis</i>	Mosquito fish		96-h	Static	Mortality		LC50	9,099				16.7-20.0			Unmeasured	CCME 2011	Al-Daham and Bhatti 1977
<i>Gasterosteus aculeatus</i>	Threespine stickelback		96-h	Static-renewal			EC50	10,200			84.8	19-21	6-9		Measured	CCME 2011	Garibay and Hall 2004

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Fish - Non-salmonid (cont.)																	
<i>Ictalurus ounctatus</i>	Channel catfish	avg lt=4.7cm, avg wt=1.2g	24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Ictalurus ounctatus</i>	Channel catfish	avg lt=4.7cm, avg wt=1.2g	24-h	Static	Mortality		LC0	6,066			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Ictalurus ounctatus</i>	Channel catfish	avg lt=4.7cm, avg wt=1.2g	6-h	Static	Mortality		LC100	12,132			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Lepomis macrochirus</i>	Bluegill sunfish		96-h	Flow-through	Mortality		LC50	3,543			101.7±7.6	21.7±0.1	7.58±0.15	60.3±3.4	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Lepomis macrochirus</i>	Bluegill sunfish	avg lt=3.5cm, avg wt=0.6g	24-h	Static	Mortality	0% Mortality	LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Lepomis macrochirus</i>	Bluegill sunfish	avg lt=3.5cm, avg wt=0.6g	24-h	Static	Mortality	0% Mortality	LC0	6,066			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Lepomis macrochirus</i>	Bluegill sunfish	Length: 5 to 9 cm; Average wt: 1 to 9 g.	96-h		Mortality		LC50	7,846				16-20				CCME 2011	Trama 1954
<i>Lepomis macrochirus</i>	Bluegill sunfish	20-35 g	24-h	Static	Mortality		LC50	8,553				22±0.2	7.3±0.4			CCME 2011	Abegg 1949, 1950 (In Doudoroff and Katz 1953; in Evans and Frick 2001)
<i>Lepomis macrochirus</i>	Bluegill sunfish	avg wet wt=1.03±0.5g, avg lt=4.37±0.59cm	6-h	Flow-through	Mortality		LC100	8,978			74-116	18.8-20.1	7.37-7.87	54-59	Measured	CCME 2011	Kszos <i>et al.</i> 1990
<i>Lepomis macrochirus</i>	Bluegill sunfish	avg lt=3.5cm, avg wt=0.6g	6-h	Static	Mortality		LC47	12,132			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Micropterus dolomieu</i>	Smallmouth bass		24-h	Static	Mortality	3.3% Mortality	LC3.3	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Morone saxatilis</i>	Striped bass		24-h		Mortality		LC50	854							With 3 mg/L Ca; added CaCl ₂ to increase the Ca concentration	Golder 2011	Grizzle and Mauldin 1995

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Fish - Non-salmonid (cont.)																	
<i>Morone saxatilis</i>	Striped bass		24-h		Mortality		LC50	11,102							With 100 mg/L Ca; added CaCl ₂ to increase the Ca concentration	Golder 2011	Grizzle and Mauldin 1995
<i>Notemigonus crysoleucas</i>	Golden shiners	9.5-11.0 cm			Survival	Average Survival Time (97-h)	NR	6,066				22-22.5	7.8-7.9			CCME 2011	Wiebe <i>et al.</i> 1934 (In Evans and Frick 2001)
<i>Notemigonus crysoleucas</i>	Golden shiners	10.0-11.0 cm			Survival	Average Survival Time (4.73-h)	NR	9,099				22-22.5	7.8-7.9			CCME 2011	Wiebe <i>et al.</i> 1934 (In Evans and Frick 2001)
<i>Notemigonus crysoleucas</i>	Golden shiners	9.5-11.5 cm			Survival	Average Survival Time (1.33-h)	NR	12,132				22-22.5	7.8-7.9			CCME 2011	Wiebe <i>et al.</i> 1934 (In Evans and Frick 2001)
<i>Perca flavescens</i>	Yellow perch		24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Perca flavescens</i>	Yellow perch		24-h	Static	Mortality		LC0	6,066			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Pimephales promelas</i>	Fathead minnow	≤24-h old	96-h	Static	Mortality		LC50	2,123			39.2				Unmeasured	CCME 2011	USEPA 1991 (Data from ERL-Duluth)
<i>Pimephales promelas</i>	Fathead minnow	Juvenile	96-h				NOEC	2,173			76	24-26	7.47-8.03	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	≤24-h old	96-h	Static	Mortality		LC50	2,244			339				Unmeasured	CCME 2011	USEPA 1991 (Data from ERL-Duluth)
<i>Pimephales promelas</i>	Fathead minnow	≤24-h old	96-h	Static	Mortality		LC50	2,790			39.2				Unmeasured	CCME 2011	USEPA 1991 (Data from ERL-Duluth)
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	96-h	Static	Mortality		LC50	3,876			84.8	25	7.5-9		Unmeasured	CCME 2011	Mount <i>et al.</i> 1997

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Fish - Non-salmonid (cont.)																	
<i>Pimephales promelas</i>	Fathead minnow	Juvenile	96-h		Mortality		LC50	4,079			76	24-26	7.47-8.03	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow		96-h	Static	Mortality		LC50	4,127			169.5				Unmeasured	CCME 2011	WISLOH 2007 (In EPA 2008)
<i>Pimephales promelas</i>	Fathead minnow		96-h	Static	Mortality		LC50	4,167			84.8				Unmeasured	CCME 2011	WISLOH 2007 (In EPA 2008)
<i>Pimephales promelas</i>	Fathead minnow	Juvenile	96-h				LOEC	4,293			76	24-26	7.47-8.03	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	11 wks old, mean wt 0.12-0.38 g	96-h		Mortality		LC50	4,640				25				CCME 2011	Adelman <i>et al.</i> 1976
<i>Pimephales promelas</i>	Fathead minnow		24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Pimephales promelas</i>	Fathead minnow		24-h	Static	Mortality		LC0	6,066			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Pimephales promelas</i>	Fathead minnow	larvae	96-h	Flow-through	Mortality		LC50	6,570			96.3±6.7	21.7±0.4	7.81±0.12	69.6±5.3	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow		6-h	Static	Mortality		LC100	12,132			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Stizostedion vitreum</i>	Walleye		24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Stizostedion vitreum</i>	Walleye		24-h	Static	Mortality		LC0	6,066			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
Fish - Salmonid																	
<i>Oncorhynchus mykiss</i>	Rainbow trout	Juvenile	96-h		Mortality		NOEC	4,265			40	13-15	7.01-7.44	36	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	Juvenile	96-h		Mortality		LC50	6,030			40	13-15	7.01-7.44	36	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout		24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996

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Fish - Salmonid (cont.)																	
<i>Oncorhynchus mykiss</i>	Rainbow trout		24-h	Static	Mortality		LC0	6,066			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Oncorhynchus mykiss</i>	Rainbow trout	Juvenile	96-h	Flow-through	Mortality		LC50	6,743			46				Measured	CCME 2011	Spehar 1986, 1987
<i>Oncorhynchus mykiss</i>	Rainbow trout	Juvenile	96-h		Mortality		LOEC	8,400			40	13-15	7.01-7.44	36	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	fingerlings; mean wt 0.31±0.06g	96-h	Static	Mortality		LC50	9,886			119	14-16	8.06-8.46		Measured	CCME 2011	Dow <i>et al.</i> 2010
<i>Oncorhynchus mykiss</i>	Rainbow trout		6-h	Static	Mortality		LC40	12,132			130-150	17±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Oncorhynchus mykiss</i>	Rainbow trout	juvenile, 12.9-14.4g	96-h	Static-renewal	Mortality		LC50	12,363			284	12-13.5	8	244	Unmeasured	CCME 2011	Vosyliene <i>et al.</i> 2006
<i>Salmo gairdneri</i>	Rainbow trout	total length 15-20 cm	24-h	Static-renewal	Mortality		LC50	3,336				14-16				CCME 2011	Kostecki and Jones 1983
<i>Salmo trutta</i>	Brown trout	avg lt=14.0cm, avg wt=30.0g	24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
<i>Salvelinus namaycush</i>	Lake trout		24-h	Static	Mortality		LC0	6,066			130-150	12±1	8.2±0.5	100±10	Unmeasured	CCME 2011	Waller <i>et al.</i> 1996
Invertebrate - Amphipod																	
<i>Crangonyx sp.</i>	Amphipod		96-h	Static	Mortality		LC0	3,000				7			Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Gammarus pseudolimnaeus</i>	Amphipod		24-h	Static	Mortality		LC20	2,500				11			Measured	CCME 2011	Crowther and Hynes 1977
<i>Gammarus pseudolimnaeus</i>	Amphipod		96-h	Static	Mortality		LC0	3,000				7			Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Hyaella azteca</i>	Amphipod	7-8 d	96-h	Static	Mortality		NOEC	1,123			76	22-24	7.7-7.9	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Amphipod (cont.)																	
<i>Hyalella azteca</i>	Amphipod	7-8 d	96-h	Static	Mortality		IC25	1,186			76	22-24	7.7-7.9	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Hyalella azteca</i>	Amphipod	7-8 d	96-h	Static	Mortality		LC50	1,382			76	22-24	7.7-7.9	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Hyalella azteca</i>	Amphipod	7-8 d	96-h	Static	Mortality		LC50	1,521 (linear interpolation)			76	22-24	7.7-7.9	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Hyalella azteca</i>	Amphipod	7-8 d	96-h	Static	Mortality		LOEC	2,190			76	22-24	7.7-7.9	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Hyalella azteca</i>	Amphipod	Juvenile (1-wk old)	48-h	Static-renewal	Survival		EC50	2,253			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Hyalella azteca</i>	Amphipod	7-d old	48-h	Static	Mortality		LC50	3,094			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Hyalella azteca</i>	Amphipod	7-d old	48-h	Static	Mortality		LC50	3,094			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Hyalella azteca</i>	Amphipod	7-d old	48-h	Static	Mortality		LC50	3,215			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Hyalella azteca</i>	Amphipod	7-d old	48-h	Static	Mortality		LC50	3,458			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Hyalella azteca</i>	Amphipod	7-d old	48-h	Static	Mortality		LC50	3,700			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Hyalella azteca</i>	Amphipod	7-14 d old	96-h	Static	Mortality		LC50	3,947			102.5	23	8.3-9.3	70	Unmeasured	CCME 2011	Lasier <i>et al.</i> 1997
Invertebrate - Aquatic Insect																	
<i>Baetis tricaudatus</i>	Mayfly	4-6 mm in length, excluding cerci	48-h	Flow-through	Immobilization	Immobility (Current velocity 0 cm/s)	EC50	2,875			178	13	8.3	150	Measured	CCME 2011	Lowell <i>et al.</i> 1995

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Invertebrate - Aquatic Insect (cont.)																	
<i>Baetis tricaudatus</i>	Mayfly	4-6 mm in length, excluding cerci	48-h	Flow-through	Immobilization	Immobility (Current velocity 6 cm/s)	EC50	3,233			178	13	8.3	150	Measured	CCME 2011	Lowell <i>et al.</i> 1995
<i>Baetis tricaudatus</i>	Mayfly	4-6 mm in length, excluding cerci	48-h	Flow-through	Immobilization	Immobility (Current velocity 12 cm/s)	EC50	3,300			178	13	8.3	150	Measured	CCME 2011	Lowell <i>et al.</i> 1995
<i>Baetis tricaudatus</i>	Mayfly		48-h	Flow-through	Immobilization		LOEC	3,640							Measured	CCME 2011	Lowell <i>et al.</i> 1995
<i>Baetis tricaudatus</i>	Mayfly		24-h	Flow-through	Development		LOEC	4,853							Measured	CCME 2011	Lowell <i>et al.</i> 1995
<i>Baetis tricaudatus</i>	Mayfly		24-h	Flow-through	Immobilization		LOEC	4,853							Measured	CCME 2011	Lowell <i>et al.</i> 1995
<i>Baetis tricaudatus</i>	Mayfly		48-h	Flow-through	Development		LOEC	4,853							Measured	CCME 2011	Lowell <i>et al.</i> 1995
<i>Chimarra</i>	Caddisfly		0.5-d		Mortality	0% Mortality	LC0	315								CCME 2011	Goetsch and Palmer 1997
<i>Chimarra marginata</i>	Caddisfly		4-d		Mortality	0% Mortality	LC0	155-190								CCME 2011	Camargo and Tarazona 1990
<i>Chironomus attenatus</i>	Chironomid	4th instar	48-h	Static	Mortality		LC50	4,850				25				CCME 2011	Thornton and Sauer, 1972
<i>Chironomus attenatus</i>	Chironomid	4th instar	36-h	Static	Mortality		LC50	5,814				25				CCME 2011	Thornton and Sauer, 1972
<i>Chironomus attenatus</i>	Chironomid	4th instar	24-h	Static	Mortality		LC50	5,956				25				CCME 2011	Thornton and Sauer, 1972
<i>Chironomus attenatus</i>	Chironomid	4th instar	12-h	Static	Mortality		LC50	6,062				25				CCME 2011	Thornton and Sauer, 1972
<i>Chironomus attenatus</i>	Chironomid	4th instar	12,24,36, 48-h	Static	Mortality		LC100	7,275				25				CCME 2011	Thornton and Sauer, 1972
<i>Chironomus dilutus</i>	Chironomid	third instar larvae	96-h				NOEC	2,150			76	22-24	7.2-7.8	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Chironomus dilutus</i>	Chironomid	7-d old	96-h	Static	Mortality		LC50	3,761			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010

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Invertebrate - Aquatic Insect (cont.)																	
<i>Chironomus dilutus</i>	Chironomid	third instar larvae	96-h				LOEC	4,805			76	22-24	7.2-7.8	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Chironomus dilutus</i>	Chironomid	third instar larvae - approx. 10-d old	96-h		Mortality		LC50	5,867			76	22-24	7.2-7.8	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	2nd to 3rd instar 9-d old at test initiation	48-h	Static	Mortality		LC50	6,032			296	21.5	7.98	85	Measured	CCME 2011	Environ 2009
<i>Chironomus riparius</i>	Chironomid	4-d old	48-h		Mortality		LC50	6,912			160-180					CCME 2011	Wang and Ingersoll 2010
<i>Hexagenia spp.</i>	Mayfly	2 months old	48-h		Mortality		LC50	4,671			160-180					CCME 2011	Wang and Ingersoll 2010
<i>Hydropsyche bulbifera</i>	Caddisfly		4-d		Mortality	0% Mortality	LC0	155-190								CCME 2011	Camargo and Tarazona 1990
<i>Hydropsyche exocellata</i>	Caddisfly		4-d		Mortality	0% Mortality	LC0	155-190								CCME 2011	Camargo and Tarazona 1990
<i>Hydropsyche lobata</i>	Caddisfly		4-d		Mortality	0% Mortality	LC0	155-190								CCME 2011	Camargo and Tarazona 1990
<i>Hydropsyche pellucidulla</i>	Caddisfly		4-d		Mortality	0% Mortality	LC0	155-190								CCME 2011	Camargo and Tarazona 1990
<i>Isonychia bicolor</i>	Mayfly	Body length was ~ 5 - 9mm & ~ 9 to 14 mm & ~ 12 - 18 mm in different tests that were averaged	96-h		Mortality		LC50	1,891							Field-collected organisms. Age of organism may have varied between tests	Publication	Echols <i>et al.</i> 2010
<i>Lepidostoma sp.</i>	Caddisfly		96-h	Static	Mortality		LC0	3,000				7			Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Lepidostoma sp.</i>	Caddisfly		96-h	Static	Mortality		LC50	6,000				7			Unmeasured	CCME 2011	Williams <i>et al.</i> 1999

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Invertebrate - Aquatic Insect (cont.)																	
<i>Nemoura trispinosa</i>	Stonefly		96-h	Static	Mortality		LC0	3,000							Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Parapsyche</i> sp.	Caddisfly		96-h	Static	Mortality		LC0	3,000				7			Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Tricorythus</i>	Mayfly		1,5-d		Mortality	0% Mortality	LC0	315								CCME 2011	Goetsch and Palmer 1997
Invertebrate - Cladoceran																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	447			39.2	25			Unmeasured	CCME 2011	Hoke <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	507			39.2	25			Unmeasured	CCME 2011	Hoke <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	48-h	Static-renewal	Survival		EC50	738			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	767			49	24-26	7.9	65		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	947			30	24-26	7.9	68		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	955			44	24-26	8.1	68		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality	Lethality by immobilization	EC50	964			54-72	23-27	8.11-8.66	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,007			25	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h		Mortality		LC50	1,068			76	24-26	7.6-8.0	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,109			280	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,130			96	24-26	8.1	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,179			278	24-26	8	65		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,195			194	24-26	8.1	66		CCME 2011	GLEC and INHS 2008

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Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,199			290	24-26	7.8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,206			280	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,214			281	24-26	8	66		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,240			283	24-26	8	63		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,258			276	24-26	7.9	63		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,274			39.2				Unmeasured	CCME 2011	Data from ERL-Duluth (In EPA CI 2008 update In USEPA 1991)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,311			279	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,369			95	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,394			280	24-26	8.1	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea		48-h		Mortality		LC50	1,395			170	25				CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,395			39.2				Unmeasured	CCME 2011	Data from ERL-Duluth (In EPA CI 2008 update In USEPA 1991)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,395			39.2				Unmeasured	CCME 2011	Data from ERL-Duluth (In EPA CI 2008 update In USEPA 1991)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,400			280	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	1,413			82.9±5.8	19-21	7.81±0.13	62.6±3.9	Unmeasured	CCME 2011	Valenti <i>et al.</i> 2007

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Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,491			400	24-26	8	60		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea		48-h	Static	Mortality		LC50	1,499			169.5				Unmeasured	CCME 2011	WISLOH 2007 (In EPA 2008 CI update dataset)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,500			280	24-26	8.2	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea		48-h		Mortality		LC50	1,595								CCME 2011	WI SLOH 1995 (In Nagpal <i>et al.</i> 2003)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,609			180	24-26	8	68		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,638			39.2				Unmeasured	CCME 2011	Data from ERL-Duluth (In EPA CI 2008 update In USEPA 1991)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,652			560	24-26	7.9	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	48-h	Static-renewal	Survival		EC50	1,676			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Ceriodaphnia dubia</i>	Water flea		48-h	Static	Mortality		LC50	1,677			84.8				Unmeasured	CCME 2011	WISLOH 2007 (In EPA 2008 CI update dataset)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,687			375	24-26	7.9	62		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,698			339				Unmeasured	CCME 2011	Data from ERL-Duluth (In EPA CI 2008 update In USEPA 1991)
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,720			280	24-26	8.1	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,764			800	24-26	8	64		CCME 2011	GLEC and INHS 2008

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Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,907			570	24-26	8	64		CCME 2011	GLEC and INHS 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	1,909			792	24-26	8.2	65		CCME 2011	GLEC and INHS 2008
<i>Dahpnia pulex</i>	Water flea	<24-h old	24-h		Immobilization		EC50	2,000								CCME 2011	Lilius <i>et al.</i> 1995
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	48-h	Static	Immobilization		EC50	1,213			54-72	19-23	8.11-8.66	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia magna</i>	Water flea		48-h	Static	Immobilization		EC50	621			240	11.5-14.5	7.2-7.8	390-415	Unmeasured	CCME 2011	Khangarot and Ray 1989
<i>Daphnia magna</i>	Water flea	4th instar - adult	48-h	Static	Mortality		LC50	2,053			39.2				Unmeasured	CCME 2011	Hoke <i>et al.</i> 1992
<i>Daphnia magna</i>	Water flea	4±4 hours old, to test effects at first molting	64-h		Immobilization		EC50	2,232			Lake Erie water	25	8.2-8.4			CCME 2011	Anderson 1948
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	2,529			45.3				Unmeasured	CCME 2011	Biesinger and Christensen 1972
<i>Daphnia magna</i>	Water flea	neonates, 12±12 hrs old	48-h	Static	Mortality		LC50	2,563			45.3	18±1	7.74	42.3		CCME 2011	Biesinger and Christensen 1972
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	2,726			39.2				Unmeasured	CCME 2011	Hoke <i>et al.</i> 1992
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	2,806			45.3				Unmeasured	CCME 2011	Biesinger and Christensen 1972
<i>Daphnia magna</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	2,893			84.8	20	7.5-9		Unmeasured	CCME 2011	Mount <i>et al.</i> 1997
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	3,009			82.9±5.8	19-21	7.81±0.13	62.6±3.9	Unmeasured	CCME 2011	Valenti <i>et al.</i> 2007
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	3,038			39.2				Unmeasured	CCME 2011	Hoke <i>et al.</i> 1992
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	3,136			100 (Ca:Mg = 0.7)	20	7.5-8.1		Unmeasured	CCME 2011	Davies and Hall 2007

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	3,137			100 (Ca:Mg = 7.0)	20	7.5-8.1		Unmeasured	CCME 2011	Davies and Hall 2007
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static-renewal	Survival		EC50	3,146	2526	3919	100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	3,222			100 (Ca:Mg = 1.8)	20	7.5-8.1		Unmeasured	CCME 2011	Davies and Hall 2007
<i>Daphnia magna</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	3,458			160-180				Measured	CCME 2011	Wang and Ingersoll 2010
<i>Daphnia magna</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	3,559			136	20±2	7.69		Measured	CCME 2011	Dow <i>et al.</i> 2010 (historical mean reference toxicity data from ASI Group Ltd - Appendix II)
<i>Daphnia magna</i>	Water flea	<24-h neonates	48-h		Mortality		LC50	3,630			98	19-21	7.6-8.0	58	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	48-h	Static	Mortality		LC50	3,731							Measured	CCME 2011	Jackman 2010
<i>Daphnia magna</i>	Water flea	<24-h old	24-h	Static	Mortality		LC50	3,870			84.8	20	7.5-9		Unmeasured	CCME 2011	Mount <i>et al.</i> 1997
<i>Daphnia magna</i>	Water flea		48-h	Static	Mortality		LC50	3,944			169.5				Unmeasured	CCME 2011	WISLOH 2007 (In EPA 2008 Cl update dataset)
<i>Daphnia magna</i>	Water flea		48-h		Mortality		LC50	4,704			170	25				CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	<3943			169.5				Unmeasured	CCME 2011	Seymour <i>et al.</i> 1997
<i>Daphnia magna</i>	Water flea	<24-h old	48-h	Static	Mortality		LC50	>2669			169.5				Unmeasured	CCME 2011	Seymour <i>et al.</i> 1997
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality		LC50	892			92.8±2.6	20.0±0.1	7.83±0.09	60.8±2.3	Measured	CCME 2011	Birge <i>et al.</i> 1985

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Invertebrate - Cladoceran (cont.)																	
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality		LC50	1,159			84.8				Unmeasured	CCME 2011	Palmer <i>et al.</i> 2004
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality		LC50	1,775			84.8				Unmeasured	CCME 2011	Palmer <i>et al.</i> 2004
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality		LC50	1,805			84.8				Unmeasured	CCME 2011	Palmer <i>et al.</i> 2004
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality		LC50	2,242			84.8				Unmeasured	CCME 2011	Palmer <i>et al.</i> 2004
Invertebrate - Isopod																	
<i>Lirceus fontinalis</i>	Isopod		96-h	Flow-through	Mortality		LC50	2,950			100.8±8.2	21.7±0.2	7.73±0.22	58.6±4.2	Measured	CCME 2011	Birge <i>et al.</i> 1985
Invertebrate - Leech																	
<i>Nepheleopsis obscura</i>	Leech	wet wt 0.35g, avg length 7 cm	96-h	Static-renewal	Mortality		LC50	4,310			290	22.5	8.03	60	Measured	CCME 2011	Environ 2009
Invertebrate - Mollusk																	
<i>Amblema plicata</i>	Threeridge mussel	Juvenile (1-wk old)	96-h	Static-renewal	Survival		EC50	1,038	808	1333	100	23	8.2	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Elliptio complanata</i>	Eastern elliptio	Glochidia	48-h	Static	Survival		EC10 ²	91			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Elliptio complanata</i>	Eastern elliptio	Glochidia	24-h	Static	Survival		EC10 ²	406			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Elliptio complanata</i>	Eastern elliptio	Glochidia	48-h	Static	Survival		EC50	1,353			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Elliptio complanata</i>	Eastern elliptio	Glochidia	24-h	Static	Survival		EC50	1,620			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Elliptio lanceolata</i>	Yellow lance mussel	10-d old	96-h	Static	Mortality		LC50	1,274			160-180					CCME 2011	Wang and Ingersoll 2010
<i>Epioblasma brevidens</i>	Cumberlandian combshell	Glochidia	24-h	Static	Survival		EC50	1,626								CCME 2011	Valenti <i>et al.</i> 2007
<i>Epioblasma capsaeformis</i>	Oyster mussel	Glochidia	24-h	Static	Survival		EC50	1,644								CCME 2011	Valenti <i>et al.</i> 2007

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Invertebrate - Mollusk (cont.)																	
<i>Epioblasma capsaeformis</i>	Oyster mussel	2 months old	96-h	Static			EC50	2,426			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Epioblasma torulosa rangiana</i>	Northern riffleshell mussel	Glochidia	24-h	Static	Survival		EC10 ²	42			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Epioblasma torulosa rangiana</i>	Northern riffleshell mussel	Glochidia	24-h	Static	Survival		EC20 ²	111			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Epioblasma torulosa rangiana</i>	Northern riffleshell mussel	Glochidia	24-h	Static	Survival		EC30 ²	161			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Epioblasma torulosa rangiana</i>	Northern riffleshell mussel	Glochidia	24-h	Static	Survival		EC50	244			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Gyraulus parvus</i>	Snail	mixed ages, 3-5 mm	96-h		Mortality		LC50	3,009			212	21-23	7.7	56		CCME 2011	GLEC and INHS 2008
<i>Gyraulus parvus</i>	Snail	mixed ages, 3-5 mm	96-h		Mortality		LC50	3,078			56	21-23	7.7	56		CCME 2011	GLEC and INHS 2008
<i>Lampsilis cardium</i>	Plain pocketbook	Glochidia	24-h	Static	Survival		EC50	817			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	48-h	Static	Survival		EC10 ²	2			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	24-h (2008)	Static	Survival		EC30 ²	8.6			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	24-h	Static	Survival		EC10 ²	24			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	24-h 2008	Static	Survival		EC50	113			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	24-h 2009	Static	Survival		EC50	285			95-115	21			Measured	CCME 2011	Gillis 2011
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Juvenile	96-h	Static	Survival		EC10 ²	601			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	48-h	Static	Survival		EC50	1,055			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	24-h	Static	Survival		EC50	1,116			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007

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Invertebrate - Mollusk (cont.)																	
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	24-h	Static	Survival		EC50	1,868			82.9±5.8	19-21	7.81±0.13	62.6±3.9	Unmeasured	CCME 2011	Valenti <i>et al.</i> 2007
<i>Lampsilis fasciola</i>	Wavy-rayed lampmussel	Glochidia	96-h	Static	Survival		EC50	2,414			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h (2007)	Static	Survival		EC20 ²	20			95-115	21			Measured; collected from Cox Creek in 2008???	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h (2008)	Static	Survival		EC30 ²	35			95-115	21			Measured; collected from Cox Creek in 2008	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h (2007)	Static	Survival		EC30 ²	117			95-115	21			Measured; collected from Cox Creek in 2008???	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h	Static	Survival		EC50	334			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	48-h	Static	Survival		EC50	340			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h	Static	Survival	Valve closure	EC50	409	378	442	61	20	7.8	48		USGS	USGS
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h	Static	Survival	Valve closure	EC50	520	474	571	103	20	8.1	87		CERC	Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h	Static	Survival	Valve closure	EC50	743	689	800	87	20	8.2	72		USGS	USGS
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h 2009	Static	Survival		EC50	763			40-48	21			Measured; collected from Maitland River 2009	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h	Static	Survival	Valve closure	EC50	1,318	1238	1403	204	20	8.4	169		USGS	USGS
																CERC	Unpublished

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Invertebrate - Mollusk (cont.)																	
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h 2009	Static	Survival		EC50	1,430			95-115	21			Measured; collected from Maitland River 2009	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile	96-h	Static	Survival		EC10 ²	1,474			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lampsilis siliquoidea</i>	Fatmucket	2 weeks old	96-h	Static			EC50	1,517			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h	Static	Survival	Valve closure	EC50	1,633	1538	1734	299	20	8.5	243		USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h 2009	Static	Survival		EC50	1,870			280-320	21			Measured; collected from Maitland River 2009	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	24-h 2009	Static	Survival		EC50	1,962			160-180	21			Measured; collected from Maitland River 2009	CCME 2011	Gillis 2011
<i>Lampsilis siliquoidea</i>	Fatmucket	4 months old	96-h	Static			EC50	2,244			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Lampsilis siliquoidea</i>	Fatmucket	2 months old	96-h	Static			EC50	2,426			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Lampsilis siliquoidea</i>	Fatmucket	2 months old	96-h	Static			EC50	2,669			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Lampsilis siliquoidea</i>	Fatmucket	Glochidia	96-h	Static	Survival		EC50	2,766			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Lasmigona complanata</i>	White heelsplitter	Juvenile (1-wk old)	96-h	Static-renewal	Survival		EC50	1,381			100	23	8.2	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Lymnaea stagnalis</i>	Pond snail	Juvenile (1-wk old)	96-h	Static-renewal	Survival		EC50	3,550			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Margaritifera falcata</i>	Western pearlshell	Juvenile (1-wk old)	96-h	Static-renewal	Survival		EC50	1,529			100	23	8.2	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Megalonaisas nervosa</i>	Washboard	Juvenile (1-wk old)	96-h	Static-renewal	Survival		EC50	1,392			100	23	8.2	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished

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Invertebrate - Mollusk (cont.)																	
<i>Musculium transversum</i>	Fingernail clam	Juvenile	96-h	Static	Mortality		LC50	1,930			48	22 ± 1	7.9 - 8.1	62	Measured	CCME 2011	USEPA 2010
<i>Physa gyrina</i>	Snail	Juvenile (1-wk old)	96-h	Static-renewal	Survival		EC50	2,060			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Physa gyrina</i>	Snail		96-h	Flow-through	Mortality		LC50	2,540			100.1±8.3	21.8±0.1	7.41±0.18	58.0±5.9	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Physa sp.</i>	Snail		96-h	Static	Mortality		LC0	3,000							Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Physa sp.</i>	Snail		246-h	Static	Behaviour	Stressed behaviour, no feeding or movement	EC60	4,500							Unmeasured	CCME 2011	Williams <i>et al.</i> 1999
<i>Sphaerium simile</i>	Fingernail clam	juveniles, 4.5-6.5 mm	96-h	Static	Mortality		LC50	740			51	21-23	7.8	64		CCME 2011	GLEC and INHS 2008
<i>Sphaerium simile</i>	Fingernail clam	juveniles, 4.5-6.5 mm	96-h	Static	Mortality		LC50	1,100			192	21-23	7.9	61		CCME 2011	GLEC and INHS 2008
<i>Utterbackia imbecillis</i>	Paper pondshell	Juvenile (1-wk old)	96-h	Static-renewal	Survival		Chronic Value	2,161			100	23	8.2	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Villosa constricta</i>	Notched rainbow	Glochidia	48-h	Static	Survival		EC10 ²	267			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa constricta</i>	Notched rainbow	Glochidia	24-h	Static	Survival		EC10 ²	789			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa constricta</i>	Notched rainbow	Glochidia	48-h	Static	Survival		EC50	1,571			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa constricta</i>	Notched rainbow	Glochidia	24-h	Static	Survival		EC50	1,674			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa constricta</i>	Notched rainbow	10-d old	24-h	Static			EC50	2,366			160-180				Measured	CCME 2011	Wang and Ingersoll 2010
<i>Villosa constricta</i>	Notched rainbow	Juvenile (2-mo)	96-h	Static-renewal	Survival	Foot movement	EC50	3,150	2670	3700	169	20	8.4	124	Test water: ASTM hard	USGS CERC	USGS Unpublished
<i>Villosa delumbis</i>	Eastern creekshell	Glochidia	24-h	Static	Survival		EC10 ²	716			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa delumbis</i>	Eastern creekshell	Glochidia	48-h	Static	Survival		EC10 ²	825			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa delumbis</i>	Eastern creekshell	Juvenile	96-h	Static	Survival		EC10 ²	898			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007

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Invertebrate - Mollusk (cont.)																	
<i>Villosa delumbis</i>	Eastern creekshell	Glochidia	24-h	Static	Survival		EC50	2,008			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa delumbis</i>	Eastern creekshell	Glochidia	48-h	Static	Survival		EC50	2,202			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa delumbis</i>	Eastern creekshell	Glochidia	96-h	Static	Survival		EC50	3,173			170-192	20.1-21.9	8.32-8.61	116-130	Measured	CCME 2011	Bringolf <i>et al.</i> 2007
<i>Villosa iris</i>	Rainbow mussel	2 months old	96-h	Static			EC50	1,517			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Villosa iris</i>	Rainbow mussel	2 months old	96-h	Static			EC50	1,638			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Villosa iris</i>	Rainbow mussel	2 months old	96-h	Static			EC50	1,820			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Villosa iris</i>	Rainbow mussel	2 months old	96-h	Static			EC50	1,941			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Villosa iris</i>	Rainbow mussel	2 months old	96-h	Static			EC50	2,244			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
Invertebrate - Planktonic Crustacean																	
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	24-h		Mortality		NOEC	1,120			76	25.0-25.2	7.88-8.12	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	24-h		Mortality		LC50	1,645			76	25.0-25.2	7.88-8.12	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer		24-h		Mortality		LC50	2,223								CCME 2011	Calleja <i>et al.</i> 1994
<i>Brachionus calyciflorus</i>	Rotifer	neonate	24-h	Static	Mortality		LC50	2,275							Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	24-h		Mortality		LOEC	2,330			76	25.0-25.2	7.88-8.12	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Brachionus patulus</i>	Rotifer	neonate	24-h	Static	Mortality		LC50	1,298							Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003

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Invertebrate - Planktonic Crustacean																	
<i>Branchinecta lynchi</i>	Fairy shrimp	<24-h post-hatch nauplii	24-h	Static-renewal	Survival		EC50	2,402			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Thamnocephalus platyurus</i>	Fairy shrimp	<24-h post-hatch nauplii	24-h	Static-renewal	Survival		EC50	1,391			100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
<i>Thamnocephalus platyurus</i>	Fairy shrimp	<24-h post-hatch nauplii	24-h	Static-renewal	Survival		EC50	1,631	1224	2173	100	23	8.3	90	DOC = 0.5 mg/L	USGS CERC	USGS Unpublished
Invertebrate - Worm																	
<i>Lumbriculus variegatus</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		NOEC	2,145			76	22-24	7.4-8.2	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Lumbriculus variegatus</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		LC50	3,100			76	22-24	7.4-8.2	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Lumbriculus variegatus</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		LOEC	4,480			76	22-24	7.4-8.2	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Lumbriculus variegatus</i>	Oligochaete or Aquatic Worm	adult	96-h	Static-renewal	Mortality		LC50	5,408			296	21.5	7.98	85	Measured	CCME 2011	Environ 2009
<i>Lumbriculus variegatus</i>	Oligochaete or Aquatic Worm		96-h	Static	Mortality		LC50	>4853			160-180				Unmeasured	CCME 2011	Wang and Ingersoll 2010
<i>Tubifex tubifex</i>	Oligochaete or Aquatic Worm	mixed ages	96-h	Static	Mortality		LC50	4,278			52	22±1	7.6	60		CCME 2011	GLEC and INHS 2008
<i>Tubifex tubifex</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		NOEC	4,575			76	22-24	7.3-8.1	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		LC50	5,648			76	22-24	7.3-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

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Invertebrate - Worm (cont.)																	
<i>Tubifex tubifex</i>	Oligochaete or Aquatic Worm	mixed ages	96-h	Static	Mortality		LC50	6,008			220	22±1	7.7	56		CCME 2011	GLEC and INHS 2008
<i>Tubifex tubifex</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		LC50	7,886			160-180					CCME 2011	Wang and Ingersoll 2010
<i>Tubifex tubifex</i>	Oligochaete or Aquatic Worm	adult	96-h		Mortality		LOEC	8,260			76	22-24	7.3-8.1	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
Chronic Studies																	
Algae and Plants																	
<i>Anabaena variabilis</i>	Alga		96-h		Growth		MATC	14,300								CCME 2011	Schiewer 1974
<i>Anacystis nidulans</i>	Alga		96-h		Growth		MATC	>24300								CCME 2011	Schiewer 1974
<i>Chlamydomonas reinhardtii</i>	Alga		3-6 d		Growth	Growth Inhibition	EC49	3,014								CCME 2011	Reynoso <i>et al.</i> 1982
<i>Chlorella emersonii</i>	Alga		8-14 d		Growth	Growth Inhibition	MATC	6,824				25-30				CCME 2011	Setter <i>et al.</i> 1982
<i>Chlorella fusca</i>	Alga		28-d		Growth		MATC	18,200								CCME 2011	Kessler (1974)
<i>Chlorella kessleri</i>	Alga		28-d		Growth		MATC	18,200								CCME 2011	Kessler (1974)
<i>Chlorella luteoviridis</i>	Alga		28-d		Growth		MATC	36,400								CCME 2011	Kessler (1974)
<i>Chlorella minutissimum</i>	Alga		28-d		Growth		MATC	6,066								CCME 2011	Kessler (1974)
<i>Chlorella protothecoides</i>	Alga		28-d		Growth		MATC	30,300								CCME 2011	Kessler (1974)
<i>Chlorella saccharophila</i>	Alga		28-d		Growth		MATC	30,300								CCME 2011	Kessler (1974)
<i>Chlorella vulgaris</i>	Alga		28-d		Growth		MATC	18,200								CCME 2011	Kessler (1974)
<i>Chlorella zofingiensis</i>	Alga		28-d		Growth		MATC	6,066								CCME 2011	Kessler (1974)

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Algae and Plants (cont.)																	
<i>Lemna minor</i>	Duckweed		96-h		Frond production	Frond production	MATC	1,171			39	24.5-25.6	7.3-7.6	2	Unmeasured	CCME 2011	Taraldsen and Norberg-King 1990
<i>Lemna minor</i>	Duckweed		7-d	Static	Population	Population	EC50	2,960								CCME 2011	Buckley <i>et al.</i> 1996
<i>Lemna minor</i>	Duckweed		7-d	Static	Population	Population	EC50	3,033								CCME 2011	Buckley <i>et al.</i> 1996
<i>Lemna minor</i>	Duckweed		7-d	Static	Population	Population	EC50	3,270								CCME 2011	Buckley <i>et al.</i> 1996
<i>Lemna minor</i>	Duckweed		7-d	Static	Population	Population	EC50	3,336								CCME 2011	Buckley <i>et al.</i> 1996
<i>Myriophyllum spicatum</i>	Eurasian millfoil		32-d		Population	Population	EC50	3,617								CCME 2011	Stanley 1974 (In Bright and Addison 2002)
<i>Myriophyllum spicatum</i>	Eurasian millfoil		32-d		Growth		EC50	4,504								CCME 2011	Stanley 1974 (In Bright and Addison 2002)
<i>Myriophyllum spicatum</i>	Eurasian millfoil		32-d		Growth		EC50	4,859								CCME 2011	Stanley 1974 (In Bright and Addison 2002)
<i>Myriophyllum spicatum</i>	Eurasian millfoil		32-d		Population	Population	EC50	4,965								CCME 2011	Stanley 1974 (In Bright and Addison 2002)
<i>Scendesmus obliquus</i>	Freshwater green alga		7-d		Growth	Decrease in cell number	EC43.1	7,091				24-26				CCME 2011	Mohammed and Shafea 1992
Amphibian																	
<i>Rana clamitans</i>	Green frog	Gosner stage 25 tadpoles, mean wt 0.017 ± 0.001g eggs	7-d	Static	Mortality		LC50	246							Unmeasured	CCME 2011	Dougherty and Smith 2006
<i>Rana pipiens</i>	Northern leopard frog		108-d	Static	Development	Developmental delays	NOEC	1,941			80-100	21-25			Measured	CCME 2011	Doe 2010

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Amphibian (cont.)																	
<i>Rana pipiens</i>	Northern leopard frog	eggs	108-d	Static	Growth	Wet weight at Gosner Stage 42; forelimbs emerge	NOEC	1,941			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana pipiens</i>	Northern leopard frog	eggs	108-d	Static	Survival		NOEC	1,941			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana pipiens</i>	Northern leopard frog	eggs	180-d	Static	Mortality		LC50	2,265			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana pipiens</i>	Northern leopard frog	eggs	7-d	Static	Mortality		LC50	3,397			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana pipiens</i>	Northern leopard frog	eggs	108-d	Static	Survival		MATC	3,431			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana pipiens</i>	Northern leopard frog	eggs	108-d	Static	Survival		LOEC	6,066			80-100	21-25			Measured	CCME 2011	Doe 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, total distance moved	LC10	292			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed	NOEC	303			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, total distance moved	NOEC	303			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed; linear interpolation	LC10	377			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed	MATC	429			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010

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Amphibian (cont.)																	
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, total distance moved	MATC	429			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	42-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed	NOEC	607			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed	LOEC	607			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Behaviour	Behavioural endpoint, total distance moved	LOEC	607			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	42-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed	MATC	743			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Survival		NOEC	910			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	56-d	Static-renewal	Growth		NOEC	910			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Rana temporaria</i>	common frog	Gosner stage 26 tadpoles	42-d	Static-renewal	Behaviour	Behavioural endpoint, mean swimming speed	LOEC	910			Recon. soft water	16			Unmeasured	CCME 2011	Denoel <i>et al.</i> 2010
<i>Xenopus laevis</i>	African clawed frog	Gosner stage 47-49 tadpoles, mean wt 0.008 ± 0.001g	7-d	Static	Survival		NOEC	80							Unmeasured	CCME 2011	Dougherty and Smith 2006
<i>Xenopus laevis</i>	African clawed frog	Gosner stage 47-49 tadpoles, mean wt 0.008 ± 0.001g	7-d	Static	Mortality		LC50	799							Unmeasured	CCME 2011	Dougherty and Smith 2006

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Amphibian (cont.)																	
<i>Xenopus laevis</i>	African clawed frog	tadpoles, <2 wks old	7-d	Static-renewal	Survival	90-97% Survival	NOEC	1,213			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	tadpoles, <2 wks old	7-d	Static-renewal	Mortality		LC10	1,307			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	frog embryo	7-d	Static-renewal	Behaviour	Impaired swimming behaviour	EC50	1,523			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	tadpoles, <2 wks old	7-d	Static-renewal	Survival		MATC	1,715			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	frog embryo	7-d	Static-renewal	Mortality		LC50	1,783			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	tadpoles, <2 wks old	7-d	Static-renewal	Survival	6.7% survival	LOEC	2,426			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	tadpoles, <2 wks old	7-d	Static-renewal	Survival	0% Survival	LC100	4,853			110-120	23±1	7.68-8.32	80-90		CCME 2011	Beak International Inc. 1999
<i>Xenopus laevis</i>	African clawed frog	Gosner stage 47-49 tadpoles, mean wt 0.008 ± 0.001g	7-d	Static	Survival		LOEC	>80							Unmeasured	CCME 2011	Dougherty and Smith 2006
<i>Bufo americanus</i>	American toad	Gosner stage 25 tadpoles, mean wt 0.012 ± 0.001g	7-d	Static	Survival		NOEC	80							Unmeasured	CCME 2011	Dougherty and Smith 2006
<i>Bufo americanus</i>	American toad	Gosner stage 25 tadpoles, mean wt 0.012 ± 0.001g	7-d	Static	Survival		LOEC	>80							Unmeasured	CCME 2011	Dougherty and Smith 2006

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Fish - Non-salmonid																	
<i>Carassius auratus</i>	Goldfish	0.38-4.02g	10-d	Static	Mortality		LC50	2,623			148.8±1.8	23.5	7.95±0.02	100±1.6	Measured	CCME 2011	Threader and Houston 1983
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		NOEC	252			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		MATC	298			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		LOEC	352			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		NOEC	352			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		MATC	431			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		NOEC	498			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		LOEC	528			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Growth		NOEC	533			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Biomass	Mean dry biomass	NOEC	558			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Mortality		NOEC	558			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007

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Fish - Non-salmonid (cont.)																	
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Mortality		LC10	585			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		MATC	587			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		LC10	598			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985 / Elphick <i>et al.</i> 2011 ³
<i>Pimephales promelas</i>	Fathead minnow	embryo <36-h old	7-d	Static-renewal			NOEC	607			120	25±1	8.1-8.3	80-100		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Growth		MATC	625			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival		LOEC	693			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Mortality		LC25	699			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	30-d	Static-renewal	Survival		LC50	699								Publication	Rescan Environmental Services Ltd. 2008
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Biomass	Mean dry biomass	EC25	704			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Growth		LOEC	734			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Fish - Non-salmonid (cont.)																	
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Biomass	Mean dry biomass	MATC	768			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Biomass	Mean dry biomass	MATC	768			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Mortality		MATC	768			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Mortality		LC50	792			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	embryo <36-h old	7-d	Static-renewal			MATC	855			120	25±1	8.1-8.3	80-100		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	embryo <36-h old	7-d	Static-renewal			EC50	874			120	25±1	8.1-8.3	80-100		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Biomass	Mean dry biomass	EC50	958			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	Mean survival ca. 20%	LC80	1,001			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Biomass	Mean dry biomass	LOEC	1,058			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Mortality		LOEC	1,058			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Fish - Non-salmonid (cont.)																	
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Growth	Mean dry weight	NOEC	1,058			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	larvae <24-h	7-d	Static-renewal	Survival	90% survival	NOEC	1,213			110-120	25±1	7.5-8.3	70-80		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	embryo <36-h old	7-d	Static-renewal			LOEC	1,213			120	25±1	8.1-8.3	80-100		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival		NOEC	1,274								CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow	eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	No survival	LC100	1,400			96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival		NOEC	1,577								CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival		NOEC	1,597								CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow	larvae <24-h	7-d	Static-renewal			MATC	1,715			110-120	25±1	7.5-8.3	70-80		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	larvae <24-h	7-d	Static-renewal	Growth		IC25	1,741			110-120	25±1	7.5-8.3	70-80		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival		NOEC	1,777								CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival		NOEC	2,002								CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival		NOEC	2,002								CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	7-d	Static	Survival		NOEC	2,426			86-94	24-26	7.24-7.81	56-64	Measured	CCME 2011	Pickering <i>et al.</i> 1996
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	7-d	Static	Growth		NOEC	2,426			86-94	24-26	7.24-7.81	56-64	Measured	CCME 2011	Pickering <i>et al.</i> 1996

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Fish - Non-salmonid (cont.)																	
<i>Pimephales promelas</i>	Fathead minnow	larvae <24-h	7-d	Static-renewal	Survival	72% survival	LOEC	2,426			110-120	25±1	7.5-8.3	70-80		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	larvae <24-h	7-d	Static-renewal	Growth		IC50	3,027			110-120	25±1	7.5-8.3	70-80		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	larvae <24-h	7-d	Static-renewal	Mortality		LC50	3,330			110-120	25±1	7.5-8.3	70-80		CCME 2011	Beak International Inc. 1999
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	7-d	Static	Population biomass	Population biomass	MATC	3,458			86-94	24-26	7.24-7.81	56-64	Measured	CCME 2011	Pickering <i>et al.</i> 1996
<i>Pimephales promelas</i>	Fathead minnow	1-7 d old	7-d	Static	Survival		LOEC	4,853			86-94	24-26	7.24-7.81	56-64	Measured	CCME 2011	Pickering <i>et al.</i> 1996
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Growth	Mean dry weight	LOEC	>1058			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Growth	Mean dry weight	EC25	>1058			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Pimephales promelas</i>	Fathead minnow	embryos, <3 hr post-fertilization	34-d	Static-renewal	Growth	Mean dry weight	EC50	>1058			80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
Fish - Salmonid																	
<i>Oncorhynchus mykiss</i>	Rainbow trout	fingerlings; approx. 2 months old	8-d	Static	Survival		NOEC	485			23	15-16	7.63	32.2	Measured	CCME 2011	Camargo and Tarazona 1991
<i>Oncorhynchus mykiss</i>	Rainbow trout	embryo-larval	7-d	Static-renewal	Embryo viability	Embryo viability	EC25	989			120	14±1	7.5-8.3	100		CCME 2011	Beak International Inc. 1999

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Fish - Salmonid (cont.)																	
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Mortality		NOEC	1,104			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Growth	Mean dry weight	NOEC	1,104			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Biomass	Mean dry biomass	NOEC	1,104			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout	embryo-alevin	27-d	Static-renewal	Embryo viability	Embryo viability	EC25	1,110			120	14±1	7.3-8.5	100		CCME 2011	Beak International Inc. 1999
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Biomass	Mean dry biomass	EC25	1,174			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout	embryo-larval	7-d	Static-renewal	Embryo viability	Embryo viability	EC50	1,456			120	14±1	7.5-8.3	100		CCME 2011	Beak International Inc. 1999
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Mortality		LC50	1,511			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Survival		LC50	1,511								Publication	Rescan Environmental Services Ltd. 2008
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Biomass	Mean dry biomass	EC50	1,559			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout	embryo-alevin	27-d	Static-renewal	Embryo viability	Embryo viability	EC50	1,595			120	14±1	7.3-8.5	100		CCME 2011	Beak International Inc. 1999
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Mortality		MATC	1,603			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

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Fish - Salmonid (cont.)																	
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Biomass	Mean dry biomass	MATC	1,603			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Mortality		LOEC	2,327			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Biomass	Mean dry biomass	LOEC	2,327			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Growth	Mean dry weight	LOEC	>1104			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Growth	Mean dry weight	EC25	>1104			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Oncorhynchus mykiss</i>	Rainbow trout	dry fertilized gametes	54-d	Static-renewal	Growth	Mean dry weight	EC50	>1104			40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Salmo trutta fario</i>	Brown trout	fingerlings; approx. 2 months old	8-d	Static	Survival		NOEC	607			23	15-16	7.63	32.2	Measured	CCME 2011	Camargo and Tarazona 1991
Invertebrate - Amphipod																	
<i>Gammarus pseudopinmaeus</i>	Amphipod		60-d		Reproduction	Reproduction in control group	NOEC	10			Spring water	7				CCME 2011	Williams <i>et al.</i> 1999
<i>Gammarus pseudopinmaeus</i>	Amphipod		60-d		Reproduction		MATC	100			Spring water	7				CCME 2011	Williams <i>et al.</i> 1999
<i>Gammarus pseudopinmaeus</i>	Amphipod		60-d		Survival		NOEC	1,000			Spring water	7				CCME 2011	Williams <i>et al.</i> 1999
<i>Gammarus pseudopinmaeus</i>	Amphipod		60-d		Reproduction		LOEC	1,000			Spring water	7				CCME 2011	Williams <i>et al.</i> 1999

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Invertebrate - Amphipod (cont.)																	
<i>Gammarus pseudopinmaeus</i>	Amphipod		60-d		Survival		NOEC	2,000			Spring water	7				CCME 2011	Williams <i>et al.</i> 1999
<i>Hyalella azteca</i>	Amphipod	0-7 d	28-d	Static	Growth	Dry weight	EC25	421			130				Measured	CCME 2011	Bartlett 2009 (unpublished)
<i>Hyalella azteca</i>	Amphipod	0-7 d	28-d	Static	Mortality		LC10	733			130				Measured	CCME 2011	Bartlett 2009 (unpublished)
<i>Hyalella azteca</i>	Amphipod	0-7 d	28-d	Static	Mortality		LC25	954			130				Measured	CCME 2011	Bartlett 2009 (unpublished)
<i>Hyalella azteca</i>	Amphipod	0-7 d	28-d	Static	Mortality		LC50	1,200			130				Measured	CCME 2011	Bartlett 2009 (unpublished)
Invertebrate - Aquatic Insect																	
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth	Mean biomass	NOEC	2,133			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Survival		NOEC	2,133			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth	Mean biomass	IC10	2,316			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth	Mean biomass	IC25	2,590			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Mortality		LC50	2,812			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Survival		LC50	2,812								Publication	Rescan Environmental Services Ltd. 2008

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Invertebrate - Aquatic Insect (cont.)																	
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth	Mean biomass	IC50	3,047			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth	Mean biomass	LOEC	3,960			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Survival		LOEC	3,960			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth	Mean AF weight	LOEC	>2133			80-100	22-24	7.6-8.1	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Hydropsyche betteni</i>	Caddisfly		6-d		Mortality		LC80	5,999								CCME 2011	Kersey 1981 (In Evans and Frick 2001)
<i>Isonychia bicolor</i>	Mayfly	Body length was ~ 5 - 9mm & ~ 9 to 14 mm & ~ 12 - 18 mm in different tests that were averaged	7-d		Mortality		LC50	1,055							Field-collected organisms. Age of organism may have varied between tests	Publication	Echols <i>et al.</i> 2010
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development		NOEC	1,213				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development		LOEC	1,638				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth		NOEC	1,638				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality		NOEC	1,638				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development		MATC	2,047				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992

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Invertebrate - Aquatic Insect (cont.)																	
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth		LOEC	2,123				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality		LOEC	2,123				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development		NOEC	2,426				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth		NOEC	2,426				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development		NOEC	2,426				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development		NOEC	2,426				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth		MATC	2,446				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality		MATC	2,661				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development		LOEC	3,088				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality		NOEC	3,397				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development		LOEC	3,640				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development		LOEC	3,640				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth		LOEC	4,246				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality		LOEC	4,246				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development		LOEC	4,246				12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran																	
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Reproduction		IC25	69.1			40				Lab water test to compare to Slipper Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC25	117			10	24-26	6.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Reproduction		NOEC	121								CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LC50	132			10	24-26	6.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC25	146			40	24-26	7.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	6 - 7 d	Static-renewal	Reproduction		IC25	147			44	25		45	Measured	Publication	Lasier and Hardin 2010
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		NOEC	152			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		NOEC	152			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		NOEC	152			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		NOEC	152			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Reproduction		IC25	158.7			64				Lab water test to compare to Nema Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	161			10	24-26	6.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	170			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	182			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Survival		NOEC	182								CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Reproduction		MATC	235								CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC25	264			20	24-26	7		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	Mean number offspring per female	NOEC	267			58-72	23-27	7.64-8.32	56-62	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Survival		MATC	288								CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	301			20	24-26	7		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		NOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		NOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		NOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		NOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		NOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		NOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		LOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		LOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		LOEC	303			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LC50	316			20	24-26	7		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Survival		LC50	322.7			40				Lab water test to compare to Slipper Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	6 - 7 d	Static-renewal	Reproduction		IC25	340			44	25		101	Measured	Publication	Lasier and Hardin 2010
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	6 - 7 d	Static-renewal	Reproduction		IC50	342			44	25		45	Measured	Publication	Lasier and Hardin 2010
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC12.8	342			100	25	8.1	69	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC21.9	342			45	25	8.2	99	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC34.8	342			46	25	8	44	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC17.1	342			99	25	8.3	96	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		IC50	346			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		IC50	370			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	394			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		IC50	406			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		IC50	412			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Reproduction		IC25	418.7			148				Lab water test to compare to Leslie Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		IC50	431			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		IC50	437			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	437			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	443			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	449			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC25	454			80-100	24-26	7.4-7.8	57-64	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	6 - 7 d	Static-renewal	Reproduction		IC25	456			93	25		66	Measured	Publication	Lasier and Hardin 2010
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		IC50	455			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		NOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		NOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		NOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		NOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		NOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		LOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		LOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		LOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992

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Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		LOEC	455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Survival		LOEC	455								CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Reproduction		LOEC	455								CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	481			40	24-26	7.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	Mean number offspring per female	LOEC	516			58-72	23-27	7.64-8.32	56-62	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC25	521			320	24-26	8.3		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LC50	540			40	24-26	7.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	552			Dilute mineral water 40-48					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		IC50	558					7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	6 - 7 d	Static-renewal	Reproduction		IC50	563				25		101	Measured	Publication	Lasier and Hardin 2010
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC32.9	565			100	25	8.1	69	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC53.5	565			45	25	8.2	99	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC58.5	565			46	25	8	44	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		EC43.9	565			99	25	8.3	96	Unmeasured	CCME 2011	Lasier <i>et al.</i> 2006
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC25	580			160	24-26	8.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		IC50	582			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		IC50	594			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003

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Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		LOEC	607			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		NOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		NOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		NOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		NOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		NOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		LOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		LOEC	607			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Survival		LC50	622.3			64				Lab water test to compare to Nema Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	6 - 7 d	Static-renewal	Reproduction		IC50	653			93	25		66	Measured	Publication	Lasier and Hardin 2010
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		IC50	667			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		IC50	685			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	697			80-100	24-26	7.4-7.8	57-64	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	697			80	24-26	7.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	700			320	24-26	8.3		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	710			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	783			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<12-h old	9-d		Reproduction	Mean brood size	NOEC	786			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<12-h old	9-d		Reproduction	Mean number of broods	NOEC	786			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<12-h old	9-d		Reproduction	Total progeny	NOEC	786			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	813			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		NOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		NOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		NOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		NOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		LOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		LOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		LOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		LOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		LOEC	819			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality and reproduction		EC50	819			54-72	23-27	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	843			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	867			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction		IC50	895			160	24-26	8.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		NOEC	910			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	916			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Survival		LC50	929.3			148				Lab water test to compare to Leslie Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	971			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	995			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	1,025			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		NOEC	1,031			54-72	23-27	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	1,037			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Mortality		LC50	1,055			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Survival		LC50	1,062								Publication	Rescan Environmental Services Ltd. 2008
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	1,068			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<12-h old	9-d		Reproduction	Mean brood size	EC50	1,068			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<12-h old	9-d		Reproduction	Total progeny	EC50	1,088			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d		Mortality		LC50	1,088			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	0-4, 20-24 & 0-24 hrs	7-d	Static-renewal	Survival		NOEC	1,092			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		LOEC	1,092			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		LOEC	1,092			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	20-24 hrs	7-d	Static-renewal	Reproduction		LOEC	1,092			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		LOEC	1,092			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LC50	1,134			80	24-26	7.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old	7-d	Static-renewal	Reproduction		IC50	1,153			Dilute mineral water					CCME 2011	DeGraeve <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<12-h old	9-d		Reproduction	Mean number of broods	EC50	1,208			90-110	23-27	8.2±0.2	55-75		CCME 2011	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LC50	1,240			160	24-26	8.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	0-4, 20-24 & 0-24 hrs	7-d	Static-renewal	Survival		MATC	1,261			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LC50	1,303			320	24-26	8.3		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality		LOEC	1,335			54-72	23-27	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Ceriodaphnia dubia</i>	Water flea	0-4, 20-24 & 0-24 hrs	7-d	Static-renewal	Survival		LOEC	1,456			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	16-24 hrs	7-d	Static-renewal	Reproduction		NOEC	<152			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		NOEC	<152			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		NOEC	<455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		NOEC	<455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Cladoceran (cont.)																	
<i>Ceriodaphnia dubia</i>	Water flea	0-4 hrs	7-d	Static-renewal	Reproduction		NOEC	<455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	0-24 hrs	7-d	Static-renewal	Reproduction		NOEC	<455			160-180	25±1	7.0-8.5	110-120	Unmeasured	CCME 2011	Cooney <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		LOEC	152??			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Ceriodaphnia dubia</i>	Water flea	6-30 hrs	7-d	Static-renewal	Reproduction		LOEC	152??			40-48		7.2-7.6		Unmeasured	CCME 2011	Aragao and Pereira, 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Mortality and reproduction		EC10	259			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Mortality		NOEC	267			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Reproduction	Mean number offspring per female	NOEC	267			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Mortality		MATC	371			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Mortality and reproduction		EC50	394			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Mortality		LOEC	516			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia ambigua</i>	Water flea	<24-h neonates	10-d	Static-renewal	Reproduction	Mean number offspring per female	LOEC	516			54-72	19-23	7.64-8.32	56-76	Measured	CCME 2011	Harmon <i>et al.</i> 2003
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction		EC25	421			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction		LOEC	506			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea		10-d		Reproduction	Mean brood size	NOEC	786			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea		10-d		Reproduction	Mean number of broods	NOEC	786			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea		10-d		Growth	Dry weight	NOEC	786			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction		EC50	1,037			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

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Invertebrate - Cladoceran (cont.)																	
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Mortality		NOEC	1,980			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Daphnia magna</i>	Water flea		10-d		Reproduction	Total progeny	NOEC	2,184			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Mortality		LC50	2,311			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d		Survival		LC50	2,311								Publication	Rescan Environmental Services Ltd. 2008
<i>Daphnia magna</i>	Water flea		10-d		Reproduction	Mean brood size	EC50	2,451			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea		10-d		Reproduction	Total progeny	EC50	2,597			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea		10-d		Growth	Dry weight	EC50	2,614			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea		7-d		Mortality	50% Mortality	LC50	3,504			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea		10-d		Reproduction	Mean number of broods	EC50	3,504			166-172	23-27	7.9-8.2	54-58		CCME 2011	Cowgill and Milazzo, 1990
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Mortality		LOEC	4,070			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d		Reproduction		NOEC	<506			80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction		NOEC	314			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Growth		NOEC	314			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985

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Invertebrate - Cladoceran (cont.)																	
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction		IC10	368			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985 / Elphick <i>et al.</i> 2011 ⁴
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction		MATC	372			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Growth		MATC	372			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction		LOEC	441			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Growth		LOEC	441			96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
Invertebrate - Mollusk																	
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	EC10	95	23	390	100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		EC10	121	36	403	100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	NOEC	145			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		NOEC	145			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	EC10	176	51	605	100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	Chronic Value	200			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		Chronic Value	200			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	EC20	213	88	515	100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		EC20	245	116	517	100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		NOEC	276			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	LOEC	276			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Mollusk (cont.)																	
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		LOEC	276			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		EC10	313	168	583	100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	EC20	403	140	1163	100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		Chronic Value	418			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		EC20	459	270	779	100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Biomass		LOEC	632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	NOEC	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	LOEC	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	Chronic Value	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	EC10	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	EC20	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	NOEC	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	LOEC	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Growth	Dry weight	Chronic Value	>632			100	23	8.3	90	No sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	NOEC	>632			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	LOEC	>632			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	Chronic Value	>632			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	EC10	>632			100	23	8.3	90	With sand	USGS CERC	USGS Unpublished

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Mollusk (cont.)																	
<i>Lampsilis siliquoidea</i>	Fatmucket	Juvenile (2-mo old)	28-d	Flow-through	Survival	Foot movement	EC20	>632			100	23	8.3	90	With sand	USGS CERC CCME 2011	USGS Unpublished Mackie 1978
<i>Musculium securis</i>	Fingernail clam	newborn	60- to 80-d		Reproduction	Mean number newborns per number of parents	NOEC	0									
<i>Musculium securis</i>	Fingernail clam	newborn	60- to 80-d		Reproduction	Mean number newborns per number of parents	LOEC	121									
<i>Physa sp.</i>	Snail		60-d		Survival		NOEC	1,000			Spring water	7					
<i>Physa sp.</i>	Snail		60-d		Survival		NOEC	2,000			Spring water	7					
Invertebrate - Planktonic Crustacean																	
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction		NOEC	1,120			76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Population increase		IC25	1,199			64				Lab water test to compare to Nema Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Brachionus calyciflorus</i>	Rotifer	mixed: young and non-egg bearing adults	14-d	Static-renewal	Rate of population increase	Rate of population increase	NOEC	1,213				23-27	7.2-7.5		Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction		IC10	1,241			76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Population increase		IC25	1,454			40				Lab water test to compare to Slipper Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction		IC25	1,505			76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

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Invertebrate - Planktonic Crustacean (cont.)																	
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Population increase		IC25	1,758			148				Lab water test to compare to Leslie Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008
<i>Brachionus calyciflorus</i>	Rotifer	mixed: young and non-egg bearing adults	14-d	Static-renewal	Population density	Negatively affected population density	NR	1,820				23-27	7.2-7.5		Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction		IC50	1,945			76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction		LOEC	2,330			76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus patulus</i>	Rotifer	mixed: young and non-egg bearing adults	20-d	Static-renewal	Population density	Negatively affected peak population density	NR	1,213				23-27	7.2-7.5		Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003
<i>Brachionus patulus</i>	Rotifer	mixed: young and non-egg bearing adults	20-d	Static-renewal	Rate of population increase	Negatively affected rate of population increase	NR	1,213				23-27	7.2-7.5		Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003
<i>Brachionus patulus</i>	Rotifer	mixed: young and non-egg bearing adults	20-d	Static	Population density	Negatively affected day of maximum population density	NR	1,213				23-27	7.2-7.5		Unmeasured	CCME 2011	Peredo-Alvarez <i>et al.</i> 2003
Invertebrate - Worm																	
<i>Dugesia gonocephala</i>	Flatworm	NR	192-h		Mortality	0% Mortality	LC0	1,230								Golder 2011	Palladini <i>et al.</i> 1980
<i>Lumbriculus variegatus</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction		LOEC	366			80-100	22-24	7.3-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Worm (cont.)																	
<i>Lumbriculus variegatus</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction		EC25	825			80-100	22-24	7.3-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Lumbriculus variegatus</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction		EC50	1,366			80-100	22-24	7.3-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Lumbriculus variegatus</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction		NOEC	<366			80-100	22-24	7.3-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction	Number of young produced	NOEC	462			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction	Number of young produced	IC10	519			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction	Number of young produced	IC25	606			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Cocoon Formation		EC25	620			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction	Number of young produced	IC50	752			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Cocoon Formation		EC50	809			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Worm (cont.)																	
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Reproduction	Number of young produced	LOEC	964			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Cocoon Formation		NOEC	964			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Cocoon Formation		LOEC	2,138			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Survival		NOEC	2,138			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Survival		EC25	2,167			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Survival		IC25 or LC50 ⁵	2,167								Publication	Rescan Environmental Services Ltd. 2008
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Survival		EC50	3,597			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007
<i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Survival		LOEC	4,065			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007

Appendix 4. Summary of effects information from toxicity tests conducted to evaluate the effects of chloride on aquatic organisms.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Endpoint Type	Test Endpoint Description	Effect Level	Effect Concentration (mg/L Cl)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source ¹	Reference
Invertebrate - Worm (cont.) <i>Tubifex tubifex</i>	Oligochaete	adult	28-d	Static-renewal	Survival		EC50	4,460			80-100	22-24	7.2-7.8	60	Measured; sand + peat used as substrate	CCME 2011	Rescan Environmental Services Ltd. 2007

¹ The Data Source "CCME 2011" or "Golder 2011" indicates that the associated reference is presented as the results were presented in CCME (2011) or Golder (2011), respectively. The original paper may not have been obtained. "Publication" means the results were aquired from the original publication. "USGS CERC" means the data were provided by the USGS Columbia Environmental Research Center.

² This test endpoint/effect level combination was considered chronic (considered in the derivation of the long-term water quality guideline) by CCME (2011).

³ Point estimates were calculated by Elphick *et al.* (2011) by using Multiple Linear Estimation (Probit) based on original data provided in Birge *et al.* (1985).

⁴ Point estimates were calculated by Elphick *et al.* (2011) using linear interpolation based on original data from Birge *et al.* (1985).

⁵ This value was reported in Table 4.1-1 of Rescan Environmental Services Ltd. (2008) as an IC₂₅, but every other survival endpoint in that table was an LC₅₀, so this may have been a typo and this value may actually be an LC₅₀.

approx. = approximately; avg = average; CCME = Canadian Council of Ministers of the Environment; d = days; DOC = dissolved organic carbon; CERC = Columbia Environmental Research Center; EC_x = effect concentration to x percent of the population; h = hours; hrs = hours; ICx = inhibition concentration to x percent of the population; LCx = lethal concentration to x percent of the population; LOEC = lowest observable effect concentration; lt = length; MATC = maximum acceptable toxicant concentration; NOEC = no observable effect concentration; NR = not reported; Recon. = reconstituted; USGS = United States Geological Survey; WER = water effect ratio; wks = weeks; wt = weight.

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Acute Studies														
Fish - Non-salmonid														
<i>Lepomis macrochirus</i>	Bluegill sunfish		96-h	Flow-through	Mortality	LC50	3,543	101.7±7.6	21.7±0.1	7.58±0.15	60.3±3.4	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Lepomis macrochirus</i>	Bluegill sunfish		96-h		Mortality	LC50	7853 ¹	39.2	16-20				CCME 2011	Patrick <i>et al.</i> 1968
<i>Pimephales promelas</i>	Fathead minnow	Juvenile	96-h		Mortality	LC50	4,079	76	24-26	7.47-8.03	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	Larvae	96-h	Flow-through	Mortality	LC50	6,570	96.3±6.7	21.7±0.4	7.81±0.12	69.6±5.3	Measured	CCME 2011	Birge <i>et al.</i> 1985
Fish - Salmonid														
<i>Oncorhynchus mykiss</i>	Rainbow trout	Juvenile	96-h		Mortality	LC50	6,030	40	13-15	7.01-7.44	36	Measured	CCME 2011	Elphick <i>et al.</i> 2011
Invertebrate - Amphipod														
<i>Hyalella azteca</i>	Amphipod	7-8 d	96-h	Static	Mortality	LC50	1382	76	22-24	7.7-7.9	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
Invertebrate - Aquatic Insect														
<i>Chironomus dilutus</i>	Chironomid	Third instar larvae - approx. 10-d old	96-h		Mortality	LC50	5,867	76	22-24	7.2-7.8	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
Invertebrate - Cladoceran														
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	48-h		Mortality	LC50	1,068	76	24-26	7.6-8.0	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	48-h		Mortality	LC50	3,630	98	19-21	7.6-8.0	58	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality	LC50	892	92.8±2.6	20.0±0.1	7.83±0.09	60.8±2.3	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		48-h	Static	Mortality	LC50	1880 ²	261±5	20.2±0.5	8.5±0.1	227±5	Measured	CCME 2011	Birge <i>et al.</i> 1985

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Invertebrate - Isopod														
<i>Lirceus fontinalis</i>	Isopod		96-h	Flow-through	Mortality	LC50	2,950	100.8±8.2	21.7±0.2	7.73±0.22	58.6±4.2	Measured	CCME 2011	Birge <i>et al.</i> 1985
Invertebrate - Mollusk														
<i>Physa gyrina</i>	Snail		96-h	Flow-through	Mortality	LC50	2,540	100.1±8.3	21.8±0.1	7.41±0.18	58.0±5.9	Measured	CCME 2011	Birge <i>et al.</i> 1985
Invertebrate - Planktonic crustacean														
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	24-h		Mortality	LC50	1,645	76	25.0-25.2	7.88-8.12	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
Invertebrate - Worm														
<i>Lumbriculus variegatus</i>	Oligochaete	Adult	96-h		Mortality	LC50	3,100	76	22-24	7.4-8.2	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	Adult	96-h		Mortality	LC50	5,648	76	22-24	7.3-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<u>Chronic Studies</u>														
Algae and Plants														
<i>Chlamydomonas reinhardtii</i>	Alga		3-6 d		Growth Inhibition	EC49	3,014						CCME 2011	Reynoso <i>et al.</i> 1982
<i>Chlorella emersonii</i>	Alga		8-14 d		Growth Inhibition	MATC	6,824		25-30				CCME 2011	Setter <i>et al.</i> 1982
<i>Lemna minor</i>	Duckweed		96-h		FronD production	MATC	1,171	39	24.5-25.6	7.3-7.6	2	Unmeasured	CCME 2011	Taraldsen and Norberg-King 1990
<i>Nitzschia linearis</i>	Diatom		5-d		Growth; reduction in number of cells	EC50	1474 ¹						CCME 2011	Patrick <i>et al.</i> 1968

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Fish - Non-salmonid														
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	NOEC	252	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	MATC	298	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	LOEC	352	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	NOEC	352	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	MATC	431	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	NOEC	498	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	LOEC	528	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Growth	NOEC	533	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Embryos, <3 hr post-fertilization	34-d	Static-renewal	Mean dry biomass	NOEC	558	80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	MATC	587	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985

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Fish - Non-salmonid (cont.)														
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	LC10	598	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985 / Elphick <i>et al.</i> 2011 ³
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Growth	MATC	625	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	LOEC	693	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Embryos, <3 hr post-fertilization	30-d	Static-renewal	Survival	LC50	699						Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Pimephales promelas</i>	Fathead minnow	Embryos, <3 hr post-fertilization	34-d	Static-renewal	Mean dry biomass	EC25	704	80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Growth	LOEC	734	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow	Embryos, <3 hr post-fertilization	34-d	Static-renewal	Mean dry biomass	MATC	768	80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	Embryos, <3 hr post-fertilization	34-d	Static-renewal	Mean dry biomass	EC50	958	80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Pimephales promelas</i>	Fathead minnow	Embryos, <3 hr post-fertilization	34-d	Static-renewal	Mean dry biomass	LOEC	1,058	80-100	24-26	7.32-8.22	52-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

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Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Fish - Non-salmonid (cont.)														
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	LC80	1,001	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival	NOEC	1,274						CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow	Eggs, 6-12 hours post-fertilization	33-d	Flow-through	Survival	LC100	1,400	96.9±8.7	25±0.3	7.5±0.22	61.6±4.0	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival	NOEC	1,577						CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival	NOEC	1,597						CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival	NOEC	1,777						CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival	NOEC	2,002						CCME 2011	Diamond <i>et al.</i> 1992
<i>Pimephales promelas</i>	Fathead minnow		7-d		Survival	NOEC	2,002						CCME 2011	Diamond <i>et al.</i> 1992
Fish - Salmonid														
<i>Oncorhynchus mykiss</i>	Rainbow trout	Dry fertilized gametes	54-d	Static-renewal	Mean dry biomass	NOEC	1,104	40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout	Dry fertilized gametes	54-d	Static-renewal	Mean dry biomass	EC25	1,174	40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Oncorhynchus mykiss</i>	Rainbow trout	Dry fertilized gametes	54-d	Static-renewal	Survival	LC50	1,511						Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Oncorhynchus mykiss</i>	Rainbow trout	Dry fertilized gametes	54-d	Static-renewal	Mean dry biomass	EC50	1,559	40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

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Fish - Salmonid (cont.)														
<i>Oncorhynchus mykiss</i>	Rainbow trout	Dry fertilized gametes	54-d	Static-renewal	Mean dry biomass	LOEC	2,327	40-76	13-15	7.12-7.76	36-60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
Invertebrate - Amphipod														
<i>Hyalella azteca</i>	Amphipod	7-8 d	28-d	Static-renewal	Growth; mean dry weight	IC25	1705 ⁵	80-100	22-24	7.5-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Hyalella azteca</i>	Amphipod	7-8 d	28-d	Static-renewal	Growth; mean dry weight	NOEC	2210 ⁵	80-100	22-24	7.5-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Hyalella azteca</i>	Amphipod	7-8 d	28-d	Static-renewal	Growth; mean dry weight	IC50	2298 ⁵	80-100	22-24	7.5-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Hyalella azteca</i>	Amphipod	7-8 d	28-d	Static-renewal	Survival	LC50	2452 ⁵						Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Hyalella azteca</i>	Amphipod	7-8 d	28-d	Static-renewal	Growth; mean dry weight	LOEC	4237 ⁵	80-100	22-24	7.5-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
Invertebrate - Aquatic Insect														
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth; mean biomass	NOEC	2,133	80-100	22-24	7.6-8.1	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth; mean biomass	IC10	2,316	80-100	22-24	7.6-8.1	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011

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Invertebrate - Aquatic Insect (cont.)														
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth; mean biomass	IC25	2,590	80-100	22-24	7.6-8.1	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Survival	LC50	2,812						Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth; mean biomass	IC50	3,047	80-100	22-24	7.6-8.1	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Chironomus dilutus</i>	Chironomid	<24-h post-hatch	20-d	Static-renewal	Growth; mean biomass	LOEC	3,960	80-100	22-24	7.6-8.1	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development	NOEC	1,213		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development	LOEC	1,638		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth	NOEC	1,638		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality	NOEC	1,638		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development	MATC	2,047		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth	LOEC	2,123		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992

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Invertebrate - Aquatic Insect (cont.)														
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality	LOEC	2,123		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development	NOEC	2,426		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth	NOEC	2,426		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development	NOEC	2,426		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development	NOEC	2,426		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth	MATC	2,446		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality	MATC	2,661		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development	LOEC	3,088		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality	NOEC	3,397		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Development	LOEC	3,640		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development	LOEC	3,640		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Growth	LOEC	4,246		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		14-d	Static-renewal	Mortality	LOEC	4,246		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992
<i>Stenonema modestum</i>	Mayfly		7-d	Static-renewal	Development	LOEC	4,246		12±1			Measured	CCME 2011	Diamond <i>et al.</i> 1992

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Invertebrate - Cladoceran														
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Reproduction	IC25	69.1	40				Lab water test to compare to Slipper Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC25	117	10	24-26	6.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d		Reproduction	NOEC	121						CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality	LC50	132	10	24-26	6.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC25	146	40	24-26	7.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Reproduction	IC25	158.7	64				Lab water test to compare to Nema Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	161	10	24-26	6.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d		Survival	NOEC	182						CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d		Reproduction	MATC	235						CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC25	264	20	24-26	7		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d		Survival	MATC	288						CCME 2011	Diamond <i>et al.</i> 1992

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Invertebrate - Cladoceran (cont.)														
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	301	20	24-26	7		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality	LC50	316	20	24-26	7		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Survival	LC50	322.7	40				Lab water test to compare to Slipper Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Reproduction	IC25	418.7	148				Lab water test to compare to Leslie Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC25	454	80-100	24-26	7.4-7.8	57-64	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d		Survival	LOEC	455						CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d		Reproduction	LOEC	455						CCME 2011	Diamond <i>et al.</i> 1992
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	481	40	24-26	7.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC25	521	320	24-26	8.3		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality	LC50	540	40	24-26	7.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC25	580	160	24-26	8.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Invertebrate - Cladoceran (cont.)														
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Survival	LC50	622.3	64				Lab water test to compare to Nema Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	697	80-100	24-26	7.4-7.8	57-64	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	697	80	24-26	7.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	700	320	24-26	8.3		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Reproduction	IC50	895	160	24-26	8.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea		7-d		Survival	LC50	929.3	148				Lab water test to compare to Leslie Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Survival	LC50	1,062						Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality	LC50	1,134	80	24-26	7.8		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality	LC50	1,240	160	24-26	8.2		Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Ceriodaphnia dubia</i>	Water flea	<24-h neonates	7-d	Static-renewal	Mortality	LC50	1,303	320	24-26	8.3		Measured	CCME 2011	Elphick <i>et al.</i> 2011

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Invertebrate - Cladoceran (cont.)														
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction	EC25	421	80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction	NOEC	<506	80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction	LOEC	506	80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Reproduction	EC50	1,037	80-100	19-21	7.4-8.1	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Daphnia magna</i>	Water flea	<24-h neonates	21-d	Static-renewal	Survival	LC50	2,311						Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction	NOEC	314	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Growth	NOEC	314	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction	IC10	368	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985 / Elphick <i>et al.</i> 2011 ⁶
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction	MATC	372	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Growth	MATC	372	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Reproduction	LOEC	441	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
<i>Daphnia pulex</i>	Water flea		21-d	Static	Growth	LOEC	441	96.3±9.9	20±0.1	7.94±0.24	58.8±10.5	Measured	CCME 2011	Birge <i>et al.</i> 1985
Invertebrate - Planktonic Crustacean														
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction	NOEC	1,120	76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Invertebrate - Planktonic Crustacean (cont.)														
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Population increase	IC25	1,199	64				Lab water test to compare to Nema Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction	IC10	1,241	76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Population increase	IC25	1,454	40				Lab water test to compare to Slipper Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction	IC25	1,505	76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Population increase	IC25	1,758	148				Lab water test to compare to Leslie Lake for WER testing	Publication	Rescan Environmental Services Ltd. 2008 ⁴
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction	IC50	1,945	76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011
<i>Brachionus calyciflorus</i>	Rotifer	<4-h old	48-h	Static	Reproduction	LOEC	2,330	76	24-25	7.88-8.16	60	Measured	CCME 2011	Elphick <i>et al.</i> 2011

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Invertebrate - Worm	<i>Lumbriculus variegatus</i>	Adult	28-d	Static-renewal	Reproduction	NOEC	<366	80-100	22-24	7.3-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
	<i>Lumbriculus variegatus</i>	Adult	28-d	Static-renewal	Reproduction	LOEC	366	80-100	22-24	7.3-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
	<i>Lumbriculus variegatus</i>	Adult	28-d	Static-renewal	Reproduction	EC25	825	80-100	22-24	7.3-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
	<i>Lumbriculus variegatus</i>	Adult	28-d	Static-renewal	Reproduction	EC50	1,366	80-100	22-24	7.3-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
	<i>Tubifex tubifex</i>	Adult	28-d	Static-renewal	Reproduction; number of young produced	NOEC	462	80-100	22-24	7.2-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
	<i>Tubifex tubifex</i>	Adult	28-d	Static-renewal	Reproduction; number of young produced	IC10	519	80-100	22-24	7.2-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011

Appendix 5. Summary of the studies that were used to support the development of SSWQOs for chloride. All tests were conducted using NaCl.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L Cl ⁻)	Hardness (mg/L CaCO ₃)	Temperature (°C)	pH	Total Alkalinity (mg/L)	Other Test Details	Data Source	Reference
Invertebrate - Worm (cont.)														
<i>Tubifex tubifex</i>	Oligochaete	Adult	28-d	Static-renewal	Reproduction; number of young produced	IC25	606	80-100	22-24	7.2-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	Adult	28-d	Static-renewal	Reproduction; number of young produced	IC50	752	80-100	22-24	7.2-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	Adult	28-d	Static-renewal	Reproduction; number of young produced	LOEC	964	80-100	22-24	7.2-7.8	60	Measured; Sand + peat used as substrate	CCME 2011	Elphick <i>et al.</i> 2011
<i>Tubifex tubifex</i>	Oligochaete	Adult	28-d	Static-renewal	Survival	IC25 or LC50 ⁷	2,167						Publication	Rescan Environmental Services Ltd. 2008 ⁴

¹ Excluded by CCME (2011) because control survival was not reported.

² Excluded by CCME (2011) because natural water was used as exposure water.

³ Point estimates were calculated by Elphick *et al.* (2011) by using Multiple Linear Estimation (Probit) based on original data provided in Birge *et al.* (1985).

⁴ Toxicity tests presented in Rescan Environmental Services Ltd. (2008) were conducted at the same time as tests presented in Elphick *et al.* (2011). The results presented here from Rescan Environmental Services Ltd. (2008) were only those that were not presented in Elphick et al. (2011).

⁵ Excluded by CCME (2011) because control survival was 62.5% and the test was conducted using sediment & peat moss as substrate.

⁶ Point estimates were calculated by Elphick *et al.* (2011) using linear interpolation based on original data from Birge *et al.* (1985).

⁷ This value was reported in Table 4.1-1 of Rescan Environmental Services Ltd. (2008) as an IC₂₅, but every other survival endpoint in that table was an LC₅₀, so this may have been a typo and this value may actually be an LC₅₀.
d = days; CCME = Canadian Council of Ministers of the Environment; EC_x = effect concentration to x percent of the population; h = hours; hrs = hours; IC_x = inhibition concentration to x percent of the population; LCx = lethal concentration to x percent of the population; LOEC = lowest observable effect concentration; MATC = maximum acceptable toxicant concentration; NOEC = no observable effect concentration; WER = water effect ratio.

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Phase 1 Tests																			
Algae																			
<i>Navicula pelliculosa</i>	Diatom	Culture in logarithmic growth phase	120-h	Static	Growth inhibition	IC10	>1487	NC	NC	ASTM Type 1 water	24 ± 2	297	34.1	163	13.6	719	133	127	De Beers 2013
<i>Navicula pelliculosa</i>	Diatom	Culture in logarithmic growth phase	120-h	Static	Growth inhibition	IC20	>1487	NC	NC	ASTM Type 1 water	24 ± 2	297	34.1	163	13.6	719	133	127	De Beers 2013
<i>Navicula pelliculosa</i>	Diatom	Culture in logarithmic growth phase	120-h	Static	Growth inhibition	IC50	>1487	NC	NC	ASTM Type 1 water	24 ± 2	297	34.1	163	13.6	719	133	127	De Beers 2013
<i>Pseudokirchneriella subcapitata</i>	Green Algae	3 to 7-d old in logarithmic growth phase	72-h	Static	Growth inhibition	IC10	>1474	NC	NC	RO water	24 ± 2	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Pseudokirchneriella subcapitata</i>	Green Algae	3 to 7-d old in logarithmic growth phase	72-h	Static	Growth inhibition	IC20	>1474	NC	NC	RO water	24 ± 2	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Pseudokirchneriella subcapitata</i>	Green Algae	3 to 7-d old in logarithmic growth phase	72-h	Static	Growth inhibition	IC50	>1474	NC	NC	RO water	24 ± 2	295	33.8	162	13.5	713	132	126	De Beers 2013
Fish - Salmonid																			
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC20	991	NC	NC	DCW	7 ± 1	198	22.7	109	9.06	479	88.4	84.6	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC50	>1484	NC	NC	DCW	7 ± 1	297	34	163	13.6	718	132	127	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Fish - Salmonid (cont.)																			
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC20	>1484	NC	NC	DCW	7 ± 1	297	34	163	13.6	718	132	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC50	>1484	NC	NC	DCW	7 ± 1	297	34	163	13.6	718	132	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC20	>1484	NC	NC	DCW	7 ± 1	297	34	163	13.6	718	132	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC50	>1484	NC	NC	DCW	7 ± 1	297	34	163	13.6	718	132	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC20	>1484	NC	NC	DCW	7 ± 1	297	34	163	13.6	718	132	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC50	>1490	NC	NC	DCW	7 ± 1	298	34.2	163	13.6	721	133	127	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Fish - Salmonid (cont.)																			
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC50	>1490	NC	NC	DCW	7 ± 1	298	34.2	163	13.6	721	133	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC20	>1490	NC	NC	DCW	7 ± 1	298	34.2	163	13.6	721	133	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC50	>1490	NC	NC	DCW	7 ± 1	298	34.2	163	13.6	721	133	127	De Beers 2013
<i>Salvelinus namaycush</i>	Lake trout	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC20	>1490	NC	NC	DCW	7 ± 1	298	34.2	163	13.6	721	133	127	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC50	>1414	NC	NC	DCW	7 ± 1	283	32.4	155	12.9	684	126	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC20	>1414	NC	NC	DCW	7 ± 1	283	32.4	155	12.9	684	126	121	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Fish - Salmonid (cont.)																			
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC50	>1414	NC	NC	DCW	7 ± 1	283	32.4	155	12.9	684	126	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC20	>1414	NC	NC	DCW	7 ± 1	283	32.4	155	12.9	684	126	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC50	>1414	NC	NC	DCW	7 ± 1	283	32.4	155	12.9	684	126	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using wet fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC20	>1414	NC	NC	DCW	7 ± 1	283	32.4	155	12.9	684	126	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC50	>1419	NC	NC	DCW	7 ± 1	284	32.5	156	13	686	127	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Percent survival	LC20	>1419	NC	NC	DCW	7 ± 1	284	32.5	156	13	686	127	121	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Fish - Salmonid (cont.)																			
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC50	>1419	NC	NC	DCW	7 ± 1	284	32.5	156	13	686	127	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; dry weight	IC20	>1419	NC	NC	DCW	7 ± 1	284	32.5	156	13	686	127	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC50	>1419	NC	NC	DCW	7 ± 1	284	32.5	156	13	686	127	121	De Beers 2013
<i>Thymallus arcticus</i>	Arctic grayling	Embryo-alevin-fry; initiated using dry fertilization between eggs and milt	Fertilization to 30-d post swim-up	Static-renewal	Growth; total length	IC20	>1419	NC	NC	DCW	7 ± 1	284	32.5	156	13	686	127	121	De Beers 2013
Invertebrate - Aquatic Insect																			
<i>Chironomus dilutus</i>	Midge	Third instar	10-d	Static-renewal	Percent survival	LC10	>1379	NC	NC	MHSW/DCW	23 ± 1	276	31.6	151	12.6	667	123	118	De Beers 2013
<i>Chironomus dilutus</i>	Midge	Third instar	10-d	Static-renewal	Percent survival	LC20	>1379	NC	NC	MHSW/DCW	23 ± 1	276	31.6	151	12.6	667	123	118	De Beers 2013
<i>Chironomus dilutus</i>	Midge	Third instar	10-d	Static-renewal	Percent survival	LC50	>1379	NC	NC	MHSW/DCW	23 ± 1	276	31.6	151	12.6	667	123	118	De Beers 2013
<i>Chironomus dilutus</i>	Midge	Third instar	10-d	Static-renewal	Growth; dry weight	IC10	>1379	NC	NC	MHSW/DCW	23 ± 1	276	31.6	151	12.6	667	123	118	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Aquatic Insect (cont.)																			
<i>Chironomus dilutus</i>	Midge	Third instar	10-d	Static-renewal	Growth; dry weight	IC20	>1379	NC	NC	MHSW/DCW	23 ± 1	276	31.6	151	12.6	667	123	118	De Beers 2013
<i>Chironomus dilutus</i>	Midge	Third instar	10-d	Static-renewal	Growth; dry weight	IC50	>1379	NC	NC	MHSW/DCW	23 ± 1	276	31.6	151	12.6	667	123	118	De Beers 2013
Invertebrate - Cladoceran																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC10	560	<131	827	80-100	25 ± 1	112	12.8	61	5.12	271	50	47.8	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	778	420	1060	80-100	25 ± 1	156	17.8	85	7.11	376	69.4	66.4	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	1368	1016	1842	80-100	25 ± 1	274	31.4	150	12.5	662	122	117	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC10	>1474	NC	NC	80-100	25 ± 1	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	>1474	NC	NC	80-100	25 ± 1	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1474	NC	NC	80-100	25 ± 1	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC10	183	19	339	80-100	20 ± 2	36.6	4.19	20	1.67	89	16.3	15.6	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC10	312	90	560	80-100	20 ± 2	62.4	7.15	34	2.85	151	27.8	26.6	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC20	663	377	1771	80-100	20 ± 2	133	15.2	73	6.06	321	59.2	56.6	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC20	684	415	984	80-100	20 ± 2	137	15.7	75	6.25	331	61	58.4	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC50	>1474	NC	NC	80-100	20 ± 2	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC50	>1474	NC	NC	80-100	20 ± 2	295	33.8	162	13.5	713	132	126	De Beers 2013
Invertebrate - Planktonic Crustacean																			
<i>Brachionus calyciflorus</i>	Rotifer	<2 h-post hatch	48-h	Static	Intrinsic rate of population increase	IC10	241	185	>1474	80-100	25 ± 1	48.2	5.52	26	2.2	117	21.5	20.6	De Beers 2013
<i>Brachionus calyciflorus</i>	Rotifer	<2 h-post hatch	48-h	Static	Intrinsic rate of population increase	IC20	>1474	NC	NC	80-100	25 ± 1	295	33.8	162	13.5	713	132	126	De Beers 2013
<i>Brachionus calyciflorus</i>	Rotifer	<2 h-post hatch	48-h	Static	Intrinsic rate of population increase	IC50	>1474	NC	NC	80-100	25 ± 1	295	33.8	162	13.5	713	132	126	De Beers 2013
Tolerance Test - Week 1																			
Invertebrate - Cladoceran																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	1323			80-100	25 ± 1	265	30.3	145	12.1	640	118	113	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
Tolerance Test - Week 2																			
Invertebrate - Cladoceran																			
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	1068			80-100	25 ± 1	214	24.5	117	9.76	516	95.3	91.2	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	1074			80-100	25 ± 1	215	24.6	118	9.82	519	95.8	91.7	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
Tolerance Test - Week 3																			
Invertebrate - Cladoceran																			
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	320			80-100	25 ± 1	64	7.33	35	2.93	155	28.6	27.3	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	933			80-100	25 ± 1	187	21.4	102	8.53	451	83.3	79.7	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	1267			80-100	25 ± 1	253	29	139	11.6	613	113	108	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
Tolerance Test - Week 4																			
Invertebrate - Cladoceran																			
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	888			80-100	25 ± 1	178	20.4	97	8.12	429	79.2	75.8	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	1160			80-100	25 ± 1	232	26.6	127	10.6	561	104	99.1	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1538			80-100	25 ± 1	308	35.3	169	14.1	744	137	131	De Beers 2013
Phase 2 Tests - Additional CaCl ₂																			
Invertebrate - Cladoceran																			
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC10	337	141	476	80-100	25 ± 1	105	2.33	11	0.93	200	9.06	8.66	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	509	379	627	80-100	25 ± 1	159	3.51	17	1.4	301	13.7	13.1	De Beers 2013
Ceriodaphnia dubia	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	950	846	1059	80-100	25 ± 1	297	6.56	31	2.62	563	25.5	24.4	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC10	1516	724	NA	80-100	25 ± 1	474	10.5	50	4.18	898	40.7	39	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	>1516	NC	NC	80-100	25 ± 1	474	10.5	50	4.18	898	40.7	39	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1516	NC	NC	80-100	25 ± 1	474	10.5	50	4.18	898	40.7	39	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC10	470	NA	856	80-100	20 ± 2	147	3.24	16	1.3	278	12.6	12.1	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC10	726	663	NA	80-100	20 ± 2	227	5.01	24	2	430	19.5	18.7	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC20	756	332	1123	80-100	20 ± 2	236	5.22	25	2.08	448	20.3	19.4	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC20	1247	724	NA	80-100	20 ± 2	390	8.61	41	3.44	738	33.5	32.1	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC50	>1523	NC	NC	80-100	20 ± 2	476	10.5	50	4.2	902	40.9	39.2	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC50	>1523	NC	NC	80-100	20 ± 2	476	10.5	50	4.2	902	40.9	39.2	De Beers 2013
Phase 2 Tests - Additional CaSO ₄																			
Invertebrate - Cladoceran																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC10	262	NA	429	80-100	25 ± 1	69.6	1.81	8.7	0.72	38	7.04	136	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	428	265	578	80-100	25 ± 1	114	2.95	14	1.18	62	11.5	222	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	896	768	1035	80-100	25 ± 1	238	6.19	30	2.47	130	24.1	465	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC10	1189	1091	1252	80-100	25 ± 1	316	8.21	39	3.28	173	31.9	617	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	1240	1157	1298	80-100	25 ± 1	329	8.56	41	3.42	181	33.3	644	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	1344	1282	1401	80-100	25 ± 1	357	9.28	44	3.7	196	36.1	698	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC10	406	NA	1987	80-100	20 ± 2	108	2.8	13	1.12	59	10.9	211	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC10	573	517	NA	80-100	20 ± 2	152	3.96	19	1.58	83	15.4	298	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC20	1235	195	3067	80-100	20 ± 2	328	8.53	41	3.4	180	33.2	641	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC20	>1531	NC	NC	80-100	20 ± 2	407	10.6	51	4.22	223	41.1	795	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC50	>1531	NC	NC	80-100	20 ± 2	407	10.6	51	4.22	223	41.1	795	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC50	>1531	NC	NC	80-100	20 ± 2	407	10.6	51	4.22	223	41.1	795	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Phase 2 Tests - Additional Na₂SO₄																			
Invertebrate - Cladoceran																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC10	232	27	590	80-100	25 ± 1	14	1.6	60	0.64	34	6.23	116	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	758	490	1086	80-100	25 ± 1	45.6	5.23	197	2.09	110	20.4	378	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC10	1554	1308	NA	80-100	25 ± 1	93.6	10.7	403	4.28	226	41.8	774	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	>1554	NC	NC	80-100	25 ± 1	93.6	10.7	403	4.28	226	41.8	774	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1554	NC	NC	80-100	25 ± 1	93.6	10.7	403	4.28	226	41.8	774	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	>1554	NC	NC	80-100	25 ± 1	93.6	10.7	403	4.28	226	41.8	774	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC10	388	NA	958	80-100	20 ± 2	23.4	2.68	101	1.07	57	10.4	193	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC10	678	501	1483	80-100	20 ± 2	40.8	4.68	176	1.87	99	18.2	338	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC20	766	282	1296	80-100	20 ± 2	46.1	5.29	199	2.11	112	20.6	382	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC20	804	576	NA	80-100	20 ± 2	48.4	5.55	209	2.22	117	21.6	401	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC50	>1566	NC	NC	80-100	20 ± 2	94.3	10.8	406	4.32	228	42.1	780	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC50	>1566	NC	NC	80-100	20 ± 2	94.3	10.8	406	4.32	228	42.1	780	De Beers 2013
Phase 2 Tests - Additional NaCl																			
Invertebrate - Cladoceran																			
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC10	1000	NA	1356	80-100	25 ± 1	60.2	6.9	308	2.76	570	26.9	25.7	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC20	1170	NA	1513	80-100	25 ± 1	70.4	8.08	360	3.22	667	31.4	30.1	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Reproduction; young per female	IC50	1482	1144	1790	80-100	25 ± 1	89.2	10.2	456	4.08	844	39.8	38.1	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC10	>1561	NC	NC	80-100	25 ± 1	94	10.8	480	4.3	889	41.9	40.1	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC20	>1561	NC	NC	80-100	25 ± 1	94	10.8	480	4.3	889	41.9	40.1	De Beers 2013
<i>Ceriodaphnia dubia</i>	Water flea	<24-h old neonates produced within 12 h of each other	7 ± 1 d	Static-renewal	Percent survival	LC50	>1561	NC	NC	80-100	25 ± 1	94	10.8	480	4.3	889	41.9	40.1	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC10	464	27	485	80-100	20 ± 2	27.9	3.2	143	1.28	264	12.5	11.9	De Beers 2013

Appendix 6. Summary of the toxicity tests conducted to support the development of SSWQOs for TDS. All tests were chronic exposures.

Test Type / Receptor Group / Species	Common Name	Life stage	Test Duration	Exposure Type	Toxicity Test Endpoint	Effect Level	Effect Concentration (mg/L TDS)	Effect Concentration (Lower Confidence Interval)	Effect Concentration (Upper Confidence Interval)	Hardness (mg/L CaCO ₃)	Temperature (°C)	Ionic Composition (mg/L)							Reference and Data Source
												Ca ²⁺	Mg ²⁺	Na ⁺	K ⁺	Cl ⁻	HCO ₃ ⁻	SO ₄ ²⁻	
Invertebrate - Cladoceran (cont.)																			
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC20	493	443	539	80-100	20 ± 2	29.7	3.4	152	1.36	281	13.2	12.7	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC10	522	481	NA	80-100	20 ± 2	31.4	3.6	161	1.44	297	14	13.4	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC20	>1556	NC	NC	80-100	20 ± 2	93.7	10.7	479	4.29	887	41.8	40	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Percent survival	LC50	>1556	NC	NC	80-100	20 ± 2	93.7	10.7	479	4.29	887	41.8	40	De Beers 2013
<i>Daphnia magna</i>	Water flea	<24-h old	21-d	Static-renewal	Reproduction; young per female	IC50	>1556	NC	NC	80-100	20 ± 2	93.7	10.7	479	4.29	887	41.8	40	De Beers 2013

d = days; DCW = dechlorinated city water; h = hours; IC_x = inhibition concentration to x percent of the population; LC_x = lethal concentration to x percent of the population; MHSW = moderately hard synthetic water; NA = not applicable; NC = not calculated; RO = reverse osmosis-treated.