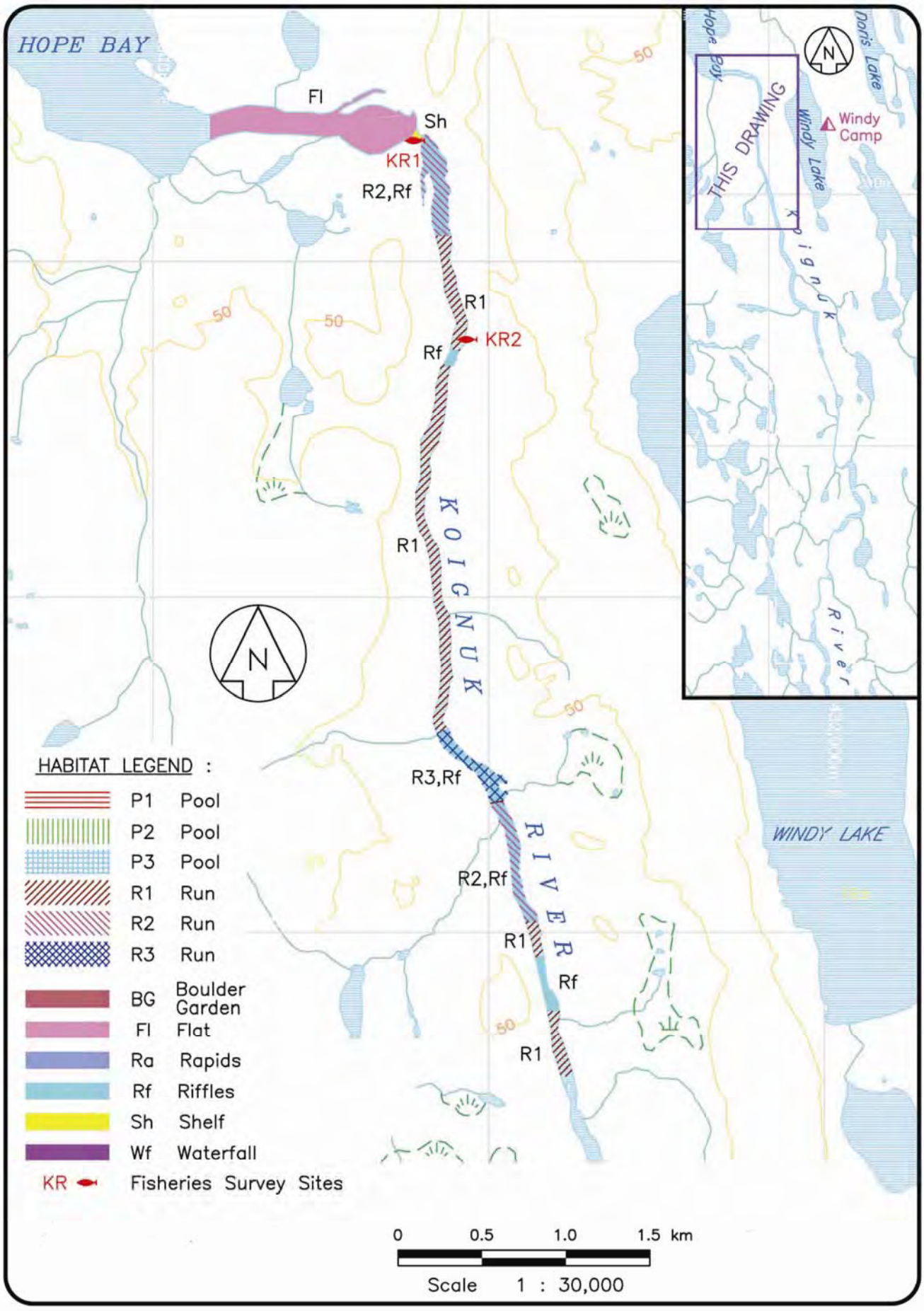


Figure 8.1 Habitat Map of Koignuk River (from Rescan 1999a)

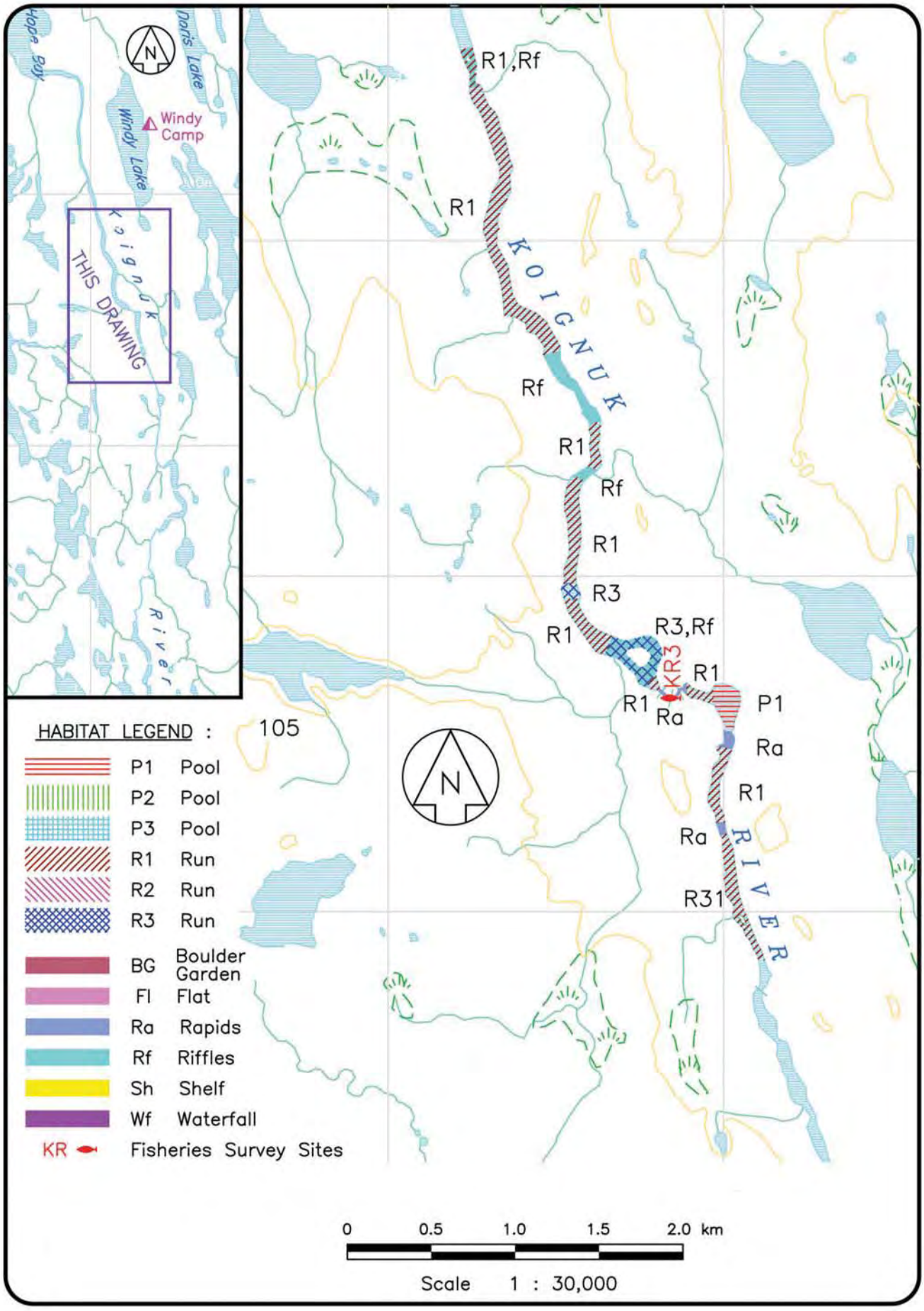


Figure 8.1 (continued) Habitat Map of Koignuk River (from Rescan 1999a)

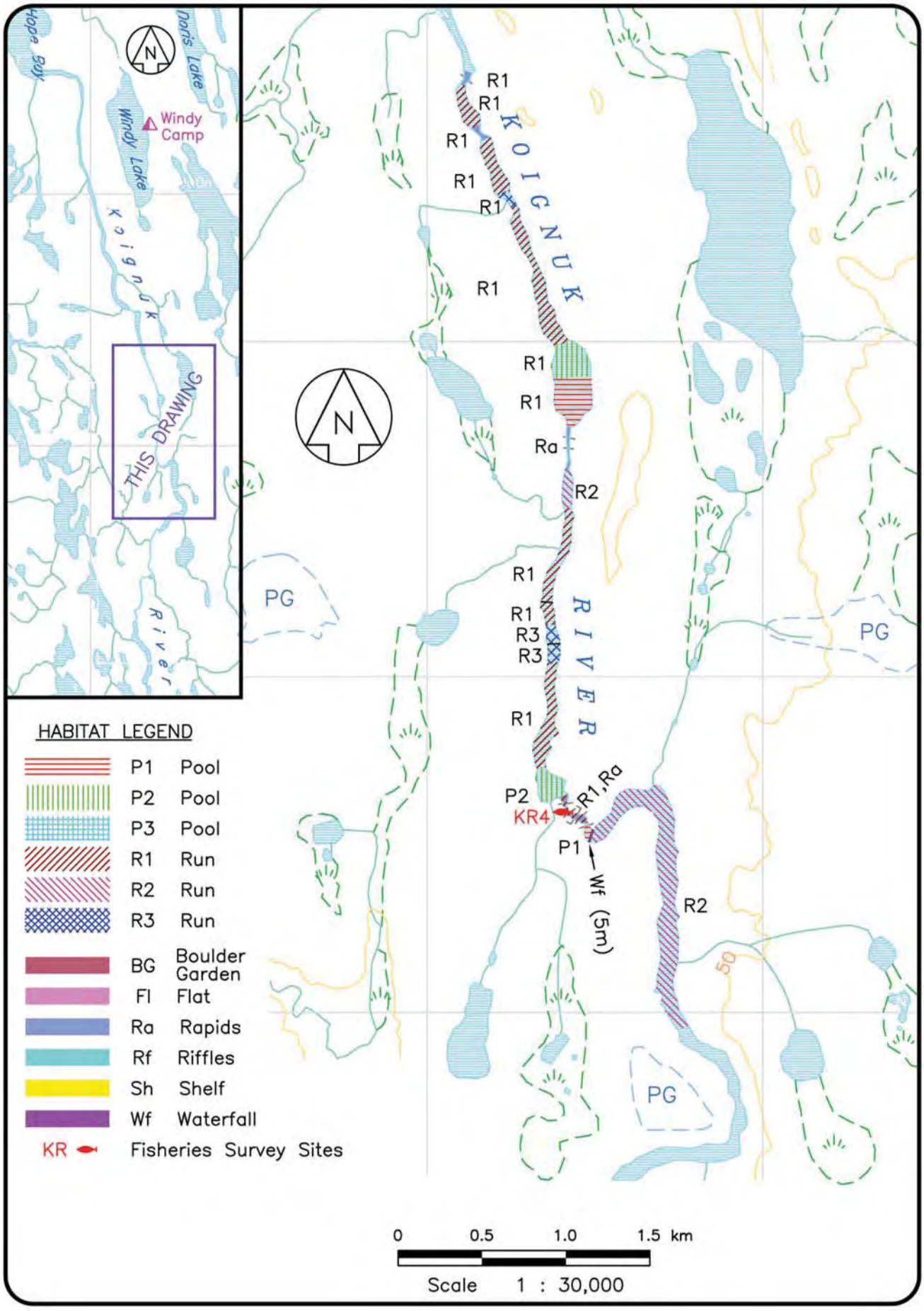


Figure 8.1 (continued) Habitat Map of Koignuk River (from Rescan 1999a)

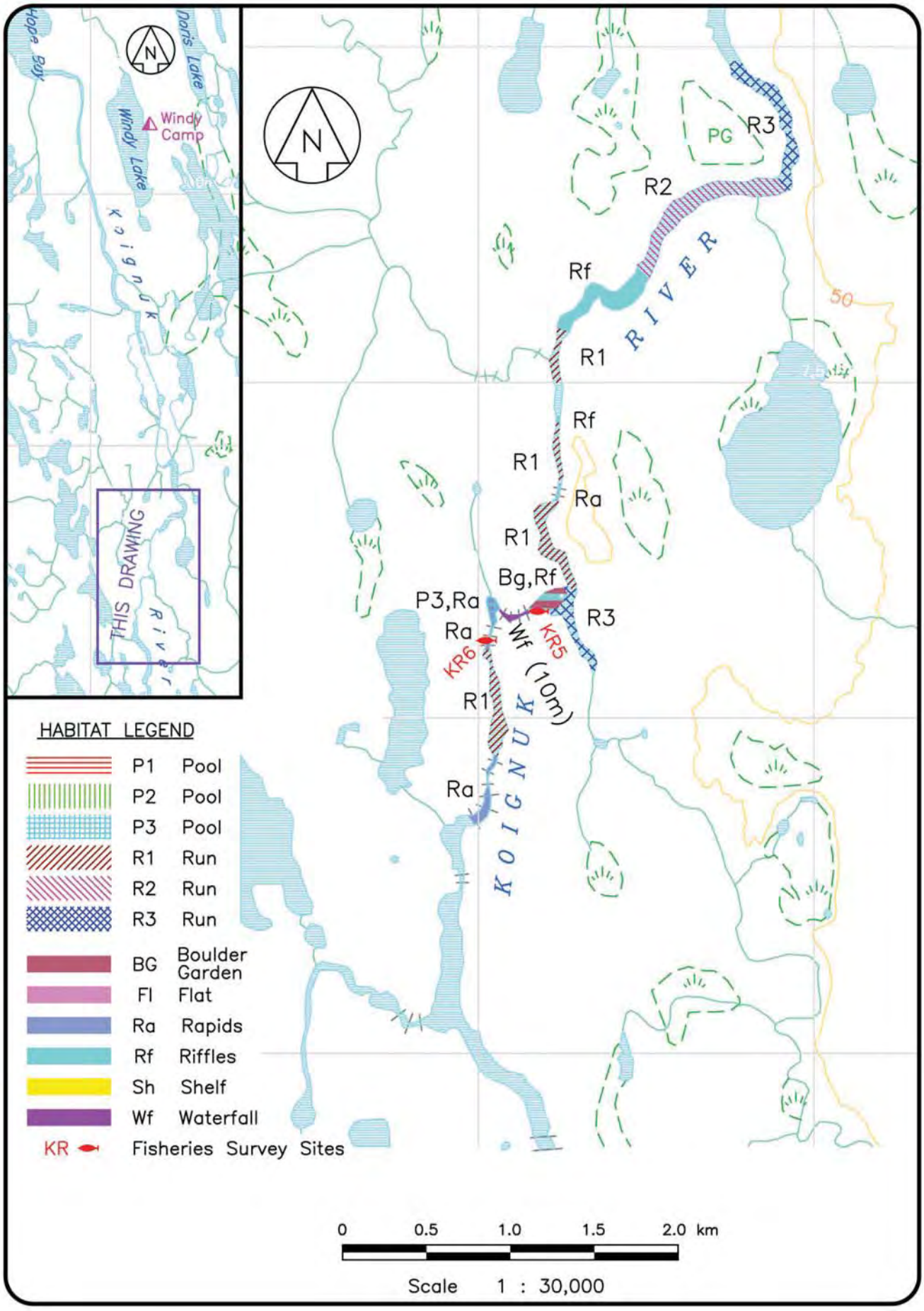


Figure 8.1 (continued) Habitat Map of Koignuk River (from Rescan 1999a)

Stream PRC13

A 500 m section of Stream PRC13 was assessed on 25 June 2000. The water level was high. In the surveyed section, the average channel width was 8 m, average depth was 1.2 m, and the stream gradient was less than 1%. The habitat consisted primarily of good and intermediate quality run habitat (65% and 20% of the area, respectively) with the remainder composed of best and intermediate quality pools (5% each) and riffles (5%). The channel substrate was dominated by silt (75%), with organic matter (10%), sand (12.5%), and boulders (2.5%) also present. The banks were 1.5 m in height; they were covered with vegetation and were stable. There was no overwintering habitat present in the surveyed section. Adult feeding areas and spawning habitat were classified as poor, whereas rearing habitat was rated as fair. Migration habitat was rated as excellent due to the width and depth of the channel (Appendix E2).

This stream was sampled again on 29 August 2000 during a low flow period. This time only a single 100 m section of the channel was surveyed. The channel had an average width of 2 m and an average depth of 0.5 m (Appendix E2). Pools and runs were the most prominent habitat features, each representing 45% of the total area. The run habitat quality decreased from June, with the majority being poor, but there was a large increase in high quality pools, which composed 40% of the total area. Substrate was predominantly silt (65%) with organic matter (10%), small gravel (10%), boulder (10%), and cobble (5%) contributing the remainder. Instream cover was provided by macrophytes (40%), pools (40%), boulders (10%), and cutbanks (5%). There was no observable spawning, adult feeding, or overwintering habitat in the surveyed section. The migration habitat was classified as poor, due to the low water level. Rearing habitat was classified as fair (Appendix E2). Backpack electrofishing conducted on 29 August 2000 resulted in the capture of three ninespine stickleback.

Stream PRC14

A 300 m section of Stream PRC14 was assessed on 25 June 2000. The water level was high. In the surveyed section, the average channel width was 2.2 m, average depth was 0.35 m, and the gradient was 2% (Appendix E2). The habitat consisted primarily of riffles and poor quality runs (35% each) with the remainder composed of fair and poor quality pools (5 and 15%, respectively) and fair quality runs (10%). The channel substrate was dominated by organic matter (80%). Instream cover was provided by pools (85%), cutbanks (10%), and overhanging vegetation (5%). The banks were partly covered with vegetation, but were unstable. They were 0.25 m and 0.50 m in height (left and right bank, respectively). There was no observable spawning, adult feeding, or overwintering habitat present in the surveyed section. Rearing habitat was ranked as poor and migration habitat was ranked as good (Appendix E2).

This stream was surveyed again on 29 August 2000 during low flow period. A 350 m section of the channel was surveyed. This section had an average width of 2.5 m and an average depth of 0.45 m. Poor, intermediate and good quality pools dominated this section (40%, 30%, and 20%, respectively). The rest of the habitat was composed of riffles (10%). Substrate was predominantly organic matter and silt (each contributing 45% of the total), with some boulders also present. The instream cover was provided by pools (80%), macrophytes (10%), overhanging vegetation (5%), and cutbanks (5%). There was no observable spawning, adult feeding, overwintering or migration habitat present in the surveyed section. Rearing habitat was classified as poor (Appendix E2).

Backpack electrofishing conducted on 25 June 2000 resulted in the capture of 16 ninespine stickleback.

Stream PRC15

During the June 2000 survey, the length of surveyed section was not recorded; however, the channel had an average width of 3 m and a gradient of less than 1% (Appendix E2). The instream habitat consisted of a series of pools connected by runs and deep riffles. Intermediate and good quality runs contributed the majority of the habitat (40% and 15%, respectively), whereas riffles (25%) and good quality pool habitat (20%) made up the remainder. The majority of the substrate was composed of organic matter (85%), but also contained silt (5%), sand (5%), and boulders (5%). Instream cover was provided by pools (80%) and cutbanks (20%). The banks were completely covered with vegetation, 0.50 m in height and stable. There was no observable overwintering habitat in the surveyed section. Spawning and adult feeding habitat were classified as poor. Rearing habitat was classified as fair and migration habitat was rated excellent, as the channel was deeply cut into the permafrost and thus provided an excellent migrating channel for adult fish (Appendix E2).

In August 2000, a 175 m section of stream was surveyed. The average stream width was 1.0 m and the average depth was 0.8 m (Appendix E2). The surveyed section was comprised of good and intermediate quality pools (20 and 15%, respectively), intermediate and poor quality runs (10 and 5%, respectively), riffles (5%), and best and intermediate quality flats (25 and 20%, respectively). Deep pools were connected by deep and narrow channels cut in the tundra and the flow was barely perceptible. Organic matter was again the most abundant substrate (65%), with silt (25%), sand (5%), and large gravel (5%) making up the rest. Instream cover was provided by macrophytes and/or submerged vegetation (50%), pools (35%), cutbanks (10%) and overhanging vegetation (5%). The banks were 0.75 m high, well vegetated and stable. There was no overwintering, spawning or adult

feeding habitat in the surveyed section. Rearing habitat was ranked as poor and migration habitat was ranked as good, due to sufficient water depth in the surveyed section (Appendix E2).

Backpack electrofishing conducted in August 2000 resulted in the capture of three ninespine stickleback and one immature Arctic grayling.

8.2.10 Summary

Stream habitat assessments were conducted at 21 stream sites between 1996 and 2000. An additional 21 stream sites were visually assessed from the air and deemed to contain no fish habitat. A detailed habitat map was prepared for the lower reaches of the Koignuk River in 1998.

Large streams supported the highest diversity of fish habitat for rearing, adult feeding, spawning, and migration (Aimaokatalok NE Inflow, Aimaokatalok River, and the Koignuk River). The associated lakes likely provided overwintering habitat, which was typically lacking within streams due to shallow depths. Most of the small inflow tributaries that did not feature a lake or pond upstream were found to be either ephemeral, consisting of run-off from melt waters, or provided only marginal rearing and feeding habitat near their mouths.

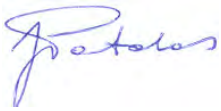
During high water, Stickleback Outflow had an instream habitat consisting of mainly riffles. This stream provided good rearing but poor migration habitat. During the same high water period, Fickle Duck Outflow had an instream habitat consisting entirely of riffles and provided good migration habitat, fair adult feeding and rearing, and poor spawning habitat.

9 CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Report prepared by:



Jacek Patalas, BSc, P.Biol.
Senior Fisheries Scientist
and Associate

Report reviewed by:

Gary Ash, MSc, P.Biol.
Senior Fisheries Scientist
and Principal

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APPENDIX A

SURFACE WATER QUALITY

Appendix A1. Summary of water quality and sediment sampling methods used in the Boston area, 1992-2000.

Parameter		Sampling Year							
		1992[a]	1993[a]	1994[b]	1995[c]	1996[d]	1997[e]	1998[f]	2000[g]
Lakes	Limnology Methods	Unknown	Unknown	Unknown	YSI 51 B dissolved oxygen meter with 30 m probe	Unknown	Precalibrated YSI 58 DO meter with 50 m probe; measured at the deepest part of the lake.		NA
	Water Quality Methods	Unknown	Grab samples at surface; samples from discrete depths		Acid-washed Go-Flo bottle for surface and depth sampling	2 L acid-washed Go-Flo bottle for surface and depth sampling, bottles triple rinsed	5 L Go-Flo bottle for 1 m and depth samples; nutrient samples field-filtered and stored frozen; other samples kept cool and dark		NA
	Number of Sample Days	Aimaokatalok - 1	Aimaokatalok - 4, Stickleback - 1	Aimaokatalok - 2, Stickleback - 1, Fickle Duck - 1	Aimaokatalok - 2, Stickleback - 1, Fickle Duck - 1	Aimaokatalok - 3, Fickle Duck - 1	Aimaokatalok - 3, Stickleback - 3, Fickle Duck - 3, Reference - 2	Aimaokatalok - 2, Stickleback - 1, Fickle Duck - 1, Reference - 2	NA
	No. Sites on Aimaokatalok	NA	4	4	5	6	6	2	NA
	Depth Sampling in Lakes[h]	NA	Yes	Yes	Yes	Yes	Yes	Yes	NA
	Sediment Quality Methods	NA	Unknown	NA	NA	Ekman grab sampler, samples divided into 0-1 cm and 1-3 cm fractions	Ekman grab sampler, sample examined for texture and colour, top 2 cm transferred to Ziploc bags and frozen		NA
Streams	Water Quality Methods	Unknown	Grab samples at surface		Grab samples just below surface	Grab samples just below surface, sample bottles triple-rinsed			Depth-integrated samples
	Number of Sample Days	Stickleback OF - 1, Fickle Duck OF - 1	Stickleback OF - 2, Fickle Duck OF - 2	Stickleback OF - 1, Fickle Duck OF - 1	Stickleback OF - 1, Fickle Duck OF - 1, Aimaokatalok NE IF - 1	Stickleback OF - 3, Fickle Duck OF - 3, Aimaokatalok NE IF - 2	Stickleback OF - 3, Fickle Duck OF - 3, Aimaokatalok NE IF - 3, Aimaokatalok River - 3, Reference OF - 2	Stickleback OF - 1, Fickle Duck OF - 1, Aimaokatalok NE IF - 1, Aimaokatalok River - 2, Aimaokatalok OF - 3, Reference OF - 3, Koignuk River -2	Koignuk River -2
Marine	Water Quality Methods	NA	NA	NA	NA	NA	5 L Go-Flo bottle for 1 m and depth samples; Nutrient samples field-filtered and stored frozen; Other samples kept cool and dark		NA
	Sediment Quality Methods	NA	NA	NA	NA	NA	Ekman grab sampler, sample examined for texture and colour, top 2cm bagged and frozen	Ekman grab sampler, sample examined for texture and colour, no chemical analyses	NA
QA/QC	Split Samples[i]	Unknown	No	No	No	No	Yes	Yes	No
	Replicates[i]	Unknown	Yes	No	Yes	Yes	Yes	Yes	Yes
	Travel/Field Blanks	Unknown	No	Yes	Yes	No	Yes	Yes	Yes
	Inter Lab Sample	Unknown	No	No	No	No	No	No	No
	Analytical Laboratory(ies)[j]	Unknown	Unknown	"independent accredited laboratories in Vancouver, B.C."	ERI	Water - ASL or ERI Sediment - ERI	Dissolved nutrients (water) - UBC Routine, dissolved ions and metals (water) - ASL Sediment - ASL		ASL

Notes: NA = not applicable (not sampled during that year); UK = unknown (methods not described in report); OF = outflow

[a] For a complete description of methods, see Rescan (1993)

[b] For a complete description of methods, see Rescan (1994)

[c] For a complete description of methods, see Rescan (1995)

[d] For a complete description of methods, see Rescan (1997)

[e] For a complete description of methods, see Rescan (1998)

[f] For a complete description of methods, see Rescan (1999)

[g] For a complete description of methods, see Rescan (2001)

[h] See Appendices A4, A5 and A6 for raw data

[i] See Appendix A3 for QA/QC data

[j] ASL= Analytical Service Laboratories, Vancouver; ERI = Elemental Research Inc., Vancouver; UBC = University of British Columbia, Vancouve

Appendix A2. Detection limits for freshwater parameters analyzed water quality analysis in Boston area, 1992-2000.

Parameter	1992	Jun 1993	Aug 1993	1994	1995	1996	1997	1998	2000
Physical									
Conductivity (µmhos/cm)					2	2	2	2	1
pH						0.01	0.01	0.01	0.1
Hardness ($CaCO_3$) (mg/L)				1	1	0.05	0.05	0.05	0.1
Total Dissolved Solids (mg/L)					1	1	10	1	
Total Suspended Solids (mg/L)			1	1	1	1	1	1	3
Turbidity (NTU)					0.1	0.1	0.1	0.1	0.1
Dissolved Anions (mg/L)									
Acidity to pH 8.3					1		1	1	1
Alkalinity to pH 4.5				1	1		1	1	1
Bicarbonate Alkalinity							1	1	
Carbonate Alkalinity						1.0	1	1	1
Chloride				0.5	0.5	0.5	0.5	0.5	0.1
Fluoride				0.05	0.05	0.05	0.02	0.02	0.01
Sulphate	1	1		0.5	0.5	1	1	1	1
Nutrients (mg/L)									
Free Ammonia		0.005		0.005	0.02	0.005	0.001	0.005	0.005
Nitrate		0.005	0.005	0.005	0.01	0.005	0.001	0.005	0.005
Nitrite		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Dissolved P				0.002	0.002	0.001	0.001	0.001	0.001
Total P				0.002	0.002	0.002	0.001	0.002	0.001
Ortho P				0.002	0.002	0.001	0.001	0.001	0.001
Total Metals (µg/L)									
Aluminium	200	200			1	1	5	5	0.001
Antimony	200	200	0.1	0.2	0.1	0.05	0.1	0.1	0.05
Arsenic	0.1	200	0.1	1	1	0.01a	0.1	0.1	0.1
Barium	10	10	10	0.03	0.6	0.05	10	10	0.05
Beryllium	5	5	5	0.5	0.5	0.5	5	5	0.5
Bismuth	100	100		0.03	0.05	0.5	100	10	0.5
Boron	100		100	1.2	1	1	100	100	1
Cadmium	0.2	10	0.1	0.07	0.2	0.05	0.2	0.2	0.05
Calcium				10	10	50	50	50	10
Chromium	15	15	1	0.3	0.5	0.1	1	1	0.5
Cobalt	15	15	1	0.06	0.08	0.1	1	1	0.1
Copper		10	0.5		0.5	0.1	1	1	0.1
Iron			30	10	10	10	10	10	30
Lead	1	50	1	0.06	0.1	0.05	1	1	0.05
Lithium	15	15		5	1	1	10	10	1
Magnesium					10	5	50	50	100
Manganese	5	5	5	0.1	0.2	0.05	5	5	0.05
Mercury			0.01	0.05	0.05		0.05	0.05	0.05
Molybdenum	1	30	1	0.16	0.1	0.05	1	1	0.05
Nickel	20	20	1		0.5	0.1	1	1	0.1
Phosphorus	300	300		20	20		300	300	
Potassium	2000	2000		50	50		10		200
Selenium	200	200	0.5	1	1	0.5	0.5	0.5	1
Silicon						50	50		50
Silver	15	15	0.05	0.01	0.01	0.01	0.1	0.1	0.01
Sodium					10		10		200
Strontium				0.06	0.1	0.1	1	1	
Thallium	100	100		0.03	0.05	0.05	100	200	
Tin	300	300		0.09	0.1	0.1	30	30	
Titanium	10	10		0.5	0.5	1	10	10	
Tungsten	100	100		0.07	0.1				
Uranium						0.01		0.005	0.01
Vanadium	30	30	5	1	1	0.1	30	30	1
Zinc	5	5	5	1	1	1	5	5	1
Cyanide									
Cyanate (mg/L)			0.5						
Thiocyanate (mg/L)			0.5						
Total Cyanide (mg/L)			0.005						
WAD Cyanide (mg/L)			0.005						

a = the detection limit was 0.05 µg/L for April 1996 samples; however, it was 0.01 µg/L for the remaining samples in 1996.

Appendix A3. Summary of water quality QA/QC program in Boston area waterbodies, 1992-2000.

Waterbody	Number of Sample Days	Number of Duplicates/ Splits/ Triplicates	Depth Composites	Site Composites	Inter Lab Comparisons	North/ South Comparisons
Aimaokatalok Lake	13	13	Yes	No	No	Yes
Stickleback Lake	7	1	Yes	No	No	No
Fickle Duck Lake	8	1	No	No	No	No
Reference Lake	4	3	No	No	No	No
Aimaokatalok NE Inflow	7	1	No	No	No	No
Aimaokatalok River	5	1	No	No	No	No
Aimaokatalok Outflow	3	1	No	No	No	No
Stickleback Outflow	12	2	No	No	No	No
Fickle Duck Outflow	12	1	No	No	Yes	No
Reference Outflow	5	1	No	No	No	No
Koignuk River	4	3	No	No	No	No
Hope Bay (marine)	2	4	Yes	No	No	Yes

Appendix A4. Analytical results for water quality QA/QC samples from Boston area, 1994-1998.

Parameter	Aimaokatalok Lake										
	Station 4 (3 m)		Station 6 (3 m)			Station 6 (10 m)		Station 6 (20 m)		Station 6 (25 m)	
	22-Apr-98		22-Apr-98			22-Apr-98		22-Apr-98		22-Apr-98	
	Rep 1	Rep 2	Rep 1a	Rep 1b	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Physical											
Conductivity (µS/cm)	64	62	56	57	56	57	58	64	57	57	58
pH	6.85	6.80	6.73	6.74	6.72	6.76	6.77	6.86	6.74	6.45	6.59
Total Diss. Solids (mg/L)	46	50	41	45	40	49	38	35	39	41	42
Total Susp. Solids (mg/L)	2	<1	2	2	<1	<1	<1	<1	<1	<1	<1
Turbidity (NTU)	0.7	0.5	1.4	1.1	0.9	0.9	0.8	0.6	0.5	0.8	0.6
Dissolved Anions (mg/L)											
Hardness ($CaCO_3$)	16.1	16.9	14.2	14.0	14.4	14.3	14.1	14.3	14.2	14.3	14.0
Total Alkalinity	10	7	9	10	8	9	9	9	9	9	9
Chloride	11.5	11.7	9.8	10.2	9.8	9.8	9.8	9.8	9.9	10.0	10.1
Fluoride	0.07	0.04	0.05	0.06	0.04	0.05	0.04	0.03	0.03	0.03	0.03
Sulphate	3	2	2	2	2	2	2	2	2	2	2
Nutrients (mg/L)											
Dissolved Phosphate	0.047	0.034	0.052	0.053	0.051	0.066	0.061	0.103	0.091	0.110	0.120
Total Phosphorus	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ammonia Nitrogen	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001	0.003	0.003	0.006
Nitrate - nitrogen	0.007	0.001	0.008	0.002	0.002	0.001	<0.001	0.004	0.005	0.003	0.007
Nitrite - nitrogen	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)											
Aluminum	19	19	24	-	28	22	18	24	22	26	27
Antimony	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.2	0.2	0.2	-	0.2	0.2	0.2	0.1	0.1	0.2	0.1
Barium	-	20	<10	-	-	<10	-	<10	-	<10	-
Beryllium	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	<5
Bismuth	-	<100	<100	-	-	<100	-	<100	-	<100	-
Boron	-	<100	<100	-	-	<100	-	<100	-	<100	-
Cadmium	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	3230	3320	2860	-	2900	2910	3080	2920	2900	2860	2820
Chromium	***4***	***4***	***9***	-	***10***	***6***	***3***	<1	<1	<1	<1
Cobalt	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1
Copper	***14***	***18***	***11***	-	***13***	***7***	***4***	2	2	***3***	1
Iron	50	60	90	-	90	80	50	40	40	100	40
Lead	<1	<1	***3***	-	***3***	1	<1	<1	<1	<1	<1
Lithium	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10
Magnesium	2000	2100	1800	-	1800	1800	1800	1800	1800	1800	1800
Manganese	<5	<5	<5	-	<5	<5	<5	8	7.0	13	13.0
Mercury	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1
Nickel	8	6	11	-	12	8	4	<1	1	12	1
Potassium	940	940	840	-	880	830	820	840	830	820	800
Selenium	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	270	330	290	-	280	300.00	320	590	540	650	680
Silver	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	6000	6000	5000	-	6000	5000	6000	6000	5000	6000	6000
Strontium	17.0	17	15	-	15.0	15	15.0	15	15.0	15	15.0
Thallium	-	<200	<200	-	-	<200	-	<200	-	<200	-
Tin	-	<30	<30	-	-	<30	-	<30	-	<30	-
Titanium	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	<30	<30	-	-	<30	-	<30	-	<30	-
Zinc	16.0	***39***	10	-	14.0	7	7.0	<5	<5	<5	<5
Dissolved Metals (µg/L)											
Aluminum	-	-	15	14	15	14	12	14	13	15	15
Antimony	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	-	-	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Barium	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Beryllium	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bismuth	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
Boron	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
Cadmium	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	-	-	2810	2830	2860	2830	2800	2840	2830	2810	2750
Chromium	-	-	***6***	***6***	***6***	***5***	***2***	<1	<1	***7***	<1
Cobalt	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	-	-	***10***	***9***	***10***	**6**	***4***	1	1	2	1
Iron	-	-	60	60	60	40	30	20	20	60	20
Lead	-	-	2	2	2	1	<1	<1	<1	<1	<1
Lithium	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Magnesium	-	-	1800	1800	1800	1800	1700	1800	1700	1800	1700
Manganese	-	-	<5	<5	<5	<5	<5	8	7	13	13
Mercury	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	-	-	11	10	11	8	4	<1	<1	13	1
Potassium	-	-	840	840	860	830	820	800	800	800	780
Selenium	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	-	-	260	260	250	280	290	550	510	610	610
Silver	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	-	-	5000	5000	5000	5000	5000	5000	5000	5000	5000
Strontium	-	-	14	15	14	15	14	15	15	14	14
Thallium	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200
Tin	-	-	<30	<30	<30	<30	<30	<30	<30	<30	<30
Titanium	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	<30	<30	<30	<30	<30	<30	<30	<30	<30
Zinc	-	-	10	10	10	6	<5	<5	<5	<5	<5

Appendix A4. Analytical results for water quality QA/QC samples from Boston area, 1994-1998.

Parameter	Aimaokatalok Lake											
	Station 1 (2 m)		Station 4 (8 m)		Station 5 (2 m)		Station 6 (5 m)		Station 6 (15 m)		Station 6 (25 m)	
	23-Aug-96		24-Aug-96		24-Aug-96		18-Jul-98		18-Jul-98		18-Jul-98	
	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Physical												
Conductivity (µS/cm)	78	83.0	-	-	-	-	35	-	35	-	37	38
pH	6.90	7.18	-	-	-	-	6.38	-	6.43	-	6.50	6.57
Total Diss. Solids (mg/L)	37	35	-	-	-	-	34	-	24	-	30	26
Total Susp. Solids (mg/L)	10	11	-	-	-	-	4	-	2	-	2	3
Turbidity (NTU)	9.0	14.0	-	-	-	-	2.8	-	2.6	-	2.4	2.3
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	12.0	12.6	-	-	-	-	9.8	-	9.7	-	9.7	9.7
Total Alkalinity	10	8	-	-	-	-	7	-	6	-	7	6
Chloride	6.44	6.39	-	-	-	-	5.7	-	5.8	-	6.2	6.1
Fluoride	0.04	0.04	-	-	-	-	0.02	-	0.03	-	0.03	0.02
Sulphate	2.0	2.0	-	-	-	-	1	-	1	-	1	1
Nutrients (mg/L)												
Dissolved Phosphate	<0.005	<0.005	-	-	-	-	-	-	-	-	-	-
Total Phosphorus	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-
Ammonia Nitrogen	0.029	0.028	-	-	-	-	-	-	-	-	-	-
Nitrate - nitrogen	0.002	0.002	-	-	-	-	-	-	-	-	-	-
Nitrite - nitrogen	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)												
Aluminum	***446***	***508***	40	33	88	***112***	45	45	48	-	40	-
Antimony	0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.1	<0.1	<0.1	-	<0.1	-
Arsenic	1.0	<1	2	<1	2.0	3.0	0.1	0.1	0.2	-	0.1	-
Barium	5.45	5.11	1.37	1.53	1.81	2.15	<10	-	-	-	-	-
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	-	<5	-
Bismuth	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	-	-	-	-	-
Boron	4	3.0	2	5	2.0	3	<100	-	-	-	-	-
Cadmium	***0.28***	***0.23***	***0.15***	***0.45***	***0.19***	***0.19***	<0.2	<0.2	<0.2	-	<0.2	-
Calcium	2600	2700	1600	1500	1790	2110	1940	1950	2110	-	1960	-
Chromium	-	-	-	-	-	-	<1	<1	<1	-	<1	-
Cobalt	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	-	<1	-
Copper	1.6	1.5	0.7	0.9	1.1	0.8	<1	<1	1	-	<1	-
Iron	***440***	***380***	30	40	70	100	130	110	120	-	120	-
Lead	0.28	0.30	0.16	0.11	0.18	0.13	<1	<1	<1	-	<1	-
Lithium	-	-	-	-	-	-	<10	<10	<10	-	<10	-
Magnesium	1540	1520	1050	1160	1110	1220	1200	1200	1200	-	1200	-
Manganese	9.4	8.31	3.0	3.39	3.42	4.1	9	10.0	12.0	-	12.0	-
Mercury	-	-	-	-	-	-	<0.05	<0.05	<0.05	-	<0.05	-
Molybdenum	<0.05	0.10	<0.05	0.07	<0.05	<0.05	<1	<1	<1	-	<1	-
Nickel	1.30	1.00	0.3	0.2	0.20	<0.1	<1	<1	<1	-	<1	-
Potassium	790	840	670	720	700	810	660	660	760	-	700	-
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	-	<0.5	-
Silicon	60	450	60	340	<50	<50	280	290	290	-	290	-
Silver	0.06	0.06	<0.01	0.04	0.04	0.03	<0.1	<0.1	<0.1	-	<0.1	-
Sodium	3750	3580	3480	3690	3730	3770	2980	2910	3450	-	3110	-
Strontium	12.4	13.1	7.4	8.1	8.1	7.9	20	19.0	20.0	-	19.0	-
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-
Tin	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	-	-	-	-	-	-
Titanium	19	18	9	26	3.0	3.0	<10	<10	<10	-	<10	-
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	0.03	0.06	<0.01	0.01	<0.01	0.03	-	-	-	-	-	-
Vanadium	<1	<1	<1	<1	<1	<1	<30	-	-	-	-	-
Zinc	7.0	8	5.0	9	22.0	9.0	<5	<5	<5	-	<5	-
Dissolved Metals (µg/L)												
Aluminum	40	40	3	3	7	5	11	-	13	12	13	-
Antimony	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	<0.1	<0.1	<0.1	-
Arsenic	<1	<1	<1	<1	<1	<1	0.1	-	0.1	0.1	0.1	-
Barium	2.11	2.39	1.35	0.85	1.03	1.15	<10	-	<10	<10	<10	-
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	<5	<5	<5	-
Bismuth	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	-	-	<100	-	-
Boron	2.0	3.0	2.0	3.0	2.0	2.0	<100	-	-	<100	-	-
Cadmium	0.05	0.20	<0.05	0.12	0.15	<0.05	<0.2	-	<0.2	<0.2	<0.2	-
Calcium	2580	2570	1520	1450	1520	1520	1950	-	1950	1970	1940	-
Chromium	-	-	-	-	-	-	<1	-	<1	<1	<1	-
Cobalt	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	-	<1	<1	<1	-
Copper	1	1	0	0	0	1	1	-	1	<1	<1	-
Iron	40.0	50.0	<10	<10	<10	<10	30	-	30	30	30	-
Lead	0.08	0.08	<0.05	<0.05	0.06	<0.05	<1	-	<1	<1	<1	-
Lithium	-	-	-	-	-	-	<10	-	<10	<10	<10	-
Magnesium	1350.0	1490.0	1050.0	1040.0	1060.0	1020.0	1200	-	1200	1200	1200	-
Manganese	0.48	0.64	<0.05	<0.05	<0.05	<0.05	<5	-	<5	<5	<5	-
Mercury	-	-	-	-	-	-	<0.05	-	<0.05	<0.05	<0.05	-
Molybdenum	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	<1	<1	<1	-
Nickel	0.80	0.80	0.10	0.10	<0.1	<0.1	<1	-	<1	<1	<1	-
Potassium	640	730	670	650	700	630	630	-	670	650	670	-
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-
Silicon	80.0	180.0	<50	<50	<50	<50	210	-	230	240	240	-
Silver	0.02	0.02	<0.01	-<0.02	<0.01	<0.01	<0.1	-	<0.1	<0.1	<0.1	-
Sodium	3320	3290	3140	3140	3390	3280	2880	-	3030	3010	3120	-
Strontium	10.6	11.8	7.3	8.1	7.4	7.1	20	-	20	19	19	-
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<200	-	-	<200	-	-
Tin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<30	-	-	<30	-	-
Titanium	<1	<1	<1	<1	<1	<1	<10	-	<10	<10	<10	-
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	0.0	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-
Vanadium	0.30	0.30	0.1	0.1	0.1	0.1	<30	-	-	<30	-	-
Zinc	1.0	2.0	1.0	2.0	<1	<1	<5	-	<5	<5	<5	-

Appendix A4. Analytical results for water quality QA/QC samples from Boston area, 1994-1998.

Parameter	Stickleback Lake (1 m) 23-Jul-97		Fickle Duck Lake WQ8 (1 m) 03-Aug-95		Reference Lake (1 m) 27-Aug-97		(2.5 m) 22-Apr-98		(1 m) 22-Jul-98	
	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Physical										
Conductivity (µS/cm)	187	189	61	60	52	51	235	228	32	32
pH	6.98	7.07	***6.1***	***6.1***		6.83	7.07	7.09	6.72	6.79
Total Diss. Solids (mg/L)	124	132	42	44	34	29	223	173	23	20
Total Susp. Solids (mg/L)	3	3	1	1	5	5	50[a]	4	4	6
Turbidity (NTU)	0.7	1.4	3.5	3.9	3.5	3.1	7.2	7.1	3.8	3.9
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	54.2	54.8	17	8	14.7	14.6	82.9	81.9	12	11.8
Total Alkalinity	32	32	10	10	12	12	67	66	9	9
Chloride	37.4	36.8	10.6	10.5	4.6	4.7	30.0	30.0	3.5	3.5
Fluoride	0.04	0.05	0.04	0.04	0.06	0.09	0.11	0.12	0.03	0.04
Sulphate	<1	<1	1	1.1	1	1	8	8	1	1
Nutrients (mg/L)										
Dissolved Phosphate	0.001	0.005	0.004	0.006	0.001	-	0.002	0.002	-	-
Total Phosphorus	0.008	0.007	0.02	0.014	0.021	0.015	0.016	0.018	-	-
Ammonia Nitrogen	0.006	0.007	0.04	0.020	0.014	-	0.019	0.021	-	-
Nitrate - nitrogen	0.002	0.003	0.005	0.006	0.002	-	0.226	0.226	-	-
Nitrite - nitrogen	<0.001	<0.001	0.001	0.001	<0.001	-	0.002	<0.001	-	-
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)										
Aluminum	6	<5	***109***	***141***	***109***	79	36	37	80	88
Antimony	<0.1	<0.1	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.3	0.4	1	1	0.3	0.3	0.7	0.8	0.2	0.2
Barium	<10	<10	4.24	3.97	<10	<10	30	20	<10	<10
Beryllium	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-
Boron	<100	-	5	3	-	-	-	-	-	-
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	14400	14000	4640	4760	3980	3840	21800	21600	3120	3110
Chromium	<1	<1	***1.6***	0.5	<1	<1	***3***	***3***	<1	<1
Cobalt	<1	<1	0.17	0.16	<1	<1	<1	<1	<1	<1
Copper	<1	<1	***2.9***	1	2	2	***30***	***30***	1	2
Iron	110	90	***430***	***450***	230	210	***1840***	***1840***	240	240
Lead	<1	<1	***4.3***	0.4	<1	**36**[b]	<1	<1	<1	<1
Lithium	-	-	1	1	-	-	-	-	-	-
Magnesium	4990	4870	1620	1610	1270	1240	6900	6800	1000	1000
Manganese	11	10	2.6	2.4	<5	<5	152	150	6	6
Mercury	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	<1	<1	0.3	0.1	<1	<1	<1	<1	<1	<1
Nickel	<1	<1	2.3	1.4	<1	<1	4	4	<1	<1
Potassium	1440	1490	400	320	440	430	2220	2250	440	440
Selenium	<0.5	<0.5	1	1	<0.5	<0.5	<0.5	0.5	<0.5	0.5
Silicon	220	210	-	-	240	240	3420	3380	260	240
Silver	<0.1	<0.1	0.05	0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	11400	11200	5450	5450	2650	2670	17000	17000	2260	2130
Strontium	94	92	22.3	23.1	19	18	59	59	18	17
Thallium	<100	-	0.05	0.05	-	-	-	-	-	-
Tin	<30	-	0.4	0.2	-	-	-	-	-	-
Titanium	<10	-	4.1	0.5	-	-	-	-	-	-
Tungsten	-	-	0.1	0.1	-	-	-	-	-	-
Uranium										
Vanadium	<30	-	1	1	-	-	-	-	-	-
Zinc	<5	<5	2	7	<5	<5	14	9	<5	<5
Dissolved Metals (µg/L)										
Aluminum	<5	<5	48	53	17	17	-	-	-	-
Antimony	<0.1	<0.1	0.1	0.1	<0.1	<0.1	-	-	-	-
Arsenic	0.3	0.3	1	1	0.2	0.3	-	-	-	-
Barium	<10	<10	3.54	3.56	<10	<10	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-
Boron	<100	<100	3	1	-	-	-	-	-	-
Cadmium	<0.2	<0.2	0.2	0.2	<0.2	<0.2	-	-	-	-
Calcium	13800	13900	4530	4270	3870	3850	-	-	-	-
Chromium	<1	<1	0.6	0.5	<1	<1	-	-	-	-
Cobalt	<1	<1	0.08	0.08	<1	<1	-	-	-	-
Copper	<1	<1	0.8	0.9	1	1	-	-	-	-
Iron	<10	<10	150	150	70	70	-	-	-	-
Lead	<1	<1	0.1	0.1	<1	16[b]	-	-	-	-
Lithium	-	-	1	1	-	-	-	-	-	-
Magnesium	4820	4880	1520	1450	1220	1210	-	-	-	-
Manganese	<5	<5	0.2	0.2	<5	<5	-	-	-	-
Mercury	-	-	<0.05	<0.05	<0.05	<0.05	-	-	-	-
Molybdenum	<1	<1	0.1	0.1	<1	<1	-	-	-	-
Nickel	<1	<1	1.1	1	<1	<1	-	-	-	-
Potassium	1450	1480	320	280	410	410	-	-	-	-
Selenium	<0.5	<0.5	1	1	<0.5	<0.5	-	-	-	-
Silicon	200.00	210	-	-	130	130	-	-	-	-
Silver	<0.1	<0.1	0.01	0.01	<0.1	<0.1	-	-	-	-
Sodium	11000.0	11000.0	5060	4880	2630	2630	-	-	-	-
Strontium	90.000	90.000	22.2	21.5	19	18	-	-	-	-
Thallium	<100	<100	0.05	0.05	-	-	-	-	-	-
Tin	<30	<30	0.1	0.1	-	-	-	-	-	-
Titanium	<10	<10	0.9	0.5	-	-	-	-	-	-
Tungsten	-	-	0.1	0.1	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-
Vanadium	<30	<30	1	1	-	-	-	-	-	-
Zinc	<5	<5	1	1	<5	<5	-	-	-	-

[a] Rep 1 sample appears to have been contaminated with sediments (50 mg/L of TSS compared to 4 mg/L in Rep 2)
[b] Rep 2 sample was likely contaminated (36 mg/L of Lead compared to <1 mg/L in Rep 1)

Appendix A4. Analytical results for water quality QA/QC samples from Boston area, 1994-1998.

Parameter	Aimaokatalok NE Inflow		Aimaokatalok Outflow		Aimaokatalok River		Stickleback Outflow			
	1-Aug-95		31-May-98		24-Aug-97		21-Jul-97		25-Aug-96	
	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Physical										
Conductivity (µS/cm)	63	63	57	55	37	38	187	186	405	284
pH	***5.70***	***5.90***	6.88	6.77	6.53	***6.49***	7.05	7.10	7.60	7.50
Total Diss. Solids (mg/L)	52	37	38	36	20	21	130	130	125	123
Total Susp. Solids (mg/L)	5	12	4	2	2	2	2	2	3	1
Turbidity (NTU)	0.6	5.0	1.0	1.4	1.0	0.6	0.7	0.6	2.0	2.0
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	14	13.0	13.6	13.8	7.76	7.86	55.2	53.2	47.6	50.2
Total Alkalinity	6	6	9	9	5	5	33	32	28	30
Chloride	12.8	12.8	8.8	8.8	4.6	4.6	36.5	37.0	41.3	41.2
Fluoride	0.05	0.05	0.07	0.05	0.05	0.05	0.04	0.04	0.05	0.05
Sulphate	1.2	1	2	2	1	1	<1	2	0.4	0.4
Nutrients (mg/L)										
Dissolved Phosphate	0.006	0.006	0.008	0.006	0.002	0.002	<0.001	0.002	0.004	0.002
Total Phosphorus	0.024	0.028	0.001	0.002	0.006	0.005	0.008	0.006	0.016	0.019
Ammonia Nitrogen	0.020	0.020	0.008	0.021	0.023	0.019	0.461	0.382	<0.005	<0.005
Nitrate - nitrogen	0.008	0.006	0.045	0.042	0.015	0.014	0.002	0.005	<0.005	<0.005
Nitrite - nitrogen	0.001	0.001	<0.001	<0.001	0.010	<0.001	0.0012	0.0012	<0.001	<0.001
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)										
Aluminum	***183***	***207***	12	13	14	14	6	<5	38	43
Antimony	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.05	0.06
Arsenic	1	1	0.1	0.2	<0.1	0.1	0.3	0.4	<1	1
Barium	3.34	3.91	<10	<10	<10	<10	<10	<10	4.8	4.9
Beryllium	0.5	0.5	-	-	-	-	<5	<5	<0.5	<0.5
Bismuth	0.07	0.07	-	-	-	-	<100		<0.5	<0.5
Boron	4	6	-	-	-	-	<100		14	17
Cadmium	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	***0.19***	<0.05
Calcium	2580	2530	2850	2750	1480	1470	14200	14000	11500	12000
Chromium	0.5	0.5	<1	<1	<1	<1	<1	<1		
Cobalt	0.08	0.20	<1	<1	<1	<1	<1	<1	<0.1	0.10
Copper	0.5	1.9	1	1	<1	1	<1	<1	0.5	0.7
Iron	***470***	***500***	30	30	90	90	110	90	140	120
Lead	0.1	0.4	<1	<1	<1	<1	<1	<1	0.1	0.1
Lithium	1	2	-	-			<10	<10	-	-
Magnesium	1750	1890	1700	1700	1040	1020	4930	4880	5220	5050
Manganese	13	23	<5	<5	<5	<5	12	10	10	9
Mercury	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-
Molybdenum	0.1	0.3	<1	<1	<1	<1	<1	<1	<0.05	<0.05
Nickel	0.7	1.1	<1	<1	<1	<1	<1	<1	<0.1	0.1
Potassium	920	880	750	750	510	480	1460	1530	1530	1450
Selenium	1	1	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	-	-	300	300	110	100.00	220	210	120	90
Silver	0.01	0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.06	0.04
Sodium	7060	7480	4430	4420	2260	2260	11300	11200	11000	11400
Strontium	15	15	14	13	14	14	92	90	58	59
Thallium	0.05	0.05	-	-	-	-	-	-	0.08	<0.05
Tin	0.2	0.1	-	-	-	-	<30	-	<0.1	<0.1
Titanium	2.2	6.4	-	-	-	-	<10	<10	7	6
Tungsten	0.1	0.1	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	0.03	0.05
Vanadium	1	1	-	-	-	-	<30	-	<1	<1
Zinc	7	5	<5	<5	<5	<5	<5	<5	30	5
Dissolved Metals (µg/L)										
Aluminum	37	31	8	-	<5	<5	<5	7	<1	<1
Antimony	0.1	0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05
Arsenic	1	1	0.1	-	0.1	0.1	0.4	0.4	<1	<1
Barium	2.2	3.9	<10	-	<10	<10	<10	<10	4.0	4.0
Beryllium	0.5	0.5	<5	-	-	-	<5	<5	<0.5	<0.5
Bismuth	0.07	0.05	-	-	-	-	<100	<100	<0.5	<0.5
Boron	4	6	-	-	-	-	<100	<100	13	15
Cadmium	***0.2***	***0.2***	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Calcium	2520	2380	2740	-	1450	1470	14100	13500	11000	11800
Chromium	0.5	0.5	<1	-	<1	<1	<1	<1	-	-
Cobalt	0.08	0.09	<1	-	<1	<1	<1	<1	<0.1	<0.1
Copper	0.5	1.7	1	-	<1	<1	<1	1	<0.1	0.2
Iron	120	90	20	-	10	20	<10	<10	<1	<1
Lead	0.1	0.1	1	-	<1	<1	<1	<1	0.06	<0.05
Lithium	1	1	<10	-	-	-	<10	<10	-	-
Magnesium	1750	1720	1700	-	1010	1020	4880	4730	4900	5030
Manganese	0.2	0.5	<5	-	<5	<5	<5	<5	<0.05	<0.05
Mercury	0.05	0.05	<0.05	-	<0.05	<0.05	-	-	-	-
Molybdenum	0.1	0.1	<1	-	<1	<1	<1	<1	<0.05	<0.05
Nickel	0.7	1	<1	-	<1	<1	<1	<1	<0.1	0.1
Potassium	850	590	740	-	470	470	1490	1470	1370	1420
Selenium	1	1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	-	-	290	-	90	90	210	200	70	70
Silver	0.01	0.01	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01
Sodium	7010	7100	4450	-	2240	2240	11300	11200	10500	10600
Strontium	14.8	14.7	14	-	14	14	91	87	55	56
Thallium	0.05	0.05	-	-	-	-	-	-	<0.05	<0.05
Tin	0.2	0.1	-	-	-	-	<30	<30	<0.1	<0.1
Titanium	2.0	0.5	-	-	-	-	<10	<10	<1	<1
Tungsten	0.1	0.1	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	<0.01	0.02
Vanadium	1	1	-	-	-	-	<30	<30	0.6	0.4
Zinc	2	1	<5	-	<5	<5	<5	<5	2.0	<1

Appendix A4. Analytical results for water quality QA/QC samples from Boston area, 1994-1998.

Parameter	Fickle Duck Outflow			Koignuk River						Reference Outflow		
	Jun-93			03-Jun-98		20-Jun-00		15-Sep-00		28-Jun-98		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3
Physical												
Conductivity (µS/cm)	39	39	40	90	90	61	61	169	168	27	27	27
pH	6.80	6.72	6.95	6.88	6.79	7.21	7.21	7.39	7.45	***6.47***	6.69	***6.47***
Total Diss. Solids (mg/L)	31	31	32	74	74	47	46	101	101	15	15	15
Total Susp. Solids (mg/L)	-	-	-	12	14	10	14	6	5	<1	<1	<1
Turbidity (NTU)	2.3	2.4	2.4	36.3	35.5	10.4	11.5	8.5	9.8	1.9	1.8	1.9
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	13.3	13.0	13.3	22.7	22.3	16.2	26.4	36.4	36.6	10.4	10.4	10.4
Total Alkalinity	10	9	9	11	11	9	9	14	13	8	8	8
Chloride	-	-	-	14.9	15.2	9.1	9.1	35.0	33.9	3.0	3.0	3.0
Fluoride	-	-	-	0.09	0.08	0.04	0.03	0.06	0.03	0.03	0.03	0.03
Sulphate	2	3	3	4	4	2	2	9	9	<1	<1	<1
Nutrients (mg/L)												
Dissolved Phosphate	-	-	-	0.007	0.006	-	-	-	-	-	-	-
Total Phosphorus	0.013	0.016	0.016	***0.051***	***0.057***	-	-	0.014	0.014	-	-	-
Ammonia Nitrogen	0.009	0.009	0.015	0.020	0.022	0.031	0.031	0.011	0.009	-	-	-
Nitrate - nitrogen	<0.005	<0.005	<0.005	0.012	0.013	0.009	0.008	<0.005	<0.005	-	-	-
Nitrite - nitrogen	<0.001	<0.001	<0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	-	-	-
Total Organic Carbon	-	-	-	-	-	6.5	6.5	5.7	5.3	-	-	-
Total Metals (µg/L)												
Aluminum	-	-	-	***1400***	***1400***	***429***	***424***	***282***	***283***	85	78	85
Antimony	-	-	-	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1
Arsenic	-	-	-	0.4	0.4	0.20	1.20	0.30	0.30	0.2	0.2	0.2
Barium	-	-	-	20	20	6.40	6.28	6.23	6.07	<10	<10	<10
Beryllium	-	-	-	<5	<5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5
Bismuth	-	-	-	-	<100	<0.5	<0.5	<0.5	<0.5	-	-	-
Boron	-	-	-	-	<100	5	5	8	9	-	-	-
Cadmium	-	-	-	<0.2	<0.2	<0.05	0.06	<0.05	<0.05	<0.2	<0.2	<0.2
Calcium	3720	3630	3740	4070	4010	3450	7410	6630	6640	2830	2830	2830
Chromium	-	-	-	***3***	***3***	0.9	0.9	0.7	0.6	<1	<1	<1
Cobalt	-	-	-	<1	<1	0.3	0.4	0.2	0.2	<1	<1	<1
Copper	-	-	-	***3***	***20***	2	1.8	2	2	2	1	2
Iron	205	230	222	***1200***	***1180***	***560***	***570***	***360***	***360***	140	140	140
Lead	-	-	-	<1	<1	0.24	0.64	0.23	0.22	2	<1	2
Lithium	-	-	-	-	<10	1	1	2	2	-	-	-
Magnesium	967	956	967	3100	3000	1900	1900	4800	4900	800	800	800
Manganese	<5	<5	<5	41	41	24	25	12	11	<5	<5	<5
Mercury	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	-	-	-	<1	<1	0.06	0.09	0.09	0.11	<1	<1	<1
Nickel	-	-	-	2	2	1.1	1.3	0.9	0.8	<1	<1	<1
Potassium	-	-	-	1940	1990	-	<2000	1350	1330	340	320	340
Selenium	-	-	-	0.5	<0.5	<1	<1	<1	<1	<0.5	<0.5	<0.5
Silicon	-	-	-	3790	3850	-	-	-	-	290	290	290
Silver	-	-	-	<0.1	<0.1	0.02	0.07	<0.01	<0.01	<0.1	<0.1	<0.1
Sodium	2700	2500	2500	9000	8000	5000	6000	14900	14700	1610	1610	1610
Strontium	10	10	10	22	22	-	-	-	-	15	15	15
Thallium	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-	-	-	-
Titanium	<10	<10	-	70	70	-	-	-	-	-	-	-
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	0.05	0.06	0.05	0.05	-	-	-
Vanadium	-	-	-	-	<30	<1	<1	<1	<1	-	-	-
Zinc	<5	<5	<5	<5	<5	2	5	2	1	<5	<5	<5
Dissolved Metals (µg/L)												
Aluminum	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-	-	-	-	-	-
Calcium	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-	-	-	-	-	-
Iron	-	-	-	-	-	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-	-	-	-	-	-
Lithium	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	-	-	-	-	-	-	-	-	-	-	-	-
Strontium	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A4. Analytical results for water quality QA/QC samples from Boston area, 1994-1998.

Parameter	Field Blank					Travel Blank						Internal Lab QC
	Aug 94	2-Aug-95	22-Apr-98	25-Apr-98	21-Jul-98	2-Aug-95	22-Apr-98	25-Apr-98	3-Jun-98	21-Jul-98	3-Aug-98	26-Jun-98
Physical												
Conductivity (µS/cm)	1.4	1.5	-	-	<2	1.5	-	-	-	<2	<2	34
pH	-	4.4	-	-	4.74	4.4	-	-	-	5.89	5.00	6.92
Total Diss. Solids (mg/L)	4	1	-	-	<10	1	-	-	-	<10	<10	36
Total Susp. Solids (mg/L)	<1	1	-	-	2	1	-	-	-	<1	2	<1
Turbidity (NTU)	0.14	0.2	-	-	0.1	0.3	-	-	-	<0.1	<0.1	2.1
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	<1	1	-	-	<0.05	1	-	-	-	-	<0.05	13.8
Total Alkalinity	<1	1	-	-	<1	1	-	-	-	<1	<1	10
Chloride	<0.5	0.03	-	-	<0.5	0.01	-	-	-	<0.5	<0.5	3.3
Fluoride	<0.05	0.02	-	-	<0.02	0.02	-	-	-	<0.02	<0.02	0.02
Sulphate	<0.5	0.1	-	-	<1	0.1	-	-	-	<1	<1	<1
Nutrients (mg/L)												
Dissolved Phosphate	<0.002	0.002	-	-	-	0.002	-	-	-	-	-	-
Total Phosphorus	<0.002	0.002	-	-	-	0.002	-	-	-	-	-	-
Ammonia Nitrogen	<0.005	0.02	-	-	-	0.02	-	-	-	-	-	-
Nitrate - nitrogen	<0.005	0.010	-	-	-	0.005	-	-	-	-	-	-
Nitrite - nitrogen	<0.001	0.001	-	-	-	0.001	-	-	-	-	-	-
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)												
Aluminum	4	4	7	110	<5	3	10	<5	<6	-	<5	72
Antimony	<0.2	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	-	<0.1	<0.1
Arsenic	1	1	<0.1	<0.1	<0.1	1	<0.1	<0.1	<0.1	-	<0.1	<0.1
Barium	<0.03	60	<10	<10	<10	0.1	<10	<10	<10	-	<10	<10
Beryllium	<0.5	0.5	<5	<5	<5	0.5	<5	<5	<5	-	<5	<5
Bismuth	<0.03	0.05	<100	<100	<100	0.05	<100	<100	<100	-	<100	<100
Boron	11.2	1	<100	<100	<100	1	<100	<100	<100	-	<100	<100
Cadmium	0.07	0.2	<0.2	<0.3	<0.2	0.2	<0.2	<0.3	<0.2	-	<0.2	<0.2
Calcium	<10	20	1070	550	<50	30	750	<50	<50	-	<50	3940
Chromium	0.53	0.5	<1	<1	<1	0.5	<1	<1	<1	-	<1	<1
Cobalt	0.08	0.08	<1	<1	<1	0.08	<1	<1	<1	-	<1	<1
Copper	0.98	2.9	<1	<1	<1	0.5	<1	<1	<1	-	<1	1
Iron	<10	30	<10	<10	<10	30	<10	<10	<10	-	<10	240
Lead	<0.06	0.2	<1	<1	<1	0.1	<1	<1	<1	-	<1	<1
Lithium	21.8	1	<10	<10	<10	1	<10	<10	<10	-	<10	<10
Magnesium	2.2	1.1	<100	<100	<100	1.2	<100	<100	<100	-	<100	1000
Manganese	<0.10	0.2	<5	<5	<5	0.2	<5	<5	<5	-	<5	<5
Mercury	<0.05	0.05	<0.05	<0.06	<0.05	0.05	<0.05	<0.06	<0.05	-	<0.05	<0.05
Molybdenum	<0.16	0.1	<1	<1	<1	0.1	<1	<1	<1	-	<1	<1
Nickel	0.3	1	<1	<1	<1	1	<1	<1	<1	-	<1	<1
Potassium	<50	50	<10	40	<10	100	20	<1	20	-	10	270
Selenium	<1	1	1	<0.5	<0.6	1	<0.5	<0.5	<0.6	-	<0.5	<0.5
Silicon	-	-	<50	<51	<52	-	<50	<50	<51	-	<50	470
Silver	<0.01	0.01	<0.1	<0.1	<0.1	0.01	<0.1	<0.1	<0.2	-	<0.1	<0.1
Sodium	50	30	30	200	<10	20	60	20	<10	-	<10	1730
Strontium	<0.06	0.2000	<5	<5	<5	0.1000	<5	<5	<5	-	<5	23
Thallium	<0.03	0.05	<200	<200	<200	0.05	<200	<200	<200	-	<200	<200
Tin	<0.09	0.1	<30	<30	<30	0.2	<30	<30	<30	-	<30	<30
Titanium	<0.5	0.5	<10	<10	<10	0.5	<10	<10	<10	-	<10	<10
Tungsten	<0.07	0.1	-	-	-	0.1	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	<1	1	<30	<30	<30	1	<30	<30	<30	-	<30	<30
Zinc	<1.00	3	<5	<5	<5	5	<5	<5	<5	-	<5	<5
Dissolved Metals (µg/L)												
Aluminum	<1	4	-	-	-	1	-	-	-	-	-	-
Antimony	<0.2	0.1	-	-	-	0.1	-	-	-	-	-	-
Arsenic	<1	1	-	-	-	1	-	-	-	-	-	-
Barium	<0.03	0.1	-	-	-	0.1	-	-	-	-	-	-
Beryllium	<0.5	0.5	-	-	-	0.5	-	-	-	-	-	-
Bismuth	<0.03	0.05	-	-	-	0.05	-	-	-	-	-	-
Boron	<1.2	1	-	-	-	1	-	-	-	-	-	-
Cadmium	<0.07	0.2	-	-	-	0.2	-	-	-	-	-	-
Calcium	<10	10	-	-	-	10	-	-	-	-	-	-
Chromium	<0.3	0.5	-	-	-	0.5	-	-	-	-	-	-
Cobalt	<0.06	0.08	-	-	-	0.08	-	-	-	-	-	-
Copper	<0.4	0.5	-	-	-	0.5	-	-	-	-	-	-
Iron	<10	10	-	-	-	30	-	-	-	-	-	-
Lead	<0.06	0.05	-	-	-	0.05	-	-	-	-	-	-
Lithium	<5	1	-	-	-	1	-	-	-	-	-	-
Magnesium	<0.37	1.1	-	-	-	1	-	-	-	-	-	-
Manganese	<0.1	0.2	-	-	-	0.2	-	-	-	-	-	-
Mercury	<0.05	0.05	-	-	-	0.05	-	-	-	-	-	-
Molybdenum	<0.16	0.1	-	-	-	0.1	-	-	-	-	-	-
Nickel	<.3	0.5	-	-	-	0.5	-	-	-	-	-	-
Potassium	<50	50	-	-	-	50	-	-	-	-	-	-
Selenium	<1	1	-	-	-	1	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	-	-	-	-	-	-
Silver	<0.01	0.01	-	-	-	0.01	-	-	-	-	-	-
Sodium	<10	10	-	-	-	10	-	-	-	-	-	-
Strontium	<0.06	0.2	-	-	-	0.1	-	-	-	-	-	-
Thallium	<0.03	0.05	-	-	-	0.05	-	-	-	-	-	-
Tin	<0.09	0.1	-	-	-	0.1	-	-	-	-	-	-
Titanium	<0.5	0.5	-	-	-	0.5	-	-	-	-	-	-
Tungsten	<0.07	0.1	-	-	-	0.1	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	<1	1	-	-	-	1	-	-	-	-	-	-
Zinc	<1	1	-	-	-	1	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake											
	WQ3 Jun-93 surface	WQ4 Jun 93 surface	WQ5 Jun 93 surface	WQ6 Jun 93 surface	Station 3 23-Apr-96 3 m	Station 4 23-Apr-96 2 m	Station 4 23-Apr-96 8 m	Station 4 23-Apr-96 14 m	Station 4 23-Apr-96 21 m	Station 5 23-Apr-96 2.5 m	Station 4 19-Apr-97 1 m	Station 6 20-Apr-97 1 m
Physical												
Conductivity (µS/cm)	38	37	44	41	66	53	49	47	44	57	63	65
pH	6.65	6.90	6.68	6.60	***6.47***	***6.36***	***6.17***	***6.43***	***6.20***	6.52	6.91	6.86
Total Diss. Solids (mg/L)	31	29	35	32	38	41	29	24	20	26	42	42
Total Susp. Solids (mg/L)	-	-	-	-	<1	<1	<1	<1	<1	22	<1	<1
Turbidity (NTU)	2.5	3.2	4.0	5.2	0.5	0.6	0.3	0.3	0.3	18.4	3.1	0.9
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	12.7	8.5	10.6	9.9	15.2	12.2	11.0	10.5	9.9	12.5	15.2	14.8
Total Alkalinity	8.6	4.7	6.2	5.0	-	9.1	8.4	7.9	7.3	9.2	11.0	12.0
Chloride	-	-	-	-	-	8.8	8.0	7.8	7.2	9.7	10.5	11.1
Fluoride	-	-	-	-	-	0.04	0.04	0.03	0.03	0.04	0.03	0.04
Sulphate	3.2	1.3	1.3	1.0	-	1.9	1.5	1.9	1.5	1.4	3.0	3.0
Nutrients (mg/L)												
Dissolved Phosphorus	-	-	-	-	-	0.004	<0.001	0.004	0.005	0.013	-	-
Total Phosphorus	0.016	0.015	0.018	0.023	-	0.013	0.005	0.007	0.007	***0.069***	0.007	0.010
Ammonia Nitrogen	0.007	0.011	0.024	0.016	-	0.007	<0.005	0.019	0.015	0.035	-	-
Nitrate - nitrogen	<0.005	0.028	0.028	0.030	-	0.013	0.019	0.031	0.082	0.038	-	-
Nitrite - nitrogen	<0.001	<0.001	<0.001	<0.001	-	0.001	0.001	0.001	0.001	0.006	-	-
Total Metals (µg/L)												
Aluminium	-	-	-	-	13	15	11	10	13	118	48	31
Antimony	-	-	-	-	<0.05	0.06	<0.05	<0.05	<0.05	0.30	<0.1	0.10
Arsenic	-	-	-	-	0.4	0.4	0.3	0.3	0.2	0.4	0.1	0.2
Barium	<10	-	-	-	2.94	2.94	1.87	1.81	1.66	4.59	-	-
Beryllium	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5
Bismuth	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-
Boron	-	-	-	-	7.0	5.0	5.0	5.0	4.0	6.0	-	-
Cadmium	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	***0.40***	***0.90***
Calcium	3460	1500	1990	1770	3210	2520	2220	2080	2080	2620	2950	3010
Chromium	-	-	-	-	0.6	0.6	0.6	0.4	0.2	0.7	<1	<1
Cobalt	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.10	<1	<1
Copper	-	<10	<10	<10	***2.3***	***7.5***	***2.1***	1.6	1.3	***4.7***	***3.0***	2.0
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
Iron	249	***399***	***629***	***601***	30	20	10	<10	10	150	70	50
Lead	-	-	-	-	0.20	***1.33***	0.73	0.08	<0.05	0.34	<1	<1
Lithium	-	<15	<15	<15	1	<1	<1	<1	<1	<1	<10	<10
Magnesium	992	1150	1370	1330	1830	1470	1320	1260	1190	1560	1810	1850
Manganese	7.0	28.0	49.0	39.0	3.0	1.6	1.5	1.5	3.2	10.1	<5	<5
Mercury	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Molybdenum	-	-	-	-	0.08	0.14	0.08	<0.05	<0.05	0.08	<1	<1
Nickel	-	-	-	-	0.8	0.8	0.6	0.6	0.5	2.1	<1	<1
Potassium	-	-	-	-	1040	830	750	700	660	910	1080	1130
Selenium	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	-	-	-	-	240	160	160	220	420	400	350	320
Silver	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1
Sodium	2700	3500	4200	3900	6150	5010	3720	3570	3400	5160	5480	5620
Strontium	10.0	10.0	10.0	10.0	16.1	12.9	11.8	11.0	10.6	13.4	16.0	18.0
Thallium	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
Tin	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-
Titanium	<10	<10	<10	<10	<1	<0.01	<0.01	<0.01	<0.01	<1	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	0.03	0.02	0.02	0.02	0.02	0.03	-	-
Vanadium	-	-	-	-	0.3	0.3	0.3	0.3	0.2	0.6	-	-
Zinc	<5	<5	<5	<5	2.0	14.0	5.0	<1	<1	5.0	11.0	9.0
Dissolved Metals (µg/L)												
Aluminium	-	-	-	-	8	8	7	6	9	14	14	15
Antimony	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1
Arsenic	-	-	-	-	0.4	0.3	0.3	0.3	0.4	0.4	0.1	0.1
Barium	-	-	-	-	2.84	2.43	1.78	1.56	1.68	3.17	<10	<10
Beryllium	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<5	<5
Bismuth	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<100	<100
Boron	-	-	-	-	7.0	6.0	5.0	5.0	4.0	6.0	<100	<100
Cadmium	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	***0.50***	***0.80***
Calcium	-	-	-	-	3110	2480	2220	2080	1980	2520	3040	2950
Chromium	-	-	-	-	0.4	0.8	0.6	0.3	0.5	0.4	<1	<1
Cobalt	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1
Copper	-	-	-	-	***2.3***	***8.0***	***3.0***	***2.1***	***2.5***	***4.2***	2.0	2.0
Iron	-	-	-	-	<0.01	<10	<10	<10	<10	40	20	20
Lead	-	-	-	-	0.07	0.83	0.18	0.08	0.07	0.07	<1	<1
Lithium	-	-	-	-	1	<1	<1	<1	<1	<1	<10	<10
Magnesium	-	-	-	-	1800	1450	1330	1290	1190	1520	1850	1810
Manganese	-	-	-	-	0.8	0.8	0.5	0.6	2.2	5.5	<5	<5
Mercury	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Molybdenum	-	-	-	-	0.08	0.15	0.15	0.09	0.10	0.17	<1	<1
Nickel	-	-	-	-	0.8	1.2	1.0	0.9	1.0	1.0	<1	<1
Potassium	-	-	-	-	1030	840	750	720	670	870	1050	1060
Selenium	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5
Silicon	-	-	-	-	230	150	150	180	370	180	320	290
Silver	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1
Sodium	-	-	-	-	5940	4140	3650	3560	3380	5040	5620	5630
Strontium	-	-	-	-	16.1	13.1	11.9	11.3	10.6	13.4	17.0	16.0
Thallium	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<100	<100
Tin	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<30	<30
Titanium	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	-	-
Vanadium	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<30	<30
Zinc	-	-	-	-	2.0	13.0	5.0	<1	1.0	2.0	12.0	10.0
Field WQ												
Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake											
	Station 4 22-Apr-98 3 m	**Station 6** 22-Apr-98 3 m	**Station 6** 22-Apr-98 10 m	**Station 6** 22-Apr-98 20 m	**Station 6** 22-Apr-98 25 m	**WQ3** Aug-92 surface	**WQ3** Aug-93 surface	**WQ4** Aug-93 surface	**WQ5** Aug-93 surface	**WQ5** Aug-93 8 m	**WQ5** Aug-93 16 m	**WQ6** Aug-93 surface
Physical												
Conductivity (µS/cm)	64	56	58	57	58	33	79	35	35	36	36	35
pH	6.85	6.72	6.77	6.74	6.59	6.64	7.14	7.27	7.36	7.31	7.54	7.58
Total Diss. Solids (mg/L)	46	40	38	39	42	26	50	24	25	23	24	23
Total Susp. Solids (mg/L)	2	<1	<1	<1	<1	-	-	1	1	<1	<1	7
Turbidity (NTU)	0.7	0.9	0.8	0.5	0.6	1.2	5.4	1.9	1.1	1.0	1.1	5.4
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	16.1	14.4	14.1	14.2	14.0	9.5	27.7	8.7	8.8	8.6	8.6	8.9
Total Alkalinity	10.0	8.0	9.0	9.0	9.0	5.3	21.3	6.4	6.2	6.4	6.2	6.3
Chloride	11.5	9.8	9.8	9.9	10.1	-	10.2	5.5	5.6	5.5	5.7	5.4
Fluoride	0.07	0.04	0.04	0.03	0.03	-	0.03	0.02	0.02	0.02	0.02	0.02
Sulphate	3.0	2.0	2.0	2.0	2.0	<1	<1	1.3	1.4	2.0	1.6	1.1
Nutrients (mg/L)												
Dissolved Phosphorus	<0.001	0.001	<0.001	0.003	0.006	-	0.009	0.006	0.005	0.005	0.006	0.011
Total Phosphorus	0.007	0.002	<0.001	0.005	0.007	-	0.014	0.007	0.007	0.007	0.008	0.014
Ammonia Nitrogen	<0.005	<0.005	<0.005	0.006	<0.005	-	0.026	0.012	0.007	0.009	0.008	0.017
Nitrate - nitrogen	0.047	0.051	0.061	0.091	0.120	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite - nitrogen	0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Total Metals (µg/L)												
Aluminium	19	28	18	22	27	-	-	38	29	33	31	***184***
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.2	0.2	0.2	0.1	0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	-	-	-	-	-	<10	-	-	-	-	-	-
Beryllium	<5	<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<5
Bismuth	-	-	-	-	-	-	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	***0.40***	-	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	3230	2900	3080	2900	2820	2110	-	1750	1780	1760	1750	1850
Chromium	***4.0***	***10.0***	***3.0***	<1	<1	-	-	<1	<1	<1	<1	<1
Cobalt	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1
Copper	***14***	***13***	***4***	2	1	***8***	-	***20***	1.0	0.5	0.5	0.5
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
Iron	50	90	50	40	40	116	-	93	71	71	74	***361***
Lead	<1	***3.00***	<1	<1	<1	***2.00***	-	<1	<1	<1	<1	<1
Lithium	<10	<10	<10	<10	<10	-	-	-	-	-	-	-
Magnesium	2000	1800	1800	1800	1800	1030	-	1050	1050	1040	1050	1100
Manganese	<5	<5	<5	7.0	13.0	7.0	-	<5	<5	6.0	<5	18.0
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	0.02	<0.01	<0.01	0.01	***0.03***
Molybdenum	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
Nickel	8.0	12.0	4.0	1.0	1.0	-	-	<1	<1	<1	<1	<1
Potassium	940	880	820	830	800	-	-	-	-	-	-	-
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	270	280	320	540	680	288	-	-	-	-	-	-
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium	6000	6000	6000	5000	6000	4800	-	-	-	-	-	-
Strontium	17.0	15.0	15.0	15.0	15.0	6.0	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-	-	-	-
Titanium	<10	<10	<10	<10	<10	-	-	-	-	-	-	-
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	16.0	14.0	7.0	<5	<5	18.0	-	<5	<5	<5	8.0	<5
Dissolved Metals (µg/L)												
Aluminium	-	15	12	13	15	-	-	12	13	13	12	12
Antimony	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	-	0.1	0.1	0.1	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	-	<10	<10	<10	<10	-	-	<10	<10	<10	<10	<10
Beryllium	-	<5	<5	<5	<5	-	-	<5	<5	<5	<5	<5
Bismuth	-	<100	<100	<100	<100	-	-	-	-	-	-	-
Boron	-	<100	<100	<100	<100	-	-	<100	<100	<100	<100	<100
Cadmium	-	<0.2	<0.2	<0.2	<0.2	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	-	2860	2800	2830	2750	-	-	1740	1780	1740	1730	1840
Chromium	-	***6.0***	***2.0***	<1	<1	-	-	<1	<1	<1	<1	<1
Cobalt	-	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1
Copper	-	***10.0***	***4.0***	1.0	1.0	-	-	<0.5	1.0	<0.5	<0.5	<0.5
Iron	-	60	30	20	20	-	-	<30	<30	<30	<30	<30
Lead	-	***2.00***	<1	<1	<1	-	-	<1	<1	<1	<1	<1
Lithium	-	<10	<10	<10	<10	-	-	-	-	-	-	-
Magnesium	-	1800	1700	1700	1700	-	-	1040	1050	1030	1030	1050
Manganese	-	<5	<5	7.0	13.0	-	-	<5	<5	<5	<5	<5
Mercury	-	<0.05	<0.05	<0.05	<0.05	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	-	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1
Nickel	-	11.0	4.0	<1	1.0	-	-	<1	<1	<1	<1	<1
Potassium	-	860	820	800	780	-	-	-	-	-	-	-
Selenium	-	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	-	250	290	510	610	-	-	-	-	-	-	-
Silver	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	-
Sodium	-	5000	5000	5000	5000	-	-	-	-	-	-	-
Strontium	-	14.0	14.0	15.0	14.0	-	-	-	-	-	-	-
Thallium	-	<200	<200	<200	<200	-	-	-	-	-	-	-
Tin	-	<30	<30	<30	<30	-	-	-	-	-	-	-
Titanium	-	<10	<10	<10	<10	-	-	-	-	-	-	-
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	<30	<30	<30	<30	-	-	<5	<5	<5	<5	<5
Zinc	-	10.0	<5	<5	<5	-	-	<5	<5	<5	6.0	<5
Field WQ												
Temperature (°C)	-	-	-	-	-	-	-	12.4	12.5	-	-	14.0
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	10.9	10.8	-	-	11.4
pH	-	-	-	-	-	-	-	7.4	7.4	-	-	7.6
Secchi (m)	-	-	-	-	-	-	-	2.0	3.5	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake											
	WQ3 Aug-94 surface	WQ4 Aug 94 surface	WQ5 Aug 94 surface	WQ5 Aug 94 5 m	WQ5 Aug 94 11 m	WQ6 Aug 94 surface	WQ3 31-Jul-95 ? m	WQ6 31-Jul-95 surface	WQ4 2-Aug-95 surface	WQ4 2-Aug-95 5 m	WQ5 2-Aug-95 surface	WQ5 2-Aug-95 5 m
Physical												
Conductivity (µS/cm)	320	36	36	35	35	34	130	33	33	32	33	33
pH	8.20	6.60	***6.10***	-	-	8.10	***6.00***	***5.70***	***5.90***	***5.90***	***5.70***	***5.70***
Total Diss. Solids (mg/L)	350	35	40	22	33	29	91	65	34	29	43	34
Total Susp. Solids (mg/L)	4	4	1	9	4	13	5	1	1	1	1	3
Turbidity (NTU)	2.5	3.0	2.7	2.6	3.0	3.3	2.3	2.4	1.3	1.3	1.1	1.1
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	110.0	7.0	9.0	10.0	8.0	9.0	35.0	8.0	8.0	8.0	8.0	8.0
Total Alkalinity	10.0	7.0	6.0	7.0	7.0	8.0	18.0	4.0	4.0	4.0	4.0	4.0
Chloride	98.0	9.5	10.0	9.5	9.5	9.5	27.5	5.6	5.5	5.5	5.7	5.8
Fluoride	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Sulphate	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.9	0.9	0.9	0.9	0.9
Nutrients (mg/L)												
Dissolved Phosphorus	0.004	0.008	0.008	0.006	0.004	0.004	0.002	0.002	0.002	0.004	0.002	0.002
Total Phosphorus	0.016	0.020	0.018	0.018	0.018	0.020	0.018	0.006	0.010	0.010	0.008	0.006
Ammonia Nitrogen	0.013	0.009	0.012	0.009	0.011	0.013	0.120	0.020	0.120	0.140	0.080	0.140
Nitrate - nitrogen	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.005	0.005	0.005	0.005	0.005
Nitrite - nitrogen	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001
Total Metals (µg/L)												
Aluminium	71	44	51	62	42	88	93	55	39	36	36	31
Antimony	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.10	0.10	0.10	0.10	0.10	0.10
Arsenic	<1	<1	<1	<1	2.0	<1	1.0	1.0	1.0	1.0	1.0	1.0
Barium	22.10	1.18	1.27	1.16	1.08	1.97	4.03	2.32	1.54	1.57	1.69	1.56
Beryllium	<0.5	0.92	0.95	<0.5	<0.5	2.72	0.50	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.10	0.05	0.07	0.05	0.05	0.05
Boron	34.3	<1.2	4.3	7.5	<1.2	28.2	11.0	1.0	4.0	3.0	1.0	1.0
Cadmium	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.2	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***
Calcium	41900	2110	2540	2170	1980	2980	10200	1590	1760	1720	1720	1930
Chromium	0.6	0.7	0.6	0.5	0.6	***1.7***	***1.7***	0.5	0.5	0.5	0.5	***1.3***
Cobalt	0.31	0.24	0.18	0.09	0.11	0.25	0.27	0.08	0.11	0.08	0.11	0.08
Copper	1.7	1.1	2.0	2.0	1.1	***10.7***	1.8	0.5	0.5	0.5	0.5	0.7
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
Iron	80	80	80	80	70	227	***340***	140	110	110	100	100
Lead	0.12	0.19	0.32	0.35	0.15	0.39	0.10	0.60	0.70	***10.20***	0.90	***3.70***
Lithium	8	<5	<5	<5	<5	65	1	1	1	1	1	1
Magnesium	8090	1490	1570	1570	1380	2100	3910	997	1060	1090	1020	1060
Manganese	5.3	3.0	3.4	2.6	3.3	5.7	1.7	4.9	4.1	4.2	4.2	4.5
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	<0.16	<0.16	<0.16	<0.16	<0.16	0.27	0.20	0.10	0.10	0.10	0.10	0.30
Nickel	1.3	0.8	1.3	1.6	0.4	0.5	2.3	1.2	1.1	1.0	1.0	1.3
Potassium	2930	1080	1160	1160	975	1590	1300	500	600	640	600	700
Selenium	<1	<1	<1	<1	<1	***5.0***	1.0	1.0	1.0	1.0	1.0	1.0
Silicon	-	-	-	-	-	-	-	-	-	-	-	-
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sodium	11400	4710	4760	4730	4120	6710	10800	3090	3190	3160	3170	3250
Strontium	362.0	7.4	7.2	6.8	6.3	10.1	43.6	8.3	9.1	8.9	8.9	8.7
Thallium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.09	0.17	<0.09	<0.09	<0.09	<0.09	0.20	0.10	0.10	0.10	0.10	0.10
Titanium	5.24	5.14	2.41	2.90	1.28	5.08	2.80	0.50	0.50	0.50	0.50	1.00
Tungsten	0.11	0.09	<0.07	0.16	0.20	0.15	0.10	0.10	0.10	0.10	0.10	0.10
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	<1	<1	<1	<1	<1	<1	1.0	1.0	1.0	1.0	1.0	1.0
Zinc	1.9	1.3	18.6	<1	2.2	5.4	3.0	1.0	1.0	2.0	2.0	6.0
Dissolved Metals (µg/L)												
Aluminium	<1	3	3	4	3	4	7	30	11	10	8	10
Antimony	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.10	0.10	0.10	0.10	0.10	0.10
Arsenic	<1	<1	<1	<1	<1	<1	1.0	1.0	1.0	1.0	1.0	1.0
Barium	21.00	0.91	1.05	1.15	0.96	0.93	2.90	1.33	1.37	1.57	1.58	1.56
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.50	0.50	0.50	0.50	0.50	0.50
Bismuth	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	0.05	0.05	0.05	0.05	0.05
Boron	1.3	<1.2	<1.2	<1.2	<1.2	<1.2	3.0	1.0	2.0	1.0	1.0	1.0
Cadmium	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***
Calcium	34500	1490	1760	1940	1630	1820	8820	1460	1680	1590	1680	1620
Chromium	0.4	<0.3	<0.3	<0.3	<0.3	<0.3	***1.1***	0.5	0.5	0.5	0.5	0.5
Cobalt	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.08	0.08	0.08	0.08	0.10	0.08
Copper	0.6	<0.4	0.6	0.5	<0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Iron	<10	<10	10	10	<10	10	40	20	30	30	30	30
Lead	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.10	0.10	0.10	0.10	0.10	0.10
Lithium	8	<5	<5	<5	<5	<5	1	1	1	1	1	1
Magnesium	6030	912	1080	1180	993	1120	3260	990	993	968	991	955
Manganese	0.7	0.2	0.3	0.5	0.3	0.2	0.2	1.8	0.2	0.2	0.2	0.2
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***
Molybdenum	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	0.10	0.10	0.10	0.10	0.10	0.10
Nickel	0.3	0.5	0.3	1.0	0.4	<0.3	0.8	0.8	0.5	1.0	0.8	0.9
Potassium	2260	636	793	893	714	838	830	460	600	540	600	550
Selenium	<1	<1	<1	<1	<1	<1	1.0	1.0	1.0	1.0	1.0	1.0
Silicon	-	-	-	-	-	-	-	-	-	-	-	-
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sodium	7940	2460	3050	3430	2810	3260	9130	2810	2980	2890	3050	2950
Strontium	359.0	6.1	7.1	6.8	6.2	7.8	39.5	8.2	9.0	8.6	8.8	8.7
Thallium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	0.05	0.05	0.05	0.05	0.05
Tin	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.1	0.1	0.1	0.1	0.1	0.1
Titanium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	0.5	0.5	0.5	0.5	0.5
Tungsten	0.08	<0.07	<0.07	<0.07	<0.07	0.08	0.10	0.10	0.10	0.10	0.10	0.10
Uranium	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	<1	<1	<1	<1	<1	<1	1.0	1.0	1.0	1.0	1.0	1.0
Zinc	<1	<1	1.9	<1	1.1	<1	1.0	1.0	1.0	1.0	1.0	1.0
Field WQ												
Temperature (°C)	11.0	10.0	8.3	8.2	8.2	10.0	7.4	8.5	8.9	-	8.8	-
Dissolved Oxygen (mg/L)	14.2	13.0	13.0	13.0	13.0	12.8	9.0	12.2	11.8	-	11.4	-
pH	8.2	6.6	6.1	-	-	8.1	7.5	6.4	7.3	-	6.9	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	0.72	0.54	-	-	0.48	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake											
	WQ5 2-Aug-95 9 m	**WQ9** 2-Aug-95 surface	**WQ9** 2-Aug-95 5 m	**WQ9** 2-Aug-95 10 m	**WQ9** 2-Aug-95 15 m	**WQ9** 2-Aug-95 20 m	**Station 2** 05-Aug-96 surface	**Station 3** 05-Aug-96 surface	**Station 4** 04-Aug-96 surface	**Station 4** 04-Aug-96 4 m	**Station 4** 04-Aug-96 8 m	**Station 5** 05-Aug-96 0.5 m
Physical												
Conductivity (µS/cm)	34	35	33	34	34	36	40	38	40	40	40	40
pH	***5.70***	***5.90***	***5.90***	***5.90***	***5.70***	***5.70***	6.80	6.80	6.90	6.90	6.80	6.90
Total Diss. Solids (mg/L)	33	15	18	21	47	27	47	51	40	45	88	127
Total Susp. Solids (mg/L)	2	1	1	1	2	1	2	4	3	<1	5	1
Turbidity (NTU)	1.6	1.3	1.3	1.3	1.2	1.2	0.4	0.8	0.6	1.0	0.6	1.0
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	8.0	8.0	8.0	8.0	9.0	9.0	8.0	8.0	7.0	7.0	8.0	7.0
Total Alkalinity	4.0	4.0	4.0	4.0	4.0	4.0	9.0	8.0	8.0	7.0	7.0	8.0
Chloride	5.8	5.9	5.9	5.9	5.9	7.0	5.9	5.8	5.8	5.8	5.8	5.8
Fluoride	0.04	0.04	0.04	0.04	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
Nutrients (mg/L)												
Dissolved Phosphorus	0.002	0.002	0.002	0.002	0.004	0.002	0.002	0.001	0.003	0.003	0.003	0.007
Total Phosphorus	0.012	0.008	0.008	0.006	0.010	0.010	0.005	0.007	0.006	0.004	0.006	0.002
Ammonia Nitrogen	0.060	0.020	0.020	0.020	0.020	0.020	<0.02	<0.02	<0.02	0.040	<0.02	0.040
Nitrate - nitrogen	0.005	0.011	0.005	0.005	0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite - nitrogen	0.001	0.001	0.001	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Metals (µg/L)												
Aluminium	32	36	35	32	38	42	15	10	7	9	10	11
Antimony	0.10	0.10	0.10	0.10	0.10	0.20	0.10	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	1.0	1.0	1.0	1.0	1.0	1.0	1.0	<1	<1	1.0	2.0	2.0
Barium	1.70	1.63	1.62	1.58	1.79	1.85	1.80	1.90	2.16	2.26	2.18	1.75
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	0.05	0.06	0.05	0.05	0.05	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	1.0	4.0	1.0	4.0	5.0	2.0	4.0	3.0	3.0	4.0	4.0	4.0
Cadmium	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***	<0.05	<0.05	***0.07***	***0.05***	<0.05	***0.10***
Calcium	1600	1650	1720	1700	1840	1780	1820	1960	1490	1340	1460	1880
Chromium	0.6	0.5	0.5	0.8	0.5	0.9	0.8	<0.1	0.6	0.7	0.6	0.8
Cobalt	0.19	0.08	0.08	0.08	0.08	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.5	0.5	0.5	0.7	0.5	1.3	0.5	0.4	1.6	0.5	0.6	0.4
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
Iron	100	100	110	110	110	120	<10	<10	<10	<10	<10	<10
Lead	0.70	0.40	***1.70***	1.00	0.10	0.10	0.06	0.06	0.18	0.14	<0.05	<0.05
Lithium	1	1	1	1	1	3	<1	<1	<1	<1	<1	<1
Magnesium	993	1010	1060	1030	1220	1120	988	998	886	869	969	1010
Manganese	4.1	4.1	4.9	4.9	4.4	5.0	0.5	0.4	0.3	0.6	0.3	0.5
Mercury	<0.05	<0.05	***0.10***	<0.05	<0.05	<0.05	-	-	-	-	-	-
Molybdenum	0.20	0.20	0.10	0.10	0.10	0.10	<0.05	<0.05	0.06	<0.05	<0.05	<0.05
Nickel	1.0	1.6	0.8	1.0	1.9	1.3	0.2	0.4	1.2	0.4	0.5	0.3
Potassium	580	510	760	780	790	870	550	600	660	540	510	530
Selenium	1.0	1.0	1.0	1.0	1.0	1.0	-	-	-	-	-	-
Silicon	-	-	-	-	-	-	290	240	200	240	230	280
Silver	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01
Sodium	3110	3290	3280	3270	3440	3790	3220	3260	2860	2720	3190	3190
Strontium	8.3	8.8	8.9	8.9	9.3	9.1	9.7	9.6	9.7	9.5	9.7	9.6
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	0.10	0.20	0.10	0.10	0.10	0.10	0.30	<0.1	0.10	<0.1	0.10	0.40
Titanium	0.60	0.50	0.70	1.10	0.50	1.60	<1	<1	<1	<1	<1	<1
Tungsten	0.10	0.10	0.10	0.10	0.10	0.20	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	0.01	0.01	0.01	<0.01	<0.01	<0.01
Vanadium	1.0	1.0	1.0	1.0	1.0	1.0	<1	<1	<1	<1	<1	<1
Zinc	1.0	1.0	1.0	3.0	23.0	3.0	<1	11.0	3.0	1.0	<1	7.0
Dissolved Metals (µg/L)												
Aluminium	9	13	15	10	9	9	1	9	<1	1	2	1
Antimony	0.10	0.10	0.10	0.10	0.10	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	1.0	1.0	1.0	1.0	1.0	1.0	<1	<1	<1	<1	<1	<1
Barium	1.36	1.57	1.50	1.57	1.69	1.57	1.67	1.56	1.52	2.26	2.12	1.70
Beryllium	0.50	0.50	0.50	0.50	0.50	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	0.05	0.05	0.05	0.05	0.05	0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	1.0	4.0	1.0	4.0	5.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Cadmium	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***	***0.20***	<0.05	<0.05	<0.05	<0.05	<0.05	***0.06***
Calcium	1490	1650	1510	1700	1810	1770	1740	1650	1340	1250	1430	1390
Chromium	0.5	0.5	0.5	0.5	0.5	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	0.08	0.08	0.08	0.08	0.08	0.16	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.5	0.5	0.5	0.6	0.5	1.0	0.5	0.4	0.3	0.4	0.5	0.4
Iron	20	50	50	60	70	70	<10	<1	<10	<10	<10	<1
Lead	0.10	0.10	0.10	0.10	0.10	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium	1	1	1	1	1	3	<1	<1	<1	<1	<1	<1
Magnesium	944	1010	975	1020	1120	1040	909	914	867	843	873	899
Manganese	0.2	0.2	0.2	0.2	0.2	0.3	0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***	-	-	-	-	-	-
Molybdenum	0.10	0.10	0.10	0.10	0.10	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	0.5	1.6	0.7	0.8	1.8	1.1	0.1	0.3	0.2	0.4	0.3	0.1
Potassium	470	500	720	740	790	810	540	490	510	490	510	510
Selenium	1.0	1.0	1.0	1.0	1.0	1.0			-	-	-	
Silicon	-	-	-	-	-	-	180	230	190	220	230	210
Silver	0.01	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	2910	3210	3090	3200	3180	3460	2840	2830	2720	2610	2720	2700
Strontium	8.3	8.6	8.2	8.8	9.0	8.6	9.7	9.5	9.7	9.4	9.5	9.5
Thallium	0.05	0.05	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	0.1	0.1	0.1	0.1	0.1	0.1	0.3	<0.1	0.1	<0.1	0.1	0.4
Titanium	0.5	0.5	0.7	0.5	0.5	1.0	<1	<1	<1	<1	<1	<1
Tungsten	0.10	0.10	0.10	0.10	0.10	0.10	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	1.0	1.0	1.0	1.0	1.0	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc	1.0	1.0	1.0	3.0	4.0	2.0	<1	<1	3.0	<1	<1	5.0
Field WQ												
Temperature (°C)	-	11.8	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	8.6	-	-	-	-	-	-	-	-	-	-
pH	-	7.1	-	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake											
	Station 5 05-Aug-96 1 m	**Station 5** 05-Aug-96 2 m	**Station 6** 05-Aug-96 surface	**Station 6** 05-Aug-96 5 m	**Station 6** 05-Aug-96 10 m	**Station 6** 05-Aug-96 15 m	**Station 6** 05-Aug-96 20 m	**Station 1** 23-Aug-96 2 m	**Station 2** 23-Aug-96 surface	**Station 3** 23-Aug-96 1 m	**Station 3** 23-Aug-96 6 m	**Station 3** 23-Aug-96 12 m
Physical												
Conductivity (µS/cm)	39	40	40	40	39	40	-	78	80	95	94	93
pH	6.90	6.80	6.80	6.80	6.80	6.80	-	6.90	7.20	7.20	7.30	7.30
Total Diss. Solids (mg/L)	52	80	59	81	56	42	-	37	23	28	13	27
Total Susp. Solids (mg/L)	2	1	2	1	1	<1	-	10	6	2	1	2
Turbidity (NTU)	0.8	0.8	0.8	0.3	0.3	0.8	-	9.0	7.0	2.6	3.2	2.8
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	7.0	8.0	7.0	8.0	7.0	6.0	-	12.0	9.0	8.0	8.0	8.0
Total Alkalinity	8.0	7.0	7.0	7.0	8.0	8.0	-	10.0	8.0	8.0	8.0	8.0
Chloride	5.9	5.8	5.8	5.8	5.8	5.8	-	6.4	7.2	6.3	6.3	6.3
Fluoride	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	0.04	0.04	0.04	0.04	0.04
Sulphate	0.9	0.9	0.9	0.9	0.9	0.9	-	2.0	1.5	1.0	1.0	1.0
Nutrients (mg/L)												
Dissolved Phosphorus	0.001	0.002	<0.001	0.004	0.003	0.001	-	0.029	0.002	0.002	0.002	0.002
Total Phosphorus	0.004	0.007	0.007	0.005	0.007	0.006	-	0.002	0.018	0.008	0.008	0.012
Ammonia Nitrogen	<0.02	<0.02	0.040	<0.02	<0.02	<0.02	-	<0.01	0.043	0.041	0.047	0.040
Nitrate - nitrogen	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite - nitrogen	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001
Total Metals (µg/L)												
Aluminium	10	9	10	14	8	9	12	***446***	***256***	40	83	66
Antimony	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	2.0	<1	<1	<1	<1	1.0	<1	1.0	1.0	<1	<1	<1
Barium	2.75	2.18	3.54	2.26	2.29	2.72	2.26	5.45	2.47	1.47	1.74	1.25
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0	3.0	3.0	3.0	1.0
Cadmium	<0.05	***0.09***	<0.05	***0.07***	<0.05	***0.08***	***0.05***	***0.28***	***0.30***	***0.30***	***0.06***	***0.08***
Calcium	1670	1860	1380	1620	1370	1720	1600	2600	2100	1570	1660	1570
Chromium	0.7	0.9	0.7	***1.1***	0.8	***1.1***	0.8	-	-	-	-	-
Cobalt	<0.1	<0.1	0.20	<0.1	<0.1	0.20	<0.1	0.20	<0.1	<0.1	<0.1	<0.1
Copper	0.5	0.6	0.6	1.5	0.8	0.6	0.5	1.6	0.9	0.5	0.8	0.9
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
Iron	<10	<10	20	<10	<10	<10	<10	***440***	180	30	90	50
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.28	0.13	0.09	0.08	<0.05
Lithium	1	<1	<1	<1	<1	1	<1	-	-	-	-	-
Magnesium	979	988	945	979	858	998	936	1540	1340	1040	1130	1080
Manganese	0.4	0.5	0.5	0.8	0.3	0.5	0.6	9.4	5.4	2.3	4.0	3.1
Mercury	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	0.09	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
Nickel	0.3	0.5	0.4	0.5	1.0	0.2	0.4	1.3	0.2	0.3	1.5	<0.1
Potassium	540	550	540	530	600	530	530	790	790	670	700	630
Selenium	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	250	250	250	280	230	250	240	60	200	<50	190	<50
Silver	0.01	0.01	0.01	0.02	<0.01	0.01	0.02	0.06	0.02	<0.01	0.01	0.02
Sodium	2750	3320	3100	3240	2720	3310	3050	3750	3630	3270	3600	3190
Strontium	9.5	10.0	9.6	9.5	10.0	9.9	9.9	12.4	11.4	7.6	9.0	8.3
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.1	<0.1	<0.1	0.40	0.30	0.30	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	<1	<1	<1	<1	<1	<1	<1	19.00	9.00	5.00	9.00	5.00
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	0.04	0.02	0.02	<0.01	0.03	<0.01	<0.01	0.03	<0.01	0.05	0.04	<0.01
Vanadium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	4.0	<1
Zinc	3.0	10.0	8.0	3.0	13.0	6.0	1.0	7.0	5.0	4.0	5.0	5.0
Dissolved Metals (µg/L)												
Aluminium	1	1	2	1	1	3	1	40	10	7	8	7
Antimony	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Barium	2.66	2.15	1.93	2.24	2.20	2.37	2.14	2.11	1.61	1.23	0.92	1.17
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0	<1
Cadmium	<0.05	<0.05	<0.05	***0.07***	<0.05	***0.05***	<0.05	***0.05***	<0.05	***0.30***	***0.15***	<0.05
Calcium	1530	1600	1290	1620	1360	1270	1540	2580	1840	1460	1570	1550
Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	-	-	-	-	-
Cobalt	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	0.5	0.6	0.5	0.5	0.5	0.4	0.5	1.0	0.6	0.5	0.4	0.5
Iron	<10	<10	<10	<10	<10	<10	<10	40	<10	<1	<1	<1
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05
Lithium	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-
Magnesium	868	908	895	879	840	784	899	1350	1190	1030	1100	1050
Manganese	0.1	0.1	<0.05	0.1	<0.05	<0.05	<0.05	0.5	<0.05	<0.05	<0.05	<0.05
Mercury	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.2	<0.1	<0.1	<0.1
Potassium	500	540	520	520	490	450	530	640	650	640	700	620
Selenium			-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	190	240	220	240	210	230	240	80	<50	<50	<50	<50
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Sodium	2690	2870	2790	2760	2630	2430	2860	3320	3210	3070	3150	3150
Strontium	9.4	9.6	9.1	9.5	9.1	9.2	9.5	10.6	9.9	7.6	8.9	7.7
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	<0.1	<0.1	<0.1	0.4	<0.1	0.3	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	0.03	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.2	0.1	0.1	0.1
Zinc	1.0	<1	7.0	<1	<1	<1	1.0	1.0	2.0	2.0	2.0	<1
Field WQ												
Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake											
	Station 4 24-Aug-96 1 m	**Station 4** 24-Aug-96 8 m	**Station 4** 24-Aug-96 1 5m	**Station 5** 24-Aug-96 1 m	**Station 5** 24-Aug-96 2 m	**Station 5** 24-Aug-96 3 m	**Station 6** 24-Aug-96 1 m	**Station 6** 24-Aug-96 7 m	**Station 6** 25-Aug-96 14 m	**Station 6** 25-Aug-96 20 m	**Station 6** 25-Aug-96 28 m	**Station 1** 24-Jul-97 1 m
Physical												
Conductivity (µS/cm)	-	-	-	118	-	-	84	78	113	74	121	34
pH	-	-	-	7.40	-	-	7.40	7.40	7.30	7.40	7.40	***6.16***
Total Diss. Solids (mg/L)	-	-	-	29	-	-	25	49	20	34	52	26
Total Susp. Solids (mg/L)	-	-	-	1	-	-	2	3	1	4	5	2
Turbidity (NTU)	-	-	-	3.2	-	-	0.7	1.8	2.0	2.2	1.0	1.0
Dissolved Anions (mg/L)												
Hardness ($CaCO_3$)	-	-	-	8.0	-	-	7.0	8.0	8.0	8.0	8.0	7.8
Total Alkalinity	-	-	-	8.0	-	-	6.0	8.0	8.0	8.0	8.0	6.0
Chloride	-	-	-	6.4	-	-	6.3	6.3	6.3	6.3	6.3	5.1
Fluoride	-	-	-	0.06	-	-	0.06	0.06	0.06	0.06	0.06	0.03
Sulphate	-	-	-	1.0	-	-	1.0	1.0	1.0	1.0	1.0	1.0
Nutrients (mg/L)												
Dissolved Phosphorus	-	-	-	0.002	-	-	0.002	0.006	0.006	0.010	0.004	0.003
Total Phosphorus	-	-	-	0.010	-	-	0.008	0.006	0.007	0.010	0.011	0.006
Ammonia Nitrogen	-	-	-	0.044	-	-	0.055	0.043	0.049	<0.005	<0.005	0.006
Nitrate - nitrogen	-	-	-	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	0.001
Nitrite - nitrogen	-	-	-	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Total Metals (µg/L)												
Aluminium	37	40	33	***108***	***112***	***109***	28	42	52	80	47	27
Antimony	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	0.07	0.05	0.10
Arsenic	1.0	2.0	<1	<1	3.0	<1	<1	<1	<1	<1	<1	0.2
Barium	1.58	1.37	1.10	1.70	2.15	2.17	1.29	1.42	1.55	1.60	1.57	-
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Bismuth	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Boron	4.0	2.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	1.0	4.0	-
Cadmium	***0.45***	***0.15***	***0.14***	***0.19***	***0.19***	***0.17***	***0.22***	***0.27***	***0.31***	***0.22***	***0.51***	<0.2
Calcium	1660	1600	1530	1710	2110	1640	1710	1890	1670	1670	1860	1590
Chromium	-	-	-	-	-	-	-	-	-	-	-	<1
Cobalt	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
Copper	0.8	0.7	0.7	0.8	0.8	0.8	1.2	0.8	0.7	0.8	0.9	1.0
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
Iron	60	30	20	70	100	80	20	40	40	60	70	200
Lead	0.12	0.16	<0.05	0.07	0.13	0.07	0.07	<0.05	0.11	<0.05	0.13	<1
Lithium	-	-	-	-	-	-	-	-	-	-	-	<10
Magnesium	1220	1050	1020	1070	1220	1120	1090	1110	1100	1100	1360	1010
Manganese	3.2	3.0	2.5	3.9	4.1	3.0	2.0	2.8	3.0	3.8	3.2	10.0
Mercury	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	0.06	0.10	<1
Nickel	0.6	0.3	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	<0.1	0.5	<1
Potassium	830	670	640	700	810	730	700	750	700	740	950	490
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	***1.2***	<0.5
Silicon	<50	60	220	100	<50	<50	<50	<50	<50	<50	<50	150
Silver	0.03	<0.01	0.01	<0.01	0.03	0.02	0.04	0.04	0.03	0.02	0.04	<0.1
Sodium	3870	3480	3630	3740	3770	3700	3580	3530	3590	3500	3400	2600
Strontium	8.6	7.4	7.7	8.0	7.9	8.7	8.0	8.2	7.9	8.7	8.6	15.0
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-
Tin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
Titanium	6.00	9.00	15.00	8.00	3.00	3.00	1.00	2.00	2.00	<1	<1	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	0.02	<0.01	0.05	<0.01	0.03	0.03	<0.01	<0.01	<0.01	<0.01	0.03	-
Vanadium	<1	<1	3.0	<1	<1	<1	<1	<1	<1	<1	<1	-
Zinc	6.0	5.0	7.0	10.0	9.0	8.0	8.0	12.0	6.0	4.0	8.0	<5
Dissolved Metals (µg/L)												
Aluminium	3	3	2	7	5	8	3	5	5	5	12	9
Antimony	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Arsenic	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.2
Barium	1.49	1.35	1.10	1.36	1.15	1.44	1.15	1.07	1.37	1.05	1.13	<10
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
Bismuth	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100
Boron	2.0	2.0	2.0	2.0	2.0	<1	1.0	2.0	2.0	<1	3.0	<100
Cadmium	<0.05	<0.05	***0.08***	<0.05	<0.05	***0.14***	***0.12***	***0.13***	***0.18***	***0.22***	***0.22***	<0.2
Calcium	1530	1520	1420	1460	1520	1430	1440	1430	1550	1560	1470	1530
Chromium	-	-	-	-	-	-	-	-	-	-	-	<1
Cobalt	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
Copper	0.5	0.4	0.3	0.5	0.5	0.5	0.3	0.4	0.4	0.4	0.5	<1
Iron	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	80
Lead	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
Lithium	-	-	-	-	-	-	-	-	-	-	-	<10
Magnesium	1030	1050	981	1010	1020	1020	929	973	1090	1100	1090	970
Manganese	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.1	0.1	<5
Mercury	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
Nickel	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
Potassium	770	670	610	700	630	600	560	670	680	680	670	470
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Silicon	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	120
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	0.03	<0.01	0.02	<0.1
Sodium	3170	3140	3380	3060	3280	3130	3070	3000	3200	3150	3230	2580
Strontium	7.9	7.3	7.4	7.7	7.1	8.2	7.2	7.4	7.9	8.1	8.2	15.0
Thallium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<100
Tin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<30
Titanium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	-
Vanadium	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	<30
Zinc	2.0	1.0	1.0	<1	<1	<1	<1	1.0	2.0	2.0	2.0	<5
Field WQ												
Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake										
	Station 2 22-Jul-97 1 m	**Station 3** 24-Jul-97 1 m	**Station 3** 24-Jul-97 9 m	**Station 4** 24-Jul-97 1 m	**Station 5** 22-Jul-97 1 m	**Station 6** 24-Jul-97 1 m	**Station 6** 24-Jul-97 12 m	**Station 6** 24-Jul-97 23 m	**Station 1** 26-Aug-97 1 m	**Station 2** 26-Aug-97 1 m	**Station 3** 25-Aug-97 1 m
Physical											
Conductivity (µS/cm)	41	41	40	41	42	42	40	41	49	50	105
pH	***6.14***	***6.24***	***6.23***	***6.29***	***6.29***	***6.31***	***6.28***	***6.25***	6.78	6.62	6.84
Total Diss. Solids (mg/L)	24	28	24	30	26	27	27	30	28	24	62
Total Susp. Solids (mg/L)	2	3	<1	<1	<1	1	2	3	2	2	2
Turbidity (NTU)	1.2	1.1	1.1	1.2	1.2	1.4	1.3	2.0	1.3	1.4	1.5
Dissolved Anions (mg/L)											
Hardness ($CaCO_3$)	9.5	9.2	9.4	9.6	9.5	9.7	9.2	9.2	9.9	10.1	10.2
Total Alkalinity	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
Chloride	7.0	7.0	6.8	6.9	6.8	7.2	6.9	7.1	6.7	7.0	6.7
Fluoride	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.07	0.08	0.06
Sulphate	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	1.0	1.0
Nutrients (mg/L)											
Dissolved Phosphorus	0.003	0.003	0.003	0.007	0.003	0.003	0.010	<0.001	0.003	0.007	0.007
Total Phosphorus	0.007	0.006	0.008	0.007	0.006	0.013	0.007	0.007	0.008	0.008	0.008
Ammonia Nitrogen	0.005	0.004	0.015	0.005	0.009	0.007	0.015	0.016	0.005	0.004	0.003
Nitrate - nitrogen	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	0.011	0.016	<0.001	<0.004	<0.001
Nitrite - nitrogen	0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.002
Total Metals (µg/L)											
Aluminium	31	29	36	27	32	37	37	38	43	38	35
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Barium	-	-	-	-	-	-	-	-	-	-	-
Beryllium	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bismuth	-	-	-	-	-	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-	-	-
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	1950	1910	1880	2010	1980	1990	1960	1970	2040	2140	2070
Chromium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	<1	1.0	<1	<1	1.0	<1	<1	<1	<1	1.0	<1
Cyanide	-	-	-	-	-	-	-	-	-	-	-
Iron	190	180	180	180	180	180	190	190	100	100	100
Lead	<1	<1	<1	<1	***2.00***	<1	<1	<1	<1	<1	<1
Lithium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Magnesium	1190	1160	1170	1230	1150	1190	1160	1180	1200	1250	1220
Manganese	12.0	12.0	14.0	14.0	12.0	12.0	16.0	17.0	6.0	<5	6.0
Mercury	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05
Molybdenum	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Potassium	570	570	580	580	580	580	600	580	600	620	600
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	290	280	340	300	310	320	360	400	220	240	240
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	3490	3510	3530	3730	3610	3730	3660	3850	3280	3370	3300
Strontium	16.0	15.0	15.0	16.0	15.0	16.0	16.0	16.0	16.0	17.0	17.0
Thallium	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-	-	-
Titanium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-
Zinc	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	6.0
Dissolved Metals (µg/L)											
Aluminium	12	11	13	11	14	15	15	15	11	46	11
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Barium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Beryllium	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bismuth	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Boron	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	1880	1850	1860	1910	1940	1970	1850	1860	2030	2080	2080
Chromium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	<1	1.0	2.0	<1	1.0	<1	<1	<1	<1	1.0	<1
Iron	70	60	70	60	70	90	80	80	40	40	40
Lead	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lithium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Magnesium	1160	1120	1150	1170	1130	1160	1120	1120	1180	1200	1200
Manganese	<5	<5	<5	<5	<5	<5	<5	7.0	<5	<5	<5
Mercury	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05
Molybdenum	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Potassium	560	550	550	550	550	570	570	580	580	620	600
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	260	240	290	250	260	260	320	350	170	170	190
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	3370	3470	3430	3540	3540	3700	3610	3780	3230	3350	3080
Strontium	15.0	15.0	15.0	15.0	15.0	16.0	16.0	16.0	16.0	16.0	17.0
Thallium	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Tin	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Titanium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-
Vanadium	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Zinc	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Field WQ											
Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Aimaokatalok Lake										
	Station 4 25-Aug-97 1 m	**Station 5** 26-Aug-97 1 m	**Station 6** 25-Aug-97 1 m	**Station 6** 25-Aug-97 9 m	**Station 6** 25-Aug-97 18 m	**Station 4** 18-Jul-98 1 m	**Station 4** 18-Jul-98 5 m	**Station 6** 18-Jul-98 1 m	**Station 6** 18-Jul-98 5 m	**Station 6** 18-Jul-98 15 m	**Station 6** 18-Jul-98 25 m
Physical											
Conductivity (µS/cm)	49	50	48	48	50	35	37	34	-	35	37
pH	6.97	6.64	6.59	6.59	6.61	6.56	6.64	***6.10***	-	***6.43***	6.50
Total Diss. Solids (mg/L)	30	29	30	29	28	28	<10	29	-	24	30
Total Susp. Solids (mg/L)	3	4	3	3	2	2	1	3	-	2	2
Turbidity (NTU)	2.0	1.9	1.7	1.4	1.1	3.4	2.9	2.7	-	2.6	2.4
Dissolved Anions (mg/L)											
Hardness ($CaCO_3$)	10.4	10.5	10.4	10.2	10.3	9.7	9.6	9.4	-	9.7	9.7
Total Alkalinity	7.0	6.0	7.0	7.0	7.0	6.0	6.0	7.0	-	6.0	7.0
Chloride	6.8	6.9	6.6	6.8	6.8	5.8	5.8	5.8	-	5.8	6.2
Fluoride	0.08	0.06	0.06	0.07	0.06	0.03	0.06	0.03	-	0.03	0.03
Sulphate	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	-	1.0	1.0
Nutrients (mg/L)											
Dissolved Phosphorus	0.007	0.003	0.003	0.003	0.009	-	-	-	-	-	-
Total Phosphorus	0.013	0.008	0.008	0.008	0.008	-	-	-	-	-	-
Ammonia Nitrogen	0.006	0.003	0.006	0.006	0.006	-	-	-	-	-	-
Nitrate - nitrogen	0.002	0.001	0.002	0.003	0.002	-	-	-	-	-	-
Nitrite - nitrogen	0.001	<0.001	0.002	<0.001	0.001	-	-	-	-	-	-
Total Metals (µg/L)											
Aluminium	58	46	47	30	38	51	53	51	45	48	40
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Barium	-	-	-	-	-	-	-	-	-	-	-
Beryllium	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bismuth	-	-	-	-	-	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-	-	-
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	2180	2170	2070	2040	2070	1980	1930	1900	1950	2110	1960
Chromium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	1.0	<1	1.0	<1	<1	<1	<1	<1	<1	1.0	<1
Cyanide	-	-	-	-	-	-	-	-	-	-	-
Iron	170	110	100	90	90	120	130	120	110	120	120
Lead	<1	***2.00***	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lithium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Magnesium	1340	1270	1270	1260	1280	1200	1200	1100	1200	1200	1200
Manganese	13.0	7.0	<5	<5	5.0	10.0	10.0	9.0	10.0	12.0	12.0
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Potassium	630	600	610	600	610	660	650	650	660	760	700
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	0.8	<0.5	0.7	<0.5	<0.5
Silicon	280	250	250	240	240	290	280	250	290	290	290
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	3330	3450	3340	3310	3460	2850	2900	2890	2910	3450	3110
Strontium	18.0	17.0	17.0	17.0	17.0	19.0	19.0	20.0	19.0	20.0	19.0
Thallium	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-	-	-
Titanium	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-	-	-
Zinc	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dissolved Metals (µg/L)											
Aluminium	11	12	11	11	11	-	-	11	-	13	13
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	<0.1
Arsenic	0.2	0.2	0.4	0.2	0.1	-	-	0.1	-	0.1	0.1
Barium	<10	<10	<10	<10	<10	-	-	<10	-	<10	<10
Beryllium	<5	<5	<5	<5	<5	-	-	<5	-	<5	<5
Bismuth	<100	<100	<100	<100	<100	-	-	-	-	-	-
Boron	<100	<100	<100	<100	<100	-	-	-	-	-	-
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	<0.2	<0.2
Calcium	2090	2170	2060	2020	2040	-	-	1900	-	1950	1940
Chromium	<1	<1	<1	<1	<1	-	-	<1	-	<1	<1
Cobalt	<1	<1	<1	<1	<1	-	-	<1	-	<1	<1
Copper	<1	<1	<1	<1	<1	-	-	1.0	-	1.0	<1
Iron	40	40	40	40	40	-	-	30	-	30	30
Lead	<1	<1	<1	<1	<1	-	-	<1	-	<1	<1
Lithium	<10	<10	<10	<10	<10	-	-	<10	-	<10	<10
Magnesium	1270	1250	1270	1250	1260	-	-	1100	-	1200	1200
Manganese	<5	<5	<5	<5	<5	-	-	<5	-	<5	<5
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	-	<0.05	<0.05
Molybdenum	<1	<1	<1	<1	<1	-	-	<1	-	<1	<1
Nickel	<1	<1	<1	<1	<1	-	-	<1	-	<1	<1
Potassium	610	600	590	590	590	-	-	650	-	670	670
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	<0.5	<0.5
Silicon	210	200	200	200	190	-	-	200	-	230	240
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	<0.1
Sodium	3300	3370	3290	3290	3410	-	-	2890	-	3030	3120
Strontium	16.0	17.0	17.0	17.0	17.0	-	-	20.0	-	20.0	19.0
Thallium	<100	<100	<100	<100	<100	-	-	-	-	-	-
Tin	<30	<30	<30	<30	<30	-	-	-	-	-	-
Titanium	<10	<10	<10	<10	<10	-	-	<10	-	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-	-	-
Vanadium	<30	<30	<30	<30	<30	-	-	-	-	-	-
Zinc	<5	<5	<5	<5	<5	-	-	<5	-	<5	<5
Field WQ											
Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Stickleback Lake								Fickle Duck Lake	
	20-Apr-97 1 m	Aug 93 surface	Aug 93 2 m	Aug 94 surface	3-Aug-95 1 m	23-Jul-97 1 m	26-Aug-97 1 m	19-Jul-98 1 m	20-Apr-97 1 m	Aug 94 surface
Physical										
Conductivity (µS/cm)	458	119	116	130	160	189	203	196	352	61
pH	7.12	7.55	7.59	8.30	***6.20***	7.07	7.38	7.26	6.77	8.40
Total Diss. Solids (mg/L)	266	80	79	110	110	132	118	141	273	51
Total Susp. Solids (mg/L)	4	<1	<1	4	4	3	3	4	12	7
Turbidity (NTU)	7.1	0.7	0.6	1.1	0.7	1.4	1.0	1.4	19.2	5.2
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	140.0	35.0	35.0	36.0	48.0	54.8	55.9	62.7	128.0	15.0
Total Alkalinity	98.0	32.1	32.0	31.0	26.0	32.0	27.0	26.0	107.0	13.0
Chloride	95.0	16.9	16.9	35.0	36.5	36.8	41.1	42.4	43.9	17.0
Fluoride	0.08	0.03	0.03	0.10	0.05	0.05	***0.14***	0.07	0.08	0.05
Sulphate	2.0	<1	<1	<0.5	0.3	<1	<1	<1	11.0	<0.5
Nutrients (mg/L)										
Dissolved Phosphorus	-	0.007	0.007	0.004	0.002	0.005	0.001	-	-	0.004
Total Phosphorus	0.013	0.009	0.009	0.020	0.006	0.007	0.008	-	***0.046***	0.030
Ammonia Nitrogen	-	0.043	0.037	0.011	0.020	0.007	0.014	-	-	0.018
Nitrate - nitrogen	-	<0.005	<0.005	<0.005	<0.005	0.003	0.003	-	-	<0.005
Nitrite - nitrogen	-	0.001	<0.001	<0.001	0.001	<0.001	<0.001	-	-	<0.001
Total Metals (µg/L)										
Aluminium	23	9	11	6	9	<5	8	11	***260***	62
Antimony	0.10	<0.1	<0.1	<0.2	0.10	<0.1	0.10	<0.1	0.30	<0.2
Arsenic	0.8	<0.1	<0.1	2.0	1.0	0.4	0.4	0.3	0.8	<1
Barium	20.00	<10	<10	2.23	4.00	<10	<10	<10	20.00	2.00
Beryllium	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-
Boron	-	-	-	<1.2	10.0	-	-	-	-	8.6
Cadmium	<0.2	<0.1	<0.1	***0.12***	<0.2	<0.2	<0.2	<0.2	***0.60***	***0.11***
Calcium	34800	8260	8200	10000	11700	14000	14300	15900	36100	4640
Chromium	<1	<1	<1	<0.3	0.5	<1	<1	<1	***2.0***	<0.3
Cobalt	<1	<1	<1	<0.06	0.29	<1	<1	<1	<1	<0.06
Copper	2.0	1.0	<0.5	1.2	0.5	<1	<1	<1	***8.0***	1.1
Cyanide	-	<5	<5	-	-	-	-	-	-	-
Iron	***720***	84	81	40	70	90	70	60	***3410***	137
Lead	<1	<1	<1	***1.97***	0.50	<1	***5.00***	<1	1.00	0.08
Lithium	-	-	-	-	-	-	-	-	-	<5
Magnesium	13600	3550	3550	4540	4570	4870	5020	5600	10000	1860
Manganese	343.0	<5	9.0	6.8	3.2	10.0	6.0	6.0	165.0	2.6
Mercury	<0.01	0.02	***0.03***	<0.05	<0.05	-	<0.05	<0.05	<0.01	<0.05
Molybdenum	<1	<1	<1	<0.16	0.10	<1	<1	<1	<1	<0.16
Nickel	<1	<1	<1	0.5	0.7	<1	<1	<1	5.0	1.3
Potassium	4600	-	-	1670	1670	1490	1420	1800	2770	650
Selenium	<0.5	<0.5	<0.5	<1	1.0	<0.5	<0.5	<0.5	<0.5	<1
Silicon	1420	-	-	-	-	210	260	190	9020	-
Silver	<0.1	<0.05	<0.05	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	0.02
Sodium	29100	-	-	10200	11900	11200	10700	12000	20800	5690
Strontium	170.0	-	-	30.8	62.1	92.0	91.0	110.0	134.0	15.7
Thallium	<100	-	-	<0.03	<0.05	-	-	-	-	<0.03
Tin	<30	-	-	<0.09	<0.2	-	-	-	-	<0.09
Titanium	<10	-	-	<0.5	<0.5	-	-	-	-	0.94
Tungsten	-	-	-	<0.07	<0.1	-	-	-	-	<0.07
Uranium	-	-	-	-	-	-	-	-	-	-
Vanadium	<30	-	-	<1	<1	-	-	-		<1
Zinc	8.0	<5	<5	1.2	1.0	<5	<5	<5	22.0	1.7
Dissolved Metals (µg/L)										
Aluminium	<5	5	7	1	1	<5	<5	-	51	2
Antimony	<0.1	<0.1	<0.1	<0.2	0.10	<0.1	<0.1	-	0.10	<0.2
Arsenic	0.7	<0.1	<0.1	<1	1.0	0.3	0.3	-	0.7	<1
Barium	20.00	<10	<10	2.10	3.94	<10	<10	-	20.00	1.56
Beryllium	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-
Boron	<100	<100	<100	<1.2	9.0	<100	<100	-	<100	<1.2
Cadmium	<0.2	<0.1	<0.1	<0.07	***0.20***	<0.2	<0.2	-	***0.30***	<0.07
Calcium	33900	8210	8200	8630	11600	13900	14200	-	35100	3930
Chromium	<1	<1	<1	<0.3	0.5	<1	<1	-	1.0	<0.3
Cobalt	<1	<1	<1	<0.06	0.08	<1	<1	-	<1	<0.06
Copper	2.0	<0.5	<0.5	<0.4	0.5	<1	<1	-	***6.0***	0.6
Iron	90	<30	<30	<10	10	<10	<10	-	***1660***	<10
Lead	<1	<1	<1	<0.06	0.10	<1	<1	-	<1	<0.06
Lithium	-	-	-	-	-	-	-	-	<10	<5
Magnesium	13300	3510	3530	3540	4500	4880	4970	-	9840	1360
Manganese	295.0	<5	<5	<0.1	0.2	<5	<5	-	152.0	<0.1
Mercury	<0.01	<0.01	0.01	<0.05	***0.05***	-	<0.05	-	<0.01	<0.05
Molybdenum	<1	<1	<1	<0.16	0.10	<1	<1	-	<1	<0.16
Nickel	<1	<1	<1	0.4	0.6	<1	<1	-	4.0	0.9
Potassium	4620	-	-	1330	1540	1480	1400	-	2690	438
Selenium	<0.5	<0.5	<0.5	<1	1.0	<0.5	<0.5	-	<0.5	<1
Silicon	1360	-	-	-	-	210	250	-	8620	-
Silver	<0.1	<0.05	<0.05	<0.01	0.01	<0.1	<0.1	-	<0.1	<0.01
Sodium	28900	-	-	7840	11500	11000	10700	-	20100	4010
Strontium	167.0	-	-	29.2	61.2	90.0	89.0	-	123.0	15.5
Thallium	<100	-	-	<0.03	0.05	<100	<100	-	-	<0.03
Tin	<30	-	-	<0.09	0.1	<30	<30	-	-	<0.09
Titanium	<10	-	-	<0.5	0.5	<10	<10	-	-	<0.5
Tungsten	-	-	-	<0.07	0.10	-	-	-	-	<0.07
Uranium	-	-	-	-	-	-	-	-	-	-
Vanadium	<30	<5	<5	<1	1.0	<30	<30	-		<1
Zinc	8.0	<5	<5	<1	1.0	<5	<5	-	9.0	<1
Field WQ										
Temperature (°C)	-	13.6	-	12.0	8.6	-	-	-	-	11.0
Dissolved Oxygen (mg/L)	-	10.8	-	15.7	11.3	-	-	-	-	13.2
pH	-	8.5	-	8.3	7.9	-	-	-	-	8.4
Secchi (m)	-	2.0	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	0.96	-	-	-	-	-	-

Appendix A5. Analytical results for water quality samples from Boston area lakes, 1992-1998.

Parameter	Fickle Duck Lake						Reference Lake			
	03-Aug-95 1 m	05-Aug-96 ? m	25-Aug-96 ? m	23-Jul-97 1 m	26-Aug-97 1 m	19-Jul-98 1 m	22-Apr-98 2.5 m	23-Jul-97 1 m	27-Aug-97 1 m	22-Jul-98 1 m
Physical										
Conductivity (µS/cm)	60	73	79	89	63	54	228	38	52	32
pH	***6.10***	7.10	7.20	7.02	6.61	7.10	7.09	6.94	6.55	6.79
Total Diss. Solids (mg/L)	44	56	54	56	50	48	173	34	34	20
Total Susp. Solids (mg/L)	1	1	20	3	4	3	4	4	5	6
Turbidity (NTU)	3.9	1.2	30.0	3.6	2.7	5.0	7.1	2.0	3.5	3.9
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	8.0	17.0	22.0	24.1	20.7	19.1	81.9	11.6	14.7	11.8
Total Alkalinity	10.0	14.0	18.0	16.0	17.0	13.0	66.0	11.0	12.0	9.0
Chloride	10.5	11.7	10.2	12.4	8.5	7.3	30.0	4.5	4.6	3.5
Fluoride	0.04	0.05	0.05	0.08	0.03	0.06	0.12	0.03	0.06	0.04
Sulphate	1.1	0.8	2.1	1.0	2.0	1.0	8.0	1.0	1.0	1.0
Nutrients (mg/L)										
Dissolved Phosphorus	0.006	0.005	0.012	0.003	0.003	-	0.002	0.001	0.001	-
Total Phosphorus	0.014	0.012	***0.050***	0.016	0.013	-	0.018	0.008	0.021	-
Ammonia Nitrogen	0.020	<0.02	<0.005	0.003	0.009	-	0.021	0.002	0.014	-
Nitrate - nitrogen	0.006	<0.005	0.009	<0.001	<0.001	-	0.226	0.003	0.002	-
Nitrite - nitrogen	0.001	<0.001	<0.001	0.002	0.002	-	<0.001	<0.001	<0.001	-
Total Metals (µg/L)										
Aluminium	***141***	25	***346***	92	64	***122***	37	44	***109***	88
Antimony	0.10	<0.05	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	1.0	<1	1.0	0.3	0.3	0.2	0.8	0.2	0.3	0.2
Barium	3.97	3.26	7.05	-	-	-	20.00	<10	<10	<10
Beryllium	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-
Boron	3.0	5.0	<1	-	-	-	-	-	-	-
Cadmium	<0.2	***0.06***	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	4760	4720	6670	6660	5820	5130	21600	3170	3980	3110
Chromium	0.5	0.7	-	<1	<1	<1	***3.0***	<1	<1	<1
Cobalt	0.16	<0.1	0.10	<1	<1	<1	<1	<1	<1	<1
Copper	1.0	1.6	***2.3***	2.0	2.0	1.0	***30.0***	2.0	2.0	2.0
Cyanide	-	-	-	-	-	-	-	-	-	-
Iron	***450***	110	***650***	***360***	***390***	270	***1840***	240	230	240
Lead	0.40	0.12	0.20	***7.00***	***2.00***	<1	<1	***6.00***	<1	<1
Lithium	1	<1	-	-	-	-	-	-	-	-
Magnesium	1610	1460	1890	1970	1590	1500	6800	930	1270	1000
Manganese	2.4	0.4	6.3	<5	<5	<5	150.0	<5	<5	6.0
Mercury	<0.05	-	-	<0.05	-	<0.05	<0.05	-	<0.05	<0.05
Molybdenum	0.10	0.08	0.10	<1	<1	<1	<1	<1	<1	<1
Nickel	1.4	1.1	1.8	1.0	1.0	1.0	4.0	<1	<1	<1
Potassium	320	440	640	480	370	430	2250	360	440	440
Selenium	1.0	-	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.5
Silicon	-	430	2310	600	670	460	3380	290	240	240
Silver	0.01	<0.01	0.04	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	5450	4690	5240	5640	4180	3380	17000	2490	2650	2130
Strontium	23.1	29.2	30.7	37.0	30.0	32.0	59.0	16.0	19.0	17.0
Thallium	0.05	<0.05	<0.05	-	-	-	-	-	-	-
Tin	0.20	0.30	<1	-	-	-	-	-	-	-
Titanium	0.50	<1	18.00	-	-	-	-	-	-	-
Tungsten	0.10	-	-	-	-	-	-	-	-	-
Uranium	-	0.04	0.04	-	-	-	-	-	-	-
Vanadium	1.0	<1	<1	-	-	-	-	-	-	-
Zinc	7.0	1.0	2.0	<5	<5	<5	9.0	<5	<5	<5
Dissolved Metals (µg/L)										
Aluminium	53	12	76	38	32	-	-	19	17	-
Antimony	0.10	<0.05	0.05	<0.1	<0.1	-	-	<0.1	<0.1	-
Arsenic	1.0	<1	<1	0.3	0.3	-	-	0.2	0.2	-
Barium	3.56	3.15	3.90	<10	<10	-	-	<10	<10	-
Beryllium	-	-	-	-	-	-	-	-	-	-
Bismuth	-	-	-	-	-	-	-	-	-	-
Boron	1.0	4.0	<1	<100	<100	-	-	-	-	-
Cadmium	***0.20***	***0.06***	<0.05	<0.2	<0.2	-	-	<0.2	<0.2	-
Calcium	4270	4430	6210	6460	5740	-	-	3120	3870	-
Chromium	0.5	0.2	-	1.0	<1	-	-	<1	<1	-
Cobalt	0.08	<0.1	<0.1	<1	<1	-	-	<1	<1	-
Copper	0.9	1.1	1.5	2.0	2.0	-	-	2.0	1.0	-
Iron	150	60	150	180	210	-	-	130	70	-
Lead	0.10	<0.5	0.07	***2.00***	1.00	-	-	***2.00***	<1	-
Lithium	1	<1	-	<10	<10	-	-	-	-	-
Magnesium	1450	1420	1610	1930	1550	-	-	920	1220	-
Manganese	0.2	<0.05	0.3	<5	<5	-	-	<5	<5	-
Mercury	***0.05***	-	-	<0.05	-	-	-	-	<0.05	-
Molybdenum	0.10	<0.05	0.07	<1	<1	-	-	<1	<1	-
Nickel	1.0	0.6	1.2	1.0	1.0	-	-	<1	<1	-
Potassium	280	330	500	450	360	-	-	360	410	-
Selenium	1.0	-	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	-
Silicon	-	420	1040	490	600	-	-	250	130	-
Silver	0.01	<0.01	0.01	<0.1	<0.1	-	-	<0.1	<0.1	-
Sodium	4880	4460	4300	5410	4170	-	-	2490	2630	-
Strontium	21.5	28.5	25.4	35.0	29.0	-	-	16.0	19.0	-
Thallium	0.05	<0.05	<0.05	-	-	-	-	-	-	-
Tin	0.1	<0.1	<0.1	-	-	-	-	-	-	-
Titanium	0.5	<1	<1	-	-	-	-	-	-	-
Tungsten	0.10	-	-	-	-	-	-	-	-	-
Uranium	-	<0.01	<0.01	-	-	-	-	-	-	-
Vanadium	1.0	0.2	<0.1	<30	<30	-	-	-	-	-
Zinc	1.0	<1	2.0	<5	<5	-	-	<5	<5	-
Field WQ										
Temperature (°C)	7.5	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	12.2	-	-	-	-	-	-	-	-	-
pH	7.5	-	-	-	-	-	-	-	-	-
Secchi (m)	-	-	-	-	-	-	-	-	-	-
Chlorophyll a (mg/m)	-	-	-	-	-	-	-	-	-	-

Appendix A6. Analytical results for water quality samples from Boston area streams, 1992-2000.

Parameter	Aimaokatalok NE Inflow							Aimaokatalok Outflow		
	1-Aug-95	4-Aug-96	25-Aug-96	15-Jun-97	22-Jul-97	25-Aug-97	28-Jun-98	31-May-98	27-Jun-98	02-Aug-98
Physical										
Conductivity (µS/cm)	63	83	63	57	78	105	44	57	36	36
pH	***5.70***	7.00	6.90	***6.26***	6.71	6.84	6.74	6.88	6.70	6.88
Total Diss. Solids (mg/L)	52	56	75	43	50	62	26	38	19	35
Total Susp. Solids (mg/L)	5	<1	15	57	5	6	2	4	1	2
Turbidity (NTU)	0.6	3.0	6.4	26.3	6.4	6.3	4.7	1.0	2.5	1.1
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	14.0	13.0	16.0	11.3	17.3	20.2	11.4	13.6	9.5	10.0
Total Alkalinity	6.0	13.0	10.0	9.0	13.0	12.0	7.0	9.0	6.0	6.0
Chloride	12.8	16.0	8.7	9.8	14.3	19.0	8.1	8.8	6.1	5.7
Fluoride	0.05	0.06	0.07	0.03	0.04	0.10	0.05	0.07	0.02	0.03
Sulphate	1.2	1.2	2.0	<1	2.0	2.0	1.0	2.0	1.0	1.0
Nutrients (mg/L)										
Dissolved Phosphorus	0.006	0.006	0.016	0.009	0.002	0.001	-	0.008	-	-
Total Phosphorus	0.024	0.025	0.017	***0.041***	0.015	0.026	-	0.001	-	-
Ammonia Nitrogen	0.020	<0.020	<0.005	0.035	0.161	0.185	-	0.008	-	-
Nitrate	0.008	<0.005	0.005	0.006	0.006	0.010	-	0.045	-	-
Nitrite	0.001	<0.001	<0.001	0.005	0.011	0.005	-	<0.001	-	-
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)										
Aluminum	***183***	29	***231***	***368***	***126***	***155***	***177***	12	80	26
Antimony	0.10	<0.05	0.06	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	1.0	<1	2.0	0.3	0.6	0.4	0.2	0.1	0.2	0.1
Barium	3.34	2.02	5.86	<10	<10	<10	<10	<10	<10	<10
Beryllium	0.5	<0.5	<0.5	<5	<5	<5	<5	-	-	-
Bismuth	0.07	<0.5	<0.5	-	-	-	-	-	-	-
Boron	4.0	8.0	<1	-	-	-	-	-	-	-
Cadmium	<0.2	***0.14***	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	2580	2980	3620	2260	3300	3840	2140	2850	2180	1970
Chromium	0.5	0.7	-	1.0	<1	<1	<1	<1	<1	<1
Cobalt	0.08	<0.1	0.10	<1	<1	<1	<1	<1	<1	<1
Copper	0.5	1.5	***2.7***	1	2	2	1	1	***3***	<1
Iron	***470***	220	***420***	***990***	***780***	***590***	***430***	30	180	70
Lead	0.10	0.09	0.24	<1	<1	<1	<1	-	-	-
Lithium	1	<1	-	-	-	-	-	<1	<1	<1
Magnesium	1750	1800	2010	1620	2290	2750	1500	1700	1200	1200
Manganese	13.4	3.9	10.1	33.0	18.0	33.0	10.0	<5	17.0	7.0
Mercury	<0.05	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	0.10	0.16	0.10	<1	<1	<1	<1	<1	<1	<1
Nickel	0.7	1.0	1.8	<1	<1	<1	<1	<1	<1	<1
Potassium	920	810	670	910	900	890	520	750	630	590
Selenium	1.0	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8
Silicon	-	380	2570	1010	390	490	560	300	400	210
Silver	0.01	<0.01	0.06	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	7060	7500	4410	4530	7900	9840	4050	4430	3500	3120
Strontium	15	18	20	14	26	29	20	14	19	20
Thallium	0.05	<0.05	<0.05	-	-	-	-	-	-	-
Tin	0.2	0.7	<0.1	-	-	-	-	-	-	-
Titanium	2.2	1.0	9.0	20.0	-	-	<10	-	-	-
Tungsten	0.10	-	-	-	-	-	-	-	-	-
Uranium	-	0.03	0.05	-	-	-	-	-	-	-
Vanadium	1.0	<1	1.0	-	-	-	-	-	-	-
Zinc	7.0	***31.0***	6.0	<5	<5	<5	<5	<5	<5	<5
Dissolved Metals (µg/L)										
Aluminum	37	10	***156***	39	59	33	-	8	16	-
Antimony	0.10	<0.05	0.05	<0.1	<0.1	<0.1	-	<0.1	<0.1	-
Arsenic	1.0	<1	<1	0.2	0.4	0.4	-	0.1	0.1	-
Barium	2.2	1.8	3.8	<10	<10	<10	-	<10	<10	-
Beryllium	0.5	<0.5	<0.5	<5	<5	<5	-	<5	<5	-
Bismuth	0.07	<0.5	<0.5	<100	<100	<100	-	-	-	-
Boron	4.0	7.0	<1	<100	<100	<100	-	-	-	-
Cadmium	***0.20***	***0.06***	<0.05	<0.2	<0.2	<0.2	-	<0.2	<0.2	-
Calcium	2520	2510	3600	2160	3210	3700	-	2740	1890	-
Chromium	0.5	0.2	-	<1	<1	<1	-	<1	<1	-
Cobalt	0.08	<0.1	<0.1	<1	<1	<1	-	<1	<1	-
Copper	0.5	1.0	***2.1***	1.0	2.0	1.0	-	1.0	<1	-
Iron	120	100	210	***320***	***420***	130	-	20	60	-
Lead	0.10	<0.05	<0.05	<1	<1	<1	-	<1	<1	-
Lithium	1	<1	-	<10	<10	<10	-	<10	<10	-
Magnesium	1750	1740	1800	1440	2240	2660	-	1700	1200	-
Manganese	0.2	1.2	4.1	<5	<5	<5	-	<5	11.0	-
Mercury	***0.05***	-	-	-	-	<0.05	-	<0.05	<0.05	-
Molybdenum	0.10	0.16	0.05	<1	<1	<1	-	<1	<1	-
Nickel	0.7	0.5	1.7	<1	<1	<1	-	<1	<1	-
Potassium	850	660	580	810	850	830	-	740	580	-
Selenium	1.0	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-
Silicon	-	340	2430	450	300	260	-	290	260	-
Silver	0.01	<0.01	<0.01	<0.1	<0.1	<0.1	-	<0.1	<0.1	-
Sodium	7010	7490	4400	4500	7740	9550	-	4450	2960	-
Strontium	14.8	17.9	18.2	12.0	26.0	28.0	-	14.0	19.0	-
Thallium	0.05	<0.05	<0.05	<100	<100	<100	-	-	-	-
Tin	0.2	<0.1	<0.1	<30	<30	<30	-	-	-	-
Titanium	2.0	<1	1.0	<10	<10	<10	-	-	-	-
Tungsten	0.1	-	-	-	-	-	-	-	-	-
Uranium	-	0.02	<0.01	-	-	-	-	-	-	-
Vanadium	1.0	0.1	<0.1	<30	<30	<30	-	-	-	-
Zinc	2.0	<1	5.0	<5	<5	<5	-	<5	<5	-
Field WQ										
Temperature (°C)	11.9	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	11.9	-	-	-	-	-	-	-	-	-
pH	7.1	-	-	-	-	-	-	-	-	-

Appendix A6. Analytical results for water quality samples from Boston area streams, 1992-2000.

Parameter	Aimaokatalok River					Stickleback Outflow			
	17-Jun-97	31-May-98	27-Jun-98	21-Jul-97	24-Aug-97	Jun-93	22-Jun-96	15-Jun-97	26-Jun-98
Physical									
Conductivity (µS/cm)	34	75	19	27	37	149	92	202	102
pH	***6.08***	6.85	6.65	***6.32***	6.53	7.16	7.10	7.06	6.96
Total Diss. Solids (mg/L)	23	52	11	18	20	119	58	113	70
Total Susp. Solids (mg/L)	19	4	<1	<1	2	-	<1	4	2
Turbidity (NTU)	4.1	0.4	1.3	0.8	1.0	1.0	1.1	1.3	0.9
Dissolved Anions (mg/L)									
Hardness ($CaCO_3$)	7.5	22.0	5.7	6.7	7.8	44.3	23.0	59.0	31.0
Total Alkalinity	6.0	14.0	4.0	5.0	5.0	41.2	19.0	40.0	14.0
Chloride	4.6	10.2	3.2	4.3	4.6	-	15.0	36.7	21.4
Fluoride	0.03	0.09	0.03	0.03	0.05	-	0.04	0.05	0.03
Sulphate	1.0	3.0	<1	1.0	1.0	2.3	<1	<1	<1
Nutrients (mg/L)									
Dissolved Phosphorus	0.004	0.002	-	0.002	0.002	-	0.008	0.005	-
Total Phosphorus	0.012	0.013	-	0.004	0.006	0.012	0.008	0.020	-
Ammonia Nitrogen	0.022	0.023	-	0.041	0.023	<0.005	0.015	0.020	-
Nitrate	0.020	0.077	-	0.017	0.015	<0.005	<0.005	0.010	-
Nitrite	0.004	0.001	-	0.003	0.010	<0.001	<0.001	0.006	-
Total Organic Carbon	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)									
Aluminum	74	25	32	17	14	-	13	6	15
Antimony	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	<0.1
Arsenic	0.2	0.2	0.1	0.1	<0.1	-	<2	0.3	0.2
Barium	<10	<10	<10	<10	<10	<10	3.18	<10	<10
Beryllium	-	-	-	-	-	<5	<0.5	<5	<5
Bismuth	-	-	-	-	-	-	<0.5	-	-
Boron	-	-	-	-	-	-	6.0	-	-
Cadmium	<0.2	<0.2	<0.2	<0.2	<0.2	<10	***0.09***	<0.2	<0.2
Calcium	1350	4990	1100	1290	1480	10000	5920	14300	7920
Chromium	<1	<1	<1	<1	<1	-	0.6	<1	<1
Cobalt	<1	<1	<1	<1	<1	-	0.20	<1	<1
Copper	1	2	<1	1	<1	-	0.5	<1	<1
Iron	***550***	240	120	170	90	96	50	170	60
Lead	<1	<1	<1	<1	<1	-	<0.05	<1	<1
Lithium	-	-	-	-	-	<15	2	<10	<10
Magnesium	1010	2300	700	870	1040	4700	2330	5460	2700
Manganese	34.0	57.0	<5	<5	<5	207.0	12.5	114.0	28.0
Mercury	-	<0.05	<0.05	-	<0.05	-	-	-	<0.05
Molybdenum	<1	<1	<1	<1	<1	-	<0.05	<1	<1
Nickel	<1	1.0	<1	<1	<1	-	0.5	<1	<1
Potassium	640	1970	370	430	510	-	950	1530	830
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Silicon	550	520	150	100	110	-	150	510	180
Silver	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.01	<0.1	<0.1
Sodium	2200	4420	1520	2280	2260	13700	5980	11500	5000
Strontium	8	17	15	13	14	23	29	70	57
Thallium	-	-	-	-	-	-	<0.05	-	-
Tin	-	-	-	-	-	-	<0.1	-	-
Titanium	-	-	-	-	-	<10	<1	<10	<10
Tungsten	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	<0.01	-	-
Vanadium	-	-	-	-	-	-	<1	-	-
Zinc	<5	<5	<5	<5	<5	<5	1.0	<5	<5
Dissolved Metals (µg/L)									
Aluminum	17	-	-	8	<5	-	<1	<5	-
Antimony	<0.1	-	-	<0.1	<0.1	-	<0.05	<0.1	-
Arsenic	0.1	-	-	0.1	0.1	-	<1	0.3	-
Barium	<10	-	-	<10	<10	-	2.9	<10	-
Beryllium	-	-	-	-	-	-	<0.5	<5	-
Bismuth	-	-	-	-	-	-	<0.5	<100	-
Boron	-	-	-	-	-	-	6.0	<100	-
Cadmium	<0.2	-	-	<0.2	<0.2	-	***0.09***	<0.2	-
Calcium	1350	-	-	1240	1450	-	5680	14300	-
Chromium	<1	-	-	<1	<1	-	0.3	<1	-
Cobalt	<1	-	-	<1	<1	-	<0.1	<1	-
Copper	<1	-	-	<1	<1	-	0.4	<1	-
Iron	230	-	-	90	10	-	20	20	-
Lead	<1	-	-	<1	<1	-	<0.05	<1	-
Lithium	-	-	-	-	-	-	2	<10	-
Magnesium	990	-	-	860	1010	-	2140	5460	-
Manganese	6.0	-	-	<5	<5	-	1.6	<5	-
Mercury	-	-	-	-	<0.05	-	-	-	-
Molybdenum	<1	-	-	<1	<1	-	<0.05	<1	-
Nickel	<1	-	-	<1	<1	-	0.2	<1	-
Potassium	560	-	-	420	470	-	950	1530	-
Selenium	<0.5	-	-	<0.5	<0.5	-	<0.5	<0.5	-
Silicon	430	-	-	90	90	-	150	510	-
Silver	<0.1	-	-	<0.1	<0.1	-	<0.01	<0.1	-
Sodium	2140	-	-	2170	2240	-	5240	11500	-
Strontium	8.0	-	-	13.0	14.0	-	30.2	70.0	-
Thallium	-	-	-	-	-	-	<0.05	<100	-
Tin	-	-	-	-	-	-	<0.1	<30	-
Titanium	-	-	-	-	-	-	<1	<10	-
Tungsten	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	<0.01	-	-
Vanadium	-	-	-	-	-	-	<0.1	<30	-
Zinc	<5	-	-	<5	<5	-	1.0	<5	-
Field WQ									
Temperature (°C)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-

Appendix A6. Analytical results for water quality samples from Boston area streams, 1992-2000.

Parameter	Stickleback Outflow								Fickle Duck Outflow	
	Aug-92	Aug-93	Aug-94	31-Jul-95	05-Aug-96	25-Aug-96	21-Jul-97	25-Aug-97	Jun-93	22-Jun-96
Physical										
Conductivity (µS/cm)	35	120	170	160	179	284	186	203	40	37
pH	***6.36***	7.10	8.10	***5.80***	7.30	7.50	7.10	7.32	6.95	7.10
Total Diss. Solids (mg/L)	28	84	110	120	-	123	130	119	32	24
Total Susp. Solids (mg/L)	-	-	6	1	<1	1	2	3	-	1
Turbidity (NTU)	1.8	4.0	6.3	0.8	0.6	2.0	0.6	1.2	2.4	2.4
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	9.2	36.4	64.0	48.0	47.0	50.2	53.2	59.2	13.3	9.0
Total Alkalinity	5.5	32.2	53.0	26.0	32.0	30.0	32.0	28.0	9.4	10.0
Chloride	-	17.0	35.0	36.4	35.9	41.2	37.0	36.9	-	4.3
Fluoride	-	0.03	0.05	0.04	0.06	0.05	0.04	0.09	-	0.04
Sulphate	<1	1.8	<0.5	0.3	0.3	0.4	2.0	<1	3.3	<1
Nutrients (mg/L)										
Dissolved Phosphorus	-	0.007	0.008	0.004	0.001	0.002	0.002	<0.001	-	0.008
Total Phosphorus	-	0.013	0.022	0.004	0.008	0.019	0.006	0.008	0.016	0.016
Ammonia Nitrogen	-	0.027	0.012	0.140	<0.020	<0.005	0.382	0.390	0.015	0.012
Nitrate	-	0.025	0.013	0.015	0.021	<0.005	0.005	0.002	<0.005	<0.005
Nitrite	-	<0.001	<0.001	0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)										
Aluminum	-	-	33	11	<1	43	<5	17	-	65
Antimony	-	-	<0.2	0.10	<0.05	0.06	<0.1	<0.1	-	<0.05
Arsenic	0.4	-	3.0	1.0	<1	1.0	0.4	0.4	-	<1
Barium	<10	-	5.22	4.32	5.17	4.85	<10	<10	-	2.51
Beryllium	<5	-	1.7	0.5	<0.5	<0.5	<5	<5	-	<0.5
Bismuth	-	-	<0.03	0.06	<0.05	<0.5	-	-	-	<0.5
Boron	-	-	32.2	15.0	16.0	17.0	-	-	-	4.0
Cadmium	<0.2	-	***0.12***	<0.2	***0.06***	<0.05	<0.2	<0.2	-	<0.05
Calcium	2080	-	20300	13400	12500	12000	14000	14600	3740	2860
Chromium	-	-	0.8	0.9	0.5	-	<1	<1	-	1.0
Cobalt	-	-	0.88	0.22	<0.1	0.10	<1	<1	-	<0.1
Copper	***3***	-	1.6	1.2	0.2	0.7	<1	<1	-	1.1
Iron	101	-	***1640***	120	30	120	90	100	222	210
Lead	1.00	-	0.38	0.10	<0.5	0.14	<1	<1	-	0.06
Lithium	<15	-	63	2	3	-	<10	<10	-	<1
Magnesium	982	-	10300	5120	4250	5050	4880	5330	967	863
Manganese	<5	-	317.0	12.1	2.7	9.2	10.0	12.0	<5	1.3
Mercury	-	-	<0.05	<0.05	-	-	-	<0.05	-	-
Molybdenum	<1	-	<0.16	0.10	0.06	<0.05	<1	<1	-	0.08
Nickel	-	-	2.6	1.2	0.4	0.1	<1	<1	-	0.6
Potassium	-	-	1800	2140	1250	1450	1530	1440	-	290
Selenium	-	-	<1	1.0	-	<0.5	<0.5	<0.5	-	<0.6
Silicon	303	-	-	-	380	90	210	250	-	340
Silver	-	-	<0.01	0.02	<0.01	0.04	<0.1	<0.1	-	<0.01
Sodium	2400	-	18500	12700	10100	11400	11200	11000	2500	2050
Strontium	6	-	35	64	57	59	90	93	10	10
Thallium	-	-	<0.03	<0.05	<0.05	<0.05	-	-	-	<0.05
Tin	-	-	<0.09	0.2	<0.1	<0.1	-	-	-	<0.1
Titanium	<10	-	0.7	0.5	<1	6.0	<10	<10	-	1.0
Tungsten	-	-	0.08	0.10	-	-	-	-	-	-
Uranium	-	-	-	-	<0.01	0.05	-	-	-	<0.01
Vanadium	-	-	<1	1.0	<1	<1	-	-	-	<1
Zinc	<5	-	5.8	7.0	<1	5.0	<5	<5	<5	2.0
Dissolved Metals (µg/L)										
Aluminum	-	-	1	2	<1	<1	7	<5	-	16
Antimony	-	-	<0.2	0.10	<0.05	<0.05	<0.1	<0.1	-	<0.05
Arsenic	-	-	1.0	1.0	<1	<1	0.4	0.3	-	<1
Barium	-	-	4.5	4.2	5.2	4.0	<10	<10	-	2.1
Beryllium	-	-	<0.5	0.5	<0.5	<0.5	<5	<5	-	<0.5
Bismuth	-	-	<0.03	0.05	<0.5	<0.5	<100	<100	-	<0.5
Boron	-	-	5.2	6.0	15.0	15.0	<100	<100	-	4.0
Cadmium	-	-	<0.07	***0.20***	<0.05	<0.05	<0.2	<0.2	-	<0.05
Calcium	-	-	14900	11700	11900	11800	13500	14800	-	2620
Chromium	-	-	0.8	0.9	0.1	-	<1	<1	-	0.2
Cobalt	-	-	<0.06	0.08	<0.1	<0.1	<1	<1	-	<0.1
Copper	-	-	<0.4	0.5	0.1	0.2	1.0	<1	-	0.8
Iron	-	-	136	10	<1	<1	<10	<10	-	70
Lead	-	-	<0.06	0.10	<0.5	<0.05	<1	<1	-	<0.05
Lithium	-	-	9	1	3	-	<10	<10	-	<1
Magnesium	-	-	6410	4450	4200	5030	4730	5370	-	634
Manganese	-	-	82.9	0.2	0.2	<0.05	<5	<5	-	0.4
Mercury	-	-	<0.05	***0.05***	-	-	-	<0.05	-	-
Molybdenum	-	-	<0.16	0.10	<0.05	<0.05	<1	<1	-	<0.05
Nickel	-	-	0.8	1.1	0.4	0.1	<1	<1	-	0.5
Potassium	-	-	1110	1500	1150	1420	1470	1400	-	290
Selenium	-	-	<1	1.0	-	<0.5	<0.5	<0.5	-	<0.5
Silicon	-	-	-	-	350	70	200	220	-	180
Silver	-	-	<0.01	0.01	<0.01	<0.01	<0.1	<0.1	-	<0.01
Sodium	-	-	11000	11200	9950	10600	11200	11200	-	1790
Strontium	-	-	31.6	58.5	56.5	55.7	87.0	93.0	-	9.8
Thallium	-	-	<0.03	0.05	<0.05	<0.05	<100	<100	-	<0.05
Tin	-	-	<0.09	0.1	<0.1	<0.1	<30	<30	-	<0.1
Titanium	-	-	0.6	0.5	<1	<1	<10	<10	-	<1
Tungsten	-	-	0.1	0.1	-	-	-	-	-	-
Uranium	-	-	-	-	<0.01	0.02	-	-	-	<0.01
Vanadium	-	-	<1	1.0	<0.1	0.4	<30	<30	-	<0.1
Zinc	-	-	<1	2.0	<1	<1	<5	<5	-	1.0
Field WQ										
Temperature (°C)	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-	-

Appendix A6. Analytical results for water quality samples from Boston area streams, 1992-2000.

Parameter	Fickle Duck Outflow									
	15-Jun-97	26-Jun-98	Aug-92	Aug-93	Aug-94	31-Jul-95	05-Aug-96	25-Aug-96	21-Jul-97	25-Aug-97
Physical										
Conductivity (µS/cm)	43	34	33	57	200	62	74	78	63	87
pH	***6.31***	6.84	6.60	7.17	6.80	***5.70***	7.00	7.20	6.89	6.78
Total Diss. Solids (mg/L)	23	19	27	35	160	53	70	64	54	60
Total Susp. Solids (mg/L)	10	1	-	-	27	3	74	18	2	5
Turbidity (NTU)	5.9	2.2	1.9	6.2	13.0	4.1	40.0	25.0	2.3	6.8
Dissolved Anions (mg/L)										
Hardness ($CaCO_3$)	13.6	13.7	8.7	19.6	72.0	18.0	17.0	23.0	18.9	25.3
Total Alkalinity	12.0	10.0	5.4	14.4	79.0	14.0	14.0	18.0	18.0	16.0
Chloride	3.2	3.4	-	7.9	23.0	10.0	11.6	9.6	8.5	11.9
Fluoride	0.03	0.02	-	0.03	0.05	0.04	0.05	0.05	0.04	0.08
Sulphate	2.0	<1	1.5	1.6	0.5	0.9	0.8	2.3	2.0	1.0
Nutrients (mg/L)										
Dissolved Phosphorus	0.008	-	-	0.007	0.010	0.004	0.006	0.018	0.002	0.001
Total Phosphorus	0.015	-	-	0.015	0.010	0.018	***0.039***	***0.036***	0.010	0.017
Ammonia Nitrogen	0.030	-	-	0.015	0.099	0.100	0.110	<0.005	0.133	0.397
Nitrate	0.002	-	-	<0.005	<0.005	0.006	<0.005	<0.005	<0.001	<0.001
Nitrite	0.007	-	-	0.005	0.002	0.001	<0.001	<0.001	0.010	0.010
Total Organic Carbon	-	-	-	-	-	-	-	-	-	-
Total Metals (µg/L)										
Aluminum	***136***	72	-	-	72	***132***	43	***387***	49	***226***
Antimony	<0.1	<0.1	-	-	<0.2	0.10	<0.05	<0.05	<0.1	<0.1
Arsenic	0.1	0.2	0.5	-	<1	1.0	<1	2.0	0.3	0.3
Barium	<10	<10	-	-	6.50	4.56	4.32	7.68	<10	<10
Beryllium	-	-	-	-	<0.5	0.5	<0.5	<0.5	-	-
Bismuth	-	-	-	-	<0.03	0.09	<0.5	<0.5	-	-
Boron	-	-	-	-	10.7	8.0	5.0	<1	-	-
Cadmium	<0.2	<0.2	<0.2	-	<0.07	<0.2	***0.14***	<0.05	<0.2	<0.2
Calcium	4020	3920	1840	-	28300	5520	4810	6630	5540	6710
Chromium	<1	<1	-	-	1.0	0.7	0.8	-	<1	<1
Cobalt	<1	<1	-	-	0.96	0.08	<0.1	0.40	<1	<1
Copper	1	1	2	-	***3.5***	0.9	1.3	2	1	2
Iron	***390***	240	76	-	***2320***	***890***	180	***640***	***440***	***580***
Lead	<1	<1	<1	-	0.31	0.10	<0.5	0.15	<1	<1
Lithium	<10	<10	-	-	-	1	<1	-	-	-
Magnesium	980	1000	995	-	9560	1830	1460	1870	1520	2120
Manganese	9.0	<5	<5	-	118.0	8.7	0.2	5.9	6.0	5.0
Mercury	-	<0.05	-	-	<0.05	<0.05	-	-	-	<0.05
Molybdenum	<1	<1	<1	-	<0.16	0.10	0.13	0.23	<1	<1
Nickel	<1	<1	-	-	3.3	2.2	0.8	2.0	1.0	1.0
Potassium	720	270	-	-	3030	630	360	680	360	510
Selenium	<0.5	<0.5	-	-	<1	1.0	-	<0.5	<0.5	<0.5
Silicon	830	470	277	-	-	-	490	2590	500	1320
Silver	<0.1	<0.1	-	-	0.01	0.01	0.01	0.06	<0.1	<0.1
Sodium	2270	1740	2400	-	9430	5320	4620	4070	4120	5560
Strontium	13	23	6	-	67	24	27	29	28	35
Thallium	-	-	-	-	<0.03	0.05	<0.05	<0.05	-	-
Tin	-	-	-	-	<0.09	0.2	0.4	<0.1	-	-
Titanium	-	-	-	-	2.7	3.4	1.0	21.0	-	-
Tungsten	-	-	-	-	0.07	0.10	-	-	-	-
Uranium	-	-	-	-	-	-	0.05	<0.01	-	-
Vanadium	-	-	-	-	<1	1.0	<1	1.0	-	-
Zinc	<5	<5	<5	-	4.5	5.0	5.0	2.0	<5	<5
Dissolved Metals (µg/L)										
Aluminum	27	-	-	-	<1	28	23	98	24	53
Antimony	<0.1	-	-	-	<0.2	0.10	<0.05	<0.05	<0.1	<0.1
Arsenic	0.1	-	-	-	<1	1.0	<1	<1	0.3	0.3
Barium	<10	-	-	-	4.8	3.3	4.0	4.0	<10	<10
Beryllium	<5	-	-	-	<0.5	0.5	<0.5	<0.5	<5	<5
Bismuth	<100	-	-	-	<0.03	0.06	<0.5	<0.5	<100	<100
Boron	<100	-	-	-	<1.2	1.0	3.0	<1	<100	<100
Cadmium	<0.2	-	-	-	<0.07	***0.20***	***0.08***	<0.05	<0.2	<0.2
Calcium	3890	-	-	-	19600	4820	4570	6330	5220	6710
Chromium	<1	-	-	-	1.0	0.5	0.2	-	<1	<1
Cobalt	<1	-	-	-	<0.06	0.08	<0.1	<0.1	<1	<1
Copper	1.0	-	-	-	0.5	0.5	1.2	1.5	2.0	2.0
Iron	150	-	-	-	115	250	120	170	250	260
Lead	<1	-	-	-	<0.06	0.10	<0.5	0.05	<1	<1
Lithium	<10	-	-	-	<5	1	<1	-	<10	<10
Magnesium	940	-	-	-	5710	1560	1390	1630	1430	2080
Manganese	<5	-	-	-	1.1	0.2	<0.05	0.3	<5	<5
Mercury	-	-	-	-	<0.05	***0.05***	-	-	-	<0.05
Molybdenum	<1	-	-	-	<0.16	0.10	0.12	0.18	<1	<1
Nickel	<1	-	-	-	1.8	1.1	0.8	1.6	1.0	1.0
Potassium	690	-	-	-	1840	330	330	500	360	440
Selenium	<0.5	-	-	-	<1	1.0	-	<0.5	<0.5	<0.5
Silicon	630	-	-	-	-	-	470	1190	460	970
Silver	<0.1	-	-	-	<0.01	0.01	<0.01	<0.01	<0.1	<0.1
Sodium	1710	-	-	-	5180	4550	4360	4040	4090	5340
Strontium	13.0	-	-	-	56.5	22.6	23.3	24.8	27.0	34.0
Thallium	<100	-	-	-	<0.03	0.05	<0.05	<0.05	<100	<100
Tin	<30	-	-	-	<0.09	0.1	<0.1	<0.1	<30	<30
Titanium	<10	-	-	-	<0.5	0.5	<1	<1	<10	<10
Tungsten	-	-	-	-	<0.07	0.1	-	-	-	-
Uranium	-	-	-	-	-	-	0.04	<0.01	-	-
Vanadium	<30	-	-	-	<1	1.0	0.3	<0.7	<30	<30
Zinc	<5	-	-	-	<1	1.0	<1	2.0	<5	<5
Field WQ										
Temperature (°C)	-	-	-	-	8.8	6.0	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	12.4	***8.2***	-	-	-	-
pH	-	-	-	-	6.8	6.7	-	-	-	-

Appendix A6. Analytical results for water quality samples from Boston area streams, 1992-2000.

Parameter	Koignuk River				Reference Outflow				
	03-Jun-98	20-Jun-00	03-Aug-98	15-Sep-00	01-Jun-98	28-Jun-98	21-Jul-97	25-Aug-97	01-Aug-98
Physical									
Conductivity (µS/cm)	90	61	65	169	37	27	39	56	38
pH	6.88	7.21	6.82	7.39	6.54	6.69	6.79	6.71	6.81
Total Diss. Solids (mg/L)	74	47	48	101	38	15	32	32	34
Total Susp. Solids (mg/L)	12	10	2	6	4	<1	4	3	3
Turbidity (NTU)	36.3	10.4	3.2	8.5	3.1	1.8	2.4	3.5	2.9
Dissolved Anions (mg/L)									
Hardness ($CaCO_3$)	22.7	16.2	13.7	36.4	12.0	10.4	12.7	17.4	14.8
Total Alkalinity	11.0	9.0	8.0	14.0	10.0	8.0	11.0	13.0	12.0
Chloride	14.9	9.1	14.9	35.0	3.4	3.0	4.1	4.6	3.0
Fluoride	0.09	0.04	0.05	0.06	0.02	0.03	0.03	0.07	0.06
Sulphate	4.0	2.0	2.0	9.0	1.0	<1	1.0	2.0	1.0
Nutrients (mg/L)									
Dissolved Phosphorus	0.007	-	-	-	0.007	-	0.001	<0.001	-
Total Phosphorus	***0.051***	-	-	0.014	0.026	-	0.008	0.016	-
Ammonia Nitrogen	0.020	0.031	-	0.011	<0.005	-	0.132	0.184	-
Nitrate	0.012	0.009	-	<0.005	<0.005	-	0.003	0.004	-
Nitrite	0.001	0.001	-	<0.001	0.002	-	0.001	0.001	-
Total Organic Carbon	-	6.5	-	5.7	-	-	-	-	-
Total Metals (µg/L)									
Aluminum	***1400***	***429***	***100***	***282***	38	78	42	***133***	47
Antimony	<0.1	<0.05	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	0.4	0.2	0.3	0.3	0.4	0.2	0.4	0.4	0.5
Barium	20.00	6.40	<10	6.23	<10	<10	<10	<10	<10
Beryllium	<5	<0.5	<5	<0.5	<5	<5	<5	<5	<5
Bismuth	-	<0.5	-	<0.5	-	-	-	-	-
Boron	-	5.0	-	8.0	-	-	-	-	-
Cadmium	<0.2	<0.05	<0.2	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium	4070	3450	2610	6630	3160	2830	3570	4660	4010
Chromium	***3.0***	0.9	<1	0.7	<1	<1	<1	<1	<1
Cobalt	<1	0.30	<1	0.20	<1	<1	<1	<1	<1
Copper	***3***	1.5	1	1.6	2	1	2	2	2
Iron	***1200***	***560***	140	***360***	***410***	140	280	***320***	***420***
Lead	<1	0.24	<1	0.23	<1	<1	<1	<1	<1
Lithium	-	1	-	2	-	-	-	-	-
Magnesium	3100	1900	1700	4800	1000	800	990	1410	1200
Manganese	41.0	23.7	9.0	11.5	158.0	<5	6.0	6.0	13.0
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05
Molybdenum	<1	0.06	<1	0.09	<1	<1	<1	<1	<1
Nickel	2.0	1.1	<1	0.9	<1	<1	<1	<1	<1
Potassium	1940	-	650	1350	2450	320	370	510	350
Selenium	0.5	<1	0.6	<1	<0.5	<0.5	<0.5	<0.5	0.6
Silicon	3790	-	300	-	330	290	200	520	230
Silver	<0.1	0.02	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	9000	5000	6000	14900	1680	1610	2370	2620	2200
Strontium	22	-	24	-	6	15	16	19	20
Thallium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	70.0	-	<10	-	-	-	-	-	-
Tungsten	-	-	-	-	-	-	-	-	-
Uranium	-	0.05	-	0.05	-	-	-	-	-
Vanadium	-	<1	-	<1	-	-	-	-	-
Zinc	<5	2.0	<5	2.0	7.0	<5	<5	<5	<5
Dissolved Metals (µg/L)									
Aluminum	-	-	-	-	-	-	16	29	-
Antimony	-	-	-	-	-	-	<0.1	<0.1	-
Arsenic	-	-	-	-	-	-	0.3	0.4	-
Barium	-	-	-	-	-	-	<10	<10	-
Beryllium	-	-	-	-	-	-	<5	<5	-
Bismuth	-	-	-	-	-	-	-	-	-
Boron	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	<0.2	<0.2	-
Calcium	-	-	-	-	-	-	3510	4650	-
Chromium	-	-	-	-	-	-	<1	<1	-
Cobalt	-	-	-	-	-	-	<1	<1	-
Copper	-	-	-	-	-	-	1.0	2.0	-
Iron	-	-	-	-	-	-	140	100	-
Lead	-	-	-	-	-	-	<1	<1	-
Lithium	-	-	-	-	-	-	-	-	-
Magnesium	-	-	-	-	-	-	970	1420	-
Manganese	-	-	-	-	-	-	<5	<5	-
Mercury	-	-	-	-	-	-	-	<0.05	-
Molybdenum	-	-	-	-	-	-	<1	<1	-
Nickel	-	-	-	-	-	-	<1	<1	-
Potassium	-	-	-	-	-	-	350	490	-
Selenium	-	-	-	-	-	-	<0.5	<0.5	-
Silicon	-	-	-	-	-	-	160	350	-
Silver	-	-	-	-	-	-	<0.1	<0.1	-
Sodium	-	-	-	-	-	-	2320	2590	-
Strontium	-	-	-	-	-	-	16.0	19.0	-
Thallium	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-
Titanium	-	-	-	-	-	-	-	-	-
Tungsten	-	-	-	-	-	-	-	-	-
Uranium	-	-	-	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-	-	-	-
Zinc	-	-	-	-	-	-	<5	<5	-
Field WQ									
Temperature (°C)	-	-	-	-	-	-	-	-	-
Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-
pH	-	-	-	-	-	-	-	-	-

Appendix A7. Analytical results for water quality samples from marine stations in Hope Bay, 1997-1998.

Parameter	Hope Bay							
	Station 1 23-Aug-97 1 m	**Station 1** 23-Aug-97 15m	**Station 2** 23-Aug-97 1 m	**Station 3** 23-Aug-97 1 m	**Station 1** 21-Jul-98 1 m	**Station 1** 21-Jul-98 5 m	**Station 2** 21-Jul-98 1 m	**Station 3** 21-Jul-98 1 m
Physical								
Conductivity (µS/cm)	32 500	-	15 300	34 100	27 200	48 800	34 900	42 500
pH	7.73	-	7.70	7.36	7.87	7.88	7.90	7.91
Total Dissolved Solids (mg/L)	21 700	-	11 900	17 800	21 700	25 600	18 300	22 500
Total Suspended Solids (mg/L)	4	-	2	10	9	21	10	15
Turbidity (NTU)	0.5	-	1.5	1.9	0.6	1.1	2.1	2.6
Salinity (‰)	19	-	10	-	20	-	-	-
Dissolved Anions (mg/L)		-						
Hardness ($CaCO_3$)	3 890	-	2 030	2 530	3 860	4 430	2 980	4 140
Total Alkalinity	90	-	60	80	90	103	81	94
Chloride	12 100	-	6 310	10 300	11 600	14 800	9 880	12 300
Fluoride	0.66	-	0.42	0.54	0.66	0.70	0.51	0.28
Sulphate	1 560	-	630	1 080	1 590	1 420	1 080	1 330
Nutrients (mg/L)		-						
Dissolved Phosphorus	-	-	-	0.0046	-	0.0178	0.0112	0.0112
Total Phosphorus	-	-	-	0.0180	-	0.0280	0.0180	0.0230
Ammonia Nitrogen	-	-	-	0.0086	-	0.0104	0.0037	0.0036
Nitrate - nitrogen	-	-	-	0.0039	-	0.0016	0.0008	0.0006
Nitrite - nitrogen	-	-	-	0.0009	-	<0.001	<0.001	<0.001
Dissolved Metals (µg/L)								
Antimony	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1
Arsenic	1.0	0.5	0.4	0.4	0.6	0.8	0.4	0.6
Cadmium	0.03	0.03	0.02	0.03	0.03	0.04	0.03	0.04
Calcium	243 000	233 000	128 000	159 000	241 000	287 000	194 000	272 000
Chromium	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Copper	0.64	0.49	0.64	0.71	0.49	0.59	0.81	0.79
Iron	<10	<10	<10	<10	<10	<10	10	<10
Lead	<0.05	<0.05	<0.05	0.09	0.40	0.11	0.18	0.22
Magnesium	796 000	766 000	415 000	517 000	792 000	903 000	607 000	841 000
Manganese	1.58	1.65	1.88	1.05	1.58	0.95	1.09	1.55
Mercury	0.01	0.01	0.01	0.02	0.02	<0.01	<0.01	<0.01
Molybdenum	6	7	4	6	8	9	5	7
Nickel	0.55	0.57	0.51	0.51	0.56	0.67	0.57	0.71
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	<1	<1	<1	<1	<1	<1	<1	<1
Uranium	1.22	1.62	0.86	1.12	0.59	0.81	0.88	1.33
Zinc	<0.5	0.5	<0.5	0.5	0.5	0.9	1.2	2.3

APPENDIX B

PRIMARY PRODUCERS

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	AIMAOKATALOK LAKE																	
	Aug-93	Aug-94		Aug-95			04-Aug-96			04-Aug-96			24-Aug-96			24-Aug-96		
	WQ5	WQ4	WQ5	WQ5	WQ9		Station 5			Station 6			Station 5			Station 6		
					0 m	5 m	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta																		
Centrales																		
Cyclotella glomerata				290.1	221.9	304.4												
Cyclotella	91.0	79.6	19.9	11.4		19.9	5.7	8.5	2.8	34.1	11.4	11.4	85.3	79.6	39.8	102.4	68.3	53.3
Melosira granulata v. angustissima																		
Melosira italica																88.2		
Melosira	*	45.5	*	5.7	56.9	28.4	2.8	<2.8	8.5	17.1	11.4	<2.8	<5.7	79.6	<2.8		37.0	88.9
Rhizosolenia																		
Pennales																		
Achnanthes minutissima				5.7	**								34.1	22.8	14.2	14.2	<2.8	<17.8
Achnanthes	22.8	17.1	14.2			**	5.7	2.8	11.4	<5.7	<5.7	2.8						<17.8
Amphora	*					**	<2.8	<2.8	<2.8				11.4			<2.8	<2.8	<17.8
Asterionella formosa				**	5.7	**	11.4	22.8	8.5	45.5	11.4	8.5	250.3	233.2	156.4	358.4	100.0	426.7
Asterionella	250.3	119.5	19.9															
Ceratoneis arcus					**	**												
Ceratoneis	*	*	*									<2.8	<5.7		<2.8	<2.8	<2.8	<17.8
Cocconeis placentula																		
Cocconeis	*	*						2.8	<2.8	<5.7		<2.8			<2.8		<2.8	
Cymatopleura			*						<2.8				<5.7	<5.7				<17.8
Cymbella minuta																		
Cymbella	11.4	11.4	2.8		**		<2.8	<2.8	<2.8	<5.7	<5.7	<2.8	34.1	34.1	<2.8	5.7	2.8	<17.8
Diatoma elongatum				39.8	11.4	**												
Diatoma tenue v. elongatum																		
Diatoma							5.7	<2.8	<2.8		<5.7	<2.8	<5.7	<5.7				<17.8
Diploneis decipiens																		
Epithemia sorex					**													
Epithemia																		
Eunotia	*	*	*			**							<5.7	<5.7		<2.8	<2.8	
Fragilaria crotonensis				28.4	5.7	14.2											<2.8	
Fragilaria	11.4	28.4	34.1		**		11.4	<2.8	<2.8	<5.7	<5.7	<2.8	34.1	11.4	11.4	17.1	17.1	<17.8
Frustulia		*	*								<5.7		5.7	<5.7		<2.8	<2.8	<17.8
Gomphonema													<5.7			<2.8		<17.8
Gyrosigma																		
Meridion																		
Navicula radiosa																		
Navicula	*	22.8	5.7		**	**	<2.8	8.5	2.8	<5.7		<2.8	45.5	17.1	<2.8	37.0	19.9	35.6
Neidium																		
Nitzschia palea																		
Nitzschia	*	*	*	**	**	**		<2.8			<5.7		11.4	<5.7		<2.8	<2.8	<17.8
Pleurosigma / Gyrosigma	*	*						2.8	<2.8			<2.8						
Stauroneis	*	*												<5.7			<2.8	<17.8
Surirella	*	*	*		**	**				<5.7	<5.7	<2.8	<5.7	<5.7	<2.8	<2.8	<2.8	<17.8
Synedra ulna					**													
Synedra	*	*															<2.8	
Tabellaria fenestrata				**				<2.8	<2.8				<5.7	<5.7	<2.8			<17.8
Tabellaria flocculosa				**	**	**			<2.8	<5.7	<5.7	<2.8	34.1	<5.7	<2.8	17.1	22.8	<17.8
Tabellaria	*	*	*															
Chlorophyta																		
Chlorococcales																		
Ankistrodesmus falcatus							37.0	37.0	37.0	56.9	5.7	5.7	11.4	<5.7	5.7	2.8	2.8	<17.8
Ankistrodesmus	17.1	51.2	56.9	5.7	5.7	8.5												
Botryococcus braunii				**	45.5	**	<2.8	<2.8	91.0	<5.7	364.1	91.0	<5.7	227.6	34.1	182.0	<2.8	<17.8
Botryococcus	*	91.0	*															
Coelastrum													<5.7	<5.7				<17.8
Crucigenia quadrata				45.5	22.8	**	147.9	76.8	250.3	341.3	273.1	22.8	45.5	22.8	34.1	68.3	11.4	853.3
Crucigenia rectangularis										<5.7	45.5			<5.7				
Crucigenia tetrapedia				**	45.5		238.9	221.9	56.9	68.3	113.8	11.4	386.8	1 035.4	750.9	421.0	625.8	2 204.4
Crucigenia	819.2	91.0	159.3															
Dictyosphaerium pulchellum					**													
Dictyosphaerium								22.8	<2.8	<5.7	<5.7	<2.8	<5.7	45.5	<2.8	<2.8	<2.8	<17.8
Dictyosphaerius	*	113.8	*															
Elakatothrix gelatinosa																		
Elakatothrix	*	11.4	*	**	45.5	11.4	22.8	11.4	8.5	17.1	39.8	<2.8	<5.7	22.8	17.1	8.5	8.5	<17.8
Kirchneriella														<5.7				
Lagerheimia																		
Nephrocytium	22.8	*	11.4				<2.8	<2.8	11.4	22.8	<5.7	22.8		<5.7	<2.8		<2.8	
Oocystis lacustris																		
Oocystis	22.8	*	*	**			<2.8	<2.8	<2.8	<5.7	22.8	<2.8	<5.7	<5.7	<2.8	62.6	<2.8	<17.8
Pediastrum	*	*	*	**	**	22.8	<2.8	<2.8	<2.8	<5.7	<5.7	14.2	79.6	<5.7		<2.8		<17.8
Quadrigula	45.5	*			**				<2.8				<5.7		<2.8			
Scenedesmus quadricauda																		
Scenedesmus	45.5	68.3	5.7	**	**	11.4	11.4	45.5	<2.8	22.8	<5.7	<2.8	22.8	45.5	22.8	22.8	22.8	142.2
Schroederia setigera																		
Selenastrum minutum																		
Selenastrum			*															
Sphaerocystis schroeteri				**	409.6	**	59.3	113.8	39.8	56.9	227.6	11.4	<5.7	364.1		17.1	<2.8	
Sphaerocystis	91.0	91.0	91.0															
Tetraedron minimum					**	**												
Tetraedron	*	*	11.4				<2.8			<5.7		<2.8	<5.7	<5.7				
Treubaria																		
Euglenales																		
Euglena											<5.7							
Phacus					**													
Trachelomonas																		<17.8
Oedogoniales																		
Oedogonium																	<2.8	
Tetrasporales																		
Gloeocystis ampla							110.9	37.0	62.6	142.2	56.9	142.2	45.5	<5.7	<2.8	119.5	34.1	391.1
Gloeocystis	85.3	*	5.7	11.4	**													
Ulothricales																		
Geminella	*																	
Ulothrix		*																

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	AIMAOKATALOK LAKE																	
	Aug-93	Aug-94		Aug-95			04-Aug-96			04-Aug-96			24-Aug-96			24-Aug-96		
	WQ5	WQ4	WQ5	WQ5	WQ9		Station 5			Station 6			Station 5			Station 6		
					0 m	5 m	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta																		
Ulvales																		
Shcizomeris		*																
Volvocales																		
Carteria																		
Chlamydomonas	5.7	*					2.8	8.5	5.7	<5.7	5.7	5.7	<5.7	<5.7			<2.8	<17.8
Eudorina	*	*	*															<17.8
Zygnematales																		
Arthrodesmus	*	*	2.8	**	**		<2.8	<2.8	<2.8	<5.7	<5.7	<2.8	<5.7	5.7	<2.8	<2.8	<2.8	<17.8
Closteriopsis																		
Closterium																		
Cosmarium		*					2.8		<2.8		<5.7	<2.8	<5.7	<5.7	<2.8		2.8	<17.8
Euastrum																		
Gonatozygon		*											<5.7					
Hyalotheca																		
Mougeotia																		
Pleurotaenium				**														
Spondylosium planum				5.7	**	**	11.4	79.6	5.7	34.1	22.8	71.1	142.2	5.7	34.1	11.4	34.1	71.1
Spondylosium	11.4	28.4	8.5															
Staurastrum paradoxum																		
Staurastrum	*	*		**		**			<2.8		<5.7	<2.8		<5.7	<2.8	<2.8	<2.8	<17.8
Xanthidium				**	**	**					<5.7	<2.8						
Zygnema		*																
Chrysophyta																		
Ochromonadales																		
Chrysosphaerella longispina											<5.7	<2.8						
Dinobryon bavaricum																		
Dinobryon cylindricum							<2.8	31.3	11.4	45.5	11.4	11.4	28.4	45.5	28.4	8.5		53.3
Dinobryon bavaricum / cylindricum				68.3	**	48.4												
Dinobryon divergens				**	**		<2.8	<2.8				<2.8		<5.7				
Dinobryon elegantissimum				5.7	28.4	45.5	2.8	<2.8	<2.8	<5.7	<5.7							17.8
Dinobryon sertularia				56.9	5.7	45.5	14.2	8.5	22.8	<5.7	17.1	2.8						
Dinobryon sociale																		
Dinobryon	11.4	5.7	65.4	**									11.4		<2.8	5.7	2.8	17.8
Mallomonas akrokomoos																		
Mallomonas pseudocoronata																		
Mallomonas	*	5.7	*		**	2.8	<2.8	2.8	2.8	<5.7	5.7		<5.7	5.7	2.8	2.8	<2.8	<17.8
Ochromonas																		
Uroglenopsis americana																		
Prymnesiales																		
Chrysochromulina																		
Rhizochrysidales																		
Diceras phaseolus							<2.8	<2.8	<2.8			<2.8				<2.8		
Diceras	*	5.7			**													
Unidentified flagellate																		
Cryptophyta																		
Cryptomonadales																		
Chroomonas acuta				96.7	56.9	65.4	207.6	122.3	125.2	136.5	159.3	48.4	147.9	79.6	39.8	71.1	22.8	35.6
Chroomonas	256.0	130.8	85.3															
Cryptomonas ovata / erosa				5.7	11.4	17.1												
Cryptomonas ovata																		
Cryptomonas	45.5	5.7	11.4				39.8	22.8	37.0	<5.7	17.1	5.7	22.8	5.7	<2.8	25.6	17.1	<17.8
Cyanophyta																		
Chroococcales																		
Agmenellum tenuissima																		<17.8
Agmenellum	*	*	22.8	**	**	**		<2.8				<2.8						
Anacystis elachista				**	**								1 001.2	227.6	56.9	156.4	341.3	355.6
Anacystis limneticus																		
Anacystis	341.3	22.8	*	**	**	**	<2.8	11.4	<2.8	<5.7	<5.7	<2.8	<5.7	<5.7	<2.8	<2.8	<2.8	<17.8
Aphanizomenon flos-aquae													<5.7	45.5	<2.8	<2.8		
Gloeocapsa																		
Gomphosphaeria pallidum							227.6	682.7	512.0	625.8	910.2	128.0	<5.7					355.6
Gomphosphaeria	796.0	824.9	298.7		**								<5.7	<5.7	<2.8	<2.8	<2.8	
Merismopedia																		
Pseudanabaena catenata																<2.8		
Rhabdoderma												<2.8						
Nostocales																		
Anabaena affinis																		
Anabaena flos-aquae																		
Anabaena helicoidea																		
Anabaena planctonica																		
Anabaena	*	*	*	**	**	**	<2.8	<2.8	<2.8	<5.7	<5.7	<2.8	<5.7	<5.7		<2.8	<2.8	<17.8
Gloeotrichia																		
Nostoc							<2.8											
Oscillatoriales																		
Lyngbya limnetica				182.0	153.6	17.1	438.0	256.0	238.9	802.1	250.3	304.4	853.3	540.4	156.4	492.1	179.2	1 422.2
Lyngbya	216.2	45.5	*															
Oscillatoria tenuis				705.4	608.7	475.0												
Oscillatoria	*	*																
Pyrrophyta																		
Dinokontae																		
Gymnodinium																		
Peridinium inconspicuum				5.7	**		2.8	14.2	2.8	5.7	5.7	2.8	<5.7	11.4	11.4	<2.8		<17.8
Peridinium	*	*	*															
Peridinium / Glenodinium				5.7	11.4	8.5	<2.8	<2.8	<2.8	<5.7	<5.7	<2.8	<5.7	5.7		2.8	<2.8	<17.8
TOTAL	**3 220**	**1 917**	**933**	**1 582**	**1 752**	**1 146**	**1 621**	**1 855**	**1 556**	**2 475**	**2 589**	**925**	**3 345**	**3 220**	**1 416**	**2 321**	**1 573**	**6 525**

NOTES: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	AIMAOKATALOK LAKE																	
	24-Jul-97			22-Jul-97			24-Jul-97			26-Aug-97			26-Aug-97			25-Aug-97		
	Station 1			Station 5			Station 6			Station 1			Station 5			Station 6		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta																		
Centrales																		
Cyclotella glomerata														3.0		58.8	52.3	46.8
Cyclotella			2.2	2.0	1.0	5.0	1.0	3.0	7.0	21.8	30.0	24.2	15.0	21.0	12.0	13.4	26.2	31.2
Melosira granulata v. angustissima	<1.7				<1.0	<1.0	3.0	4.0	6.0	21.8	<2.0	77.0	14.0	27.0	22.0	21.8	52.3	21.8
Melosira italica																		
Melosira																	<2.2	18.7
Rhizosolenia				3.0	8.0	1.0	3.0	7.0	1.0						4.0	13.4		
Pennales																		
Achnanthes minutissima	1.7	8.7	4.4							15.3		<2.2				3.4		
Achnanthes	6.8	2.2								<2.2	2.0	4.4	<1.0	1.0			2.2	
Amphora																		
Asterionella formosa	3.4	<2.2	4.4	<1.0	4.0	<1.0	4.0	5.0	22.0	26.2	54.0	41.8	14.0	<1.0	4.0	18.5	32.7	6.2
Asterionella																		
Ceratoneis arcus																		
Ceratoneis																		
Cocconeis placentula																		
Cocconeis																		
Cymatopleura																		
Cymbella minuta																		
Cymbella	<1.7									4.4			<1.0	<1.0				
Diatoma elongatum																		
Diatoma tenue v. elongatum	22.1	<2.2	2.2	2.0	<1.0	3.0	2.0		2.0	13.1	6.0	17.6	1.0	5.0	<1.0	5.0	6.5	6.2
Diatoma																		
Diploneis decipiens																		
Epithemia sorex																		
Epithemia																		
Eunotia																		
Fragilaria crotonensis										8.7	4.0					<1.7		
Fragilaria	3.4	4.4	<2.2	1.0	<1.0		2.0		2.0	19.6	8.0	41.8	14.0	25.0	12.0	35.3	13.1	12.5
Frustulia																		
Gomphonema		<2.2	<2.2													<1.7		
Gyrosigma	1.7																	
Meridion																		
Navicula radiosa																		
Navicula								<1.0		<2.2	2.0	2.2					2.2	
Neidium														1.0				
Nitzschia palea		<2.2	6.5							<2.2		<2.2				<1.7		
Nitzschia																		
Pleurosigma / Gyrosigma																		
Stauroneis														1.0				
Surirella		<2.2																
Synedra ulna																		
Synedra	<1.7									<2.2								
Tabellaria fenestrata																	<2.2	
Tabellaria flocculosa	5.1	4.4	6.5				<1.0			21.8	10.0	13.2	<1.0	3.0		1.7		3.1
Tabellaria																		
Chlorophyta																		
Chlorococcales																		
Ankistrodesmus falcatus	<1.7	<2.2	8.7	3.0	<1.0	<1.0				13.1		4.4	<1.0	2.0			2.2	
Ankistrodesmus	27.2	21.8	30.5		1.0	4.0	3.0		1.0	4.4	22.0	4.4	10.0	4.0	2.0	10.1	6.5	3.1
Botryococcus braunii																		<3.1
Botryococcus																		
Coelastrum																		
Crucigenia quadrata																		
Crucigenia rectangularis	6.8	<2.2							<1.0	26.2	8.0	8.8	16.0	8.0	4.0	<1.7	17.4	37.4
Crucigenia tetrapedia											<2.0				8.0	23.5	8.7	
Crucigenia						4.0				87.2	32.0		32.0	16.0	16.0	27.2	34.9	49.9
Dictyosphaerium pulchellum																		
Dictyosphaerium																		
Dictyosphaerius																		
Elakatothrix gelatinosa						2.0			1.0	<2.2	4.0	8.8				<1.7		6.2
Elakatothrix			<2.2	<1.0									3.0	2.0	<1.0		10.9	
Kirchneriella											<2.0					3.4		3.1
Lagerheimia																		
Nephrocytium																		
Oocystis lacustris													4.0			20.2		
Oocystis								<1.0							<1.0			
Pediastrum		<2.2	2.2						1.0	<2.2	<2.0			1.0				
Quadrigula																		
Scenedesmus quadricauda																		
Scenedesmus	6.8	<2.2	13.1						8.0	26.2	8.0	8.8	16.0	8.0	<1.0	<1.7	8.7	<3.1
Schroederia setigera																		
Selenastrum minutum																		
Selenastrum																		
Sphaerocystis schroeteri	71.4		<2.2	20.0	16.0	3.0				<2.2	160.0		4.0	35.0	10.0	<1.7		<3.1
Sphaerocystis																		
Tetraedron minimum																		
Tetraedron																		
Treubaria																		
Euglenales																		
Euglena																		
Phacus																		
Trachelomonas																		
Oedogoniales																		
Oedogonium																		
Tetrasporales																		
Gloeocystis ampla																		
Gloeocystis						3.0		<1.0	4.0				<1.0	<1.0	24.0			
Ulothricales																		
Geminella																		
Ulothrix																		

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	AIMAOKATALOK LAKE																	
	24-Jul-97			22-Jul-97			24-Jul-97			26-Aug-97			26-Aug-97			25-Aug-97		
	Station 1			Station 5			Station 6			Station 1			Station 5			Station 6		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta																		
Ulvales																		
Shcizomeris																		
Volvocales																		
Carteria								<1.0		<2.2	<2.0							
Chlamydomonas																		
Eudorina	1.7																	
Zygnematales																		
Arthrodesmus											<2.0	<2.2		<1.0				
Closteriopsis																		
Closterium																		
Cosmarium	6.8										<2.0	2.2	3.0	1.0		1.7	<2.2	
Euastrum	<1.7	<2.2	2.2											1.0				
Gonatozygon																		
Hyalotheca																		
Mougeotia																5.0		
Pleurotaenium																		
Spondylosium planum	5.1	8.7	2.2				<1.0			<2.2	<2.0	<2.2				10.1	13.1	
Spondylosium																		
Staurastrum paradoxum																		
Staurastrum		4.4	<2.2							<2.2								
Xanthidium																		
Zygnema																		
Chrysophyta																		
Ochromonadales																		
Chrysosphaerella longispina																		
Dinobryon bavaricum	17.0	48.0	26.2	38.0	12.0	102.0	<1.0	12.0	21.0	2.2	4.0	15.4	22.0	11.0	2.0	8.4	13.1	15.6
Dinobryon cylindricum																		
Dinobryon bavaricum / cylindricum																		
Dinobryon divergens																		
Dinobryon elegantissimum																		
Dinobryon sertularia		65.4	<2.2	12.0	7.0	13.0	10.0	11.0	9.0	13.1	<2.0	2.2	<1.0	2.0	4.0	21.8	17.4	
Dinobryon sociale	42.5	8.7	34.9	14.0	47.0	38.0	23.0	15.0	12.0	6.5	6.0	26.4						
Dinobryon	<1.7		4.4	1.0	<1.0	1.0											24.0	<3.1
Mallomonas akrokomoos																		
Mallomonas pseudocoronata																		
Mallomonas	<1.7	4.4	4.4	1.0	<1.0	1.0		1.0	8.0	8.7	8.0	2.2	2.0	3.0	3.0	1.7	<2.2	9.4
Ochromonas	11.9	4.4	6.5	2.0	2.0	4.0		5.0	4.0	17.4	6.0	11.0	8.0	2.0	5.0	57.1	63.2	18.7
Uroglenopsis americana																		
Prymnesiales																		
Chrysochromulina																3.4		
Rhizochrysidales																		
Diceras phaseolus																		
Diceras															1.0			
Unidentified flagellate																		
Cryptophyta																		
Cryptomonadales																		
Chroomonas acuta	6.8	8.7	2.2	1.0	3.0	5.0	16.0	17.0	23.0	4.4	6.0	<2.2	4.0		<1.0	5.0	24.0	40.6
Chroomonas																		
Cryptomonas ovata / erosa																		
Cryptomonas ovata	1.7	4.4					<1.0	<1.0	4.0			11.0				16.8	15.3	9.4
Cryptomonas	5.1	6.5	2.2	2.0	1.0	8.0	8.0	4.0	11.0	15.3	14.0	35.2	13.0	9.0	9.0	6.7	15.3	9.4
Cyanophyta																		
Chroococcales																		
Agmenellum tenuissima																		
Agmenellum																		
Anacystis elachista																		
Anacystis limneticus																		
Anacystis		132.0		20.0	10.0			10.0	10.0		40.0			60.0	10.0			
Aphanizomenon flos-aquae																		
Gloeocapsa											<2.0							
Gomphosphaeria pallidum																		
Gomphosphaeria							<1.0	4.0			<2.0	26.4	30.0	22.0		<1.7	<2.2	<3.1
Merismopedia	20.4																	
Pseudanabaena catenata																		
Rhabdoderma																		
Nostocales																		
Anabaena affinis	<1.7		<2.2							<2.2	<2.0	<2.2	6.0	8.0	16.0			
Anabaena flos-aquae																		
Anabaena helicoidea																		
Anabaena planctonica														<1.0				
Anabaena				<1.0							<2.0					43.7		<3.1
Gloeotrichia																		
Nostoc																		
Oscillatoriales																		
Lyngbya limnetica			<2.2	<1.0	<1.0		45.0				52.0	26.4	66.0	90.0	65.0	<1.7	87.2	<3.1
Lyngbya																		
Oscillatoria tenuis																		
Oscillatoria			<2.2	30.0		<1.0	<1.0			21.8	<2.0	99.0	<1.0	<1.0	30.0			
Pyrrophyta																		
Dinokontae																		
Gymnodinium	1.7	2.2	<2.2		1.0	1.0	<1.0	<1.0			<2.0			1.0	<1.0			
Peridinium inconspicuum																		
Peridinium	1.7	15.3	13.1			1.0			<1.0	2.2	4.0	<2.2	4.0	2.0			2.2	<3.1
Peridinium / Glenodinium																		
TOTAL	**279**	**355**	**179**	**152**	**113**	**199**	**120**	**98**	**157**	**401**	**490**	**515**	**301**	**375**	**263**	**437**	**552**	**349**

NOTES: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	AIMAOKATALOK LAKE						STICKLEBACK LAKE										
	18-Jul-98			18-Jul-98			Aug-94	Aug-95	05-Aug-96			25-Aug-96			23-Jul-97		
	Station 4			Station 6													
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta																	
Centrales																	
Cyclotella glomerata			16.8	<11.4	<11.4	<2.8											
Cyclotella	<2.8	<5.7	8.4	<11.4	<11.4	11.2	11.4	**		<17.8		5.7	<2.8		<2.0	8.0	
Melosira granulata v. angustissima																	
Melosira italica																	
Melosira	22.4	11.4	<2.8	<11.4	<11.4	33.6	*										
Rhizosolenia																	
Pennales																	
Achnanthes minutissima	25.2	79.8	11.2	22.8	<11.4	8.4		5.7				136.5	187.7	315.7			<2.0
Achnanthes						<2.8	113.8		<5.7	53.3	177.8				2.0		
Amphora			<2.8							<17.8		2.8	<2.8				
Asterionella formosa	11.2	39.9	16.8	<11.4	<11.4	<2.8		11.4	91.0	515.6	88.9	102.4	76.8	74.0	48.0	4.0	12.0
Asterionella							153.6										
Ceratoneis arcus																	
Ceratoneis		<5.7	<2.8		<11.4		*		<5.7			<2.8	<2.8				
Cocconeis placentula																	
Cocconeis	<2.8							2.8		<17.8		2.8	5.7	<2.8			
Cymatopleura	<2.8	<5.7		11.4	<11.4	<2.8											
Cymbella minuta		<5.7	<2.8	<11.4	<11.4	<2.8											
Cymbella			2.8	<11.4	<11.4		11.4	**	17.1	<17.8	<17.8	37.0	17.1	28.4			
Diatoma elongatum			<2.8		11.4												
Diatoma tenue v. elongatum															26.0	160.0	136.0
Diatoma	<2.8	<5.7				2.8	*				<17.8	5.7	2.8	<2.8			
Diploneis decipiens																	
Epithemia sorex								**									
Epithemia												<2.8	<2.8	<2.8			
Eunotia	<2.8	<5.7		<11.4	<11.4		*	**		<17.8	<17.8	<2.8	<2.8	<2.8			
Fragilaria crotonensis		11.4	5.6	34.2	11.4	22.4		2.8	17.1								
Fragilaria		5.7	<2.8	<11.4		<2.8	17.1		<5.7	<17.8	88.9	11.4	22.8	<2.8	6.0	12.0	20.0
Frustulia												<2.8					
Gomphonema	<2.8			11.4	<11.4		*	2.8		<17.8	<17.8	<2.8	<2.8	<2.8			
Gyrosigma																	
Meridion								**									
Navicula radiosa																	
Navicula	<2.8	5.7	<2.8	<11.4	<11.4	36.4	11.4	2.8	5.7	<17.8	17.8	14.2	34.1	5.7			
Neidium																	
Nitzschia palea																	
Nitzschia		5.7	2.8		<11.4	<2.8	5.7			<17.8	<17.8	<2.8		<2.8			
Pleurosigma / Gyrosigma	<2.8							**	<5.7			<2.8	<2.8				
Stauroneis							*				<17.8	<2.8	<2.8	<2.8			
Surirella	5.6	<5.7	<2.8	<11.4	<11.4	<2.8						<2.8					
Synedra ulna																	
Synedra	2.8		<2.8	<11.4		<2.8	*	**	5.7	<17.8	<17.8		<2.8				
Tabellaria fenestrata				<11.4													
Tabellaria flocculosa	<2.8	<5.7	<2.8	91.2	<11.4							<2.8	<2.8	<2.8			
Tabellaria							*										
Chlorophyta																	
Chlorococcales																	
Ankistrodesmus falcatus									56.9	266.7	88.9	108.1	74.0	187.7			
Ankistrodesmus	16.8	28.5	58.8	91.2	34.2	47.6	392.5	2.8							4.0	10.0	6.0
Botryococcus braunii	33.6	<5.7	<2.8	<11.4	<11.4	<2.8		**	<5.7	<17.8	<17.8	<2.8	<2.8				
Botryococcus							*										
Coelastrum		<5.7											<2.8				
Crucigenia quadrata	<2.8		22.4		91.2			**	45.5	<17.8	71.1	22.8	22.8	<2.8			
Crucigenia rectangularis															8.0		
Crucigenia tetrapedia	<2.8	22.8	11.2	45.6		<2.8		45.5	45.5	853.3	355.6	250.3	34.1	136.5			8.0
Crucigenia	<2.8		<2.8	<11.4		<2.8	455.1										
Dictyosphaerium pulchellum																	
Dictyosphaerium		<5.7							<5.7		71.1	<2.8	<2.8	<2.8			
Dictyosphaerius							*										
Elakatothrix gelatinosa																	
Elakatothrix	<2.8	<5.7	<2.8	<11.4	<11.4			**	<5.7	<17.8	<17.8			<2.8		6.0	2.0
Kirchneriella												<2.8	17.1			16.0	
Lagerheimia				<11.4			22.8										
Nephrocytium			<2.8				22.8		<5.7	<17.8	<17.8		<2.8	<2.8			
Oocystis lacustris																	
Oocystis	<2.8	<5.7	<2.8						<5.7	35.6	<17.8			<2.8			
Pediastrum	<2.8	<5.7	<2.8		<11.4	<2.8	*	**	<5.7	<17.8	<17.8	22.8	<2.8	<2.8	<2.0		
Quadrigula																	
Scenedesmus quadricauda	22.4	<5.7	22.4		45.6	<2.8		96.7									
Scenedesmus	<2.8	22.8	<2.8	<11.4	<11.4	<2.8	113.8		91.0	71.1	355.6	79.6	<2.8	11.4	16.0		
Schroederia setigera																	
Selenastrum minutum													<2.8				
Selenastrum			<2.8					2.8									
Sphaerocystis schroeteri	<2.8	<5.7	<2.8		91.2			**	22.8	<17.8							
Sphaerocystis																	
Tetraedron minimum								76.8									
Tetraedron	<2.8	5.7	<2.8	<11.4	22.8		74.0		<5.7	302.2	142.2	34.1	22.8	11.4			
Treubaria					<11.4												
Euglenales																	
Euglena	<2.8											<2.8					
Phacus														<2.8			
Trachelomonas								**	<5.7			<2.8	<2.8	<2.8			
Oedogoniales																	
Oedogonium											<17.8	<2.8		<2.8			
Tetrasporales																	
Gloeocystis ampla	11.2								<5.7	<17.8	160.0	2.8		68.3			
Gloeocystis							*										
Ulothricales																	
Geminella																	
Ulothrix	<2.8		<2.8				*										

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	AIMAOKATALOK LAKE						STICKLEBACK LAKE										
	18-Jul-98			18-Jul-98			Aug-94	Aug-95	05-Aug-96			25-Aug-96			23-Jul-97		
	Station 4			Station 6													
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta																	
Ulvales																	
Shcizomeris																	
Volvocales																	
Carteria																<2.0	
Chlamydomonas	2.8	<5.7					*			<17.8	<17.8	2.8	<2.8				
Eudorina		<5.7	<2.8									<2.8					
Zygnematales																	
Arthrodesmus	<2.8	<5.7	<2.8	<11.4	<11.4						<17.8	<2.8	<2.8				
Closteriopsis																	
Closterium						<2.8							<2.8	<2.8			
Cosmarium							*		<5.7		<17.8	<2.8	<2.8	<2.8			
Euastrum																	
Gonatozygon		<5.7											<2.8				
Hyalotheca																	
Mougeotia							*					<2.8					
Pleurotaenium																	
Spondylosium planum	<2.8	5.7	<2.8	<11.4	<11.4	<2.8			22.8	35.6	17.8		<2.8	5.7			
Spondylosium							11.4										
Staurastrum paradoxum																	
Staurastrum		<5.7					*	**		<17.8	<17.8	<2.8	<2.8				
Xanthidium		<5.7		<11.4									<2.8				
Zygnema																	
Chrysophyta																	
Ochromonadales																	
Chrysosphaerella longispina																	
Dinobryon bavaricum	39.2	57.0	56.0	79.8	45.6	25.2									2.0		4.0
Dinobryon cylindricum									96.7					<2.8			
Dinobryon bavaricum / cylindricum								**									
Dinobryon divergens	44.8	68.4	53.2	91.2	34.2	100.8		19.9			<17.8	56.9	125.2				
Dinobryon elegantissimum	<2.8			<11.4													
Dinobryon sertularia								**							2.0	12.0	34.0
Dinobryon sociale															94.0	130.0	94.0
Dinobryon	16.8	114.0	61.6	125.4	102.6	75.6	*			320.0	<17.8	2.8	11.4	2.8	2.0		2.0
Mallomonas akrokomoos		<5.7															
Mallomonas pseudocoronata	11.2	17.1	25.2	34.2	22.8	<2.8											
Mallomonas			<2.8											<2.8			
Ochromonas															14.0	<2.0	20.0
Uroglenopsis americana				<11.4													
Prymnesiales																	
Chrysochromulina																	
Rhizochrysidales																	
Diceras phaseolus				<11.4													
Diceras																	
Unidentified flagellate	<2.8	<5.7	<2.8	<11.4	<11.4	<2.8			<5.7	<17.8	<17.8						
Cryptophyta																	
Cryptomonadales																	
Chroomonas acuta	98.0	119.7	53.2	91.2	364.8	173.6		162.1	102.4	106.7	160.0	184.9	91.0	139.4	14.0	6.0	30.0
Chroomonas							256.0										
Cryptomonas ovata / erosa								14.2									
Cryptomonas ovata															6.0	8.0	<2.0
Cryptomonas	25.2	17.1	25.2	45.6	68.4	44.8	17.1		51.2	160.0	35.6	25.6	39.8	19.9	36.0	30.0	28.0
Cyanophyta																	
Chroococcales																	
Agmenellum tenuissima	<2.8		<2.8	410.4	410.4	134.4											
Agmenellum							*										
Anacystis elachista					<11.4	<2.8		**	3 185.8	7 217.8	7 857.8	355.6	227.6	412.4			
Anacystis limneticus	22.4	<5.7		<11.4	182.4	134.4											
Anacystis	<2.8	<5.7	<2.8	<11.4			2 104.9	**					<2.8	<2.8	120.0	150.0	
Aphanizomenon flos-aquae																	
Gloeocapsa																	
Gomphosphaeria pallidum	<2.8		<2.8														
Gomphosphaeria							*						<2.8				
Merismopedia																	
Pseudanabaena catenata												<2.8					
Rhabdoderma									<5.7	<17.8	<17.8						
Nostocales																	
Anabaena affinis			<2.8														
Anabaena flos-aquae																	
Anabaena helicoidea																	
Anabaena planctonica																	
Anabaena	<2.8		<2.8	<11.4			*	**	<5.7	<17.8		<2.8	<2.8	<2.8		196.0	
Gloeotrichia													<2.8	<2.8			
Nostoc																	
Oscillatoriales																	
Lyngbya limnetica	78.4	108.3	<2.8	524.4	399.0	106.4		**	<5.7	144.0	<17.8	<2.8	187.7	<2.8		<2.0	
Lyngbya	<2.8						*										
Oscillatoria tenuis	299.6	575.7	137.2	433.2	<11.4	<2.8		51.2				<2.8	<2.8	<2.8			
Oscillatoria							159.3		<5.7	<17.8	<17.8				<2.0		20.0
Pyrrophyta																	
Dinokontae																	
Gymnodinium															<2.0		<2.0
Peridinium inconspicuum	5.6	11.4	<2.8	11.4	<11.4	2.8		34.1	79.6	53.3	71.1	28.4	28.4	5.7			
Peridinium							45.5								8.0	8.0	2.0
Peridinium / Glenodinium	5.6	<5.7	<2.8	<11.4	<11.4	<2.8		**	<5.7	35.6	17.8	2.8	2.8	2.8			
TOTAL	**801**	**1 334**	**591**	**2 155**	**1 938**	**960**	**4 000**	**534**	**3 937**	**10 171**	**9 778**	**1 499**	**1 232**	**1 428**	**408**	**756**	**418**

NOTES: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	STICKLEBACK LAKE						FICKLE DUCK LAKE									
	26-Aug-97			19-Jul-98			Aug-95	05-Aug-96			25-Aug-96			23-Jul-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta																
Centrales																
Cyclotella glomerata																
Cyclotella		<2.0					39.8	2.8	<5.7		2.8			<1.0	<1.0	
Melosira granulata v. angustissima																
Melosira italica																
Melosira					<35.6								<2.8			
Rhizosolenia																
Pennales																
Achnanthes minutissima		<2.0	<4.4	106.8	106.8	35.6				<5.7	19.9	<2.8	<2.8			
Achnanthes			<4.4					14.2	<5.7							
Amphora					<35.6			2.8	5.7		<2.8					
Asterionella formosa		<2.0	<4.4	<17.8	<35.6		17.1	<2.8	17.1	45.5	5.7	<2.8	5.7	9.0	11.0	9.0
Asterionella																
Ceratoneis arcus																
Ceratoneis						<17.8		2.8	<5.7		<2.8					
Cocconeis placentula	2.0															
Cocconeis					<35.6	<17.8			<5.7							
Cymatopleura					<35.6	<17.8			<5.7		<2.8	<2.8	<2.8			
Cymbella minuta																
Cymbella				<17.8	<35.6		**	2.8	<5.7	<5.7	5.7	<2.8	5.7	<1.0		1.0
Diatoma elongatum							11.4									
Diatoma tenue v. elongatum		<2.0												4.0	1.0	
Diatoma				<17.8	<35.6	17.8		<2.8	<5.7	5.7	2.8		2.8			
Diploneis decipiens																
Epithemia sorex																
Epithemia									<5.7		<2.8		<2.8			
Eunotia					<35.6	<17.8	**		<5.7	<5.7	<2.8	2.8	<2.8			
Fragilaria crotonensis			<4.4			71.2	**		39.8	51.2						
Fragilaria	2.0	<2.0	4.4	<17.8	35.6	<17.8	**	22.8	<5.7	<5.7	<2.8	5.7	8.5	4.0	3.0	3.0
Frustulia																
Gomphonema		2.0				<17.8		<2.8	<5.7		<2.8					<1.0
Gyrosigma																
Meridion																
Navicula radiosa																
Navicula			4.4	<17.8	<35.6	<17.8	5.7	5.7	5.7	<5.7	<2.8	2.8	17.1			
Neidium																
Nitzschia palea																
Nitzschia				<17.8	<35.6			<2.8	<5.7	<5.7	<2.8	<2.8				
Pleurosigma / Gyrosigma					<35.6		**		<5.7		<2.8		<2.8			
Stauroneis						<17.8		<2.8					<2.8			
Surirella					<35.6	<17.8		<2.8			<2.8					
Synedra ulna																
Synedra											<2.8	<2.8	5.7			
Tabellaria fenestrata							**				<2.8	<2.8	<2.8			
Tabellaria flocculosa							22.8	<2.8	34.1	5.7	22.8	68.3	34.1			<1.0
Tabellaria				<17.8												
Chlorophyta																
Chlorococcales																
Ankistrodesmus falcatus								5.7	74.0	34.1	11.4	2.8	17.1			
Ankistrodesmus	20.0	22.0	165.7	<17.8	35.6	<17.8	17.1									<1.0
Botryococcus braunii						<17.8	45.5	<2.8	<5.7	<5.7	<2.8	<2.8	<2.8			
Botryococcus																
Coelastrum																
Crucigenia quadrata					<35.6	<17.8	91.0	22.8	91.0	<5.7			<2.8			
Crucigenia rectangularis			70.4													
Crucigenia tetrapedia	<2.0	8.0	35.2	71.2	142.4	<17.8	22.8	307.2	295.8	165.0	68.3	22.8	68.3			8.0
Crucigenia														<1.0		<1.0
Dictyosphaerium pulchellum																
Dictyosphaerium													<2.8			
Dictyosphaerius																
Elakatothrix gelatinosa																
Elakatothrix					<35.6		22.8	5.7	<5.7	56.9		<2.8	<2.8			
Kirchneriella				<17.8						<5.7						
Lagerheimia				<17.8	<35.6	<17.8										
Nephrocytium							**	45.5	<5.7	<5.7		<2.8				
Oocystis lacustris																
Oocystis					<35.6		**		<5.7				<2.8			
Pediastrum				<17.8	<35.6	<17.8	**	42.7	182.0	45.5	<2.8	<2.8	22.8			1.0
Quadrigula								<2.8	<5.7			5.7				
Scenedesmus quadricauda																
Scenedesmus	8.0		17.6	<17.8	<35.6	71.2		22.8	<5.7	<5.7	<2.8	<2.8	<2.8	<1.0		4.0
Schroederia setigera																4.0
Selenastrum minutum																
Selenastrum																
Sphaerocystis schroeteri				<17.8			45.5					<2.8				15.0
Sphaerocystis																
Tetraedron minimum																
Tetraedron				35.6	35.6	17.8			<5.7	17.1						
Treubaria																
Euglenales																
Euglena								<2.8	<5.7	5.7	<2.8	5.7	<2.8			
Phacus													<2.8			
Trachelomonas				<17.8		<17.8										
Oedogoniales																
Oedogonium													<2.8			
Tetrasporales																
Gloeocystis ampla					<35.6			22.8	<5.7	<5.7						
Gloeocystis							**									
Ulothricales																
Geminella																
Ulothrix																

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	STICKLEBACK LAKE						FICKLE DUCK LAKE									
	26-Aug-97			19-Jul-98			Aug-95	05-Aug-96			25-Aug-96			23-Jul-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta																
Ulvales																
Shcizomeris																
Volvocales																
Carteria																
Chlamydomonas									<5.7	<5.7		<2.8				
Eudorina								<2.8	22.8	<5.7	182.0	128.0	182.0	<1.0	<1.0	24.0
Zygnematales																
Arthrodesmus								<2.8	<5.7	<5.7			<2.8			
Closteriopsis																
Closterium								<2.8					<2.8			
Cosmarium	2.0		4.4					<2.8	<5.7			<2.8	<2.8			
Euastrum								<2.8		<5.7	<2.8	<2.8	<2.8			
Gonatozygon																
Hyalotheca								<2.8								
Mougeotia																
Pleurotaenium																
Spondylosium planum				<17.8	<35.6	<17.8			22.8	22.8	2.8	<2.8	<2.8			
Spondylosium																
Staurastrum paradoxum																
Staurastrum							**	<2.8	<5.7	<5.7	<2.8		2.8			
Xanthidium								<2.8			<2.8	<2.8	2.8	<1.0		
Zygnema																
Chrysophyta																
Ochromonadales																
Chrysosphaerella longispina																
Dinobryon bavaricum	<2.0		17.6	1 068.0	534.0	427.2										
Dinobryon cylindricum								250.3	682.7	210.5						
Dinobryon bavaricum / cylindricum							125.2									
Dinobryon divergens				<17.8	<35.6	<17.8	102.4	<2.8		45.5						
Dinobryon elegantissimum				35.6	<35.6					165.0						
Dinobryon sertularia					<35.6	<17.8	22.8									
Dinobryon sociale	108.0	48.0	145.2											<1.0	3.0	7.0
Dinobryon					<35.6	<17.8			<5.7		<2.8					
Mallomonas akrokomoos					<35.6											
Mallomonas pseudocoronata																
Mallomonas		<2.0	<4.4	<17.8	<35.6	<17.8	**									
Ochromonas		14.0	<4.4											1.0	<1.0	
Uroglenopsis americana																
Prymnesiales																
Chrysochromulina																
Rhizochrysidales																
Diceras phaseolus									<5.7							
Diceras																
Unidentified flagellate				<17.8	142.4	106.8		<2.8	<5.7	<5.7						
Cryptophyta																
Cryptomonadales																
Chroomonas acuta	54.0	48.0	140.8	249.2	35.6	71.2	5.7	<2.8	5.7	<5.7		<2.8		2.0	2.0	5.0
Chroomonas																
Cryptomonas ovata / erosa							**									
Cryptomonas ovata		<2.0														
Cryptomonas	4.0	8.0	22.0	17.8	<35.6	<17.8		11.4	51.2	22.8	14.2	28.4	17.1	<1.0		3.0
Cyanophyta																
Chroococcales																
Agmenellum tenuissima					<35.6											
Agmenellum																
Anacystis elachista				<17.8		<17.8				<5.7						
Anacystis limneticus				<17.8	<35.6	213.6										
Anacystis	240.0	280.0	1 047.2		<35.6		**	<2.8	<5.7							<1.0
Aphanizomenon flos-aquae																
Gloeocapsa														12.0		
Gomphosphaeria pallidum								<2.8		<5.7						
Gomphosphaeria				<17.8			**		<5.7		<2.8		<2.8			
Merismopedia																
Pseudanabaena catenata											<2.8					
Rhabdoderma									22.8							
Nostocales																
Anabaena affinis							659.9	878.9	1 968.4	1 900.1	714.0	1 103.6	682.7			
Anabaena flos-aquae							**	<2.8								
Anabaena helicoidea								122.3	119.5	119.5	34.1	238.9	270.2			<1.0
Anabaena planctonica								625.8	1 655.5	381.2						
Anabaena	<2.0			<17.8		<17.8		<2.8		<5.7				24.0		
Gloeotrichia																
Nostoc																
Oscillatoriales																
Lyngbya limnetica	<2.0			<17.8	<35.6	<17.8	62.6	119.5	102.4	466.5	110.9	110.9	91.0		<1.0	
Lyngbya																
Oscillatoria tenuis																
Oscillatoria	<2.0		<4.4	<17.8	<35.6	<17.8										
Pyrrophyta																
Dinokontae																
Gymnodinium	<2.0	<2.0	<4.4													<1.0
Peridinium inconspicuum				<17.8	<35.6	<17.8	**	<2.8	<5.7	<5.7	<2.8	8.5	<2.8			
Peridinium	2.0		<4.4													
Peridinium / Glenodinium				<17.8	<35.6	<17.8						<2.8				
TOTAL	**442**	**430**	**1 675**	**1 584**	**1 068**	**1 032**	**1 320**	**2 537**	**5 399**	**3 766**	**1 197**	**1 735**	**1 436**	**56**	**20**	**84**

NOTES: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	FICKLE DUCK LAKE						REFERENCE LAKE								
	26-Aug-97			19-Jul-98			23-Jul-97			27-Aug-97			22-Jul-98		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta															
Centrales															
Cyclotella glomerata															
Cyclotella	<2.7	<4.4	3.1				4.4	<1.4	2.2			5.5			
Melosira granulata v. angustissima															
Melosira italica															
Melosira					<2.8								<17.8		<17.8
Rhizosolenia															
Pennales															
Achnanthes minutissima					22.4	11.2			4.4					<35.6	71.2
Achnanthes	13.5	4.4	<3.1					<1.4	2.2	11.0					
Amphora					<2.8	<2.8									
Asterionella formosa	32.4	13.1	3.1	79.8	64.4	39.2	4.4	<1.4	<2.2	22.0	<10.9	<5.5	53.4	<35.6	17.8
Asterionella															
Ceratoneis arcus															
Ceratoneis					<2.8	<2.8							<17.8	<35.6	
Cocconeis placentula										5.5					
Cocconeis															
Cymatopleura				<5.7	<2.8	<2.8							<17.8	71.2	<17.8
Cymbella minuta				11.4		<2.8							<17.8	<35.6	<17.8
Cymbella	2.7	8.7		<5.7	<2.8	2.8				<5.5	10.9		<17.8	<35.6	<17.8
Diatoma elongatum				5.7		<2.8							<17.8		
Diatoma tenue v. elongatum	2.7	4.4	6.2					<1.4	2.2						
Diatoma															<17.8
Diploneis decipiens										5.5					
Epithemia sorex							<1.1								
Epithemia															
Eunotia		<4.4			<2.8								<17.8	<35.6	17.8
Fragilaria crotonensis	5.4	<4.4	<3.1	34.2	11.2	14.0	2.2	1.4			<10.9		35.6	106.8	17.8
Fragilaria	8.1	4.4	15.6	<5.7		<2.8	2.2	2.7	10.9	11.0	<10.9	<5.5		<35.6	<17.8
Frustulia				<5.7											
Gomphonema				5.7		<2.8								<35.6	
Gyrosigma	<2.7						<1.1			5.5					
Meridion															
Navicula radiosa										<5.5					
Navicula	2.7	<4.4	3.1	<5.7	<2.8	5.6				<5.5		<5.5	35.6	<35.6	35.6
Neidium															
Nitzschia palea			3.1				2.2	4.1	2.2	27.5	21.8				
Nitzschia		13.1				<2.8							<17.8	<35.6	17.8
Pleurosigma / Gyrosigma				<5.7	<2.8	<2.8							<17.8	<35.6	17.8
Stauroneis														<35.6	<17.8
Surirella				<5.7	2.8	<2.8					<10.9		<17.8	<35.6	<17.8
Synedra ulna			<3.1	<5.7		<2.8									
Synedra															<17.8
Tabellaria fenestrata			<3.1										<17.8	<35.6	
Tabellaria flocculosa	2.7	<4.4	<3.1		36.4	<2.8	<1.1	2.7	<2.2	5.5	10.9	5.5	178.0	<35.6	249.2
Tabellaria															
Chlorophyta															
Chlorococcales															
Ankistrodesmus falcatus	27.0	21.8	15.6							16.5					
Ankistrodesmus		26.2		11.4	8.4	5.6	6.6	5.4	6.6	11.0	10.9		35.6	106.8	35.6
Botryococcus braunii				<5.7	44.8	<2.8							<17.8		<17.8
Botryococcus															
Coelastrum															
Crucigenia quadrata													71.2	<35.6	<17.8
Crucigenia rectangularis							17.6	16.3	8.7		43.6	21.8			
Crucigenia tetrapedia	140.4	157.0	62.4	91.2	22.4	123.2			17.4		<10.9		213.6	284.8	142.4
Crucigenia							8.8	10.9					<17.8	<35.6	<17.8
Dictyosphaerium pulchellum															
Dictyosphaerium					67.2								<17.8	<35.6	
Dictyosphaerius															
Elakatothrix gelatinosa	2.7	21.8	3.1								<10.9				
Elakatothrix				<5.7	5.6	<2.8								<35.6	
Kirchneriella	2.7					<2.8									
Lagerheimia														<35.6	
Nephrocytium															
Oocystis lacustris												<5.5			
Oocystis															
Pediastrum		<4.4		45.6	22.4	<2.8							<17.8	<35.6	<17.8
Quadrigula															
Scenedesmus quadricauda				22.8	33.6	11.2							<17.8		
Scenedesmus	<2.7	17.4	<3.1		<2.8		4.4	<1.4					<17.8	71.2	<17.8
Schroederia setigera															
Selenastrum minutum															
Selenastrum															
Sphaerocystis schroeteri				<5.7	<2.8	123.2							<17.8		
Sphaerocystis															
Tetraedron minimum															
Tetraedron				5.7	2.8	<2.8							<17.8	35.6	<17.8
Treubaria															
Euglenales															
Euglena				<5.7		<2.8							<17.8	<35.6	<17.8
Phacus															
Trachelomonas					<2.8								<17.8		<17.8
Oedogoniales															
Oedogonium						<2.8									
Tetrasporales															
Gloeocystis ampla														<35.6	
Gloeocystis															
Ulothricales															
Geminella															
Ulothrix				<5.7											

Appendix B1. Phytoplankton abundance (cells/mL) in Boston area lakes, 1993-1998.

Taxa / Species	FICKLE DUCK LAKE						REFERENCE LAKE								
	26-Aug-97			19-Jul-98			23-Jul-97			27-Aug-97			22-Jul-98		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta															
Ulvales															
Shcizomeris															
Volvocales															
Carteria			3.1					1.4	4.4	5.5		<5.5			
Chlamydomonas													<17.8		17.8
Eudorina	<2.7	<4.4	<3.1		89.6	<2.8							<17.8	<35.6	
Zygnematales															
Arthrodesmus					<2.8										<17.8
Closteriopsis													<17.8		
Closterium						<2.8									
Cosmarium	5.4			<5.7	<2.8					<5.5		<5.5			<17.8
Euastrum		4.4				<2.8							<17.8		
Gonatozygon															
Hyalotheca															
Mougeotia															
Pleurotaenium															
Spondylosium planum				<5.7				2.7			10.9		35.6	<35.6	<17.8
Spondylosium															
Staurastrum paradoxum					<2.8								<17.8		<17.8
Staurastrum		<4.4										<5.5			
Xanthidium													<17.8	<35.6	
Zygnema															
Chrysophyta															
Ochromonadales															
Chrysosphaerella longispina															
Dinobryon bavaricum				45.6	<2.8	33.6			10.9	11.0			35.6	106.8	89.0
Dinobryon cylindricum	5.4	21.8	46.8												
Dinobryon bavaricum / cylindricum															
Dinobryon divergens														<35.6	<17.8
Dinobryon elegantissimum				<5.7		<2.8									
Dinobryon sertularia												<5.5			
Dinobryon sociale															
Dinobryon				<5.7		<2.8	5.5	25.8	24.0	<5.5			<17.8	<35.6	<17.8
Mallomonas akrokomoos															
Mallomonas pseudocoronata															
Mallomonas						<2.8	2.2	5.4						<35.6	
Ochromonas	8.1	4.4	3.1				16.5	17.7	32.7	33.0	32.7	103.6			
Uroglenopsis americana															
Prymnesiales															
Chrysochromulina															
Rhizochrysidales															
Diceras phaseolus						<2.8									17.8
Diceras								1.4							
Unidentified flagellate				<5.7	<2.8	<2.8							<17.8	<35.6	<17.8
Cryptophyta															
Cryptomonadales															
Chroomonas acuta		<4.4		51.3	<2.8	14.0	2.2	<1.4	2.2	5.5	21.8		71.2	<35.6	<17.8
Chroomonas															
Cryptomonas ovata / erosa															
Cryptomonas ovata							4.4	<1.4							
Cryptomonas	8.1	4.4	3.1	11.4	14.0	2.8	15.4	12.2	10.9	38.5	54.5	49.1	53.4	<35.6	<17.8
Cyanophyta															
Chroococcales															
Agmenellum tenuissima				182.4	<2.8	<2.8							284.8	<35.6	<17.8
Agmenellum															<17.8
Anacystis elachista				<5.7									<17.8	2 136.0	
Anacystis limneticus				91.2	44.8	<2.8								<35.6	71.2
Anacystis													<17.8		<17.8
Aphanizomenon flos-aquae													2 919.2	6 764.0	3 132.8
Gloeocapsa															
Gomphosphaeria pallidum					168.0	56.0							<17.8	<35.6	
Gomphosphaeria							<1.1							<35.6	<17.8
Merismopedia															
Pseudanabaena catenata						22.4									
Rhabdoderma															
Nostocales															
Anabaena affinis	248.4	518.8	343.2	136.8	378.0	78.4				1 078.0	1 853.0	506.9	2 598.8	5 019.6	587.4
Anabaena flos-aquae				<5.7						<5.5	<10.9	<5.5	<17.8	<35.6	
Anabaena helicoidea															
Anabaena planctonica	<2.7	148.2	205.9							143.0	<10.9	<5.5			
Anabaena						<2.8	8.8	<1.4	146.1	115.5	218.2	<5.5	<17.8	<35.6	<17.8
Gloeotrichia															
Nostoc															
Oscillatoriales															
Lyngbya limnetica	267.3	13.1	<3.1	661.2	380.8	<2.8		1.4	<2.2	3 685.0	36 515.0	2 861.3	<17.8	<35.6	<17.8
Lyngbya															
Oscillatoria tenuis															
Oscillatoria						<2.8									
Pyrrophyta															
Dinokontae															
Gymnodinium		<4.4	<3.1				1.1	4.1	<2.2	11.0					
Peridinium inconspicuum				<5.7	2.8	2.8							<17.8	35.6	71.2
Peridinium							<1.1		2.2	27.5	<10.9	16.4			
Peridinium / Glenodinium															
TOTAL	**786**	**1 007**	**721**	**1 493**	**1 422**	**546**	**109**	**116**	**290**	**5 275**	**38 804**	**3 570**	**6 622**	**14 738**	**4 610**

NOTES: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B2. Abundance (cells/mL) and percent composition of main taxa of phytoplankton in Boston area lakes, 1993-1998.

Lake	Date (Site)	No. Repl.	Bacillariophyta			Chlorophyta			Chrysophyta			Cryptophyta			Cyanophyta			Pyrrophyta			All Taxa	
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Aimaokatalok	17-Aug-93 (WQ5)	1	**387**	-	*12.0*	**1 166**	-	*36.2*	**11**	-	*0.4*	**302**	-	*9.4*	**1 354**	-	*42.0*	**0**	-	*0.0*	**3 220**	-
	Aug-94 (WQ4)	1	**324**	-	*16.9*	**546**	-	*28.5*	**17**	-	*0.9*	**137**	-	*7.1*	**893**	-	*46.6*	**0**	-	*0.0*	**1 917**	-
	Aug-94 (WQ5)	1	**97**	-	*10.4*	**353**	-	*37.8*	**65**	-	*7.0*	**97**	-	*10.4*	**322**	-	*34.5*	**0**	-	*0.0*	**933**	-
	Aug-95 (WQ5)	1	**381**	-	*24.1*	**68**	-	*4.3*	**131**	-	*8.3*	**102**	-	*6.5*	**887**	-	*56.1*	**11**	-	*0.7*	**1 582**	-
	Aug-95 (WQ9 0m)	1	**302**	-	*17.2*	**575**	-	*32.8*	**34**	-	*1.9*	**68**	-	*3.9*	**762**	-	*43.5*	**11**	-	*0.7*	**1 752**	-
	Aug-95 (WQ9 5m)	1	**367**	-	*32.0*	**54**	-	*4.7*	**142**	-	*12.4*	**83**	-	*7.2*	**492**	-	*42.9*	**9**	-	*0.7*	**1 146**	-
	04-Aug-96 (Station 5)	3	**42**	4	*2.5*	**623**	27	*37.1*	**32**	8	*1.9*	**185**	32	*11.0*	**789**	84	*47.0*	**7**	4	*0.4*	**1 677**	91
	04-Aug-96 (Station 6)	3	**51**	23	*2.6*	**780**	225	*39.1*	**31**	9	*1.6*	**122**	36	*6.1*	**1 007**	297	*50.4*	**5**	1	*0.2*	**1 996**	537
	24-Aug-96 (Station 5)	3	**415**	99	*15.6*	**1 136**	323	*42.7*	**41**	6	*1.5*	**99**	38	*3.7*	**960**	479	*36.1*	**10**	5	*0.4*	**2 660**	623
	24-Aug-96 (Station 6)	3	**504**	119	*14.5*	**1 773**	946	*51.1*	**36**	27	*1.0*	**57**	20	*1.7*	**1 101**	518	*31.7*	**1**	1	*0.0*	**3 473**	1 541
	24-Jul-97 (Station 1)	3	**30**	7	*11.1*	**73**	27	*27.0*	**93**	19	*34.3*	**13**	4	*4.6*	**51**	41	*18.8*	**11**	4	*4.2*	**271**	51
	22-Jul-97 (Station 5)	3	**10**	2	*6.5*	**19**	2	*12.1*	**98**	30	*63.6*	**7**	3	*4.3*	**20**	15	*12.9*	**1**	1	*0.6*	**155**	25
	24-Jul-97 (Station 6)	3	**25**	8	*19.7*	**6**	5	*4.8*	**44**	6	*34.9*	**28**	5	*22.1*	**23**	11	*18.4*	**0**	0	*0.0*	**125**	17
	26-Aug-97 (Station 1)	3	**164**	31	*34.9*	**143**	57	*30.5*	**43**	10	*9.2*	**29**	9	*6.1*	**89**	38	*18.9*	**2**	1	*0.4*	**469**	34
	26-Aug-97 (Station 5)	3	**66**	10	*21.2*	**77**	7	*24.5*	**22**	5	*6.9*	**12**	3	*3.7*	**134**	23	*42.9*	**2**	1	*0.7*	**313**	33
	25-Aug-97 (Station 6)	3	**168**	12	*37.8*	**101**	1	*22.7*	**85**	22	*19.0*	**48**	10	*10.7*	**44**	25	*9.8*	**1**	1	*0.2*	**446**	59
	18-Jul-98 (Station 4)	3	**97**	31	*10.7*	**96**	10	*10.5*	**188**	42	*20.7*	**113**	18	*12.4*	**407**	158	*44.8*	**8**	4	*0.8*	**908**	221
	18-Jul-98 (Station 6)	3	**103**	43	*6.1*	**156**	69	*9.3*	**246**	42	*14.6*	**263**	88	*15.6*	**912**	289	*54.1*	**5**	3	*0.3*	**1 684**	367
Stickleback	Aug-94	1	**324**	-	*8.1*	**1 092**	-	*27.3*	**0**	-	*0.0*	**273**	-	*6.8*	**2 264**	-	*56.6*	**46**	-	*1.1*	**4 000**	-
	Aug-95	1	**28**	-	*5.3*	**225**	-	*42.0*	**20**	-	*3.7*	**176**	-	*33.0*	**51**	-	*9.6*	**34**	-	*6.4*	**534**	-
	05-Aug-96	3	**360**	125	*4.5*	**1 037**	386	*13.0*	**139**	95	*1.7*	**205**	33	*2.6*	**6 135**	1 482	*77.1*	**86**	3	*1.1*	**7 962**	2 016
	25-Aug-96	3	**363**	31	*26.2*	**372**	105	*26.8*	**66**	39	*4.8*	**167**	23	*12.0*	**394**	19	*28.5*	**24**	8	*1.7*	**1 386**	80
	23-Jul-97	3	**145**	32	*27.4*	**25**	5	*4.8*	**137**	12	*25.9*	**53**	4	*10.0*	**162**	96	*30.7*	**6**	2	*1.1*	**527**	114
	26-Aug-97	3	**5**	2	*0.6*	**118**	88	*13.9*	**111**	29	*13.1*	**92**	35	*10.9*	**522**	263	*61.5*	**1**	1	*0.1*	**849**	413
	19-Jul-98	3	**125**	10	*10.1*	**136**	39	*11.1*	**771**	171	*62.8*	**125**	72	*10.1*	**71**	71	*5.8*	**0**	0	*0.0*	**1 228**	178
Fickle Duck	Aug-95	1	**97**	-	*7.3*	**245**	-	*18.5*	**250**	-	*19.0*	**6**	-	*0.4*	**723**	-	*54.7*	**0**	-	*0.0*	**1 320**	-
	05-Aug-96	3	**88**	17	*2.3*	**504**	100	*12.9*	**451**	126	*11.6*	**30**	14	*0.8*	**2 827**	613	*72.5*	**0**	0	*0.0*	**3 901**	829
	25-Aug-96	3	**73**	7	*5.0*	**242**	39	*16.6*	**0**	0	*0.0*	**20**	4	*1.4*	**1 119**	176	*76.8*	**3**	3	*0.2*	**1 456**	155
	23-Jul-97	3	**15**	1	*28.1*	**19**	19	*35.0*	**4**	2	*6.9*	**4**	2	*7.5*	**12**	12	*22.5*	**0**	0	*0.0*	**53**	19
	26-Aug-97	3	**51**	10	*6.1*	**170**	48	*20.3*	**30**	11	*3.6*	**5**	1	*0.6*	**582**	50	*69.4*	**0**	0	*0.0*	**838**	87
	19-Jul-98	3	**116**	21	*10.0*	**246**	36	*21.3*	**26**	14	*2.3*	**31**	16	*2.7*	**733**	290	*63.6*	**2**	1	*0.2*	**1 154**	305
Reference	23-Jul-97	3	**17**	4	*9.8*	**37**	0	*21.6*	**47**	13	*27.6*	**16**	3	*9.2*	**52**	47	*30.4*	**2**	1	*1.4*	**172**	59
	27-Aug-97	3	**49**	24	*0.3*	**40**	13	*0.3*	**60**	22	*0.4*	**56**	10	*0.4*	**15 659**	11 474	*98.6*	**18**	11	*0.1*	**15 883**	11 471
	22-Jul-98	3	**309**	77	*3.6*	**350**	87	*4.0*	**83**	24	*1.0*	**42**	42	*0.5*	**7 838**	3 096	*90.5*	**36**	21	*0.4*	**8 657**	3 096

SE = Standard Error

Appendix B3. Periphyton abundance (cells/cm^2) in Boston area streams, 1993-1998.

Species List	STICKLEBACK OUTFLOW												
	Aug 1995	25-Aug 1996			21-Jul 1997			24-25 Aug 1997			26-30-Jul 1998		
		Rep A	Rep B	Rep C	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta													
Centrales													
Cyclotella						<897			<836	2,444			
Melosira					<433								
Pennales													
Achnanthes flexella	**												
Achnanthes minutissima	93,560		19,480	28,080	3,464	6,279	13,038	9,360	118,712	202,852	75,413	66,576	27,562
Achnanthes		4,608			1,299	1,794	2,173	1,872	5,258	8,554	<603	1,097	634
Amphipleura pellucida						<897	<2173				<603		
Amphora	4,924	1,152	<2,435		<433	<897	2,173	<208	836	1,222	<603	<366	<158
Asterionella formosa		<1,152	4,870	5,265		<897	2,173				<603	<366	
Asterionella													
Caloneis													
Ceratoneis arcus	**												
Ceratoneis													
Cocconeis	**						<2173	<208	<836	<1,222	<603	366	158
Cymatopleura								<208					
Cymbella	4,924	11,520	14,610	8,775	1,299	2,691	10,865	1,040	4,180	9,776	1,207	2,195	475
Denticula								<208	<836				
Diatoma elongatum	68,939	14,976	7,305	7,020	153,715	234,117	525,866	3,744	14,212	3,666	10,859	11,340	317
Diatoma		1,152	2,435	1,755	2,165	4,485	19,557	208	836	1,222	1,207	732	<158
Diploneis	**		<2,435										
Epithemia sorex	4,924		2,435	1,755	<433		<2173	<208	<836	<1,222	603	<366	<158
Epithemia													
Eunotia	**	2,304	<2,435	1,755		<897	2,173	<208	<836	<1,222	603	<366	158
Fragilaria crotonensis	4,924				<433	<897	15,211	416	<836	<1,222	603	<366	475
Fragilaria		9,216	31,655	15,795	2,165	1,794	23,903	2,704	9,196	3,666	3,620	2,561	317
Frustulia	**												
Gomphonema		1,152	9,740	7,020	866	3,588	4,346	1,872	11,704	13,442	3,017	1,097	475
Meridion	**												
Navicula radiosa					<433	<897	4,346	<208	836	<1,222	<603	<366	
Navicula	4,924	5,760	21,915	14,040	866	4,485	8,692	1,664	7,524	6,110	3,017	2,926	634
Neidium								<208		<1,222	<603	<366	
Nitzschia acicularis					866	1,794	6,519	<208	<836		<603	366	
Nitzschia	**	4,608	14,610	7,020	433	2,691	10,865	1,248	7,524	8,554	1,810	732	<158
Pinnularia		<1,152		1,755	<433	<897	2,173	<208	<836	<1,222	<603	<366	
Pleurosigma / Gyrosigma	**		<2,435		<433						<603		
Stauroneis	**	<1,152	<2,435	<1,755	<433	<897	<2173	208		<1,222	<603	<366	<158
Surirella			<2,435		<433		<2173	<208		<1,222	<603	<366	
Synedra ulna		6,912	<2,435		433	<897	<2173	<208	<836	<1,222	<603	<366	<158
Synedra		<1,152	2,435	<1,755	11,258	15,249	32,595	1,040	5,852	9,776	1,207	732	317
Tabellaria fenestrata													
Tabellaria flocculosa	19,697	1,152	19,480	14,040	433	2,691	4,346	208	836	<1,222	2,413	5,853	634
Tabellaria													
Unidentified		2,304		3,510									
Chlorophyta													
Chaetophorales													
Coleochaete ?									<836				
Draparnaldia													
Stigeoclonium	**							<208	<836	<1,222	7,240	732	5,544
Unidentified													
Chlorococcales													
Ankistrodesmus falcatus					<433	<897	4,346	<208	<836	<1,222	<603	<366	<158
Ankistrodemus spiralis						<897	<2173						<158
Ankistrodemus													
Botryococcus braunii	**				<433	<897							
Botryococcus													
Coelastrum					5,196	<897			<836		7,240	<366	<158
Crucigenia quadrata						<897	<2173			<1,222			
Crucigenia rectangularis											<603		
Crucigenia tetrapedia	19,697				<433	<897	<2173	832	3,344	4,888	2,413	2,926	<158
Crucigenia		4,608	9,740	7,020					<836				
Dictyosphaerium								<208	<836				
Elakatothrix													
Euastropsis													
Kirchneriella													
Lagerheimia		1,152			<433			<208	<836				
Nephrocytium													
Oocystis				3,510		897	4,346		836			<366	<158
Pediastrum	**	<1,152	<2,435	<1,755	3,031	4,485	32,595	<208	1,672	<1,222	<603	8,048	<158
Quadrigula													
Scenedesmus	39,394	<1,152			1,732	5,382	13,038	416	<836	2,444	2,413	1,829	634
Schroederia													
Selenastrum minutum								<208			<603		
Sphaerocystis schroeteri								<208	<836			<366	1,267
Tetraedron				1,755	866	897	13,038	<208	<836		1,810	366	158
Euglenales													
Euglena	**				<433	<897		<208	<836	1,222			
Phacus										<1,222	<603		
Trachelomonas	**	1,152	4,870	1,755	<433	<897	<2173	416	836	1,222	603	<732	158
Oedogoniales													
Bulbochaete										<1,222	<603	<366	<158
Oedogonium		8,064	9,740	8,775	<433	1,794	2,173	1,040	4,180	<1,222	<603	732	475
Siphonocladales													
Rhizoclonium					<433								
Tetrasporales													
Apiocystis brauniana													
Gloeocystis ampla										<1,222	<603		
Tetraspora lamellosa													
Tetraspora					<433	<897	<2173				<603	<366	<158
Tetraspora ?													
Ulothrichales													
Cylindrocapsa ?													
Geminella													
Microspora		<1,152			<433	897	<2173			<1,222	<603		<158
Stigeoclonium ?		<1,152											
Ulothrix		5,760		<1,755									
Volvocales													
Chlamydomonas												<366	
Eudorina													

Appendix B3. Periphyton abundance (cells/cm^2) in Boston area streams, 1993-1998.

Species List	STICKLEBACK OUTFLOW												
	Aug 1995	25-Aug 1996			21-Jul 1997			24-25 Aug 1997			26-30-Jul 1998		
		Rep A	Rep B	Rep C	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta													
Zygnematales													
Arthrodesmus													
Closterium		<1,152	<2,435	<1,755	<433	<897	<2173	<208	<836	<1,222	<603	<366	<158
Cosmarium	**	4,608	2,435	1,755	<433	897	4,346	208	1,672	1,222	1,207	366	158
Desmidium													
Euastrum				<1,755			<2173	<208		<1,222			
Gonatozygon													
Hyalotheca	**												
Micrasterias													
Mougeotia	**	1,152	<2,435	8,775	<433	<897	<2173	832	<836	2,444	3,017	1,097	<158
Netrium												<366	
Onychonema ?													
Penium													
Pleurotaenium		<1,152						<208		<1,222			
Sphaerozosma									<836				
Spirogyra					<433	<897	<2173	<208	<836			<366	
Spondylosium planum	**								<836				
Spondylosium													
Staurastrum paradoxum													
Staurastrum	**	1,152	<2,435	<1,755	<433	<897	<2173	<208	<836	<1,222	<603	<366	
Teilingia granulata													
Xanthidium													
Zygnema	**				433	897						<366	<158
Unidentified unicellular													
Unidentified flagellate											603		317
Chrysophyta													
Chromulinales													
Hydrurus foetidus													
Mischococcales													
Mischococcus					<433								
Ophiocytium						<897		<208		<1,222			
Ochromonadales													
Dinobryon bavaricum					433	897	4,346						
Dinobryon cylindricum						897	8,692				<603		
Dinobryon divergens						<897							
Dinobryon elegantissimum					<433	<897	6,519						
Dinobryon sociale							<2173						
Dinobryon sertularia					<433	<897	<2173						
Dinobryon		<1,152	2,435	3,510	<433			208					
Kephyrion / Pseudokephyrion													
Mallomonas		<1,152	<2,435										
Tribonematales													
Tribonema					433	<897	4,346	<208					<158
Unidentified flagellate					866	<897	<2173				1,207	2,195	
Unidentified unicellular													
Unidentified								<208	<836				
Cryptophyta													
Cryptomonadales													
Chroomonas acuta					<433		<2173					366	158
Cryptomonas	**				<433	<897		<208			<603	<366	<158
Cyanophyta													
Chamaesiphonales													
Clastidium setigerum					<433				<836	3,666	<603	732	634
Chroococcales													
Agmenellum glauca													
Agmenellum						<897		<208	<836	<1,222	<603		
Anacystis aeruginosa										105,092			
Anacystis elachista								8,320	25,080	97,760			
Anacystis		46,080	133,925	140,400	3,464	<897	145,591	832	3,344	<1,222			
Anacystis / Coccochloris											44,041	17,924	3,168
Coccochloris										<1,222			
Dactylococcopsis		10,368	12,175	7,020									
Gomphosphaeria naegelianum					<433	<897			<836	<1,222			
Gomphosphaeria						<897		<208	16,720	<1,222			
Rhabdoderma													
Unidentified													
Nostocales													
Anabaena affinis													
Anabaena	**	<1,152	73,050	<1,755	2,598	<897	39,114	2,496	<836	3,666	13,876	<366	<158
Aphanizomenon flos-aquae													
Gloeotrichia ?			17,045	8,775									
Nostoc			<2,435		<433								<158
Pseudanabaena catenata													
Rivularia	315,149								<836				
Tolypothrix			<2,435		<433		47,806	<208		<1,222			
Oscillatoriales													
Lyngbya limnetica	615,525		107,140	<1,755				2,080	<836				
Lyngbya						<897				8,554	<603	10,974	1,584
Oscillatoria tenuis					23,815	4,485	30,422	<208	34,276	31,772			
Oscillatoria	**	28,800	17,045	17,550	12,124	31,395	60,844	9,360	22,572	8,554	3,620	6,950	1,426
Phormidium mucicola										30,550			
Spirulina							<2173			<1,222			
Unidentified sheathed filament											<603	<366	950
Pyrrophyta													
Dinokontae													
Peridinium inconspicuum	**												
Peridinium / Glenodinium	**	1,152	2,435		1,299	1,794	6,519	<208	836	<1,222	603	1,829	317
Peridinium													
Rhodophyta													
Nemalionales													
Audouinella													
Batrachospermum													
Total	1,196,580	180,864	543,005	328,185	235,552	337,272	1,119,095	52,624	302,874	574,340	195,469	153,636	49,104

NOTE: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B3. Periphyton abundance (cells/cm^2) in Boston area streams, 1993-1998.

Species List	FICKLE DUCK OUTFLOW								AIMAOKATALOK NE INFLOW						
	17-18 Aug 1993	Aug 1995	25-Aug 1997			26-31 Jul 1998			5-6 Aug 1996			25-Aug 1997	28-Jun to 31-Jul 1998		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3
Bacillariophyta															
Centrales															
Cyclotella	*								<872						
Melosira	*								<872				<1,725		<2,514
Pennales															
Achnanthes flexella		**													
Achnanthes minutissima		**	8,015	1,298	5,325	2,147	4,164	1,408		6,316	6,002	4,228	3,450	6,290	7,541
Achnanthes	36,223		17,175	5,841	30,175	3,067	4,164	1,610		<197		384	6,900	2,097	7,541
Amphipleura pellucida															
Amphora	*							<201			<375				<2,514
Asterionella formosa												192			
Asterionella	*														
Caloneis													<1,725	<2,097	
Ceratoneis arcus		**													
Ceratoneis	*								<872						
Cocconeis											<375	<192		<2,097	<2,514
Cymatopleura	3,019								<872						
Cymbella	12,074	44,405	4,580	5,192	14,200	307		201	<872	987	2,626	192	1,725	6,290	5,027
Denticula															
Diatoma elongatum		152,245	1,145	2,596	1,775	2,147	1,041	402				5,382	6,900	23,064	27,649
Diatoma	*								2,617	395	2,251				
Diploneis															
Epithemia sorex															
Epithemia										<197					
Eunotia	3,019		1,145	2,596	8,875	613	3,123	201	872	197	375	<192	<1,725	<2,097	2,514
Fragilaria crotonensis		50,748							2,617	<197	4,126			<2,097	
Fragilaria	15,093		3,435	1,947	8,875	613	4,164	201	3,489	<197	3,751	192	3,450	6,290	2,514
Frustulia	*														
Gomphonema			4,580	<649	1,775	<307		<201	<872	197		384	<1,725	4,193	2,514
Meridion															
Navicula radiosa			<1,145	<649	<1,775										
Navicula	15,093	12,687	<1,145	649	1,775	<307	<1,041	<201	2,617	395	6,002	384	1,725	4,193	2,514
Neidium															
Nitzschia acicularis				<649	<1,775	<307								2,097	<2,514
Nitzschia	*		1,145	1,947	10,650			201	<872			192	1,725	2,097	<2,514
Pinnularia				<649	<1,775	<307		<201				<192	<1,725	<2,097	<2,514
Pleurosigma / Gyrosigma	*	6,344			<1,775				872						
Stauroneis	3,019							<201	<872	<197	<375				
Surirella	3,019										<375	<192	<1,725		<2,514
Synedra ulna		38,061	<1,145	<649	<1,775			<201				<192	<1,725		
Synedra	21,130		<1,145	1,947	7,100			604	<872			192	<1,725	2,097	
Tabellaria fenestrata		25,374	1,145	1,298	7,100		<1,041	201					<1,725		
Tabellaria flocculosa		418,673	4,580	11,033	31,950	307	1,041	1,811	294,837	7,895	<375	769	1,725	4,193	12,568
Tabellaria	196,209														
Unidentified															
Chlorophyta															
Chaetophorales															
Coleochaete ?															
Draparnaldia															
Stigeoclonium	*	2,232,921	<1,145	<649											
Unidentified															
Chlorococcales															
Ankistrodesmus falcatus			2,290	<649	5,325	1,534	1,041	2,012	5,234	7,303	14,254	5,382	12,075	44,031	50,270
Ankistrodemus spiralis			<1,145	<649	<1,775							3,075	<1,725	8,387	10,054
Ankistrodemus	3,019	57,092													
Botryococcus braunii		**		<649	<1,775			<201	<872	6,316	<375	<192		<2,097	
Botryococcus	*														
Coelastrum										<197	<375		<1,725	<2,097	<2,514
Crucigenia quadrata		**													
Crucigenia rectangularis						<307									
Crucigenia tetrapedia		**	4,580	<649		<307	<1,041	805		790	3,001	961	6,900	8,387	<2,514
Crucigenia				<649											
Dictyosphaerium	*	**								2,961	1,500	2,691	20,700	<2,097	17,595
Elakatothrix							<1,041				375	<192		<2,097	
Euastropsis								<201							
Kirchneriella												<192			
Lagerheimia			<1,145					201							<2,514
Nephrocytium		**								<197	<375				
Oocystis										<197		192	<1,725	2,097	<2,514
Pediastrum	*		<1,145	<649	<1,775	<307		<201	<872	4,145	7,877	2,306	<1,725	14,677	12,568
Quadrigula															
Scenedesmus	*	25,374	<1,145	<649	7,100	1,227	<1,041	<201	3,489	17,369	9,002	2,306	27,600	25,160	90,486
Schroederia															
Selenastrum minutum												961			
Sphaerocystis schroeteri					<1,775					<197	6,002	769		12,580	10,054
Tetraedron	*						<1,041			<197	375	577			
Euglenales															
Euglena	*	**	<1,145			<307			<872	<197	<375			<2,097	<2,514
Phacus															
Trachelomonas				<649	<1,775	307	<1,041			<197		<192	5,175	4,193	2,514
Oedogoniales															
Bulbochaete	33,205	**		<649	<1,775					<197			<1,725	<2,097	<2,514
Oedogonium	*	**	<1,145	1,947	3,550	<307	<1,041	<201	<872	4,145	1,125	2,883	<1,725	<2,097	5,027
Siphonocladales															
Rhizoclonium															
Tetrasporales															
Apiocystis brauniana															
Gloeocystis ampla												<192			
Tetraspora lamellosa			<1,145												
Tetraspora				<649	<1,775								<1,725		
Tetraspora ?			428,230	66,847	165,075	46,005	320,659	13,682					6,900	8,387	
Ulothrichales															
Cylindrocapsa ?															
Geminella		177,619							<872	<197			<1,725		
Microspora			2,290	1,298	1,775										
Stigeoclonium ?															
Ulothrix	*														
Volvocales															
Chlamydomonas												<192		<2,097	2,514
Eudorina	*	**									<375				

Appendix B3. Periphyton abundance (cells/cm^2) in Boston area streams, 1993-1998.

Species List	FICKLE DUCK OUTFLOW								AIMAOKATALOK NE INFLOW						
	17-18 Aug 1993	Aug 1995	25-Aug 1997			26-31 Jul 1998			5-6 Aug 1996			25-Aug 1997	28-Jun to 31-Jul 1998		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3
Chlorophyta															
Zygnematales															
Arthrodesmus	3,019	6,344		<649						<197	<375				
Closterium	*	12,687	1,145	<649	3,550	307	<1,041	402	<872	395	<375	384	<1,725	2,097	<2,514
Cosmarium	*	19,031	<1,145	649	1,775	307	1,041	1,408	872	592	750	192	5,175	25,160	17,595
Desmidium					<1,775										
Euastrum	*	**	<1,145	<649	1,775	<307		201	872	<197		<192		<2,097	2,514
Gonatozygon	*	12,687							<872	<197					
Hyalotheca		**	4,580	7,788	24,850	<307	<1,041	<201	<872			<192			<2,514
Micrasterias				<649	<1,775							<192	<1,725		
Mougeotia	3,019	12,687	<1,145	<649	<1,775	<307	<1,041	<201	<872		<375		3,450	8,387	12,568
Netrium															
Onychonema ?		114,184													
Penium															
Pleurotaenium			<1,145	<649	<1,775			<201			<375				
Sphaerozosma			<1,145	<649	3,550							384			
Spirogyra	*	**	<1,145	<649	3,550					<197	<375		6,900	8,387	5,027
Spondylosium planum		25,374			<1,775	<307	<1,041		1,745	987	<375	<192	<1,725	<2,097	<2,514
Spondylosium	*														
Staurastrum paradoxum		12,687													
Staurastrum	*	12,687	<1,145	649	<1,775	613	<1,041	1,006	2,617	197	<375	<192	<1,725	2,097	5,027
Teilingia granulata						1,840	1,041	604					<1,725	4,193	<2,514
Xanthidium	*	**		<649	<1,775	<307		<201	<872	<197	<375	<192		<2,097	
Zygnema	*	**	<1,145	<649	<1,775	<307			<872			15,184	22,425	23,064	15,081
Unidentified unicellular								<201					1,725	6,290	<2,514
Unidentified flagellate														2,097	5,027
Chrysophyta															
Chromulinales															
Hydrurus foetidus		**													
Mischococcales															
Mischococcus															
Ophiocytium					<1,775										
Ochromonadales															
Dinobryon bavaricum															
Dinobryon cylindricum															
Dinobryon divergens							<1,041								
Dinobryon elegantissimum															
Dinobryon sociale															
Dinobryon sertularia												577	1,725	<2,097	
Dinobryon	12,074	**	<1,145			307	<1,041		<872				<1,725		
Kephyrion / Pseudokephyrion															
Mallomonas	3,019			<649				<201							
Tribonematales															
Tribonema					<1,775										
Unidentified flagellate					1,775	307	2,082	402				<192	3,450	2,097	<2,514
Unidentified unicellular													1,725		
Unidentified															
Cryptophyta															
Cryptomonadales															
Chroomonas acuta															
Cryptomonas	*	**			<1,775			<201	<872	592					
Cyanophyta															
Chamaesiphonales															
Clastidium setigerum			5,725		<1,775	19,936	38,521	8,450				1,730			<2,514
Chroococcales															
Agmenellum glauca									41,870	<197	6,002				
Agmenellum	422,604					3,680						3,075	<1,725	16,774	<2,514
Anacystis aeruginosa				<649							<375				
Anacystis elachista															
Anacystis	*	**	<1,145	<649	122,475	<307		805	<872	<197	<375	9,418	158,700	92,255	110,594
Anacystis / Coccochloris															
Coccochloris															
Dactylococcopsis															
Gomphosphaeria naegelianum					<1,775							41,131	412,275	526,272	821,915
Gomphosphaeria		**				<307			<872	8,882	16,879		<1,725		
Rhabdoderma											<375				
Unidentified						286,458	780,825	179,068							
Nostocales															
Anabaena affinis												<192			
Anabaena	42,260	**	<1,145	2,596	1,775	<307	<1,041	1,207	20,935	1,579	15,754	9,226	10,350	20,967	<2,514
Aphanizomenon flos-aquae						<307	<1,041	<201							
Gloeotrichia ?															
Nostoc										3,750	51,388				
Pseudanabaena catenata											<375				
Rivularia	*	355,237							71,528	3,750	<375				
Tolypothrix															
Oscillatoriales															
Lyngbya limnetica		107,840							284,369	43,027	67,517	4,805			
Lyngbya	166,023					3,374		<201					17,250		<2,514
Oscillatoria tenuis												<192			
Oscillatoria	54,335	**	<1,145	<649	23,075	18,402	12,493	3,219	<872	<197	6,002			12,580	<2,514
Phormidium mucicola															
Spirulina												<192			
Unidentified sheathed filament						6,134									
Pyrrophyta															
Dinokontae															
Peridinium inconspicuum									1,745	<197	<375				
Peridinium / Glenodinium		**				<307				<197			<1,725		
Peridinium	*														
Rhodophyta							8,329	604					<1,725		
Nemalionales															
Audouinella			<1,145	<649								<192			
Batrachospermum															
Total	1,050,472	3,932,986	495,785	118,118	500,550	399,937	1,183,731	220,918	743,198	123,159	232,932	120,700	752,100	943,515	1,266,804

NOTE: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B3. Periphyton abundance (cells/cm^2) in Boston area streams, 1993-1998.

Species List	AIMAOKATALOK RIVER					REFERENCE OUTFLOW					
	24-Aug 1997		27-Jun to 01-Aug-98			25-Aug 1997			28-Jun to 01-Aug 1998		
	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta											
Centrales											
Cyclotella	<227								<1,709	<342	
Melosira				<612							
Pennales											
Achnanthes flexella											
Achnanthes minutissima	454	1,890	7,961	7,342	5,506	13,534	848	848	1,709	683	186
Achnanthes	908	378	8,846	5,506	8,258	28,110		2,545	10,252	3,759	372
Amphipleura pellucida											
Amphora			<885						<1,709		<186
Asterionella formosa	<227								<1,709		
Asterionella											
Caloneis									<1,709		<186
Ceratoneis arcus											
Ceratoneis											
Cocconeis											
Cymatopleura											
Cymbella		<126	885	1,224	688	9,370	566	3,393	3,417		372
Denticula											
Diatoma elongatum	6,810	1,260	16,807	16,519	9,635	130,138	23,755	39,022	18,795	342	558
Diatoma	<227							<848			
Diploneis									1,709	<342	<186
Epithemia sorex											
Epithemia											
Eunotia	<227	<126	1,769	<612	688	1,041	283	<848	1,709	342	<186
Fragilaria crotonensis				1,224		<1,041			<1,709		<186
Fragilaria		126	13,269	8,565	4,129		566	2,545	11,960	342	744
Frustulia									<1,709		
Gomphonema	227			612		11,452	9,898	19,511		342	<186
Meridion											
Navicula radiosa											
Navicula		<126	885	1,224	688	4,164		<848	3,417	<342	372
Neidium											
Nitzschia acicularis		<126	<885			<1,041			1,709	342	186
Nitzschia	454		2,654	612	1,376	<1,041			8,543		186
Pinnularia				<612	<688				<1,709		
Pleurosigma / Gyrosigma											
Stauroneis									<1,709		
Surirella				<612							
Synedra ulna	<227							<848	1,709	<342	
Synedra	2,270	252	1,769	1,224	688	5,206	283	3,393	6,834		186
Tabellaria fenestrata	<227								<1,709		
Tabellaria flocculosa	4,540	5,922	174,266	102,171	106,671	1,041	283	<848	11,960	3,759	2,231
Tabellaria											
Unidentified											
Chlorophyta											
Chaetophorales											
Coleochaete ?										<342	
Draparnaldia						6,247					
Stigeoclonium									<1,709	<342	<186
Unidentified											372
Chlorococcales											
Ankistrodesmus falcatus	1,589	3,024	28,307	11,624	22,022	8,329	1,131	11,876	8,543	1,367	1,301
Ankistrodemus spiralis	<227	504	3,538	<612	<688	<1,041		<848	<1,709		<186
Ankistrodemus	454	<126									
Botryococcus braunii			<885	<612	<688						
Botryococcus											
Coelastrum			<885	4,894	<688		<283		<1,709	1,367	<186
Crucigenia quadrata	<227	<126	<885	<612	<688						
Crucigenia rectangularis											<186
Crucigenia tetrapedia	<227	504	<885	4,894	5,506	<1,041	<283		<1,709	<342	<186
Crucigenia				2,447							<186
Dictyosphaerium	<227	<126	7,077	2,447						1,367	
Elakatothrix											
Euastropsis			<885	<612							
Kirchneriella		<126	<885	<612	<688						
Lagerheimia	454	126	<885	<612							186
Nephrocytium											
Oocystis	227	126	1,769	7,342	4,817	<1,041		<848	<1,709	<342	<186
Pediastrum	<227	<126	8,846	8,565	13,174				<1,709	<342	<186
Quadrigula	<227										
Scenedesmus	908	252	14,154	20,801	19,270	<1,041		<848	10,252	1,367	1,487
Schroederia								<848			
Selenastrum minutum	<227										
Sphaerocystis schroeteri	908	2,520	7,077	2,447	2,753	<1,041				<342	<186
Tetraedron		<126	<885	<612	688					<342	<186
Euglenales											
Euglena									<1,709		<186
Phacus											
Trachelomonas	<227	<126	885						<1,709	<342	<186
Oedogoniales											
Bulbochaete			<885	<612	<688	<1,041			1,709	2,392	1,487
Oedogonium	<227	<126	3,538	2,447	1,376	5,206	283	1,697	49,549	2,734	3,160
Siphonocladales											
Rhizoclonium											
Tetrasporales											
Apiocystis brauniana										<342	186
Gloeocystis ampla											
Tetraspora lamellosa											
Tetraspora								3,393			
Tetraspora ?						73,918	<283	2,545	10,252	3,759	186
Ulothrichales											
Cylindrocapsa ?				612	8,253				<1,709	1,367	<186
Geminella		<126	<885	<612	<688				<1,709		
Microspora			<885	<612		<1,041	<283	848			372
Stigeoclonium ?											
Ulothrix						<1,041					
Volvocales											
Chlamydomonas										<342	
Eudorina											

Appendix B3. Periphyton abundance (cells/cm^2) in Boston area streams, 1993-1998.

Species List	AIMAOKATALOK RIVER					REFERENCE OUTFLOW					
	24-Aug 1997		27-Jun to 01-Aug-98			25-Aug 1997			28-Jun to 01-Aug 1998		
	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Chlorophyta											
Zygnematales											
Arthrodesmus	454		885	612	688						
Closterium	<227	126	<885	612	1,376	4,164	848	3,393	<1,709	342	<186
Cosmarium	1,362	756	12,384	15,295	20,646	1,041	283	848	3,417	1,709	930
Desmidium											
Euastrum	<227		1,769	1,224	1,376	<1,041	<283	<848	<1,709	<342	<186
Gonatozygon			<885	<612	<688						
Hyalotheca			<885	<612	<688	<1,041	<283	<848	<1,709		<186
Micrasterias											
Mougeotia	<227	126	<885	612	6,194			<848	<1,709	342	372
Netrium											
Onychonema ?											
Penium					<688					<342	
Pleurotaenium			<885	<612	<688					<342	<186
Sphaerozosma	681	504				<1,041	283	<848			
Spirogyra	<227	<126	<885	<612	6,194		<283		3,417	<342	<186
Spondylosium planum	<227	<126	<885	<612	<688	<1,041		<848			
Spondylosium											
Staurastrum paradoxum											
Staurastrum	227	<126	5,308	5,506	4,129	<1,041	283	848	6,834	342	558
Teilingia granulata			9,731	9,177	11,699				<1,709		558
Xanthidium											
Zygnema	1,816	3,024	7,077	<612	<688	<1,041	566	23,752			
Unidentified unicellular			23,000	22,637	33,722					<342	186
Unidentified flagellate			885	1,835	688					<342	
Chrysophyta											
Chromulinales											
Hydrurus foetidus											
Mischococcales											
Mischococcus											
Ophiocytium											
Ochromonadales											
Dinobryon bavaricum											
Dinobryon cylindricum											
Dinobryon divergens											
Dinobryon elegantissimum						1,041	<283				
Dinobryon sociale											
Dinobryon sertularia			<885	2,447	<688						<186
Dinobryon		<126								<342	186
Kephyrion / Pseudokephyrion				612							
Mallomonas								<848			<186
Tribonematales											
Tribonema											
Unidentified flagellate		<126	885	612	1,376	3,123	<283	1,697	<1,709	683	186
Unidentified unicellular									<1,709	1,367	186
Unidentified											
Cryptophyta											
Cryptomonadales											
Chroomonas acuta											
Cryptomonas									<1,709	342	<186
Cyanophyta											
Chamaesiphonales											
Clastidium setigerum	681	630	1,769	<612	<688	22,904	51,470	26,297	3,417	1,367	<186
Chroococcales											
Agmenellum glauca											
Agmenellum	<227		7,076	9,789	8,258				<1,709	<342	
Anacystis aeruginosa											
Anacystis elachista											
Anacystis	<227	504	70,768	41,602	100,477		8,201	2,545	34,172	30,070	5,205
Anacystis / Coccochloris											
Coccochloris											
Dactylococcopsis											
Gomphosphaeria naegelianum			199,035	55,062	138,328	<1,041		<848	59,801	54,672	46,475
Gomphosphaeria	908	<126				<1,041	3,959	13,573			8,366
Rhabdoderma					<688						
Unidentified											
Nostocales											
Anabaena affinis							<283	<848			
Anabaena			4,423	<612	<688	12,493	7,636	2,545	11,960	5,467	1,301
Aphanizomenon flos-aquae										<342	
Gloeotrichia ?											
Nostoc											
Pseudanabaena catenata			10,615					<848			
Rivularia											
Tolypothrix	<227										
Oscillatoriales											
Lyngbya limnetica						54,137	33,936	16,118			
Lyngbya	<227			9,177	<688	12,493	<283		<1,709		5,019
Oscillatoria tenuis						<1,041		<848			
Oscillatoria	2,043	1,386	61,922	47,109	32,345	<1,041		<848	17,086	12,301	1,115
Phormidium mucicola											
Spirulina						<1,041	566	2,545			
Unidentified sheathed filament											
Pyrrophyta											
Dinokontae											
Peridinium inconspicuum											
Peridinium / Glenodinium	<227		1,769	612	<688			<848	<1,709	342	186
Peridinium											
Rhodophyta											930
Nemalionales											
Audouinella						<1,041	<283				
Batrachospermum	<227										
Total	28,375	23,940	723,602	439,272	583,687	409,152	145,927	185,777	304,131	134,972	85,886

NOTE: * Genus was identified in fields that fell outside of the specified counting area during laboratory analysis.
** Genus was present in the remainder of the sample that was not sub-sampled for enumeration.

Appendix B4. Mean abundance (cells/cm^2) and percent composition of main taxa of periphyton in Boston area streams, 1993-1998.

Stream	Sample Date	No. Repl.	Bacillariophyta			Chlorophyta			Chrysophyta			Cryptophyta			Cyanophyta			Pyrrophyta			Rhodophyta			All Taxa	
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Stickleback Outflow	Aug-95	1	**206 816**	-	*17.3*	**59 090**	-	*4.9*	**0**	-	*0.0*	**0**	-	*0.0*	**930 674**	-	*77.8*	**0**	-	*0.0*	**0**	-	*0.0*	**1196 580**	-
	25-Aug-96	3	**111 790**	24 465	*31.9*	**29 259**	2 058	*8.3*	**1 982**	1 038	*0.6*	**0**	0	*0.0*	**206 458**	81 090	*58.9*	**1 196**	703	*0.3*	**0**	0	*0.0*	**350 685**	105 145
	21-Jul-97	3	**383 978**	156 338	*68.1*	**33 762**	20 110	*6.0*	**9 143**	7 380	*1.6*	**0**	0	*0.0*	**133 886**	94 962	*23.7*	**3 204**	1,664	*0.6*	**0**	0	*0.0*	**563 973**	279 110
	24-25 Aug-97	3	**161 458**	72 113	*52.1*	**9 909**	3 093	*3.2*	**69**	69	*0.0*	**0**	0	*0.0*	**138 231**	79 044	*44.6*	**279**	279	*0.1*	**0**	0	*0.0*	**309 946**	150 648
	26-Jun-98 to 30-Jul-98	3	**78 101**	23 120	*58.8*	**17 117**	5 173	*12.9*	**1 134**	635	*0.9*	**175**	106	*0.1*	**35 293**	15 537	*26.6*	**916**	464	*0.7*	**0**	0	*0.0*	**132 736**	43 525
Fickle Duck Outflow	17-18 Aug-93	1	**307 897**	-	*29.3*	**42 260**		*4.0*	**15 093**	-	*1.4*	***0***	-	*0.0*	**685 222**	-	*65.2*	**0**	-	*0.0*	**0**	-	*0.0*	**1050 472**	-
	Aug-95	1	**748 536**	-	*19.0*	**2721 373**		*69.2*	**0**	-	*0.0*	***0***	-	*0.0*	**463 077**	-	*11.8*	**0**	-	*0.0*	**0**	-	*0.0*	**3932 986**	-
	25-Aug-97	3	**70 955**	29 469	*19.1*	**248 056**	105 872	*66.8*	**592**	592	*0.2*	***0***	0	*0.0*	**51 882**	47 730	*14.0*	**0**	0	*0.0*	**0**	0	*0.0*	**371 484**	126 691
	26-Jun-98 to 31-Jul-98	3	**11 247**	3 297	*1.9*	**132 081**	96 290	*22.0*	**1 033**	528	*0.2*	***0***	0	*0.0*	**454 191**	193 423	*75.5*	**0**	0	*0.0*	**2,977**	2,681	*0.5*	**601 528**	295 653
Aimaokatalok NE Inflow	5-6 Aug-96	3	**116 478**	95 755	*31.8*	**34 763**	9 970	*9.5*	**0**	0	*0.0*	**197**	197	*0.1*	**214 410**	106 350	*58.5*	**582**	582	*0.2*	**0**	0	*0.0*	**366 430**	191 031
	25-Aug-97	1	**12 491**	-	*10.3*	**38 247**		*31.7*	**577**	-	*0.5*	**0**	-	*0.0*	**69 385**		*57.5*	**0**	-	*0.0*	**0**	-	*0.0*	**120 700**	-
	28-Jun-98 to 31-Jul-98	3	**53 626**	13 191	*5.4*	**197 537**	42 264	*20.0*	**2 999**	2 042	*0.3*	**0**	0	*0.0*	**733 310**	101 644	*74.3*	**0**	0	*0.0*	**0**	0	*0.0*	**987 473**	150 199
Aimaokatalok River	24-Aug-97	2	**12 746**	2 918	*48.7*	***10 336***	1 256	*39.5*	**0**	0	*0.0*	**0**	*0*	*0.0*	***3 076***	556	*11.8*	**0**	0	*0.0*	**0**	0	*0.0*	**26 158**	2 218
	27-Jun-98 to 01-Aug-98	3	**171 220**	29 035	*29.4*	**142 277**	11 530	*24.4*	**1 977**	859	*0.3*	**0**	0	*0.0*	**265 919**	56 084	*45.7*	**794**	519	*0.1*	**0**	0	*0.0*	**582 187**	82 082
Reference Outflow	25-Aug-97	3	**103 932**	51 059	*42.1*	**50 594**	27 499	*20.5*	**1 954**	1 209	*0.8*	***0***	0	*0.0*	**90 473**	13 468	*36.6*	**0**	0	*0.0*	**0**	0	*0.0*	**246 952**	81 912
	28-Jun-98 to 01-Aug-98	3	**33 007**	25 391	*18.9*	**41 255**	26 439	*23.6*	**869**	612	*0.5*	**114**	114	*0.1*	**99 265**	17 174	*56.7*	**176**	99	*0.1*	**310**	310	*0.2*	**174 996**	66 104

SE = Standard Error

APPENDIX C

SECONDARY PRODUCERS

Appendix C1. Zooplankton abundance (organisms/m^3) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE															
		Aug-93	02-Aug-95			04-Aug-96			04-Aug-96			24-Aug-96			24-Aug-96		
		WQ5	Station WQ5			Station 5			Station 6			Station 5			Station 6		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA																	
Asplanchna																	
Brachionus																	
Conochilus unicornis	colony																
Conochilus unicornis																	
Filinia																	
Kellicottia longispina						14 500	12 760	13 340				13 920	6 960	18 560	6 500	3 250	3 575
Kellicottia			260	215	1 040												
Keratella cochlearis				7													
Keratella quadrata																	
Lepadella																	
Polyarthra							58										
Trichotriidae																	
Unidentified									43 550	12 350	17 550				650		
Unidentified		12 264															
CLADOCERA																	
Alona guttata																	
Alona rectangulata																	
Alona rustica																	
Alonella	juvenile																
Bosmina longirostris			1		1		17	29	7	13	39	41	290	41	91	59	104
Chydorus sphaericus						6						17	17	23	39	20	26
Daphnia galatea mandotea																	
Daphnia longiremis			16	98	46	1 972	1 102	3 132	15 600	18 200	11 700	11 020	9 280	4 698	20 800	10 075	8 190
Daphnia middendorffiana		189									1				1		
Daphnia	juvenile																
Holopedium gibberum		566	22	33	59	406	81	696	11 050	14 300	8 450	638	812	986			13
COPEPODA																	
Calanoida																	
Diaptomus pribilofensis	male								20	1	1	6					
Diaptomus pribilofensis	female								7	1	2	23		6			1
Diaptomus ashlandi	male								3	1	3	52	17	17	39	52	25
Diaptomus ashlandi	female								150	3	9	58	23	35	39	39	36
Diaptomus	cop. V		1	20	20					455	299		6	17	26	26	12
Diaptomus	cop. IV	472								130							
Diaptomus	cop. III																
Diaptomus	cop. II																
Diaptomus	cop. I																
Diaptomus		94															
Epischura lacustris	male								3	5	3			12	1		
Epischura lacustris	female								8	7	7				1		
Epischura lacustris	cop. V								1	1							
Epischura lacustris	cop. IV																
Epischura lacustris	cop. III																
Epischura lacustris	cop. II																
Epischura lacustris	cop. I																7
Epischura nevadensis	male																
Epischura nevadensis	female																
Epischura nevadensis	cop. V																
Epischura nevadensis	cop. IV																
Epischura nevadensis	cop. III																
Epischura nevadensis	cop. II																
Epischura nevadensis	cop. I																
Heterocope septentrionalis	male																
Heterocope septentrionalis	female																
Heterocope septentrionalis	cop. V																
Heterocope septentrionalis	cop. IV																
Heterocope septentrionalis	cop. III																
Leptodiaptomus ashlandi	male																
Leptodiaptomus ashlandi	female																
Leptodiaptomus pribilofensis	male																
Leptodiaptomus pribilofensis	female																
Leptodiaptomus	cop. V																
Leptodiaptomus	cop. IV																
Leptodiaptomus	cop. III																
Leptodiaptomus	cop. II																
Leptodiaptomus	cop. I																
Limnocalanus macrurus	male		21	26	14	6			6	5	5	6		6	5	5	3
Limnocalanus macrurus	female		20	17	16				5	4	6	12		6	4	4	2
Limnocalanus macrurus	cop. V																1
Limnocalanus macrurus	cop. IV																
Limnocalanus macrurus	cop. III																
Limnocalanus macrurus	cop. I																
Limnocalanus macrurus		94															
Unidentified Calanoida	nauplius								65	65							
Cyclopoida																	
Cyclops bicuspidatus thomasi	male		7														
Cyclops bicuspidatus thomasi	female		13														1
Cyclops scutifer	male		208	676	507	290	87	232	455	455	325	12			7		1
Cyclops scutifer	female		936	1 138	1 053	2 320	1 624	5 800	3 445	2 990	3 380	6	12	23	46	52	18
Cyclops scutifer		1 132															
Cyclops capillatus	male																
Cyclops	male																
Cyclops	copepodite		2 210	3 257	2 925												
Cyclops	cop. III-IV	1 981															
Cyclops	cop. I-II	943															
Cyclops																	
Lichomolgidae (parasitic)	copepodite																
Lichomolgidae (parasitic)	nauplius					23 780	17 400	49 880	3 900	7 800	12 350	20 300	21 460	20 300	39 650	21 450	23 400
Unidentified Cyclopoida	male																
Unidentified Cyclopoida	copepodite					11 020	6 380	23 200	9 750	9 100	9 750	8 584	4 060	7 540	2 860	3 185	2 080
Unidentified Cyclopoida	nauplius																
Harpacticoida																	
OSTRACODA																	
Unidentifed Ostracoda	juvenile																
MALACOSTRACA																	
Gammarus lacustris																	
Mysis relicta	female																
Unidentified Crustacean larvae	nauplius	23 208															
TOTAL		**40 943**	**3 714**	**5 483**	**5 679**	**54 300**	**39 510**	**96 309**	**88 022**	**65 885**	**63 880**	**54 694**	**42 937**	**52 270**	**70 757**	**38 215**	**37 495**

Appendix C1. Zooplankton abundance (organisms/m^3) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE														
		24-Jul-97			22-Jul-97			24-Jul-97			26-Aug-97			25-Aug-97		
		Station 1			Station 5			Station 6			Station 5			Station 6		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA																
Asplanchna			6	6	47	67	27				117					
Brachionus																
Conochilus unicornis	colony															
Conochilus unicornis								2 237	3 203	3 355	12					
Filinia																
Kellicottia longispina		585	1 227	877	1 236	1 737	1 002	661	356	407	40 337	14 030	17 538	11 692	11 692	11 042
Kellicottia																
Keratella cochlearis			6	6	67	200	67								130	
Keratella quadrata																
Lepadella																
Polyarthra																
Trichotriidae																
Unidentified																
Unidentified			12	6												
CLADOCERA																
Alona guttata																
Alona rectangulata																
Alona rustica																
Alonella	juvenile															
Bosmina longirostris		23	12	12	3						1 169	643	585	1 104	260	390
Chydorus sphaericus		6	6	6	3		3									
Daphnia galatea mandotea																
Daphnia longiremis									10		1 812	1 403	2 280	2 079	3 118	1 949
Daphnia middendorffiana																
Daphnia	juvenile															
Holopedium gibberum		18	18	41	27	57	23	112	81	168				715	1 559	1 039
COPEPODA																
Calanoida																
Diaptomus pribilofensis	male															
Diaptomus pribilofensis	female															
Diaptomus ashlandi	male															
Diaptomus ashlandi	female															
Diaptomus	cop. V															
Diaptomus	cop. IV															
Diaptomus	cop. III															
Diaptomus	cop. II															
Diaptomus	cop. I															
Diaptomus																
Epischura lacustris	male															6
Epischura lacustris	female		6										6			6
Epischura lacustris	cop. V															
Epischura lacustris	cop. IV															
Epischura lacustris	cop. III															
Epischura lacustris	cop. II															
Epischura lacustris	cop. I															
Epischura nevadensis	male															
Epischura nevadensis	female															
Epischura nevadensis	cop. V															
Epischura nevadensis	cop. IV															
Epischura nevadensis	cop. III															
Epischura nevadensis	cop. II															
Epischura nevadensis	cop. I															
Heterocope septentrionalis	male															
Heterocope septentrionalis	female															
Heterocope septentrionalis	cop. V															
Heterocope septentrionalis	cop. IV															
Heterocope septentrionalis	cop. III															
Leptodiaptomus ashlandi	male											23	23	13	13	32
Leptodiaptomus ashlandi	female									5	18	12	6	26	13	26
Leptodiaptomus pribilofensis	male	6												6		
Leptodiaptomus pribilofensis	female	12														
Leptodiaptomus	cop. V	47						10		5				13		
Leptodiaptomus	cop. IV		6		13	10	7	5		10						
Leptodiaptomus	cop. III	6	6		23	23	20									
Leptodiaptomus	cop. II			6	37	67	43									
Leptodiaptomus	cop. I				10	23	33									
Limnocalanus macrurus	male							15	10	20	53	76	88	45	65	58
Limnocalanus macrurus	female							5	25	25	105	70	76	26	58	26
Limnocalanus macrurus	cop. V							56	31	56						
Limnocalanus macrurus	cop. IV								5							
Limnocalanus macrurus	cop. III															
Limnocalanus macrurus	cop. I															
Limnocalanus macrurus																
Unidentified Calanoida	nauplius	228	35	47	1 604	2 372	768	15	153	102	58	585				
Cyclopoida																
Cyclops bicuspidatus thomasi	male	29	12	23	17	30	13	36	10	10	58				13	6
Cyclops bicuspidatus thomasi	female		6	6	13	10	7	5	10	5	6			65		
Cyclops scutifer	male	64	164	53	200	334	401	1 525	1 423	1 881	2 338	292	292	260	110	65
Cyclops scutifer	female	94	164	99	167	301	234	1 169	712	864		4 092	1 754	1 364	779	909
Cyclops scutifer																
Cyclops capillatus	male															
Cyclops	male															
Cyclops	copepodite	456	292	397	1 670	1 871	1 336	1 373	1 627	1 627	7 015	4 092	6 430	2 988	2 403	3 118
Cyclops	cop. III-IV															
Cyclops	cop. I-II															
Cyclops																
Lichomolgidae (parasitic)	copepodite															
Lichomolgidae (parasitic)	nauplius															
Unidentified Cyclopoida	male															
Unidentified Cyclopoida	copepodite															
Unidentified Cyclopoida	nauplius	158	47	35	768	802	1 236	102	102		1 228			65	1 039	2 144
Harpacticoida																
OSTRACODA																
Unidentifed Ostracoda	juvenile															
MALACOSTRACA																
Gammarus lacustris		18	18	41	27	57	23							715	1 559	1 039
Mysis relicta	female							1								
Unidentified Crustacean larvae	nauplius															
TOTAL		**1 748**	**2 040**	**1 660**	**5 933**	**7 961**	**5 245**	**7 326**	**7 757**	**8 540**	**54 326**	**25 319**	**29 078**	**21 175**	**22 812**	**21 857**

Appendix C1. Zooplankton abundance (organisms/m^3) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE						STICKLEBACK LAKE								
		18-Jul-98 Station 4			18-Jul-98 Station 6			Aug-93	03-Aug-95			04-Aug-96			25-Aug-96		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA																	
Asplanchna		38	75	75	19		10		296	638	17	29	348	139			
Brachionus															58		
Conochilus unicornis	colony	75		38													
Conochilus unicornis																	
Filinia												81	116	1 914			
Kellicottia longispina		6 792	5 283	1 000	1 456	98	857					151	348	58			
Kellicottia									1 740	2 784	10 730						
Keratella cochlearis					10				302	406	812		58				
Keratella quadrata																	
Lepadella																	
Polyarthra											58						
Trichotriidae																	
Unidentified												41	232	580			
Unidentified								893 584									
CLADOCERA																	
Alona guttata																	58
Alona rectangulata																	
Alona rustica																	
Alonella	juvenile																
Bosmina longirostris		113	226	45	29	1	1		400	23	46	29	348	238			
Chydorus sphaericus			4						29	6	6			6	116	290	58
Daphnia galatea mandotea																	
Daphnia longiremis		226	26	42	87	148	57				6	17	23	23			
Daphnia middendorffiana								3 019									
Daphnia	juvenile	415	642	113		39	95	3 019									
Holopedium gibberum		2 000	2 038	1 358	476	441	267					23					
COPEPODA																	
Calanoida																	
Diaptomus pribilofensis	male																
Diaptomus pribilofensis	female																
Diaptomus ashlandi	male																
Diaptomus ashlandi	female																
Diaptomus	cop. V												6				
Diaptomus	cop. IV																
Diaptomus	cop. III												6				
Diaptomus	cop. II																
Diaptomus	cop. I																
Diaptomus																	
Epischura lacustris	male																
Epischura lacustris	female																
Epischura lacustris	cop. V																
Epischura lacustris	cop. IV	8															
Epischura lacustris	cop. III																
Epischura lacustris	cop. II				1												
Epischura lacustris	cop. I				1												
Epischura nevadensis	male								23	70	29						
Epischura nevadensis	female								70	75	23						
Epischura nevadensis	cop. V								151	290	52						
Epischura nevadensis	cop. IV								41	186	64						
Epischura nevadensis	cop. III								52	110	23						
Epischura nevadensis	cop. II								29	93	35						
Epischura nevadensis	cop. I								6	17	6						
Heterocope septentrionalis	male																
Heterocope septentrionalis	female																
Heterocope septentrionalis	cop. V																
Heterocope septentrionalis	cop. IV			19													
Heterocope septentrionalis	cop. III		4	4													
Leptodiaptomus ashlandi	male	38	38	38													
Leptodiaptomus ashlandi	female			4													
Leptodiaptomus pribilofensis	male																
Leptodiaptomus pribilofensis	female																
Leptodiaptomus	cop. V	38	75	189	19	20	29										
Leptodiaptomus	cop. IV	416	755	83	78	127	86										
Leptodiaptomus	cop. III	528	64	64	39	98	114										
Leptodiaptomus	cop. II	83	642	528	10	29	48										
Leptodiaptomus	cop. I	38	75	75													
Limnocalanus macrurus	male				2	32	33			6							
Limnocalanus macrurus	female	4			24	23	28										
Limnocalanus macrurus	cop. V				98	137	143										
Limnocalanus macrurus	cop. IV	4		4	10	10											
Limnocalanus macrurus	cop. III						10										
Limnocalanus macrurus	cop. I																
Limnocalanus macrurus																	
Unidentified Calanoida	nauplius	340	566	170	10	69			23	23	6						
Cyclopoida																	
Cyclops bicuspidatus thomasi	male	1 170	642	943	39	88	95			6							
Cyclops bicuspidatus thomasi	female	604	264	264	19		39		12								
Cyclops scutifer	male	1 358	981	1 132	3 689	2 157	2 476		17	12	6						6
Cyclops scutifer	female	2 226	2 453	2 264	165	1 275	476		29	6	6	6	17	12	6		6
Cyclops scutifer								3 019									
Cyclops capillatus	male																
Cyclops	male																
Cyclops	copepodite								2 314	2 668	1 334						
Cyclops	cop. III-IV																
Cyclops	cop. I-II																
Cyclops								3 019									
Lichomolgidae (parasitic)	copepodite														58		
Lichomolgidae (parasitic)	nauplius											441	2 146	3 944	232	406	232
Unidentified Cyclopoida	male																
Unidentified Cyclopoida	copepodite	5 660	6 453	9 057	34	246	495					180	1 624	1 798	754	580	522
Unidentified Cyclopoida	nauplius								522	1 276	464						
Harpacticoida																	
OSTRACODA																	
Unidentifed Ostracoda	juvenile								151	58	58						
MALACOSTRACA																	
Gammarus lacustris																	
Mysis relicta	female				1	1											
Unidentified Crustacean larvae	nauplius							6 038									
TOTAL		**22 175**	**21 306**	**17 509**	**6 318**	**5 040**	**5 358**	**911 697**	**6 206**	**8 752**	**13 781**	**998**	**5 272**	**8 712**	**1 224**	**1 276**	**882**

Appendix C1. Zooplankton abundance (organisms/m^3) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	STICKLEBACK LAKE									FICKLE DUCK LAKE					
		23-Jul-97			26-Aug-97			19-Jul-98			03-Aug-95			05-Aug-96		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA																
Asplanchna					12	6		42	52	43	1 720	473	215	30	473	17
Brachionus																
Conochilus unicornis	colony							633	196	71						
Conochilus unicornis																
Filinia									65							
Kellicottia longispina		58			310	550	509	17 449	7 832	125 983				10 363	61 060	11 868
Kellicottia											6 450	2 150	3 870			
Keratella cochlearis				58	12	18	12	316	65							
Keratella quadrata																
Lepadella														4	129	
Polyarthra					12	23	23								43	43
Trichotriidae																
Unidentified																
Unidentified					53	88	94	15	14							
CLADOCERA																
Alona guttata																
Alona rectangulata																
Alona rustica															4	
Alonella	juvenile															
Bosmina longirostris		292	234	58	64	187	164	221	65	100	43			4		
Chydorus sphaericus			58	53	12	12		95	39	28					26	
Daphnia galatea mandotea											301	344	774			
Daphnia longiremis		643				6	6				473	86	86	52	69	47
Daphnia middendorffiana																
Daphnia	juvenile															
Holopedium gibberum					6						65	26	13	13	13	4
COPEPODA																
Calanoida																
Diaptomus pribilofensis	male															
Diaptomus pribilofensis	female															
Diaptomus ashlandi	male															
Diaptomus ashlandi	female															
Diaptomus	cop. V										13	172	1 720			
Diaptomus	cop. IV										2 580	4 300	1 290			
Diaptomus	cop. III															
Diaptomus	cop. II														9	
Diaptomus	cop. I														39	9
Diaptomus																
Epischura lacustris	male			6		6		2		14						
Epischura lacustris	female				6	29	6	2		14						
Epischura lacustris	cop. V	6	82	41				42	33	57						
Epischura lacustris	cop. IV	12	58	47				169	124	157						
Epischura lacustris	cop. III		6	23				190	144	242						
Epischura lacustris	cop. II			58			6	527	170	214						
Epischura lacustris	cop. I			58				843	117	14						
Epischura nevadensis	male										17	4				
Epischura nevadensis	female										17					
Epischura nevadensis	cop. V												9			
Epischura nevadensis	cop. IV															
Epischura nevadensis	cop. III										3 870	2 150	3 870			
Epischura nevadensis	cop. II										1 333	516	258			
Epischura nevadensis	cop. I										43		43			
Heterocope septentrionalis	male										77	22	60			
Heterocope septentrionalis	female										133	90	52			
Heterocope septentrionalis	cop. V												4			
Heterocope septentrionalis	cop. IV															
Heterocope septentrionalis	cop. III															
Leptodiaptomus ashlandi	male															
Leptodiaptomus ashlandi	female															
Leptodiaptomus pribilofensis	male															
Leptodiaptomus pribilofensis	female															
Leptodiaptomus	cop. V															
Leptodiaptomus	cop. IV			58												
Leptodiaptomus	cop. III															
Leptodiaptomus	cop. II															
Leptodiaptomus	cop. I															
Limnocalanus macrurus	male	6														
Limnocalanus macrurus	female															
Limnocalanus macrurus	cop. V															
Limnocalanus macrurus	cop. IV															
Limnocalanus macrurus	cop. III															
Limnocalanus macrurus	cop. I															
Limnocalanus macrurus																
Unidentified Calanoida	nauplius	58			725	848	590	2 318	2 796	1 281	43			4	172	129
Cyclopoida																
Cyclops bicuspidatus thomasi	male	585	643	292		70	23	137	117	142						
Cyclops bicuspidatus thomasi	female	175	409	351	6				7	7						
Cyclops scutifer	male	58	6	23							258	17	22			
Cyclops scutifer	female	818	6	6										17	9	9
Cyclops scutifer																
Cyclops capillatus	male														4	
Cyclops	male															
Cyclops	copepodite	28 060	49 690	46 767	520	1 152	783				129					
Cyclops	cop. III-IV															
Cyclops	cop. I-II															
Cyclops																
Lichomolgidae (parasitic)	copepodite															
Lichomolgidae (parasitic)	nauplius													3 354	15 480	3 225
Unidentified Cyclopoida	male															
Unidentified Cyclopoida	copepodite							15 275	13 265	14 947				43	34	17
Unidentified Cyclopoida	nauplius	58			82	94	82		196	71	3 010	3 870	1 290			
Harpacticoida					12											
OSTRACODA																
Unidentifed Ostracoda	juvenile															
MALACOSTRACA																
Gammarus lacustris		6			6				7							
Mysis relicta	female															
Unidentified Crustacean larvae	nauplius															
TOTAL		**30 837**	**51 193**	**47 901**	**1 836**	**3 087**	**2 297**	**38 273**	**25 302**	**143 386**	**20 576**	**14 220**	**13 575**	**13 885**	**77 563**	**15 368**

Appendix C1. Zooplankton abundance (organisms/m^3) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	FICKLE DUCK LAKE											
		25-Aug-96			23-Jul-97			26-Aug-97			19-Jul-98		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA													
Asplanchna		40 850	54 610	38 700	21 045	34 296	32 737	1 743	765	2 211	42 137	445	3 953
Brachionus													
Conochilus unicornis	colony										235	4 329	4 115
Conochilus unicornis						2 338	1 559	4 252	1 275	2 551			
Filinia		430											
Kellicottia longispina		80 840	116 960	80 840	2 338	2 338	390	68 025	15 731	45 492	9 364	7 215	953
Kellicottia													
Keratella cochlearis		1 290								85			
Keratella quadrata													
Lepadella													
Polyarthra													
Trichotriidae		2 580	2 580	2 580									
Unidentified		86	215	43									
Unidentified										170			
CLADOCERA													
Alona guttata													
Alona rectangulata				43									
Alona rustica													
Alonella	juvenile		86	86									
Bosmina longirostris				43	16	8	78	5 527	1 020	2 381	4 623	6 854	577
Chydorus sphaericus		172	43	43				17	4	4			
Daphnia galatea mandotea													
Daphnia longiremis		645	731	387	47	312	234	850	102	468			
Daphnia middendorffiana													
Daphnia	juvenile										59		82
Holopedium gibberum					7 015	14 030	4 677	4	9	4	936	2 381	988
COPEPODA													
Calanoida													
Diaptomus pribilofensis	male												
Diaptomus pribilofensis	female												
Diaptomus ashlandi	male												
Diaptomus ashlandi	female												
Diaptomus	cop. V												
Diaptomus	cop. IV												
Diaptomus	cop. III												
Diaptomus	cop. II												
Diaptomus	cop. I												
Diaptomus													
Epischura lacustris	male	9	4		1 169	234	140	26	9	30	29	173	16
Epischura lacustris	female				468	86	47	9		13		22	8
Epischura lacustris	cop. V			4	1 559	249	171	38	4	21	123	281	132
Epischura lacustris	cop. IV	4	4	9	1 481	312	468	77	4	26	170	556	75
Epischura lacustris	cop. III				1 325	468	468	17	4	9	527	184	247
Epischura lacustris	cop. II				390	624	468	34	4	13	819	1 732	170
Epischura lacustris	cop. I					312	234			4	50	866	658
Epischura nevadensis	male												
Epischura nevadensis	female												
Epischura nevadensis	cop. V												
Epischura nevadensis	cop. IV												
Epischura nevadensis	cop. III												
Epischura nevadensis	cop. II												
Epischura nevadensis	cop. I												
Heterocope septentrionalis	male												
Heterocope septentrionalis	female												
Heterocope septentrionalis	cop. V												
Heterocope septentrionalis	cop. IV												
Heterocope septentrionalis	cop. III												
Leptodiaptomus ashlandi	male												
Leptodiaptomus ashlandi	female												
Leptodiaptomus pribilofensis	male							4					
Leptodiaptomus pribilofensis	female												
Leptodiaptomus	cop. V					23	86						
Leptodiaptomus	cop. IV				55	468	234				18	22	16
Leptodiaptomus	cop. III				8		312						8
Leptodiaptomus	cop. II												
Leptodiaptomus	cop. I												
Limnocalanus macrurus	male												
Limnocalanus macrurus	female				16	8							
Limnocalanus macrurus	cop. V				78	8							
Limnocalanus macrurus	cop. IV				312								
Limnocalanus macrurus	cop. III				78								
Limnocalanus macrurus	cop. I				78								
Limnocalanus macrurus													
Unidentified Calanoida	nauplius	172	860	430	78	78	156	213	170	128	77	722	411
Cyclopoida													
Cyclops bicuspidatus thomasi	male				702		78						82
Cyclops bicuspidatus thomasi	female				312		16						
Cyclops scutifer	male				8		8						
Cyclops scutifer	female								4				
Cyclops scutifer													
Cyclops capillatus	male												
Cyclops	male		4										
Cyclops	copepodite				1 247	390	468	298	34	72			
Cyclops	cop. III-IV												
Cyclops	cop. I-II												
Cyclops													
Lichomolgidae (parasitic)	copepodite												
Lichomolgidae (parasitic)	nauplius	12 040	12 900	8 600									
Unidentified Cyclopoida	male										59		
Unidentified Cyclopoida	copepodite	43	129	129							1 639	11	75
Unidentified Cyclopoida	nauplius				779	156	234	4 252	1 871	3 274			
Harpacticoida													
OSTRACODA													
Unidentifed Ostracoda	juvenile												
MALACOSTRACA													
Gammarus lacustris					7 015	14 030	4 677	4	9	4			
Mysis relicta	female												
Unidentified Crustacean larvae	nauplius												
TOTAL		**139 161**	**189 127**	**131 937**	**47 617**	**70 767**	**47 937**	**85 388**	**21 020**	**56 958**	**60 863**	**25 792**	**12 567**

Appendix C1. Zooplankton abundance (organisms/m^3) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	REFERENCE LAKE								
		23-Jul-97			27-Aug-97*			22-Jul-98		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA										
Asplanchna								3 376	288	28
Brachionus										
Conochilus unicornis	colony							16	8	4
Conochilus unicornis										
Filinia										
Kellicottia longispina		292	409	175	226	22 604	21 045	3 344	32	352
Kellicottia										
Keratella cochlearis					156	156				
Keratella quadrata			58							
Lepadella										
Polyarthra										
Trichotriidae										
Unidentified										
Unidentified							8	48		
CLADOCERA										
Alona guttata										
Alona rectangulata										
Alona rustica										
Alonella	juvenile									
Bosmina longirostris		23	12	175	47	23		14	728	568
Chydorus sphaericus					8	8	8	8		
Daphnia galatea mandotea										
Daphnia longiremis		6		29	23			8		16
Daphnia middendorffiana										
Daphnia	juvenile							64	48	12
Holopedium gibberum		29	210	134				4	48	24
COPEPODA										
Calanoida										
Diaptomus pribilofensis	male									
Diaptomus pribilofensis	female									
Diaptomus ashlandi	male									
Diaptomus ashlandi	female									
Diaptomus	cop. V									
Diaptomus	cop. IV									
Diaptomus	cop. III									
Diaptomus	cop. II									
Diaptomus	cop. I									
Diaptomus										
Epischura lacustris	male	12	18	53		8			8	48
Epischura lacustris	female		12	117						88
Epischura lacustris	cop. V			6		23		16	16	4
Epischura lacustris	cop. IV					16		8	8	4
Epischura lacustris	cop. III					8	23	32		8
Epischura lacustris	cop. II					8	23	8	24	32
Epischura lacustris	cop. I						8	32	4	4
Epischura nevadensis	male									
Epischura nevadensis	female									
Epischura nevadensis	cop. V									
Epischura nevadensis	cop. IV									
Epischura nevadensis	cop. III									
Epischura nevadensis	cop. II									
Epischura nevadensis	cop. I									
Heterocope septentrionalis	male	35	105	29						
Heterocope septentrionalis	female	12	123	23						
Heterocope septentrionalis	cop. V		18							
Heterocope septentrionalis	cop. IV									
Heterocope septentrionalis	cop. III									
Leptodiaptomus ashlandi	male									8
Leptodiaptomus ashlandi	female							8	16	
Leptodiaptomus pribilofensis	male	70	117	88						24
Leptodiaptomus pribilofensis	female	58	152	23				8	8	
Leptodiaptomus	cop. V	526	994	526				16		24
Leptodiaptomus	cop. IV		29	41						
Leptodiaptomus	cop. III									
Leptodiaptomus	cop. II				8					
Leptodiaptomus	cop. I									
Limnocalanus macrurus	male									
Limnocalanus macrurus	female									
Limnocalanus macrurus	cop. V									
Limnocalanus macrurus	cop. IV									
Limnocalanus macrurus	cop. III									
Limnocalanus macrurus	cop. I									
Limnocalanus macrurus										
Unidentified Calanoida	nauplius							176	14	88
Cyclopoida										
Cyclops bicuspidatus thomasi	male	23	18	23	8			184	14	64
Cyclops bicuspidatus thomasi	female	6	18	18					8	
Cyclops scutifer	male		12	6						
Cyclops scutifer	female	41	47	58						
Cyclops scutifer										
Cyclops capillatus	male									
Cyclops	male									
Cyclops	copepodite	146	292	117	218	249	218			
Cyclops	cop. III-IV									
Cyclops	cop. I-II									
Cyclops										
Lichomolgidae (parasitic)	copepodite									
Lichomolgidae (parasitic)	nauplius									
Unidentified Cyclopoida	male									
Unidentified Cyclopoida	copepodite							74	584	336
Unidentified Cyclopoida	nauplius			58	1 442	2 416	779	48	112	8
Harpacticoida			6							
OSTRACODA										
Unidentifed Ostracoda	juvenile									
MALACOSTRACA										
Gammarus lacustris		29	210	134						
Mysis relicta	female									
Unidentified Crustacean larvae	nauplius									
TOTAL		**1 310**	**2 859**	**1 836**	**2 136**	**25 519**	**22 113**	**7 492**	**1 968**	**1 744**

* Samples badly preserved with ethyl alcohol

Appendix C2. Mean abundance (organisms/m^3) and percent composition of main taxa of zooplankton in Boston area lakes, 1993-1998.

Lake	Date	No.	Rotifera			Cladocera			Calanoida			Cyclopoida			Harpacticoida			Ostracoda			Malacostraca			Unid. Crustacea			All Taxa	
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Aimaokatalok	Aug-93 (WQ5)	1	**12 264**	-	*30.0*	**755**	-	*1.8*	**660**	-	*1.6*	**4 057**	-	*9.9*	**0**	-	*0.0*	**0**	-	*0.0*	**0**	-	*0.0*	**23 208**	-	*56.7*	**40 943**	-
	2-Aug-95 (WQ5)	3	**507**	267	*10.2*	**91**	27	*1.8*	**51**	6	*1.0*	**4 310**	498	*86.9*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**4 959**	625
	4-Aug-96 (Station 5)	3	**13 553**	497	*21.4*	**2 480**	768	*3.9*	**2**	2	*<0.1*	**47 338**	16 255	*74.7*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**63 373**	17 013
	6-Aug-96 (Station 6)	3	**24 483**	9 651	*33.7*	**26 453**	3 559	*36.4*	**426**	127	*0.6*	**21 233**	2 424	*29.2*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**72 596**	7 735
	24-Aug-96 (Station 5)	3	**13 147**	3 371	*26.3*	**9 288**	1 810	*18.6*	**101**	32	*0.2*	**27 432**	996	*54.9*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**49 967**	3 584
	24-Aug-96 (Station 6)	3	**4 658**	1 249	*9.5*	**13 139**	3 931	*26.9*	**109**	11	*0.2*	**30 916**	5 828	*63.3*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**48 823**	10 969
	24-Jul-97 (Station 1)	3	**910**	193	*50.1*	**47**	7	*2.6*	**134**	82	*7.4*	**699**	55	*38.5*	**0**	0	*0.0*	**0**	0	*0.0*	**25**	8	*1.4*	**0**	0	*0.0*	**1 816**	115
	22-Jul-97 (Station 5)	3	**1 483**	271	*23.3*	**39**	9	*0.6*	**1 685**	469	*26.4*	**3 137**	154	*49.2*	**0**	0	*0.0*	**0**	0	*0.0*	**36**	11	*0.6*	**0**	0	*0.0*	**6 380**	815
	24-Jul-97 (Station 6)	3	**3 406**	261	*43.3*	**124**	23	*1.6*	**185**	39	*2.3*	**4 160**	147	*52.8*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**7 875**	355
	26-Aug-97 (Station 5)	3	**24 011**	8 289	*66.3*	**2 631**	294	*7.3*	**399**	183	*1.1*	**9 199**	723	*25.4*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**36 241**	9 108
	25-Aug-97 (Station 6)	3	**11 519**	241	*52.5*	**4 071**	458	*18.5*	**145**	8	*0.7*	**5 110**	578	*23.3*	**0**	0	*0.0*	**0**	0	*0.0*	**1 104**	246	*5.0*	**0**	0	*0.0*	**21 948**	475
	18-Jul-98 (Station 4)	3	**4 459**	1 732	*21.9*	**2 416**	432	*11.9*	**1 630**	308	*8.0*	**11 824**	921	*58.2*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**20 330**	1 432
	18-Jul-98 (Station 6)	3	**817**	401	*14.7*	**547**	64	*9.8*	**442**	77	*7.9*	**3 765**	105	*67.6*	**0**	0	*0.0*	**0**	0	*0.0*	**1**	0	*<0.1*	**0**	0	*0.0*	**5 572**	384
Stickleback	Aug-93	1	**893 584**	-	*98.0*	**6 038**	-	*0.7*	**0**	-	*0.0*	**6 038**	-	*0.7*	**0**	-	*0.0*	**0**	-	*0.0*	**0**	0	*0.0*	**6 038**	-	*0.7*	**911 697**	-
	03-Aug-95	3	**5 928**	2 877	*61.9*	**172**	129	*1.8*	**501**	190	*5.2*	**2 890**	623	*30.2*	**0**	0	*0.0*	**89**	31	*0.9*	**0**	0	*0.0*	**0**	0	*0.0*	**9 580**	2 225
	04-Aug-96	3	**1 365**	702	*27.3*	**236**	88	*4.7*	**4**	4	*0.1*	**3 389**	1 493	*67.9*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**4 994**	2 231
	25-Aug-96	3	**19**	19	*1.7*	**174**	58	*15.4*	**0**	0	*0.0*	**934**	86	*82.8*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**1 127**	124
	27-Jul-97	3	**39**	19	*0.1*	**446**	250	*1.0*	**173**	62	*0.4*	**42 650**	6 518	*98.5*	**0**	0	*0.0*	**0**	0	*0.0*	**2**	2	*<0.1*	**0**	0	*0.0*	**43 310**	6 309
	26-Aug-97	3	**573**	89	*23.8*	**152**	37	*6.3*	**739**	81	*30.7*	**937**	206	*38.9*	**4**	4	*0.2*	**0**	0	*0.0*	**2**	2	*<0.1*	**0**	0	*0.0*	**2 407**	365
	19-Jul-98	3	**50 925**	37 702	*73.8*	**183**	67	*0.3*	**3 155**	616	*4.6*	**14 721**	573	*21.3*	**0**	0	*0.0*	**0**	0	*0.0*	**2**	2	*<0.1*	**0**	0	*0.0*	**68 987**	37 387
Fickle Duck	03-Aug-95	3	**4 959**	1 660	*30.8*	**737**	140	*4.6*	**7 562**	283	*46.9*	**2 865**	790	*17.8*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**16 124**	2 234
	05-Aug-96	3	**28 010**	16 853	*78.7*	**77**	18	*0.2*	**120**	63	*0.3*	**7 397**	4 065	*20.8*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**35 605**	20 983
	25-Aug-96	3	**140 868**	16 787	*91.8*	**760**	80	*0.5*	**499**	199	*0.3*	**11 282**	1 306	*7.4*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**153 408**	17 981
	23-Jul-97	3	**32 348**	4 650	*58.3*	**8 805**	2 837	*15.9*	**4 248**	1 423	*7.7*	**1 465**	795	*2.6*	**0**	0	*0.0*	**0**	0	*0.0*	**8 574**	2 810	*15.5*	**0**	0	*0.0*	**55 440**	7 664
	26-Aug-97	3	**47 433**	16 310	*87.1*	**3 464**	1 549	*6.4*	**285**	67	*0.5*	**3 268**	763	*6.0*	**0**	0	*0.0*	**0**	0	*0.0*	**6**	1	*<0.1*	**0**	0	*0.0*	**54 455**	18 624
	19-Jul-98	3	**24 249**	13 770	*73.3*	**5 500**	2 192	*16.6*	**2 704**	927	*8.2*	**622**	539	*1.9*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**33 074**	14 409
Reference	23-Jul-97	3	**312**	85	*15.6*	**207**	81	*10.3*	**1 062**	258	*53.1*	**294**	49	*14.7*	**2**	2	*0.1*	**0**	0	*0.0*	**125**	53	*6.2*	**0**	0	*0.0*	**2 001**	455
	27-Aug-97	3	**14 732**	7 192	*88.8*	**39**	21	*0.2*	**42**	17	*0.3*	**1 777**	485	*10.7*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**16 589**	7 293
	22-Jul-98	3	**2 499**	2 143	*66.9*	**514**	216	*13.8*	**245**	74	*6.6*	**477**	124	*12.8*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**3 735**	1 880

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE																	
		Aug-93	Aug-94	Aug-94	2-Aug-95			4-Aug-96			4-Aug-96			24-Aug-96			24-Aug-96		
		WQ3	WQ4	WQ5	Station WQ-5 (10 m)			Station 5 (2 m)			Station 6 (24 m)			Station 5 (3.5 m)			Station 6 (29 m)		
			(18 m)	(18 m)	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
HYDROZOA																			
Hydra canadensis																			
Hydra																			
TURBELLARIA																133			
ROTIFERA								267	533	178		1 111	533			178			
Filinia																			
Kellicottia								89	311	667	311	222	89						
Keratella								44											
Lecane																			
Polyarthra																178			
NEMATODA		9 337		74				3 200	2 755	2 489	44	44		44	267	2 444	89	267	89
BIVALVIA (PELECYPODA)				311															
Sphaeriidae	Juvenile				89		622												
Pisidium nitidum				430															
Pisidium	Juvenile																		
Pisidium								178	267	444	178	178	178	3 022	1 022	1 955	578	578	311
Sphaerium nitidum			2 474																
Sphaerium								178	444	578			267			1 644	578	444	222
GASTROPODA																			
Muricidae																			
Typhis			44																
Valvatidae	Juvenile																		
Valvata sincera helicoidea																			
Valvata sincera sincera																			
Valvata sincera									44	44				444	356	2 355			
ANNELIDA																			
OLIGOCHAETA	Juvenile	3 916																	
OLIGOCHAETA	Egg																		
Enchytraeidae			948						222	44	44								
Lumbriculidae		803		104															
Lumbriculidae	Juvenile																		
Lumbriculus																			
Lumbriculus variegatus																			
Naididae (damaged)																			
Chaetogaster									44	44									
Nais																			
Tubificidae											44	44			44	44	533	889	755
Tubificidae	Juvenile	803						44	267										
Tubificidae (damaged)																			
Tubificidae (sp. A)																			
Tubificidae (sp. B)				193															
TARDIGRADA																			44
ACARI (ACARINA)																			
Oribatidae																			
Hydracarina		803						44				44		44		89			
Hydracarina	Adult				44		44												
Forelli	Adult																		
Frontipoda								89											
INSECTA	Larva	100																	
INSECTA	Egg																		
DIPTERA																			
Chironomidae	Larva				222	133													
Chironomidae	Pupa																		
Chironomidae	Adult												44						
Chironomidae	Juvenile	3 414		1 274															
Chironominae																	44		
Chironominae	Pupa											44							
Chironomini				178															
Chironomini	Larva																		
Chironomini	Pupa								89	89									
Chironomus																	178	133	178
Chironomus	Larva																		
Cladopelma	Larva																		
Cryptochironomus																			
Cryptochironomus	Larva																		
Demicryptochironomus	Larva																		
Demicryptochironomus	Pupa																		
Dicrotendipes																			
Dicrotendipes	Larva																		
Glyptotendipes										44									
Glyptotendipes	Larva																		
Lipiniella	Larva																		
Lipiniella	Pupa																		
Microtendipes	Larva																		
Phaenopsectra		201									89	44	89	44		133			
Phaenopsectra	Larva																		
Phaenopsectra	Pupa																		
Stictochironomus																			
Tanytarsini				74															
Tanytarsini	Juvenile								44	44									
Tanytarsini	Larva																		
Tanytarsini	Pupa																		
Corynocera	Larva																		
Micropsectra	Larva																		
Paratanytarsus	Larva																		
Rheotanytarsus								222	1 155	1 111		133						44	44
Rheotanytarsus	Larva																		
Rheotanytarsus	Pupa																		
Stempellinella																44			
Stempellinella	Larva																		
Stempellinella	Pupa																		
Tanytarsus			385					44	844	311	44	356		133	133	400			
Tanytarsus	Larva																		
Tanytarsus	Pupa																		
Diamesinae	Pupa																		
Diamesa	Larva																		
Potthastia	Larva																		
Protanypus	Larva																		
Protanypus	Pupa																		
Orthocladiinae	Juvenile							44	44	44									
Orthocladiinae	Larva				89	44	44												

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE																		
		Aug-93	Aug-94	Aug-94	2-Aug-95			4-Aug-96			4-Aug-96			24-Aug-96			24-Aug-96		
		WQ3	WQ4 (18 m)	WQ5 (18 m)	Station WQ-5 (10 m)			Station 5 (2 m)			Station 6 (24 m)			Station 5 (3.5 m)			Station 6 (29 m)		
					Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Orthocladiinae	Pupa							44	44										
Orthocladiinae	Adult				89														
Acamptocladius	Larva																		
Corynoneura																			
Corynoneura	Larva					44	44												
Corynoneura	Pupa																		
Cricotopus																			
Cricotopus	Larva																		
Eukiefferiella																44			
Eukiefferiella	Larva																		
Euryhapsis																			
Heterotrissocladius	Larva				89	44													
Heterotrissocladius								178	578	400				44		44			
Orthocladius	Larva																		
Paracladius								89	356	533			44	44					
Psectrocladius	Larva																		
Rheocricotopus	Larva																		
Thienemaniella	Larva																		
Zalutschia	Larva																		
Zalutschia	Pupa																		
Zavrelia	Larva																		
Prodiamesinae																			
Monodiamesa								44	133	44		44		89					
Monodiamesa	Larva																		
Tanypodinae				444															
Tanypodinae	Pupa																		
Paramerina	Larva																		
Procladius								89	133	44	44	133	133	311	267	267			
Procladius	Larva					44	133												
Tanypus			1 630																
Thienemannimyia																			
Empididae																			
Chelifera	Larva																		
Simuliidae																			
Simulium	Adult																		
Simulium	Larva																		
Tipulidae																			
Hexatoma	Larva																		
EPHEMEROPTERA																			
Baetidae	Nymph																		
Leptophlebiidae																			
Paraleptophlebia debilis	Nymph																		
HEMIPTERA	Nymph						44												
PLECOPTERA																			
Podmosta																			
Zapada	Nymph																		
TRICHOPTERA																			
Brachycentridae	Larva																		
Brachycentrus americanus	Larva																		
Limnephilidae	Pupa																		
Clostoeca																			
Ecclisomyia	Larva																		
Grensia praeterita																			
Grensia																89			
CLADOCERA																			
Chydorus sphaericus																			
Daphnia longiremis								444		178	178	311	89	178	44	89	267	89	44
Daphnia	Juvenile	1 606																	
Daphnia																			
Holopedium gibberum				15				44	44	133	222	222	133	133	44				
Holopedium																			
Ophryoxus gracilis									89										
COPEPODA	Nauplius							755	356	667	267	178	133						
Calanoida											44	133	133		44				
Diaptomus		1 606		415															
Leptodiaptomus pribilofensis																			
Cyclopoida		201		785				1 200	1 467	1 111	267	222	89	267	44	89	44		
Cyclops capillatus																			
Cyclops scutifer							222												
Cyclops	Juvenile				44														
Cyclops																			
Eucyclops agilis																			
Macrocyclops albidus																			
Macrocyclops ater																			
Harpacticoida			89					44											
Canthocamptidae																			
OSTRACODA																	44		44
OSTRACODA	Juvenile																		
OSTRACODA (damaged)					222														
OSTRACODA (sp. A)				356															
OSTRACODA (sp. B)																			
Candona									44										
Cypria																			
Cypridopsis			1 052																
Cypris																			
Cyprois marginata					44		44												
Ilyocypris																			
Limnocythere																			
MALACOSTRACA																			
Amphipoda																			
Gammarus lacustris																			
Gammarus lacustris	Juvenile																		
Gammarus																			
Mysis relicta																			
Isopoda																			
Saduria entomon									44										
PISCES (FISH)																			
Pungitius pungitius																			
Unidentified	Egg															44			
TOTAL		**19 378**	**6 622**	**3 437**	**800**	**311**	**978**	**4 533**	**7 555**	**6 310**	**489**	**1 067**	**711**	**4 222**	**2 089**	**9 688**	**2 044**	**2 355**	**1 689**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE																	
		24-Jul-97			22-Jul-97			24-Jul-97			26-Aug-97			26-Aug-97			25-Aug-97		
		Station 1 (<5 m)			Station 5 (<5 m)			Station 6 (>10 m)			Station 1 (<5 m)			Station 5 (<5 m)			Station 6 (>10 m)		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
HYDROZOA																			
Hydra canadensis																			
Hydra																			
TURBELLARIA																			
ROTIFERA																			
Filinia																			
Kellicottia																			
Keratella																			
Lecane																			
Polyarthra																			
NEMATODA					44	133	44					44						44	
BIVALVIA (PELECYPODA)																			
Sphaeriidae	Juvenile				1 422	667	1 156	133	267	89				311	133		89		311
Pisidium nitidum																			
Pisidium	Juvenile																		
Pisidium			133		44	133	133							44					
Sphaerium nitidum																			
Sphaerium		89	44																
GASTROPODA																			
Muricidae																			
Typhis																			
Valvatidae	Juvenile																		
Valvata sincera helicoidea																			
Valvata sincera sincera		44	400		89	44	89							44	267	133			
Valvata sincera																			
ANNELIDA																			
OLIGOCHAETA	Juvenile																		
OLIGOCHAETA	Egg																		
Enchytraeidae																			
Lumbriculidae																			
Lumbriculidae	Juvenile																		
Lumbriculus			44																
Lumbriculus variegatus																			
Naididae (damaged)																			
Chaetogaster																			
Nais																			
Tubificidae																			
Tubificidae	Juvenile		133		44														
Tubificidae (damaged)																			
Tubificidae (sp. A)																			
Tubificidae (sp. B)																			
TARDIGRADA																			
ACARI (ACARINA)																			
Oribatidae																			
Hydracarina										44									
Hydracarina	Adult																		
Forelli	Adult																		
Frontipoda																			
INSECTA	Larva																		
INSECTA	Egg																		
DIPTERA																			
Chironomidae	Larva	89	89							44				44					
Chironomidae	Pupa		44			44	133											44	
Chironomidae	Adult																		
Chironomidae	Juvenile																		
Chironominae																			
Chironominae	Pupa																		
Chironomini																			
Chironomini	Larva												89						
Chironomini	Pupa																		
Chironomus																			
Chironomus	Larva											44	178						
Cladopelma	Larva																		
Cryptochironomus																			
Cryptochironomus	Larva					89													
Demicryptochironomus	Larva																		
Demicryptochironomus	Pupa																		
Dicrotendipes																			
Dicrotendipes	Larva																		
Glyptotendipes																			
Glyptotendipes	Larva																		
Lipiniella	Larva																		
Lipiniella	Pupa																		
Microtendipes	Larva											44							
Phaenopsectra																			
Phaenopsectra	Larva							44	89	89		44			44				
Phaenopsectra	Pupa																		
Stictochironomus																			
Tanytarsini																			
Tanytarsini	Juvenile																		
Tanytarsini	Larva		44					44											
Tanytarsini	Pupa																		
Corynocera	Larva																		
Micropsectra	Larva		44																
Paratanytarsus	Larva						44												
Rheotanytarsus																			
Rheotanytarsus	Larva	44	44										89						
Rheotanytarsus	Pupa	44	222																
Stempellinella																			
Stempellinella	Larva														44				
Stempellinella	Pupa																		
Tanytarsus																			
Tanytarsus	Larva		133		622	133	489												
Tanytarsus	Pupa																		
Diamesinae	Pupa																		
Diamesa	Larva																		
Potthastia	Larva																		
Protanypus	Larva																		
Protanypus	Pupa																		
Orthocladiinae	Juvenile																		
Orthocladiinae	Larva		44			44													44

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE																	
		24-Jul-97			22-Jul-97			24-Jul-97			26-Aug-97			26-Aug-97			25-Aug-97		
		Station 1 (<5 m)			Station 5 (<5 m)			Station 6 (>10 m)			Station 1 (<5 m)			Station 5 (<5 m)			Station 6 (>10 m)		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Orthocladiinae	Pupa																		
Orthocladiinae	Adult																		
Acamptocladius	Larva																		
Corynoneura																			
Corynoneura	Larva																		
Corynoneura	Pupa																		
Cricotopus																			
Cricotopus	Larva																		
Eukiefferiella																			
Eukiefferiella	Larva				89	89													
Euryhapsis																			
Heterotrissocladius	Larva				44														
Heterotrissocladius																			
Orthocladius	Larva																		
Paracladius																			
Psectrocladius	Larva		44			44													
Rheocricotopus	Larva																		
Thienemaniella	Larva																		
Zalutschia	Larva																		
Zalutschia	Pupa																		
Zavrelia	Larva																		
Prodiamesinae																			
Monodiamesa																			
Monodiamesa	Larva		44	44	44		44												
Tanypodinae																			
Tanypodinae	Pupa																		
Paramerina	Larva																		
Procladius																			
Procladius	Larva	44				44	44		44	178		44		44					133
Tanypus																			
Thienemannimyia																			
Empididae																			
Chelifera	Larva																		
Simuliidae																			
Simulium	Adult					44													44
Simulium	Larva				44		44												
Tipulidae																			
Hexatoma	Larva																		
EPHEMEROPTERA																			
Baetidae	Nymph																		
Leptophlebiidae																			
Paraleptophlebia debilis	Nymph																		
HEMIPTERA	Nymph																		
PLECOPTERA																			
Podmosta																			
Zapada	Nymph																		
TRICHOPTERA																			
Brachycentridae	Larva																		
Brachycentrus americanus	Larva		44																
Limnephilidae	Pupa																		
Clostoeca																			
Ecclisomyia	Larva																		
Grensia praeterita																			
Grensia																			
CLADOCERA																			
Chydorus sphaericus																			
Daphnia longiremis																			
Daphnia	Juvenile																		
Daphnia																			
Holopedium gibberum																			
Holopedium																			
Ophryoxus gracilis																			
COPEPODA	Nauplius																		
Calanoida																			
Diaptomus																			
Leptodiaptomus pribilofensis																			
Cyclopoida																			
Cyclops capillatus																			
Cyclops scutifer									44										
Cyclops	Juvenile																		
Cyclops																			
Eucyclops agilis																			
Macrocyclops albidus																			
Macrocyclops ater																			
Harpacticoida																			
Canthocamptidae																			
OSTRACODA																			
OSTRACODA	Juvenile																		
OSTRACODA (damaged)																			
OSTRACODA (sp. A)																			
OSTRACODA (sp. B)																			
Candona																			
Cypria																			
Cypridopsis																			
Cypris																			
Cyprois marginata																			
Ilyocypris																			
Limnocythere							44												
MALACOSTRACA																			
Amphipoda																			
Gammarus lacustris																			
Gammarus lacustris	Juvenile																		
Gammarus																			
Mysis relicta																			
Isopoda																			
Saduria entomon									44										
PISCES (FISH)																			
Pungitius pungitius																			
Unidentified	Egg																		
TOTAL		**356**	**1 556**	**44**	**2 489**	**1 467**	**2 267**	**222**	**444**	**444**		**222**	**356**	**489**	**489**	**133**	**133**	**44**	**489**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE												STICKLEBACK LAKE					
		17-Jul-98			18-Jul-98			17-Jul-98			18-Jul-98			Aug-94	3-Aug-95			5-Aug-96	
		Station 1 (1.2 m)			Station 4 (6.5 m)			Station 5 (3 m)			Station 6 (29 m)				2 m			2.5 m	
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
HYDROZOA																				
Hydra canadensis														156						
Hydra																			44	
TURBELLARIA		44		44					89											
ROTIFERA																		13 643	8 221	
Filinia																				
Kellicottia																		44	444	
Keratella																				
Lecane																				
Polyarthra																				
NEMATODA		1 644	1 778	4	89	89	89	4 222	5 156	3 289		44	44	3 800	3 778	1 333	2 222	29 730	27 597	21 864
BIVALVIA (PELECYPODA)																				
Sphaeriidae	Juvenile														3 556	4 000	7 556			
Pisidium nitidum														178						
Pisidium	Juvenile													178						
Pisidium																		3 866	1 244	2 044
Sphaerium nitidum														1 067	533	800	400			
Sphaerium					89	1 244	1 244	5 956	489	2 978								2 311	978	1 467
GASTROPODA																				
Muricidae																				
Typhis																				
Valvatidae	Juvenile																			
Valvata sincera helicoidea														578						
Valvata sincera sincera					44	267														
Valvata sincera															1 200	1 467	667	933	222	222
ANNELIDA																				
OLIGOCHAETA	Juvenile	133	44	89										1 422						
OLIGOCHAETA	Egg																			
Enchytraeidae		311	533	356				44	622	44										
Lumbriculidae																				
Lumbriculidae	Juvenile	44	267	267																
Lumbriculus																				
Lumbriculus variegatus																				
Naididae (damaged)															667					
Chaetogaster																		622	711	1 378
Nais		44	44	44														44	89	
Tubificidae																		1 955	1 600	356
Tubificidae	Juvenile	2 578	2 711	522																
Tubificidae (damaged)															267	444	533			
Tubificidae (sp. A)														822						
Tubificidae (sp. B)														956						
TARDIGRADA																				
ACARI (ACARINA)															1 111					
Oribatidae																				
Hydracarina					133	44		44	89					22					133	
Hydracarina	Adult														667	267	44			
Forelli	Adult																			
Frontipoda																				
INSECTA	Larva																			
INSECTA	Egg																			
DIPTERA																				
Chironomidae	Larva	889	667	167				133		311					222	222	1 333			
Chironomidae	Pupa																			
Chironomidae	Adult																			
Chironomidae	Juvenile													3 689						
Chironominae																				
Chironominae	Pupa																			
Chironomini														400						
Chironomini	Larva	1 156	267	44																
Chironomini	Pupa																	44		
Chironomus																		2 800	267	844
Chironomus	Larva									44	44						133			
Cladopelma	Larva																489			
Cryptochironomus																		44		
Cryptochironomus	Larva																			
Demicryptochironomus	Larva		222	178																
Demicryptochironomus	Pupa														356	44	89			
Dicrotendipes																				
Dicrotendipes	Larva																			
Glyptotendipes																				
Glyptotendipes	Larva																89			
Lipiniella	Larva	178	222	44																
Lipiniella	Pupa																			
Microtendipes	Larva																			
Phaenopsectra																		400	311	222
Phaenopsectra	Larva	711	756	578	44										1 111	1 378	800			
Phaenopsectra	Pupa															44				
Stictochironomus																		89	267	178
Tanytarsini														2 133						
Tanytarsini	Juvenile																	444	533	
Tanytarsini	Larva	2 889	1 378	289		44	44	133	2 578	667					444					
Tanytarsini	Pupa			44																
Corynocera	Larva														2 889	1 022	3 644			
Micropsectra	Larva		44	267																
Paratanytarsus	Larva	178	489	844				267	622	44										
Rheotanytarsus																		1 200	667	1 733
Rheotanytarsus	Larva	167	4	889											667	889	1 022			
Rheotanytarsus	Pupa	89		311																
Stempellinella																				
Stempellinella	Larva	89	356	222				133	178											
Stempellinella	Pupa		133	311				89	89											
Tanytarsus																				
Tanytarsus	Larva	133	133	133		89	89	444	2 311	578					444	800	667	978		755
Tanytarsus	Pupa	44															178			
Diamesinae	Pupa																			
Diamesa	Larva																			
Potthastia	Larva																44			
Protanypus	Larva					44														
Protanypus	Pupa						44													
Orthocladiinae	Juvenile																	1 289	267	1 333
Orthocladiinae	Larva			222				44	89	89					222	44	89			

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK LAKE												STICKLEBACK LAKE					
		17-Jul-98			18-Jul-98			17-Jul-98			18-Jul-98			Aug-94	3-Aug-95			5-Aug-96	
		Station 1 (1.2 m)			Station 4 (6.5 m)			Station 5 (3 m)			Station 6 (29 m)				2 m			2.5 m	
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Orthocladiinae	Pupa		89	44											222	44				
Orthocladiinae	Adult																			
Acamptocladius	Larva																			
Corynoneura																		89		
Corynoneura	Larva																			
Corynoneura	Pupa																			
Cricotopus																		133		711
Cricotopus	Larva														222	178	89			
Eukiefferiella																				44
Eukiefferiella	Larva	44																		
Euryhapsis														489						
Heterotrissocladius	Larva				267	356	89		267											
Heterotrissocladius																				
Orthocladius	Larva																			
Paracladius																				
Psectrocladius	Larva		133							356					1 111	222	400			
Rheocricotopus	Larva																			
Thienemaniella	Larva																			
Zalutschia	Larva							89	444	4	44									
Zalutschia	Pupa																			
Zavrelia	Larva																			
Prodiamesinae																				
Monodiamesa																				
Monodiamesa	Larva								89	44										
Tanypodinae																				
Tanypodinae	Pupa																44			
Paramerina	Larva																			
Procladius																		178	44	
Procladius	Larva	133		89	44	89	267			89		89	44		178	44	222			
Tanypus																				
Thienemannimyia																				
Empididae																				
Chelifera	Larva	356	533	4																
Simuliidae																				
Simulium	Adult																			
Simulium	Larva																			
Tipulidae																				
Hexatoma	Larva																			
EPHEMEROPTERA																				
Baetidae	Nymph																			
Leptophlebiidae																				
Paraleptophlebia debilis	Nymph																			
HEMIPTERA	Nymph																			
PLECOPTERA																				
Podmosta																				
Zapada	Nymph																			
TRICHOPTERA																				
Brachycentridae	Larva																			
Brachycentrus americanus	Larva																			
Limnephilidae	Pupa																			
Clostoeca																				
Ecclisomyia	Larva																			
Grensia praeterita						44								178	44	178		89	44	44
Grensia																				
CLADOCERA																				
Chydorus sphaericus		44	44																	
Daphnia longiremis																				
Daphnia	Juvenile																			
Daphnia																				
Holopedium gibberum																				
Holopedium																				
Ophryoxus gracilis																				
COPEPODA	Nauplius																			
Calanoida																				
Diaptomus																				
Leptodiaptomus pribilofensis						44														
Cyclopoida														667						
Cyclops capillatus																	444			
Cyclops scutifer																				
Cyclops	Juvenile																			
Cyclops		44																		
Eucyclops agilis					89	44	44	89		44										
Macrocyclops albidus		44																		
Macrocyclops ater																				
Harpacticoida		1 867	8	133					89					4 133				1 067	267	444
Canthocamptidae															444					
OSTRACODA																		1 955	1 022	1 111
OSTRACODA	Juvenile																			
OSTRACODA (damaged)																				
OSTRACODA (sp. A)														2 489						
OSTRACODA (sp. B)														3 978						
Candona		267	222	444				133	444	89										
Cypria		44													222	444	2 400			
Cypridopsis															222		889			
Cypris																				
Cyprois marginata																222	444			
Ilyocypris															444		1 067			
Limnocythere																				
MALACOSTRACA																				
Amphipoda																				
Gammarus lacustris															400	578	356	1 422	311	622
Gammarus lacustris	Juvenile														889	44	311			
Gammarus														400						
Mysis relicta		44							89	44										
Isopoda																				
Saduria entomon								89												
PISCES (FISH)																				
Pungitius pungitius																				
Unidentified	Egg																			
TOTAL		**14 078**	**11 034**	**6 586**	**711**	**2 311**	**1 867**	**11 822**	**13 733**	**8 671**	**89**	**133**	**89**	**27 067**	**21 422**	**14 711**	**26 222**	**51 684**	**36 619**	**35 374**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	STICKLEBACK LAKE												FICKLE DUCK LAKE					
		25-Aug-96			23-Jul-97			26-Aug-97			19-Jul-98			3-Aug-95Station WQ-8			23-Jul-97		
		2.5 m			<5 m			<5 m			2.6 m			1.5 m			<5 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
HYDROZOA																			
Hydra canadensis																			
Hydra		89	89	311															
TURBELLARIA		44		44															
ROTIFERA		1 378	1 155	1 067															
Filinia		44																	
Kellicottia																			
Keratella			89	89															
Lecane		44	178																
Polyarthra			267	89															
NEMATODA		5 688	5 288	7 733	755	7 467		44			4 356	133	489	44	489	133	44		44
BIVALVIA (PELECYPODA)																			
Sphaeriidae	Juvenile													133					489
Pisidium nitidum																			
Pisidium	Juvenile																		
Pisidium			44	44	622	267												489	
Sphaerium nitidum																			
Sphaerium			44		533	711	311	1 911	222	667	444	311	311				178	2 000	
GASTROPODA																			
Muricidae																			
Typhis																			
Valvatidae	Juvenile										1 244								
Valvata sincera helicoidea																			
Valvata sincera sincera					2 444	10 622	711	222	1 333	178	489	356	1 111				89	400	133
Valvata sincera														44		133			
ANNELIDA																			
OLIGOCHAETA	Juvenile										356	178	133						
OLIGOCHAETA	Egg					133													
Enchytraeidae				133															
Lumbriculidae																			
Lumbriculidae	Juvenile																		
Lumbriculus																			44
Lumbriculus variegatus				44															
Naididae (damaged)																			
Chaetogaster		889	489	2 000															
Nais					133	889		133		89	6 578	2 444	2 756						
Tubificidae		44	89	667															
Tubificidae	Juvenile				89	44						44	44						44
Tubificidae (damaged)														222	2 489	222			
Tubificidae (sp. A)																			
Tubificidae (sp. B)																			
TARDIGRADA		89	178		44			44											
ACARI (ACARINA)																			
Oribatidae																			
Hydracarina			44		133	1 467	44			44	444	178	311				44	44	
Hydracarina	Adult													44	44	311			
Forelli	Adult																		
Frontipoda																			
INSECTA	Larva																		
INSECTA	Egg	2 400		267															
DIPTERA																			
Chironomidae	Larva				933	6 800	44	311		44	1 689	89	4			89		44	
Chironomidae	Pupa																		
Chironomidae	Adult																		
Chironomidae	Juvenile																		
Chironominae		44																	
Chironominae	Pupa																		
Chironomini																			
Chironomini	Larva										444	756	1 511						
Chironomini	Pupa																		
Chironomus			44																
Chironomus	Larva				755	2 667	1 244		1 556			622	756		133		89	178	44
Cladopelma	Larva																		
Cryptochironomus				44															
Cryptochironomus	Larva																		
Demicryptochironomus	Larva																		
Demicryptochironomus	Pupa																		
Dicrotendipes		667	44	133															
Dicrotendipes	Larva				89														
Glyptotendipes																			
Glyptotendipes	Larva										178	489	133						
Lipiniella	Larva																		
Lipiniella	Pupa																		
Microtendipes	Larva																		
Phaenopsectra		2 711	933	889															
Phaenopsectra	Larva										133					44	89		
Phaenopsectra	Pupa																		
Stictochironomus																			
Tanytarsini																			
Tanytarsini	Juvenile																		
Tanytarsini	Larva				89	533		44			1 244	133	178		44			44	
Tanytarsini	Pupa																		
Corynocera	Larva																		
Micropsectra	Larva																	44	44
Paratanytarsus	Larva					667		178	133		622	178	267				89	178	
Rheotanytarsus		3 377	489	3 333															
Rheotanytarsus	Larva				4 266	11 733	133	44	133	89	1 778	978	3 289				44		
Rheotanytarsus	Pupa																		
Stempellinella				222															
Stempellinella	Larva														44				
Stempellinella	Pupa																44		
Tanytarsus		2 933	400	3 200															
Tanytarsus	Larva				89	1 378					178	356	578	44	44		400	489	44
Tanytarsus	Pupa				89	178	44						44				400	311	44
Diamesinae	Pupa														44				
Diamesa	Larva																		
Potthastia	Larva				222	178		44		44									
Protanypus	Larva																		
Protanypus	Pupa																		
Orthocladiinae	Juvenile	1 289	267	1 422															
Orthocladiinae	Larva				89	533					1 111	133	178						

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	STICKLEBACK LAKE												FICKLE DUCK LAKE					
		25-Aug-96			23-Jul-97			26-Aug-97			19-Jul-98			3-Aug-95Station WQ-8			23-Jul-97		
		2.5 m			<5 m			<5 m			2.6 m			1.5 m			<5 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Orthocladiinae	Pupa														133	44			
Orthocladiinae	Adult																		
Acamptocladius	Larva													44					
Corynoneura																			
Corynoneura	Larva				44	44		44			89	89							
Corynoneura	Pupa										89								
Cricotopus		889	267	578															
Cricotopus	Larva														44				
Eukiefferiella																			
Eukiefferiella	Larva																		
Euryhapsis																			
Heterotrissocladius	Larva																		
Heterotrissocladius																			
Orthocladius	Larva				489	2 444	44	89											
Paracladius																			
Psectrocladius	Larva										444	444	4				44	311	
Rheocricotopus	Larva												89						
Thienemaniella	Larva																		
Zalutschia	Larva											44		4 756	3 467	2 800			
Zalutschia	Pupa														44				
Zavrelia	Larva																1 689	400	1 244
Prodiamesinae																			
Monodiamesa		89																	
Monodiamesa	Larva													44	400	267			
Tanypodinae																			
Tanypodinae	Pupa																		
Paramerina	Larva					133			44										
Procladius		44		89															
Procladius	Larva												89	178	400		1 289	1 600	1 422
Tanypus																			
Thienemannimyia						178													
Empididae																			
Chelifera	Larva																		
Simuliidae																			
Simulium	Adult																		
Simulium	Larva																		
Tipulidae																			
Hexatoma	Larva																		
EPHEMEROPTERA																			
Baetidae	Nymph					44													
Leptophlebiidae																			
Paraleptophlebia debilis	Nymph																		
HEMIPTERA	Nymph																		
PLECOPTERA																			
Podmosta				44															
Zapada	Nymph																		
TRICHOPTERA																			
Brachycentridae	Larva																		
Brachycentrus americanus	Larva																		
Limnephilidae	Pupa	44																	
Clostoeca				89															
Ecclisomyia	Larva		44																
Grensia praeterita					44													44	
Grensia																			
CLADOCERA																			
Chydorus sphaericus													44						
Daphnia longiremis																			
Daphnia	Juvenile																		
Daphnia														44	178	222			
Holopedium gibberum																			
Holopedium																			
Ophryoxus gracilis																			
COPEPODA	Nauplius																		
Calanoida																			
Diaptomus																			
Leptodiaptomus pribilofensis											89								
Cyclopoida		44		222															
Cyclops capillatus																			
Cyclops scutifer								44											
Cyclops	Juvenile																		
Cyclops											89								
Eucyclops agilis						178						89	89					44	
Macrocyclops albidus													89						
Macrocyclops ater																			
Harpacticoida		178	44	844							89	578	933						
Canthocamptidae					444	4 489		222		44									
OSTRACODA																		44	
OSTRACODA	Juvenile										178		89						
OSTRACODA (damaged)																			
OSTRACODA (sp. A)																			
OSTRACODA (sp. B)																			
Candona			89	133	222	44			44		178		133						
Cypria						5 867		44			244	978	756		89	89		44	
Cypridopsis																			
Cypris				755		38 044	311		1 422		444	2 444	4 489						
Cyprois marginata																			
Ilyocypris															89				
Limnocythere																			
MALACOSTRACA																			
Amphipoda																			
Gammarus lacustris		44	133	222	222	178	178		89				222						
Gammarus lacustris	Juvenile																		
Gammarus																			
Mysis relicta																			
Isopoda																			
Saduria entomon																			
PISCES (FISH)																			
Pungitius pungitius																			
Unidentified	Egg																		
TOTAL		**19 154**	**9 021**	**22 975**	**12 843**	**97 733**	**3 067**	**3 378**	**4 978**	**1 200**	**23 045**	**11 956**	**18 897**	**5 556**	**8 000**	**4 133**	**4 533**	**6 667**	**3 600**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	FICKLE DUCK LAKE						REFERENCE LAKE								
		26-Aug-97			19-Jul-98			23-Jul-97			27-Aug-97			22-Jul-98		
		<5 m			2.9 m			<5 m			<5 m			2.5 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
HYDROZOA																
Hydra canadensis																
Hydra																
TURBELLARIA																
ROTIFERA																
Filinia																
Kellicottia																
Keratella																
Lecane																
Polyarthra																
NEMATODA						89		1 778			178			267	89	
BIVALVIA (PELECYPODA)																
Sphaeriidae	Juvenile							267	1 644	844			44			
Pisidium nitidum																
Pisidium	Juvenile															
Pisidium			89													
Sphaerium nitidum																
Sphaerium		311	622	1 911	133	311	89	400	1 822	489	489	578	267	1 733	2 622	3 778
GASTROPODA																
Muricidae																
Typhis																
Valvatidae	Juvenile															
Valvata sincera helicoidea																
Valvata sincera sincera		44	133	44				400	133	311	178	89	178	44	711	44
Valvata sincera																
ANNELIDA																
OLIGOCHAETA	Juvenile															
OLIGOCHAETA	Egg															
Enchytraeidae																
Lumbriculidae																
Lumbriculidae	Juvenile				44											
Lumbriculus																
Lumbriculus variegatus																
Naididae (damaged)																
Chaetogaster																
Nais																
Tubificidae																
Tubificidae	Juvenile	44		89		44		222	400	133	178		133	133		44
Tubificidae (damaged)																
Tubificidae (sp. A)																
Tubificidae (sp. B)																
TARDIGRADA																
ACARI (ACARINA)																
Oribatidae		44														
Hydracarina		44				44	133			44	44	44				
Hydracarina	Adult															
Forelli	Adult				178		44							133		
Frontipoda																
INSECTA	Larva															
INSECTA	Egg															
DIPTERA																
Chironomidae	Larva			44	89	44	44									
Chironomidae	Pupa				44											
Chironomidae	Adult															
Chironomidae	Juvenile															
Chironominae																
Chironominae	Pupa															
Chironomini																
Chironomini	Larva				178	222						133		622	44	178
Chironomini	Pupa															
Chironomus																
Chironomus	Larva	711		44	311				44		44	178	133			
Cladopelma	Larva		44					178	44							
Cryptochironomus																
Cryptochironomus	Larva							44	44							
Demicryptochironomus	Larva															
Demicryptochironomus	Pupa															
Dicrotendipes																
Dicrotendipes	Larva										44					
Glyptotendipes																
Glyptotendipes	Larva				178	89								933	844	311
Lipiniella	Larva															
Lipiniella	Pupa													44		44
Microtendipes	Larva															
Phaenopsectra																
Phaenopsectra	Larva	44									400	489	89			
Phaenopsectra	Pupa					89										
Stictochironomus																
Tanytarsini																
Tanytarsini	Juvenile															
Tanytarsini	Larva				356	222		133	89		400	44	89	178	133	44
Tanytarsini	Pupa														44	
Corynocera	Larva															
Micropsectra	Larva				133	44	44	178	89							44
Paratanytarsus	Larva				89	44								267	267	133
Rheotanytarsus																
Rheotanytarsus	Larva	44			44	44	44	89	267		5 556	800	2 667			
Rheotanytarsus	Pupa															
Stempellinella																
Stempellinella	Larva					44										
Stempellinella	Pupa				44		44							44		44
Tanytarsus																
Tanytarsus	Larva		44	400	667	489	444	89		44	133	44	89		311	533
Tanytarsus	Pupa							178	133	44				89		
Diamesinae	Pupa															
Diamesa	Larva												44			
Potthastia	Larva				44											
Protanypus	Larva															
Protanypus	Pupa															
Orthocladiinae	Juvenile															
Orthocladiinae	Larva							222	44		133				44	

Appendix C3. Benthic macroinvertebrate abundance (organisms/m^2) in Boston area lakes, 1993-1998.

Taxa / Species	Stage	FICKLE DUCK LAKE						REFERENCE LAKE								
		26-Aug-97			19-Jul-98			23-Jul-97			27-Aug-97			22-Jul-98		
		<5 m			2.9 m			<5 m			<5 m			2.5 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Orthocladiinae	Pupa				44											
Orthocladiinae	Adult															
Acamptocladius	Larva															
Corynoneura																
Corynoneura	Larva															
Corynoneura	Pupa															
Cricotopus																
Cricotopus	Larva															
Eukiefferiella																
Eukiefferiella	Larva															
Euryhapsis																
Heterotrissocladius	Larva															
Heterotrissocladius																
Orthocladius	Larva															
Paracladius																
Psectrocladius	Larva			89				533	267	311				622	1 156	622
Rheocricotopus	Larva															
Thienemaniella	Larva			44												
Zalutschia	Larva				2 267	244	167									
Zalutschia	Pupa															
Zavrelia	Larva	133	489	844							178	400	44			
Prodiamesinae																
Monodiamesa																
Monodiamesa	Larva															
Tanypodinae																
Tanypodinae	Pupa															
Paramerina	Larva												44			
Procladius																
Procladius	Larva	444	178	933	222	267	89	178	222	133	311	222	267	444	356	356
Tanypus																
Thienemannimyia																
Empididae																
Chelifera	Larva								133							
Simuliidae																
Simulium	Adult															
Simulium	Larva															
Tipulidae																
Hexatoma	Larva			44												
EPHEMEROPTERA																
Baetidae	Nymph															
Leptophlebiidae																
Paraleptophlebia debilis	Nymph												44			
HEMIPTERA	Nymph															
PLECOPTERA																
Podmosta																
Zapada	Nymph												44			
TRICHOPTERA																
Brachycentridae	Larva										44					
Brachycentrus americanus	Larva															
Limnephilidae	Pupa															
Clostoeca																
Ecclisomyia	Larva															
Grensia praeterita																
Grensia																
CLADOCERA																
Chydorus sphaericus																
Daphnia longiremis																
Daphnia	Juvenile															
Daphnia																
Holopedium gibberum																
Holopedium								44								
Ophryoxus gracilis																
COPEPODA	Nauplius															
Calanoida																
Diaptomus																
Leptodiaptomus pribilofensis																
Cyclopoida																
Cyclops capillatus																
Cyclops scutifer																
Cyclops	Juvenile															
Cyclops																
Eucyclops agilis																
Macrocyclops albidus																
Macrocyclops ater											44		133			
Harpacticoida																
Canthocamptidae																
OSTRACODA																
OSTRACODA	Juvenile															
OSTRACODA (damaged)																
OSTRACODA (sp. A)																
OSTRACODA (sp. B)																
Candona					89		89	44			133	44	89		133	
Cypria					178			44								
Cypridopsis																
Cypris					44	178	89									
Cyprois marginata																
Ilyocypris																
Limnocythere																
MALACOSTRACA																
Amphipoda																
Gammarus lacustris																
Gammarus lacustris	Juvenile															
Gammarus																
Mysis relicta																
Isopoda																
Saduria entomon																
PISCES (FISH)																
Pungitius pungitius													44			
Unidentified	Egg															
TOTAL		**1 822**	**1 600**	**4 489**	**5 378**	**2 511**	**1 322**	**4 978**	**5 378**	**2 356**	**8 444**	**3 067**	**4 267**	**5 555**	**6 756**	**6 177**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C4. Mean abundance (organisms/m^2) and percent composition of main taxa of benthic invertebrates in Boston area lakes, 1993-1998.

Lake	Date	Station	Depth (m)	No. Repl	Nematoda			Bivalvia (Pelecypoda)			Gastropoda			Oligochaeta			Acarina			Ostracoda			Malacostraca			Ephemeroptera Plecoptera Trichoptera		
					Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Aimaokatalok	Aug-93	WQ3	<5 m	1	**9 337**	-	*48.2*	**0**	-	*0.0*	**0**	-	*0.0*	**5 522**	-	*28.5*	**803**	-	*4.1*	**0**	-	*0.0*	**0**	-	*0.0*	**0**	-	*0.0*
	Aug-94	WQ4	<5 m	1	**0**	-	*0.0*	**2 474**	-	*37.4*	**44**	-	*0.7*	**948**	-	*14.3*	**0**	-	*0.0*	**1 052**	-	*15.9*	**0**	-	*0.0*	**0**	-	*0.0*
	Aug-94	WQ5	18 m	1	**74**	-	*2.2*	**741**	-	*21.6*	**0**	-	*0.0*	**296**	-	*8.6*	**0**	-	*0.0*	**356**	-	*10.3*	**0**	-	*0.0*	**0**	-	*0.0*
	02-Aug-95	WQ5	10 m	3	**0**	0	*0.0*	**237**	194	*34.0*	**0**	0	*0.0*	**0**	0	*0.0*	**30**	15	*4.3*	**104**	82	*14.9*	**0**	0	*0.0*	**0**	0	*0.0*
	04-Aug-96	Stn. 5	2 m	3	**2 815**	207	*45.9*	**696**	193	*11.4*	**30**	15	*0.5*	**222**	156	*3.6*	**44**	44	*0.7*	**15**	15	*0.2*	**15**	15	*0.2*	**0**	0	*0.0*
	04-Aug-96	Stn. 6	24 m	3	**30**	15	*3.9*	**267**	89	*35.3*	**0**	0	*0.0*	**44**	26	*5.9*	**15**	15	*2.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
	24-Aug-96	Stn. 5	3.5 m	3	**918**	766	*17.2*	**2 548**	781	*47.8*	**1 052**	652	*19.7*	**30**	15	*0.6*	**44**	26	*0.8*	**0**	0	*0.0*	**0**	0	*0.0*	**30**	30	*0.6*
	24-Aug-96	Stn. 6	29 m	3	**148**	59	*7.3*	**904**	189	*44.5*	**0**	0	*0.0*	**726**	104	*35.8*	**0**	0	*0.0*	**30**	15	*1.5*	**0**	0	*0.0*	**0**	0	*0.0*
	24-Jul-97	Stn. 1	<5 m	3	**0**	0	*0.0*	**89**	51	*13.6*	**148**	127	*22.7*	**59**	59	*9.1*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**15**	15	*2.3*
	22-Jul-97	Stn. 5	<5 m	3	**74**	30	*3.6*	**1 185**	199	*57.1*	**74**	15	*3.6*	**15**	15	*0.7*	**0**	0	*0.0*	**15**	15	*0.7*	**0**	0	*0.0*	**0**	0	*0.0*
	24-Jul-97	Stn. 6	>10 m	3	**0**	0	*0.0*	**163**	53	*44.0*	**0**	0	*0.0*	**0**	0	*0.0*	**15**	15	*4.0*	**0**	0	*0.0*	**15**	15	*4.0*	**0**	0	*0.0*
	26-Aug-97	Stn. 1	<5 m	3	**15**	15	*7.7*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
	26-Aug-97	Stn. 5	<5 m	3	**0**	0	*0.0*	**163**	104	*44.0*	**148**	65	*40.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
	25-Aug-97	Stn. 6	>10 m	3	**15**	15	*6.7*	**133**	93	*60.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
	17-Jul-98	Stn. 1	1.2 m	3	**1 142**	570	*10.8*	**0**	0	*0.0*	**0**	0	*0.0*	**2 663**	707	*25.2*	**0**	0	*0.0*	**326**	65	*3.1*	**15**	15	*0.1*	**0**	0	*0.0*
	18-Jul-98	Stn. 4	6.5 m	3	**89**		*5.5*	**859**	385	*52.7*	**104**	82	*6.4*	**0**	0	*0.0*	**59**	39	*3.6*	**0**	0	*0.0*	**0**	0	*0.0*	**15**	15	*0.9*
	17-Jul-98	Stn. 5	3 m	3	**4 222**	539	*37.0*	**3 141**	1 580	*27.5*	**0**	0	*0.0*	**237**	193	*2.1*	**44**	26	*0.4*	**222**	112	*1.9*	**74**	15	*0.6*	**0**	0	*0.0*
	18-Jul-98	Stn. 6	29 m	3	**30**	15	*28.6*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
Stickleback	Aug-94		<5 m	1	**3 800**	-	*14.0*	**1 422**	-	*5.3*	**578**	-	*2.1*	**3 200**	-	*11.8*	**22**	-	*0.1*	**6 467**	-	*23.9*	**400**	-	*1.5*	**178**		*0.7*
	03-Aug-95		2 m	3	**2 444**	714	*11.8*	**5 615**	1 188	*27.0*	**1 111**	235	*5.3*	**637**	150	*3.1*	**326**	182	*1.6*	**2 119**	1 342	*10.2*	**859**	215	*4.1*	**74**	53	*0.4*
	05-Aug-96		2.5 m	3	**26 397**	2 349	*64.0*	**3 970**	1 165	*9.6*	**459**	237	*1.1*	**2 252**	267	*5.5*	**44**	44	*0.1*	**1 363**	297	*3.3*	**785**	331	*1.9*	**59**	15	*0.1*
	25-Aug-96		2.5 m	3	**6 236**	757	*36.5*	**44**	26	*0.3*	**0**	0	*0.0*	**1 452**	704	*8.5*	**15**	15	*0.1*	**326**	283	*1.9*	**133**	51	*0.8*	**74**	30	*0.4*
	23-Jul-97		<5 m	3	**2 741**	2 373	*7.2*	**815**	257	*2.2*	**4 593**	3 056	*12.1*	**430**	325	*1.1*	**548**	460	*1.4*	**14 830**	14 563	*39.1*	**193**	15	*0.5*	**30**	15	*0.1*
	26-Aug-97		<5 m	3	**15**	15	*0.5*	**933**	505	*29.3*	**578**	378	*18.1*	**74**	39	*2.3*	**15**	15	*0.5*	**504**	482	*15.8*	**30**	30	*0.9*	**0**	0	*0.0*
	19-Jul-98		2.6 m	3	**1 659**	1 352	*9.2*	**356**	44	*2.0*	**1 067**	398	*5.9*	**4 178**	1 380	*23.3*	**311**	77	*1.7*	**3 311**	1 278	*18.4*	**74**	74	*0.4*	**0**	0	*0.0*
Fickle Duck	03-Aug-95		1.5 m	3	**222**	136	*3.8*	**44**	44	*0.8*	**59**	39	*1.0*	**978**	756	*16.6*	**133**	89	*2.3*	**89**	51	*1.5*	**0**	0	*0.0*	**0**	0	*0.0*
	23-Jul-97		<5 m	3	**30**	15	*0.6*	**1 052**	724	*21.3*	**207**	97	*4.2*	**30**	30	*0.6*	**30**	15	*0.6*	**30**	30	*0.6*	**0**	0	*0.0*	**15**	15	*0.3*
	26-Aug-97		<5 m	3	**0**	0	*0.0*	**978**	481	*37.1*	**74**	30	*2.8*	**44**	26	*1.7*	**15**	15	*0.6*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
	19-Jul-98		2.9 m	3	**30**	30	*1.0*	**178**	68	*5.8*	**0**	0	*0.0*	**30**	15	*1.0*	**133**	44	*4.3*	**222**	44	*7.2*	**0**	0	*0.0*	**0**	0	*0.0*
Reference	23-Jul-97		<5 m	3	**593**	593	*14.0*	**1 822**	844	*43.0*	**281**	78	*6.6*	**252**	78	*5.9*	**15**	15	*0.3*	**30**	30	*0.7*	**0**	0	*0.0*	**0**	0	*0.0*
	27-Aug-97		<5 m	3	**59**	59	*1.1*	**459**	78	*8.7*	**148**	30	*2.8*	**104**	53	*2.0*	**30**	15	*0.6*	**89**	26	*1.7*	**0**	0	*0.0*	**44**	26	*0.8*
	22-Jul-98		2.5 m	3	**119**	78	*1.9*	**2 711**	592	*44.0*	**266**	222	*4.3*	**59**	39	*1.0*	**44**	44	*0.7*	**44**	44	*0.7*	**0**	0	*0.0*	**0**	0	*0.0*

Lake	Date	Station	Depth (m)	No. Repl.	Chironomini			Tanytarsini			Orthocladiinae			Tanypodinae			Other Chironomids			Other Taxa			All Taxa		
					Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Aimaokatalok	Aug-93	WQ3	<5 m	1	**201**	-	*1.0*	**0**	-	*0.0*	**0**	-	*0.0*	**0**	-	*0.0*	**3 514**	-	*18.1*	**0**	-	*0.0*	**19 378**	-	*100.0*
	Aug-94	WQ4	<5 m	1	**0**	-	*0.0*	**385**	-	*5.8*	**0**	-	*0.0*	**1 630**	-	*24.6*	**0**	-	*0.0*	**89**	-	*1.3*	**6 622**	-	*100.0*
	Aug-94	WQ5	18 m	1	**178**	-	*5.2*	**74**	-	*2.2*	**0**	-	*0.0*	**444**	-	*12.9*	**1 274**	-	*37.1*	**0**	-	*0.0*	**3 437**	-	*100.0*
	02-Aug-95	WQ-5	10 m	3	**0**	0	*0.0*	**0**	0	*0.0*	**133**	26	*19.1*	**59**	39	*8.5*	**119**	65	*17.0*	**15**	15	*2.1*	**696**	199	*100.0*
	04-Aug-96	Stn. 5	2 m	3	**74**	39	*1.2*	**1 259**	524	*20.5*	**785**	215	*12.8*	**89**	26	*1.4*	**74**	30	*1.2*	**15**	15	*0.2*	**6 133**	877	*100.0*
	04-Aug-96	Stn. 6	24 m	3	**74**	15	*9.8*	**178**	156	*23.5*	**15**	15	*2.0*	**104**	30	*13.7*	**30**	30	*3.9*	**0**	0	*0.0*	**755**	168	*100.0*
	24-Aug-96	Stn. 5	3.5 m	3	**59**	39	*1.1*	**237**	104	*4.4*	**59**	30	*1.1*	**281**	15	*5.3*	**30**	30	*0.6*	**44**	44	*0.8*	**5 333**	2 263	*100.0*
	24-Aug-96	Stn. 6	29 m	3	**163**	15	*8.0*	**30**	15	*1.5*	**0**	0	*0.0*	**0**	0	*0.0*	**15**	15	*0.7*	**15**	15	*0.7*	**2 029**	193	*100.0*
	24-Jul-97	Stn. 1	<5 m	3	**0**	0	*0.0*	**193**	150	*29.5*	**30**	30	*4.5*	**15**	15	*2.3*	**104**	39	*15.9*	**0**	0	*0.0*	**652**	461	*100.0*
	22-Jul-97	Stn. 5	<5 m	3	**30**	30	*1.4*	**430**	150	*20.7*	**104**	53	*5.0*	**30**	15	*1.4*	**89**	44	*4.3*	**30**	15	*1.4*	**2 074**	310	*100.0*
	24-Jul-97	Stn. 6	>10 m	3	**74**	15	*20.0*	**15**	15	*4.0*	**0**	0	*0.0*	**74**	53	*20.0*	**15**	15	*4.0*	**0**	0	*0.0*	**370**	74	*100.0*
	26-Aug-97	Stn. 1	<5 m	3	**133**	77	*69.2*	**30**	30	*15.4*	**0**	0	*0.0*	**15**	15	*7.7*	**0**	0	*0.0*	**0**	0	*0.0*	**193**	104	*100.0*
	26-Aug-97	Stn. 5	<5 m	3	**15**	15	*4.0*	**15**	15	*4.0*	**0**	0	*0.0*	**15**	15	*4.0*	**15**	15	*4.0*	**0**	0	*0.0*	**370**	119	*100.0*
	25-Aug-97	Stn. 6	>10 m	3	**0**	0	*0.0*	**0**	0	*0.0*	**15**	15	*6.7*	**44**	44	*20.0*	**15**	15	*6.7*	**0**	0	*0.0*	**222**	136	*100.0*
	17-Jul-98	Stn. 1	1.2 m	3	**1 452**	346	*13.7*	**3 146**	315	*29.8*	**178**	68	*1.7*	**74**	39	*0.7*	**574**	214	*5.4*	**643**	643	*9.4*	**10 566**	2 175	*100.0*
	18-Jul-98	Stn. 4	6.5 m	3	**15**	15	*0.9*	**89**	44	*5.5*	**237**	78	*14.5*	**133**	68	*8.2*	**30**	15	*1.8*	**0**	0	*0.0*	**1 630**	477	*100.0*
	17-Jul-98	Stn. 5	3 m	3	**15**	15	*0.1*	**2 711**	1 535	*23.8*	**461**	193	*4.0*	**30**	30	*0.3*	**193**	82	*1.7*	**59**	59	*0.5*	**11 409**	1 476	*100.0*
	18-Jul-98	Stn. 6	29 m	3	**15**	15	*14.3*	**0**	0	*0.0*	**15**	15	*14.3*	**44**	26	*42.9*	**0**	0	*0.0*	**0**	0	*0.0*	**104**	15	*100.0*
Stickleback	Aug-94		<5 m	1	**400**	-	*1.5*	**2 133**	-	*7.9*	**489**	-	*1.8*	**0**	-	*0.0*	**3 689**	-	*13.6*	**4 289**		*15.8*	**27 067**	-	*100.0*
	03-Aug-95		2 m	3	**1 511**	44	*7.3*	**4 222**	816	*20.3*	**948**	416	*4.6*	**163**	65	*0.8*	**607**	385	*2.9*	**148**	148	*0.7*	**20 785**	3 338	*100.0*
	05-Aug-96		2.5 m	3	**1 822**	786	*4.4*	**2 103**	453	*5.1*	**1 289**	538	*3.1*	**74**	53	*0.2*	**0**	0	*0.0*	**607**	233	*1.5*	**41 226**	5 241	*100.0*
	25-Aug-96		2.5 m	3	**1 837**	793	*10.8*	**4 651**	1 886	*27.3*	**1 570**	521	*9.2*	**44**	26	*0.3*	**44**	44	*0.3*	**637**	283	*3.7*	**17 065**	4 163	*100.0*
	23-Jul-97		<5 m	3	**1 585**	553	*4.2*	**6 400**	4 235	*16.9*	**1 230**	912	*3.2*	**104**	104	*0.3*	**2 726**	2 150	*7.2*	**1 659**	1 422	*4.4*	**37 881**	30 059	*100.0*
	26-Aug-97		<5 m	3	**519**	519	*16.3*	**207**	59	*6.5*	**44**	44	*1.4*	**15**	15	*0.5*	**148**	107	*4.7*	**104**	82	*3.3*	**3 185**	1 095	*100.0*
	19-Jul-98		2.6 m	3	**1 674**	484	*9.3*	**3 274**	829	*18.2*	**905**	433	*5.0*	**30**	30	*0.2*	**594**	548	*3.3*	**533**	245	*3.0*	**17 966**	3 235	*100.0*
Fickle Duck	03-Aug-95		1.5 m	3	**59**	39	*1.0*	**59**	39	*1.0*	**3 778**	566	*64.1*	**193**	116	*3.3*	**281**	121	*4.8*	**0**	0	*0.0*	**5 896**	1 129	*100.0*
	23-Jul-97		<5 m	3	**133**	44	*2.7*	**726**	297	*14.7*	**1 230**	295	*24.9*	**1 437**	90	*29.1*	**15**	15	*0.3*	**0**	0	*0.0*	**4 933**	908	*100.0*
	26-Aug-97		<5 m	3	**281**	237	*10.7*	**163**	119	*6.2*	**533**	245	*20.2*	**519**	221	*19.7*	**15**	15	*0.6*	**15**	15	*0.6*	**2 637**	928	*100.0*
	19-Jul-98		2.9 m	3	**356**	194	*11.6*	**933**	219	*30.4*	**907**	702	*29.6*	**193**	53	*6.3*	**89**	44	*2.9*	**0**	0	*0.0*	**3 070**	1 204	*100.0*
Reference	23-Jul-97		<5 m	3	**119**	65	*2.8*	**444**	180	*10.5*	**459**	148	*10.8*	**178**	26	*4.2*	**0**	0	*0.0*	**44**	44	*1.0*	**4 237**	948	*100.0*
	27-Aug-97		<5 m	3	**504**	167	*9.6*	**3 274**	1 516	*62.3*	**252**	107	*4.8*	**281**	30	*5.4*	**15**	15	*0.3*	**0**	0	*0.0*	**5 259**	1 630	*100.0*
	22-Jul-98		2.5 m	3	**1 007**	314	*16.3*	**711**	68	*11.5*	**815**	193	*13.2*	**385**	30	*6.3*	**0**	0	*0.0*	**0**	0	*0.0*	**6 163**	347	*100.0*

NOTE: Terrestrial animals (e.g., adult Culicidae = mosquitoes) were excluded from these data but not from Rescan's original reports. In addition, non-benthic forms were removed (e.g., cladocerans and most copepods).
Due to rounding, total numbers may not match the sum of the major taxonomic groups.

Appendix C5. Drift invertebrate abundance (organisms/1000 m^3) in Boston area streams, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK NE INFLOW								AIMAOKATALOK RIVER				STICKLEBACK OUTFLOW					
		22-Jul-97		24-Aug-97		27-Jun-98		31-Jul-98		27-Jun-98		31-Jul-98		21-Jul-97		26-Jun-98		30-Jul-98	
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
ARACHNIDA																			
Aranea			0.2			355.0					356.9								
Oribatidae											178.4		925.7		85.8			129.9	443.1
Parasitic Mite												178.6		343.2					
CLADOCERA																			
Unknown Chydoridae																			
Alonella																			
Bosmina longirostris										126.0									
Chydorus sphaericus								528.3										175.8	147.7
Daphnia longiremis										816.7									
Daphnia middendorffiana						294.4	155.6				535.3								
Eurycercus glacialis				1.9	2.1					627.7					85.8				
Holopedium gibberum										627.7									
COELENTERATA																			
Hydra								528.3	286.9			178.6						129.9	
COLEOPTERA																			
Carabidae	Adult									627.7	356.9								
	Larva																		
Dytiscidae											356.9								
Agabus	Larva						485.7									335.2			
Brachyvatus	Adult									156.6	963.6								
Brachyvatus	Larva									627.7									
Hydroporus	Larva							264.2	819.7				277.5						
Elmidae	Larva																		
Haliplidae																			
Haliplus	Adult						242.8												
Haliplus	Larva					799.8	242.8			125.5									
Hydrophiloidea								264.2											
Helophorus	Larva																		
Oreodytes	Larva	0.2																	
Staphylinidae	Adult				1.0	355.0				628.0								130.0	
Unidentified (terrestrial)	Adult					355.0													
COLLEMBOLA																			
Entomobryidae			1.6	4.5	2.1		242.8							343.2			834.7		
Isotomidae																			
Isotoma				5.1	4.1											335.2			
Isotomura																			295.4
Sminthuridae																			
Sminthurus				2.6	1.0													129.9	
COPEPODA																			
Calanoida																			
Heterocope septentrionalis																			
Epischura lacustris																			
Leptodiaptomus pribilofensis																			
Limnocalanus macrurus		0.2			7.2														
Cyclopoida																			
Cyclops capillatus		0.4	1.6																
Cyclops scutifer				23.1	64.4	113.6	742.3	156.3	245.9	269.9	0.5		185.1			674.7	254.2		147.7
Eucyclops agilis				4.5	4.1									3 882.5	2 917.2				
Macrocyclops albidus						674.5	364.3		819.7	753.3	0.5								
Harpacticoida												357.1							147.7
DIPTERA Unidentified (terrestrial)	Adult		2.2		0.6			264.2	498.4		356.9	357.1							
Unidentified (terrestrial)	Pupa						242.8												
Ceratopogonidae																			
Bezzia	Larva																		
Chironomidae	Larva	0.4	3.3	0.6	46.3			781.3	249.2	627.7	892.2	3.0	175.8	1 029.6		674.7	417.4	236.9	1 273.1
Chironomidae	Pupa	1.0	29.9	124.7	61.7	355.0	971.3		245.9	169.5				343.2	193.1				147.7
Chironomini	Larva			0.6	1.3						178.4								
Chironomini	Pupa						485.7			125.5				10.7					
Demicryptochironomus	Larva										356.9								
Dicrotendipes	Larva					114.6	599.6				713.8							129.9	
Glyptotendipes	Larva	0.2	1.6	1.9	0.6				498.4										
Phaenopsectra	Larva					248.5	485.7			627.7									
Phaenopsectra	Pupa																834.7		
Diamesinae	Larva																		
Monodiamesa	Larva	0.2				799.8													
Diamesa	Larva																		
Potthastia	Larva			1.3	0.6		485.7												
Pseudokiefferiella	Larva					461.5	218.6	264.2	819.7	252.0	176.6	357.1	277.5						
Pseudokiefferiella	Pupa					177.5	485.7												
Orthocladiinae	Adult					213.0	218.6												
Orthocladiinae	Larva	0.4			16.5	799.8	242.8	781.3	498.4	627.7	178.4	714.3	462.5			335.2	834.7		886.3
Orthocladiinae	Pupa	5.3	44.7	25.7	1.3	142.0	728.6			565.0	0.4	171.4	185.1					259.7	443.1
Corynoneura	Larva	0.4						141.7	498.4		178.4	714.3	925.7					411.9	147.7
Corynoneura	Pupa		4.9	9.6	3.2			234.4	249.2			125.0	832.6					259.7	134.0
Cricotopus	Larva	0.4	0.4					731.3	221.3		713.8	642.9	185.1	10.7					
Cricotopus	Pupa											142.9	185.1						
Eukiefferiella	Larva	2.6	24.4					234.4	498.4			214.3	745.6						147.7
Eukiefferiella	Pupa	3.0	52.9	0.6	0.6														
Gymnometriocnemus	Larva											171.4	832.6						
Metriocnemus	Pupa					165.0	121.4		498.4										
Orthocladius	Larva												185.1				834.7		
Orthocladius	Pupa			0.6		142.0	485.7			252.0		357.1							
Psectrocladius	Larva	0.4					242.8	264.2	819.7			714.3	185.1			335.2		389.6	738.6
Psectrocladius	Pupa	0.2				284.0	145.7												
Synorthocladius	Larva							264.2											
Thienemanniella	Larva							264.2	498.4				277.5						
Zavrelia	Larva																	129.9	
Tanypodinae	Larva				2.1							2.5	166.5					389.6	
Tanypodinae	Pupa																		
Nilotanypus	Larva								498.4							368.8			
Paramerina	Larva					177.5	971.3												
Procladius	Larva			1.3	1.9	213.0	971.3					357.1					834.7		
Procladius	Pupa					165.0	728.6	264.2											
Thiennemannimyia	Larva	0.2		6.4	4.2	142.0	534.2		819.7		356.9	714.3	185.1		257.4	167.6	333.9	129.9	
Thiennemannimyia	Pupa											357.1							

Appendix C5. Drift invertebrate abundance (organisms/1000 m^3) in Boston area streams, 1993-1998.

Taxa / Species	Stage	AIMAOKATALOK NE INFLOW								AIMAOKATALOK RIVER				STICKLEBACK OUTFLOW					
		22-Jul-97		24-Aug-97		27-Jun-98		31-Jul-98		27-Jun-98		31-Jul-98		21-Jul-97		26-Jun-98		30-Jul-98	
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Tanytarsini	Larva		6.5	3.9	3.1	355.0		416.7	286.9	627.7		357.1	277.5			335.2	333.9	259.7	147.7
Tanytarsini	Pupa	0.6																	
Paratanytarsus	Larva						485.7												
Paratanytarsus	Pupa																		
Rheotanytarsus	Larva	0.4	1.6		4.4	248.5	971.3	156.3	491.8	313.9	713.8	714.3					834.7		
Rheotanytarsus	Pupa	0.4	6.9					264.2	249.2	627.7		171.4	925.7					259.7	738.6
Stempellinella	Larva				3.1	284.0	291.4			188.3	249.8	357.1				739.9	834.7	129.9	
Stempellinella	Pupa																		
Tanytarsus	Larva											357.1							295.4
Tanytarsus	Pupa			0.6	1.0														443.1
Culicidae																			
Anopheles	Adult	0.4	0.2												10.7				
Empididae	Adult																		
Clinocera	Larva										356.9								
Ephydridae	Adult																	259.7	147.7
Simuliidae	Larva															134.9	417.4		
Simuliidae	Pupa	63.2	64.0	1.9	2.6			781.3	498.4			357.1						389.6	147.7
Simulium	Adult											357.1							
Simulium	Larva	6.9	18.3	0.6	0.6	923.0	412.8	151.4	819.7	125.5	214.1	714.3			343.2				443.1
Muscidae	Adult		0.4																
Tipulidae	Adult		0.2																
Unidentified	Larva													10.7					
Tipula	Larva					142.0	485.7						925.7				834.7		443.1
EPHEMEROPTERA																			
Ameletidae	Nymph																		
Baetidae	Nymph	0.6		1.3								178.6							
Baetis bicaudatus	Nymph																		
Baetis tricaudatus	Nymph		15.0					396.3	249.2			392.9	555.4						
Ephemerellidae	Nymph																		
Ephemerella inermis	Nymph												925.7						
Paraleptophlebia	Nymph														85.8				
EUBRANCHIOPODA																			
Triops longicaudatus						418.9	361.8			753.3	535.3		925.7					129.9	147.7
HEMIPTERA	Nymph					355.0	242.8	264.2											
HIRUDINEA																			
Piscicola salmositica				2.6	1.3		485.7	264.2										129.9	
HOMOPTERA																			
Coccoidea						355.0				188.3									
HYDRACARINA		5.3	16.1	57.2	78.7	124.2		191.4	282.0		1.0	857.1	148.1	81 381.4	62 526.8	134.9	333.9	123.6	443.1
Forelli						799.8		156.3	286.9			714.3							
HYMENOPTERA																			
Aphidiidae	Adult																		
Braconidae	Adult	0.2																	
Chalcoidea	Adult																		
Scelionidae	Adult	0.4				799.8	242.8				535.3								147.7
LEPIDOPTERA																			
Estigmene			0.2																
MALACOSTRACA																			
Gammarus lacustris														139.4	32.2	211.4		129.9	
MOLLUSCA																			
Sphaeriidae	Juvenile														171.6				
Sphaerium		0.2																129.9	
Physidae																			
Physa		0.2			0.6	799.8	194.3	264.2	819.7		142.8								
Valvatidae	Juvenile					165.0	242.8	781.3	245.9										
Valvata sincera sincera			0.2	1.3		355.0	364.3	182.3	163.9	125.5				10.7					
NEMATODA						394.9	242.8	264.2	163.9	695.2	166.0		745.6			674.7	918.2	514.9	
OLIGOCHAETA	Juvenile									627.7		357.1	277.5						
Enchytraeidae																			
Naididae									249.2								333.9	259.7	118.2
Naididae	Juvenile																		
Chaetogaster																		411.9	177.3
Nais								264.2	458.2			428.6	647.5	343.2					
Vejdovskyella					1.0														
Lumbriculidae							242.8										834.7		
Tubificidae	Juvenile										713.8							129.9	
OSTRACODA																		514.9	
Candona			1.6	106.0	83.2		485.7	148.4	258.2	627.7	356.9		185.1					257.5	177.3
Cypria		0.2			8.2		485.7		498.4	916.6	0.7	535.7	277.5	142 513.9	22 973.0	234.7	751.3	0.9	5 792.5
Cypris					8.2	355.0		264.2					925.7	686.4	450.5	174.3	233.4	259.7	1 181.7
PISCES																			
Unidentified	Egg					165.0											254.2		
Pungitius pungitius				0.6										118.0		674.7	166.9	556.1	443.1
Thymallus arcticus	Juvenile																		
PLECOPTERA																			
Nemouridae																			
Nemoura	Nymph			0.6		165.0	145.7			627.7									
TARDIGRADA												178.6							
THYSANOPTERA	Adult		1.6																
TRICHOPTERA																			
	Larva							528.3		627.7						335.2	254.2		
Brachycentridae	Larva								123.0										
Brachycentrus americanus	Larva			0.6		789.7	242.8	528.3	249.2	627.7	142.8		277.5						
Micrasema	Larva					799.8	485.7												
Hydropsychidae	Larva													343.2					
Cheumatopsyche	Larva	0.2																	
Lepidostomatidae																			
Lepidostoma	Larva					355.0													
Leptoceridae	Larva		1.6																
Neureclipsis	Larva	0.8																	
Limnephilidae	Larva															335.2			
Grensia praeterita	Larva		0.2							627.7	178.4			85.8	53.6		834.7	416.5	443.1
Grensia praeterita	Pupa		0.2																
Phryganeidae	Larva																		
TURBELLARIA												357.1							
TOTAL		**95**	**298**	**392**	**421**	**14,099**	**18,251**	**12,234**	**15,479**	**15,519**	**9,375**	**13,502**	**14,290**	**231,478**	**90,090**	**6,537**	**12,929**	**7,221**	**15,796**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates and are excluded from the total.

Appendix C5. Drift invertebrate abundance (organisms/1000 m^3) in Boston area streams, 1993-1998.

Taxa / Species	Stage	FICKLE DUCK OUTFLOW								REFERENCE OUTFLOW							
		21-Jul-97		25-Aug-97		26-Jun-98		30-Jul-98		21-Jul-97		25-Aug-97		27-Jun-98		01-Aug-98	
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
ARACHNIDA																	
Aranea																	
Oribatidae							863.9	152.9			3.5				594.9		
Parasitic Mite								764.6									
CLADOCERA																	
Unknown Chydoridae									314.7								245.7
Alonella																583.7	
Bosmina longirostris																	
Chydorus sphaericus								456.3	157.4						594.9	778.2	163.8
Daphnia longiremis														484.7	416.4		
Daphnia middendorffiana														646.2	178.5		
Eurycercus glacialis		2.5	7.6	18.0	4.5						3.5	1.2			119.0		
Holopedium gibberum																972.8	
COELENTERATA																	
Hydra																	
COLEOPTERA																	
Carabidae	Adult	1.3															
	Larva									0.2							
Dytiscidae																	
Agabus	Larva		1.3			119.9	216.0										
Brachyvatus	Adult																
Brachyvatus	Larva																
Hydroporus	Larva	3.4	7.6					382.3									
Elmidae	Larva	3.4															
Haliplidae																	
Haliplus	Adult						259.2				0.2				119.0		
Haliplus	Larva	1.3	1.3			198.5		114.7						129.2	177.9		819.8
Hydrophiloidea																	
Helophorus	Larva						863.9										
Oreodytes	Larva																
Staphylinidae	Adult																
Unidentified (terrestrial)	Adult																
COLLEMBOLA																	
Entomobryidae																	
Isotomidae																	
Isotoma																	
Isotomura			1.3				432.0	382.3									
Sminthuridae																	
Sminthurus		6.7						764.6									
COPEPODA																	
Calanoida															119.0		
Heterocope septentrionalis										0.9							
Epischura lacustris										0.9							
Leptodiaptomus pribilofensis											2.5				594.9		
Limnocalanus macrurus										1.7	3.5						
Cyclopoida																	
Cyclops capillatus																	
Cyclops scutifer						754.3	863.9	382.3		0.9				0.1	0.4	194.6	819.8
Eucyclops agilis			50.6		4.5				314.7	14.8	34.9						
Macrocyclops albidus		27.0						152.9	942.2		7.0			0.0	0.1		
Harpacticoida			1.3	13.5	4.5									969.4		972.8	
DIPTERA Unidentified (terrestrial)	Adult					794.0			314.7								
Unidentified (terrestrial)	Pupa																
Ceratopogonidae																	
Bezzia	Larva													323.1	476.0		
Chironomidae	Larva	48.5	11.4	919.9	248.0	397.0	734.3	1.7	317.2	1.7	17.4	5.8		323.1	238.0	117.7	1 155.6
Chironomidae	Pupa	193.9	10.1	13.5	9.0	794.0	863.9		125.6	41.0	465.3	197.9				116.7	245.7
Chironomini	Larva																
Chironomini	Pupa													484.7			
Demicryptochironomus	Larva					397.0											
Dicrotendipes	Larva																
Glyptotendipes	Larva		1.3								2.2						
Phaenopsectra	Larva																
Phaenopsectra	Pupa																
Diamesinae	Larva																
Monodiamesa	Larva																
Diamesa	Larva										3.7	1.2					
Potthastia	Larva				4.5								1.2				
Pseudokiefferiella	Larva									0.2		7.0	3.5				819.8
Pseudokiefferiella	Pupa													484.7	119.0		
Orthocladiinae	Adult					397.0											
Orthocladiinae	Larva	24.0	6.3	4.5	9.0	198.5		114.7		13.1	6.3	5.8		258.5	0.0	972.8	245.7
Orthocladiinae	Pupa	94.4	19.0			397.0		764.6				314.3	58.2	646.2	142.8	972.8	163.8
Corynoneura	Larva	37.1	72.1	63.1	13.5		432.0	270.0	157.4						119.0	389.2	
Corynoneura	Pupa	3.4						342.3	314.7	0.9						252.9	188.4
Cricotopus	Larva	13.5	6.3	4.5	4.5					7.2	5.0						327.6
Cricotopus	Pupa																
Eukiefferiella	Larva	21.5	1.3	9.0	9.0			382.3		38.4	27.5	4.6	1.2				
Eukiefferiella	Pupa	3.4			13.5					24.4	72.4	12.8	16.3				
Gymnometriocnemus	Larva																
Metriocnemus	Pupa																
Orthocladius	Larva	3.4					432.0										
Orthocladius	Pupa						259.2					1.2		323.1			
Psectrocladius	Larva	29.5	7.6			297.7	827.3	191.1	314.7			2.3		969.4			163.8
Psectrocladius	Pupa	3.4	3.8			476.4	259.2							646.2		689.3	327.6
Synorthocladius	Larva																
Thienemanniella	Larva												1.2				
Zavrelia	Larva																
Tanypodinae	Larva	3.4		13.5	18.0											486.4	819.8
Tanypodinae	Pupa																
Nilotanypus	Larva																
Paramerina	Larva																
Procladius	Larva																
Procladius	Pupa													581.6	511.6		
Thiennemannimyia	Larva	4.6	5.1	4.5	13.5	794.0					0.2						163.8
Thiennemannimyia	Pupa													161.6	119.0		

Appendix C5. Drift invertebrate abundance (organisms/1000 m^3) in Boston area streams, 1993-1998.

Taxa / Species	Stage	FICKLE DUCK OUTFLOW								REFERENCE OUTFLOW							
		21-Jul-97		25-Aug-97		26-Jun-98		30-Jul-98		21-Jul-97		25-Aug-97		27-Jun-98		01-Aug-98	
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Tanytarsini	Larva	10.1	5.1	4.5	9.0		345.6	722.4	628.1							145.9	384.9
Tanytarsini	Pupa																
Paratanytarsus	Larva																
Paratanytarsus	Pupa						863.9	382.3									
Rheotanytarsus	Larva	10.1								3.5	12.6	1.2			238.0	486.4	196.6
Rheotanytarsus	Pupa	23.6	2.5			397.0	863.9			11.3	76.3			646.2	356.9	165.4	1 000.0
Stempellinella	Larva			248.0	85.7	436.7	142.5	418.3	157.4					323.1	356.9		163.8
Stempellinella	Pupa													484.7			
Tanytarsus	Larva		1.3			397.0											
Tanytarsus	Pupa	11.4	3.8					191.1	628.1					161.6	119.0		
Culicidae																	
Anopheles	Adult	3.8	7.6								0.4				119.0		
Empididae	Adult		1.3														
Clinocera	Larva					397.0											
Ephydridae	Adult																
Simuliidae	Larva					357.3	134.0							646.2	476.0		
Simuliidae	Pupa	41.7	31.6	9.0	9.0					32.3	256.8	9.3	7.0				163.8
Simulium	Adult															194.6	573.4
Simulium	Larva	277.0	21.5			581.4	0.0	382.3	125.6	46.2	58.4		1.2	0.1	0.8		163.8
Muscidae	Adult																
Tipulidae	Adult																
Unidentified	Larva																
Tipula	Larva														119.0		163.8
EPHEMEROPTERA																	
Ameletidae	Nymph		2.5														
Baetidae	Nymph	6.7									20.9	3.5					
Baetis bicaudatus	Nymph									2.6	3.5		1.2				
Baetis tricaudatus	Nymph		1.3							0.2	3.9	1.2					819.8
Ephemerellidae	Nymph																
Ephemerella inermis	Nymph																
Paraleptophlebia	Nymph																
EUBRANCHIOPODA																	
Triops longicaudatus						238.2	112.3		942.2					1.0	1.8		163.8
HEMIPTERA	Nymph																
HIRUDINEA																	
Piscicola salmositica						397.0						1.2					
HOMOPTERA																	
Coccoidea																972.8	
HYDRACARINA		57.3	84.7	699.0	293.1	127.3	146.9	1 342.3	199.2	19.8	128.6	21.0	55.9		0.1	711.2	122.9
Forelli						365.2	0.0	676.9	942.2							184.8	819.8
HYMENOPTERA																	
Aphidiidae	Adult										0.2						
Braconidae	Adult								314.7	0.2							819.8
Chalcoidea	Adult											1.2					
Scelionidae	Adult	3.4		4.5					942.2		3.5					972.8	
LEPIDOPTERA																	
Estigmene																	
MALACOSTRACA																	
Gammarus lacustris																	
MOLLUSCA																	
Sphaeriidae	Juvenile	3.4								0.9							
Sphaerium								764.6									
Physidae																	
Physa								382.3	314.7					161.6			819.8
Valvatidae	Juvenile							266.2	482.9							389.2	819.8
Valvata sincera sincera		19.4	3.8	9.0	13.5			114.7	942.2	0.4	0.7	1.2		161.6	238.0		245.7
NEMATODA		6.7	1.3			397.0	172.8	191.1			0.4	3.5	2.3			291.8	
OLIGOCHAETA	Juvenile							266.2									819.8
Enchytraeidae											3.7						
Naididae																194.6	
Naididae	Juvenile																
Chaetogaster																	
Nais		3.4	3.8	99.2	85.7		432.0	988.6	628.1	0.9						485.6	1 000.0
Vejdovskyella																	
Lumbriculidae							432.0										
Tubificidae	Juvenile			4.5													
OSTRACODA								764.6	219.8								
Candona		13.5	13.9	248.0	36.1	357.3	777.5	152.9		5.2		4.7	7.0				327.6
Cypria		80.9	63.2	18.0	9.0	238.2	345.6	4 828.9	241.5	0.9	101.2				594.9	272.4	819.8
Cypris		107.9	2.5		13.5	158.8	863.9	152.9	125.6			2.3	1.2	969.4	0.1	194.6	163.8
PISCES																	
Unidentified	Egg											1.2		145.4	119.0		
Pungitius pungitius			2.5		18.0	397.0		382.3				4.7	111.7			972.8	819.8
Thymallus arcticus	Juvenile											10.5	4.7				
PLECOPTERA																	
Nemouridae																	
Nemoura	Nymph			4.5							0.2						
TARDIGRADA																194.6	
THYSANOPTERA	Adult																
TRICHOPTERA																	
	Larva			4.5	4.5		432.0										
Brachycentridae	Larva																
Brachycentrus americanus	Larva	3.4								0.2				161.6			
Micrasema	Larva					397.0					0.2						
Hydropsychidae	Larva	3.4									0.2						
Cheumatopsyche	Larva																
Lepidostomatidae																	
Lepidostoma	Larva																
Leptoceridae	Larva																
Neureclipsis	Larva																
Limnephilidae	Larva																
Grensia praeterita	Larva									2.6	0.2						
Grensia praeterita	Pupa									0.4							
Phryganeidae	Larva				13.5							1.2					
TURBELLARIA																	
TOTAL		**1,208**	**458**	**2,412**	**929**	**10,066**	**12,508**	**18,455**	**9,537**	**274**	**1,319**	**604**	**157**	**11,149**	**6,547**	**11,216**	**15,850**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates and are excluded from the total.

Appendix C6. Mean abundance (organisms/1000 m^3) and percent composition of main taxa of macroinvertebrate drift in Boston area streams, 1997-1998.

Site	Date	No. Repl.	Oligochaeta			Cladocera			Copepoda			Ostracoda			Acarina			Ephemeroptera			Plecoptera			Trichoptera			Coleoptera		
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Aimaokatalok NE Inflow	22-Jul-97	2	**0**	0	*0.0*	**0**	0	*0.0*	**1**	1	*0.5*	**1**	1	*0.4*	**11**	5	*5.2*	**8**	7	*4.0*	**0**	0	*0.0*	**2**	1	*0.8*	**0**	0	*0.1*
	24-Aug-97	2	**1**	1	*0.1*	**2**		*0.5*	**52**	24	*12.7*	**103**	3	*25.3*	**68**	11	*16.7*	**1**	1	*0.2*	**0**	0	*0.1*	**0**	0	*0.1*	**0**	0	*0.0*
	27-Jun-98	2	**121**	121	*0.8*	**225**	69	*1.4*	**947**	159	*5.9*	**663**	308	*4.1*	**462**	462	*2.9*	**0**	0	*0.0*	**155**	10	*1.0*	**1 336**	608	*8.3*	**886**	86	*5.5*
	31-Jul-98	2	**486**	222	*3.5*	**264**	264	*1.9*	**611**	455	*4.4*	**585**	172	*4.2*	**458**	111	*3.3*	**323**	74	*2.3*	**0**	0	*0.0*	**714**	342	*5.2*	**674**	146	*4.9*
Aimaokatalok River	27-Jun-98	2	**671**	43	*5.4*	**1 367**	831	*11.0*	**512**	511	*4.1*	**951**	593	*7.6*			*0.0*	**0**	0	*0.0*	**314**	314	*2.5*	**1 102**	781	*8.9*	**1 115**	205	*9.0*
	31-Jul-98	2	**855**	70	*6.2*	**0**	0	*0.0*	**271**	86	*2.0*	**962**	426	*6.9*	**860**	712	*6.2*	**1 026**	455	*7.4*	**0**	0	*0.0*	**139**	139	*1.0*	**139**	139	*1.0*
Stickleback Outflow	21-Jul-97	2	**172**	172	*0.1*	**43**	49	*<0.1*	**3 400**	483	*2.1*	**83 312**	59 888	*51.8*	**71 954**	9 427	*44.8*	**43**	43	*0.0*	**0**	0	*0.0*	**241**	188	*0.2*	**0**	0	*0.0*
	26-Jun-98	2	**584**	584	*6.0*	**0**	0	*0.0*	**464**	210	*4.8*	**697**	288	*7.2*	**234**	99	*2.4*	**0**	0	*0.0*	**0**	0	*0.0*	**880**	209	*9.0*	**168**	168	*1.7*
	30-Jul-98	2	**548**	253	*4.8*	**162**	14	*1.4*	**148**	148	*1.3*	**4 092**	3 059	*35.6*	**283**	160	*2.5*	**0**	0	*0.0*	**0**	0	*0.0*	**430**	13	*3.7*	**0**	0	*0.0*
Fickle Duck Outflow	21-Jul-97	2	**4**		*0.4*	**5**	3	*0.6*	**39**	12	*4.7*	**141**	61	*16.9*	**71**	14	*8.5*	**5**	1	*0.6*	**0**	0	*0.0*	**3**	3	*0.4*	**9**	1	*1.1*
	25-Aug-97	2	**95**	9	*5.7*	**11**	7	*0.7*	**11**	2	*0.7*	**162**	104	*9.7*	**496**	203	*29.7*	**0**	0	*0.0*	**2**	2	*0.1*	**11**	7	*0.7*	**0**	0	*0.0*
	26-Jun-98	2	**432**	432	*3.8*	**0**	0	*0.0*	**809**	55	*7.2*	**1 371**	616	*12.1*	**320**	173	*2.8*	**0**	0	*0.0*	**0**	0	*0.0*	**414**	17	*3.7*	**829**	510	*7.3*
	30-Jul-98	2	**941**	313	*6.7*	**464**	8	*3.3*	**896**	361	*6.4*	**3 243**	2 656	*23.2*	**1 580**	439	*11.3*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**248**	248	*1.8*
Reference Outflow	21-Jul-97	2	**2**	1	*0.3*	**2**	2	*0.2*	**34**	14	*4.2*	**54**	48	*6.7*	**74**	54	*9.3*	**16**	13	*2.0*	**0**	0	*0.0*	**2**	1	*0.2*	**0**	0	*0.0*
	25-Aug-97	2	**0**	0	*0.0*	**1**	1	*0.2*	**0**	0	*0.0*	**8**	1	*2.0*	**38**	17	*10.1*	**3**	2	*0.8*	**0**	0	*0.0*	**1**	1	*0.2*	**0**	0	*0.0*
	27-Jun-98	2	**0**	0	*0.0*	**1 220**	89	*13.8*	**842**	128	*9.5*	**782**	187	*8.8*			*<0.1*	**0**	0	*0.0*	**0**	0	*0.0*	**81**	81	*0.9*	**213**	84	*2.4*
	01-Aug-98	2	**1 250**	570	*9.2*	**1 372**	963	*10.1*	**994**	174	*7.3*	**889**	422	*6.6*	**919**	23	*6.8*	**410**	410	*3.0*	**0**	0	*0.0*	**0**	0	*0.0*	**410**	410	*3.0*

Site	Date	No. Repl.	Simuliidae			Unid. Chironomidae			Tanypodinae			Tanytarsini			Chironomini			Orthocladiinae			Diamesinae			Other Taxa			All Taxa		
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Aimaokatalok NE Inflow	22-Jul-97	2	**76**	6	*37.0*	**17**	16	*8.4*			*<0.1*	**8**	7	*4.0*	**1**	1	*0.4*	**80**	67	*38.9*			*<0.1*	**1**	1	*0.6*	**196**	102	*100.0*
	24-Aug-97	2	**3**		*0.7*	**117**	9	*28.7*	**8**		*2.0*	**8**	4	*2.0*	**2**		*0.5*	**29**	7	*7.2*	**1**		*0.2*	**13**	4	*3.1*	**406**	15	*100.0*
	27-Jun-98	2	**668**	255	*4.1*	**663**	308	*4.1*	**1 952**	1 254	*12.1*	**1 318**	430	*8.1*	**967**	604	*6.0*	**1 750**	217	*10.8*	**1 314**	124	*8.1*	**2 747**	116	*17.0*	**16 175**	2 076	*100.0*
	31-Jul-98	2	**1 125**	193	*8.1*	**638**	143	*4.6*	**791**	527	*5.7*	**932**	95	*6.7*	**249**	249	*1.8*	**3 349**	433	*24.2*	**542**	278	*3.9*	**2 114**	434	*15.3*	**13 856**	1 623	*100.0*
Aimaokatalok River	27-Jun-98	2	**170**	44	*1.4*	**845**	47	*6.8*	**178**	178	*1.4*	**1 361**	397	*10.9*	**1 001**	248	*8.0*	**1 258**	187	*10.1*	**214**	38	*1.7*	**1 388**	187	*11.1*	**12 447**	3 072	*100.0*
	31-Jul-98	2	**536**	536	*3.9*	**89**	86	*0.6*	**891**	540	*6.4*	**1 580**	377	*11.4*	**0**	0	*0.0*	**4 485**	517	*32.3*	**317**	40	*2.3*	**1 745**	852	*12.6*	**13 896**	394	*100.0*
Stickleback Outflow	21-Jul-97	2	**172**	172	*0.1*	**783**	590	*0.5*	**129**	129	*0.1*	**0**	0	*0.0*	**5**	5	*<0.1*	**5**	5	*0.0*	**0**	0	*0.0*	**526**	322	*0.3*	**160 784**	70 694	*100.0*
	26-Jun-98	2	**276**	141	*2.8*	**546**	129	*5.6*	**852**	316	*8.8*	**1 539**	464	*15.8*	**417**	417	*4.3*	**1 170**	499	*12.0*	**0**	0	*0.0*	**1 904**	683	*19.6*	**9 733**	3 196	*100.0*
	30-Jul-98	2	**490**	101	*4.3*	**829**	592	*7.2*	**260**	260	*2.3*	**1 137**	488	*9.9*	**65**	65	*0.6*	**1 974**	523	*17.2*	**0**	0	*0.0*	**1 090**	204	*9.5*	**11 508**	4 288	*100.0*
Fickle Duck Outflow	21-Jul-97	2	**186**	133	*22.3*	**132**	110	*15.8*	**7**	1	*0.8*	**34**	21	*4.1*	**1**	1	*0.1*	**175**	59	*21.0*	**0**	0	*0.0*	**21**	15	*2.6*	**833**	375	*100.0*
	25-Aug-97	2	**9**	0	*0.5*	**595**	338	*35.6*	**25**	7	*1.5*	**174**	79	*10.4*	**0**	0	*0.0*	**65**	16	*3.9*	**2**	2	*0.1*	**11**	2	*0.7*	**1 670**	742	*100.0*
	26-Jun-98	2	**536**	402	*4.8*	**1 395**	204	*12.4*	**397**	397	*3.5*	**1 723**	493	*15.3*	**198**	198	*1.8*	**1 790**	420	*15.9*	**0**	0	*0.0*	**1 073**	356	*9.5*	**11 287**	1 221	*100.0*
	30-Jul-98	2	**254**	128	*1.8*	**222**	221	*1.6*	**0**	0	*0.0*	**1 564**	150	*11.2*	**0**	0	*0.0*	**1 426**	639	*10.2*	**0**	0	*0.0*	**3 156**	474	*22.6*	**13 996**	4 459	*100.0*
Reference Outflow	21-Jul-97	2	**197**	118	*24.7*	**263**	220	*33.0*			*<0.1*	**52**	37	*6.5*	**1**	1	*0.1*	**98**	14	*12.3*	**2**	2	*0.2*	**1**		*0.2*	**797**	523	*100.0*
	25-Aug-97	2	**9**	1	*2.3*	**102**	102	*26.7*	**0**	0	*0.0*	**1**	1	*0.2*	**0**	0	*0.0*	**209**	132	*54.9*	**6**	2	*1.7*	**4**	2	*1.1*	**381**	224	*100.0*
	27-Jun-98	2	**562**	85	*6.3*	**281**	43	*3.2*	**687**	56	*7.8*	**1 343**	272	*15.2*	**242**	242	*2.7*	**1 553**	1 291	*17.5*	**302**	183	*3.4*	**741**	94	*8.4*	**8 848**	2 301	*100.0*
	01-Aug-98	2	**164**	164	*1.2*	**818**	583	*6.0*	**735**	249	*5.4*	**1 271**	474	*9.4*	**0**	0	*0.0*	**2 347**	930	*17.3*	**410**	410	*3.0*	**1 544**	669	*11.4*	**13 533**	2 317	*100.0*

NOTE: Terrestrial animals (e.g., adult Culicidae or mosquitoes) were excluded from these data, but not from Rescan's original reports.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Boston area streams, 1994-1998.

Taxa / Species	Stage	STICKLEBACK OUTFLOW															
		01-Aug-95			05-Aug-96				21-Jul-97			25-Aug-97			26-Jun to 30-Jul-98		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 4	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ARACHNIDA																	
Acarina (parasitic)	Adult	40	20	20													
Hydracarina	Adult	1	1		2	7	13	22	59	10	382	59	29	29	175	121	77
Oribatidae	Adult																
CLADOCERA																	
Chydoridae	Juvenile																
Alona																	
Alonella																	
Alonella nana				140													
Chydorus sphaericus		20		400													44
Daphniidae																	
Daphnia		40															
Macrothricidae (damaged)			10														
COLEOPTERA																	
Dytiscidae																	
Brachyvatus	Adult																
Elmidae	Larva																
Haliplidae																	
Haliplus	Larva																
COLLEMBOLA																	
Isotomidae																	
Isotoma	Adult												10				
COPEPODA	Nauplius					44		178									
Calanoida																	
Canthocamptidae										20		10					
Cyclopidae																	
Cyclopoida																	
Cyclops capillatus																	
Cyclops scutifer																	
Cyclops sp.																	44
Cyclops sp.	Copep.																
Eucyclops agilis																	
Macrocyclops albidus																	
Harpacticoida								222									
DIPTERA	Adult																
Chironomidae	Adult				2												
Chironomidae	Juvenile				76	16	18	82									
Chironomidae	Larva	260	130	420						10		29			88	44	1 075
Chironomidae	Pupa								88	39	49						
Chironomini	Larva																
Chironomini	Pupa																
Demicryptochironomus	Larva														11		
Glyptotendipes	Larva																
Phaenopsectra	Larva	1	2			2								10			
Diamesinae																	
Diamesa	Larva													88			
Monodiamesa	Larva																
Potthastia	Larva																
Pseudokiefferiella	Larva	5	1							10							
Orthocladiinae	Larva	80	30	3													22
Orthocladiinae	Pupa	2															
Chaetocladius	Larva	16	10														
Corynoneura	Larva	340	300	180											307	88	461
Corynoneura	Pupa	1	1	41													44
Cricotopus	Larva	27	40	40	4		2	4									
Cricotopus	Pupa																
Eukiefferiella	Larva							2				10					
Eukiefferiella	Pupa																
Gymnometriocnemus	Larva																
Heterotrissocladius	Larva																
Heterotrissocladius	Pupa																
Orthocladius	Larva	7										10					
Psectrocladius	Larva	16	1													11	175
Psectrocladius	Pupa																
Rheocricotopus	Larva																
Rheocricotopus	Pupa																
Thienemaniella	Larva																
Tanypodinae	Larva		1													22	
Paramerina	Larva									10				10			
Procladius	Larva	1	1														
Thienemannimyia	Larva		6	2	4	4	25	18					10				
Thienemannimyia	Pupa																
Tanytarsini	Larva																132
Tanytarsini	Pupa																
Paratanytarsus	Larva	2	3	42								20					
Rheotanytarsus	Larva				2		16	11	10						44	11	11
Rheotanytarsus	Pupa								20								
Stempellinella	Larva						2	29									
Tanytarsus	Larva	1	2	1	778	368	591	921		20							
Tanytarsus	Pupa		1														

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Boston area streams, 1994-1998.

Taxa / Species	Stage	STICKLEBACK OUTFLOW														
		01-Aug-95			05-Aug-96				21-Jul-97			25-Aug-97			26-Jun to 30-Jul-98		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 4	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Culicidae																	
Anopheles	Adult										10						
Empididae	Pupa	1															
Simuliidae	Pupa								10								
Simuliidae	Larva																
Prosimulium	Larva																
Simulium	Adult																33
Simulium	Larva	5	1					13	98	20							
Simulium	Pupa	2	27														
Tipulidae																	
Dicranota	Larva																
Priuncera sp.								9									
Tipula	Larva				2												
Unidentified	Adult		1														
EPHEMEROPTERA																	
Baetidae	Larva																
Baetis bicaudatus	Larva																
Baetis tricaudatus	Larva	3															
Ephemerellidae																	
Ephemerella inermis																	
GASTROPODA																	
Valvatidae															44	22	
Valvata sincera sincera							2					20		88			
HYDROZOA																	
Hydra								2					10			44	285
MALACOSTRACA																	
Gammarus lacustris						2			88	167	88	29	59		44	99	154
Idoteidae																	
Saduria entomon									10								
NEMATODA		60	50	121	98	22	74	539	10		10	10	29				
OLIGOCHAETA															44	175	219
Enchytraeidae		120	80	10				2									
Lumbriculidae			6	2								10			11		
Lumbriculus																	
Lumbriculus variegatus								2									
Naididae																	
Chaetogaster					4		4	13									
Nais								2					20		88	482	175
Tubificidae							2										
Tubificidae	Juvenile																
OSTRACODA																	
Candona							4	4			10	49			88		197
Cyclocypris			10														
Cypria									29		39				263	1 864	833
Cypridopsis		700	550	2 160													
Cypris									118	20	78	20			16 052	2 653	3 048
Cyprois marginata		880	600	4 640													
Ilyocypris		20	120	49													
PELECYPODA																	
Sphaeriidae																	
Psidium																	
Sphaerium					4										11		
Physidae																	
Physa																	
PISCES																	
Pungitius pungitius		1	1	2													
unidentified				6													
PLECOPTERA																	
Nemouridae																	
Nemoura	Larva									20	10		10		55		22
Podmosta						2											
Chloroperlidae																	
Suwallia	Larva																
ROTIFERA					4 977	3 333	889	2 844									
Kellicottia					356	178											
Lecane					267	89											
Polyarthra						222	178										
TRICHOPTERA																	
Brachycentridae																	
Brachycentrus americanus																	
Micrasema																	
Limnephilidae		2	6	2													
Clostoeca sp.					4	7											
Grensia praeterita	Larva								69	20	59	10	49	10	77	22	22
Grensia praeterita	Pupa											10		20			
TURBELLARIA							2	2									
TOTAL		**2 593**	**2 000**	**7 733**	**978**	**430**	**755**	**1 899**	**608**	**363**	**725**	**294**	**225**	**255**	**17 401**	**5 658**	**6 951**

Shaded rows indicate terrestrial invertebrates or non-benthic forms that were excluded from the total.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Boston area streams, 1994-1998.

Taxa / Species	Stage	AIMAOKATALOK NE INFLOW						AIMAOKATALOK RIVER					
		25-Aug-97			28-Jun to 31-Jul-98			24-Aug-97			27-Jun to 1-Aug-98		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ARACHNIDA													
Acarina (parasitic)	Adult												
Hydracarina	Adult	10			11		22				66	22	
Oribatidae	Adult												
CLADOCERA													
Chydoridae	Juvenile												
Alona													
Alonella					33						22	33	
Alonella nana													
Chydorus sphaericus					11						121	132	11
Daphniidae													
Daphnia													
Macrothricidae (damaged)													
COLEOPTERA													
Dytiscidae													
Brachyvatus	Adult												
Elmidae	Larva												
Haliplidae													
Haliplus	Larva												
COLLEMBOLA													
Isotomidae													
Isotoma	Adult												
COPEPODA	Nauplius												
Calanoida													
Canthocamptidae													
Cyclopidae													
Cyclopoida													
Cyclops capillatus													
Cyclops scutifer													
Cyclops sp.											33	11	44
Cyclops sp.	Copep.												
Eucyclops agilis													
Macrocyclops albidus											55	44	66
Harpacticoida											77	88	
DIPTERA	Adult												
Chironomidae	Adult												
Chironomidae	Juvenile												
Chironomidae	Larva	78	10	10	11	44	44	10			175	219	219
Chironomidae	Pupa							10					
Chironomini	Larva				22	11	11						
Chironomini	Pupa												
Demicryptochironomus	Larva					11							
Glyptotendipes	Larva				33								11
Phaenopsectra	Larva						22						
Diamesinae													
Diamesa	Larva	88	49										
Monodiamesa	Larva												
Potthastia	Larva												
Pseudokiefferiella	Larva					11							
Orthocladiinae	Larva	49	10		11	11					11	33	22
Orthocladiinae	Pupa												
Chaetocladius	Larva												
Corynoneura	Larva					33	99				11		
Corynoneura	Pupa					11							
Cricotopus	Larva												
Cricotopus	Pupa												
Eukiefferiella	Larva		10			11							
Eukiefferiella	Pupa												
Gymnometriocnemus	Larva										11		
Heterotrissocladius	Larva												
Heterotrissocladius	Pupa												
Orthocladius	Larva												
Psectrocladius	Larva												11
Psectrocladius	Pupa												
Rheocricotopus	Larva					44							
Rheocricotopus	Pupa												
Thienemaniella	Larva					11							
Tanypodinae	Larva						22					99	99
Paramerina	Larva				11								
Procladius	Larva				11								
Thienemannimyia	Larva				186	99	252				11	55	55
Thienemannimyia	Pupa						11						
Tanytarsini	Larva	29			88	66	99				164	77	99
Tanytarsini	Pupa				22								
Paratanytarsus	Larva											11	
Rheotanytarsus	Larva	245	39			154	164				88	44	44
Rheotanytarsus	Pupa											11	
Stempellinella	Larva	10			11	22					33	121	33
Tanytarsus	Larva	10											
Tanytarsus	Pupa												

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Boston area streams, 1994-1998.

Taxa / Species	Stage	AIMAOKATALOK NE INFLOW						AIMAOKATALOK RIVER					
		25-Aug-97			28-Jun to 31-Jul-98			24-Aug-97			27-Jun to 1-Aug-98		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Culicidae													
Anopheles	Adult												
Empididae	Pupa												
Simuliidae	Pupa								10				
Simuliidae	Larva												
Prosimulium	Larva												
Simulium	Adult											11	11
Simulium	Larva		10	10		11			39	10			
Simulium	Pupa												
Tipulidae													
Dicranota	Larva												
Priuncera sp.													
Tipula	Larva				22		22						
Unidentified	Adult												
EPHEMEROPTERA													
Baetidae	Larva												
Baetis bicaudatus	Larva												
Baetis tricaudatus	Larva	69	29	10		22							
Ephemerellidae													
Ephemerella inermis		10						69	20	10			
GASTROPODA													
Valvatidae											22		121
Valvata sincera sincera		39	10		1 009	647	877	29	20	29			11
HYDROZOA													
Hydra													
MALACOSTRACA													
Gammarus lacustris													
Idoteidae													
Saduria entomon													
NEMATODA							11				11	11	132
OLIGOCHAETA													
Enchytraeidae													
Lumbriculidae					11		11						
Lumbriculus													
Lumbriculus variegatus													
Naididae													
Chaetogaster													
Nais													
Tubificidae													
Tubificidae	Juvenile						44						
OSTRACODA													
Candona		20			1 447	219	943			598	66	121	66
Cyclocypris													
Cypria													
Cypridopsis													
Cypris						11	66			29			
Cyprois marginata													
Ilyocypris													
PELECYPODA													
Sphaeriidae													
Psidium		10							10				
Sphaerium													
Physidae													
Physa					219	88	143	10			11		11
PISCES													
Pungitius pungitius unidentified													
PLECOPTERA													
Nemouridae													
Nemoura	Larva				11		11						
Podmosta													
Chloroperlidae													
Suwallia	Larva												
ROTIFERA													
Kellicottia													
Lecane													
Polyarthra													
TRICHOPTERA													
Brachycentridae		29	10										
Brachycentrus americanus								98	578	10			
Micrasema					22								
Limnephilidae													
Clostoeca sp.													
Grensia praeterita	Larva												11
Grensia praeterita	Pupa												
TURBELLARIA													
TOTAL		**696**	**176**	**29**	**3 158**	**1 535**	**2 873**	**225**	**676**	**686**	**757**	**910**	**943**

Shaded rows indicate terrestrial invertebrates or non-benthic forms that were excluded from the total.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Boston area streams, 1994-1998.

Taxa / Species	Stage	FICKLE DUCK OUTFLOW										REFERENCE OUTFLOW					
		Aug 94	01-Aug-95			25-Aug-97			26-Jun to 31-Jul-98			25-Aug-97			28-Jun to 1-Aug-98		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ARACHNIDA																	
Acarina (parasitic)	Adult																
Hydracarina	Adult	4	3	40		49	29	108	132	252	88	10	20	10	5 691	1 458	395
Oribatidae	Adult		10														
CLADOCERA																	
Chydoridae	Juvenile								22		175						22
Alona			10														
Alonella																	
Alonella nana			40														
Chydorus sphaericus				70					22	132	614					88	
Daphniidae																	
Daphnia		28		2													
Macrothricidae (damaged)																	
COLEOPTERA																	
Dytiscidae																	
Brachyvatus	Adult									11							
Elmidae	Larva																
Haliplidae																	
Haliplus	Larva									11							
COLLEMBOLA																	
Isotomidae																	
Isotoma	Adult							10									
COPEPODA	Nauplius																
Calanoida																	
Canthocamptidae																	
Cyclopidae																	
Cyclopoida		7															
Cyclops capillatus			10	6	40												
Cyclops scutifer						10											
Cyclops sp.									44							88	
Cyclops sp.	Copep.		80	20													
Eucyclops agilis																	
Macrocyclops albidus								402	22	44	186	59	49				
Harpacticoida		160							154	88	175				175	1 491	44
DIPTERA	Adult																
Chironomidae	Adult																
Chironomidae	Juvenile																
Chironomidae	Larva		1 110	420	240	88	206	10	1 020	2 237	10 011	29		20	7 368	4 035	1 053
Chironomidae	Pupa	1 855															
Chironomini	Larva														175	11	88
Chironomini	Pupa	333															
Demicryptochironomus	Larva															11	
Glyptotendipes	Larva																
Phaenopsectra	Larva	4	1	1	1												
Diamesinae												88	88	49			
Diamesa	Larva																
Monodiamesa	Larva														175		
Potthastia	Larva														888		22
Pseudokiefferiella	Larva																
Orthocladiinae	Larva		130	190	50	147	294	39	33	44	88	10	39	29	3 684	526	175
Orthocladiinae	Pupa																
Chaetocladius	Larva																
Corynoneura	Larva		710	240	230				208	1 096	2 631					263	22
Corynoneura	Pupa		30	30	11				33	175	351						
Cricotopus	Larva		50		1							98	69	20			
Cricotopus	Pupa											29		10			
Eukiefferiella	Larva																
Eukiefferiella	Pupa							10				20	10	10			
Gymnometriocnemus	Larva																
Heterotrissocladius	Larva		280	90	50												
Heterotrissocladius	Pupa																
Orthocladius	Larva																
Psectrocladius	Larva											10	10		22	22	11
Psectrocladius	Pupa																
Rheocricotopus	Larva								88	22	219				3 224	55	11
Rheocricotopus	Pupa														11		
Thienemaniella	Larva								22		88						
Tanypodinae	Larva	52							11	88	614					175	175
Paramerina	Larva															11	
Procladius	Larva																
Thienemannimyia	Larva					294	157	196	121	307	132				197	1 042	461
Thienemannimyia	Pupa																
Tanytarsini	Larva					29	98		735	1 447	4 309	69	29	10	6 491	6 140	1 623
Tanytarsini	Pupa																
Paratanytarsus	Larva							10	439	44	175					33	33
Rheotanytarsus	Larva		1	1	1			10		132	263	29	39	29	49 461	11 677	3 574
Rheotanytarsus	Pupa		1														
Stempellinella	Larva					745	10	245	329	5 756	2 456			10		263	66
Tanytarsus	Larva	10				20										11	
Tanytarsus	Pupa																

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Boston area streams, 1994-1998.

Taxa / Species	Stage	FICKLE DUCK OUTFLOW										REFERENCE OUTFLOW					
		Aug 94	01-Aug-95			25-Aug-97			26-Jun to 31-Jul-98			25-Aug-97			28-Jun to 1-Aug-98		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Culicidae																	
Anopheles	Adult								22								
Empididae	Pupa																
Simuliidae	Pupa											10		10			
Simuliidae	Larva																22
Prosimulium	Larva																
Simulium	Adult								22								
Simulium	Larva																
Simulium	Pupa																
Tipulidae																	
Dicranota	Larva				1	1											
Priuncera sp.																	
Tipula	Larva						10	10	11			10		10		88	
Unidentified	Adult																
EPHEMEROPTERA																	
Baetidae	Larva													10			
Baetis bicaudatus	Larva																
Baetis tricaudatus	Larva																
Ephemerellidae																	
Ephemerella inermis												10		59			
GASTROPODA																	
Valvatidae									33	263						175	197
Valvata sincera sincera					1							255	39	137	11		11
HYDROZOA																	
Hydra		17															
MALACOSTRACA																	
Gammarus lacustris		28															
Idoteidae																	
Saduria entomon																	
NEMATODA		201	90	22	30			20	44	44	175				351	351	110
OLIGOCHAETA		42							11							88	
Enchytraeidae			30		1												
Lumbriculidae		42	19	1												11	
Lumbriculus																	
Lumbriculus variegatus																	
Naididae																	
Chaetogaster																	
Nais							20									1 678	110
Tubificidae		208															
Tubificidae	Juvenile	113					10									88	
OSTRACODA		728															
Candona						176	88	49	77	1 710	1 140	88	29		351	175	88
Cyclocypris			20	2													
Cypria																	
Cypridopsis			380	123	434												
Cypris							10		11	44	175		10		175		
Cyprois marginata			90	42	91												
Ilyocypris			30	11													
PELECYPODA																	
Sphaeriidae																	
Psidium																	
Sphaerium																	
Physidae																	
Physa												10	59	29			
PISCES																	
Pungitius pungitius unidentified																	
PLECOPTERA		21															
Nemouridae																	
Nemoura	Larva					10		10						20	11		11
Podmosta																	
Chloroperlidae																	
Suwallia	Larva					10											
ROTIFERA																	
Kellicottia																	
Lecane																	
Polyarthra																	
TRICHOPTERA																	
Brachycentridae													10				
Brachycentrus americanus										11							
Micrasema						29	10										
Limnephilidae																	
Clostoeca sp.																	
Grensia praeterita	Larva	4															
Grensia praeterita	Pupa																
TURBELLARIA		4															
TOTAL		**3 823**	**2 985**	**1 214**	**1 142**	**1 597**	**941**	**725**	**3 509**	**13 771**	**23 091**	**774**	**451**	**470**	**78 461**	**29 878**	**8 300**

Shaded rows indicate terrestrial invertebrates or non-benthic forms that were excluded from the total.

Appendix C8. Mean abundance (organisms/m^2) and percent composition of main taxa of benthic invertebrates in Boston area streams, 1994-1998.

Stream	Date	No.	Cnidaria			Nematoda			Oligochaeta			Ostracoda			Acarina			Ephemeroptera			Plecoptera			Trichoptera		
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Aimaokatalok	25-Aug-97	3	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**7**	7	*2.2*	**3**	3	*1.1*	**39**	20	*13.0*	**0**	0	*0.0*	**13**	9	*4.3*
NE Inflow	28-Jun to 31-Jul-98	3	**0**	0	*0.0*	**4**	4	*0.1*	**22**	17	*0.9*	**895**	356	*35.5*	**11**	6	*0.4*	**7**	7	*0.3*	**7**	4	*0.3*	**7**	7	*0.3*
Aimaokatalok	24-Aug-97	3	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**209**	209	*39.5*	**0**	0	*0.0*	**33**	18	*6.2*	**0**	0	*0.0*	**229**	177	*43.2*
River	27-Jun to 1-Aug-98	3	**0**	0	*0.0*	**51**	40	*5.9*	**0**	0	*0.0*	**84**	18	*9.7*	**29**	19	*3.4*	**0**	0	*0.0*	**0**	0	*0.0*	**4**	4	*0.4*
Stickleback	01-Aug-95	3	**0**	0	*0.0*	**77**	22	*1.9*	**73**	32	*1.8*	**3 243**	1 805	*78.9*	**27**	7	*0.7*	**1**	1	*0.0*	**0**	0	*0.0*	**3**	1	*0.1*
Outflow	05-Aug-96	4	**1**	1	*0.0*	**183**	120	*18.0*	**7**	4	*0.7*	**2**	1	*0.2*	**11**	4	*1.1*	**0**	0	*0.0*	**1**	1	*0.0*	**3**	2	*0.3*
	21-Jul-97	3	**0**	0	*0.0*	**7**	3	*1.2*	**0**	0	*0.0*	**98**	40	*17.3*	**150**	117	*26.6*	**0**	0	*0.0*	**10**	6	*1.7*	**49**	15	*8.7*
	25-Aug-97	3	**3**	3	*1.3*	**13**	9	*5.1*	**10**	6	*3.8*	**23**	23	*8.9*	**39**	10	*15.2*	**0**	0	*0.0*	**3**	3	*1.3*	**33**	9	*12.7*
	26-Jun to 30-Jul-98	3	**110**	89	*1.1*	**0**	0	*0.0*	**398**	149	*4.0*	**8 333**	4 037	*83.3*	**124**	29	*1.2*	**0**	0	*0.0*	**26**	16	*0.3*	**40**	18	*0.4*
Fickle Duck	Aug-94	1	**17**	-	*0.5*	**201**	-	*5.3*	**405**	-	*10.6*	**728**	-	*19.0*	**4**	-	*0.1*	**0**	-	*0.0*	**21**	-	*0.5*	**4**	-	*0.1*
Outflow	01-Aug-95	3	**0**	0	*0.0*	**47**	21	*2.7*	**17**	16	*1.0*	**408**	115	*22.9*	**18**	12	*1.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*
	25-Aug-97	3	**0**	0	*0.0*	**7**	7	*0.6*	**10**	10	*0.9*	**108**	37	*9.9*	**62**	24	*5.7*	**0**	0	*0.0*	**10**	6	*0.9*	**13**	9	*1.2*
	26-Jun to 31-Jul-98	3	**0**	0	*0.0*	**88**	44	*0.7*	**4**	4	*0.0*	**1 053**	499	*7.8*	**157**	49	*1.2*	**0**	0	*0.0*	**0**	0	*0.0*	**4**	4	*0.0*
Reference	25-Aug-97	3	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**42**	26	*7.5*	**13**	3	*2.3*	**26**	21	*4.6*	**7**	7	*1.2*	**3**	3	*0.6*
Outflow	28-Jun to 1-Aug-98	3	**0**	0	*0.0*	**270**	80	*0.7*	**658**	604	*1.7*	**263**	134	*0.7*	**2 515**	1 617	*6.5*	**0**	0	*0.0*	**7**	4	*0.0*	**0**	0	*0.0*

Stream	Date	No.	Simuliidae			Unid. Chironomidae			Tanypodinae			Tanytarsini			Chironomini			Orthocladinae			Diamesinae			Remainder			All Taxa [a]		
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Aimaokatalok	25-Aug-97	3	**7**	3	*2.2*	**33**	23	*10.9*	**0**	0	*0.0*	**111**	92	*37.0*	**0**	0	*0.0*	**23**	14	*7.6*	**46**	26	*15.2*	**20**	15	*6.5*	**301**	202	*100*
NE Inflow	28-Jun to 31-Jul-98	3	**4**	4	*0.1*	**33**	11	*1.3*	**197**	54	*7.8*	**208**	44	*8.3*	**37**	10	*1.4*	**77**	33	*3.0*	**4**	4	*0.1*	**1 009**	150	*40.0*	**2 522**	500	*100*
Aimaokatalok	24-Aug-97	3	**20**	15	*3.7*	**7**	7	*1.2*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**0**	0	*0.0*	**33**	3	*6.2*	**529**	152	*100*
River	27-Jun to 1-Aug-98	3	**0**	0	*0.0*	**205**	15	*23.5*	**106**	48	*12.2*	**241**	33	*27.7*	**4**	4	*0.4*	**33**	0	*3.8*	**0**	0	*0.0*	**113**	16	*13.0*	**870**	57	*100*
Stickleback	01-Aug-95	3	**12**	8	*0.3*	**270**	84	*6.6*	**4**	2	*0.1*	**17**	13	*0.4*	**1**	1	*0.0*	**378**	65	*9.2*	**2**	2	*0.0*	**0**	0	*0.0*	**4 109**	1 820	*100*
Outflow	05-Aug-96	4	**3**	3	*0.3*	**48**	18	*4.7*	**13**	5	*1.3*	**680**	126	*66.9*	**1**	1	*0.0*	**3**	1	*0.3*	**0**	0	*0.0*	**61**	57	*6.0*	**1 016**	315	*100*
	21-Jul-97	3	**42**	33	*7.5*	**62**	13	*11.0*	**3**	3	*0.6*	**16**	9	*2.9*	**0**	0	*0.0*	**0**	0	*0.0*	**3**	3	*0.6*	**124**	31	*22.0*	**565**	107	*100*
	25-Aug-97	3	**0**	0	*0.0*	**10**	10	*3.8*	**7**	3	*2.5*	**7**	7	*2.5*	**3**	3	*1.3*	**7**	7	*2.5*	**29**	29	*11.4*	**72**	9	*27.8*	**258**	20	*100*
	26-Jun to 30-Jul-98	3	**0**	0	*0.0*	**402**	336	*4.0*	**7**	7	*0.1*	**66**	40	*0.7*	**4**	4	*0.0*	**369**	177	*3.7*	**0**	0	*0.0*	**124**	16	*1.2*	**10 003**	3 717	*100*
Fickle Duck	Aug-94	1	**0**	-	*0.0*	**1 855**	-	*48.5*	**52**	-	*1.4*	**10**	-	*0.3*	**336**	-	*8.8*	**0**	-	*0.0*	**0**	-	*0.0*	**191**	-	*5.0*	**3 823**	-	*100*
Outflow	01-Aug-95	3	**0**	0	*0.0*	**590**	265	*33.1*	**0**	0	*0.0*	**1**	0	*0.1*	**1**	0	*0.1*	**697**	258	*39.2*	**0**	0	*0.0*	**1**	1	*0.1*	**1 780**	603	*100*
	25-Aug-97	3	**0**	0	*0.0*	**101**	57	*9.3*	**216**	41	*19.8*	**389**	208	*35.7*	**0**	0	*0.0*	**163**	71	*15.0*	**0**	0	*0.0*	**10**	6	*0.9*	**1 088**	262	*100*
	26-Jun to 31-Jul-98	3	**0**	0	*0.0*	**4 422**	2 816	*32.9*	**424**	178	*3.2*	**5 362**	1 930	*39.8*	**0**	0	*0.0*	**1 699**	883	*12.6*	**0**	0	*0.0*	**245**	59	*1.8*	**13 457**	5 655	*100*
Reference	25-Aug-97	3	**7**	3	*1.2*	**16**	9	*2.9*	**0**	0	*0.0*	**72**	14	*12.7*	**0**	0	*0.0*	**121**	28	*21.4*	**75**	13	*13.3*	**183**	51	*32.4*	**565**	105	*100*
Outflow	28-Jun to 1-Aug-98	3	**7**	7	*0.0*	**4 152**	1 824	*10.7*	**687**	299	*1.8*	**26 457**	15 205	*68.0*	**95**	44	*0.2*	**2 675**	2 141	*6.9*	**362**	351	*0.9*	**731**	512	*1.9*	**38 880**	20 748	*100*

NOTES: Terrestrial animals (e.g., adult Culicidae or mosquitoes) were excluded from these data, but not from Rescan's original reports. In addition, non-benthic forms (e.g., cladocerans and most copepods) were removed from statistical analyses. Due to rounding, total numbers may not match the sum of the major taxonomic groups.

Appendix C9. Marine benthic invertebrate abundance (organisms/m^2) in Hope Bay, 1998.

Taxa/Species	Stage	HOPE BAY 21-Jul-1998								
		STATION 1 8.0 m depth			STATION 2 3.6 m depth			STATION 3 3.7 m depth		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
AMPHIPODA	Juvenile									
Atylus tridens		133								
Orchomene		44			44					
Paramoera		133								
Pontoporeia femorata		267	533	44						
COLLEMBOLA										
Podura sp	Adult	44	44							
COPEPODA										
Harpacticoida							44	267		
CUMACEA										
Bathycuma			44							
Diastylis (abbotti?)								89		
DIPTERA										
Chironomidae	Larva		44	89						
Chironomini										
Chironomus	Larva			44				89		
Phaenopsectra	Larva	44								
Polypedilum	Larva		44	44			44			
Orthocladiinae										
Cricotopus	Larva	133				44	222			
Eukiefferiella	Larva	267	44				267			
Monodiamesa	Larva	44	133	89			89			
Saetheria	Larva		89							
Stilocladius	Larva	89		44						
Thienemanniella	Larva	178	178	178			89			
Tanytarsini										
Rheotanytarsus	Larva	44	44	44			356			
Tanypodinae										
Procladius	Larva		44	44						
Culicidae	Adult	89								
HIRUDINEA										
Piscicolidae?	Juvenile		44							
HYDRACARINA	Juvenile			44			44			
Lebertia			89							
Neumannia			44				89		44	
Sperchon							44			
HYMENOPTERA										
Formicidae	Adult					44				
ISOPODA	Juvenile	178								
Saduria entomon		44								
NEMATODA		89		44	311	1 844	44	3 556	122	396
OLIGOCHAETA	Juvenile									
Enchytraeidae			44					178	133	89
OSTRACODA		133	44	44			44			
POLYCHAETA	Juvenile	44						89		
Amphictenidae										
Pectinaria granulata		356	89	396						
Capitellidae										
Mediomastus		133	133	178				356	1 156	311
Cirratulidae	damaged			89	44					
Nephtyidae										
Nephthys ciliata										
Nephthys cornuta		122	1 467	711						
Paraonidae										
Aricidea lopezi		44								
Paronella spinifera								44		
Pholadidae										
Pholoe minuta		711	267	267						
Phyllodocidae										
Eteone longa		89	44	178			89			
Polynoidae dam		622	89							
Spionidae										
Laonice cf cirrata				44	356	533	222	167	489	178
PRIAPULIDA		44								
PELECYPODA										
Macoma inquinata		89			89			133		
TOTAL		**4 078**	**3 556**	**2 618**	**844**	**2 422**	**1 688**	**4 967**	**1 944**	**974**

NOTE: Shaded rows indicate terrestrial invertebrates or adult forms of aquatic invertebrates that were excluded from the total.
Designation "cf" indicates that positive identification could not be made to species.

Appendix C10. Mean abundance (organisms/m^2) and percent composition of main taxa of benthic invertebrates in Hope Bay, 21 July 1998.

Site	Depth (m)	No. Repl.	Nematoda			Polychaeta			Ostracoda			Cumacea		
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Station 1	8.0	3	**44**	26	*1.3*	**2 025**	82	*59.2*	**74**	30	*2.2*	**15**	15	*0.4*
Station 2	3.6	3	**733**	561	*44.4*	**415**	65	*25.1*	**15**	15	*0.9*	**0**	0	*0.0*
Station 3	3.7	3	**1 358**	1 102	*51.7*	**930**	361	*35.4*	**0**	0	*0.0*	**30**	30	*1.1*

Site	Depth (m)	No. Repl.	Amphipoda			Chironomidae			Pelecypoda			Other Taxa			All Taxa[a]	
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Station 1	8.0	3	**385**	171	*11.3*	**667**	68	*19.5*	**30**	30	*0.9*	**178**	68	*5.2*	**3 417**	427
Station 2	3.6	3	**15**	15	*0.9*	**370**	348	*22.4*	**30**	30	*1.8*	**74**	74	*4.5*	**1 652**	456
Station 3	3.7	3	**0**	0	*0.0*	**30**	30	*1.1*	**44**	44	*1.7*	**237**	107	*9.0*	**2 628**	1 202

[a]Terrestrial animals (e.g., adult Culicidae or mosquitoes) were excluded from these data, but not from Rescan's original reports.

APPENDIX D

FISH POPULATIONS

Appendix D1. Fish capture summary for Boston area lakes, 1993-1997.

Lake	Year	Method	Effort (h)	Lake trout	Lake whitefish	Arctic grayling	Cisco	Ninespine stickleback	All Species
Aimaokatalok	1993	GN		7	6				13
	1994	GN		20	23	1			44
	1995	AN		2					2
	1995	GN	52.5	23	5				28
	1995	MT	46.0					75	75
	1996	GN		13	1				14
	1997	AN		30					30
	1997	GN		70	74		17		161
	1993-1997	**Total**	**98.5**	**165**	**109**	**1**	**17**	**75**	**367**
Stickleback	1993	GN						observed	0
	1994	GN						observed	0
	1995	MT	22.0					19	19
	1995	GN	11.5						0
	1997	GN						observed	0
	1993-1997	**Total**	**33.5**	**0**	**0**	**0**	**0**	**19**	**19**
Fickle Duck	1995	GN	9.5			4		observed	4
	1995	MT	22.0					3	3
	1996	GN				4		observed	4
	1995-1996	**Total**	**31.5**	**0**	**0**	**8**	**0**	**3**	**11**

Appendix D2. Catch and catch-per-unit-effort (CPUE) data for small mesh, large mesh, and index (38 mm mesh size) gill net sets in Aimaokatalok Lake, 1997.

Set ID	Date	Mesh Sizes (mm)	Net Area (m^2)	Set Time	Lift Time	Soak Time (min)	Lake trout		Lake whitefish		Cisco		All Species	
							n	*CPUE*	n	*CPUE*	n	*CPUE*	n	*CPUE*
SS1	10-Aug	19, 25, 38, 51	146.4	9:20	15:20	360	1	*2.7*	1	*2.7*			2	*5.5*
SS2	10-Aug	19, 25, 38, 51	146.4	15:45	21:45	360	4	*10.9*					4	*10.9*
SS3	11-Aug	19, 25, 38, 51	146.4	19:50	23:20	210	13	*60.9*	11	*51.5*	8	*37.5*	32	*149.9*
Small Mesh Gang Total						**930**	**18**		**12**		**8**		**38**	
	Mean CPUE (fish/100m^2/24h)							***24.9***		***18.1***		***12.5***		***55.4***
	St Dev of Mean CPUE							*31.5*		*29.0*		*21.6*		*81.8*
SL1	10-Aug	64, 76, 89	109.8	9:15	14:55	340	6	*23.1*	1	*3.9*			7	*27.0*
SL2	10-Aug	64, 76, 89	109.8	15:35	21:30	355	18	*66.5*	13	*48.0*			31	*114.5*
SL3	11-Aug	64, 76, 89	109.8	19:45	22:45	180	4	*29.1*	6	*43.7*			10	*72.9*
Large Mesh Gang Total						**875**	**28**		**20**				**48**	
	Mean CPUE (fish/100m^2/24h)							***39.6***		***31.9***				***71.5***
	St Dev of Mean CPUE							*23.5*		*24.4*				*43.8*
GN 1	10-Aug	38	109.8	9:30	10:30	60	1	*21.9*					1	*21.9*
GN 2	10-Aug	38	109.8	9:35	10:40	65	1	*20.2*					1	*20.2*
GN 3	10-Aug	38	109.8	9:40	10:50	70	1	*18.7*	1	*18.7*			2	*37.5*
GN 4	10-Aug	38	109.8	11:00	12:00	60	1	*21.9*	2	*43.7*			3	*65.6*
GN 5	10-Aug	38	109.8	11:05	12:10	65			3	*60.5*			3	*60.5*
GN 6	10-Aug	38	109.8	11:10	12:20	70	2	*37.5*	6	*112.4*			8	*149.9*
GN 7	10-Aug	38	109.8	11:15	12:45	90	1	*14.6*	2	*29.1*			3	*43.7*
GN 8	11-Aug	38	109.8	19:55	20:55	60	3	*65.6*	2	*43.7*			5	*109.3*
GN 9	11-Aug	38	109.8	20:00	21:10	70	2	*37.5*	5	*93.7*			7	*131.1*
GN 10	11-Aug	38	109.8	20:00	21:30	90	3	*43.7*	10	*145.7*	3	*43.7*	16	*233.2*
GN 11	11-Aug	38	109.8	20:05	22:00	115	9	*102.6*	11	*125.4*	6	*68.4*	26	*296.5*
Index Gill Net Total						**815**	**24**		**42**		**9**		**75**	
	Mean CPUE (fish/100m^2/24h)							***34.9***		***61.2***		***10.2***		***106.3***
	St Dev of Mean CPUE							*28.4*		*50.9*		*23.3*		*90.4*

Appendix D3. Size and age statistics for fish captured in Boston area lakes, 1993-1997.

Lake	Year	Species	Fork Length (mm)					Weight (g)					Condition Factor					Age (years)				
			n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
Aimaokatalok	1993	Lake trout	*7*	**557**	98	450	700	*7*	**1957**	1159	1000	3600	*7*	**1.03**	0.10	0.88	1.14	*7*	**7.1**	1.5	6	10
		Lake whitefish	*6*	**447**	62	360	500	*5*	**1212**	536	620	1700	*5*	**1.30**	0.08	1.17	1.36	*6*	**16.3**	4.4	10	21
	1994	Lake trout	*20*	**582**	185	170	880	*20*	**2459**	1888	35	6500	*20*	**0.97**	0.10	0.71	1.24	*13*	**11.0**	4.1	5	16
		Lake whitefish	*23*	**403**	95	172	507	*23*	**991**	608	45	1900	*23*	**1.23**	0.29	0.74	1.94	*11*	**14.8**	4.8	7	23
		Arctic grayling	*0*					*1*	**400**	-	400	400	*0*					*1*	**6.0**	-	6	6
	1995	Lake trout	*25*	**609**	109	347	805	*25*	**2528**	1351	500	7100	*23*	**1.03**	0.14	0.77	1.36	*7*	**28.0**	9.4	18	40
		Lake whitefish	*5*	**404**	26	379	440	*5*	**900**	255	700	1300	*5*	**1.34**	0.11	1.25	1.52	*2*	**15.5**	2.1	14	17
	1996	Lake trout	*9*	**576**	149	426	854	*5*	**1408**	515	825	1800	*5*	**0.82**	0.07	0.75	0.88	*3*	**20.0**	1.0	19	21
		Lake whitefish	*1*	**521**	-	521	521	*0*					*0*					*0*				
	1997	Lake trout	*99*	**488**	137	113	905	*98*	**1558**	1118	14	6000	*98*	**1.13**	0.21	0.67	1.97	*23*	**18.2**	5.4	11	29
		Lake whitefish	*72*	**434**	83	182	538	*72*	**1263**	538	72	2100	*72*	**1.37**	0.18	1.06	1.88	*24*	**27.6**	9.2	15	46
		Cisco	*17*	**207**	67	92	348	*17*	**125**	138	8	532	*17*	**0.99**	0.10	0.85	1.26	*0*				
	1993-1997	**Lake trout**	*160*	**527**	147	113	905	*153*	**1850**	1331	14	7100	*153*	**1.08**	0.19	0.67	1.97	*53*	**16.4**	8.1	5	40
		Lake whitefish	*107*	**430**	83	172	538	*105*	**1183**	553	45	2100	*105*	**1.33**	0.21	0.74	1.94	*43*	**22.2**	9.6	7	46
		Cisco	*17*	**207**	67	92	348	*17*	**125**	138	8	532	*17*	**0.99**	0.10	0.85	1.26	*0*				
		Arctic grayling	*0*					*1*	**400**	-	400	400	*0*					*1*	**6.0**	-	6	6
Fickle Duck	1995	Arctic grayling	*4*	**358**	19	335	380	*4*	**750**	129	600	900	*4*	**1.63**	0.02	1.60	1.65	*2*	**10.0**	2.8	8	12
	1996	Arctic grayling	*4*	**289**	82	224	407	*0*					*0*					*0*				
	1995-1996	**Arctic grayling**	*8*	**323**	66	224	407	*4*	**750**	129	600	900	*4*	**1.63**	0.02	1.60	1.65	*2*	**10.0**	2.8	8	12

NOTE: all sampling methods combined; SD = standard deviation

Appendix D4. Length-frequency (%) distribution of fish captured in Boston area lakes, 1993-1997.

Fork Length Interval (mm)	AIMAOKATALOK LAKE													FICKLE DUCK LAKE		
	Lake trout						Lake whitefish						Cisco	Arctic grayling		
	1993	1994	1995	1996	1997	**Total**	1993	1994	1995	1996	1997	**Total**	1997	1995	1996	**Total**
90 - 99													5.9			
100 - 109																
110 - 119					1.0	**0.6**										
120 - 129					1.0	**0.6**							5.9			
130 - 139					1.0	**0.6**										
140 - 149													5.9			
150 - 159																
160 - 169																
170 - 179		5.0				**0.6**		4.3				**0.9**	5.9			
180 - 189					1.0	**0.6**		4.3			1.4	**1.9**	29.4			
190 - 199													11.8			
200 - 209													5.9			
210 - 219																
220 - 229															25.0	**12.5**
230 - 239																
240 - 249					1.0	**0.6**					2.8	**1.9**	5.9		25.0	**12.5**
250 - 259					1.0	**0.6**										
260 - 269					1.0	**0.6**					1.4	**0.9**				
270 - 279					1.0	**0.6**										
280 - 289											1.4	**0.9**	5.9		25.0	**12.5**
290 - 299								4.3			2.8	**2.8**	5.9			
300 - 309					1.0	**0.6**					4.2	**2.8**	5.9			
310 - 319					2.0	**1.3**		4.3			1.4	**1.9**				
320 - 329																
330 - 339					1.0	**0.6**					1.4	**0.9**		25.0		**12.5**
340 - 349		5.0	4.0		1.0	**1.9**		4.3				**0.9**	5.9			
350 - 359								4.3				**0.9**		25.0		**12.5**
360 - 369		5.0				**0.6**	16.7	8.7				**2.8**		25.0		**12.5**
370 - 379			4.0			**0.6**			20.0		1.4	**1.9**				
380 - 389					2.0	**1.3**	16.7	8.7	20.0			**3.7**		25.0		**12.5**
390 - 399					1.0	**0.6**					4.2	**2.8**				
400 - 409									20.0		1.4	**1.9**			25.0	**12.5**
410 - 419		5.0			2.0	**1.9**		4.3			6.9	**5.6**				
420 - 429				11.1	3.0	**2.5**		4.3	20.0		2.8	**3.7**				
430 - 439					1.0	**0.6**					5.6	**3.7**				
440 - 449					5.1	**3.1**			20.0		2.8	**2.8**				
450 - 459	14.3			11.1	3.0	**3.1**		4.3			2.8	**2.8**				
460 - 469		5.0	4.0		6.1	**5.0**	16.7	8.7			2.8	**4.7**				
470 - 479		5.0		11.1	9.1	**6.9**		13.0			13.9	**12.1**				
480 - 489		5.0		11.1	8.1	**6.3**	16.7	8.7			6.9	**7.5**				
490 - 499	14.3				5.1	**3.8**		4.3			12.5	**9.3**				
500 - 509	14.3	5.0			6.1	**5.0**	33.3	8.7			8.3	**9.3**				
510 - 519	14.3		4.0		5.1	**4.4**					4.2	**2.8**				
520 - 529					2.0	**1.3**				100.0	5.6	**4.7**				
530 - 539		10.0	4.0		1.0	**2.5**					1.4	**0.9**				
540 - 549			4.0	11.1	4.0	**3.8**										
550 - 559					3.0	**1.9**										
560 - 569			4.0	11.1		**1.3**										
570 - 579	14.3	5.0			2.0	**2.5**										
580 - 589			4.0		3.0	**2.5**										
590 - 599			8.0		2.0	**2.5**										
600 - 609			8.0	11.1	2.0	**3.1**										
610 - 619																
620 - 629					2.0	**1.3**										
630 - 639			4.0		2.0	**1.9**										
640 - 649			12.0			**1.9**										
650 - 659			12.0			**1.9**										
660 - 669			4.0			**0.6**										
670 - 679																
680 - 689	14.3	5.0				**1.3**										
690 - 699		5.0	4.0		1.0	**1.9**										
700 - 709	14.3				1.0	**1.3**										
710 - 719		10.0				**1.3**										
720 - 729																
730 - 739		5.0	4.0			**1.3**										
740 - 749		5.0	4.0			**1.3**										
750 - 759																
760 - 769			4.0			**0.6**										
770 - 779					1.0	**0.6**										
780 - 789		5.0		11.1		**1.3**										
790 - 799																
800 - 809			4.0		2.0	**1.9**										
810 - 819																
820 - 829																
830 - 839		5.0				**0.6**										
840 - 849																
850 - 859				11.1		**0.6**										
860 - 869																
870 - 879																
880 - 889		5.0				**0.6**										
890 - 899					1.0	**0.6**										
900 - 909					1.0	**0.6**										
No. Sampled	***7***	***20***	***25***	***9***	***99***	***160***	***6***	***23***	***5***	***1***	***72***	***107***	***17***	***4***	***4***	***8***

Appendix D5. Age-specific length and weight statistics for fish captured in Boston area lakes, 1993-1997

Age (yr)	AIMAOKATALOK LAKE																				FICKLE DUCK LAKE									
	LAKE TROUT										LAKE WHITEFISH										ARCTIC GRAYLING									
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1-4																														
5	*2*	**355**	13	345	364	*2*	**425**	35	400	450																				
6	*5*	**465**	38	410	510	*5*	**1040**	230	700	1300																				
7	*2*	**535**	49	500	570	*2*	**1500**	566	1100	1900	*1*	**362**	-	362	362	*1*	**500**	-	500	500										
8	*1*	**680**	-	680	680	*1*	**3600**	-	3600	3600											*1*	**335**	-	335	335	*1*	**600**	-	600	600
9											*2*	**385**	6	380	389	*2*	**650**	71	600	700										
10	*2*	**601**	140	502	700	*2*	**2400**	1697	1200	3600	*1*	**360**	-	360	360	*1*	**620**	-	620	620										
11	*1*	**447**	-	447	447	*1*	**800**	-	800	800																				
12	*4*	**525**	235	306	742	*4*	**2149**	2128	298	4500	*1*	**380**	-	380	380	*1*	**640**	-	640	640	*1*	**380**	-	380	380	*1*	**900**	-	900	900
13	*2*	**518**	81	461	576	*2*	**1406**	699	912	1900																				
14	*5*	**506**	104	416	686	*5*	**1483**	986	732	3200	*2*	**403**	32	380	426	*2*	**800**	141	700	900										
15	*3*	**705**	189	504	880	*3*	**3892**	2564	1375	6500	*2*	**441**	16	430	453	*2*	**1177**	33	1154	1200										
16	*2*	**690**	203	547	834	*2*	**3529**	3070	1358	5700	*5*	**436**	31	411	489	*5*	**1116**	273	942	1600										
17	*4*	**505**	66	424	580	*4*	**1269**	410	780	1648	*6*	**457**	29	411	498	*5*	**1302**	250	912	1600										
18	*3*	**536**	59	475	592	*3*	**1687**	482	1244	2200	*1*	**480**	-	480	480	*1*	**1500**	-	1500	1500										
19	*3*	**475**	114	347	566	*3*	**1200**	608	500	1600	*1*	**462**	-	462	462	*1*	**1500**	-	1500	1500										
20	*2*	**535**	78	479	590	*2*	**1488**	937	825	2150	*1*	**500**	-	500	500	*1*	**1600**	-	1600	1600										
21	*2*	**580**	31	558	602	*2*	**1756**	62	1712	1800	*1*	**500**	-	500	500	*1*	**1700**	-	1700	1700										
22	*1*	**519**	-	519	519	*1*	**1810**	-	1810	1810	*1*	**493**	-	493	493	*1*	**1775**	-	1775	1775										
23	*2*	**637**	174	514	760	*2*	**2650**	1768	1400	3900	*3*	**485**	19	471	507	*3*	**1699**	221	1446	1852										
24											*4*	**482**	27	449	512	*4*	**1404**	218	1100	1612										
25	*1*	**577**	-	577	577	*1*	**2044**	-	2044	2044																				
26																														
27																														
28																														
29	*3*	**521**	90	448	621	*3*	**1623**	873	922	2600																				
30																														
31-33																														
34											*2*	**499**	35	474	523	*2*	**1712**	549	1324	2100										
35	*1*	**600**	-	600	600	*1*	**1900**	-	1900	1900	*1*	**498**	-	498	498	*1*	**1348**	-	1348	1348										
36											*5*	**496**	24	473	523	*5*	**1579**	335	1264	2000										
37											*2*	**497**	20	483	511	*2*	**1541**	83	1482	1600										
38	*1*	**805**	-	805	805	*1*	**7100**	-	7100	7100																				
39																														
40	*1*	**603**	-	603	603	*1*	**2100**	-	2100	2100																				
41-45																														
46											*1*	**479**	-	479	479	*1*	**1166**	-	1166	1166										
Total	***53***	**544**	**127**	**306**	**880**	***53***	**1909**	**1487**	**298**	**7100**	***43***	**459**	**45**	**360**	**523**	***42***	**1305**	**401**	**500**	**2100**	***2***	**358**	**32**	**335**	**380**	***2***	**750**	**212**	**600**	**900**

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D6. Sex-specific length, age and condition factor characteristics for immature and mature fish captured in Boston area lakes, 1993-1997.

Sex	Maturity	Parameter		AIMAOKATALOK LAKE		
				LKTR	LKWH	CISC
Female	Immature	Fork Length	*n*	*10*	*5*	*1*
		(mm)	Minimum	129	182	305
			Maximum	461	379	305
		Age	*n*	*5*		
		(yr)	Minimum	12		
			Maximum	17		
		Condition Factor	*n*	*10*	*5*	*1*
			Mean	0.97	1.22	1.05
	Mature	Fork Length	*n*	*15*	*18*	*2*
		(mm)	Minimum	469	411	198
			Maximum	708	523	205
		Age	*n*	*12*	*14*	
		(yr)	Minimum	14	15	
			Maximum	29	36	
		Condition Factor	*n*	*14*	*18*	*2*
			Mean	1.04	1.35	0.99
	Combined	Fork Length	*n*	*25*	*23*	*3*
		(mm)	Minimum	129	182	198
			Maximum	708	523	305
		Age	*n*	*17*	*14*	
		(yr)	Minimum	12	15	
			Maximum	29	36	
		Condition Factor	*n*	*24*	*18*	*2*
			Mean	1.01	1.35	0.99
Male	Immature	Fork Length	*n*	*9*	*8*	*6*
		(mm)	Minimum	183	241	120
			Maximum	602	437	287
		Age	*n*	*3*		
		(yr)	Minimum	11		
			Maximum	21		
		Condition Factor	*n*	*9*	*8*	*6*
			Mean	0.95	1.16	0.94
	Mature	Fork Length	*n*	*8*	*13*	*2*
		(mm)	Minimum	448	413	293
			Maximum	566	511	348
		Age	*n*	*6*	*10*	
		(yr)	Minimum	14	16	
			Maximum	29	46	
		Condition Factor	*n*	*7*	*13*	*2*
			Mean	1.06	1.26	1.19
	Combined	Fork Length	*n*	*17*	*21*	*8*
		(mm)	Minimum	183	241	120
			Maximum	602	511	348
		Age	*n*	*9*	*10*	
		(yr)	Minimum	11	16	
			Maximum	29	46	
		Condition Factor	*n*	*16*	*21*	*8*
			Mean	1.00	1.22	1.00

Note: LKTR = lake trout; LKWH = lake whitefish; CISC = cisco

Appendix D7. Raw data for fish captured in Boston area lakes, 1993-1997.

Lake	Site #	Date	Meth	Mesh (mm)	Sample #	Species	TL (mm)	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Tissues	Mort-ality	Comments / Stomach Content
Aimaokatalok		Aug-93	GN		1	LKTR		680	3600	1.14	F			8				Y		
Aimaokatalok		Aug-93	GN		2	LKTR		490	1300	1.10	F			6				Y		
Aimaokatalok		Aug-93	GN		3	LKTR		570	1900	1.03	F			7				Y		
Aimaokatalok		Aug-93	GN		4	LKWH		500	1600	1.28	M			20				Y		
Aimaokatalok		Aug-93	GN		5	LKWH		360	620	1.33	M			10				Y		
Aimaokatalok		Aug-93	GN		6	LKWH		500	1700	1.36	M			21				Y		
Aimaokatalok		Aug-93	GN		7	LKTR		700	3600	1.05	F			10						
Aimaokatalok		Aug-93	GN		8	LKTR		500	1100	0.88	F			7						
Aimaokatalok		Aug-93	GN		9	LKTR		510	1200	0.90				6						
Aimaokatalok		Aug-93	GN		10	LKTR		450	1000	1.10				6						
Aimaokatalok		Aug-93	GN		11	LKWH		480	1500	1.36	M			18						
Aimaokatalok		Aug-93	GN		12	LKWH		380	640	1.17	F			12						
Aimaokatalok		Aug-93	GN		13	LKWH		460			F			17						
Aimaokatalok		24-Aug-94	GN	38-89	GR1	ARGR	340		400		M			6				Y		
Aimaokatalok		24-Aug-94	GN	89	LT1	LKTR	540	**502**	1200	0.95	F			10				Y		
Aimaokatalok		24-Aug-94	GN	89	LT2	LKTR	510	**474**	1000	0.94	F			14				Y		
Aimaokatalok		24-Aug-94	GN	89	LT3	LKTR	620	**576**	1900	1.00	F			13				Y		
Aimaokatalok		24-Aug-94	GN	89	LT4	LKTR	740	**686**	3200	0.99	F			14				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT5	LKTR	950	**880**	6500	0.95	F			15				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT6	LKTR	900	**834**	5700	0.98	F			16						
Aimaokatalok		24-Aug-94	GN	38-89	LT7	LKTR	370	**345**	400	0.97		1		5				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT8	LKTR	790	**732**	3800	0.97	M			15						
Aimaokatalok		24-Aug-94	GN	38-89	LT9	LKTR	770	**714**	4500	1.24	F			12						
Aimaokatalok		24-Aug-94	GN	38-89	LT10	LKTR	800	**742**	3400	0.83	F			12				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT11	LKTR	390	**364**	450	0.94		1		5				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT12	LKTR	570	**530**	1500	1.01	M									
Aimaokatalok		24-Aug-94	GN	38-89	LT13	LKTR	750	**695**	3300	0.98	F									
Aimaokatalok		24-Aug-94	GN	38-89	LT14	LKTR	770	**714**	3300	0.91	F									
Aimaokatalok		24-Aug-94	GN	38-89	LT15	LKTR	570	**530**	1400	0.94	M									
Aimaokatalok		24-Aug-94	GN	38-89	LT16	LKTR	500	**465**	1000	0.99	F			6				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT17	LKTR	850	**788**	4700	0.96	M									
Aimaokatalok		24-Aug-94	GN	38-89	LT18	LKTR	440	**410**	700	1.02	M			6				Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT19	LKTR	180	**170**	35	0.71		1						Y		
Aimaokatalok		24-Aug-94	GN	38-89	LT20	LKTR	520	**483**	1200	1.06	F									
Aimaokatalok		24-Aug-94	GN	89	WF1	LKWH	510	**471**	1400	1.34	M			17				Y		
Aimaokatalok		24-Aug-94	GN	89	WF2	LKWH	490	**453**	1200	1.29	M			15				Y		
Aimaokatalok		24-Aug-94	GN	89	WF3	LKWH	450	**417**	1400	1.94	M							Y		
Aimaokatalok		24-Aug-94	GN	89	WF4	LKWH	540	**498**	1600	1.29	M			17				Y		
Aimaokatalok		24-Aug-94	GN	89	WF5	LKWH	550	**507**	1800	1.38	M			23				Y		
Aimaokatalok		24-Aug-94	GN	89	WF6	LKWH	500	**462**	1500	1.52	F			19						
Aimaokatalok		24-Aug-94	GN	89	WF7	LKWH	460	**426**	900	1.17	F			14						
Aimaokatalok		24-Aug-94	GN	38-89	WF8	LKWH	180	**172**	45	0.88		1						Y		
Aimaokatalok		24-Aug-94	GN	38-89	WF9	LKWH	550	**507**	1800	1.38	F									
Aimaokatalok		24-Aug-94	GN	38-89	WF10	LKWH	410	**380**	600	1.09	F			9				Y		
Aimaokatalok		24-Aug-94	GN	38-89	WF11	LKWH	320	**299**	300	1.12		1								
Aimaokatalok		24-Aug-94	GN	38-89	WF12	LKWH	520	**480**	1400	1.27	M									
Aimaokatalok		24-Aug-94	GN	38-89	WF13	LKWH	390	**362**	500	1.05	F			7				Y		
Aimaokatalok		24-Aug-94	GN	38-89	WF14	LKWH	510	**471**	1300	1.24	F									
Aimaokatalok		24-Aug-94	GN	38-89	WF15	LKWH	190	**181**	50	0.84		1								
Aimaokatalok		24-Aug-94	GN	38-89	WF16	LKWH	420	**389**	700	1.18	M			9				Y		
Aimaokatalok		24-Aug-94	GN	38-89	WF17	LKWH	510	**471**	1900	1.82	M									
Aimaokatalok		24-Aug-94	GN	38-89	WF18	LKWH	500	**462**	1300	1.32	M			17				Y		
Aimaokatalok		24-Aug-94	GN	38-89	WF19	LKWH	530	**489**	1600	1.37	F			16				Y		
Aimaokatalok		24-Aug-94	GN	38-89	WF20	LKWH	370	**344**	400	0.98		1								
Aimaokatalok		24-Aug-94	GN	38-89	WF21	LKWH	380	**353**	350	0.79	M									
Aimaokatalok		24-Aug-94	GN	38-89	WF22	LKWH	340	**317**	400	1.25	F									
Aimaokatalok		24-Aug-94	GN	38-89	WF23	LKWH	390	**362**	350	0.74	F									
Aimaokatalok	A	Aug-95	AN		1	LKTR	630	580	1500	0.77	F							Y		
Aimaokatalok	A	Aug-95	AN		2	LKTR	490	465	1000	0.99	F							Y		
Aimaokatalok	F7	Aug-95	GN		1	LKTR	650	600	1900	0.88	M			35				Y		
Aimaokatalok	F7	Aug-95	GN		2	LKTR	680	640	2800	1.07	M							Y		
Aimaokatalok	F7	Aug-95	GN		3	LKTR	800	760	3900	0.89	F			23				Y		
Aimaokatalok	F7	Aug-95	GN		4	LKTR	700	638	2800	1.08	M							Y		
Aimaokatalok	F7	Aug-95	GN		5	LKTR	412	376	600	1.13	F							Y		
Aimaokatalok	F7	Aug-95	GN		6	LKTR	802	734	3700	0.94	M							Y		
Aimaokatalok	F7	Aug-95	GN		7	LKTR	570	530	1500	1.01	F							Y		
Aimaokatalok	F7	Aug-95	GN		8	LKTR	610	563	1700	0.95	M							Y		
Aimaokatalok	F7	Aug-95	GN		9	LKTR	380	347	500	1.20	F			19				Y		
Aimaokatalok	F7	Aug-95	GN		10	LKTR	690	660	3100	1.08	M							Y		
Aimaokatalok	F7	Aug-95	GN		11	LKWH	420	380	700	1.28	M			14				Y		
Aimaokatalok	F7	Aug-95	GN		12	LKWH	425	400	800	1.25	M							Y		
Aimaokatalok	F7	Aug-95	GN		13	LKWH	460	420	1000	1.35	M							Y		
Aimaokatalok	F7	Aug-95	GN		14	LKWH	470	440	1300	1.53	M			17				Y		
Aimaokatalok	F8	Aug-95	GN		1	LKTR	880	805	7100	1.36	F			38				Y		
Aimaokatalok	F8	Aug-95	GN		2	LKTR	690	650	3000	1.09	F							Y		
Aimaokatalok	F8	Aug-95	GN		3	LKTR	700	650	3400	1.24	M							Y		
Aimaokatalok	F8	Aug-95	GN		4	LKTR	684	642	2700	1.02	F							Y		
Aimaokatalok	F8	Aug-95	GN		5	LKTR	640	592	2200	1.06	F			18				Y		
Aimaokatalok	F8	Aug-95	GN		6	LKTR	748	694	3100	0.93	F							Y		
Aimaokatalok	F8	Aug-95	GN		7	LKTR	654	590	1700	0.83	F							Y		

Appendix D7. Raw data for fish captured in Boston area lakes, 1993-1997.

Lake	Site #	Date	Meth	Mesh (mm)	Sample #	Species	TL (mm)	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Tissues	Mort-ality	Comments / Stomach Content
Aimaokatalok	F8	Aug-95	GN		8	LKTR	592	544	2000	1.24	M							Y		
Aimaokatalok	F8	Aug-95	GN		9	LKTR	706	649	3100	1.13	M							Y		
Aimaokatalok	F8	Aug-95	GN		10	LKTR	638	603	2100	0.96	M			40				Y		
Aimaokatalok	F8	Aug-95	GN		11	LKTR	812	748	3800	0.91	M							Y		
Aimaokatalok	F8	Aug-95	GN		12	LKTR	538	514	1400	1.03	M			23				Y		
Aimaokatalok	F8	Aug-95	GN		13	LKTR	710	652	2600	0.94	F							Y		
Aimaokatalok	F8	Aug-95	GN		14	LKWH	404	379	700	1.29	F							Y		
Aimaokatalok	F7	7-Aug-96	GN	89	47	LKTR		602	1800	0.83	M	1		21					Y	
Aimaokatalok	F7	7-Aug-96	GN	127	48	LKTR		"672"	"700"	"0.23"	F	2		"11"					Y	
Aimaokatalok	F7	7-Aug-96	GN			LKTR														
Aimaokatalok	F7	7-Aug-96	GN	89		LKTR		784												
Aimaokatalok	F7	7-Aug-96	GN	38		LKTR		486												
Aimaokatalok	F7	7-Aug-96	GN	51		LKTR		426												
Aimaokatalok	F8	8-Aug-96	GN	38	49	LKTR		"826"	"2650"	"0.47"	M	2							Y	
Aimaokatalok	F8	8-Aug-96	GN	51	50	LKTR		566	1600	0.88	M	2		19					Y	
Aimaokatalok	F8	8-Aug-96	GN	89	51	LKTR		479	825	0.75	F	2		20					Y	
Aimaokatalok	F8	8-Aug-96	GN	38		LKTR		450												
Aimaokatalok	F8	8-Aug-96	GN	51		LKTR		540												
Aimaokatalok	F8	8-Aug-96	GN	51		LKTR														
Aimaokatalok	F8	8-Aug-96	GN	51		LKTR		854												
Aimaokatalok	F8	8-Aug-96	GN	51		LKWH		521												
Aimaokatalok	outlet	7-Aug-97	AN		1	LKTR		545	1800	1.11						red	590			
Aimaokatalok	outlet	7-Aug-97	AN		2	LKTR		623	2350	0.97						red	589			
Aimaokatalok	outlet	7-Aug-97	AN		3	LKTR		487	1400	1.21						red	588			
Aimaokatalok	outlet	7-Aug-97	AN		4	LKTR		513	1900	1.41						red	587			
Aimaokatalok	outlet	7-Aug-97	AN		5	LKTR		558	1800	1.04						red	586			
Aimaokatalok	outlet	7-Aug-97	AN		6	LKTR		462	1300	1.32						red	585			
Aimaokatalok	outlet	7-Aug-97	AN		7	LKTR		483	1200	1.06						red	584			
Aimaokatalok	outlet	7-Aug-97	AN		8	LKTR		503	1350	1.06						red	583			
Aimaokatalok	outlet	7-Aug-97	AN		9	LKTR		520	1650	1.17						red	582			
Aimaokatalok	outlet	7-Aug-97	AN		10	LKTR		483	1450	1.29						red	581			
Aimaokatalok	outlet	7-Aug-97	AN		11	LKTR		486	1400	1.22						red	580			
Aimaokatalok	outlet	7-Aug-97	AN		12	LKTR		501	1525	1.21						red	579			
Aimaokatalok	outlet	7-Aug-97	AN		13	LKTR		478	1400	1.28						red	578			
Aimaokatalok	outlet	7-Aug-97	AN		14	LKTR		474	1375	1.29						red	577			
Aimaokatalok	outlet	7-Aug-97	AN		15	LKTR		503	1525	1.20						red	576			
Aimaokatalok	outlet	7-Aug-97	AN		16	LKTR		455	1200	1.27						red	575			
Aimaokatalok	outlet	7-Aug-97	AN		17	LKTR		468	1475	1.44						red	574			
Aimaokatalok	outlet	7-Aug-97	AN		18	LKTR		488	1450	1.25						red	573			
Aimaokatalok	outlet	7-Aug-97	AN		19	LKTR		510	1525	1.15						red	572			
Aimaokatalok	outlet	7-Aug-97	AN		20	LKTR		470	1300	1.25						red	571			
Aimaokatalok	outlet	7-Aug-97	AN		21	LKTR		473	1300	1.23						red	570			
Aimaokatalok	outlet	7-Aug-97	AN		22	LKTR		814	5150	0.95						red	569			
Aimaokatalok	outlet	7-Aug-97	AN		23	LKTR		508	1600	1.22						red	568			
Aimaokatalok	outlet	7-Aug-97	AN		24	LKTR		441	1200	1.40						red	567			
Aimaokatalok	outlet	7-Aug-97	AN		25	LKTR		495	1500	1.24						red	566			
Aimaokatalok	outlet	7-Aug-97	AN		26	LKTR		473	1325	1.25					F	red	565			
Aimaokatalok	outlet	7-Aug-97	AN		27	LKTR		477	1700	1.57					F	red	564			
Aimaokatalok	outlet	7-Aug-97	AN		28	LKTR		449	1275	1.41					F	red	563			
Aimaokatalok	outlet	7-Aug-97	AN		29	LKTR		504	1400	1.09					F	red	562			
Aimaokatalok	outlet	7-Aug-97	AN		30	LKTR		522	1775	1.25					F	red	561			
Aimaokatalok	GN1	10-Aug-97	GN	38	31	LKTR		256	160	0.95					F	red	101			
Aimaokatalok	GN2	10-Aug-97	GN	38	32	LKTR		314	282	0.91					F	red	102			
Aimaokatalok	GN3	10-Aug-97	GN	38	33	LKTR		394	660	1.08					F	red	103			
Aimaokatalok	GN3	10-Aug-97	GN	38	34	LKWH		492	1800	1.51					F	red	104			
Aimaokatalok	GN4	10-Aug-97	GN	38	35	LKWH		494	1800	1.49					F	red	105			
Aimaokatalok	GN4	10-Aug-97	GN	38	36	LKTR		306	298	1.04	F	1	1	12	O,F			Y	Y	
Aimaokatalok	GN4	10-Aug-97	GN	38	37	LKWH		523	2000	1.40	F	2	2	36	O,F			Y	Y	
Aimaokatalok	GN5	10-Aug-97	GN	38	38	LKWH		538	1900	1.22					F	red	106			
Aimaokatalok	GN5	10-Aug-97	GN	38	39	LKWH		487	1556	1.35	F	2	2		O,F				Y	
Aimaokatalok	GN5	10-Aug-97	GN	38	40	LKWH		511	1600	1.20	M	2	2	37	O,F			Y	Y	
Aimaokatalok	GN6	10-Aug-97	GN	38	41	LKWH		528	1900	1.29					F	red	101			
Aimaokatalok	GN6	10-Aug-97	GN	38	42	LKWH		474	1600	1.50					F	red	108			
Aimaokatalok	GN6	10-Aug-97	GN	38	43	LKWH		523	2100	1.47	F	2	2	34	O,F			Y	Y	
Aimaokatalok	GN6	10-Aug-97	GN	38	44	LKWH		495	1950	1.61					F	red	110			
Aimaokatalok	GN6	10-Aug-97	GN	38	45	LKWH		508	1700	1.30					F	red	111			
Aimaokatalok	GN6	10-Aug-97	GN	38	46	LKWH		502	1700	1.34					F	red	112			
Aimaokatalok	GN6	10-Aug-97	GN	38	47	LKTR		445	1200	1.36					F	red	113			
Aimaokatalok	GN6	10-Aug-97	GN	38	48	LKTR		478	1200	1.10					F	red	114			
Aimaokatalok	SL1	10-Aug-97	GN	64-89	49	LKTR		504	1375	1.07	M	1	1	15	O,F			Y	Y	
Aimaokatalok	GN7	10-Aug-97	GN	38	50	LKWH		465	1400	1.39					F	red	109			
Aimaokatalok	GN7	10-Aug-97	GN	38	51	LKWH		443	1400	1.61					F	red	115			
Aimaokatalok	GN7	10-Aug-97	GN	38	52	LKTR		819	6000	1.09					F	red	116			
Aimaokatalok	SL1	10-Aug-97	GN	64-89	53	LKTR		897	5000	0.69					F	red	117			
Aimaokatalok	SL1	10-Aug-97	GN	64-89	54	LKTR		448	922	1.03	M	2	3	29	O,F			Y	Y	
Aimaokatalok	SL1	10-Aug-97	GN	64-89	55	LKTR		590	2150	1.05	F	2	2	20	O,F			Y	Y	
Aimaokatalok	SL1	10-Aug-97	GN	64-89	56	LKTR		483	1122	1.00	M	2	3	14	O,F			Y	Y	
Aimaokatalok	SL1	10-Aug-97	GN	64-89	57	LKTR		338	398	1.03	F	1	1	12	F			Y	Y	
Aimaokatalok	SL1	10-Aug-97	GN	64-89	58	LKWH		520	1875	1.33	F	2	2	36	O,F			Y	Y	
Aimaokatalok	SS1	10-Aug-97	GN	19-51	59	LKWH		493	1775	1.48	F	2	2	22	O,F			Y	Y	

Appendix D7. Raw data for fish captured in Boston area lakes, 1993-1997.

Lake	Site #	Date	Meth	Mesh (mm)	Sample #	Species	TL (mm)	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Tissues	Mort-ality	Comments / Stomach Content
Aimaokatalok	SS1	10-Aug-97	GN	19-51	60	LKTR		416	732	1.02	F	1	1	14	O,F			Y	Y	
Aimaokatalok	SL2	10-Aug-97	GN	64-89	61	LKWH		483	1482	1.32	M	2	2	37	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	62	LKWH		474	1324	1.24	F	2	2	34	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	63	LKWH		479	1166	1.06	M	2	2	46	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	64	LKWH		498	1348	1.09	M	2	2	35	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	65	LKWH		473	1264	1.19	F	2	2	36	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	66	LKWH		434	1032	1.26	M	2	2	16	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	67	LKWH		417	942	1.30	F	2	2	16	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	68	LKWH		411	912	1.31	F	2	2	17	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	69	LKWH		479	1338	1.22	F	2	2	36	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	70	LKWH		471	1852	1.77	F	2	2	23	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	71	LKWH		411	1006	1.45	F	2	2	16	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	72	LKWH		493	1488	1.24	M	2	2	24	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	73	LKWH		449	1100	1.22	M	2	2	24	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	74	LKTR		547	1358	0.83	F	2	2	16	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	75	LKTR		580	1648	0.84	F	2	2	17	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	76	LKTR		708	3700	1.04	F	2	2		O,F			Y	Y	10% fish remains
Aimaokatalok	SL2	11-Aug-97	GN	64-89	77	LKTR		484	1084	0.96	M	2	3	17	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	78	LKTR		519	1810	1.29	M	2	3	22	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	79	LKTR		621	2600	1.09	F	2	3	29	O,F			Y	Y	15% fish remains
Aimaokatalok	SL2	11-Aug-97	GN	64-89	80	LKTR		469	1362	1.32	F	2	3	14	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	81	LKTR		589	2625	1.28	F	2	3		O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	82	LKTR		542	1616	1.01	F	2	3	18	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	83	LKTR		493	1346	1.12	F	2	3	29	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	84	LKTR		512	1500	1.12	F	2	2	19	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	85	LKTR		530	1564	1.05	F	2	3	17	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	86	LKTR		447	800	0.90	M	1	1	11	O,F			Y	Y	
Aimaokatalok	SL2	11-Aug-97	GN	64-89	87	LKTR		461	912	0.93	F	1	1	13	O,F			Y	Y	50% fish remains
Aimaokatalok	SL2	11-Aug-97	GN	64-89	88	LKTR		424	780	1.02	F	1	1	17	O,F			Y	Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	89	LKTR		450	816	0.90	F	1	1		O,F				Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	90	LKTR		413	658	0.93	F	1	1		O,F				Y	empty stomach
Aimaokatalok	SL2	11-Aug-97	GN	64-89	91	LKTR		387	556	0.96	M	1	1		O,F				Y	10% diptera larvae
Aimaokatalok	SS2	11-Aug-97	GN	19-51	92	LKTR		340	398	1.01	M	1	1		O,F				Y	5% diptera larvae
Aimaokatalok	SS2	11-Aug-97	GN	19-51	93	LKTR		558	1712	0.99	F	2	3	21	O,F			Y	Y	50% fish remains
Aimaokatalok	SS2	11-Aug-97	GN	19-51	94	LKTR		577	2044	1.06	F	2	3	25	O,F			Y	Y	75% fish remains
Aimaokatalok	SS2	11-Aug-97	GN	19-51	95	LKTR		475	1244	1.16	M	2	3	18	O,F			Y	Y	empty stomach
Aimaokatalok	GN8	11-Aug-97	GN	38	96	LKWH		453	1500	1.61					F	red	118			
Aimaokatalok	GN8	11-Aug-97	GN	38	97	LKTR		498	1550	1.25					F	red	119			
Aimaokatalok	GN8	11-Aug-97	GN	38	98	LKTR		588	2250	1.11					F	red	120			
Aimaokatalok	GN8	11-Aug-97	GN	38	99	LKTR		467	1300	1.28					F	red	121			
Aimaokatalok	GN8	11-Aug-97	GN	38	100	LKWH		477	1446	1.33	M	2	3	23	O,F			Y	Y	
Aimaokatalok	GN9	11-Aug-97	GN	38	101	LKWH		417	1200	1.65					F	red	122			
Aimaokatalok	GN9	11-Aug-97	GN	38	102	LKWH		506	1850	1.43					F	red	123			
Aimaokatalok	GN9	11-Aug-97	GN	38	103	LKWH		435	1300	1.58					F	red	124			
Aimaokatalok	GN9	11-Aug-97	GN	38	104	LKWH		503	1800	1.41					F	red	126			
Aimaokatalok	GN9	11-Aug-97	GN	38	105	LKTR		697	3350	0.99					F	red	127			
Aimaokatalok	GN9	11-Aug-97	GN	38	106	LKTR		577	2250	1.17					F	red	128			
Aimaokatalok	GN9	11-Aug-97	GN	38	107	LKWH		512	1612	1.20	F	2	3	24	O,F			Y	Y	
Aimaokatalok	GN10	11-Aug-97	GN	38	108	LKWH		392	1000	1.66						red	129			
Aimaokatalok	GN10	11-Aug-97	GN	38	109	LKWH		483	1650	1.46						red	130			
Aimaokatalok	GN10	11-Aug-97	GN	38	110	LKWH		470	1650	1.59						red	131			
Aimaokatalok	GN10	11-Aug-97	GN	38	111	LKWH		492	1800	1.51						red	132			
Aimaokatalok	GN10	11-Aug-97	GN	38	112	LKWH		472	1650	1.57						red	133			
Aimaokatalok	GN10	11-Aug-97	GN	38	113	CISC		241	150	1.07										
Aimaokatalok	GN10	11-Aug-97	GN	38	114	LKWH		423	1150	1.52						red	134			
Aimaokatalok	GN10	11-Aug-97	GN	38	115	LKTR		775	5000	1.07						red	135			
Aimaokatalok	GN10	11-Aug-97	GN	38	116	LKTR		422	900	1.20						red	136			
Aimaokatalok	GN10	11-Aug-97	GN	38	117	LKTR		312	500	1.65						red	137			
Aimaokatalok	GN10	11-Aug-97	GN	38	118	LKWH		430	1154	1.45	F	2	3	15	O,F			Y	Y	
Aimaokatalok	GN10	11-Aug-97	GN	38	119	LKWH		475	1414	1.32	F	2	3	24	O,F			Y	Y	
Aimaokatalok	GN10	11-Aug-97	GN	38	120	LKWH		503	1638	1.29	F	2	2		O				Y	
Aimaokatalok	GN10	11-Aug-97	GN	38	121	LKWH		379	674	1.24	F	1	1		O				Y	
Aimaokatalok	GN10	11-Aug-97	GN	38	122	CISC		198	78	1.00	F	2	3		O,F				Y	possibly LSCS
Aimaokatalok	GN10	11-Aug-97	GN	38	123	CISC		183	60	0.98	M	1	1		O,F				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	124	LKWH		513	1950	1.44						red	138			
Aimaokatalok	GN11	11-Aug-97	GN	38	125	LKWH		394	1100	1.80						red	139			
Aimaokatalok	GN11	11-Aug-97	GN	38	126	LKWH		461	1600	1.63					F	red	140			
Aimaokatalok	GN11	11-Aug-97	GN	38	127	LKTR		595	2400	1.14					F	red	141			
Aimaokatalok	GN11	11-Aug-97	GN	38	128	LKTR		467	1350	1.33					F	red	142			
Aimaokatalok	GN11	11-Aug-97	GN	38	129	LKTR		602	2350	1.08					F	red	143			
Aimaokatalok	GN11	11-Aug-97	GN	38	130	LKTR		552	1750	1.04					F	red	144			
Aimaokatalok	GN11	11-Aug-97	GN	38	131	LKTR		603	2300	1.05					F	red	145			
Aimaokatalok	GN11	11-Aug-97	GN	38	132	LKTR		511	1400	1.05					F	red	146			
Aimaokatalok	GN11	11-Aug-97	GN	38	133	LKTR		"238"	"350"	"2.60"					F					
Aimaokatalok	GN11	11-Aug-97	GN	38	134	LKTR		260	152	0.86	F	1	1		O,F				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	135	LKTR		183	54	0.88	M	1	1		O,F				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	136	LKWH		413	940	1.33	M	2	2		O				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	137	LKWH		304	340	1.21	M	1	1		O,F				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	138	LKWH		317	394	1.24	M	1	1		O,F				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	139	LKWH		437	962	1.15	M	1	1		O				Y	

Appendix D7. Raw data for fish captured in Boston area lakes, 1993-1997.

Lake	Site #	Date	Meth	Mesh (mm)	Sample #	Species	TL (mm)	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Tissues	Mort-ality	Comments / Stomach Content
Aimaokatalok	GN11	11-Aug-97	GN	38	140	LKWH		283	290	1.28	F	1	1		O,F				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	141	CISC		205	84	0.98	F	2	3		O,F				Y	possibly LSCS
Aimaokatalok	GN11	11-Aug-97	GN	38	142	CISC		183	56	0.91									Y	frozen whole
Aimaokatalok	GN11	11-Aug-97	GN	38	143	CISC		177	50	0.90									Y	frozen whole
Aimaokatalok	GN11	11-Aug-97	GN	38	144	CISC		185	62	0.98									Y	frozen whole
Aimaokatalok	GN11	11-Aug-97	GN	38	145	CISC		183	52	0.85									Y	frozen whole
Aimaokatalok	GN11	11-Aug-97	GN	38	146	CISC		187	64	0.98	M	1	1		O				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	147	LKWH		182	72	1.19	F	1	1		O,F				Y	
Aimaokatalok	SL3	11-Aug-97	GN	64-89	148	LKWH		"309"	"600"	"2.03"					F	red	147			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	149	LKWH		507	1600	1.23					F	red	148			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	150	LKWH		"301"	"600"	"2.20"					F	red	149			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	151	LKWH		407	900	1.33					F	red	150			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	152	LKTR		435							F	orange	182			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	153	LKTR		635	3100	1.21					F	orange	183			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	154	LKTR		545	1750	1.08					F	orange	184			
Aimaokatalok	SL3	11-Aug-97	GN	64-89	155	LKTR		480	1260	1.14	M	2	3		O,F				Y	25% fish remains
Aimaokatalok	SL3	11-Aug-97	GN	64-89	156	LKWH		427	1000	1.28	M	2	2	16	O,F			Y	Y	empty stomach
Aimaokatalok	SL3	11-Aug-97	GN	64-89	157	LKWH		486	1418	1.24	M	2	3	36	O,F			Y	Y	empty stomach
Aimaokatalok	SS3	11-Aug-97	GN	19-51	158	LKWH		334	700	1.88						orange	185			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	159	LKWH		392	1000	1.66						orange	186			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	160	LKTR		905	5000	0.67					F	orange	187			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	161	LKTR		453	1100	1.18						orange	188			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	162	LKTR		498	2400	1.94						orange	189			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	163	LKTR		494	1450	1.20						orange	190			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	164	LKTR		633	2650	1.04						orange	191			
Aimaokatalok	SS3	11-Aug-97	GN	19-51	165	LKTR		273	400	1.97						orange	192			
Aimaokatalok	GN11	11-Aug-97	GN	38	166	LKWH		268	212	1.10	M	1	1		O				Y	
Aimaokatalok	GN11	11-Aug-97	GN	38	167	LKWH		241	158	1.13	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	168	LKWH		497	1558	1.27	F	2	2		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	169	LKWH		494	1590	1.32	M	2	2		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	170	LKWH		483	1654	1.47	M	2	3		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	171	LKWH		456	1270	1.34	F	2	3		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	172	LKWH		290	274	1.12	F	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	173	LKWH		306	324	1.13	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	174	LKWH		302	350	1.27	F	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	175	LKWH		293	298	1.18	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	176	LKWH		241	160	1.14	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	177	CISC		287	236	1.00	M	1	1		O				Y	damaged
Aimaokatalok	SS3	11-Aug-97	GN	19-51	178	CISC		348	532	1.26	M	2	3		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	179	CISC		293	280	1.11	M	2	2		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	180	CISC		305	298	1.05	F	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	181	CISC		193	64	0.89	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	182	CISC		120	16	0.93	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	183	CISC		147	28	0.88	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	184	CISC		92	8	1.03		1	1							
Aimaokatalok	SS3	11-Aug-97	GN	19-51	185	LKTR		470	996	0.96	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	186	LKTR		428	790	1.01	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	187	LKTR		383	544	0.97	M	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	188	LKTR		242	130	0.92	F	1	1		O				Y	
Aimaokatalok	SS3	11-Aug-97	GN	19-51	189	LKTR		129	22	1.02	F	1	1							
Aimaokatalok	SS3	11-Aug-97	GN	19-51	190	LKTR		113	14	0.97		1	1							
Aimaokatalok	SS3	11-Aug-97	GN	19-51	191	LKTR		135	24	0.98		1	1							
Fickle Duck	F13	Aug-95	GN		1	ARGR	410	380	900	1.64	M			12				Y		
Fickle Duck	F13	Aug-95	GN		2	ARGR	375	335	600	1.60	F			8				Y		
Fickle Duck	F13	Aug-95	GN		3	ARGR	405	365	800	1.65	F							Y		
Fickle Duck	F13	Aug-95	GN		4	ARGR	375	350	700	1.63	M							Y		
Fickle Duck	TRL-01	11-Aug-96	GN	38		ARGR		244												
Fickle Duck	TRL-01	11-Aug-96	GN	51		ARGR		407												
Fickle Duck	TRL-01	11-Aug-96	GN	38		ARGR		224												
Fickle Duck	TRL-01	11-Aug-96	GN	51		ARGR		282												

CODES:

Sampling Method
- GN Gill nets
- AN Angling

Species
- ARGR Arctic grayling
- CISC Cisco
- LKTR Lake trout
- LKWH Lake whitefish
- LSCS Least cisco

TL Total Length

FL Fork Length

Condition Factor (CF)

$CF = \text{Weight [in g]} \times 10^5 / (\text{FL [in mm]})^3$

Ageing Structure
- O Otoliths
- F Fin rays

Tissues
- Y Tissue samples taken for metals analyses

Sex
- F Female
- M Male

Maturity
- 1 Immature
- 2 Mature

Reproductive Status
- 1 Undeveloped
- 2 Green
- 3 Ripe

" " Values in parenthesis were not used in data analysis (length data did not agree with corresponding weight)

Bold FL FL estimated through linear regression FL and TL data collected in 1995

Appendix D8. Catch and catch-per-unit-effort (CPUE) for fish captured in Boston area streams, 1993-2000.

Stream	Site	Date	Method	Lake trout		Lake whitefish		Arctic grayling		Greenland cod		Ninespine stickleback		All Species	
				n	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE
Aimaokatalok NE Inflow	F9	01-Aug-95	EF					*4*	0.5					*4*	*0.5*
	F10	01-Aug-95	MT					*1*	n/a					*1*	*n/a*
	BP-F-01	10-Aug-96	EF	*34*	3.3									*34*	*3.3*
BP03		15-Jun-97	EF					*1*	0.1			*5*	0.5	*6*	*0.6*
BP05		16-Jun-97	EF					*1*	0.2			*2*	0.4	*3*	*0.6*
BP10		17-Jun-97	EF	*1*	0.4			*1*	0.4			*1*	0.4	*3*	*1.2*
BP11		17-Jun-97	EF									*7*	*2*	*7*	*2*
Fickle Duck Inflow	BP12	17-Jun-97	EF									*2*	0.4	*2*	*0.4*
Stickleback Outflow		Aug-93	EF									*31*	12.4	*31*	*12.4*
		Aug-94	MT	*1*	n/a							*40+*	n/a	*41+*	*n/a*
		3-Aug-95	MT									*68*	n/a	*68*	*n/a*
	BP-01	15-Jun-97	EF									*2*	0.3	*2*	*0.3*
Fickle Duck Outflow		Aug-93	EF									*2*	0.3	*2*	*0.3*
		Aug-94	MT	*1*	n/a							*40+*	n/a	*41+*	*n/a*
		31-Jul-95	EF									*40*	32.9	*40*	*32.9*
		31-Jul-95	MT									*82*	n/a	*82*	*n/a*
	BP-02	15-Jun-97	EF									*2*	0.4	*2*	*0.4*
Koignuk River		03-Aug-95	EF									*4*	0.7	*4*	*0.7*
		20-Aug-95	AL	*3*	n/a			*3*	n/a					*6*	*n/a*
		08-Aug-96	EF	*14*	n/a									*14*	*n/a*
		Aug-98	AL	*13*	n/a			*7*	n/a	*1*	n/a			*21*	*n/a*
		14-Aug-98	GN			*1*	n/a							*1*	*n/a*
Boulder Creek		03-Aug-95	EF					*7*	1.0					*7*	*1.0*
		13-Aug-96	EF	*26*	n/a									*26*	*n/a*
PRC13		29-Aug-00	EF									*3*	n/a	*3*	*n/a*
PRC14		25-Jun-00	EF									*16*	n/a	*16*	*n/a*
PRC15		29-Aug-00	EF					*1*	n/a			*3*	n/a	*4*	*n/a*
Total				***93***		***1***		***26***		***1***		***350+***		***471+***	

NOTE: EF = backpack electrofishing; AL = angling with lures; MT = minnow traps; n/a = effort data not available
CPUE values are calculated only for EF and are based on number of fish captured or observed per minute of active sampling.

Appendix D9. Size and age statistics for fish captured in Boston area streams, 1995-2000.

Stream	Year	Species	Fork Length (mm)					Weight (g)					Condition Factor					Age (years)				
			n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
Aimaokatalok NE Inflow	1996	Lake trout	*34*	**64**	6	52	82															
BP03	1997	Arctic grayling	*1*	**358**	-	358	358	*1*	**460**	-	460	460	*1*	**1.00**	-	1.00	1.00					
	1997	Ninespine stickleback	*5*	**47**	3	43	50															
BP05	1997	Arctic grayling	*1*	**224**	-	224	224	*1*	**102**	-	224	224	*1*	**0.91**	-	0.91	0.91					
	1997	Ninespine stickleback	*2*	**52**	4	49	54															
BP10	1997	Lake trout	*1*	**733**	-	733	733	*1*	**4050**	-	4050	4050	*1*	**1.03**	-	1.03	1.03					
		Arctic grayling	*1*	**415**	-	415	415	*1*	**826**	-	826	826	*1*	**1.16**	-	1.16	1.16					
		Ninespine stickleback	*1*	**53**	-	53	53															
BP11	1997	Ninespine stickleback	*7*	**50**	3	47	55															
BP12 (Fickle Duck Inflow)	1997	Ninespine stickleback	*2*	**64**	10	57	71															
Stickleback Outflow	1997	Ninespine stickleback	*2*	**60**	1	59	61															
Fickle Duck Outflow	1997	Ninespine stickleback	*2*	**65**	6	61	69															
Koignuk River	1995	Lake trout	*3*	**473**	157	322	635															
		Arctic grayling	*3*	**343**	21	310	347											*3*	**5.3**	1.2	4	6
	1996	Lake trout	*14*	**58**	8	46	72															
	1998	Lake trout	*9*	**527**	113	410	795	*9*	**1856**	1564	670	5850	*9*	**1.09**	0.07	0.97	1.16	9	**14.7**	4.7	10	25
		Arctic grayling	*4*	**356**	42	293	383	*4*	**473**	131	280	570	*4*	**1.03**	0.10	0.91	1.13	*4*	**8.5**	2.4	5	10
		Lake whitefish	*1*	**173**	-	173	173	*1*	**51**	-	173	173	*1*	**0.98**	-	0.98	0.98					
		Greenland cod	*1*	**467**	-	467	467	*1*	**1180**	-	1180	1180	*1*	**1.16**	-	1.16	1.16	1	**4.0**	-	4	4
	1995-1998	**Lake trout**	*26*	**268**	245	46	795	*9*	**1856**	1564	670	5850	*9*	**1.09**	0.07	0.97	1.16	9	**14.7**	4.7	10	25
		Arctic grayling	*7*	**347**	34	293	383	*4*	**473**	131	280	570	*4*	**1.03**	0.10	0.91	1.13	7	**7.1**	2.5	4	10
		Lake whitefish	*1*	**173**	-	173	173	*1*	**51**	-	173	173	*1*	**0.98**	-	0.98	0.98					
		Greenland cod	*1*	**467**	-	467	467	*1*	**1180**	-	1180	1180	*1*	**1.16**	-	1.16	1.16	1	**4.0**	-	4	4
Boulder Creek	1996	Lake trout	*26*	**60**	18	48	116															
PRC13	2000	Ninespine stickleback	*3*	**29**	5	33	24															
PRC14	2000	Ninespine stickleback	*16*	**38**	11	26	69															
PRC15	2000	Arctic grayling	*1*	**55**	-	55	55															
		Ninespine stickleback	*3*	**31**	3	28	33															

NOTE: All sampling methods and sites combined; SD = standard deviation

Appendix D10. Raw data for fish captured in Boston area streams, 1995-2000.

Stream	Site #	Date	Samp Meth.	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Recap-ture	Comments
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	60											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	60											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	82											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	66											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	58											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	66											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	72											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	72											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	52											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	72											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	64											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	70											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	68											Pass # 1
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	60											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	58											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	68											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	74											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	70											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	66											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	56											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	62											Pass # 2
Aimaokatalok NE Inflow	BP-F-01	10-Aug-96	EF		LKTR	52											Pass # 2
Boulder Creek	F14	13-Aug-96	EF		LKTR	52											Pass # 1
Boulder Creek	F14	13-Aug-96	EF		LKTR	60											Pass # 1
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	108											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	116											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	102											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	52											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	62											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	62											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	56											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	48											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	48											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	50											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	50											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	56											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	54											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	58											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	50											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	50											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	56											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	54											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	58											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	50											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	54											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	52											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	54											Pass # 2
Boulder Creek	BP-F-01	13-Aug-96	EF		LKTR	52											Pass # 2
BP03	BP03	15-Jun-97	EF	5	ARGR	358	460	1.00	M	2			S	Red	100		
BP03	BP03	15-Jun-97	EF	6	NNST	43											released
BP03	BP03	15-Jun-97	EF	7	NNST	47											released
BP03	BP03	15-Jun-97	EF	8	NNST	49											released
BP03	BP03	15-Jun-97	EF	9	NNST	50											released
BP03	BP03	15-Jun-97	EF	10	NNST	46											released
BP05	BP05	16-Jun-97	EF	11	ARGR	224	102	0.91	M	1			S				
BP05	BP05	16-Jun-97	EF	12	NNST	54											released
BP05	BP05	16-Jun-97	EF	13	NNST	49											released
BP10	BP10	17-Jun-97	EF	14	LKTR	733	4050	1.03					F	Red	99		
BP10	BP10	17-Jun-97	EF	15	NNST	53											released
BP10	BP10	17-Jun-97	EF	16	ARGR	415	826	1.16					S	Red	98		
BP11	BP11	17-Jun-97	EF	17	NNST	48											released
BP11	BP11	17-Jun-97	EF	18	NNST	48											released
BP11	BP11	17-Jun-97	EF	19	NNST	55											released
BP11	BP11	17-Jun-97	EF	20	NNST	53											released
BP11	BP11	17-Jun-97	EF	21	NNST	49											released
BP11	BP11	17-Jun-97	EF	22	NNST	47											released
BP11	BP11	17-Jun-97	EF	23	NNST	51											released

Appendix D10. Raw data for fish captured in Boston area streams, 1995-2000.

Stream	Site #	Date	Samp Meth.	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Recap-ture	Comments
Fickle Duck Inflow	BP12	17-Jun-97	EF	24	NNST	57											released
Fickle Duck Inflow	BP12	17-Jun-97	EF	25	NNST	71											released
Fickle Duck Outflow	BP02	15-Jun-97	EF	3	NNST	69											released
Fickle Duck Outflow	BP02	15-Jun-97	EF	4	NNST	61											released
Koignuk River	21	20-Aug-95	AN	55	ARGR	347			M			6	S				near falls
Koignuk River	21	20-Aug-95	AN	56	ARGR	346			M			6	S				
Koignuk River	21	20-Aug-95	AN	57	ARGR	310			F			4	S				
Koignuk River	21	20-Aug-95	AN	58	LKTR	635											
Koignuk River	21	20-Aug-95	AN	59	LKTR	322											
Koignuk River	21	20-Aug-95	AN	60	LKTR	462											
Koignuk River	F21	08-Aug-96	EF		LKTR	50											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	62											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	62											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	62											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	46											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	48											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	52											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	50											Pass # 1
Koignuk River	F21	08-Aug-96	EF		LKTR	70											Pass # 2
Koignuk River	F21	08-Aug-96	EF		LKTR	72											Pass # 2
Koignuk River	F21	08-Aug-96	EF		LKTR	68											Pass # 2
Koignuk River	F21	08-Aug-96	EF		LKTR	58											Pass # 2
Koignuk River	F21	08-Aug-96	EF		LKTR	54											Pass # 2
Koignuk River	F21	08-Aug-96	EF		LKTR	56											Pass # 2
Koignuk River	KR1 - Km 1.25	14-Aug-98	AN	1	LKTR												escaped
Koignuk River	KR1 - Km 1.25	14-Aug-98	AN	2	LKTR	527	1680	1.15				11	F	Red	82, 83		
Koignuk River	KR1 - Km 1.25	14-Aug-98	AN	3	GRCD	467	1180	1.16				4	F	Red	84		
Koignuk River	KR1 - Km 1.25	14-Aug-98	GN	4	LKWH	173	51	0.98		1	1						
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	10	LKTR	548	1870	1.14				16	F	Red	79		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	11	LKTR	420	780	1.05				16	F	Red	78		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	12	LKTR	480	1220	1.10				17	F	Red	77		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	13	ARGR	383	510	0.91				9	F	Red	76		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	14	LKTR	795	5850	1.16				25	F	Red	75		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	15	ARGR	293	280	1.11				5	F				
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	16	LKTR	410	670	0.97				13	F	Red	908		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	17	LKTR	565	1970	1.09				14	F	Red	909		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	18	LKTR	510	1500	1.13				10	F				
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	19	LKTR	491	1160	0.98				10	F	Red	910		
Koignuk River	KR4 - Km 18.5	18-Aug-98	AN	20	ARGR	377	530	0.99				10	F	Red	911		
Koignuk River	KR5 - Km 23.8	19-Aug-98	AN	21	ARGR	370	570	1.13				10	F	Red	912		
PRC-13	PRC-13	29-Aug-00	EF	1	NNST	33											
PRC-13	PRC-13	29-Aug-00	EF	2	NNST	31											
PRC-13	PRC-13	29-Aug-00	EF	3	NNST	24											
PRC-14	PRC-14	25-Jun-00	EF	1	NNST	33											
PRC-14	PRC-14	25-Jun-00	EF	2	NNST	33											
PRC-14	PRC-14	25-Jun-00	EF	3	NNST	69											
PRC-14	PRC-14	25-Jun-00	EF	4	NNST	56											
PRC-14	PRC-14	25-Jun-00	EF	5	NNST	37											
PRC-14	PRC-14	25-Jun-00	EF	6	NNST	48											
PRC-14	PRC-14	25-Jun-00	EF	7	NNST	32											
PRC-14	PRC-14	25-Jun-00	EF	8	NNST	32											
PRC-14	PRC-14	25-Jun-00	EF	9	NNST	37											
PRC-14	PRC-14	25-Jun-00	EF	10	NNST	26											
PRC-14	PRC-14	25-Jun-00	EF	11	NNST	41											
PRC-14	PRC-14	25-Jun-00	EF	12	NNST	26											
PRC-14	PRC-14	25-Jun-00	EF	13	NNST	31											
PRC-14	PRC-14	25-Jun-00	EF	14	NNST	28											
PRC-14	PRC-14	25-Jun-00	EF	15	NNST	36											
PRC-14	PRC-14	25-Jun-00	EF	16	NNST	38											
PRC-15	PRC-15	29-Aug-00	EF	1	NNST	33											
PRC-15	PRC-15	29-Aug-00	EF	2	NNST	32											
PRC-15	PRC-15	29-Aug-00	EF	3	NNST	28											
PRC-15	PRC-15	29-Aug-00	EF	4	ARGR	55											
Stickleback Outflow	BP01	15-Jun-97	EF	1	NNST	59											released
Stickleback Outflow	BP01	15-Jun-97	EF	2	NNST	61											released

CODES:

Sampling Method

AL	Angling
EF	Backpack electrofishing
GN	Gill net

Species

ARGR	Arctic grayling
GRCD	Greenland cod
LKTR	Lake trout
LKWH	Lake whitefish
NNST	Ninespine stickleback

Sex

F	Female
M	Male

Maturity

1	Immature
2	Mature

Reproductive Status

1	Undeveloped
2	Green
3	Ripe

Ageing Structure

O	Otoliths
S	Scales
F	Fin rays

Recap

Y Recaptured fish (previously tagged).

Site numbers are based on Rescan (1998) designations.

Condition Factor (CF)

$CF = \text{Weight [in g]} \times 10^5 / (\text{FL [in mm]})^3$

FL = Fork Length

Appendix D11. Metal concentrations (µg/g wet weight) in fish tissues from Boston area lakes, 1993-1997.

Fish	Lake	Year	Species[a]	Tissue[b]	Length[c] (mm)	Weight (g)	Age (yr)	Moisture[d] (%)	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
1	Aimaokatalok	1993	LKTR	M	680	3600	8			0.025			<0.006				0.224		<0.04	311	0.144	0.332		<0.2	0.16	<0.01		4.26
2	Aimaokatalok	1993	LKTR	M	490	1300	6			0.015			<0.006				0.356		<0.04	316	0.123	0.166		<0.2	0.15	<0.01		3.79
3	Aimaokatalok	1993	LKTR	M	570	1900	7			0.022			<0.006				0.269		<0.04	269	0.109	0.570		<0.2	0.15	<0.01		3.62
1	Aimaokatalok	1994	LKTR	M	**502**	1200	10			0.041			<0.0015				0.207		0.003	246	0.109	0.387		0.014	0.188	<0.0023	<0.002	2.73
2	Aimaokatalok	1994	LKTR	M	**474**	1000	14			0.053			<0.0012				0.356		0.012	255	0.210	0.239		0.021	0.204	<0.0020	<0.002	3.24
3	Aimaokatalok	1994	LKTR	M	**576**	1900	13			0.053			<0.0015				1.440		0.049	244	0.141	0.538		0.024	0.155	<0.0024	<0.002	3.54
4	Aimaokatalok	1994	LKTR	M	**686**	3200	14			0.037			<0.0011				0.339		0.031	242	0.105	0.806		0.011	0.124	<0.0021	<0.002	3.31
5	Aimaokatalok	1994	LKTR	M	**880**	6500	15			0.074			<0.0015				0.254		0.006	252	0.090	0.895		0.080	0.199	<0.0024	<0.002	3.11
7	Aimaokatalok	1994	LKTR	M	**345**	400	5			<0.01			<0.0013				0.250		0.002	258	0.139	0.207		0.027	0.133	<0.0020	<0.002	2.86
10	Aimaokatalok	1994	LKTR	M	**742**	3400	12			0.048			<0.0015				0.354		0.015	260	0.093	0.672		0.018	0.186	<0.0023	<0.002	3.96
11	Aimaokatalok	1994	LKTR	M	**364**	450	5			0.050			<0.0012				0.353		0.003	303	0.137	0.259		0.014	0.171	<0.0021	<0.002	3.39
16	Aimaokatalok	1994	LKTR	M	**465**	1000	6			0.010			<0.0012				0.314		0.365	262	0.099	0.224		0.019	0.109	<0.0020	<0.002	3.87
18	Aimaokatalok	1994	LKTR	M	**410**	700	6			0.127			<0.0014				0.292		0.191	280	0.300	0.237		0.029	0.284	<0.0022	<0.002	5.84
19	Aimaokatalok	1994	LKTR	M	**170**	35				<0.01			<0.0021				0.321		0.012	101	0.146	<0.013		0.036	0.037	<0.0038	<0.002	6.06
F7-9	Aimaokatalok	1995	LKTR	M	347	500	19			<0.05			<0.005				0.380		0.034	289	0.179	0.432		0.070	0.22	<0.005	<0.005	5.6
F7-5	Aimaokatalok	1995	LKTR	M	376	600				<0.05			0.008				0.420		0.025	247	0.126	0.368		<0.05	0.22	0.009	<0.005	3.5
A-2	Aimaokatalok	1995	LKTR	M	465	1000				<0.05			<0.005				0.330		0.013	252	0.129	0.234		0.200	0.22	0.009	<0.007	5.5
F8-12	Aimaokatalok	1995	LKTR	M	514	1400	23			<0.05			<0.005				0.440		0.075	239	0.113	0.792		<0.05	0.16	<0.005	<0.009	4.4
F7-7	Aimaokatalok	1995	LKTR	M	530	1500				<0.05			0.008				0.460		0.046	257	0.137	0.512		0.910	0.20	<0.005	0.0050	8.1
F8-8	Aimaokatalok	1995	LKTR	M	544	2000				<0.05			<0.005				0.290		0.019	244	0.111	0.522		<0.05	0.15	0.005	<0.007	2.8
F7-8	Aimaokatalok	1995	LKTR	M	563	1700				<0.05			0.009				0.370		0.030	332	0.164	0.608		0.270	0.28	0.013	<0.006	4.8
A-1	Aimaokatalok	1995	LKTR	M	580	1500				<0.05			<0.005				0.310		0.024	210	0.098	0.288		0.130	0.12	<0.005	<0.008	5.6
F8-10	Aimaokatalok	1995	LKTR	M	603	2100	40			<0.05			0.017				0.290		0.099	218	0.126	1.150		0.170	0.20	<0.005	0.0100	5.8
F8-5	Aimaokatalok	1995	LKTR	M	592	2200	18			<0.05			<0.005				0.430		0.038	254	0.121	0.450		<0.05	0.14	<0.005	<0.007	3.3
F7-1	Aimaokatalok	1995	LKTR	M	600	1900	35			<0.05			0.006				0.450		0.087	248	0.137	1.040		<0.05	0.18	0.015	<0.005	4.4
F8-7	Aimaokatalok	1995	LKTR	M	590	1700				<0.05			<0.005				0.200		0.021	221	0.109	0.864		<0.05	0.20	<0.005	<0.006	3.4
F7-2	Aimaokatalok	1995	LKTR	M	640	2800				<0.05			0.013				0.370		0.035	242	0.086	0.800		0.330	0.22	0.013	0.0110	3.5
F8-4	Aimaokatalok	1995	LKTR	M	642	2700				<0.05			<0.005				0.400		0.028	269	0.091	0.450		<0.05	0.22	0.008	<0.007	3.0
F8-2	Aimaokatalok	1995	LKTR	M	650	3000				<0.05			<0.005				0.590		0.033	232	0.111	0.864		0.080	0.18	0.011	<0.007	5.0
F7-10	Aimaokatalok	1995	LKTR	M	660	3100				<0.05			0.008				0.370		0.045	274	0.284	0.736		0.170	0.06	0.060	<0.005	7.3
F7-4	Aimaokatalok	1995	LKTR	M	638	2800				<0.05			0.012				0.510		0.024	231	0.079	0.624		<0.05	0.36	0.009	<0.005	3.5
F8-3	Aimaokatalok	1995	LKTR	M	650	3400				<0.05			<0.005				0.690		0.083	237	0.152	0.558		0.210	0.22	0.011	<0.007	5.4
F8-9	Aimaokatalok	1995	LKTR	M	649	3100				<0.05			<0.005				0.360		0.128	232	0.107	0.684		0.060	0.14	<0.005	<0.007	3.2
F8-13	Aimaokatalok	1995	LKTR	M	652	2600				<0.05			<0.005				0.330		0.021	216	0.086	0.792		<0.05	0.10	<0.005	<0.009	4.4
F8-6	Aimaokatalok	1995	LKTR	M	694	3100				<0.05			<0.005				0.260		0.065	242	0.101	1.010		<0.05	0.21	0.006	<0.006	5.6
F7-3	Aimaokatalok	1995	LKTR	M	760	3900	23			<0.05			0.009				0.460		0.023	260	0.102	0.768		0.100	0.24	0.010	<0.005	4.2
F7-6	Aimaokatalok	1995	LKTR	M	734	3700				<0.05			0.006				0.450		0.098	258	0.149	0.720		0.120	0.22	<0.005	<0.005	6.1
F8-11	Aimaokatalok	1995	LKTR	M	748	3800				<0.05			0.007				0.290		0.164	217	0.121	0.936		<0.05	0.21	0.007	<0.006	5.0
F8-1	Aimaokatalok	1995	LKTR	M	805	7100	38			<0.05			<0.005				0.280		0.029	246	0.074	1.440		0.070	0.31	0.009	<0.006	3.1
#1	Aimaokatalok	1996	LKTR	M				80.3		<0.05			<0.02				0.180		<0.05	249	0.200	0.767		<0.2	<0.2	<0.01	<0.2	3.0
#2	Aimaokatalok	1996	LKTR	M				75.9		0.070			<0.02				0.290		<0.05	263	0.100	0.435		<0.2	<0.2	<0.01	<0.2	3.1
#3	Aimaokatalok	1996	LKTR	M				75.8		0.050			<0.02				0.260		<0.05	266	0.100	0.480		<0.2	<0.2	<0.01	<0.2	2.9
#36	Aimaokatalok	1997	LKTR	M	306	298	12		<5	<0.05	<0.5	<0.2	<0.02	116	<0.5	<0.5	<0.5	2	<0.05	275	<0.2	0.184	<1	<1	0.20	<0.1		3.1
#49	Aimaokatalok	1997	LKTR	M	504	1375	15		<5	<0.05	<0.5	<0.2	<0.02	181	<0.5	<0.5	<0.5	3	<0.05	269	<0.2	0.206	<1	<1	0.20	<0.1		2.8
#54	Aimaokatalok	1997	LKTR	M	448	922	29		<5	<0.05	<0.5	<0.2	<0.02	82	<0.5	<0.5	<0.5	4	<0.05	239	<0.2	0.427	<1	<1	0.20	<0.1		2.3
#55	Aimaokatalok	1997	LKTR	M	590	2150	20		<5	<0.05	<0.5	<0.2	<0.02	53	<0.5	<0.5	<0.5	3	<0.05	250	<0.2	0.503	<1	<1	0.20	<0.1		2.7
#56	Aimaokatalok	1997	LKTR	M	483	1122	14		<5	<0.05	<0.5	<0.2	<0.02	62	<0.5	<0.5	<0.5	2	<0.05	257	<0.2	0.441	<1	<1	0.20	<0.1		2.7
#57	Aimaokatalok	1997	LKTR	M	338	398	12		<5	<0.05	<0.5	<0.2	<0.02	182	<0.5	<0.5	<0.5	4	<0.05	278	<0.2	0.195	<1	<1	0.20	<0.1		3.1

Appendix D11. Metal concentrations (µg/g wet weight) in fish tissues from Boston area lakes, 1993-1997.

Fish	Lake	Year	Species[a]	Tissue[b]	Length[c] (mm)	Weight (g)	Age (yr)	*Moisture[d] (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#60	Aimaokatalok	1997	LKTR	M	416	732	14		<5	<0.05	<0.5	<0.2	<0.02	69	<0.5	<0.5	<0.5	3	<0.05	251	<0.2	0.180	<1	<1	0.20	<0.1		2.8
#74	Aimaokatalok	1997	LKTR	M	547	1358	16		<5	<0.05	<0.5	<0.2	<0.02	92	<0.5	<0.5	<0.5	2	<0.05	279	<0.2	0.338	<1	<1	0.20	<0.1		2.7
#75	Aimaokatalok	1997	LKTR	M	580	1648	17		<5	<0.05	<0.5	<0.2	<0.02	144	<0.5	<0.5	<0.5	2	<0.05	258	<0.2	0.560	<1	<1	0.20	<0.1		2.8
#76	Aimaokatalok	1997	LKTR	M	708	3700			<5	0.060	<0.5	<0.2	<0.02	51	<0.5	<0.5	<0.5	2	<0.05	247	<0.2	0.764	<1	<1	0.20	<0.1		2.4
#77	Aimaokatalok	1997	LKTR	M	484	1084	17		<5	<0.05	<0.5	<0.2	<0.02	103	<0.5	<0.5	<0.5	4	<0.05	264	<0.2	0.427	<1	<1	0.20	<0.1		2.6
#78	Aimaokatalok	1997	LKTR	M	519	1810	22		<5	<0.05	<0.5	<0.2	<0.02	87	<0.5	<0.5	<0.5	4	<0.05	244	<0.2	0.212	<1	<1	0.20	<0.1		2.5
#79	Aimaokatalok	1997	LKTR	M	621	2600	29		<5	0.080	<0.5	<0.2	<0.02	120	<0.5	<0.5	<0.5	2	<0.05	253	<0.2	0.836	<1	<1	0.20	<0.1		2.2
#80	Aimaokatalok	1997	LKTR	M	469	1362	14		<5	<0.05	<0.5	<0.2	<0.02	75	<0.5	<0.5	<0.5	3	<0.05	282	<0.2	0.312	<1	<1	0.20	<0.1		2.5
#81	Aimaokatalok	1997	LKTR	M	589	2625			<5	<0.05	<0.5	<0.2	<0.02	60	<0.5	<0.5	<0.5	2	<0.05	265	<0.2	0.340	<1	<1	0.20	<0.1		2.5
#82	Aimaokatalok	1997	LKTR	M	542	1616	18		<5	<0.05	<0.5	<0.2	<0.02	113	<0.5	<0.5	<0.5	3	<0.05	255	<0.2	0.135	<1	<1	0.20	<0.1		2.3
#83	Aimaokatalok	1997	LKTR	M	493	1346	29		<5	<0.05	<0.5	<0.2	<0.02	164	<0.5	<0.5	<0.5	3	<0.05	229	<0.2	0.393	<1	<1	0.20	<0.1		2.2
#84	Aimaokatalok	1997	LKTR	M	512	1500	19		<5	<0.05	<0.5	<0.2	<0.02	85	<0.5	<0.5	<0.5	3	<0.05	254	<0.2	0.328	<1	<1	0.20	<0.1		2.6
#85	Aimaokatalok	1997	LKTR	M	530	1564	17		<5	<0.05	<0.5	<0.2	<0.02	119	<0.5	<0.5	<0.5	2	<0.05	243	<0.2	0.374	<1	<1	0.20	<0.1		2.2
#86	Aimaokatalok	1997	LKTR	M	447	800	11		<5	<0.05	<0.5	<0.2	<0.02	125	<0.5	<0.5	<0.5	2	<0.05	275	<0.2	0.236	<1	<1	0.20	<0.1		2.9
#87	Aimaokatalok	1997	LKTR	M	461	912	13		<5	<0.05	<0.5	<0.2	<0.02	56	<0.5	<0.5	<0.5	3	<0.05	266	<0.2	0.210	<1	<1	0.20	<0.1		2.9
#88	Aimaokatalok	1997	LKTR	M	424	780	17		<5	<0.05	<0.5	<0.2	<0.02	53	<0.5	<0.5	<0.5	2	<0.05	268	<0.2	0.280	<1	<1	0.20	<0.1		2.6
#93	Aimaokatalok	1997	LKTR	M	558	1712	21		<5	<0.05	<0.5	<0.2	<0.02	85	<0.5	<0.5	<0.5	1	<0.05	253	<0.2	0.358	<1	<1	0.10	<0.1		2.2
#94	Aimaokatalok	1997	LKTR	M	577	2044	25		<5	0.070	<0.5	<0.2	<0.02	70	<0.5	<0.5	<0.5	2	<0.05	265	<0.2	0.662	<1	<1	0.20	<0.1		2.3
#95	Aimaokatalok	1997	LKTR	M	475	1244	18		<5	<0.05	<0.5	<0.2	<0.02	84	<0.5	<0.5	<0.5	2	<0.05	250	<0.2	0.320	<1	<1	0.20	<0.1		2.5
1	Aimaokatalok	1993	LKTR	L	680	3600	8			0.012			0.010				9.517		<0.04	135	0.946	0.900		<0.2	0.76	0.062		27.6
2	Aimaokatalok	1993	LKTR	L	490	1300	6			0.023			0.063				26.030		<0.04	162	0.971	0.338		<0.2	1.26	0.122		38.2
3	Aimaokatalok	1993	LKTR	L	570	1900	7			0.025			0.144				13.483		<0.04	161	1.139	1.527		<0.2	1.06	0.058		33.56
1	Aimaokatalok	1994	LKTR	L	**502**	1200	10			0.038			0.080				13.400		0.008	123	1.170	0.683		0.036	0.56	0.139	<0.0024	21.9
2	Aimaokatalok	1994	LKTR	L	**474**	1000	14			0.026			0.039				17.500		0.026	178	1.300	0.599		0.050	0.80	0.202	<0.0025	34.7
3	Aimaokatalok	1994	LKTR	L	**576**	1900	13			0.032			0.042				16.700		0.009	125	0.920	0.918		0.021	0.72	0.303	<0.002	25.8
4	Aimaokatalok	1994	LKTR	L	**686**	3200	14			<0.01			0.058				21.500		0.019	140	1.100	1.820		0.042	0.52	0.235	<0.0024	28.4
5	Aimaokatalok	1994	LKTR	L	**880**	6500	15			0.147			0.062				13.000		0.004	134	1.140	2.310		0.042	1.23	0.081	0.0023	26.9
7	Aimaokatalok	1994	LKTR	L	**345**	400	5			0.081			0.034				8.490		0.010	140	1.270	0.329		0.044	1.05	0.086	<0.0028	23.2
10	Aimaokatalok	1994	LKTR	L	**742**	3400	12			<0.01			0.051				14.300		0.021	146	1.140	1.330		0.037	1.06	0.205	<0.002	26.9
11	Aimaokatalok	1994	LKTR	L	**364**	450	5			0.154			0.049				10.800		0.010	182	1.790	0.368		0.114	1.15	0.065	<0.0021	30.5
16	Aimaokatalok	1994	LKTR	L	**465**	1000	6			0.116			0.045				2.670		0.009	144	1.050	0.337		0.019	0.48	0.020	<0.0022	24.8
18	Aimaokatalok	1994	LKTR	L	**410**	700	6			0.309			0.040				14.600		0.012	170	1.570	0.377		0.033	1.86	0.085	0.0036	30.6
19	Aimaokatalok	1994	LKTR	L	**170**	35				<0.01			0.007				1.800		0.006	125	0.450	0.049		0.016	0.24	0.013	<0.002	17.6
F7-9	Aimaokatalok	1995	LKTR	L	347	500	19			0.110			0.039				11.600		0.064	220	2.250	0.672		<0.05	1.91	0.086	<0.005	36.5
F7-5	Aimaokatalok	1995	LKTR	L	376	600				<0.05			0.026				21.400		0.028	217	1.940	0.616		<0.05	0.84	0.127	<0.005	34.6
A-2	Aimaokatalok	1995	LKTR	L	465	1000				<0.05			0.072				11.500		0.040	168	1.660	0.197		0.320	0.68	0.080	<0.005	31.3
F8-12	Aimaokatalok	1995	LKTR	L	514	1400	23			<0.05			0.062				9.360		0.047	162	1.260	1.050		<0.05	0.39	0.120	<0.005	29.0
F7-7	Aimaokatalok	1995	LKTR	L	530	1500				<0.05			0.073				23.200		0.022	179	1.450	0.512		0.080	0.84	0.245	<0.005	46.2
F8-8	Aimaokatalok	1995	LKTR	L	544	2000				<0.05			0.047				8.750		0.031	129	0.974	0.741		<0.05	0.58	0.127	<0.005	28.0
F7-8	Aimaokatalok	1995	LKTR	L	563	1700				<0.05			0.033				11.500		0.025	177	1.250	0.704		0.060	0.74	0.126	<0.005	31.0
A-1	Aimaokatalok	1995	LKTR	L	580	1500				<0.05			0.082				20.400		0.026	166	1.850	0.381		<0.05	1.59	0.134	<0.005	33.0
F8-10	Aimaokatalok	1995	LKTR	L	603	2100	40			0.150			0.115				28.500		0.073	171	1.720	2.810		<0.05	2.77	0.415	<0.005	38.8
F8-5	Aimaokatalok	1995	LKTR	L	592	2200	18			<0.05			0.050				14.500		0.069	164	1.850	0.728		<0.05	1.10	0.220	<0.005	35.7
F7-1	Aimaokatalok	1995	LKTR	L	600	1900	35			<0.05			0.090				10.100		0.064	155	1.220	2.620		0.090	0.70	0.134	<0.005	30.8
F8-7	Aimaokatalok	1995	LKTR	L	590	1700				<0.05			0.132				23.700		0.067	170	1.780	2.070		<0.05	0.50	0.320	0.0070	34.6
F7-2	Aimaokatalok	1995	LKTR	L	640	2800				<0.05			0.011				16.500		0.051	172	1.320	1.470		0.060	0.40	0.123	<0.005	31.0
F8-4	Aimaokatalok	1995	LKTR	L	642	2700				<0.05			0.044				17.800		0.048	155	1.720	0.823		<0.05	0.50	0.234	<0.005	36.7
F8-2	Aimaokatalok	1995	LKTR	L	650	3000				<0.05			0.067				4.440		0.033	219	1.600	1.010		<0.05	0.69	0.152	<0.005	25.4
F7-10	Aimaokatalok	1995	LKTR	L	660	3100				<0.05			0.050				21.300		0.032	166	2.110	1.540		<0.05	1.01	0.205	0.0060	40.8

Appendix D11. Metal concentrations (µg/g wet weight) in fish tissues from Boston area lakes, 1993-1997.

Fish	Lake	Year	Species[a]	Tissue[b]	Length[c] (mm)	Weight (g)	Age (yr)	Moisture[d] (%)	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
F7-4	Aimaokatalok	1995	LKTR	L	638	2800				0.140			0.032				13.600		0.027	167	1.530	1.330		<0.05	2.24	0.106	<0.005	35.3
F8-3	Aimaokatalok	1995	LKTR	L	650	3400				<0.05			0.062				7.990		0.060	93	1.070	0.876		<0.05	0.62	0.190	<0.005	22.1
F8-9	Aimaokatalok	1995	LKTR	L	649	3100				<0.05			0.028				10.200		0.021	158	1.100	1.170		<0.05	0.47	0.150	<0.005	30.2
F8-13	Aimaokatalok	1995	LKTR	L	652	2600				<0.05			0.095				15.900		0.054	173	1.800	1.620		<0.05	0.31	0.214	<0.005	32.5
F8-6	Aimaokatalok	1995	LKTR	L	694	3100				<0.05			0.082				11.400		0.044	155	1.580	1.990		<0.05	0.26	0.138	<0.005	34.0
F7-3	Aimaokatalok	1995	LKTR	L	760	3900	23			0.080			0.023				13.000		0.024	167	1.090	1.840		<0.05	1.39	0.114	<0.005	30.5
F7-6	Aimaokatalok	1995	LKTR	L	734	3700				0.090			0.070				16.800		0.027	181	1.980	1.830		0.060	2.00	0.172	<0.005	33.1
F8-11	Aimaokatalok	1995	LKTR	L	748	3800				<0.05			0.064				16.400		0.030	155	1.220	2.110		<0.05	0.34	0.181	<0.005	33.0
F8-1	Aimaokatalok	1995	LKTR	L	805	7100	38			<0.05			0.053				7.510		0.083	150	1.230	3.480		0.090	0.34	1.570	<0.005	27.7
#1	Aimaokatalok	1996	LKTR	L				81.2		<0.05			0.160				15.100		<0.05	146	1.200	2.080		<0.2	1.80	0.130	<0.2	27.0
#2	Aimaokatalok	1996	LKTR	L				77.3		0.080			0.030				14.900		<0.05	104	1.100	1.260		<0.2	1.50	0.170	<0.2	28.8
#3	Aimaokatalok	1996	LKTR	L				76.0		0.080			0.060				34.100		<0.05	145	1.400	1.440		<0.2	1.50	0.300	<0.2	45.3
#36	Aimaokatalok	1997	LKTR	L	306	298	12		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.700	88	<0.05	15	<0.2	0.305	<1	<1	<0.3	<0.1		3.2
#49	Aimaokatalok	1997	LKTR	L	504	1375	15		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.800	183	<0.05	14	<0.2	0.433	<1	<1	<0.2	<0.1		3.0
#54	Aimaokatalok	1997	LKTR	L	448	922	29		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.700	761	<0.05	16	<0.2	1.400	<1	<1	0.20	0.100		3.4
#55	Aimaokatalok	1997	LKTR	L	590	2150	20		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.300	300	<0.05	11	<0.2	0.971	<1	<1	<0.1	0.100		2.8
#56	Aimaokatalok	1997	LKTR	L	483	1122	14		<5	<0.05	<0.5	<0.2	<0.02	12	<0.5	<0.5	1.800	269	<0.05	12	<0.2	0.547	<1	<1	0.10	0.100		3.2
#57	Aimaokatalok	1997	LKTR	L	338	398	12		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.700	84	<0.05	15	<0.2	0.269	<1	<1	<0.2	<0.1		3.1
#60	Aimaokatalok	1997	LKTR	L	416	732	14		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.600	178	<0.05	15	<0.2	0.361	<1	<1	0.10	0.100		3.7
#74	Aimaokatalok	1997	LKTR	L	547	1358	16		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	2.300	247	<0.05	12	<0.2	0.828	<1	<1	0.10	0.200		3.2
#75	Aimaokatalok	1997	LKTR	L	580	1648	17		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.400	116	<0.05	12	<0.2	0.801	<1	<1	0.10	0.200		2.7
#76	Aimaokatalok	1997	LKTR	L	708	3700			<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.900	1520	<0.05	13	<0.2	1.730	<1	<1	0.10	0.200		2.3
#77	Aimaokatalok	1997	LKTR	L	484	1084	17		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.800	1170	<0.05	14	<0.2	0.625	<1	<1	0.10	0.200		3.0
#78	Aimaokatalok	1997	LKTR	L	519	1810	22		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.200	2710	<0.05	12	<0.2	0.387	<1	<1	<0.1	0.100		2.5
#79	Aimaokatalok	1997	LKTR	L	621	2600	29		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	580	<0.05	18	<0.2	1.230	<1	<1	<0.1	<0.1		1.9
#80	Aimaokatalok	1997	LKTR	L	469	1362	14		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	529	<0.05	17	<0.2	0.536	<1	<1	<0.1	<0.1		1.7
#81	Aimaokatalok	1997	LKTR	L	589	2625			<5	<0.05	<0.5	<0.2	<0.02	11	<0.5	<0.5	0.600	1140	<0.05	14	<0.2	0.649	<1	<1	<0.1	0.100		2.0
#82	Aimaokatalok	1997	LKTR	L	542	1616	18		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.500	587	<0.05	19	<0.2	0.427	<1	<1	<0.1	0.100		2.1
#83	Aimaokatalok	1997	LKTR	L	493	1346	29		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	3100	<0.05	17	<0.2	0.552	<1	<1	<0.1	<0.1		2.0
#84	Aimaokatalok	1997	LKTR	L	512	1500	19		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.500	14600	<0.05	13	<0.2	0.570	<1	<1	<0.1	0.200		2.8
#85	Aimaokatalok	1997	LKTR	L	530	1564	17		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.900	2800	<0.05	21	<0.2	0.544	<1	<1	<0.1	0.200		2.5
#86	Aimaokatalok	1997	LKTR	L	447	800	11		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	695	<0.05	16	<0.2	0.258	<1	<1	0.10	0.100		2.9
#87	Aimaokatalok	1997	LKTR	L	461	912	13		<5	<0.05	<0.5	<0.2	<0.02	14	<0.5	<0.5	1.700	231	<0.05	16	<0.2	0.436	<1	<1	0.20	0.300		3.6
#88	Aimaokatalok	1997	LKTR	L	424	780	17		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.700	629	<0.05	17	<0.2	0.771	<1	<1	0.20	<0.1		3.2
#93	Aimaokatalok	1997	LKTR	L	558	1712	21		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.800	249	<0.05	19	<0.2	0.512	<1	<1	<0.1	<0.1		2.6
#94	Aimaokatalok	1997	LKTR	L	577	2044	25		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.900	173	<0.05	19	<0.2	1.100	<1	<1	<0.1	0.100		2.3
#95	Aimaokatalok	1997	LKTR	L	475	1244	18		<5	<0.05	<0.5	<0.2	<0.02	21	<0.5	<0.5	1.600	383	<0.05	15	<0.2	0.689	<1	<1	0.20	0.200		3.6
4	Aimaokatalok	1993	LKWH	M	500	1600	20			0.023			<0.006				0.235		<0.04	286	0.235	0.138		<0.2	0.19	<0.01		3.02
5	Aimaokatalok	1993	LKWH	M	360	600	10			0.013			<0.006				0.268		<0.04	321	0.212	0.046		<0.2	0.29	<0.01		3.83
6	Aimaokatalok	1993	LKWH	M	500	1700	21			0.030			<0.006				0.223		<0.04	274	0.215	0.291		<0.2	0.20	<0.01		3.12
1	Aimaokatalok	1994	LKWH	M	**471**	1400				0.078			<0.0012				0.308		0.006	325	0.757	0.477		0.047	0.267	<0.0022	<0.002	4.36
2	Aimaokatalok	1994	LKWH	M	**453**	1200				<0.01			<0.0012				0.204		0.007	285	0.156	0.092		0.014	0.333	<0.0020	<0.002	3.37
3	Aimaokatalok	1994	LKWH	M	**417**	1400				0.066			<0.0013				0.607		0.015	295	0.346	0.069		0.033	0.223	0.002	<0.002	4.31
4	Aimaokatalok	1994	LKWH	M	**498**	1600				0.058			<0.0016				0.172		0.009	302	0.395	0.170		0.041	0.340	<0.0025	<0.002	3.55
5	Aimaokatalok	1994	LKWH	M	**507**	1800				0.032			<0.0015				0.381		0.009	309	0.163	0.245		0.023	0.221	<0.0023	<0.002	3.46
8	Aimaokatalok	1994	LKWH	M	**172**	45				0.102			<0.0014				0.272		0.039	212	0.199	0.034		0.103	0.200	<0.0026	<0.002	8.86
10	Aimaokatalok	1994	LKWH	M	**380**	600				0.027			0.0013				0.240		0.003	317	0.188	0.067		0.022	0.220	<0.0023	<0.002	3.18
13	Aimaokatalok	1994	LKWH	M	**362**	500				0.086			<0.0013				2.090		0.005	289	0.108	0.119		0.019	0.159	<0.0021	<0.002	3.40
16	Aimaokatalok	1994	LKWH	M	**389**	700				0.011			<0.0008				0.119		0.003	206	0.103	0.034		0.011	0.139	<0.0014	<0.002	2.28

Appendix D11. Metal concentrations (µg/g wet weight) in fish tissues from Boston area lakes, 1993-1997.

Fish	Lake	Year	Species[a]	Tissue[b]	Length[c] (mm)	Weight (g)	Age (yr)	Moisture[d] (%)	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
18	Aimaokatalok	1994	LKWH	M	**462**	1300				0.044			<0.0013				0.375		0.003	264	0.126	0.115		0.150	0.151	<0.0020	<0.002	3.02
19	Aimaokatalok	1994	LKWH	M	**489**	1600				0.047			<0.0013				0.217		0.015	258	0.147	0.137		0.014	0.315	<0.0023	<0.002	3.29
F8-14	Aimaokatalok	1995	LKWH	M	379	700				<0.05			<0.005				0.330		0.054	274	0.133	0.198		<0.05	0.20	<0.005	<0.007	4.6
F7-11	Aimaokatalok	1995	LKWH	M	380	700	14			<0.05			<0.005				0.430		0.023	302	0.159	0.128		0.080	0.34	0.007	<0.005	4.7
F7-12	Aimaokatalok	1995	LKWH	M	400	800				<0.05			0.010				0.260		0.020	263	0.132	0.080		0.130	0.31	<0.005	<0.005	3.7
F7-13	Aimaokatalok	1995	LKWH	M	420	1000				<0.05			<0.005				0.310		0.030	264	0.153	0.096		0.090	0.31	<0.005	<0.005	5.1
F7-14	Aimaokatalok	1995	LKWH	M	440	1300	17			<0.05			0.005				0.340		0.019	253	0.108	0.096		0.180	0.31	0.007	<0.005	4.9
#37	Aimaokatalok	1997	LKWH	M	523	2000	36		<5	<0.05	<0.5	<0.2	<0.02	85	<0.5	<0.5	<0.5	3	<0.05	266	<0.2	0.339	<1	<1	0.30	<0.1		3.0
#40	Aimaokatalok	1997	LKWH	M	511	1600	37		<5	0.060	<0.5	<0.2	<0.02	93	<0.5	<0.5	<0.5	4	<0.05	266	<0.2	0.275	<1	<1	0.20	<0.1		2.8
#43	Aimaokatalok	1997	LKWH	M	523	2100	34		<5	<0.05	<0.5	<0.2	<0.02	99	<0.5	<0.5	<0.5	2	<0.05	251	<0.2	0.438	<1	<1	0.20	<0.1		2.9
#58	Aimaokatalok	1997	LKWH	M	520	1875	36		<5	<0.05	<0.5	<0.2	<0.02	156	<0.5	<0.5	<0.5	3	<0.05	243	<0.2	0.308	<1	<1	0.20	<0.1		3.1
#59	Aimaokatalok	1997	LKWH	M	493	1775	22		<5	0.090	<0.5	<0.2	<0.02	80	<0.5	<0.5	<0.5	2	<0.05	249	<0.2	0.214	<1	<1	0.20	<0.1		3.0
#61	Aimaokatalok	1997	LKWH	M	483	1482	37		<5	<0.05	<0.5	<0.2	<0.02	112	<0.5	<0.5	<0.5	4	<0.05	268	<0.2	0.247	<1	<1	0.20	<0.1		2.7
#62	Aimaokatalok	1997	LKWH	M	474	1324	34		<5	<0.05	<0.5	<0.2	<0.02	114	<0.5	<0.5	<0.5	3	<0.05	279	<0.2	0.370	<1	<1	0.20	<0.1		3.0
#63	Aimaokatalok	1997	LKWH	M	479	1166	46		<5	<0.05	<0.5	<0.2	<0.02	63	<0.5	<0.5	<0.5	5	<0.05	232	<0.2	0.427	<1	<1	0.20	<0.1		2.6
#64	Aimaokatalok	1997	LKWH	M	498	1348	35		<5	0.050	<0.5	<0.2	<0.02	71	<0.5	<0.5	<0.5	4	<0.05	314	<0.2	0.286	<1	<1	0.20	<0.1		2.8
#65	Aimaokatalok	1997	LKWH	M	473	1264	36		<5	<0.05	<0.5	<0.2	<0.02	96	<0.5	<0.5	<0.5	2	<0.05	294	<0.2	0.303	<1	<1	0.20	<0.1		2.8
#66	Aimaokatalok	1997	LKWH	M	434	1034	16		<5	0.050	<0.5	<0.2	<0.02	71	<0.5	<0.5	<0.5	2	<0.05	318	<0.2	0.103	<1	<1	0.20	<0.1		2.9
#67	Aimaokatalok	1997	LKWH	M	417	942	16		<5	<0.05	<0.5	<0.2	<0.02	94	<0.5	<0.5	<0.5	2	<0.05	296	<0.2	0.095	<1	<1	0.20	<0.1		2.8
#68	Aimaokatalok	1997	LKWH	M	411	912	17		<5	<0.05	<0.5	<0.2	<0.02	110	<0.5	<0.5	<0.5	2	<0.05	326	<0.2	0.069	<1	<1	0.30	<0.1		2.9
#69	Aimaokatalok	1997	LKWH	M	479	1338	36		<5	<0.05	<0.5	<0.2	<0.02	130	<0.5	<0.5	<0.5	3	<0.05	308	<0.2	0.231	<1	<1	0.20	<0.1		2.8
#70	Aimaokatalok	1997	LKWH	M	471	1852	23		<5	<0.05	<0.5	<0.2	<0.02	56	<0.5	<0.5	<0.5	2	<0.05	298	<0.2	0.181	<1	<1	0.30	<0.1		2.8
#71	Aimaokatalok	1997	LKWH	M	411	1006	16		<5	<0.05	<0.5	<0.2	<0.02	57	<0.5	<0.5	<0.5	2	<0.05	307	<0.2	0.109	<1	<1	0.20	<0.1		3.1
#72	Aimaokatalok	1997	LKWH	M	493	1488	24		<5	<0.05	<0.5	<0.2	<0.02	80	<0.5	<0.5	<0.5	2	<0.05	299	<0.2	0.168	<1	<1	0.20	<0.1		2.9
#73	Aimaokatalok	1997	LKWH	M	449	1100	24		<5	<0.05	<0.5	<0.2	<0.02	191	<0.5	<0.5	<0.5	2	<0.05	300	<0.2	0.138	<1	<1	0.30	<0.1		2.6
#100	Aimaokatalok	1997	LKWH	M	477	1446	23		<5	<0.05	<0.5	<0.2	<0.02	120	<0.5	<0.5	<0.5	3	<0.05	291	<0.2	0.220	<1	<1	0.20	<0.1		3.1
#107	Aimaokatalok	1997	LKWH	M	512	1612	24		<5	0.050	<0.5	<0.2	<0.02	78	<0.5	<0.5	<0.5	3	<0.05	307	<0.2	0.187	<1	<1	0.20	<0.1		3.1
#118	Aimaokatalok	1997	LKWH	M	430	1154	15		<5	0.050	<0.5	<0.2	<0.02	76	<0.5	<0.5	<0.5	2	<0.05	317	<0.2	0.091	<1	<1	0.20	<0.1		3.2
#119	Aimaokatalok	1997	LKWH	M	475	1414	24		<5	<0.05	<0.5	<0.2	<0.02	82	<0.5	<0.5	<0.5	2	<0.05	282	<0.2	0.213	<1	<1	0.20	<0.1		2.9
#156	Aimaokatalok	1997	LKWH	M	427	1000	16		<5	0.070	<0.5	<0.2	<0.02	95	<0.5	<0.5	<0.5	3	<0.05	321	<0.2	0.097	<1	<1	0.20	<0.1		3.1
#157	Aimaokatalok	1997	LKWH	M	486	1418	36		<5	<0.05	<0.5	<0.2	<0.02	83	<0.5	<0.5	<0.5	2	<0.05	294	<0.2	0.248	<1	<1	0.20	<0.1		2.4
4	Aimaokatalok	1993	LKWH	L	500	1600	20			0.093			0.133				7.616		<0.04	190	2.091	0.983		<0.2	1.54	0.079		30.96
5	Aimaokatalok	1993	LKWH	L	360	600	10			0.091			0.138				3.564		<0.04	198	1.715	0.211		<0.2	2.35	0.043		28.3
6	Aimaokatalok	1993	LKWH	L	500	1700	21			0.089			0.296				5.852		<0.04	173	1.541	1.404		<0.2	2.05	0.083		26.41
1	Aimaokatalok	1994	LKWH	L	**471**	1400				0.427			0.205				9.740		0.033	142	1.560	2.740		0.151	2.09	0.302	0.0400	27.8
2	Aimaokatalok	1994	LKWH	L	**453**	1200				0.139			0.132				4.830		0.012	116	1.170	0.309		0.054	0.92	0.029	<0.0021	22.3
3	Aimaokatalok	1994	LKWH	L	**417**	1400				0.201			0.057				7.320		0.013	183	1.720	0.339		0.077	0.91	0.059	<0.0025	30.5
4	Aimaokatalok	1994	LKWH	L	**498**	1600				0.173			0.296				7.940		0.021	149	1.410	0.992		0.135	1.36	0.096	<0.0026	24.5
5	Aimaokatalok	1994	LKWH	L	**507**	1800				0.127			0.160				11.800		0.014	127	1.100	0.814		0.053	0.92	0.159	0.0124	22.4
8	Aimaokatalok	1994	LKWH	L	**172**	45				0.051			0.019				1.890		0.017	196	0.799	0.125		0.021	0.41	0.013	0.0144	93.2
10	Aimaokatalok	1994	LKWH	L	**380**	600				0.158			0.090				3.570		0.016	178	1.300	0.235		0.029	0.83	0.034	<0.0024	27.4
13	Aimaokatalok	1994	LKWH	L	**362**	500				0.112			0.016				2.900		0.025	160	1.450	0.446		0.042	0.72	0.029	<0.0038	45.2
16	Aimaokatalok	1994	LKWH	L	**389**	700				0.164			0.058				4.000		0.007	198	1.980	0.271		0.064	0.92	0.039	<0.0030	24.6
18	Aimaokatalok	1994	LKWH	L	**462**	1300				0.035			0.110				6.400		0.008	140	1.310	0.536		0.084	0.83	0.091	0.0118	23.1
19	Aimaokatalok	1994	LKWH	L	**489**	1600				0.162			0.123				4.360		0.006	272	2.000	0.460		0.035	0.92	0.061	0.0049	25.3
F8-14	Aimaokatalok	1995	LKWH	L	379	700				<0.05			0.041				2.890		0.028	242	3.510	0.374		<0.05	1.37	0.054	<0.005	45.0
F7-11	Aimaokatalok	1995	LKWH	L	380	700	14			0.210			0.054				4.660		0.034	229	2.130	0.192		0.090	1.68	0.083	<0.005	29.5
F7-12	Aimaokatalok	1995	LKWH	L	400	800				<0.05			0.085				4.090		0.028	201	2.050	0.176		0.150	0.56	0.053	<0.005	49.2
F7-13	Aimaokatalok	1995	LKWH	L	420	1000				<0.05			0.079				11.700		0.050	208	1.680	0.208		0.130	0.34	0.212	<0.005	34.4

Appendix D11. Metal concentrations (µg/g wet weight) in fish tissues from Boston area lakes, 1993-1997.

Fish	Lake	Year	Species[a]	Tissue[b]	Length[c] (mm)	Weight (g)	Age (yr)	Moisture[d] (%)	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
F7-14	Aimaokatalok	1995	LKWH	L	440	1300	17			<0.05			0.079				3.890		0.024	183	1.860	0.192		0.060	0.37	0.046	<0.005	30.5
#37	Aimaokatalok	1997	LKWH	L	523	2000	36		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.000	213	<0.05	14	<0.2	1.200	<1	<1	0.10	0.200		2.4
#40	Aimaokatalok	1997	LKWH	L	511	1600	37		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.700	211	<0.05	12	<0.2	1.060	<1	<1	0.20	0.200		2.3
#43	Aimaokatalok	1997	LKWH	L	523	2100	34		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.600	222	<0.05	16	<0.2	1.500	<1	<1	0.20	0.100		2.7
#58	Aimaokatalok	1997	LKWH	L	520	1875	36		<5	<0.05	<0.5	<0.2	0.020	<10	<0.5	<0.5	<0.5	201	<0.05	15	0.200	0.811	<1	<1	0.10	<0.1		2.2
#59	Aimaokatalok	1997	LKWH	L	493	1775	22		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.700	134	<0.05	13	<0.2	0.430	<1	<1	0.10	<0.1		2.6
#61	Aimaokatalok	1997	LKWH	L	483	1482	37		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	282	<0.05	12	<0.2	0.888	<1	<1	0.10	<0.1		1.9
#62	Aimaokatalok	1997	LKWH	L	474	1324	34		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.600	179	<0.05	15	<0.2	0.909	<1	<1	0.10	<0.1		2.2
#63	Aimaokatalok	1997	LKWH	L	479	1166	46		<5	<0.05	<0.5	<0.2	0.030	<10	<0.5	<0.5	1.100	219	<0.05	17	<0.2	5.720	<1	<1	0.40	0.500		3.5
#64	Aimaokatalok	1997	LKWH	L	498	1348	35		<5	<0.05	<0.5	<0.2	0.030	<10	<0.5	<0.5	1.200	473	<0.05	16	<0.2	1.710	<1	<1	0.30	0.200		3.0
#65	Aimaokatalok	1997	LKWH	L	473	1264	36		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.600	186	<0.05	15	<0.2	0.907	<1	<1	0.10	0.100		2.4
#66	Aimaokatalok	1997	LKWH	L	434	1034	16		<5	<0.05	<0.5	<0.2	<0.02	18	<0.5	<0.5	0.800	137	<0.05	20	0.200	0.455	<1	<1	<0.2	0.200		3.2
#67	Aimaokatalok	1997	LKWH	L	417	942	16		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.600	172	<0.05	17	<0.2	0.393	<1	<1	0.20	<0.1		3.1
#68	Aimaokatalok	1997	LKWH	L	411	912	17		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	148	<0.05	22	0.300	0.180	<1	<1	0.10	<0.1		2.9
#69	Aimaokatalok	1997	LKWH	L	479	1338	36		<5	<0.05	<0.5	<0.2	0.020	<10	<0.5	<0.5	<0.5	163	<0.05	18	0.400	0.583	<1	<1	0.10	<0.1		2.3
#70	Aimaokatalok	1997	LKWH	L	471	1852	23		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	58	<0.05	18	0.200	0.335	<1	<1	<0.1	<0.1		2.0
#71	Aimaokatalok	1997	LKWH	L	411	1006	16		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.600	144	<0.05	22	0.200	0.360	<1	<1	0.10	0.100		3.1
#72	Aimaokatalok	1997	LKWH	L	493	1488	24		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.900	169	<0.05	17	<0.2	0.673	<1	<1	0.20	0.500		3.4
#73	Aimaokatalok	1997	LKWH	L	449	1100	24		<5	<0.05	<0.5	<0.2	0.020	<10	<0.5	<0.5	0.700	284	<0.05	16	<0.2	0.583	<1	<1	<0.2	0.200		2.6
#100	Aimaokatalok	1997	LKWH	L	477	1446	23		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.300	203	<0.05	16	<0.2	0.963	<1	<1	0.20	0.300		3.7
#107	Aimaokatalok	1997	LKWH	L	512	1612	24		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.100	83	<0.05	16	<0.2	0.424	<1	<1	0.10	0.100		2.6
#118	Aimaokatalok	1997	LKWH	L	430	1154	15		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	0.600	78	<0.05	21	0.300	0.252	<1	<1	0.10	<0.1		3.1
#119	Aimaokatalok	1997	LKWH	L	475	1414	24		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	97	<0.05	16	<0.2	0.310	<1	<1	<0.1	<0.1		2.1
#156	Aimaokatalok	1997	LKWH	L	427	1000	16		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	109	<0.05	18	<0.2	0.317	<1	<1	0.10	<0.1		3.1
#157	Aimaokatalok	1997	LKWH	L	486	1418	36		<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	1.000	152	<0.05	16	<0.2	2.500	<1	<1	0.30	0.200		3.3
1	Aimaokatalok	1994	ARGR	M	340	400				<0.01			<0.0014				0.292		0.008	277	0.136	<0.008		0.012	0.102	<0.0023	<0.002	3.28
1	Aimaokatalok	1994	ARGR	L	340	400				<0.01			0.035				3.300		0.011	187	1.030	0.122		0.069	0.42	0.047	<0.0026	21.1
#1	Fickle Duck	1996	LKTR	M				80.7		0.060			<0.02				0.220		<0.05	236	<0.1	0.033		<0.2	0.40	<0.01	<0.2	3.0
#2	Fickle Duck	1996	LKTR	M				75.6		0.110			<0.02				0.300		<0.05	252	<0.1	0.008		<0.2	0.50	<0.01	<0.2	3.3
#3	Fickle Duck	1996	LKTR	M				79.4		0.070			<0.02				0.300		<0.05	229	0.100	0.035		<0.2	0.50	<0.01	<0.2	3.3
#1	Fickle Duck	1996	LKTR	L				74.7		0.560			0.040				27.700		0.060	155	1.100	0.607		<0.2	2.20	0.050	<0.2	41.5
#2	Fickle Duck	1996	LKTR	L				76.9		0.520			0.020				39.100		<0.05	163	1.100	0.021		<0.2	2.60	0.070	<0.2	47.8
#3	Fickle Duck	1996	LKTR	L				72.3		0.910			0.080				42.600		<0.05	156	1.900	0.092		<0.2	3.40	0.230	<0.2	49.4
F13-2	Fickle Duck	1995	ARGR	M	335	600	8			<0.05			0.005				0.510		0.034	337	0.407	0.032		0.060	0.31	0.006	<0.005	4.9
F13-4	Fickle Duck	1995	ARGR	M	350	700				<0.05			0.007				0.390		0.010	278	0.139	0.032		<0.05	0.25	0.006	<0.005	3.8
F13-3	Fickle Duck	1995	ARGR	M	365	800				<0.05			<0.005				0.410		0.036	221	0.125	0.096		<0.05	0.36	<0.005	0.0070	6.0
F13-1	Fickle Duck	1995	ARGR	M	380	900	12			<0.05			<0.005				1.210		0.048	274	0.131	0.080		<0.05	0.34	0.010	<0.006	5.8
#F13-2	Fickle Duck	1995	ARGR	L	335	600	8			0.190			0.020				1.580		0.018	174	2.860	<0.005		<0.05	1.11	0.023	<0.005	20.3
#F13-4	Fickle Duck	1995	ARGR	L	350	700				<0.05			0.015				2.050		0.016	160	1.230	<0.005		<0.05	1.03	0.029	<0.006	21.4
F13-3	Fickle Duck	1995	ARGR	L	365	800				<0.05			0.031				1.520		0.012	180	1.740	0.064		<0.05	0.99	0.021	<0.005	19.2
F13-1	Fickle Duck	1995	ARGR	L	380	900	12			<0.05			0.013				2.090		0.021	137	1.130	<0.005		<0.05	1.08	0.033	<0.005	18.9

[a] LKTR = lake trout; LKWH = lake whitefish; ARGR = Arctic grayling

[b] M = muscle (myomere); L = liver

[c] Fork length, except for ARGR from 1994, where only total length was reported. **Bolded length values for 1994 LKTR and LKWH were converted to fork length from total length** (see Appendix D7).

[d] Metal concentrations for all samples from 1996 were reported by Rescan (1997) as dry weight but based on magnesium content, these reported concnentrations have been assumed to be in wet weight.

NOTE: Shaded values indicate results that were less than the detection limit.

Appendix D12. Metal concentrations (µg/g wet weight) in fish tissues from Aimaokatalok Lake, 1993-1997.

Parameter		Lake Trout												Lake Whitefish										Arctic Grayling	
		1993		1994		1995		1996		1997		1993-1997[c]		1993		1994		1995		1997		1993-1997[c]		1994	
		Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle
Number sampled		*3*	*3*	*11*	*11*	*25*	*25*	*3*	*3*	*25*	*25*	*67*	*67*	*3*	*3*	*11*	*11*	*5*	*5*	*24*	*24*	*43*	*43*	*1*	*1*
Aluminum	*n<DL*[a]									25	25	25	25							24	24	24	24		
	Mean									2.5	2.5	2.5	2.5							2.5	2.5	2.5	2.5		
	SD[b]									0.0	0.0	0.0	0.0							0.0	0.0	0.0	0.0		
	Min.									2.5	2.5	2.5	2.5							2.5	2.5	2.5	2.5		
	Max.									2.5	2.5	2.5	2.5							2.5	2.5	2.5	2.5		
Arsenic	*n<DL*	*0*	*0*	*3*	*2*	*20*	*25*	*1*	*1*	*25*	*22*	*49*	*50*	*0*	*0*	*0*	*1*	*4*	*5*	*24*	*17*	*28*	*23*	*1*	*1*
	Mean	0.020	0.021	0.083	0.046	0.043	0.025	0.062	0.048	0.025	0.030	0.043	0.031	0.091	0.022	0.159	0.051	0.062	0.025	0.025	0.035	0.068	0.037	0.005	0.005
	SD	0.007	0.005	0.093	0.035	0.038	0.000	0.032	0.023	0.000	0.015	0.048	0.019	0.002	0.009	0.102	0.031	0.083	0.000	0.000	0.018	0.080	0.022	-	-
	Min.	0.012	0.015	0.005	0.005	0.025	0.025	0.025	0.025	0.025	0.025	0.005	0.005	0.089	0.013	0.035	0.005	0.025	0.025	0.025	0.025	0.025	0.005	0.005	0.005
	Max.	0.025	0.025	0.309	0.127	0.150	0.025	0.080	0.070	0.025	0.080	0.309	0.127	0.093	0.030	0.427	0.102	0.210	0.025	0.025	0.090	0.427	0.102	0.005	0.005
Barium	*n<DL*									*25*	*25*	*25*	*25*							*24*	*24*	*24*	*24*		
	Mean									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
	SD									0.00	0.00	0.00	0.00							0.00	0.00	0.00	0.00		
	Min.									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
	Max.									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
Beryllium	*n<DL*									*25*	*25*	*25*	*25*							*24*	*24*	*24*	*24*		
	Mean									0.1	0.1	0.1	0.1							0.1	0.1	0.1	0.1		
	SD									0.0	0.0	0.0	0.0							0.0	0.0	0.0	0.0		
	Min.									0.1	0.1	0.1	0.1							0.1	0.1	0.1	0.1		
	Max.									0.1	0.1	0.1	0.1							0.1	0.1	0.1	0.1		
Cadmium	*n<DL*	*0*	*3*	*0*	*11*	*0*	*14*	*0*	*3*	*25*	*25*	*25*	*56*	*0*	*3*	*0*	*10*	*0*	*3*	*19*	*24*	*19*	*40*	*0*	*1*
	Mean	0.072	0.003	0.046	0.001	0.060	0.006	0.083	0.010	0.010	0.010	0.041	0.006	0.189	0.003	0.115	0.001	0.068	0.005	0.013	0.010	0.058	0.006	0.035	0.001
	SD	0.067	0.000	0.018	0.000	0.029	0.004	0.068	0.000	0.000	0.000	0.036	0.004	0.093	0.000	0.083	0.000	0.019	0.003	0.006	0.000	0.073	0.004	-	-
	Min.	0.010	0.003	0.007	0.001	0.011	0.003	0.030	0.010	0.010	0.010	0.007	0.001	0.133	0.003	0.016	0.000	0.041	0.003	0.010	0.010	0.010	0.000	0.035	0.001
	Max.	0.144	0.003	0.080	0.001	0.132	0.017	0.160	0.010	0.010	0.010	0.160	0.017	0.296	0.003	0.296	0.001	0.085	0.010	0.030	0.010	0.296	0.010	0.035	0.001
Calcium	*n<DL*									*21*	*0*	*21*	*0*							*23*	*0*	*23*	*0*		
	Mean									6.5	97.2	6.5	97.2							5.5	95.5	5.5	95.5		
	SD									3.9	39.0	3.9	39.0							2.7	31.2	2.7	31.2		
	Min.									5.0	51.0	5.0	51.0							5.0	56.0	5.0	56.0		
	Max.									21.0	182.0	21.0	182.0							18.0	191.0	18.0	191.0		
Chromium	*n<DL*									*25*	*25*	*25*	*25*							*24*	*24*	*24*	*24*		
	Mean									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
	SD									0.00	0.00	0.00	0.00							0.00	0.00	0.00	0.00		
	Min.									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
	Max.									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
Cobalt	*n<DL*									*25*	*25*	*25*	*25*							*24*	*24*	*24*	*24*		
	Mean									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
	SD									0.00	0.00	0.00	0.00							0.00	0.00	0.00	0.00		
	Min.									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
	Max.									0.25	0.25	0.25	0.25							0.25	0.25	0.25	0.25		
Copper	*n<DL*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*4*	*25*	*4*	*25*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*24*	*7*	*24*	*0*	*0*
	Mean	16.34	0.28	12.25	0.41	14.69	0.39	21.37	0.24	1.06	0.25	9.58	0.33	5.68	0.24	5.89	0.45	5.45	0.33	0.70	0.25	2.93	0.31	3.30	0.29
	SD	8.62	0.07	6.01	0.35	5.91	0.11	11.03	0.06	0.58	0.00	8.44	0.17	2.03	0.02	3.06	0.56	3.55	0.06	0.42	0.00	3.18	0.29	-	-
	Min.	9.52	0.22	1.80	0.21	4.44	0.20	14.90	0.18	0.25	0.25	0.25	0.18	3.56	0.22	1.89	0.12	2.89	0.26	0.25	0.25	0.25	0.12	3.30	0.29
	Max.	26.03	0.36	21.50	1.44	28.50	0.69	34.10	0.29	2.30	0.25	34.10	1.44	7.62	0.27	11.80	2.09	11.70	0.43	1.90	0.25	11.80	2.09	3.30	0.29
Iron	*n<DL*									*0*	*0*	*0*	*0*							*0*	*0*	*0*	*0*		
	Mean									1332.9	2.6	1332.9	2.6							179.9	2.7	179.9	2.7		
	SD									2897.9	0.8	2897.9	0.8							85.4	0.9	85.4	0.9		
	Min.									84.0	1.0	84.0	1.0							58.0	2.0	58.0	2.0		
	Max.									14600.0	4.0	14600.0	4.0							473.0	5.0	473.0	5.0		

Appendix D12. Metal concentrations (µg/g wet weight) in fish tissues from Aimaokatalok Lake, 1993-1997.

Parameter		Lake Trout												Lake Whitefish										Arctic Grayling	
		1993		1994		1995		1996		1997		1993-1997[c]		1993		1994		1995		1997		1993-1997[c]		1994	
		Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle
Number sampled		*3*	*3*	*11*	*11*	*25*	*25*	*3*	*3*	*25*	*25*	*67*	*67*	*3*	*3*	*11*	*11*	*5*	*5*	*24*	*24*	*43*	*43*	*1*	*1*
Lead	*n<DL*	*3*	*3*	*0*	*0*	*0*	*0*	*3*	*3*	*25*	*25*	*31*	*31*	*3*	*3*	*0*	*0*	*0*	*0*	*24*	*24*	*27*	*27*	*0*	*0*
	Mean	0.020	0.020	0.012	0.063	0.044	0.051	0.025	0.025	0.025	0.025	0.030	0.041	0.020	0.020	0.016	0.010	0.033	0.029	0.025	0.025	0.023	0.021	0.011	0.008
	SD	0.000	0.000	0.007	0.114	0.019	0.039	0.000	0.000	0.000	0.000	0.016	0.053	0.000	0.000	0.008	0.010	0.010	0.015	0.000	0.000	0.007	0.010	-	-
	Min.	0.020	0.020	0.004	0.002	0.021	0.013	0.025	0.025	0.025	0.025	0.004	0.002	0.020	0.020	0.006	0.003	0.024	0.019	0.025	0.025	0.006	0.003	0.011	0.008
	Max.	0.020	0.020	0.026	0.365	0.083	0.164	0.025	0.025	0.025	0.025	0.083	0.365	0.020	0.020	0.033	0.039	0.050	0.054	0.025	0.025	0.050	0.054	0.011	0.008
Magnesium	*n<DL*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	152.7	298.7	146.1	245.7	167.6	246.7	131.7	259.3	15.3	258.8	104.9	253.9	187.0	293.7	169.2	278.4	212.6	271.2	16.6	288.6	90.3	284.3	187.0	277.0
	SD	15.3	25.8	21.3	51.1	26.2	26.1	24.0	9.1	2.7	13.5	72.8	29.4	12.8	24.4	43.7	39.8	23.3	18.8	2.7	26.5	87.8	29.5	-	-
	Min.	135.0	269.0	123.0	101.0	92.9	210.0	104.0	249.0	11.0	229.0	11.0	101.0	173.0	274.0	116.0	206.0	183.0	253.0	12.0	232.0	12.0	206.0	187.0	277.0
	Max.	162.0	316.0	182.0	303.0	220.0	332.0	146.0	266.0	21.0	282.0	220.0	332.0	198.0	321.0	272.0	325.0	242.0	302.0	22.0	326.0	272.0	326.0	187.0	277.0
Manganese	*n<DL*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*25*	*25*	*25*	*25*	*0*	*0*	*0*	*0*	*0*	*0*	*17*	*24*	*17*	*24*	*0*	*0*
	Mean	1.019	0.125	1.173	0.143	1.542	0.124	1.233	0.133	0.100	0.100	0.906	0.118	1.782	0.221	1.436	0.244	2.246	0.137	0.146	0.100	0.834	0.150	1.030	0.136
	SD	0.105	0.018	0.343	0.063	0.356	0.042	0.153	0.058	0.000	0.000	0.694	0.040	0.281	0.013	0.365	0.194	0.728	0.020	0.083	0.000	0.870	0.115	-	-
	Min.	0.946	0.109	0.450	0.090	0.974	0.074	1.100	0.100	0.100	0.100	0.100	0.074	1.541	0.212	0.799	0.103	1.680	0.108	0.100	0.100	0.100	0.100	1.030	0.136
	Max.	1.139	0.144	1.790	0.300	2.250	0.284	1.400	0.200	0.100	0.100	2.250	0.300	2.091	0.235	2.000	0.757	3.510	0.159	0.400	0.100	3.510	0.757	1.030	0.136
Mercury	*n<DL*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*
	Mean	0.922	0.356	0.829	0.406	1.368	0.706	1.593	0.561	0.677	0.369	1.012	0.509	0.866	0.158	0.661	0.142	0.228	0.120	0.978	0.223	0.802	0.186	0.122	0.004
	SD	0.595	0.203	0.709	0.282	0.823	0.281	0.431	0.180	0.366	0.182	0.706	0.283	0.605	0.124	0.735	0.127	0.082	0.047	1.146	0.106	0.963	0.113	-	-
	Min.	0.338	0.166	0.049	0.007	0.197	0.234	1.260	0.435	0.258	0.135	0.049	0.007	0.211	0.046	0.125	0.034	0.176	0.080	0.180	0.069	0.125	0.034	0.122	0.004
	Max.	1.527	0.570	2.310	0.895	3.480	1.440	2.080	0.767	1.730	0.836	3.480	1.440	1.404	0.291	2.740	0.477	0.374	0.198	5.720	0.438	5.720	0.477	0.122	0.004
Molybdenum	*n<DL*									*25*	*25*	*25*	*25*							*24*	*24*	*24*	*24*		
	Mean									0.5	0.5	0.4464	0.4464							0.5	0.5	0.5	0.5		
	SD									0.0	0.0	0.2	0.2							0.0	0.0	0.0	0.0		
	Min.									0.5	0.5	0	0							0.5	0.5	0.5	0.5		
	Max.									0.5	0.5	0.5	0.5							0.5	0.5	0.5	0.5		
Nickel	*n<DL*	*3*	*3*	*0*	*0*	*18*	*11*	*3*	*3*	*25*	*25*	*24*	*17*	*3*	*3*	*0*	*0*	*1*	*1*	*24*	*24*	*4*	*4*	*0*	*0*
	Mean	0.100	0.100	0.041	0.026	0.048	0.127	0.100	0.100	0.500	0.500	0.054	0.097	0.100	0.100	0.068	0.043	0.091	0.101	0.500	0.500	0.079	0.068	0.069	0.012
	SD	0.000	0.000	0.027	0.019	0.061	0.185	0.000	0.000	0.000	0.000	0.052	0.148	0.000	0.000	0.042	0.044	0.051	0.058	0.000	0.000	0.042	0.052	-	-
	Min.	0.100	0.100	0.016	0.011	0.025	0.025	0.100	0.100	0.500	0.500	0.016	0.011	0.100	0.100	0.021	0.011	0.025	0.025	0.500	0.500	0.021	0.011	0.069	0.012
	Max.	0.100	0.100	0.114	0.080	0.320	0.910	0.100	0.100	0.500	0.500	0.320	0.910	0.100	0.100	0.151	0.150	0.150	0.180	0.500	0.500	0.151	0.180	0.069	0.012
Selenium	*n<DL*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*14*	*0*	*14*	*3*	*0*	*0*	*0*	*0*	*0*	*0*	*4*	*0*	*4*	*0*	*0*	*0*
	Mean	1.023	0.156	0.879	0.163	0.928	0.199	1.600	0.100	0.096	0.196	0.644	0.186	1.982	0.224	0.985	0.233	0.864	0.294	0.146	0.217	0.572	0.230	0.417	0.102
	SD	0.251	0.004	0.453	0.063	0.678	0.064	0.173	0.000	0.054	0.020	0.635	0.053	0.412	0.059	0.428	0.072	0.619	0.054	0.087	0.038	0.627	0.055	-	-
	Min.	0.758	0.153	0.241	0.037	0.260	0.060	1.500	0.100	0.050	0.100	0.050	0.037	1.539	0.185	0.410	0.139	0.340	0.200	0.050	0.200	0.050	0.139	0.417	0.102
	Max.	1.256	0.161	1.860	0.284	2.770	0.360	1.800	0.100	0.200	0.200	2.770	0.360	2.354	0.291	2.090	0.340	1.680	0.340	0.400	0.300	2.354	0.340	0.417	0.102
Silver	*n<DL*	*0*	*3*	*0*	*11*	*0*	*10*	*0*	*3*	*8*	*25*	*8*	*52*	*0*	*3*	*0*	*10*	*0*	*3*	*11*	*24*	*11*	*40*	*0*	*1*
	Mean	0.081	0.005	0.130	0.001	0.227	0.009	0.200	0.005	0.120	0.050	0.164	0.023	0.069	0.005	0.083	0.001	0.090	0.004	0.144	0.050	0.117	0.029	0.047	0.001
	SD	0.036	0.000	0.094	0.000	0.290	0.011	0.089	0.000	0.071	0.000	0.192	0.023	0.022	0.000	0.084	0.000	0.070	0.002	0.132	0.000	0.113	0.024	-	-
	Min.	0.058	0.005	0.013	0.001	0.080	0.003	0.130	0.005	0.050	0.050	0.013	0.001	0.043	0.005	0.013	0.001	0.046	0.003	0.050	0.050	0.013	0.001	0.047	0.001
	Max.	0.122	0.005	0.303	0.002	1.570	0.060	0.300	0.005	0.300	0.050	1.570	0.060	0.083	0.005	0.302	0.002	0.212	0.007	0.500	0.050	0.500	0.050	0.047	0.001
Tellurium	*n<DL*			*9*	*11*	*23*	*22*	*3*	*3*			*35*	*36*									*0*	*0*	*1*	*1*
	Mean			0.001	0.001	0.003	0.004	0.100	0.100			0.010	0.010			0.008	0.001	0.003	0.003			0.007	0.002	0.001	0.001
	SD			0.001	0.000	0.001	0.002	0.000	0.000			0.026	0.026			0.012	0.000	0.000	0.000			0.010	0.001	-	-
	Min.			0.001	0.001	0.003	0.003	0.100	0.100			0.001	0.001			0.001	0.001	0.003	0.003			0.001	0.001	0.001	0.001
	Max.			0.004	0.001	0.007	0.011	0.100	0.100			0.100	0.100			0.040	0.001	0.003	0.004			0.040	0.004	0.001	0.001
Zinc	*n<DL*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	33.12	3.89	26.48	3.81	32.87	4.66	33.70	3.00	2.77	2.58	20.64	3.63	28.56	3.32	33.30	3.92	37.72	4.60	2.74	2.89	16.42	3.38	21.10	3.28
	SD	5.31	0.33	4.68	1.12	4.95	1.37	10.09	0.10	0.57	0.27	14.64	1.32	2.29	0.44	20.89	1.74	8.88	0.54	0.51	0.19	18.92	1.08	-	-
	Min.	27.60	3.62	17.60	2.73	22.10	2.80	27.00	2.90	1.70	2.20	1.70	2.20	26.41	3.02	22.30	2.28	29.50	3.70	1.90	2.40	1.90	2.28	21.10	3.28
	Max.	38.19	4.26	34.70	6.06	46.20	8.10	45.30	3.10	3.70	3.10	46.20	8.10	30.96	3.83	93.20	8.86	49.20	5.10	3.70	3.20	93.20	8.86	21.10	3.28

[a] Number of samples below detection limit [b] Standard deviation

[c] Nickel values were calculated for 1993 to 1996 data only (42 lake trout and 19 lake whitefish), because of very high detection limit used in 1997 (1 µg/g).

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from Fickle Duck Lake, 1995-1996.

Parameter		Arctic Grayling (1995)		Lake Trout (1996)	
		Liver	Muscle	Liver	Muscle
Number sampled		*4*	*4*	*3*	*3*
Arsenic	*n<DL*	*3*	*4*	*0*	*0*
	Mean	0.066	0.025	0.663	0.080
	SD	0.083	0.000	0.215	0.026
	Min.	0.025	0.025	0.520	0.060
	Max.	0.190	0.025	0.910	0.110
Cadmium	*n<DL*	*0*	*2*	*0*	*3*
	Mean	0.020	0.004	0.047	0.010
	SD	0.008	0.002	0.031	0.000
	Min.	0.013	0.003	0.020	0.010
	Max.	0.031	0.007	0.080	0.010
Copper	*n<DL*	*0*	*0*	*0*	*0*
	Mean	1.81	0.63	36.47	0.27
	SD	0.30	0.39	7.79	0.05
	Min.	1.52	0.39	27.70	0.22
	Max.	2.09	1.21	42.60	0.30
Lead	*n<DL*	*0*	*0*	*2*	*3*
	Mean	0.017	0.032	0.037	0.025
	SD	0.004	0.016	0.020	0.000
	Min.	0.012	0.010	0.025	0.025
	Max.	0.021	0.048	0.060	0.025
Magnesium	*n<DL*	*0*	*0*	*0*	*0*
	Mean	162.8	277.5	158.0	239.0
	SD	19.1	47.4	4.4	11.8
	Min.	137.0	221.0	155.0	229.0
	Max.	180.0	337.0	163.0	252.0
Manganese	*n<DL*	*0*	*0*	*0*	*2*
	Mean	1.740	0.201	1.367	0.067
	SD	0.793	0.138	0.462	0.029
	Min.	1.130	0.125	1.100	0.050
	Max.	2.860	0.407	1.900	0.100
Mercury	*n<DL*	*3*	*0*	*0*	*0*
	Mean	0.018	0.060	0.240	0.025
	SD	0.031	0.033	0.320	0.015
	Min.	0.003	0.032	0.021	0.008
	Max.	0.064	0.096	0.607	0.035
Nickel	*n<DL*	*4*	*3*	*3*	*3*
	Mean	0.025	0.034	0.100	0.100
	SD	0.000	0.018	0.000	0.000
	Min.	0.025	0.025	0.100	0.100
	Max.	0.025	0.060	0.100	0.100
Selenium	*n<DL*	*0*	*0*	*0*	*0*
	Mean	1.053	0.315	2.733	0.467
	SD	0.053	0.048	0.611	0.058
	Min.	0.990	0.250	2.200	0.400
	Max.	1.110	0.360	3.400	0.500
Silver	*n<DL*	*0*	*1*	*0*	*3*
	Mean	0.027	0.006	0.117	0.005
	SD	0.006	0.003	0.099	0.000
	Min.	0.021	0.003	0.050	0.005
	Max.	0.033	0.010	0.230	0.005
Tellurium	*n<DL*	*4*	*3*	*3*	*3*
	Mean	0.003	0.004	0.100	0.100
	SD	0.000	0.002	0.000	0.000
	Min.	0.003	0.003	0.100	0.100
	Max.	0.003	0.007	0.100	0.100
Zinc	*n<DL*	*0*	*0*	*0*	*0*
	Mean	19.95	5.13	46.23	3.20
	SD	1.14	1.00	4.18	0.17
	Min.	18.90	3.80	41.50	3.00
	Max.	21.40	6.00	49.40	3.30

[a] Number of samples below detection limit [b] Standard deviation

APPENDIX E

FISH HABITAT

Appendix E1. Habitat Classification System for Arctic Streams

(from Rescan 1998, 2001)

Boulder Garden (BG) Large boulders, usually only partially submerged, distributed through the stream channel and providing high quality cover for juvenile and small fish. Often associated or in combination with R3 habitat type.

Cascade (Ca) A series of small steps where stream falls over channel obstructions such as boulders and organic debris. Often in series with Run and/or Pool habitat types.

Chute (Ch) A steep section of the stream channel.

Falls (Fa) Water flows over a channel obstruction and into a downstream plunge pool. Obstruction height greater than 0.75 m and forms an obvious barrier to fish passage.

Shelf (Sh) Very shallow stream flow over a bedrock outcrop. When combined with a steep gradient, forms a fish passage barrier. Poor quality habitat.

Flat (F) Areas of still, often stagnant water. Substrate usually covered in silt or organic matter. Though fish habitat quality is usually poor, deep flats can provide cover for holding fish.

- **F1** – best quality flat habitat; depth greater than 0.75 m.
- **F2** – intermediate quality flat habitat; depth 0.3 to 0.75 m.
- **F3** – poorest quality flat habitat; depth less than 0.3 m.

Pools (P) Portions of the stream with reduced current velocity at low flow and deeper water than surrounding areas. Often associated with Run habitat types.

- **P1** – best quality pool habitat; depth greater than 0.75 m.
- **P2** – intermediate quality pool habitat; depth 0.3 to 0.75 m.
- **P3** – poorest quality pool habitat; depth less than 0.3 m.

Rapids (Ra) Water flows swiftly over completely or partially submerged materials to produce intense surface agitation. Usually greater than 0.2 m in depth, with a gradient of greater than 4%.

Riffle (Rf) Shallow rapids where the water flows swiftly over completely or partially submerged materials to produce surface agitation. Usually less than 0.2 m in depth, with a gradient of less than 4%.

Run (R) Areas of swiftly flowing water, without surface waves, which approximates uniform flow and in which the slope of water surface is roughly parallel to the overall gradient of the stream reach.

- **R1** – best quality run habitat; depth greater than 0.75 m.
- **R2** – intermediate quality run habitat; depth 0.3 to 0.75 m.
- **R3** – poorest quality run habitat; depth less than 0.3 m.

Appendix E1. Habitat Classification System (continued).

STREAM MORPHOLOGY CLASSIFICATION

Channel Type (C)

C1 – single stream channel (no bars, islands, or side channels) throughout the survey section.

C2 – occasional bars, creating areas within the survey section with more than one channel. No more than 50 % of the survey section has multiple channels.

C3 – stream channel is heavily braided. More than 50 % of the survey section consists of multiple channels.

Channel Boundary Type (D)

D1 – stream is confined to a well defined channel with a distinct boundary at the waters edge.

D2 – up to 50 % of the stream survey section possesses no distinct channel.

D3 – there is no distinct channel. Stream is often dispersed through grasses and other vegetation.

STREAM HABITAT SUITABILITY CLASSIFICATION

The suitability of a stream's habitat with respect to spawning, rearing, adult feeding, overwintering, and migration is expressed using a qualitative numerical scale from 0 to 4. Under this scheme:

0 = no habitat present,
1 = poor,
2 = fair,
3 = good, and
4 = excellent habitat.

Appendix E2. Aquatic habitat survey results for Boston area streams, 1996-2000.

Parameter		Watercourse	Aimaokatalok NE Inflow				Aimaokatalok River		
		Site No.	BP-F-01				FP-20		
		Date	07-Jul-96			26-Jun-00	09-Aug-96		
		Location (m)	0-100	100-200	200-300		0-100	100-200	200-300
		Distance (m)	100	100	100	750	100	100	100
		Latitude	N67°41.619'	N67°41.667'	N67°41.620'		N13443926	N13443336	N13442566
		Longitude	W106°20.120'	W106°19.805'	W106°19.283'		W7497797	W7497797	W7498258
Stage						High			
Water Temperature (°C)									
Water Colour						clear tea			
Channel / Boundary Type [a]									
Gradient (%)						2			
Wetted Width (m)	Mean		9.4	11.3	16.5	20.0	14.3	10.2	22.5
	Min		7.8	7.8	14.0		10.6	9.6	15.1
	Max		12.7	17.9	18.3		18.4	14.3	30.7
Depth (m)	Mean								
	Mean Maximum Pool Depth								
	Mean Maximum Riffle Depth								
Mean Velocity (m/s)			0.48	0.87	0.47		0.58		
Instream Habitat[a] (%)	Pool - Class P1		15			5	20	15	80
	Pool - Class P2								
	Pool - Class P3								
	Riffle					15			
	Rapid		30	85	50	55	15	20	10
	Run - Class 1		55	15	50	15	65	65	10
	Run - Class 2								
	Run - Class 3								
	Flat - Class 1					5			
	Flat - Class 2								
	Chute					5			
	Cascade								
	Shelf								
Substrate (%)	Organic matter								
	Silt								
	Sand					5			
	Small Gravel								
	Large Gravel								
	Cobble					15			
	Boulder					65			
	Bedrock					15			
	Dominant Particle Size		Cobble	Cobble	Cobble		Boulder	Boulber	Cobble
	Co-dominant Particle Size		Boulder	Boulder	Boulder		Cobble	Cobble	Boulder
	Compaction (%)								
	Embeddedness (%)								
Instream Cover (%)	Pool					15			
	Boulder					85			
	Cutbank								
	Instream Vegetation								
	Overhanging Vegetation								
	Macrophytes/Vegetation								
Habitat Suitability[b]	Spawning					4			
	Rearing					4			
	Adult Feeding					4			
	Overwintering					1			
	Migration					4			
Bank Material	Dominant Particle Size		Gravel	Gravel	Cobble		Boulder	Boulder	Cobble
	Co-dominant Particle Size		Boulder	Boulder	Boulder		Cobble	Cobble	Boulder
	Right d/s Bank	Height (m)				1			
		Stability (%)				100			
		Dominant Part. Size				Bo			
		Co-dominant Part. Size				Sa			
		Cover (%)				100			
	Left d/s Bank	Height (m)				1			
		Stability (%)				100			
		Dominant Part. Size				Bo			
		Co-dominant Part. Size				Sa			
		Cover (%)				100			
Bank Vegetation (%)	lichens		20						
	willow		10	20	30		5	50	30
	grass		70	80	70		95	50	70

[a] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Boston area streams, 1996-2000.

Parameter		Watercourse	Stickleback Outflow	Fickle Duck Outflow				Fickle Duck Inflow
		Site No.	BP1	BP02				BP12
		Date	15-Jun-97	07-Jul-96			15-Jun-97	17-Jun-97
		Location (m)		0-100	100-200	200-300		
		Distance (m)	175	100	100	100	80	210
		Latitude		N67°38.683'	N67°38.776'	N67°88.749'		
		Longitude		W106°21.400'	W106°21.406'	W106°21.525'		
Stage			Flood				Flood	Flood
Water Temperature (°C)								
Water Colour								
Channel / Boundary Type [a]			C1, D1				C1, D1	C1, D3
Gradient (%)								
Wetted Width (m)	Mean		4.5	2.2	1.6	3.2	6.5	6.2
	Min			0.8	0.7	1.1		
	Max			3.4	2.1	4.8		
Depth (m)	Mean		0.35				0.55	0.65
	Mean Maximum Pool Depth		1.25					1.95
	Mean Maximum Riffle Depth		0.30				1.25	0.35
Mean Velocity (m/s)				0.83	0.70	0.41		
Instream Habitat[a] **(%)**	Pool - Class P1		7.5					20
	Pool - Class P2		2.5					
	Pool - Class P3							
	Riffle		90				100	55
	Rapid			15	10	20		5
	Run - Class 1			85	90	80		
	Run - Class 2							10
	Run - Class 3							10
	Flat - Class 1							
	Flat - Class 2							
	Chute							
	Cascade							
	Shelf							
Substrate (%)	Organic matter		95				90	60
	Silt							15
	Sand		5					5
	Small Gravel							
	Large Gravel							
	Cobble						10	10
	Boulder							10
	Bedrock							
	Dominant Particle Size			Cobble	Cobble	Cobble		
	Co-dominant Particle Size			Rock	Rock	Rock		
	Compaction (%)							
	Embeddedness (%)							
Instream Cover (%)	Pool		10					25
	Boulder							10
	Cutbank							25
	Instream Vegetation		90				100	40
	Overhanging Vegetation							
	Macrophytes/Vegetation							
Habitat Suitability[b]	Spawning		0				1	1
	Rearing		3				2	3
	Adult Feeding		0				2	2
	Overwintering		0				0	1
	Migration		1				3	2
Bank Material	Dominant Particle Size			Cobble	Cobble	Mud/Silt		
	Co-dominant Particle Size			Rock	Mud/Silt	Rock		
	Right d/s Bank	Height (m)						
		Stability (%)						
		Dominant Part. Size						
		Co-dominant Part. Size						
		Cover (%)						
	Left d/s Bank	Height (m)						
		Stability (%)						
		Dominant Part. Size						
		Co-dominant Part. Size						
		Cover (%)						
Bank Vegetation (%)	lichens							
	willow			60	90	85		
	grass			40	10	15		

[a] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Boston area streams, 1996-2000.

Parameter		Watercourse	Aimaokatalok Lake Inflows							
		Site No.	BP03	BP04	BP05	BP06	BP07	BP08	BP09	BP10
		Date	15-Jun-97	16-Jun-97	16-Jun-97	16-Jun-97	16-Jun-97	16-Jun-97	16-Jun-97	17-Jun-97
		Location (m)								
		Distance (m)	350	95	80	150	50	110	95	150
		Latitude								
		Longitude								
Stage			Flood	Flood	Flood	Flood	Flood	Flood	Flood	Flood
Water Temperature (°C)										
Water Colour										
Channel / Boundary Type [a]			C2, D2	C3, D3	C3, D3	C3, D3	C3, D3	C3, D3	C2, D3	C3, D3
Gradient (%)										
Wetted Width (m)	Mean		3.3	8.5	7.5	8.3	0.6	5.3	4.2	3.2
	Min									
	Max									
Depth (m)	Mean		0.40	0.35	0.25	0.35	0.15	0.25	0.30	0.35
	Mean Maximum Pool Depth		1.30	0.45	0.35	1.60	0.25	0.90	0.55	1.85
	Mean Maximum Riffle Depth		0.25	0.25	0.25	0.20	0.10	0.20	0.25	0.30
Mean Velocity (m/s)										
Instream Habitat[a] **(%)**	Pool - Class P1		10			15				15
	Pool - Class P2								7.5	10
	Pool - Class P3			2.5	2.5		2.5	10	2.5	
	Riffle		80	95	95	75	95	90	75	70
	Rapid									
	Run - Class 1									
	Run - Class 2									
	Run - Class 3		10	2.5	2.5	10	2.5			5
	Flat - Class 1									
	Flat - Class 2									
	Chute									
	Cascade									
	Shelf									
Substrate (%)	Organic matter		90	100	100	80	100	95	80	75
	Silt					5				25
	Sand		5			5		2	5	
	Small Gravel							1	7.5	
	Large Gravel									
	Cobble							2	5	
	Boulder		5						2.5	
	Bedrock					10				
	Dominant Particle Size									
	Co-dominant Particle Size									
	Compaction (%)									
	Embeddedness (%)									
Instream Cover (%)	Pool		20			35		20	7.5	30
	Boulder		5			5			2.5	
	Cutbank		10			5			10	
	Instream Vegetation		65	100	100	55	100	80	80	70
	Overhanging Vegetation									
	Macrophytes/Vegetation									
Habitat Suitability[b]	Spawning		0	0	0	0	0	1	3	0
	Rearing		3	2	2	2	0	1	4	2
	Adult Feeding		1	0	0	0	0	0	1	3
	Overwintering		0	0	0	0	0	0	0	0
	Migration		0	0	0	0	0	0	0	0
Bank Material	Dominant Particle Size									
	Co-dominant Particle Size									
	Right d/s Bank	Height (m)								
		Stability (%)								
		Dominant Part. Size								
		Co-dominant Part. Size								
		Cover (%)								
	Left d/s Bank	Height (m)								
		Stability (%)								
		Dominant Part. Size								
		Co-dominant Part. Size								
		Cover (%)								
Bank Vegetation (%)	lichens									
	willow									
	grass									

[a] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Boston area streams, 1996-2000.

Parameter		Watercourse	Aimaokatalok Lake Inflows			Koignuk River		Boulder Creek		
		Site No.	BP11	BP13	BP14	FP-21		FP-14		
		Date	17-Jun-97	17-Jun-97	17-Jun-97	09-Aug-96	09-Aug-96	19-Aug-96	10-Aug-96	10-Aug-96
		Location (m)				0-100	100-200	0-100	100-200	200-300
		Distance (m)	160	225	310	100	100	100	100	100
		Latitude				N13434860	N13435102	N13432554	N13432688	N13432986
		Longitude				W7518118	W7518386	W7534559	W7534067	W7533698
Stage			Flood	Flood	Flood					
Water Temperature (°C)										
Water Colour										
Channel / Boundary Type [a]			C2, D3	C1, D2	C2, D2					
Gradient (%)										
Wetted Width (m)	Mean		0.7	3.2	3.1	25.5	-	15.6	9.9	5.2
	Min					21.8	-	10.7	6.5	2.4
	Max					33.2	-	20.6	15.1	8.2
Depth (m)	Mean		0.35	0.65						
	Mean Maximum Pool Depth		0.50	2.10	2.10					
	Mean Maximum Riffle Depth		0.20	0.30	0.35					
Mean Velocity (m/s)						1.02	1.30	1.04	0.14	0.16
Instream Habitat [a] **(%)**	Pool - Class P1			20	25		20	70	20	30
	Pool - Class P2				5					
	Pool - Class P3		5							
	Riffle		85	80	40					
	Rapid				20	80	30		30	40
	Run - Class 1					20	50	30	50	30
	Run - Class 2									
	Run - Class 3		10		10					
	Flat - Class 1									
	Flat - Class 2									
	Chute									
	Cascade									
	Shelf									
Substrate (%)	Organic matter		100	75	75					
	Silt			15						
	Sand				5					
	Small Gravel									
	Large Gravel									
	Cobble			5	10					
	Boulder			5	5					
	Bedrock				5					
	Dominant Particle Size					Cobble	Cobble	Cobble	Cobble	Boulder
	Co-dominant Particle Size					Boulder	Boulder	Boulder	Boulder	Cobble
	Compaction (%)									
	Embeddedness (%)									
Instream Cover (%)	Pool			25	15					
	Boulder			5	10					
	Cutbank									
	Instream Vegetation		100	70	65					
	Overhanging Vegetation				10					
	Macrophytes/Vegetation									
Habitat Suitability [b]	Spawning		0	1	1					
	Rearing		0	3	2					
	Adult Feeding		0	2	1					
	Overwintering		0	0	0					
	Migration		0	0	0					
Bank Material	Dominant Particle Size					Cobble	Cobble	Cobble	Mud/Silt	Boulder
	Co-dominant Particle Size					Boulder	Boulder	Boulder	Boulder	Cobble
	Right d/s Bank	Height (m)								
		Stability (%)								
		Dominant Part. Size								
		Co-dominant Part. Size								
		Cover (%)								
	Left d/s Bank	Height (m)								
		Stability (%)								
		Dominant Part. Size								
		Co-dominant Part. Size								
		Cover (%)								
Bank Vegetation (%)	lichens									
	willow					50	80	70	60	80
	grass					50	20	30	40	20

[a] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Boston area streams, 1996-2000.

Parameter		Watercourse	Road Crossings near Boulder Creek					
		Site No.	PRC13		PRC14		PRC15	
		Date	25-Jun-00	29-Aug-00	25-Jun-00	29-Aug-00	26-Jun-00	29-Aug-00
		Location (m)						
		Distance (m)	500	100	300	350		175
		Latitude						
		Longitude						
Stage			High	Low	High	Low	High	Low
Water Temperature (°C)			12	6.5	7			6
Water Colour			Turbid	Turbid	Turbid		clear tea	
Channel / Boundary Type [a]								
Gradient (%)			<1	<1	2		<1	<1
Wetted Width (m)	Mean		8.0	2.0	2.2	2.5	3.0	1.0
	Min							
	Max							
Depth (m)	Mean		1.20	0.50	0.35	0.45		0.80
	Mean Maximum Pool Depth			1.60	1.50	1.30	1.50	2.00
	Mean Maximum Riffle Depth		0.35	0.35		0.05	0.65	0.45
Mean Velocity (m/s)								
Instream Habitat[a] **(%)**	Pool - Class P1		5	40		20	20	20
	Pool - Class P2		5	5	5	30		15
	Pool - Class P3				15	40		
	Riffle		5	10	35	10	25	5
	Rapid							
	Run - Class 1		65				15	
	Run - Class 2		20	15	10		40	10
	Run - Class 3			30	35			5
	Flat - Class 1							25
	Flat - Class 2							20
	Chute							
	Cascade							
	Shelf							
Substrate (%)	Organic matter		10	10	80	45	85	65
	Silt		75	65	20	45	5	25
	Sand		12.5				5	5
	Small Gravel			10				
	Large Gravel							5
	Cobble			5				
	Boulder		2.5	10		10	5	
	Bedrock							
	Dominant Particle Size							
	Co-dominant Particle Size							
	Compaction (%)		50	30	10			
	Embeddedness (%)		100	40	60			
Instream Cover (%)	Pool		30	40	85	80	80	35
	Boulder		10	10				
	Cutbank			5	10	5	20	10
	Instream Vegetation							
	Overhanging Vegetation		60	5	5	5		5
	Macrophytes/Vegetation			40		10		50
Habitat Suitability[b]	Spawning		1	0	0	0	1	0
	Rearing		2	2	1	1	2	1
	Adult Feeding		1	0	0	0	1	0
	Overwintering		0	0	0	0	0	0
	Migration		4	1	3	0	4	3
Bank Material	Dominant Particle Size							
	Co-dominant Particle Size							
	Right	Height (m)	1.5	1.8	0.5		0.5	0.75
	d/s Bank	Stability (%)	90	90	50		100	80
		Dominant Part. Size	Si	Si	OM		OM	OM
		Co-dominant Part. Size	OM	OM	Si		Si	Sa
		Cover (%)	100	100	60		100	100
	Left	Height (m)	1.5	1.2	0.25		0.5	0.75
	d/s Bank	Stability (%)	85	90	50		100	80
		Dominant Part. Size	Si	Si	OM		OM	OM
		Co-dominant Part. Size	OM	OM	Si		Si	Sa
		Cover (%)	100	100	65		100	100
Bank Vegetation (%)	lichens							
	willow							
	grass							

[a] See Appendix E1 for description of codes.

Plate 1. **Stream BP03**, 15 June 1997, showing the discharge point into Aimaokatloak Lake. The water flowed through a depression, over terrestrial grasses, and had no distinct channel.

Plate 2. **Stream BP06**, 16 June 1997, showing the stream discharging into Aimaokatalok Lake over a bedrock shelf. Elevated lake levels diminished the effect of the migration barrier.

Plate 3. **Stream BP09**, 16 June 1997, showing the stream discharging into Aimaokatalok Lake over boulders. Elevated lake levels diminished the effect of the migration barrier.

Plate 4. **Stream BP10**, 17 June 1997, showing a series of pool and riffle habitats. The pools were deep and contained mature Arctic grayling and lake trout.

Plate 5. **Stream BP14,** 17 June 1997, showing a thicket of willows overlaying a boulder garden. A juvenile Arctic grayling was observed in the pool to the right.

Plate 7. **Stickleback Outflow,** 15 June 1997, showing the dispersed flow through terrestrial vegetation.

Plate 6. **Fickle Duck Inflow (BP12)**, 17 June 1997, showing a series of riffle/run habitat flooding terrestrial grasses. Ninespine stickleback were caught in this section of stream.

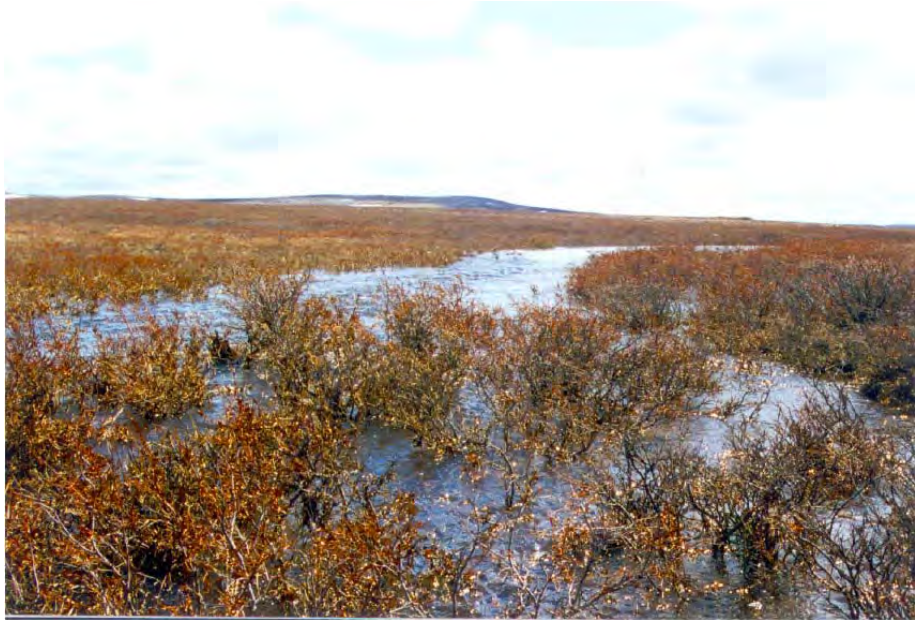

Plate 8. **Fickle Duck Outflow,** 15 June 1997, showing the dispersed flow through willows and grasses.