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RATIONALIZATION
FOR REGIONAL TREND DETECTION
OF THE CWS/LRTAP MONITORING NETWORK
AT ALGOMA, MUSKOKA AND SUDBURY SITES.

RATIONALIZATION FOR REGIONAL TREND DETECTION OF THE CWS/LRTAP MONITORING NETWORK AT ALGOMA, MUSKOKA AND SUDBURY SITES.

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by

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ABSTRACT

This report presents the results of a rationalisation of the CWS/LRTAP network of lakes of the Muskoka, Algoma and Sudbury regions, monitored since 1988 to assess the recovery from acidic precipitations on a regional basis. The purpose of the study is to propose efficient strategies for the reduction of the sampling effort minimizing the loss in power of the network, to be reduced as a consequence of financial cutbacks.

Starting with the 1988-1995 database, the historical **spatio-temporal** persistence, known to reduce the **information content** of the individual measurements and the **power of trend detection techniques** are first evaluated for the six most important parameters of the database: pH, Alkalinity, Base cations, Sulfates, Dissolved Organic Carbon and Nitrites-Nitrates.

The virtues of competing logistic strategies for the considered sampling effort reduction are discussed and compared. Then the choice of a sampling strategy is made, taking into account the inter-lake variabilities as demonstrated by the historical measurements and the resulting power of the reduced networks is evaluated for different sampling efforts.

Finally, a **procedure** is described, leading to the **actual** selection of lakes to be sampled on recurring cycles, according to their relative distances and to the external classification to which they belong.

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INTRODUCTION

SCOPE OF THE PRESENT CONTRACT

The purpose of this contract is to help redesign the CWS/LRTAP biomonitoring network of water quality from lakes located in 3 sites (Sudbury, Muskoka and Algoma).
The network, sampled once a year in the fall, was established in 1983 to monitor the eventual recovery with time of lakes vulnerable to acidity, following the reduction of atmospheric acidic compounds. In previous studies, we have assessed the power of the network to detect trends on a regional basis; we have also performed some multivariate analyses to regroup lakes and parameters of similar behaviours. One of the key points of the statistical analyses was the estimation of both the temporal and spatial persistence of the data, which controls the power to detect changes and thus validates the use of various parametric or nonparametric techniques according to their pertinent underlying assumptions.

This contract was triggered by the necessity, resulting from imposed financial cutbacks, to reduce the number of lakes to be sampled each year; during the period 1990-1994, the average sampling effort was of 331 lakes a year; for the period 1990-1995, it was of 388 lakes. The goal for the future sampling effort was to reduce it to an order of magnitude of 200, while minimizing unavoidable losses in the trend detection power of the network. In the past, **260, 253** and **161** lakes were sampled respectively in the Muskoka, Algoma and Sudbury regions, but **not** on a yearly basis.

Two main questions will be addressed:

-Which sampling strategy should be chosen:
.Round robbin: all sampling efforts in one region each year, with rotating region with the years.
.Split sampling: 1/3, 1/3, 1/3 of lakes of each region sampled each year, with a rotation with the years.
.Some combination of both.

-Which lakes should be kept in the network in view of their representativity and of their belonging to some external classification modalities, while giving an overweight to small, quick reacting lakes, the main object of the monitoring. The objective here is to retain about 80% of lakes smaller than 10 ha. Lakes to be reduced in number should preferably belong to:

CLASSMA: class 1, value >4
CLASSUD: class 4, value = 4
CLASSUD: class 4, value = 0

As a consequence, what is the loss in trend detection power, i.e. in the ability to detect trend expressed as a fraction of the intrinsic variability, let say 0.5 σ , with a given power, nine times out of ten, for the network redeveloped with 3 cutback hypotheses, i.e. approximately **180, 195** and **210** retained lakes, to be sampled each year ?.

In the following report, we will refer to **results** obtained previously on the same database by our previous studies, **shortly** as:

R1: Linear trend detection and statistical power analysis. Lakes from the Sudbury area (1983-1994).. Contract # KR405-4-0276 , March 1995.

R2: Comparisons of lake medians and lake trend slopes in the Muskoka, Algoma and Sudbury regions. Contract # KR405-5-0159, March 1996.

R3: Regional trend detection and power analyses for chemical parameters monitored at the CWS LRTAP biomonitoring sites in Algoma, Muskoka and Sudbury (1988-1995), Contract #KR405-5-0179, May 1996.

STRUCTURE OF THE REPORT

The present report will first **locate** the sampled lakes at the 3 sites: Muskoka (1); Algoma (12) and Sudbury (37) and determine their relative **distances** using UTM coordinates. **6** quality parameters are used for this rationalisation study: **pH, Alkalinity, Basecations, SO4, DOC and NO2-3.** Three sets of data will be used for the analyses: Two concerning the **levels** of the parameters recorded at the start of the program (years 93, 88 and 91 respectively) and the last available year (95). One related to the **evolution** of the measurements as defined by the average yearly trend **slopes**.
Chapter 1 studies the persistence of the historical data set. It is well recognized that both spatial and temporal persistences reduce the regional power of a trend monitoring network as the **Information Content** of each data is reduced by **redundancy**: Part of the new information is already contained in past information at the sampled station, and also in information gathered at nearby stations. In this chapter, the study of historical data set will allow to draw conclusions that will be applied to the rationalisation process.
Chapter 2 evaluates the possible sampling strategies and **Chapter 3** quantifies their associated **detection power**. Finally, **Chapter 4** proceeds with the **rationalization** proper, i.e. the evaluation of the future sampling effort compared with the historical one, the **choice** of the lakes to be monitored and the definition of their **sampling cycles**.

CHAPTER 1

Spatio-temporal variability of historical data.

1.1 Localisation of the sampled stations.

The sampled stations are located within 3 regions (1=Muskoka; 12=Algoma and 37=Sudbury). Given the UTM coordinates of the stations, it is possible to draw a global map of the location of the stations. Even if the maps are not very clear, due to the high number of lakes and their proximity, these map give a good pattern of their dispersion. In the following figures, the coordinates are expressed as km (UTM). The Muskoka and Algoma regions (260 and 253 lakes, respectively) exhibit selected **clusters** (called **"plots"**)of lakes located within 5 x 5 km squares and the Sudbury region (161 lakes) shows a good spreading of lakes within the territory.

Figure 1-1 Location of the sampled lakes in the Muskoka region.

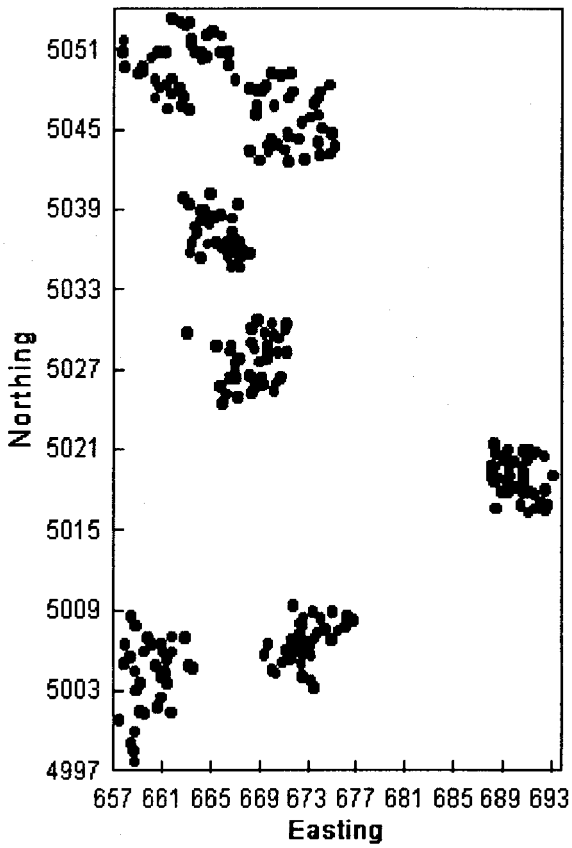


Figure 1-2 Location of the sampled lakes in the Algoma region.

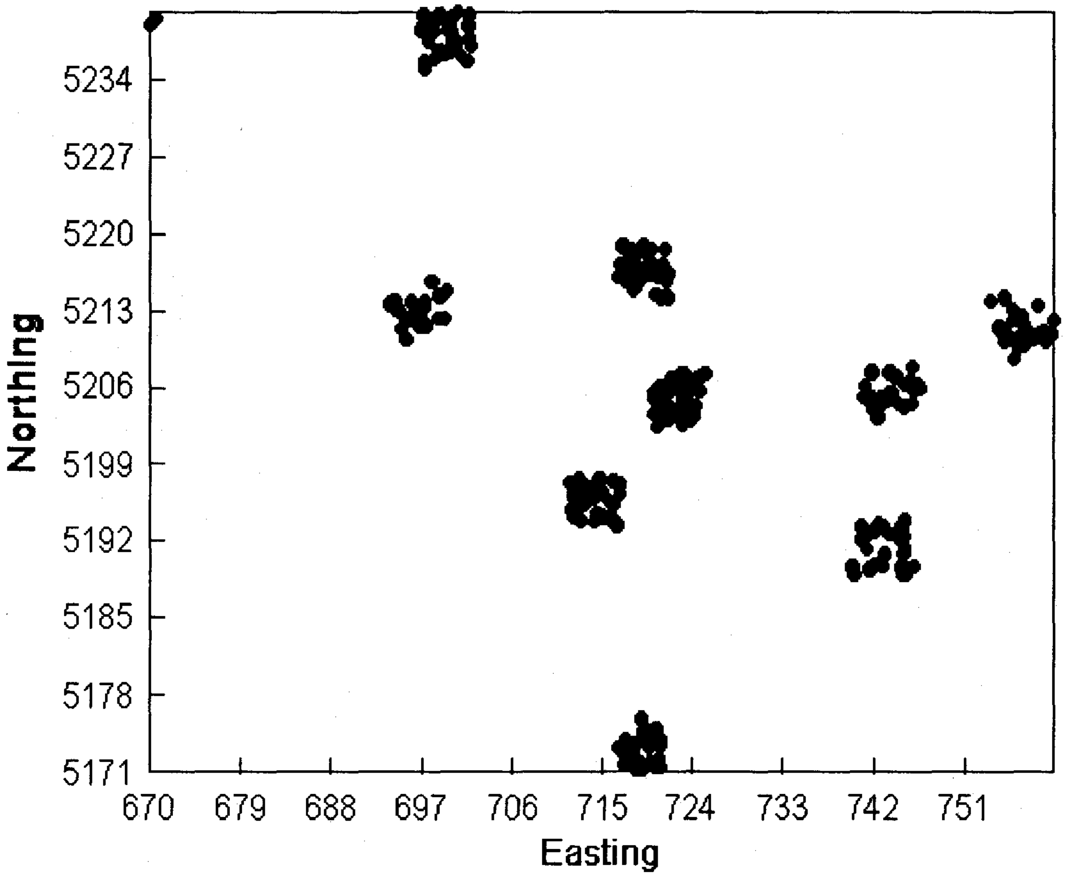
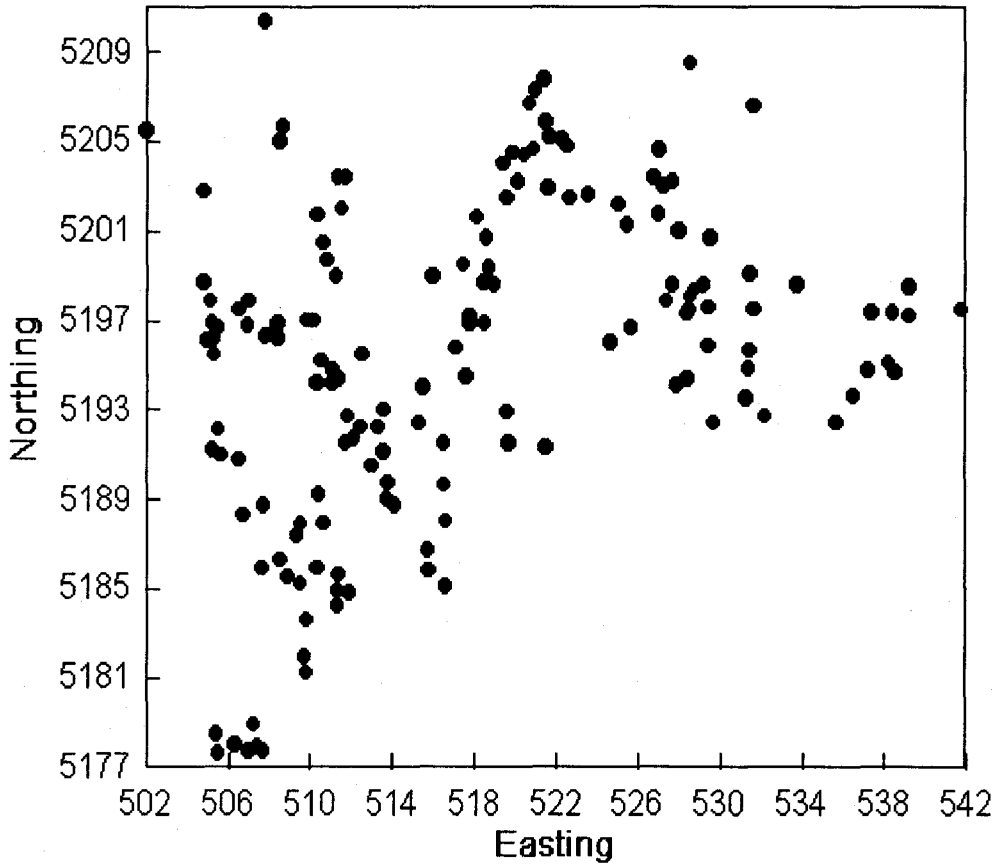


Figure 1-3 Location of the sampled lakes in the Sudbury region.



As we will be interested by lakes influenced by each others , the tables A-1, (given in **Appendix A** and regrouped in clusters for the Muskoka and Algoma regions and in East-West strips in the Sudbury region) provide the distances between lakes within each cluster; In these tables, interlake distances lower than **4**, **3** and **2** km (see **later** in this chapter for justification), respectively for the Muskoka, Algoma and Sudbury regions have been **shaded** as these criteria will be used later as a factor to eliminate some of the lakes due to spatial persistence.

1.2 Assessment of spatial and temporal persistence.

In a network devoted to detect trend **regionally**, the information contained in a sample is **not** completely **new**, as part of this information is also contained in synchroneous data gathered at other nearby stations (spatial correlation) , and spills over to the previous and next samples gathered at the same station (temporal correlation). Thus, a new sample may contain redundant information. Knowledge of both structures is essential for the estimation of the power of the trend detection network. As mentioned by **Loftis et al.** (Loftis, J.c., G.B.McBride and J.C.Ellis, 1991, "Considerations on the scale in water quality monitoring and data analysis". Water resources bulletin, 27-2:p.255-264):

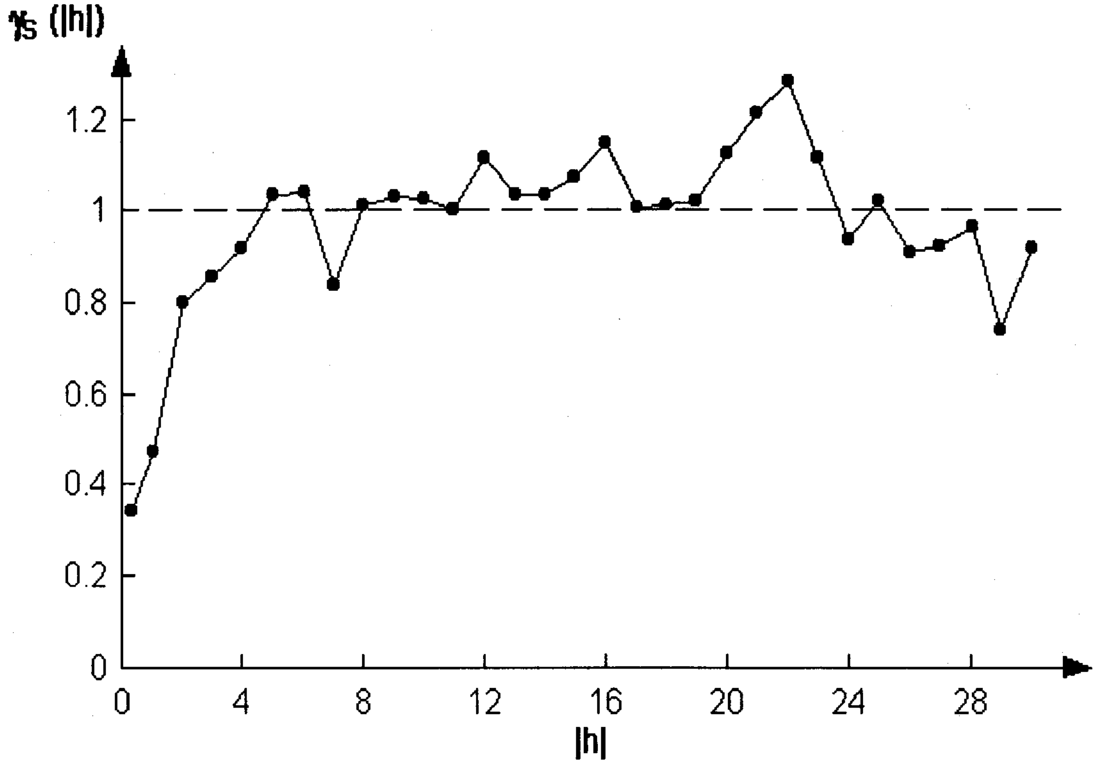
..."**The question of whether a given series of equally spaced observations are independent or serially correlated is scale dependent in many situations**"... This statement applies both to temporal and to spatial dependence. In the present report, scale plays an important role in determining the dependence of sampled observations. In the case of temporal dependence, it seems logical to accept that observations taken from the same lake of high flushing rate are independent when at least a full year separates them. It would be more hazardous to suppose that weekly observations are independent. In the case ot spatial dependence, the scale effect should also be taken into account to make sure that the conclusions drawn are pertinent. **Regional** trend detection implies working within a region where lakes might be spatially correlated. A spatial correlation between two lakes within the Sudbury region could be considered as important for a trend detection study at the scale of the whole Ontario Province, even more at the scale of the country (Canada), but it should be seen as only a normal **intrinsic** occurrence for the Sudbury region.
It is then quite normal that closeby lakes appear correlated within the same region, and it seems logical that this intrisic correlation would not affect the trend detection tests associated with this region. But in the case of the Muskoka and of the Algoma regions, the spatial correlation problem is looked at another scale. In these regions, sampled lakes were chosen within 10 km x 10 km **clusters** (called "plots"). The selection of lakes this close from each others brings inevitably higher correlations as the **intrinsic** regional correlations of the whole entitie. This "overweight"correlation between nearby lakes constitutes what will be called in this text "**spatial correlation**"in so far as it is closely **distance-related**.

1.2.1 Spatial persistence

The analysis of spatial data constitutes a branch of the statistics called **geostatistics**. One classical problem, called **Kriging** or optimal interpolation, deals with the evaluation of probable values at some place (with confidence levels) in a field, given only a few sampled points. The spatial persistence structure is studied using as tool the **variogram**, a graph very similar to the **autocorrelogram** in the temporal domain, where all pairs of sampled points are combined in lagged classes, according to their spatial distances (spatial lag). In the **Kriging**, the shape of this variogram is compared with shapes associated with theoretical models of decaying apatial memory (spherical, exponential, linear or random structures) and the recognized experimental structure is then used to evaluate values at unsampled points. In this application, we will only use this mathematical tool to assess the **extend** of **spatial** dependency.
The variogram is characterized by 3 values: the **nugget** corresponding to the intercept (the extension) of the variogram shape at lag 0 on the variance axis, i.e. the intrinsic variability related to very close measurements, the **sill** corresponding to the asymptotic level of the global variance of unrelated, far apart, points and the **range** which is the spatial **lag** where the variogram reaches this plateau of spatial independency. The difference level between the **sill** (standardized to 1 in the following example and in the table of results) and the **nugget** represents the part of the variability affected by **spatial persistence**. In our case, we will interpret the **range** as the distance within which samples contain some distance dependent common information.

Figure 4 presents a typical experimental standardized variogram (pH omnidirectional , Sudbury region, 1995) and the information it contains: the **range** is of about **6 km**, the **nugget** is of **0.35** and the spatial correlation coefficient **r**, obtained for **h=range/3** (here **h=2km**) is about **0.6**.

Figure 1-4 Typical standardized variogram (pH, Sudbury region, 1995)



When used for Kriging, the experimental variograms have to be identified with the shape of some theoretical models (spherical, exponential, Gaussian or Power, with or without nugget effects). This is not our purpose with this project as we are only looking for the **extend and magnitude** of possible spatial **redundancy**. In addition, we have also investigated the strength and extend of possible **spatial cross-correlation** between **parameters** within regions.

Tools used

To perform the variogram analyses, we have used **Variowin 2.2** (Pannatier, 1996), a very new Windows version of the classical **EPA** geostatistical software **GEOEAS** (Englund and Sparks,1981), which was working under the DOS operating system.

Spatial variability (for each parameter)

The following tables present the results gathered by region; **ns** means no spatial structure and **na** means that data were not available.

Table 1-1 Spatial structure for the Muskoka region.

Muskoka						
951	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	12	11	6	ns	ns	ns
nugget	0.6	0.6	0.7	--	--	--
R1 for r/3	0.4	0.3	0.3	--	--	--
931	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	12	9	5	6	ns	ns
nugget	0.7	0.6	0.5	0.7	--	--
R1 for r/3	0.7	0.7	0.6	0.8	--	--
slope1	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	ns	ns	4	ns	na	na
nugget	--	--	0.6	--	--	--
R1 for r/3	--	--	0.8	--	--	--

Table 1-2 Spatial structure for the Algoma region.

Algoma						
9512	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	6	6	6	7	7	7
nugget	0.3	0.1	0.1	0.3	0.6	0.6
R1 for r/3	0.4	0.3	0.3	0.6	0.8	0.8
8812	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	9	6	7	3	8	na
nugget	0.3	0.25	0.2	0.6	0.5	--
R1 for r/3	0.6	0.4	0.35	0.8	0.6	--
slope12	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	7	ns	ns	4	ns	na
nugget	0.7	--	--	0.6	--	--
R1 for r/3	0.85	--	--	0.8	--	--

Table 1-3 Spatial structure for the Sudbury region.

Sudbury						
9537	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	6	3	5	5	6	3
nugget	0.35	0.6	0.4	0.65	0.8	0.6
R1 for r/3	0.6	0.7	0.6	0.8	0.8	0.8
9137	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	4	3	3	3	5	ns
nugget	0.6	0.8	0.4	0.5	0.75	--
R1 for r/3	0.7	0.85	0.65	0.65	0.8	--
slope37	**pH**	**Alk**	**Basecations**	**SO4**	**DOC**	**NO2-3**
range	3	ns	3	3	ns	ns
nugget	0.7	--	0.65	0.8	--	--
R1 for r/3	0.8	--	0.85	0.9	--	--

In the Muskoka region, the **range** is large (up to 12 km) for some parameters; in the Algoma region, the maximum **range** is reduced to 9 km and in the Sudbury region, it is even smaller (6 km).
In the 3 regions, the **slopes** present very little spatial structure and the levels of the **nugget** is high as % of the total variance. Thus, this indirect secondary variate can be considered as completely **spatially uncorrelated**.

Taking the **worse case** situation of all parameters, years and variates, one can **conservatively** assess the spatial radius of influence to one third of the maximum range for the region and for the whole set of parameters:

In the Muskoka region, **4 km** with a spatial correlation coefficient of $\mathbf{r_1=0.7}$
In the Algoma region, **3 km** with a spatial correlation coefficient of $\mathbf{r_1=0.6}$
In the Sudbury region, **2 km** with a spatial correlation coefficient of $\mathbf{r_1=0.8}$

Spatial covariability between parameters

In order to assess the spatial covariability of the six selected parameters, we also used **Variowin 2.2** the **cross variograms** and the **lagged cross-correlations** between parameters.
The results are summarized at table 1-4:

Table 1-4 Spatial covariability between partameters.

Muskoka													
951	**pH**	**Alk**	**BaCa**	**SO4**	**DOC**	**NO23**	**931**	**pH**	**Alk**	**BaCa**	**SO4**	**DOC**	**NO23**
pH	--	0.80	0.45	0.18	-0.42	-0.03	**pH**	--	0.70	0.42	0.30	-0.42	0.02
Alk	11	--	0.63	0.12	-0.10	-0.08	**Alk**	5	--	0.52	0.01	-0.02	-0.10
BaCa	9	9	--	0.33	0.17	0.00	**BaCa**	8		--	0.25	0.25	0.05
SO4	9	8	9	--	-0.42	0.20	**SO4**	7	ns	7	--	-0.45	0.16
DOC	ns	10	ns	ns	--	-0.20	**DOC**	ns	ns	4	ns	--	0.03
NO23	ns	ns	ns	ns	ns	--	**NO23**	ns	ns	5	6	ns	--

Algoma													
9512	**pH**	**Alk**	**BaCa**	**SO4**	**DOC**	**NO23**	**8812**	**pH**	**Alk**	**BaCa**	**SO4**	**DOC**	**NO23**
pH	--	0.75	0.80	0.50	-0.27	0.40	**pH**	--	0.80	0.80	0.02	-0.10	na
Alk	7	--	0.90	0.54	-0.12	0.40	**Alk**	7	--	0.95	0.13	-0.03	na
BaCa	7	6	--	0.70	0.16	0.35	**BaCa**	7	8	--	0.35	0.18	na
SO4	8	8	7	--	0.00	0.35	**SO4**	6	ns	7	--	0.04	na
DOC	ns	ns	ns	ns	--	-0.35	**DOC**	ns	ns	ns	ns	--	na
NO23	ns	6	6	ns	5	--	**NO23**	na	na	na	na	na	--

Sudbury													
9537	**pH**	**Alk**	**BaCa**	**SO4**	**DOC**	**NO23**	**9137**	**pH**	**Alk**	**BaCa**	**SO4**	**DOC**	**NO23**
pH	--	0.65	0.70	-0.05	0.28	0.05	**pH**	--	0.70	0.75	0.00	0.30	0.05
Alk	6	--	0.95	-0.03	0.15	0.00	**Alk**	4	--	0.95	0.00	0.20	0.00
BaCa	6	4	--	0.17	0.20	0.03	**BaCa**	4	4	--	0.20	0.30	0.05
SO4	ns	ns	ns	--	-0.30	0.24	**SO4**	ns	ns	2	--	-0.05	0.00
DOC	5	6	6	ns	--	-0.23	**DOC**	7	6	8		--	-0.05
NO23	1	ns	ns	1	2	--	**NO23**	1	1	1	ns	1	--

On these tables, the upper right triangles presents the global level of correlation between the parameters, and the lower left triangles present the radius of influence (in km) of the more intimate relationships. The cells of the higher values are shaded and consistently demonstrate a close relationship between **pH** and **Alk, pH** and **BaCa**, **BaCa** and **Alk.** The **range** of influence, shown in the lower triangles are of the same order of magnitude as the **ranges** established in the previous section. The results for the slopes are more erratic, but nevertheless exhibit high values for the same combinations of parameters:

	Muskoka	Algoma	Sudbury
pH - Alk	0.45	0.52	0.27
pH -BaCa	0.50	0.22	----
Alk - BaCa	0.35	0.55	0.7
Alk - SO4	-0.40	-0.24	----
pH - SO4	-0.60	-0.45	-0.20
BaCa - SO4	----	----	0.50

Closing this section, one could add that, for more in-depth purposes, **the spatial tools** used here could certainly be re-used with success in analysing the spatial behaviour, when applied not on the totality of the lakes of each region as was done here, but on members of the different classifications of lakes related to their geology, volumes and other geophysical attributes and as such, add to the interpretation of the recovery of the lakes of the region...

1.2.2 Temporal persistence.

Even if the presence of temporal persistence seems unlikely in our case of samples taken once a year or once every two years on lakes with yearly turnover, statistical analyses were performed to ensure that this possible dependance has no significant effect on trend detection results.

A first analysis was performed in our **R3** report to determine the possible presence of temporal autocorrelation in the data obtained from the 3 regions. In this first analysis **(R3, table 86, page 37)** the correlation between pairs of years has been studied for the lakes of the Muskoka region. This analysis allows only to determine the maximum level of autocorrelation, because, as discussed in **R3** report, "......, this correlation contains a part related to the levels of the parameters of the lakes. A lake presenting, for a parameter such as pH, a level higher in 1990 than the bulk of the other lakes will probably have also higher values for the other years"
Thus the occurrence of very close values for two consecutive years seems more related to their origin from the same lake than to possible temporal persistence.

A second analysis performed for the Muskoka region, in the same report (R3, table 87, page 38) shows that the random sampling of a single value per lake (eliminating the possibility of temporal persistence) yields very similar results as the ones obtained by the use of all the data available for each lake.

Table **1-5** shows the comparison of the two analyses (1 value per lake **vs** all the values for each lake):

Table 1-5 Trend detection using regressions using one observation per lake vs using all observations for all lakes (Muskoka region).

			1 observation per lake					All observations for each lake		
Parameter	**n**	**RMSE**	**Slope**	**Estim. 1990**	**Estim. 1995**	**n**	**RMSE**	**Slope**	**Estim. 1990**	**Estim. 1995**
pH	232	0.46	0.1000	5.48	6.00	782	0.46	0.090	5.57	6.02
Conductivity	232	8.21	-1.1200	26.78	21.20	782	7.80	-1.270	27.08	20.74
Alkalinity	228	26.97	1.2100	16.93	23.00	772	29.00	0.900	19.96	24.46
Calcium	235	0.65	-0.1100	2.19	1.64	790	0.55	-0.120	2.22	1.60
Magnesium	235	0.20	-0.0290	0.63	0.48	790	0.18	-0.033	0.67	0.51
Potassium	235	0.12	0.0000	0.33	0.33	790	0.13	-0.002	0.34	0.33
Sodium	235	0.94	-0.0150	0.76	0.68	790	0.92	-0.032	0.81	0.65
Sulfate	235	2.01	-0.5300	7.04	4.37	790	1.73	-0.510	6.93	4.39
Silicate	235	1.23	0.1100	1.20	1.74	790	1.22	0.080	1.25	1.66
Chloride	235	1.62	-0.0010	0.46	0.46	790	1.54	-0.028	0.52	0.38
TIC	135	0.34	-0.0580	0.83	0.54	464	0.36	-0.015	0.65	0.58
DOC	204	3.13	0.0370	6.00	6.19	693	2.96	0.010	5.97	6.03
TKN	204	0.24	-0.0310	0.49	0.33	688	0.23	-0.020	0.47	0.35
NO2NO3	135	0.02	-0.0004	0.02	0.02	463	0.02	0.002	0.01	0.02
TN	69	0.12	n.a.	0.38	0.38	231	0.16	n.a.	0.40	0.40
NH3	135	37.71	-0.2400	31.83	30.64	464	36.55	-0.690	37.06	33.62
TP	204	9.14	-1.0600	13.12	7.82	690	11.48	-1.170	13.51	7.66
Shaded areas are associated to significant slopes at the 5% significant level.										

One can note that:

a/ The results related to trend significance are similar except for TIC and NO2NO3.
b/ The RMSE and location parameters (ordinate at the origin, slope, estimated values for 1990 and 1995) are consistent from one analysis to the other.

The similarities in results of these analyses allows the following important conclusions :

a/ The possible autocorrelation has a negligible effect on trend detection conclusions if lakes of the Muskoka region are sampled annually, bi-annually or tri-anually. As a consequence it is proper to use all the available years for regional trend detection.
b/ **In a network rationalisation scheme, the similarity in results suggests that the number of lakes sampled each year can be reduced and that a sufficient temporal trend detection power would be retained.**

Even though the analyses performed in previous reports tend to conclude to the absence of an autocorrelation effect on the conclusions of the trend detection analyses, no attempt has been performed to evaluate the significance of the first order autocorrelation coefficient in studied regions. The main reason for not estimating the first order autocorrelation coefficients was the short lengths of the series and the non-equidistance of the observations for the Muskoka and Algoma regions. However, an attempt is now performed with the data of the Sudbury region where equidistant observations are available during **6** consecutive years (1990-1995) for a group of **49** lakes. Three parameters are studied: pH, sulfates and alkalinity. Given the fact that trends affect the autocorrelation coefficient, the estimation of this parameter has been performed on **detrended** data.

Table 1-6 presents the Durbin-Watson (DW) statistics used to test the presence of a positive first order autocorrelation coefficient. Regretfully, this test is not recommended for short series and critical values are only tabulated for series larger than 14. Durbin-Watson statistics should only be regarded as **indicators** of the possible presence of autocorrelation. Given the small size of the series treated here (n=6), a significant autocorrelation can be suspected for Durbin-Watson statistics smaller than 1.0.

Table 1-6 Durbin-Watson statistics and estimated first order autocorrelation coefficient of simple linear for trend detection in the Sudbury region.

	pH	pH	Alkalinity	Alkalinity	SO4	SO4
Lac Number	DW Statistic	r1	DW Statistic	r1	DW Statistic	r1
2	1.99	-0.10	1.64	-0.12	1.80	-0.14
3	1.87	-0.05	2.24	-0.19	2.11	-0.24
5	1.56	-0.06	2.38	-0.32	2.15	-0.14
13	1.13	0.15	1.57	0.09	2.32	-0.20
16	1.98	-0.16	2.34	-0.32	1.46	0.09
17	1.02	0.22	1.41	0.19	2.32	-0.30
22	2.38	-0.28	2.45	-0.34	2.55	-0.40
197	3.10	-0.62	3.25	-0.66	1.44	0.04
199	2.66	-0.46	2.04	-0.21	2.48	-0.46
219	3.41	-0.73	3.27	-0.70	2.12	-0.15
225	1.52	-0.04	1.27	0.11	2.70	-0.50
240	1.52	-0.03	1.63	0.00	2.00	-0.16
247	2.11	-0.31	2.37	-0.39	3.15	-0.61
248	1.61	-0.05	2.08	-0.14	1.35	0.20
250	1.57	0.11	1.45	0.18	2.57	-0.47
251	2.70	-0.55	3.38	-0.75	1.39	0.13
254	2.73	-0.54	3.05	-0.58	3.19	-0.65
257	1.89	-0.23	1.86	-0.17	2.70	-0.50
258	1.31	0.12	1.26	0.17	1.44	0.09
259	1.30	0.05	1.27	0.05	2.23	-0.40
266	2.79	-0.49	3.20	-0.60	2.07	-0.22
268	2.24	-0.27	2.91	-0.49	3.47	-0.74
299	1.61	0.02	1.75	-0.05	1.15	0.26
316	1.36	0.13	2.23	-0.21	3.55	-0.81
333	2.56	-0.50	2.29	-0.30	1.90	-0.12

	pH	pH	Alkalinity	Alkalinity	SO4	SO4
Lac Number	DW Statistic	r1	DW Statistic	r1	DW Statistic	r1
338	2.14	-0.27	1.85	-0.07	2.67	-0.47
401	2.30	-0.34	2.92	-0.48	1.86	-0.11
402	1.93	-0.21	1.68	0.10	2.48	-0.33
403	1.52	-0.08	1.06	0.21	2.07	-0.15
404	2.11	-0.13	2.20	-0.13	3.07	-0.55
407	1.57	-0.11	1.50	0.14	2.91	-0.51
408	1.88	-0.20	1.38	0.15	3.21	-0.66
409	3.11	-0.65	2.85	-0.54	1.82	-0.09
410	3.10	-0.68	2.75	-0.50	2.57	-0.50
524	2.91	-0.47	2.99	-0.57	1.98	-0.24
527	2.17	-0.22	2.56	-0.32	2.57	-0.30
530	2.40	-0.24	2.52	-0.28	2.19	-0.11
583	1.28	0.11	1.64	0.06	2.90	-0.60
589	1.67	-0.10	2.19	-0.14	1.76	0.00
590	1.56	0.02	1.72	0.04	1.14	0.20
593	2.25	-0.36	2.03	-0.13	2.07	-0.21
856	2.95	-0.63	3.19	-0.67	2.33	-0.28
900	1.13	0.13	1.24	0.16	2.73	-0.37
902	2.47	-0.30	3.02	-0.56	2.39	-0.29
905	2.22	-0.38	2.05	-0.13	1.31	0.20
909	1.94	-0.24	2.19	-0.20	1.54	-0.01
920	1.07	0.18	1.45	0.11	1.78	-0.03
922	2.61	-0.50	2.32	-0.40	2.06	-0.16
932	1.33	0.08	2.68	-0.34	1.82	-0.02

Table 1-6 shows that no lake, for any parameter, exhibits a DW statistics lower than 1.0. Furthermore the estimators for the order-1 autocorrelation coefficients are quite often negative (76%, 69% and 82% of all cases for pH, alkalinity and sulfates respectively) and never larger than 0.26.

Even if the previous results have been obtained in the context of very short samples, they nevertheless enforce the validity of the hypothesis of **no temporal persistence**, for yearly or bi-yearly samplings. In face of these results and the actual unavailability of larger samples, we will in the following parts accept the hypothesis that temporal persistence has a **negligible** effect on the detection of trends, thus on the rationalisation of the network of lakes, and this, by extension, in the 3 regions.

1.3 Conclusions

In this chapter dealing with the spatio-temporal persitence of historical data, we have established or infered by induction:

Firstly, that **no** yearly temporal persistence existed.

Secondly, that **spatial** existence was **present**, but that the radius of influence where spatial persistence contains significant redundancy in information is limited to 4, 3 and 2 km for the Muskoka, Algoma and Sudbury regions. As a consequence, we have classified in **descending order** the lakes, in each cluster, for the Muskoka and Algoma regions and for the whole Sudbury region, according to the number of other lakes present in their radius of common information. It has been **verified** that this order was **almost** the same as if the **worse** lake was first identified, eliminated, and then the distances of the remaining lakes recounted to identify the second worse, an so on. This **caveat**, because it was at first believed that, given the fact that **one distance** affects **2** lakes **counts**, eliminating the first most close lakes, other nearby lakes could possibly have **biased** counts of proximity, which was not the case.

A synthesis of the result is given at in the **Appendix A-2** as Tables M-22/25, A-23/27 and S-24 , for the Muskoka and Algoma clusters and for the whole Sudbury region. The tables contain the name of the lake, the number of other lakes within their radius of influence, the classification criteria and the number of years the lake was sampled for further use.

CHAPTER 2

Sampling strategies

2.1 Statistical consideration about the CWS/LRTAP network.

The databank provided by the CWS presents several characteristics that must be taken into account in the rationalization process. First, and this is particularly true for the Algoma and Muskoka regions, lake selection wasn't done with a **completely random** sampling. As we see it, lake selection in the Algoma and Muskoka regions was conducted according to a simple **cluster** sampling: Random choice of 7 clusters (plots 5km x 5 km) in the Muskoka region and of 9 clusters in the Algoma region, followed by the selection of **all** lakes located in each of the clusters. This sampling method needs special variance estimators since the use of several units (lakes) spatially near from each others will usually **underestimate** the target population variance.

To better understand the consequences of such an historical sampling scheme, a short discussion on the target populations and on the sampled lakes will be presented:
In the present report, three regions are studied. These regions are all located in (or in the vicinity) of what is called **Northern Ontario**. Collectively, they could be used to assess the detection of regional trend for Northern Ontario, globally speaking . The **target** population could then be: **all small lakes in Northern Ontario,** but the selection of lakes at three sites located near Sault Ste. Marie, Sudbury and Hunstville would surely underestimate the target population variance and probably be biased for level parameters (means and trend slopes) since no lake would be sampled between Sault Ste. Marie, Manitoba and the north of Thunder Bay..

If the three studied sites are to be used globally to produce a **regional** trend detection, the target population should be: **all small lakes located in Ontario between Sault Ste. Marie and the Algonquin Provincial Park**. The three sites cover a good part of the region defined above and should give **unbiased** estimates for level parameters (means and trend slopes). However, special care must be taken to the variance estimates since lakes are grouped at only three sites, with probably less variability than in the target population. In addition, in two of these three sites, the lakes are grouped within plots, with probably less variability than in their complete respective regions.

The three sites could also be studied **separately** :

1/ Given the presence of lakes well scattered in the Wanapitei study area (50 km North of Sudbury), the target population can then be defined as: **all small** (to be quantified..) **lakes located in an area of approximately 30km by 30 km: 900 km^2**. The goal of a **regional trend** detection would **then** be to evaluate the statistical significance of changes in this area for different chemical parameters. Although the conclusion of a regional trend detection analysis does not allow to draw conclusions for **individual** lakes, **regional** trend detection can be quite useful when long enough time series are **not available** for individual lakes. The use of several lakes regionally **compensates**, in part, for the shortness of temporal series: one is **trading** the lack of **one** long time series at an **individual** site which could give significant trend detection results, for **shorter multiple** regional stations. As the selected lakes cover the complete region, their mean values and variances should be unbiased estimators of the **target** population mean and variance.

2/ The 7 plots of the Muskoka region are located in an area of approximately 3000 km^2. The target population is then defined as: **all small lakes** (to be quantified..) **in that area**. Inside the region, lakes are selected according to a simple cluster sampling. Spatial correlation analysis shows that lakes spatially close tend to be more correlated than lakes far apart. Thus, the **original** sampling plan tend to **underestimate** the target population variance and let trend detection tests conclude **too often** that a (significant) trend exists for the target population. This should be taken into account in regional trend detection at this site.

3/ The 9 plots of the Muskoka region are located in an area of approximately 2000 km^2. The target population is then defined as: **all small lakes** (to be quantified..) **in that area**. Inside the region, lakes are selected according to a simple cluster sampling. Spatial correlation analysis shows that lakes spatially close tend to be more correlated than lakes far apart. Thus the **original** sampling plan tend to **underestimate** the target population variance and let trend detection tests conclude **too often** that a (significant) trend exists for the target population. This should be taken into account in regional trend detection at this site.

The rationalization strategies and optimization will be done according to site characteristics and the following working hypotheses.

1/ No temporal autocorrelation on a yearly basis sampling

2/ Spatial correlation is present and its effect should be considered in order to evaluate the possible effect of selecting several lakes too close together.

3/ Variance stationarity in time (years added would not increase or decrease the variance around the trend slope : RMSE).

4/ Eventual trends are monotonic.

5/ Lakes sampled must be chosen from the already sampled lakes. No new lakes can be added.

2.2 Historical sampling

In the past, **260, 253 and 161** lakes have been sampled in the Muskoka, Algoma and Sudbury regions, for a total of **674** lakes, but not on a yearly basis. The sampling effort was averaging 331 lakes a year between 1990 and 1994, and 646 lakes a year in 1995-96. The purpose of the rationalisation is to reduce this number to the order of magnitude of **200**, while **minimizing the loss in trend power detection**, taking into consideration the information contained in the already acquired data. From the previous chapter and our **R3 report** (**Tables 91, 92 and 93, pages 44 and 45**), it was found that the lakes of the Sudbury region exhibited the largest spatial variability (see **MS lake** vs **MS year** , in the tables), the lowest radius of influence, and in addition, the longest sampled series. At the opposite, the Muskoka and Algoma regions are showing the largest redundancy in information related in part to the historical choice to sample lakes within 5 km **clusters** (so called "**plots**"). For this reason these two regions are the more likely **candidates** for lake number reduction without losing much information.

2.3 Strategies

Regional sampling provides different types of information:

- Synchroneous measurements provide a **spatial picture** of the region.
- Successive measurements of the same lakes of a region allow to determine the hydro-meteorological characteristics with time. We will call this information the **"year"**effect.
- Long term trend and its associated detection power is related to the length of the sampled series and to the information content of the data.

In this situation, 2 broad classes of strategies can be considered:

- The sampling of **one region each year**, with a return **after 3 years.**

This strategy gives a detailed spatial picture of the region every 3 years, with lots of spatial redundancy, especially in the Muskoka and Algoma regions, misses the "year"effects for the non-sampled, intermediary years. As a consequence, a regional diagnostic regarding the recovery can only be performed every 3 years for a particular region.

- The sampling of every region each year, but only with a limited number of lakes; different lakes being sampled each year on a **regularly rotating basis**. In this scheme, the lakes sampled in a region **for a particular year** should be chosen to be as **independent** (far apart) from each other as possible: For the same region, the lakes chosen for the next year will be different from the first set and also chosen to be as dispersed as possible and so on until the sampling returns to the first set.

This scheme presents a logistical difficulty with a yearly sampling program involving all the 3 regions during the short duration of the fall turnover. As the sampling is performed by helicopter, this drawback seems not unsurmontable in practice and is disregarded in view of the following advantages:

It surveys completely the "year"effect and gives a good evaluation of the time trajectory of the regions. It exploits the long series of the Sudbury region and monitors the evolution of the high variability of this region. **Selecting dispersed lakes within clusters** in the Muskoka and Algoma regions will limit the acquisition of redundant information and allow yearly trend diagnostics.

CHAPTER 3

Power analysis of sampling strategies

3.1 The independent case.

The power analysis in the independent case is performed to show the detectable amplitude in the best possible situation (no spatial correlation effect). This power analysis allows the selection of an adequate sampling strategy which can **then** be studied for the influence of spatial correlation.
The **power analysis** was performed mainly to determine :

- the number of lakes needed at each site;
- the time of sampling of those lakes at each site;

with the detection of global trends of 0.5σ, 9 times out of 10 as a goal. Power tables are presented for each of the three sites. These tables, (3 for each region **with alternate strategies**) are located at the **Appendix A-3** and they present:

- the detectable trend amplitudes for power of 90% with the already sampled lakes up to 1995 and 1996.
- the detectable trend amplitudes over the next decade.

The definitions of the column contents are the following:

Column 1 : Number of lakes; it presents the number of lakes to be sampled after 1996 after rationalization. For years 1995 and 1996, the detectable trends amplitudes are calculated with the real number of sampled lakes (1995: 260 for Muskoka, 253 for Algoma and 159 for Sudbury; 1996: 226 for Muskoka, 239 for Algoma and 156 for Sudbury).

Column 2 : Year; it presents the year to which the detectable trend amplitudes correspond.

Column 3 : Denominator; it presents the value of :

$$\sum (X_i - X_{mean})^2$$

where X_i represents the ith sampled year and X_{mean} represents the mean of the sampled years. The summation is done for all sampled years and all lakes. For the same sampled years, two "independent" lakes would then contribute the same value to the denominator. The addition of lakes increases the denominator and decreases the detectable trend amplitude. For example, lakes sampled in 1994, 1995 and 1996 have a denominator of 2 ($1^2+0^2+1^2$), and 200 "independent" lakes sampled in 1994, 1995 and 1996 have a denominator of 400.

Since detectable trend amplitudes with 90% power are obtained by:

$$\Delta^2 = \frac{10.89\sigma^2}{\sum (X_i - X_{mean})}$$

one can easily see the importance of having more sampled lakes in order to decrease the detectable trend amplitude.

Column 4: Annual relative amplitude (Δ/σ); it presents the annual trend amplitudes which can be detected with a power of 90%. These "unitless" trend amplitudes are discussed in terms of "number of σ". For example, 0.01 in column 4 means that a trend of 0.01σ per year can be detected 9 times out of 10. The term **relative** is associated to the presence of σ in the trend amplitude while the term **annual** is associated to the **"per year"**, in the trend amplitude.

Column 5: Global relative amplitude (Δ/σ); it presents the global trend amplitudes which can be detected with a power of 90%. These "unitless" trend amplitudes are discussed in term of "number of σ". For example, 0.5 in column 5 means that a trend of 0.5σ for the **complete** sampled period can be detected 9 times out of 10. The term **relative** is associated to the presence of σ in the trend amplitude while the term **global** is associated to the **"complete sampled period"** in the trend amplitude.

Column 6: Annual absolute trend pH (Δ); it presents the annual trend amplitudes which can be detected with power 90% for pH. These trend amplitudes are presented in pH units and are obtained by replacing σ by the RMSE obtained in the regional trend detection analyses of **Report R3.** For example, 0.01 in column 6 means that a trend of 0.01 unit of pH per year can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude, while the term **annual** is associated to the **"per year"** in the trend amplitude.

Column 7: Annual absolute trend Alkalinity (Δ); it presents the annual trend amplitudes which can be detected with power 90% for alkalinity. These trend amplitudes are presented in ppm and are obtained by replacing σ by the RMSE obtained in the regional trend detection analyses of **Report R3** . For example, 0.01 in column 7 means that a trend in alkalinity of 0.01 ppm per year can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude while the term **annual** is associated to the **"per year"** in the trend amplitude.

Column 8: Annual absolute trend Basecat (Δ); it presents the annual trend amplitudes which can be detected with power 90% for base cations. These trend amplitudes are presented in ueq/L and are obtained by replacing σ by the RMSE obtained in regional trend detection analyses performed for

this report. For example, 0.01 in column 8 means that a trend of 0.01 ueq/L per year can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude while the term **annual** is associated to the **"per year"** in the trend amplitude.

Column 9: Annual absolute trend Sulfates (Δ); it presents the annual trend amplitudes which can be detected with power 90% for sulfate concentrations. These trend amplitudes are presented in ppm and are obtained by replacing σ by the RMSE obtained in the regional trend detection analyses of report R3. For example, 0.01 in column 9 means that a trend of 0.01 ppm per year can be detected 9 times out of 10. The term absolute is associated to the absence of σ in the trend amplitude while the term annual is associated to the **"per year"** in the trend amplitude.

Column 10: Global absolute trend pH (Δ); it presents the **global** trend amplitudes which can be detected with power 90% for alkalinity. These trend amplitudes are presented in ppm and are obtained by replacing σ by the RMSE obtained in the regional trend detection analyses of report R3. For example, 0.01 in column 10 means that a trend of 0.01 ppm for the complete sampled period can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude while the term **global** is associated to the **"complete sampled period"** in the trend amplitude.

Column 11: Global absolute trend Alkalinity (Δ); it presents the **global** trend amplitudes which can be detected with power 90% for pH. These trend amplitudes are presented in pH units and are obtained by replacing σ by the RMSE obtained in the regional trend detection analyses of **Report R3.** For example, 0.01 in column 6 means that a trend of 0.01 unit of pH for the complete sampled period can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude while the term **global** is associated to the **"complete sampled period"** in the trend amplitude.

Column 12: Global absolute trend Basecat (Δ); it presents the global trend amplitudes which can be detected with power 90% for the basecations. These trend amplitudes are presented in ueq/L and are obtained by replacing σ by the RMSE obtained in regional trend detection analyses performed for the **present report**. For example, 0.01 in column 12 means that a trend of 0.01 ueq/L for the complete sampled period can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude while the term **global** is associated to the **"complete sampled period"** in the trend amplitude.

Column 13: Global absolute trend Sulfates (Δ); it presents the global trend amplitudes which can be detected with power 90% for sulfate concentrations. These trend amplitudes are presented in ppm and are obtained by replacing σ by the RMSE obtained in the regional trend detection analyses of **Report R3.** For example, 0.01 in column 13 means that a trend of 0.01 ppm for the complete sampled period can be detected 9 times out of 10. The term **absolute** is associated to the absence of σ in the trend amplitude while the term **global** is associated to the **"complete sampled period"** in the trend amplitude.

Nine power tables are presented in the **independent case**: three tables for each site. For the Muskoka and Algoma sites, three power tables **(Tables M-26 to M-28 and A-28 to A-30** in **Appendix A-3)** present three **possible** strategies :

#1/ Sampling of 180, 195 and 210 lakes once every three years;

#2/ Sampling of 30, 40 and 50 lakes per year on a three year cycle;

#3/ Sampling of 60, 65 and 70 lakes per year on a three year cycle.

Strategy **#1** corresponds to a **round robbin** global strategy and present three possible choices for the number of lakes. Strategies **#2** and **#3** correspond to **split sampling** strategies and present six choices for the number of lakes.

For the Sudbury sites, the three power tables **(Tables S-25 to S-27 in Appendix A-3)** also present three possible strategies :

#1/ Sampling of 130, 140 and 150 lakes once every three years;

#2/ Sampling of 40, 45 and 50 lakes per year on a three year cycle;

#3/ Sampling of 60, 65 and 70 lakes per year on a two year cycle.

Strategy **#1** corresponds to a **round robbin** global strategy and present three possible choices for the number of lakes. Strategies **#2** and **#3** correspond to **split sampling** strategies and present two possible **cycles** and three choices for the number of lakes in each cycle.

3.2 Choice of an "optimal" strategy.

The optimization of the sampling strategy is done using both **qualitative** and **quantitative** criteria. The criteria are :

- **Maintain** a global trend detection **power of 90%** for trends of amplitude **0.5σ**;
- **Decrease** as much as possible the **redundant information** introduced by lake **plots**;
- **Increase** the number of lakes in sites showing **high variability**;

The money criteria will not be discussed since the **cost** of acquiring a new sample is **practically** the same for all sites. The other criteria should be optimized: Having the most adequate information for regional trend detection at the least possible cost (sampling effort).
The constraints are :

- Only lakes **already** sampled will be sampled in the future (**no new lake**);
- High **redundancy** of information for lakes located within the same plots, at the Algoma and Muskoka sites

3.2.1 Muskoka site.

Tables M-26, M-27 and M-28, in the Appendix A-3, present the sampling strategies for the Muskoka site. The **round robbin** strategy allows to increase power (decrease the detectable trend amplitude) more quickly than the **split sampling** strategy for the same number of sampled lakes **on a three year basis**: For 180 lakes we can detect a global trend of **0.038σ** as soon as **1997** for the first strategy, while reaching only **0.039σ** in **1998** for the second one. However, this gain for the Muskoka site is obtain at the expense of the other sites which will have to wait **one** or **two** years to be sampled. The gain for the Muskoka region is only due to the fact that the power tables are produced with the arbitrary choice of sampling **Muskoka first**.

The choice between **round robbin** and **split sampling** strategies appear quite simple for the Muskoka site. Given the following facts:

- **Very little** power detection **gain**, if any, can be achieved by the selection of a **round robbin** strategy.
- The high level of expected **redundancy** between lakes of the same plots points towards the selection of only few lakes per plot (hard to achieve in a **round robbin** strategy);
- The **split sampling** strategy allows an annual **follow-up of trends**; identification of **"special"** high or low years;
- **Both** sampling strategies allow to maintain a **90% power** to detect trend amplitudes of 0.5σ.

we thus believe that the **split sampling** strategy is **by far** the most **appropriate** strategy for regional trend detection in the Muskoka site.

Concerning the selection of the **number of lakes** sampled per year, an optimum is more difficult to obtain. In fact, a sampling strategy of as less as **30** lakes sampled per year would **still allow** to detect a trend of 0.5σ with a 90% power in the case of **complete spatial independence**. However we believe that the presence of **spatial** correlation forces the selection of **more** lakes, as "independent" as possible to maintain the detection of 0.5σ with a 90% power in a **dependent** case. Given the presence of spatial correlation **(discussed in more details in section 3.4.1)**, we believe that approximately **60 lakes per year** should allow to maintain the detection of a 0.5σ with a 90% power in our **dependent** case. We also believe that the selection of more than 60 lakes per year would force the selection of **even** more redundant lakes with **equal** cost but not much **new** information.

3.2.2 Algoma site.

Tables A-28, A-29 and A-30, in the Appendix A-3, present the sampling strategies for the Algoma site. Given the similarities between the Muskoka and Algoma sites, the choice between **round robbin** and **split sampling** strategies is the same for both sites. Given the same facts than in the Muskoka site:

- Very little power detection gain, if any, can be achieved by the selection of a round robbin strategy.

• The high level of expected redundancy between lakes of the same plots points towards the selection of only few lakes per plots (hard to achieve in a round robbin strategy);
• The split sampling strategy allows an annual follow-up of trends; identification of particularly high or low years;
• Both sampling strategies allow to maintain a 90% power to detect trend amplitudes of 0.5σ.

we believe that the split sampling strategy is by far the most appropriate strategy for regional trend detection in the Algoma site.

Like for the Muskoka region, an optimum is difficult to obtain for the selection of the number of lakes sampled per year. Once again, a sampling strategy of as less as 30 lake sampled per year would allow to detect a trend of 0.5σ with a 90% power in a completely independent case. However we believe that the presence of spatial correlation forces the selection of more lakes, as "independent" as possible, to maintain the detection of 0.5σ with a 90% power in a dependent case. Given the presence of spatial correlation (discussed in more details in **section 3.4.1**) we believe that approximately 60 lakes per year should allow to maintain the detection of a 0.5σ with a 90% power in our dependent case. We also believe that the selection of more than 60 lakes per year would force the selection of more redundant lakes with equal cost but not much new information.

The selection of 60 lakes per year in the Algoma site corresponds to approximately 7 lakes per plot, while the selection of 60 lakes per year in the Muskoka site corresponds to approximately 9 lakes per plot. Given the similar plot size for all plots and the similar variability from plot to plot (see for example our **Report R3, p.43**: similar RMSE from plot to plot for regional trend detection with only plot 5 showing a possible greater variability), we suggest the selection of **equal sample size** in each plot.

3.2.3 Sudbury site.

Tables S-25, S-26 and S-27, in the Appendix A-3, present the sampling strategies for the Sudbury site. For this site, the lakes aren't grouped into small plots and the spatial correlation is less important than the other sites. Nevertheless, the following facts :

• Very little power detection gain, if any, can be achieved by the selection of a round robbin strategy.
• The split sampling strategy allows an annual follow-up of trends; identification of particularly high or low years;
• Both sampling strategies allow to maintain a 90% power to detect trend amplitudes of 0.5σ;

show that a **split sampling** strategy is the **most appropriate** strategy for regional trend detection in the Sudbury site.

Like for the Muskoka and Algoma regions, an optimum is difficult to obtain for the selection of the number of lakes sampled per year. Past reports show that less trends are detected in the Sudbury site. A higher variability between lakes being part of the problem, the selection of more lakes for this site should be envisaged in order to balanced for this higher variability. Unfortunately, the number of lakes already sampled in the Sudbury region is smaller than in the Algoma and Muskoka sites so it's impossible to sample more than 53 lakes per year on a three year cycle. Given this fact, we suggest to use a strategy of sampling lakes on a **two year cycle** in the Sudbury region rather than on a **three year** cycle like in the Algoma and Muskoka sites.

On a two year cycle, table S-26 shows the detectable trend amplitudes for sample sizes of 60, 65 and 70 lakes per year. The small gain in power from the addition of 10 lakes (from 60 to 70 lakes per year) being quite small in practice (for example, the global trend amplitude detectable with a 90% power will be 0.363σ in year 2000 with 60 lakes per year compared to 0.349σ for the same year with 70 lakes per year). Thus, we suggest to sample 60 lakes per year on a two year cycle in the Sudbury site.

3.3 Selected sampling strategy.

We propose the following sampling strategy :

- **63** lakes sampled (9 per plot) per year on a **three** year cycle in the **Muskoka** site ;
- **63** lakes sampled (7 per plot) per year on a **three** year cycle in the **Algoma** site;
- **60** lakes sampled per year on a **two** year cycle in the **Sudbury** site;

This strategy ensures a **follow-up** for 498 lakes with the following break-down :

- A follow-up for **72.7%** of 260 lakes previously sampled in the Muskoka region;
- A follow-up for **74.7%** of 253 lakes previously sampled in the Algoma region;
- A follow-up for **74.5%** of 161 lakes previously sampled in the Sudbury region;

Furthermore, this sampling strategy requires only **183** lakes to be sampled each year. However, this strategy solely oriented towards regional trend detection may not be optimal for other purposes. Fortunately, the small number of lakes sampled each year in the chosen strategy in comparison with previous sampling strategies allow the CWS to increase the selected sample sizes to meet other needs.

3.4. Further developments for the selected sampling strategy.

3.4.1 Discussion on spatial correlation.

The presence of spatial correlation for lakes inside the same plots in the Muskoka and Algoma regions affects variance estimators. Two different way to see the effect of spatial correlation on the variance estimators arrive to similar conclusions. First, developments associated to water quality networks (**Sherwani and Moreau,** "Strategies for water quality monitoring",**1975**) arrive to the conclusion that n spatially correlated observations correspond to a smaller number of independent observations called "**effective**" number of observations (n*). The relation between n and n* is obtained by :

$$\frac{n}{n*}=(1+\rho(n-1))$$

where ρ is the mean correlation coefficient for the sampled lakes.

The second way to look at the effect of spatial correlation on the variance estimators comes from classic statistical sampling techniques textbook. **Cochran** ("Sampling techniques", p. 241, 1977) presents in section 9.4 the variance of the mean in a single-stage cluster sampling in terms of intracluster correlation as :

$$Var(\bar{y})=\frac{1-f}{n}.\frac{NM-1}{M^2(N-1)}S^2(1+(M-1)\rho)$$

and

$$Var(\bar{y})\doteq\frac{1-f}{nM}S^2(1+(M-1)\rho)$$

and concludes that, in terms of variance estimators for the mean, the difference between a simple random sampling of **nM** elements and a single-stage cluster sampling with **n** clusters of size **M** is the multiplication factor :

$$(1+(M-1)\rho)$$

The results of these two approaches bring us to the conclusion that the variance estimators used in trend detections analyses should be obtained by using the **effective number of observations** instead of n (number of dependent observations). In a way similar to **Lettenmaier (1976)**, we should, by analogy, evaluate the power of the regional trend detection network with **effective** number of observations instead of n.

Both approaches also are in concordance with our hypotheses :

- Lakes from different clusters must be seen as independent;
- The effect of spatial correlation should be significant for lakes located in the same cluster.

Table 3.1 presents the **effective number of independent observations** for values of mean correlation coefficient (ρ) ranging from 0.0 to 0.9. This table shows that for high mean correlation coefficient ($\rho>0.3$) the effective number of observations can not be higher than 2 independent lakes what ever the actual number of sampled lakes.

Table 3.1 : Effective number of independent observations for mean correlation coefficients from 0.0 to 0.9.

# of lakes	r=0.0	r=0.1	r=0.2	r=0.3	r=0.4	r=0.5	r=0.6	r=0.7	r=0.8	r=0.9
1	1	1	1	1	1	1	1	1	1	1
2	2	1.8	1.7	1.5	1.4	1.3	1.3	1.2	1.1	1.1
3	3	2.5	2.1	1.9	1.7	1.5	1.4	1.3	1.2	1.1
4	4	3.1	2.5	2.1	1.8	1.6	1.4	1.3	1.2	1.1
5	5	3.6	2.8	2.3	1.9	1.7	1.5	1.3	1.2	1.1
6	6	4	3	2.4	2	1.7	1.5	1.3	1.2	1.1
7	7	4.4	3.2	2.5	2.1	1.8	1.5	1.3	1.2	1.1
8	8	4.7	3.3	2.6	2.1	1.8	1.5	1.4	1.2	1.1
9	9	5	3.5	2.6	2.1	1.8	1.6	1.4	1.2	1.1
10	10	5.3	3.6	2.7	2.2	1.8	1.6	1.4	1.2	1.1
20	20	6.9	4.2	3	2.3	1.9	1.6	1.4	1.2	1.1
30	30	7.7	4.4	3.1	2.4	1.9	1.6	1.4	1.2	1.1
40	40	8.2	4.5	3.1	2.4	2	1.6	1.4	1.2	1.1
50	50	8.5	4.6	3.2	2.4	2	1.6	1.4	1.2	1.1
60	60	8.7	4.7	3.2	2.4	2	1.6	1.4	1.2	1.1
70	70	8.9	4.7	3.2	2.4	2	1.7	1.4	1.2	1.1
80	80	9	4.8	3.2	2.5	2	1.7	1.4	1.2	1.1
90	90	9.1	4.8	3.2	2.5	2	1.7	1.4	1.2	1.1
100	100	9.2	4.8	3.3	2.5	2	1.7	1.4	1.2	1.1

The results of **section 1-2-1** clearly showed the presence of spatial correlation for lakes inside the same plot. Although the spatial correlation appears to be very high for some parameters, we believe that the effect of spatial correlation on regional trend detection is mitigated by the following facts:

- the spatial correlation is lower when **trend slopes** rather than **level values** are used to construct variograms;
- the intrinsic correlation between lakes of the same site is included in spatial correlation even if it's **not** distance-related.

In addition, the effect of spatial correlation can be reduced by lake selection. Lakes as **far apart** as possible should be used for (yearly) monitoring, in plots from the Algoma and Muskoka sites. The chosen sampling strategy allow to maximize distances between sampled lakes since only 7 or 9 lakes are sampled by plot. **Table 3.1** also showed that in presence of spatial correlation, the choice of 7 or 9 lakes is associated to an **effective number of independent observations** almost equivalent to much larger sample sizes. For example, given a mean correlation coefficient of 0.2 , 9 dependent lakes are equivalent to 3 independent lakes while 30 dependent lakes are equivalent to 4 independent lakes; meaning that the cost of **21 additional dependent** lakes is associated to the information of **one additional independent** lake.

The **complementary** analyses performed in this report suggest that the effect of **spatial correlation** should lead to a **review** of the results associated to the **significance of some regional trend detected in the Algoma and Mukoka** regions (**Report R-3**). Thus, this problem should be revisited in view of the new information (**section 1.2.1**) contained in the present report.

CHAPTER 4

Rationalisation

4.1 Selected sampling effort

According to the results of the previous chapter related to the trend detection power of the future network, the selected sampling effort is the following:

- In the Muskoka region: selection of **9** lakes in each plot **(7)** to be sampled each year **(63** lakes), on a rotating basis of **3** years , for a total of **189** lakes.
- In the Algoma region: selection of 7 lakes in each plot **(9)** to be sampled each year **(63** lakes), on a rotating basis of **3** years , for a total of **189** lakes.
- In the Sudbury: selection of **60** lakes to be sampled each year, on a rotating basis of **2** years , for a total of **120** lakes.

Globally, a total of 189 + 189 + 120 = **498** lakes will be monitored, to be compared with the actual total of **672** lakes, i.e. a reduction of **74%** without notable loss of power.

The **tables 4.1, 4.2 and 4.3** present for each site and for the selected lakes groupings, the historical and future (next decade) numbers of lakes monitored and its effects on the denominator (See: **section 3.1, column 3**) which controls the **detection power**. As a consequence, given the chosen sampling strategy, we can estimate the **global detectable trend amplitude** with power **90%** for all **17** measured parameters plus base cations. **Table 4.3** presents such global amplitudes for all **18** parameters in the three sites, while **table 4.4** presents annual detectable trend amplitude with power **90%** for all **17** measured parameters plus basecations.

Table 4.1 : Presentation of denominator approximation for actual sampling and for the next decade for the selected sampling strategy in the Muskoka region.

Possible combinations of sampled years.														Denominator	Number of lakes associated with the combinations at the left for a given year.										
90	91	93	95	96	97	98	99	00	01	02	03	04	05	for 1 lake	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
		93	95											2,0	29	29	29	29	29	29	29	29	29	29	29
90		93	95											12,7	134	5	5	5	5	5	5	5	5	5	5
90	91	93	95											14,8	97	0	0	0	0	0	0	0	0	0	0
90	91	93	95	96										26,0	0	97	66	35	4	4	4	4	4	4	4
90		93	95	96										21,0	0	129	97	65	33	33	33	33	33	33	33
90	91	93	95	96	97									39,3	0	0	31	31	31	0	0	0	0	0	0
90		93	95	96	97									30,8	0	0	32	32	32	0	0	0	0	0	0
90	91	93	95	96		98								46,8	0	0	0	31	31	31	0	0	0	0	0
90		93	95	96		98								37,2	0	0	0	32	32	32	0	0	0	0	0
90	91	93	95	96			99							56,0	0	0	0	0	31	31	31	0	0	0	0
90		93	95	96			99							45,2	0	0	0	0	32	32	32	0	0	0	0
90	91	93	95	96	97			100						73,7	0	0	0	0	0	31	31	31	0	0	0
90		93	95	96	97			100						58,8	0	0	0	0	0	32	32	32	0	0	0
90	91	93	95	96		98			101					90,9	0	0	0	0	0	0	31	31	31	0	0
90		93	95	96		98			101					73,5	0	0	0	0	0	0	32	32	32	0	0
90	91	93	95	96			99			102				110,9	0	0	0	0	0	0	0	31	31	31	0
90		93	95	96			99			102				90,8	0	0	0	0	0	0	0	32	32	32	0
90	91	93	95	96	97			100			103			135,9	0	0	0	0	0	0	0	0	31	31	31
90		93	95	96	97			100			103			111,4	0	0	0	0	0	0	0	0	32	32	32
90	91	93	95	96		98			101			104		164,0	0	0	0	0	0	0	0	0	0	31	31
90		93	95	96		98			101			104		135,4	0	0	0	0	0	0	0	0	0	32	32
90	91	93	95	96			99			102			105	195,9	0	0	0	0	0	0	0	0	0	0	31
90		93	95	96			99			102			105	162,9	0	0	0	0	0	0	0	0	0	0	32
															3186	5352	6079	7243	8948	10911	13437	16598	20208	24457	29397
															Denominator for a given year										

Table 4.2 : Presentation of denominator approximation for actual sampling and for the next decade for the selected sampling strategy in the Algoma region.

Possible combinations of sampled years.														Denominator	Number of lakes associated with the combinations at the left for a given year.										
88	**92**	**94**	**95**	**96**	**97**	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**for 1 lake**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
88	92	94	95											28,8	236	0	0	0	0	0	0	0	0	0	0
88			95											24,5	17	14	14	14	14	14	14	14	14	14	14
88			95	96										38,0	0	3	3	3	3	3	3	3	3	3	3
88	92	94	95	96										40,0	0	236	173	110	47	47	47	47	47	47	47
88	92	94	95	96	97									53,3	0	0	63	63	63	0	0	0	0	0	0
88	92	94	95	96		98								60,8	0	0	0	63	63	63	0	0	0	0	0
88	92	94	95	96			99							70,0	0	0	0	0	63	63	63	0	0	0	0
88	92	94	95	96	97			100						87,7	0	0	0	0	0	63	63	63	0	0	0
88	92	94	95	96		98			101					104,9	0	0	0	0	0	0	63	63	63	0	0
88	92	94	95	96			99			102				124,9	0	0	0	0	0	0	0	63	63	63	0
88	92	94	95	96	97			100			103			149,9	0	0	0	0	0	0	0	0	63	63	63
88	92	94	95	96		98			101			104		178,0	0	0	0	0	0	0	0	0	0	63	63
88	92	94	95	96			99			102			105	209,9	0	0	0	0	0	0	0	0	0	0	63
															7202	**9897**	**10737**	**12050**	**13940**	**16106**	**18879**	**22335**	**26251**	**30859**	**36215**
															Denominator for a given year										

Table 4.3 : Presentation of denominator approximation for actual sampling and for the next decade for the selected sampling strategy in the Sudbury region.

Possible combinations of sampled years.																Denom-inator	Number of lakes associated with the combinations at the left for a given year.										
90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	for 1 lake	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
90	91	92	93	94	95											17,5	51	0	0	0	0	0	0	0	0	0	0
90	91		93	94	95											17,2	23	0	0	0	0	0	0	0	0	0	0
	91		93	94	95											8,8	78	0	0	0	0	0	0	0	0	0	0
			93	94	95											2,0	7	7	7	7	7	7	7	7	7	7	7
90	91	92	93	94	95	96										28,0	0	51	26	1	1	1	1	1	1	1	1
90	91		93	94	95	96										26,8	0	23	12	1	1	1	1	1	1	1	1
	91		93	94	95	96										14,8	0	78	54	30	30	30	30	30	30	30	30
90	91	92	93	94	95	96	97									42,0	0	0	25	25	0	0	0	0	0	0	0
90	91		93	94	95	96	97									39,4	0	0	11	11	0	0	0	0	0	0	0
	91		93	94	95	96	97									23,3	0	0	24	24	0	0	0	0	0	0	0
90	91	92	93	94	95	96		98								49,9	0	0	0	25	25	0	0	0	0	0	0
90	91		93	94	95	96		98								46,9	0	0	0	11	11	0	0	0	0	0	0
	91		93	94	95	96		98								29,5	0	0	0	24	24	0	0	0	0	0	0
90	91	92	93	94	95	96	97		99							68,9	0	0	0	0	25	25	0	0	0	0	0
90	91		93	94	95	96	97		99							63,9	0	0	0	0	11	11	0	0	0	0	0
	91		93	94	95	96	97		99							42,0	0	0	0	0	24	24	0	0	0	0	0
90	91	92	93	94	95	96		98		100						86,0	0	0	0	0	0	25	25	0	0	0	0
90	91		93	94	95	96		98		100						79,9	0	0	0	0	0	11	11	0	0	0	0
	91		93	94	95	96		98		100						55,4	0	0	0	0	0	24	24	0	0	0	0
90	91	92	93	94	95	96	97		99		101					111,6	0	0	0	0	0	0	25	25	0	0	0
90	91		93	94	95	96	97		99		101					102,9	0	0	0	0	0	0	11	11	0	0	0
	91		93	94	95	96	97		99		101					73,5	0	0	0	0	0	0	24	24	0	0	0
90	91	92	93	94	95	96		98		100		102				138,9	0	0	0	0	0	0	0	25	25	0	0
90	91		93	94	95	96		98		100		102				128,2	0	0	0	0	0	0	0	11	11	0	0
	91		93	94	95	96		98		100		102				94,9	0	0	0	0	0	0	0	24	24	0	0
90	91	92	93	94	95	96	97		99		101		103			172,7	0	0	0	0	0	0	0	0	25	25	0
90	91		93	94	95	96	97		99		101		103			158,9	0	0	0	0	0	0	0	0	11	11	0
	91		93	94	95	96	97		99		101		103			120,2	0	0	0	0	0	0	0	0	24	24	0
90	91	92	93	94	95	96		98		100		102		104		210,9	0	0	0	0	0	0	0	0	0	25	25
90	91		93	94	95	96		98		100		102		104		194,1	0	0	0	0	0	0	0	0	0	11	11
	91		93	94	95	96		98		100		102		104		150,0	0	0	0	0	0	0	0	0	0	24	24
90	91	92	93	94	95	96	97		99		101		103		105	254,7	0	0	0	0	0	0	0	0	0	0	25
90	91		93	94	95	96	97		99		101		103		105	234,2	0	0	0	0	0	0	0	0	0	0	11
	91		93	94	95	96	97		99		101		103		105	166,0	0	0	0	0	0	0	0	0	0	0	24
																	1985	**3214**	**3907**	**5027**	**6416**	**8305**	**10558**	**13359**	**16624**	**20472**	**24446**
																	Denominator for a given year										

Table 4.4 : Actual and future global detectable trends for the three regions given the chosen sampling strategy.

	Year	Denom.	global absolute trend pH (Δ)	global absolute trend Conductivity (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Ca (Δ)	global absolute trend Mg (Δ)	global absolute trend K (Δ)	global absolute trend Na (Δ)	global absolute trend Basecat (Δ)	global absolute trend SO4 (Δ)	global absolute trend Si (Δ)	global absolute trend Cl (Δ)	global absolute trend TIC (Δ)	global absolute trend DOC (Δ)	global absolute trend TKN (Δ)	global absolute trend NO2NO3 (Δ)	global absolute trend TN (Δ)	global absolute trend NH4 (Δ)	global absolute trend TP (Δ)
Muskoka 63/year 3-YEAR cycle	1995	3186	0,134	2,280	8,477	0,161	0,053	0,038	0,269	20,258	0,506	0,357	0,450	0,105	0,865	0,067	0,006	0,047	10,684	3,356
	1996	5352	0,125	2,111	7,849	0,149	0,049	0,035	0,249	18,756	0,468	0,330	0,417	0,097	0,801	0,062	0,005	0,043	9,892	3,107
	1997	6079	0,136	2,311	8,592	0,163	0,053	0,039	0,273	20,532	0,513	0,361	0,456	0,107	0,877	0,068	0,006	0,047	10,829	3,401
	1998	7244	0,143	2,419	8,995	0,171	0,056	0,040	0,285	21,496	0,537	0,378	0,478	0,112	0,918	0,071	0,006	0,050	11,337	3,561
	1999	8948	0,144	2,449	9,105	0,173	0,057	0,041	0,289	21,758	0,543	0,383	0,484	0,113	0,929	0,072	0,006	0,050	11,476	3,604
	2000	10911	0,145	2,464	9,162	0,174	0,057	0,041	0,291	21,893	0,547	0,385	0,487	0,114	0,935	0,073	0,006	0,051	11,547	3,627
	2001	13437	0,144	2,443	9,081	0,172	0,056	0,041	0,288	21,701	0,542	0,382	0,482	0,113	0,927	0,072	0,006	0,050	11,446	3,595
	2002	16598	0,141	2,398	8,914	0,169	0,055	0,040	0,283	21,301	0,532	0,375	0,473	0,111	0,910	0,071	0,006	0,049	11,235	3,529
	2003	20208	0,139	2,354	8,752	0,166	0,054	0,039	0,278	20,914	0,522	0,368	0,465	0,109	0,893	0,069	0,006	0,048	11,030	3,464
	2004	24457	0,136	2,304	8,567	0,162	0,053	0,038	0,272	20,473	0,511	0,360	0,455	0,106	0,874	0,068	0,006	0,047	10,798	3,391
	2005	29397	0,133	2,252	8,372	0,159	0,052	0,038	0,266	20,007	0,499	0,352	0,445	0,104	0,855	0,066	0,006	0,046	10,552	3,314
Algoma 63/year 3-YEAR cycle	1995	7202	0,130	1,598	14,222	0,301	0,047	0,016	0,033	18,529	0,227	0,313	0,021	0,154	0,640	0,027	0,006	0,023	9,109	0,529
	1996	9897	0,133	1,636	14,559	0,308	0,048	0,016	0,034	18,967	0,233	0,320	0,022	0,157	0,655	0,028	0,006	0,024	9,324	0,541
	1997	10737	0,149	1,832	16,307	0,346	0,054	0,018	0,038	21,245	0,261	0,359	0,025	0,176	0,733	0,031	0,007	0,027	10,444	0,606
	1998	12050	0,161	1,977	17,592	0,373	0,058	0,019	0,041	22,919	0,281	0,387	0,026	0,190	0,791	0,034	0,007	0,029	11,267	0,654
	1999	13940	0,169	2,068	18,401	0,390	0,060	0,020	0,043	23,973	0,294	0,405	0,028	0,199	0,828	0,035	0,008	0,030	11,785	0,684
	2000	16106	0,174	2,137	19,021	0,403	0,062	0,021	0,044	24,781	0,304	0,419	0,029	0,205	0,855	0,036	0,008	0,031	12,182	0,707
	2001	18879	0,177	2,172	19,326	0,410	0,063	0,021	0,045	25,177	0,309	0,425	0,029	0,209	0,869	0,037	0,008	0,032	12,377	0,719
	2002	22335	0,178	2,178	19,383	0,411	0,064	0,021	0,045	25,252	0,310	0,427	0,029	0,209	0,872	0,037	0,008	0,032	12,414	0,721
	2003	26251	0,177	2,176	19,369	0,410	0,064	0,021	0,045	25,233	0,310	0,426	0,029	0,209	0,871	0,037	0,008	0,032	12,405	0,720
	2004	30859	0,176	2,162	19,238	0,408	0,063	0,021	0,045	25,064	0,308	0,423	0,029	0,208	0,865	0,037	0,008	0,032	12,321	0,715
	2005	36215	0,174	2,138	19,027	0,403	0,062	0,021	0,044	24,789	0,304	0,419	0,029	0,205	0,856	0,036	0,008	0,031	12,186	0,708
Sudbury 60/year 2-YEAR cycle	1995	1985	0,326	6,537	68,499	1,181	0,226	0,052	0,189	77,105	0,785	0,670	0,267	0,711	1,093	0,115	0,004	0,104	39,782	3,000
	1996	3214	0,307	6,164	64,598	1,114	0,213	0,049	0,178	72,715	0,740	0,632	0,251	0,671	1,030	0,108	0,003	0,098	37,517	2,829
	1997	3907	0,325	6,523	68,355	1,179	0,225	0,052	0,188	76,943	0,783	0,669	0,266	0,710	1,090	0,115	0,004	0,103	39,699	2,993
	1998	5027	0,328	6,572	68,870	1,188	0,227	0,052	0,190	77,523	0,789	0,674	0,268	0,715	1,098	0,115	0,004	0,104	39,998	3,016
	1999	6416	0,326	6,544	68,581	1,183	0,226	0,052	0,189	77,198	0,786	0,671	0,267	0,712	1,094	0,115	0,004	0,104	39,830	3,003
	2000	8305	0,319	6,391	66,976	1,155	0,221	0,051	0,185	75,392	0,768	0,655	0,261	0,695	1,068	0,112	0,004	0,101	38,898	2,933
	2001	10558	0,311	6,235	65,342	1,127	0,216	0,049	0,180	73,552	0,749	0,639	0,254	0,678	1,042	0,110	0,004	0,099	37,949	2,862
	2002	13359	0,302	6,047	63,370	1,093	0,209	0,048	0,175	71,333	0,726	0,620	0,247	0,658	1,011	0,106	0,003	0,096	36,804	2,775
	2003	16624	0,293	5,873	61,541	1,061	0,203	0,047	0,170	69,274	0,705	0,602	0,240	0,639	0,982	0,103	0,003	0,093	35,742	2,695
	2004	20472	0,284	5,699	59,723	1,030	0,197	0,045	0,165	67,227	0,685	0,584	0,232	0,620	0,953	0,100	0,003	0,090	34,685	2,615
	2005	24446	0,279	5,588	58,557	1,010	0,193	0,044	0,161	65,915	0,671	0,573	0,228	0,608	0,934	0,098	0,003	0,089	34,008	2,564

Table 4.5 : Actual and future annual detectable trends for the three regions given the chosen sampling strategy.

	Year	Denom.	annual absolute trend pH (Δ)	annual absolute trend Conduct. (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Ca (Δ)	annual absolute trend Mg (Δ)	annual absolute trend K (Δ)	annual absolute trend Na (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend SO4 (Δ)	annual absolute trend Si (Δ)	annual absolute trend Cl (Δ)	annual absolute trend TIC (Δ)	annual absolute trend DOC (Δ)	annual absolute trend TKN (Δ)	annual absolute trend NO2NO3 (Δ)	annual absolute trend TN (Δ)	annual absolute trend NH4 (Δ)	annual absolute trend TP (Δ)
Muskoka 63/year 3-YEAR cycle	1995	3186	0,027	0,456	1,695	0,032	0,011	0,008	0,054	4,052	0,101	0,071	0,090	0,021	0,173	0,013	0,001	0,009	2,137	0,671
	1996	5352	0,021	0,352	1,308	0,025	0,008	0,006	0,042	3,126	0,078	0,055	0,069	0,016	0,134	0,010	0,001	0,007	1,649	0,518
	1997	6079	0,019	0,330	1,227	0,023	0,008	0,006	0,039	2,933	0,073	0,052	0,065	0,015	0,125	0,010	0,001	0,007	1,547	0,486
	1998	7244	0,018	0,302	1,124	0,021	0,007	0,005	0,036	2,687	0,067	0,047	0,060	0,014	0,115	0,009	0,001	0,006	1,417	0,445
	1999	8948	0,016	0,272	1,012	0,019	0,006	0,005	0,032	2,418	0,060	0,043	0,054	0,013	0,103	0,008	0,001	0,006	1,275	0,400
	2000	10911	0,015	0,246	0,916	0,017	0,006	0,004	0,029	2,189	0,055	0,039	0,049	0,011	0,094	0,007	0,001	0,005	1,155	0,363
	2001	13437	0,013	0,222	0,826	0,016	0,005	0,004	0,026	1,973	0,049	0,035	0,044	0,010	0,084	0,007	0,001	0,005	1,041	0,327
	2002	16598	0,012	0,200	0,743	0,014	0,005	0,003	0,024	1,775	0,044	0,031	0,039	0,009	0,076	0,006	0,001	0,004	0,936	0,294
	2003	20208	0,011	0,181	0,673	0,013	0,004	0,003	0,021	1,609	0,040	0,028	0,036	0,008	0,069	0,005	0,000	0,004	0,848	0,267
	2004	24457	0,010	0,165	0,612	0,012	0,004	0,003	0,019	1,462	0,037	0,026	0,033	0,008	0,062	0,005	0,000	0,003	0,771	0,242
	2005	29397	0,009	0,150	0,558	0,011	0,003	0,003	0,018	1,334	0,033	0,023	0,030	0,007	0,057	0,004	0,000	0,003	0,703	0,221
Algoma 63/year 3-YEAR cycle	1995	7202	0,026	0,320	2,844	0,060	0,009	0,003	0,007	3,706	0,046	0,063	0,004	0,031	0,128	0,005	0,001	0,005	1,822	0,106
	1996	9897	0,022	0,273	2,426	0,051	0,008	0,003	0,006	3,161	0,039	0,053	0,004	0,026	0,109	0,005	0,001	0,004	1,554	0,090
	1997	10737	0,021	0,262	2,330	0,049	0,008	0,003	0,005	3,035	0,037	0,051	0,004	0,025	0,105	0,004	0,001	0,004	1,492	0,087
	1998	12050	0,020	0,247	2,199	0,047	0,007	0,002	0,005	2,865	0,035	0,048	0,003	0,024	0,099	0,004	0,001	0,004	1,408	0,082
	1999	13940	0,019	0,230	2,045	0,043	0,007	0,002	0,005	2,664	0,033	0,045	0,003	0,022	0,092	0,004	0,001	0,003	1,309	0,076
	2000	16106	0,017	0,214	1,902	0,040	0,006	0,002	0,004	2,478	0,030	0,042	0,003	0,021	0,086	0,004	0,001	0,003	1,218	0,071
	2001	18879	0,016	0,197	1,757	0,037	0,006	0,002	0,004	2,289	0,028	0,039	0,003	0,019	0,079	0,003	0,001	0,003	1,125	0,065
	2002	22335	0,015	0,182	1,615	0,034	0,005	0,002	0,004	2,104	0,026	0,036	0,002	0,017	0,073	0,003	0,001	0,003	1,035	0,060
	2003	26251	0,014	0,167	1,490	0,032	0,005	0,002	0,003	1,941	0,024	0,033	0,002	0,016	0,067	0,003	0,001	0,002	0,954	0,055
	2004	30859	0,013	0,154	1,374	0,029	0,005	0,002	0,003	1,790	0,022	0,030	0,002	0,015	0,062	0,003	0,001	0,002	0,880	0,051
	2005	36215	0,012	0,143	1,268	0,027	0,004	0,001	0,003	1,653	0,020	0,028	0,002	0,014	0,057	0,002	0,001	0,002	0,812	0,047
Sudbury 60/year 2-YEAR cycle	1995	1985	0,065	1,307	13,700	0,236	0,045	0,010	0,038	15,421	0,157	0,134	0,053	0,142	0,219	0,023	0,001	0,021	7,956	0,600
	1996	3214	0,051	1,027	10,766	0,186	0,036	0,008	0,030	12,119	0,123	0,105	0,042	0,112	0,172	0,018	0,001	0,016	6,253	0,471
	1997	3907	0,046	0,932	9,765	0,168	0,032	0,007	0,027	10,992	0,112	0,096	0,038	0,101	0,156	0,016	0,001	0,015	5,671	0,428
	1998	5027	0,041	0,821	8,609	0,148	0,028	0,007	0,024	9,690	0,099	0,084	0,034	0,089	0,137	0,014	0,000	0,013	5,000	0,377
	1999	6416	0,036	0,727	7,620	0,131	0,025	0,006	0,021	8,578	0,087	0,075	0,030	0,079	0,122	0,013	0,000	0,012	4,426	0,334
	2000	8305	0,032	0,639	6,698	0,116	0,022	0,005	0,018	7,539	0,077	0,066	0,026	0,070	0,107	0,011	0,000	0,010	3,890	0,293
	2001	10558	0,028	0,567	5,940	0,102	0,020	0,005	0,016	6,687	0,068	0,058	0,023	0,062	0,095	0,010	0,000	0,009	3,450	0,260
	2002	13359	0,025	0,504	5,281	0,091	0,017	0,004	0,015	5,944	0,061	0,052	0,021	0,055	0,084	0,009	0,000	0,008	3,067	0,231
	2003	16624	0,023	0,452	4,734	0,082	0,016	0,004	0,013	5,329	0,054	0,046	0,018	0,049	0,076	0,008	0,000	0,007	2,749	0,207
	2004	20472	0,020	0,407	4,266	0,074	0,014	0,003	0,012	4,802	0,049	0,042	0,017	0,044	0,068	0,007	0,000	0,006	2,478	0,187
	2005	24446	0,019	0,373	3,904	0,067	0,013	0,003	0,011	4,394	0,045	0,038	0,015	0,041	0,062	0,007	0,000	0,006	2,267	0,171

4.2 Effect of the spatial correlation on the power of the chosed sampling strategy.

While **section 3.1** presents power tables in the **best possible situation** (under the hypotheses of independent lakes), previous analyses are showing that the presence of spatial correlation is an important factor. It forces the study of the power for the chosen sampling strategy in presence of **such dependence**. Table 3.1 shows that for a mean spatial correlation of **0.2**, the effective number of independent observations would be **3.5 lakes per plot** for the Muskoka region (9 dependent lakes sampled by plot), and **3.2 lakes per plot** for the Algoma region (7 dependent lakes sampled by plot). In the Muskoka region, 3.5 independent lakes per plot correspond to **24.5** independent lakes for the entire region while in the Algoma region 3.2 independent lakes per plot produce **28.8** independent lakes for the entire region.

Power tables **M-27** and **A-29** showed that the criteria of detecting trends of 0.5σ with power 90% would be **easily met** with **30** independent lakes sampled per year. Thus we believe that a realistic value of **0.2** for mean spatial correlation between sampled lakes in the chosen strategy would not break the power criteria retained by the CWS (0.5σ with power 90%).

Furthermore, a brief power analysis shows that, **even with a spatial correlation of 0.4 (1.8** independent per year, **12.8** independent lakes per year for the entire Muskoka region), the chosen sampling strategy would **still** allow to **meet the criteria of 0.5σ with power 90% up until 2005; after that year, the sampling strategy would no longer meet the power criteria.**

Given those informations, the study of spatial correlation should continue to be done in the future, in order to use the additional information to produce **a more valuable** estimation of the **intrinsic regional correlation**: the spatial correlation not affected by trends..

With the available information, we believe that the chosen sampling strategy would not induce a spatial correlation larger than 0.4 for a given parameter. Furthermore, we believe that the majority of studied parameters will present spatial correlations well under 0.3.

4.3 Procedure for the choice of stations for future monitoring

Given the selected sampling strategy presented in section 3.3, we propose a lake selection which follows these criteria :

- Lakes with **2 or less** sampled years are deleted **first**;
- Larger lakes (according to classifications) with several other lakes at proximity are then deleted;
- Finally for the remaining lakes, the selection of lakes is made in order to **maximize** as much as possible the **distances** between lakes sampled on the **same year**.

4.4 Actual selection of lakes

The **Appendix 4** presents tables similar to these of the **Appendix 2**, with the exception of the last column, where the **"plot"** index has been replaced by a **"year"** index of the sampling. For the **Muskoka and Algoma** sites, the values **1, 2 and 3** are associated with the 3 groups of lakes to be sampled **in rotation**. The value **4** is associated with discarded, unsampled lakes. The correspondence between the groups 1, 2 and 3 and the years 1997, 1998 and 1999 could be established **directly** (i.e. 1=1997, 2=1998 and 3=1999), but could also be **randomized** (1=1998, 2=1999 and 3=1997 for instance). Whatever the chosen order of this correspondence, it should **be maintained after the first 3 year cycle**. For the **Sudbury** site, the values **1** and **2** refer to the **alterning** yearly sampled groups and the value **3** refers to **discarded** lakes.

The following **10 Figures** present, for each plot of each region, the **localisation maps** of the lakes and their groupings:

- Group 1 is presented as **yellow** dots.
- Group 2 is presented as **pink** dots.
- Group 3 is presented as **blue** dots.
- Group 4 is presented as **grey** dots (**discarded** lakes).

For the **Sudbury region**, **pink** dots are not used.

APPENDIX A-1. Table M-1, Muskoka region, Cluster 1
Interlake distances (critical value 4 km)

	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134
101																																		
102	0.77																																	
103	1.43	0.67																																
104	2.28	1.52	0.92																															
105	3.35	2.62	1.96	1.51																														
106	3.75	3.03	2.48	1.57	2.03																													
107	3.60	2.89	2.36	1.47	2.10	0.21																												
108	3.85	3.11	2.51	1.60	1.81	0.31	0.51																											
109	4.51	3.89	3.45	2.62	3.30	1.26	1.23	1.50																										
110	4.76	4.27	4.00	3.32	4.29	2.30	2.20	2.59	1.17																									
111	5.31	4.67	4.21	3.35	3.82	1.86	1.90	2.02	0.80	1.43																								
112	6.48	5.85	5.38	4.50	4.82	2.97	3.04	3.07	1.97	2.22	1.17																							
113	6.76	6.08	5.56	4.66	4.75	3.09	3.20	3.12	2.32	2.82	1.54	0.71																						
114	7.14	6.47	5.96	5.06	5.17	3.50	3.60	3.54	2.67	3.04	1.87	0.82	0.42																					
115	7.31	6.60	6.03	5.12	4.97	3.57	3.71	3.53	3.03	3.65	2.30	1.57	0.87	0.89																				
116	5.28	4.53	3.89	3.00	2.55	1.71	1.92	1.49	2.16	3.31	2.11	2.67	2.37	2.78	2.43																			
117	5.90	5.15	4.53	3.63	3.24	2.21	2.41	2.06	2.31	3.37	2.00	2.25	1.82	2.20	1.76	0.69																		
118	6.78	6.02	5.38	4.50	3.87	3.18	3.38	2.99	3.30	4.31	2.90	2.85	2.24	2.50	1.75	1.50	1.01																	
119	7.30	6.54	5.87	5.05	4.15	3.91	4.12	3.87	4.23	5.29	3.89	3.85	3.22	3.45	2.62	2.21	1.92	1.02																
120	7.82	7.06	6.40	5.54	4.77	4.27	4.48	4.07	4.38	5.35	3.92	3.65	2.97	3.11	2.23	2.58	2.11	1.10	0.75															
121	8.21	7.47	6.84	5.94	5.42	4.50	4.68	4.37	4.27	5.05	3.64	3.05	2.34	2.34	1.48	2.96	2.31	1.57	1.85	1.16														
122	8.71	7.95	7.29	6.45	5.58	5.22	5.42	5.01	5.33	6.28	4.85	4.48	3.78	3.86	2.97	3.52	3.07	2.06	1.43	0.96	1.58													
123	9.31	8.56	7.95	7.04	6.53	5.58	5.75	5.46	5.25	5.92	4.56	3.77	3.11	2.98	2.27	4.07	3.41	2.66	2.76	2.01	1.11	1.89												
124	8.89	8.16	7.56	6.65	6.25	5.15	5.31	5.06	4.73	5.35	4.01	3.18	2.53	2.37	1.71	3.73	3.05	2.44	2.76	2.04	0.92	2.20	0.62											
125	9.06	8.35	7.78	6.86	6.63	5.32	5.46	5.27	4.71	5.16	3.94	2.94	2.40	2.12	1.75	4.08	3.39	2.97	3.46	2.78	1.62	3.00	1.29	0.80										
126	8.56	7.86	7.31	6.40	6.27	4.84	4.97	4.82	4.16	4.57	3.38	2.35	1.84	1.53	1.30	3.72	3.04	2.79	3.44	2.83	1.70	3.23	1.74	1.15	0.60									
127	8.15	7.47	6.95	6.04	6.04	4.47	4.59	4.48	3.69	4.01	2.89	1.80	1.39	1.02	1.14	3.54	2.88	2.85	3.63	3.10	2.06	3.64	2.31	1.70	1.21	0.61								
128	8.76	8.09	7.57	6.67	6.68	5.10	5.21	5.12	4.27	4.50	3.47	2.33	2.01	1.62	1.75	4.17	3.51	3.40	4.11	3.52	2.40	3.93	2.36	1.80	1.08	0.70	0.64							
129	8.41	7.82	7.40	6.56	6.92	5.06	5.11	5.17	3.95	3.75	3.21	2.10	2.29	1.92	2.63	4.66	4.11	4.37	5.25	4.79	3.78	5.36	3.94	3.36	2.68	2.21	1.72	1.60						
130	8.49	7.91	7.50	6.66	7.04	5.17	5.21	5.29	4.05	3.81	3.31	2.22	2.44	2.06	2.78	4.79	4.25	4.52	5.40	4.94	3.93	5.51	4.07	3.49	2.80	2.34	1.87	1.72	0.15					
131	8.49	7.93	7.55	6.72	7.18	5.26	5.29	5.40	4.10	3.76	3.40	2.37	2.67	2.32	3.09	5.00	4.49	4.80	5.71	5.27	4.27	5.85	4.43	3.85	3.16	2.70	2.21	2.08	0.49	0.36				
132	10.11	9.46	8.97	8.07	8.12	6.51	6.61	6.54	5.60	5.66	4.80	3.63	3.43	3.01	3.20	5.62	4.95	4.78	5.38	4.72	3.56	4.93	3.10	2.74	1.95	1.98	2.09	1.45	2.07	2.09	2.36			
133	9.82	9.14	8.60	7.69	7.57	6.12	6.25	6.11	5.37	5.63	4.57	3.45	3.07	2.70	2.61	5.02	4.33	4.00	4.50	3.81	2.65	3.95	2.10	1.78	1.04	1.30	1.68	1.13	2.47	2.55	2.88	1.00		
134	10.10	9.34	8.70	7.82	7.11	6.45	6.64	6.29	6.28	7.04	5.65	4.96	4.27	4.18	3.41	4.82	4.23	3.32	3.02	2.34	2.01	1.68	1.24	1.85	2.48	2.98	3.55	3.56	5.16	5.28	5.64	4.09	3.10	
135	10.88	10.12	9.47	8.61	7.82	7.27	7.46	7.10	7.15	7.92	6.52	5.83	5.15	5.05	4.28	5.61	5.06	4.11	3.68	3.07	2.88	2.26	2.08	2.70	3.26	3.80	4.39	4.34	5.94	6.06	6.42	4.70	3.74	0.88

APPENDIX A-1. Table M-2, Muskoka region, Cluster 2
Interlake distances (critical value 4 km)

	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
201																																			
202	0.50																																		
203	1.22	0.76																																	
204	3.38	2.97	2.22																																
205	3.71	3.31	2.56	0.37																															
206	4.79	4.34	3.58	1.62	1.28																														
207	4.94	4.46	3.73	2.18	1.90	0.87																													
208	3.15	2.68	1.93	1.00	1.08	1.70	1.82																												
209	2.76	2.26	1.58	1.63	1.78	2.32	2.24	0.71																											
210	2.05	1.55	1.03	2.22	2.45	3.15	3.07	1.48	0.84																										
211	2.42	2.00	1.84	3.21	3.41	3.90	3.62	2.36	1.65	1.04																									
212	2.64	2.19	1.87	2.93	3.10	3.51	3.20	2.02	1.32	0.91	0.43																								
213	2.92	2.44	2.00	2.69	2.81	3.13	2.78	1.73	1.06	0.97	0.85	0.43																							
214	2.98	2.49	1.95	2.31	2.41	2.71	2.41	1.33	0.70	0.94	1.21	0.80	0.42																						
215	3.06	2.56	1.92	1.90	1.99	2.31	2.08	0.91	0.40	1.04	1.59	1.20	0.85	0.43																					
216	3.51	3.01	2.34	1.86	1.86	1.93	1.61	0.89	0.76	1.51	2.02	1.60	1.20	0.80	0.48																				
217	3.64	3.14	2.59	2.59	2.61	2.59	2.09	1.60	1.19	1.59	1.66	1.23	0.82	0.65	0.79	0.76																			
218	3.98	3.49	2.96	2.89	2.88	2.71	2.10	1.92	1.55	1.95	1.89	1.49	1.10	1.02	1.15	1.03	0.37																		
219	4.18	3.71	3.31	3.59	3.60	3.45	2.80	2.60	2.12	2.27	1.84	1.53	1.30	1.45	1.74	1.74	0.99	0.75																	
220	3.49	3.04	2.71	3.38	3.46	3.57	3.06	2.39	1.78	1.70	1.12	0.86	0.76	1.08	1.48	1.68	0.99	1.01	0.72																
221	3.18	2.76	2.54	3.56	3.69	3.94	3.50	2.61	1.94	1.81	0.78	0.70	0.88	1.29	1.72	2.02	1.41	1.50	1.20	0.51															
222	3.60	3.21	3.07	4.11	4.23	4.40	3.88	3.15	2.48	2.17	1.24	1.26	1.42	1.81	2.24	2.49	1.81	1.80	1.26	0.82	0.56														
223	3.93	3.56	3.43	4.44	4.54	4.65	4.09	3.46	2.82	2.53	1.59	1.62	1.75	2.13	2.55	2.76	2.05	1.99	1.35	1.09	0.92	0.36													
224	4.39	4.08	4.07	5.25	5.37	5.48	4.90	4.28	3.62	3.28	2.25	2.37	2.56	2.95	3.38	3.80	2.89	2.80	2.12	1.92	1.69	1.14	0.84												
225	3.77	3.54	3.69	5.23	5.40	5.73	5.27	4.33	3.62	3.08	2.02	2.30	2.62	3.04	3.47	3.80	3.18	3.20	2.65	2.20	1.78	1.40	1.32	0.94											
226	4.65	4.44	4.61	6.10	6.25	6.48	5.95	5.17	4.48	3.96	2.92	3.16	3.44	3.86	4.29	4.57	3.90	3.86	3.21	2.91	2.57	2.09	1.87	1.10	0.92										
227	5.14	4.96	5.18	6.73	6.89	7.13	6.59	5.81	5.11	4.58	3.54	3.80	4.08	4.50	4.93	5.21	4.54	4.49	3.82	3.55	3.21	2.73	2.50	1.70	1.52	0.64									
228	5.85	5.70	5.94	7.48	7.64	7.84	7.28	6.56	5.87	5.34	4.30	4.55	4.83	5.24	5.68	5.94	5.25	5.18	4.49	4.27	3.95	3.45	3.20	2.38	2.28	1.39	0.76								
229	5.95	5.75	5.90	7.29	7.42	7.52	6.91	6.33	5.66	5.21	4.17	4.37	4.60	5.00	5.43	5.66	4.94	4.83	4.11	3.98	3.73	3.19	2.89	2.06	2.22	1.30	0.88	0.64							
230	5.80	5.50	5.50	6.56	6.64	6.59	5.91	5.58	4.95	4.66	3.67	3.76	3.89	4.26	4.67	4.81	4.06	3.88	3.14	3.18	3.06	2.50	2.15	1.43	2.10	1.49	1.61	1.84	1.24						
231	5.12	4.77	4.65	5.51	5.57	5.47	4.79	4.51	3.92	3.73	2.82	2.82	2.88	3.22	3.61	3.72	2.97	2.77	2.02	2.14	2.12	1.58	1.22	0.89	1.84	1.75	2.20	2.71	2.21	1.12					
232	5.60	5.20	4.98	5.53	5.54	5.26	4.51	4.54	4.02	4.00	3.21	3.11	3.07	3.33	3.67	3.68	2.94	2.66	1.94	2.31	2.45	2.00	1.69	1.64	2.58	2.52	2.94	3.37	2.82	1.60	0.78				
233	4.65	4.20	3.86	4.22	4.22	4.00	3.29	3.23	2.75	2.84	2.24	2.02	1.87	2.07	2.38	2.37	1.63	1.35	0.64	1.16	1.50	1.32	1.22	1.82	2.53	2.92	3.50	4.11	3.68	2.62	1.50	1.31			
234	4.87	4.41	4.01	4.16	4.13	3.79	3.04	3.19	2.77	2.97	2.49	2.22	2.01	2.13	2.39	2.30	1.60	1.27	0.70	1.38	1.79	1.67	1.61	2.20	2.92	3.30	3.87	4.47	4.01	2.91	1.81	1.47	0.39		
235	5.18	4.74	4.40	4.68	4.66	4.33	3.56	3.70	3.26	3.38	2.77	2.56	2.41	2.59	2.88	2.82	2.10	1.79	1.14	1.70	2.02	1.75	1.57	1.97	2.80	3.04	3.56	4.10	3.61	2.45	1.40	0.94	0.54	0.54	
236	6.24	5.77	5.35	5.20	5.10	4.47	3.81	4.29	4.00	4.31	3.86	3.59	3.35	3.43	3.61	3.40	2.82	2.45	2.06	2.75	3.14	2.94	2.78	3.11	3.98	4.11	4.58	5.02	4.46	3.22	2.38	1.85	1.65	1.37	1.20

APPENDIX A-1. Table M-3, Muskoka region, Cluster 3
Interlake distances (critical value 4 km)

	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336
301																																				
302	0.72																																			
303	1.32	0.81																																		
304	1.36	1.03	1.75																																	
305	2.51	2.10	2.66	1.15																																
306	4.30	3.91	4.42	2.94	1.81																															
307	4.65	4.19	4.60	3.29	2.15	0.63																														
308	5.20	4.70	5.05	3.85	2.72	1.25	0.64																													
309	3.68	3.19	3.60	2.33	1.21	0.94	1.00	1.52																												
310	3.00	2.48	2.90	1.66	0.65	1.55	1.71	2.21	0.71																											
311	3.72	3.15	3.45	2.42	1.43	1.41	1.26	1.60	0.54	0.78																										
312	3.05	2.41	2.60	1.90	1.29	2.20	2.16	2.50	1.26	0.81	0.91																									
313	2.25	1.53	1.52	1.50	1.68	3.16	3.22	3.60	2.26	1.62	2.00	1.11																								
314	2.09	1.37	1.06	1.75	2.21	3.76	3.83	4.20	2.86	2.21	2.60	1.70	0.61																							
315	2.97	2.25	1.92	2.42	2.51	3.72	3.64	3.88	2.78	2.27	2.38	1.52	0.92	0.89																						
316	3.26	2.54	2.16	2.72	2.76	3.88	3.76	3.96	2.94	2.48	2.51	1.70	1.22	1.17	0.30																					
317	3.68	2.95	2.64	3.00	2.86	3.75	3.55	3.68	2.83	2.47	2.34	1.66	1.51	1.61	0.72	0.50																				
318	4.31	3.64	3.67	3.19	2.45	2.51	2.13	2.11	1.75	1.82	1.22	1.30	2.16	2.64	2.02	2.00	1.63																			
319	4.96	4.30	4.38	3.76	2.89	2.45	1.93	1.70	1.92	2.24	1.49	1.90	2.87	3.36	2.75	2.71	2.30	0.73																		
320	6.52	5.90	6.04	5.25	4.23	3.10	2.47	1.87	3.06	3.61	2.83	3.49	4.52	5.03	4.41	4.36	3.92	2.40	1.68																	
321	5.96	5.31	5.39	4.74	3.80	2.97	2.35	1.87	2.71	3.15	2.37	2.91	3.88	4.36	3.70	3.63	3.18	1.72	1.01	0.75																
322	5.23	4.56	4.58	4.08	3.25	2.84	2.31	2.02	2.32	2.60	1.87	2.19	3.08	3.54	2.85	2.77	2.32	0.92	0.40	1.60	0.86															
323	4.85	4.14	3.96	3.92	3.39	3.58	3.16	3.04	2.82	2.80	2.28	2.11	2.61	2.90	2.06	1.89	1.39	1.08	1.36	2.72	1.97	1.17														
324	3.95	3.25	2.72	3.57	3.65	4.69	4.49	4.61	3.75	3.34	3.28	2.54	2.09	1.90	1.17	0.89	0.94	2.53	3.16	4.70	3.95	3.11	2.01													
325	4.33	3.73	3.01	4.30	4.61	5.80	5.64	5.78	4.86	4.39	4.41	3.62	2.94	2.55	2.12	1.92	2.10	3.70	4.32	5.82	5.07	4.24	3.11	1.17												
326	4.46	3.76	3.23	4.04	4.05	4.95	4.70	4.75	4.04	3.69	3.54	2.88	2.55	2.40	1.63	1.33	1.22	2.64	3.20	4.64	3.89	3.08	1.92	0.51	1.20											
327	5.19	4.46	4.20	4.34	3.88	4.11	3.69	3.54	3.35	3.31	2.82	2.59	2.95	3.16	2.28	2.05	1.56	1.62	1.84	3.01	2.28	1.58	0.54	1.93	2.92	1.71										
328	6.08	5.36	5.01	5.31	4.88	5.04	4.57	4.34	4.32	4.31	3.79	3.59	3.88	4.01	3.12	2.85	2.40	2.58	2.66	3.44	2.79	2.32	1.52	2.45	3.15	2.06	1.00									
329	5.75	5.05	4.98	4.66	3.90	3.54	2.98	2.64	3.01	3.26	2.55	2.77	3.54	3.92	3.14	3.00	2.51	1.48	1.10	1.71	1.01	0.70	1.14	3.14	4.20	3.00	1.32	1.79								
330	6.80	6.12	6.09	5.65	4.78	4.04	3.42	2.91	3.74	4.13	3.36	3.76	4.62	5.03	4.26	4.12	3.63	2.48	1.90	1.26	1.07	1.57	2.25	4.22	5.24	4.03	2.32	2.43	1.12							
331	7.93	7.24	7.17	6.80	5.94	5.12	4.49	3.93	4.88	5.28	4.52	4.91	5.73	6.11	5.30	5.13	4.63	3.62	3.05	2.10	2.18	2.72	3.24	5.11	6.02	4.84	3.18	2.94	2.19	1.16						
332	7.64	6.96	6.90	6.50	5.63	4.81	4.18	3.62	4.57	4.97	4.21	4.61	5.45	5.84	5.05	4.89	4.39	3.33	2.75	1.80	1.87	2.42	3.00	4.90	5.85	4.66	2.97	2.83	1.92	0.85	0.32					
333	6.71	6.01	5.91	5.63	4.84	4.30	3.70	3.25	3.89	4.19	3.46	3.73	4.49	4.85	4.03	3.86	3.36	2.44	1.98	1.76	1.39	1.59	1.97	3.87	4.82	3.63	1.94	1.91	0.97	0.54	1.27	1.04				
334	7.31	6.59	6.41	6.31	5.59	5.15	4.56	4.11	4.70	4.95	4.25	4.42	5.06	5.35	4.49	4.28	3.78	3.15	2.78	2.55	2.25	2.38	2.46	4.11	4.92	3.78	2.23	1.79	1.70	1.29	1.21	1.19	0.86			
335	6.34	5.62	5.42	5.38	4.74	4.52	3.98	3.63	3.95	4.11	3.46	3.52	4.09	4.37	3.50	3.29	2.79	2.29	2.07	2.45	1.89	1.68	1.48	3.15	4.04	2.86	1.25	1.06	1.00	1.37	1.98	1.82	0.85	0.99		
336	6.89	6.17	5.84	6.06	5.55	5.51	4.98	4.66	4.88	4.95	4.36	4.28	4.67	4.83	3.94	3.68	3.22	3.15	3.06	3.43	2.91	2.67	2.17	3.29	3.92	2.87	1.72	0.84	2.02	2.24	2.43	2.39	1.70	1.22	1.03	
337	6.13	5.73	4.92	6.56	7.11	8.46	8.34	8.49	7.52	6.99	7.10	6.26	5.44	4.92	4.74	4.59	4.81	6.41	7.01	8.44	7.70	6.90	5.74	3.88	2.71	3.82	5.45	5.38	6.77	7.71	8.32	8.20	7.24	7.13	6.40	5.97

APPENDIX A-1. Table M-4, Muskoka region, Cluster 4
Interlake distances (critical value 4 km)

	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434
401																																		
402	0.98																																	
403	3.12	2.20																																
404	4.23	3.30	1.12																															
405	3.55	2.58	0.76	0.94																														
406	4.35	3.38	1.36	0.60	0.81																													
407	4.90	4.01	1.81	0.81	1.75	1.22																												
408	4.50	3.64	1.49	0.76	1.63	1.33	0.50																											
409	4.10	3.21	1.02	0.41	1.14	1.00	0.80	0.50																										
410	3.50	2.63	0.51	0.87	1.02	1.32	1.41	1.02	0.61																									
411	3.25	2.41	0.52	1.18	1.21	1.61	1.68	1.25	0.90	0.31																								
412	2.73	1.95	0.81	1.75	1.57	2.12	2.26	1.81	1.49	0.89	0.59																							
413	2.33	1.74	1.42	2.39	2.16	2.76	2.85	2.38	2.10	1.52	1.21	0.64																						
414	1.62	1.17	1.86	2.93	2.52	3.22	3.48	3.03	2.71	2.10	1.81	1.23	0.72																					
415	0.80	1.35	3.10	4.21	3.67	4.43	4.79	4.34	4.00	3.39	3.11	2.53	2.00	1.31																				
416	1.63	1.92	3.11	4.14	3.79	4.47	4.61	4.13	3.87	3.28	2.97	2.39	1.77	1.27	0.85																			
417	3.15	2.44	1.10	1.74	1.83	2.22	2.06	1.57	1.38	0.90	0.63	0.53	0.85	1.56	2.85	2.56																		
418	3.68	2.93	1.21	1.43	1.81	1.99	1.58	1.08	1.03	0.79	0.69	0.98	1.40	2.11	3.40	3.09	0.55																	
419	3.97	3.14	1.10	0.93	1.50	1.52	1.07	0.59	0.52	0.59	0.73	1.25	1.80	2.46	3.77	3.54	0.98	0.53																
420	4.17	3.40	1.49	1.30	1.93	1.90	1.20	0.72	0.90	0.98	1.04	1.46	1.90	2.60	3.90	3.58	1.05	0.50	0.43															
421	3.88	3.20	1.62	1.77	2.22	2.35	1.77	1.28	1.36	1.20	1.10	1.28	1.55	2.27	3.52	3.12	0.76	0.41	0.84	0.57														
422	3.82	3.22	1.89	2.17	2.55	2.74	2.16	1.68	1.76	1.53	1.37	1.40	1.50	2.19	3.38	2.90	0.87	0.76	1.23	0.96	0.40													
423	1.97	2.34	3.48	4.48	4.17	4.83	4.90	4.41	4.19	3.61	3.30	2.73	2.09	1.67	1.18	0.43	2.84	3.35	3.83	3.83	3.34	3.08												
424	2.65	2.59	2.86	3.71	3.62	4.15	3.99	3.49	3.36	2.85	2.55	2.06	1.47	1.49	1.94	1.16	1.97	2.41	2.92	2.84	2.30	1.99	1.17											
425	4.31	3.91	2.94	3.21	3.62	3.79	3.08	2.64	2.80	2.60	2.43	2.34	2.21	2.77	3.72	3.04	1.86	1.83	2.28	1.93	1.44	1.07	3.07	1.91										
426	2.54	2.75	3.48	4.39	4.22	4.81	4.72	4.22	4.06	3.52	3.22	2.69	2.06	1.85	1.75	0.90	2.68	3.14	3.65	3.58	3.05	2.74	0.64	0.75	2.56									
427	2.95	3.03	3.43	4.25	4.19	4.71	4.49	3.99	3.89	3.40	3.10	2.62	2.04	2.01	2.18	1.33	2.51	2.91	3.44	3.31	2.76	2.42	1.14	0.57	2.10	0.51								
428	3.34	3.24	3.20	3.88	3.96	4.39	4.03	3.54	3.50	3.07	2.80	2.40	1.91	2.11	2.62	1.81	2.17	2.48	3.02	2.83	2.27	1.89	1.72	0.69	1.45	1.14	0.65							
429	3.81	3.62	3.26	3.80	4.00	4.35	3.84	3.36	3.40	3.05	2.80	2.51	2.12	2.46	3.11	2.33	2.17	2.37	2.89	2.64	2.08	1.68	2.26	1.18	0.99	1.68	1.18	0.54						
430	3.44	3.59	3.95	4.72	4.71	5.20	4.90	4.40	4.34	3.88	3.59	3.15	2.58	2.58	2.66	1.81	2.99	3.34	3.87	3.70	3.14	2.76	1.53	1.12	2.23	0.91	0.57	0.87	1.24					
431	3.20	3.45	4.05	4.88	4.80	5.34	5.12	4.62	4.53	4.03	3.73	3.24	2.64	2.52	2.40	1.58	3.15	3.55	4.07	3.94	3.38	3.03	1.23	1.19	2.59	0.70	0.64	1.17	1.61	0.42				
432	3.58	4.07	5.02	5.91	5.76	6.34	6.19	5.69	5.57	5.05	4.75	4.23	3.60	3.34	2.82	2.16	4.18	4.61	5.13	5.01	4.46	4.10	1.73	2.21	3.64	1.54	1.70	2.24	2.65	1.41	1.08			
433	4.11	4.68	5.72	6.61	6.45	7.04	6.88	6.38	6.27	5.75	5.45	4.92	4.30	4.01	3.38	2.80	4.88	5.30	5.83	5.70	5.15	4.79	2.37	2.91	4.27	2.23	2.39	2.91	3.28	2.05	1.76	0.70		
434	4.69	4.82	4.90	5.50	5.66	6.04	5.52	5.05	5.10	4.74	4.48	4.12	3.63	3.76	3.90	3.05	3.84	4.07	4.59	4.33	3.77	3.37	2.75	2.26	2.50	2.15	1.78	1.73	1.70	1.25	1.53	1.92	2.27	
435	5.43	5.10	4.10	4.20	4.74	4.80	3.91	3.54	3.80	3.71	3.58	3.55	3.41	3.94	4.78	4.02	3.05	2.93	3.30	2.90	2.52	2.21	3.96	2.86	1.21	3.36	2.85	2.24	1.70	2.74	3.16	4.05	4.57	2.40

APPENDIX A-1. Table M-5, Muskoka region, Cluster 5
Interlake distances (critical value 4 km)

	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	541	542
501																																									
502	0.40																																								
503	0.69	0.60																																							
504	0.82	1.01	0.60																																						
505	1.36	1.63	1.25	0.65																																					
506	2.04	2.20	1.66	1.22	0.85																																				
507	4.00	4.20	3.67	3.20	2.67	2.01																																			
508	3.86	3.94	3.35	3.05	2.73	1.89	1.26																																		
509	3.38	3.45	2.85	2.57	2.30	1.45	1.46	0.50																																	
510	3.02	3.02	2.42	2.27	2.18	1.39	2.12	1.14	0.69																																
511	2.28	2.26	1.66	1.56	1.61	1.02	2.51	1.80	1.30	0.76																															
512	1.81	1.72	1.13	1.22	1.61	1.24	3.03	2.40	1.90	1.35	0.60																														
513	1.50	1.39	0.81	1.00	1.42	1.36	3.26	2.71	2.21	1.68	0.92	0.34																													
514	1.50	1.17	0.97	1.53	2.13	2.28	4.21	3.60	3.10	2.51	1.80	1.21	0.95																												
515	2.69	2.30	2.26	2.83	3.43	3.48	5.28	4.46	4.00	3.32	2.77	2.27	2.13	1.30																											
516	2.80	2.70	2.12	2.17	2.30	1.71	2.87	1.88	1.46	0.76	0.70	0.99	1.31	1.94	2.60																										
517	3.36	3.19	2.66	2.80	2.99	2.40	3.37	2.24	1.91	1.28	1.40	1.59	1.86	2.26	2.56	0.70																									
518	3.72	3.54	3.03	3.20	3.39	2.60	3.66	2.48	2.21	1.62	1.80	1.98	2.24	2.55	2.67	1.10	0.40																								
519	3.69	3.69	3.09	2.92	2.77	1.94	2.01	0.78	0.65	0.87	1.43	2.01	2.34	3.14	3.85	1.25	1.48	1.70																							
520	3.75	3.72	3.12	3.01	2.91	2.10	2.28	1.04	0.91	0.74	1.47	2.01	2.35	3.09	3.72	1.16	1.27	1.45	0.27																						
521	3.89	3.83	3.24	3.19	3.16	2.38	2.64	1.39	1.27	0.98	1.63	2.11	2.44	3.10	3.60	1.16	1.07	1.17	0.63	0.36																					
522	3.99	3.98	3.38	3.23	3.09	2.26	2.17	0.90	0.92	0.97	1.72	2.28	2.62	3.38	4.02	1.46	1.55	1.69	0.32	0.30	0.53																				
523	4.49	4.49	3.89	3.72	3.54	2.69	2.21	1.02	1.29	1.48	2.24	2.80	3.14	3.91	4.50	1.97	1.99	2.06	0.81	0.81	0.92	0.52																			
524	4.70	4.74	4.13	3.89	3.83	2.78	1.81	0.92	1.33	1.75	2.50	3.09	3.42	4.24	4.93	2.35	2.45	2.55	1.10	1.21	1.39	0.91	0.50																		
525	5.01	5.04	4.43	4.22	3.98	3.12	2.24	1.28	1.67	2.02	2.79	3.37	3.70	4.49	5.10	2.57	2.58	2.62	1.36	1.41	1.51	1.11	0.60	0.36																	
526	5.17	5.17	4.57	4.40	4.21	3.36	2.62	1.59	1.91	2.15	2.91	3.47	3.80	4.54	5.05	2.60	2.50	2.48	1.48	1.46	1.46	1.19	0.68	0.72	0.40																
527	5.20	5.16	4.56	4.46	4.33	3.50	3.00	1.87	2.10	2.19	2.92	3.44	3.77	4.44	4.84	2.50	2.29	2.20	1.56	1.45	1.34	1.24	0.85	1.10	0.86	0.47															
528	5.49	5.45	4.85	4.75	4.61	3.77	3.17	2.09	2.36	2.48	3.21	3.73	4.07	4.73	5.11	2.80	2.56	2.45	1.84	1.74	1.63	1.52	1.10	1.26	0.95	0.55	0.29														
529	4.28	4.18	3.61	3.61	3.62	2.86	3.08	1.82	1.76	1.47	2.05	2.47	2.80	3.36	3.68	1.49	1.14	1.05	1.11	0.85	0.50	0.82	1.10	1.60	1.61	1.43	1.15	1.42													
530	4.44	4.29	3.75	3.85	3.95	3.26	3.68	2.42	2.30	1.90	2.34	2.65	2.94	3.34	3.45	1.88	1.10	0.81	1.68	1.41	1.04	1.52	1.70	2.19	2.16	1.92	1.55	1.77	0.61												
531	5.10	4.99	4.42	4.44	4.45	3.68	3.65	2.41	2.47	2.28	2.88	3.29	3.61	4.10	4.27	2.30	1.84	1.62	1.82	1.60	1.30	1.55	1.48	1.88	1.72	1.38	0.92	1.05	0.83	0.82											
532	5.18	5.06	4.50	4.53	4.56	3.80	3.81	2.56	2.61	2.41	2.98	3.37	3.68	4.15	4.27	2.38	1.89	1.63	1.97	1.74	1.42	1.70	1.61	2.04	1.87	1.52	1.06	1.17	0.94	0.83	0.16										
533	5.87	5.77	5.20	5.19	5.15	4.34	4.00	2.84	3.02	2.87	3.62	4.07	4.39	4.91	5.06	3.08	2.65	2.42	2.42	2.24	2.00	2.11	1.62	2.10	1.82	1.42	1.00	0.89	1.59	1.62	0.81	0.79									
534	4.10	3.85	3.42	3.70	4.00	3.50	4.48	3.29	3.02	2.42	2.48	2.51	2.70	2.74	2.44	1.81	1.14	0.82	2.51	2.26	1.95	2.48	2.80	3.30	3.33	3.13	2.78	2.99	1.72	1.23	2.00	1.95	2.72								
535	4.32	4.03	3.66	4.00	4.36	3.93	5.00	3.82	3.54	2.92	2.91	2.88	3.00	2.88	2.33	2.27	1.64	1.35	3.04	2.79	2.48	3.02	3.33	3.83	3.85	3.63	3.26	3.46	2.24	1.71	2.43	2.38	3.10	0.53							
536	4.42	4.12	3.78	4.15	4.53	4.13	5.24	4.07	3.78	3.15	3.11	3.03	3.15	2.96	2.30	2.48	1.87	1.59	3.29	3.04	2.73	3.26	3.58	4.08	4.09	3.87	3.49	3.69	2.49	1.95	2.66	2.58	3.30	0.78	0.25						
537	4.59	4.32	3.92	4.23	4.55	4.06	4.99	3.78	3.54	2.95	3.04	3.06	3.22	3.18	2.69	2.36	1.69	1.34	3.00	2.74	2.41	2.94	3.20	3.70	3.69	3.44	3.05	3.23	2.10	1.53	2.18	2.10	2.81	0.56	0.36	0.50					
538	4.49	4.25	3.81	4.08	4.36	3.82	4.66	3.44	3.22	2.66	2.81	2.88	3.08	3.14	2.80	2.11	1.42	1.04	2.66	2.40	2.06	2.59	2.84	3.34	3.33	3.09	2.69	2.88	1.74	1.17	1.84	1.77	2.50	0.40	0.60	0.81	0.36				
539	4.77	4.54	4.09	4.33	4.58	4.00	4.72	3.47	3.30	2.78	3.00	3.12	3.34	3.44	3.12	2.30	1.60	1.20	2.71	2.44	2.08	2.59	2.79	3.29	3.24	2.97	2.55	2.71	1.70	1.10	1.68	1.57	2.26	0.71	0.87	1.05	0.55	0.32			
541	4.00	3.66	3.41	3.86	4.33	4.07	5.45	4.36	4.00	3.32	3.11	2.87	2.91	2.50	1.61	2.58	2.12	1.97	3.61	3.39	3.13	3.65	4.03	4.52	4.59	4.42	4.08	4.30	2.99	2.53	3.31	3.25	4.00	1.31	0.92	0.78	1.26	1.51	1.80		
542	6.45	6.33	5.77	5.80	5.80	5.01	4.70	3.55	3.72	3.62	4.24	4.65	4.96	5.40	5.41	3.66	3.15	2.86	3.10	2.91	2.64	2.80	2.53	2.80	2.51	2.11	1.70	1.56	2.19	2.06	1.36	1.27	0.71	2.99	3.28	3.44	2.94	2.69	2.40	4.20	
543	4.85	4.85	4.25	4.08	3.89	3.04	2.40	1.30	1.60	1.84	2.69	3.16	3.49	4.24	4.80	2.30	2.26	2.28	1.17	1.15	1.20	0.87	0.36	0.61	0.36	0.32	0.60	0.79	1.25	1.80	1.39	1.64	1.60	2.98	3.49	3.74	3.33	2.97	2.88	4.24	2.30

APPENDIX A-1. Table M-6, Muskoka region, Cluster 6
Interlake distances (critical value 4 km)

	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637
601																																					
602	1.07																																				
603	1.50	0.88																																			
604	3.35	2.40	1.90																																		
605	4.53	3.65	3.04	1.27																																	
606	5.76	4.91	4.26	2.55	1.27																																
607	6.55	5.72	5.05	3.35	2.08	0.81																															
608	7.01	6.24	5.52	3.94	2.67	1.43	0.75																														
609	6.87	6.21	5.42	4.08	2.91	1.89	1.51	0.93																													
610	5.59	4.89	4.12	2.75	1.63	1.02	1.35	1.48	1.34																												
611	3.43	2.97	2.09	1.90	2.07	2.87	3.55	3.81	3.51	2.33																											
612	2.85	2.14	1.36	0.98	1.77	2.93	3.71	4.16	4.08	2.77	1.08																										
613	2.33	1.88	0.99	1.72	2.53	3.61	4.37	4.75	4.55	3.30	1.12	0.78																									
614	1.42	1.21	0.52	2.27	3.30	4.46	5.24	5.65	5.47	4.21	2.01	1.54	0.91																								
615	1.99	1.84	1.03	2.30	3.13	4.19	4.94	5.28	5.01	3.81	1.51	1.39	0.61	0.64																							
616	3.40	3.04	2.16	2.21	2.40	3.15	3.80	4.03	3.65	2.55	0.34	1.32	1.17	1.99	1.42																						
617	4:06	3.49	2.65	1.88	1.60	2.19	2.84	3.10	2.82	1.62	0.72	1.39	1.74	2.65	2.20	0.96																					
618	6.19	5.62	4.78	3.68	2.68	2.01	1.99	1.67	0.89	1.08	2.77	3.49	3.86	4.77	4.27	2.87	2.14																				
619	6.26	5.85	4.98	4.24	3.45	3.00	3.04	2.67	1.78	2.00	2.88	3.82	4.00	4.85	4.27	2.86	2.44	1.04																			
620	5.59	5.21	4.33	3.74	3.09	2.90	3.11	2.90	2.12	1.88	2.24	3.22	3.34	4.19	3.60	2.20	1.87	1.24	0.68																		
621	4.79	4.44	3.55	3.16	2.76	2.92	3.32	3.29	2.66	1.98	1.49	2.52	2.56	3.39	2.80	1.40	1.29	1.77	1.49	0.81																	
622	2.84	3.47	3.04	4.56	5.26	6.14	6.80	6.98	6.48	5.52	3.28	3.61	2.84	2.52	2.26	3.00	3.96	5.61	5.20	4.56	3.85																
623	3.49	4.11	3.63	5.04	5.62	6.41	7.02	7.13	6.56	5.71	3.58	4.06	3.32	3.10	2.77	3.27	4.22	5.68	5.15	4.55	3.91	0.66															
624	3.96	4.24	3.53	4.44	4.74	5.34	5.87	5.90	5.26	4.53	2.69	3.47	2.87	3.06	2.51	2.35	3.20	4.37	3.78	3.19	2.62	1.63	1.40														
625	5.09	5.19	4.37	4.80	4.75	5.02	5.40	5.27	4.50	4.08	2.90	3.91	3.52	3.98	3.36	2.60	3.15	3.62	2.82	2.38	2.11	2.95	2.66	1.32													
626	6.42	6.16	5.27	4.83	4.19	3.87	3.94	3.56	2.65	2.86	3.23	4.26	4.28	5.06	4.44	3.11	2.95	1.94	0.90	1.11	1.74	4.96	4.80	3.40	2.25												
627	6.84	6.61	5.73	5.32	4.67	4.30	4.32	3.88	2.95	3.30	3.70	4.74	4.74	5.50	4.87	3.57	3.44	2.33	1.30	1.60	2.22	5.24	5.03	3.64	2.40	0.49											
628	7.27	7.07	6.19	5.81	5.15	4.75	4.72	4.24	3.30	3.76	4.18	5.23	5.20	5.95	5.32	4.04	3.94	2.76	1.75	2.09	2.70	5.55	5.30	3.93	2.64	0.98	0.49										
629	8.25	8.04	7.15	6.68	5.92	5.36	5.20	4.62	3.70	4.42	5.12	6.15	6.16	6.92	6.29	5.00	4.82	3.36	2.48	2.95	3.63	6.50	6.21	4.87	3.56	1.89	1.43	0.98									
630	5.69	5.77	4.94	5.26	5.09	5.23	5.53	5.32	4.49	4.25	3.36	4.41	4.06	4.57	3.94	3.08	3.52	3.65	2.73	2.43	2.36	3.51	3.16	1.89	0.80	2.01	2.05	2.20	3.07								
631	4.55	5.10	4.53	5.73	6.13	6.75	7.28	7.28	6.60	5.93	4.06	4.75	4.06	4.02	3.59	3.73	4.61	5.71	5.02	4.49	3.99	1.72	1.08	1.41	2.25	4.49	4.62	4.80	5.64	2.60							
632	4.53	5.16	4.65	5.95	6.41	7.08	7.62	7.64	6.98	6.28	4.34	4.96	4.25	4.13	3.75	4.01	4.92	6.08	5.41	4.88	4.36	1.70	1.05	1.75	2.65	4.89	5.02	5.20	6.04	3.00	0.40						
633	4.73	5.44	5.00	6.39	6.91	7.60	8.16	8.19	7.53	6.82	4.84	5.41	4.68	4.47	4.14	4.52	5.43	6.63	5.96	5.43	4.90	1.97	1.37	2.29	3.18	5.43	5.55	5.71	6.52	3.51	0.94	0.55					
634	5.06	5.56	4.96	6.04	6.35	6.88	7.36	7.30	6.57	6.01	4.29	5.06	4.41	4.45	3.98	3.96	4.78	5.69	4.92	4.45	4.04	2.25	1.61	1.61	2.10	4.32	4.39	4.52	5.32	2.34	0.54	0.81	1.21				
635	6.06	6.51	5.86	6.77	6.92	7.29	7.68	7.53	6.73	6.36	4.93	5.81	5.22	5.36	4.85	4.60	5.33	5.87	4.98	4.63	4.38	3.27	2.64	2.36	2.28	4.25	4.20	4.22	4.88	2.25	1.57	1.77	2.01	1.03			
636	6.24	6.57	5.85	6.54	6.55	6.80	7.13	6.92	6.08	5.83	4.65	5.61	5.11	5.39	4.82	4.34	4.95	5.25	4.31	4.03	3.89	3.58	3.01	2.33	1.80	3.53	3.45	3.44	4.08	1.60	2.03	2.33	2.68	1.53	0.81		
637	6.78	7.01	6.23	6.70	6.55	6.65	6.89	6.60	5.72	5.65	4.80	5.82	5.41	5.81	5.20	4.51	4.99	4.94	3.94	3.78	3.81	4.24	3.72	2.82	1.91	3.09	2.91	2.80	3.34	1.46	2.80	3.13	3.50	2.33	1.60	0.82	
638	5.45	6.31	6.02	7.58	8.20	8.96	9.54	9.60	8.94	8.21	6.16	6.62	5.86	5.50	5.28	5.84	6.78	8.05	7.37	6.85	6.31	3.02	2.58	3.70	4.59	6.83	6.92	7.05	7.82	4.87	2.36	1.97	1.42	2.53	3.04	3.82	4.64

APPENDIX A-1. Table M-7, Muskoka region, Cluster 7
Interlake distances (critical value 4 km)

	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735
701																																			
702	0.78																																		
703	1.01	0.76																																	
704	1.75	1.01	1.55																																
705	2.97	2.20	2.40	1.36																															
706	1.89	1.21	1.08	1.13	1.38																														
707	1.79	1.40	0.78	1.82	2.18	0.83																													
708	2.91	2.20	2.09	1.73	0.92	1.03	1.60																												
709	2.72	2.07	1.82	1.82	1.31	0.86	1.23	0.45																											
710	2.75	2.23	1.75	2.26	1.98	1.15	0.99	1.11	0.87																										
711	3.57	2.87	2.71	2.37	1.30	1.68	2.12	0.67	0.90	1.36																									
712	4.80	4.08	3.94	3.49	2.21	2.91	3.32	1.89	2.12	2.45	1.23																								
713	4.97	4.28	4.08	3.74	2.51	3.09	3.42	2.09	2.26	2.50	1.41	0.35																							
714	4.98	4.25	4.14	3.61	2.30	3.10	3.54	2.07	2.33	2.69	1.43	0.25	0.50																						
715	6.21	5.46	5.39	4.75	3.40	4.34	4.81	3.31	3.59	3.94	2.69	1.49	1.50	1.26																					
716	7.01	6.31	6.12	5.71	4.39	5.12	5.45	4.11	4.30	4.49	3.44	2.23	2.04	2.09	1.21																				
717	7.53	6.86	6.59	6.34	5.07	5.66	5.88	4.68	4.81	4.90	4.01	2.86	2.60	2.77	2.05	0.85																			
718	5.01	4.41	4.04	4.10	3.06	3.21	3.29	2.37	2.35	2.30	1.78	1.33	1.03	1.52	2.32	2.39	2.64																		
719	5.07	4.54	4.07	4.38	3.51	3.38	3.29	2.71	2.57	2.33	2.21	2.02	1.73	2.23	3.00	2.90	2.97	0.71																	
720	4.74	4.29	3.74	4.26	3.55	3.19	2.95	2.68	2.45	2.06	2.31	2.42	2.18	2.65	3.54	3.50	3.57	1.22	0.60																
721	4.32	4.27	3.52	4.79	4.77	3.70	2.98	3.89	3.46	2.79	3.94	4.60	4.45	4.85	5.91	5.95	5.97	3.62	3.05	2.45															
722	4.49	4.52	3.76	5.11	5.19	4.06	3.29	4.33	3.89	3.22	4.41	5.10	4.96	5.36	6.42	6.45	6.45	4.13	3.55	2.95	0.51														
723	3.89	3.98	3.22	4.64	4.86	3.64	2.84	4.04	3.59	2.93	4.22	5.04	4.94	5.30	6.43	6.58	6.66	4.20	3.70	3.10	0.81	0.65													
724	4.27	4.42	3.66	5.12	5.37	4.14	3.32	4.55	4.11	3.45	4.73	5.53	5.42	5.79	6.90	7.01	7.05	4.65	4.11	3.51	1.09	0.67	0.51												
725	4.65	5.06	4.41	5.96	6.55	5.20	4.37	5.86	5.42	4.82	6.17	7.12	7.05	7.38	8.55	8.76	8.84	6.37	5.88	5.28	2.90	2.47	2.18	1.81											
726	5.44	5.77	5.07	6.60	7.04	5.74	4.91	6.27	5.83	5.18	6.50	7.33	7.21	7.58	8.70	8.76	8.75	6.43	5.86	5.26	2.81	2.31	2.29	1.80	0.98										
727	5.02	5.27	4.54	6.05	6.39	5.12	4.30	5.59	5.15	4.49	5.78	6.59	6.46	6.84	7.94	8.00	8.00	5.67	5.10	4.50	2.05	1.55	1.57	1.06	1.20	0.76									
728	6.06	6.25	5.51	6.97	7.17	5.98	5.17	6.32	5.88	5.21	6.41	7.07	6.89	7.32	8.32	8.22	8.10	6.00	5.36	4.79	2.48	2.00	2.33	1.85	2.15	1.26	1.11								
729	6.21	6.31	5.55	6.92	6.97	5.87	5.10	6.08	5.66	4.99	6.09	6.62	6.42	6.87	7.80	7.61	7.43	5.48	4.81	4.26	2.19	1.81	2.33	1.95	2.82	2.03	1.64	0.83							
730	5.74	5.78	5.02	6.36	6.37	5.30	4.55	5.48	5.06	4.39	5.48	6.02	5.82	6.26	7.21	7.05	6.91	4.89	4.22	3.67	1.60	1.26	1.84	1.55	2.80	2.17	1.59	1.20	0.61						
731	4.90	4.79	4.04	5.21	5.04	4.10	3.43	4.13	3.73	3.08	4.07	4.56	4.37	4.81	5.77	5.68	5.61	3.45	2.80	2.23	0.67	0.95	1.46	1.62	3.41	3.16	2.41	2.56	2.06	1.45					
732	5.30	5.17	4.43	5.57	5.34	4.45	3.81	4.42	4.04	3.40	4.32	4.72	4.50	4.96	5.86	5.68	5.55	3.54	2.86	2.33	1.06	1.25	1.82	1.91	3.65	3.30	2.58	2.55	1.94	1.37	0.40				
733	6.31	6.12	5.40	6.42	6.02	5.29	4.73	5.10	4.76	4.18	4.87	5.02	4.75	5.24	5.95	5.55	5.27	3.73	3.02	2.62	2.14	2.28	2.89	2.92	4.56	4.06	3.41	3.07	2.29	1.90	1.47	1.08			
734	6.55	6.39	5.67	6.73	6.37	5.60	5.01	5.46	5.11	4.51	5.24	5.41	5.14	5.63	6.34	5.92	5.61	4.12	3.41	3.01	2.29	2.36	2.99	2.96	4.51	3.93	3.33	2.87	2.06	1.76	1.66	1.25	0.39		
735	6.59	6.35	5.66	6.58	6.07	5.45	4.95	5.17	4.86	4.32	4.88	4.90	4.60	5.10	5.72	5.23	4.89	3.58	2.87	2.57	2.55	2.75	3.33	3.40	5.07	4.58	3.92	3.57	2.78	2.42	1.88	1.51	0.51	0.75	
736	7.05	6.74	6.08	6.86	6.21	5.75	5.34	5.34	5.08	4.60	4.95	4.78	4.45	4.95	5.41	4.79	4.35	3.45	2.80	2.66	3.22	3.47	4.02	4.14	5.84	5.36	4.70	4.35	3.54	3.20	2.56	2.23	1.30	1.49	0.78

APPENDIX A-1. Table A-8, Algoma region, Cluster 1
Interlake distances (critical value 3 km)

	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133
101																																	
102	0.60																																
103	2.52	1.92																															
104	3.52	2.93	1.22																														
105	3.60	3.00	1.14	0.41																													
106	3.71	3.11	1.30	0.28	0.22																												
107	4.01	3.41	1.62	0.51	0.50	0.32																											
108	4.53	3.93	2.01	1.35	1.03	1.06	0.94																										
109	4.90	4.30	2.43	1.43	1.30	1.20	0.92	0.72																									
110	5.10	4.52	2.64	2.28	1.91	2.00	1.92	0.98	1.50																								
111	4.54	3.96	2.06	1.75	1.36	1.48	1.46	0.61	1.30	0.58																							
112	3.52	2.94	1.08	1.30	0.92	1.14	1.34	1.17	1.80	1.58	1.02																						
113	3.28	2.69	0.81	1.14	0.81	1.03	1.28	1.32	1.88	1.84	1.26	0.28																					
114	2.13	1.72	1.42	2.62	2.44	2.64	2.94	3.04	3.62	3.30	2.82	1.87	1.75																				
115	1.27	0.95	1.71	2.91	2.85	3.01	3.32	3.62	4.12	4.03	3.51	2.50	2.31	0.86																			
116	2.28	1.97	1.86	3.04	2.84	3.05	3.34	3.36	3.98	3.52	3.08	2.19	2.11	0.45	1.03																		
117	2.83	2.56	2.33	3.44	3.19	3.41	3.68	3.55	4.22	3.54	3.18	2.42	2.40	1.00	1.62	0.61																	
118	3.82	3.42	2.41	3.20	2.85	3.07	3.27	2.84	3.56	2.56	2.33	1.93	2.06	1.70	2.55	1.58	1.24																
119	4.13	3.64	2.15	2.60	2.20	2.41	2.55	1.97	2.69	1.61	1.42	1.30	1.53	2.06	2.91	2.14	2.01	0.94															
120	4.70	4.16	2.41	2.44	2.02	2.18	2.22	1.41	2.09	0.78	0.81	1.35	1.63	2.75	3.54	2.90	2.84	1.79	0.85														
121	5.09	4.53	2.69	2.47	2.08	2.20	2.15	1.24	1.80	0.32	0.72	1.61	1.89	3.21	3.98	3.40	3.37	2.33	1.39	0.54													
122	6.02	5.52	3.89	3.94	3.53	3.68	3.67	2.77	3.31	1.81	2.21	2.86	3.14	3.94	4.79	3.96	3.69	2.45	1.89	1.53	1.53												
123	5.56	5.05	3.40	3.45	3.05	3.20	3.20	2.32	2.90	1.40	1.75	2.36	2.64	3.49	4.34	3.54	3.32	2.10	1.43	1.03	1.10	0.50											
124	27.09	27.00	27.08	26.32	26.72	26.52	26.41	27.20	26.60	28.10	27.80	27.63	27.44	28.26	27.85	28.68	29.26	29.46	28.92	28.60	28.40	29.90	29.50										
125	4.72	4.22	2.66	2.94	2.53	2.72	2.80	2.06	2.75	1.42	1.46	1.71	1.97	2.64	3.49	2.69	2.50	1.32	0.58	0.67	1.13	1.30	0.85	29.21									
126	27.59	27.51	27.64	26.90	27.30	27.10	27.00	27.80	27.21	28.71	28.40	28.21	28.01	28.80	28.37	29.22	29.81	30.03	29.50	29.20	29.01	30.52	30.11	0.85	29.80								
127	4.34	3.89	2.56	3.10	2.71	2.92	3.06	2.46	3.18	1.98	1.89	1.80	2.01	2.22	3.08	2.19	1.92	0.70	0.51	1.20	1.72	1.77	1.40	29.42	0.63	30.01							
128	4.08	3.76	3.00	3.86	3.51	3.73	3.94	3.50	4.22	3.14	2.97	2.60	2.72	2.06	2.83	1.80	1.27	0.67	1.56	2.36	2.88	2.70	2.45	30.08	1.79	30.64	1.17						
129	4.14	4.10	4.25	5.35	5.08	5.30	5.56	5.31	6.01	5.08	4.84	4.25	4.28	2.88	3.21	2.44	1.92	2.52	3.47	4.30	4.84	4.59	4.40	31.06	3.76	31.58	3.13	1.97					
130	3.73	3.57	3.42	4.48	4.19	4.41	4.66	4.39	5.09	4.17	3.92	3.34	3.38	2.12	2.63	1.70	1.12	1.61	2.56	3.40	3.94	3.81	3.57	30.38	2.88	30.92	2.25	1.12	0.92				
131	5.11	4.90	4.43	5.32	4.96	5.19	5.39	4.89	5.61	4.39	4.33	4.05	4.18	3.32	3.96	2.96	2.35	2.12	2.92	3.62	4.10	3.44	3.38	31.51	2.97	32.06	2.44	1.46	1.52	1.39			
132	5.22	4.92	4.11	4.85	4.47	4.69	4.85	4.25	4.97	3.66	3.67	3.55	3.72	3.23	3.98	2.95	2.39	1.70	2.31	2.92	3.36	2.59	2.56	31.15	2.25	31.72	1.80	1.17	2.22	1.75	0.85		
133	5.81	5.42	4.24	4.72	4.31	4.50	4.60	3.85	4.51	3.07	3.24	3.44	3.67	3.70	4.53	3.54	3.06	2.00	2.14	2.43	2.75	1.63	1.75	31.01	1.80	31.60	1.68	1.80	3.31	2.72	1.94	1.10	
134	6.59	6.15	4.75	5.00	4.59	4.75	4.79	3.92	4.50	3.00	3.34	3.81	4.07	4.46	5.32	4.36	3.94	2.78	2.61	2.57	2.70	1.22	1.60	31.10	2.10	31.71	2.27	2.73	4.31	3.71	2.92	2.10	1.00

APPENDIX A-1. Table A-9, Algoma region, Cluster 2
Interlake distances (critical value 3 km)

	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
201																			
202	1.12																		
203	1.73	1.06																	
204	2.45	1.40	1.06																
205	2.97	1.87	1.70	0.64															
206	3.58	2.46	2.42	1.36	0.72														
207	3.61	2.50	2.27	1.22	0.63	0.45													
208	3.44	2.60	1.71	1.41	1.62	2.11	1.70												
209	2.91	2.41	1.35	1.81	2.31	2.96	2.62	1.13											
210	2.09	1.49	0.42	1.17	1.79	2.51	2.28	1.40	0.92										
211	1.70	1.71	1.03	2.08	2.72	3.44	3.26	2.31	1.40	1.00									
212	2.39	2.52	1.75	2.73	3.35	4.07	3.83	2.58	1.48	1.57	0.81								
213	2.27	2.12	1.20	2.12	2.73	3.44	3.19	1.97	0.92	0.95	0.58	0.64							
214	3.55	3.12	2.06	2.47	2.91	3.51	3.13	1.46	0.72	1.64	1.93	1.70	1.36						
215	3.98	3.47	2.41	2.64	2.98	3.51	3.10	1.40	1.08	1.98	2.40	2.20	1.84	0.50					
216	5.77	5.16	4.13	4.10	4.24	4.56	4.11	2.69	2.86	3.72	4.21	3.93	3.64	2.28	1.80				
217	5.19	4.84	3.78	4.12	4.46	4.96	4.54	2.86	2.44	3.36	3.50	3.00	2.92	1.72	1.49	1.44			
218	3.72	3.81	2.91	3.73	4.30	4.97	4.65	3.09	2.02	2.60	2.12	1.34	1.71	1.70	2.06	3.37	2.10		
219	4.25	4.39	3.51	4.33	4.88	5.55	5.22	3.62	2.60	3.20	2.69	1.90	2.31	2.20	2.48	3.55	2.16	0.60	
220	5.95	5.64	4.58	4.92	5.25	5.73	5.30	3.64	3.24	4.16	4.25	3.69	3.68	2.52	2.28	1.70	0.81	2.62	2.51

APPENDIX A-1. Table A-10, Algoma region, Cluster 3
Interlake distances (critical value 3 km)

	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334
301																																		
302	0.94																																	
303	0.90	0.89																																
304	1.75	1.10	0.99																															
305	2.32	2.11	1.43	1.22																														
306	3.32	2.83	2.43	1.73	1.22																													
307	2.83	2.59	1.94	1.63	0.51	0.94																												
308	2.79	2.77	1.97	1.97	0.76	1.57	0.63																											
309	1.77	2.21	1.33	2.04	1.49	2.70	1.84	1.43																										
310	0.81	1.50	0.86	1.84	1.94	3.10	2.42	2.22	1.00																									
311	1.14	1.91	1.25	2.22	2.15	3.35	2.60	2.30	0.92	0.41																								
312	1.20	2.06	1.60	2.48	2.47	3.67	2.91	2.61	1.20	0.64	0.32																							
313	0.98	1.92	1.58	2.56	2.77	3.92	3.24	3.00	1.65	0.82	0.73	0.50																						
314	0.99	1.92	1.75	2.69	3.03	4.15	3.51	3.31	1.99	1.10	1.08	0.86	0.36																					
315	1.00	1.91	1.80	2.73	3.11	4.22	3.61	3.42	2.12	1.20	1.21	1.00	0.50	0.14																				
316	2.21	2.91	2.11	2.94	2.41	3.61	2.70	2.20	0.94	1.43	1.08	1.14	1.63	1.98	2.12																			
317	2.42	3.04	2.20	2.96	2.30	3.47	2.55	2.00	0.92	1.62	1.30	1.41	1.91	2.27	2.41	0.32																		
318	2.72	3.20	2.31	2.90	2.02	3.11	2.16	1.56	0.98	1.92	1.70	1.89	2.39	2.75	2.88	0.91	0.60																	
319	3.22	3.42	2.55	2.79	1.63	2.40	1.51	0.90	1.52	2.51	2.44	2.69	3.16	3.51	3.64	1.91	1.63	1.04																
320	3.13	3.18	2.36	2.42	1.21	1.87	1.00	0.45	1.60	2.50	2.52	2.81	3.24	3.57	3.69	2.21	1.97	1.44	0.54															
321	3.67	3.69	2.88	2.86	1.64	2.00	1.30	0.92	2.12	3.04	3.04	3.32	3.77	4.10	4.22	2.65	2.38	1.80	0.76	0.54														
322	3.84	4.06	3.19	3.40	2.21	2.82	2.01	1.46	2.11	3.11	3.00	3.23	3.72	4.07	4.20	2.32	2.01	1.41	0.64	1.02	0.85													
323	3.00	3.54	2.67	3.30	2.44	3.50	2.56	1.94	1.33	2.20	1.92	2.05	2.55	2.91	3.05	0.94	0.64	0.41	1.30	1.77	2.06	1.51												
324	3.38	4.04	3.21	3.93	3.14	4.22	3.28	2.66	1.90	2.60	2.25	2.28	2.75	3.08	3.22	1.17	1.00	1.12	1.98	2.48	2.72	2.06	0.72											
325	2.67	3.40	2.62	3.45	2.86	4.04	3.11	2.56	1.43	1.91	1.53	1.52	1.97	2.30	2.44	0.51	0.57	1.08	2.12	2.51	2.88	2.41	0.90	0.78										
326	3.13	3.90	3.14	3.98	3.38	4.55	3.61	3.04	1.97	2.40	2.00	1.94	2.34	2.64	2.77	1.04	1.08	1.50	2.51	2.94	3.26	2.69	1.21	0.71	0.54									
327	3.10	4.03	3.52	4.50	4.28	5.50	4.63	4.16	2.80	2.66	2.28	2.02	2.12	2.24	2.32	1.97	2.21	2.79	3.83	4.18	4.59	4.13	2.62	2.22	1.73	1.51								
328	3.72	4.65	4.16	5.14	4.90	6.12	5.24	4.75	3.42	3.30	2.92	2.66	2.73	2.82	2.89	2.56	2.77	3.32	4.37	4.74	5.13	4.61	3.10	2.61	2.25	1.92	0.64							
329	3.73	4.66	4.13	5.10	4.82	6.03	5.14	4.63	3.33	3.28	2.88	2.64	2.75	2.86	2.94	2.44	2.64	3.18	4.22	4.61	4.98	4.44	2.94	2.42	2.10	1.75	0.63	0.22						
330	3.83	4.75	4.22	5.19	4.88	6.10	5.20	4.69	3.40	3.36	2.97	2.73	2.85	2.96	3.04	2.50	2.69	3.22	4.25	4.65	5.02	4.46	2.97	2.43	2.15	1.77	0.73	0.28	0.10					
331	4.43	5.35	4.79	5.75	5.38	6.58	5.66	5.12	3.89	3.94	3.54	3.31	3.45	3.57	3.65	2.97	3.12	3.61	4.61	5.05	5.37	4.75	3.31	2.69	2.56	2.11	1.33	0.81	0.71	0.61				
332	3.90	4.73	4.00	4.87	4.27	5.42	4.48	3.89	2.86	3.22	2.82	2.70	3.03	3.28	3.40	1.93	1.97	2.33	3.28	3.75	4.02	3.35	1.98	1.30	1.43	0.89	1.49	1.58	1.36	1.33	1.43			
333	4.08	4.81	4.00	4.77	3.99	5.06	4.12	3.50	2.73	3.32	2.94	2.91	3.32	3.62	3.76	1.90	1.81	1.97	2.77	3.28	3.47	2.72	1.57	0.85	1.41	0.98	2.20	2.38	2.16	2.14	2.21	0.81		
334	4.84	5.24	4.34	4.71	3.57	4.21	3.41	2.83	3.08	4.05	3.82	3.97	4.47	4.83	4.97	2.86	2.56	2.13	1.94	2.41	2.22	1.40	1.92	1.99	2.68	2.69	4.20	4.52	4.31	4.30	4.42	3.00	2.21	
335	3.90	4.51	3.65	4.30	3.40	4.39	3.45	2.82	2.32	3.10	2.77	2.83	3.30	3.64	3.78	1.70	1.49	1.40	2.02	2.56	2.69	1.92	1.00	0.57	1.35	1.21	2.69	3.01	2.80	2.80	2.96	1.53	0.81	1.51

APPENDIX A-1. Table A-11, Algoma region, Cluster 4
Interlake distances (critical value 3 km)

	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436
401																																				
402	0.91																																			
403	1.17	0.36																																		
404	1.20	0.32	0.41																																	
405	1.61	0.76	0.78	0.45																																
406	2.52	1.61	1.40	1.33	1.03																															
407	3.13	2.22	2.00	1.94	1.62	0.61																														
408	3.20	2.30	2.12	2.00	1.63	0.73	0.32																													
409	3.81	2.93	2.79	2.62	2.20	1.43	0.99	0.72																												
410	3.77	2.91	2.82	2.60	2.16	1.56	1.25	0.94	0.41																											
411	3.29	2.51	2.50	2.20	1.75	1.52	1.50	1.20	1.06	0.72																										
412	2.35	1.52	1.50	1.21	0.76	0.82	1.20	1.08	1.51	1.41	1.00																									
413	2.20	1.56	1.70	1.30	0.95	1.52	1.92	1.77	2.06	1.84	1.20	0.72																								
414	1.98	1.58	1.82	1.41	1.22	2.02	2.48	2.34	2.64	2.40	1.73	1.27	0.58																							
415	1.42	1.20	1.51	1.14	1.14	2.13	2.66	2.59	3.01	2.83	2.20	1.52	1.00	0.58																						
416	1.17	1.14	1.49	1.17	1.28	2.30	2.87	2.82	3.28	3.11	2.50	1.77	1.30	0.89	0.32																					
417	2.60	2.50	2.80	2.41	2.28	3.09	3.50	3.33	3.50	3.19	2.47	2.30	1.58	1.08	1.30	1.46																				
418	2.92	2.56	2.79	2.38	2.11	2.69	3.00	2.78	2.83	2.48	1.77	1.87	1.20	0.98	1.50	1.77	0.81																			
419	4.16	3.44	3.47	3.14	2.70	2.51	2.38	2.06	1.60	1.20	1.00	1.98	1.97	2.35	2.91	3.23	2.75	1.94																		
420	4.65	3.85	3.81	3.53	3.09	2.62	2.30	2.00	1.34	1.06	1.36	2.33	2.53	3.00	3.52	3.83	3.52	2.72	0.81																	
421	5.37	4.63	4.64	4.33	3.88	3.55	3.28	2.97	2.33	2.02	2.14	3.14	3.18	3.54	4.11	4.43	3.80	3.00	1.21	0.98																
422	5.51	4.80	4.83	4.50	4.06	3.78	3.54	3.22	2.60	2.28	2.33	3.33	3.31	3.64	4.22	4.53	3.81	3.03	1.36	1.26	0.30															
423	5.16	4.48	4.53	4.19	3.75	3.55	3.36	3.05	2.47	2.12	2.06	3.04	2.97	3.27	3.85	4.16	3.41	2.63	1.06	1.20	0.50	0.40														
424	4.61	3.92	3.96	3.62	3.19	3.00	2.85	2.53	2.01	1.63	1.50	2.48	2.42	2.75	3.32	3.64	3.00	2.20	0.50	0.89	0.81	0.89	0.57													
425	4.60	4.08	4.22	3.83	3.45	3.59	3.61	3.30	2.94	2.53	2.11	2.88	2.52	2.62	3.19	3.48	2.44	1.75	1.38	2.02	1.70	1.58	1.21	1.14												
426	3.68	3.16	3.31	2.92	2.55	2.81	2.93	2.65	2.46	2.06	1.46	2.04	1.61	1.70	2.28	2.58	1.70	0.92	1.17	1.97	2.10	2.11	1.71	1.32	0.92											
427	3.61	3.18	3.36	2.95	2.62	3.00	3.18	2.91	2.78	2.39	1.75	2.20	1.68	1.64	2.19	2.48	1.43	0.72	1.53	2.33	2.42	2.40	2.00	1.65	1.03	0.36										
428	2.60	2.82	3.16	2.82	2.83	3.76	4.24	4.11	4.36	4.07	3.35	3.04	2.34	1.77	1.70	1.68	0.92	1.73	3.67	4.44	4.70	4.70	4.30	3.91	3.26	2.60	2.30									
429	3.34	3.42	3.75	3.37	3.29	4.12	4.52	4.34	4.46	4.12	3.41	3.33	2.61	2.10	2.24	2.30	1.03	1.64	3.49	4.30	4.39	4.34	3.95	3.64	2.80	2.34	1.99	0.81								
430	3.83	3.80	4.10	3.71	3.55	4.27	4.61	4.39	4.40	4.04	3.34	3.45	2.75	2.33	2.60	2.73	1.30	1.61	3.24	4.05	4.02	3.93	3.54	3.31	2.35	2.08	1.72	1.42	0.64							
431	3.89	3.69	3.95	3.54	3.30	3.88	4.14	3.90	3.83	3.44	2.78	3.06	2.41	2.12	2.53	2.73	1.30	1.20	2.56	3.36	3.29	3.20	2.82	2.59	1.63	1.41	1.06	1.84	1.22	0.73						
432	4.25	4.03	4.28	3.86	3.61	4.14	4.37	4.11	3.98	3.58	2.95	3.32	2.70	2.45	2.88	3.09	1.66	1.50	2.62	3.40	3.22	3.10	2.73	2.58	1.52	1.53	1.21	2.16	1.49	0.91	0.36					
433	5.34	4.92	5.10	4.70	4.35	4.57	4.60	4.30	3.93	3.52	3.11	3.83	3.40	3.38	3.92	4.19	2.92	2.42	2.33	2.92	2.34	2.12	1.86	2.02	1.00	1.80	1.75	3.58	2.94	2.35	1.75	1.46				
434	5.17	4.69	4.84	4.44	4.07	4.22	4.22	3.91	3.51	3.11	2.73	3.51	3.14	3.19	3.75	4.03	2.87	2.27	1.91	2.47	1.91	1.70	1.42	1.58	0.63	1.53	1.56	3.61	3.04	2.50	1.82	1.60	0.45			
435	5.88	5.32	5.42	5.04	4.64	4.61	4.49	4.18	3.65	3.28	3.09	4.00	3.75	3.91	4.48	4.78	3.72	3.05	2.12	2.40	1.55	1.26	1.20	1.65	1.30	2.20	2.33	4.49	3.95	3.41	2.73	2.50	1.14	0.91		
436	6.44	5.89	6.00	5.62	5.22	5.19	5.06	4.74	4.20	3.83	3.67	4.58	4.33	4.46	5.03	5.33	4.21	3.58	2.69	2.92	2.00	1.70	1.73	2.21	1.84	2.76	2.86	4.94	4.34	3.77	3.13	2.86	1.41	1.34	0.58	
437	6.79	6.25	6.36	5.98	5.58	5.55	5.41	5.09	4.54	4.18	4.02	4.94	4.69	4.81	5.38	5.67	4.53	3.92	3.05	3.24	2.30	2.00	2.06	2.56	2.19	3.11	3.20	5.24	4.62	4.03	3.42	3.13	1.68	1.66	0.94	0.36

APPENDIX A-1. Table A-12, Algoma region, Cluster 5
Interlake distances (critical value 3 km)

	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
501																									
502	0.76																								
503	1.27	0.63																							
504	1.52	1.10	0.58																						
505	2.12	1.70	1.12	0.61																					
506	2.50	2.10	1.51	1.00	0.40																				
507	3.57	3.13	2.51	2.06	1.46	1.08																			
508	3.30	3.10	2.60	2.02	1.53	1.20	1.20																		
509	3.81	3.54	2.98	2.43	1.87	1.49	0.98	0.58																	
510	3.04	3.05	2.69	2.12	1.84	1.68	2.06	0.89	1.42																
511	2.04	2.02	1.70	1.17	1.10	1.17	2.05	1.33	1.90	1.03															
512	1.53	1.56	1.34	0.91	1.12	1.35	2.36	1.81	2.35	1.52	0.51														
513	1.40	2.14	2.51	2.50	2.97	3.26	4.30	3.64	4.22	3.04	2.33	1.94													
514	1.80	2.42	2.62	2.44	2.78	3.00	3.96	3.14	3.72	2.44	1.91	1.66	0.76												
515	2.47	2.69	2.51	2.02	2.00	2.02	2.73	1.70	2.27	0.89	0.91	1.17	2.20	1.55											
516	4.25	4.36	4.03	3.47	3.16	2.95	3.03	1.87	2.10	1.35	2.34	2.80	3.93	3.21	1.80										
517	3.41	3.70	3.54	3.05	2.96	2.91	3.40	2.21	2.68	1.33	1.90	2.20	2.82	2.06	1.03	1.24									
518	3.28	3.71	3.67	3.26	3.30	3.32	3.96	2.82	3.33	1.92	2.20	2.35	2.42	1.66	1.30	1.93	0.72								
519	2.24	2.90	3.14	2.97	3.31	3.52	4.46	3.58	4.16	2.82	2.41	2.20	0.94	0.54	1.92	3.41	2.20	1.65							
520	3.72	4.46	4.78	4.66	5.01	5.22	6.12	5.16	5.73	4.33	4.08	3.89	2.32	2.24	3.47	4.57	3.35	2.64	1.70						
521	3.11	3.80	4.06	3.89	4.20	4.39	5.28	4.31	4.88	3.48	3.24	3.09	1.73	1.46	2.62	3.79	2.56	1.87	0.92	0.85					
522	3.67	4.21	4.26	3.91	4.02	4.08	4.75	3.62	4.13	2.73	2.93	3.00	2.55	1.89	2.06	2.61	1.49	0.81	1.63	2.04	1.41				
523	4.72	5.19	5.15	4.73	4.73	4.70	5.18	3.98	4.40	3.13	3.63	3.83	3.68	2.98	2.73	2.47	1.80	1.49	2.77	2.92	2.47	1.14			
524	5.11	5.49	5.37	4.88	4.78	4.69	5.00	3.80	4.13	3.03	3.73	4.02	4.22	3.48	2.86	2.06	1.84	1.84	3.36	3.71	3.20	1.80	0.81		
525	4.88	5.19	4.99	4.48	4.31	4.18	4.40	3.21	3.51	2.50	3.31	3.66	4.16	3.40	2.50	1.41	1.49	1.75	3.38	4.02	3.41	2.00	1.30	0.67	

APPENDIX A-1. Table A-13, Algoma region, Cluster 6
Interlake distances (critical value 3 km)

	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627
601																											
602	0.99																										
603	1.20	0.94																									
604	0.57	1.14	0.85																								
605	1.22	1.70	1.03	0.67																							
606	1.58	2.21	1.57	1.10	0.54																						
607	2.62	2.88	1.96	2.06	1.41	1.30																					
608	2.19	2.38	1.46	1.63	1.03	1.10	0.51																				
609	2.47	2.44	1.50	1.92	1.43	1.61	0.81	0.54																			
610	1.49	1.39	0.45	1.00	0.86	1.35	1.53	1.02	1.06																		
611	1.84	1.14	0.78	1.61	1.78	2.30	2.40	1.91	1.73	0.98																	
612	3.41	2.42	2.88	3.50	3.90	4.44	4.63	4.14	3.90	3.20	2.24																
613	2.83	1.88	2.00	2.76	3.02	3.55	3.57	3.10	2.82	2.24	1.25	1.12															
614	3.18	2.25	2.26	3.06	3.26	3.78	3.67	3.23	2.89	2.44	1.49	1.25	0.40														
615	3.29	2.43	2.25	3.09	3.19	3.68	3.40	3.00	2.60	2.33	1.48	1.75	0.81	0.50													
616	3.00	2.40	1.80	2.63	2.51	2.92	2.39	2.05	1.58	1.68	1.26	2.72	1.62	1.51	1.10												
617	3.14	3.05	2.12	2.59	2.09	2.20	1.08	1.10	0.67	1.70	2.19	4.23	3.11	3.10	2.73	1.63											
618	3.05	3.14	2.20	2.48	1.89	1.87	0.60	0.86	0.73	1.75	2.45	4.60	3.50	3.54	3.20	2.12	0.57										
619	3.36	3.12	2.25	2.85	2.42	2.61	1.57	1.51	1.00	1.88	2.14	4.00	2.89	2.82	2.40	1.30	0.50	1.06									
620	4.48	4.22	3.36	3.96	3.49	3.61	2.41	2.52	2.06	3.00	3.18	4.79	3.71	3.55	3.07	2.11	1.41	1.81	1.12								
621	4.07	3.84	2.97	3.55	3.08	3.21	2.02	2.11	1.65	2.59	2.83	4.55	3.45	3.32	2.86	1.84	1.00	1.43	0.72	0.41							
622	4.15	3.76	2.97	3.67	3.30	3.52	2.47	2.43	1.91	2.67	2.66	4.11	3.05	2.86	2.38	1.49	1.39	1.92	0.92	0.71	0.67						
623	4.11	3.42	2.93	3.77	3.64	4.02	3.32	3.08	2.56	2.82	2.30	2.98	2.08	1.77	1.28	1.14	2.36	2.92	1.89	2.10	2.04	1.40					
624	4.16	3.40	3.01	3.86	3.80	4.22	3.61	3.33	2.83	2.95	2.32	2.69	1.88	1.53	1.08	1.30	2.69	3.24	2.24	2.50	2.43	1.80	0.40				
625	3.57	2.80	2.44	3.29	3.28	3.72	3.24	2.91	2.44	2.42	1.73	2.30	1.36	1.06	0.57	0.86	2.44	2.95	2.04	2.57	2.41	1.87	0.72	0.60			
626	4.03	3.13	3.02	3.86	3.97	4.46	4.12	3.74	3.31	3.11	2.25	1.80	1.30	0.91	0.78	1.75	3.35	3.86	2.96	3.42	3.30	2.72	1.36	0.98	0.92		
627	4.16	3.26	3.16	4.00	4.11	4.60	4.25	3.88	3.45	3.26	2.39	1.84	1.41	1.02	0.92	1.88	3.48	3.99	3.08	3.51	3.40	2.81	1.43	1.04	1.04	0.14	

APPENDIX A-1. Table A-14, Algoma region, Cluster 7
Interlake distances (critical value 3 km)

	701	702	703	704	705	706	707	708	709	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727
701																										
702	0.71																									
703	3.30	2.66																								
704	4.47	3.81	1.20																							
705	4.47	3.91	1.44	1.26																						
706	3.70	3.09	0.50	0.98	0.94																					
707	2.69	2.19	1.08	2.18	1.80	1.22																				
708	1.77	1.81	2.85	4.00	3.51	3.04	1.82																			
709	2.33	2.22	2.56	3.64	3.00	2.66	1.48	0.64																		
711	3.01	3.00	3.19	4.17	3.32	3.19	2.12	1.24	0.82																	
712	3.64	3.42	2.64	3.40	2.37	2.48	1.75	1.98	1.35	1.12																
713	5.27	4.76	2.42	2.10	0.98	1.92	2.58	4.08	3.49	3.60	2.51															
714	5.24	4.69	2.20	1.71	0.78	1.70	2.55	4.18	3.62	3.82	2.77	0.45														
715	5.16	4.76	2.84	2.89	1.63	2.41	2.61	3.72	3.09	2.98	1.87	0.99	1.42													
716	5.30	5.43	5.46	6.22	5.11	5.33	4.48	3.62	3.32	2.50	2.84	4.92	5.30	3.98												
717	4.90	5.02	5.08	5.87	4.78	4.96	4.08	3.21	2.91	2.09	2.48	4.65	5.01	3.73	0.41											
718	4.65	4.70	4.55	5.30	4.20	4.40	3.58	2.91	2.52	1.70	1.92	4.07	4.43	3.16	0.92	0.58										
719	5.15	5.20	4,97	5.67	4.53	4.80	4.03	3.41	3.01	2.20	2.33	4.30	4.69	3.35	0.63	0.54	0.50									
720	6.05	6.10	5.73	6.32	5.12	5.51	4.84	4.31	3.91	3.10	3.10	4.75	5.17	3.76	0.99	1.25	1.40	0.91								
721	5.29	5.17	4.27	4.75	3.52	3.99	3.51	3.53	2.97	2.33	1.80	3.12	3.54	2.14	1.94	1.80	1.33	1.32	1.63							
722	5.50	5.35	4.30	4.70	3.45	3.98	3.60	3.76	3.18	2.58	1.94	2.97	3.40	1.98	2.22	2.10	1.65	1.60	1.80	0.32						
723	5.72	5.54	4.34	4.66	3.40	4.00	3.71	4.00	3.40	2.84	2.12	2.84	3.28	1.86	2.51	2.41	1.96	1.90	2.01	0.63	0.32					
724	5.58	5.28	3.70	3.86	2.60	3.31	3.26	3.96	3.32	2.97	1.98	1.94	2.39	0.98	3.30	3.13	2.60	2.67	2.92	1.36	1.12	0.92				
725	6.08	5.78	4.12	4.18	2.93	3.70	3.73	4.46	3.82	3.44	2.48	2.15	2.60	1.30	3.52	3.40	2.92	2.91	3.01	1.60	1.30	1.02	0.50			
726	6.02	5.66	3.79	3.72	2.50	3.34	3.54	4.48	3.84	3.58	2.52	1.65	2.09	0.95	3.98	3.82	3.30	3.35	3.53	2.04	1.77	1.52	0.70	0.57		
727	6.44	6.06	4.08	3.90	2.73	3.61	3.91	4.92	4.28	4.02	2.97	1.80	2.21	1.30	4.34	4.20	3.70	3.72	3.83	2.41	2.12	1.84	1.12	0.82	0.45	
728	7.14	6.75	4.66	4.34	3.26	4.18	4.58	5.64	5.00	4.74	3.69	2.28	2.63	1.98	4.90	4.80	4.33	4.30	4.30	3.01	2.70	2.40	1.80	1.41	1.17	0.72

APPENDIX A-1. Table A-15, Algoma region, Cluster 8
Interlake distances (critical value 3 km)

	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824
801																								
802	0.51																							
803	1.41	1.03																						
804	1.10	0.60	0.91																					
805	2.25	1.75	1.12	1.22																				
806	3.40	2.90	2.56	2.30	1.48																			
807	1.42	1.17	1.90	1.00	1.97	2.51																		
808	1.57	1.51	2.42	1.55	2.61	3.09	0.64																	
809	1.17	1.10	2.04	1.21	2.34	3.01	0.51	0.41																
810	0.94	1.43	2.34	1.99	3.18	4.24	1.94	1.75	1.49															
811	1.61	1.53	2.41	1.53	2.56	3.00	0.58	0.10	0.45	1.84														
812	2.15	2.06	2.90	2.00	2.92	3.12	1.00	0.58	0.98	2.28	0.54													
813	2.13	1.92	2.63	1.73	2.50	2.62	0.76	0.73	1.00	2.46	0.63	0.50												
814	2.42	2.24	2.94	2.04	2.77	2.76	1.08	0.94	1.27	2.69	0.86	0.50	0.32											
815	3.78	3.47	3.86	3.06	3.23	2.43	2.36	2.47	2.73	4.20	2.38	2.04	1.75	1.55										
816	3.80	3.41	3.61	2.92	2.82	1.80	2.44	2.72	2.89	4.37	2.62	2.41	2.00	1.91	0.72									
817	4.00	3.81	4.43	3.55	4.01	3.45	2.64	2.48	2.84	4.19	2.41	1.91	1.89	1.58	1.08	1.80								
818	2.65	2.70	3.63	2.77	3.76	3.96	1.80	1.22	1.60	2.47	1.24	0.86	1.35	1.22	2.52	3.04	1.99							
819	3.11	3.21	4.18	3.32	4.34	4.53	2.38	1.77	2.14	2.79	1.80	1.44	1.92	1.77	2.91	3.49	2.20	0.58						
820	3.93	4.00	4.93	4.04	4.96	4.94	3.06	2.51	2.90	3.64	2.52	2.06	2.47	2.24	2.97	3.64	2.02	1.30	0.85					
821	4.48	4.40	5.16	4.26	4.91	4.49	3.28	2.82	3.32	4.44	2.68	2.34	2.53	2.22	2.16	2.88	1.08	1.98	1.89	1.32				
822	5.07	5.00	5.77	4.87	5.50	5.03	3.88	3.51	3.92	4.99	3.48	2.94	3.14	2.83	2.64	3.35	1.58	2.52	2.33	1.61	0.61			
823	5.05	4.94	5.65	4.75	5.30	4.73	3.79	3.49	3.89	5.06	3.44	2.91	3.04	2.72	2.31	3.01	1.30	2.62	2.52	1.90	0.64	0.45		
824	4.58	4.39	5.00	4.12	4.54	3.86	3.22	3.05	3.42	4.74	2.98	2.48	2.47	2.16	1.43	2.12	0.58	2.46	2.57	2.21	0.98	1.28	0.89	
825	5.52	5.25	5.69	4.88	5.03	4.03	4.10	4.06	4.39	5.80	3.98	3.52	3.40	3.12	1.84	2.26	1.66	3.64	3.79	3.40	2.11	2.15	1.71	1.22

APPENDIX A-1. Table A-16, Algoma region, Cluster 9
Interlake distances (critical value 3 km)

	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924
901																								
902	1.00																							
903	1.26	0.45																						
904	3.79	2.86	2.53																					
905	3.90	2.90	2.73	1.24																				
906	2.91	1.97	2.00	2.15	1.36																			
907	2.01	1.20	1.43	2.77	2.28	1.00																		
908	0.64	0.78	1.20	3.62	3.54	2.42	1.46																	
909	0.91	1.27	1.70	4.08	3.91	2.70	1.70	0.50																
910	1.89	2.79	3.13	5.65	5.59	4.40	3.40	2.06	1.70															
911	1.62	2.19	2.62	4.99	4.74	3.47	2.47	1.41	0.92	1.12														
912	2.04	2.44	2.88	5.12	4.74	3.42	2.46	1.70	1.21	1.56	0.54													
913	1.53	1.66	2.10	4.26	3.90	2.60	1.62	1.00	0.63	1.96	0.90	0.86												
914	2.42	1.96	2.32	3.74	3.06	1.70	1.04	1.78	1.72	3.23	2.14	1.90	1.26											
915	2.86	2.14	2.37	3.18	2.33	1.03	0.94	2.25	2.34	3.96	2.91	2.72	2.01	0.82										
916	2.60	2.52	2.94	4.70	4.06	2.70	1.94	2.02	1.71	2.75	1.64	1.21	1.08	1.00	1.79									
917	3.13	3.16	3.59	5.36	4.68	3.32	2.61	2.60	2.22	2.90	1.89	1.36	1.60	1.63	2.36	0.67								
918	2.71	2.82	3.26	5.17	4.58	3.22	2.41	2.21	1.80	2.48	1.44	0.92	1.20	1.53	2.33	0.54	0.45							
919	3.00	3.13	3.57	5.47	4.84	3.48	2.70	2.52	2.10	2.62	1.66	1.12	1.51	1.78	2.56	0.78	0.32	0.32						
920	4.20	4.32	4.75	6.49	5.73	4.40	3.76	3.72	3.30	3.58	2.77	2.24	2.72	2.75	3.40	1.84	1.17	1.51	1.20					
921	3.55	3.52	3.95	5.58	4.81	3.48	2.86	3.01	2.65	3.33	2.33	1.80	2.02	1.84	2.48	1.00	0.45	0.89	0.71	0.92				
922	4.74	4.72	5.14	6.62	5.74	4.48	3.98	4.20	3.83	4.30	3.42	2.88	3.21	2.94	3.45	2.20	1.61	2.04	1.77	0.78	1.20			
923	4.10	4.00	4.41	5.86	5.00	3.72	3.23	3.54	3.20	3.91	2.92	2.39	2.57	2.18	2.69	1.51	1.03	1.48	1.28	0.92	0.58	0.76		
924	5.31	5.06	5.43	6.46	5.42	4.32	4.10	4.71	4.44	5.25	4.24	3.72	3.81	3.11	3.34	2.73	2.36	2.80	2.62	1.97	1.92	1.24	1.35	
925	4.67	4.05	4.29	4.62	3.47	2.63	2.87	4.03	3.98	5.37	4.25	3.86	3.47	2.27	1.92	2.66	2.82	3.08	3.13	3.30	2.60	2.91	2.38	2.13

APPENDIX A-1. Table A-17, Sudbury region, Stripe 1
Interlake distances (critical value 2 km)

	638	268	251	266	254	26	252	250	926	1007	253	959	1005	938	968	1006	24	255	935	973	961	932	904	957	933	256	692	257	258	963	903	655	930	902	1001	22	2	900	962
638																																							
268	4.10																																						
251	6.70	2.61																																					
266	4.91	0.85	1.80																																				
254	5.91	1.84	0.82	1.00																																			
26	11.61	7.51	4.90	6.70	5.70																																		
252	6.62	2.55	0.32	1.71	0.71	5.00																																	
250	7.32	3.24	0.67	2.41	1.40	4.30	0.70																																
926	24.31	20.21	17.60	19.40	18.40	12.70	17.70	17.00																															
1007	10.72	6.64	4.03	5.81	4.81	0.95	4.10	3.41	13.60																														
253	6.14	2.12	0.78	1.26	0.36	5.51	0.54	1.22	18.20	4.60																													
959	25.21	21.11	18.51	20.30	19.30	13.60	18.60	17.90	0.91	14.50	19.10																												
1005	11.83	7.74	5.14	6.92	5.91	0.45	5.21	4.51	12.50	1.10	5.70	13.40																											
938	24.85	20.75	18.15	19.94	18.93	13.25	18.23	17.53	1.03	14.12	18.72	0.89	13.02																										
968	5.57	2.08	2.05	1.46	1.43	6.43	1.77	2.33	19.03	5.49	1.28	19.93	6.56	19.50																									
1006	12.12	8.08	5.51	7.24	6.24	1.36	5.53	4.85	12.35	1.64	5.98	13.24	0.92	12.80	6.70																								
24	14.62	10.57	7.98	9.73	8.73	3.26	8.02	7.33	9.89	3.98	8.49	10.77	2.92	10.31	9.20	2.51																							
255	6.36	2.83	2.02	2.11	1.70	5.85	1.71	2.06	18.36	4.90	1.40	19.25	5.94	18.81	0.81	6.01	8.50																						
935	25.20	21.11	18.51	20.29	19.28	13.62	18.58	17.88	1.79	14.48	19.06	1.50	13.37	0.76	19.81	13.11	10.60	19.10																					
973	5.37	2.34	2.69	1.90	2.06	6.94	2.40	2.94	19.47	5.99	1.82	20.36	7.04	19.91	0.84	7.12	9.60	1.10	20.20																				
961	24.02	19.94	17.34	19.12	18.11	12.46	17.40	16.71	1.84	13.31	17.88	2.14	12.21	1.27	18.61	11.92	9.41	17.90	1.22	19.00																			
932	25.04	20.96	18.36	20.13	19.13	13.48	18.42	17.72	2.09	14.33	18.90	1.92	13.22	1.10	19.62	12.93	10.42	18.91	0.45	20.00	1.02																		
904	17.13	13.10	10.53	12.26	11.26	5.82	10.55	9.87	7.72	6.55	11.00	8.56	5.48	8.01	11.65	5.02	2.56	10.92	8.22	12.01	7.01	8.00																	
957	14.40	10.41	7.88	9.56	8.57	3.54	7.87	7.21	10.46	4.05	8.30	11.32	3.11	10.79	8.88	2.42	1.06	8.14	11.02	9.23	9.81	10.80	2.80																
933	25.27	21.20	18.60	20.37	19.36	13.73	18.66	17.96	2.44	14.57	19.13	2.20	13.46	1.43	19.84	13.15	10.65	19.12	0.70	20.21	1.30	0.36	8.20	11.00															
256	7.16	3.84	2.81	3.14	2.67	5.72	2.50	2.62	17.96	4.79	2.33	18.84	5.74	18.36	1.77	5.65	8.08	1.03	18.62	1.79	17.41	18.40	10.40	7.60	18.60														
692	8.17	12.08	14.57	12.79	13.75	19.38	14.42	15.11	31.99	18.44	13.89	32.88	19.52	32.43	12.97	19.64	22.13	13.63	32.71	12.53	31.51	32.50	24.50	21.70	32.70	14.10													
257	7.21	4.13	3.32	3.49	3.13	6.14	3.01	3.16	18.23	5.22	2.81	19.11	6.13	18.61	2.06	5.98	8.35	1.43	18.84	1.91	17.63	18.62	10.62	7.82	18.81	0.54	13.91												
258	6.91	4.02	3.49	3.45	3.20	6.54	3.18	3.40	18.64	5.61	2.91	19.52	6.53	19.02	1.99	6.39	8.77	1.50	19.25	1.72	18.04	19.03	11.03	8.23	19.21	0.85	13.51	0.41											
963	7.52	4.38	3.40	3.71	3.28	5.94	3.10	3.18	17.95	5.02	2.94	18.82	5.91	18.32	2.30	5.72	8.08	1.62	18.55	2.20	17.34	18.33	10.33	7.53	18.51	0.61	14.21	0.32	0.70										
903	16.91	12.94	10.41	12.09	11.10	5.91	10.40	9.74	8.39	6.53	10.82	9.20	5.52	8.59	11.38	4.92	2.69	10.62	8.73	11.70	7.51	8.47	0.98	2.53	8.64	10.02	24.11	10.20	10.60	9.90									
655	4.30	7.31	9.56	7.87	8.75	14.19	9.36	10.02	26.68	13.24	8.83	27.56	14.30	27.09	7.76	14.34	16.80	8.35	27.34	7.26	26.13	27.12	19.12	16.32	27.31	8.73	5.45	8.50	8.10	8.80	18.70								
930	4.78	7.96	10.25	8.55	9.43	14.89	10.06	10.72	27.39	13.95	9.52	28.27	15.00	27.80	8.46	15.05	17.50	9.06	28.05	7.96	26.84	27.83	19.83	17.02	28.01	9.43	4.77	9.20	8.80	9.50	19.40	0.71							
902	17.78	13.82	11.29	12.97	11.99	6.80	11.29	10.63	7.83	7.42	11.70	8.60	6.41	7.94	12.24	5.82	3.56	11.48	8.03	12.54	6.82	7.75	1.36	3.42	7.89	10.86	24.92	11.02	11.41	10.71	0.89	19.50	20.20						
1001	16.04	12.16	9.70	11.31	10.35	5.59	9.67	9.03	9.72	6.04	10.05	10.51	5.16	9.87	10.48	4.40	2.75	9.70	9.97	10.75	8.76	9.69	2.27	2.06	9.83	9.03	23.05	9.15	9.54	8.85	1.36	17.62	18.31	1.94					
22	15.62	11.78	9.35	10.93	9.97	5.42	9.30	8.68	10.26	5.80	9.67	11.05	4.98	10.40	10.06	4.17	2.83	9.27	10.50	10.31	9.29	10.22	2.76	1.97	10.36	8.57	22.56	8.68	9.07	8.37	1.89	17.13	17.82	2.47	0.54				
2	18.22	14.29	11.79	13.44	12.47	7.38	11.77	11.12	7.85	7.98	12.18	8.59	6.99	7.88	12.66	6.35	4.18	11.89	7.91	12.94	6.71	7.60	2.02	3.94	7.71	11.23	25.26	11.36	11.75	11.05	1.49	19.83	20.52	0.67	2.21	2.70			
900	21.47	17.50	14.96	16.65	15.66	10.33	14.96	14.29	5.48	11.03	15.38	6.01	9.98	5.17	15.92	9.46	7.07	15.16	4.99	16.23	3.91	4.61	4.52	7.09	4.65	14.52	28.56	14.67	15.06	14.36	4.56	23.13	23.83	3.69	5.51	6.00	3.31		
962	22.17	18.20	15.65	17.35	16.36	11.01	15.66	14.99	5.16	11.72	16.09	5.61	10.66	4.74	16.63	10.15	7.75	15.87	4.48	16.93	3.47	4.08	5.19	7.79	4.08	15.23	29.27	15.37	15.76	15.07	5.26	23.84	24.53	4.39	6.22	6.71	4.01	0.71	
1	19.84	15.91	13.39	15.05	14.07	8.88	13.38	12.72	6.74	9.53	13.79	7.38	8.51	6.60	14.29	7.92	5.63	13.51	6.53	14.57	5.37	6.18	3.18	5.52	6.26	12.86	26.87	12.99	13.37	12.68	3.00	21.44	22.13	2.10	3.83	4.31	1.63	1.70	2.40

APPENDIX A-1. Table A-18, Sudbury region, Stripe 2
Interlake distances (critical value 2 km)

	903	655	930	902	1001	22	2	900	962	1	259	260	6	239	299	905	248	292	856	927	240	242	922	5	909	646	1004	974	298	645	13	225	943	3	923	247	921	16	1038
903																																							
655	18.70																																						
930	19.40	0.71																																					
902	0.89	19.50	20.20																																				
1001	1.36	17.62	18.31	1.94																																			
22	1.89	17.13	17.82	2.47	0.54																																		
2	1.49	19.83	20.52	0.67	2.21	2.70																																	
900	4.56	23.13	23.83	3.69	5.51	6.00	3.31																																
962	5.26	23.84	24.53	4.39	6.22	6.71	4.01	0.71																															
1	3.00	21.44	22.13	2.10	3.83	4.31	1.63	1.70	2.40																														
259	10.78	8.10	8.78	11.54	9.61	9.10	11.80	15.10	15.80	13.40																													
260	10.82	8.16	8.83	11.56	9.63	9.12	11.82	15.11	15.80	13.40	0.30																												
6	1.84	19.18	19.87	1.46	1.80	2.15	1.06	4.04	4.73	2.35	11.11	11.10																											
239	8.10	10.95	11.62	8.81	6.87	6.35	9.04	12.31	13.01	10.61	2.84	2.81	8.30																										
299	15.50	3.76	4.35	16.26	14.33	13.82	16.52	19.81	20.51	18.11	4.73	4.70	15.80	7.50																									
905	3.47	15.91	16.60	3.99	2.11	1.58	4.10	7.33	8.02	5.63	7.82	7.81	3.30	5.00	12.50																								
248	9.12	10.00	10.67	9.83	7.89	7.37	10.05	13.32	14.02	11.62	1.93	1.84	9.30	1.02	6.50	6.00																							
292	14.35	4.97	5.57	15.10	13.16	12.65	15.34	18.62	19.32	16.92	3.59	3.54	14.60	6.31	1.24	11.30	5.30																						
856	2.64	17.23	17.91	2.94	1.39	1.10	2.92	6.07	6.75	4.37	9.14	9.11	2.02	6.31	13.80	1.32	7.30	12.60																					
927	13.60	5.78	6.39	14.33	12.39	11.87	14.56	17.83	18.53	16.13	2.88	2.79	13.81	5.52	2.06	10.51	4.51	0.82	11.80																				
240	8.89	10.53	11.18	9.56	7.62	7.08	9.73	12.98	13.66	11.28	2.56	2.42	8.94	1.00	6.95	5.64	0.72	5.72	6.92	4.91																			
242	8.32	11.11	11.77	8.97	7.03	6.50	9.14	12.38	13.06	10.68	3.09	2.97	8.34	0.80	7.54	5.05	1.17	6.32	6.32	5.51	0.60																		
922	12.98	6.58	7.19	13.69	11.75	11.23	13.90	17.17	17.85	15.46	2.44	2.28	13.13	4.88	2.85	9.83	3.86	1.62	11.12	0.81	4.20	4.80																	
5	3.50	20.99	21.67	2.73	3.77	4.11	2.06	2.80	3.35	1.62	12.89	12.86	1.97	10.05	17.53	5.08	11.03	16.32	3.77	15.51	10.60	10.00	14.80																
909	3.13	20.29	20.97	2.47	3.20	3.50	1.82	3.40	3.99	1.98	12.19	12.16	1.41	9.35	16.83	4.39	10.33	15.62	3.08	14.81	9.90	9.30	14.10	0.70															
646	17.33	3.22	3.55	18.06	16.12	15.60	18.29	21.56	22.25	19.86	6.57	6.51	17.53	9.25	1.97	14.23	8.24	2.98	15.52	3.73	8.60	9.20	4.40	19.20	18.50														
1004	2.98	19.62	20.29	2.50	2.77	2.98	1.94	4.07	4.68	2.56	11.51	11.47	1.14	8.67	16.14	3.74	9.64	14.92	2.44	14.11	9.20	8.61	13.40	1.40	0.71	17.80													
974	8.60	10.99	11.64	9.24	7.31	6.77	9.39	12.62	13.30	10.92	3.05	2.91	8.57	1.12	7.38	5.30	1.20	6.15	6.55	5.33	0.50	0.36	4.60	10.20	9.50	9.00	8.80												
298	15.98	4.24	4.70	16.70	14.76	14.24	16.92	20.18	20.87	18.48	5.28	5.19	16.14	7.89	1.24	12.85	6.87	1.75	14.13	2.40	7.21	7.81	3.01	17.80	17.10	1.41	16.40	7.60											
645	17.40	3.58	3.86	18.12	16.18	15.66	18.33	21.59	22.28	19.89	6.68	6.60	17.56	9.31	2.20	14.26	8.29	3.10	15.54	3.81	8.62	9.22	4.43	19.20	18.50	0.40	17.80	9.00	1.41										
13	6.11	13.87	14.53	6.62	4.75	4.22	6.67	9.81	10.47	8.13	5.82	5.73	5.77	3.04	10.30	2.64	3.89	9.07	3.76	8.25	3.35	2.77	7.52	7.31	6.61	11.91	5.91	2.92	10.50	11.90									
225	7.20	12.73	13.39	7.76	5.86	5.32	7.84	11.00	11.67	9.32	4.74	4.62	6.96	2.12	9.12	3.77	2.82	7.89	4.95	7.07	2.21	1.66	6.33	8.51	7.82	10.71	7.11	1.75	9.30	10.70	1.20								
943	3.72	20.48	21.16	3.08	3.68	3.92	2.43	3.64	4.17	2.42	12.38	12.33	1.94	9.54	16.98	4.65	10.49	15.75	3.36	14.94	10.03	9.43	14.22	0.85	0.61	18.61	0.94	9.61	17.20	18.60	6.70	7.90							
3	6.49	13.78	14.43	6.98	5.13	4.60	7.00	10.09	10.75	8.42	5.78	5.66	6.07	3.08	10.16	3.02	3.85	8.93	4.09	8.10	3.26	2.69	7.36	7.54	6.85	11.73	6.14	2.79	10.32	11.71	0.45	1.04	6.90						
923	7.07	13.38	14.02	7.56	5.71	5.19	7.58	10.65	11.30	8.98	5.46	5.32	6.64	2.90	9.73	3.61	3.55	8.49	4.66	7.67	2.91	2.39	6.91	8.08	7.38	11.25	6.68	2.42	9.84	11.22	0.99	0.78	7.42	0.58					
247	10.03	10.31	10.92	10.63	8.71	8.17	10.73	13.89	14.55	12.20	3.09	2.83	9.85	2.56	6.58	6.64	2.02	5.35	7.83	4.53	1.57	1.91	3.73	11.36	10.67	7.99	9.96	1.56	6.58	7.94	4.08	2.89	10.72	3.82	3.30				
921	6.16	15.18	15.82	6.47	4.83	4.36	6.35	9.21	9.84	7.61	7.24	7.12	5.33	4.58	11.52	2.91	5.32	10.28	3.54	9.46	4.70	4.16	8.69	6.53	5.85	13.01	5.15	4.22	11.60	12.97	1.64	2.51	5.81	1.50	1.80	5.02			
16	7.61	13.67	14.29	8.02	6.25	5.74	7.96	10.91	11.54	9.28	5.94	5.77	6.98	3.61	9.96	4.17	4.10	8.73	5.08	7.91	3.41	2.97	7.12	8.25	7.57	11.38	6.87	2.91	9.96	11.31	1.75	1.58	7.53	1.30	0.90	3.40	1.73		
1038	8.42	13.04	13.65	8.85	7.06	6.54	8.81	11.77	12.40	10.14	5.52	5.32	7.83	3.51	9.30	4.97	3.80	8.08	5.92	7.26	3.08	2.77	6.46	9.10	8.42	10.65	7.72	2.61	9.24	10.57	2.42	1.82	8.37	1.98	1.44	2.73	2.57	0.85	
182	7.00	14.81	15.43	7.31	5.67	5.20	7.18	9.99	10.60	8.41	7.02	6.86	6.16	4.53	11.10	3.72	5.14	9.87	4.39	9.04	4.47	3.98	8.26	7.27	6.61	12.51	5.92	3.97	11.10	12.45	1.94	2.41	6.53	1.62	1.63	4.54	0.85	1.14	1.90

APPENDIX A-1. Table A-19, Sudbury region, Stripe 3
Interlake distances (critical value 2 km)

	13	225	943	3	923	247	921	16	1038	182	219	920	51	303	966	48	47	965	199	1009	45	197	326	1033	316	333	338	1013	954	334	348	1030	342	343	579	570	307	34	583
13																																							
225	1.20																																						
943	6.70	7.90																																					
3	0.45	1.04	6.90																																				
923	0.99	0.78	7.42	0.58																																			
247	4.08	2.89	10.72	3.82	3.30																																		
921	1.64	2.51	5.81	1.50	1.80	5.02																																	
16	1.75	1.58	7.53	1.30	0.90	3.40	1.73																																
1038	2.42	1.82	8.37	1.98	1.44	2.73	2.57	0.85																															
182	1.94	2.41	6.53	1.62	1.63	4.54	0.85	1.14	1.90																														
219	3.20	4.16	4.57	3.14	3.45	6.61	1.66	3.22	4.00	2.10																													
920	2.77	3.61	5.26	2.62	2.87	5.94	1.13	2.55	3.31	1.41	0.71																												
51	3.69	4.61	4.48	3.61	3.89	6.99	2.11	3.59	4.33	2.45	0.50	1.04																											
303	3.71	3.51	8.33	3.28	2.91	4.18	2.98	2.01	1.80	2.14	3.76	3.09	3.89																										
966	4.55	3.92	9.88	4.10	3.58	3.35	4.30	2.84	2.15	3.47	5.31	4.62	5.48	1.61																									
48	6.25	7.16	4.25	6.16	6.41	9.36	4.66	6.00	6.64	4.88	3.05	3.55	2.56	5.71	7.30																								
47	7.02	7.98	4.03	6.96	7.25	10.25	5.47	6.87	7.53	5.74	3.83	4.38	3.36	6.62	8.21	0.91																							
965	8.65	7.57	14.78	8.28	7.69	4.95	9.01	7.32	6.46	8.26	10.26	9.56	10.47	6.64	5.02	12.30	13.20																						
199	5.16	5.63	6.65	4.88	4.85	7.13	3.61	4.12	4.47	3.26	2.86	2.70	2.56	3.05	4.51	3.01	3.86	9.41																					
1009	4.80	4.85	8.13	4.40	4.16	5.66	3.64	3.28	3.26	2.93	3.75	3.24	3.69	1.50	2.69	4.87	5.74	7.52	1.90																				
45	8.06	8.99	4.71	7.99	8.25	11.18	6.49	7.83	8.45	6.71	4.86	5.39	4.38	7.41	8.97	1.84	1.06	13.91	4.50	6.40																			
197	6.02	6.72	5.69	5.83	5.94	8.55	4.38	5.34	5.83	4.31	3.07	3.28	2.60	4.59	6.10	1.58	2.34	11.02	1.80	3.50	2.90																		
326	6.90	6.14	12.17	6.47	5.92	4.61	6.70	5.23	4.48	5.86	7.60	6.94	7.71	3.85	2.41	9.21	10.08	3.38	6.23	4.34	10.71	7.82																	
1033	9.82	8.81	15.70	9.43	8.85	6.33	10.02	8.37	7.53	9.22	11.13	10.44	11.29	7.40	5.82	12.91	13.79	1.49	9.94	8.05	14.42	11.53	3.71																
316	6.62	6.07	11.25	6.17	5.69	5.20	6.10	4.88	4.27	5.25	6.74	6.12	6.77	3.11	2.16	8.03	8.88	4.78	5.02	3.20	9.45	6.58	1.39	5.00															
333	8.15	7.32	13.46	7.72	7.16	5.48	8.00	6.51	5.73	7.16	8.90	8.24	9.00	5.15	3.70	10.41	11.28	2.77	7.41	5.55	11.86	8.98	1.30	2.63	2.41														
338	8.35	7.50	13.73	7.92	7.36	5.57	8.24	6.73	5.94	7.41	9.17	8.50	9.27	5.41	3.94	10.71	11.57	2.55	7.71	5.85	12.16	9.28	1.57	2.33	2.71	0.30													
1013	11.96	10.90	17.91	11.58	10.99	8.28	12.22	10.55	9.71	11.42	13.35	12.65	13.51	9.62	8.03	15.09	15.97	3.34	12.11	10.23	16.57	13.68	5.89	2.21	7.12	4.71	4.41												
954	9.84	8.92	15.34	9.42	8.85	6.71	9.82	8.26	7.45	8.99	10.78	10.11	10.89	7.02	5.52	12.30	13.16	2.42	9.30	7.45	13.72	10.85	3.18	1.28	4.28	1.90	1.62	2.92											
334	8.68	7.91	13.78	8.25	7.70	6.16	8.44	7.01	6.26	7.59	9.24	8.60	9.31	5.52	4.17	10.58	11.42	3.26	7.57	5.76	11.95	9.10	1.78	2.82	2.56	0.70	0.76	4.72	1.80										
348	11.50	10.50	17.25	11.10	10.52	8.02	11.64	10.02	9.18	10.82	12.68	12.00	12.82	8.93	7.38	14.30	15.16	3.11	11.30	9.44	15.73	12.86	5.12	1.70	6.28	3.88	3.59	1.03	2.01	3.80									
1030	10.56	9.62	16.11	10.14	9.57	7.32	10.57	9.00	8.18	9.74	11.54	10.87	11.65	7.78	6.28	13.05	13.91	2.73	10.04	8.20	14.45	11.59	3.94	1.30	5.02	2.66	2.38	2.28	0.76	2.51	1.30								
342	10.11	9.21	15.56	9.69	9.12	7.02	10.07	8.53	7.72	9.24	11.00	10.34	11.10	7.25	5.77	12.47	13.32	2.71	9.46	7.62	13.86	11.00	3.40	1.48	4.44	2.10	1.84	2.86	0.32	1.91	1.90	0.60							
343	10.18	9.31	15.52	9.76	9.19	7.20	10.08	8.57	7.78	9.24	10.97	10.31	11.05	7.22	5.78	12.35	13.19	3.03	9.34	7.53	13.71	10.87	3.38	1.84	4.33	2.08	1.84	3.13	0.61	1.77	2.14	0.85	0.36						
579	14.68	13.62	20.61	14.30	13.72	10.95	14.94	13.28	12.44	14.14	16.05	15.36	16.19	12.30	10.73	17.69	18.55	6.05	14.69	12.83	19.11	16.24	8.52	4.92	9.67	7.28	6.99	2.73	5.39	7.16	3.40	4.65	5.25	5.41					
570	13.54	12.53	19.30	13.15	12.57	9.97	13.70	12.07	11.24	12.88	14.73	14.05	14.86	10.98	9.44	16.27	17.13	5.02	13.27	11.43	17.66	14.81	7.15	3.72	8.25	5.88	5.60	1.75	3.98	5.71	2.06	3.23	3.81	3.95	1.51				
307	8.02	7.80	11.18	7.60	7.23	7.56	7.02	6.34	6.00	6.26	7.07	6.62	6.92	4.33	4.24	7.32	8.05	7.08	4.53	3.40	8.36	5.75	3.83	6.96	2.56	4.39	4.66	8.83	5.92	4.15	7.86	6.56	5.97	5.73	11.10	9.60			
34	8.00	7.99	10.28	7.60	7.33	8.24	6.77	6.44	6.28	6.11	6.50	6.17	6.26	4.49	4.89	6.25	6.91	8.36	3.72	3.20	7.11	4.68	5.02	8.32	3.66	5.72	6.01	10.23	7.32	5.53	9.27	7.96	7.37	7.13	12.50	11.00	1.40		
583	15.37	14.31	21.26	14.99	14.41	11.65	15.61	13.96	13.11	14.81	16.69	16.01	16.83	12.94	11.38	18.29	19.14	6.74	15.28	13.44	19.68	16.83	9.14	5.59	10.26	7.88	7.60	3.41	5.99	7.73	4.02	5.24	5.82	5.97	0.71	2.02	11.60	13.00	
1031	16.28	15.20	22.23	15.90	15.32	12.50	16.55	14.89	14.04	15.76	17.66	16.97	17.81	13.92	12.35	19.29	20.14	7.63	16.28	14.43	20.68	17.83	10.12	6.54	11.26	8.88	8.59	4.34	6.99	8.73	5.00	6.24	6.82	6.97	1.62	3.03	12.61	14.00	1.00

APPENDIX A-1. Table A-20, Sudbury region, Stripe 4
Interlake distances (critical value 2 km)

	348	1030	342	343	579	570	307	34	583	1031	577	585	609	588	612	613	17	593	572	908	590	589	573	976	522	393	524	822	394	526	949	531	527	404	406	530	373	955	906
348																																							
1030	1.30																																						
342	1.90	0.80																																					
343	2.14	0.85	0.36																																				
579	3.40	4.65	5.25	5.41																																			
570	2.06	3.23	3.81	3.95	1.51																																		
307	7.86	6.56	5.97	5.73	11.10	9.60																																	
34	9.27	7.96	7.37	7.13	12.50	11.00	1.40																																
583	4.02	5.24	5.82	5.97	0.71	2.02	11.60	13.00																															
1031	5.00	6.24	6.82	6.97	1.62	3.03	12.61	14.00	1.00																														
577	2.92	4.05	4.62	4.73	1.06	0.86	10.31	11.71	1.32	2.30																													
585	4.11	5.28	5.85	5.97	1.08	2.06	11.53	12.92	0.51	1.17	1.24																												
609	6.36	7.57	8.15	8.28	3.00	4.34	13.84	15.23	2.34	1.39	3.55	2.32																											
588	4.61	5.74	6.30	6.39	1.66	2.56	11.87	13.25	1.02	1.20	1.70	0.58	2.01																										
612	7.02	8.23	8.81	8.93	3.67	5.00	14.47	15.85	3.01	2.06	4.20	2.96	0.67	2.60																									
613	7.63	8.82	9.40	9.51	4.29	5.60	15.01	16.39	3.62	2.69	4.78	3.54	1.30	3.14	0.64																								
17	9.84	8.57	8.01	7.72	12.87	11.36	2.48	1.81	13.30	14.28	11.98	13.15	15.42	13.41	16.01	16.50																							
593	5.95	7.08	7.63	7.72	2.83	3.89	13.14	14.51	2.13	1.55	3.04	1.86	1.13	1.34	1.49	1.90	14.60																						
572	3.72	4.55	5.02	5.02	2.46	2.04	10.20	11.56	2.33	3.05	1.53	1.92	3.91	1.93	4.44	4.90	11.60	3.00																					
908	5.46	6.53	7.07	7.13	2.59	3.42	12.48	13.85	1.93	1.73	2.56	1.53	1.80	0.94	2.21	2.62	13.90	0.73	2.30																				
590	5.75	6.74	7.26	7.29	3.10	3.75	12.50	13.85	2.47	2.33	2.91	2.02	2.26	1.48	2.56	2.85	13.82	1.13	2.31	0.81																			
589	5.73	6.66	7.16	7.17	3.30	3.78	12.27	13.61	2.72	2.69	2.97	2.24	2.69	1.70	2.97	3.23	13.54	1.56	2.15	0.98	0.42																		
573	4.48	5.06	5.45	5.38	3.62	3.10	10.09	11.40	3.44	4.04	2.69	2.98	4.65	2.84	5.09	5.46	11.26	3.61	1.17	2.88	2.63	2.30																	
976	5.39	5.91	6.26	6.16	4.40	4.00	10.58	11.86	4.11	4.56	3.54	3.62	4.94	3.36	5.28	5.55	11.59	3.83	2.01	3.14	2.73	2.33	0.92																
522	5.35	5.85	6.20	6.10	4.43	4.00	10.49	11.77	4.16	4.62	3.55	3.67	5.02	3.42	5.37	5.65	11.49	3.91	2.02	3.22	2.82	2.42	0.91	0.10															
393	7.70	6.90	6.62	6.26	9.60	8.26	5.97	6.73	9.76	10.60	8.54	9.44	11.42	9.49	11.89	12.25	5.69	10.40	7.56	9.68	9.41	9.05	6.80	6.79	6.69														
524	6.67	6.99	7.25	7.08	5.98	5.51	10.80	11.99	5.69	6.07	5.10	5.19	6.29	4.89	6.54	6.71	11.48	5.16	3.57	4.53	4.03	3.61	2.42	1.58	1.55	6.21													
822	6.93	7.06	7.24	7.04	6.67	6.02	10.26	11.39	6.45	6.92	5.72	5.97	7.22	5.72	7.50	7.69	10.77	6.10	4.22	5.45	4.97	4.55	3.05	2.36	2.30	5.36	0.98												
394	8.15	7.50	7.31	6.96	9.64	8.42	7.19	7.94	9.72	10.48	8.58	9.35	11.18	9.33	11.60	11.90	6.84	10.11	7.43	9.39	9.06	8.67	6.53	6.36	6.26	1.22	5.53	4.60											
526	8.63	9.03	9.32	9.16	7.42	7.26	12.73	13.86	6.99	7.12	6.70	6.48	6.94	6.04	6.99	6.97	13.21	5.86	5.22	5.41	4.81	4.43	4.20	3.28	3.30	7.69	2.08	2.47	6.79										
949	8.47	8.64	8.83	8.62	7.91	7.43	11.57	12.62	7.60	7.92	7.04	7.09	7.98	6.75	8.14	8.21	11.85	6.86	5.51	6.30	5.74	5.33	4.36	3.52	3.49	6.24	1.94	1.58	5.26	1.61									
531	9.35	9.88	10.21	10.08	7.72	7.79	13.90	15.05	7.20	7.16	7.14	6.70	6.74	6.20	6.67	6.54	14.43	5.75	5.76	5.43	4.83	4.50	4.88	3.98	4.03	8.93	3.12	3.67	8.02	1.24	2.80								
527	9.00	9.32	9.57	9.39	7.96	7.72	12.70	13.78	7.55	7.72	7.20	7.04	7.57	6.62	7.63	7.61	13.06	6.48	5.70	6.02	5.42	5.03	4.63	3.71	3.72	7.47	2.34	2.48	6.50	0.64	1.24	1.61							
404	9.23	8.83	8.75	8.43	10.06	9.06	9.26	10.01	9.99	10.61	9.02	9.55	11.06	9.41	11.37	11.58	8.85	9.94	7.66	9.26	8.82	8.41	6.58	6.12	6.04	3.30	4.88	3.89	2.08	5.53	3.92	6.71	5.10						
406	9.34	9.04	9.00	8.70	9.90	8.99	9.90	10.70	9.78	10.34	8.88	9.32	10.71	9.14	10.98	11.15	9.58	9.58	7.46	8.92	8.45	8.03	6.34	5.80	5.73	3.97	4.44	3.48	2.76	4.88	3.28	6.03	4.42	0.76					
530	9.44	9.77	10.02	9.84	8.34	8.13	13.10	14.17	7.91	8.04	7.60	7.40	7.83	6.96	7.85	7.80	13.42	6.76	6.11	6.32	5.72	5.35	5.05	4.13	4.14	7.80	2.79	2.91	6.80	0.92	1.57	1.62	0.45	5.31	4.60				
373	11.40	10.62	10.33	9.97	13.05	11.81	8.39	8.60	13.12	13.87	11.99	12.74	14.51	12.70	14.89	15.16	6.99	13.42	10.82	12.71	12.34	11.94	9.88	9.62	9.53	3.72	8.57	7.59	3.41	9.36	7.75	10.53	8.92	3.83	4.50	9.10			
955	9.40	9.44	9.56	9.31	9.11	8.53	11.67	12.62	8.82	9.18	8.20	8.33	9.26	8.01	9.42	9.48	11.68	8.14	6.68	7.57	7.02	6.60	5.51	4.72	4.68	5.99	3.14	2.52	4.88	2.68	1.28	3.71	2.12	3.16	2.42	2.22	6.90		
906	10.37	9.92	9.82	9.49	11.22	10.22	9.84	10.46	11.14	11.74	10.18	10.70	12.15	10.54	12.44	12.62	9.14	11.03	8.81	10.36	9.90	9.48	7.72	7.22	7.15	3.92	5.91	4.94	2.77	6.31	4.71	7.41	5.81	1.17	1.48	5.94	3.24	3.72	
387	11.65	10.91	10.65	10.30	13.16	11.96	8.93	9.17	13.20	13.92	12.10	12.81	14.51	12.74	14.87	15.12	7.56	13.41	10.89	12.71	12.32	11.91	9.90	9.59	9.50	4.03	8.47	7.48	3.55	9.14	7.53	10.28	8.67	3.64	4.26	8.83	0.58	6.61	2.90

APPENDIX A-1. Table A-21, Sudbury region, Stripe 5
Interlake distances (critical value 2 km)

	949	531	527	404	406	530	373	955	906	387	402	403	553	407	408	401	924	410	975	947	958	409	951	953	545	925	480	469	472	475	479	494	501	493	502	515
949																																				
531	2.80																																			
527	1.24	1.61																																		
404	3.92	6.71	5.10																																	
406	3.28	6.03	4.42	0.76																																
530	1.57	1.52	0.45	5.31	4.60																															
373	7.75	10.53	8.92	3.83	4.50	9.10																														
955	1.28	3.71	2.12	3.16	2.42	2.22	6.90																													
906	4.71	7.41	5.81	1.17	1.48	5.94	3.24	3.72																												
387	7.53	10.28	8.67	3.64	4.26	8.83	0.58	6.61	2.90																											
402	4.55	7.24	5.63	1.17	1.36	5.76	3.45	3.54	0.22	3.10																										
403	4.03	6.67	5.07	1.22	1.03	5.18	4.06	2.96	0.82	3.71	0.61																									
553	6.89	4.18	5.65	10.67	9.94	5.38	14.42	7.52	11.20	14.10	11.00	10.40																								
407	3.85	6.43	4.84	1.49	1.12	4.92	4.39	2.72	1.17	4.02	0.95	0.36	10.10																							
408	3.88	6.36	4.79	1.93	1.50	4.84	4.68	2.68	1.53	4.28	1.30	0.78	9.92	0.45																						
401	4.89	7.40	5.83	2.12	2.06	5.88	3.85	3.72	1.14	3.38	1.00	1.03	10.94	1.06	1.04																					
924	6.41	9.02	7.43	2.90	3.24	7.52	2.41	5.32	1.78	1.86	1.89	2.38	12.63	2.60	2.72	1.70																				
410	2.82	4.63	3.25	3.56	2.83	3.14	6.82	1.63	3.61	6.41	3.38	2.79	7.86	2.44	2.14	3.10	4.80																			
975	9.78	12.47	10.87	5.96	6.51	10.98	2.48	8.77	5.07	2.39	5.24	5.81	16.14	6.07	6.22	5.20	3.51	8.30																		
947	9.35	11.87	10.31	5.88	6.24	10.35	3.45	8.19	4.78	3.04	4.88	5.33	15.24	5.50	5.52	4.48	3.00	7.40	1.94																	
958	8.18	10.61	9.08	5.00	5.23	9.09	3.59	6.98	3.84	3.04	3.89	4.25	13.89	4.36	4.30	3.30	2.15	6.07	3.02	1.40																
409	5.25	7.04	5.73	4.27	3.83	5.59	6.16	3.98	3.58	5.63	3.40	3.07	9.84	2.79	2.35	2.50	3.77	2.48	6.94	5.60	4.20															
951	7.58	9.93	8.42	4.65	4.78	8.41	3.94	6.35	3.49	3.36	3.50	3.76	13.12	3.82	3.70	2.76	2.01	5.35	3.76	2.21	0.81	3.40														
953	6.37	8.46	7.04	4.32	4.15	6.96	5.10	5.09	3.31	4.53	3.20	3.16	11.43	3.04	2.73	2.20	2.72	3.83	5.48	4.02	2.62	1.61	1.81													
545	6.72	5.02	5.69	9.70	8.94	5.25	13.06	6.71	9.87	12.64	9.65	9.05	3.64	8.70	8.38	9.26	10.92	6.26	14.34	13.11	11.70	7.50	10.90	9.10												
925	10.48	12.95	11.41	7.08	7.42	11.42	4.52	9.30	5.97	4.16	6.06	6.49	16.20	6.64	6.62	5.59	4.19	8.41	2.52	1.20	2.34	6.44	3.08	4.83	13.91											
480	7.52	8.99	7.85	6.44	6.10	7.64	7.42	6.28	5.55	6.84	5.41	5.22	11.18	5.00	4.60	4.41	5.08	4.70	7.43	5.68	4.41	2.35	3.70	2.37	8.27	6.11										
469	12.81	14.93	13.52	9.96	10.12	13.44	7.98	11.54	8.79	7.57	8.82	9.10	17.60	9.14	8.98	8.09	7.12	10.30	6.00	4.54	4.97	7.91	5.34	6.48	14.75	3.51	6.48									
472	12.55	14.47	13.15	10.06	10.12	13.02	8.61	11.27	8.91	8.14	8.90	9.09	16.86	9.07	8.85	8.06	7.37	9.90	6.91	5.20	5.26	7.43	5.42	6.18	13.86	4.39	5.68	1.44								
475	12.37	14.07	12.85	10.28	10.23	12.68	9.33	11.09	9.15	8.81	9.11	9.21	16.18	9.14	8.86	8.19	7.78	9.62	7.87	6.04	5.80	7.14	5.77	6.13	13.02	5.42	5.10	2.83	1.39							
479	11.29	12.57	11.55	10.01	9.77	11.30	10.06	10.07	9.00	9.49	8.90	8.83	14.17	8.66	8.29	7.90	8.04	8.47	9.18	7.24	6.50	6.14	6.14	5.70	10.82	7.01	3.79	5.28	3.91	2.61						
494	13.05	14.61	13.46	11.16	11.07	13.26	10.35	11.78	10.04	9.82	9.99	10.06	16.48	9.96	9.66	9.05	8.74	10.26	8.92	7.08	6.80	7.80	6.73	6.93	13.21	6.46	5.62	3.68	2.27	1.04	2.44					
501	12.22	13.40	12.43	11.01	10.77	12.17	11.01	11.01	10.00	10.44	9.90	9.82	14.81	9.65	9.28	8.90	9.03	9.40	10.03	8.10	7.43	7.11	7.11	6.70	11.38	7.78	4.75	5.68	4.25	2.86	1.00	2.31				
493	13.60	15.17	14.02	11.65	11.58	13.82	10.72	12.33	10.53	10.20	10.48	10.56	17.04	10.48	10.18	9.55	9.18	10.82	9.19	7.40	7.20	8.35	7.17	7.45	13.76	6.71	6.18	3.70	2.37	1.40	2.95	0.57	2.71			
502	13.04	14.18	13.24	11.82	11.58	12.97	11.72	11.83	10.80	11.16	10.70	10.64	15.49	10.47	10.10	9.71	9.79	10.22	10.64	8.72	8.13	7.93	7.84	7.51	12.03	8.32	5.58	5.94	4.50	3.12	1.81	2.33	0.82	2.57		
515	12.64	13.55	12.72	11.82	11.50	12.42	12.13	11.48	10.87	11.55	10.75	10.61	14.57	10.40	10.00	9.74	10.04	9.85	11.29	9.35	8.59	7.72	8.19	7.57	11.04	9.09	5.40	7.03	5.59	4.21	2.11	3.54	1.36	3.85	1.30	
510	15.41	16.32	15.51	14.41	14.14	15.21	14.31	14.24	13.40	13.75	13.30	13.21	17.18	13.03	12.65	12.30	12.40	12.61	13.13	11.24	10.72	10.42	10.46	10.10	13.59	10.73	8.08	7.95	6.58	5.33	4.40	4.33	3.40	4.25	2.62	2.79

APPENDIX A-2. Tables M-22, Muskoka region, Clusters 1 & 2
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
101	7	3	1	3	2	4	1
102	8	**6**	0	3	2	4	1
103	10	4	0	3	2	4	1
135	10	**6**	1	3	2	4	1
104	12	**6**	0	3	2	4	1
105	12	**6**	0	3	0	3	1
134	14	3	2	1	2	4	1
131	15	0	0	0	-9	0	1
132	15	3	0	3	1	4	1
110	16	**6**	0	3	0	4	1
130	16	1	1	0	1	4	1
107	17	**5**	1	2	2	4	1
106	18	1	1	1	-9	1	1
108	18	**5**	2	1	2	4	1
109	18	4	0	2	2	4	1
122	18	**6**	1	3	2	3	1
129	18	**5**	0	3	1	4	1
133	19	**6**	0	3	2	4	1
119	20	**5**	2	1	2	4	1
120	20	1	2	3	2	4	1
123	20	4	0	2	2	4	1
128	21	1	2	1	0	4	1
116	22	4	0	3	1	4	1
118	23	**6**	0	2	2	3	1
121	23	**6**	0	3	2	4	1
124	23	3	2	2	2	4	1
125	23	3	2	1	2	4	1
111	24	**5**	0	3	2	3	1
117	24	**5**	0	3	1	4	1
126	24	**6**	0	3	2	4	1
127	24	0	1	1	2	4	1
112	26	**5**	0	2	2	4	1
113	27	**6**	0	3	2	4	1
114	27	0	0	0	-9	0	1
115	28	**6**	0	0	0	4	1

lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
228	11	3	1	2	0	4	2
229	14	**5**	0	3	1	4	2
227	18	**6**	0	3	2	4	2
201	20	**6**	1	3	1	4	2
204	20	3	0	3	2	4	2
205	20	1	1	0	2	4	2
206	20	**5**	0	3	-9	4	2
202	21	**5**	1	3	1	4	2
230	21	**5**	0	3	1	4	2
236	22	3	0	3	2	4	2
207	23	4	0	2	2	4	2
226	23	3	0	1	0	4	2
203	24	2	1	0	2	4	2
208	25	**6**	0	3	2	4	2
232	26	0	0	0	-9	0	2
224	27	2	2	3	0	4	2
231	27	1	2	0	-9	2	2
209	28	0	2	1	0	4	2
234	28	**5**	2	1	1	4	2
235	28	4	0	3	1	4	2
210	30	1	0	3	2	4	2
215	30	2	1	3	1	4	2
216	30	0	2	0	-9	2	2
225	30	0	0	0	-9	0	2
233	30	0	2	1	-9	1	2
214	31	**5**	0	3	1	4	2
217	31	2	1	1	0	4	2
223	31	0	1	1	0	4	2
213	32	**5**	0	2	2	4	2
218	32	**5**	0	3	1	4	2
219	32	4	0	0	1	4	2
222	32	3	2	3	0	4	2
211	33	1	1	1	0	4	2
212	33	2	0	3	0	4	2
220	34	0	0	0	-9	0	2
221	35	**5**	0	2	0	4	2

APPENDIX A-2. Tables M-23, Muskoka region, Clusters 3 & 4
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
337	3	3	2	0	2	3	3
301	14	3	0	0	2	3	3
325	16	3	2	3	0	3	3
331	16	2	1	2	1	4	3
332	16	1	1	3	1	3	3
334	17	0	0	0	-9	0	3
302	18	4	1	3	1	4	3
303	18	1	2	3	0	3	3
304	20	1	2	2	-9	2	3
306	21	4	1	2	2	4	3
330	21	3	2	3	0	3	3
336	21	2	1	3	2	3	3
320	23	2	1	2	1	3	3
305	24	2	0	2	1	3	3
307	24	2	2	0	-9	2	3
314	24	**6**	2	3	0	3	3
328	24	**6**	0	3	1	3	3
333	24	1	2	3	0	3	3
308	25	**6**	1	3	2	3	3
326	25	0	0	0	-9	0	3
335	25	3	0	3	0	4	3
310	26	**5**	0	3	0	3	3
313	27	4	1	3	1	3	3
309	28	4	2	3	2	3	3
324	28	**6**	0	2	2	3	3
315	29	3	0	3	1	3	3
321	29	0	1	2	2	3	3
311	30	3	1	3	0	4	3
316	30	2	2	1	1	3	3
322	30	1	2	3	0	3	3
327	30	1	2	3	0	3	3
329	30	**6**	0	0	2	4	3
312	31	4	2	3	0	4	3
319	31	**5**	1	3	0	4	3
317	33	3	0	1	0	3	3
323	33	**6**	0	3	1	2	3
318	34	1	1	3	0	3	3

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
433	12	0	0	3	2	3	4
432	16	**5**	0	0	0	3	4
406	19	4	0	2	2	3	4
434	19	4	0	3	2	3	4
407	21	1	1	3	0	3	4
404	22	1	1	3	0	3	4
401	24	2	0	3	0	4	4
405	24	1	0	3	1	2	4
408	24	0	1	3	0	3	4
435	24	4	0	3	0	4	4
409	25	0	2	0	0	3	4
431	25	1	0	3	0	3	4
415	28	**5**	1	3	1	4	4
423	28	1	0	0	2	3	4
426	28	0	0	0	-9	0	4
430	28	1	0	0	0	3	4
402	29	0	0	3	-9	0	4
403	29	0	0	3	0	2	4
416	29	1	1	2	0	3	4
410	30	0	0	0	-9	0	4
419	30	0	0	2	0	3	4
420	30	0	1	0	-9	2	4
427	30	0	0	0	-9	0	4
411	31	0	0	0	-9	0	4
412	31	0	0	0	-9	0	4
418	31	0	1	2	0	3	4
417	32	0	1	0	-9	2	4
421	32	1	0	2	0	2	4
422	32	4	0	1	0	4	4
425	32	**6**	0	3	2	3	4
428	32	4	0	3	0	3	4
429	32	0	0	2	0	3	4
413	33	4	0	3	1	4	4
414	33	**6**	0	3	1	4	4
424	33	**5**	0	3	2	4	4

APPENDIX A-2. Tables M-24, Muskoka region, Clusters 5 & 6
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
501	20	1	2	3	0	3	5
502	22	0	0	3	-9	0	5
515	26	6	1	2	2	4	5
541	26	0	2	2	2	3	5
504	27	2	2	3	0	3	5
505	27	0	0	1	-9	0	5
507	28	0	0	1	-9	0	5
542	28	3	2	3	0	3	5
533	29	5	0	2	1	4	5
503	30	1	2	0	0	3	5
514	30	4	1	3	2	3	5
528	32	0	0	0	-9	0	5
536	32	1	2	3	0	3	5
525	33	0	0	3	-9	0	5
526	33	1	1	1	0	3	5
527	33	4	2	3	0	3	5
524	34	2	1	3	0	3	5
531	34	1	2	3	0	3	5
532	34	0	1	3	0	3	5
539	34	4	0	3	0	2	5
543	34	0	1	1	0	3	5
506	35	1	1	2	2	3	5
537	35	1	2	1	0	3	5
535	36	0	0	0	-9	0	5
538	36	1	2	3	0	3	5
523	37	3	0	1	0	2	5
508	38	2	1	3	0	4	5
513	38	3	1	1	2	3	5
534	38	1	1	3	0	3	5
509	39	1	1	3	2	3	5
512	39	1	2	0	2	3	5
529	39	3	0	3	0	4	5
530	39	2	2	3	0	3	5
511	40	1	1	3	2	3	5
522	40	4	0	2	1	3	5
510	41	2	1	3	1	3	5
516	41	5	1	1	0	4	5
517	41	2	2	3	0	3	5
518	41	2	2	3	0	3	5
519	41	3	0	3	1	3	5
520	41	1	2	3	0	3	5
521	41	1	1	3	0	3	5

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
638	9	6	0	3	0	3	6
629	11	3	1	2	1	3	6
601	12	6	0	3	2	3	6
602	12	0	0	3	1	2	6
633	12	3	0	3	0	4	6
635	12	4	0	2	0	3	6
632	13	0	0	0	-9	0	6
608	14	6	0	2	2	4	6
634	14	1	0	3	0	3	6
603	15	6	0	2	2	3	6
607	15	5	0	3	2	3	6
628	15	4	0	1	1	3	6
631	15	0	0	0	0	3	6
606	16	6	0	2	2	3	6
609	16	6	0	2	2	3	6
614	16	1	2	3	2	3	6
636	16	6	0	3	2	3	6
637	17	4	0	2	2	3	6
604	18	1	0	2	2	3	6
627	18	0	0	0	-9	0	6
605	19	4	0	0	2	3	6
610	19	4	0	3	0	3	6
623	20	6	0	3	0	3	6
626	20	3	0	3	2	3	6
612	21	2	0	2	0	3	6
613	21	6	0	3	1	4	6
618	21	1	2	2	0	2	6
615	22	6	0	2	2	3	6
619	22	4	0	2	2	3	6
622	22	5	0	3	0	4	6
630	23	3	0	2	0	4	6
620	24	1	1	0	2	3	6
617	26	5	0	3	1	3	6
625	26	3	0	3	1	3	6
611	27	6	0	3	0	3	6
624	27	0	0	3	0	2	6
616	28	0	0	2	1	2	6
621	30	6	0	3	2	3	6

APPENDIX A-2. Table M-25, Muskoka region, Cluster 7
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
717	8	1	0	2	2	3	7
716	9	4	1	0	2	4	7
701	11	3	0	3	0	3	7
702	11	3	0	3	1	3	7
725	11	4	0	3	0	3	7
726	12	**5**	0	3	1	4	7
736	12	2	1	3	0	3	7
704	13	**5**	0	2	2	4	7
715	13	3	1	3	0	3	7
727	14	4	0	3	0	3	7
728	14	4	2	3	0	3	7
729	15	1	2	3	0	3	7
703	16	4	0	3	0	4	7
713	16	1	2	0	-9	1	7
714	16	4	0	3	2	3	7
730	16	3	1	3	2	4	7
733	16	0	2	3	0	3	7
734	16	0	1	1	1	3	7
735	16	**6**	1	3	2	3	7
705	17	**5**	1	3	0	4	7
712	17	1	0	3	1	3	7
706	18	1	2	2	2	3	7
708	18	0	0	0	0	1	7
724	18	3	0	3	2	4	7
711	19	**6**	0	1	0	4	7
732	20	3	1	3	2	3	7
709	21	0	0	3	0	3	7
718	21	2	0	3	1	3	7
722	21	4	0	3	0	3	7
731	21	0	1	0	0	3	7
707	22	0	1	3	2	3	7
710	23	1	0	1	0	2	7
723	23	**5**	0	3	1	4	7
719	24	0	1	2	1	3	7
721	25	1	1	0	2	3	7
720	27	**6**	1	2	2	4	7

APPENDIX A-2. Tables A-23, Algoma region, Clusters 1 & 2
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
124	1	1	0	0	-9	1	1
126	1	3	2	1	-9	3	1
101	6	**6**	1	1	0	3	1
129	8	**6**	0	3	0	4	1
102	9	1	2	3	1	4	1
131	12	**6**	1	3	1	4	1
134	12	4	1	1	0	4	1
130	13	2	2	3	0	4	1
133	13	**6**	0	3	0	4	1
115	14	1	1	1	-9	4	1
107	15	3	1	3	0	4	1
109	15	4	0	3	1	4	1
122	15	1	2	1	0	4	1
132	15	0	2	1	-9	4	1
106	16	1	1	3	0	4	1
104	17	3	0	1	0	4	1
123	17	3	1	3	0	4	1
108	18	2	0	1	0	4	1
110	18	2	0	3	0	4	1
117	18	4	0	1	0	4	1
105	19	2	2	3	0	4	1
116	19	3	0	3	0	4	1
111	20	4	1	3	0	4	1
114	21	1	1	1	0	4	1
121	21	**6**	1	1	0	4	1
128	21	3	2	1	0	4	1
103	22	**6**	1	3	0	4	1
113	23	0	1	1	0	4	1
112	24	3	0	3	0	4	1
127	24	4	2	3	0	4	1
118	25	1	1	1	0	4	1
120	25	**6**	1	1	0	4	1
125	27	1	-9	1	0	1	1
119	28	4	1	3	0	4	1

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
216	6	**5**	0	3	0	4	2
220	6	1	1	3	0	4	2
206	8	1	1	1	0	4	2
207	8	4	0	3	0	4	2
201	9	2	2	3	0	4	2
219	9	3	0	3	2	4	2
217	10	1	1	2	0	4	2
218	11	2	0	1	0	4	2
202	12	2	0	1	0	4	2
205	13	0	0	0	-9	0	2
204	14	3	1	3	0	4	2
211	14	0	0	0	-9	0	2
212	14	3	2	3	2	4	2
203	15	2	0	1	0	4	2
208	15	**6**	0	2	2	4	2
210	15	3	0	3	0	4	2
213	15	1	2	1	1	4	2
214	15	1	1	1	2	4	2
215	15	**5**	0	2	2	4	2
209	18	**6**	0	3	2	4	2

APPENDIX A-2. Tables A-24, Algoma region, Clusters 3 & 4
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
306	11	1	1	3	1	3	3
331	11	2	0	3	2	4	3
334	14	1	0	1	1	4	3
302	15	1	2	3	0	4	3
328	16	4	0	3	1	4	3
301	17	5	2	3	1	4	3
330	17	4	1	1	2	4	3
332	17	4	2	3	1	4	3
315	18	1	1	1	2	4	3
321	18	0	2	3	1	4	3
329	18	0	1	3	1	4	3
307	19	3	1	3	1	3	3
322	19	5	2	3	0	4	3
304	20	5	0	3	0	4	3
314	20	1	2	3	2	4	3
333	20	5	0	3	1	4	3
305	21	1	1	0	0	4	3
327	21	1	1	1	0	4	3
303	22	2	2	1	0	4	3
313	22	3	1	3	0	4	3
320	22	3	1	3	1	4	3
335	22	5	0	2	2	4	3
308	23	0	0	0	0	1	3
310	23	1	2	3	0	4	3
319	23	2	0	3	1	4	3
324	25	0	2	2	-9	3	3
326	25	2	1	1	1	4	3
323	27	3	1	3	0	4	3
318	28	3	1	1	0	4	3
309	29	0	2	1	0	4	3
312	29	3	1	3	0	4	3
311	30	1	1	0	0	4	3
325	30	1	2	3	1	4	3
317	31	1	2	1	0	4	3
316	33	3	2	3	0	4	3

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
437	9	1	0	1	2	4	4
401	13	0	0	1	0	4	4
429	14	3	0	3	0	4	4
436	14	0	0	0	-9	0	4
430	15	2	1	3	0	4	4
435	15	6	0	3	2	4	4
422	16	2	0	3	2	4	4
428	16	4	0	3	0	4	4
403	17	0	0	0	0	4	4
421	17	2	0	3	0	4	4
402	18	5	1	3	0	4	4
406	19	1	2	3	0	4	4
407	19	0	1	1	0	4	4
433	19	5	0	1	0	4	4
434	19	0	0	0	0	4	4
404	20	0	0	0	-9	0	4
423	20	6	0	3	0	4	4
431	20	2	1	3	0	4	4
432	20	0	1	0	0	4	4
405	21	0	0	0	-9	0	4
408	21	0	0	0	-9	0	4
416	21	0	1	3	-9	3	4
420	21	2	0	3	0	4	4
409	22	0	0	0	-9	0	4
410	23	3	0	3	0	4	4
412	23	3	0	1	0	4	4
417	23	4	0	3	0	4	4
415	24	1	2	3	0	4	4
424	24	5	0	3	0	4	4
425	25	3	0	3	0	4	4
414	27	5	0	3	0	4	4
419	27	4	0	3	2	4	4
411	28	0	0	0	0	4	4
413	29	2	0	3	0	4	4
427	30	0	0	1	2	4	4
418	31	6	0	3	2	4	4
426	32	6	2	3	2	4	4

APPENDIX A-2. Tables A-25, Algoma region, Clusters 5 & 6
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
520	7	1	0	1	0	4	5
524	7	3	2	3	0	4	5
525	8	0	0	0	-9	0	5
521	9	4	1	3	1	4	5
507	10	**6**	0	0	2	4	5
501	11	2	0	3	2	4	5
502	11	3	0	3	-9	2	5
523	11	4	0	3	0	4	5
509	12	1	0	3	2	4	5
508	13	**5**	0	2	2	4	5
516	13	1	0	1	0	4	5
503	14	1	0	3	0	4	5
506	14	**5**	0	0	0	4	5
522	14	1	0	1	0	4	5
504	15	1	1	3	0	4	5
505	15	0	0	0	2	4	5
513	15	4	1	3	2	4	5
519	15	3	1	3	1	4	5
518	16	2	0	1	0	4	5
510	17	4	1	3	0	4	5
514	17	3	0	1	1	4	5
512	18	**6**	0	2	0	4	5
517	18	4	0	3	0	4	5
511	19	4	2	2	2	4	5
515	23	0	0	1	2	4	5

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
601	11	0	0	0	-9	0	6
627	11	0	-9	3	-9	0	6
612	12	4	1	3	1	4	6
626	12	3	1	1	2	4	6
620	13	3	1	1	0	4	6
605	14	3	0	3	0	4	6
606	14	2	2	1	0	4	6
604	15	**6**	0	3	2	4	6
602	16	**6**	1	3	1	3	6
614	16	**5**	1	2	2	4	6
621	16	**5**	0	2	2	4	6
607	17	1	0	2	2	4	6
613	17	**6**	1	2	2	4	6
618	17	4	0	2	1	3	6
624	17	3	0	2	0	4	6
608	18	3	0	2	1	4	6
615	18	1	1	1	2	3	6
617	19	**6**	0	3	2	4	6
622	19	**6**	0	3	2	4	6
623	19	3	1	2	1	3	6
625	21	**6**	0	2	1	4	6
603	22	**6**	1	3	1	3	6
619	22	4	0	2	1	4	6
609	23	2	2	3	1	4	6
610	23	2	2	3	0	4	6
611	25	4	0	3	0	4	6
616	25	**6**	1	2	1	4	6

APPENDIX A-2. Tables A-26, Algoma region, Clusters 7 & 8
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
701	4	3	2	3	0	4	7
702	5	<u>**5**</u>	2	3	0	4	7
704	7	3	2	3	1	4	7
708	8	3	2	3	0	4	7
720	8	3	1	1	1	4	7
706	9	3	2	1	1	4	7
716	9	1	2	3	1	4	7
728	9	1	2	3	2	4	7
717	10	1	2	0	0	4	7
703	11	3	2	3	1	4	7
709	11	4	2	3	1	4	7
719	11	0	0	0	-9	0	7
705	12	1	2	0	-9	3	7
726	12	1	1	1	2	4	7
727	12	0	1	0	1	4	7
707	13	<u>**5**</u>	2	3	1	4	7
711	13	1	2	1	1	2	7
714	13	0	2	0	2	4	7
718	13	4	2	0	2	4	7
725	14	0	1	3	2	4	7
713	15	1	2	3	1	4	7
721	15	0	2	0	-9	3	7
722	16	0	2	0	2	4	7
723	16	0	2	1	2	4	7
724	16	2	2	1	2	4	7
715	17	2	2	2	2	4	7
712	21	2	1	3	1	4	7

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
825	7	4	0	3	2	4	8
806	9	1	2	0	1	4	8
822	11	4	0	3	2	3	8
823	11	4	0	2	0	4	8
801	13	<u>**6**</u>	1	3	2	4	8
803	13	3	0	1	0	4	8
805	13	<u>**5**</u>	2	3	1	4	8
810	13	4	1	3	1	4	8
802	14	4	1	1	1	4	8
820	14	4	2	3	2	4	8
824	14	1	2	3	0	4	8
804	15	4	2	3	2	4	8
816	15	1	2	1	0	4	8
821	15	<u>**6**</u>	0	3	1	4	8
819	16	0	0	0	-9	0	8
817	17	<u>**5**</u>	1	2	1	4	8
807	18	2	1	3	2	4	8
809	18	3	2	3	1	4	8
815	18	<u>**6**</u>	0	3	1	4	8
808	19	2	2	1	1	4	8
818	19	<u>**5**</u>	1	3	2	4	8
811	20	0	0	0	-9	0	8
813	21	1	1	3	1	4	8
812	22	0	0	0	-9	0	8
814	23	3	2	3	1	4	8

APPENDIX A-2. Table A-27, Algoma region, Cluster 9
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	plot
904	5	**<u>6</u>**	1	2	2	4	9
905	6	4	2	2	2	4	9
924	9	**<u>6</u>**	0	2	1	4	9
925	10	3	2	3	2	4	9
910	11	**<u>5</u>**	0	0	2	4	9
922	11	4	0	2	2	4	9
920	12	1	0	2	0	4	9
906	13	0	2	0	2	4	9
901	14	1	2	3	1	4	9
903	14	3	2	2	2	4	9
923	14	0	2	1	2	4	9
902	16	0	2	1	1	4	9
908	16	**<u>6</u>**	2	3	2	4	9
921	16	0	2	1	1	4	9
909	17	2	1	3	2	4	9
919	17	0	1	1	1	3	9
911	18	3	1	3	2	4	9
917	18	0	2	0	-9	4	9
907	19	**<u>5</u>**	1	2	1	4	9
912	19	1	2	3	1	4	9
913	19	3	2	3	2	4	9
915	19	3	2	2	2	4	9
918	19	2	2	3	1	4	9
914	20	2	2	3	-9	3	9
916	22	4	1	2	1	4	9

APPENDIX A-2. Tables S-24, Sudbury region
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
480	0	**5**	0	2	2	1	2	2	1	5	1	4
510	0	1	1	3	0	1	1	0	3	1	1	4
545	0	4	0	2	2	0	2	2	3	3	4	4
553	0	4	1	3	0	1	3	0	3	4	3	4
638	0	2	0	1	0	1	1	0	3	3	2	4
692	0	3	0	3	0	1	3	0	3	4	2	4
17	1	2	0	3	0	2	1	0	2	1	1	6
24	1	**5**	1	0	1	0	0	1	3	3	4	4
307	1	**5**	0	1	0	2	1	0	3	3	3	4
316	1	1	1	1	0	1	1	0	3	1	1	6
373	1	4	0	1	0	2	1	0	3	2	4	4
393	1	**6**	0	3	0	2	1	0	**4**	4	4	4
394	1	1	0	1	0	2	1	0	2	2	0	5
409	1	3	0	0	2	1	0	2	3	2	3	6
410	1	4	0	2	2	1	2	2	3	4	4	6
469	1	2	0	0	1	1	1	1	3	1	2	4
655	1	**5**	0	3	1	1	3	1	**4**	3	4	4
925	1	4	0	3	0	2	3	0	3	0	3	4
930	1	**6**	0	2	0	1	2	0	**4**	4	4	4
962	1	2	1	0	2	2	0	2	2	0	1	3
965	1	**6**	0	-9	0	1	-99	0	**4**	5	4	4
966	1	**6**	0	2	2	1	2	2	**4**	5	4	4
975	1	4	0	3	0	2	1	0	3	2	2	4
34	2	**5**	0	1	0	2	1	0	3	3	4	4
45	2	1	0	1	0	2	1	0	2	1	1	4
47	2	4	0	3	0	2	1	0	3	2	3	4
51	2	3	0	3	0	2	1	0	3	2	2	4
197	2	**5**	2	2	2	0	3	2	3	3	4	6
199	2	3	1	3	0	1	1	0	3	1	4	6
268	2	2	0	3	2	1	1	0	2	3	0	6
387	2	3	0	1	0	2	1	0	2	2	1	4
472	2	1	0	2	2	1	1	2	2	2	0	4
479	2	3	1	3	1	1	1	1	3	4	2	4
493	2	4	0	2	2	1	2	2	3	4	2	4
494	2	3	0	3	2	1	1	2	2	3	2	4
515	2	4	1	3	2	1	3	2	2	4	1	4
645	2	3	0	2	0	0	1	0	3	3	2	4
822	2	1	0	3	2	2	3	2	2	2	1	4
900	2	3	2	3	2	2	3	1	3	4	2	6
904	2	**5**	1	3	2	0	3	1	3	4	2	5
905	2	2	0	0	2	1	0	2	3	2	3	6
922	2	4	0	1	0	0	1	0	2	3	3	6
927	2	1	0	1	0	0	1	0	3	2	1	5

APPENDIX A-2. Tables S-24, Sudbury region
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
951	2	**5**	0	0	2	1	0	2	1	3	0	4
953	2	**5**	0	2	2	1	2	2	**4**	5	3	4
955	2	**6**	0	2	2	2	2	2	**4**	5	4	4
957	2	1	2	1	0	0	1	0	3	3	1	4
958	2	**5**	0	2	2	2	2	2	1	4	1	5
1009	2	0	0	0	1	1	0	1	**0**	0	2	3
1013	2	0	2	0	0	1	0	0	**0**	0	2	3
26	3	**5**	1	2	1	0	2	1	3	3	3	4
48	3	4	0	1	0	2	1	0	3	2	3	4
219	3	3	0	1	0	2	1	0	3	2	3	6
247	3	2	0	3	0	0	3	0	3	2	2	6
299	3	1	0	3	0	0	1	0	3	1	2	6
303	3	4	0	2	1	1	2	1	3	3	4	4
475	3	**6**	0	2	2	1	3	2	**4**	4	2	4
501	3	**5**	0	2	2	1	2	2	2	5	2	4
502	3	**6**	0	2	2	1	3	2	**4**	4	4	4
522	3	4	0	3	0	2	3	0	**4**	4	4	5
531	3	**6**	0	2	2	1	2	2	**4**	5	4	4
570	3	**6**	0	2	2	2	2	2	1	4	1	4
573	3	**6**	0	3	2	2	3	2	**4**	5	3	5
612	3	1	0	0	2	0	0	0	1	1	0	5
613	3	**6**	0	2	1	0	2	1	**4**	4	4	4
646	3	3	0	3	0	0	3	0	3	2	4	4
856	3	3	2	3	1	1	3	1	2	4	2	6
947	3	**6**	0	3	2	2	3	2	**4**	5	3	4
976	3	2	1	1	0	2	1	0	3	0	2	4
1005	3	0	2	0	0	0	0	0	**0**	0	1	3
1006	3	1	2	0	0	0	0	0	**0**	1	1	3
1007	3	0	2	1	0	1	1	0	**0**	0	2	3
239	4	3	0	3	0	2	3	0	3	3	2	5
250	4	3	0	3	2	2	3	0	2	4	2	6
292	4	**6**	0	2	2	0	3	2	**4**	5	4	4
298	4	**5**	0	3	0	0	3	0	3	3	3	4
326	4	**5**	1	3	0	1	1	0	3	3	3	5
333	4	4	0	2	2	1	2	2	3	2	4	6
348	4	**6**	0	0	2	2	3	2	1	4	1	4
524	4	**6**	0	2	2	2	3	2	**4**	4	4	6
526	4	**6**	0	2	2	2	2	2	**4**	5	4	5
527	4	4	1	2	1	2	2	1	2	2	3	6
530	4	3	1	3	0	2	3	0	3	1	3	6
572	4	1	1	3	0	2	1	0	2	1	0	4
589	4	2	1	3	1	0	3	0	3	2	2	6
590	4	3	0	3	2	0	3	2	2	3	2	6

APPENDIX A-2. Tables S-24, Sudbury region
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
920	4	2	0	1	0	2	1	0	3	2	2	6
924	4	**5**	0	3	0	2	3	0	2	2	2	5
926	4	3	0	3	2	1	1	2	1	1	0	4
933	4	**6**	0	2	0	2	2	0	**4**	4	4	5
943	4	2	0	3	2	0	1	1	2	0	1	4
959	4	4	0	1	2	1	1	2	2	4	2	4
1	5	**6**	0	2	1	0	2	1	**4**	5	4	5
5	5	**5**	0	3	1	0	3	1	3	3	3	6
22	5	3	2	3	1	1	1	1	3	3	3	6
240	5	**6**	0	2	2	2	2	2	**4**	3	4	6
251	5	2	1	3	0	2	1	0	3	2	2	6
259	5	3	0	1	0	2	1	0	3	2	2	6
260	5	1	0	3	0	2	1	0	2	1	1	5
609	5	**5**	1	3	0	0	2	0	3	3	3	5
902	5	3	0	2	1	0	1	1	3	1	3	6
932	5	4	0	3	0	2	1	0	2	3	2	6
961	5	0	2	1	0	2	1	0	3	0	1	4
1001	5	1	2	0	2	0	0	2	**0**	1	1	3
1004	5	0	1	0	1	0	0	1	**0**	0	2	3
1030	5	1	2	3	0	2	1	0	**0**	1	2	3
2	6	4	0	1	2	0	1	2	2	3	2	6
13	6	2	0	3	0	2	1	0	3	2	2	6
242	6	3	2	3	0	2	1	0	3	1	2	4
248	6	3	0	3	0	2	3	0	3	3	2	6
256	6	3	0	3	2	1	3	2	1	3	0	5
334	6	4	0	2	0	2	3	0	3	3	4	4
338	6	0	2	3	0	2	1	0	3	1	1	6
343	6	1	0	1	0	2	1	0	**0**	1	2	4
401	6	2	0	1	0	2	1	0	3	1	2	6
404	6	4	0	3	2	2	3	2	3	3	3	6
406	6	4	0	1	0	2	1	0	2	3	2	5
577	6	3	0	2	0	2	2	0	3	2	3	4
579	6	1	1	1	2	1	1	2	**0**	1	2	4
583	6	**5**	2	2	2	1	3	2	1	2	1	6
903	6	**6**	0	2	2	0	2	2	**4**	4	4	5
909	6	1	0	2	1	0	1	1	3	1	2	6
935	6	3	2	3	0	1	1	0	2	1	1	5
938	6	1	1	3	0	1	1	0	2	2	1	4
949	6	**6**	0	2	1	2	2	1	3	4	3	5
963	6	1	1	1	2	1	1	2	2	2	1	3
974	6	1	2	3	0	2	1	0	2	2	1	5
1033	6	1	2	1	0	2	1	0	**0**	0	2	3
1038	6	1	2	1	1	0	1	1	**0**	1	3	3

APPENDIX A-2. Tables S-24, Sudbury region
Proximity counts, geophysical classification and historical sampling effort.

Lake	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
3	7	4	0	1	2	2	1	2	2	3	2	6
16	7	4	1	2	2	0	3	1	3	3	3	6
182	7	0	1	0	2	0	0	1	1	1	2	4
225	7	0	1	2	0	2	1	0	**0**	1	1	6
252	7	1	0	1	1	2	1	1	**0**	1	4	4
257	7	2	0	3	0	1	1	0	2	2	1	6
266	7	3	0	3	2	1	3	2	2	3	1	6
342	7	1	2	2	0	2	1	0	3	1	2	5
403	7	4	0	3	0	2	3	0	2	3	2	6
407	7	1	0	3	0	2	1	0	2	2	1	6
408	7	3	0	3	0	2	3	0	3	3	2	6
921	7	**6**	0	3	0	2	2	0	**4**	4	4	5
923	7	1	0	3	2	2	3	2	**0**	0	0	4
954	7	**6**	0	2	2	2	2	2	1	5	2	4
973	7	2	0	3	0	1	1	0	3	1	2	5
1031	7	1	2	3	0	1	1	0	**0**	1	1	3
6	8	1	0	1	1	0	1	1	3	1	3	5
253	8	4	2	2	2	1	2	2	2	3	2	5
254	8	3	0	2	2	1	2	2	3	1	2	6
258	8	**5**	0	3	0	1	3	0	3	3	3	6
402	8	**5**	0	0	0	2	0	0	2	3	4	6
585	8	**5**	0	0	2	1	0	2	1	3	0	4
906	8	**6**	0	3	0	2	3	0	**4**	5	4	5
908	8	2	0	2	2	0	2	2	2	3	1	4
968	8	**6**	0	2	2	1	3	2	**4**	5	1	4
255	9	3	0	0	2	1	0	2	1	2	0	4
593	9	4	0	1	0	0	1	0	3	2	3	6
588	10	**6**	0	2	2	0	2	2	1	4	1	5

APPENDIX A-3 Table M-26

Actual detection power for the Muskoka site and detection powers in the next decade given a strategy of 180, 195 and 210 lakes once every three years.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
180	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	7434	0,038	0,268	0,018	1,110	2,652	0,066	0,123	7,770	18,567	0,463
	1998	7434	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1999	7434	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2000	13052	0,029	0,289	0,013	0,838	2,002	0,050	0,133	8,377	20,017	0,500
	2001	13052	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2002	13052	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2003	23380	0,022	0,281	0,010	0,626	1,496	0,037	0,129	8,136	19,443	0,485
	2004	23380	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2005	23380	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
195	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	7581	0,038	0,265	0,017	1,099	2,627	0,066	0,122	7,694	18,386	0,459
	1998	7581	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1999	7581	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2000	13619	0,028	0,283	0,013	0,820	1,960	0,049	0,130	8,200	19,596	0,489
	2001	13619	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2002	13619	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2003	24736	0,021	0,273	0,010	0,608	1,454	0,036	0,125	7,910	18,903	0,472
	2004	24736	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2005	24736	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
210	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	7728	0,038	0,263	0,017	1,089	2,601	0,065	0,121	7,620	18,210	0,455
	1998	7728	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1999	7728	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2000	14187	0,028	0,277	0,013	0,803	1,920	0,048	0,127	8,035	19,200	0,479
	2001	14187	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2002	14187	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2003	26093	0,020	0,266	0,009	0,592	1,416	0,035	0,122	7,702	18,405	0,459
	2004	26093	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2005	26093	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

APPENDIX A-3 Table M-27

Actual detection power for the Muskoka site and detection powers in the next decade given a strategy of 60, 65 and 70 lakes per year on a three year cycle.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
60/year	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	6046	0,042	0,297	0,020	1,231	2,941	0,073	0,137	8,615	20,588	0,514
	1998	7157	0,039	0,312	0,018	1,131	2,703	0,067	0,144	9,050	21,626	0,540
	1999	8783	0,035	0,317	0,016	1,021	2,440	0,061	0,146	9,190	21,962	0,548
	2000	10656	0,032	0,320	0,015	0,927	2,215	0,055	0,147	9,271	22,154	0,553
	2001	13065	0,029	0,318	0,013	0,837	2,001	0,050	0,146	9,210	22,008	0,549
	2002	16080	0,026	0,312	0,012	0,755	1,803	0,045	0,144	9,056	21,641	0,540
	2003	19523	0,024	0,307	0,011	0,685	1,637	0,041	0,141	8,904	21,277	0,531
	2004	23575	0,021	0,301	0,010	0,623	1,489	0,037	0,138	8,726	20,852	0,521
	2005	28286	0,020	0,294	0,009	0,569	1,360	0,034	0,135	8,535	20,396	0,509
65/year	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	6095	0,042	0,296	0,019	1,226	2,929	0,073	0,136	8,581	20,505	0,512
	1998	7287	0,039	0,309	0,018	1,121	2,679	0,067	0,142	8,969	21,432	0,535
	1999	9034	0,035	0,312	0,016	1,007	2,406	0,060	0,144	9,062	21,655	0,541
	2000	11047	0,031	0,314	0,014	0,911	2,176	0,054	0,144	9,105	21,758	0,543
	2001	13638	0,028	0,311	0,013	0,819	1,958	0,049	0,143	9,014	21,541	0,538
	2002	16881	0,025	0,305	0,012	0,737	1,760	0,044	0,140	8,839	21,122	0,527
	2003	20587	0,023	0,299	0,011	0,667	1,594	0,040	0,138	8,671	20,720	0,517
	2004	24948	0,021	0,292	0,010	0,606	1,448	0,036	0,135	8,482	20,270	0,506
	2005	30020	0,019	0,286	0,009	0,552	1,320	0,033	0,131	8,285	19,799	0,494
70/year	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	6144	0,042	0,295	0,019	1,221	2,918	0,073	0,136	8,546	20,423	0,510
	1998	7417	0,038	0,307	0,018	1,111	2,655	0,066	0,141	8,890	21,243	0,530
	1999	9285	0,034	0,308	0,016	0,993	2,373	0,059	0,142	8,938	21,360	0,533
	2000	11438	0,031	0,309	0,014	0,895	2,138	0,053	0,142	8,948	21,383	0,534
	2001	14211	0,028	0,305	0,013	0,803	1,918	0,048	0,140	8,831	21,102	0,527
	2002	17682	0,025	0,298	0,011	0,720	1,720	0,043	0,137	8,636	20,638	0,515
	2003	21650	0,022	0,292	0,010	0,650	1,554	0,039	0,134	8,455	20,205	0,504
	2004	26322	0,020	0,285	0,009	0,590	1,410	0,035	0,131	8,258	19,734	0,493
	2005	31753	0,019	0,278	0,009	0,537	1,283	0,032	0,128	8,056	19,251	0,481

APPENDIX A-3 Table M-28

Actual detection power for the Muskoka site and detection powers in the next decade given a strategy of 30, 40 and 50 lakes per year on a three year cycle.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
30/year	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	5699	0,044	0,306	0,020	1,268	3,029	0,076	0,141	8,874	21,205	0,529
	1998	6255	0,042	0,334	0,019	1,210	2,892	0,072	0,154	9,680	23,133	0,577
	1999	7068	0,039	0,353	0,018	1,138	2,720	0,068	0,163	10,245	24,482	0,611
	2000	8004	0,037	0,369	0,017	1,070	2,556	0,064	0,170	10,697	25,562	0,638
	2001	9209	0,034	0,378	0,016	0,997	2,383	0,059	0,174	10,970	26,214	0,654
	2002	10716	0,032	0,383	0,015	0,924	2,209	0,055	0,176	11,094	26,510	0,662
	2003	12438	0,030	0,385	0,014	0,858	2,051	0,051	0,177	11,155	26,657	0,665
	2004	14464	0,027	0,384	0,013	0,796	1,902	0,047	0,177	11,140	26,621	0,665
	2005	16819	0,025	0,382	0,012	0,738	1,763	0,044	0,176	11,069	26,451	0,660
40/year	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	5815	0,043	0,303	0,020	1,255	2,999	0,075	0,139	8,785	20,993	0,524
	1998	6556	0,041	0,326	0,019	1,182	2,824	0,071	0,150	9,455	22,595	0,564
	1999	7640	0,038	0,340	0,017	1,095	2,616	0,065	0,156	9,854	23,547	0,588
	2000	8888	0,035	0,350	0,016	1,015	2,426	0,061	0,161	10,151	24,257	0,606
	2001	10494	0,032	0,354	0,015	0,934	2,232	0,056	0,163	10,276	24,557	0,613
	2002	12504	0,030	0,354	0,014	0,856	2,045	0,051	0,163	10,270	24,542	0,613
	2003	14799	0,027	0,353	0,012	0,787	1,880	0,047	0,162	10,227	24,438	0,610
	2004	17501	0,025	0,349	0,011	0,723	1,729	0,043	0,161	10,128	24,202	0,604
	2005	20642	0,023	0,345	0,011	0,666	1,592	0,040	0,158	9,991	23,876	0,596
50/year	1995	3186	0,058	0,292	0,027	1,695	4,052	0,101	0,134	8,477	20,258	0,506
	1996	5352	0,045	0,271	0,021	1,308	3,126	0,078	0,124	7,849	18,756	0,468
	1997	5931	0,043	0,300	0,020	1,243	2,969	0,074	0,138	8,699	20,786	0,519
	1998	6857	0,040	0,319	0,018	1,156	2,762	0,069	0,147	9,246	22,094	0,552
	1999	8212	0,036	0,328	0,017	1,056	2,524	0,063	0,151	9,505	22,713	0,567
	2000	9772	0,033	0,334	0,015	0,968	2,313	0,058	0,154	9,681	23,134	0,578
	2001	11780	0,030	0,334	0,014	0,882	2,107	0,053	0,154	9,699	23,178	0,579
	2002	14292	0,028	0,331	0,013	0,801	1,913	0,048	0,152	9,606	22,955	0,573
	2003	17161	0,025	0,327	0,012	0,731	1,746	0,044	0,151	9,497	22,694	0,567
	2004	20538	0,023	0,322	0,011	0,668	1,596	0,040	0,148	9,349	22,341	0,558
	2005	24464	0,021	0,316	0,010	0,612	1,462	0,037	0,146	9,178	21,932	0,548

APPENDIX A-3 Table A-28

Actual detection power for the Algoma site and detection powers in the next decade given a strategy of 180, 195 and 210 lakes once every three years.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
180	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	9897	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1998	13647	0,028	0,226	0,019	2,068	2,692	0,033	0,151	16,542	21,537	0,264
	1999	13647	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2000	13647	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2001	21571	0,022	0,247	0,015	1,645	2,141	0,026	0,166	18,092	23,554	0,289
	2002	21571	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2003	21571	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2004	34737	0,018	0,248	0,012	1,296	1,687	0,021	0,166	18,145	23,623	0,290
	2005	34737	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
195	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	9897	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1998	13960	0,028	0,223	0,019	2,044	2,662	0,033	0,150	16,356	21,294	0,261
	1999	13960	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2000	13960	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2001	22544	0,022	0,242	0,015	1,609	2,095	0,026	0,162	17,697	23,040	0,283
	2002	22544	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2003	22544	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2004	36807	0,017	0,241	0,012	1,259	1,639	0,020	0,161	17,627	22,949	0,282
	2005	36807	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
210	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	9897	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1998	14272	0,028	0,221	0,019	2,022	2,632	0,032	0,148	16,176	21,060	0,259
	1999	14272	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2000	14272	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2001	23517	0,022	0,237	0,014	1,575	2,051	0,025	0,159	17,327	22,558	0,277
	2002	23517	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2003	23517	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2004	38877	0,017	0,234	0,011	1,225	1,595	0,020	0,157	17,152	22,330	0,274
	2005	38877	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

APPENDIX A-3 Table A-29

Actual detection power for the Algoma site and detection powers in the next decade given a strategy of 60, 65 and 70 lakes per year on a three year cycle.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
60/year	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	10696	0,032	0,223	0,021	2,336	3,041	0,037	0,150	16,350	21,286	0,261
	1998	11946	0,030	0,242	0,020	2,210	2,877	0,035	0,162	17,681	23,019	0,283
	1999	13746	0,028	0,253	0,019	2,060	2,682	0,033	0,170	18,543	24,141	0,296
	2000	15809	0,026	0,262	0,018	1,921	2,501	0,031	0,176	19,212	25,012	0,307
	2001	18450	0,024	0,267	0,016	1,778	2,315	0,028	0,179	19,562	25,468	0,313
	2002	21741	0,022	0,269	0,015	1,638	2,133	0,026	0,180	19,659	25,595	0,314
	2003	25471	0,021	0,269	0,014	1,514	1,971	0,024	0,180	19,676	25,617	0,314
	2004	29860	0,019	0,267	0,013	1,398	1,820	0,022	0,179	19,571	25,479	0,313
	2005	34961	0,018	0,265	0,012	1,292	1,682	0,021	0,177	19,379	25,229	0,310
65/year	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	10762	0,032	0,223	0,021	2,329	3,032	0,037	0,149	16,300	21,221	0,261
	1998	12117	0,030	0,240	0,020	2,194	2,857	0,035	0,161	17,556	22,856	0,281
	1999	14067	0,028	0,250	0,019	2,037	2,652	0,033	0,168	18,330	23,864	0,293
	2000	16301	0,026	0,258	0,017	1,892	2,463	0,030	0,173	18,920	24,632	0,302
	2001	19163	0,024	0,262	0,016	1,745	2,272	0,028	0,176	19,195	24,990	0,307
	2002	22729	0,022	0,263	0,015	1,602	2,086	0,026	0,176	19,227	25,032	0,307
	2003	26769	0,020	0,262	0,014	1,476	1,922	0,024	0,176	19,193	24,988	0,307
	2004	31523	0,019	0,260	0,012	1,361	1,771	0,022	0,174	19,048	24,798	0,304
	2005	37050	0,017	0,257	0,011	1,255	1,634	0,020	0,172	18,824	24,508	0,301
70/year	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	10829	0,032	0,222	0,021	2,321	3,022	0,037	0,149	16,249	21,155	0,260
	1998	12287	0,030	0,238	0,020	2,179	2,837	0,035	0,160	17,434	22,697	0,279
	1999	14387	0,028	0,248	0,018	2,014	2,622	0,032	0,166	18,125	23,597	0,290
	2000	16794	0,025	0,255	0,017	1,864	2,427	0,030	0,171	18,640	24,268	0,298
	2001	19876	0,023	0,257	0,016	1,713	2,231	0,027	0,173	18,847	24,538	0,301
	2002	23716	0,021	0,257	0,014	1,569	2,042	0,025	0,172	18,823	24,506	0,301
	2003	28067	0,020	0,256	0,013	1,442	1,877	0,023	0,172	18,744	24,404	0,300
	2004	33187	0,018	0,254	0,012	1,326	1,726	0,021	0,170	18,564	24,169	0,297
	2005	39138	0,017	0,250	0,011	1,221	1,590	0,020	0,168	18,315	23,845	0,293

APPENDIX A-3 Table A-30

Actual detection power for the Algoma site and detection powers in the next decade given a strategy of 30, 40 and 50 lakes per year on a three year cycle.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
30/year	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	10297	0,033	0,228	0,022	2,381	3,099	0,038	0,153	16,664	21,694	0,266
	1998	10922	0,032	0,253	0,021	2,311	3,009	0,037	0,169	18,491	24,074	0,296
	1999	11822	0,030	0,273	0,020	2,222	2,892	0,036	0,183	19,995	26,032	0,320
	2000	12853	0,029	0,291	0,020	2,131	2,774	0,034	0,195	21,307	27,740	0,341
	2001	14174	0,028	0,305	0,019	2,029	2,642	0,032	0,204	22,319	29,057	0,357
	2002	15820	0,026	0,315	0,018	1,921	2,500	0,031	0,211	23,046	30,004	0,368
	2003	17685	0,025	0,323	0,017	1,816	2,365	0,029	0,216	23,614	30,743	0,377
	2004	19879	0,023	0,328	0,016	1,713	2,231	0,027	0,220	23,986	31,228	0,383
	2005	22430	0,022	0,331	0,015	1,613	2,100	0,026	0,221	24,194	31,498	0,387
40/year	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	10430	0,032	0,226	0,022	2,365	3,079	0,038	0,152	16,557	21,556	0,265
	1998	11264	0,031	0,249	0,021	2,276	2,963	0,036	0,167	18,208	23,706	0,291
	1999	12464	0,030	0,266	0,020	2,164	2,817	0,035	0,178	19,473	25,352	0,311
	2000	13839	0,028	0,281	0,019	2,053	2,673	0,033	0,188	20,534	26,733	0,328
	2001	15600	0,026	0,291	0,018	1,934	2,518	0,031	0,195	21,274	27,697	0,340
	2002	17794	0,025	0,297	0,017	1,811	2,358	0,029	0,199	21,730	28,291	0,347
	2003	20281	0,023	0,301	0,016	1,696	2,208	0,027	0,202	22,051	28,708	0,352
	2004	23206	0,022	0,303	0,015	1,586	2,064	0,025	0,203	22,200	28,902	0,355
	2005	26607	0,020	0,303	0,014	1,481	1,928	0,024	0,203	22,214	28,920	0,355
50/year	1995	7202	0,039	0,194	0,026	2,846	3,706	0,045	0,130	14,232	18,529	0,227
	1996	9897	0,033	0,199	0,022	2,428	3,161	0,039	0,133	14,569	18,967	0,233
	1997	10564	0,032	0,225	0,022	2,350	3,060	0,038	0,151	16,452	21,419	0,263
	1998	11605	0,031	0,245	0,021	2,242	2,919	0,036	0,164	17,939	23,355	0,287
	1999	13105	0,029	0,259	0,019	2,110	2,747	0,034	0,174	18,991	24,725	0,304
	2000	14824	0,027	0,271	0,018	1,984	2,583	0,032	0,182	19,840	25,830	0,317
	2001	17026	0,025	0,278	0,017	1,851	2,410	0,030	0,186	20,364	26,512	0,325
	2002	19768	0,023	0,282	0,016	1,718	2,237	0,027	0,189	20,617	26,841	0,330
	2003	22876	0,022	0,284	0,015	1,597	2,079	0,026	0,190	20,762	27,031	0,332
	2004	26534	0,020	0,284	0,014	1,483	1,931	0,024	0,190	20,761	27,029	0,332
	2005	30785	0,019	0,282	0,013	1,377	1,792	0,022	0,189	20,651	26,886	0,330

APPENDIX A-3 Table S-25

Actual detection power for the Sudbury site and detection powers in the next decade given a strategy of 130, 140 and 150 lakes once every three years.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
130	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3214	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1998	3214	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1999	5819	0,043	0,389	0,038	8,003	9,007	0,092	0,343	72,028	81,061	0,825
	2000	5819	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2001	5819	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2002	11973	0,030	0,362	0,027	5,579	6,279	0,064	0,318	66,952	75,348	0,767
	2003	11973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2004	11973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2005	22026	0,022	0,334	0,020	4,114	4,629	0,047	0,294	61,703	69,441	0,707
	2006	22026	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
140	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3214	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1998	3214	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1999	5982	0,043	0,384	0,038	7,893	8,883	0,090	0,338	71,040	79,949	0,814
	2000	5982	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2001	5982	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2002	12540	0,029	0,354	0,026	5,452	6,135	0,062	0,311	65,421	73,625	0,750
	2003	12540	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2004	12540	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2005	23268	0,022	0,325	0,019	4,002	4,504	0,046	0,286	60,034	67,563	0,688
	2006	23268	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
150	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3214	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1998	3214	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	1999	6121	0,042	0,380	0,037	7,803	8,782	0,089	0,334	70,229	79,036	0,805
	2000	6121	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2001	6121	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2002	13083	0,029	0,346	0,025	5,337	6,007	0,061	0,305	64,049	72,081	0,734
	2003	13083	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2004	13083	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	2005	24486	0,021	0,316	0,019	3,901	4,391	0,045	0,278	58,522	65,861	0,671
	2006	24486	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

APPENDIX A-3 Table S-26

Actual detection power for the Sudbury site and detection powers in the next decade given a strategy of 60, 65 and 70 lakes per year on a two year cycle.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
60/year	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3903	0,053	0,370	0,046	9,772	10,998	0,112	0,325	68,404	76,983	0,784
	1998	5017	0,047	0,373	0,041	8,619	9,700	0,099	0,328	68,953	77,600	0,790
	1999	6401	0,041	0,371	0,036	7,631	8,588	0,087	0,327	68,676	77,288	0,787
	2000	8282	0,036	0,363	0,032	6,708	7,550	0,077	0,319	67,084	75,497	0,769
	2001	10528	0,032	0,354	0,028	5,950	6,696	0,068	0,311	65,449	73,657	0,750
	2002	13320	0,029	0,343	0,025	5,290	5,953	0,061	0,302	63,477	71,437	0,727
	2003	16576	0,026	0,333	0,023	4,742	5,336	0,054	0,293	61,644	69,374	0,706
	2004	20413	0,023	0,323	0,020	4,273	4,809	0,049	0,285	59,822	67,324	0,686
	2005	24819	0,021	0,314	0,018	3,875	4,361	0,044	0,277	58,128	65,417	0,666
	2006	29830	0,019	0,306	0,017	3,535	3,978	0,041	0,269	56,556	63,648	0,648
65/year	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3946	0,053	0,368	0,046	9,719	10,937	0,111	0,324	68,031	76,562	0,780
	1998	5134	0,046	0,368	0,041	8,520	9,589	0,098	0,324	68,163	76,711	0,781
	1999	6610	0,041	0,365	0,036	7,509	8,451	0,086	0,321	67,581	76,057	0,774
	2000	8621	0,036	0,355	0,031	6,575	7,400	0,075	0,313	65,752	73,997	0,753
	2001	11024	0,031	0,346	0,028	5,815	6,544	0,067	0,304	63,960	71,981	0,733
	2002	14014	0,028	0,335	0,025	5,157	5,804	0,059	0,294	61,885	69,646	0,709
	2003	17504	0,025	0,324	0,022	4,614	5,193	0,053	0,285	59,987	67,510	0,687
	2004	21616	0,022	0,314	0,020	4,152	4,673	0,048	0,277	58,133	65,424	0,666
	2005	26343	0,020	0,305	0,018	3,761	4,233	0,043	0,268	56,421	63,497	0,647
	2006	31719	0,019	0,296	0,016	3,428	3,858	0,039	0,261	54,846	61,724	0,629
70/year	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3988	0,052	0,366	0,046	9,667	10,880	0,111	0,322	67,672	76,158	0,775
	1998	5250	0,046	0,364	0,040	8,426	9,482	0,097	0,321	67,406	75,859	0,772
	1999	6820	0,040	0,360	0,035	7,393	8,320	0,085	0,316	66,533	74,876	0,762
	2000	8961	0,035	0,349	0,031	6,449	7,258	0,074	0,307	64,492	72,580	0,739
	2001	11521	0,031	0,338	0,027	5,688	6,401	0,065	0,298	62,565	70,411	0,717
	2002	14708	0,027	0,327	0,024	5,034	5,665	0,058	0,287	60,407	67,983	0,692
	2003	18431	0,024	0,316	0,021	4,497	5,061	0,052	0,278	58,459	65,791	0,670
	2004	22820	0,022	0,306	0,019	4,041	4,548	0,046	0,269	56,579	63,674	0,648
	2005	27867	0,020	0,297	0,017	3,657	4,116	0,042	0,261	54,857	61,736	0,629
	2006	33607	0,018	0,288	0,016	3,330	3,748	0,038	0,253	53,283	59,965	0,611

APPENDIX A-3 Table S-27

Actual detection power for the Sudbury site and detection powers in the next decade given a strategy of 40, 45 and 50 lakes per year on a three year cycle.

# of lakes	Year	Denominator	annual relative amplitude (Δ/σ)	global relative amplitude (Δ/σ)	annual absolute trend pH (Δ)	annual absolute trend Alkalinity (Δ)	annual absolute trend Basecat (Δ)	annual absolute trend Sulfates (Δ)	global absolute trend pH (Δ)	global absolute trend Alkalinity (Δ)	global absolute trend Basecat (Δ)	global absolute trend Sulfates (Δ)
40/year	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3657	0,055	0,382	0,048	10,095	11,361	0,116	0,336	70,668	79,530	0,810
	1998	4379	0,050	0,399	0,044	9,226	10,383	0,106	0,351	73,805	83,061	0,846
	1999	5448	0,045	0,402	0,039	8,271	9,308	0,095	0,354	74,441	83,776	0,853
	2000	6735	0,040	0,402	0,035	7,439	8,372	0,085	0,354	74,390	83,719	0,852
	2001	8408	0,036	0,396	0,032	6,658	7,493	0,076	0,348	73,237	82,422	0,839
	2002	10517	0,032	0,386	0,028	5,953	6,700	0,068	0,340	71,437	80,395	0,819
	2003	12959	0,029	0,377	0,026	5,363	6,035	0,061	0,332	69,718	78,461	0,799
	2004	15858	0,026	0,367	0,023	4,848	5,456	0,056	0,323	67,872	76,383	0,778
	2005	19252	0,024	0,357	0,021	4,400	4,952	0,050	0,314	65,999	74,276	0,756
	2006	23108	0,022	0,347	0,019	4,016	4,520	0,046	0,306	64,258	72,316	0,736
45/year	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3700	0,054	0,380	0,048	10,037	11,295	0,115	0,334	70,256	79,066	0,805
	1998	4496	0,049	0,394	0,043	9,105	10,247	0,104	0,346	72,839	81,973	0,835
	1999	5677	0,044	0,394	0,039	8,103	9,119	0,093	0,347	72,924	82,069	0,836
	2000	7102	0,039	0,392	0,034	7,244	8,153	0,083	0,345	72,443	81,528	0,830
	2001	8955	0,035	0,384	0,031	6,451	7,260	0,074	0,338	70,965	79,865	0,813
	2002	11295	0,031	0,373	0,027	5,744	6,465	0,066	0,328	68,932	77,577	0,790
	2003	14007	0,028	0,362	0,025	5,158	5,805	0,059	0,319	67,059	75,468	0,768
	2004	17227	0,025	0,352	0,022	4,651	5,235	0,053	0,310	65,119	73,285	0,746
	2005	20999	0,023	0,342	0,020	4,213	4,741	0,048	0,301	63,194	71,119	0,724
	2006	25288	0,021	0,332	0,018	3,839	4,321	0,044	0,292	61,425	69,129	0,704
50/year	1995	1985	0,074	0,370	0,065	13,703	15,421	0,157	0,326	68,513	77,105	0,785
	1996	3214	0,058	0,349	0,051	10,769	12,119	0,123	0,307	64,612	72,715	0,740
	1997	3762	0,054	0,377	0,047	9,954	11,202	0,114	0,331	69,675	78,412	0,798
	1998	4656	0,048	0,387	0,043	8,947	10,069	0,103	0,340	71,576	80,552	0,820
	1999	5981	0,043	0,384	0,038	7,894	8,884	0,090	0,338	71,046	79,956	0,814
	2000	7577	0,038	0,379	0,033	7,014	7,893	0,080	0,334	70,135	78,931	0,804
	2001	9653	0,034	0,369	0,030	6,214	6,993	0,071	0,325	68,351	76,923	0,783
	2002	12272	0,030	0,357	0,026	5,511	6,202	0,063	0,315	66,132	74,425	0,758
	2003	15305	0,027	0,347	0,023	4,935	5,554	0,057	0,305	64,152	72,197	0,735
	2004	18906	0,024	0,336	0,021	4,440	4,997	0,051	0,296	62,160	69,956	0,712
	2005	23124	0,022	0,326	0,019	4,015	4,518	0,046	0,286	60,221	67,773	0,690
	2006	27915	0,020	0,316	0,017	3,654	4,112	0,042	0,278	58,464	65,795	0,670

APPENDIX A-4. Tables A-31, Algoma region, Clusters 1 & 2
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
106	16	1	1	3	0	4	1
109	15	4	0	3	1	4	1
112	24	3	0	3	0	4	1
115	14	1	1	1	-9	4	1
117	18	4	0	1	0	4	1
120	25	6	1	1	0	4	1
131	12	6	1	3	1	4	1
134	12	4	1	1	0	4	1
101	6	6	1	1	0	3	2
107	15	3	1	3	0	4	2
110	18	2	0	3	0	4	2
114	21	1	1	1	0	4	2
119	28	4	1	3	0	4	2
123	17	3	1	3	0	4	2
128	21	3	2	1	0	4	2
129	8	6	0	3	0	4	2
102	9	1	2	3	1	4	3
104	17	3	0	1	0	4	3
108	18	2	0	1	0	4	3
116	19	3	0	3	0	4	3
118	25	1	1	1	0	4	3
122	15	1	2	1	0	4	3
130	13	2	2	3	0	4	3
132	15	0	2	1	-9	4	3
103	22	6	1	3	0	4	4
105	19	2	2	3	0	4	4
111	20	4	1	3	0	4	4
113	23	0	1	1	0	4	4
121	21	6	1	1	0	4	4
124	1	1	0	0	-9	1	4
125	27	1	-9	1	0	1	4
126	1	3	2	1	-9	3	4
127	24	4	2	3	0	4	4
133	13	6	0	3	0	4	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
203	15	2	0	1	0	4	1
207	8	4	0	3	0	4	1
209	18	6	0	3	2	4	1
212	14	3	2	3	2	4	1
217	10	1	1	2	0	4	1
219	9	3	0	3	2	4	1
202	12	2	0	1	0	4	2
204	14	3	1	3	0	4	2
206	8	1	1	1	0	4	2
213	15	1	2	1	1	4	2
215	15	5	0	2	2	4	2
216	6	5	0	3	0	4	2
201	9	2	2	3	0	4	3
208	15	6	0	2	2	4	3
210	15	3	0	3	0	4	3
214	15	1	1	1	2	4	3
218	11	2	0	1	0	4	3
220	6	1	1	3	0	4	3
205	13	0	0	0	-9	0	4
211	14	0	0	0	-9	0	4

APPENDIX A-4. Tables A-32, Algoma region, Clusters 3 & 4
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
302	15	1	2	3	0	4	1
305	21	1	1	0	0	4	1
313	22	3	1	3	0	4	1
318	28	3	1	1	0	4	1
321	18	0	2	3	1	4	1
331	11	2	0	3	2	4	1
333	20	5	0	3	1	4	1
301	17	5	2	3	1	4	2
306	11	1	1	3	1	3	2
314	20	1	2	3	2	4	2
320	22	3	1	3	1	4	2
325	30	1	2	3	1	4	2
330	17	4	1	1	2	4	2
334	14	1	0	1	1	4	2
304	20	5	0	3	0	4	3
307	19	3	1	3	1	3	3
309	29	0	2	1	0	4	3
315	18	1	1	1	2	4	3
322	19	5	2	3	0	4	3
323	27	3	1	3	0	4	3
327	21	1	1	1	0	4	3
303	22	2	2	1	0	4	4
308	23	0	0	0	0	1	4
310	23	1	2	3	0	4	4
311	30	1	1	0	0	4	4
312	29	3	1	3	0	4	4
316	33	3	2	3	0	4	4
317	31	1	2	1	0	4	4
319	23	2	0	3	1	4	4
324	25	0	2	2	-9	3	4
326	25	2	1	1	1	4	4
328	16	4	0	3	1	4	4
329	18	0	1	3	1	4	4
332	17	4	2	3	1	4	4
335	22	5	0	2	2	4	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
402	18	5	1	3	0	4	1
407	19	0	1	1	0	4	1
418	31	6	0	3	2	4	1
419	27	4	0	3	2	4	1
422	16	2	0	3	2	4	1
425	25	3	0	3	0	4	1
430	15	2	1	3	0	4	1
401	13	0	0	1	0	4	2
406	19	1	2	3	0	4	2
420	21	2	0	3	0	4	2
428	16	4	0	3	0	4	2
432	20	0	1	0	0	4	2
433	19	5	0	1	0	4	2
437	9	1	0	1	2	4	2
403	17	0	0	0	0	4	3
410	23	3	0	3	0	4	3
412	23	3	0	1	0	4	3
417	23	4	0	3	0	4	3
421	17	2	0	3	0	4	3
431	20	2	1	3	0	4	3
434	19	0	0	0	0	4	3
404	20	0	0	0	-9	0	4
405	21	0	0	0	-9	0	4
408	21	0	0	0	-9	0	4
409	22	0	0	0	-9	0	4
411	28	0	0	0	0	4	4
413	29	2	0	3	0	4	4
414	27	5	0	3	0	4	4
415	24	1	2	3	0	4	4
416	21	0	1	3	-9	3	4
423	20	6	0	3	0	4	4
424	24	5	0	3	0	4	4
426	32	6	2	3	2	4	4
427	30	0	0	1	2	4	4
429	14	3	0	3	0	4	4
435	15	6	0	3	2	4	4
436	14	0	0	0	-9	0	4

APPENDIX A-4. Tables A-33, Algoma region, Clusters 5 & 6
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
503	14	1	0	3	0	4	1
506	14	5	0	0	0	4	1
509	12	1	0	3	2	4	1
514	17	3	0	1	1	4	1
515	23	0	0	1	2	4	1
521	9	4	1	3	1	4	1
524	7	3	2	3	0	4	1
501	11	2	0	3	2	4	2
505	15	0	0	0	2	4	2
508	13	5	0	2	2	4	2
513	15	4	1	3	2	4	2
516	13	1	0	1	0	4	2
520	7	1	0	1	0	4	2
522	14	1	0	1	0	4	2
504	15	1	1	3	0	4	3
507	10	6	0	0	2	4	3
510	17	4	1	3	0	4	3
511	19	4	2	2	2	4	3
518	16	2	0	1	0	4	3
519	15	3	1	3	1	4	3
523	11	4	0	3	0	4	3
502	11	3	0	3	-9	2	4
512	18	6	0	2	0	4	4
517	18	4	0	3	0	4	4
525	8	0	0	0	-9	0	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
604	15	6	0	3	2	4	1
607	17	1	0	2	2	4	1
610	23	2	2	3	0	4	1
613	17	6	1	2	2	4	1
621	16	5	0	2	2	4	1
623	19	3	1	2	1	3	1
626	12	3	1	1	2	4	1
605	14	3	0	3	0	4	2
609	23	2	2	3	1	4	2
611	25	4	0	3	0	4	2
612	12	4	1	3	1	4	2
615	18	1	1	1	2	3	2
620	13	3	1	1	0	4	2
622	19	6	0	3	2	4	2
603	22	6	1	3	1	3	3
606	14	2	2	1	0	4	3
614	16	5	1	2	2	4	3
616	25	6	1	2	1	4	3
618	17	4	0	2	1	3	3
619	22	4	0	2	1	4	3
624	17	3	0	2	0	4	3
601	11	0	0	0	-9	0	4
602	16	6	1	3	1	3	4
608	18	3	0	2	1	4	4
617	19	6	0	3	2	4	4
625	21	6	0	2	1	4	4
627	11	0	-9	3	-9	0	4

APPENDIX A-4. Tables A-34, Algoma region, Clusters 7 & 8
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
701	4	3	2	3	0	4	1
706	9	3	2	1	1	4	1
709	11	4	2	3	1	4	1
715	17	2	2	2	2	4	1
716	9	1	2	3	1	4	1
722	16	0	2	0	2	4	1
727	12	0	1	0	1	4	1
703	11	3	2	3	1	4	2
708	8	3	2	3	0	4	2
712	21	2	1	3	1	4	2
714	13	0	2	0	2	4	2
720	8	3	1	1	1	4	2
723	16	0	2	1	2	4	2
728	9	1	2	3	2	4	2
702	5	5	2	3	0	4	3
704	7	3	2	3	1	4	3
707	13	5	2	3	1	4	3
713	15	1	2	3	1	4	3
717	10	1	2	0	0	4	3
721	15	0	2	0	-9	3	3
725	14	0	1	3	2	4	3
705	12	1	2	0	-9	3	4
711	13	1	2	1	1	2	4
718	13	4	2	0	2	4	4
719	11	0	0	0	-9	0	4
724	16	2	2	1	2	4	4
726	12	1	1	1	2	4	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
802	14	4	1	1	1	4	1
805	13	5	2	3	1	4	1
810	13	4	1	3	1	4	1
814	23	3	2	3	1	4	1
815	18	6	0	3	1	4	1
820	14	4	2	3	2	4	1
823	11	4	0	2	0	4	1
801	13	6	1	3	2	4	2
804	15	4	2	3	2	4	2
806	9	1	2	0	1	4	2
813	21	1	1	3	1	4	2
821	15	6	0	3	1	4	2
824	14	1	2	3	0	4	2
825	7	4	0	3	2	4	2
803	13	3	0	1	0	4	3
807	18	2	1	3	2	4	3
809	18	3	2	3	1	4	3
816	15	1	2	1	0	4	3
817	17	5	1	2	1	4	3
818	19	5	1	3	2	4	3
822	11	4	0	3	2	3	3
808	19	2	2	1	1	4	4
811	20	0	0	0	-9	0	4
812	22	0	0	0	-9	0	4
819	16	0	0	0	-9	0	4

APPENDIX A-4. Table A-35, Algoma region, Cluster 9
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
902	16	0	2	1	1	4	1
906	13	0	2	0	2	4	1
909	17	2	1	3	2	4	1
911	18	3	1	3	2	4	1
914	20	2	2	3	-9	3	1
920	12	1	0	2	0	4	1
921	16	0	2	1	1	4	1
903	14	3	2	2	2	4	2
905	6	4	2	2	2	4	2
910	11	5	0	0	2	4	2
913	19	3	2	3	2	4	2
915	19	3	2	2	2	4	2
919	17	0	1	1	1	3	2
924	9	6	0	2	1	4	2
901	14	1	2	3	1	4	3
904	5	6	1	2	2	4	3
907	19	5	1	2	1	4	3
912	19	1	2	3	1	4	3
916	22	4	1	2	1	4	3
922	11	4	0	2	2	4	3
925	10	3	2	3	2	4	3
908	16	6	2	3	2	4	4
917	18	0	2	0	-9	4	4
918	19	2	2	3	1	4	4
923	14	0	2	1	2	4	4

APPENDIX A-4. Tables M-29, Muskoka region, Clusters 1 & 2
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
103	10	4	0	3	2	4	1
108	18	5	2	1	2	4	1
111	24	5	0	3	2	3	1
119	20	5	2	1	2	4	1
120	20	1	2	3	2	4	1
124	23	3	2	2	2	4	1
128	21	1	2	1	0	4	1
130	16	1	1	0	1	4	1
134	14	3	2	1	2	4	1
101	7	3	1	3	2	4	2
104	12	6	0	3	2	4	2
107	17	5	1	2	2	4	2
110	16	6	0	3	0	4	2
112	26	5	0	2	2	4	2
116	22	4	0	3	1	4	2
122	18	6	1	3	2	3	2
123	20	4	0	2	2	4	2
132	15	3	0	3	1	4	2
102	8	6	0	3	2	4	3
105	12	6	0	3	0	3	3
109	18	4	0	2	2	4	3
117	24	5	0	3	1	4	3
121	23	6	0	3	2	4	3
125	23	3	2	1	2	4	3
129	18	5	0	3	1	4	3
133	19	6	0	3	2	4	3
135	10	6	1	3	2	4	3
106	18	1	1	1	-9	1	4
113	27	6	0	3	2	4	4
114	27	0	0	0	-9	0	4
115	28	6	0	0	0	4	4
118	23	6	0	2	2	3	4
126	24	6	0	3	2	4	4
127	24	0	1	1	2	4	4
131	15	0	0	0	-9	0	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
201	20	6	1	3	1	4	1
205	20	1	1	0	2	4	1
210	30	1	0	3	2	4	1
213	32	5	0	2	2	4	1
215	30	2	1	3	1	4	1
219	32	4	0	0	1	4	1
226	23	3	0	1	0	4	1
228	11	3	1	2	0	4	1
236	22	3	0	3	2	4	1
203	24	2	1	0	2	4	2
206	20	5	0	3	-9	4	2
209	28	0	2	1	0	4	2
212	33	2	0	3	0	4	2
217	31	2	1	1	0	4	2
224	27	2	2	3	0	4	2
227	18	6	0	3	2	4	2
230	21	5	0	3	1	4	2
234	28	5	2	1	1	4	2
202	21	5	1	3	1	4	3
204	20	3	0	3	2	4	3
207	23	4	0	2	2	4	3
211	33	1	1	1	0	4	3
214	31	5	0	3	1	4	3
218	32	5	0	3	1	4	3
223	31	0	1	1	0	4	3
229	14	5	0	3	1	4	3
235	28	4	0	3	1	4	3
208	25	6	0	3	2	4	4
216	30	0	2	0	-9	2	4
220	34	0	0	0	-9	0	4
221	35	5	0	2	0	4	4
222	32	3	2	3	0	4	4
225	30	0	0	0	-9	0	4
231	27	1	2	0	-9	2	4
232	26	0	0	0	-9	0	4
233	30	0	2	1	-9	1	4

APPENDIX A-4. Tables M-30, Muskoka region, Clusters 3 & 4
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
303	18	1	2	3	0	3	1
304	20	1	2	2	-9	2	1
306	21	4	1	2	2	4	1
312	31	4	2	3	0	4	1
316	30	2	2	1	1	3	1
322	30	1	2	3	0	3	1
325	16	3	2	3	0	3	1
330	21	3	2	3	0	3	1
335	25	3	0	3	0	4	1
302	18	4	1	3	1	4	2
310	26	5	0	3	0	3	2
315	29	3	0	3	1	3	2
318	34	1	1	3	0	3	2
320	23	2	1	2	1	3	2
327	30	1	2	3	0	3	2
332	16	1	1	3	1	3	2
333	24	1	2	3	0	3	2
337	3	3	2	0	2	3	2
301	14	3	0	0	2	3	3
305	24	2	0	2	1	3	3
308	25	6	1	3	2	3	3
311	30	3	1	3	0	4	3
314	24	6	2	3	0	3	3
321	29	0	1	2	2	3	3
324	28	6	0	2	2	3	3
331	16	2	1	2	1	4	3
336	21	2	1	3	2	3	3
307	24	2	2	0	-9	2	4
309	28	4	2	3	2	3	4
313	27	4	1	3	1	3	4
317	33	3	0	1	0	3	4
319	31	5	1	3	0	4	4
323	33	6	0	3	1	2	4
326	25	0	0	0	-9	0	4
328	24	6	0	3	1	3	4
329	30	6	0	0	2	4	4
334	17	0	0	0	-9	0	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
401	24	2	0	3	0	4	1
406	19	4	0	2	2	3	1
407	21	1	1	3	0	3	1
419	30	0	0	2	0	3	1
421	32	1	0	2	0	2	1
423	28	1	0	0	2	3	1
429	32	0	0	2	0	3	1
430	28	1	0	0	0	3	1
433	12	0	0	3	2	3	1
403	29	0	0	3	0	2	2
404	22	1	1	3	0	3	2
408	24	0	1	3	0	3	2
414	33	6	0	3	1	4	2
415	28	5	1	3	1	4	2
422	32	4	0	1	0	4	2
424	33	5	0	3	2	4	2
431	25	1	0	3	0	3	2
435	24	4	0	3	0	4	2
405	24	1	0	3	1	2	3
409	25	0	2	0	0	3	3
413	33	4	0	3	1	4	3
416	29	1	1	2	0	3	3
418	31	0	1	2	0	3	3
425	32	6	0	3	2	3	3
428	32	4	0	3	0	3	3
432	16	5	0	0	0	3	3
434	19	4	0	3	2	3	3
402	29	0	0	3	-9	0	4
410	30	0	0	0	-9	0	4
411	31	0	0	0	-9	0	4
412	31	0	0	0	-9	0	4
417	32	0	1	0	-9	2	4
420	30	0	1	0	-9	2	4
426	28	0	0	0	-9	0	4
427	30	0	0	0	-9	0	4

APPENDIX A-4. Tables M-31, Muskoka region, Clusters 5 & 6
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
504	27	2	2	3	0	3	1
509	39	1	1	3	2	3	1
511	40	1	1	3	2	3	1
514	30	4	1	3	2	3	1
522	40	4	0	2	1	3	1
526	33	1	1	1	0	3	1
529	39	3	0	3	0	4	1
533	29	5	0	2	1	4	1
536	32	1	2	3	0	3	1
501	20	1	2	3	0	3	2
510	41	2	1	3	1	3	2
513	38	3	1	1	2	3	2
517	41	2	2	3	0	3	2
524	34	2	1	3	0	3	2
527	33	4	2	3	0	3	2
532	34	0	1	3	0	3	2
538	36	1	2	3	0	3	2
541	26	0	2	2	2	3	2
503	30	1	2	0	0	3	3
506	35	1	1	2	2	3	3
508	38	2	1	3	0	4	3
512	39	1	2	0	2	3	3
515	26	6	1	2	2	4	3
531	34	1	2	3	0	3	3
537	35	1	2	1	0	3	3
542	28	3	2	3	0	3	3
543	34	0	1	1	0	3	3
502	22	0	0	3	-9	0	4
505	27	0	0	1	-9	0	4
507	28	0	0	1	-9	0	4
516	41	5	1	1	0	4	4
518	41	2	2	3	0	3	4
519	41	3	0	3	1	3	4
520	41	1	2	3	0	3	4
521	41	1	1	3	0	3	4
523	37	3	0	1	0	2	4
525	33	0	0	3	-9	0	4
528	32	0	0	0	-9	0	4
530	39	2	2	3	0	3	4
534	38	1	1	3	0	3	4
535	36	0	0	0	-9	0	4
539	34	4	0	3	0	2	4

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
601	12	6	0	3	2	3	1
604	18	1	0	2	2	3	1
607	15	5	0	3	2	3	1
610	19	4	0	3	0	3	1
615	22	6	0	2	2	3	1
623	20	6	0	3	0	3	1
628	15	4	0	1	1	3	1
634	14	1	0	3	0	3	1
637	17	4	0	2	2	3	1
603	15	6	0	2	2	3	2
606	16	6	0	2	2	3	2
609	16	6	0	2	2	3	2
620	24	1	1	0	2	3	2
622	22	5	0	3	0	4	2
626	20	3	0	3	2	3	2
630	23	3	0	2	0	4	2
633	12	3	0	3	0	4	2
635	12	4	0	2	0	3	2
605	19	4	0	0	2	3	3
608	14	6	0	2	2	4	3
612	21	2	0	2	0	3	3
614	16	1	2	3	2	3	3
619	22	4	0	2	2	3	3
625	26	3	0	3	1	3	3
629	11	3	1	2	1	3	3
631	15	0	0	0	0	3	3
636	16	6	0	3	2	3	3
602	12	0	0	3	1	2	4
611	27	6	0	3	0	3	4
613	21	6	0	3	1	4	4
616	28	0	0	2	1	2	4
617	26	5	0	3	1	3	4
618	21	1	2	2	0	2	4
621	30	6	0	3	2	3	4
624	27	0	0	3	0	2	4
627	18	0	0	0	-9	0	4
632	13	0	0	0	-9	0	4
638	9	6	0	3	0	3	4

APPENDIX A-4. Table M-32, Muskoka region, Cluster 7
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping.

Lake	Proxi	clma1	clma2	clma3	clma4	nb	Year
702	11	3	0	3	1	3	1
709	21	0	0	3	0	3	1
712	17	1	0	3	1	3	1
716	9	4	1	0	2	4	1
720	27	6	1	2	2	4	1
722	21	4	0	3	0	3	1
726	12	5	0	3	1	4	1
729	15	1	2	3	0	3	1
733	16	0	2	3	0	3	1
701	11	3	0	3	0	3	2
711	19	6	0	1	0	4	2
715	13	3	1	3	0	3	2
718	21	2	0	3	1	3	2
724	18	3	0	3	2	4	2
725	11	4	0	3	0	3	2
728	14	4	2	3	0	3	2
731	21	0	1	0	0	3	2
734	16	0	1	1	1	3	2
703	16	4	0	3	0	4	3
705	17	5	1	3	0	4	3
714	16	4	0	3	2	3	3
717	8	1	0	2	2	3	3
719	24	0	1	2	1	3	3
721	25	1	1	0	2	3	3
727	14	4	0	3	0	3	3
730	16	3	1	3	2	4	3
736	12	2	1	3	0	3	3
704	13	5	0	2	2	4	4
706	18	1	2	2	2	3	4
707	22	0	1	3	2	3	4
708	18	0	0	0	0	1	4
710	23	1	0	1	0	2	4
713	16	1	2	0	-9	1	4
723	23	5	0	3	1	4	4
732	20	3	1	3	2	3	4
735	16	6	1	3	2	3	4

APPENDIX A-4. Tables S-28, Sudbury region
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping..

Lake	Year	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
1	1	5	6	0	2	1	0	2	1	4	5	4	5
3	1	7	4	0	1	2	2	1	2	2	3	2	6
24	1	1	5	1	0	1	0	0	1	3	3	4	4
26	1	3	5	1	2	1	0	2	1	3	3	3	4
34	1	2	5	0	1	0	2	1	0	3	3	4	4
47	1	2	4	0	3	0	2	1	0	3	2	3	4
182	1	7	0	1	0	2	0	0	1	1	1	2	4
197	1	2	5	2	2	2	0	3	2	3	3	4	6
219	1	3	3	0	1	0	2	1	0	3	2	3	6
225	1	7	0	1	2	0	2	1	0	0	1	1	6
239	1	4	3	0	3	0	2	3	0	3	3	2	5
247	1	3	2	0	3	0	0	3	0	3	2	2	6
251	1	5	2	1	3	0	2	1	0	3	2	2	6
256	1	6	3	0	3	2	1	3	2	1	3	0	5
258	1	8	5	0	3	0	1	3	0	3	3	3	6
259	1	5	3	0	1	0	2	1	0	3	2	2	6
266	1	7	3	0	3	2	1	3	2	2	3	1	6
298	1	4	5	0	3	0	0	3	0	3	3	3	4
316	1	1	1	1	1	0	1	1	0	3	1	1	6
333	1	4	4	0	2	2	1	2	2	3	2	4	6
342	1	7	1	2	2	0	2	1	0	3	1	2	5
348	1	4	6	0	0	2	2	3	2	1	4	1	4
387	1	2	3	0	1	0	2	1	0	2	2	1	4
394	1	1	1	0	1	0	2	1	0	2	2	0	5
401	1	6	2	0	1	0	2	1	0	3	1	2	6
406	1	6	4	0	1	0	2	1	0	2	3	2	5
408	1	7	3	0	3	0	2	3	0	3	3	2	6
410	1	1	4	0	2	2	1	2	2	3	4	4	6
469	1	1	2	0	0	1	1	1	1	3	1	2	4
475	1	3	6	0	2	2	1	3	2	4	4	2	4
480	1	0	5	0	2	2	1	2	2	1	5	1	4
501	1	3	5	0	2	2	1	2	2	2	5	2	4
510	1	0	1	1	3	0	1	1	0	3	1	1	4
522	1	3	4	0	3	0	2	3	0	4	4	4	5
524	1	4	6	0	2	2	2	3	2	4	4	4	6
527	1	4	4	1	2	1	2	2	1	2	2	3	6
531	1	3	6	0	2	2	1	2	2	4	5	4	4
553	1	0	4	1	3	0	1	3	0	3	4	3	4
572	1	4	1	1	3	0	2	1	0	2	1	0	4
579	1	6	1	1	1	2	1	1	2	0	1	2	4
585	1	8	5	0	0	2	1	0	2	1	3	0	4
589	1	4	2	1	3	1	0	3	0	3	2	2	6

APPENDIX A-4. Tables S-28, Sudbury region
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping..

Lake	Year	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
609	1	5	5	1	3	0	0	2	0	3	3	3	5
613	1	3	6	0	2	1	0	2	1	4	4	4	4
638	1	0	2	0	1	0	1	1	0	3	3	2	4
646	1	3	3	0	3	0	0	3	0	3	2	4	4
902	1	5	3	0	2	1	0	1	1	3	1	3	6
903	1	6	6	0	2	2	0	2	2	4	4	4	5
905	1	2	2	0	0	2	1	0	2	3	2	3	6
908	1	8	2	0	2	2	0	2	2	2	3	1	4
927	1	2	1	0	1	0	0	1	0	3	2	1	5
930	1	1	6	0	2	0	1	2	0	4	4	4	4
932	1	5	4	0	3	0	2	1	0	2	3	2	6
943	1	4	2	0	3	2	0	1	1	2	0	1	4
958	1	2	5	0	2	2	2	2	2	1	4	1	5
959	1	4	4	0	1	2	1	1	2	2	4	2	4
961	1	5	0	2	1	0	2	1	0	3	0	1	4
966	1	1	6	0	2	2	1	2	2	4	5	4	4
974	1	6	1	2	3	0	2	1	0	2	2	1	5
975	1	1	4	0	3	0	2	1	0	3	2	2	4
2	2	6	4	0	1	2	0	1	2	2	3	2	6
5	2	5	5	0	3	1	0	3	1	3	3	3	6
13	2	6	2	0	3	0	2	1	0	3	2	2	6
16	2	7	4	1	2	2	0	3	1	3	3	3	6
17	2	1	2	0	3	0	2	1	0	2	1	1	6
22	2	5	3	2	3	1	1	1	1	3	3	3	6
45	2	2	1	0	1	0	2	1	0	2	1	1	4
48	2	3	4	0	1	0	2	1	0	3	2	3	4
51	2	2	3	0	3	0	2	1	0	3	2	2	4
199	2	2	3	1	3	0	1	1	0	3	1	4	6
242	2	6	3	2	3	0	2	1	0	3	1	2	4
248	2	6	3	0	3	0	2	3	0	3	3	2	6
250	2	4	3	0	3	2	2	3	0	2	4	2	6
254	2	8	3	0	2	2	1	2	2	3	1	2	6
257	2	7	2	0	3	0	1	1	0	2	2	1	6
268	2	2	2	0	3	2	1	1	0	2	3	0	6
292	2	4	6	0	2	2	0	3	2	4	5	4	4
299	2	3	1	0	3	0	0	1	0	3	1	2	6
303	2	3	4	0	2	1	1	2	1	3	3	4	4
307	2	1	5	0	1	0	2	1	0	3	3	3	4
326	2	4	5	1	3	0	1	1	0	3	3	3	5
334	2	6	4	0	2	0	2	3	0	3	3	4	4
338	2	6	0	2	3	0	2	1	0	3	1	1	6
343	2	6	1	0	1	0	2	1	0	0	1	2	4

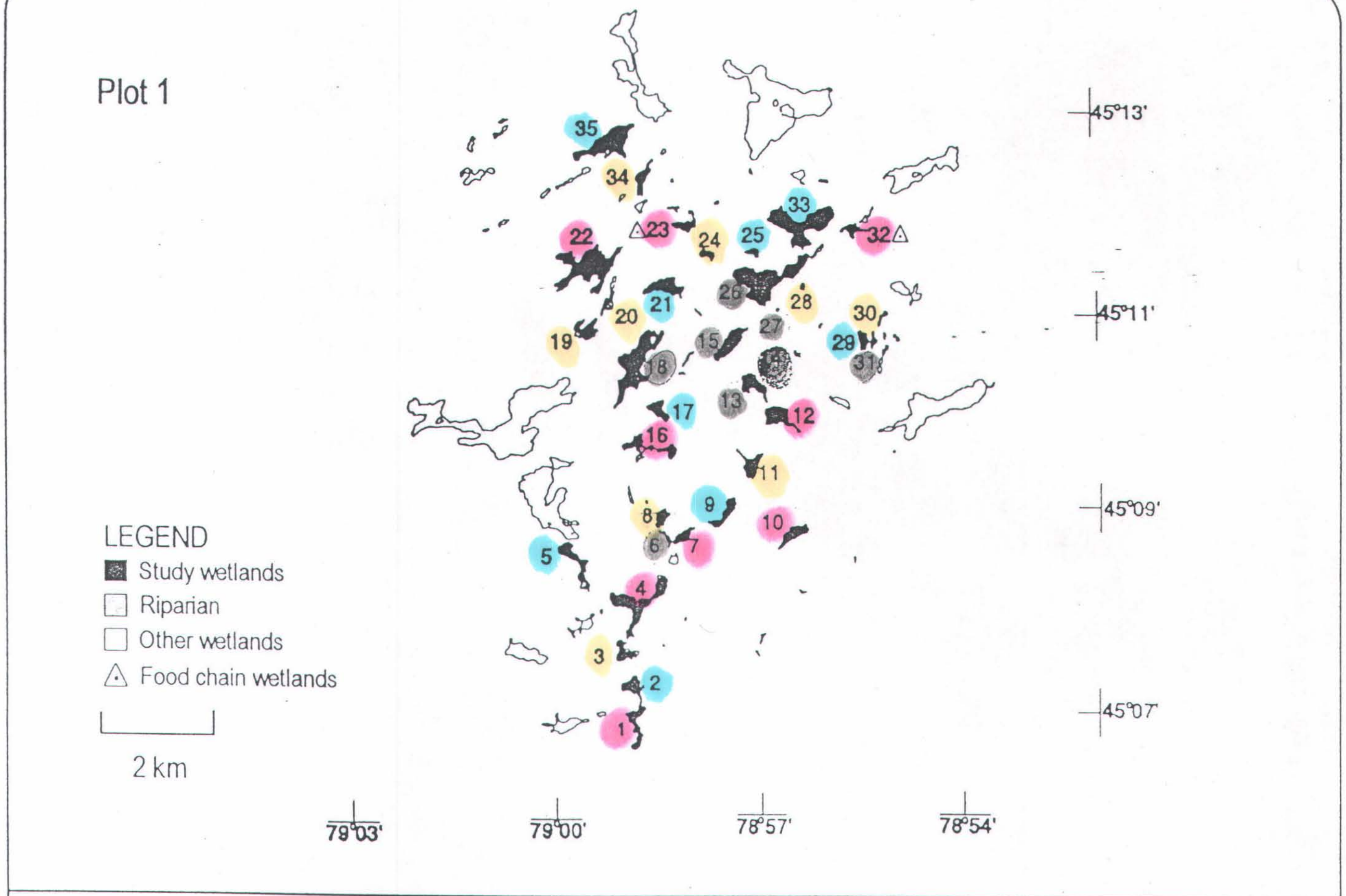
APPENDIX A-4. Tables S-28, Sudbury region
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping..

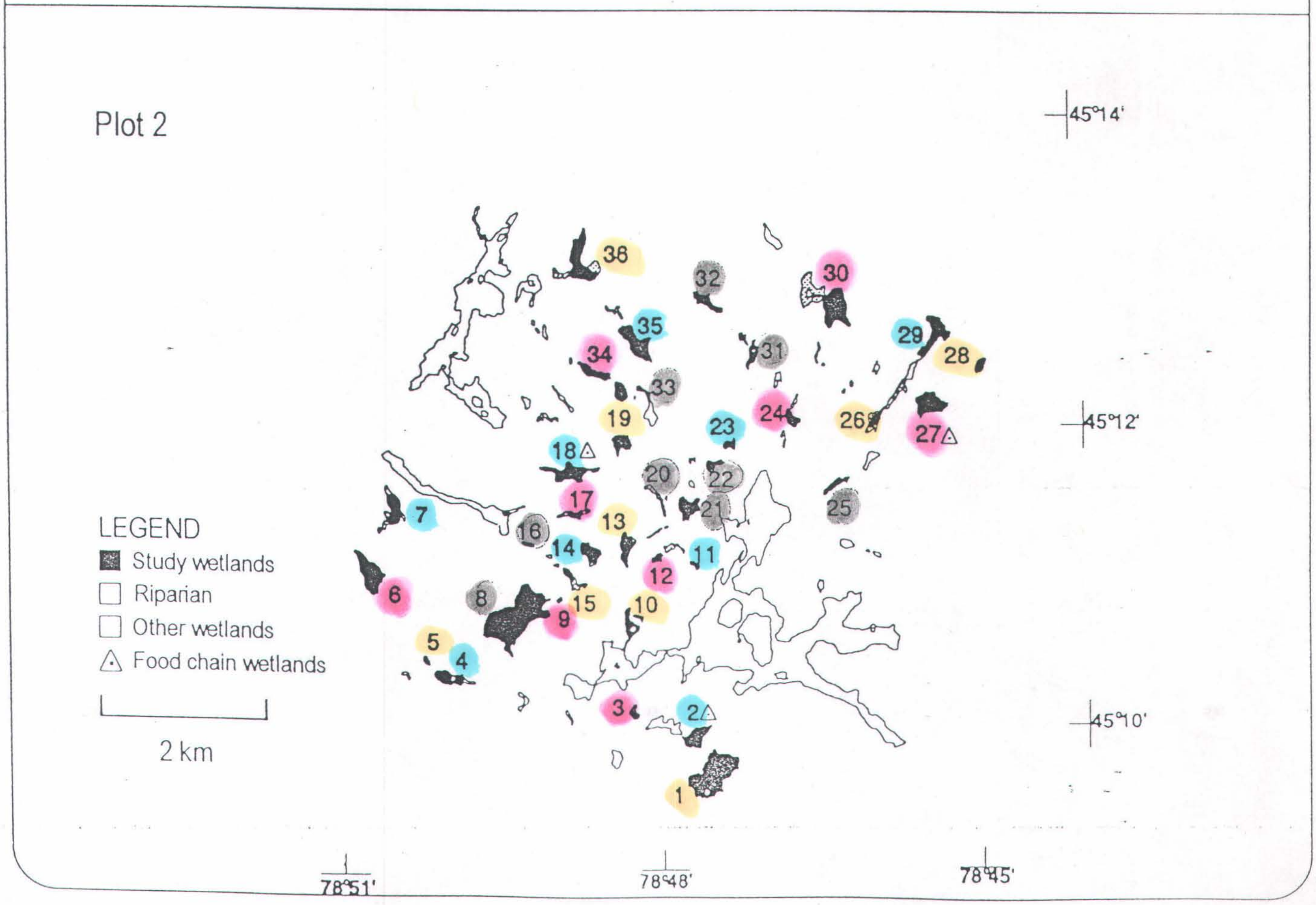
Lake	Year	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
373	2	1	4	0	1	0	2	1	0	3	2	4	4
393	2	1	6	0	3	0	2	1	0	4	4	4	4
402	2	8	5	0	0	0	2	0	0	2	3	4	6
404	2	6	4	0	3	2	2	3	2	3	3	3	6
407	2	7	1	0	3	0	2	1	0	2	2	1	6
409	2	1	3	0	0	2	1	0	2	3	2	3	6
472	2	2	1	0	2	2	1	1	2	2	2	0	4
479	2	2	3	1	3	1	1	1	1	3	4	2	4
493	2	2	4	0	2	2	1	2	2	3	4	2	4
515	2	2	4	1	3	2	1	3	2	2	4	1	4
530	2	4	3	1	3	0	2	3	0	3	1	3	6
545	2	0	4	0	2	2	0	2	2	3	3	4	4
573	2	3	6	0	3	2	2	3	2	4	5	3	5
577	2	6	3	0	2	0	2	2	0	3	2	3	4
583	2	6	5	2	2	2	1	3	2	1	2	1	6
590	2	4	3	0	3	2	0	3	2	2	3	2	6
593	2	9	4	0	1	0	0	1	0	3	2	3	6
612	2	3	1	0	0	2	0	0	0	1	1	0	5
645	2	2	3	0	2	0	0	1	0	3	3	2	4
655	2	1	5	0	3	1	1	3	1	4	3	4	4
692	2	0	3	0	3	0	1	3	0	3	4	2	4
822	2	2	1	0	3	2	2	3	2	2	2	1	4
856	2	3	3	2	3	1	1	3	1	2	4	2	6
900	2	2	3	2	3	2	2	3	1	3	4	2	6
904	2	2	5	1	3	2	0	3	1	3	4	2	5
909	2	6	1	0	2	1	0	1	1	3	1	2	6
920	2	4	2	0	1	0	2	1	0	3	2	2	6
922	2	2	4	0	1	0	0	1	0	2	3	3	6
924	2	4	5	0	3	0	2	3	0	2	2	2	5
925	2	1	4	0	3	0	2	3	0	3	0	3	4
926	2	4	3	0	3	2	1	1	2	1	1	0	4
933	2	4	6	0	2	0	2	2	0	4	4	4	5
949	2	6	6	0	2	1	2	2	1	3	4	3	5
951	2	2	5	0	0	2	1	0	2	1	3	0	4
973	2	7	2	0	3	0	1	1	0	3	1	2	5
976	2	3	2	1	1	0	2	1	0	3	0	2	4
6	3	8	1	0	1	1	0	1	1	3	1	3	5
240	3	5	6	0	2	2	2	2	2	4	3	4	6
252	3	7	1	0	1	1	2	1	1	0	1	4	4
253	3	8	4	2	2	2	1	2	2	2	3	2	5
255	3	9	3	0	0	2	1	0	2	1	2	0	4
260	3	5	1	0	3	0	2	1	0	2	1	1	5

APPENDIX A-4. Tables S-28, Sudbury region
Selection of lakes, proximity counts, geophysical classification, historical sampling effort and grouping..

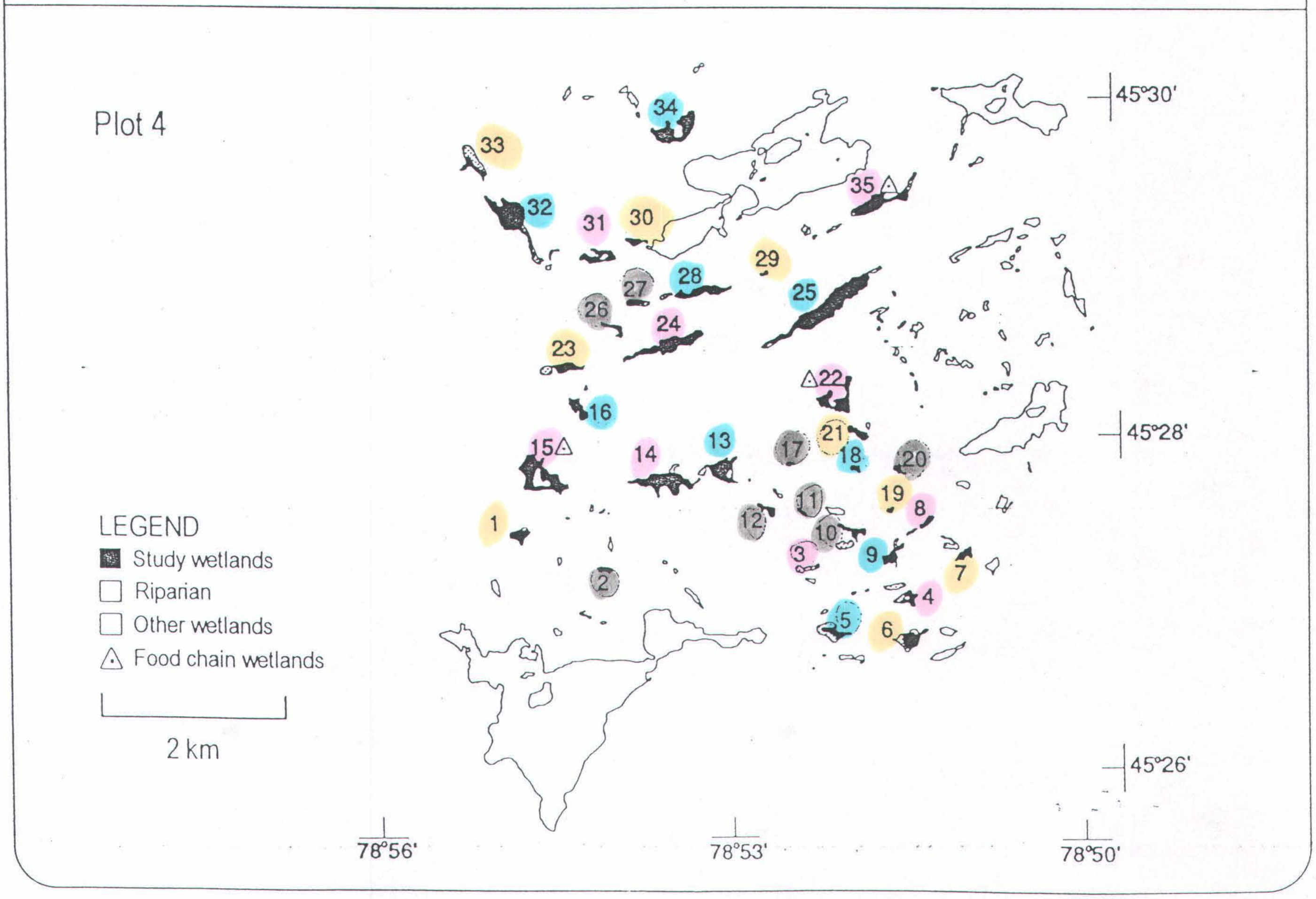
Lake	Year	Proxi	clma1	clma2	clma3	clma4	clsu1	clsu2	clsu3	clsu4	clsu5	clsu6	nb
403	3	7	4	0	3	0	2	3	0	2	3	2	6
494	3	2	3	0	3	2	1	1	2	2	3	2	4
502	3	3	6	0	2	2	1	3	2	4	4	4	4
526	3	4	6	0	2	2	2	2	2	4	5	4	5
570	3	3	6	0	2	2	2	2	2	1	4	1	4
588	3	10	6	0	2	2	0	2	2	1	4	1	5
906	3	8	6	0	3	0	2	3	0	4	5	4	5
921	3	7	6	0	3	0	2	2	0	4	4	4	5
923	3	7	1	0	3	2	2	3	2	0	0	0	4
935	3	6	3	2	3	0	1	1	0	2	1	1	5
938	3	6	1	1	3	0	1	1	0	2	2	1	4
947	3	3	6	0	3	2	2	3	2	4	5	3	4
953	3	2	5	0	2	2	1	2	2	4	5	3	4
954	3	7	6	0	2	2	2	2	2	1	5	2	4
955	3	2	6	0	2	2	2	2	2	4	5	4	4
957	3	2	1	2	1	0	0	1	0	3	3	1	4
962	3	1	2	1	0	2	2	0	2	2	0	1	3
963	3	6	1	1	1	2	1	1	2	2	2	1	3
965	3	1	6	0	-9	0	1	-99	0	4	5	4	4
968	3	8	6	0	2	2	1	3	2	4	5	1	4
1001	3	5	1	2	0	2	0	0	2	0	1	1	3
1004	3	5	0	1	0	1	0	0	1	0	0	2	3
1005	3	3	0	2	0	0	0	0	0	0	0	1	3
1006	3	3	1	2	0	0	0	0	0	0	1	1	3
1007	3	3	0	2	1	0	1	1	0	0	0	2	3
1009	3	2	0	0	0	1	1	0	1	0	0	2	3
1013	3	2	0	2	0	0	1	0	0	0	0	2	3
1030	3	5	1	2	3	0	2	1	0	0	1	2	3
1031	3	7	1	2	3	0	1	1	0	0	1	1	3
1033	3	6	1	2	1	0	2	1	0	0	0	2	3
1038	3	6	1	2	1	1	0	1	1	0	1	3	3

Muskoka Plots and Lakes



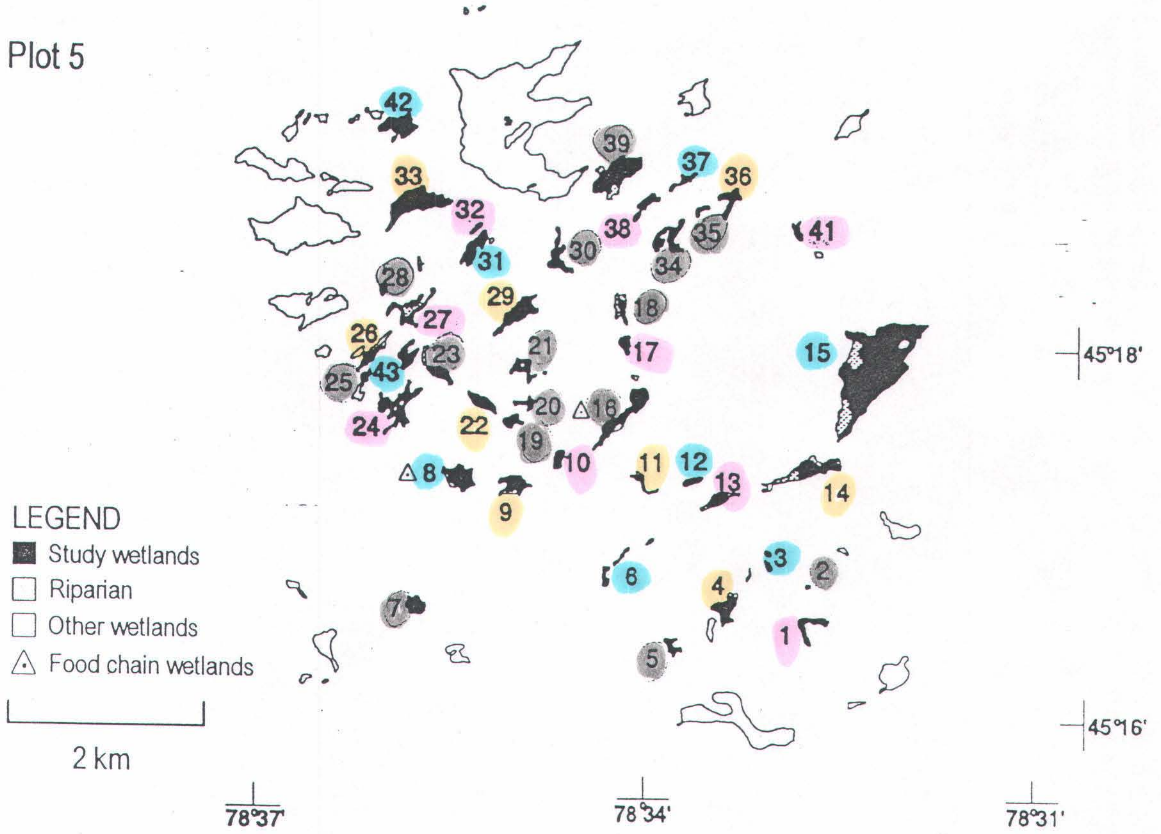


Muskoka Plots and Lakes

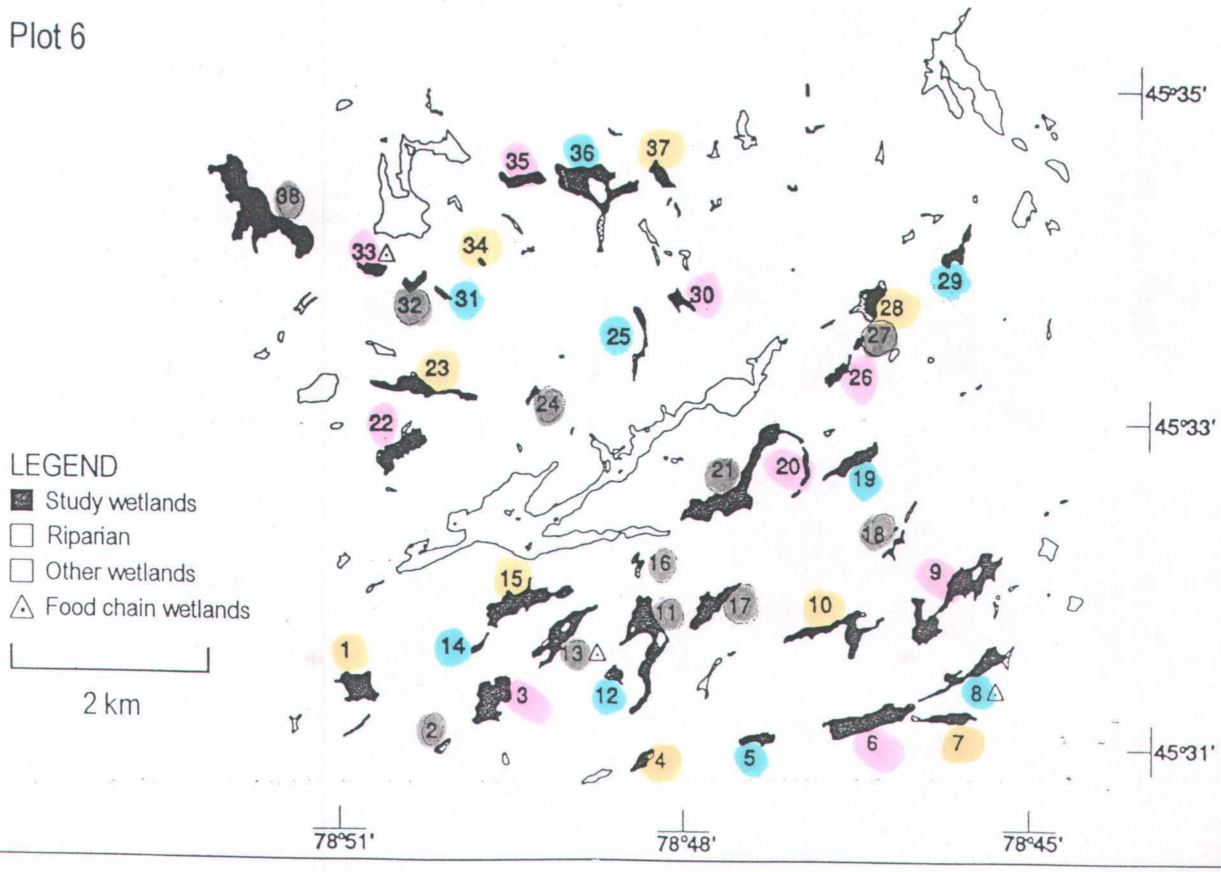


Muskoka Plots and Lakes

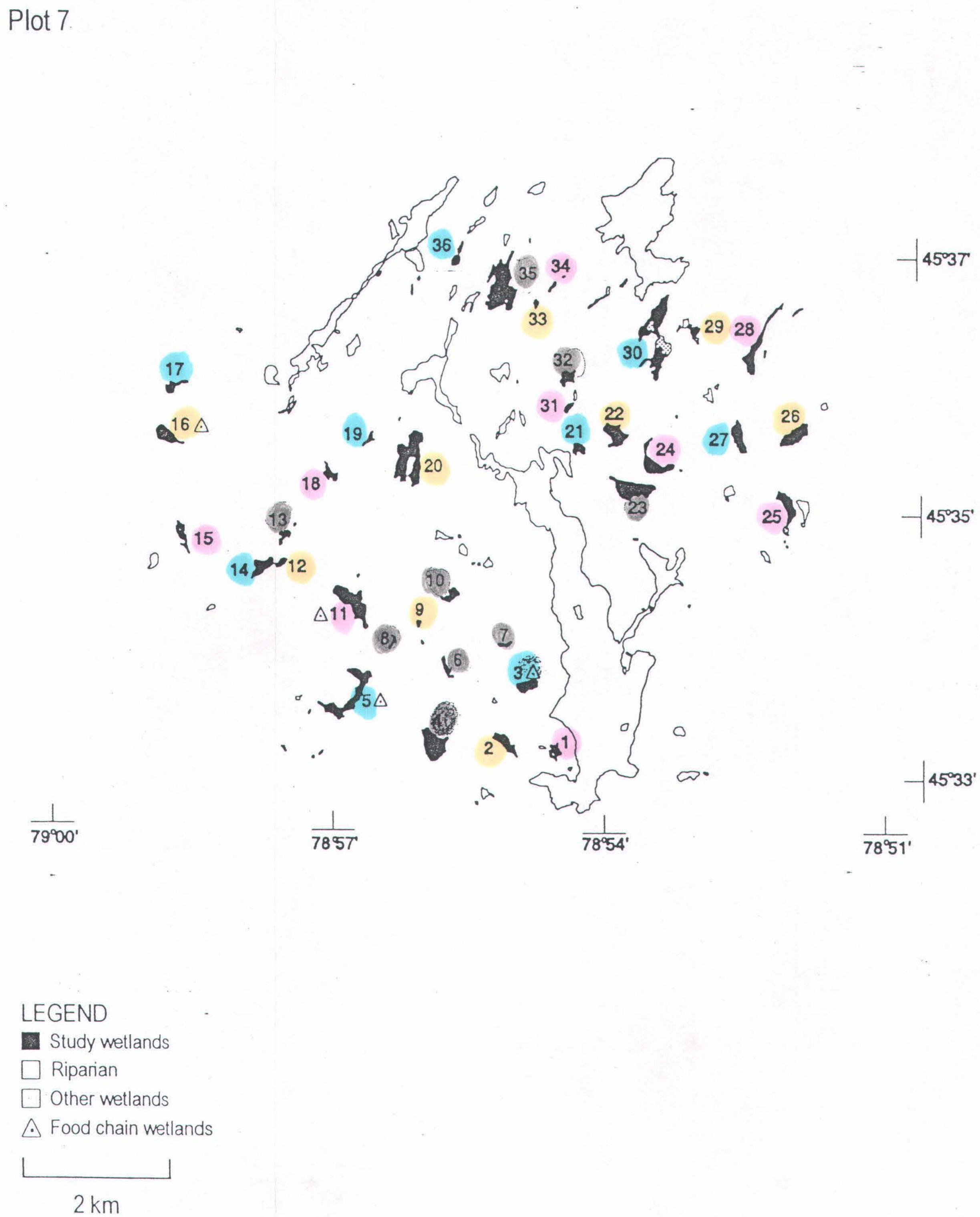
Plot 5



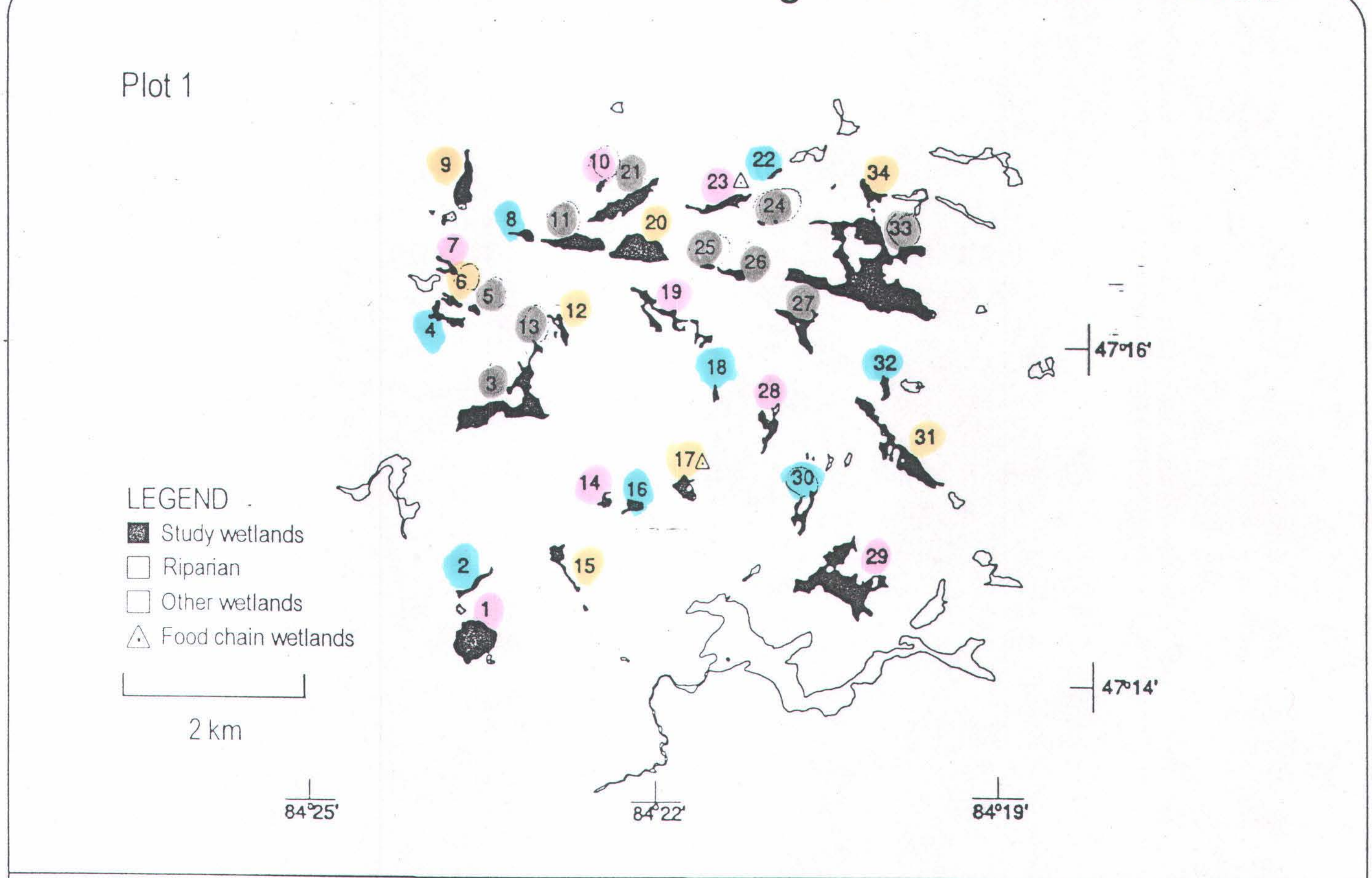
Plot 6

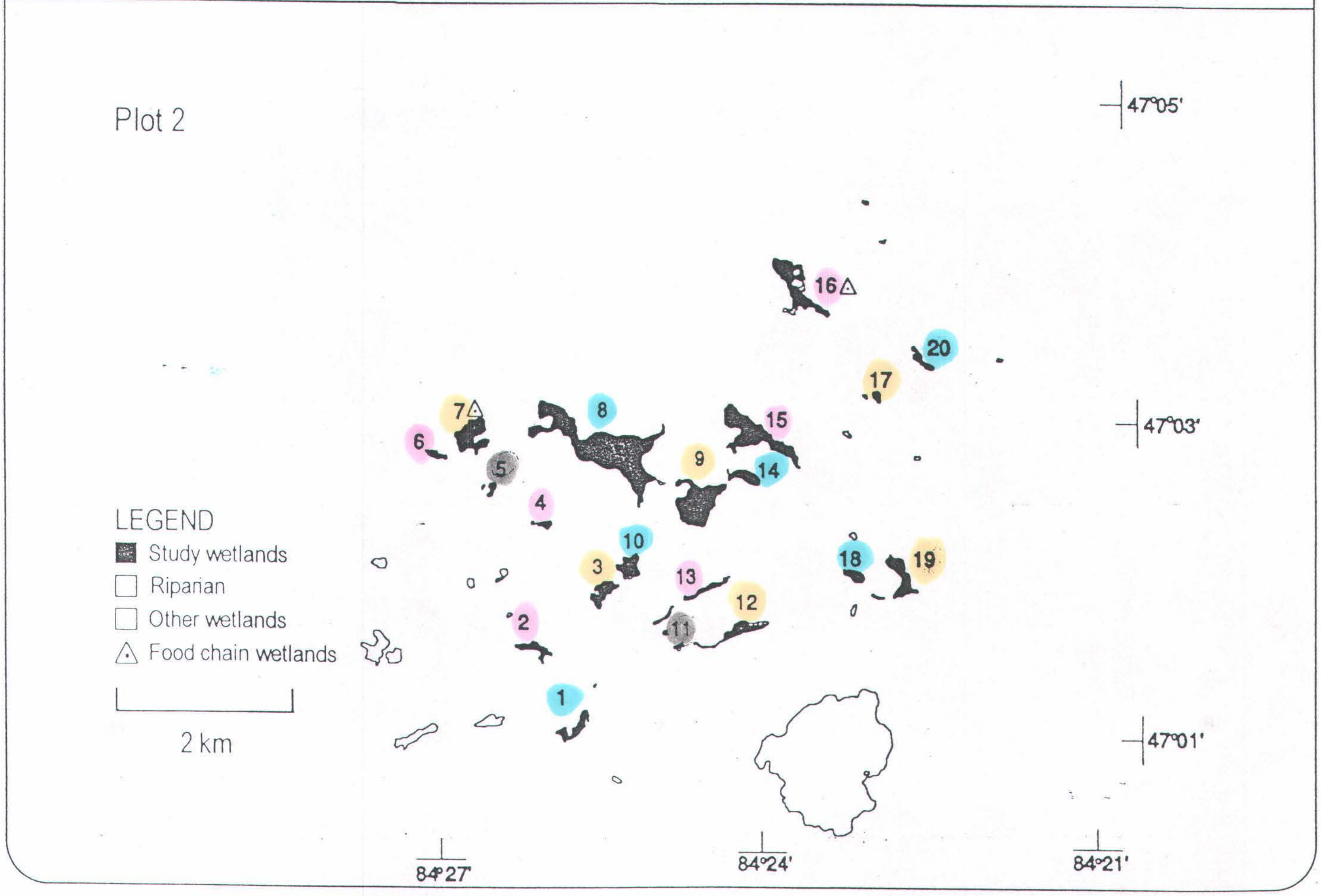


Muskoka Plots and Lakes

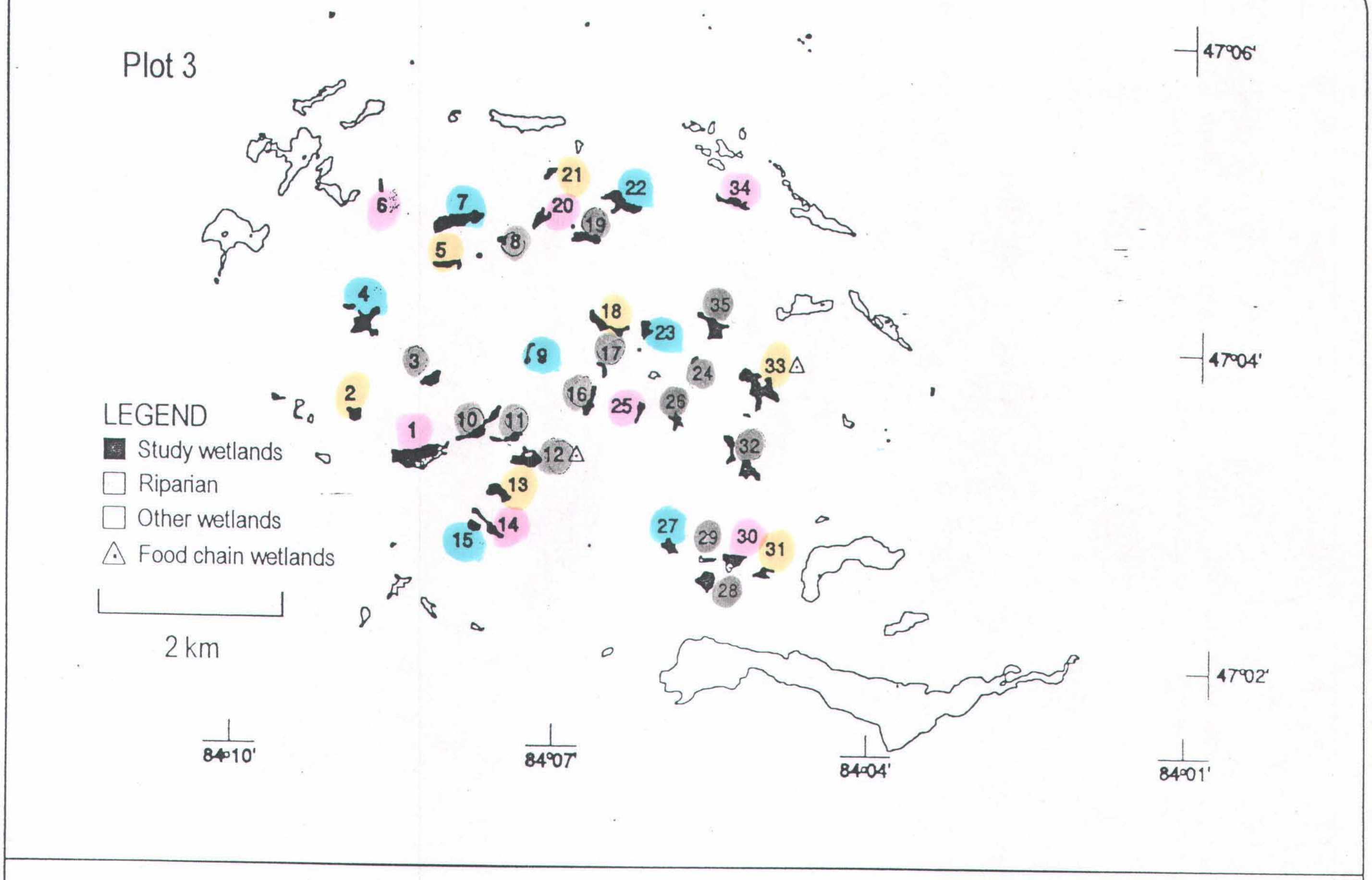


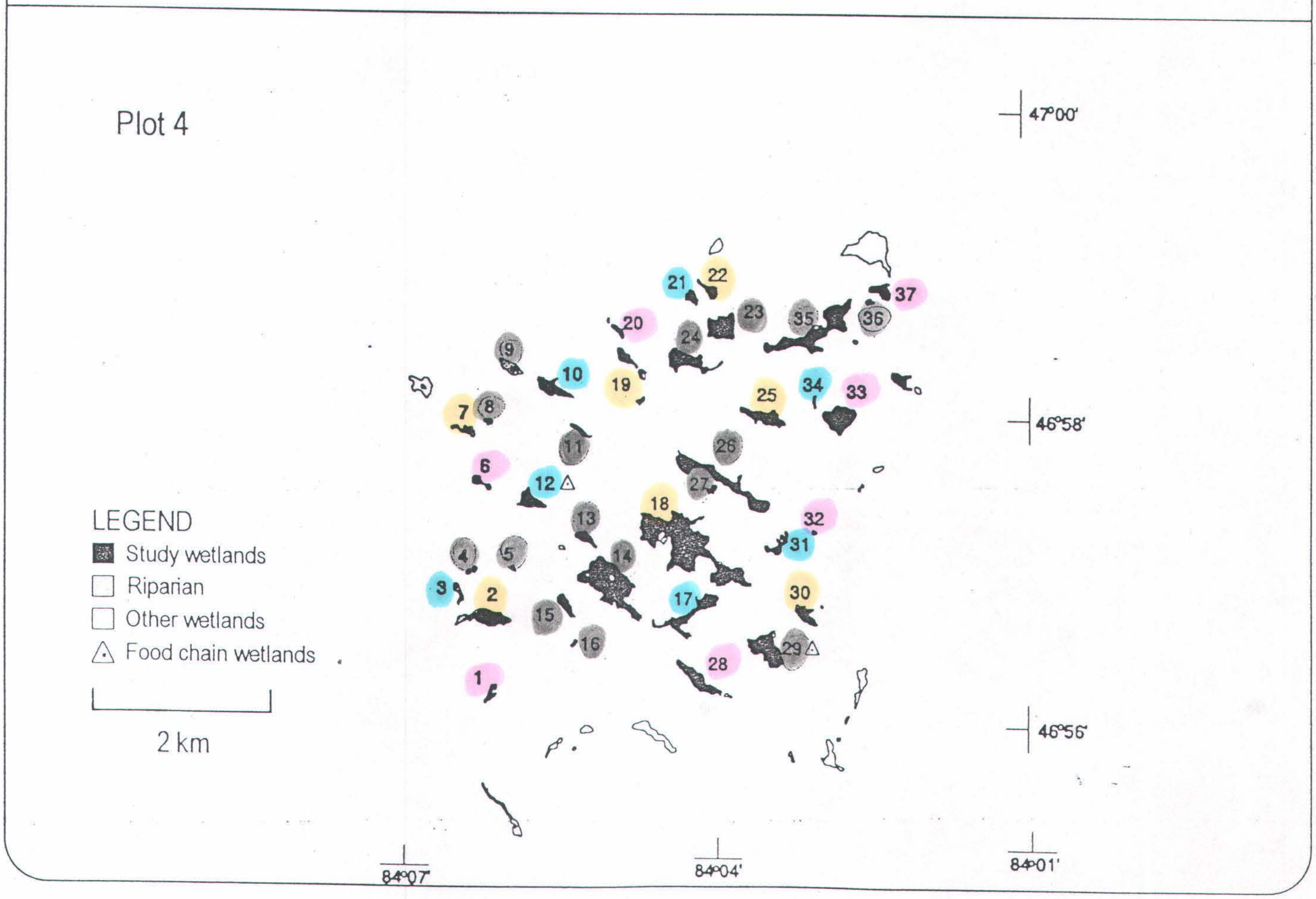
Algoma Plots and Lakes



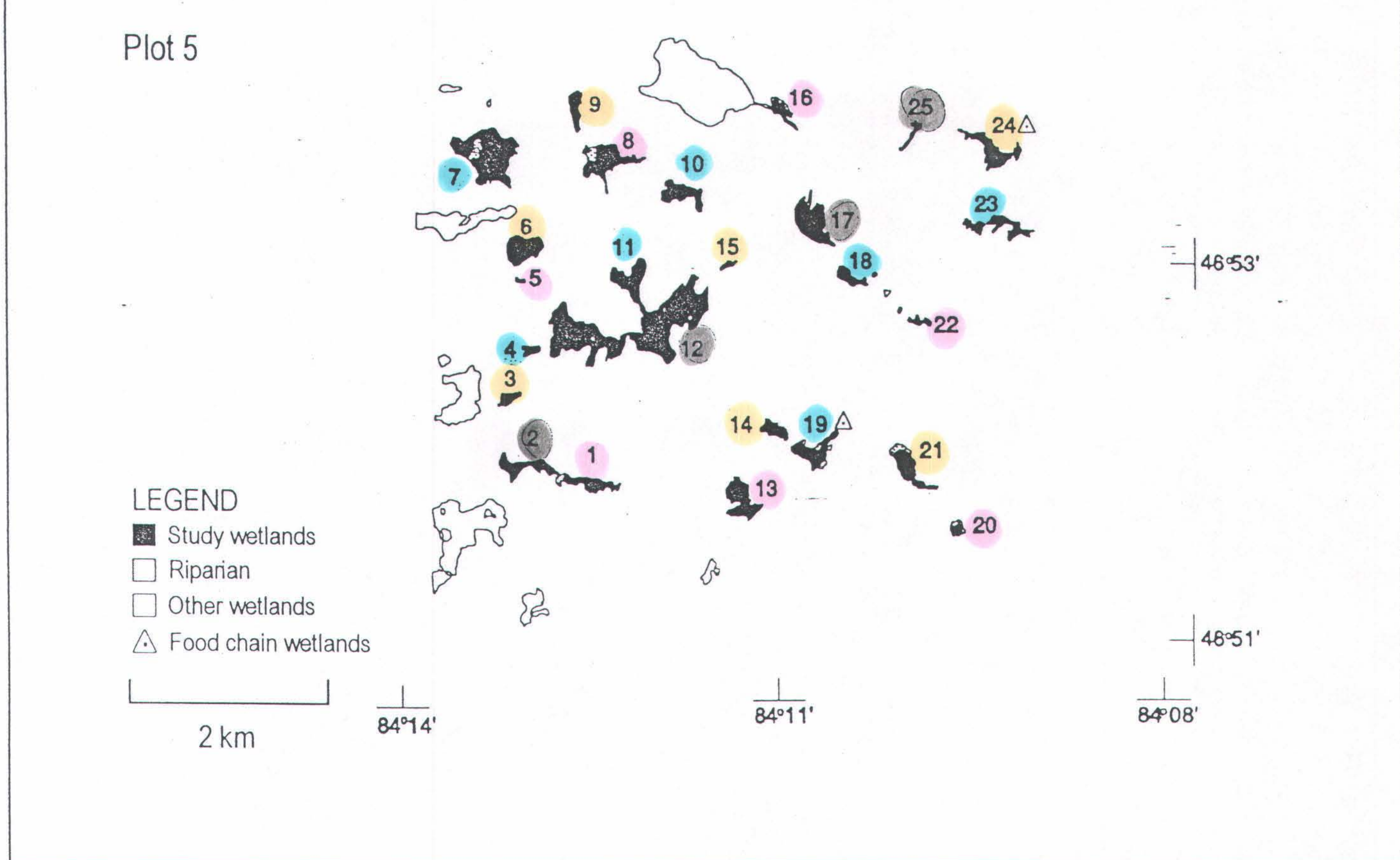


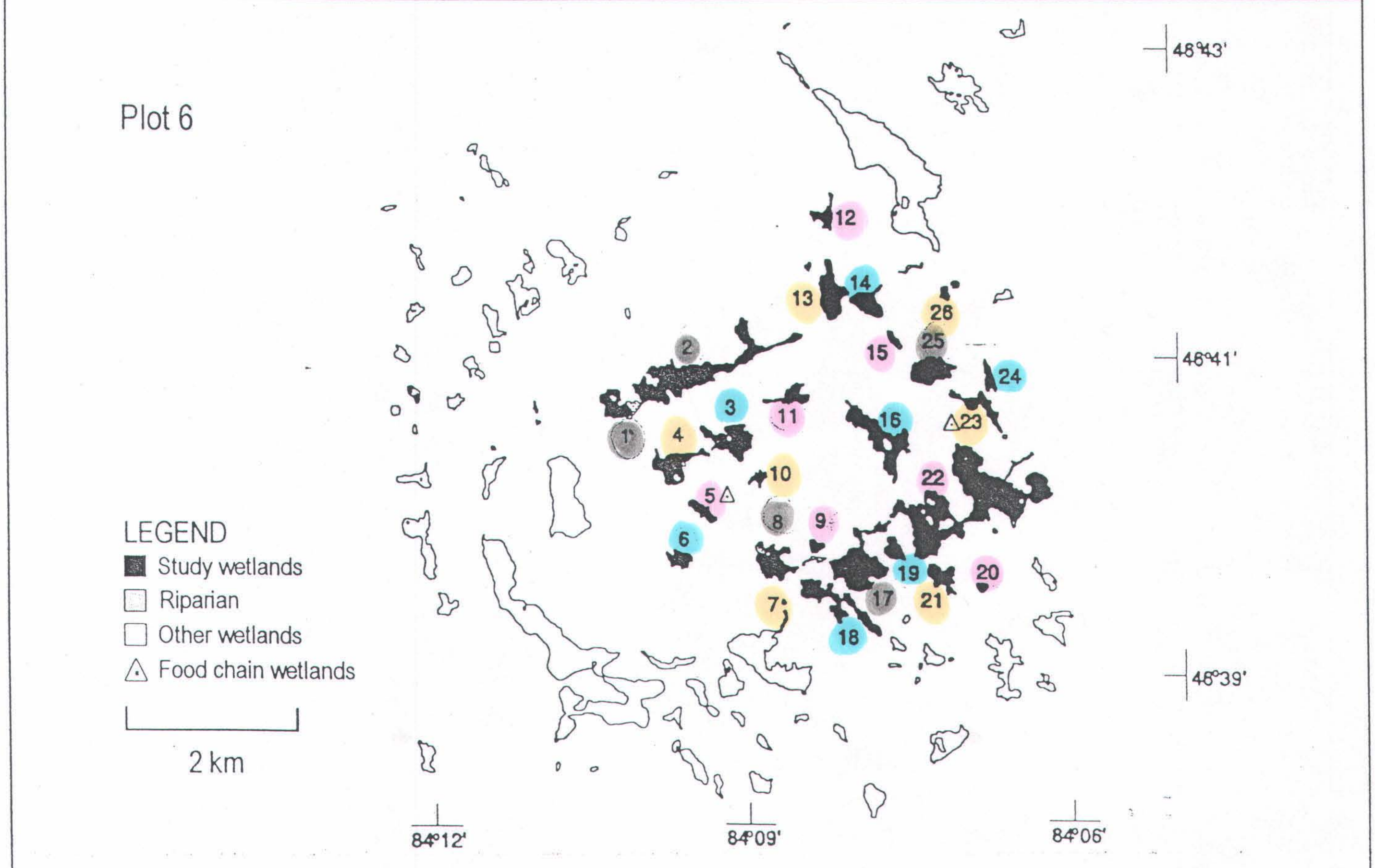
Algoma Plots and Lakes





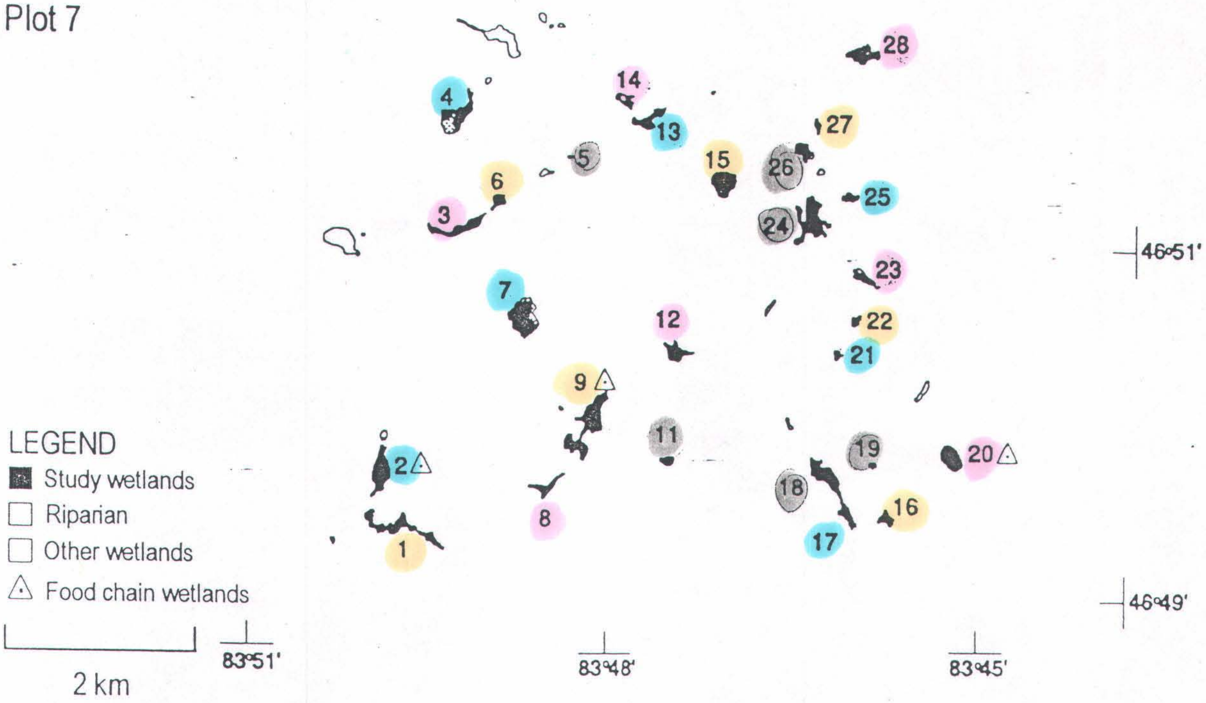
Algoma Plots and Lakes



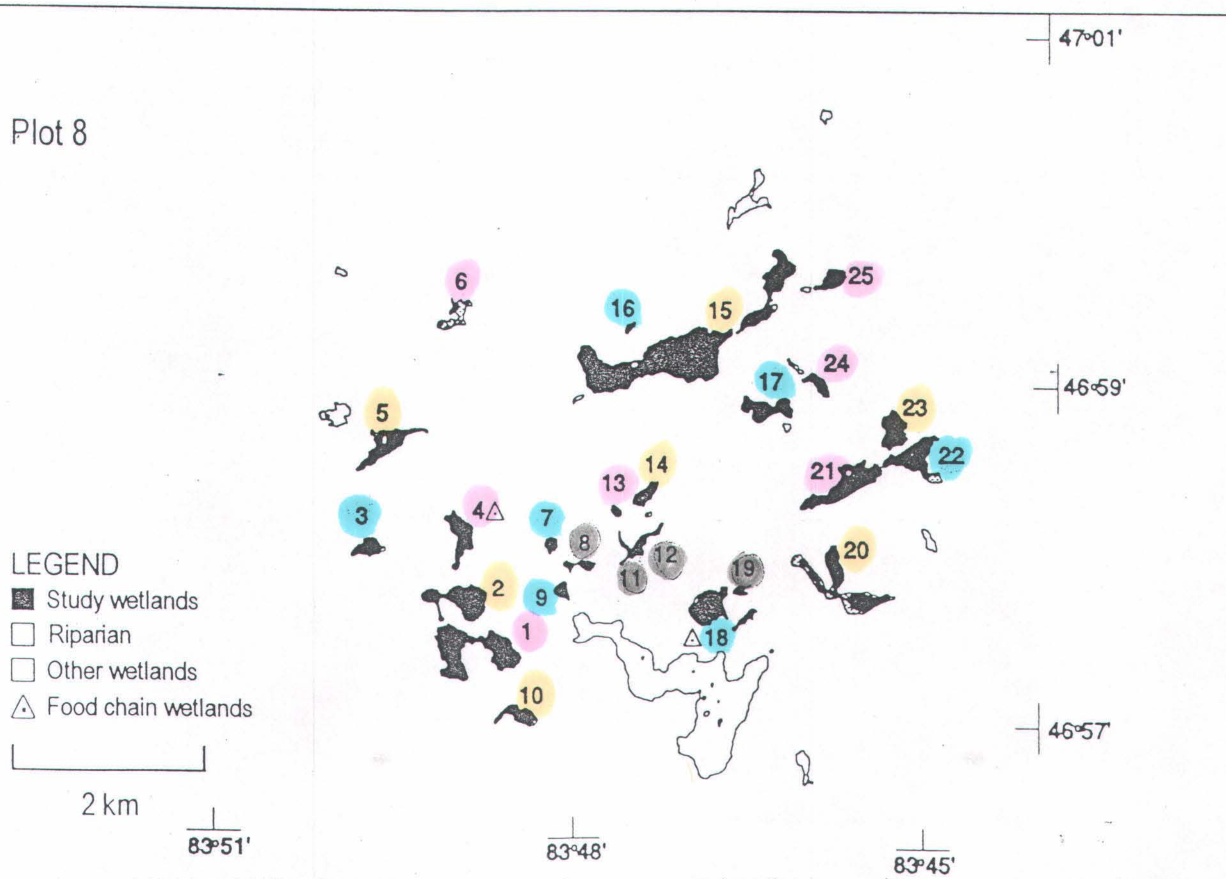


Algoma Plots and Lakes

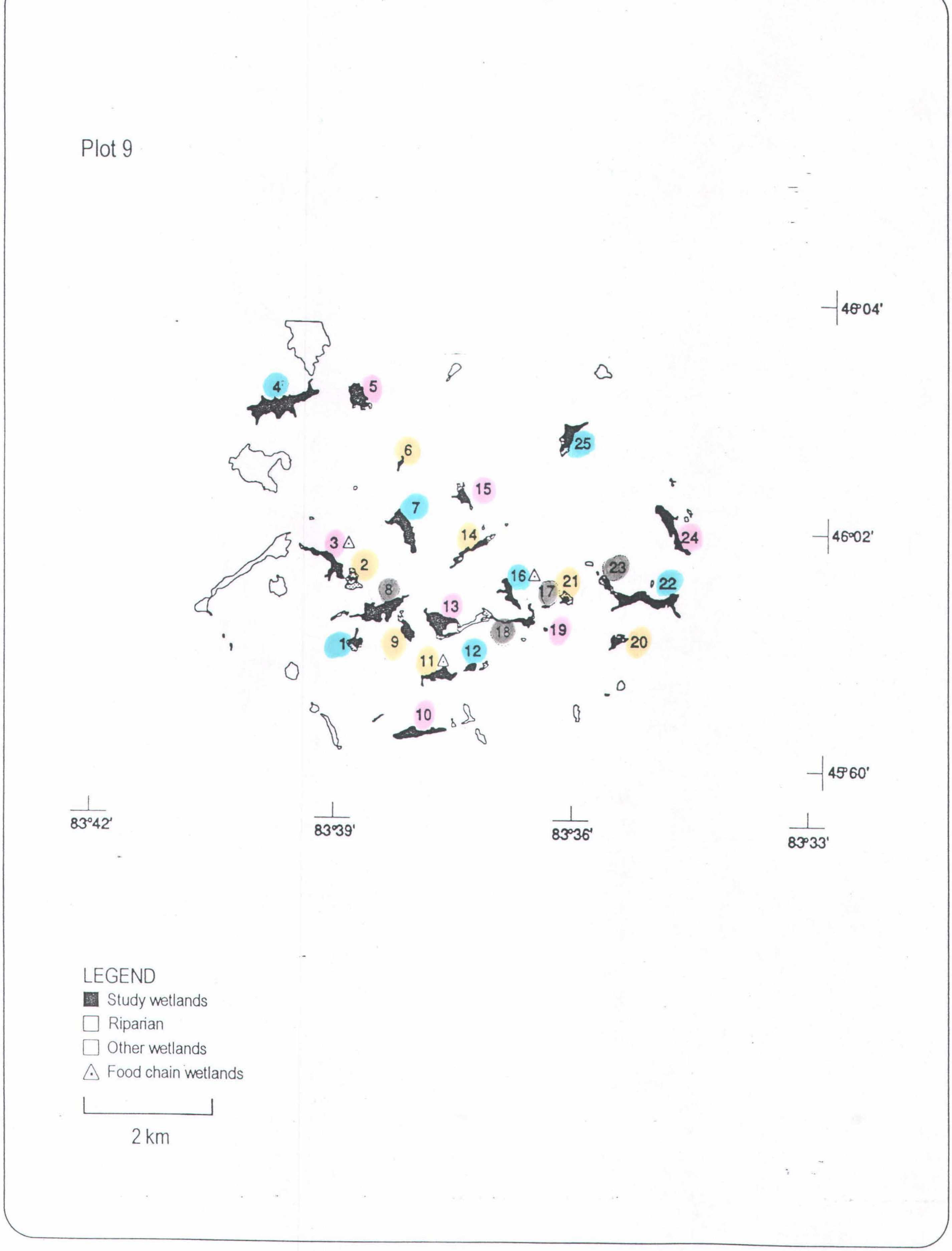
Plot 7



Plot 8



Algoma Plots and Lakes



Sudbury Study Lakes