A WATER QUALITY ASSESSMENT

OF

LOCHABER LAKE, ANTIGONISH COUNTY, NOVA SCOTIA.

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ABSTRACT

A water quality investigation was undertaken on Lochaber Lake and its inlet streams in order to address concerns related to impacts from both seasonal and permanent residential development and agricultural land uses. Past studies had indicated site-specific agricultural impacts, while anecdotal evidence suggested remedial action was taken. No subsequent confirmatory sampling had been undertaken thus prompting this study. An intensive sampling program was set up to determine chemical water quality at five lake locations, as well as all inlet streams. A similar program was established to assess bacteriological water quality at 13 nearshore lake stations and 7 stream stations. After monitoring for a full open water season, there was no evidence to suggest that Lochaber Lake, as a whole, was overly productive. Nutrient and chlorophyll concentrations indicated oligotrophic, or very unproductive conditions. However, certain inlet streams exhibited some indications of nutrient enrichment as did several site-specific locations in the lake. Nutrient sources were attributed to both agricultural runoff and residential development. Similar results were indicated with respect to bacteriology, although water quality impacts were more substantial and expected water uses were impaired.

ACKNOWLEDGEMENTS

The chemical and bacteriological water quality sampling programs, in both the lake and the streams, were jointly undertaken by Central and Regional Office staff from the provincial Department of the Environment . Special thanks is extended to field staff operating from the Port Hawksbury and Antigonish District Offices without who's help this study would not have been possible.

Assistance was provided to this initiative by Wilfred Fisher, area resident and past president of the Lochaber Community Development Association, who was instrumental in unearthing a copy of the previous water quality study undertaken by students of St. Francis University.

Central and Regional Office staff of the Department of Agriculture and Marketing were also instrumental in liaising with farmers in the Lochaber Lake watershed. Assistance was provided in the form of site-specific audits upon the availability of the preliminary sampling results.

Appreciation is extended to all who were involved and in any way contributed to this endeavour.

BACKGROUND & INTRODUCTION

During the period of April to October 1994 a water quality monitoring program was undertaken on Lochaber Lake and its associated inlet streams. This program was initiated in response to recent concerns brought forward by local residents relating to water quality impacts from agriculture and residential development. Background information leading to this initiative is outlined in the following text.

In 1974 the provincial Department of Health notified the Lochaber Community Development Association (LCDA) that because of high bacterial counts the lake was unsuitable for swimming purposes and was therefore closed to such uses in order to protect public health.

A survey during the summer of 1977 by students from St. Francis University and sponcered by the LCDA was undertaken in order to more specifically determine the extent of the water quality impacts within the lake. This survey investigated;

> " the presence of pollution in Lochaber Lake by measuring the numbers of total coliform and fecal coliform bacteria, BOD determination, turbidity and oxygen / temperature profiles".

Results showed;

> " no consistently high bacterial levels although there is some cause for concern. BOD results showed the lake to be relatively clean. The point of concern was the streams, which had high coliform levels on the later testing days and also some of the regular sampling sites which had high counts over the 18 sampling days."

As a result of this survey agricultural practices were altered on one farm located adjacent to an inlet stream, such that a manure storage facility was relocated further away from the watercourse. To the author's knowledge no subsequent water quality monitoring was undertaken to confirm improved conditions as a result of this remedial action.

In this context the purpose of this study was to determine present water quality in terms of both chemistry and bacteriology and to assess the determined quality relative to established guidelines for specific water uses , other lakes(having similar geomorphology) in the vicinity, and to water quality previously established in Lochaber Lake itself, if deemed feasible.

STUDY AREA

Lochaber Lake is a relatively small, but deep freshwater lake situated in both Antigonish and Guysborough Counties in the northeastern section of mainland Nova Scotia (latitude 45^0 25'N and longitude 62^0 02'W). It has a surface area of approximately 3 km^2 with a maximum length of 4.5 km and width of .75 km, respectively. The mean depth is 21.8 meters with a maximum depth of 52.4 meters located near the middle. The lake is elongate in shape and generally has a steeply sloped littoral zone with the exception of the extreme northern and southern sections which are much shallower and therefore more conducive to emergent and submergent plant growth. This is a headwater lake in the St. Marys River system which provides the only drainage outlet. This system flows in a southerly direction and eventually drains into the Atlantic Ocean at Sherbrooke. Eight inflowing steams feed Lochaber Lake on a nearly continuous basis, the North River St. Marys being one of the more significant.

The area surrounding the lake lies at the southern fringe of the Antigonish Highlands and just north of the St. Marys Lowlands. It is underlain primarily by sedimentary deposits of the Knoydart Formation consisting largely of mudstone, siltstone, and shale. Sand and gravel formations underlie the area immediately north of the lake. (Benson, 1974). Surficial geology in this area can be described as generally sandy till conditions with well drained gravelly to sandy loam soils (Cann and Hilchey 1954).

Forestry, agriculture, and both permanent and seasonal residential development are the predominant land uses in the watershed.

Lake and watershed morphometry are given in the following table, while bottom contours and sampling stations are shown in Figure 1.

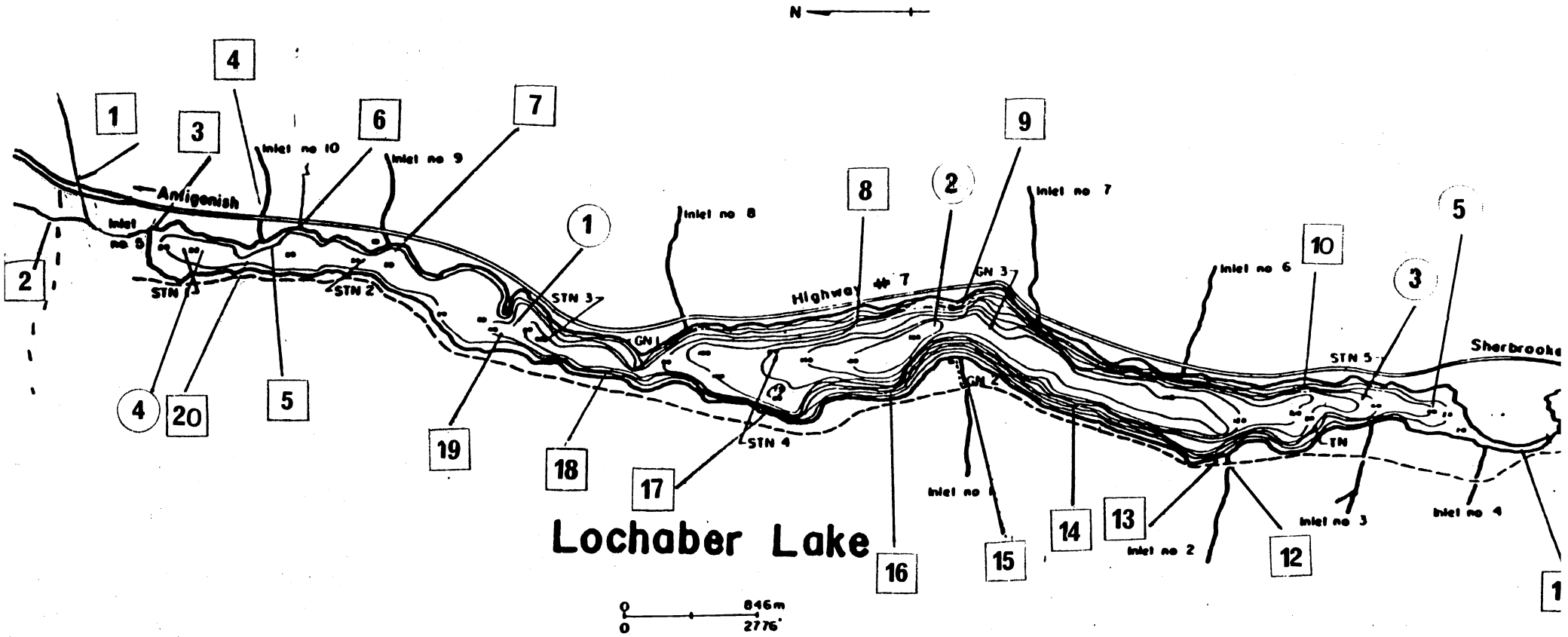
Table 1

Morphometric measurements of Lochaber Lake*

Surface area	307.2	ha
Shoreline length	18.3	km
Volume	669.0 x 10^5	m^3
Maximum depth	52.4	m
Mean depth	21.8	m
Maximum length	8.4	km
Maximum width	.73	km
Drainage area **	5870	ha
Flushing rate **	1	time/year

* Environment Canada, Fisheries and Marine Service Survey, 1973
**Nova Scotia Dept. of Lands & Forests Lake Survey, 1975

Figure 1



SAMPLING LOCATIONS

Chemistry ○

Bacteriology □

METHODS

During the open-water season of 1994, a bi-weekly sampling program was undertaken in Lochaber Lake whereby physical, chemical and biological characteristics of water quality were investigated, primarily to determine nutrient levels and associated trophic state[1]. Water temperature and dissolved oxygen profiles were determined in the field using a model 57 YSI meter while transparency or clarity was determined using a standard 20 cm Secchi disk. Water samples were collected at the lake surface (i.e. 0.5 meter depth) using a 2 litre Van Dorn water sampler and placed in 500 ml polyethylene bottles previously cleaned with nitric acid, rinsed with distilled water and further rinsed with lake water. This procedure was repeated at up to five stations on the lake, as time and weather permitted, including bottom locations of the deeper stations (i.e. stations #1, #2, and #3 -see Figure 1) as well as at the thermocline when thermal stratification was evident.

Nutrient concentrations were determined in samples taken at a depth of 0.5 m below the surface (hereafter referred to as surface samples) , 1 m above the bottom (hereafter refered to as bottom samples), and at the thermocline$_2$ if present. Chlorophyll concentrations were determined from the surface samples and samples taken at a depth equal to twice the Secchi disk depth on that day ,or the euphotic zone$_3$. Metal and major ion concentrations were determined from samples taken at the mid-depth location of station #2, which is located near the middle of the lake.

Inlet and outlet streams were sampled for water quality on a monthly basis as well, with temperature and relative flow recorded.

If in-lake nutrient concentrations were found to be high, relative proportions of nutrient contributions from each sub-watershed could be determined from the stream data. This would enable a prioritized approach to be taken with respect to remedial action should major sources of nutrients be identified from the watershed.

Bacteriological water quality was investigated in terms of fecal coliform concentrations in both the lake and associated streams. Thirteen lake stations and seven stream stations were sampled on a bi-weekly basis during the period of May to September 1994. Additional samples were taken as the season progressed and as significant concentrations were identified. Sampling stations were selected in order to monitor the more heavily used swimming beaches, maintain consistency with previous studies, provide the best geographically coverage, and address any suspect sources of contamination. Samples to be analysed for bacteriological water quality were collected in sterile 200 ml polyethylene bottles.

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[1]Trophic state refers to the level of biological productivity in a waterbody. (See page 5)

[2] Thermocline refers to the narrow layer of water separating a well oxygenated surface layer from the less oxygenated bottom waters.

[3] Euphotic zone refers to the zone of light penetration.

All samples were kept cool and in the dark prior to lab analysis. Subsequently samples were shipped to the lab such that analysis was performed within 24 hours of collection, as per APHA standard protocols.

Laboratory analysis was performed at the Environmental Chemistry Lab of the Victoria General Hospital (VGH) where analytical procedures were undertaken in accordance with established protocols outlined in "Standard Methods for the Examination of Water and Waste Water" (APHA 1991).

Local precipitation events were determined in order to help interpret sample results and assess any emerging trends in water quality. Observations reported from a meteorological station in Ashdale (Collegeville), Antigonish County was used in this regard.

RESULTS AND DISCUSSION

The chemical water quality characteristics or parameters which were measured during this study can be divided into three broad categories. These include parameters necessary to determine trophic state (i.e. nutrients, chlorophyll, transparency), major ions and metals. The first category was given primary consideration due to the nature of the potential impacts from local land uses. The latter two categories were included in order to ensure quality assurance of the data set and to assess suitability of the lake water for expected water uses.

As outlined in the previous section, physical characteristics were investigated in terms of water temperature and dissolved oxygen profiles for all lake stations as well as temperature and relative flows at stream locations. Both chemical and physical data is presented in Tables 4,5,and 6 in Appendix B.

Additionally, bacteriological water quality was investigated to determine suitability for swimming at selected beaches around the lake. Stream locations were sampled as well, when particular sources were suspect. This data is included in Table 7A& 7B, Appendix C.

Meterological conditions were recorded during the period of study in order to aid the interpretation of analytical results and assess emerging trends. Table 8, Appendix D presents this information.

Results from each of the above areas of investigation are presented in applicable tables, as indicated, and are discussed below.

CHEMISTRY

IN-LAKE CONDITIONS

Trophic State

Trophic state refers to the level of biological productivity within a lake gauged over a range of very unproductive (oligotrophic) conditions to very productive (eutrophic) conditions. Conditions midway between these two extremes are termed mesotrophic. A progression from very unproductive to very productive conditions typifies the natural lake aging process and is termed eutrophication. This process, which involves the lake basin gradually infilling with silt and organic

matter, takes thousands of years to complete and eventually causes the lake to evolve back to dry land. Manmade influences which contributes additional nutrients, organic matter and sediment to a lake can greatly accelerate this process and cause the lake to infill at a much faster rate. This accelerated process is termed cultural eutrophication.

Three key indicators of trophic state have been established. They are generally recognized as being chlorophyll a, total nutrient concentrations (either phosphorus or nitrogen), and transparency as determined by a Secchi disk.

Chlorophyll a concentration has been shown to correlate well with levels of algal biomass (Nicholls and Dillon 1978). Additionally, strong correlations between chlorophyll a, total nutrient concentration and transparency have been shown, based on mean annual or mean ice-free season concentrations. (Dillon and Rigler 1974, Vollenweider and Kerekes 1980, Clark and Hutchison 1992).

Total nutrient concentrations represent the chemical response of a lake to eutrophication while chlorophyll a concentrations represent the biological response, and transparency represents the physical response. Together these water quality parameters provide an excellent indication of trophic state when monitored over a full growing season and taken in the context of the lake as a whole. Each is addressed in the following text and existing water quality is compared to established values indicating trophic state categories (OECD 1982) as presented in Table 2.

Table 2 **PROPOSED BOUNDARY VALUES FOR TROPHIC CATEGORIES (OECD 1982)**
(fixed boundary system)

Trophic Category	$\overline{[P]}$	$\overline{[chl]}$	$[\overline{chl}]_{max}$	$\overline{[Sec]}$	$[\overline{Sec}]_{min}$
	mg/m³			m	
Ultra-oligotrophic	< 4.0	< 1.0	< 2.5	> 12.0	> 6.0
Oligotrophic.	< 10.0	< 2.5	< 8.0	> 6.0	> 3.0
Mesotrophic.	10 - 35	2.5 - 8	8 - 25	6 - 3	3 - 1.5
Eutrophic	35 -100	8 - 25	25 - 75	3 - 1.5	1.5 - 0.7
Hypertrophic	> 100	> 25	> 75	< 1.5	< 0.7

LEGEND

$\overline{[P]}$ → Annual Mean in-lake Total Phosphorus concentration

$\overline{[chl]}$ → Annual Mean chlorophyll a concentration

$[\overline{chl}]_{max}$ → Annual maximum chlorophyll a

$\overline{[Sec]}$ → Annual mean Secchi disk transparency

$[\overline{Sec}]_{min}$ → Annual minimum Secchi disk transparency

Nutrients

Nutrients investigated in this study include two species of phosphorus - ortho phosphorus and total phosphorus (Total P), and three species of nitrogen - nitrate + nitrite, ammonia, and total nitrogen (Total N). Results for these parameters are found in Tables 4,5, and 6, Appendix B.

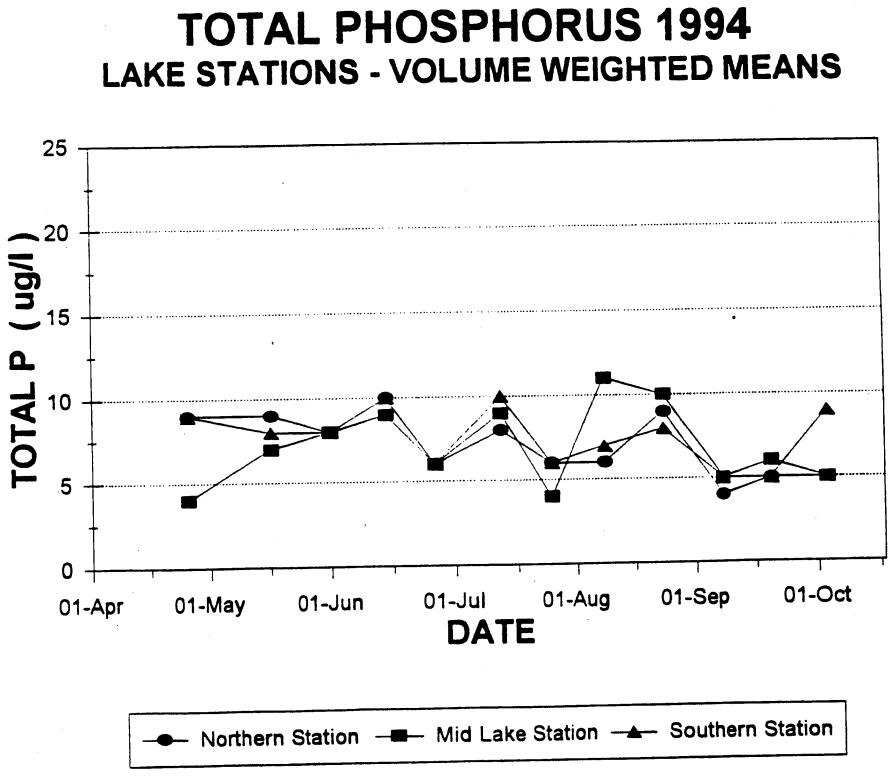
Total nutrient concentrations (i.e. both organic and inorganic species, as in Total P and Total N) are considered to be the best chemical indicators of trophic state (OECD 1982, Clark & Hutchison 1992) and therefore, are of primary interest to this investigation. Ratios of Total N to Total P concentrations can be used to determine which nutrient is in shortest supply and therefore is the limiting nutrient for plant growth in any given lake. It has been shown that if the Total N/Total P ratio is greater than 17:1 phosphorus is limiting; less than 17:1 nitrogen is limiting (OECD 1982). In Lochaber Lake, as in most lakes, P is seen to be limiting from the calculated ratio of 35:1 based on mean concentrations derived from the 1994 data (See Table 6, Appendix B).

Nutrient concentrations can vary significantly in a lake over time and space (Marshall et al 1988). The sampling protocol was established to address this variability by sampling over time at selected lake locations representative of a given surface area. Additionally, samples were taken periodically at specified depths in the water column or when stratification was evident on any given day.

Total P concentrations during the sampling period ranged from a minimum of less than detectible limits of 1 ug/l at many stations to a maximum of 22 ug/l at the bottom of station #2 on August 9th. This higher Total P concentration was determined to be caused by the reintroduction of nutrients from the bottom sediments as a result of thermal stratification and the associated reduced oxygen regime.

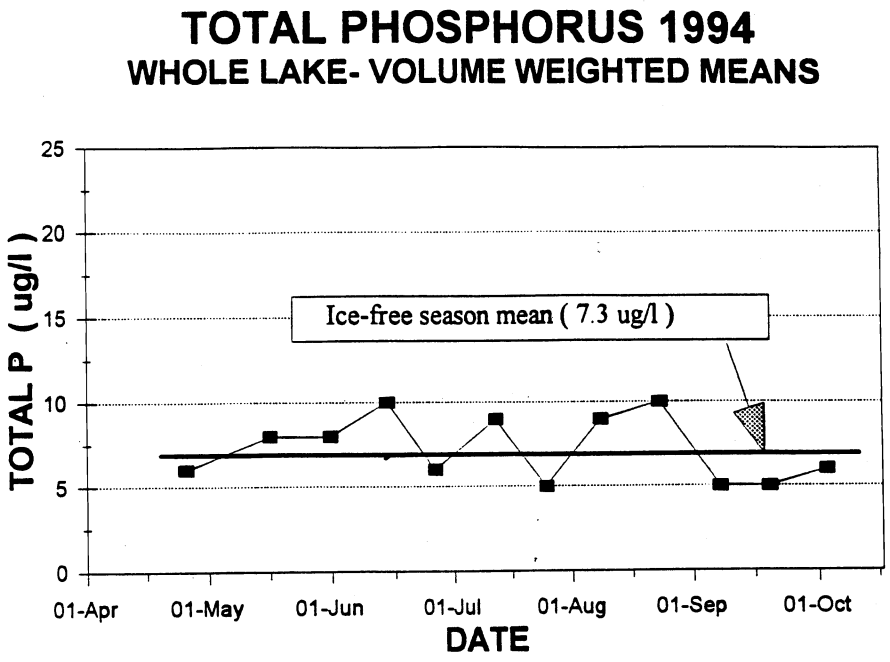
Volume-weighted methods have been used in determining mean Total P concentrations so that sampling locations which have very small volumes in relation to other lake locations will not greatly influence or bias overall results. Surface area and volume calculations are shown in Table 3, Appendix A. Volume-weighted mean Total P concentrations have been determined for each sampling station and are presented in Figure 2.

Figure 2



Whole lake volume-weighted mean concentrations of Total P for each sampling date are shown in Figure 3 . A mean ice-free or growing season value for Total P has been calculated and is included on these graphs. This value when compared to Table 2 indicates that Lochaber Lake as a whole is classified as oligotrophic.

Figure 3



Chlorophyll

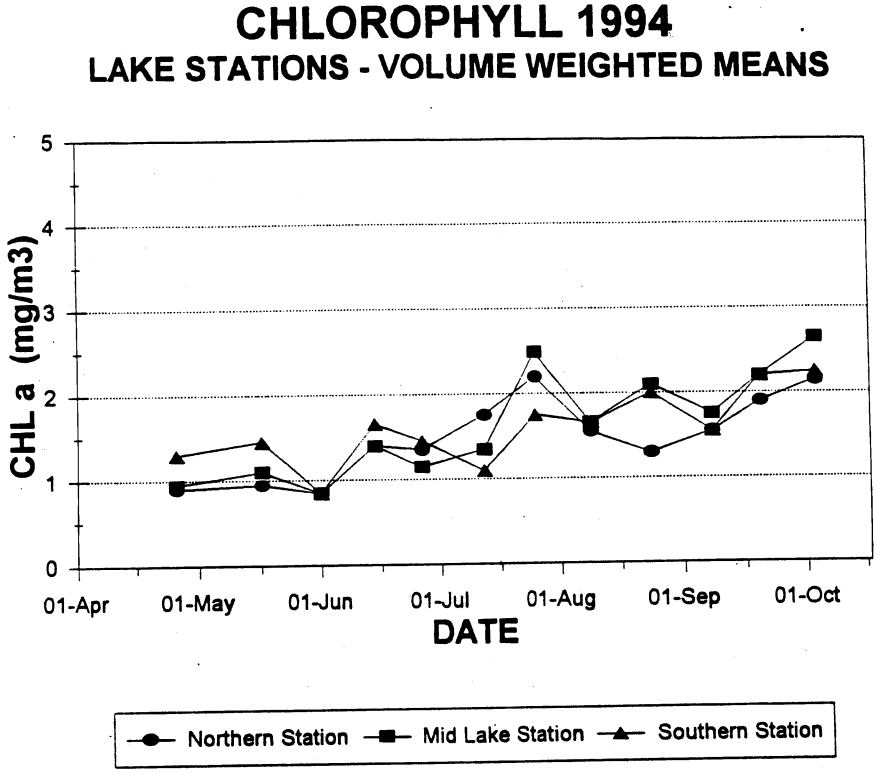
Primary productivity can be defined for the purpose of this study as being the extent of microscopic plant life or algal production in the water column as a result of available nutrients. The most commonly accepted indicator to quantify this primary productivity or algal biomass is obtained by measuring the chlorophyll a concentration in representative water samples. Chlorophyll a concentrations have been shown to correlate extremely well with algal biomass (Nicholls and Dillon 1978). Therefore, an increase in Chlorophyll a concentrations indicate an associated and proportional increase in algal biomass or density.

As in the case of nutrients, algal population growth can vary significantly, over time and space. Therefore, the sampling protocol was established to address this variability as outlined in the previous section.

Chlorophyll concentrations ranged from a minimum of 0.5 mg/m^3 at station #3 at 9 meters depth on July 13th to a maximum of 2.8 mg/m^3 at station #2 at the surface on July 26th. Results indicate that chlorophyll concentrations did not differ to a large extent between any of the five sampling stations.

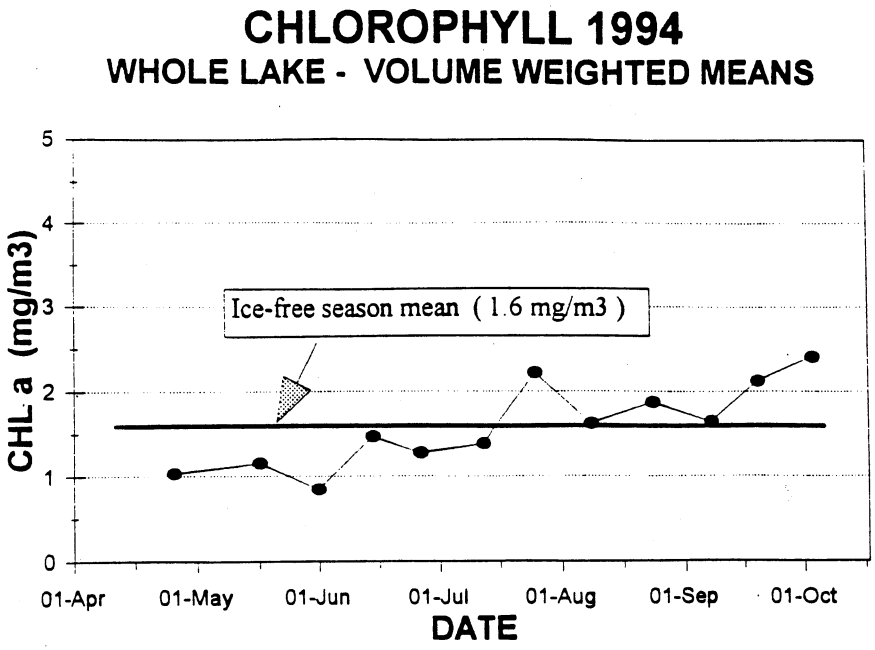
Samples from the euphotic zone (defined as that zone between the lake surface and twice the Secchi disk depth) have been determined to be most suitable for monitoring chlorophyll and algal productivity (Clark and Hutchison 1992) . This is the case since deeper waters tend to be light limited. Ice-free season chlorophyll concentrations for the three main lake stations are presented in the following graph (Figure 4).

Figure 4



Whole lake mean chlorophyll concentrations were calculated from euphotic zone samples taken on each sampling date. Data are presented in the following graph (Figure 5) and indicates that chlorophyll concentrations and therefore algal production peaked at the end of July and again in early October. Eutrophic lakes typically show spring and fall maximums of chlorophyll, while peak concentrations during the months of April and May are typical of oligotrophic systems (Marshall et al 1989). Seasonal chlorophyll patterns in Lochaber Lake do not reflect either of these typical patterns.

Figure 5



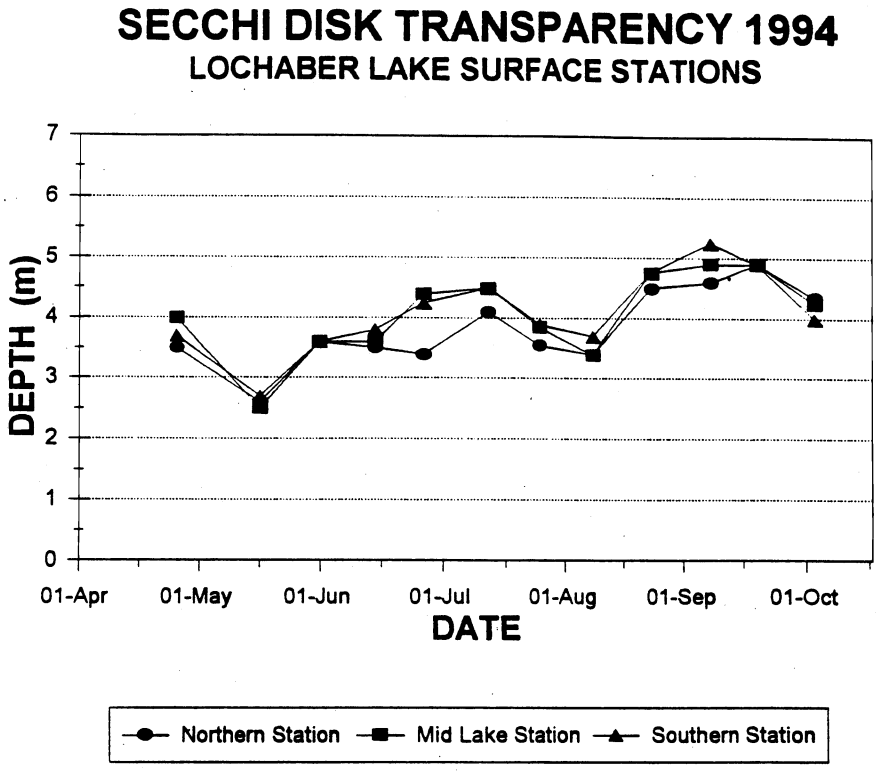
From the whole lake chlorophyll concentrations calculated on each sampling day, a mean ice-free season concentration was determined and is also presented on this graph. This value was determined to be 1.6 mg/m3. When compared with the OECD eutrophication tables (Table 2), this value indicates that Lochaber Lake falls into the oligotrophic category and is very unproductive.

Transparency

Transparency, as determined by a Secchi disk depth, is considered a good indicator of productivity and trophic state when suspended sediment and highly coloured waters are not present to bias results (OECD 1982). During this study samples exhibited a mean colour value of 10.7 True Color Units (TCU). Secchi measurements were not taken during or immediately following any major rain event. At least 48 hours following any significant rain event was used as a requirement of any given sampling date. Given these conditions, Secchi depth transparency is considered to be an appropriate indicator of algal production and therefore trophic state. However, wind driven turbulence was encountered on several sampling days. In such instances bottom sediments found in shallower areas of the lake were re-suspended through wind and wave action. Transparency would undoubtably be diminished by such elevated suspended solid concentrations. In this type of situation Secchi disk transparency will not be a reliable indicator of trophic state and therefore this data set should be interpreted with caution.

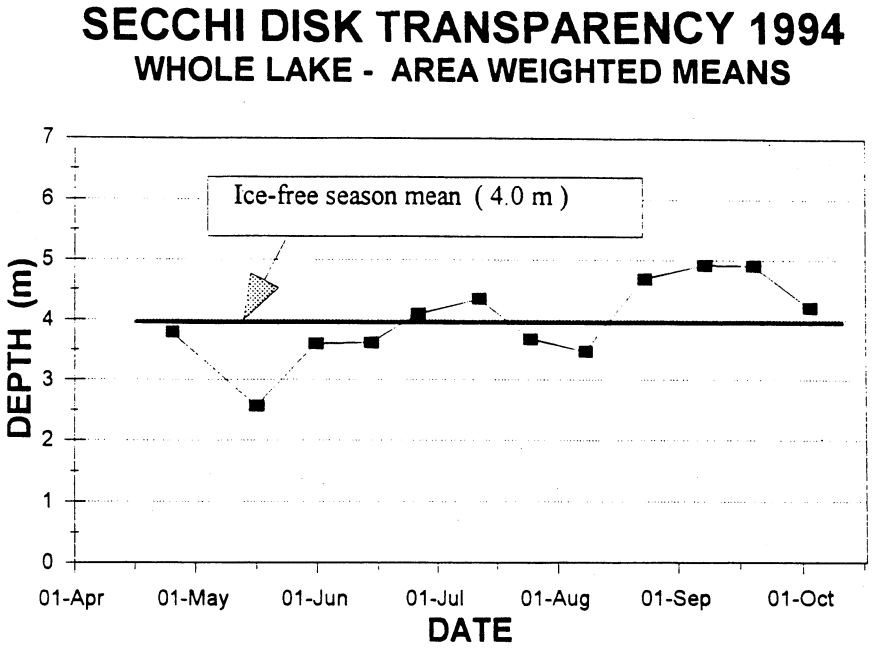
Secchi depths ranged from a minimum of 2.5 meters at station # 2 on May 17th to a maximum of 5.3 meters at station # 3 on September 8th. Despite the cautionary note above regarding the influences of suspended sediments on transparency measurements, the Secchi disk values reported from June to the end of the sampling program do appear to be directly related to chlorophyll concentrations at the respective sampling locations. Poor chlorophyll : transparency relationships shown by the accumulated data during April and May could be the result of higher sediment concentrations due to wind and rain events combined with generally low chlorophyll concentrations. The results for the three main lake sampling stations are presented in the following graph (Figure 6).

Figure 6



The mean transparency values for the lake as a whole were calculated for each sampling date. The results are presented in the following graph (Figure 7). A mean ice-free season value of 4.0 meters was calculated. This value, when compared to Table 2 indicates that Lochaber Lake is classified as mesotrophic. As previously suggested, wind driven mixing appears to be contributing to the lowered transparency and therefore this indicator is not providing an accurate reflection of lake productivity.

Figure 7



In summary, the primary indicators of trophic state, chlorophyll a and total phosphorus, suggest that oligotrophic conditions existed in Lochaber Lake during this study. The lake as a whole was nutrient poor, and biologically unproductive with respect to algal growth. Transparency was relatively high due to the absence of significant algal populations, although re-suspended sediments occasionally lowered transparency temporarily due to wind activity.

Moreover, temperature and dissolved oxygen profiles (Tables 4 to 6, Appendix B) indicated that although thermal stratification was observed in the lake during the summer of the study period dissolved oxygen concentrations remained relatively high. Therefore the reintroduction of nutrients from the bottom sediments as a result of hypolimnetic oxygen depletions was not considered to be extensive.

Major Ions

Ions are both negatively and positively charged particles which are found dissolved in water. These include substances which may be considered to be nutrients and metals, but for the purpose of this study refer to all other common substances found in solution.

A list of these water quality parameters and associated results are found in Table 11A (Appendix F). Concentrations of specific parameters are compared to Canadian Water Quality Guideline (CCME 1987) values established to support aquatic life and recreational water uses, as well as typical pristine lake conditions in Nova Scotia (NAQUADAT 1995).

A brief explanation follows of each parameter, its environmental significance, and typical values expected in natural Nova Scotia surface waters.

Temperature:

Temperature profiles were recorded for the entire water column at each lake station. From this data it was determined whether thermal stratification existed at that time. This information, in association with dissolved oxygen concentrations, was primarily used to interpret analytical results.

The lake was observed to stratify during the summer period. Thermal stratification was observed beginning on the June 27th sampling date with a thermocline becoming noticable at a depth of 8 meters. As the growing season progressed and water temperatures rose the warmer surface water layer became its largest as the thermocline was observed at 15 meters on October 4th.

Wind-driven mixing and atmospheric cooling are assumed to have destratified the lake shortly after this date although subsequent monitoring was not undertaken to confirm.

Temperatures are compared to values considered to be the upper limit of tolerance of cold-water fish species. The maximum temperature was 24.2 degrees Celsius recorded on July 26th at the surface of station #1. The highest temperature recorded at the bottom of station #2 was 7.5 degrees which was recorded on all sampling dates between June 15th and September 8th with the exception of August 24th when a temperature of 7.0 degrees was observed. This location due to its depth is assumed to have the coolest summer temperatures in the lake barring the influence of underground springs elsewhere.

The temperature at this location, which can be considered a refuge for cold-water fish species during the summer, is well within the established temperature limits for suitable habitat for such species. (Alabaster and Lloyd 1982). Therefore temperature is not a limiting factor with respect to growth and survival of such species.

Dissolved Oxygen:

Dissolved oxygen profiles were recorded concurrently with water temperature at all lake stations. As indicated above, dissolved oxygen concentrations were primarily used in interpreting analytical results but were additionally compared to Canadian Water Quality Guideline (CWQG) values.

The concentration of dissolved oxygen in surface waters is usually less than 10 mg/l (McNeely et al.1979). Large variations in oxygen exist seasonally and geographically and are in part the result of variations in temperature, turbulence, atmospheric pressure, and photosynthetic activity or organic decomposition.

The minimum concentration of dissolved oxygen recorded was 7.6 mg/l at the bottom of station #1 on October 4th, when the greatest stratification of the study period occurred.

The maximum value reported was 14.0 mg/l observed on April 26th at a depth of 7 meters at station #1. This might well be expected since water temperatures were near their lowest (5.0 °C) and under such conditions dissolved oxygen concentrations would be high given full saturation.

All observed dissolved oxygen values met or exceeded the values suggested by the CWQG for the protection of aquatic life.

pH:

The pH of a solution refers to the hydrogen ion concentration or the relative acidic/basic nature of the solution expressed on a scale of 0 to 14, with a neutral pH at 7.

In natural aquatic systems, the pH usually results from the geology and geochemistry of the rocks and soils of the watershed or drainage basin. For surface waters, the pH range of interest is typically 4 to 11 (CCME 1987).

The pH concentrations during the study ranged from 6.3 to 7.7 with a mean value of 7.0 recorded. The highest value was recorded at the surface of station # 1 on July 26th, while the minimum value was recorded at a depth of 23 meters at station # 2 on October 4th. Samples taken from the bottom waters were consistantly lower in pH than those taken from the surface, but only marginally so. This is to be expected due to the lower oxygen regime in the bottom waters.

The pH values reported for the study period fall within the CWQG values established for body contact recreational water use and the protection of aquatic life, with the exception of the lowest value which was observed on only one occasion and at one location. Although pH values were not always within the range established as a Canadian Water Quality Guideline (CWQG), lower values are common in Nova Scotia lakes. This is due to influences from geological conditions, naturally occurring organics, and lake morphology (shape). The hypolimnetic or bottom waters of deeper lakes commonly experience lower pH values due to reduced dissolved oxygen levels and elevated carbon dioxide levels resulting from the decomposition of organic matter.

Alkalinity:

Alkalinity refers to the capacity of a solution to neutralize acid and in natural waters is primarily the result of carbonate and bicarbonate ions. Because of the predominant effect of carbonate, alkalinity is expressed in equivalent amounts of calcium carbonate (CaCO3). Concentrations of carbonate and bicarbonate in surface waters result in large part from the natural weathering of rock in the watershed. Greater concentrations are found, and therefore higher alkalinity exists, where sedimentary or metamorphic bedrock is present. Such is the case with Lochaber Lake where sedimentary bedrock predominates in the watershed.

In natural surface waters alkalinity varies greatly. In Nova Scotia concentrations are generally less than 50 mg/l unless limestone deposits are in close proximity in which case concentrations can more than double. Conversely, in areas of non-carbonate bedrock, alkalinities below detectable limits are common.

During this study alkalinity ranged from 1 to 10 mg/l with a mean of 7.9 mg/l. This suggests that the buffering capacity is moderate and that acidity or a low pH in the lake, and any associated impacts on aquatic life, should not be a concern.

The minimum value reported was observed on August 24th at the surface and mid depth of station # 3, as well as at the bottom of station # 2 on the same date. The maximum value was observed on September 20th at the surface of station # 1.

Conductivity:

Conductivity refers to the ability of a substance to conduct an electric current. In an aqueous solution this measurement is dependent upon the total concentration of dissolved substances and the solution's temperature.

The conductivity of natural fresh waters varies greatly and may range from less than 20 umhos/cm in dilute waters to over several hundred or more in waters influenced by limestone or salt deposits.

Values in the lake ranged from 50 to 67.5 umhos/cm with a mean of 53.4. These values are well within the normal range of unimpacted lakes in similar geological settings.

The minimum value reported was observed on October 4th at the bottom of station # 2, while the maximum value was observed on June 27th at the same station but at the mid-depth location.

Colour:

The true color of water refers to the color resulting from substances which are totally dissolved in the solution. It is not to be mistaken for apparent color resulting from suspended or colloidal matter. The color in natural waters are primarily due to colored organic substances, known as humic substances, resulting from the decay or aqueous extraction of vegetation. The presence of metals such as iron, manganese, and copper which are weathered from rock can also contribute to color, but this situation predominates in groundwater.

Natural surface waters in Nova Scotia may range in color from less than detectable limits, in many cases, to over 100 True Color Units (TCU), in a very limited number of cases where bog lakes are encountered. Average color values are usually less than 45 TCU.

Reported values from Lochaber Lake ranged from < 3 to 15 TCU, with a mean of 10.7 TCU. These values reflect relatively uncolored conditions where the effects of humic substances from natural wetlands or bogs are minimal.

Minimum color values were reported on September 20th at the mid-depth location of station # 2 . Maximum values were reported at the surface of station # 1 on April 26th and May 17th as well as at a depth of 7 meters on the latter date. A color value of 15 TCU was also reported on June 1st at the surface of station # 2. The higher values reported during the spring runoff period are consistent with normal seasonal patterns and are attributed to the flushing or leaching of decomposing organics from the surrounding watershed.

Turbidity:

Turbidity measurements provide an approximation for concentrations of suspended material such as clay, sand, silt, finely divided organic and inorganic matter, plankton and other microorganisms in water.

Reported values ranged from 0.3 to 3.8 Nephelometric Turbidity Units (NTU), with a mean of 06 NTU. These values are low indicating relatively clear water conditions since sampling was avoided during storm events and plankton growth was minimal.

The minimum value was reported on several occasions but most consistently on the sampling dates in September and at stations # 2 and # 3, while the maximum value was reported on August 9th at the bottom of station # 2. The low turbidity values observed in September reflect the lack of precipitation and associated stream flow at that time. The higher turbidity value observed at the bottom of station # 2 was coincident with a higher concentration of Total P, but no increase in Total Organic Carbon (TOC). Due to these observations the turbidity value is attributed to increased levels of nutrients through dissolution from the sediments. Such events occur under low oxygen regimes common in deeper stratified lakes.

Total Organic Carbon:

Total organic carbon (TOC) refers to the total of suspended and dissolved organic constituents of water. Elevated levels of TOC are primarily indicative of naturally occurring organic matter such as humic substances but also can reflect high algal concentrations. Levels of organic carbon in surface waters vary widely, ranging from non-detectable in newly risen rivers supplied by limestone springs to greater than 100 mg/l in peaty swamp waters (Croll 1972).

Values for TOC ranged from 2.0 to 5.6 mg/l, with a mean of 3.8 mg/l. These values are considered to be low and fall well within the range of TOC values for pristine lakes which are not associated with a bogy shoreline or watershed.

The minimum value was reported on July 26th at the bottom of station # 5 and the maximum was reported on June 15th at the 7 meter depth of station # 1. Similar values to that reported as the maximum were observed at all stations on June 15th. Higher values on this date may be related to increased runoff from rain events prior to the sampling date.

Hardness:

Hardness is a traditional measure of the capacity of water to react with soap and is expressed in terms of mg/l of CaCO3.

In fresh water the principal hardness-causing ions are calcium and magnesium which naturally leach from rock and soils. Soft water is considered to have a value of 0 to 60 mg/l, medium hard 60 to 120 mg/l, hard 120 to 180 mg/l, and very hard 180 mg/l and above (Health and Welfare Canada 1980).

Natural fresh waters in Nova Scotia are almost invariably soft if not in close proximity to limestone or salt deposits. Reported values in Lochaber Lake ranged from 9.9 to 17.9 mg/l, with a mean of 14.8 mg/l. These values indicate soft water conditions which are typical of lakes not having thick topsoil or predominating limestone formations in their watershed.

The minimum value was reported on July 26th at the mid-depth of station # 2, while the maximum was reported on July 13th at the same location. Relative concentrations of calcium on these dates appear responsible for the observed differences.

Sodium:

Sodium is a non-toxic metal which is abundant, widely distributed in nature, and present to some extent in all natural waters. The principal sources of sodium are from the weathering of igneous rock and salt deposits, as well as the leaching of soils. Deicing salt used on highways can also significantly contribute to overall sodium levels in nearby watercourses. Concentrations in

pristine surface waters vary greatly, ranging from less than 1 mg/l to over 300 mg/l, depending upon amount of rainfall and evaporation, and geologic formations present. Typical undisturbed lakes in Nova Scotia however would have sodium concentrations generally less than 50 mg/l.

Reported values for Lochaber Lake ranged from 3.6 to 5.0 mg/l, with a mean of 4.1 mg/l. These values are typical of Nova Scotia lakes as shown above and indicate little groundwater influence. Little or no influences from highway deicing activities are evident.

The minimum value reported was on May 17th at the surface of stations # 1 and # 3, while the maximum value reported was on August 24th at station # 2.

Potassium:

Potassium is a widely distributed non-toxic element which is essential to plant and animal nutrition. The primary natural source is from the weathering of rock. Although potassium may be found in many rocks, those with significant amounts (e.g. granite) are resistant to weathering. Commercial chemical fertilizers contain substantial concentrations of this element and may be a significant cultural source from the watershed.

Concentrations of potassium in natural surface waters seldom reach 20 mg/l and is generally less than 10 mg/l (CCME 1987).

Values reported during this study ranged from 0.3 to 0.4 mg/l with a mean of 0.35 mg/l. These values reflect natural conditions with little migration of potassium from geologic formations in the watershed.

The reported minimum and maximum values occured with nearly equal frequency and at all stations at some point during the study period. No other concentrations were reported and no pattern was evident.

Calcium:

Calcium is one of the most abundant cations (positively charged ions) found in surface or groundwaters. It is readily soluble in water and enters the aquatic environment through the weathering of rocks, especially limestone, and from the soil, through seepage and run-off. Calcium salts, along with those of magnesium, are primarily responsible for the hardness of water. This element is considered to be essential for nearly all living organisms.

The concentrations of calcium in natural fresh waters vary according to the proximity of calcium-rich geological formations. Typical concentrations are less than 15 mg/l, whereas waters close to carbonate rocks may have concentrations in the range of 30-100 mg/l.(CCME 1987)

Values reported during this study ranged from 2.3 to 5.5 mg/l with a mean of 4.5 mg/l. These values reflect typical lake conditions where carbonate rock has some influence on water quality but does not dominate the near shore area of the watershed.

The minimum value reported was on July 26th at the mid-depth of station # 2, while the maximum value reported was on July 13th at the same location.

Magnesium:

Magnesium is the eighth most abundant natural element in the earth's crust and is a common constituent of natural water (CCME 1987). The principal sources of magnesium are ferromagnesium minerals in igneous rocks and magnesium carbonates in sedimentary rocks. Along with calcium, it is one of the main contributors to water hardness, and is also considered to be an essential element for all living organisms.

Water in watersheds with magnesium-containing rock may have magnesium in the concentration range of 1 to 100 mg/l.

Values reported during the study ranged from 0.8 to 1.0 mg/l, with a mean of 0.9 mg/l. These values are low and therefore suggest magnesium poor geologic formations in the watershed.

A narrow range of magnesium concentrations was observed, such that little difference between the minimum and the maximum values existed. As a result minimum values were reported at all sampling stations at some point during the study period and the maximum value was observed on numerous occasions as well.

Sulphate:

Sulphate is widely distributed and is an ionic component of all natural waters. It may be leached from most sedimentary rocks, including shales, with the most appreciable contributions from such sulphate deposits as gypsum and anhydrite. Acid rain can also contribute to sulphate concentrations in surface waters.

Concentrations normally vary from 10 to 80 mg/l in naturally occurring surface waters (CCME 1987).

Reported values ranged from 4.0 to 10.0 mg/l during this study, with a mean of 6.3 mg/l. These sulphate concentrations are typical values for Nova Scotia lakes having no extensive gypsum deposits in close proximity and showing no significant impacts from acid rain.

The minimum value reported was observed at the mid-depth of station # 2 on two sampling dates, July 26th and October 24th. The maximum value reported was observed at the bottom of station # 2 on April 26th.

Chloride:

Chloride is widely distributed in the environment, generally as sodium chloride, potassium chloride, and calcium chloride (CCME 1987). The weathering and leaching of sedimentary rocks and soils and the dissolution of salt deposits release chlorides to water (Mc Neely et al. 1979). In natural waters, chlorides are present in low concentrations, commonly less than 50 mg/l. Deicing salts applied to highways can contribute significantly to chloride concentrations where extensive urbanization has occurred.

Reported values for Lochaber Lake ranged from 4.2 to 6.8 mg/l, with a mean of 5.9 mg/l. These values reflect naturally occurring conditions with little or no impact from highway salting.

The minimum value reported was on August 9th at the mid-depth of station # 2, while the maximum value reported was on July 13th at the same location.

Silica:

Silicon is a stable, relatively light chemical element that does not occur free in nature, but combines with oxygen and other elements to form oxides of silicates (CCME 1987). The term "silica" refers to silicon in natural waters, and is usually represented by the hydrated form of the oxide. Silica is present in most rocks, but many are resistant to chemical weathering. Although relatively unreactive chemically, silicon is considered an essential micronutrient to some algal species, most notably the diatoms. Therefore silicon concentrations in freshwaters are significantly influenced by diatom cycling.

Most natural waters contain less than 5 mg/l of silica, although a range of 1 to 30 mg/l is not uncommon. Typical surface waters has a silica concentration of 3 to 4 mg/l (McNeely et al. 1979).

Reported values of silica concentrations during this study ranged from <0.5 to 2.5 mg/l, when a questionable value of 18.6 mg/l was deleted from the database. This value was considered erroneous since it was an order of magnitude higher than the nearest value reported and associated data obtained from that sample did not support its validity. The mean silica value was calculated to be 2.2 mg/l. These values are low suggesting that either sources of silica are limited in the geologic setting of the watershed or diatom populations have assimilated the available silica in the water column. Since chlorophyll values are low, and therefore assumably all algal populations are low, the former reason is suspected.

The minimum value reported was below detectable limits of 0.5 mg/l and occured on July 13th at the mid-depth of station #2. The maximum value was reported at the surface of station # 3 on May 17th and at the deeper locations sampled at station # 2 on May 17th and June 1st.

In summary, reported values for the above parameters are, with one exception, within the established guidelines for the protection of freshwater aquatic life and for recreational water uses.

In only one sample of the entire lake monitoring program did the observed pH not fall within the Canadian Water Quality Guideline (CWQG) range established for the protection of freshwater aquatic life. This reported pH value of 6.3 is only slightly lower than the guideline range of 6.5 to 9.0 .

The CWQGuidelines for the protection of freshwater aquatic life are established to identify ideal environmental conditions under which no impact is experienced by the most sensitive species likely to inhabit those Canadian waters.These guidelines are meant to be screening tools only, since many natural unimpacted Canadian waters, including those in Nova Scotia , do not meet these guidelines.

Natural unimpacted lakes in the Lochaber area of Nova Scotia have pHs ranging from 4.6 to 7.8 (NAQUADAT 1995). The pH values reported for Lochaber Lake during this study fall well within this range. Therefore, in the absence of any identified source of contamination which would significantly influence pH, these values should be considered natural background concentrations.

Furthermore, due to the fact that the process of deriving CWQGuidelines involves using a safety factor of at least 10, Lochaber Lake water quality, with respect to the parameters included in this section, should be considered suitable to support aquatic life and recreational water uses.

Metals

Dissolved metals which were investigated during this study are listed, along with results, in Table 11B. As with major ions, concentrations of specific metals are compared to Canadian Water Quality Guideline (CWQG) values established to support aquatic life. Results indicate that metal concentrations are generally below the normal detectable limits and are within CWQG values established for the protection of aquatic life. However, on occasion, concentrations greater than the guideline values were observed for several metals. Although exceeding guideline values, these concentrations are very low and well within the normal range or unimpacted lakes (See Table 11B, Appendix F) . Since no specific manmade sources of these metals were observed, these concentrations should be considered natural background levels.

STREAM CONDITIONS

INLET STREAMS

Inlet streams, with the exception of the North River St. Marys, generally showed little chemical impact from human related acvtivities in the watershed. The North River St. Marys and, to a lesser degree, a small seasonal stream on the east side of the lake each showed elevated nutrient levels on a sporadic basis. Total phosphorus concentrations ranged from <0.001 to 0.025 mg/l with a mean value of 0.010 mg/l. Data combined with site inspections suggest that agricutural runoff is likely the principal source of elevated nutrients in North River. A combination of on-site sewage disposal and agricultural runoff appears to influence water quality in the seasonal stream.

Lake water quality was determined to be nutrient poor and significant manmade sources of nutrient input to the lake were identified in only one inlet stream. Therefore, relative proportions of phosphorus contributions from the sub-watersheds are not necessary to calculate since priorities for remedial action are predetermined.

A statistical summary of stream data is presented in Table 12, Appendix F. Chemistry, relative flow, and temperature data for all stream stations are available but are not included in this report, in the interests of brevity and clarity.

OUTLET STREAM

Nutrient concentrations reported at the outlet stream, the North River St. Marys, were largely reflective of lake concentrations observed at station # 5 (the most southerly lake station). Additionally, chlorophyll_a concentrations were observed to be similar at these stations during the study period.

Temperatures recorded at the outlet stream were also roughly indicative of temperatures at the lake surface.

BACTERIOLOGY

The bacteriological program undertaken by NSDOE staff from the Antigonish office consisted of a water quality monitoring program of thirteen (13) lake and seven (7) stream stations, as well as a sanitary survey of properties located near the lake and inflowing streams. Sampling stations as part of the monitoring program are shown on Figure 1. These two initiatives and the associated results are outlined below.

Bacteriological Water Quality Monitoring Program

Fecal coliform bacteria are present in wastes from warm blooded animals and are associated with disease causing organisms. Canadian Water Quality Guidelines have been established to determine fecal coliform levels beyond which specific water uses can no longer be safely accommodated. Drinking water must be free of fecal coliforms in order to be acceptable for this use. Water is considered unsuitable for irrigation when fecal coliform concentrations exceed 100 per 100 mls of water. Similarly, swimming areas are considered unsafe for body contact recreation when concentrations of these organisms exceed 200 per 100 mls of water.

Bacteriological results of this monitoring program are found in Table 7A, Appendix C. Results of additional sampling undertaken by NSDOE Head Office staff are presented in Table 7B.

Agencies responsible for the protection of human health recommend that all surface waters used for drinking purposes be treated to prevent water-born diseases associated with bacteriological agents. Therefore, the most sensitive untreated water use in the Lochaber context becomes irrigation for crops, which requires concentrations of less than 100 fecal coliform per 100 mls to assure suitability for this purpose. It is recognized that presently irrigation is not the expected water use in both lake and streams of the study area, and is therefore of concern only within a limited context. However, the guideline for irrigation is included for comparison in the lake context so as to include this potential use.

Using 100 fecal coliform bacteria per 100 mls as a guide, the following observations can be made. Of the 92 bacteriological samples taken from the lake during the study period, six (6) samples exceeded the irrigation guideline. Three (3) of those six samples occurred on the August 9th sampling date and were high enough to also exceed the swimming guideline of 200 coliform . Of the fifty-six (56) samples taken from the streams flowing into the lake, twenty-four (24) samples exceeded the 100 coliform limit for irrigation. Fifteen (15) of these twenty-four samples also exceeded the swimming guideline.

It was noted that there was an increase in fecal coliform levels observed in the lake and streams after heavy rainfalls. Three (3) high results from the lake occurred after 97 mm of rain fell from August 5th to 9th. Fecal coliform levels in the streams also increased on this date. This relationship between rainfall and an increase in fecal contamination of waterways is common and well known. Fecal material that has accumulated during dry periods is washed into the streams and lakes with the runoff after heavy rain events.

Potential sources of fecal material include wildlife, domestic animals, malfunctioning septic systems, livestock, and farming activities. No specific study is cited which has demonstrated a background concentration of fecal coliform bacteria likely to be present in a watercourse as a result of normal wildlife populations. However, samples taken in the headwaters of this study area where no evidence of human or concentrated wildlife populations exist, suggest that < 20 fecal coliform per 100 mls would present an acceptable guideline.

Sanitary Survey

A Sanitary Survey was carried out in the summer of 1994. The goal of the survey was to identify malfunctioning on-site sewage disposal systems. Approximately 100 of the permanent and seasonal residences around the lake were inspected.

Where possible the site inspection was carried out when there was someone present on the property. A survey report was filled out at each visit. There were twelve (12) suspected malfunctions (i.e. sewage or laundry waste discharging into a roadside ditch or ground surface). Tracer dye was used to confirm suspected malfunctions. At three (3) of the homes the dye was not recovered and therefore the disposal system was assumed to be operating properly. At the remaining nine (9) residences dye was recovered, indicating malfunctioning systems. Three (3) of these residences have since repaired or replaced their malfunctioning systems.

Some of the seasonal residences have disposal systems which would not meet the required separation distance to the lake in the existing Regulations. However, results of the lake sampling program indicate that bacteriological impacts appear to be minimal from these properties at this point in time.

The results of the two initiatives described above indicate the following:

In general, the bacteriological water quality of the lake is suitable for swimming and irrigation uses. However, after heavy rainfalls high bacterial concentrations are possible and it would be prudent to avoid these activities, particularly at the location where the North River empties into the lake.

During the study period the streams at the head of the lake (North River St.Marys and Gussett Brook) were generally unsuitable for swimming and untreated irrigation water uses due to high bacterial levels. Although elevated bacterial levels were observed in other inflowing streams sporadically after heavy rainfalls, these two streams consistently had much higher levels than other sampling stations.

No concentrated populations of wildlife were observed in the study area. Therefore, the bacterial concentrations reported during this study are determined to be primarily indicative of human related sources as opposed to wildlife populations.

The sanitary survey identified nine (9) residences with malfunctioning septic systems. Some of these sources appeared to be the cause of significant bacterial contamination in nearby watercourses.

Elevated bacterial concentrations observed at one sample location on Gussett Brook appears to be caused by manure storage practices. Another location downstream on the North River St. Marys appears to be impacted by livestock pasturing near the stream, in addition to upstream influences. Results from these particular sampling locations suggest that water related impacts from agriculture are evident in the study area. However, more intensive site-specific audits and sampling programs would be required to identify all individual impacts associated with farming activities in the watershed.

When the sample results are compared to those of the 1977 Young Canada Works Project study, it appears that the 1994 study has reported higher bacterial concentrations both in the lake and inflowing streams. Many considerations could make this comparison invalid, such as annual variation and differences in analytical methods, and are difficult to assess. However, if increased bacterial concentrations are real and not contributed to the foregoing, then this increase could be attributed to increased human activities in the watershed, since wildlife populations are unlikely to have increased markedly since the previous study.

The presence of significant bacterial concentrations in surface waters, as observed in this study, supports the requirement for proper treatment if this source is to be used as a drinking water supply. The Department of the Environment recommends that no one drink untreated water from any surface water supply. If a surface supply is to be used for this purpose it should be filtered and disinfected.

CONCLUSIONS

Based on the results of this study, it can be concluded that Lochaber Lake, as a whole, is relatively nutrient poor, unproductive with respect to algal growth, and has moderate to high transparency. It is therefore classified as oligotrophic. Few significant sources of nutrient input could be identified from the watershed through repeated sampling of inlet streams and through visual observation of direct run-off areas. Little reintroduction of nutrients from bottom sediments was evident due to the maintenance of relatively high oxygen concentrations, although strong thermal stratification was observed.

Inflowing streams were generally nutrient poor with the exception of the North River St. Mary's and a small seasonal stream on the east side of the lake, each showing elevated nutrient levels on a sporadic basis. Data, combined with site inspections, suggest that agricultural runoff primarily influenced water quality in the first stream. A combination of on-site sewage disposal and agricultural runoff appeared to influence water quality in the latter case.

Lochaber Lake, as a whole, has remained relatively unimpacted from a nutrient perspective. This situation exists due to the great volume of water in the lake combined with a moderately high flushing rate. However, localized impacts from nutrient inputs do occur. Considerable plant growth at several nearshore locations in the lake and along certain reaches of inflowing streams are attributed to culturally related nutrient inputs.

Bacteriological water quality monitoring appeared to indicate localized impacts in the lake from residential development and agricultural run-off. The North River St. Mary's, flowing into the northend of the lake, showed high fecal coliform concentrations consistently throughout the sampling period. This is primarily attributed to agricultural runoff. Elevated bacterial concentrations in this stream were consistent with patterns emerging in the chemistry data.

Based on this 1994 data, chemical water quality in Lochaber Lake is suitable to support the expected water uses. That is, when compared to established Canadian Water Quality Guideline values, Lochaber Lake water quality was suitable to support aquatic life, body contact recreational uses, as well as irrigation water uses if desired.

Based on this 1994 data, bacteriological water quality in Lochaber Lake is not consistently suitable to support the expected water uses. That is, when compared to established Canadian Water Quality Guideline values, Lochaber Lake bacteriological water quality was occasionally unsuitable to support body contact recreational uses, as well as untreated irrigation water uses should they be desired. However, in general, the bacteriological water quality of the lake is suitable for swimming and irrigation uses. After heavy rainfalls high bacterial concentrations are possible and it would be prudent to avoid these activities, particularly at the location where the North River empties into the lake.

When compared to other Nova Scotia lakes with relatively undeveloped watersheds, Lochaber Lake has comparable chemical water quality.

When compared to the Canadian Water Quality Guidelines, the streams at the head of the lake (North River St.Marys and Gussett Brook) were generally unsuitable for swimming and untreated irrigation water uses during the study period, due to high bacterial levels.

Residential development with respect to malfunctioning on-site sewage disposal systems (and possibly domestic animal feces) appear responsible for significant water quality impacts in the lake and possibly one inflowing stream.

Agricultural runoff from manure storage, livestock pasturing, and possibly manure spreading activities appear responsible for significant water quality impacts in one and possibly two inflowing streams to the lake.

When the results of this study are compared to those of the 1977 Young Canada Works Project study, it appears that the 1994 study has reported higher bacterial concentrations both in the lake and inflowing streams. It is difficult to determine the validity of this comparison and the significance of results..

Some differences in Lochaber Lake chemical water quality are noticable when comparing the present study to a less extensive study undertaken in 1973 (Fisheries and Marine Service Branch, Environment Canada). Comparison of primary indicators relating to eutrophication are not possible since they were not included in the initial study. Observed differences in the water quality parameters which were reported in both studies may be related to human activities but overall are not considered particularly significant.

The presence of significant bacterial concentrations in surface waters, as observed in this study, supports the requirement for proper treatment if this source is to be used as a drinking water supply. The Department of the Environment recommends that no one drink untreated water from any surface water supply. If a surface supply is to be used for this purpose it should be filtered and disinfected.

In summary, the foregoing conclusions suggest that Lochaber Lake is relatively unimpacted from a nutrient perspective and has chemical water quality suitable for all expected water uses, including the protection of aquatic life and recreational uses. Bacteriological water quality in the lake and at least one major inlet stream is periodically impacted by human related activities and subsequently water uses such as swimming and irrigation are impaired.

RECOMMENDATIONS

Due to the manmade water quality impacts observed during this study, it is strongly recommended that remedial actions be taken to address the situation. Such actions should primarily focus on the management of human and animal wastes but should additionally address all nutrient related materials. Although properties immediately adjacent to waterbodies have the greatest potential for impacting these water resources, all upgradient properties should be considered potentially impacting. Remedial or mitigative actions should therefore involve all properties in the watershed.

Specific recommended actions include;

- Site-specific audits of residential properties to ensure that normal household activities are not impacting on water quality. Such activities to be considered should include, but not be limited to ; on-site sewage disposal, disposal of pet feces, and the use of fertilizers on the property.

- Site-specific audits of agricultural properties to ensure farming practices are being undertaken in a manner that does not impact water quality. Such practices to be considered should include but not be limited to; manure management, livestock pasturing, fertilizer application, and erosion control.

- Suspension of the practice to approve the construction of a dwelling on an undersized lot against the recommendation of an Environmental Health Engineer.

- Determination of other industrial sectors in the watershed that may potentially impact water quality and mitigate associated impacts.

- Inform and educate the general public so as to prevent water quality impacts and avoid impairment of expected water uses.

- Formation of a community-based watershed advisory board to help coordinate and implement the above actions. Its overall role would be to ensure that all activities in the watershed are undertaken so as to have a minimal impact on water resources and that expected water uses can be sustained. This board should be comprised of representatives of all stakeholder groups including water users and all sectors which may potentially impact those water uses.

In addition to the above recommendations for remedial actions, several other points of a cautionary nature are put forward.

The Department of the Environment and all other agencies concerned with human health recommend that no one drink untreated water from a surface water supply. If a surface supply is to be used for this purpose it should be filtered and disinfected.

Although Lochaber Lake was not considered to be particularly impacted from a nutrient perspective at the present time, future development in the watershed could considerably change this situation. Therefore, watershed management practices should be implemented in order to minimize the export of phosphorus from the watershed thereby assuring low nutrient and high transparency in-lake conditions to the greatest degree possible. Development in the watershed (e.g. forestry, farming, residential, etc.) can be accommodated without negative impacts to water quality as long as it is undertaken in an environmentally acceptable manner. Buffer strips, erosion control measures, good livestock manure management, suitable sewage disposal systems, are examples of appropriate practices which must be implemented if the water resource is to continue to provide the expected uses to area residents.

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Appendix A

LOCHABER LAKE VOLUME CALCULATIONS

BASIN # 1 - NORTHERN SECTION OF LAKE

Depth (m)	Area (ha)	% Total Area (basin)	% Total Area (lake)	Stratum	Volume (m3x104)	% Total Volume (basin)	% Total Volume (lake)
0.0	78.6	100.0	25.6				
2.0							
4.0				0 - 6	407.6	66.9	6.5
6.0	57.8	73.5	18.8				
8.0							
10.0				6 - 12	177.8	29.2	2.8
12.0	8.7	11.1	2.8				
14.0							
16.0				12 - 18	22.6	3.7	0.4
18.0	0.5	0.6	0.2				
20.0				18 - 21.5	1.0	0.2	
21.5	0.0	0.0	0.0				
			SUBTOTALS		609.0	100.0	9.7

BASIN # 2 - MIDDLE SECTION OF LAKE

Depth (m)	Area (ha)	% Total Area (basin)	% Total Area (lake)	Stratum	Volume (m3x104)	% Total Volume (basin)	% Total Volume (lake)
0.0	145.8	100.0	47.5				
2.0							
4.0				0 - 6	799.2	20.7	12.7
6.0	121.0	83.0	39.4				
8.0							
10.0				6 - 12	689.4	17.9	11.0
12.0	108.9	74.7	35.5				
14.0							
16.0				12 - 18	628.9	16.3	10.0
18.0	100.8	69.1	32.8				
20.0							
22.0				18 - 24	564.1	14.6	9.0
24.0	87.4	59.9	28.5				
26.0							
28.0				24 - 30	470.9	12.2	7.5
30.0	69.9	47.9	22.8				
32.0							
34.0				30 - 36	348.4	9.0	5.5
36.0	47.0	32.2	15.3				
38.0							
40.0				36 - 42	218.9	5.7	3.5
42.0	26.9	18.4	8.8				
44.0							
46.0				42 - 48	114.1	3.0	1.8
48.0	12.1	8.3	3.9				
50.0				48 - 50.5	24.2	0.6	0.4
50.5	0.0	0.0	0.0				
			SUBTOTALS		3858.3	100.0	61.4

LOCHABER LAKE VOLUME CALCULATIONS

BASIN # 3 - SOUTHERN SECTION OF LAKE

Depth (m)	Area (ha)	% Total Area (basin)	% Total Area (lake)	Stratum	Volume (m3x104)	% Total Volume (basin)	% Total Volume (lake)
0.0	82.6	100.0	26.9				
2.0							
4.0				0 - 6	442.4	24.3	7.0
6.0	65.2	78.9	21.2				
8.0							
10.0				6 - 12	370.9	20.4	5.9
12.0	58.5	70.8	19.1				
14.0							
16.0				12 - 18	311.8	17.2	5.0
18.0	45.7	55.3	14.9				
20.0							
22.0				18 - 24	253.8	14.0	4.0
24.0	39.0	47.2	12.7				
26.0							
28.0				24 - 30	196.6	10.8	3.1
30.0	26.9	32.6	8.8				
32.0							
34.0				30 - 36	140.8	7.7	2.2
36.0	20.2	24.5	6.6				
38.0							
40.0				36 - 42	84.3	4.6	1.3
42.0	8.7	10.5	2.8				
44.0				42 - 46	17.4	1.0	0.3
46.0	0.0	0.0	0.0				
			SUBTOTALS		1818.1	100.0	28.9

TOTAL LAKE VOLUME 6285.3 m3x104

Appendix B

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 1

STATION	Date	Temp. (C)	DO	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
LL-DS1-0m	26-Apr-94	5.5	13.8	3.5	6.9	7.0	53.0	15.0	15.0	1.1	0.009	0.240	0.9	0.4	3.7	<0.001	0.150	<0.01
	17-May-94	8.0	12.6	2.6	6.9	9.0	52.2	14.7	15.0	1.3	0.009	0.280	1.0	0.1	4.1	<0.001	0.130	<0.05
	01-Jun-94																	
	15-Jun-94	14.5	11.1	3.5	7.2	8.0	54.0		11.0	0.7	0.011	0.250	1.7	1.1	5.4	<0.001	0.140	<0.01
	27-Jun-94	19.5	10.4	3.4	7.1	8.0	52.0		12.0	0.6	0.006	0.220	1.5	0.7	4.3	<0.001	0.120	<0.01
	13-Jul-94	21.6	9.4	4.1	7.1	8.0	56.0		8.0	0.5	0.007	0.220	2.2	0.7	3.2	<0.001	0.110	<0.01
	26-Jul-94	24.2	8.9	3.6	7.2	9.0	53.0		11.0	0.4	0.005	0.220	2.1	1.2	4.3	<0.001	0.090	<0.01
	09-Aug-94	22.0	9.1	3.4	7.3	9.0	54.0		10.0	0.5	0.006	0.200	1.9	1.3	3.2	<0.001	0.070	0.02
	24-Aug-94	20.0	9.0	4.5	7.0	8.0	54.0		10.0	0.5	0.009	0.190	1.5	1.0	3.2	<0.001	0.070	0.01
	08-Sep-94	18.0	8.9	4.6	7.3	9.0	54.0		10.0	0.4	0.004	0.180	1.6	0.8	3.6	<0.001	0.070	0.01
	20-Sep-94	16.5	9.0	4.9	7.3	10.0	55.0		9.0	0.4	0.004	0.190	2.0	0.9	3.6	<0.001	0.070	<0.01
	04-Oct-94	15.0	9.8	4.4	7.3	9.0	52.0		10.0	0.6	0.004	0.240	2.2	0.9	3.0	<0.001	0.070	<0.01
LL-DS1-7m	26-Apr-94	5.0	14.0															
	17-May-94	8.0	12.5		6.8	9.0	52.1	14.6	15.0	1.2	0.008	0.280	0.9	0.3	3.9	<0.001	0.130	<0.05
	01-Jun-94																	
	15-Jun-94	13.0	11.2		7.0	8.0	54.0		12.0	0.7	0.007	0.250	1.1	0.6	5.6	<0.001	0.140	<0.01
	27-Jun-94	13.2	11.1		7.0	8.0	54.0		14.0	0.8	0.007	0.240	1.2	0.8	4.5	<0.001	0.130	0.01
	13-Jul-94	17.5	8.8		7.2	9.0	54.0		7.0	0.6	0.010	0.240	1.3	0.9	3.2	<0.001	0.110	0.01
	26-Jul-94	21.8	8.6		7.7	8.0	53.0		10.0	0.5	0.008	0.230	2.3	1.1	4.3	<0.001	0.100	0.01
	09-Aug-94	20.5	8.2		6.9	8.0	52.0		9.0	0.6	0.006	0.270	1.2	1.3	3.4	<0.001	0.170	<0.01
	24-Aug-94	20.0	9.0		6.7	8.0	53.0		11.0	0.6	0.009	0.280	1.1	0.9	3.2	<0.001	0.180	<0.01
	08-Sep-94	18.0	8.9		6.8	9.0	52.0		11.0	0.7	0.004	0.270	1.5	0.8	3.8	<0.001	0.180	<0.01
	20-Sep-94	11.5	9.0		7.5	9.0	54.0		10.0	0.5	0.006	0.190	1.8	1.1	4.0	<0.001	0.070	<0.01
	04-Oct-94	15.0	9.2										2.1	1.0				
LL-DS1-15m	26-Apr-94	4.6	13.8		6.9	7.0	53.0	14.9	14.0	1.0	0.009	0.220	0.6	0.5	3.7	<0.001	0.150	<0.01
(Bottom 17m)	17-May-94	7.0	12.5		6.9	9.0	54.1	14.6	14.0	1.0	<0.001	0.270			4.1	<0.001	0.140	<0.05
	01-Jun-94																	
	15-Jun-94	10.3	11.2		7.0	8.0	53.0		12.0	0.6	0.007	0.250			5.5	<0.001	0.140	<0.01
	27-Jun-94	10.8	11.2		6.9	8.0	52.0		13.0	0.6	0.006	0.250			4.4	<0.001	0.150	<0.01
	13-Jul-94	11.5	10.3		6.8	8.0	52.0		11.0	0.4	0.012	0.280			3.4	<0.001	0.160	<0.01
	26-Jul-94	10.5	9.5		7.2	8.0	52.0		9.0	0.6	0.006	0.280			4.1	<0.001	0.190	<0.01
	09-Aug-94	11.0	9.6		6.8	8.0	52.0		11.0	0.6	0.007	0.270			3.4	<0.001	0.180	<0.01
	24-Aug-94	10.5	9.3		6.7	8.0	52.0		9.0	0.8	0.010	0.280			3.2	<0.001	0.180	<0.01
	08-Sep-94	10.5	8.0		6.8	8.0	55.0		11.0	0.6	0.005	0.280			4.0	<0.001	0.180	<0.01
	20-Sep-94	11.0	7.8		6.8	8.0	52.0		0.0	0.4	0.006	0.280			4.1	<0.001	0.180	<0.01
	04-Oct-94	11.0	7.6		6.9	9.0	52.0		9.0	1.0	0.006	0.230			3.2	<0.001	0.080	<0.01

LL-DS1-0m denotes : Lochaber Lake - Deep Station 1-0 meters deep

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 1

STATION	Date	As	Fe	Mn	Pb-HGA	Cu	Zn	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
LL-DS1-0m	26-Apr-94		0.037	0.021		0.002	0.013												
	17-May-94		0.040	0.020		<0.01	<0.01												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		
LL-DS1-7m	26-Apr-94																		
	17-May-94		0.030	0.020		<0.01	<0.01												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		
LL-DS1-15m (Bottom 17m)	26-Apr-94		0.035	0.024		<0.002	<0.005												
	17-May-94					<0.01	0.010												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		

LL-DSI-Om denotes : Lochaber Lake - Deep Station 1-0 meters deep

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 1

STATION	Date	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev.	Ion sum	Th. Cond	Sat pH	Lang.@5	Lang @20	Lang @50
LL- DS1- 0m	26-Apr-94	4.4	0.4	4.6	0.9	0.000	6.990	7.0	6.5	2.4	0.500	0.480	2.4	0.11	30.4	56.2	10.3	-3.4	-3.0	-2.5
	17-May-94	3.6	0.3	4.6	0.8	0.010	8.990	6.0	5.6	2.4	0.460	0.480	2.5	0.11	29.2	52.9	10.2	-3.3	-2.9	-2.4
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			
LL- DS1- 7m	26-Apr-94																			
	17-May-94	3.7	0.3	4.6	0.8	0.010	8.990	6.0	5.5	2.4	0.460	0.480	1.8	0.11	29.2	52.9	10.2	-3.4	-3.0	-2.5
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			
LL-DS1-15m	26-Apr-94	4.3	0.4	4.5	0.9	0.010	6.990	7.0	6.7	2.4	0.500	0.490	1.0	0.11	30.4	56.3	10.3	-3.4	-3.0	-2.4
(Bottom 17m)	17-May-94	3.7	0.3	4.5	0.8	0.010	8.990	6.0	5.9	2.4	0.460	0.490	3.2	0.11	29.6	53.7	10.2	-3.3	-2.9	-2.4
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			

LL-DS1-0m denotes : Lochaber Lake - Deep Station 1-0 meters deep

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 2

STATION	Date	Temp. (C)	DO	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
LL- DS2- 0m	26-Apr-94	5.5	13.3	4.0	7.0	7.0	53.0	14.5	12.0	1.3	0.003	0.220	1.0	0.6	3.5	<0.001	0.150	<0.01
	17-May-94	7.5	12.4	2.5	6.8	8.0	52.6	14.6	12.0	1.3	0.007	0.270	1.1	0.2	3.9	<0.001	0.140	<0.05
	01-Jun-94	10.5	11.8	3.6	7.0	7.0	53.0		15.0	0.8	0.009	0.260	1.0	0.3	4.2	<0.001	0.150	<0.01
	15-Jun-94	14.0	11.0	3.6	7.2	8.0	54.0		11.0	0.7	0.011	0.250	1.8	1.1	5.4	<0.001	0.140	<0.01
	27-Jun-94	19.5	10.1	4.4	7.2	9.0	52.0		12.0	0.8	0.006	0.240	1.4	0.6	4.3	<0.001	0.120	<0.01
	13-Jul-94	21.2	9.4	4.5	7.1	8.0	56.0		12.0	0.5	0.008	0.220	1.9	0.6	3.4	<0.001	0.110	<0.01
	26-Jul-94	24.0	9.0	3.9	7.2	8.0	52.0		11.0	0.5	0.003	0.220	2.8	1.2	4.1	<0.001	0.100	<0.01
	09-Aug-94	22.0	8.9	3.4	7.0	8.0	52.0		10.0	0.5	0.006	0.190	1.7	1.5	4.1	<0.001	0.070	0.01
	24-Aug-94	20.5	9.4	4.8	6.9	8.0	53.0		10.0	0.5	0.010	0.190	2.2	1.3	3.2	<0.001	0.070	<0.01
	08-Sep-94	18.0	8.9	4.9	7.2	9.0	55.0		9.0	0.4	0.004	0.190	1.9	1.0	4.0	<0.001	0.070	0.01
	20-Sep-94	16.5	9.1	4.9	7.2	9.0	54.0		10.0	0.3	0.003	0.190	2.2	1.3	3.6	<0.001	0.070	<0.01
	04-Oct-94	15.0	9.8	4.3	7.1	9.0	51.0		9.0	0.4	0.004	0.200	2.6	1.1	2.8	0.004	0.070	<0.01
LL- DS2- 23m	26-Apr-94	5.0	12.7		7.0	7.0	53.0	14.4	14.0	1.2	0.004	0.220	0.9	0.5	3.5	<0.001	0.150	<0.01
	17-May-94	7.5	12.1															
	01-Jun-94	9.0	11.7		6.9	8.0	53.0	15.2	14.0	0.8	0.008	0.240	0.7	0.6	4.1	<0.001	0.150	<0.05
	15-Jun-94	8.5	11.5		6.9	8.0	53.4	16.0	11.0	0.6	0.010	0.240	1.0	0.8	5.2	<0.001	0.140	<0.05
	27-Jun-94	8.5	11.8		6.9	8.0	67.7	14.2	11.0	0.4	0.006	0.250	0.9	0.9	4.3	<0.001	0.140	<0.05
	13-Jul-94	8.5	11.5		7.0	8.0	52.3	17.9	10.0	0.4	0.006	0.250	0.8	0.8	3.4	<0.001	0.130	<0.05
	26-Jul-94	8.5	11.2		7.0	8.0	55.2	9.9	9.0	0.5	0.004	0.240	2.2	1.1	4.1	<0.001	0.110	<0.05
	09-Aug-94	9.0	10.4		6.8	8.0	62.4	15.0	10.0	0.4	0.006	0.260	1.6	1.5	3.6	<0.001	0.150	<0.05
	24-Aug-94	8.0	11.0		6.7	7.0	54.8	16.9	12.0	0.5	0.009	0.270	2.0	1.4	3.2	<0.001	0.180	<0.05
	08-Sep-94	8.5	9.8		6.7	8.0	61.7	15.2	10.0	0.5	0.004	0.270	1.6	1.4	4.0	<0.001	0.170	<0.05
	20-Sep-94	9.5	8.6		6.8	8.0	56.1	14.2	<3.0	0.3	0.005	0.190	2.2	1.2	3.6	<0.001	0.080	<0.05
	04-Oct-94	8.0	9.0		6.3	9.0	54.6	16.0	12.0	0.6	0.005	0.260	2.7	1.1	3.0	<0.001	0.150	0.10
LL- DS2- 45m	26-Apr-94	4.9	12.6		6.9	7.0	53.0	14.5	11.0	1.2	0.009	0.240	0.7	0.6	3.6	<0.001	0.110	<0.01
(Bottom 47.5m)	17-May-94				6.7	8.0	54.0	14.4	13.0	0.8	0.007	0.280			3.5	<0.001	0.140	<0.05
	01-Jun-94	7.0	11.4		7.0	7.0	52.1		14.0	0.8	0.008	0.250			4.1	<0.001	0.150	<0.01
	15-Jun-94	7.5	11.3		6.8	8.0	53.0		12.0	0.7	0.010	0.250			5.2	<0.001	0.160	<0.01
	27-Jun-94	7.5	11.6		6.8	8.0	51.0		11.0	0.6	0.005	0.260			3.9	<0.001	0.170	<0.01
	13-Jul-94	7.5	11.0		6.8	8.0	53.0		10.0	0.4	0.013	0.260			3.4	<0.001	0.160	<0.01
	26-Jul-94	7.5	10.5		6.9	8.0	52.0		11.0	0.6	0.005	0.280			4.1	0.001	0.200	<0.01
	09-Aug-94	7.5	10.4		6.8	8.0	52.0		9.0	3.8	0.022	0.260			3.4	0.001	0.170	<0.01
	24-Aug-94	7.0	9.8		6.9	<1.0	53.0		10.0	0.4	0.012	0.270			3.5	<0.001	0.170	<0.01
	08-Sep-94	7.5	8.6		6.8	8.0	53.0		11.0	0.7	0.008	0.280			4.5	<0.001	0.180	<0.01
	20-Sep-94	7.2	8.0		6.7	8.0	52.0		9.0	0.5	0.009	0.270			4.0	<0.001	0.180	<0.01
	04-Oct-94	7.0	8.1		6.7	9.0	50.0		10.0	0.6	0.007	0.290			2.8	0.007	0.180	<0.01

LL-DS2-0m denotes : Lochaber Lake - Deep Station 2 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 2

STATION	Date	As	Fe	Mn	Pb-HGA	Cu	Zn	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
LL- DS2- 0m	26-Apr-94	<0.002	0.039	0.024	<0.002	<0.002	0.008	0.046	<0.10	0.011	<0.005	<0.002	<0.002	<0.002	<0.002	<0.050	<0.002	<0.05	0.002
	17-May-94		0.020	0.020		<0.01	<0.01												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		
LL- DS2- 23m	26-Apr-94	<0.002	0.024	0.027	<0.002	<0.002	0.014	0.086	<0.01	0.011	<0.005	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.05	<0.002
	17-May-94																		
	01-Jun-94		0.020	0.010	<0.002	<0.01	<0.01	0.044	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	15-Jun-94		<0.02	<0.01	<0.002	0.010	0.020	0.036	<0.10	0.012	<0.005	<0.002	<0.002	<0.05	<0.02	<0.002	<0.002		<0.01
	27-Jun-94		0.020	0.010	<0.002	<0.01	<0.01	0.034	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	13-Jul-94		<0.02	0.010	<0.002	<0.01	<0.01	0.030	<0.10	0.011	<0.005	<0.002		<0.05	<0.02	<0.05	<0.002		<0.01
	26-Jul-94		0.020	0.020	<0.002	0.010	<0.01	0.047	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	09-Aug-94		<0.02	<0.01	<0.002	<0.01	<0.01	0.035	<0.10	0.012	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	24-Aug-94		<0.02	<0.01	<0.002	<0.01	<0.01	0.053	<0.10	0.012	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	08-Sep-94		<0.02	<0.01	<0.002	<0.01	<0.01	0.031	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	20-Sep-94		<0.02	<0.01	<0.002	<0.01	<0.01	0.035	<0.10	0.010	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	04-Oct-94		0.020	<0.01	<0.002	<0.01	<0.01	0.067	<0.10	<0.005	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
LL- DS2- 45m	26-Apr-94	<0.002	0.048	0.025	<0.002	0.003	0.010	0.081	<0.10	0.011	<0.005	<0.002	<0.002	<0.002	0.003	<0.05	<0.002	<0.002	<0.002
(Bottom 47.5m)	17-May-94		0.020	0.020		<0.01	<0.01												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		

LL- DS2-0m denotes : Lochaber Lake - Deep Station 2 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 2

STATION	Date	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev.	Ion sum	Th. Cond	Sat pH	Lang.@5	Lang @20	Lang @50
LL- DS2- 0m	26-Apr-94	4.2	0.4	4.4	0.9	0.010	6.990	6.0	6.0	2.4	0.480	0.440	4.2	0.11	28.5	52.6	10.3	-3.3	-3.0	-2.4
	17-May-94	3.7	0.3	4.5	0.8	0.000	7.990	7.0	5.4	2.4	0.460	0.480	1.8	0.11	29.5	53.3	10.2	-3.4	-3.1	-2.5
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			
LL- DS2- 23m	26-Apr-94	4.2	0.3	4.4	0.9	0.010	6.990	6.0	5.9	2.4	0.480	0.440	4.0	0.11	28.2	52.1	10.3	-3.4	-3.0	-2.4
	17-May-94																			
	01-Jun-94	4.1	0.4	4.6	0.9	0.010	7.990	6.0	5.9	2.5	0.490	0.470	2.2	0.11	29.9	54.6	10.2	-3.3	-3.0	-2.4
	15-Jun-94	4.0	0.4	4.9	0.9	0.010	7.990	7.0	6.5	2.4	0.500	0.510	0.5	0.11	31.5	57.9	10.2	-3.3	-2.9	-2.4
	27-Jun-94	3.7	0.3	4.2	0.9	0.010	7.990	7.0	6.4	2.4	0.450	0.510	5.5	0.11	30.3	55.0	10.3	-3.4	-3.0	-2.4
	13-Jul-94	4.2	0.4	5.5	1.0	0.010	7.990	7.0	6.8	<0.5	0.550	0.520	3.4	0.11	30.3	60.9	10.2	-3.2	-2.8	-2.2
	26-Jul-94	4.7	0.4	2.3	1.0	0.010	7.990	4.0	6.4	1.6	0.410	0.440	3.2	0.11	25.7	48.0	10.5	-3.5	-3.2	-2.6
	09-Aug-94	4.0	0.3	4.7	0.8	0.000	7.990	7.0	4.2	2.1	0.480	0.450	4.1	0.11	28.6	51.9	10.2	-3.4	-3.1	-2.5
	24-Aug-94	5.0	0.4	5.1	1.0	0.000	6.990	6.0	5.0	2.4	0.570	0.430	13.5	0.11	29.9	55.6	10.2	-3.5	-3.2	-2.6
	08-Sep-94	4.6	0.3	4.4	1.0	0.000	7.990	6.0	5.0	2.3	0.510	0.450	6.5	0.11	29.2	53.6	10.2	-3.5	-3.2	-2.6
	20-Sep-94	4.1	0.3	4.2	0.9	0.000	7.990	6.0	5.2	1.3	0.470	0.440	3.0	0.11	27.2	51.5	10.3	-3.5	-3.1	-2.5
	04-Oct-94	4.8	0.4	4.8	1.0	0.000	9.000	4.0	5.6	18.6	0.550	0.440	10.7	0.11	45.4	54.6	10.2	-3.9	-3.5	-2.9
LL- DS2- 45m	26-Apr-94	4.3	0.4	4.4	0.9	0.010	6.990	10.0	6.2	2.4	0.490	0.530	4.3	0.11	32.8	59.4	10.3	-3.4	-3.1	-2.5
(Bottom 47.5m)	17-May-94	3.6	0.3	4.5	0.8	0.000	7.990	6.0	5.9	2.5	0.450	0.470	1.9	0.11	29.0	52.5	10.2	-3.5	-3.2	-2.6
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			

LL-DS2-0m denotes: Lochaber Lake - Deep Station 2 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 3

STATION	Date	Temp. (C)	DO	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
LL- DS3- 0m	26-Apr-94	5.5	13.4	3.7	7.0	7.0	53.0	14.6	13.0	1.2	0.009	0.220	1.3	0.8	3.1	<0.001	0.150	0.01
	17-May-94	7.8	12.2	2.7	6.8	9.0	52.8	14.4	13.0	1.0	0.008	0.280	1.6	0.1	3.7	<0.001	0.130	<0.05
	01-Jun-94																	
	15-Jun-94	13.5	10.9	3.8	7.0	8.0	52.0		11.0	0.6	0.009	0.240	1.7	0.8	5.6	<0.001	0.140	<0.01
	27-Jun-94	19.3	10.2	4.3	7.2	9.0	52.0		12.0	0.5	0.006	0.230	1.4	0.6	3.8	<0.001	0.120	<0.01
	13-Jul-94	21.0	9.6	4.5	7.1	8.0	54.0		9.0	0.4	0.010	0.230	1.7	1.0	3.4	<0.001	0.110	<0.01
	26-Jul-94	23.6	9.0	3.9	7.2	8.0	52.0		10.0	0.5	0.004	0.210	2.8	0.8	4.1	<0.001	0.100	<0.01
	09-Aug-94	22.0	9.0	3.7	7.1	8.0	52.0		10.0	0.4	0.006	0.200	1.6	1.5	3.4	<0.001	0.070	0.02
	24-Aug-94	20.5	9.4	4.8	7.3	<1.0	53.0		9.0	0.7	0.010	0.190	2.0	1.5	3.5	<0.001	0.070	<0.01
	08-Sep-94	18.1	8.9	5.3	6.9	9.0	53.0		9.0	0.3	0.005	0.180	1.9	1.1	4.0	<0.001	0.070	<0.01
	20-Sep-94	16.5	9.2	4.9	7.2	9.0	54.0		11.0	0.3	0.003	0.190	2.3	1.1	3.8	<0.001	0.070	<0.01
	04-Oct-94	15.0	9.2	4.0	7.1	9.0	52.0		10.0	0.4	0.007	0.260	2.4	1.0	3.0	<0.001	0.070	<0.01
LL- DS3- 7m	26-Apr-94	5.5	13.2															
	17-May-94	7.8	11.5		6.8	8.0	54.9	14.3	13.0	0.8	0.008	0.280	1.3	0.4	3.7	<0.001	0.140	<0.05
	01-Jun-94																	
	15-Jun-94	12.2	11.0		7.1	8.0	52.0		12.0	0.6	0.010	0.240	1.6	0.8	5.4	<0.001	0.140	<0.01
	27-Jun-94	13.5	10.9		7.0	8.0	52.0		11.0	0.5	0.005	0.250	1.5	0.6	3.9	<0.001	0.130	<0.01
	13-Jul-94	14.0	10.3		7.0	9.0	56.0		9.0	0.3	0.010	0.260	0.5	0.7	4.0	<0.001	0.140	0.01
	26-Jul-94	20.0	8.5		6.9	8.0	52.0		10.0	0.5	0.008	0.280	0.7	0.7	4.1	<0.001	0.170	0.02
	09-Aug-94	22.0	9.0		6.9	8.0	53.0		11.0	0.4	0.008	0.240	1.7	1.4	3.4	<0.001	0.130	0.02
	24-Aug-94	20.0	9.3		6.9	<1.0	53.0		10.0	0.6	0.010	0.250	2.0	1.5	3.2	<0.001	0.140	<0.01
	08-Sep-94	18.0	9.0		6.8	8.0	52.0		10.0	0.4	0.005	0.280	1.2	1.0	4.5	<0.001	0.180	<0.01
	20-Sep-94	16.2	9.0		6.8	8.0	53.0		12.0	0.3	0.005	0.230	2.1	1.1	3.8	<0.001	0.130	<0.01
	04-Oct-94	15.0	9.2		6.7	9.0	51.0		11.0	0.4	0.011	0.290	2.1	1.0	2.8	<0.001	0.180	0.02
LL- DS3-26m (Bottom 30m)	26-Apr-94	5.0	12.8		7.0	7.0	53.0	14.8	14.0	1.2	0.009	0.220	1.2	0.5	3.1	<0.001	0.150	<0.01
	17-May-94																	
	01-Jun-94																	
	15-Jun-94	7.8	11.3		6.8	7.0	52.0		12.0	0.8	0.010	0.250			5.4	<0.001	0.160	<0.01
	27-Jun-94	8.8	11.5		6.9	8.0	52.0		11.0	0.5	0.006	0.260			4.1	<0.001	0.170	<0.01
	13-Jul-94	8.2	11.4		6.8	8.0	54.0		8.0	0.3	0.009	0.270			3.4	<0.001	0.160	<0.01
	26-Jul-94	8.5	10.6		6.8	7.0	53.0		11.0	0.5	0.005	0.270			3.3	<0.001	0.190	<0.01
	09-Aug-94	8.0	11.3		6.8	7.0	52.0		9.0	0.5	0.007	0.290			3.6	<0.001	0.170	<0.01
	24-Aug-94	7.8	11.0		6.9	7.0	52.0		11.0	0.6	0.006	0.290			3.5	<0.001	0.170	<0.01
	08-Sep-94	8.0	8.6		6.8	8.0	52.0		11.0	0.5	0.005	0.280			4.3	<0.001	0.180	<0.01
	20-Sep-94	8.0	9.1		6.7	8.0	52.0		11.0	0.5	0.005	0.280			3.8	<0.001	0.180	<0.01
	04-Oct-94	8.0	8.8		6.7	8.0	51.0		10.0	0.5	0.008	0.290			3.0	<0.001	0.180	<0.01

LL-DS3-Om denotes : Lochaber Lake - Deep Station 3 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 3

STATION	Date	As	Fe	Mn	Pb-HGA	Cu	Zn	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
LL- DS3- 0m	26-Apr-94		0.038	0.022		0.013	0.008												
	17-May-94		0.020	0.020		<0.01	0.080												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		
LL- DS3- 7m	26-Apr-94																		
	17-May-94		0.020	0.020		<0.01	<0.01												
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		
LL- DS3-26m (Bottom 30m)	26-Apr-94		0.037	0.023		<0.002	0.008												
	17-May-94																		
	01-Jun-94																		
	15-Jun-94																		
	27-Jun-94																		
	13-Jul-94																		
	26-Jul-94																		
	09-Aug-94																		
	24-Aug-94																		
	08-Sep-94																		
	20-Sep-94																		
	04-Oct-94																		

LL-DS3-0m denotes: Lochaber Lake - Deep Station 3 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Station 3

STATION	Date	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev.	Ion sum	Th. Cond	Sat pH	Lang.@5	Lang @20	Lang @50
LL- DS3- 0m	26-Apr-94	4.3	0.4	4.4	0.9	0.010	6.990	6.0	6.6	2.4	0.490	0.460	2.9	0.11	29.2	54.2	10.3	-3.3	-2.9	-2.4
	17-May-94	3.6	0.3	4.5	0.8	0.010	8.990	6.0	6.0	2.4	0.450	0.490	4.3	0.11	29.5	53.5	10.2	-3.4	-3.0	-2.5
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			
LL- DS3- 7m	26-Apr-94																			
	17-May-94	3.7	0.3	4.4	0.8	0.000	7.990	6.0	5.6	2.5	0.460	0.460	0.6	0.11	28.7	52.0	10.2	-3.4	-3.1	-2.5
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			
LL- DS3-26m (Bottom 30m)	26-Apr-94	4.3	0.4	4.5	0.9	0.010	6.990	7.0	6.7	2.4	0.490	0.490	0.8	0.11	30.4	56.2	10.3	-3.3	-3.0	-2.4
	17-May-94																			
	01-Jun-94																			
	15-Jun-94																			
	27-Jun-94																			
	13-Jul-94																			
	26-Jul-94																			
	09-Aug-94																			
	24-Aug-94																			
	08-Sep-94																			
	20-Sep-94																			
	04-Oct-94																			

LL-DS3-0m denotes: Lochaber Lake - Deep Station 3 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Stations 4 & 5

STATION	Date	Temp. (C)	DO	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Between LL-DS4 and Inlet #1	13-Jul-94				7.3	9.0	60.0		7.0	0.7	0.009	0.230			3.2	0.009	0.100	<0.01
LL- DS4- 0m	13-Jul-94	22.5	9.2	3.7	7.0	9.0	55.0		7.0	0.7	0.007	0.230	1.9	0.7	3.6	<0.001	0.100	<0.01
LL- DS4- 5.5m (Bottom 7m)	13-Jul-94	22.1	8.8		7.0	9.0	54.0		10.0	0.7	0.007	0.230	1.7	0.7	3.6	<0.001	0.110	<0.01
LL- DS5- 0m	26-Jul-94	23.0	9.3	3.2	7.3	8.0	56.0		9.0	0.5	0.003	0.230	2.7	0.9	2.8	<0.001	0.090	<0.01
LL- DS5- 6m	26-Jul-94	22.1	9.2		6.7	8.0	57.0		10.0	0.5	0.004	0.270	2.7	1.5	2.6	<0.001	0.160	0.02
LL- DS5- 12m (Bottom 13m)	26-Jul-94	11.8	10.1		6.8	8.0	55.0		11.0	0.4	0.006	0.280			2.0	<0.001	0.210	<0.01

LL-DS4-0m denotes: Lochaber Lake - Deep Station 4 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Stations 4 & 5

STATION	Date	As	Fe	Mn	Pb-HGA	Cu	Zn	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Between LL-DS4 and Inlet #1	13-Jul-94																		
LL- DS4- 0m	13-Jul-94																		
LL- DS4- 5.5m (Bottom 7m)	13-Jul-94																		
LL- DS5- 0m	26-Jul-94																		
LL- DS5- 6m	26-Jul-94																		
LL- DS5- 12m (Bottom 13m)	26-Jul-94																		

LL-DS4-0m denotes: Lochaber Lake - Deep Station 4 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Stations 4 & 5

STATION	Date	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev.	Ion sum	Th. Cond	Sat pH	Lang @5	Lang @20	Lang @50
Between LL-DS4 and Inlet #1	13-Jul-94																			
LL- DS4- 0m	13-Jul-94																			
LL- DS4- 5.5m (Bottom 7m)	13-Jul-94																			
LL- DS5- 0m	26-Jul-94																			
LL- DS5- 6m	26-Jul-94																			
LL- DS5- 12m (Bottom 13m)	26-Jul-94																			

LL-DS4-0m denotes: Lochaber Lake - Deep Station 4 - 0 meters depth

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - April 26,1994

LOCATION	Depth (m)	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	5.5	13.8	108	3.5	6.9	7.0	53	15	15	1.1	0.009	0.240	0.9	0.4	3.7	<0.001	0.150	<0.01
	2.0	5.0	13.8	108															
	4.0	5.0	14.0	109															
	6.0	5.0	14.0	109															
	8.0	5.0	14.0	109															
	10.0	5.0	14.0	109															
	12.0	5.0	14.0	109															
	14.0	5.0	14.0	109															
	16.0	4.8	13.8	108															
	18.0	4.8	13.9	108															
	20.0	4.8	13.9	108															
	22.0	4.8	13.9	108															
	24.0	4.6	13.9	107															
	26.0	4.6	13.8	106		6.9	7.0	53	15	14	1.0	0.009	0.220	0.6	0.5	3.7	<0.001	0.150	<0.01
	28.0	4.6	13.8	106															
	28.5	4.6	13.5	104															
Station 2	0.0	5.5	13.3	105	4.0	7.0	7.0	53	15	12	1.3	0.003	0.220	1.0	0.6	3.5	<0.001	0.150	<0.01
	2.0	5.5	13.2	104															
	4.0	5.2	13.2	104															
	5.0																		
	6.0	5.2	13.2	104															
	8.0	5.2	13.2	104															
	10.0	5.0	13.0	102															
	12.0	5.0	13.0	102															
	14.0	5.0	12.9	101															
	15.0																		
	16.0	5.0	12.9	101															
	18.0	5.0	12.9	101															
	20.0	5.0	12.9	101															
	22.0	5.0	12.7	99															
	24.0	5.0	12.8	100		7.0	7.0	53	14	14	1.2	0.004	0.220	0.9	0.5	3.5	<0.001	0.150	<0.01
	25.0																		
	26.0	5.0	12.8	100															
	28.0	5.0	12.7	99															
	30.0	5.0	12.7	99															
	32.0	5.0	12.7	99															
	34.0	5.0	12.7	99															
	35.0																		
	36.0	5.0	12.6	98															
	38.0	5.0	12.6	98															
	40.0	5.0	12.6	98															
	42.0	5.0	12.6	98															
	44.0	5.0	12.6	98															
	45.0																		
	46.0	4.9	12.6	98		6.9	7.0	53	15	11	1.2	0.009	0.240	0.7	0.6	3.6	<0.001	0.110	<0.01
	47.5																		
Station 3	0.0	5.5	13.4	106	3.7	7.0	7.0	53	15	13	1.2	0.009	0.220	1.3	0.8	3.1	<0.001	0.150	0.010
	2.0	5.5	13.3	105															
	4.0	5.5	13.3	105															
	6.0	5.5	13.2	104															
	8.0	5.5	13.2	104															
	10.0	5.5	13.2	104															
	12.0	5.5	13.2	104															
	14.0	5.5	13.1	103															
	16.0	5.3	13.0	102															
	18.0	5.3	13.0	102															
	20.0	5.3	12.9	102															
	22.0	5.0	12.9	101															
	24.0	5.0	12.9	101															
	26.0	5.0	12.8	100		7.0	7.0	53	15	14	1.2	0.009	0.220	1.2	0.5	3.1	<0.001	0.150	<0.01
	28.0	5.0	12.8	100															
	28.5	5.0	12.6	98															

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - April 26,1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	Al	B	Ba	Be	Cd-HGA	Cr	Co	Ni	Sb	Se	Sn	V
Station 1	0.0	0.480	0.037	0.021		0.002	0.013												
	2.0																		
	4.0																		
	6.0																		
	8.0																		
	10.0																		
	12.0																		
	14.0																		
	16.0																		
	18.0																		
	20.0																		
	22.0																		
	24.0																		
	26.0		0.035	0.024		<0.0020	<0.005												
	28.0																		
	28.5																		
Station 2	0.0	<0.002	0.039	0.024	<0.002	<0.0020	0.008	0.046	<0.10		<0.005	<0.002		<0.002	<0.002	<0.050	<0.002	<0.05	0.002
	2.0																		
	4.0																		
	5.0																		
	6.0																		
	8.0																		
	10.0																		
	12.0																		
	14.0																		
	15.0																		
	16.0																		
	18.0																		
	20.0																		
	22.0																		
	24.0	<0.002	0.042	0.027	<0.002	<0.0020	0.014	0.086	<0.10	0.011	<0.005	<0.002	<0.002	<0.002	<0.002	<0.050	<0.002	<0.05	<0.002
	25.0																		
	26.0																		
	28.0																		
	30.0																		
	32.0																		
	34.0																		
	35.0																		
	36.0																		
	38.0																		
	40.0																		
	42.0																		
	44.0																		
	45.0																		
	46.0	<0.002	0.048	0.025	<0.002	0.003	0.010	0.081	<0.10	0.011	<0.005	<0.002	<0.002	<0.002	0.003	<0.050	<0.002	<0.05	<0.002
	47.5																		
Station 3	0.0					0.013	0.008												
	2.0																		
	4.0																		
	6.0																		
	8.0																		
	10.0																		
	12.0																		
	14.0																		
	16.0																		
	18.0																		
	20.0																		
	22.0																		
	24.0																		
	26.0		0.037	0.023		<0.002	0.008												
	28.0																		
	28.5																		

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - April 26,1994

LOCATION	Depth (m)	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0	4.4	0.4	4.6	0.9	0.000	6.990	7.0	6.5	2.4	0.500	0.480	2.4	0.11	30.4	56.2	10.3	-3.4	-3.0	-2.5
	2.0																			
	4.0																			
	6.0																			
	8.0																			
	10.0																			
	12.0																			
	14.0																			
	16.0																			
	18.0																			
	20.0																			
	22.0																			
	24.0																			
	26.0	4.3	0.4	4.5	0.9	0.010	6.990	7.0		2.4	0.500	0.490	1.0	0.11	30.4	56.3	10.3	-3.4	-3.0	-2.4
	28.0																			
	28.5																			
Station 2	0.0	4.2	0.4	4.4	0.9	0.010	6.990	6.0		2.4	0.480	0.440	4.2	0.11	28.5	52.6	10.3	-3.3	-3.0	-2.4
	2.0																			
	4.0																			
	5.0																			
	6.0																			
	8.0																			
	10.0																			
	12.0																			
	14.0																			
	15.0																			
	16.0																			
	18.0																			
	20.0																			
	22.0																			
	24.0	4.2	0.3	4.4	0.9	0.010	6.990	6.0	5.9	2.4	0.480	0.440	4.0	0.11	28.2	52.1	10.3	-3.4	-3.0	-2.4
	25.0																			
	26.0																			
	28.0																			
	30.0																			
	32.0																			
	34.0																			
	35.0																			
	36.0																			
	38.0																			
	40.0																			
	42.0																			
	44.0																			
	45.0																			
	46.0	4.3	0.4	4.4	0.9	0.010	6.990	10.0	6.2	2.4	0.490	0.530	4.3	0.11	32.8	59.4	10.3	-3.4	-3.1	-2.5
	47.5																			
Station 3	0.0	4.3	0.4	4.4	0.9	0.001	6.990	6.0	6.6	2.4	0.490	0.460	2.9	0.11	29.2	54.2	10.3	-3.3	-2.9	-2.4
	2.0																			
	4.0																			
	6.0																			
	8.0																			
	10.0																			
	12.0																			
	14.0																			
	16.0																			
	18.0																			
	20.0																			
	22.0																			
	24.0																			
	26.0	4.3	0.4	4.5	0.9	0.010	6.990	7.0	6.7	2.4	0.490	0.490	0.8	0.11	30.1	56.2	10.3	-3.3	-3.0	-2.4
	28.0																			
	28.5																			

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - May 17,1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	8.0	12.6	106	2.6	6.9	9.0	52	15	15	1.3	0.009	0.280	1.0	0.1	4.1	<0.01	0.130	<0.05
	2.0	8.0	12.6	106															
	4.0	8.0	12.6	106															
	5.0					6.8	9.0	52	15	15	1.2	0.008	0.280	0.9	0.3	3.9	<0.01	0.130	<0.05
	6.0	8.0	12.5	105															
	8.0	8.0	12.5	105															
	10.0	7.5	12.5	103															
	12.0	7.5	12.5	103															
	14.0	7.0	12.5	103															
	16.0	7.0	12.5	103		6.9	9.0	54	15	14	1.0	0.009	0.270			4.1	<0.01	0.140	<0.05
	17.0	6.8	12.2	99															
Station 2	0.0	7.5	12.4	102	2.7	6.8	8.0	53	15	12	1.3	0.007	0.270	1.1	0.2	3.9	<0.001	0.140	<0.05
	2.0																		
	4.0	7.5	12.2	101															
	5.0					6.8	8.0	52	15	14	1.1	0.008	0.280	1.3	0.3	3.7	<0.01	0.140	<0.05
	6.0																		
	8.0	7.5	12.2	101															
	10.0																		
	12.0	7.5	12.2	101															
	14.0																		
	15.0																		
	16.0	7.5	12.2	101															
	18.0																		
	20.0	7.5	12.1	100															
	22.0																		
	24.0	7.5	12.1	100															
	25.0																		
	26.0																		
	28.0	7.5	12.0	99															
	30.0																		
	35.0																		
	40.0					6.7	8.0	54	14	13	0.8	0.007	0.280			3.5	<0.01	0.140	<0.05
	45.0																		
	47.0																		
Station 3	0.0	7.8	12.2	102	2.7	6.8	9.0	53	14	13	1.0	0.008	0.280	1.6	0.1	3.7	<0.01	0.130	<0.01
	2.0	7.8	12.2	102															
	4.0	7.8	12.2	102															
	6.0	7.8	12.2	102															
	7.0	7.8	11.5	96															

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - May 17,1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0		0.040	0.020		<0.01	<0.01														
	2.0																				
	4.0																				
	5.0		0.030	0.020		<0.01	<0.01														
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0		0.030	0.020		<0.01	0.010														
	17.0																				
Station 2	0.0		0.020	0.020		<0.01	<0.01														
	2.0																				
	4.0																				
	5.0		0.030	0.020	<0.002	<0.01	<0.01			0.088	<1.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	25.0																				
	26.0																				
	28.0																				
	30.0																				
	35.0																				
	40.0		0.020	0.020		<0.01	<0.01														
	45.0																				
	47.0																				
Station 3	0.0		0.020	0.020		<0.01	0.080														
	2.0																				
	4.0																				
	6.0																				
	7.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - May 17,1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0	3.6	0.3	4.6	0.8	0.010	8.990	6.000	5.6		2.4	0.460	0.480	2.5	0.110	29.2	52.9	10.2	-3.3	-2.9	-2.4
	2.0																				
	4.0																				
	5.0	3.7	0.3	4.6	0.8	0.010	8.990	6.000	5.5		2.4	0.460	0.480	1.8	0.110	29.2	52.9	10.2	-3.4	-3.0	-2.5
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0	3.7	0.3	4.5	0.8	0.010	8.990	6.000	5.9		2.4	0.460	0.490	3.2	0.110	29.6	53.7	10.2	-3.3	-2.9	-2.4
	17.0																				
Station 2	0.0	3.7	0.3	4.5	0.8	0.000	7.990	7.000	5.4		2.4	0.460	0.480	1.8	0.110	29.5	53.3	10.2	-3.4	-3.1	-2.5
	2.0																				
	4.0																				
	5.0	3.7	0.3	4.5	0.8	0.000	7.990	6.000	5.4		2.4	0.460	0.460	0.5	0.110	28.6	51.8	10.2	-3.4	-3.1	-2.5
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	25.0																				
	26.0																				
	28.0																				
	30.0																				
	35.0																				
	40.0	3.6	0.3	4.5	0.8	0.000	7.990	6.000	5.9		2.5	0.450	0.470	1.9	0.110	29.0	52.5	10.2	-3.5	-3.2	-2.6
	45.0																				
	47.0																				
Station 3	0.0	3.6	0.3	4.5	0.8	0.010	8.990	6.000	6.0		2.4	0.450	0.490	4.3	0.110	29.5	53.5	10.2	-3.4	-3.0	-2.5
	2.0																				
	4.0																				
	6.0																				
	7.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June 1, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	N/R	N/R		N/R														
	2.0	N/R	N/R																
	4.0	N/R	N/R																
	6.0	N/R	N/R																
	8.0	N/R	N/R																
	10.0	N/R	N/R																
	12.0	N/R	N/R																
	14.0	N/R	N/R																
	16.0	N/R	N/R																
	17.0	N/R	N/R																
Station 2	0.0	10.5	11.8	105	3.6	7.0	7.0	53		15	0.8	0.009	0.260	1.0	0.3	4.2	<0.001	0.150	<0.01
	2.0	10.5	11.8	105															
	4.0	10.5	11.8	105															
	5.0			105															
	6.0	10.5	11.8	105															
	7.0	10.5	11.8	105		6.9	8.0	53	15	14	0.8	0.008	0.240	0.7	0.6	4.1	<0.01	0.150	<0.05
	8.0	10.5	11.8	105															
	10.0	10.5	11.8	105															
	12.0	10.5	11.8	105															
	14.0	10.0	11.8	104															
	15.0																		
	16.0	10.0	11.8	104															
	18.0	10.0	11.8	104															
	20.0	10.0	11.8	104															
	22.0	9.5	11.8	103															
	24.0	9.0	11.7	101															
	25.0																		
	26.0																		
	28.0																		
	30.0	8.5	11.7	99															
	32.0																		
	34.0	7.8	11.7	99															
	35.0																		
	36.0																		
	38.0	7.2	11.7	95															
	40.0																		
	42.0	7.0	11.6	95		7.0	7.0	52		14	0.8	0.008	0.250			4.1	<0.001	0.150	<0.01
	44.0																		
	45.0																		
	46.0	7.0	11.4	93															
	47.5																		
Station 3	0.0																		
	5.0																		
	10.0																		
	15.0																		
	20.0																		
	25.0																		
	30.0																		

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June 1, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0																				
	17.0																				
Station 2	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	7.0		0.020	0.010	<0.002	<0.01	<0.01			0.044	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	25.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				
	34.0																				
	35.0																				
	36.0																				
	38.0																				
	40.0																				
	42.0																				
	44.0																				
	45.0																				
	46.0																				
	47.5																				
Station 3	0.0																				
	5.0																				
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June 1, 1994

LOCATION	Depth [m]	Va	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																					
	2.0																					
	4.0																					
	6.0																					
	8.0																					
	10.0																					
	12.0																					
	14.0																					
	16.0																					
	17.0																					
Station 2	0.0																					
	2.0																					
	4.0																					
	5.0																					
	6.0																					
	7.0	<0.01	4.1	0.4	4.6	0.9	0.010	7.990	6.000	5.9		2.5	0.490	0.470	2.2	0.110	29.9	54.6	10.2	-3.3	-3.0	-2.4
	8.0																					
	10.0																					
	12.0																					
	14.0																					
	15.0																					
	16.0																					
	18.0																					
	20.0																					
	22.0																					
	24.0																					
	25.0																					
	26.0																					
	28.0																					
	30.0																					
	32.0																					
	34.0																					
	35.0																					
	36.0																					
	38.0																					
	40.0																					
	42.0																					
	44.0																					
	45.0																					
	46.0																					
	47.5																					
Station 3	0.0																					
	5.0																					
	10.0																					
	15.0																					
	20.0																					
	25.0																					
	30.0																					

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June15, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	14.5	11.1	108	3.5	7.2	8.0	54		11	0.7	0.011	0.250	1.7	1.1	5.4	<0.001	0.140	<0.01
	2.0	14.0	11.1	107															
	4.0	13.5	11.1	106															
	6.0	13.5	11.2	107															
	7.0					7.0	8.0	54		12	0.7	0.007	0.250	1.1	0.6	5.6	<0.001	0.140	<0.01
	8.0	13.0	11.2	106															
	10.0	12.5	11.2	105															
	12.0	11.3	11.2	103															
	14.0					6.9	8.0	53		14	0.8	0.007	0.250			5.4	<0.001	0.150	0.010
	15.0	10.5	11.2	100															
	16.0	10.3	11.2	100															
	18.0																		
Station 2	0.0	14.0	11.0	106	3.6	7.0	8.0	53		12	0.6	0.007	0.250	1.8	1.1	5.5	<0.001	0.140	<0.01
	5.0	13.0	10.9	103															
	7.0					6.9	8.0	53	16	11	0.6	0.010	0.240	1.0	0.8	5.2	<0.01	0.140	<0.05
	10.0	12.5	10.9	102															
	15.0	11.0	11.1	100															
	20.0	9.5	11.3	98															
	25.0	8.5	11.5	98															
	30.0	8.0	11.5	97															
	35.0	7.5	11.5	96															
	40.0	7.5	11.5	96															
	45.0	7.5	11.3	94		6.8	8.0	53		12	0.7	0.010	0.250			5.2	<0.001	0.160	<0.01
	47.0																		
Station 3	0.0	13.5	10.9	104	3.8	7.0	8.0	52		11	0.6	0.009	0.240	1.7	0.8	5.6	<0.001	0.140	<0.01
	2.0	13.2	10.9	104															
	4.0	13.0	11.0	104															
	6.0	12.5	11.1	104															
	7.0					7.1	8.0	52		12	0.6	0.010	0.240	1.6	0.8	5.4	<0.001	0.140	<0.01
	8.0	12.2	11.0	101															
	10.0	12.0	10.9	101															
	12.0	12.0	10.9	101															
	14.0	12.0	10.9	101															
	16.0	12.0	10.8	100															
	18.0	11.5	10.8	99															
	20.0	10.0	10.9	97															
	22.0	9.0	11.1	96															
	24.0	8.0	11.2	94															
	26.0	7.8	11.3	96															
	28.0	7.5	11.3	94															
	30.0	7.5	11.3	94		6.8	7.0	52		12	0.8	0.010	0.250			5.4	<0.001	0.160	<0.01
	32.0	BOTTOM																	

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June15, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HGA	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
Station 2	0.0																				
	5.0																				
	7.0		<0.02	<0.01	<0.002	0.010	0.020			0.036	<0.10	0.012	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.0																				
Station 3	0.0																				
	2.0																				
	4.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June15, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
Station 2	0.0																				
	5.0																				
	7.0	4.0	0.4	4.9	0.9	0.010	7.990	7.000	6.5		2.4	0.500	0.510	0.5	0.110	31.5	57.9	10.2	-3.3	-2.9	-2.4
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.0																				
Station 3	0.0																				
	2.0																				
	4.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June 27, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	19.5	10.4	113	3.4	7.1	8.0	52		12	0.6	0.006	0.220	1.5	0.7	4.3	<0.001	0.120	<0.01
	2.0																		
	4.0																		
	5.0	18.5	10.4	111															
	6.0																		
	7.0					7.0	8.0	54		14	0.8	0.007	0.240	1.2	0.8	4.5	<0.001	0.130	0.01
	8.0																		
	10.0	13.2	11.1	106															
	12.0					6.9	8.0	52		13	0.6	0.006	0.250			4.4	<0.001	0.150	<0.01
	14.0																		
	15.0	10.8	11.2	102		7.2	9.0	52		12	0.8	0.006	0.240	1.4	0.6	4.3	<0.001	0.120	<0.01
	16.0																		
Station 2	0.0	19.5	10.1	110	4.4	7.2	9.0	52		12	0.8	0.006	0.240	1.4	0.6	4.3	<0.001	0.120	<0.01
	5.0	18.0	10.1	106															
	9.0					6.9	8.0	68	14	11	0.4	0.006	0.250	0.9	0.9	4.3	<0.001	0.140	0.01
	10.0	13.5	10.9	104															
	15.0	11.0	11.3	102															
	20.0	9.5	11.5	101															
	25.0	8.5	11.8	101															
	30.0	7.8	11.8	98															
	35.0	7.8	11.7	98															
	40.0	7.8	11.6	97		6.8	8.0	51		11	0.6	0.005	0.260			3.9	<0.001	0.170	<0.01
	45.0	7.5	11.6	97															
	48.0	7.5	11.5	96															
Station 3	0.0	19.3	10.2	110	4.3	7.2	9.0	52		12	0.5	0.006	0.230	1.4	0.6	3.8	<0.001	0.120	<0.01
	5.0	17.0	10.4	107															
	8.0					7.0	8.0	52		11	0.5	0.005	0.250	1.5	0.6	3.9	<0.001	0.130	<0.01
	10.0	13.5	10.9	104															
	15.0	11.5	11.2	103															
	20.0	10.0	11.3	100															
	25.0	9.0	11.5	99															
	30.0	7.9	11.6	98		6.9	8.0	52		11	0.5	0.006	0.260			4.1	<0.001	0.170	<0.01

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June 27, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
Station 2	0.0																				
	5.0																				
	9.0		0.020	0.010	<0.002	<0.01	<0.01			0.034	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	48.0																				
Station 3	0.0																				
	5.0																				
	8.0																				
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - June 27, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
Station 2	0.0																				
	5.0																				
	9.0	3.7	0.3	4.2	0.9	0.010	7.990	7.000				0.450	0.510	5.5	0.110	30.3	55.0	10.3	-3.4	-3.0	-2.4
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	48.0																				
Station 3	0.0																				
	5.0																				
	8.0																				
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 13, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	21.6	9.4	106	4.1	7.1	8.0	56		8	0.5	0.007	0.220	2.2	0.7	3.2	<0.001	0.110	<0.01
	2.0																		
	4.0																		
	5.0	21.5	9.2	103															
	6.0																		
	8.0					7.2	9.0	54		7	0.6	0.010	0.240	1.3	0.9	3.2	<0.001	0.110	0.01
	10.0	17.5	8.8	92															
	12.0																		
	14.0					6.8	8.0	52		11	0.4	0.012	0.280			3.4	<0.001	0.160	<0.01
	15.0	11.5	10.3	95															
	16.0	11.0	10.3	93															
	17.0																		
Station 2	0.0	21.2	9.4	104	4.5	7.1	8.0	56		12	0.5	0.008	0.220	1.9	0.6	3.4	<0.001	0.110	<0.01
	5.0	20.5	9.2	101															
	9.0					7.0	8.0	52	18	10	0.4	0.006	0.250	0.8	0.8	3.4	<0.01	0.130	0.02
	10.0	15.6	10.0	100															
	15.0	11.3	10.8	98															
	20.0	10.0	11.1	98															
	25.0	8.5	11.5	98															
	30.0	7.8	11.4	96															
	35.0	7.7	11.4	97															
	40.0	7.5	11.2	93															
	45.0	7.5	11.0	92		6.8	8.0	53		10	0.4	0.013	0.260			3.4	<0.001	0.160	<0.01
	47.0	BOTTOM																	
Station 3	0.0	21.0	9.6	107	4.5	7.1	8.0	0		9	0.4	0.010	0.230	1.7	1.0		<0.001	0.110	<0.01
	5.0	20.2	9.5	103															
	9.0					7.0	9.0	56		9	0.3	0.010	0.260	0.5	0.7	4.0	<0.001	0.140	0.01
	10.0	14.0	10.3	99															
	15.0	11.0	11.0	99															
	20.0	9.8	11.2	98															
	25.0	8.8	11.4	99															
	28.0	8.2	11.4	96		6.8	8.0	54		8	0.3	0.009	0.270			3.4	<0.001	0.160	<0.01
	30.0	BOTTOM																	
Station 4	0.0	22.5	9.2	106	3.7	7.0	9.0	55		7	0.7	0.007	0.230	1.9	0.7	3.6	<0.001	0.100	<0.01
	2.0	22.2	9.1	103															
	4.0	22.1	9.1	103															
	5.5					7.0	9.0	54		10	0.7	0.007	0.230	1.7		3.6	<0.001	0.110	<0.01
	6.0	22.1	8.8	100															
	6.5	BOTTOM																	
Station 5	0.0	N/R																	
	2.0	N/R																	
	4.0	N/R																	
	6.0	N/R																	
	8.0	N/R																	

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 13, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	17.0																				
Station 2	0.0																				
	5.0																				
	9.0		<0.02	0.01	<0.002	<0.01	<0.01			0.030	<0.10	0.011	<0.005	<0.002		<0.05	<0.02	<0.05	<0.002		<0.01
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.0																				
Station 3	0.0																				
	5.0																				
	9.0																				
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	28.0																				
	30.0																				
Station 4	0.0																				
	2.0																				
	4.0																				
	5.5																				
	6.0																				
	6.5																				
Station 5	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				

N/R refers to data not recorded

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 13, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	17.0																				
Station 2	0.0																				
	5.0																				
	9.0	4.2	0.4	5.5	1.0	0.010	7.990	7.000	6.8		<0.5	0.550	0.520	3.4	0.110	30.3	60.9	10.2	-3.2	-2.8	-2.2
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.0																				
Station 3	0.0																				
	5.0																				
	9.0																				
	10.0																				
	15.0																				
	20.0																				
	25.0																				
	28.0																				
	30.0																				
Station 4	0.0																				
	2.0																				
	4.0																				
	5.5																				
	6.0																				
	6.5																				
Station 5	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				

N/R refers to data not recorded

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 26, 1994

LOCATION	Depth (m)	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk.	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Phcophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	24.2	8.9	105	3.6	8.4	9.0	53		11	0.4	0.005	0.220	2.1	1.2	4.3	<0.001	0.090	<0.01
	2.0																		
	4.0																		
	5.0	23.7	8.8	104															
	6.0																		
	7.0	21.8	8.6	98		7.7	8.0	53		10	0.5	0.008	0.230	2.3	1.1	4.3	<0.001	0.100	0.010
	8.0																		
	9.0	18.8	8.3	89															
	10.0	16.5	8.3	85															
	12.0	13.0	9.5	90															
	14.0	11.2	9.5	86															
	15.0					7.2	8.0	52		9	0.6	0.006	0.280			4.1	<0.001	0.190	<0.01
	16.0	10.5	9.5	85															
	16.5	BOTTOM																	
Station 2	0.0	24.0	9.0	106	3.9	7.2	8.0	52		11	0.5	0.003	0.220	2.8	1.2	4.1	<0.001	0.100	<0.01
	5.0	23.0	8.9	102															
	6.0	22.0	8.7	99															
	8.0	20.5	8.4	92		7.0	8.0	55	10	9	0.5	0.004	0.240	2.2	1.1	4.1	<0.01	0.110	<0.05
	10.0	16.5	8.9	91															
	12.0	13.0	9.8	93															
	14.0	11.5	10.2	94															
	15.0																		
	16.0	10.9	10.3	93															
	18.0	10.5	10.4	93															
	20.0	10.0	10.7	95															
	25.0	8.5	11.2	96															
	30.0	8.0	11.2	94															
	35.0	7.5	11.2	95															
	40.0	7.5	10.8	90												4.1	0.001	0.200	<0.01
	45.0	7.5	10.5	88		6.9	8.0	52		11	0.6	0.005	0.280						
	47.0																		
Station 3	0.0	23.6	9.0	105	3.9	7.2	8.0	52		10	0.5	0.004	0.210	2.8	0.8	4.1	<0.001	0.100	<0.01
	2.0	23.0	8.9	102															
	4.0	22.5	8.9	102															
	5.0																		
	6.0	22.0	8.7	99															
	8.0	20.0	8.5	92															
	9.0					6.9	8.0	52		10	0.5	0.008	0.280	0.7	0.7	4.1	<0.001	0.170	0.020
	10.0	14.5	9.3	90															
	12.0	12.0	10.1	94															
	14.0	11.5	10.1	93															
	15.0																		
	16.0	10.8	10.2	92															
	18.0	10.5	10.5	94															
	20.0	10.0	10.2	90															
	22.0	9.5	10.5	92															
	24.0	9.0	10.5	91															
	25.0																		
	26.0	8.5	10.6	91												3.3	<0.001	0.190	<0.01
	28.0	8.2	10.8	92		6.8	7.0	53		11	0.5	0.005	0.270						
	30.0	8.0	10.2	86															
	32.0	7.6	10.7	89															
	33.0	7.8	10.7	89															
	33.5	BOTTOM																	

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 26, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 4	0.0	N/R																	
	2.0	N/R																	
	4.0	N/R																	
	6.0	N/R																	
	8.0	N/R																	
Station 5	0.0	23.0	9.3	107	3.2	7.3	8.0	56		9	0.5	0.003	0.230	2.7	0.9	2.8	<0.001	0.090	<0.01
	2.0	22.4	9.3	107															
	4.0	22.1	9.4	107															
	6.0	22.1	9.2	105										2.7	1.5				
	8.0	20.5	8.8	97															
	9.0					6.7	8.0	57		10	0.5	0.004	0.270			2.6	<0.001	0.160	0.020
	10.0	13.8	9.8	93															
	11.0					6.8	8.0	55		11	0.4	0.006	0.280			2.0	<0.001	0.210	<0.01
	12.0	11.8	10.1	93															
	12.8	BOTTOM																	

N/R refers to data not recorded

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 26, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	7.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	16.5																				
Station 2	0.0																				
	5.0																				
	6.0																				
	8.0		0.020	0.020	<0.002	0.010	<0.01			0.047	<0.10	0.011	5.000	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.0																				
Station 3	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	25.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				
	33.0																				
	33.5																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 26, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 4	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
Station 5	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	11.0																				
	12.0																				
	12.8																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 26, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	7.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	16.5																				
Station 2	0.0																				
	5.0																				
	6.0																				
	8.0	4.7	0.4	2.3	1.0	0.010	7.990	4.000	6.4		1.6	0.410	0.440	3.2	0.110	25.7	48.0	10.5	-3.5	-3.2	-2.6
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.0																				
Station 3	0.0																				
	2.0																				
	4.0																				
	5.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	25.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				
	33.0																				
	33.5																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - July 26, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 4	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
Station 5	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	11.0																				
	12.0																				
	12.8																				

N/R refers to data not recorded

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - August 9, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	22.0	9.1	103	3.4	7.3	9.0	54		10	0.5	0.006	0.200	1.9	1.3	3.2	<0.001	0.070	0.02
	2.0	22.0	9.0	102															
	4.0	21.9	9.0	102															
	6.0	21.5	8.7	98										1.2	1.3				
	7.0																		
	8.0	20.5	8.2	90															
	10.0	17.9	8.3	87															
(thermocline)	11.0					6.9	8.0	52		9	0.6	0.006	0.270			3.4	<0.001	0.170	<0.01
	12.0	12.5	9.6	90															
	14.0	11.5	9.6	88															
	15.0					6.8	8.0	52		11	0.6	0.007	0.270			3.4	<0.001	0.180	<0.01
	16.0	11.0	9.6	87															
	17.0																		
Station 2	0.0	22.0	8.9	101	3.5	7.0	8.0	52		10	0.5	0.006	0.190	1.7	1.5	4.1	<0.001	0.070	0.01
	2.0																		
	4.0	22.0	9.0	102															
	5.0													1.6	1.5				
	7.0																		
	8.0	22.0	9.0	102															
	10.0	17.5	8.4	88															
(thermocline)	11.0					6.8	8.0	62	15	10	0.4	0.006	0.260			3.6	<0.01	0.150	<0.05
	12.0	13.0	9.8	93															
	15.0																		
	16.0	11.0	10.4	94															
	20.0	10.0	11.0	97															
	24.0	9.0	10.4	90															
	28.0	8.0	11.4	96															
	32.0	8.0	11.4	96															
	36.0	7.5	11.2	93															
	40.0	7.5	10.8	89															
	42.0	7.5	10.4	86															
	46.0					6.8	8.0	52		9	3.8	0.022	0.260			3.4	0.001	0.170	<0.01
	47.5	BOTTOM																	
Station 3	0.0	22.0	9.0	102	3.7	7.1	8.0	52		10	0.4	0.006	0.200	1.6	1.5	3.4	<0.001	0.070	0.02
	4.0	22.0	9.0	102										1.7	1.4				
	7.0																		
	8.0	22.0	9.0	102															
	10.0	20.5	8.8	97															
(thermocline)	11.0					6.9	8.0	53		11	0.4	0.008	0.240			3.4	<0.001	0.130	0.02
	12.0	14.5	9.4	91															
	16.0	11.0	10.3	93															
	20.0	10.0	10.8	96															
	24.0	8.0	11.2	94															
	28.0	8.0	11.3	95															
	30.0	8.0	11.2	94															
	32.0	BOTTOM				6.8	7.0	52		9	0.5	0.007	0.290			3.6	<0.001	0.170	<0.01

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - August 9, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
(thermocline)	11.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	17.0																				
Station 2	0.0																				
	2.0																				
	4.0																				
	5.0																				
	7.0																				
	8.0																				
	10.0																				
(thermocline)	11.0		<0.02	<0.01	<0.002	<0.01	<0.01			0.035	<0.10	0.012	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	12.0																				
	15.0																				
	16.0																				
	20.0																				
	24.0																				
	28.0																				
	32.0																				
	36.0																				
	40.0																				
	42.0																				
	46.0																				
	47.5																				
Station 3	0.0																				
	4.0																				
	7.0																				
	8.0																				
	10.0																				
(thermocline)	11.0																				
	12.0																				
	16.0																				
	20.0																				
	24.0																				
	28.0																				
	30.0																				
	32.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - August 9, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	7.0																				
	8.0																				
	10.0																				
(thermocline)	11.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	17.0																				
Station 2	0.0																				
	2.0																				
	4.0																				
	5.0																				
	7.0																				
	8.0																				
	10.0																				
(thermocline)	11.0	4.0	0.3	4.7	0.8	0.000	7.990	7.000	4.2		2.1	0.480	0.450	4.1	0.110	28.6	51.9	10.2	-3.4	-3.1	-2.5
	12.0																				
	15.0																				
	16.0																				
	20.0																				
	24.0																				
	28.0																				
	32.0																				
	36.0																				
	40.0																				
	42.0																				
	46.0																				
	47.5																				
Station 3	0.0																				
	4.0																				
	7.0																				
	8.0																				
	10.0																				
(thermocline)	11.0																				
	12.0																				
	16.0																				
	20.0																				
	24.0																				
	28.0																				
	30.0																				
	32.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - August 24, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	20.0	9.0	98	4.5	7.0	8.0	54		10	0.5	0.009	0.190	1.5	1.0	3.2	<0.001	0.070	0.01
	2.0	20.0	9.0	98															
	4.0	20.5	9.0	99															
	6.0	20.0	9.0	98															
	8.0	20.0	9.0	98															
	9.0													1.1	0.9				
	10.0	18.0	8.3	87															
	12.0	12.0	9.0	83		6.7	8.0	53		11	0.6	0.009	0.280			3.2	<0.001	0.180	<0.01
	14.0	11.0	9.2	83															
	15.0					6.7	8.0	52		9	0.8	0.010	0.280			3.2	<0.001	0.180	<0.01
	16.0	10.5	9.3	83															
	18.0	10.5	9.3	83															
Station 2	0.0	20.5	9.4	103	4.8	6.9	8.0	53		10	0.5	0.010	0.190	2.2	1.3	3.2	<0.001	0.070	<0.01
	4.0	20.5	9.3	102															
	8.0	20.3	9.0	98															
	9.0													2.0	1.4				
	10.0	19.0	9.0	97															
	12.0	14.0	9.0	87		6.7	7.0	55	17	12	0.5	0.009	0.270			3.2	<0.01	0.180	<0.05
	14.0	12.0	9.8	91															
	16.0	11.0	10.0	90															
	20.0	10.0	10.2	90															
	24.0	8.0	11.0	92															
	28.0	7.5	11.0	91															
	32.0	7.5	10.8	89															
	36.0	7.5	10.8	89															
	40.0	7.0	10.0	82															
	42.0	7.0	9.8	80															
	45.0					6.9	<1.0	53		10	0.4	0.012	0.270			3.5	<0.001	0.170	<0.01
	47.5	BOTTOM																	
Station 3	0.0	20.5	9.4	103	4.8	7.3	<1.0	53		9	0.7	0.010	0.190	2.0	1.5	3.5	<0.001	0.070	<0.01
	4.0	20.5	9.4	103															
	8.0	20.0	9.3	101															
	9.0													2.0	1.5				
	10.0	20.0	9.2	100															
	12.0	15.0	8.6	84		6.9	<1.0	53		10	0.6	0.010	0.250			3.2	<0.001	0.140	<0.01
	14.0	12.0	9.6	89															
	16.0	11.0	9.8	88															
	20.0	10.0	10.3	91															
	24.0	8.0	10.8	91															
	26.0																		
	28.0	7.8	11.0	91															
	30.0					6.9	7.0	52		11	0.6	0.006	0.290			3.5	<0.001	0.170	<0.01
	32.0	7.5	10.7	88															

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - August 24, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
Station 2	0.0																				
	4.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0		<0.02	<0.01	<0.002	<0.01	<0.01			0.053	<0.10	0.012	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	14.0																				
	16.0																				
	20.0																				
	24.0																				
	28.0																				
	32.0																				
	36.0																				
	40.0																				
	42.0																				
	45.0																				
	47.5																				
Station 3	0.0																				
	4.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0																				
	20.0																				
	24.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - August 24, 1994

LOCATION	Depth (m)	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
Station 2	0.0																				
	4.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0	5.0	0.4	5.1	1.0	0.000	6.990	6.000	5.0		2.4	0.570	0.430	13.5	0.110	29.9	55.6	10.2	-3.5	-3.2	-2.6
	14.0																				
	16.0																				
	20.0																				
	24.0																				
	28.0																				
	32.0																				
	36.0																				
	40.0																				
	42.0																				
	45.0																				
	47.5																				
Station 3	0.0																				
	4.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	16.0																				
	20.0																				
	24.0																				
	26.0																				
	28.0																				
	30.0																				
	32.0																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - September 8, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0.0	18.0	8.9	94	4.6	7.3	9.0	54		10	0.4	0.004	0.180	1.6	0.8	3.6	<0.001	0.070	0.01
	2.0	18.0	8.9	94															
	4.0	18.0	8.9	94															
	6.0	18.0	8.9	94															
	8.0	18.0	8.9	94															
	9.0													1.5	0.8				
	10.0	18.0	8.9	94															
	12.0	14.5	7.9	77		6.8	9.0	52		11	0.7	0.004	0.270			3.8	<0.001	0.180	<0.01
	14.0	11.5	8.4	76															
	15.0					6.8	8.0	55		11	0.6	0.005	0.280			4.0	<0.001	0.180	<0.01
	16.0	10.5	8.0	71															
	18.0																		
Station 2	0.0	18.0	8.9	94	4.9	7.2	9.0	55		9	0.4	0.004	0.190	1.9	1.0	4.0	<0.001	0.070	0.01
	5.0	18.0	8.9	94															
	9.0													1.6	1.4				
	10.0	18.0	9.0	95															
	12.0	17.5	8.8	92															
	13.0	13.0	8.4	79		6.7	8.0	62	15	10	0.5	0.004	0.270			4.0	<0.01	0.170	<0.05
	14.0	11.5	8.7	79															
	15.0	11.0	8.8	79															
	20.0	10.0	9.3	82															
	25.0	8.5	9.8	83															
	30.0	7.5	9.9	83															
	35.0	7.5	9.6	80															
	40.0	7.5	9.2	77															
	45.0	7.5	8.6	72		6.8	8.0	53		11	0.7	0.008	0.280			4.5	<0.001	0.180	<0.01
	47.5	BOTTOM																	
Station 3	0.0	18.1	8.9	94	5.3	6.9	9.0	53		9	0.3	0.005	0.180	1.9	1.1	4.0	<0.001	0.070	<0.01
	2.0	18.1	9.0	95															
	4.0	18.0	9.0	95															
	6.0	18.0	9.0	95															
	8.0	18.0	9.0	95										1.2	1.0				
	10.0	18.0	9.0	95															
	12.0	16.5	8.4	86															
	13.0	13.0	8.4	79		6.8	8.0	52		10	0.4	0.005	0.280			4.5	<0.001	0.180	<0.01
	14.0	11.5	8.6	78															
	16.0	10.5	8.5	76															
	18.0	10.0	8.6	76															
	20.0	9.5	9.1	79															
	22.0	8.8	9.3	80															
	24.0	8.5	9.4	80															
	26.0	8.0	9.6	81															
	28.0	7.5	9.4	78		6.8	8.0	52		11	0.5	0.005	0.280			4.3	<0.001	0.180	<0.01
	29.5	7.5	9.3	78															

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - September 8, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
Station 2	0.0																				
	5.0																				
	9.0																				
	10.0																				
	12.0																				
	13.0		<0.02	<0.01	<0.002	<0.01	<0.01			0.031	<0.10	0.011	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	14.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.5																				
Station 3	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	13.0																				
	14.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	26.0																				
	28.0																				
	29.5																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - September 8, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	9.0																				
	10.0																				
	12.0																				
	14.0																				
	15.0																				
	16.0																				
	18.0																				
Station 2	0.0																				
	5.0																				
	9.0																				
	10.0																				
	12.0																				
	13.0	4.6	0.3	4.4	1.0	0.000	7.990	6.000	5.0		2.3	0.510	0.450	6.5	0.110	29.2	53.6	10.2	-3.5	-3.2	-2.6
	14.0																				
	15.0																				
	20.0																				
	25.0																				
	30.0																				
	35.0																				
	40.0																				
	45.0																				
	47.5																				
Station 3	0.0																				
	2.0																				
	4.0																				
	6.0																				
	8.0																				
	10.0																				
	12.0																				
	13.0																				
	14.0																				
	16.0																				
	18.0																				
	20.0																				
	22.0																				
	24.0																				
	26.0																				
	28.0																				
	29.5																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - September 20, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0	16.5	9.0	92	4.9	7.3	10.0	55		9	0.4	0.004	0.190	2.0	0.9	3.6	<0.001	0.070	<0.01
	2	16.5	9.0	92															
	4	16.5	9.0	92															
	6	16.5	9.0	92															
	8	16.5	9.0	92															
	10	16.2	9.0	91										1.8	1.1				
	12	16.2	9.0	91															
	13	16.0	8.7	88		7.5	9.0	54		10	0.5	0.006	0.190			4.0	<0.001	0.190	<0.01
	14	11.5	8.1	74															
	15	11.0	7.8	70		6.8	8.0	52		10	0.4	0.006	0.280			4.1	<0.001	0.180	<0.01
	16	10.5	7.7	69															
Station 2	0	16.5	9.1	93	4.9	7.2	9.0	54		10	0.3	0.003	0.190	2.2	1.3	3.6	<0.001	0.070	<0.01
	5	16.5	9.0	92															
	10	16.3	9.0	92										2.2	1.2				
	12	16.1	8.9	90															
	13	16.0	8.8	89		6.8	8.0	56	14	<3.0	0.3	0.005	0.190			3.6	<0.01	0.080	<0.05
	14	12.5	8.0	75															
	15	11.2	8.1	73															
	20	9.5	8.6	75															
	25	8.0	9.3	78															
	30	7.5	9.1	75															
	35	7.2	8.8	73															
	39					6.7	8.0	52		9	0.5	0.009	0.270			4.0	<0.001	0.180	<0.01
	40	7.2	8.2	68															
	41	7.2	8.0	66															
Station 3	0	16.5	9.2	94	4.9	7.2	9.0	54		11	0.3	0.003	0.190	2.3	1.1	3.8	<0.001	0.070	<0.01
	2	16.5	9.2	94															
	4	16.5	9.1	93															
	6	16.5	9.1	93															
	8	16.2	9.0	91										2.1	1.1				
	10	16.2	9.0	91															
	12	16.2	9.0	91															
	13	15.0	8.2	80		6.8	8.0	53		12	0.3	0.005	0.230			3.8	<0.001	0.130	<0.01
	14	13.0	7.9	75															
	15	11.5	8.1	74															
	16	10.7	8.3	74															
	18	10.0	8.3	74															
	20	9.5	8.4	73															
	22	8.5	8.7	74															
	24	8.0	9.0	76															
	26	9.1	9.1	78		6.7	8.0	52		11	0.5	0.005	0.280			3.8	<0.001	0.180	<0.01
	28	9.1	9.1	78															
	29	8.8	8.8	75															

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - September 20, 1994

LOCATION	Depth (m)	As	Fe	Mn	Pb-HG	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0																				
	2																				
	4																				
	6																				
	8																				
	10																				
	12																				
	13																				
	14																				
	15																				
	16																				
Station 2	0																				
	5																				
	10																				
	12																				
	13		<0.02	<0.01	<0.002	<0.01	<0.01			0.035	<0.10	0.010	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	14																				
	15																				
	20																				
	25																				
	30																				
	35																				
	39																				
	40																				
	41																				
Station 3	0																				
	2																				
	4																				
	6																				
	8																				
	10																				
	12																				
	13																				
	14																				
	15																				
	16																				
	18																				
	20																				
	22																				
	24																				
	26																				
	28																				
	29																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - September 20, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0																				
	2																				
	4																				
	6																				
	8																				
	10																				
	12																				
	13																				
	14																				
	15																				
	16																				
Station 2	0																				
	5																				
	10																				
	12																				
	13	4.1	0.3	4.2	0.9	0.000	7.990	6.000	5.2		1.3	0.470	0.440	3.0	0.110	27.2	51.5	10.3	-3.5	-3.1	-2.5
	14																				
	15																				
	20																				
	25																				
	30																				
	35																				
	39																				
	40																				
	41																				
Station 3	0																				
	2																				
	4																				
	6																				
	8																				
	10																				
	12																				
	13																				
	14																				
	15																				
	16																				
	18																				
	20																				
	22																				
	24																				
	26																				
	28																				
	29																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - October 4, 1994

LOCATION	Depth [m]	Temp. (C)	DO	% Air Sat	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Station 1	0	15.0	9.8	96	4.4	7.3	9.0	52		10	0.6	0.004	0.240	2.2	0.9	3.0	<0.001	0.070	<0.01
	4	15.0	9.4	92															
	8	15.0	9.2	90															
	9													2.1	1.0				
	12	15.0	9.3	91															
	14	14.5	9.1	88															
	15					6.9	9.0	52		9	1.0	0.006	0.230			3.2	<0.001	0.080	<0.01
	16	11.0	7.6	69															
	22																		
Station 2	0	15.0	9.8	96	4.3	7.1	9.0	51		9	0.4	0.004	0.200	2.6	1.1	2.8	<0.001	0.070	<0.01
	5	15.5	9.5	94															
	9													2.7	1.1				
	10	15.5	9.4	93															
	12	15.2	9.2	91															
	14	15.0	9.0	88															
	15					6.3	9.0	55	16	12	0.6	0.005	0.260			3.0	<0.01	0.150	0.100
	16	11.0	8.3	75															
	18	10.0	8.3	74															
	20	10.0	8.4	74															
	25	8.0	9.0	76															
	30	7.8	9.1	77															
	35	7.0	8.8	72															
	40	7.0	8.4	69															
	42					6.7	9.0	50		10	0.6	0.007	0.290			2.8	<0.001	0.180	<0.01
	44	7.0	8.1	66															
Station 3	0	15.0	9.2	90	4.0	7.1	9.0	52		10	0.4	0.007	0.260	2.4	1.0	3.0	<0.001	0.070	<0.01
	5	15.0	9.3	91															
	8													2.1	1.0				
	10	15.0	9.2	90															
	12	15.0	9.2	90															
	14	14.8	8.7	86															
	15					6.7	9.0	51		11	0.4	0.011	0.290			2.8	<0.001	0.180	0.020
	16	11.0	8.4	76															
	18	10.5	8.3	74															
	20	9.5	8.0	70															
	25	8.0	8.8	74															
	30	7.2	9.0	74		6.7	8.0	51		10	0.5	0.008	0.290			3.0	<0.001	0.180	<0.01
	32	7.0	8.6	71															

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - October 4, 1994

LOCATION	Depth [m]	As	Fe	Mn	Pb-HGA	Cu	Zn	SS	Humic	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Station 1	0																				
	4																				
	8																				
	9																				
	12																				
	14																				
	15																				
	16																				
	22																				
Station 2	0																				
	5																				
	9																				
	10																				
	12																				
	14																				
	15		0.020	<0.01	<0.002	<0.01	<0.01			0.067	<0.10	<0.005	<0.005	<0.002	<0.002	<0.05	<0.02	<0.05	<0.002		<0.01
	16																				
	18																				
	20																				
	25																				
	30																				
	35																				
	40																				
	42																				
	44																				
Station 3	0																				
	5																				
	8																				
	10																				
	12																				
	14																				
	15																				
	16																				
	18																				
	20																				
	25																				
	30																				
	32																				

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - October 4, 1994

LOCATION	Depth [m]	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	F	Si	Cat sum	Anion sum	% Diff.	Std. Dev	Ion sum	Th. Con	Sat pH	Lang.@5	Lang @20	Lang @50
Station 1	0																				
	4																				
	8																				
	9																				
	12																				
	14																				
	15																				
	16																				
	22																				
Station 2	0																				
	5																				
	9																				
	10																				
	12																				
	14																				
	15	4.8	0.4	4.8	1.0	0.000	9.000	4.000	5.6		18.6	0.550	0.440	10.7	0.110	45.4	54.6	10.2	-3.9	-3.5	-2.9
	16																				
	18																				
	20																				
	25																				
	30																				
	35																				
	40																				
	42																				
	44																				
Station 3	0																				
	5																				
	8																				
	10																				
	12																				
	14																				
	15																				
	16																				
	18																				
	20																				
	25																				
	30																				
	32																				

Table 6

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - LAKE DATA - Statistics

	Date	Temp. (C)	DO	Secchi (m)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Min		4.6	7.6	2.5	6.3	<1.0	50.0	9.9	<3	0.3	<0.001	0.180	0.5	0.1	2.0	<0.001	0.070	<0.01
Max		24.2	14.0	5.3	7.7	10.0	67.7	17.9	15.0	3.8	0.022	0.290	2.8	1.5	5.6	0.001	0.210	0.1
Mean		12.9	10.2	4.0	7.0	7.9	53.4	14.8	10.7	0.6	0.007	0.246	1.6	0.9	3.8	<0.001	0.135	<0.01
Standard Deviation		5.9	1.5	0.7	0.2	1.5	2.4	1.4	2.3	0.4	0.003	0.031	0.6	0.4	0.7	0.001	0.039	0.01
Number of Samples		105	105	36	103	103	103	24	103	103	103	103	72	72	103	103	103	103

	Date	As	Fe	Mn	Pb-HGA	Cu	Zn	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Min		<0.002	<0.02	<0.01	<0.002	<0.002	<0.01	0.030	<0.01	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Max		<0.002	0.048	0.027	<0.002	0.013	0.080	0.086	<0.01	0.012	<0.005	<0.002	<0.002	<0.002	0.003	<0.05	<0.002	<0.05	0.002
Mean		<0.002	0.021	0.015	<0.002	0.002	0.007	0.048	<0.01	0.010	<0.005	<0.002	<0.002	<0.002	<0.002	<0.05	<0.002	<0.05	<0.002
Standard Deviation		0.000	0.015	0.010	0.000	0.004	0.017	0.019	0.000	0.003	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001
Number of Samples		3	23	23	13	24	24	13	13	13	13	13	12	13	13	13	13	3	13

	Date	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev.	Ion sum	Th. Cond	Sat pH	Lang.@5	Lang @20	Lang @50
Min		3.6	0.3	2.3	0.8	0.00	7.0	4.0	4.2	<0.5	0.4	0.4	0.5	0.1	25.7	48.0	10.2	-3.9	-3.5	-2.9
Max		5.0	0.4	5.5	1.0	0.01	9.0	10.0	6.8	2.5	0.6	0.5	13.5	0.1	45.4	60.9	10.5	-3.2	-2.8	-2.2
Mean		4.1	0.4	4.5	0.9	0.01	7.9	6.3	5.9	2.2	0.5	0.5	3.7	0.1	30.1	54.2	10.3	-3.4	-3.1	-2.5
Standard Deviation		0.4	0.1	0.5	0.1	0.0	0.7	1.1	0.6	3.4	0.0	0.0	3.0	0.0	3.5	2.7	0.1	0.1	0.1	0.1
Number of Samples		24	24	24	24	24	24	24	24	23	24	24	24	24	24	24	24	24	24	24

Appendix C

Table 7A

RESULTS - FECAL COLIFORM
LOCHABER WATER SURVEY

SITE NO.	MAY 31	JUNE 14	JUNE 28	JULY 12	JULY 26	AUG. 9	Aug. 23
S #1	0	96	508	)200	580	460	160
S #2	118	10	440	)200	DRY	820	1160
S #3	368	420	156	158	112	1120	720
S #4	0	0	88	STREAM WAS DRY		420	0
L #5	6	0	42	6	4	20	0
S #6	0	0	0	12	DRY	700	180
L #7	0	4	6	2	2	22	4
L #8	104	24	72	0	2	4	0
L #9	0	0	4	2	58	500	10
L #10	0	0	4	0	6	500	4
L #11	2	4	14	6	190	16	20
S #12	0	2	22	44	102	320	98
L #13	0	4	14	0	4	2	14
L #14	0	0	52	0	12	4	0
S #15	4	6	20	10	112	140	96
L #16	6	108	6	2	14	26	12
L #17	0	0	24	2	8	260	2
L #18	12	2	6	4	10	4	4
L #19	0	0	4	0	36 **	No Sample	4
L #20	10	0	46	0	2	6	0

** Bottle Broke

S - indicates stream sampling location
L - indicates lake shoreline sampling location

Table 7B

LOCHABER
Bacteriological Data

SITE NO.	Oct 6/93		April 26/94		May 17/94		June 1/94		July 13/94	
	TC	FC	TC	FC	TC	FC	TC	FC	TC	FC
ST - 0	900	20								
ST - 1A									-	134
ST - 1B									-	18
ST - 1C									-	3100
ST - 1(inlet)	1250	20	1400	0	1000	60				
ST - 2					230	0				
ST - 3					52	0				
ST - 4					222	0				
ST - 5					480	0				
ST - 6					230	0				
ST - 7					282	0				
ST - 8							400	4		
ST - 1(outlet			40	0	146	0				
L - 1 (DS4)									-	0
L - 2 (near ST - 1 inlet)									-	0

KEY

ST-0	Confluence of Cameron Brook and main branch of North River, St. Mary's	ST-5	Near LCDA Hall
ST-1A	Gussett Brook most U/S station opposite mid field (Sid Taylor	ST-6	opposite Middleton Road
ST-1B	Gussett Brook most D/S of old outhouse	ST-7	Hurlbert Brook
ST-1C	Gussett Brook U/S of bridge at Highway #7		
ST-1 (inlet	North River St. Mary's D/S of bridge at north end of lake	ST-8	Southeast side of lake near abandoned gas station
ST-2	brook near Fisher's residence	ST-1 (outlet)	U/S of bridge at southend lake outlet
ST-3	Near H. Turnbull Residence	L-1(DS4)	Northend of Lochaber Lake
ST-4	Near Chalet	L-2 (near ST-1 inlet	near inlet stream ST-1

ST - indicates stream sampling locations

L - indicates lake shoreline sampling locations

Appendix D

Table 8

Environment Canada / Environnement Canada

Atmospheric Environment Service / Service de l'environnement atmosphérique

Meterological Data

COLLEGEVILLE, NS

AES National Headquarters Identification: 8201000

Regional Identification: 0390C

May, 1994

Day	TEMPERATURE (Degrees Celsius) Maximum	Minimum	Mean	PRECIPITATION Rain (mm)	Snow (cm)	Total (mm)	DAY WITH Thund.	Frz Rn	Hail	SNOW ON GND (cm)	RMKS
1	11.5	-3.5	4.0	4.2		4.2				0	
2	16.0	4.0	10.0	1.2		1.2				0	
3	11.5	-1.0	5.3							0	
4	17.0	-1.0	8.0							0	
5	12.5	0.0	6.3	45.6		45.6				0	
6	10.0	7.0	8.5							0	
7	3.0	1.5	2.3	3.6	T	3.6				0	
8	13.0	-3.0	5.0	34.4		34.4				0	
9	16.0	3.5	9.8	9.6		9.6				0	
10	19.0	3.5	11.3	8.2		8.2				0	
11	14.5	6.5	10.5							0	
12	15.5	0.5	8.0							0	
13	12.5	7.5	10.0	3.4		3.4				0	
14	7.0	2.0	4.5	4.2		4.2				0	
15	9.0	1.5	5.3	T		T				0	
16	12.5	2.5	7.5							0	
17	10.5	-1.5	4.5							0	
18	7.0	1.5	4.3	17.6		17.6				0	
19	4.5	3.0	3.8	5.8		5.8				0	
20	12.5	3.5	8.0							0	
21	23.0	-2.5	10.3							0	
22	19.5	1.0	10.3	1.0		1.0				0	
23	16.5	5.0	10.8							0	
24	11.0	-2.5	4.3							0	
25	13.5	-2.5	5.5	12.2		12.2				0	
26	13.0	7.0	10.0	3.6		3.6				0	
27	16.5	7.0	11.8	2.2		2.2				0	
28	17.5	4.0	10.8							0	
29	17.0	2.0	9.5							0	
30	17.5	3.5	10.5	1.4		1.4				0	
31	25.5	12.0	18.8							0	
TOTAL	425.5	72.0		158.2	T	158.2					
MEAN	13.7	2.3	8.0								

Monthly Maximum Temperature:	25.5	on Day:	31
Monthly Minimum Temperature:	-3.5	on Day:	1
Highest Rainfall:	45.6	on Day:	5
Highest Snowfall:	T	on Day:	7
Highest TOTAL Precipitation:	45.6	on Day:	5

Heating Degree-Days:	309.3	(Base 18°)
Cooling Degree-Days:	0.8	(Base 18°)
Growing Degree-Days:	101.8	(Base 5°)
Corn Heat Units:	15.1	(Base 10°)
Freezing Degree-Days:		(Base 0°)
Thawing Degree-Days:	249.5	(Base 0°)

Abbreviations: Thund. - Thunder Frz Rn - Freezing Rain SNOW ON GND - Depth of Snow on Ground RMKS - Remarks Recorded

Codes Which May Appear:
A - Value Accumulated over more than 1 day
L - Precipitation Uncertain
N - Missing Temperature ABOVE Freezing
+ - Extreme Value Occurred Also Later in Month
M - Missing Value
F - Value Accumulated and Estimated
T - Trace of Precipitation
X - "occurred" or "exists"
E - Estimated Value
C - Precipitation Occurred, Amount Unknown
Y - Missing Temperature BELOW Freezing
I - Incomplete Data

able 8

Environment Canada / Environnement Canada

Atmospheric Environment Service / Service de l'environnement atmosphérique

Meterological Data

COLLEGEVILLE, NS

AES National Headquarters Identification: 8201000

Regional Identification: 0390C

June, 1994

Day	TEMPERATURE (Degrees Celsius) Maximum	Minimum	Mean	PRECIPITATION Rain (mm)	Snow (cm)	Total (mm)	DAY WITH Thund.	Frz Rn	Hail	SNOW ON GND (cm)	RMKS
1	24.5	9.5	17.0	2.0		2.0				0	
2	25.0	12.5	18.8							0	
3	7.5	5.0	6.3							0	
4	13.0	2.5	7.8							0	
5	19.0	0.0	9.5							0	
6	19.5	6.5	13.0							0	
7	16.0	11.0	13.5	14.0		14.0				0	
8	18.5	8.0	13.3	5.0		5.0				0	
9	17.5	0.5	9.0							0	
10	16.5	0.5	8.5							0	
11	23.0	-1.0	11.0							0	
12	24.5	7.0	15.8							0	
13	16.5	12.0	14.3	6.2		6.2				0	
14	18.0	13.5	15.8	9.0		9.0				0	
15	20.5	14.0	17.3							0	
16	23.0	8.0	15.5							0	
17	31.0	11.0	21.0							0	
18	28.0	14.5	21.3	3.4		3.4				0	
19	18.5	16.5	17.5	12.2		12.2	X			0	
20	23.5	2.0	12.8							0	
21	26.5	3.5	15.0	10.0		10.0				0	
22	24.5	11.5	18.0	1.4		1.4				0	
23	24.0	8.5	16.3	1.0		1.0				0	
24	22.5	8.0	15.3							0	
25	23.5	6.5	15.0	1.0		1.0				0	
26	21.0	12.5	16.8	1.2		1.2				0	
27	30.5	12.5	21.5							0	
28	27.5	16.5	22.0	8.8		8.8				0	
29	28.5	18.0	23.3	3.6		3.6	X			0	
30	25.5	18.0	21.8	1.0		1.0				0	
TOTAL	657.5	269.0		79.8	0.0	79.8	2				
MEAN	21.9	9.0	15.5								

Monthly Maximum Temperature:	31.0	on Day:	17
Monthly Minimum Temperature:	-1.0	on Day:	11
Highest Rainfall:	14.0	on Day:	7
Highest Snowfall:	0.0		
Highest TOTAL Precipitation:	14.0	on Day:	7

Heating Degree-Days:	99.7	(Base 18°)
Cooling Degree-Days:	23.7	(Base 18°)
Growing Degree-Days:	314.0	(Base 5°)
Corn Heat Units:	172.9	(Base 10°)
Freezing Degree-Days:		(Base 0°)
Thawing Degree-Days:	464.0	(Base 0°)

Abbreviations: Thund. - Thunder; Frz Rn - Freezing Rain; SNOW ON GND - Depth of Snow on Ground; RMKS - Remarks Recorded

Codes Which May Appear:
A - Value Accumulated over more than 1 day
L - Precipitation Uncertain
N - Missing Temperature ABOVE Freezing
+ - Extreme Value Occurred Also Later In Month
M - Missing Value
F - Value Accumulated and Estimated
T - Trace of Precipitation
X - "occurred" or "exists"
E - Estimated Value
C - Precipitation Occurred, Amount Unknown
Y - Missing Temperature BELOW Freezing
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Table 8

Environment Canada / Environnement Canada

Atmospheric Environment Service / Service de l'environnement atmosphérique

Meterological Data

COLLEGEVILLE, NS

AES National Headquarters Identification: 8201000

Regional Identification: 0390C

July, 1994

Day	TEMPERATURE (Degrees Celsius) Maximum	Minimum	Mean	PRECIPITATION Rain (mm)	Snow (cm)	Total (mm)	DAY WITH Thund.	Frz Rn	Hail	SNOW ON GND (cm)	RMKS
1	28.0	15.0	21.5							0	
2	24.0	15.5	19.8							0	
3	23.5	18.0	20.8							0	
4	23.0	7.0	15.0							0	
5	24.0	4.5	14.3	8.6		8.6				0	
6	21.0	14.0	17.5	4.0		4.0				0	
7	21.5	12.0	16.8	1.8		1.8				0	
8	16.5	13.0	14.8	2.0		2.0				0	
9	21.0	11.5	16.3							0	
10	23.5	14.0	18.8							0	
11	25.5	18.0	21.8							0	
12	27.5	11.0	19.3							0	
13	28.5	8.5	18.5							0	
14	22.0	14.0	18.0							0	
15	25.5	6.5	16.0							0	
16	26.5	13.0	19.8							0	
17	25.0	8.0	16.5							0	
18	26.5	12.0	19.3							0	
19	20.5	11.0	15.8							0	
20	27.0	15.0	21.0							0	
21	31.5	12.0	21.8							0	
22	33.5	18.5	26.0							0	
23	30.5	21.0	25.8							0	
24	29.5	20.5	25.0	4.6		4.6				0	
25	24.5	19.0	21.8	3.0		3.0				0	
26	30.0	19.0	24.5	1.0		1.0				0	
27	27.5	20.0	23.8	2.0		2.0				0	
28	27.5	20.0	23.8	2.0		2.0				0	
29	29.0	20.0	24.5	1.4		1.4				0	
30	28.5	17.5	23.0							0	
31	31.5	15.0	23.3	2.6		2.6	X			0	
TOTAL	804.0	444.0		33.0	0.0	33.0	1				
MEAN	25.9	14.3	20.1								

Monthly Maximum Temperature:	33.5	on Day:	22
Monthly Minimum Temperature:	4.5	on Day:	5
Highest Rainfall:	8.6	on Day:	5
Highest Snowfall:	0.0		
Highest TOTAL Precipitation:	8.6	on Day:	5

Heating Degree-Days:	19.0	(Base 18°)
Cooling Degree-Days:	85.9	(Base 18°)
Growing Degree-Days:	469.9	(Base 5°)
Corn Heat Units:	314.9	(Base 10°)
Freezing Degree-Days:		(Base 0°)
Thawing Degree-Days:	624.9	(Base 0°)

Abbreviations: Thund. - Thunder; Frz Rn - Freezing Rain; SNOW ON GND - Depth of Snow on Ground; RMKS - Remarks Recorded

Codes Which May Appear:
A - Value Accumulated over more than 1 day
L - Precipitation Uncertain
N - Missing Temperature ABOVE Freezing
+ - Extreme Value Occurred Also Later in Month
M - Missing Value
F - Value Accumulated and Estimated
T - Trace of Precipitation
X - "occurred" or "exists"
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I - Incomplete Data

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Meterological Data

COLLEGEVILLE, NS

AES National Headquarters Identification: 8201000

Regional Identification: 0390C

August, 1994

Day	TEMPERATURE (Degrees Celsius) Maximum	Minimum	Mean	PRECIPITATION Rain(mm)	Snow (cm)	Total (mm)	DAY WITH Thund.	Frz Rn	Hail	SNOW ON GND (cm)	RMKS
1	31.0	18.0	24.5							0	
2	29.0	17.5	23.3	3.4		3.4	X			0	
3	23.5	16.5	20.0	1.2		1.2				0	
4	29.5	18.0	23.8							0	
5	27.0	18.0	22.5	15.4		15.4				0	
6	17.5	16.5	17.0	77.5		77.5				0	
7	19.0	14.5	16.8							0	
8	24.5	7.0	15.8	2.0		2.0				0	
9	21.0	15.0	18.0	2.0		2.0				0	
10	28.0	14.0	21.0							0	
11	23.5	9.0	16.3							0	
12	20.5	11.0	15.8							0	
13	24.5	6.0	15.3							0	
14	27.5	17.0	22.3							0	
15	25.0	19.0	22.0							0	
16	22.5	7.5	15.0							0	
17	26.5	8.0	17.3							0	
18	23.0	14.5	18.8	15.6		15.6				0	
19	20.0	17.0	18.5							0	
20	20.0	15.0	17.5	1.0		1.0				0	
21	25.0	16.5	20.8	1.0		1.0				0	
22	20.0	16.5	18.3	13.4		13.4				0	
23	18.5	10.0	14.3							0	
24	20.0	3.0	11.5							0	
25	23.5	3.5	13.5							0	
26	25.0	9.0	17.0							0	
27	26.0	14.5	20.3							0	
28	25.0	17.5	21.3							0	
29	22.0	15.0	18.5							0	
30	21.0	8.0	14.5							0	
31	19.0	7.0	13.0							0	
TOTAL	728.0	399.5		132.5	0.0	132.5	1				
MEAN	23.5	12.9	18.2								

Monthly Maximum Temperature: 31.0 on Day: 1
Monthly Minimum Temperature: 3.0 on Day: 24
Highest Rainfall: 77.5 on Day: 6
Highest Snowfall: 0.0
Highest TOTAL Precipitation: 77.5 on Day: 6

Heating Degree-Days: 39.4 (Base 18°)
Cooling Degree-Days: 45.9 (Base 18°)
Growing Degree-Days: 409.5 (Base 5°)
Corn Heat Units: 254.5 (Base 10°)
Freezing Degree-Days: (Base 0°)
Thawing Degree-Days: 564.5 (Base 0°)

Abbreviations: Thund. - Thunder; Frz Rn - Freezing Rain; SNOW ON GND - Depth of Snow on Ground; RMKS - Remarks Recorded

Codes Which May Appear:
A - Value Accumulated over more than 1 day
L - Precipitation Uncertain
N - Missing Temperature ABOVE Freezing
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F - Value Accumulated and Estimated
T - Trace of Precipitation
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Environment Canada / Environnement Canada

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Meterological Data

COLLEGEVILLE, NS

AES National Headquarters Identification: 8201000

Regional Identification: 0390C

September, 1994

Day	TEMPERATURE (Degrees Celsius) Maximum	Minimum	Mean	PRECIPITATION Rain (mm)	Snow (cm)	Total (mm)	DAY WITH Thund.	Frz Rn	Hail	SNOW ON GND (cm)	RMKS
1	14.0	9.5	11.8	4.0		4.0				0	
2	18.5	5.5	12.0							0	
3	18.0	2.5	10.3							0	
4	19.5	2.0	10.8	4.4		4.4				0	
5	16.0	9.5	12.8	28.6		28.6				0	
6	20.0	13.0	16.5	4.2		4.2				0	
7	19.5	13.0	16.3							0	
8	22.5	9.0	15.8	1.4		1.4				0	
9	22.5	9.0	15.8							0	
10	22.0	13.5	17.8	2.4		2.4				0	
11	19.5	13.5	16.5				X			0	
12	14.0	7.5	10.8	3.2		3.2				0	
13	14.0	10.0	12.0							0	
14	16.0	6.0	11.0							0	
15	17.0	5.0	11.0							0	
16	17.5	3.5	10.5							0	
17	21.0	5.0	13.0	4.0		4.0				0	
18	12.5	10.0	11.3	4.0		4.0				0	
19	16.5	-0.5	8.0							0	
20	17.5	1.0	9.3							0	
21	17.0	5.0	11.0							0	
22	16.5	4.5	10.5							0	
23	17.5	1.5	9.5							0	
24	19.5	2.0	10.8							0	
25	19.5	5.0	12.3							0	
26	20.5	3.0	11.8							0	
27	22.0	6.0	14.0							0	
28	18.5	10.0	14.3	14.6		14.6				0	
29	18.5	14.5	16.5	31.6		31.6				0	
30	17.5	12.5	15.0	31.8		31.8	X			0	
TOTAL	545.0	211.5		134.2	0.0	134.2	2				
MEAN	18.2	7.1	12.7								

Monthly Maximum Temperature: 22.5 on Days: 8 9

Monthly Minimum Temperature: -0.5 on Day: 19

Highest Rainfall: 31.8 on Day: 30

Highest Snowfall: 0.0

Highest TOTAL Precipitation: 31.8 on Day: 30

Heating Degree-Days: 161.0 (Base 18°)

Cooling Degree-Days: (Base 18°)

Growing Degree-Days: 229.0 (Base 5°)

Corn Heat Units: 82.2 (Base 10°)

Freezing Degree-Days: (Base 0°)

Thawing Degree-Days: 379.0 (Base 0°)

Abbreviations: Thund. - Thunder; Frz Rn - Freezing Rain; SNOW ON GND - Depth of Snow on Ground; RMKS - Remarks Recorded

Codes Which May Appear:
A - Value Accumulated over more than 1 day
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Atmospheric Environment Service / Service de l'environnement atmosphérique

Meterological Data
COLLEGEVILLE, NS

AES National Headquarters Identification: 8201000

Regional Identification: 0390C

October, 1994

Day	TEMPERATURE (Degrees Celsius) Maximum	Minimum	Mean	PRECIPITATION Rain (mm)	Snow (cm)	Total (mm)	DAY WITH Thund.	Frz Rn	Hail	SNOW ON GND (cm)	RMKS
1	10.0	8.5	9.3	1.6		1.6				0	
2	10.5	2.5	6.5							0	
3	10.0	1.5	5.8	4.6		4.6				0	
4	13.0	7.5	10.3							0	
5	15.5	2.0	8.8							0	
6	12.0	4.0	8.0							0	
7	15.0	-1.0	7.0							0	
8	22.5	4.5	13.5							0	
9	22.0	6.5	14.3	1.0		1.0				0	
10	17.0	11.0	14.0	26.0		26.0				0	
11	10.0	4.5	7.3	1.4		1.4				0	
12	6.5	4.0	5.3							0	
13	11.0	-2.5	4.3							0	
14	12.0	-1.5	5.3	1.2		1.2				0	
15	8.0	3.0	5.5	4.2		4.2				0	
16	7.0	4.0	5.5	3.6		3.6				0	
17	9.0	5.0	7.0	3.4		3.4				0	
18	9.5	5.5	7.5							0	
19	12.0	3.0	7.5							0	
20	15.5	-3.0	6.3							0	
21	14.0	-1.0	6.5	1.2		1.2				0	
22	14.5	8.5	11.5	23.8		23.8				0	
23	14.5	12.5	13.5	T		T				0	
24	12.5	9.5	11.0	3.4		3.4				0	
25	15.5	10.0	12.8							0	
26	14.0	5.5	9.8	2.0		2.0				0	
27	9.5	6.0	7.8	13.8		13.8				0	
28	11.0	-1.5	4.8							0	
29	15.0	-1.0	7.0							0	
30	17.5	8.0	12.8							0	
31	17.5	-1.0	8.3							0	
TOTAL	403.5	124.5		91.2	0.0	91.2					
MEAN	13.0	4.0	8.5								

Monthly Maximum Temperature: 22.5 on Day: 8
Monthly Minimum Temperature: -3.0 on Day: 20
Highest Rainfall: 26.0 on Day: 10
Highest Snowfall: 0.0
Highest TOTAL Precipitation: 26.0 on Day: 10

Heating Degree-Days: 293.2 (Base 18°)
Cooling Degree-Days: (Base 18°)
Growing Degree-Days: 110.7 (Base 5°)
Corn Heat Units: 23.7 (Base 10°)
Freezing Degree-Days: (Base 0°)
Thawing Degree-Days: 264.8 (Base 0°)

Abbreviations: Thund. - Thunder; Frz Rn - Freezing Rain; SNOW ON GND - Depth of Snow on Ground; RMKS - Remarks Recorded

Codes Which May Appear:
A - Value Accumulated over more than 1 day
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Appendix E

Table 9

STATISTICAL SUMMARY OF SELECTED WATER QUALITY PARAMETERS IN LOCAL UNIMPACTED LAKES *

	COLOUR_APP (REL UNITS)	SP_COND USIE/CM	TEMPERATURE (S) DEG C	TURBIDITY JTU	BORON_DISS MG/L	TOC MG/L	CHLOROPHYLL A MG/M3	NO3/NO2_DIS MG/L
MIN	<5	16.0	5.6	<0.1	0.05	2.9		<.005
MAX	130.0	153.0	22.2	3.5	0.05	15.7		0.250
MEAN	33.1	39.4	16.5	0.8	0.05	9.0		0.022
STD DEV	32.3	29.1	4.5	0.6	0.00	4.4		0.045
NO. OF SAMPLES	109.0	110.0	38.0	80.0	2.0	10.0	0.0	78.0

	AMMONIA_DIS MG/L	NITROGEN_TOT MG/L	O_DIS (F) MG/L	ALK_TOT MG/L CACO3	ALK_GRAN MG/L CACO3	PH UNITS	NA_DIS MG/L	MG_DIS MG/L	AL_EXT MG/L
MIN	<.05	<0.1		<1.0	-0.6	4.6	1.2	0.2	0.013
MAX	0.11	0.500		58.8	1.7	7.8	17.0	2.3	0.410
MEAN	0.05	0.156		9.6	0.5	6.1	3.3	0.7	0.130
STD DEV	0.03	0.097		9.0	0.5	0.9	1.9	0.4	0.090
NO. OF SAMPLES	33.0	74.0	0.0	54.0	56.0	98.0	110.0	105.0	61.0

	SIO2_REACTIVE MG/L	PO4_DIS_ORTHO MG/L	P_TOT MG/L	SO4_DIS MG/L	CL_DIS MG/L	K_DIS MG/L	CA_DIS MG/L	CR_EXT MG/L	MN_EXT MG/L	FE_EXT MG/L
MIN	0.05	0.007	0.001	0.8	1.50	0.12	0.40		0.010	0.012
MAX	5.10	0.007	0.045	38.0	18.00	1.20	22.00		0.270	0.630
MEAN	1.45	0.007	0.009	4.2	4.86	0.36	2.70		0.062	0.222
STD DEV	1.10	ERR	0.007	5.3	2.55	0.19	3.81		0.052	0.176
NO. OF SAMPLES	56.0	1.0	78.0	110.0	99.0	110.0	105.0	0.0	62.0	66.0

	CO_EXT MG/L	NI_EXT MG/L	CU_EXT MG/L	ZN_EXT MG/L	AS_TOT MG/L	SR_EXT MG/L	CD_EXT MG/L	BA_EXT MG/L	EXT_PB MG/L
MIN		<0.002	<0.002	<0.01	<0.0005		<0.001		<0.002
MAX		<0.002	0.070	0.100	0.0005		0.001		0.012
MEAN		<0.002	0.004	<0.01	<0.0005		<0.001		<0.002
STD DEV		0.000	0.013	0.014	0.0001		0.000		0.001
NO OF SAMPLES	0.0	4.0	66.0	68.0	7.0	0.0	64.0	0.0	62.0

* NAQUADAT 1995

Table 10

STATISTICAL SUMMARY OF SELECTED WATER QUALITY PARAMETERS IN LOCAL NOVA SCOTIA LAKES *

	COND.	pH	NA	K	CA	MG	ALK.	SO4	CL	ORTHO P	TOTAL P
MIN	21.4	4.6	2.2	0.01	0.3	0.2	0.05	2.0	3.1	<0.001	0.001
MAX	30160.0	7.0	6500.0	235.00	260.0	722.0	80	17.3	11500	0.046	0.365
MEAN	931.6	5.5	206.3	7.55	9.4	23.4	4.45	2.9	365.05	0.003	0.011
STD DEV	4345.4	0.6	932.4	33.69	37.7	104.7	13.63	1.8	1650.52	0.005	0.040
NO. OF SAMPLES	81	83	83	83	83	83	83	76	83	83	83

	NO3+NO2	NH3	TOTAL N	TOC	ACIDITY	COLOR	TURB	AL	FE	MN	AS	CD
MIN	<0.01	<0.01	0.09	2.2	1.6	3	0.5	0.013	0.007	<0.003	0.001	0.003
MAX	0.63	0.63	0.9	16.8	28.0	275	12.0	0.460	4.400	0.380	0.001	0.003
MEAN	0.02	0.02	0.20	7.3	6.8	92	1.5	0.142	0.256	0.073	0.001	0.003
STD DEV	0.08	0.07	0.12	4.2	5.3	82	1.7	0.113	0.501	0.073	0	0
NO. OF SAMPLES	83	83	83	74	83	83	83	83	83	83	1	1

	CO	CR	CU	NI	PB	SE	ZN
MIN	0	0	0	0	0	0	0.018
MAX	0	0	0	0	0	0	0.018
MEAN	0	0	0	0	0	0	0.018
STD DEV	0	0	0	0	0	0	0
NO. OF SAMPLES	0	0	0	0	0	0	1

* (NSDOE 1995) - Local lakes refer to all lakes sampled in surrounding secondary watersheds.

Appendix F

Table 11A

Lochaber Lake Water Quality Data 1994

CATEGORY	PARAMETER	MIN.	MAX.	MEAN	CWQ GUIDELINES *		LOCAL UNIMPACTED LAKES (NAQUADAT 1995)		
					Freshwater Aquatic Life	Recreation	Min.	Max.	Mean
Chemistry									
Trophic State Indicators	Ortho-PO_4 (P)	<0.001	0.001	<0.001	-	-	▲ <0.001	▲ 0.046	▲ 0.003
	Total P (P)	<0.001	0.022	0.007	-	-	0.001	0.045	0.009
	Nitrate + Nitrite (N)	<0.070	0.210	0.135	-	-	<0.005	0.250	0.022
	Ammonia (N)	<0.01	0.10	<0.01	1.37-2.2(2)	-	<0.05	0.11	0.05
	Total N (N)	0.180	0.290	0.246	-	-	<0.1	0.500	0.156
	Chlorophyll a (mg/m^3)	0.5	2.8	1.6	-	-	-	-	-
	Pheophytin (mg/m^3)	0.1	1.5	0.9	-	-	-	-	-
	Transparency (Secchi depth in meters)	2.5	5.3	4.0	-	≥1.2 meters	-	-	-
General Characteristics & Major Ions	Temperature (^oC)	4.6	24.2	12.9	20-21 ▼	-	5.6	22.2	16.5
	Dissolved Oxygen	7.6	14.0	10.2	5.0-9.5	-	-	-	-
	pH (pH units)	6.3	7.7	7.0	6.5-9.0	5.0-9.5	4.6	7.8	6.1
	Alkalinity	<1.0	10.0	7.9	-	-	<1.0	58.8	9.6
	Conductivity (umhos/cm)	50.0	67.7	53.4	-	-	16.0	153.0	39.4
	Colour (TCU)	<3.0	15.0	10.7	-	-	<5.0	130.0	33.1
	Turbidity	0.3	3.8	0.6	-	-	<0.1	3.5	0.8
	Total Organic Carbon	2.0	5.6	3.8	-	-	2.9	15.7	9.0
	Hardness	9.9	17.9	14.8	-	-	-	-	-
	Sodium	3.6	5.0	4.1	-	-	1.2	17.0	3.3
	Potassium	0.3	0.4	0.4	-	-	0.12	1.20	0.36
	Calcium	2.3	5.5	4.5	-	-	0.40	22.0	2.7
	Magnesium	0.8	1.0	0.9	-	-	0.2	2.3	0.7
	Sulphate	4.0	10.0	6.3	-	-	0.8	38.0	4.2
	Chloride	4.2	6.8	5.9	-	-	1.5	18.0	4.8
	Silica	<0.5	2.5	2.2	-	-	0.05	5.1	1.5

* All concentrations are reported in mg/l unless otherwise indicated.
Nitrate - Avoid prolific weed growth
Nitrite - 0.06

(1) Guideline changes with hardness
(2) Guideline changes with temperature and pH
(3) Guideline changes with pH

▼ Upper permissable temperature for salmon and trout (Alabaster and Lloyd 1982)

▲ NSDOE 1995 - Lake Chemistry Data

Table 12

LOCHABER LAKE WATER QUALITY ASSESSMENT 1994 - STREAM DATA - Statistics

	Temp. (C)	pH	Alk	Cond.	Hard.	Color	Turb.	Total P	Total N	Chl a	Pheophyt.	TOC	Ortho P	NO2+NO3	NH4 (N)
Min	9.0	6.4	1.0	28.3	7.5	<3.0	0.1	<0.001	0.090	0.5	0.4	1.0	<0.001	<0.01	<0.01
Max	23.0	7.6	50.0	350.0	48.4	32.0	2.2	0.025	0.650	2.6	1.2	13.6	0.017	0.590	0.03
Mean	16.9	7.1	14.2	80.6	21.3	12.0	0.6	0.010	0.269	1.2	0.7	4.8	0.001	0.132	<0.01
Standard Deviation	3.7	0.3	10.3	60.3	13.4	5.5	0.4	0.005	0.122	0.6	0.3	2.8	0.003	0.139	0.01
Number of Sample	12	57	57	57	13	57	57	57	57	11	11	57	57	57	57

	As	Fe	Mn	Pb-HGA	Cu	Zn	Al	B	Ba	Be	Cd - HGA	Cr	Co	Ni	Sb	Se	Sn	Va
Min		<0.02	<0.01		<0.01	<0.01												
Max		0.260	0.130		0.020	0.010												
Mean		0.058	0.025		<0.01	<0.01												
Standard Deviation		0.069	0.036		0.006	0.005												
Number of Sample	0	13	13	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0

	Na	K	Ca	Mg	Carb.	Bicarb.	SO4	Cl	Si	Cat sum	Anion sum	% Diff.	Std. Dev.	Ion sum	Th. Cond	Sat pH	Lang.@5	Lang @20	Lang @50
Min	2.0	<0.02	2.0	0.5	0.00	4.00	3.0	2.1	1.0	0.260	0.250	0.1	0.11	16.9	28.3	9.2	-4.4	-4.1	-3.5
Max	8.8	1.30	15.5	2.4	0.06	31.90	23.0	12.8	4.6	1.370	1.330	9.4	0.13	81.3	152.0	10.8	-2.0	-1.6	-1.0
Mean	3.7	0.34	6.7	1.1	0.02	12.80	9.2	4.9	2.6	0.595	0.603	2.6	0.12	36.7	66.6	10.0	-3.1	-2.7	-2.2
Standard Deviation	1.8	0.35	4.6	0.6	0.02	8.57	6.7	2.9	1.0	0.330	0.330	2.4	0.01	19.6	36.5	0.6	0.9	0.9	0.9
Number of Sample	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13

Table 11B

Lochaber Lake Water Quality Data 1994

CATEGORY	PARAMETER	MIN.	MAX.	MEAN	CWQ GUIDELINES *		LOCAL UNIMPACTED LAKES (NAQUADAT 1995)		
					Freshwater Aquatic Life	Recreation	Min.	Max.	Mean
Chemistry									
Metals	Aluminum	0.030	0.086	0.048	0.005-0.1	-	0.013	0.410	0.130
	Antimony	<0.002	<0.05	<0.05	-	-	-	-	-
	Arsenic	<0.002	<0.002	<0.002	0.05	-	<0.0005	0.0005	<0.0005
	Barium	<0.005	0.012	0.010	-	-	-	-	-
	Beryllium	<0.005	<0.005	<0.005	-	-	-	-	-
	Boron	<0.01	<0.01	<0.01	-	-	0.05	0.05	0.05
	Cadmium	<0.002	<0.002	<0.002	0.0002-0.0018(1)	-	<0.001	0.001	<0.001
	Chromium	<0.002	0.002	<0.002	0.002 -0.020	-	-	-	-
	Cobalt	<0.002	<0.002	<0.002	-	-	-	-	-
	Copper	<0.002	0.013	<0.002	0.002 -0.004(1)	-	<0.002	0.070	0.004
	Iron	<0.020	0.048	0.021	0.3	-	0.012	0.630	0.222
	Lead	<0.002	<0.002	<0.002	0.001 -0.007(1)	-	<0.002	0.012	<0.002
	Manganese	<0.010	0.027	0.015	-	-	0.01	0.270	0.062
	Nickel	<0.002	<0.003	<0.002	0.025 -0.150(1)	-	<0.002	0.001	<0.002
	Selenium	<0.002	<0.002	<0.002	0.001	-	-	-	-
	Tin	<0.002	<0.05	<0.05	-	-	-	-	-
	Vanadium	<0.002	0.002	<0.002	-	-	-	-	-
	Zinc	<0.01	0.080	<0.007	0.03	-	<0.01	0.10	<0.01
Bacteriology	Fecal Coliform (#/100 mls)	0	3100	96.8	-	200	-	-	-

* All concentrations are reported in mg/1 unless otherwise indicated.
Nitrate - Avoid prolific week growth
Nitrite - 0.06

▾ Upper permissable temperature for salmon and trout (Alabaster and Lloyd 1982)

(1) Guideline changes with hardness
(2) Guideline changes with temperature and pH
(3) Guideline changes with pH

Table 13 LOCHABER LAKE DATA COMPARISON -1973 AND 1994 STUDIES

AGENCY	STUDY DATE	DISSOLVED OXYGEN	PH	CONDUCTIVITY
Environment Canada	August, 1973	> 8.6	6.3 - 7.4	45 (mean)
NS Dept. of the Environment	April-Oct., 1994	>7.6	6.3 - 7.7	53 (mean)