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Lake Taupo Long-Term Monitoring Programme 2002-2003: Including Two Additional Sites

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Contents

Figures

Tables

Executive Summary

With the expectation that the trophic status of Lake Taupo will slowly change to reflect changes in land use within the lake's catchments, a long term programme monitoring the lake's water quality was commissioned by Environment Waikato. This programme commenced in October 1994 and is conducted by NIWA with field assistance from the Department of Internal Affairs, Taupo Harbourmaster's Office.

The monitoring programme was designed to detect change through assessment of the rate of consumption of oxygen from the bottom waters of the lake (volumetric hypolimnetic oxygen depletion – VHOD) as an integration of all biological processes occurring in Lake Taupo. Additional parameters are measured to provide a more comprehensive picture of water quality. Recently it has become apparent that VHOD may be too coarse to determine trophic change in a lake the size and complexity of Lake Taupo. Consequently, more emphasis is now focused on the parameters 'phytoplankton biomass', 'water clarity', and nutrient (particularly nitrate) accumulation in the lake. This report presents the results from the 2002/03 monitoring period at the mid-lake site, Site A, with this in mind and includes additional data collected since January 2002 from the Kuratau Basin (Site B) and the Western Bays (Site C) to assess spatial variability of water quality across Lake Taupo.

The trend in the data of increasing phytoplankton biomass, as indicated by chlorophyll *a* concentration, continued with an average rate of 0.10 ± 0.03 mg m^{-3} y^{-1} over the 9 years of the monitoring programme, and with highest biomass in August just when the lake had completely mixed. The winter bloom was dominated by a diatom mixture of *Asterionella formosa* and *Aulacoseira granulata* in 2003 rather than just *Asterionella formosa* which dominated in 2002. The chlorophyll *a* concentrations in the winter bloom 2003 reached 2.9, 3.1, and 3.2 mg m^{-3} at sites A, B, and C, respectively, the highest recorded for Lake Taupo during the 9 year monitoring period.

Blue-green algae (*Anabaena circinalis / Anabaena flos-aquae*) were present throughout the lake in increasing abundance from about November 2002 and became dominant from March to May 2003. During this period, local blooms developed as drifting algae accumulated along the northern shores and caused areas of the lake to be closed for contact recreation for the first time ever. The blue-green algae were dispersed during May 2003 by deep mixing. The timing of the appearance of the blue-green algal dominance in 2003 was almost the same as in 2001, but the duration was longer in 2003.

Long-term nutrient data show no major differences to trends seen previously. Nutrient concentrations (DRP, NH_4-N, and NO_3-N) in the upper water column were comparable with concentrations in previous years, and were similar across the three sites

monitored. DRP and NO_3-N concentrations rose during initial winter mixing and then were depleted as phytoplankton grew. The peak concentration of DRP at winter mixing were substantially higher, and the summer concentrations of NH_4-N and NO_3-N lower now than they were 5 years earlier. Bottom water (150 m) nutrient concentrations increased at a similar rate to the previous year, except for NH_4-N concentrations, the rate of increase of which has declined over the three winter periods monitored.

During the 2002/03 monitoring period, there were no extremes of water clarity except that Secchi disc depths of less than 10 m were recorded in the southern basin. Mean values for the 2002/03 monitoring period were 14.5 m, 13.7 m, and 14.9 m at sites A, B, and C, respectively.

The 2002/03 net VHOD rate at 13.76 ± 2.14 mg m^{-3} d^{-1} (mean ± 95% confidence limit) was about 50% higher than the rate for the previous year, 9.06 ± 2.7 mg m^{-3} d^{-1}. VHOD estimates made from the other two sites at 14.99 ± 1.70 and 13.44 ± 1.51 mg m^{-3} d^{-1} for site B and C, respectively, are not significantly different to the site A values and indicate that previous estimates of VHOD from site A are valid for the whole lake.

The close agreement between all parameters measured at the three sites suggests that there are no major differences spatially across the lake, although there were periods of lower water clarity and higher chlorophyll *a* in the southern basin. The only major difference between sites was in autumn 2003, when the data showed that reoxygenation occurred about a month earlier at site C (Western Bays) than at site B (Kuratau Basin) and almost 2 months earlier than at site A (Mid lake). This information is important for understanding the development of the winter bloom and interpreting the data associated with accumulation of nutrients in the hypolimnion during the stratified period.

Notwithstanding this, the generally close agreement between the data from the three sites gives confidence in the past use of the site A data as representing the water quality of the whole lake.

In the 2002 review of the long-term monitoring programme data, 3 trends in the data were identified — increasing phytoplankton biomass in the upper 10 m, increasing NO_3-N mass in the lake prior to winter mixing, and an increasing range in the variability of water clarity — that were of concern with respect to the water quality of Lake Taupo. These trends in the data are still present as is the concern.

Glossary

BOD	Biochemical Oxygen Demand: the rate of oxygen consumption associated with biological decomposition and chemical processes and in the water column.
VHOD	Volumetric Hypolimnetic Oxygen Demand: the net rate of oxygen loss associated with biological, chemical and physical processes in the hypolimnion of a lake in the absence of a temperature change
Phytoplankton	Microscopic free-floating aquatic plants (algae)
Cyanobacteria	Blue-green algae. These are potentially toxic. They can adjust their depth in the water column using small gas bladders (gas vacuoles), and some species can use (i.e. fix) atmospheric nitrogen for growth when nutrient nitrogen in the water column is depleted.
Zooplankton	Small to microscopic free-swimming aquatic animals which graze on phytoplankton or smaller zooplankton
Biomass	The living mass of the phytoplankton or zooplankton populations
Thermal stratification	Separation of a water column into two layers by temperature – warmer water on top
Thermocline	The boundary zone or temperature gradient between the two layers in a thermally stratified water column.
Epilimnion	The upper water column in a thermally stratified water column
Hypolimnion	The lower water column in a thermally stratified water column
Metalimnion	The thermocline zone — of variable thickness
Euphotic zone	The upper water column in which there is sufficient light for photosynthesis and hence phytoplankton growth
Nutrients	Essential dissolved inorganic nitrogen and phosphorus compounds which can be used directly by plants for growth
Ammoniacal nitrogen	Sum of ammonium ion (NH_4^+) plus free (unionised) ammonia (NH_3). Some amines (NH_2^-) may be included as interference during analysis. Symbol, NH_4-N.
Nitrate nitrogen	Used in this report as the sum of nitrate (NO_3^-) plus nitrite (NO_2^-). Symbol, NO_3-N.
DIN	Dissolved Inorganic Nitrogen: the sum of NH_4-N + NO_3-N
DON	Dissolved Organic Nitrogen: the soluble nitrogen other than DIN
PN	Particulate Nitrogen: includes phytoplankton and other detritus
TN	Total Nitrogen: Sum of DIN + DON + PN
NO_x	Gaseous oxides of nitrogen, including N_2O, NO, NO_2

1 Introduction

With the expectation that the trophic status of Lake Taupo will slowly change to reflect changes in land use within the lake's catchments, a long term monitoring programme of the lake's water quality was commissioned by Environment Waikato. This programme commenced in October 1994 and is conducted by NIWA with field assistance from the Department of Internal Affairs, Taupo Harbourmaster’s Office. The monitoring precision was augmented from February 1999 by the use of a new profiling instrument – a Richard Brancker Research model RBR410 conductivity-temperature-depth (CTD) profiler/logger fitted with a Yellow Springs Instrument (YSI) model 5739 dissolved oxygen (DO) probe. In January 2002, this instrument was upgraded to a Richard Brancker Research model XR420 freshwater profiler/logger with improved sensitivity. The new profiler is fitted with a YSI model 5739 DO probe as well as a Sea Point Chlorophyll Fluorometer to give *in situ* estimates of vertical distribution of algal biomass within the lake water column. This report presents data from the routine mid-lake monitoring station from August 2002 to September 2003.

The 2000 – 2001 annual report (Gibbs et al. 2002) reviewed the monitoring data accumulated since 1994, relating it to the known sensitivity of Lake Taupo to nitrogen (N), and known increased N loading from the catchment. A continuation of that assessment in such detail is not included in this report. Rather, the new data are presented in the context of the long-term data set, and a further review is planned for 2005 — 2006..

In January 2002, a 2-year study began at two additional sites to evaluate spatial variability of water quality across the lake. Results from these additional sites are also presented in this report, assessed individually and also integrated with the routine mid-lake site data. The additional sites were selected as those historically measured in the 1974-76 assessment of lake water quality (White et al. 1980) and are marked on the lake map (Fig.1).

1.1 Rationale

The volumetric hypolimnetic oxygen depletion (VHOD) rate is sensitive to changes in trophic status of a lake that thermally stratifies for part of the year. VHOD was chosen as the parameter most likely to detect a change in the water quality of Lake Taupo. Estimates of VHOD are made from dissolved oxygen and temperature profiles measured at 2-3 week intervals during the stratified period. However, the VHOD rate will only *indicate* that a change has occurred and will not detect other indicators of changing water quality. For that purpose, the upper water column is sampled for nutrients, chlorophyll *a*, phytoplankton species composition and water clarity at 2-3 weekly intervals, and a full profile of the lake's water quality is made twice during the stratified period. The first profile is in spring, when thermal stratification has become established and is stable. The second is in autumn the following year before thermal stratification begins to break down, and the thermocline deepens.

Sampling at the two additional sites, Kuratau Basin and Western Bays, was conducted at the time of the routine mid-lake sampling. Data collected included the 2-3 weekly temperature and DO profiles, and integrated 10 m tube samples, as measured at the routine mid-lake site, but not the twice yearly detailed profiles. Sampling from the two additional sites is planned to continue until the end of December 2004.

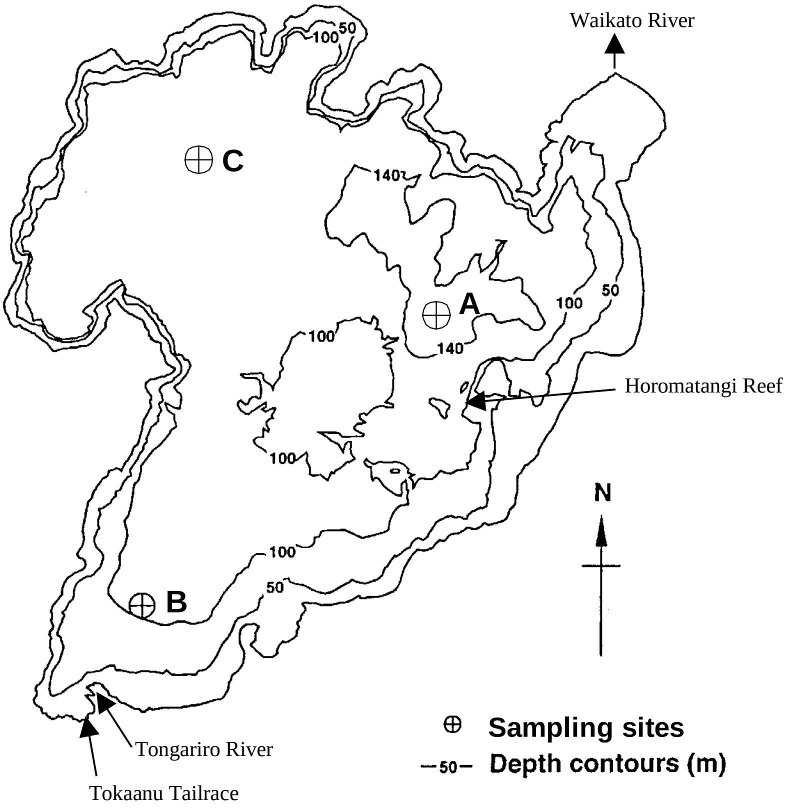

Figure 1: Site map of Lake Taupo showing location of the routine monitoring site at mid-lake (A), and the two additional; sites at Kuratau Basin (B) and the Western Bays (C).

1.2 Measurements

The parameters measured routinely at 2-3 weekly intervals at all three sites are:

- depth-related temperature and dissolved oxygen (DO), using the RBR XR420 CTD profiler. Additional parameters of conductivity and chlorophyll fluorescence recorded by the profiler sensors are available at NIWA and will only be reported as appropriate;

- water clarity by Secchi disc depth;

- chlorophyll *a*, nitrate+nitrite N (NO_3-N), ammoniacal-N (NH_4-N), dissolved organic N (DON), particulate N (PN), total nitrogen (TN), dissolved reactive phosphorus (DRP), dissolved organic phosphorus (DOP), particulate phosphorus (PP), total phosphorus (TP), and algal species dominance in integrated-tube water samples from the top 10 m.
- Water samples have also been collected at the same time from just above the lake bed (150 m) mid-lake site (A) for analysis of NO_3-N, NH_4-N, and DRP to assess nutrient accumulation in the hypolimnion and to confirm complete mixing in winter.

- The parameters measured at 10 m depth intervals from the surface to the bottom of the lake twice a year from the mid-lake site (A) only, are:

- conductivity, pH, temperature, DO, chlorophyll *a*, DRP, DOP, PP, TP, NO_3-N, NH_4-N, DON, PN, TN, urea nitrogen (Urea-N), total suspended solids (SS), volatile suspended solids (VSS), particulate carbon (PC), and dissolved organic carbon (DOC).

Additional parameters measured twice yearly at site A, but not as complete profiles were:

- algal species composition and abundance on water samples from 1, 10, 50, 100 and 140 m.

1.3 Report contents

This report presents the results from the 2002/2003 stratified period plus the winter mixing, and refers to data in previous annual monitoring reports from 1995 to 2002 (Gibbs 1995, 1997a, 1997b, 1998, 2000a, 2000b, 2002; Gibbs et al. 2002) for inter-annual comparisons, and archived historical data since 1974 held by NIWA. The methods used are as per the 1994/95 report and a copy of these methods is included in Appendix 1 together with a sampling site location map. The calculation of the net VHOD rate, as applied to Lake Taupo data, was described in the 1996/97 report and a copy is presented in Appendix 2. Copies of temperature and dissolved oxygen, and nutrient data from the previous eight years are included in Appendix 3 and 4 respectively. Graphical presentations of historical time-series temperature, dissolved oxygen, and Secchi disc depth data collected since the start of this monitoring programme are updated and presented in figures in the text. Phytoplankton species composition and dominance data for 2002/03 are included in Appendix 5 and discussed in the text. Graphical presentations of all available chlorophyll *a* concentration and Secchi depth water clarity data are presented where appropriate.

1.4 Statistical evaluation

Simple statistical evaluation of data has been made using Microsoft Excel® and regression results have been reported to ± 95% confidence limits. Statistical significance (P), where used, is qualified with the coefficient of determination (r^2) and the number of data points used (n). For details see Statistical Methods, Appendix 1.

Note that statistical significance is dependent on the number of data points used. Comparisons between trends should only be made where there are similar numbers of data points.

1.5 “TREND” definition

As in previous reports, the word “trend” is used in the context of a change between the start and the end of a time series data set where the use of a linear regression analysis shows a statistically significant difference from the null hypothesis of there being no change. Use of the word “trend” is a statistical one. It does not imply any valid *extrapolation* of the observed change beyond the period of the data set being examined by the linear regression.

2 Results and Discussion

2.1 Temperature and dissolved oxygen

Depth profiles of temperature and dissolved oxygen (DO) were measured at the mid lake site, Site A (Fig. 1), at about 2-3 weekly intervals, depending on the weather, throughout the year. From January 2002, depth profiles of temperature and DO were also measured at Site B (Kuratau Basin) and Site C (Western Bays) (Fig. 1). These data, plus profiles measured during the full water quality samplings at Site A on 13 November 2002 (spring) and 3 April 2003 (autumn), are presented in Appendix 4. The Site A time-series temperature and DO data from specific depths of 20 m (epilimnion) and 130 m (hypolimnion) collected in the monitoring programme since 1994 are presented in Figure 2. Temperature and DO data from the three sites are compared in Figure 3.

Temperature and DO data indicate that Lake Taupo mixed in winter 2002 and winter 2003. The mixing in winter 2002 was accompanied by rapid reduction in bottom water temperature of 0.4 ºC, from 11.27 ºC to 10.85 ºC, but in winter 2003 the reduction in bottom water temperature was less at 0.2 ºC, from 11.27 ºC to 11.06 ºC (Fig. 2A).

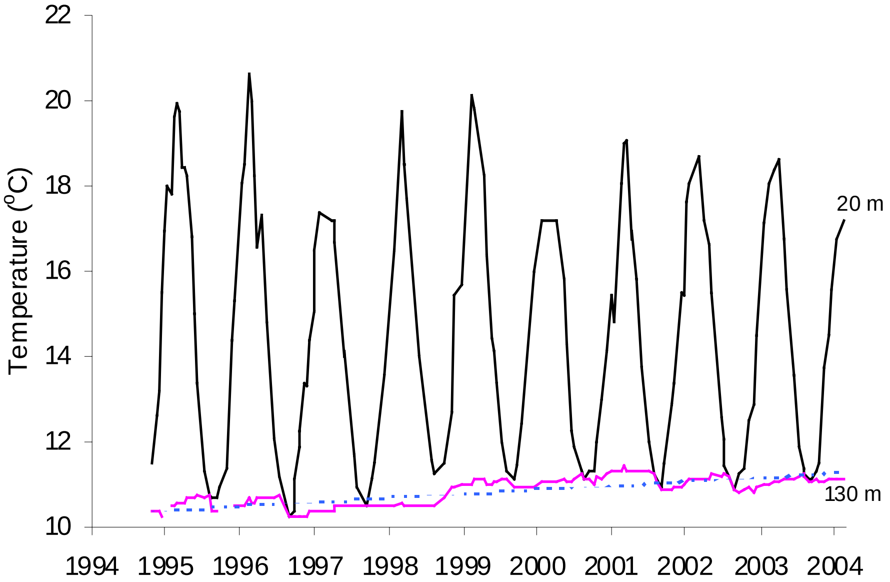

Figure 2A: Time-series temperature from 20 m (black line) and 130 m (pink line) depths. Winter mixing occurred where these two lines meet. The data show the lack of mixing in winter 1998 and only partial mixing in 1999. The lake has completely mixed each year since 2000. The broken blue line is referred to in the text.

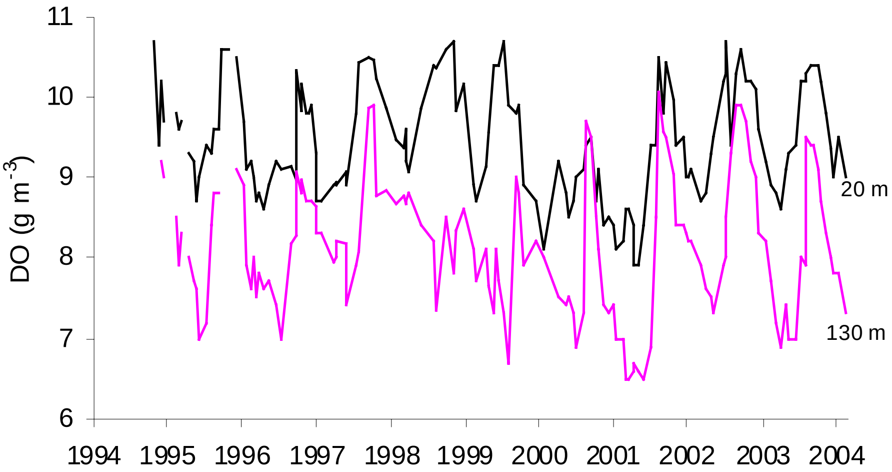

Figure 2B: Time-series dissolved oxygen data from 20 m (black line) and 130 m (pink line) depths. Mixing and complete reoxygenation occurred where the 2 lines in the temperature data (Fig. 2A) meet each winter. This corresponds with the period that the 2 lines on the oxygen data meet. However, where temperature data indicate mixing and the 2 lines of the oxygen data do not meet, there is incomplete reoxygenation (see text).

In previous reports, the apparent increase in bottom water temperature (broken blue line, Fig.2A) has been estimated as an annual rate. However, as the time-series database increases, it is apparent that there was a step-wise increase in bottom water temperature during the exceptionally warm year in 1998, rather than a gradual change over the whole time period. Prior to 1998, mean near-bottom water temperatures at 130 m were 10.51 ± 0.14 ºC (n = 63). From 1999 on, mean near-bottom water temperatures had increased to 11.12 ± 0.13 ºC (n = 80). This increase of 0.6 ºC has subsequently been maintained. Although the increase occurred about the time of introducing the RBR410 profiler, cross calibration checks confirm that the temperature increase is real, possibly associated with the warm year, and not a function of instrument error.

One effect of winter mixing is to replenish the oxygen in the lower water column. Complete mixing is indicated where the 20 m and 130 m temperature and DO data are the same (Fig. 2A, B). Complete reoxygenation is indicated when DO concentrations reach 100% saturation at both depths. At 11 ºC, 100% saturation for DO is 11 g m^{-3}. Oxygen concentrations at and below 20 m (Fig. 2B) rarely reach 11 g m^{-3}, indicating that Lake Taupo rarely ever becomes completely re-oxygenated. Occasionally the DO data are not the same even though the temperature data are at 130 m, as seen in winter 2003. This is due to incomplete mixing. Failure to reach 100% saturation indicates that there has been insufficient time during the mixed period to stir the oxygen into the lake. In 1998 and 1999 the lake did not mix, or partially mixed, temperature did not equilibrate and the oxygen depletion in the bottom waters became cumulative between years.

2.1.1 Three site comparisons

Temperature and DO profile data from the three monitoring sites since January 2002 are presented in figures 3 and 4, respectively, separated into upper water column (20 m) and near bottom (90 m). Although “near bottom” at Site A would be much deeper, 90 m data are used as a direct comparison by depth with the other two sites.

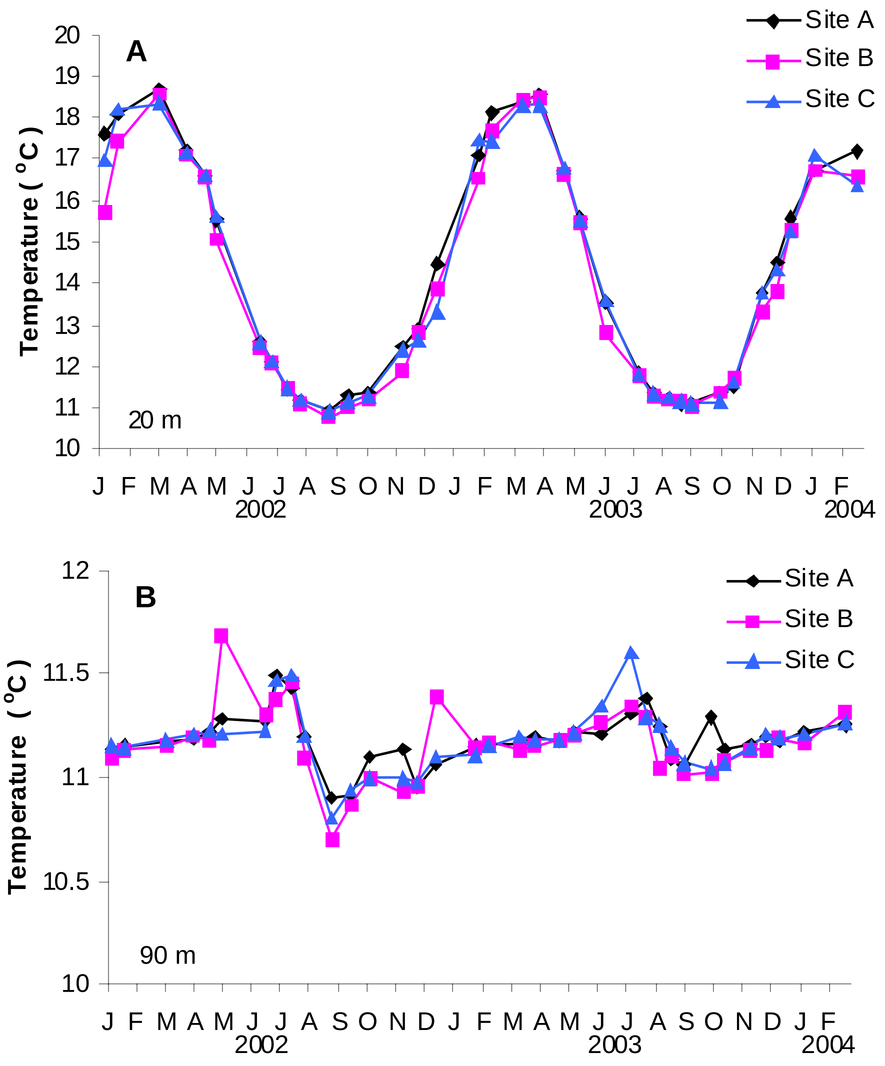

Figure 3: Summary of VHOD rates (± 95% confidence limit) and the dominant phytoplankton species during the preceding winter bloom.Comparison between temperature data in (A), the upper 20 m and (B), the lower water column (90 m) at the three monitoring sites: Site A, mid lake; Site B, Kuratau Basin; Site C, Western Bays.

In general, the upper water column temperatures at the three sites were comparable (Fig. 3A) with minor differences “on-the-day”. The data show that the upper water column was about 2 °C cooler in summer 2004 than in the preceding two years.

Temperatures in the lower water column were similar at the three sites, although there were occasional excursions with slightly warmer temperatures at one or other of the sites “on-the-day” (Fig. 3B). The overall rate of hypolimnetic warming during the stratified period is essentially the same for all three sites at about 0.5 ± 0.16 ºC.

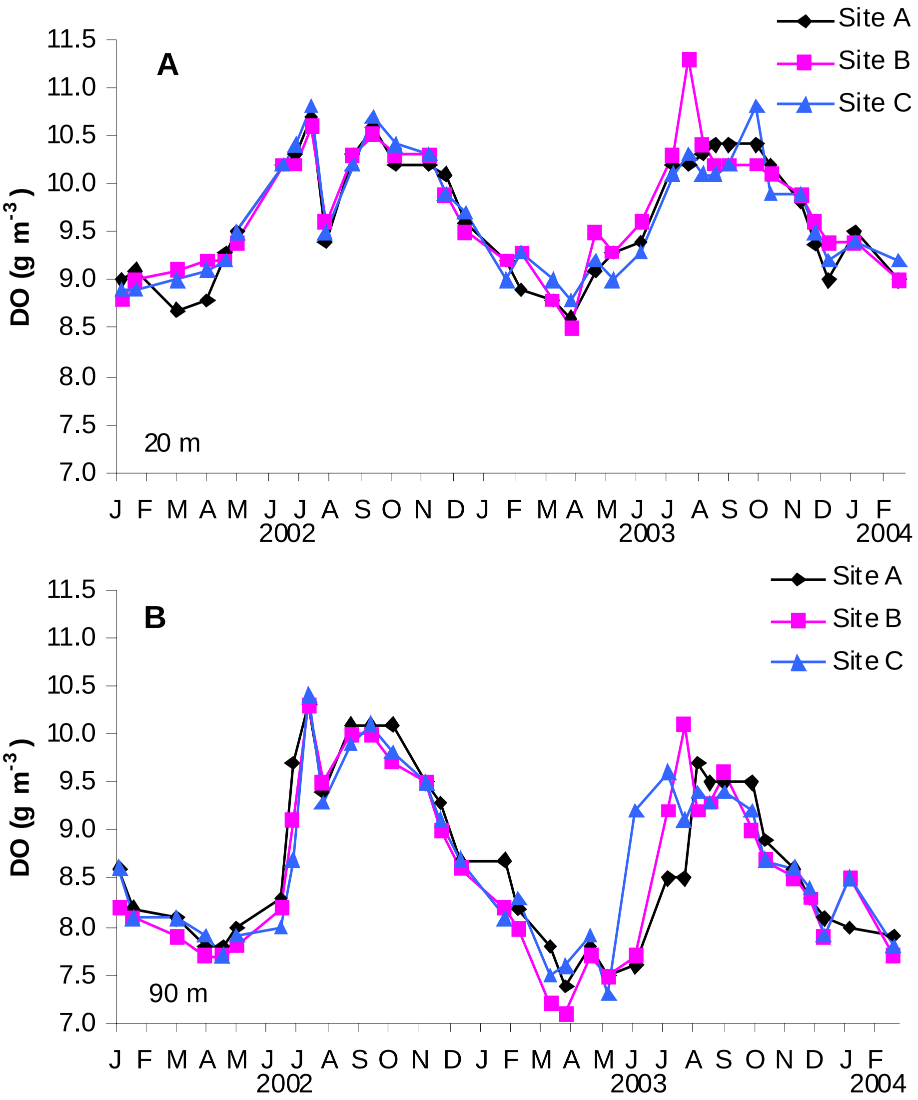

Figure 4:Comparison between DO concentrations in A), the upper 20 m and B), the lower water column (90 m) at the three monitoring sites: Site A, mid lake; Site B, Kuratau Basin; Site C, Western Bays.

As with the temperature data, there was little or no difference between sites in DO concentrations in the upper water column (Fig. 4A), although one value at site B (Kuratau Basin) was higher than at the other 2 sites and reached 100% saturation during winter mixing in 2003. In contrast, there were marked differences between sites in the DO concentrations in the lower water during winter mixing 2003 (Fig. 4B). The water column at site C (Western Bays) began to re-oxygenate about 1 month earlier than the other two sites, and there was a lag in reoxygenation between the three sites, with site A (Mid Lake) reaching maximum oxygen concentration almost 2 months after site C. This suggests deep mixing proceeded faster at site C than the other two sites. It also implies upwards mixing of nutrients from the hypolimnion occurred at different times across the lake, which has further implications for the development of the winter algal bloom as well as the residual nutrient content in the hypolimnion as an interannual indicator of nutrient recycling / regeneration.

The degree of separation between the three sites was not observed in the previous year but illustrates the potential difference between sites that can occur, and how data from a single site in a large lake might potentially give misleading information. It also indicates that there may be some important information obtained from three sites which would not be obtained from a single lake site. However, as site A was last to re-oxygenate, site A is a better site for long term monitoring than either site B or site C, if only a single site is used.

2.2 VHOD rate

The VHOD rate was estimated between September 2002 and May 2003 based on oxygen profile data collected at site A (Mid Lake). The VHOD rate in 2002/2003 was 13.76 ± 2.14 mg m^{-3} d^{-1} (mean ± 95% confidence limit) (Fig. 5).

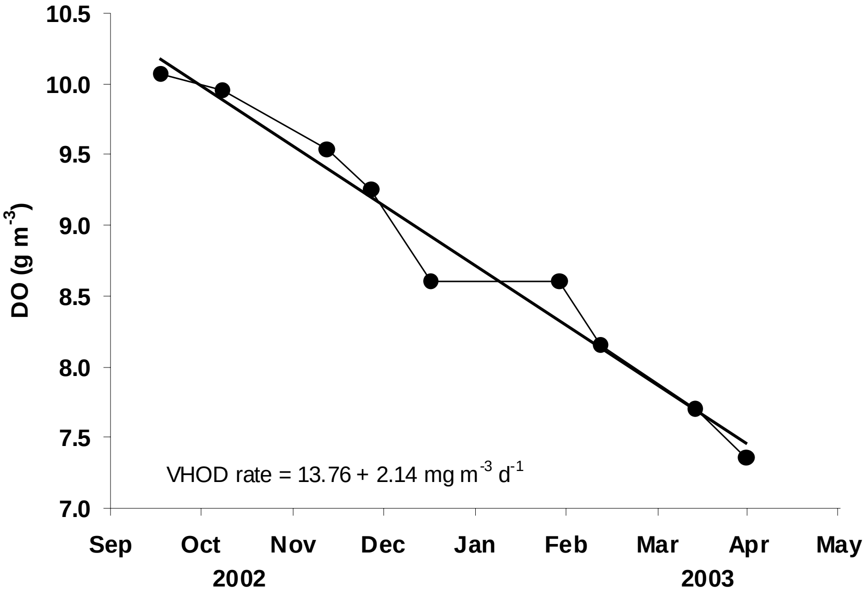

Figure 5: VHOD data and linear regression of 2002/2003. ($P < 0.001$, $r^2 = 0.9706$, $n = 9$).

Table 1: Summary of VHOD rates (± 95% confidence limit) and the dominant phytoplankton species during the preceding winter bloom.

Year	VHOD rate	Dominant phytoplankton species	
1994-95	8.93 (2.39)	*Aulacoseira granulata**	Diatom
1995-96	9.07 (2.77)	*A. granulata*	Diatom
1996-97	5.12 (1.37)	*Botryococcus braunii*	Colonial green
1997-98	3.21 (2.03)	*B. braunii*	Colonial green
1998-99	2.64 (1.90)	*B. braunii*	Colonial green
1999-00	5.11 (1.14)	*B. braunii* + *A. granulata* + *Cyclotella stelligera*	C.G. – Diatom mix
2000-01	9.34 (2.9)	*A. granulata*	Diatom
2001-02	9.06 (2.7)	*Asterionella formosa*	Diatom
2002-03	13.76 (2.14)	*A. formosa* + *A. granulata*	Diatom

* Not measured in winter but measured in October 1994.

The 2002/2003 VHOD rate is about 50% higher than the value for the previous year, 9.1 ± 2.7 mg m^{-3} d^{-1} (Table 1). Because past reductions in VHOD rates below 9 mg m^{-3} d^{-1} have been attributed to reductions in the BOD load or organic content in the hypolimnion, this increase above 9 mg m^{-3} d^{-1} should be attributed to an increase in the BOD load or organic content in the hypolimnion.

This is the highest VHOD rate recorded in the 9 year period of the monitoring programme and, although it may prove to be just an “unusual year”, it is somewhat disturbing as it is a further indication of declining water quality that is consistent with declining water clarity, increasing hypolimnetic nutrient accumulation, and increasing algal biomass in the lake. The source of that additional BOD may have been larger than normal algal bloom in spring 2002 or the presence of an algal bloom in summer 2002/2003.

2.2.1 Three site evaluation

The availability of a complete year of oxygen data from the three sites in Lake Taupo provides an opportunity to compare the VHOD rates calculated using data from each of the three sites. The routine VHOD calculation (see Appendix1 for calculation details) is estimated for the whole lake as depth integrated oxygen concentration changes between 70 m and 150 m at site A, Mid lake. For the three site comparison, the VHOD rate from each site has been calculated using oxygen data from that site between 70 m and 100 m for that depth slice over the whole lake.

The VHOD rates for 2002/2003 for the 70-100 m depth band, using data from each of the three sites are in close agreement, ranging from 13.44 to 14.99 mg m^{-3} d^{-1} with a mean VHOD rate of 14.0 mg m^{-3} d^{-1} (Fig. 6). As the 95% confidence limits for each value overlap between the three sites, as well as the routine site A VHOD value, it is not possible to distinguish between the three estimates within the experimental error of the method. This indicates that previous estimates of VHOD from site A are valid for the whole lake.

Notwithstanding this, there are minor differences in the VHOD rates between the three sites with the Kuratau Basin (site B) value being highest and the Western Bays (site C) being lowest. From our present knowledge of the lake, these differences were to be expected, and the higher rate based on the Kuratau Basin data is consistent with slightly elevated productivity in the southern end of the lake due to the major inflows.

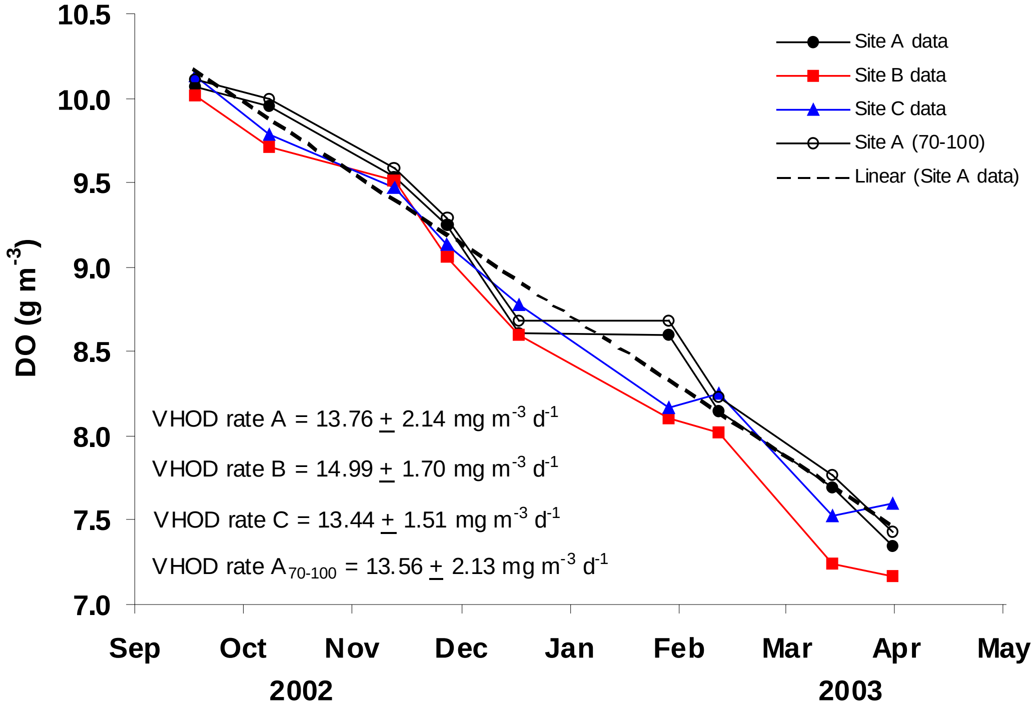

Figure 6:Comparison of VHOD rates for 2002/2003 calculated using oxygen profile date from the three sites on Lake Taupo. Rates calculated from depth integrated oxygen concentrations between 70 m and 100 m. The routine site A rate is included, with its regression line (see Fig.5) for direct comparison. All rates: $P < 0.001$, $r^2 > 0.97$, $n = 9$.

2.3 Secchi depth

The time-series Secchi depth data (Fig. 7) consistently show a tendency for low clarity in winter after mixing and higher clarity in summer. This seasonality imparts high variability to the time series of Secchi depth and this was seen in the data from the 2001/02 monitoring period, which had both extreme high and low values. Such extreme swings in water clarity were not seen in the 2002/03 data.

Water clarity in spring 2002 increased as the winter diatom bloom settled and before the summer bloom of colonial greens developed. A second clear phase occurred in February preceding the development of a cyanophyte bloom in autumn. Lower water clarity occurred from June through to October 2003, consistent with the development of the winter bloom.

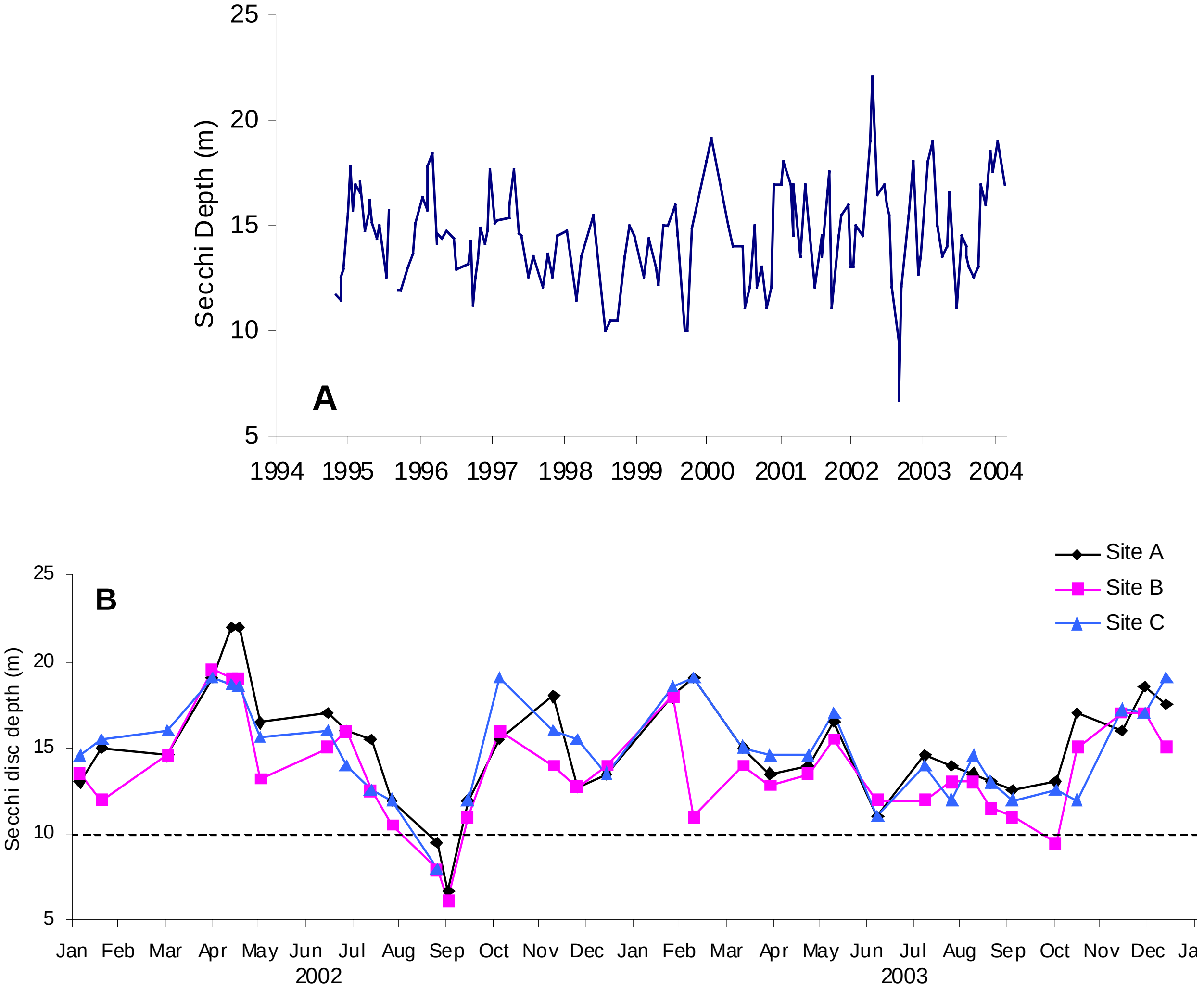

Figure 7:Time-series Secchi disc depth data A), for the mid lake site, Site A, and B), a comparison between the three sites from January 2002 to December 2003, inclusive. Site A, mid lake; Site B, Kuratau Basin; Site C, Western Bays. Broken line at 10 m was the lowest recorded clarity before 2002.

Comparison of the Secchi disc depth readings from the three sites (Fig. 7B) shows that, while there was reasonably good agreement between the three sites in 2002, Site B (Kuratau Basin) had substantially lower clarity on at least two occasions — at the beginning of the blue-green algal bloom in February 2003 and during the winter diatom bloom in August/September 2003.

2.4 Phytoplankton

The trend of increasing chlorophyll *a* concentration in the upper 10 m of the water column at the mid lake site, Site A, noted in the previous annual report (Gibbs 2002), has continued with a mean rate of 0.10 ± 0.03 mg m^{-3} y^{-1} ($P < 0.0001$, $r^2 = 0.25$, $n = 141$) (Fig. 8) over the 9 year monitoring period. The overall pattern of chlorophyll *a* concentration changes since 1994 is one of minimum concentrations in summer and maximum concentrations during the winter algal bloom. However, while the then record high chlorophyll *a* concentrations (2.6 mg m^{-3}) in winter 2002 coincided with a record low Secchi disc depth (6.7 m), the peak winter 2003 chlorophyll *a* concentrations of 2.9 mg m^{-3} at site A, exceeded the previous record but only had a minimum Secchi disc depth of 11.1 m.

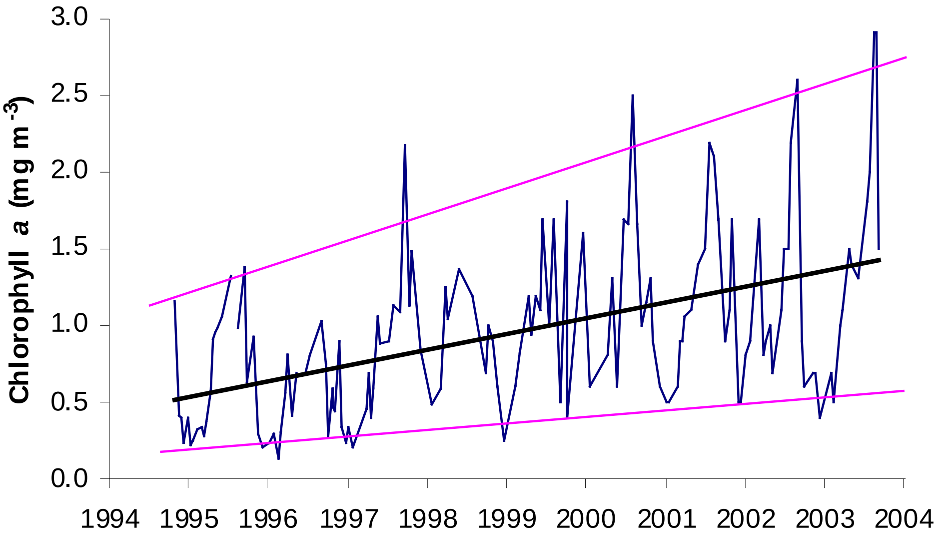

Figure 8: Time-series chlorophyll *a* concentrations in the upper 10 m of Lake Taupo at the mid-lake site, Site A. The solid regression line represents a statistically significant increase in the mean chlorophyll *a* concentrations of 0.10 ± 0.03 mg m^{-3} y^{-1} (P < 0.0001, r^2 = 0.25, n = 141). (Broken pink lines, see text.)

As a general observation, the long term chlorophyll *a* data (Fig. 8) appear to provide a clearer indication of changing water quality in Lake Taupo than the long term Secchi disc depth data (Fig. 7A). This difference is consistent with chlorophyll *a* being a measure of algal biomass and hence is a response to nutrient enrichment, whereas Secchi disc depth is a function of the number and size of particles in the water column and includes dust, pollen, and river-borne silt as well as phytoplankton. The long term chlorophyll *a* data indicate that, although algal biomass is always lowest in early summer (~December) and highest in winter (~August), these minimums and maximums are different each year. “Eye-balling” the data suggests that there is a tendency for both the summer minimums and the winter maximums to be increasing (broken pink lines, Fig. 8).

2.4.1 Three site comparison

The comparison of chlorophyll *a* concentrations at the three sites (Fig. 9) shows a close similarity between sites with concentrations changing across the lake at about the same time. One obvious exception was the very high chlorophyll *a* concentration at site B (Kuratau Basin) in November 2002. This corresponds with locally intense proliferations of diatoms (*Aulacoseira granulata, Fragilaria crotonensis,* and *Asterionella formosa*). Also noteworthy is that the chlorophyll peak in winter bloom 2003 was higher at sites B and C than at site A and exceeded 3 mg m^{-3} for the first time in the surface waters of Lake Taupo.

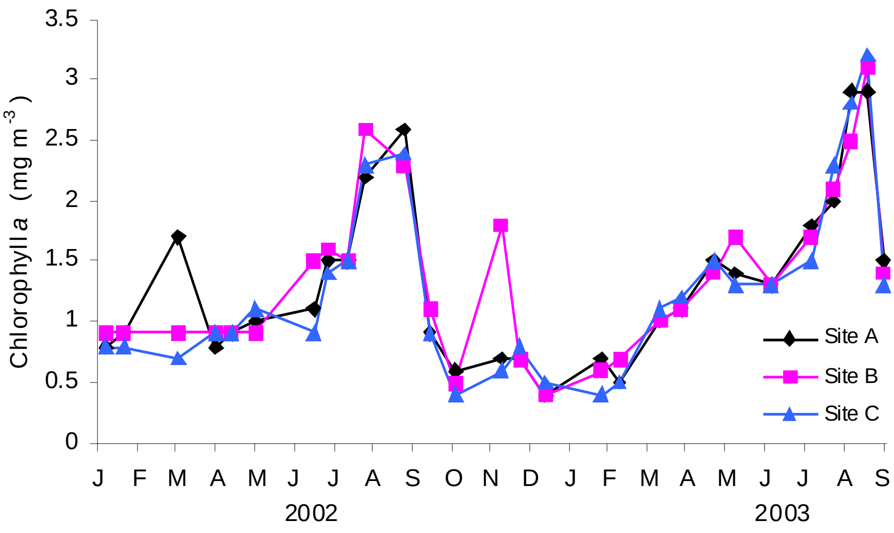

Figure 9:Comparison of chlorophyll *a* concentrations in the top 10 m of water column at the three sites since January 2002; Site A, mid-lake; Site B, Kuratau Basin; Site C, Western Bays.

2.4.2 Species abundance

Blue-green algae (*Anabaena circinalis / Anabaena flos-aquae*) are often present in low numbers in the phytoplankton assemblage of Lake Taupo. However, while the colonial green algae, *Botryococcus braunii,* was the dominant species in summer, from November 2002, *Anabaena* ranked about 4 or higher in dominance and peaked briefly as dominant species at site C in January 2003 before becoming the dominant species at all sites in March 2003. At that time, *Anabaena* cell counts in the open water were recorded at about 1000 per ml but at very much higher concentrations in wind-drift blooms along the northern shores. *Anabaena* species were either dominant or co-dominant with *Botryococcus braunii* through March and April at all sites. *Anabaena* dominance was last recorded at site A, mid lake, in mid May. Blue-green algae disappeared from the phytoplankton assemblage with the onset of deep mixing. The timing of the appearance of the *Anabaena* bloom in autumn 2003 was almost the same as in 2001 (cf. Gibbs et al. 2002). Open water cell counts were higher in April 2001 but the duration was not as long and hence shoreline impacts were less than in 2003.

As winter mixing progressed, the algal species assemblage changed to include the diatoms *Asterionella formosa* and *Aulacoseira granulata*, which became the dominant species in the winter bloom 2003. *Botryococcus braunii* remained as a co-dominant species until July 2003.

Of potential interest from the long-term record is the recent emergence of the diatom *Fragilaria crotonensis* as the dominant species in the spring phytoplankton assemblage. In 1994/95 it was not recorded and was reported only occasionally at an abundance level of up to 4 in 1999/2000.

2.5 Nutrients in the upper waters

2.5.1 Inorganic nutrients

Long-term nutrient data show no major differences to trends seen previously. At the mid lake site, Site A, time-series plots of DRP (Fig. 10A), and NH_4-N and NO_3-N (Fig. 10B) show values within the seasonal range measured over the last 9 years of the monitoring programme. DRP has a mean concentration of about 1.0 mg m^{-3} with maximum values of up to 3 mg m^{-3}. In contrast mean NH_4-N and NO_3-N concentrations appear to have been slowly declining over the last 9 years, although maximum concentrations are largely unchanged.

2.5.1.1 Three site comparisons

Comparison of the data since January 2002 for the three sites shows relatively close agreement for DRP (Fig. 11A) and NO_3-N (Fig. 11B). The detailed expansion of these data for the last two years highlights the cyclical nature of DRP concentrations, with maximum concentrations developing after winter mixing then declining to minimum concentrations by the end of the stratified period. In contrast, NO_3-N concentrations appear to increase at winter mixing then rapidly reduce to near zero soon after. This is consistent with the expectation that Lake Taupo is nitrogen limited for much of the year.

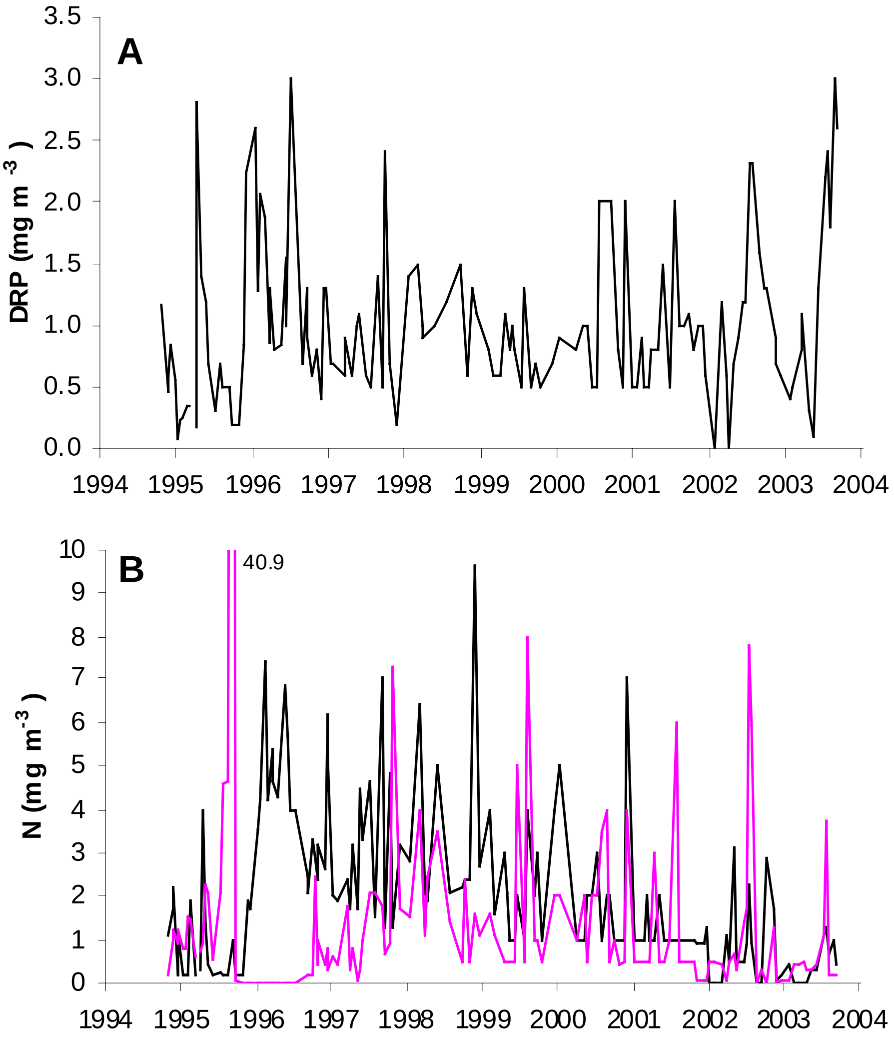

Figure 10:Time-series plots of A) DRP and B) NH_4-N (black) and NO_3-N (red) concentrations in the upper 10 m. For plotting purposes values recorded as below detection level (Appendix 4) have been set at detection level to distinguish them from actual low value estimates.

The DRP appeared simultaneously at all sites in the upper water column although there was a second "pulse" at sites B and C in October 2002. It was not until May 2003 that DRP concentrations reached near zero concentrations across the lake. This coincides with the end of the period of blue-green algal dominance and may indicate that they "ran out" of P. However, the disappearance of the blue-greens also coincides with the deepening of the thermocline and hence it is more likely that they dispersed due to deep mixing.

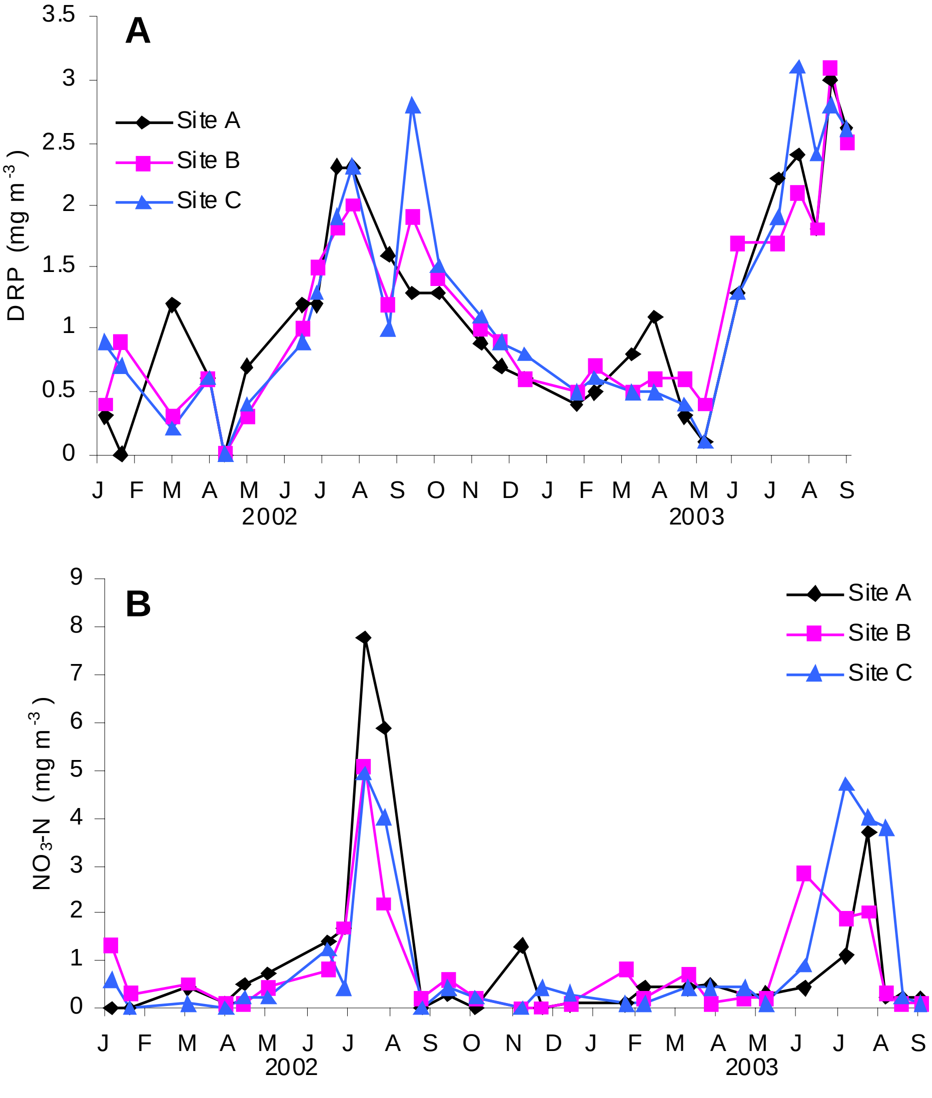

Figure 11:Comparison between the three sites for A), DRP, and B), NO_3-N, concentrations in the upper 10 m at Site A, mid lake; Site B, Kuratau Basin; Site C, Western Bays.

From May 2003 on, DRP and NO_3-N began to increase which is consistent with the deepening thermocline allowing partial mixing of nutrients from the hypolimnion up into the epilimnion. In 2002 this phase of the lake seasonal cycle saw the algal biomass begin to increase (Fig. 9). In 2003, algal biomass was already high at this time, presumably due to the presence of the blue-green algae, and it continued to increase from that level to reach a new maximum.

Concentrations of DRP and NO_3-N in the hypolimnion before winter mixing are about 10 and 40 mg m^{-3}, respectively. Consequently, as algae typically utilise N and P in the ratio of 15:1 for growth, the NO_3-N mixed upwards from the hypolimnion, during the lowering of the thermocline, is used for primary production faster than the DRP and thus disappears leaving free DRP in the water column as the winter bloom develops.

In contrast to the simultaneous appearance of NO_3-N at all sites in July 2002, in 2003 free NO_3-N first appeared in the upper water column at site B at the beginning of June, then at site C in early July and finally at site A in late July. This apparent sequential appearance of NO_3-N is comparable with the different times of mixing as indicated by the oxygen data (section 2.1.1) and suggests that winter mixing in 2003 was somewhat slower than in 2002, and the vertical driving force may have been weaker in 2003.

Apart from wind-induced mixing during the period of isothermy, deep mixing in Lake Taupo can be augmented by geothermal stirring. The effects of this were seen in winter 2002 when a large amount of DON (c. 1200 t) was thought to have been entrained from the sediments by a rising warm water plume event near site A (Fig. 12). Although there was a small increase in the DON concentration at site A in autumn 2003, there was no comparable stirring event during the mixed period as seen the previous year.

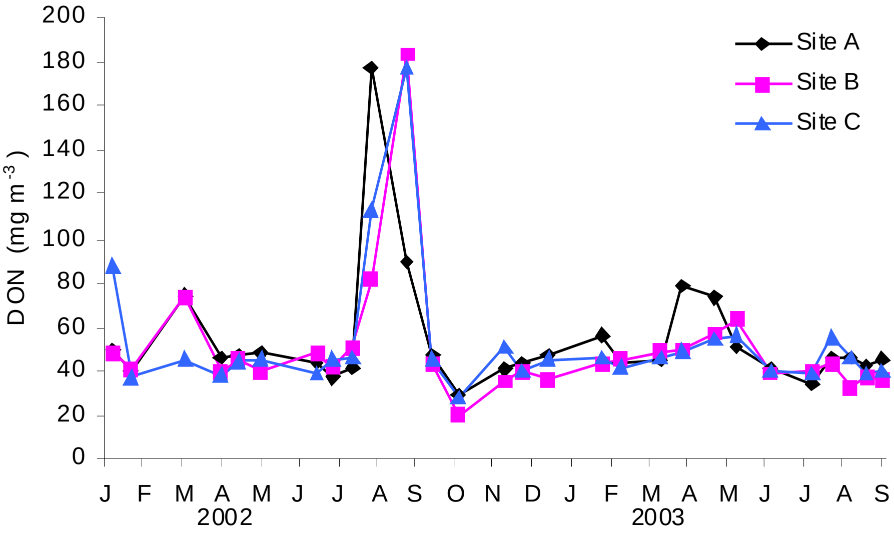

Figure 12:Comparison of DON concentrations in the upper 10 m at the three sites since January 2002.

2.6 Nutrient accumulation in the hypolimnion

Water sample collection from 150 m at Site A continued through the 2002-2003 stratified period and the data demonstrate a consistent seasonal pattern (Fig. 13). Although there were small variations in the maximum DRP and NO_3-N concentrations reached before winter mixing, there appears to have been little change in these accumulation rates in the last three years. An NH_4-N pulse appears during the mixed period but is variable in magnitude and period from year to year.

Winter mixing is indicated by the sudden drop in DRP and NO_3-N concentrations about the beginning of August. This is somewhat later than the appearance of these nutrients in the upper water column (section 2.5.2). This temporal difference is a function of the downwards movement of the thermocline as winter mixing proceeds.

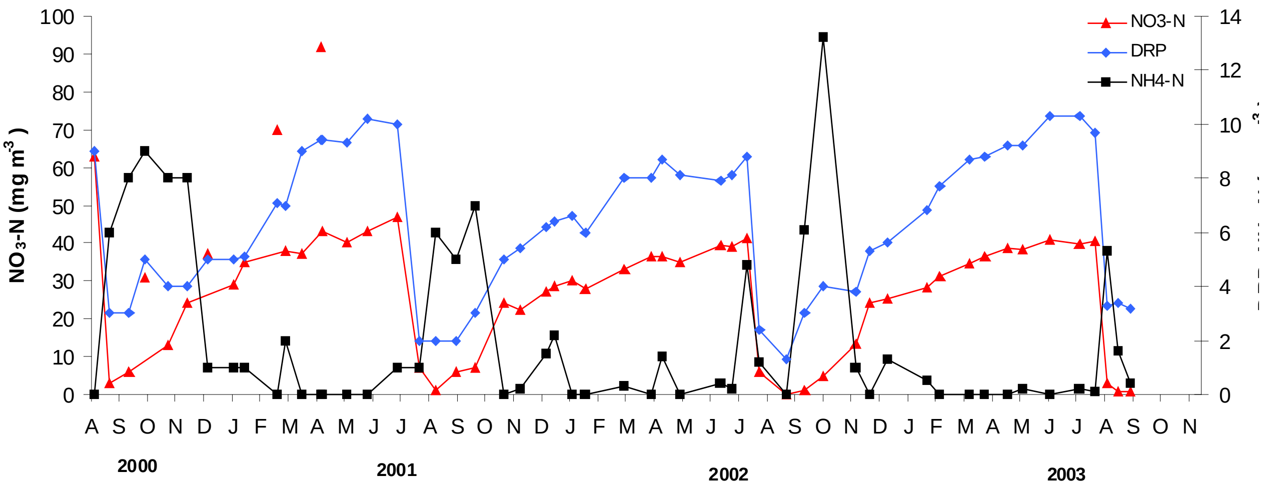

Figure 13:Time-series bottom water (150 m) nutrient concentrations at the mid-lake site (Site A). Individual NO_3-N data points in 2000/01 are regarded as anomalous (possibly due to geothermal pulses). Note DRP and NH_4-N data use right hand axis.

The mass of NO_3-N in the hypolimnion was lower in 2002/03 than in 2001/02. However, from the long-term time-series data (1974-2003), estimates of the of NO_3-N in the water column of the lake below 70 m each autumn show that the mass of NO_3-N has increased by 12.5 t y^{-1} ($P < 0.001$, $r^2 = 0.66$, $n = 15$), while in the whole lake it has increased by an average of about 17.7 t y^{-1} (Fig. 14).

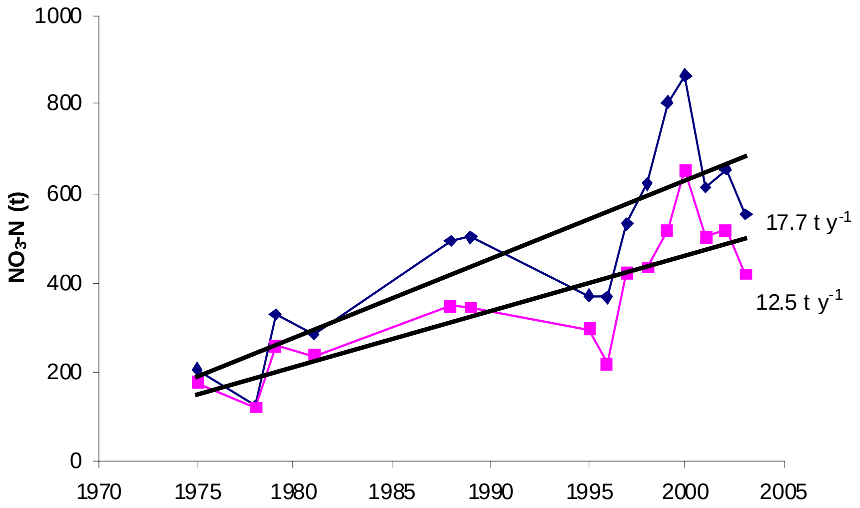

Figure 14: Total mass of NO_3-N in Lake Taupo in autumn before winter mixing. Upper curves (black) are for the whole lake, the lower curves are for the hypolimnion below 70 m only ($P < 0.001$, $r^2 = 0.66$, $n = 15$).

Long-term time-series data for TN based on spring profile data (Fig. 15) show a non-statistically significant increase of about 20 t y^{-1}. The increased TN in spring 2002 is associated with the pulse input of DON in July 2002, and the overall increase is consistent with the 1200 t N input estimated for that event.

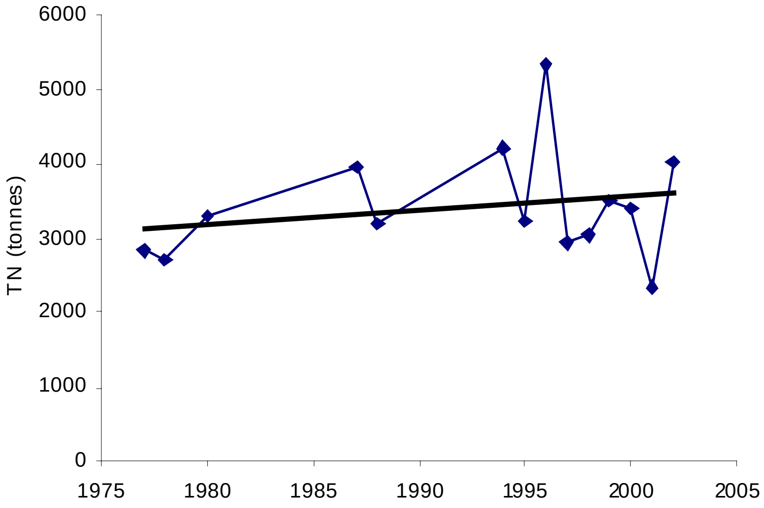

Figure 15: Change in total nitrogen (TN) mass in Lake Taupo in spring (whole lake). The slope of the regression line is about 20 t y^{-1} and is not statistically significant.

3 Summary

- Phytoplankton biomass, as indicated by chlorophyll *a* concentration, continues to increase with a rate of 0.10 ± 0.03 mg m^{-3} y^{-1} ($P < 0.0001$, $r^2 = 0.25$, $n = 141$) over the 9 year monitoring period. The highest chlorophyll *a* concentrations occurred in August – September associated with the lowest water clarity.

- Winter 2003 chlorophyll *a* concentrations exceeded 3 mg m^{-3}, and are the highest recorded in Lake Taupo over the 9 year monitoring period or during the 29 year period since 1974.

- A late summer bloom of blue-green algae (*Anabaena circinalis / Anabaena flos-aquae*) developed in March 2003 and shore-line accumulations of the drifting algae caused areas of the lake to be closed for contact recreation for the first time ever.

- The winter bloom was dominated by the diatom mix of *Asterionella formosa* and *Aulacoseira granulata* in winter 2003 rather than just *Asterionella formosa* which dominated in 2002. Chlorophyll *a* concentrations exceeded 3 mg m^{-3} in the western bay and the southern end of the lake, also for the first time ever.

- Nitrate accumulation rate in the hypolimnion was slightly lower than the previous year at 12.5 t y^{-1} ($P < 0.001$, $r^2 = 0.66$, n=15), and 17.7 t y^{-1} for the whole lake. The mass accumulated in the hypolimnion by autumn is higher than at the beginning of the long-term monitoring programme and is about double that measured in 1975.

- The 2002/03 net VHOD rate at 13.76 ± 2.14 mg m^{-3} d^{-1} (mean ± 95% confidence limit) was about 50% greater than the previous year. There was close agreement between VHOD rates calculated using data from the three sites in the 2002/03 stratified period.

- Nutrient concentrations (DRP, NH_4-N, and NO_3-N) in the upper water column were generally comparable with concentrations in previous years. However, winter DRP concentrations were substantially higher in 2002 and 2003 than the previous 5 years, and both NH_4-N, and NO_3-N concentrations were lower during the summer months.

- Bottom water temperatures remain higher than at the start of the monitoring programme, but it is now apparent that rather than being a gradual increase, there was a step-wise increase of about 0.6 ºC in 1998, about the time of the world wide warmest year.

- Water clarity, as indicated by mean Secchi disc depth data is presently less than 15 m across the lake. There were no extreme values as seen the previous year. The three site data since January 2002 give mean values of 14.5, 13.7, and 14.9 m at sites A, B, and C, respectively, confirming the poorer water quality in the southern end of Lake Taupo.

- Bottom water (150 m) nutrient concentrations increased at a similar rate to the previous year, except for NH_4-N concentrations which declined over the 2 winter periods so far monitored.

- The pulse of DON which appeared in the upper water column in winter 2002, was the likely cause of the additional ~1000 t of total nitrogen that appeared in the lake in spring 2002.

- The three site comparison shows that there is remarkably close agreement between sites and thus there can be confidence in the use of data from the mid lake site as representative of the whole lake. The additional site data did show a difference in the timing of deep mixing in 2003 and thus consideration should be given to the value of continuing the three site monitoring.

In a previous annual report (Gibbs et al. 2002), 3 trends in the data were identified — increasing phytoplankton biomass in the upper 10 m, increasing NO_3-N mass in the lake prior to winter mixing, and an increasing range in the variability of water clarity — that were of concern with respect to the water quality of Lake Taupo. These trends in the data are still present as is the concern.

Acknowledgments

This report was made possible by the team effort of Les Porter and Jill Cogswell of the Taupo Harbourmaster's Office, and Eddie Bowman (NIWA Rotorua) who have collected the data. Much of the success of this monitoring programme is attributable to the extra effort by Eddie.

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Appendix 1. Site map, sampling strategy and methods

Copied from Gibbs 1995, and modified after 1998.

(1) Site Map

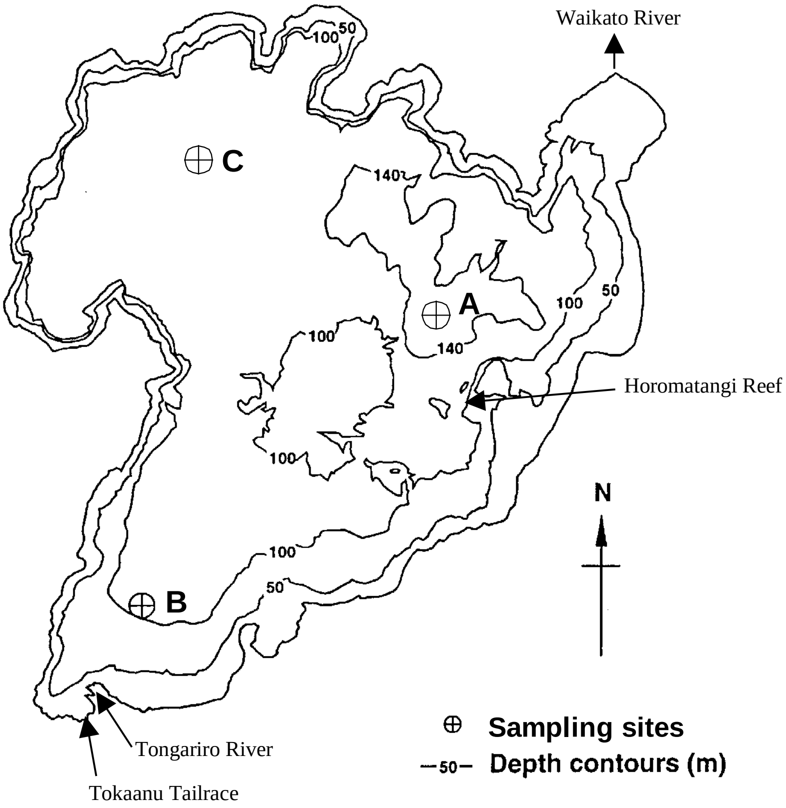

Figure 1: Site map of Lake Taupo showing location of the routine monitoring site at mid-lake (A), and the two additional; sites at Kuratau Basin (B) and the Western Bays (C).

(2) Methods

The sampling site was selected in the central basin of Lake Taupo (Site Map) with a water depth of about 160 m. This site is more than 5 km from the nearest land and is exposed to both the north-south and east-west axis of the lake.

To calculate VHOD requires two measurements each year far enough apart in time for a measurable change to occur in the DO concentrations in the hypolimnion of the lake. Details of the procedure and limitations of this measurement are described by Vant (1987). For the monitoring of Lake Taupo, which mixes briefly in winter between July and August, the initial sampling time was selected to be in October, to give sufficient time for thermal stratification to establish a stable hypolimnion. The final sampling time was selected to be in April, before lake cooling causes the downward movement of the thermocline which precedes the winter mixing.

At each of these biannual samplings, a detailed profile of DO and temperature was measured. Prior to 1998, measurements were made at 1 m depth intervals through the full depth of the water column using an *in situ* recording Applied Microsystems STD-12 profiler fitted with a Royce DO sensor, and compared with manual measurements of DO and temperature made at 10 m depth intervals from the surface to the bottom of the lake using a Yellow Springs Instrument (YSI) model 58 dissolved oxygen meter fitted with a stirred Model 5739 probe on a 160 m cable. Subsequent to 1998, a Richard Brancker Research (RBR) model TD410 conductivity-temperature-depth (CTD) profiler fitted with a stirred YSI model 5739 DO sensor was used. The DO sensor was calibrated regularly by NIWA, Rotorua staff.

The following parameters were also measured as profiles from water samples collected using a van Dorn water sampling bottle starting at 1 m and then at 10 m intervals from 10 m to the bottom of the lake:

DO, chlorophyll *a*, dissolved reactive phosphorus (DRP), dissolved organic phosphorus (DOP), particulate phosphorus (PP), total phosphorus (TP), nitrate + nitrite nitrogen* (NO_3-N), ammoniacal nitrogen (NH_4-N), dissolved organic nitrogen (DON), particulate nitrogen (PN), total nitrogen (TN), urea nitrogen (Urea-N), total suspended solids (SS), volatile suspended solids (VSS), particulate carbon (PC), dissolved organic carbon (DOC), and water colour. (* Little, if any nitrite is ever found in the Lake Taupo water column, hence the use of NO_3-N).

Additional parameters measured but not as complete profiles were:

water clarity (by Secchi disc depth) and algal species composition and abundance on water samples from 1, 10, 50, 100, and 140 m.

Determinations on the water samples were made with the standard methods routinely used for freshwater analysis by NIWA.

Data for the low level monitoring programme were scheduled to be collected from the mid-lake sampling station at 2 weekly intervals. The practicality of achieving this target was limited by the weather and in reality data were generally collected at about 2-3 weekly intervals. Parameters measured were:

DO and temperature profiles at 1 m depth intervals to the bottom of the lake by RBR TD410 CTD profiler, water clarity as Secchi disc depth, and a 10 m tube water sample was collected for measurement of chlorophyll *a*, NO_3-N, NH_4-N, TN, DRP, TP, and algal species dominance.

Near-bottom water samples from 150 m were collected using a van Dorn water sampling bottle and analysed for DRP, NO_3-N, and NH_4-N.

(3) Statistical methods

Copied from Gibbs (2000b).

In this report we have used linear regressions and associated statistical tests to examine trends. The key result of these procedures is the coefficient of determination (r^2), which measures the amount of variability in the data that is accounted for by the regression. Another is the P-value.[1] This can be used as a weight of evidence against the hypothesis that there was in fact no trend. This weight is strong when P is small, meaning that a trend at least as large as that measured could have occurred merely by chance—we have only a limited number of data from which to infer the strength of any trend, so our measurements always are uncertain to some degree. So if P is low enough (taken as less than 5% in this report, which is the usual practice), it is conventional to say that the measured trend is "statistically significant", and that convention is followed in this report. However, it is important (and often not realised) to note that the P-value cannot be used as an *absolute* weight of evidence. This is because it tends to decrease as the number of samples taken in a given period is increased. For example, when we plot monthly Secchi disc depth data from 1994–2001 (Figure 3A, Gibbs 2000b) with these 93 data we obtain a statistically significant result (because $P < 0.05$)—even though the coefficient of determination was only $r^2 = 0.0445$. When we plot the minimum winter clarity over this period we then have only 7 data. In this case (Fig. 3B, Gibbs 2000b) we happen to have the same measured trend slope with a much higher coefficient of determination ($r^2 = 0.464$), yet the result is *not* statistically significant (because $P = 0.09$). This is entirely because of the reduced number of samples in the winter minimum case. What this makes clear is that the P value is useful as a *relative* weight of evidence when comparing datasets of the *same size*, but it has no evidential meaning when comparing results from datasets of very different sizes.

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[1] It is defined as the probability of obtaining a trend at least as extreme as was obtained if in fact there was no trend at all.

Appendix 2. The Calculation of Net VHOD Rates

Copied from Gibbs 1995.

Rationale

In the strictest terms, VHOD can only be calculated for a lake which has thermally stratified and the resultant thermocline provides an effective barrier against re-oxygenation of the hypolimnion. The measure of the barrier efficiency is the rate of heating of the hypolimnion following stratification as heat will be transferred across the thermocline at a similar rate to oxygen.

In Lake Taupo, the thermal inertia of the hypolimnion is so great that heating during the stratified period is typically about 0.2 °C and never more than 0.4 °C over a 200 day period. While this would seem to meet the temperature criterion, in a lake that large, oxygen can be transferred into the hypolimnion by mechanisms other than diffusion.

Wind induced mixing may increase turbulent diffusion across the thermocline as would an internal seiche on the thermocline. Both of these mechanisms would also transfer heat. The penetration of the thermocline by an underflowing density current would entrain oxygenated surface water into the hypolimnion with that flow. As the density current must be colder than the thermocline to plunge through it, there is no heat transferred with this mechanism.

In Lake Taupo the Tongariro River is always colder than the surface water and for at least 9 months of the year it is also colder than the minimum lake water temperature of 10.3 ^{o}C. Thus, during most of the stratified period, the Tongariro River flows directly into the hypolimnion entraining oxygenated surface water with it. The amount of surface water entrained has been estimated to be about 10 times the river discharge. The amount of oxygen transported in this way is likely to be more than 200 tonnes per day (Gibbs 1996).

Clearly this is a substantial oxygen input which invalidates the concept of the thermocline forming an oxygen barrier for purposes of calculating the VHOD. The true VHOD may only be calculated during mid summer when the Tongariro River flows deep into the epilimnion but does not penetrate the thermocline.

The data collected to date indicates that hypolimnetic oxygen depletion occurs throughout the stratified period - with or without the density current re-oxygenation - and hence the value obtained from a VHOD calculation over the whole stratified period is the net VHOD rate taking all the factors affecting the hypolimnion into account.

As the data from 1996/97 shows the density current also advects dissolved organic nutrients with it, management strategies which affect the Tongariro River also impact on the lake. Hence it is appropriate to use the net VHOD rate for interannual comparisons rather than the true or gross VHOD rate calculated only through mid summer.

Method of Calculation

The following is the method used to calculate the net VHOD rate for Lake Taupo.
Requirements: Microsoft EXCEL spreadsheet or equivalent.

EASY PLOT statistical graphing package or equivalent.

Although the thermocline in Lake Taupo is usually at about 40 m, the isothermal water column lies below 70 m. To accommodate the gradient across the thermocline, the net VHOD rate calculation only uses oxygen data from below 70 m.

To calculate the mean oxygen concentration in the water column below 70 m, the DO concentration at each 10 m depth increment is multiplied by the volume of the 10 m slice it came from. This assumes rapid horizontal mixing and minimal vertical mixing to extrapolate one DO value across the whole lake. Historical data from multiple sites would suggest that this is a reasonable assumption.

The slice volumes (hypsographic volumes) for Lake Taupo have been calculated for 10 m thick layers centred on the 5 m point of each slice i.e. 75, 85, 95, 105 m etc. The DO measurements are made at 10 m intervals i.e. 70, 80, 90, 100, 110 m etc.

The mass of oxygen in each 10 m slice is the average of the DO concentration at the top and bottom of a slice multiplied by the slice volume. i.e. for the 70 - 80 m slice the calculation is:-

$$\text{mass}_{70\text{-}80m} = ((\text{DO}_{70m} + \text{DO}_{80m}) \div 2) \times \text{Volume}_{70\text{-}80m}$$

For each profile date:

Compute the mass for each 10 m slice between 70 m and 150 m and sum the results as the total mass of DO in the hypolimnion below 70 m. Sum the slice volumes below 70 m as the total volume of the hypolimnion below 70 m.

The volume weighted mean DO concentration is the total mass value divided by the total volume value.

Use the sequential day number or equivalent to construct a time series of volume weighted mean DO concentrations over the stratified period and use the CURVE FIT regression analysis of EASY PLOT to obtain the $y = ax + b$ straight line fit for these data.

As the DO data are in g m^{-3}, the value of 'a' is in g m^{-3} d^{-1}. Divide 'a' by 1000 to get the net VHOD rate in mg m^{-3} d^{-1}. The negative sign indicates a loss rate.

The hypsographic volumes and upper surface areas of the 10 m slices through the whole depth of Lake Taupo are listed at the end of this section.

Lake Taupo Hypsographic Data used in the Net VHOD RATE calculation.

Slice depths (m)	Volume of slice (km^3)	Upper surface area of slice (km^2)
0 - 10	5.849359	600
10 - 20	5.599702	570
20 - 30	5.459951	550
30 - 40	5.359888	542
40 - 50	5.538266	530
50 - 60	5.395538	528
60 - 70	4.899510	502
70 - 80	4.619076	478
80 - 90	4.278738	446
90 - 100	3.847292	410
100 - 110	3.006616	360
110 - 120	1.730549	245
120 - 130	0.837468	110
130 - 140	0.394439	60
140 - 150	0.073333	22
150 -	0	0

Statistical evaluation of the VHOD rate

From the 1999-2000 monitoring report (Gibbs 2000b), the VHOD rate is expressed as the calculated net VHOD rate ± the 95% confidence limit. This gives a meaningful estimate of the range within which the VHOD rate lies and is more appropriate than the standard deviation on the data or a standard error estimate on the regression coefficient.

Julian Date or sequential day number for each day of the year.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1	1	32	60	91	121	152	182	213	244	274	305	335	1
2	2	33	61	92	122	153	183	214	245	275	306	336	2
3	3	34	62	93	123	154	184	215	246	276	307	337	3
4	4	35	63	94	124	155	185	216	247	277	308	338	4
5	5	36	64	95	125	156	186	217	248	278	309	339	5
6	6	37	65	96	126	157	187	218	249	279	310	340	6
7	7	38	66	97	127	158	188	219	250	280	311	341	7

8	8	39	67	98	128	159	189	220	251	281	312	342	8
9	9	40	68	99	129	160	190	221	252	282	313	343	9
10	10	41	69	100	130	161	191	222	253	283	314	344	10
11	11	42	70	101	131	162	192	223	254	284	315	345	11
12	12	43	71	102	132	163	193	224	255	285	316	346	12
13	13	44	72	103	133	164	194	225	256	286	317	347	13
14	14	45	73	104	134	165	195	226	257	287	318	348	14
15	15	46	74	105	135	166	196	227	258	288	319	349	15
16	16	47	75	106	136	167	197	228	259	289	320	350	16
17	17	48	76	107	137	168	198	229	260	290	321	351	17
18	18	49	77	108	138	169	199	230	261	291	322	352	18
19	19	50	78	109	139	170	200	231	262	292	323	353	19
20	20	51	79	110	140	171	201	232	263	293	324	354	20
21	21	52	80	111	141	172	202	233	264	294	325	355	21
22	22	53	81	112	142	173	203	234	265	295	326	356	22
23	23	54	82	113	143	174	204	235	266	296	327	357	23
24	24	55	83	114	144	175	205	236	267	297	328	358	24
25	25	56	84	115	145	176	206	237	268	298	329	359	25
26	26	57	85	116	146	177	207	238	269	299	330	360	26
27	27	58	86	117	147	178	208	239	270	300	331	361	27
28	28	59	87	118	148	179	209	240	271	301	332	362	28
29	29		88	119	149	180	210	241	272	302	333	363	29
30	30		89	120	150	181	211	242	273	303	334	364	30
31	31		90		151		212	243		304		365	31

Appendix 3. Temperature and Dissolved Oxygen data

Includes accumulated data since 1994.

* represents data missing or invalid

Data from the Kuratau Basin (site B) and Western Bays (site C) are included as separate sheets following the mid-lake data from site A for that year.

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. 2002-2003

Mid-Lake site A for the period starting 1 July 2002

Temperature

Date	1/07/2002	17/07/2002	31/07/2002	29/08/2002	18/09/2002	9/10/2002	13/11/2002	28/11/2002	18/12/2002	30/01/2003	13/02/2003	17/03/2003	3/04/2003	28/04/2003	15/05/2003	12/06/2003	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003
Depth (m)																					
0	12.13	11.44	11.20	11.10	11.38	11.60	12.58	14.12	15.00	17.84	19.31	18.55	19.05	16.76	15.67	13.59	11.85	11.38	11.25	11.23	11.13
10	12.12	11.44	11.20	10.90	11.33	11.60	12.55	14.02	14.78	17.59	19.19	18.43	18.70	16.73	15.57	13.56	11.86	11.38	11.24	11.17	11.13
20	12.11	11.44	11.20	10.90	11.28	11.40	12.50	12.91	14.48	17.08	18.10	18.37	18.59	16.73	15.56	13.55	11.86	11.38	11.24	11.12	11.11
30	12.11	11.44	11.20	10.80	11.02	11.30	12.38	12.41	14.26	16.13	15.50	16.77	17.02	16.72	15.57	13.55	11.86	11.38	11.24	11.11	11.06
40	12.11	11.44	11.20	10.90	10.97	11.30	12.16	11.98	12.67	12.69	12.85	13.44	13.31	12.80	15.53	12.22	11.86	11.38	11.24	11.11	11.06
50	12.11	11.44	11.20	10.90	10.96	11.20	12.00	11.54	11.87	12.03	12.14	12.03	12.30	11.96	12.20	11.82	11.86	11.38	11.24	11.11	11.06
60	12.10	11.44	11.20	10.80	10.94	11.20	11.72	11.22	11.64	11.70	11.68	11.60	11.81	11.62	11.61	11.52	11.86	11.38	11.24	11.11	11.06
70	12.10	11.44	11.20	10.80	10.93	11.20	11.51	11.09	11.31	11.41	11.33	11.39	11.52	11.34	11.36	11.38	11.86	11.38	11.24	11.10	11.06
80	11.97	11.44	11.20	10.90	10.92	11.10	11.32	10.98	11.17	11.25	11.25	11.27	11.31	11.27	11.27	11.27	11.35	11.38	11.24	11.00	11.06
90	11.49	11.43	11.20	10.90	10.91	11.10	11.13	10.95	11.06	11.15	11.16	11.16	11.20	11.17	11.22	11.21	11.31	11.38	11.24	11.09	11.06
100	11.39	11.41	11.20	10.90	10.90	11.10	11.05	10.92	11.04	11.11	11.10	11.13	11.18	11.15	11.20	11.20	11.27	11.35	11.24	11.09	11.06
110	11.32	11.37	11.20	10.90	10.89	11.00	11.05	10.90	11.04	11.09	11.08	11.10	11.13	11.13	11.16	11.17	11.24	11.34	11.23	11.09	11.06
120	11.29	11.32	11.20	10.90	10.87	11.00	11.01	10.87	11.00	11.06	11.06	11.09	11.13	11.13	11.15	11.15	11.22	11.32	11.22	11.09	11.06
130	11.25	11.27	11.20	10.90	10.85	10.90	10.99	10.85	10.98	11.04	11.04	11.08	11.09	11.10	11.12	11.12	11.21	11.27	11.22	11.08	11.06
140	11.23	11.26	11.20	10.80	10.83	10.90	10.97	10.83	10.97	11.03	11.03	11.09	11.09	11.09	11.12	11.11	11.21	11.26	11.21	11.08	11.06
150	11.23	11.26	11.20	10.80	10.81	10.90	10.96	10.82	10.97	11.03	11.03	11.07	11.08	11.09	11.11	11.11	11.20	11.22	11.20	11.08	11.07

Dissolved Oxygen (g m^{-3})

Depth (m)																					
0	10.3	10.4	9.7	10.5	10.5	10.3	10.2	9.8	9.6	9.1	8.9	9.0	8.8	9.2	9.5	10.0	10.3	10.6	10.5	10.5	10.5

10	10.3	10.7	9.5	10.4	10.7	10.3	10.2	10.0	9.7	9.1	8.9	8.9	8.8	9.2	9.2	9.7	10.2	10.4	10.5	10.5	10.6
20	10.3	10.7	9.4	10.3	10.6	10.2	10.2	10.1	9.6	9.2	8.9	8.8	8.6	9.1	9.3	9.4	10.2	10.2	10.3	10.4	10.4
30	10.2	10.7	9.4	10.3	10.5	10.2	10.2	10.1	9.6	9.1	8.8	8.5	8.3	8.9	9.2	9.3	10.2	9.9	10.1	10.3	10.1
40	10.2	10.6	9.4	10.2	10.4	10.2	10.1	9.7	9.5	9.2	8.8	8.4	8.0	8.4	9.1	9.0	10.1	9.9	10.0	10.0	9.8
50	10.2	10.6	9.4	10.2	10.3	10.1	10.1	9.7	9.3	9.1	8.6	8.2	7.8	8.2	8.2	8.2	10.0	9.0	9.9	9.9	9.8
60	10.1	10.5	9.4	10.2	10.2	10.1	10.0	9.5	9.1	8.9	8.4	8.0	7.7	8.1	8.1	8.1	9.9	8.8	9.8	9.7	9.6
70	10.1	10.5	9.3	10.1	10.2	10.0	9.9	9.5	8.8	8.8	8.4	7.8	7.6	8.0	8.0	8.0	9.9	8.7	9.8	9.6	9.6
80	10.0	10.3	9.4	10.1	10.2	10.1	9.7	9.4	8.7	8.7	8.3	7.8	7.5	7.9	7.8	7.9	8.7	8.6	9.7	9.5	9.5
90	9.7	10.3	9.4	10.1	10.1	10.1	9.5	9.3	8.7	8.7	8.2	7.8	7.4	7.8	7.5	7.6	8.5	8.5	9.7	9.5	9.5
100	8.6	10.1	9.4	10.1	10.0	9.8	9.4	9.1	8.6	8.6	8.1	7.7	7.3	7.7	7.2	7.5	8.2	8.4	9.6	9.5	9.5
110	8.3	9.8	9.3	9.9	9.9	9.8	9.4	9.1	8.4	8.4	8.0	7.6	7.2	7.6	7.1	7.4	8.2	8.1	9.6	9.4	9.5
120	8.1	8.8	9.3	9.9	9.9	9.8	9.3	9.0	8.3	8.3	7.8	7.4	7.0	7.5	7.1	7.2	8.0	8.0	9.5	9.4	9.5
130	8.0	8.5	9.3	9.9	9.9	9.7	9.2	9.0	8.3	8.2	7.7	7.2	6.9	7.4	7.0	7.0	8.0	7.9	9.5	9.4	9.4
140	7.8	8.1	9.3	9.9	9.9	9.4	9.0	8.8	8.2	8.0	7.4	7.1	6.8	7.2	6.8	6.7	7.8	7.8	9.5	9.3	9.4
150	7.8	8.1	9.3	9.8	9.8	9.4	8.9	8.7	8.1	7.9	7.3	6.9	6.5	6.9	6.7	6.5	7.7	7.6	9.3	9.3	9.4

Secchi depth

(m)	16	15.5	12	9.5	12	15.5	18	12.7	13.5	18	19	15	13.5	14	16.5	11	14.5	14	13.5	13	12.5

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. 2002-2003

Additional site B (Kuratau Basin) for the period starting 1 July 2002

Temperature

Date	1/07/2002	17/07/2002	31/07/2002	29/08/2002	18/09/2002	9/10/2002	13/11/2002	28/11/2002	18/12/2002	30/01/2003	13/02/2003	17/03/2003	3/04/2003	28/04/2003	15/05/2003	12/06/2003	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003
Depth (m)																					
0	12.13	11.48	11.3	11	11.08	11.70	11.98	13.82	15.16	16.76	18.87	18.74	19.09	16.73	15.79	13.24	11.82	11.32	11.38	11.36	11.13
10	12.09	11.49	11.1	10.8	11.05	11.30	11.94	13.67	15.08	16.75	18.46	18.54	18.82	16.66	15.49	13.02	11.8	11.29	11.22	11.17	11.11
20	12.09	11.48	11.1	10.8	11.03	11.20	11.9	12.79	13.86	16.53	17.71	18.45	18.49	16.62	15.47	12.79	11.79	11.29	11.22	11.14	11.07
30	12.09	11.48	11.1	10.8	11.03	11.20	11.8	12.31	13.4	14.33	16.2	14.87	15.32	16.2	15.41	11.83	11.79	11.29	11.21	11.13	11.03
40	12.08	11.48	11.1	10.8	11.02	11.20	11.68	11.75	13.18	12.98	13.89	12.03	13.25	13.46	13.2	11.62	11.79	11.29	11.21	11.13	11.02

50	11.97	11.49	11.1	10.8	10.91	11.20	11.44	11.44	12.91	12.1	12.59	12.06	12	12.28	12.09	11.51	11.79	11.29	11.21	11.13	11.02
60	11.93	11.49	11.1	10.8	10.9	11.10	11.26	11.27	12.27	11.69	11.75	11.58	11.58	11.7	11.71	11.38	11.78	11.29	11.21	11.13	11.01
70	11.87	11.48	11.1	10.8	10.89	11.10	11.11	11.17	11.58	11.37	11.4	11.36	11.35	11.4	11.4	11.29	11.78	11.29	11.21	11.12	11.01
80	11.78	11.48	11.1	10.8	10.89	11.00	11	11.03	11.51	11.23	11.3	11.24	11.25	11.25	11.28	11.27	11.77	11.29	11.16	11.12	11.01
90	11.37	11.46	11.1	10.7	10.87	11.00	10.93	10.96	11.39	11.14	11.17	11.13	11.15	11.18	11.21	11.26	11.35	11.29	11.04	11.11	11.01
100	11.28	11.3	11	10.7	10.85	11.00	10.91	10.92	11.2	11.09	11.12	11.13	11.12	11.12	11.18	11.25	11.27	11.29	10.91	11.08	11.01
110			10.7	10.7		10.90															

Dissolved Oxygen (g m^{-3})

Depth (m)

0	10.3	10.4	9.9	10.4	10.4	10.4	10.3	9.9	9.6	9.3	9.4	8.9	8.9	9.7	9.4	10	10.7	10.9	10.8	10.6	10.6
10	10.3	10.8	9.7	10.3	10.5	10.5	10.3	10	9.7	9.3	9.3	8.9	8.8	9.6	9.4	10	10.5	11	10.6	10.6	10.5
20	10.2	10.6	9.6	10.3	10.5	10.3	10.3	9.9	9.5	9.2	9.3	8.8	8.5	9.5	9.3	9.6	10.3	11.3	10.4	10.2	10.2
30	10.2	10.6	9.6	10.2	10.5	10.3	103	9.9	9.6	9.2	9.2	8.2	8.1	9.4	8.8	9.2	10.2	11.2	10.1	9.9	10.1
40	10.1	10.5	9.6	10.2	10.4	10.2	10.2	9.5	9.4	9.1	9	8.2	8	8.8	8.5	8.8	10.1	11.2	9.9	9.8	9.9
50	10.1	10.5	9.6	10.1	10.3	10.1	10.1	9.5	9.4	8.9	8.8	8	7.7	8.3	7.9	8.5	10	10.9	9.8	9.6	9.8
60	9.8	10.4	9.6	10.1	10.2	10.1	9.9	9.4	9.2	8.6	8.6	7.8	7.6	8.3	7.8	8.3	9.9	10.7	9.7	9.5	9.7
70	9.7	10.4	9.5	10	10.1	9.8	9.8	9.4	9	8.4	8.4	7.7	7.4	8.2	7.7	8.2	9.9	10.4	9.7	9.5	9.7
80	9.5	10.3	9.5	10	10.1	9.7	9.7	9	8.6	8.3	8.3	7.3	7.3	8	7.7	8.1	9.8	10.3	9.4	9.4	9.6
90	9.1	10.3	9.5	10	10	9.7	9.5	9	8.6	8.2	8	7.2	7.1	7.7	7.5	7.7	9.2	10.1	9.2	9.3	9.6
100	8.7	9.8	9.6	9.9	9.9	9.7	9.2	9	8.4	7.7	7.6	7	7	7.6	7.1	7.5	8.3	10	9.2	9.3	9.6
110			9.2	9.8		9.4															

Secchi depth

(m)	16	12.5	10.5	8	11	16	14	12.7	14	18	11	14	12.8	13.5	15.5	12	12	13	13	11.5	11

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **2002-2003**

Additional site C (Western Bays) for the period starting 1 July 2002

Temperature

Date Depth (m)	1/07/2002	17/07/2002	31/07/2002	29/08/2002	18/09/2002	9/10/2002	13/11/2002	28/11/2002	18/12/2002	30/01/2003	13/02/2003	17/03/2003	3/04/2003	28/04/2003	15/05/2003	12/06/2003	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003
0	12.22	11.52	11.6	11.4	11.24	12.10	12.56	13.98	15.12	17.61	19.58	19.04	18.15	17.1	15.8	13.65	11.86	11.43	11.56	11.31	11.32
10	12.15	11.5	11.2	10.9	11.23	11.30	12.5	13.45	14.21	17.49	18.95	18.45	18.58	16.82	15.54	13.62	11.8	11.36	11.26	11.21	11.13
20	12.14	11.49	11.2	10.9	11.16	11.30	12.38	12.63	13.31	17.48	17.41	18.29	18.3	16.77	15.52	13.59	11.8	11.34	11.25	11.14	11.09
30	12.14	11.49	11.2	10.8	11.06	11.20	12.33	12.42	12.73	14.31	14.19	14.81	14.61	16.76	15.51	13.59	11.8	11.32	11.25	11.14	11.08
40	12.13	11.49	11.2	10.8	11.02	11.20	11.75	12.2	11.98	12.36	12.79	12.88	12.73	13.62	13.07	13.59	11.8	11.31	11.25	11.14	11.08
50	12.13	11.49	11.2	10.8	11.02	11.20	11.28	11.98	11.53	12	11.98	11.86	12.1	12.08	12.14	13.54	11.8	11.31	11.25	11.14	11.07
60	11.92	11.49	11.2	10.8	11	11.10	11.12	11.37	11.33	11.61	11.68	11.49	11.71	11.56	11.71	13.28	11.8	11.31	11.25	11.14	11.07
70	11.55	11.49	11.2	10.8	10.99	11.10	11.08	11.21	11.15	11.29	11.3	11.35	11.37	11.35	11.4	11.8	11.8	11.31	11.25	11.14	11.07
80	11.5	11.49	11.2	10.8	10.95	11.10	11.03	11.04	11.12	11.19	11.19	11.25	11.22	11.24	11.27	11.45	11.79	11.31	11.25	11.14	11.07
90	11.47	11.49	11.2	10.8	10.94	11.00	11	10.98	11.1	11.11	11.15	11.2	11.18	11.18	11.22	11.35	11.6	11.29	11.25	11.14	11.07
100	11.45	11.49	11.2	10.8	10.92	11.00	10.97	10.96	11.08	11.08	11.13	11.2	11.15	11.15	11.17	11.23	11.28	11.27	11.24	11.14	11.07

Dissolved Oxygen (g m^{-3})

Depth (m)																					
0	10.4	10.5	9.7	10.3	10.5	10.4	10.2	9.9	9.6	9.1	9.5	9.9	8.9	9.4	9.3	10	10.3	10.7	10.3	10.4	10.4
10	10.4	10.8	9.5	10.2	10.7	10.4	10.3	9.7	9.6	9	9.3	9.7	8.8	9.2	9.1	9.6	10.3	10.8	10.3	10.3	10.4
20	10.4	10.8	9.5	10.2	10.7	10.4	10.3	9.9	9.7	9	9.3	9	8.8	9.2	9	9.3	10.1	10.3	10.1	10.1	10.2
30	10.3	10.7	9.4	10.1	10.6	10.4	10.2	9.9	9.6	8.7	9	8.4	8.3	9	8.8	9.1	10.1	10	9.9	9.9	10

40	10.3	10.5	9.4	10	10.5	10.3	10.1	9.7	9.5	8.7	9	8.4	8.1	8.5	8.3	9.3	10	10	9.8	9.7	9.9
50	10.2	10.5	9.4	10	10.4	10	9.9	9.7	9.2	8.6	8.7	8.1	7.9	8.2	7.8	9.2	9.9	9.9	9.6	9.6	9.7
60	10	10.5	9.4	10	10.4	10	9.7	9.6	9.1	8.5	8.5	8.1	7.9	8.2	7.8	9.9	9.8	9.6	9.6	9.5	9.6
70	9.6	10.5	9.4	9.9	10.3	9.9	9.7	9.5	9	8.4	8.4	7.9	7.8	8	7.7	9.7	9.8	9.5	9.5	9.4	9.5
80	8.8	10.5	9.3	9.9	10.2	9.9	9.5	9	8.8	8.3	8.3	7.6	7.7	8	7.5	9.4	9.7	9.5	9.5	9.4	9.5
90	8.7	10.4	9.3	9.9	10.1	9.8	9.5	9.1	8.7	8.1	8.3	7.5	7.6	7.9	7.3	9.2	9.6	9.1	9.4	9.3	9.4
100	8.6	10.2	9.3	10	10	9.6	9.3	9.1	8.7	8	8.1	7.3	7.4	7.8	7.2	9.1	8.8	8.8	9	9.3	9.4

Secchi depth

(m)	14	12.5	12	8	12	19	16	15.5	13.5	18.5	19	15	14.5	14.5	17	11	14	12	14.5	13	12

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **2001-2002**

Mid-Lake site A for the period starting 2 July 2001

Temperature

Date	2/07/01	25/07/01	13/08/01	3/09/01	25/09/01	25/10/01	12/11/01	10/12/01	20/12/01	8/01/02	22/01/02	6/03/02	4/04/02	22/04/02	5/05/02	19/06/02	1/07/02	17/07/02	31/07/02	29/08/02	18/09/02	9/10/02
Depth (m)																						
0	12.11	11.26	11.15	10.96	11.58	12.97	14.23	15.47	17.92	18.37	19.4	18.69	17.45	17.05	15.51	12.57	12.13	11.44	11.2	11.1	11.38	11.60
10	12.04	11.26	11.12	10.98	11.57	12.91	14.16	15.51	16.60	18.07	18.8	18.69	17.38	16.64	15.54	12.57	12.12	11.44	11.2	10.9	11.33	11.60
20	12.00	11.26	11.12	10.95	11.56	12.90	13.37	15.52	15.46	17.62	18.05	18.68	17.18	16.61	15.52	12.57	12.11	11.44	11.2	10.9	11.28	11.40
30	11.99	11.26	11.11	10.94	11.52	12.89	12.85	14.52	13.79	13.5	14.8	15.3	16.83	16.56	15.5	12.56	12.11	11.44	11.2	10.8	11.02	11.30
40	11.98	11.26	11.11	10.94	11.04	12.00	11.87	13.01	12.41	12.43	13.1	12.42	12.9	13.35	15.39	12.56	12.11	11.44	11.2	10.9	10.97	11.30
50	11.98	11.26	11.11	10.94	10.96	11.50	11.57	11.80	11.70	11.61	12.06	11.73	12.09	11.93	11.92	12.56	12.11	11.44	11.2	10.9	10.96	11.20
60	11.95	11.26	11.10	10.94	10.92	11.13	11.24	11.27	11.32	11.38	11.52	11.43	11.51	11.53	11.49	12.53	12.1	11.44	11.2	10.8	10.94	11.20
70	11.76	11.26	11.09	10.94	10.91	11.01	11.13	11.13	11.22	11.24	11.25	11.27	11.3	11.3	11.33	11.98	12.1	11.44	11.2	10.8	10.93	11.20
80	11.51	11.26	11.08	10.92	10.90	10.96	11.03	11.05	11.16	11.16	11.17	11.2	11.24	11.25	11.27	11.35	11.97	11.44	11.2	10.9	10.92	11.10
90	11.45	11.26	11.08	10.91	10.90	10.95	11.01	11.02	11.12	11.13	11.15	11.17	11.19	11.22	11.28	11.27	11.49	11.43	11.2	10.9	10.91	11.10
100	11.41	11.26	11.08	10.91	10.90	10.94	10.99	11.00	11.08	11.12	11.14	11.16	11.17	11.2	11.38	11.25	11.39	11.41	11.2	10.9	10.9	11.10
110	11.39	11.26	11.08	10.91	10.90	10.92	10.97	10.99	11.07	11.1	11.13	11.13	11.14	11.18	11.27	11.24	11.32	11.37	11.2	10.9	10.89	11.00
120	11.36	11.26	11.08	10.91	10.89	10.92	10.95	10.97	11.04	11.1	11.12	11.13	11.14	11.17	11.26	11.21	11.29	11.32	11.2	10.9	10.87	11.00
130	11.35	11.26	11.07	10.90	10.89	10.91	10.94	10.96	11.04	11.09	11.1	11.13	11.13	11.15	11.24	11.2	11.25	11.27	11.2	10.9	10.85	10.90
140	11.34	11.26	11.07	10.90	10.89	10.90	10.94	10.96	11.04	11.08	11.1	11.13	11.13	11.14	11.23	11.19	11.23	11.26	11.2	10.8	10.83	10.90
150	11.33	11.26	11.07	10.90	10.89	10.90	10.94	10.96	11.03	11.08	11.1	11.12	11.13	11.14	11.19	11.9	11.23	11.26	11.2	10.8	10.81	10.90

Dissolved Oxygen (g m^{-3})

Depth (m)																					
0	9.2	10.2	9.6	10.6	10.4	9.9	9.5	9.4	9.1	9.1	9.0	8.7	8.8	9.4	10.5	10.2	10.3	10.4	9.7	10.5	10.5	10.3
10	9.1	10.5	9.6	10.7	10.4	9.9	9.8	9.5	8.9	9.0	8.9	8.7	8.9	9.3	9.5	10.2	10.3	10.7	9.5	10.4	10.7	10.3
20	9.4	9.4	9.6	10.6	10.4	10.0	9.4	9.5	9.0	9.0	9.1	8.7	8.8	9.3	9.5	10.2	10.3	10.7	9.4	10.3	10.6	10.2
30	9.8	9.2	9.6	10.6	10.4	10.1	9.4	9.1	8.8	9.0	9.1	8.4	8.7	9.2	9.4	10.2	10.2	10.7	9.4	10.3	10.5	10.2
40	9.8	9.1	9.6	10.6	10.0	9.7	8.9	9.1	8.6	8.8	9.0	8.4	8.3	8.7	9.3	10.1	10.2	10.6	9.4	10.2	10.4	10.2
50	9.6	8.9	9.6	10.6	9.9	9.5	9.0	8.7	8.6	8.7	8.7	8.2	8.2	8.3	8.6	10.1	10.2	10.6	9.4	10.2	10.3	10.1
60	9.4	8.9	9.5	10.5	9.8	9.3	8.7	8.6	8.5	8.6	8.6	8.2	8.1	8.1	8.3	10.0	10.1	10.5	9.4	10.2	10.2	10.1
70	9.5	9.0	9.4	10.4	9.7	9.3	8.8	8.7	8.5	8.6	8.5	8.2	8.0	8.0	8.2	9.6	10.1	10.5	9.3	10.1	10.2	10.0
80	7.7	8.9	9.4	10.4	9.7	9.2	8.6	8.4	8.5	8.6	8.4	8.1	7.9	7.9	8.2	8.5	10.0	10.3	9.4	10.1	10.2	10.1
90	7.8	8.9	9.4	10.4	9.6	9.5	8.8	8.5	8.5	8.6	8.2	8.1	7.8	7.8	8.0	8.3	9.7	10.3	9.4	10.1	10.1	10.1
100	7.5	8.6	9.3	10.4	9.6	9.2	8.6	8.4	8.3	8.5	8.1	8.0	7.8	7.8	7.5	8.2	8.6	10.1	9.4	10.1	10.0	9.8
110	7.4	8.7	9.3	10.4	9.6	9.2	8.6	8.4	8.3	8.4	8.1	8.0	7.7	7.7	7.3	8.1	8.3	9.8	9.3	9.9	9.9	9.8
120	6.9	8.5	9.3	10.3	9.5	9.0	8.4	8.4	8.3	8.2	8.1	7.9	7.7	7.6	7.2	8.0	8.1	8.8	9.3	9.9	9.9	9.8
130	6.9	8.5	9.3	10.2	9.5	9.0	8.4	8.4	8.3	8.2	8.2	7.9	7.6	7.5	7.3	7.9	8.0	8.5	9.3	9.9	9.9	9.7
140	6.8	8.3	9.2	10.2	9.5	8.6	8.2	8.2	8.1	8.0	8.1	7.8	7.1	7.8	7.3	7.8	7.8	8.1	9.3	9.9	9.9	9.4
150	6.4	8.2	9.2	10.2	9.3	8.5	8.1	8.1	7.9	7.8	7.9	7.6	7.0	7.2	7.3	7.7	7.8	8.1	9.3	9.8	9.8	9.4

Secchi depth

(m)	12	14.5	13.5	17.5	11	14.5	15.5	16	13	13	15	14.5	19	22	16.4	17	16	15.5	12	9.5	12	15.5

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. 2001-2002

Additional site B (Kuratau Basin) for the period starting 8 January 2002 on

Temperature

Date	8/01/2002	22/01/2002	6/03/2002	4/04/2002	22/04/2002	5/05/2002	19/06/2002	1/07/2002	17/07/2002	31/07/2002	29/08/2002	18/09/2002
Depth (m)												
0	18.1	18.8	18.64	17.38	16.84	15.12	12.45	12.13	11.48	11.3	11	11.08
10	17.55	18.45	18.58	17.35	16.61	15.14	12.44	12.09	11.49	11.1	10.8	11.05

20	15.72	17.4	18.56	17.1	16.6	15.05	12.44	12.09	11.48	11.1	10.8	11.03
30	13.74	13.9	15.07	16.74	16.4	14.75	12.43	12.09	11.48	11.1	10.8	11.03
40	12.62	12.73	13.08	14.3	13.4	14.4	12.24	12.08	11.48	11.1	10.8	11.02
50	11.92	11.98	11.91	12.77	12.12	14.07	12.11	11.97	11.49	11.1	10.8	10.91
60	11.31	11.41	11.5	12.03	11.53	12.96	11.73	11.93	11.49	11.1	10.8	10.9
70	11.21	11.25	11.24	11.5	11.32	12.2	11.49	11.87	11.48	11.1	10.8	10.89
80	11.15	11.19	11.21	11.29	11.24	11.97	11.38	11.78	11.48	11.1	10.8	10.89
90	11.1	11.13	11.15	11.2	11.18	11.69	11.3	11.37	11.46	11.1	10.7	10.87
100	11.1	11.12	11.12	11.19	11.15	11.39	11.22	11.28	11.3	11	10.7	10.85
110										10.7	10.7	

Dissolved Oxygen (g m^{-3})

Depth (m)												
0	8.7	8.8	9.3	9.3	9.3	10.9	10.4	10.3	10.4	9.9	10.4	10.4
10	8.6	9	9.1	9.2	9.3	9.5	10.3	10.3	10.8	9.7	10.3	10.5
20	8.8	9	9.1	9.2	9.2	9.4	10.2	10.2	10.6	9.6	10.3	10.5
30	8.8	8.9	8.6	9.1	9.2	9.3	10.2	10.2	10.6	9.6	10.2	10.5
40	8.7	8.7	8.7	8.9	8.5	9.1	10.1	10.1	10.5	9.6	10.2	10.4
50	8.7	8.4	8.5	8.6	8.2	9	10	10.1	10.5	9.6	10.1	10.3
60	8.7	8.3	8.4	8.4	8	8.6	9	9.8	10.4	9.6	10.1	10.2
70	8.7	8.3	8.3	8.3	7.9	8.1	8.7	9.7	10.4	9.5	10	10.1
80	8.7	8.2	8.1	8.1	7.8	7.9	8.4	9.5	10.3	9.5	10	10.1
90	8.2	8.1	7.9	7.7	7.7	7.8	8.2	9.1	10.3	9.5	10	10
100	8	7.6	7.5	7.7	7.5	7.7	7.8	8.7	9.8	9.6	9.9	9.9
110	8				6.2					9.2	9.8	

Secchi depth

Depth (m)	13.5	12	14.5	19.5	19	13.2	15	16	12.5	10.5	8	11

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **2001-2002**

Additional site C (Western Bays) for the period starting 8 January 2002 on

Temperature

Date Depth (m)	8/01/2002	22/01/2002	6/03/2002	4/04/2002	22/04/2002	5/05/2002	19/06/2002	1/07/2002	17/07/2002	31/07/2002	29/08/2002	18/09/2002	9/10/2002
0	18.72	18.82	18.68	17.47	16.88	15.6	12.58	12.22	11.52	11.6	11.4	11.24	12.10
10	17.41	18.46	18.47	17.24	11.63	15.64	12.56	12.15	11.5	11.2	10.9	11.23	11.30
20	16.95	18.21	18.32	17.16	16.58	15.64	12.56	12.14	11.49	11.2	10.9	11.16	11.30
30	14	13.77	15.9	17.12	16.5	15.61	12.56	12.14	11.49	11.2	10.8	11.06	11.20
40	13.14	12.01	12.98	13.17	13.02	12.26	12.56	12.13	11.49	11.2	10.8	11.02	11.20
50	11.97	11.5	12.13	12.11	11.87	11.57	12.56	12.13	11.49	11.2	10.8	11.02	11.20
60	11.44	11.26	11.59	11.57	11.47	11.37	11.9	11.92	11.49	11.2	10.8	11	11.10
70	11.26	11.17	11.36	11.38	11.32	11.29	11.36	11.55	11.49	11.2	10.8	10.99	11.10
80	11.18	11.16	11.25	11.32	11.26	11.24	11.28	11.5	11.49	11.2	10.8	10.95	11.10
90	11.15	11.14	11.18	11.21	11.23	11.21	11.23	11.47	11.49	11.2	10.8	10.94	11.00
100	11.12	11.11	11.18	11.19	11.19	11.19	11.22	11.45	11.49	11.2	10.8	10.92	11.00
110	11.11	11.1			11.16	11.15				11.2	10.8		10.90
120										11.2	10.8		10.90

Dissolved Oxygen (g m^{-3})

Depth (m)													
0	8.6	8.9	9.3	9.4	9.3	10.6	10.3	10.4	10.5	9.7	10.3	10.5	10.4
10	8.4	8.9	9	9.1	9.2	9.5	10.2	10.4	10.8	9.5	10.2	10.7	10.4
20	8.9	8.9	9	9.1	9.2	9.5	10.2	10.4	10.8	9.5	10.2	10.7	10.4
30	8.6	8.9	8.8	9.1	9.1	9.4	10.1	10.3	10.7	9.4	10.1	10.6	10.4
40	8.6	8.5	8.6	8.6	8.5	8.9	10.1	10.3	10.5	9.4	10	10.5	10.3
50	8.5	8.2	8.5	8.5	8.1	8.6	10	10.2	10.5	9.4	10	10.4	10
60	8.6	8.1	8.5	8.2	7.9	8.3	9.7	10	10.5	9.4	10	10.4	10
70	8.6	8.1	8.2	8.2	7.8	8.2	9.1	9.6	10.5	9.4	9.9	10.3	9.9
80	8.7	8.1	8.1	8	7.7	8	8.4	8.8	10.5	9.3	9.9	10.2	9.9
90	8.6	8.1	8.1	7.9	7.7	7.9	8	8.7	10.4	9.3	9.9	10.1	9.8
100	8.7	8.1	8.1	7.9	7.6	7.8	7.7	8.6	10.2	9.3	10	10	9.6
110	8.5	7.9			7.6	7.7				9.3	10		9.7
120	8.5	7.7								9.1	9.9		9.6

Secchi depth

Depth (m)	14.5	15.5	16	19	18.5	15.6	16	14	12.5	12	8	12	19

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **2000-2001**

For the period starting 11 July 2000

Temperature

Date	**11-7-00**	**04-8-00**	**21-8-00**	**11-9-00**	**28-9-00**	**25-10-00**	**13-11-00**	**06-12-00**	**03-1-01**	**15-1-01**	**20-2-01**	**01-3-01**	**19-3-01**	**09-4-01**	**11-4-01**	**10-5-01**	**29-5-01**	**02-7-01**	**25-7-01**	**13-8-01**
Depth (m)																				
0	11.87	11.32	11.19	11.80	12.47	14.04	13.27	15.73	18.16	18.98	20.47	20.87	19.01	16.99	16.99	15.78	13.62	12.11	11.26	11.15
10	11.87	11.32	11.15	11.46	11.52	13.03	13.09	15.06	17.37	18.51	19.37	20.71	19.05	16.87	16.99	15.78	13.74	12.04	11.26	11.12
20	11.86	11.32	11.14	11.33	11.36	11.99	12.98	14.15	15.46	14.79	18.08	18.98	19.06	16.78	16.97	15.78	13.78	12.00	11.26	11.12
30	11.86	11.33	11.14	11.30	11.33	11.83	12.80	13.31	13.61	13.63	16.06	15.95	16.46	15.82	16.84	15.73	13.79	11.99	11.26	11.11
40	11.86	11.33	11.14	11.27	11.31	11.60	12.36	12.49	12.73	12.81	13.39	13.36	13.05	13.13	13.87	13.19	13.80	11.98	11.26	11.11

50	11.86	11.33	11.14	11.22	11.30	11.49	12.10	12.16	12.21	12.27	12.67	12.58	12.42	12.35	12.68	12.42	13.80	11.98	11.26	11.11
60	11.64	11.33	11.15	11.18	11.27	11.42	11.69	11.78	11.76	11.87	12.01	12.01	11.84	11.81	11.89	11.90	11.92	11.95	11.26	11.10
70	11.42	11.33	11.15	11.15	11.24	11.39	11.41	11.53	11.64	11.67	11.77	11.79	11.67	11.67	11.69	11.69	11.61	11.76	11.26	11.09
80	11.31	11.33	11.15	11.14	11.20	11.38	11.29	11.40	11.47	11.55	11.56	11.63	11.55	11.54	11.54	11.52	11.54	11.51	11.26	11.08
90	11.22	11.33	11.15	11.13	11.17	11.33	11.26	11.36	11.43	11.46	11.50	11.55	11.49	11.46	11.48	11.47	11.46	11.45	11.26	11.08
100	11.21	11.32	11.15	11.13	11.14	11.33	11.21	11.32	11.38	11.39	11.43	11.50	11.43	11.41	11.43	11.42	11.42	11.41	11.26	11.08
110	11.19	11.32	11.15	11.13	11.06	11.29	11.19	11.28	11.36	11.36	11.40	11.46	11.41	11.37	11.39	11.40	11.38	11.39	11.26	11.08
120	11.19	11.31	11.15	11.13	11.04	11.27	11.19	11.27	11.33	11.34	11.39	11.44	11.39	11.33	11.35	11.38	11.35	11.36	11.26	11.08
130	11.18	11.26	11.15	11.12	11.02	11.23	11.17	11.26	11.30	11.32	11.37	11.43	11.37	11.32	11.34	11.36	11.33	11.35	11.26	11.07
140	11.16	11.18	11.14	11.12	11.01	11.18	11.15	11.25	11.30	11.31	11.35	11.40	11.35	11.31	11.32	11.34	11.31	11.34	11.26	11.07
150	11.15	11.18	11.14	11.12	11.01	11.15	11.15	11.25	11.32	11.31	11.33	11.41	11.34	11.31	11.32	11.34	11.31	11.33	11.26	11.07

Dissolved Oxygen (g m^{-3})

Depth (m)																				
0	9.0	9.0	9.2	9.3	9.1	8.9	8.2	8.7	8.2	8.0	8.0	8.2	8.4	8.3	8.4	8.2	8.7	9.2	10.2	9.6
10	9.0	9.0	9.4	9.5	8.7	8.8	8.4	8.3	8.3	8.6	8.0	8.5	8.3	8.3	8.2	8.0	8.5	9.1	10.5	9.6
20	9.0	9.1	9.4	9.5	8.7	9.1	8.4	8.5	8.4	8.1	8.2	8.6	8.6	8.4	7.9	7.9	8.4	9.4	9.4	9.6
30	9.0	9.1	9.6	9.5	8.7	8.9	8.4	8.5	8.5	8.2	8.0	8.3	8.0	8.0	8.0	7.8	8.4	9.8	9.2	9.6
40	9.0	9.1	9.6	9.5	9.1	8.7	8.2	8.2	8.4	7.9	8.1	8.1	7.6	7.8	7.6	7.7	8.3	9.8	9.1	9.6
50	9.0	9.1	9.6	9.5	9.1	8.5	8.2	8.2	8.2	8.1	7.9	7.8	7.6	7.5	7.4	7.5	8.3	9.6	8.9	9.6
60	9.0	9.1	9.7	9.5	8.7	8.4	8.0	7.9	8.0	7.5	7.7	7.4	6.8	7.2	7.2	7.5	7.2	9.4	8.9	9.5
70	8.9	9.1	9.7	9.5	8.7	8.3	7.9	7.8	7.9	7.4	7.6	7.2	6.8	7.1	7.4	7.3	7.0	9.5	9.0	9.4
80	7.8	9.0	9.7	9.5	8.7	8.2	7.6	7.6	7.8	7.5	7.4	7.0	6.5	6.9	7.3	7.3	7.0	7.7	8.9	9.4
90	7.4	8.9	9.7	9.5	8.7	8.2	7.6	7.6	7.7	7.5	7.4	6.9	6.5	6.9	7.1	7.1	7.0	7.8	8.9	9.4
100	7.2	8.7	9.7	9.5	8.7	8.0	7.5	7.6	7.6	7.3	7.2	6.8	6.6	6.8	7.0	7.0	6.9	7.5	8.6	9.3
110	7.1	8.3	9.7	9.5	8.7	8.0	7.5	7.5	7.6	7.2	7.1	6.7	6.5	6.8	7.0	7.0	6.7	7.4	8.7	9.3
120	6.9	7.9	9.7	9.5	8.2	8.1	7.4	7.4	7.5	7.1	7.0	6.5	6.5	6.7	6.8	6.9	6.6	6.9	8.5	9.3

130	6.9	7.3	9.7	9.5	8.5	8.1	7.4	7.3	7.4	7.0	7.0	6.5	6.5	6.6	6.7	6.6	6.5	6.9	8.5	9.3
140	6.9	7.1	9.7	9.5	8.6	8.0	7.3	7.2	7.2	6.9	6.8	6.4	6.5	6.4	6.4	6.7	6.3	6.8	8.3	9.2
150	6.8	7.4	9.7	9.3	8.5	7.9	7.3	7.1	7.1	6.6	6.5	6.3	6.4	6.3	6.3	6.6	6.1	6.4	8.2	9.2
Secchi depth																				
Depth (m)																				
	11	12	15	12	13	11	12	17	17	18	17	14.5	17	13.5	13.5	17	14.5	12	14.5	13.5

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **1999-2000**

For the period starting 13 July 1999

Temperature

Date	**13-7-99**	**6-8-99**	**3-9-99**	**29-9-99**	**18-10-99**	**19-12-99**	**18-1-00**	**12-4-00**	**4-5-00**	**25-5-00**	**20-6-00**	**11-7-00**	**4-8-00**	**21-8-00**	**11-9-00**	**28-9-00**	**25-10-00**	**13-11-00**	**6-12-00**
Depth (m)																			
0	12.0	11.8	11.8	11.5	12.8	16.56	18.63	17.41	15.82	14.22	12.28	11.87	11.32	11.19	11.80	12.47	14.04	13.27	15.73
10	12.0	11.4	11.3	11.5	12.7	16.40	18.35	17.25	15.77	14.28	12.28	11.87	11.32	11.15	11.46	11.52	13.03	13.09	15.06
20	12.0	11.4	11.2	11.5	12.4	15.96	17.22	17.21	15.76	14.31	12.28	11.86	11.32	11.14	11.33	11.36	11.99	12.98	14.15
30	12.0	11.4	11.1	11.4	11.6	15.23	14.94	16.65	15.75	14.28	12.27	11.86	11.33	11.14	11.30	11.33	11.83	12.86	13.31
40	12.0	11.3	11.1	11.2	11.4	12.16	13.29	12.55	13.64	14.22	12.26	11.86	11.33	11.14	11.27	11.31	11.60	12.36	12.49
50	12.0	11.3	11.1	11.1	11.3	11.64	11.91	11.67	12.14	12.53	12.26	11.86	11.33	11.14	11.22	11.30	11.49	12.10	12.16
60	12.0	11.3	11.0	11.1	11.1	11.35	11.45	11.39	11.56	11.56	12.21	11.85	11.33	11.15	11.18	11.27	11.42	11.69	11.78
70	12.0	11.3	11.0	11.0	11.1	11.25	11.31	11.29	11.36	11.34	11.58	11.64	11.33	11.15	11.15	11.24	11.39	11.41	11.53
80	11.4	11.3	11.0	11.0	11.0	11.18	11.21	11.23	11.24	11.23	11.32	11.42	11.33	11.15	11.14	11.20	11.38	11.29	11.40
90	11.3	11.3	11.0	11.0	11.0	11.16	11.17	11.20	11.21	11.20	11.24	11.31	11.33	11.15	11.13	11.17	11.33	11.26	11.36
100	11.2	11.2	11.0	11.0	11.0	11.14	11.14	11.17	11.17	11.15	11.17	11.22	11.32	11.15	11.13	11.14	11.33	11.21	11.32
110	11.2	11.2	11.0	11.0	11.0	11.12	11.12	11.15	11.14	11.12	11.16	11.21	11.32	11.15	11.13	11.06	11.29	11.19	11.28
120	11.2	11.1	11.0	11.0	11.0	11.10	11.09	11.13	11.12	11.10	11.14	11.19	11.31	11.15	11.13	11.04	11.27	11.19	11.27
130	11.1	11.1	11.0	11.0	11.0	11.08	11.08	11.11	11.10	11.09	11.12	11.18	11.26	11.15	11.12	11.02	11.23	11.17	11.26
140	11.1	11.1	11.0	11.0	11.0	11.07	11.07	11.09	11.09	11.09	11.10	11.16	11.18	11.14	11.12	11.01	11.18	11.15	11.25
150	11.1	11.0	11.0	10.9	11.0	11.10	11.06	11.09	11.09	11.07	11.10	11.15	11.18	11.14	11.12	11.01	11.15	11.15	11.25

Dissolved Oxygen (g m^{-3})

Depth (m)																			
0	10.5	10.1	9.2	9.5	8.9	8.3	7.9	9.2	8.7	8.5	8.1	9.0	9.0	9.2	9.3	9.1	8.9	8.2	8.7
10	10.7	10.2	9.8	9.8	8.9	8.6	7.9	9.2	8.6	8.3	8.3	9.0	9.0	9.4	9.5	8.7	8.8	8.4	8.3
20	10.7	9.9	9.8	9.9	8.9	8.7	8.1	9.2	8.8	8.5	8.7	9.0	9.1	9.4	9.5	8.7	9.1	8.4	8.5
30	10.6	10.0	9.8	9.7	8.9	8.7	8.3	9.0	8.8	8.5	8.6	9.0	9.1	9.6	9.5	8.7	8.9	8.4	8.5
40	10.6	9.7	9.5	9.6	8.8	8.7	8.1	8.3	8.2	8.6	8.6	9.0	9.1	9.6	9.5	9.1	8.7	8.2	8.2
50	10.4	9.9	9.5	9.3	8.6	8.7	8.0	8.0	7.9	8.2	8.6	9.0	9.1	9.6	9.5	9.1	8.5	8.2	8.2
60	10.4	9.8	9.4	9.2	8.6	8.6	8.0	8.0	7.9	7.7	8.7	9.0	9.1	9.7	9.5	8.7	8.4	8.0	7.9
70	10.3	9.7	9.3	9.0	8.6	8.7	8.0	8.0	7.8	7.7	8.4	8.9	9.1	9.7	9.5	8.7	8.3	7.9	7.8
80	10.3	9.0	9.2	9.0	8.5	8.5	7.9	7.9	7.7	7.6	7.6	7.8	9.0	9.7	9.5	8.7	8.2	7.6	7.6
90	8.1	8.6	9.2	9.0	8.6	8.5	7.7	7.9	7.8	7.4	7.4	7.4	8.9	9.7	9.5	8.7	8.2	7.6	7.6
100	7.9	7.3	9.2	8.9	8.6	8.5	8.3	7.7	7.6	7.4	7.3	7.2	8.7	9.7	9.5	8.7	8.0	7.5	7.6
110	7.5	7.1	9.1	8.9	8.6	8.3	8.1	7.7	7.6	7.6	7.4	7.1	8.3	9.7	9.5	8.7	8.0	7.5	7.5
120	7.4	6.8	9.1	8.9	8.3	8.4	8.1	7.7	7.4	7.5	7.3	6.9	7.9	9.7	9.5	8.2	8.1	7.4	7.4
130	7.3	6.7	9.0	8.8	7.9	8.2	8.0	7.5	7.4	7.5	7.3	6.9	7.3	9.7	9.5	8.5	8.1	7.4	7.3
140	7.1	6.7	8.9	8.7	7.5	8.1	8.0	7.5	7.2	7.4	7.2	6.9	7.1	9.7	9.5	8.6	8.0	7.3	7.2
150	6.9	6.4	8.9	8.6	7.5	8.0	7.5	7.2	6.8	7.0	6.9	6.8	7.4	9.7	9.3	8.5	7.9	7.3	7.1

Secchi depth

Depth (m)	16	14.5	10	10	14.9	18	19.1	15	14	14	14	11	12	15	12	13	11	12	17

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **1998-1999**

For the period starting 28 July 1998

Temperature

Date	**28-7-98**	**22-8-98**	**29-9-98**	**1-11-98**	**26-11-98**	**22-12-98**	**12-2-99**	**3-3-99**	**14-4-99**	**30-4-99**	**19-5-99**	**1-6-99**	**17-6-99**	**13-7-99**	**6-8-99**	**3-9-99**	**29-9-99**	**18-10-99**
Depth (m)																		
0	11.4	11.5	12.9	13.6	18.4	18.5	20.1	20.9	18.3	16.4	14.4	14.2	13.0	12.0	11.8	11.8	11.5	12.8
10	11.6	11.3	11.9	13.2	15.6	16.7	20.1	19.8	18.3	16.4	14.4	14.1	13.4	12.0	11.4	11.3	11.5	12.7
20	11.6	11.3	11.5	12.7	15.4	15.7	20.1	19.8	18.3	16.4	14.5	14.1	13.4	12.0	11.4	11.2	11.5	12.4
30	11.6	11.3	11.3	12.4	12.7	14.5	14.9	15.1	18.1	16.0	14.5	14.1	13.4	12.0	11.4	11.1	11.4	11.6
40	11.6	11.3	11.2	12.4	12.1	12.7	13.2	13.1	12.9	13.1	14.5	13.9	13.4	12.0	11.3	11.1	11.2	11.4
50	11.6	11.3	11.1	12.2	11.8	11.8	12.1	12.1	11.9	12.2	13.1	13.0	13.4	12.0	11.3	11.1	11.1	11.3
60	11.6	11.3	11.1	11.7	11.5	11.5	11.6	11.8	11.6	12.0	11.8	12.0	12.1	12.0	11.3	11.0	11.1	11.1
70	11.6	11.1	11.0	11.2	11.3	11.3	11.4	11.5	11.4	11.8	11.3	11.4	11.5	12.0	11.3	11.0	11.0	11.1
80	10.6	10.9	11.0	11.1	11.2	11.2	11.2	11.4	11.3	11.2	11.2	11.3	11.3	11.4	11.3	11.0	11.0	11.0
90	10.6	10.9	10.9	11.1	11.1	11.1	11.1	11.3	11.2	11.1	11.1	11.2	11.2	11.3	11.3	11.0	11.0	11.0
100	10.5	10.8	10.9	11.0	11.1	11.1	11.1	11.3	11.2	11.1	11.1	11.1	11.2	11.2	11.2	11.0	11.0	11.0
110	10.5	10.5	10.9	11.0	11.0	11.1	11.1	11.2	11.2	11.1	11.1	11.1	11.1	11.2	11.2	11.0	11.0	11.0
120	10.5	10.5	10.9	11.0	11.0	11.0	11.0	11.2	11.2	11.1	11.1	11.1	11.1	11.2	11.1	11.0	11.0	11.0
130	10.5	10.5	10.7	11.0	11.0	11.1	11.1	11.1	11.1	11.1	11.0	11.1	11.1	11.1	11.1	11.0	11.0	11.0
140	10.5	10.5	10.7	10.9	11.0	11.1	11.1	11.1	11.1	11.1	11.0	11.1	11.0	11.1	11.1	11.0	11.0	11.0
150	10.5	10.5	10.7	10.9	11.0	11.1	11.1	11.1	11.1	11.1	11.0	11.1	11.0	11.1	11.0	11.0	10.9	11.0

Dissolved Oxygen (g m^{-3})

Depth (m)																		
0	10.6	10.6	10.6	10.4	9.6	9.7	9.0	8.6	9.1	9.5	9.9	10.0	10.4	10.5	10.1	9.2	9.5	8.9
10	10.5	10.5	10.7	10.7	9.9	10.1	9.0	8.7	9.2	9.5	10.5	10.4	10.3	10.7	10.2	9.8	9.8	8.9
20	10.4	10.4	10.6	10.7	9.8	10.2	8.9	8.7	9.1	9.6	10.4	10.4	10.4	10.7	9.9	9.8	9.9	8.9
30	10.4	10.3	10.5	10.6	10.1	10.2	9.9	9.5	9.1	9.6	10.1	10.7	10.5	10.6	10.0	9.8	9.7	8.9
40	10.3	10.3	10.3	10.4	10.0	10.1	9.9	9.2	9.1	9.1	10.0	10.4	10.4	10.6	9.7	9.5	9.6	8.8
50	10.3	10.2	10.2	10.2	9.8	9.9	9.6	8.9	9.0	8.7	9.2	9.6	10.4	10.4	9.9	9.5	9.3	8.6
60	10.3	10.1	10.1	10.0	9.7	9.7	9.5	8.8	8.9	8.7	8.7	9.4	9.0	10.4	9.8	9.4	9.2	8.6
70	10.3	9.5	9.9	9.6	9.5	9.5	9.4	8.7	8.7	8.6	8.3	9.1	8.9	10.3	9.7	9.3	9.0	8.6
80	8.6	8.2	9.5	9.1	9.2	9.3	9.2	8.6	8.6	8.4	8.2	9.1	8.6	10.3	9.0	9.2	9.0	8.5
90	8.5	7.9	9.3	8.8	9.1	9.1	9.1	8.4	8.6	8.0	7.8	8.8	8.5	8.1	8.6	9.2	9.0	8.6
100	8.3	7.4	8.9	8.5	9.1	8.9	8.9	8.3	8.6	8.0	7.7	8.5	8.2	7.9	7.3	9.2	8.9	8.6
110	8.3	7.4	8.5	8.3	8.8	8.9	8.7	8.2	8.5	8.0	7.5	8.2	8.1	7.5	7.1	9.1	8.9	8.6
120	8.2	7.4	7.7	8.0	8.6	8.8	8.3	7.9	8.3	7.9	7.4	8.2	8.0	7.4	6.8	9.1	8.9	8.3
130	8.2	7.4	7.6	7.8	8.4	8.6	8.1	7.7	8.1	7.7	7.3	8.1	7.7	7.3	6.7	9.0	8.8	7.9
140	8.1	7.4	7.4	7.6	8.2	8.4	7.9	7.5	7.9	7.5	7.2	7.8	7.4	7.1	6.7	8.9	8.7	7.5
150	8.1	7.4	7.4	7.6	8.0	8.2	7.7	7.3	7.7	7.3	7.0	7.5	7.3	6.9	6.4	8.9	8.6	7.5

Secchi depth

Depth (m)	10.0	10.5	10.4	13.5	15.0	14.5	12.5	14.3	13.0	12.2	15.0	15.0	15.0	16.0	14.5	10.0	10.0	14.9

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **1997-1998**

For the period starting 16 September 1997

Temperature

Date	**16-9-97**	**11-10-97**	**28-10-97**	**02-12 -97**	**21-1 -98**	**04-3-98**	**24-3-98**	**26-3-98**	**07-4-98**	**29-5-98**	**28-7-98**	**22-8-98**
Depth (m)												
1	10.8	11.8	12.2	14.5	17.7	20.0	19.3	18.6	17.7	14.2	11.4	11.49
10	10.5	11.4	12.0	13.7	17.6	19.9	18.6	18.6	17.7	14.3	11.6	11.32
20	10.5	11.1	11.5	13.6	16.5	19.7	18.5	18.5	17.7	14.0	11.6	11.27
30	10.5	10.8	11.5	13.1	14.3	16.4	18.0	18.1	17.5	13.1	11.6	11.27
40	10.5	10.6	11.4	12.5	12.0	13.3	13.0	12.6	13.7	12.0	11.6	11.27
50	10.5	10.5	11.1	11.5	11.2	12.0	11.9	11.7	11.5	11.2	11.6	11.26
60	10.5	10.5	11.1	11.0	11.0	11.5	11.1	11.1	11.0	10.9	11.6	11.26
70	10.5	10.5	10.8	10.8	10.8	11.0	10.7	10.8	10.8	10.8	11.6	11.12
80	10.5	10.5	10.7	10.7	10.7	10.8	10.6	10.7	10.6	10.6	10.6	10.90
90	10.5	10.5	10.6	10.6	10.6	10.7	10.5	10.6	10.6	10.6	10.6	10.86
100	10.5	10.5	10.5	10.5	10.6	10.7	10.5	10.6	10.6	10.6	10.5	10.82
110	10.5	10.5	10.4	10.5	10.6	10.6	10.5	10.5	10.5	10.6	10.5	10.5
120	10.5	10.5	10.5	10.5	10.5	10.6	10.5	10.5	10.5	10.5	10.5	10.5
130	10.5	10.5	10.5	10.5	10.5	10.6	10.5	10.5	10.5	10.5	10.5	10.5
140	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
150	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5

Dissolved Oxygen (g m^{-3})

Depth (m)												
1	10.55	10.37	10.68	9.89	9.27	9.17	9.43	9.10	9.14	9.92	10.60	10.64
10	10.52	10.51	10.22	9.86	9.38	9.19	9.53	9.07	9.10	9.88	10.46	10.50
20	10.50	10.46	10.24	9.86	9.46	9.22	9.61	8.95	9.07	9.87	10.40	10.36
30	10.29	10.46	10.00	9.74	9.81	9.30	9.78	8.97	9.09	9.68	10.35	10.27
40	10.31	10.39	9.96	9.66	9.85	9.32	9.73	9.47	9.32	9.40	10.32	10.26
50	10.27	10.36	9.89	9.47	9.53	9.16	9.55	9.45	9.34	9.26	10.30	10.20
60	10.16	10.31	9.77	9.44	9.37	9.17	9.30	9.47	9.30	9.18	10.28	10.10
70	10.08	10.24	9.76	9.19	9.30	9.11	9.21	9.38	9.24	9.20	10.25	9.54
80	10.06	10.15	9.85	9.04	9.13	9.04	9.14	9.30	9.13	9.12	8.58	8.15
90	10.03	10.09	9.33	9.00	9.10	8.93	9.03	9.24	9.05	9.08	8.52	7.90
100	9.99	10.06	9.23	8.96	9.01	8.89	8.39	9.16	8.97	8.94	8.34	7.36
110	9.96	10.02	9.03	8.87	8.89	8.83	8.38	8.98	8.94	8.78	8.26	7.36
120	9.91	10.00	8.96	8.87	8.84	8.75	8.38	8.87	8.88	8.69	8.21	7.36
130	9.86	9.92	8.76	8.84	8.68	8.63	8.38	8.38	8.79	8.41	8.21	7.36
140	9.82	9.87	8.76	8.71	8.45	8.30	8.38	8.38	8.58	8.41	8.14	7.36
150	9.56	9.69	8.76	8.65	8.38	8.22	8.38	8.38	8.40	8.41	8.14	7.36

Secchi depth data (m)

Depth (m)	12.0	13.7	12.5	14.5	14.7	11.5	13.5	13.5	13.5	15.5	10.0	10.5

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. 1996-1997

For the period starting 3 September 1996

Temperature

Date	3-9-96	17-9-96	27-9-96	17-10-96	24-10-96	6-11-96	28-11-96	11-12-96	23-12-96	8-1-97	29-1-97	26-3-97	2-4-97	15-4-97	20-5-97	29-5-97	7-7-97	29-7-97
Depth (m)																		
1	10.5	10.7	12.5	13.3	12.6	13.5	13.6	14.8	16.3	17.9	17.8	17.7	17.3	16.7	14.1	14.2	11.7	10.9
10	10.4	10.6	11.6	12.0	12.3	13.6	13.6	14.8	15.3	16.8	17.6	17.6	17.3	16.7	14.0	14.1	11.7	11.0
20	10.3	10.4	11.1	11.9	12.3	13.4	13.3	14.4	15.1	16.5	17.4	17.2	17.2	16.7	14.0	14.1	11.7	11.0
30	10.3	10.3	11.0	11.8	12.3	13.3	13.3	14.2	15.0	15.6	14.8	16.6	17.2	16.7	12.6	14.1	11.7	11.0
40	10.3	10.3	10.5	11.7	11.9	11.7	11.6	12.7	13.5	13.0	13.4	13.8	14.5	14.0	11.5	14.0	11.7	11.0
50	10.4	10.3	10.4	11.5	11.6	10.8	10.9	12.5	12.4	11.9	11.8	12.4	11.5	11.9	11.0	12.1	11.7	11.0
60	10.3	10.3	10.4	10.9	11.1	10.6	10.9	11.7	11.3	11.2	10.9	11.2	10.9	11.1	10.5	11.8	11.7	11.0
70	10.3	10.3	10.3	10.6	10.6	10.5	10.5	11.7	10.7	10.8	10.7	10.7	10.6	10.9	10.5	11.1	11.7	11.0
80	10.3	10.3	10.3	10.5	10.5	10.4	10.4	11.1	10.6	10.6	10.6	10.5	10.5	10.7	10.5	10.8	10.9	11.0
90	10.3	10.3	10.3	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.4	10.5	10.5	10.6	10.5	10.6	10.8	10.9
100	10.3	10.3	10.3	10.3	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.5	10.5	10.6	10.7
110	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.5	10.5	10.6
120	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.5	10.5	10.5
130	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.5	10.5	10.5
140	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.3	10.3	10.3	10.4	10.4	10.5	10.5	10.5	10.5	10.5
150	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.4	10.5	10.4	10.4	10.5	10.5

Dissolved Oxygen (g m^{-3})

Depth (m)																		
1	8.81	9.08	10.03	9.78	10.32	9.96	9.99	10.03	9.10	8.71	8.80	9.70	9.40	9.06	9.09	9.3	9.9	10.53
10	9.17	9.17	10.43	9.85	10.27	9.84	9.87	9.97	9.30	8.70	8.80	9.30	9.25	8.95	9.10	9.2	9.8	10.42
20	9.14	8.98	10.32	9.84	10.15	9.80	9.80	9.90	9.30	8.70	8.70	8.93	8.94	8.91	9.06	9.2	9.8	10.45
30	8.98	8.95	10.16	9.84	9.89	9.79	9.81	9.76	9.30	8.80	9.10	8.80	8.82	8.87	9.01	9.2	9.8	10.43
40	8.90	8.93	9.98	9.80	9.89	9.73	9.77	9.70	9.30	9.00	8.90	8.78	8.79	8.82	8.94	9.1	9.8	10.46
50	8.78	8.87	9.69	9.76	9.80	9.29	9.35	9.10	9.30	8.80	8.90	8.51	8.58	8.65	8.86	9.1	9.7	10.40
60	8.73	8.80	9.54	9.67	9.67	9.19	9.14	9.04	9.15	8.60	8.70	8.49	8.56	8.71	8.70	9.0	9.7	10.36
70	8.74	8.80	9.45	9.56	9.44	9.14	9.09	9.03	9.07	8.60	8.60	8.47	8.52	8.71	8.64	8.9	9.7	10.34
80	8.70	8.77	9.37	9.42	9.33	9.03	9.01	9.01	9.00	8.60	8.50	8.36	8.46	8.69	8.48	8.5	8.6	10.34
90	8.63	8.70	9.24	9.29	9.30	8.99	8.96	8.92	8.98	8.60	8.50	8.30	8.45	8.63	8.32	8.3	8.2	10.24
100	8.59	8.61	9.11	9.22	9.21	8.94	8.93	8.88	8.95	8.60	8.40	8.27	8.40	8.54	8.29	8.2	8.1	8.70
110	8.48	8.49	9.13	9.15	9.20	8.90	8.87	8.80	8.89	8.50	8.30	8.18	8.29	8.48	8.27	8.1	8.0	8.02
120	8.44	8.33	9.07	8.91	8.98	8.77	8.74	8.73	8.85	8.40	8.20	8.08	8.20	8.41	8.22	8.1	8.0	8.05
130	8.19	8.27	9.07	8.83	8.98	8.71	8.69	8.69	8.66	8.30	8.30	7.96	8.02	8.20	8.19	8.1	7.9	8.09
140	8.39	8.35	9.05	8.89	8.89	8.62	8.65	8.60	8.33	8.20	8.20	7.40	7.60	7.87	7.97	7.8	7.4	7.79
150	8.81	8.84	8.98	8.49	8.94	8.48	8.43	8.47	8.25	8.10	8.10	7.40	7.50	7.71	7.88	7.7	7.2	7.13

Secchi depth data (m)

Secchi d	13.1	14..2	11.2	12.6	13.4	14.9	14.1	14.7	17.7	15.1	15.2	15.3	16.0	17.7	14.6	14.5	12.5	13.5

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **1995-1996**

For the period starting 12 September 1995

Temperature

Date	**12-9-95**	**25-9-95**	**30-10-95**	**24-11-95**	**06-12-95**	**12-1-96**	**31-1-96**	**13-2-96**	**29-2-96**	**20-3-96**	**28-3-96**	**18-4-96**	**19-5-96**	**14-6-96**	**9-7-96**
Depth (m)															
1	10.7		13.7		17.7	21.1	21.7	22.7	20.5	18.2	16.8	17.7	14.8	12.2	11.2
10	10.7		11.9		16.2	20.7	20.7	21.0	20.1	18.2	16.7	17.4	14.8	12.2	11.2
20	10.7		11.4		15.3	18.1	18.5	20.6	20.0	18.2	16.6	17.3	14.8	12.1	11.2
30	10.7		11.2		12.4	14.8	13.5	15.1	15.5	18.1	13.7	17.0	14.8	12.1	11.2
40	10.7		10.9		11.4	12.4	12.3	12.2	11.9	12.3	12.4	12.6	14.7	12.0	11.2
50	10.7		10.8		11.0	11.5	11.6	11.6	11.3	11.4	11.6	11.4	11.6	11.2	11.2
60	10.7		10.7		10.7	11.0	11.2	11.0	11.0	11.1	11.4	11.1	11.1	10.9	11.2
70	10.7		10.5		10.6	10.9	10.8	10.8	10.8	10.9	11.6	11.1	10.9	10.8	11.2
80	10.5		10.5		10.6	10.9	10.7	10.7	10.7	10.8	11.2	10.9	10.8	10.8	11.2
90	10.4		10.5		10.6	10.7	10.7	10.7	10.7	10.7	11.3	10.8	10.7	10.8	10.8
100	10.4		10.5		10.5	10.6	10.6	10.7	10.7	10.7	10.9	10.8	10.7	10.7	10.8
110	10.4		10.5		10.5	10.5	10.6	10.7	10.7	10.6	10.8	10.8	10.7	10.7	10.8
120	10.4		10.5		10.5	10.5	10.5	10.6	10.6	10.6	10.7	10.7	10.7	10.7	10.8
130	10.4		10.5		10.5	10.5	10.5	10.7	10.6	10.6	10.7	10.7	10.7	10.7	10.8
140	10.4		10.5		10.5	10.5	10.5	10.6	10.6	10.6	10.7	10.7	10.7	10.7	10.8
150	10.4		10.5		10.5	10.5	10.5	10.6	10.6	10.6	10.6	10.7	10.7	10.7	10.8
160	10.4		*		10.5	10.5	10.5	*	*	*	*	*	*	*	*

Dissolved oxygen (g m^{-3})															
Depth (m)															
1	9.6		10.3		9.5	8.5	8.5	8.1	8.2	8.4	8.7	8.6	9.0	9.2	9.3
10	9.6		10.5		9.9	8.7	8.5	8.1	8.2	8.3	8.7	8.6	9.0	9.2	9.1
20	9.6		10.6		10.0	9.1	9.1	8.2	8.1	8.3	8.8	8.6	8.9	9.2	9.1
30	9.6		10.7		10.5	9.7	10.1	9.2	9.0	8.1	9.0	8.4	8.9	9.1	9.0
40	9.7		10.7		10.5	10.1	10.2	9.5	9.1	8.7	8.8	8.7	8.9	9.0	8.9
50	9.6		10.3		10.3	9.9	9.9	9.0	9.0	8.6	8.6	8.4	8.7	8.4	8.8
60	9.5		10.3		10.0	9.6	8.9	8.7	8.8	8.5	8.5	8.4	8.5	8.1	8.7
70	9.4		10.2		10.0	9.6	8.9	8.6	8.6	8.5	8.5	8.4	8.3	7.9	8.7
80	9.4		10.2		9.9	9.6	8.8	8.5	8.5	8.4	8.3	8.4	8.3	7.8	8.6
90	9.0		10.1		9.8	9.5	8.8	8.4	8.4	8.3	8.2	8.3	8.2	7.7	8.1
100	9.0		10.0		9.7	9.4	8.8	8.3	8.3	8.3	8.2	8.3	8.1	7.7	7.5
110	9.0		9.9		9.6	9.4	8.8	8.1	8.3	8.2	8.1	7.9	7.8	7.6	7.3
120	8.8		9.9		9.4	9.3	8.3	8.1	8.3	8.1	8.3	7.9	7.8	7.5	7.1
130	8.8		9.8		9.3	9.2	8.3	7.9	8.2	7.8	8.3	7.8	7.8	7.5	7.1
140	8.7		9.6		9.1	8.9	7.9	7.6	8.2	7.5	8.0	7.6	7.7	7.4	7.0
150	8.7		9.2		8.9	8.7	7.9	7.6	8.0	7.4	7.8	7.4	7.5	7.4	7.0
Secchi depth															
Depth (m)	11.9	11.9	13.0	13.6	15.1	16.3	15.7	17.8	18.4	14.1	14.6	14.4	14.7	14.4	12.9

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database. **1994-1995**

Started 27 October 1994

Temperature

Date	27-10-94	21-11-94	01-12-94	13-12 -94	27-12 -94	13-1 -95	25-1 -95	09-2 -95	26-2 -95	08-3 -95	24-3-95	12-4-95	19-4-95	04-5-95	21-5-95	08-6-95	14-7-95	30-7-95
Depth (m)																		
1	11.7	12.8	15.7	17.5	17.8	18.6	19.9	20.6	20.9	20.9	18.5	19.4	18.4	17.0	15.0	13.4	11.3	10.8
10	11.5	12.6	14.2	16.4	17.3	18.4	19.9	20.0	19.9	19.8	18.4	18.6	18.2	16.9	15.0	13.5	11.3	10.8
20	11.5	12.6	13.2	15.5	16.9	18.0	17.8	19.6	19.9	19.7	18.4	18.4	18.2	16.8	15.0	13.4	11.3	10.8
30	11.3	12.6	13.0	13.2	13.3	15.9	15.6	15.0	15.0	15.1	18.4	15.7	16.5	14.6	15.0	13.4	11.3	10.8
40	10.9	12.6	12.1	12.5	12.2	13.1	13.3	12.9	13.0	12.8	12.7	13.0	12.5	12.2	12.7	13.3	11.3	10.8
50	10.9	12.4	11.4	11.7	11.6	12.0	11.8	11.9	11.9	11.8	12.0	11.8	11.6	11.3	11.7	12.8	11.2	10.8
60	10.8	11.8	10.7	11.1	*	11.4	11.5	11.4	11.1	11.2	11.3	11.3	11.1	11.2	11.3	11.7	11.2	10.8
70	10.7	10.9	10.6	10.8	*	*	11.2	11.0	10.9	10.9	11.0	10.9	10.9	10.9	11.0	11.2	11.2	10.8
80	10.6	10.7	10.5	10.7	*	*	11.0	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	11.0	10.9	10.8
90	10.5	10.6	10.5	10.6	*	*	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.8	10.8	10.8	10.8
100	10.5	10.5	10.5	10.5	*	*	10.7	10.6	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.8	10.7	10.8
110	10.5	10.5	10.4	10.4	*	*	10.6	10.6	10.6	10.6	10.7	10.7	10.7	10.7	10.7	10.8	10.7	10.8
120	10.4	10.4	10.4	10.4	*	*	10.6	10.5	10.6	10.6	10.6	10.7	10.7	10.7	10.7	10.8	10.7	10.8
130	10.4	10.4	10.4	10.3	*	*	10.5	10.5	10.6	10.6	10.6	10.6	10.7	10.7	10.7	10.8	10.7	10.8
140	10.4	10.3	10.4	10.3	*	*	10.5	10.5	10.6	10.6	10.6	10.6	10.7	10.6	10.7	10.8	10.7	10.8
150	10.3	10.3	10.3	10.3	*	*	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.6	10.7	10.8	10.7	10.8
160	10.3	10.3	10.3	10.3	*	*	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.7	*	10.7	*	*

Dissolved oxygen (g m^{-3})

Depth (m)																		
1	10.5	9.6	9.8	9.2	9.0	8.0	8.9	8.4	8.5	8.5	8.7	*	9.2	9.3	9.0	9.0	9.6	9.6
10	10.6	9.4	10.3	9.4	10.6	10.4	10.2	8.5	8.4	8.0	*	*	9.3	9.1	8.8	9.1	9.6	9.5
20	10.8	9.4	10.3	9.4	11.0	10.5	11.5	8.5	8.4	8.0	*	*	9.2	9.0	8.8	9.1	9.4	9.4
30	10.7	9.4	10.2	9.7	12.5	11.2	11.4	9.8	9.6	9.7	*	*	9.3	9.2	8.7	9.0	9.4	9.3
40	10.5	9.3	10.1	9.6	12.5	11.9	12.0	9.7	9.4	9.7	*	*	9.7	9.3	8.6	9.0	9.3	9.3
50	10.4	9.3	9.9	9.5	12.6	11.9	12.0	9.4	9.4	9.5	*	*	9.5	9.2	8.5	8.8	9.2	9.3
60	10.4	9.4	9.9	9.5	*	10.3	11.9	9.4	9.3	9.4	*	*	9.5	9.2	8.5	8.3	9.2	9.2
70	10.4	*	9.8	9.5	*	*	11.7	9.3	9.3	9.3	*	*	9.5	9.2	8.4	8.3	9.2	9.2
80	10.4	*	9.8	9.5	*	*	11.6	9.3	8.9	9.1	*	*	9.0	9.2	8.3	8.3	8.5	9.1
90	10.4	*	9.7	9.5	*	*	11.4	9.2	8.8	9.0	*	*	8.7	9.0	8.1	7.9	8.3	9.0
100	10.2	*	9.6	9.4	*	*	11.3	9.0	8.6	8.8	*	*	8.6	8.6	8.0	7.6	7.8	8.9
110	10.3	*	9.7	9.3	*	*	11.1	9.0	8.3	8.7	*	*	8.3	8.2	8.0	7.5	7.4	8.8
120	10.2	*	9.4	9.2	*	*	10.9	8.7	8.2	8.4	*	*	8.2	7.9	7.8	7.1	7.2	8.6
130	9.8	*	9.2	9.0	*	*	10.6	8.5	7.9	8.3	*	*	8.0	7.7	7.6	7.0	7.2	8.4
140	9.8	*	8.9	9.0	*	*	10.5	8.3	7.6	8.1	*	*	8.0	7.5	7.4	7.0	7.1	8.4
150	9.9	*	8.6	8.7	*	*	10.4	8.3	7.3	7.9	*	*	7.5	7.3	7.0	7.0	7.1	8.3
160	*	*	8.5	8.5	*	*	10.0	8.2	7.5	7.7	*	*	6.6	7.2	*	6.8	*	*

Secchi depth

Depth (m)	11.7	11.4	12.5	12.9	15.6	17.8	15.7	17.0	16.5	17.1	14.7	15.7	16.1	15.1	14.3	15.0	12.5	15.7

* = missing or invalid data

Appendix 4. Nutrient data

Includes accumulated data since 1994. Blank cells represent missing data.
Data from the Kuratau Basin (site B) and Western Bays (site C) are included as separate sheets following the mid-lake data from site A for that year.
In the spring/autumn profile data, two different analytical methods are used to measure particulate nitrogen.

A wet digestion method involving high temperature refluxing in digestion mixture [persulphate / sulphuric acid / Selenium catalyst] for 3 hours followed by colorimetric determination of the nitrogen as the ammoniacal form, and

A CHN combustion method which converts all nitrogen compounds to N_2 gas in a furnace at ~1000°C to be measured in a thermal conductivity detector.

Particulate nitrogen analysed by the wet digestion method may not include some non-refractory nitrogen components which may be detected by the CHN combustion furnace method. Consequently the PN value from the CHN combustion furnace method should always be greater than or equal to the PN value obtained by the wet digestion method. Occasionally they are reported as less than the wet digestion method value in which case the wet digestion value should be regarded as correct. The cause of this difference is unknown but may be associated with the presence of low molecular weight organic nitrogen compounds lost during the drying step before combustion.

The PN values for the time series data are all from wet digestion method analyses and hence are directly comparable with the profile data.

Low level NH_4-N results are likely to be interference from low molecular weight DON and hence may not be biologically available for phytoplankton growth although they are a valid part of the TN in the lake.

From February 2002, DRP, NO_3-N, and NH_4-N were measured on a Lachat Flow Injection Analysis (FIA) system but using essentially the same chemistry as previously used on the Technical Auto-Analyzer system. The reported detection limits for these nutrients remains the same at 0.5 mg m^{-3} for DRP and NO_3-N, and 1 mg m^{-3} for NH_4-N, the greater precision of the FIA system provides confidence in reporting results to a lower level as an indication of likely absolute values near zero. Such values are provided as an indication only and the true value should be expressed as less than the detection limit.

Lake Taupo cumulative database of 10m tube sample data.
Samples collected from central lake site.

Date Collected	Temp. ^{o}C	Secchi m	DRP $mg\ m^{-3}$	DOP $mg\ m^{-3}$	PP $mg\ m^{-3}$	TP $mg\ m^{-3}$	NH_4-N $mg\ m^{-3}$	NO_3-N $mg\ m^{-3}$	DON $mg\ m^{-3}$	PN $mg\ m^{-3}$	TN $mg\ m^{-3}$	Chlorophyll *a* $mg\ m^{-3}$	PC $mg\ m^{-3}$
27/10/1994	11.7	11.7	1.2	0.7	2.5	4.4	1.1	0.2	56	16.6	73.4	1.16	
24/11/1994	12.8	11.4	0.5	2.7	1.7	4.8	1.7	1.0	51	12.6	66.5	0.41	
1/12/1994	15.7	12.5	0.6	2.4	2.4	5.4	2.2	1.2	56	18.5	78.0	0.41	
13/12/1994	17.5	12.9	0.8	4.2	1.4	6.4	<0.2	0.9	51	9.3	60.8	0.24	
28/12/1994	17.8	15.6	0.5	1.7	1.9	4.1	1.1	1.3	51	16.7	69.6	0.41	
13/01/1995	18.6	17.8	0.1	2.2	1.6	3.8	<0.2	0.8	53	11.6	64.9	0.22	
24/01/1995	19.9	15.7	0.2	2.1	1.2	3.6	<0.2	0.8	57	13.3	71.0	0.25	
10/02/1995	20.6	17.0	0.3	2.2	1.2	3.6	<0.2	1.5	62	10.2	73.3	0.32	
27/02/1995	20.9	16.5	0.4	<0.5	2.5	2.8	1.9	1.5	71	16.5	90.8	0.35	
9/03/1995	20.9	17.1	0.4	1.7	1.7	3.7	0.2	0.7	55	11.6	67.5	0.28	
24/03/1995	18.5	14.7			1.9	1.9				13.0		0.37	
12/04/1995	19.4	15.7	0.2	1.4	1.7	3.2	0.3	0.7	51	17.3	69.6	0.57	
19/04/1995	18.4	16.1	2.8	1.5	1.4	5.7	4.0	0.9	71	14.1	90.0	0.92	
4/05/1995	17.0	15.1	1.4	1.1	3.0	5.5	1.4	2.3	76	24.7	104.4	0.96	
21/05/1995	15.0	14.3	1.2	0.9	2.2	4.3	0.4	2.1	50	29.2	81.8	0.98	
8/06/1995	13.4	15.0	0.7	0.4	1.8	2.9	0.2	0.6	54	15.4	70.2	1.05	
14/07/1995	11.3	12.5	0.3	2.5	1.7	4.5	0.3	2.1	53	15.0	70.8	1.32	
30/07/1995	10.8	15.7	0.7	0.7	1.9	3.3	<0.2	4.6	35	17.3	57.3		
13/08/1995			0.5	0.4	1.9	2.8	<0.2	4.6	39	14.2	57.4	0.99	
12/09/1995	10.7	11.9	0.5	2.2	2.2	4.9	1.0	40.9	177	19.1	237.6	1.37	
25/09/1995	11.5	11.9	<0.2	0.7	2.1	2.8	<0.2	0.1	84	17.6	101.6	0.64	
30/10/1995	13.0	13.0	<0.2	2.4	1.9	4.3	<0.2	<0.1	56	14.7	70.4	0.93	
24/11/1995	13.7	13.6	0.8	1.8	1.6	4.3	1.9	<0.1	59	12.6	73.3	0.29	
6/12/1995	17.7	15.1	2.2	0.4	1.2	3.9	1.7	<0.1	58	11.3	70.8	0.20	
12/01/1996	21.1	16.3	2.6	0.6	1.2	4.4	3.6	<0.1	64	10.1	77.8	0.24	
31/01/1996	21.7	15.7	1.3	1.6	1.3	4.2	4.2	<0.1	59	11.9	75.5	0.29	
13/02/1996	22.7	17.8	2.1	3.3	1.2	6.6	7.4	<0.1	81	10.4	98.9	0.15	
29/02/1996	20.5	18.4	1.9	2.2	1.2	5.3	4.2	<0.1	61	10.8	76.3	0.31	
20/03/1996	18.2	14.1	0.8	2.2	1.4	4.5	5.4	<0.1	76	14.2	95.3	0.56	
28/03/1996	16.8	14.6	1.3	1.8	1.4	4.5	4.7	<0.1	91	12.6	108.3	0.81	
18/04/1996	17.7	14.4	0.8	2.2			4.3	<0.1	61			0.41	
19/05/1996	14.8	14.7	0.8	3.0			6.8	<0.1	59			0.70	
14/06/1996	12.2	14.4	1.6	3.2			5.7	<0.1	71				
19/06/1996	12.2	14.4	1.0	1.2			4.0	<0.1	49			0.70	
9/07/1996	11.2	12.9	3.0		1.9		4.0	<0.1	47	11.3		0.80	
3/09/1996	10.5	13.1	0.7	2.0	3.0	5.7	2.5	0.2	52	17.0	71.7	1.03	
18/09/1996	10.7	14.2	1.3	1.2	2.4	4.9	2.1	0.2	42	14.0	58.3	0.75	
30/09/1996	12.5	11.2	0.9	1.6	1.8	4.3	3.3	0.2	58	11.0	72.5	0.28	
17/10/1996	13.3	12.6	0.6	2.1	2.6	5.3	2.9	2.5	64	19.0	88.4	0.59	
24/10/1996	12.6	13.4	0.7	2.3	2.2	5.2	2.4	0.4	64	15.0	81.8	0.47	
6/11/1996	13.5	14.9	0.8	2.6	2.2	5.6	3.2	1.0	64	17.0	85.2	0.45	
28/11/1996	13.6	14.1	0.4	1.9	2.4	4.7	2.6	0.4	49	20.0	72.0	0.90	
11/12/1996	14.8	14.7	1.3	1.7	1.3	4.3	6.2	0.8	98	17.0	122.0	0.33	
23/12/1996	16.3	17.7	1.3	1.1			5.2	0.3	46			0.23	
8/01/1997	17.9	15.1	0.7	1.7	1.9	4.3	2.0	0.6	50	15.0	67.6	0.33	
29/01/1997	17.8	15.2	0.7	1.8	1.6	4.1	1.9	0.4	54	17.0	73.3	0.21	
26/03/1997	17.7	15.3	0.6	1.7	2.1	4.4	2.4	1.8	57	19.0	80.2	0.46	
2/04/1997	17.3	16.0	0.9	1.3	1.6	3.8	1.7	0.3	51	16.0	69.0	0.69	
15/04/1997	16.7	17.7	0.7	2.5	1.5	4.7	3.2	0.8	57	12.0	73.0	0.40	
1/05/1997	15.6	16.0	0.6				1.7	0.1				0.58	
21/05/1997	14.2	14.6	1.0	8.8	1.7	11.5	4.5	0.3	92	15.0	111.8	1.05	
29/05/1997	14.3	14.5	1.1	1.1			3.3	1.0	51			0.89	
7/07/1997	11.6	12.5	0.6	0.9			4.7	2.1	53			0.90	
29/07/1997	10.9	13.5	0.5	1.6			1.5	2.1	39			1.13	
2/09/1997	10.6	14.1	1.4	1.1	1.7	4.2	7.0	1.8	47.0	13.1	68.9	1.08	
16/09/1997	10.6	12.0	0.5	1.1			1.3	0.7	35			2.16	
11/10/1997	11.6	13.7	2.4	2.8	1.7	6.9	4.8	0.9	63.3	16.2	85.2	1.14	
29/10/1997	12.1	12.5	0.7	1.9	1.9	4.5	1.3	7.3	32	19.0	59.6	1.49	
2/12/1997	14.5	14.5	0.2	2.3			3.2	1.7	55			0.83	
21/01/1998	17.7	14.7	1.4	1.1	1.2	3.7	2.8	1.5	46.0	10.0	60.3	0.48	
4/03/1998	20.0	11.5	1.5	1.7	2.6	5.8	6.4	4.0	76.0	19.8	106.2	0.58	
24/03/1998	19.3	13.5	1.0	1.4	1.8	3.2	2.1	1.1	48.0	13.2	64.4	1.25	
7/04/1998	17.7	13.5	0.9	1.4	1.8	4.1	1.9	2.5	52.0	13.7	70.1	1.04	
29/05/1998	14.2	15.5	1.0	1.9	1.9	4.8	5.0	3.5	51.0	16.4	75.9	1.36	
28/07/1998	11.4	10.0	1.2	1.0	3.1	5.3	2.1	1.4	45.0	26.0	74.5	1.19	
29/09/1998	12.9	10.5	1.5	1.0			2.2	0.5	41.0	20.3	64.0	0.70	
8/10/1998	12.9	10.4	1.5	<1			2.4	2.4	46.0	37.6	88.4	1.00	
1/11/1998	13.6	13.5	0.6	1.3	2.6	4.5	2.4	<0.5	36.0	15.2	53.6	0.90	
26/11/1998	18.4	15.0	1.3	2.6	2.1	6.0	9.6	1.6	42.0	16.4	69.6	0.61	
22/12/1998	18.5	14.5	1.1	0.4	2.5	4.0	2.7	1.1	36.0	17.7	61.5	0.25	
12/02/1999	20.1	12.5	0.8	2.8	1.7	5.3	4.0	1.6	39.0	11.4	56.0	0.60	165
3/03/1999	20.9	14.3	0.6	2.9	2.0	5.5	1.6	1.1	40.0	16.8	59.5	0.82	203
14/04/1999	18.3	13.0	0.6	<1	1.8	2.4	3.0	<0.5	41.0	19.0	61.6	1.20	250
30/04/1999	16.4	12.2	1.1	1.5	1.7	4.3	2.1	<0.5	38.0	19.6	60.2	0.94	198
19/05/1999	14.4	15.0	0.8	<1	1.5	5.1	1	<1	46.0	16.2	63.7	1.2	166
8/06/1999	14.1	14.5	1.0	<1	3.9	4.9	1	<1	48.0	25.4	74.9	1.1	
18/06/1999	13.0	15.0	0.8	<1	2.0	5.0	2	5	42.0	16.5	65.5	1.7	
20/07/1999	12.0	16.0	0.5	<1	3.1	3.6	1	<1	45.0	28.3	74.3	1.0	
9/08/1999	11.5	14.5	1.3	1.7	2.3	5.3	4	8	45.0	18.4	75.4	1.7	
6/09/1999	11.1	10.0	<0.5	2.5	2.1	5.1	2	1	60	16.2	79.2	0.5	
29/09/1999	11.5	10.0	0.7	1	4	5.7	3	1	54	32.6	90.6	1.8	
18/10/1999	12.7	14.9	0.5	3	2.5	6	<1	<1	41	19.4	60.4	0.4	
20/12/1999	16.4	18.0	0.7	2.3	5	8	4	2	39	38	83	1.6	
18/01/2000	17.6	19.1	0.9	2	2	4	5	2	52	18.5	70.5	0.6	
12/04/2000	17.3	15.0	0.8	3	2	5	1	1	61	22	83	0.8	
4/05/2000	15.8	14.0	1	3	2	5	1	2	48	17	68	1.3	
25/05/2000	14.3	14.0	1	4	1	6	2	<1	55	17	65	0.6	
20/06/2000	12.3	14.0	<1	4	0	4.0	2	2	52	16	72.0	1.7	194
11/07/2000	11.9	11.0	<1	4	3	7.0	3	2	46	22.5	73.5	1.65	198
5/08/2000	11.3	12.0	2	2	3	7.0	1	3.5	42	19.5	66.0	2.5	154
22/08/2000	11.2	15.0	2	2	2	6.0	2	4	49	16.5	71.5	1.65	159
12/09/2000	11.5	12.0	2	5	3.5	10.5	2	<1	63	23.5	88.5	1	148
29/09/2000	11.5	13.0	2	4	2	8.0	1	1	54	21	77.0	1.15	237
26/10/2000	13.1	11.0	0.8	4.2	3	8.0	1.0	0.4	41.6	25	68.0	1.3	237
14/11/2000	13.1	12.0	<1	4	2	6.0	1	<1	41	14.5	56.5	0.9	171
7/12/2000	15.1	17.0	2	2	1.55	5.6	7	4	63	14.75	88.8	0.6	166
4/01/2001	18.0	14.5	<1	2	1.5	3.5	1	<1	40	11	52.0	0.5	127
16/01/2001	19.0	18.0	0.5	2.5	1.5	4.5	1	0.5	53.5	13	68.0	0.5	119
21/02/2001	20.5	17.0	0.9	1.1	1.5	3.5	<1	0.5	46.5	12.5	59.5	0.6	191
2/03/2001	20.7	14.5	<1	2	2	4.0	2	<1	53	18	73.0	0.9	193
20/03/2001	19.0	17.0	<1	3	1.4	4.4	<1	<1	46	14.25	60.3	0.9	154
9/04/2001	17.0	13.5	0.8	1.2	2.15	4.2	<1	3	62	19.45	84.5	1.05	199
8/05/2001	15.8	17.0	0.8	3.2	1.7	5.7	2	<1	61	23	86.0	1.1	248
30/05/2001	13.6	14.5	1.5	1.5	2	5.0	1	<1	57	12	70.0	1.4	203
2/07/2001	12.1	12.0	<1	3	2.3	5.3	1	1	50	18.3	70.3	1.5	156
25/07/2001	11.3	14.5	2	1	2.65	5.7	<1	6	45	19.75	70.8	2.2	188
13/08/2001	11.2	13.5	1	1	2.85	4.9	1	<1	41	21.9	63.9	2.1	225
3/09/2001	10.2	17.5	1	1	2.6	4.6	<1	<1	37	19	56.0	1.7	203
25/09/2001	11.6	11.0	1.1	0.9	2.8	4.8	1	<1	56	24.5	81.5	0.9	283
25/10/2001	13.0	14.5	0.8	1.2	2.4	4.4	<1	<1	46	19.4	65.4	1.1	246
12/11/2001	14.3	15.5	0.7	<1 (0.3)	5.15	6.2	<1 (0.5)	<0.5 (0)	34	35.0	69.5	1.7	403
10/12/2001	15.5	16.0	1.0	2	2.55	5.6	<1 (0.9)	<0.5 (0.1)	48	17.6	65.6	0.5	228
20/12/2001	17.0	13.0	0.6	2.7	2.05	5.4	1.3	<0.5 (0.1)	48	14.85	64.2	0.5	204
8/01/2002	18.3	13.0	<0.5 (0.3)	2	2.2	4.2	<1 (0)	<0.5	50	17.15	67.2	0.8	247
22/01/2002	19.3	15.0	<0.5 (0)	7	2.25	9.3	<1 (0)	<0.5	40	20.35	60.4	0.9	188
6/03/2002	18.7	14.5	1.2	0.8	2.05	4.1	<1 (0)	<0.5 (0.4)	74	17.7	91.7	1.7	227
4/04/2002	17.4	19.0	0.6	3	1.45	5.1	1.1	<0.5 (0.1)	46	10.7	57.8	0.8	138
17/04/2002	17.4	22.0	<0.5 (0)	3	1.65	4.7	<1 (0.5)	0.5	47	13.1	60.6	0.9	157
22/04/2002	17.05	22.0	-	-	-	-	-	-	-	-	-	-	-
5/05/2002	15.5	16.4	0.7	1			3.1	0.7	48			1	
16/05/2002			0.9	1.1	1.5	3.5	<1	<0.5	49	15.1	64.1	0.7	153
19/06/2002	12.6	17.0	1.2	1.8	1.9	4.9	<1 (0.5)	1.4	43.6	15.8	60.8	1.1	165
1/07/2002	12.1	16.0	1.2	1.8	1.8	4.8	<1 (0.9)	1.7	37.3	14.3	53.3	1.5	214
17/07/2002	11.4	15.5	2.3	2.7	1.7	6.7	2.3	7.8	41.9	14.6	66.6	1.5	154
31/07/2002	11.2	12.0	2.3	2.7	2.5	7.5	<1 (0.9)	5.9	177.2	16.7	199.8	2.2	193
29/08/2002	11.1	9.5	1.6	1.4	3.1	6.1	<1 (0)	<0.5 (0)	90	23	113.0	2.6	196
5/09/2002		6.7	-	-	-	-	-	-	-	-	-	-	-

▨ Special repeat analyses.
Detection limit <0.1 mg m^{-3}

Detection limits prior to 14 April 1999 were

	DL
DRP	0.2 mg m^{-3}
NH4-N	0.5 mg m^{-3}
NO3-N	0.5 mg m^{-3}

Values reported less than the DL
were special estimates of low samples.

Detection limits from 14 April 1999 on are

	DL
DRP	0.5 mg m^{-3}
NH4-N	1 mg m^{-3}
NO3-N	1 mg m^{-3}

Values reported less than the DL
were special estimates of low samples.

New LACHAT Flow Injection Analysis
Detection limits from 1 Dec 2001 on are

	DL
DRP	0.5 mg m^{-3}
NH4-N	1 mg m^{-3}
NO3-N	0.5 mg m^{-3}

High precision and confidence in the FIA
results allow estimates below the nominal DL.
Data in brackets are given as an indication

of the likely absolute concentration

Lake Taupo cumulative database of 10 m tube sample data
Samples collected from Mid Lake (Site A)

Date Collected	Temp.	Secchi	DRP	DOP	PP	TP	NH_4-N	NO_3-N	DON	PN	TN	Chlorophyll *a*	PC
20/06/2000	12.3	14.0	<1	4	0	4.0	2	2	52	16	72.0	1.7	193.5
11/07/2000	11.9	11.0	<1	4	3	7.0	3	2	46	22.5	73.5	1.65	198
5/08/2000	11.3	12.0	2	2	3	7.0	1	3.5	12	19.5	36.0	2.5	153.5
22/08/2000	11.2	15.0	2	2	2	6.0	2	4	49	16.5	71.5	1.65	158.5
12/09/2000	11.5	12.0	2	5	3.5	10.5	2	<1	63	23.5	88.5	1	148
29/09/2000	11.5	13.0	2	4	2	8.0	1	1	54	21	77.0	1.15	236.5
26/10/2000	13.1	11.0	0.8	4.2	3	8.0	1.0	0.4	41.6	25	68.0	1.3	237
14/11/2000	13.1	12.0	<1	4	2	6.0	1	<1	41	14.5	56.5	0.9	171
7/12/2000	15.1	17.0	2	2	1.55	5.6	7	4	63	14.75	88.8	0.6	165.5
4/01/2001	18.0	14.5	<1	2	1.5	3.5	1	<1	40	11	52.0	0.5	127
16/01/2001	19.0	18.0	0.5	2.5	1.5	4.5	1	0.5	53.5	13	68.0	0.5	118.5
21/02/2001	20.5	17.0	0.9	1.1	1.5	3.5	<1	0.5	46.5	12.5	59.5	0.6	190.5
2/03/2001	20.7	14.5	<1	2	2	4.0	2	<1	53	18	73.0	0.9	193
20/03/2001	19.0	17.0	<1	3	1.4	4.4	<1	<1	46	14.25	60.3	0.9	154
9/04/2001	17.0	13.5	0.8	1.2	2.15	4.2	<1	3	62	19.45	84.5	1.05	199
8/05/2001	15.8	17.0	0.8	3.2	1.7	5.7	2	<1	61	23	86.0	1.1	248
30/05/2001	13.6	14.5	1.5	1.5	2	5.0	1	<1	57	12	70.0	1.4	203
2/07/2001	12.1	12.0	<1	3	2.3	5.3	1	1	50	18.3	70.3	1.5	155.5
25/07/2001	11.3	14.5	2	1	2.65	5.7	<1	6	45	19.75	70.8	2.2	188
13/08/2001	11.2	13.5	1	1	2.85	4.9	1	<1	41	21.9	63.9	2.1	225
3/09/2001	10.2	17.5	1	1	2.6	4.6	<1	<1	37	19	56.0	1.7	203
25/09/2001	11.6	11.0	1.1	0.9	2.8	4.8	1	<1	56	24.5	81.5	0.9	283
25/10/2001	13.0	14.5	0.8	1.2	2.4	4.4	<1	<1	46	19.4	65.4	1.1	246
12/11/2001	14.3	15.5	1.0	2	2.55	5.6	0.9	0.1	48	17.6	66.6	0.5	227.5
10/12/2001	15.5	16.0	1.0	2	2.55	5.6	0.9	0.1	48	17.6	66.6	0.5	227.5
20/12/2001	17.0	13.0	0.6	2.7	2.05	5.4	1.3	0.1	48	14.85	64.3	0.5	203.5
8/01/2002	18.3	13.0	0.3	2	2.2	4.5	0	<1	50	17.15	67.2	0.8	246.5
22/01/2002	19.3	15.0	0	7	2.25	9.3	0	<1	40	20.35	60.4	0.9	188
6/03/2002	18.7	14.5	1.2	0.8	2.05	4.1	0.0	0.4	74	17.7	92.1	1.7	226.5
4/04/2002	17.4	19.0	0.6	3	1.45	5.1	1.1	0.1	46	10.7	57.9	0.8	138
17/04/2002	17.4	22.0	0.0	3	1.65	4.7	0.5	0.5	47	13.1	61.1	0.9	157
5/05/2002	15.5	16.4	0.7	1			3.1	0.7	48			1	
19/06/2002	12.6	17.0	1.2	1.8	1.9	4.9	0.5	1.4	43.6	15.8	61.3	1.1	165.0
1/07/2002	12.1	16.0	1.2	1.8	1.8	4.8	0.9	1.7	37.3	14.3	54.2	1.5	214
17/07/2002	11.4	15.5	2.3	2.7	1.7	6.7	2.3	7.8	41.9	14.6	66.6	1.5	153.5
31/07/2002	11.2	12.0	2.3	2.7	2.5	7.5	0.9	5.9	177.2	16.7	200.7	2.2	193
29/08/2002	11.1	9.5	1.6	1.4	3.1	6.1	0.0	0	90	23	113.0	2.6	196
18/09/2002	11.4	12	1.3	1.7	2	5.0	0	0.3	47	13	60.3	0.9	196.5
9/10/2002	11.6	15.5	1.3	2.7	2.1	6.1	2.9	0	29	12	43.9	0.6	159.5
13/11/2002	12.6	18	0.9	1.1	2.4	4.4	1.7	1.3	41	14.0	58.0	0.7	158.5

Lake Taupo cumulative database of 10 m tube sample data
Samples collected from Mid Lake (Site A)

Date Collected	Temp.	Secchi	DRP	DOP	PP	TP	NH$_4$-N	NO$_3$-N	DON	PN	TN	Chlorophyll *a*	PC
28/11/2002	14.1	12.7	0.7	2.3	2.7	5.7	0.1	0.0	43.0	22.0	65.1	0.7	201.5
18/12/2002	15.0	13.5	0.6	1.8	2.5	4.9	0.2	0.1	47.0	14.0	61.3	0.4	123.0
30/01/2003	17.8	18	0.4	3.6	1.9	5.9	0.4	0.1	56.5	12.0	69.0	0.7	166.0
13/02/2003	19.3	19	0.5	2.5	1.6	4.6	0.0	0.4	43.6	8.0	52.0	0.5	146.0
17/03/2003	18.5	15	0.8	2.2	1.7	4.7	<1	0.4	45.6	13.0	59.0	1.0	212
3/04/2003	19.3	13.5	1.1	2.9	1.8	5.8	<1	0.5	78.5	17.7	96.7	1.1	234.5
28/04/2003	16.7	14	0.3	3.7	1.9	5.9	<1	0.3	73.7	15.6	89.6	1.5	208.5
15/05/2003	15.6	16.5	0.1	3.9	2.2	6.2	0.3	0.3	50.4	19.5	70.5	1.4	228.5
12/06/2003	13.5	11	1.3	2.7	2.2	6.2	0.3	0.4	40.3	13.7	54.7	1.3	111.0
14/07/2003	11.8	14.5	2.2	1.8	2.6	6.6	1.1	1.1	34.8	18.0	55.0	1.8	102.0
31/07/2003	11.4	14	2.4	1.6	2.4	6.4	1.3	3.7	46.0	16.7	67.7	2.0	89.5
14/08/2003	11.2	13.5	1.8	2.2	3.1	7.1	0.7	0.2	46.1	21.1	68.1	2.9	91.5
26/08/2003	11.2	13	3.0	1.0	4.0	8.0	1.0	0.2	42.8	21.7	65.7	2.9	135.5
8/09/2003	11.1	12.5	2.6	0.4	3.3	6.3	0.4	0.2	45.2	17.4	63.2	1.5	199.5

Lake Taupo cumulative database of 10 m tube sample data
Samples collected from Kuratau Basin (Site B)

Date Collected	Temp. °C	Secchi m	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH_4-N mg m^{-3}	NO_3-N mg m^{-3}	DON mg m^{-3}	PN mg m^{-3}	TN mg m^{-3}	Chlorophyll *a* mg m^{-3}	PC mg m^{-3}
8/01/2002	18.1	13.5	0.4	2	2.2	4.6	0.4	1.3	48	16.7	66.4	0.9	233
22/01/2002	18.8	12	0.9	2	2.6	5.5	0.9	0.3	41	19.9	62.1	0.9	221
6/03/2002	18.6	14.5	0.3	2	2.3	4.6	1.4	0.5	73	18.3	93.2	0.9	207
4/04/2002	17.4	19.5	0.6	2	1.5	4.1	0.4	0.1	40	11.2	51.7	0.9	162
17/04/2002	16.8	19	0.0	3	1.6	4.6	0.5	0.1	45	12.3	57.9	0.9	143
5/05/2002	15.1	13.2	0.3	1.1			1.6	0.4	40			0.9	
19/06/2002	12.5	15	1.0	1	2.2	4.2	0.4	0.8	48.2	17.4	66.8	1.5	182
1/07/2002	12.1	16	1.5	1.5	1.8	4.8	0.8	1.7	41.5	14.2	58.2	1.6	146
17/07/2002	11.5	12.5	1.8	2.2	2	6	0.8	5.1	51.1	16.1	73.1	1.5	156.5
31/07/2002	11.3	10.5	2.0	3	2.5	7.5	1.5	2.2	81.5	18.5	103.7	2.6	194.5
29/08/2002	11.0	8	1.2	4.8	3.3	9.3	0	0.2	184.0	22.9	207.1	2.3	221
18/09/2002	11.1	11	1.9	2.1	2.1	6.1	0.4	0.6	43.4	14	58.4	1.1	149
9/10/2002	11.7	16	1.4	1.6	1.7	4.7	4.4	0.2	19.6	11.7	35.9	0.5	149
13/11/2002	12.0	14	1	3	2.5	6.5	0.3	0	35	15.2	50.5	1.8	478
28/11/2002	13.8	12.7	0.9	2.9	2	5.8	0	0	40	16.7	56.7	0.7	203.5
18/12/2002	15.2	14	0.6	1.4	2.1	4.1	0	0.1	36	11.2	47.3	0.4	143
30/01/2003	16.8	18	0.5	2.5	1.7	4.7	<1	0.8	43	12.1	55.9	0.6	148.5
13/02/2003	18.8	11	0.7	1.3	1.6	3.6	0.4	0.2	45	9.3	54.9	0.7	131
17/03/2003	18.7	14	0.5	3.5	2	6	<1	0.7	49	16.3	66	1	208
3/04/2003	19.0	12.8	0.6	3.4	2.1	6.1	<1	0.1	50	19.6	69.7	1.1	239.5
28/04/2003	16.7	13.5	0.6	3.4	1.6	5.6	<1	0.2	57	13.1	70.3	1.4	218.5
15/05/2003	15.7	15.5	0.4	3.6	1.8	5.8	<1	0.2	63	13.5	76.7	1.7	229.5
12/06/2003	12.5	12	1.7	1.3	2.2	5.2	0.1	2.8	39.1	13.9	55.9	1.3	
14/07/2003	11.8	12	1.7	2.3	2.2	6.2	0.9	1.9	39.4	15.9	58.1	1.7	96.5
31/07/2003	11.3	13	2.1	1.9	2.7	6.7	1.2	2.0	43.8	18.0	65	2.1	
14/08/2003	11.4	13	1.8	2.2	3.3	7.3	0.3	0.3	33	22.3	55.9	2.5	
26/08/2003	11.3	11.5	3.1	0.9	4.0	8	0.4	0.1	37	22.4	59.9	3.1	
8/09/2003	11.1	11	2.5	1.5	3.3	7.3	0.4	0.1	36	23.5	60	1.4	

Lake Taupo cumulative database of 10 m tube sample data

Samples collected from Western Bays (site C)

Date Collected	Temp.	Secchi	DRP	DOP	PP	TP	NH_4-N	NO_3-N	DON	PN	TN	Chlorophyll *a*	PC
	^{o}C	m	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}
8/01/2002	18.72	14.5	0.9	4	2.3	7.2	0.9	0.6	88	16.1	105.6	0.8	213
22/01/2002	18.82	15.5	0.7	2	2.2	4.9	0.7	0.0	37	16.8	54.5	0.8	221
6/03/2002	18.68	16	0.2	2	2	4.2	0	0.1	45	16	61.1	0.7	177
4/04/2002	17.47	19	0.6	2	1.4	4	0.0	0.0	38	8.8	46.8	0.9	152
17/04/2002	16.88	18.5	0	3	1.6	4.6	0.7	0.2	44	11.8	56.7	0.9	167
5/05/2002	15.6	15.6	0.4	1			2	0.2	45			1.1	
19/06/2002	12.58	16	0.9	2.1	2	5	0.3	1.2	38.8	15.9	56.2	0.9	161
1/07/2002	12.22	14	1.3	1.7	1.9	4.9	0.3	0.4	45	15	60.7	1.4	148
17/07/2002	11.52	12.5	1.9	2.1	2	6	0.9	4.9	46.1	16.3	68.2	1.5	160
31/07/2002	11.6	12	2.3	2.7	2.3	7.3	1.7	4.0	113.3	16.7	135.7	2.3	150
29/08/2002	11.4	8	1	3	3.2	7.2	0	0	177	22.3	199.3	2.4	217
18/09/2002	11.24	12	2.8	2.2	2	7	1.7	0.4	45.3	11.7	59.1	0.9	152
9/10/2002	12.10	19	1.5	1.5	1.7	4.7	0.3	0.2	28	10.2	38.7	0.4	116
13/11/2002	12.60	16	1.1	2.9	2	6	0.1	0	51	12.2	63.3	0.6	141
28/11/2002	13.90	15.5	0.9	2.1	2	5	0.4	0.4	40	14.4	55.2	0.8	125.5
18/12/2002	15.10	13.5	0.8	2.2	1.9	4.9	0	0.3	45	10.2	55.5	0.5	136.5
30/01/2003	17.60	18.5	0.5	2.5	1.5	4.5	<1	0.1	46	8.6	54.7	0.4	141.5
13/02/2003	19.50	19	0.6	1.4	1.6	3.6	0	0.1	42	8.4	50.5	0.5	104
17/03/2003	18.70	15	0.5	2.5	1.7	4.7	<1	0.4	46	14.6	61	1.1	215
3/04/2003	18.80	14.5	0.5	2.5	1.6	4.6	<1	0.4	49	16.5	65.9	1.2	204
28/04/2003	17.00	14.5	0.4	2.6	1.4	4.4	<1	0.4	54	12.2	66.6	1.5	191
15/05/2003	15.60	17	0.1	3.9	2.2	6.2	<1	0.1	56	18	74.1	1.3	197
12/06/2003	13.70	11	1.3	1.7	2	5	0.1	0.9	40	13.8	54.8	1.3	
14/07/2003	11.80	14	1.9	2.1	2	6	1	4.7	39.3	14.9	59.9	1.5	85
31/07/2003	11.40	12	3.1	5.9	2.8	11	0.1	4.0	55	20.3	79.4	2.3	

14/08/2003	11.50	14.5	2.4	2.6	2.9	7.9	1.1	3.8	46.1	19.5	70.5	2.8
26/08/2003	11.30	13	2.8	2.2	3.8	8.8	0.5	0.2	39	25.0	64.7	3.2
8/09/2003	11.30	12	2.6	0.4	3	6	0.1	0.1	40	19.5	59.7	1.3

Lake Taupo biannual nutrient database **2002-2003** Started 27 October 1994

Collection date 13 November 2002 Secchi depth = 18.0 m

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_*a*	DRP	DOP	PP	TP	NH_4-N	NO_3-N	DON	UREA	PN*	TN	DOC	PC	PN**
	m		mS cm^{-1}	^{o}C	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}
NZ1	1	7.87	122	12.58	10.2	0.6	<0.5	0.6	1.3	1.7	2.2	5.2	0.8	0.6	65.6	2	15.3	82.3	620	160.0	12.5
NZ2	10	7.86	120	12.58	10.3	0.5	<0.5	0.7	1.2	1.8	2.1	5.1	0.7	0.0	49.3	1	13.7	63.7	573	180.5	13.5
NZ3	20	7.93	120	12.49	10.2	1.0	<0.5	0.7	1.1	1.9	2.2	5.2	0.5	0.1	61.4	1	15.8	77.8	536	157.5	12.0
NZ4	30	7.85	121	12.38	10.2	<0.5	<0.5	0.8	0.9	3.1	2.6	6.6	0.7	0.5	74.8	2	17.7	93.7	657	242.0	14.0
NZ5	40	7.81	119	12.16	10.1	<0.5	<0.5	0.7	1.2	1.8	1.9	4.9	0.6	0.7	58.7	1	12.9	72.9	506	164.5	8.0
NZ6	50	7.83	120	12.00	10.1	<0.5	<0.5	0.7	1.6	1.4	1.7	4.7	1.6	0.0	55.4	1	11.5	68.5	505	170.0	9.5
NZ7	60	7.78	119	11.81	10.0	<0.5	<0.5	0.6	1.5	1.5	1.5	4.5	1.2	0.0	64.8	2	9.5	75.5	531	108.5	6.5
NZ8	70	7.72	120	11.51	9.9	<0.5	<0.5	0.6	2.8	1.2	1.3	5.3	3.4	2.2	42.4	7	7.1	55.1	514	53.5	5.0
NZ9	80	7.67	120	11.32	9.7	<0.5	<0.5	0.4	2.7	1.3	1.1	5.1	3.3	0.9	38.8	2	5.9	48.9	578	61.0	4.5
NZ10	90	7.77	121	11.13	9.6	<0.5	<0.5	0.4	2.8	1.2	1.0	5.0	3.7	0.4	44.9	4	6.6	55.6	487	41.0	<2
NZ11	100	7.53	122	11.08	9.4	<0.5	<0.5	0.2	3.0	2.0	0.8	5.8	4.2	3.7	65.1	5	6.1	79.1	525	31.0	<2
NZ12	110	7.64	121	11.05	9.4	<0.5	<0.5	0.1	3.3	1.7	0.7	5.7	3.4	5.4	57.2	4	4.4	70.4	472	38.0	<2
NZ13	120	7.55	122	11.01	9.3	<0.5	<0.5	0.2	3.6	0.4	1.0	5.0	3.0	7.0	51.0	6	5.9	66.9	473	64.5	4.0
NZ14	130	7.32	123	10.99	9.2	<0.5	<0.5	0.1	3.6	0.4	1.0	5.0	2.9	7.5	45.6	5	6.7	62.7	555	70.5	3.5
NZ15	140	7.47	121	10.97	9.1	0.5	<0.5	0.1	3.7	1.3	0.9	5.9	2.5	10.5	60.0	16	6.7	79.7	460	54.5	3.0
NZ16	150	7.46	121	10.96	9.0	<0.5	<0.5	0.2	4.3	1.7	1.0	7.0	0.5	12.9	58.6	4	6.4	78.4	461	52.5	3.0

Collection date 3 April 2003 Secchi depth = 13.5 m

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_*a*	DRP	DOP	PP	TP	NH_4-N	NO_3-N	DON	UREA	PN*	TN	DOC	PC	PN**
	m		mS cm^{-1}	^{o}C	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}
UJ1	1	8.01	119	19.20	8.8	3.0	0.5	0.7	0.8	3.2	1.8	5.8	5	0.4	75.6	5	18.8	99.8	546	219.0	19.5
UJ2	10	8.07	146	18.71	8.8	0.7	1.0	1.4	0.9	4.1	2.5	7.5	<1	0.6	45.4	1	24.0	70.0	511	304.5	29.0
UJ3	20	8.15	120	18.60	8.6	1.0	0.7	1.3	0.6	3.4	2.3	6.3	<1	0.6	40.4	1	23.7	64.7	520	270.0	31.5
UJ4	30	7.93	119	16.93	8.3	<0.5	<0.5	1.5	0.8	3.2	1.8	5.8	<1	0.3	39.7	1	20.4	60.4	503	181.0	39.0
UJ5	40	7.66	118	13.31	8.0	<0.5	<0.5	1.3	1.7	3.3	1.7	6.7	<1	0.8	39.2	1	12.2	52.2	443	115.0	54.0
UJ6	50	7.61	122	12.39	7.9	<0.5	1.0	0.7	2.9	2.1	1.3	6.3	<1	4.8	35.2	3	8.6	48.6	410	92.5	5.5
UJ7	60	7.57	138	11.80	7.7	<0.5	<0.5	0.5	3.9	2.1	1.1	7.1	<1	10.7	32.3	1	5.9	48.9	366	86.5	4.5
UJ8	70	7.42	121	11.50	7.6	<0.5	<0.5	0.2	4.4	1.6	0.9	6.9	<1	16.3	27.7	1	6.1	50.1	404	109.5	4.0
UJ9	80	7.39	121	11.32	7.5	<0.5	<0.5	0.1	4.5	1.5	1.0	7.0	<1	19.3	41.7	1	6.2	67.2	365	37.0	4.0
UJ10	90	7.32	121	11.20	7.3	<0.5	<0.5	0.1	4.7	1.3	0.8	6.8	<1	21.9	24.1	2	4.5	50.5	360	40.0	<4
UJ11	100	7.29	121	11.19	7.3	<0.5	<0.5	<0.1	5.3	2.7	0.9	8.9	<1	23.9	27.1	2	4.6	55.6	387	92.5	<4
UJ12	110	7.26	120	11.12	7.2	<0.5	<0.5	<0.1	5.5	0.5	0.7	6.7	<1	25.2	30.8	1	2.9	58.9	366	28.5	<4
UJ13	120	7.33	122	11.11	7.0	<0.5	<0.5	<0.1	6.6	0.4	0.7	7.7	<1	28.8	36.2	5	2.5	67.5	409	40.0	<4
UJ14	130	7.27	123	11.09	6.9	<0.5	<0.5	<0.1	7.7	0.3	0.9	8.9	<1	30.9	29.1	3	3.2	63.2	382	15.5	<4
UJ15	140	7.28	122	11.10	6.8	<0.5	<0.5	<0.1	7.6	0.4	0.8	8.8	<1	30.4	47.6	4	4.3	82.3	384	47.5	<4
UJ16	150	7.29	122	11.09	6.5	<0.5	<0.5	<0.1	9.0	5.0	1.6	15.6	<1	36.4	30.6	2	6.5	73.5	371	38.5	<4

NH_4, NO_3, DON, Urea all as N * = PN by wet digestion method, ** = PN by combustion furnace method.

Detection limits: DRP 0.5; NO_3-N 0.5; NH_4-N 1.0 mg m^{-3}

New Analytical instrument (Flow Injection Analysis) from January 2002, gives greatly improved resolution at low levels.

FIA instrument results are given as a better indication of likely absolute low levels of DRP, NO_3-N, and NH_4-N below nominal detection limit.

Lake Taupo biannual nutrient database **2001-2002** Started 27 October 1994

Collection date 12 November 2001 Secchi depth = 15.5 m

Code	Depth m	pH	EC @25oC µS cm^{-1}	Temp ^{o}C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_a mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH4-N mg m^{-3}	NO3-N mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC mg m^{-3}	PC mg m^{-3}	PN** mg m^{-3}
XH1	1	7.85	122	14.23	9.5	0.5	<0.5	0.6	0.9	1.1	1.55	3.6	<1	<0.5	29	2	6	35	500	146.5	12.0
XH2	10	7.86	122	14.16	9.8	0.5	<0.5	0.7	1.1	0.9	4.3	6.3	<1	<0.5	32	2	16.5	49	520	212.0	31.3
XH3	20	7.82	119	13.37	9.4	<0.5	<0.5	1.0	1.1	<0.5	3.5	4.6	<1	<0.5	28	1	20	48	510	340.5	26.8
XH4	30	7.6	116	12.85	9.4	0.6	0.7	1.3	1.6	<0.5	3.1	4.7	<1	1.0	29	1	14.5	45	480	264.5	24.7
XH5	40	7.44	122	11.87	8.9	<0.5	<0.5	1.3	2.2	<0.5	2.8	5.0	1	2.5	25.5	2	11.5	41	470	200.5	21.7
XH6	50	7.46	121	11.57	9.0	<0.5	<0.5	0.9	2.6	<0.5	1.75	4.4	<1	7.2	26.8	2	6	40	470	136.5	12.6
XH7	60	7.41	121	11.24	8.7	1.3	1.2	0.7	2.6	<0.5	1.4	4.0	<1	8.0	24	2	<2	32	440	104.5	9.1
XH8	70	7.4	122	11.13	8.8	<0.5	<0.5	0.5	2.9	<0.5	1.15	4.1	<1	12.3	21.7	2	<2	34	450	142.0	7.2
XH9	80	7.38	122	11.03	8.6	<0.5	<0.5	0.4	3.2	<0.5	1.15	4.4	<1	13.6	29.4	4	<2	43	440	103.0	8.1
XH10	90	7.4	119	11.01	8.8	<0.5	<0.5	0.4	3.2	<0.5	1.05	4.3	<1	15.1	21.9	2	<2	37	420	79.0	6.2
XH11	100	7.35	120	10.99	8.6	<0.5	<0.5	0.3	3.8	<0.5	1.05	4.9	<1	17.8	25.2	2	4	47	460	98.0	6.6
XH12	110	7.36	122	10.97	8.6	<0.5	<0.5	0.3	4.0	<0.5	1.1	5.1	<1	19.5	24.5	2	<2	44	490	116.5	5.8
XH13	120	7.35	126	10.95	8.4	<0.5	<0.5	0.3	4.5	<0.5	1.3	5.8	<1	22.0	22	2	<2	44	490	93.5	5.6
XH14	130	7.38	127	10.94	8.4	<0.5	<0.5	0.3	4.4	<0.5	1.1	5.5	<1	21.1	21.9	2	<2	43	420	113.5	5.5
XH15	140	7.34	126	10.94	8.2	<0.5	<0.5	0.3	5.2	<0.5	1.3	6.5	<1	24.7	25.3	2	<2	50	440	93.5	7.3
XH16	150	7.38	127	10.94	8.1	1.3	0.6	0.3	5.3	<0.5	1.3	6.6	<1	25.2	26.8	3	<2	52	480	83.5	7.7

Collection date 4 April 2002 Secchi depth = 19.0 m

Code	Depth m	pH	EC @25oC µS cm^{-1}	Temp ^{o}C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_a mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH4-N mg m^{-3}	NO3-N mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}
EJ1	1	7.91	119	17.45	8.8	<0.5	<0.5	0.72	0.5	0.5	1	2.0	1.1	0.3	44.6		7.85	53.9	0.5	187.0	10.0
EJ2	10	7.94	118	17.38	8.9	<0.5	<0.5	0.96	0.6	1.4	1.4	3.4	0.2	0.1	44.7		9.4	54.4	0.6	164.5	10.5
EJ3	20	7.88	119	17.18	8.8	<0.5	<0.5	1.02	0.5	1.5	1.35	3.4	0.3	0.0	38.7		9.45	48.5	0.8	154.5	11.0
EJ4	30	7.85	119	16.83	8.7	<0.5	<0.5	0.95	0.7	2.3	1.45	4.5	0.4	0.1	40.5		8.4	49.4	0.5	136.5	10.5
EJ5	40	7.65	121	12.9	8.3	<0.5	<0.5	0.89	1.4	0.6	1.2	3.2	0.4	0.8	32.8		7.95	42.0	0.4	100.0	8.0
EJ6	50	7.66	120	12.09	8.2	<0.5	<0.5	0.85	2.1	0.9	1.3	4.3	0.4	3.5	35.1		7.8	46.8	0.4	114.0	9.0
EJ7	60	7.60	123	11.51	8.1	<0.5	<0.5	0.50	3.9	2.1	1	7.0	0.9	12.3	30.8		5.7	49.7	0.4	75.0	6.0
EJ8	70	7.42	123	11.3	8.0	<0.5	<0.5	0.26	4.5	0.5	0.95	6.0	0.0	20.9	30.1		5.65	56.7	0.5	49.5	4.0
EJ9	80	7.46	121	11.24	7.9	<0.5	<0.5	0.24	4.6	0.4	1.1	6.1	0.2	24.8	29		7.55	61.6	0.3	50.0	5.0
EJ10	90	7.38	121	11.19	7.8	<0.5	<0.5	0.19	5.3	<0.5	0.75	6.1	0.3	28.1	23.6		4.45	56.5	0.4	48.0	4.0
EJ11	100	7.33	121	11.17	7.8	<0.5	<0.5	0.11	5.4	0.6	0.8	6.8	0.1	28.6	30.3		5.05	64.1	0.3	76.0	5.5
EJ12	110	7.37	122	11.14	7.7	<0.5	<0.5	0.10	6.0	<0.5	0.8	6.8	0.5	31.7	23.8		6.15	62.2	0.6	67.5	7.5
EJ13	120	7.36	122	11.14	7.7	<0.5	<0.5	0.10	6.3	<0.5	0.6	6.9	0.2	32.2	24.6		3.25	60.3	0.3	46.5	4.0
EJ14	130	7.32	122	11.13	7.6	<0.5	<0.5	0.09	6.5	<0.5	0.45	7.0	0.1	32.2	26.7		0.8	59.8	0.5	48.0	5.5
EJ15	140	7.34	122	11.13	7.1	<0.5	<0.5	0.07	7.0	<0.5	0.7	7.7	1.1	34.0	29.9		4.9	69.9	0.4	44.0	4.0
EJ16	150	7.44	122	11.13	7.0	<0.5	<0.5	0.09	8.7	<0.5	0.9	9.6	0.8	36.3	24.9		4.45	66.5	0.4	75.5	4.0

NH$_4$, NO$_3$, DON, Urea all as N * = PN by wet digestion method, ** = PN by combustion furnace method.

Detection limits: DRP 0.5; NO$_3$-N 0.5; NH$_4$-N 1.0 mg m^{-3}

New Analytical instrument (Flow Injection Analysis) from January 2002, gives greatly improved resolution at low levels.
FIA instrument results are given for Autumn as an indication of likely absolute low levels of DRP, NO$_3$-N, and NH$_4$-N.

Lake Taupo biannual nutrient database **2000-2001** **Started 27 October 1994**

Collection date 26 October 2000 Secchi depth = 11 m

Code	Depth	pH	EC @25°C	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH4-N	NO3-N	DON	UREA	PN*	TN	DOC	PC	PN**
	m		µS cm^{-1}	°C	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}
FX1	1	7.87	120	12.5	9.1	0.5	<0.5	0.4	<1	3	2	5.0	1	<1	25	4	9	35	0.5	104.5	4.0
FX2	10	7.85	120	11.5	8.7	0.8	0.5	1.1	1	4	3	8.0	<1	<1	33	2	23	56	0.5	196.0	12.0
FX3	20	7.79	120	11.4	8.7	<0.5	<0.5	1.3	<1	2	4	6.0	<1	<1	41	2	29	70	0.5	237.0	19.0
FX4	30	7.74	120	11.3	8.7	1.1	0.5	1.3	<1	2	3	5.0	<1	<1	36	1	24	60	0.5	183.0	11.0
FX5	40	7.69	119	11.3	9.1	0.9	0.5	1.5	<1	2	3	5.0	1	<1	38	2	18	57	0.5	90.5	7.0
FX6	50	7.63	120	11.3	9.1	0.8	<0.5	1.4	1	2	2	5.0	2	<1	64	2	14	80	0.4	79.5	6.0
FX7	60	7.54	120	11.3	8.7	0.9	<0.5	1.2	1	1	2	4.0	<1	<1	45	2	14	59	0.4	58.0	5.0
FX8	70	7.52	120	11.2	8.7	<0.5	<0.5	1.2	1	1	2	4.0	4	1	38	4	14	57	0.5	61.5	5.0
FX9	80	7.52	120	11.2	8.7	0.9	<0.5	1.1	2	2	2.5	6.5	5	2	44	2	13	64	0.5	44.5	<4
FX10	90	7.59	120	11.2	8.7	0.9	<0.5	1.1	2	2	2	6.0	6	3	37	2	14	60	0.5	58.5	5.5
FX11	100	7.47	120	11.1	8.7	<0.5	<0.5	1.4	1	1	3	5.0	3	4	39	4	16	62	0.4	48.5	6.0
FX12	110	7.41	121	11.1	8.7	0.9	<0.5	1.2	2	2	3	7.0	3	4	38	3	15	60	0.4	29.5	<4
FX13	120	7.40	121	11.0	8.2	0.5	<0.5	0.8	2	2	2	6.0	6	7	38	5	8	59	0.4	104.0	5.5
FX14	130	7.42	121	11.0	8.5	0.6	<0.5	0.2	2	2	2	6.0	6	7	41	4	11	65	0.4	71.0	6.5
FX15	140	7.36	121	11.0	8.6	0.8	<0.5	0.6	4	1	3	8.0	5	11	40	3	11	67	0.4	65.5	5.0
FX16	150	7.32	121	11.0	8.5	0.6	<0.5	1.4	4	2	4	10.0	8	13	47	9	18	86	0.4	110.5	8.0

Collection date 8 April 2001 Secchi depth = 13.5 m

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH4-N	NO3-N	DON	UREA	PN*	TN	DOC	PC	PN**
	m		µS cm^{-1}	°C	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}
NZ1	1	7.94	120	17.0	8.3	<0.5	<0.5	1.0	<1	2	2	4.0	2	1	40	7	20.0	63.0	0.6	201.0	15.5
NZ2	10	7.97	120	16.9	8.3	<0.5	<0.5	1.4	<1	1	2	3.0	<1	<1	29	1	19.0	48.0	0.6	189.0	13.0
NZ3	20	7.99	120	16.8	8.4	<0.5	<0.5	1.5	<1	1	2	3.0	<1	<1	36	1	19.0	55.0	0.6	208.5	14.5
NZ4	30	7.96	124	15.8	8.0	<0.5	<0.5	1.2	<1	2	2	4.0	1	<1	42	1	16.0	59.0	0.6	156.0	10.5
NZ5	40	7.76	120	13.1	7.8	<0.5	<0.5	1.2	<1	1	1.5	2.5	1	1	22	2	12.0	36.0	0.5	145.0	8.5
NZ6	50	7.69	119	12.4	7.5	<0.5	<0.5	1.0	2	0	1	3.0	1	2	22	2	10.0	35.0	0.5	100.0	5.5
NZ7	60	7.60	120	11.8	7.2	<0.5	<0.5	0.8	1	1	1	3.0	<1	9	16	2	7.0	32.0	0.5	82.0	<2
NZ8	70	7.57	120	11.7	7.1	<0.5	<0.5	0.4	3	0	<1	3.0	<1	19	25	2	5.5	49.5	0.4	80.5	<2
NZ9	80	7.44	121	11.5	6.9	<0.5	<0.5	0.3	3	0	<1	3.0	2	24	15	3	5.0	46.0	0.6	70.0	<2
NZ10	90	7.39	121	11.5	6.9	<0.5	<0.5	0.2	3	1	<1	4.0	2	26	14	4	4.0	46.0	0.5	57.5	<2
NZ11	100	7.38	122	11.4	6.8	<0.5	<0.5	0.2	4	0	<1	4.0	2	29	16	1	4.0	51.0	0.5	47.5	<2
NZ12	110	7.39	122	11.4	6.8	<0.5	<0.5	0.1	4	1	<1	4.0	2	31	18	4	3.5	54.5	0.5	42.5	<2
NZ13	120	7.41	121	11.3	6.7	<0.5	<0.5	0.1	5	0	<1	5.0	1	33	16	4	5.0	55.0	0.4	40.0	<2
NZ14	130	7.42	122	11.3	6.6	<0.5	<0.5	0.1	5	0	<1	5.0	1	33	20	4	5.0	59.0	0.5	42.5	<2
NZ15	140	7.34	123	11.3	6.4	<0.5	<0.5	0.1	6	1	<1	7.0	2	38	12	5	4.5	56.5	0.5	55.0	<2
NZ16	146	7.30	123	11.3	6.3	<0.5	<0.5	0.1	7	2	1	10.0	2	43	22	5	6.5	73.5	0.5	70.5	<2

NH_4, NO_3, DON, Urea all as N Detection limits: DRP 0.5; NO_3-N 0.5; NH_4-N 1.0 mg m^{-3}
* = PN by wet digestion method, ** = PN by combustion furnace method.

Lake Taupo biannual nutrient database **1999-2000** **Started 27 October 1994**

Collection date 18 October 1999 Secchi depth = 14.9 m

Code	Depth m	pH	EC @25oC µS cm^{-1}	Temp ^{o}C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_a$^{+}_{+}$ mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH_4-N mg m^{-3}	NO_3-N mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC mg m^{-3}	PC mg m^{-3}	PN** mg m^{-3}
PX1	1	7.71	119	12.8	8.9	0.5	<0.5	0.14	0.5	3	3.7	7.2	<1	<1	41	16	19.4	60.4	441	105.7	8.8
PX2	10	7.74	117	12.7	8.9	<0.5	<0.5	0.39	0.5	4	3.2	7.7	<1	<1	36	4	19.9	55.9	411	160.8	12.9
PX3	20	7.73	122	12.4	8.9	0.6	<0.5	0.80	1	2	5.5	8.5	<1	<1	34	1	37.8	71.8	437	254.7	37.3
PX4	30	7.76	120	11.6	8.9	<0.5	1.9	1.06	1	2	3.9	6.9	<1	<1	36	<1	26.7	62.7	413	198.3	24.2
PX5	40	7.57	117	11.4	8.8	<0.5	<0.5	3.14	2	2	2.4	6.4	5	<1	44	22	14.6	63.6	392	117.2	9.7
PX6	50	7.48	119	11.3	8.6	<0.5	<0.5	2.90	2.5	2	1.7	6.2	8	2	33	5	9.1	52.1	417	87.0	6.6
PX7	60	7.49	118	11.1	8.6	0.5	<0.5	1.45	3	1	1.5	5.5	7	9	36	5	12.6	64.6	449	95.0	11.1
PX8	70	7.41	117	11.1	8.6	<0.5	<0.5	0.65	3.5	1	1.5	6.0	4	15	27	9	5.6	51.6	421	49.9	4.9
PX9	80	7.39	117	11.0	8.5	<0.5	<0.5	0.75	3.5	2	1.4	6.9	4	17	31	7	5.7	57.7	398	42.7	5.7
PX10	90	7.36	118	11.0	8.6	<0.5	<0.5	0.54	4	2	1.3	7.3	3	17	29	2	5.8	54.8	393	51.2	5.7
PX11	100	7.36	118	11.0	8.6	<0.5	<0.5	0.63	4	1	1.6	6.6	4	18	30	2	7.3	59.3	492	56.1	5.8
PX12	110	7.35	118	11.0	8.6	0.5	<0.5	0.65	4	2	1.8	7.8	5	18	46	10	20.1	89.1	547	129.5	21.4
PX13	120	7.33	119	11.0	8.3	0.8	0.7	0.71	4	2	1.7	7.7	6	19	47	20	45.3	117.3	530	222.3	44.3
PX14	130	7.33	119	11.0	7.9	0.6	0.5	0.59	4	2	1.7	7.7	5	19	40	12	15.3	79.3	461	112.9	19.7
PX15	140	7.32	123	11.0	7.5	0.6	<0.5	0.90	4	1	2.3	7.3	4	19	53	12	16.5	92.5	514	84.5	9.7
PX16	150	7.29	119	11.0	7.5	1.6	<0.5	0.67	4.5	2	2.1	8.6	3	19	34	7	9.6	65.6	783	63.9	6.8

Collection date 12 April 2000 Secchi depth = 15 m

Code	Depth m	pH	EC @25oC µS cm^{-1}	Temp ^{o}C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_a mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH_4-N mg m^{-3}	NO_3-N mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC mg m^{-3}	PC mg m^{-3}	PN** mg m^{-3}
YX1	1	7.86	118	17.4	9.2	0.6		1.3	<1	4	2	6.0	6	2	72	8	16	96.0	542	255.0	31.0
YX2	10	7.88	118	17.3	9.2	1.1		1.3	<1	3	2	5.0	3	1	57	1	21	82.0	472	198.5	16.5
YX3	20	7.88	118	17.2	9.2	1.0		1.4	<1	3	2	5.0	1	<1	59	3	15.5	75.5	599	166.5	12.0
YX4	30	7.79	118	16.7	9.0	1.1		1.3	<1	3	2	5.0	1	<1	59	2	17	77.0	608	154.0	17.5
YX5	40	7.29	119	12.6	8.3	0.6		1.1	2	2	1	5.0	2	2	57	6	9.5	70.5	396	72.0	6.0
YX6	50	7.17	120	11.7	8.0	1.0		0.8	3	2	1	6.0	2	7	42	7	8.5	59.5	403	94.5	7.5
YX7	60	7.18	119	11.4	8.0	0.5		1.0	4	1	<1	5.0	1	16	44	1	4	65.0	402	48.5	<4
YX8	70	7.1	120	11.3	8.0	0.6		<0.1	6	1	<1	7.0	6	29	35	1	6.5	76.5	418	41.0	4.0
YX9	80	7.14	120	11.2	7.9	1.0		<0.1	6	1	<1	7.0	2	32	46	1	12	92.0	451	105.5	8.0
YX10	90	7.11	120	11.2	7.9	0.7		<0.1	7	<1	<1	7.0	1	35	34	2	11	81.0	428	67.5	5.0
YX11	100	7.12	125	11.2	7.7	0.7		<0.1	7	2	<1	9.0	2	37	41	1	8.5	88.5	417	68.5	<4
YX12	110	7.12	120	11.2	7.7	0.9		<0.1	7	2	<1	9.0	2	37	50	3	11	100.0	439	65.0	5.5
YX13	120	7.06	120	11.1	7.7	0.6		<0.1	8	1	<1	9.0	3	39	47	1	6.5	95.5	431	40.5	0.0
YX14	130	7.12	120	11.1	7.5	1.2		<0.1	8	1	<1	9.0	2	40	47	3	9	98.0	453	57.0	5.0
YX15	140	7.08	120	11.1	7.5	1.2		<0.1	9	<1	<1	9.0	2	42	45	2	8	97.0	415	50.5	<4
YX16	146	7.04	120	11.1	7.2	1.7		0.1	10	3	1	14.0	4	43	42	2	10	99.0	429	92.0	4.0

NH_4, NO_3, DON, Urea all as N Detection limits: DRP 0.5; NO_3-N 0.5; NH_4-N 1.0 mg m^{-3}

* = PN by wet digestion method, ** = PN by combustion furnace method. $^{++}$ = from calibrated chlorophyll fluorescence profiler (filters damaged)

Lake Taupo biannual nutrient database **1998-1999** **Started 27 October 1994**

Collection date 1 November 1998 Secchi depth = 13.5 m

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH4-N	NO3-N	DON	PN*	TN	DOC	PC	PN**
	m		µS cm^{-1}	°C	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}
DM1	1	7.91	118	13.6	10.4	0.8	<0.5	0.8	0.7	1.5	2.0	4.2	3.4	<0.5	35	10.8	49.2		133.5	12.0
DM2	10	7.87	117	13.2	10.7	0.8	<0.5	1.0	0.6	1.3	2.6	4.5	2.4	<0.5	36	15.2	53.6		180.5	15.0
DM3	20	7.82	118	12.7	10.7	0.5	<0.5	1.4	0.6	1.4	2.9	4.9	1.9	1.1	37	18.0	58.0		215.0	23.3
DM4	30	7.80	118	12.4	10.6	<0.5	<0.5	1.1	0.5	1.3	2.3	4.1	1.9	<0.5	34	14.1	50.0		128.0	13.5
DM5	40	7.75	118	12.4	10.4	<0.5	<0.5	0.6	0.6	1.2	1.7	3.5	2.5	<0.5	34	9.2	45.7		118.0	10.4
DM6	50	7.70	118	12.2	10.2	<0.5	<0.5	0.6	0.6	1.2	1.7	3.5	2.6	0.6	31	8.1	42.3		114.5	7.9
DM7	60	7.46	119	11.7	10.0	<0.5	<0.5	0.4	2.1	1.0	1.4	4.5	1.6	9.5	32	6.0	49.1		73.0	6.0
DM8	70	7.30	120	11.2	9.6	<0.5	<0.5	0.3	3.3	0.9	1.0	5.2	2.7	16.0	32	3.8	54.5		56.0	2.7
DM9	80	7.15	121	11.1	9.1	<0.5	<0.5	0.2	3.9	0.8	0.9	5.6	1.5	20.5	29	5.0	56.0		64.5	2.7
DM10	90	7.07	122	11.1	8.8	<0.5	<0.5	0.2	4.9	0.5	0.9	6.3	2.6	24.8	32	5.0	64.4		45.0	2.9
DM11	100	7.16	121	11.0	8.5	<0.5	<0.5	0.2	5.0	0.5	0.9	6.4	3.3	26.2	34	3.6	67.1		42.5	2.0
DM12	110	7.16	122	11.0	8.3	<0.5	<0.5	0.1	6.2	0.4	0.8	7.4	2.0	29.2	30	4.0	65.2		54.0	2.9
DM13	120	7.11	122	11.0	8.0	<0.5	<0.5	0.1	6.4	0.3	0.8	7.5	2.2	30.6	29	3.3	65.1		63.0	1.8
DM14	130	7.08	122	11.0	7.8	<0.5	<0.5	0.1	7.0	0.2	0.8	8.0	2.2	31.4	28	3.1	64.7		48.5	2.0
DM15	140	7.07	123	10.9	7.6	<0.5	<0.5	0.1	7.9	0.0	0.9	8.8	2.0	33.8	32	5.0	72.8		54.0	2.0
DM16	150	7.10	123	10.9	7.6	2.5	<0.5	0.2	8.2	0.4	3.7	12.3	2.7	35.4	34	12.8	84.9		140.5	10.5

Collection date 14 April 1999 Secchi depth = 13 m

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH4-N	NO3-N	DON	PN*	TN	DOC	PC	PN**
	m		µS cm^{-1}	°C	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}
II1	1		119	18.3	8.9	<0.5	<0.5	1.2	0.6		1.8	2.4	3	<0.5	43	19.0	65.0	0.6	221.4	19.5
II2	10		118	18.3	8.8	<0.5	<0.5	1.2	0.5		1.8	2.3	1	<0.5	40	19.3	60.3	0.5	216.3	17.6
II3	20		118	18.3	8.8	<0.5	<0.5	1.2	0.5		1.7	2.2	1	2	41	19.0	63.0	0.5	132.3	8.9
II4	30		118	18.1	8.7	<0.5	<0.5	1.2	1.1		1.4	2.5	1	3	34	14.0	52.0	0.6	136.8	9.7
II5	40		118	12.9	8.4	<0.5	<0.5	0.7	2.3		0.9	3.2	1	6	31	8.9	46.9	0.7	91.2	6.5
II6	50		119	11.9	8.1	<0.5	<0.5	0.4	3.1		0.7	3.8	1	14	28	7.9	50.9	0.5	63.1	4.8
II7	60		121	11.6	8.0	<0.5	<0.5	0.3	4.3		0.7	5.0	1	19	33	7.3	60.3	0.6	42.3	5.0
II8	70		121	11.4	8.0	<0.5	<0.5	0.2	5.5		0.8	6.3	1	23	27	8.6	59.6	0.4	48.4	7.0
II9	80		122	11.3	7.8	<0.5	<0.5	0.1	5.9		0.8	6.7	2	28	29	8.3	67.3	0.5	51.5	6.1
II10	90		123	11.2	7.6	<0.5	<0.5	0.1	6.1		0.6	6.7	1	30	31	6.4	68.4	0.5	62.1	4.2
II11	100		122	11.2	7.4	<0.5	<0.5	0.1	6.1		0.5	6.6	2	27	28	6.1	63.1	0.6	33.1	1.5
II12	110		120	11.2	7.2	<0.5	<0.5	0.1	6.6		0.5	7.1	2	28	27	6.1	63.1	0.5	35.7	2.9
II13	120		122	11.2	7.1	<0.5	<0.5	0.1	6.4		0.5	6.9	2	24	26	5.2	57.2	0.6	34.1	2.2
II14	130		122	11.1	6.8	<0.5	<0.5	<0.1	7.5		0.5	8.0	2	28	31	6.3	67.3	0.6	46.9	5.5
II15	140		122	11.1	6.3	<0.5	<0.5	0.1	8.8		0.9	9.7	2	33	31	6.4	72.4	0.5	63.4	3.0
II16	150		116	11.1	5.9	<0.5	<0.5	<0.1	8.6		0.9	9.5	4	28	60	7.7	99.7	0.9	51.1	1.1

NH$_4$, NO$_3$, DON, Urea all as N Detection limits: DRP 0.5; NO$_3$-N 0.5; NH$_4$-N 1.0 mg m^{-3}

* = PN by wet digestion method, ** = PN by combustion furnace method.

Lake Taupo biannual nutrient database **1997-1998** **Started 27 October 1994**

Collection Date 30 October 1997 Secchi depth = 12.5 m

ID	Depth m	pH	EC @25°C µS cm^{-1}	Temp C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_*a* mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH$_4$ mg m^{-3}	NO$_3$ mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}	SO$_4$ g m^{-3}
TT1	1	7.70	116.9	12.2	10.7	0.61	0.30	1.28	1.0	1.3	1.5	3.8	2.1	2.9	36	1.1	14.3	55.3	0.71	168.3	17.2	
TT2	10	7.71	117.8	12.0	10.2	0.54	0.29	1.49	0.7	1.9	1.9	4.5	1.3	7.3	32	1.1	18.7	59.7	0.82	160.7	18.8	
TT3	20	7.65	118.1	11.5	10.2	0.59	0.32	1.58	0.8	1.6	1.7	4.0	1.6	0.7	36	1.1	14.0	52.0	0.60	133.0	16.5	
TT4	30	7.64	118.2	11.5	10.0	0.52	0.25	1.19	0.4	1.5	1.9	3.8	1.5	1.3	31	0.9	15.8	49.8	0.60	146.9	16.0	
TT5	40	7.62	117.1	11.4	10.0	0.55	0.28	1.31	0.6	1.5	1.6	3.7	1.7	0.3	33	1.0	14.1	49.1	0.62	126.3	13.4	
TT6	50	7.63	116.9	11.1	9.9	0.37	0.20	1.10	0.4	1.5	1.4	3.2	2.2	0.3	32	0.8	12.3	46.3	0.51	112.1	12.1	
TT7	60	7.54	117.7	11.1	9.8	0.21	0.10	0.93	1.4	0.7	1.5	3.5	3.3	0.7	34	1.6	14.3	52.3	0.74	80.6	9.0	
TT8	70	7.45	117.8	10.8	9.8	0.41	0.12	0.79	1.1	1.1	1.1	3.2	8.2	1.3	31	1.5	7.9	47.9	0.65	58.4	4.8	
TT9	80	7.36	118.3	10.7	9.9	0.31	0.04	0.54	1.5	1.1	0.8	3.3	6.1	2.3	31	0.6	6.0	45.0	0.57	57.6	9.0	
TT10	90	7.48	117.8	10.6	9.3	0.44	0.27	0.74	1.1	1.2	1.2	3.5	7.9	4.8	33	0.7	12.4	58.4	0.52	69.3	12.2	
TT11	100	7.29	118.5	10.5	9.2	0.25	0.11	0.40	2.0	1.2	0.8	4.1	8.4	5.0	30	1.1	5.7	48.7	0.63	64.5	8.3	
TT12	110	6.97	119.3	10.4	9.0	0.21	0.06	0.29	2.3	1.0	1.1	4.3	10.8	5.6	29	2.5	6.7	51.7	0.59	53.0	5.5	
TT13	120	7.00	119.1	10.5	9.0	0.29	0.26	0.27	2.0	1.2	1.0	4.1	9.9	6.7	31	6.1	5.8	53.8	0.58	37.5	5.3	
TT14	130	6.80	119.8	10.5	8.8	0.28	0.26	0.28	2.2	1.2	1.3	4.7	10.6	7.1	32	1.5	8.2	58.2	0.56	49.0	6.4	
TT15	140	7.23	117.9	10.4	8.8	0.25	0.20	0.26	2.7	1.4	1.1	5.2	10.8	9.5	37	2.0	10.9	67.9	0.63	66.0	8.5	
TT16	150	7.29	118.9	10.4	8.8	0.50	0.27	0.32	2.5	1.1	1.0	4.5	11.6	9.6	37	3.0	7.6	65.6	0.54	69.0	9.2	

Collection Date:- 7 April 1998 Secchi depth = 13.5 m

ID	Depth m	pH	EC @25°C µS cm^{-1}	Temp C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_*a* mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH$_4$ mg m^{-3}	NO$_3$ mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}	SO$_4$ g m^{-3}
YE1	1	8.00	118	17.7	9.1	0.40	0.10	0.67	0.8	1.4	1.3	3.5	2.9	4.6	53	3.7	9.9	70.4	0.83	156.5	14.4	7.7
YE2	10	7.99	119	17.7	9.1	0.49	0.12	1.04	0.9	1.4	1.8	4.1	1.9	2.5	52	4.6	13.7	70.1	0.78	179.5	16.0	8.1
YE3	20	8.00	119	17.7	9.1	0.32	0.32	1.07	0.7	1.5	1.7	3.9	2.4	1.5	48	3.7	12.6	64.5	0.71	162.5	15.2	8.5
YE4	30	7.99	120	17.5	9.1	0.30	0.20	1.06	0.7	1.7	1.6	4.0	2.0	1.2	48	3.7	12.7	63.9	0.78	138.5	14.5	8.0
YE5	40	7.60	120	13.7	9.3	0.13	0.13	1.18	1.2	1.0	1.2	3.4	2.0	3.1	39	4.2	8.2	52.3	0.69	112.5	8.2	7.7
YE6	50	7.50	120	11.5	9.3	0.34	0.00	0.75	2.4	0.9	0.9	4.2	2.5	4.5	52	3.2	6.5	65.5	0.65	88.0	6.7	7.8
YE7	60	7.38	120	11.0	9.3	0.11	0.00	0.49	3.0	0.7	0.8	4.5	1.5	11.7	32	3.2	5.3	50.5	0.72	74.5	5.8	7.7
YE8	70	7.32	121	10.8	9.2	0.20	0.00	0.33	3.1	0.9	0.6	4.6	1.0	17.7	38	3.7	4.0	60.7	0.78	57.5	4.1	7.9
YE9	80	7.23	120	10.6	9.1	0.24	0.24	0.24	3.5	0.6	0.8	4.9	1.4	23.1	43	6.9	5.7	73.2	0.69	49.5	4.5	7.9
YE10	90	7.27	121	10.6	9.1	0.31	0.21	0.17	4.4	0.6	0.7	5.7	1.3	24.1	41	6.5	5.6	72.0	0.68	47.5	4.9	7.9
YE11	100	7.29	121	10.6	9.0	0.32	0.11	0.16	4.5	0.7	0.8	6.0	1.0	24.5	39	3.7	6.8	71.3	0.57	58.0	7.4	7.8
YE12	110	7.29	121	10.5	8.9	0.35	0.35	0.12	4.8	0.7	0.5	6.0	1.3	25.1	40	5.5	6.5	72.9	0.63	52.5	2.6	7.8
YE13	120	7.35	121	10.5	8.9	0.24	0.08	0.37	3.4	0.6	1.2	5.2	1.0	18.9	35	4.6	4.1	59.0	0.75	63.5	3.8	7.7
YE14	130	7.24	122	10.5	8.8	0.32	0.16	0.11	5.7	0.6	0.7	7.0	1.0	27.0	39	6.0	3.5	70.5	0.63	52.0	3.9	7.9
YE15	140	7.21	122	10.5	8.6	0.45	0.05	0.15	6.4	0.6	1.0	8.0	4.2	29.1	65	10.6	6.7	105.0	0.74	60.5	5.9	7.8
YE16	150	7.49	121	10.5	8.4	0.80	0.15	0.62	3.3	1.1	1.6	6.0	2.5	13.0	62	9.7	14.2	91.7	0.70	135.5	13.6	7.9

NH$_4$, NO$_3$, DON, Urea all as N Detection limits: DRP 0.5; NO$_3$-N 0.5; NH$_4$-N 1.0 mg m^{-3}

* = PN by wet digestion method, ** = PN by combustion furnace method.

Lake Taupo biannual nutrient database **1996-1997** **Started 27 October 1994**

Collection Date 24 October 1996 Secchi depth = 12.6 m

ID	Depth m	pH	EC @25°C µS cm^{-1}	Temp C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_*a* mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH$_4$ mg m^{-3}	NO$_3$ mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}	SO4 g m^{-3}
IG1	1			12.4	10.3	0.45	0.34	0.27	0.6	2.1	1.7	4.4	3.0	0.5	59.3	1.4	13.9	76.7	0.86	171	14.5	7.82
IG2	10			12.3	10.3	0.72	0.42	0.47	0.7	2.3	2.2	5.2	2.4	0.4	64.5	1.0	14.5	81.8	0.88	201	16.8	7.90
IG3	20			12.3	10.2	0.67	0.40	0.45	0.8	2.8	2.9	6.5	2.6	0.4	75.8	0.6	18.7	97.5	0.91	232	19.8	7.87
IG4	30			12.3	9.9	0.85	0.49	0.64	0.6	2.3	3.1	6.0	3.3	0.5	73.6	0.4	20.6	98.0	0.95	198	15.7	7.86
IG5	40			11.9	9.9	0.71	0.46	0.56	0.5	1.8	2.5	4.8	2.6	1.2	64.8	0.3	14.6	83.2	0.80	183	12.8	7.84
IG6	50			11.6	9.8	0.62	0.34	0.45	1.1	3.1	2.1	6.3	2.9	0.6	71.2	0.9	13.2	87.9	0.92	157	14.9	7.95
IG7	60			11.1	9.7	0.77	0.32	0.70	0.9	1.8	2.3	5.0	4.4	13.2	175.4	3.5	14.3	207.3	1.29	151	14.1	10.67
IG8	70			10.6	9.4	0.65	0.28	0.54	0.8	1.5	1.9	4.2	2.9	0.8	59.3	1.5	9.2	72.2	0.78	116	10.2	7.85
IG9	80			10.5	9.3	0.51	0.27	0.55	0.9	2.5	1.8	5.2	3.0	3.0	76.1	1.3	9.8	91.9	0.95	103	10.8	7.80
IG10	90			10.4	9.3	0.49	0.23	0.50	0.6	1.8	1.8	4.2	2.1	1.0	52.3	1.4	10.9	66.3	0.73	95	11.0	7.69
IG11	100			10.4	9.2	0.50	0.21	0.51	0.5	1.5	1.8	3.8	1.8	3.6	53.9	4.5	9.6	68.9	1.04	106	12.8	7.85
IG12	110			10.4	9.2	0.43	0.23	0.49	0.4	1.3	2.0	3.7	2.5	5.2	54.0	6.0	9.3	71.0	0.80	94	11.5	7.85
IG13	120			10.4	9.0	0.47	0.21	0.47	0.8	1.4	1.8	4.0	3.7	9.6	61.9	6.9	8.0	83.2	0.78	78	9.7	7.97
IG14	130			10.3	8.9	0.44	0.18	0.38	1.1	1.5	2.3	4.9	4.5	9.7	52.4	4.6	12.0	78.6	1.00	83	8.7	7.99
IG15	140			10.3	8.9	0.49	0.22	0.51	1.5	1.6	2.5	5.6	4.3	12.9	57.8	5.0	10.4	85.4	0.99	80	8.9	8.14
IG16	150			10.3	8.9	1.13	0.26	0.57	1.2	2.3	3.5	7.0	5.1	13.6	65.9	4.8	14.5	99.1	0.91	121	13.4	8.15

Collection Date:- 2 April 1997 Secchi depth = 16.0 m

ID	Depth m	pH	EC @25°C µS cm^{-1}	Temp C	DO g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_*a* mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH$_4$ mg m^{-3}	NO$_3$ mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}	SO4 g m^{-3}
NA1	1	8.02	118.4	17.3	9.4	0.30	0.30	0.63	0.9	2.2	1.5	4.6	4.0	0.6	67.4	4.9	18.1	90.1	0.82	186.5	17.3	7.80
NA2	10	8.01	118.3	17.3	9.2	0.20	0.10	0.69	0.9	1.3	1.6	3.8	1.7	0.3	51.0	3.3	14.4	67.4	0.77	190.0	17.1	7.86
NA3	20	8.03	118.2	17.2	8.9	0.40	0.30	0.63	0.6	1.2	1.6	3.4	1.8	0.3	51.8	2.2	17.6	71.5	0.75	192.0	19.1	7.85
NA4	30	7.98	118.4	17.2	8.8	0.40	0.40	0.52	0.7	1.0	1.5	3.2	2.5	0.6	47.5	2.7	15.2	65.8	0.56	207.5	20.3	7.90
NA5	40	7.52	118.5	14.2	8.8	0.20	0.20	0.72	0.8	1.8	1.4	4.0	2.7	0.3	53.2	4.1	13.3	69.5	0.69	158.0	15.2	7.91
NA6	50	7.32	119.3	11.3	8.6	0.00	0.00	0.39	1.5	1.4	1.0	3.9	11.2	3.1	54.7	4.5	9.7	78.7	0.62	116.5	10.6	7.88
NA7	60	7.18	120.2	10.9	8.6	0.20	0.20	0.16	1.7	1.3	0.8	3.8	3.7	10.1	48.9	2.1	10.5	73.2	0.86	100.0	13.8	7.88
NA8	70	7.13	119.6	10.6	8.5	0.10	0.10	0.12	1.9	1.7	0.8	4.4	4.3	11.8	58.3	2.2	8.0	82.4	0.83	75.0	8.7	7.87
NA9	80	7.12	120.1	10.5	8.5	0.10	0.10	0.05	3.3	1.4	0.7	5.4	6.9	26.9	82.4	16.9	6.7	122.9	0.98	77.5	9.9	7.90
NA10	90	7.12	120.4	10.5	8.5	0.00	0.00	0.25	3.6	2.2	0.7	6.5	28.9	22.9	108.3	7.4	8.1	168.2	0.63	110.5	8.8	8.00
NA11	100	7.10	120.4	10.5	8.4	0.20	0.20	0.04	4.4	1.2	0.8	6.4	10.7	22.5	72.0	5.2	7.1	112.3	0.85	71.0	8.3	7.97
NA12	110	7.07	120.6	10.4	8.3	0.20	0.20	0.02	3.7	2.0	0.8	6.5	2.9	21.9	52.5	3.8	6.4	83.7	1.01	77.0	9.6	7.93
NA13	120	7.07	120.5	10.4	8.2	0.30	0.20	0.02	3.3	2.4	0.8	6.5	6.4	22.8	56.4	4.2	13.0	98.6	0.70	113.5	15.4	7.88
NA14	130	7.08	120.4	10.4	8.0	0.20	0.20	0.01	4.3	1.6	0.8	6.7	6.2	27.9	56.7	6.2	8.2	99.0	0.81	118.5	11.0	7.97
NA15	140	7.10	121.1	10.4	7.6	0.40	0.40	0.04	4.5	1.7	1.2	7.4	3.9	28.9	58.5	7.9	24.7	116.0	0.80	212.5	28.8	7.91
NA16	150	7.10	122.1	10.4	7.5	1.20	0.40	0.07	5.0	1.0	2.7	8.7	8.6	29.0	61.5	11.8	20.2	119.3	2.07	234.5	22.1	7.97

NH$_4$, NO$_3$, DON, Urea all as N Detection limits: DRP 0.5; NO$_3$-N 0.5; NH$_4$-N 1.0 mg m^{-3}

* = analysed by wet digestion method, ** = analysed by CHN combustion furnace method.

Lake Taupo biannual nutrient database **1995-1996**

Collection Date:- 30 October 1995 Secchi depth = 13.0 m

ID	Depth	pH	EC @25^{o}C	Temp	DO	BOD$_5$	SS	VSS	Chlor_*a*	DRP	DOP	PP	TP	NH$_4$	NO$_3$	DON	UREA	PN*	TN	DOC	PC	PN**
	m		µS cm^{-1}	C	g m^{-3}	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}
ZH1	1	7.40	115.1	13.7	10.3	0.80	0.60	0.38	0.45	<0.2	2.4	1.27	3.67	<0.2	<0.1	55.7	3	6.89	62.69	0.75	123	10.3
ZH2	10	7.59	116.1	11.9	10.5	0.40	0.95	0.53	0.96	<0.2	0.8	1.94	2.74	<0.2	<0.1	48.0	3	14.69	62.69	0.61	217	18.0
ZH3	20	7.39	117.8	11.4	10.6	-0.05	1.09	0.59	1.18	0.3	1.5	2.41	4.21	0.2	<0.1	51.5	4	19.47	71.17	0.58	285	22.3
ZH4	30	7.58	116.6	11.2	10.7	-0.15	1.15	0.58	1.26	0.2	0.7	2.21	3.11	<0.2	<0.1	44.6	2	17.83	62.43	0.45	242	19.4
ZH5	40	7.48	116.2	10.9	10.7	0.00	0.91	0.57	1.22	<0.2	1.1	1.88	2.98	<0.2	<0.1	41.9	2	13.00	54.90	0.44	183	15.8
ZH6	50	7.36	117.0	10.8	10.3	0.25	0.69	0.42	1.10	<0.2	0.8	1.71	2.51	<0.2	<0.1	41.7	3	8.55	50.25	0.43	116	10.3
ZH7	60	7.28	117.2	10.7	10.3	0.70	0.49	0.28	1.03	<0.2	0.8	1.55	2.35	<0.2	0.1	41.1	3	7.75	48.95	0.40	110	10.3
ZH8	70	7.25	117.8	10.5	10.2	0.50	0.64	0.43	1.03	<0.2	0.6	1.50	2.10	<0.2	0.2	40.4	2	7.27	47.87	0.38	108	9.9
ZH9	80	7.25	117.5	10.5	10.2	0.40	0.72	0.43	1.19	<0.2	0.8	1.58	2.38	<0.2	0.7	41.4	2	7.19	49.39	0.48	115	12.1
ZH10	90	7.30	118.0	10.5	10.1	0.00	0.72	0.40	1.27	0.3	0.6	1.59	2.49	<0.2	1.5	38.5	3	7.30	47.30	0.47	101	12.1
ZH11	100	7.25	117.5	10.5	10.0	0.15	0.71	0.39	1.30	<0.2	0.2	1.77	1.97	<0.2	2.4	36.4	3	10.67	49.47	0.49	107	12.5
ZH12	110	7.25	117.5	10.5	9.9	0.35	0.71	0.38	1.32	<0.2	0.9	1.69	2.59	0.5	4.6	44.3	3	10.26	59.66	0.52	93	13.1
ZH13	120	7.23	117.3	10.5	9.9	0.30	0.70	0.41	1.35	<0.2	1.3	1.55	2.85	0.5	5.6	51.3	9	7.99	65.39	0.51	99	12.9
ZH14	130	7.25	117.3	10.5	9.8	0.20	0.69	0.47	1.32	<0.2	0.4	1.89	2.29	1.3	6.6	49.7	7	13.42	71.02	0.55	112	18.5
ZH15	140	7.25	117.3	10.5	9.6	0.40	0.97	0.47	1.60	<0.2	0.2	2.54	2.74	5.7	11.7	60.6	9	11.77	89.77	0.57	113	15.8
ZH16	150	7.25	117.5	10.5	9.2	0.40	1.77	0.91	1.77	0.7	0.4	3.05	4.15	8.3	13.2	90.9	15	48.30	160.70	0.69	357	55.1

Collection Date:- 28 March 1996 Secchi depth = 14.6 m

ID	Depth	pH	EC @25^{o}C	Temp	DO	BOD$_5$	SS	VSS	Chlor_*a*	DRP	DOP	PP	TP	NH$_4$	NO$_3$	DON	UREA	PN*	TN	DOC	PC	PN**
	m		µS cm^{-1}	C	g m^{-3}	g m^{-3}	g m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	g m^{-3}	mg m^{-3}	mg m^{-3}
DR1	1	8.02	117.4	16.8	8.7	0.15	0.31	0.18	0.48	1.3	1.8	0.93	4.03	<0.2	4.7	91.0	1.4	12.69	108.39	0.35	118	9.7
DR2	10	8.02	117.4	16.7	8.7	0.20	0.44	0.25	0.81	1.3	1.5	1.43	4.23	<0.2	7.4	111.0	6.2	12.60	131.00	0.42	149	12.3
DR3	20	7.95	117.6	16.6	8.8	0.25	0.34	0.23	0.76	1.0	1.8	1.30	4.10	0.6	<0.1	60.0	2.0	11.70	72.30	0.35	126	11.7
DR4	30	7.59	119.0	13.7	9.0	0.25	0.39	0.15	1.13	1.5	1.7	1.51	4.71	0.5	0.2	64.0	2.0	11.72	76.42	0.26	101	12.8
DR5	40	7.43	118.9	12.4	8.8	0.25	0.35	0.16	0.97	1.3	1.4	1.41	4.11	1.1	<0.1	51.0	2.2	11.77	63.87	0.22	68	8.6
DR6	50	7.34	119.5	11.6	8.6	0.10	0.32	0.14	0.71	1.8	1.5	1.17	4.47	0.8	5.0	68.0	3.5	8.76	82.56	0.18	60	6.4
DR7	60	7.32	119.4	11.4	8.5	0.25	0.27	0.10	0.48	2.2	1.0	1.06	4.26	1.8	5.9	59.0	1.8	8.32	75.02	0.17	46	5.7
FR8	70	7.29	120.4	11.6	8.5	0.25	0.23	0.13	0.28	2.3	1.5	0.80	4.60	<0.2	14.1	87.0	3.4	6.65	107.75	0.26	48	6.4
DR9	80	7.20	120.8	11.2	8.3	0.20	0.30	0.14	0.17	2.9	1.3	0.83	5.03	1.5	10.0	68.0	1.4	5.15	84.65	0.23	45	5.5
DR10	90	7.20	121.2	11.3	8.2	0.20	0.39	0.14	0.12	2.7	2.1	0.89	5.69	2.5	11.5	55.0	1.4	5.34	74.34	0.17	51	6.7
DR11	100	7.24	121.3	10.9	8.2	0.05	0.45	0.19	0.10	2.8	1.8	0.93	5.53	2.2	11.4	72.0	8.1	9.25	94.85	0.22	46	6.9
DR12	110	7.32	122.1	10.8	8.1	0.25	0.25	0.15	0.08	2.7	1.8	0.88	5.38	1.0	11.5	68.0	1.6	5.86	86.36	0.23	52	8.1
DR13	120	7.39	120.2	10.7	8.3	0.15	0.24	0.11	0.09	2.8	1.2	0.74	4.74	2.2	11.2	75.0	3.8	3.91	92.31	0.26	34	5.3
DR14	130	7.47	120.3	10.7	8.3	0.25	0.31	0.15	0.08	3.1	1.5	0.70	5.30	1.5	12.4	70.0	2.5	3.43	87.33	0.27	45	3.8
DR15	140	7.43	121.1	10.7	8.0	0.15	0.33	0.15	0.08	4.6	1.4	0.96	6.96	2.9	16.0	88.0	5.7	4.28	111.18	0.26	51	7.4
DR16	150	7.52	120.1	10.6	7.8	0.75	0.75	0.63	0.07	4.7	1.5	2.13	8.33	3.2	15.9	140.0	32.4	69.74	228.84	0.52	349	70.7

NH$_4$, NO$_3$, DON, UREA all as N Detection limits: DRP 0.5; NO$_3$-N 0.5; NH$_4$-N 1.0 mg m^{-3}

* = analysed by wet digest method, ** = analysed by CHN combustion furnace method.

Lake Taupo biannual nutrient database **1994-1995**

Collection date:- 27 October 1994 Secchi Depth = 11.7 m

ID	Depth m	Temp C	DO g m^{-3}	BOD$_5$ g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_*a* mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH$_4$ mg m^{-3}	NO$_3$ mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}	Total LEAD mg m^{-3}
MM1	1	11.7	10.5	0.30	0.93	0.55	1.16	1.6	0.7	2.5	4.8	1.1	0.2	61	0.1	16.6	78.9	0.67	193.3	20.3	0.22
MM2	10	11.5	10.6	0.35	0.86	0.49	0.97	1.5	0.4	2.5	4.4	2.2	0.1	50	<0.1	15.2	67.5	0.42	203.8	19.0	
MM3	20	11.5	10.8	0.70	0.87	0.58	0.92	1.2	1.1	2.8	5.1	5.1	<0.1	49	0.2	17.4	71.5	0.40	254.5	19.6	
MM4	30	11.3	10.7	0.30	0.86	0.54	0.99	1.2	0.0	2.3	3.5	<0.4	2.5	88	8.3	13.7	104.2	0.64	199.1	18.9	
MM5	40	10.9	10.5	0.05	0.83	0.49	0.97	1.0	1.4	2.1	4.5	0.4	<0.1	49	1.6	12.4	61.8	0.55	193.7	17.5	
MM6	50	10.9	10.4	0.15	0.85	0.48	0.83	1.0	0.9	2.2	4.1	<0.4	1.1	70	6.4	14.9	86.0	0.37	182.0	16.6	
MM7	60	10.8	10.4	0.00	1.04	0.53	0.88	1.1	0.9	2.1	4.1	<0.4	<0.1	47	1.0	13.6	60.6	0.46	184.6	20.0	
MM8	70	10.7	10.4	0.10	1.23	0.54	1.18	1.1	1.2	2.3	4.6	2.6	0.4	57	1.6	14.7	74.7	0.96	198.7	23.0	
MM9	80	10.6	10.4	0.35	1.07	0.45	1.37	1.0	1.4	2.4	4.8	1.2	0.1	47	1.0	15.3	63.6	0.51	154.4	22.6	
MM10	90	10.5	10.4	0.10	1.24	0.48	1.79	1.0	1.1	1.9	4.0	1.5	<0.1	43	1.3	15.6	60.1	0.48	152.0	22.0	
MM11	100	10.5	10.2	0.10	1.22	0.49	1.76	1.2	1.0	2.5	4.7	1.5	0.4	58	1.8	17.9	77.8	1.21	183.7	33.9	
MM12	110	10.5	10.3	0.45	1.15	0.48	1.78	1.4	0.4	3.0	4.8	1.4	0.4	52	1.9	16.8	70.6	0.65	105.8	28.4	
MM13	120	10.4	10.2	0.00	0.96	0.41	1.94	1.1	0.7	2.8	4.6	<0.4	0.6	61	1.6	16.7	78.4	1.00	106.7	29.8	
MM14	130	10.4	9.8	0.00	1.07	0.41	2.37	1.0	1.2	2.6	4.8	6.8	0.9	73	5.5	20.8	101.5	0.53	157.6	23.7	
MM15	140	10.4	9.8	0.00	1.63	0.57	2.32	1.1	1.1	2.3	4.5	3.7	0.9	61	1.9	20.6	86.2	0.44	176.0	19.2	0.36
MM16	150	10.3	9.9	0.25	1.73	0.75	2.49	1.8	0.8	2.3	4.9	4.2	1.9	60	12.1	39.6	105.7	0.57	303.6	44.0	1.09
MM17	Tube				0.99	0.53	0.84	1.3	1.0	2.0	4.3	0.5	0.2	39	3.1	15.9	55.6	0.53			

Collection date:- 19 April 1995 Secchi Depth = 16.1 m

ID	Depth m	Temp C	DO g m^{-3}	BOD$_5$ g m^{-3}	SS g m^{-3}	VSS g m^{-3}	Chlor_*a* mg m^{-3}	DRP mg m^{-3}	DOP mg m^{-3}	PP mg m^{-3}	TP mg m^{-3}	NH$_4$ mg m^{-3}	NO$_3$ mg m^{-3}	DON mg m^{-3}	UREA mg m^{-3}	PN* mg m^{-3}	TN mg m^{-3}	DOC g m^{-3}	PC mg m^{-3}	PN** mg m^{-3}	Total LEAD mg m^{-3}
SZ1	1	18.4	9.2	0.10	0.22	0.22	0.95	3.3	1.7	1.3	6.3	3.6	0.9	83	7.7	14.6	102.1	0.70	160.5	16.8	<0.5
SZ2	10	18.2	9.3	0.15	0.28	0.28	0.89	2.2	1.2	1.5	4.9	2.0	0.8	59	6.5	13.5	75.3	0.68	189.0	18.1	<0.5
SZ3	20	18.2	9.2	0.25	0.24	0.24	0.80	1.3	0.0	1.4	2.7	1.0	1.0	56	4.5	10.7	68.7	0.60	153.5	14.5	
SZ4	30	16.5	9.3	0.50	0.26	0.26	1.35	1.3	1.0	1.6	3.9	1.2	0.7	55	8.4	13.4	70.3	0.60	151.5	14.7	<0.5
SZ5	40	12.5	9.7	0.45	0.16	0.16	0.98	1.1	0.2	1.2	2.5	2.0	1.0	47	4.4	8.0	58.0	0.60	111.0	8.6	
SZ6	50	11.6	9.5	0.60	0.10	0.10	0.86	2.0	0.5	1.2	3.7	1.7	1.3	47	5.3	8.8	58.8	0.60	119.0	10.5	
SZ7	60	11.1	9.5	0.30	0.07	0.07	0.73	1.0	1.1	1.2	3.3	0.5	5.4	40	5.3	7.0	52.9	0.50	83.8	9.0	
SZ8	70	10.9	9.5	0.55	0.04	0.04	0.45	1.4	0.7	1.3	3.4	0.5	7.7	39	6.2	8.7	55.9	0.55	97.4	11.1	
SZ9	80	10.8	9.0	0.40	0.10	0.10	0.35	1.6	0.0	1.0	2.6	0.5	11.3	36	3.2	6.1	53.9	0.53	75.5	8.2	
SZ10	90	10.7	8.7	0.30	0.07	0.07	0.25	1.3	0.5	1.4	3.2	0.5	15.7	40	6.1	9.8	66.0	0.50	92.5	9.6	
SZ11	100	10.7	8.6	0.75	0.01	0.01	0.23	2.8	0.1	0.8	3.7	0.4	18.4	37	6.3	8.2	64.0	0.60	68.7	6.3	
SZ12	110	10.7	8.3	0.50	0.09	0.09	0.20	2.1	1.0	1.3	4.4	0.5	20.4	41	4.4	12.4	74.3	0.55	99.0	14.0	
SZ13	120	10.7	8.2	0.40	0.05	0.05	0.16	2.5	0.0	0.9	3.4	0.5	22.0	37	3.5	4.8	64.3	0.50	62.1	4.5	
SZ14	130	10.7	8.0	0.70	0.00	0.00	0.17	3.1	0.0	1.0	4.1	0.6	26.5	45	3.5	5.9	78.0	0.55	77.0	7.4	
SZ15	140	10.6	7.8	1.00	0.28	0.25	0.17	4.1	0.0	1.7	5.8	0.5	30.7	44	3.6	11.2	86.4	0.60	133.5	12.4	<0.5
SZ16	150	10.6	7.5	2.05	49.47	5.58	64.05	38.9	1.4	*	40.3	1.7	40.9	48	11.4	*	90.6	0.75	*	*	<0.5
Surficial sediment																					10.5

* = Sediment contamination, sample not filtered for analysis.

NH$_4$, NO$_3$, DON, UREA all as N

Detection limits: DRP 0.5; NO$_3$-N 0.5; NH$_4$-N 1.0 mg m^{-3}

* = analysed by wet digestion method, ** = analysed by CHN combustion furnace method.

Appendix 5. Phytoplankton data

(Note: totals may vary by 1 due to rounding).

Phytoplankton dominance data from the Kuratau Basin (site B) and Western Bays (site C) are included along side Mid-lake (site A) data from January 2002 by date for comparison purposes

Lake Taupo phytoplankton species composition and biovolume (µm^3) 2002-2003

From Site A (Mid Lake)

Sample Code	**NZ1**	**NZ2**	**NZ6**	**NZ11**	**NZ16**
14/11/2002	**Surface**	**10m**	**50m**	**100m**	**150m**
SP.					
Fragilaria crotonensis	41181	91749	127605	18983	5273
Anabaena circinalis / Anabaena flos-aquae	13401	45117	0	0	0
Ankistrodesmus sp.	11035	14750	7262	4766	0
Botryococcus braunii	10537	0	11239	0	0
Flagellates < 5µm	7557	14598	13214	755	6796
Asterionella formosa	7304	10232	8953	1919	3517
***Oocytsis* sp.**	4560	0	2166	619	928
Aulacoseira granulata* var. *angustissima	3298	4157	959	2878	0
Cyclotella stelligera	1490	5199	1733	1733	578
***Nitzschia* sp.**	946	4494	642	642	10914
Chroococcus minutus	833	0	0	0	0
Elakotothrix gelatinosa	681		0	0	0
Closterium acutm	578	1155	0	0	0
***Staurastrum* sp.**	456	1099	0	0	0
Closterium acutum* var. *variable	380	1032	516	0	516
unknown diatom sp.	153	0	474	0	0
Lyngbya contorta/Romeria leopliensis	148	0	0	0	0
***Gymnodinium* sp.**	1	0	0	0	0
Eudorina elegans	0	4225	0	0	0
Planktosphaeria gelatinosa	0	4023	0	0	0
***Closterium* sp.**	0	3095	0	1032	18567
***Chromulina* sp.**	0	2799	1	0	0
c.f. *Chlorella/Nannochloropsis* sp.	0	227	311	69	1590
Chlamydomonas sp.	0	227	0	0	0
Tetraedon gracile	0	155	227	0	0
***Aulacoseria* sp.**	0	0	963	0	0
***Mougeotia* sp.**	0	0	371	0	0
C.f. *Pleurochloris* sp.	0	0	0	227	0
***Scenedesmus* sp.**	0	0	0	0	0
***Synedra* sp.**	0	0	0	0	0
c.f. *Coenochloris* sp.	0	0	0	0	3854
Cerasterias staurastroides	0	0	0	0	0
Dinobryon divergens	0	0	0	0	0
Lagerheimia longiseta	0		0	186	0
Total biovolume per ml	104539	208331	176637	33807	52532

Sample Code	**UJ1**	**UJ2**	**UJ3**	**UJ6**	**UJ11**	**UJ16**
3/04/2003	**Surface**	**10m**	**20m**	**50m**	**100m**	**150m**
SP.						
Anabaena circinalis / Anabaena flos-aquae	84235	239519	270545	57085	348	696
Flagellates < 5µm	6954	7629	9179	2596	325	232
Ankistrodesmus falcatus	3762	2431	3511	167	84	0
***Oocytsis* sp.**	3648	8703	18012	1140	0	0
***Nitzschia* sp.**	2602	3112	6149	473	0	0
Cyclotella stelligera	638	1105	7661	2554	638	1064
Lyngbya contorta/Romeria leopliensis	460	41	91	1231	0	0
Elakotothrix gelatinosa	389	0	584	0	0	0
Closterium acutum* var. *variable	380	0	380	1330	380	190
Sphaerocystis schroeteri	228		0	0	0	0
***Eunotia* sp.**	102		0	43	0	0
Nephrocytium lunatum	87	0	0	0	0	0
Botryococcus braunii	0	29785	0	0	0	702
Eudorina elegans	0	3260	6521	0	0	0
Westella botryoides	0	608	187	0	0	0
***Synedra* sp.**	0	93	0	0	17	0
***Gymnodinium* sp.**	0	0	1280	128	0	0
Microcytstis elabens var. minor	0	0	684	0	0	0
***Staurastrum* sp.**	0	0	405	0	0	0
Lagerheimia longiseta	0	0	274	0	0	0
Asterionella formosa	0	0	0	0	236	1060
Aulacoseira granulata var. angustissima	0	0	0	707	3298	2709
***Aulacoseria* sp.**	0	0	0	0	0	0
unknown diatom sp.	0	0	0	350	0	0
Closterium acutm	0	0	0	0	0	0
c.f. *Malomonas* sp.	0	0	0	0	0	1484
Total biovolume per ml	103485	296287	325463	67803	5326	8138

Lake Taupo phytoplankton dominance 2002-03

(1 = dominant,…10 = rare)

Data from 10 m integrated tube samples

Three site data from July 2002

IP2 10 m 2/07/02	**Site A**	*IQ1 10 m 2/07/02*	**Site B**	**IQ2 10 m 2/07/02**	**Site C**
Asterionella formosa	1	*Aulacoseira granulata* var. *angustissima*	1	*Aulacoseira granulata* var. *angustissima*	1
Botryococcus braunii	2	*Asterionella formosa*	2	*Asterionella formosa*	2
Anabaena circinalis/ Anabaena flos-aquae	3	*Botryococcus braunii*	4	Flagellates < 5µm	4
Eudorina elegans	4	*Dinobryon divergens*	6	*Ceratium hirundinella*	6
Aulacoseira granulata var. *angustissima*	5	Flagellates < 5µm	6	*Dinobryon divergens*	7
Closterium acutum	6	*Cyclotella meneghiniane*	7	*Staurastrum* sp.	7
Flagellates < 5µm	6	*Anabaena circinalis/ Anabaena flos-aquae*	8	*Closterium acutum*	8
Nitzschia sp.	6	*Fragilaria crotonensis*	8	*Cyclotella meneghiniane*	8
Cyclotella meneghiniane	7	*Gymnodinium* sp.	8	*Nitzschia* sp.	8
Closterium acutum var. *variable*	8	*Synedra* sp.	9	*Synedra* sp.	8
Actinastrum hantschii	9	*Closterium acutum*	10	*Botryococcus braunii*	9
Gymnodinium sp.	9	*Oocystis sp.*	10	*Fragilaria crotonensis*	9
Chromulina sp.	10	*Staurastrum* sp.	10	*Oocystis sp.*	9
				Anabaena circinalis	10

IP4 10 m 18/07/02	**Site A**	**IQ3 10 m 18/07/02**	**Site B**	**IQ4 10 m 18/07/02**	**Site C**
Asterionella formosa	1	*Asterionella formosa*	1	*Botryococcus braunii*	1
Anabaena circinalis/ Anabaena flos-aquae	2	*Botryococcus braunii*	2	*Asterionella formosa*	2
Aulacoseira granulata var. *angustissima*	3	*Anabaena circinalis/ Anabaena flos-aquae*	3	*Aulacoseira granulata* var. *angustissima*	2
Aulacoseira sp.	4	*Aulacoseira granulata* var. *angustissima*	3	*Cyclotella meneghiniane*	6
Cyclotella meneghiniane	4	*Nitzschia* sp.	4	*Dinobryon divergens*	6
Oocystis sp.	4	Flagellates < 5µm	5	Flagellates < 5µm	6
Flagellates < 5µm	5	*Oocystis sp.*	5	Fragilaria crotonensis	7
Nitzschia sp.	5	*Cyclotella meneghiniane*	6	*Anabaena circinalis/ Anabaena flos-aquae*	8
Dinobryon divergens	6	*Ankistrodesmus falcatus*	7	*Ankistrodesmus falcatus*	8
Staurastrum tangaroaii	6	*Closterium acutum* var. *variable*	7	*Oocystis sp.*	9
Closterium acutum var. *variable*	7	*Elakotothrix gelatinosa*	7	*Staurastrum* sp.	9
Ankistrodesmus falcatus	8	*Closterium acutum*	8	*Synedra* sp.	9
Botryococcus braunii	8	*Gymnodinium* sp.	8	*Closterium acutum*	10
Elakotothrix gelatinosa	8				
Sphaerocystis schroeteri	8				
Closterium acutum	10				
Gymnodinium sp.	10				

JN2 10 m 1/08/02	**Site A**	**JO1 10 m 1/08/02**	**Site B**	**JO2 10m 1/08/02**	**10m Site C**
Asterionella formosa	1	*Asterionella formosa*	1	*Asterionella formosa*	1
Cyclotella meneghiniane	3	*Aulacoseira granulata* var. *angustissima*	3	*Cyclotella meneghiniane*	3
Aulacoseira granulata var. *angustissima*	4	*Cyclotella meneghiniane*	3	*Aulacoseira granulata* var. *angustissima*	4
Aulacoseira sp.	5	Fragilaria crotonensis	3	Fragilaria crotonensis	4
Flagellates < 5µm	5	*Nitzschia* sp.	4	*Nitzschia* sp.	5
Nitzschia sp.	5	*Dinobryon divergens*	7	Flagellates < 5µm	6
Oocystis sp.	5	Flagellates < 5µm	7	*Dinobryon divergens*	7
Closterium acutum var. *variable*	6	*Synedra* sp.	7	*Sphaerocystis schroeteri*	7
Actinastrum hantschii	7	*Closterium acutum*	8	*Synedra* sp.	7
Ankistrodesmus falcatus	7	*Botryococcus braunii*	9	*Botryococcus braunii*	8
Sphaerocystis schroeteri	7	*Oocystis sp.*	9	*Closterium acutum*	8
Synedra sp.	9	*Actinastrum hantschii*	10	*Oocystis sp.*	9
Botryococcus braunii	10	*Gymnodinium* sp.	10	*Actinastrum hantschii*	10
Closterium acutum	10	*Nephrocytium lunatum*	10	*Closterium acutum* var. *variable*	10
Gymnodinium sp.	10	*Scenedesmus longus* var. *minutus*	10	*Gymnodinium* sp.	10
Nephrocytium lunatum	10	*Sphaerocystis schroeteri*	10	*Nephrocytium lunatum*	10
		Staurastrum sp.	10	*Scenedesmus longus* var. *minutus*	10
				Staurastrum sp.	10

JN4 10 m 30/08/02	**Site A**	**JO5 10 m 30/08/02**	**Site B**	**JO6 10 m 30/08/02**	**Site C**
Asterionella Formosa	1	*Asterionella formosa*	1	*Asterionella formosa*	1
Aulacoseira sp.	2	*Aulacoseira granulata* var. *angustissima*	2	*Aulacoseira granulata* var. *angustissima*	2
Aulacoseira granulata var. *angustissima*	4	Fragilaria crotonensis	3	*Botryococcus braunii*	3

Nitzschia sp.	5
Cyclotella meneghiniane	6
Flagellates < 5µm	6
Ankistrodesmus falcatus	8
Closterium acutum	8
Fragilaria crotonensis	8
Oocystis sp.	8
Gymnodinium sp.	9
Botryococcus braunii	10

Cyclotella meneghiniane	5
Botryococcus braunii	8
Flagellates < 5µm	8
Oocystis sp.	8
Synedra sp.	8
Closterium acutum	9
Dinobryon divergens	9
Gymnodinium sp.	9
Nephrocytium lunatum	9
Planktosphaeria gelatinosa	9
Staurastrum sp.	9
Sphaerocystis schroeteri	10

Fragilaria crotonensis	4
Phormidium sp.	5
Cyclotella meneghiniane	6
Oocystis sp.	8
Planktosphaeria gelatinosa	8
Staurastrum sp.	8
Synedra sp.	8
Aulacoseira sp.	9
Closterium acutum	9
Flagellates < 5µm	9
Gymnodinium sp.	9
Dinobryon divergens	10
Nephrocytium lunatum	10
Scenedesmus longus var. *minutus*	10
Sphaerocystis schroeteri	10

LU2 10 m 20/09/02	**Site A**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	4
Fragilaria crotonensis	4
Cyclotella meneghiniane	6
Botryococcus braunii	8
Flagellates < 5µm	8
Gymnodinium sp.	8
Nitzschia sp.	8
Staurastrum sp.	8
Oocystis sp.	9
Planktosphaeria gelatinosa	9
Anabaena circinalis/ Anabaena flos-aquae	10
Closterium acutum	10
Closterium acutum var. *variable*	10
Gloeocystis planctonica	10
Sphaerocystis schroeteri	10

LV1 10 m 20/09/02	**Site B**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	4
Fragilaria crotonensis	5
Cyclotella meneghiniane	6
Botryococcus braunii	8
Flagellates < 5µm	8
Gymnodinium sp.	8
Nitzschia sp.	8
Staurastrum sp.	8
Oocystis sp.	9
Planktosphaeria gelatinosa	9
Closterium acutum var. *variable*	10
Sphaerocystis schroeteri	10

LV2 10 m 20/09/02	**Site C**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	4
Fragilaria crotonensis	4
Cyclotella meneghiniane	6
Gymnodinium sp.	6
Botryococcus braunii	8
Flagellates < 5µm	8
Nitzschia sp.	8
Staurastrum sp.	8
Planktosphaeria gelatinosa	9
Oocystis sp.	10
Sphaerocystis schroeteri	10

MO2 10 m 9/10/2002	**Site A**
Asterionella formosa	1
Fragilaria crotonensis	1
Aulacoseira granulata var. *angustissima*	4
Closterium acutum var. *variable*	5
Staurastrum tangaroaii	6
Botryococcus braunii	7
Closterium acutm	7
Staurastrum sp.	7
Flagellates/Unicells < 5µm	8
Oocytsis sp.	8
Synedra sp.	8
Gymnodinium sp.	9
Nephrocytium lunatum	9
Planktosphaeria gelatinosa	9

MP1 10 m 9/10/2002	**Site B**
Asterionella formosa	1
Fragilaria crotonensis	1
Closterium acutm	3
Aulacoseira granulata var. *angustissima*	4
Closterium acutum var. *variable*	6
Flagellates/Unicells < 5µm	8
Tetraedon gracile	8
Staurastrum tangaroaii	9
Gymnodinium sp.	10
Oocytsis sp.	10
Staurastrum sp.	10
Synedra sp.	10

MP1 10 m 9/10/2002	**Site C**
Asterionella formosa	1
Fragilaria crotonensis	1
Anabaena circinalis / Anabaena flos-aquae	3
Closterium acutm	3
Aulacoseira granulata var. *angustissima*	4
Closterium acutum var. *variable*	6
Dinobryon sp.	8
Flagellates/Unicells < 5µm	8
Tetraedon gracile	8
Actinastrum hantschii	9
Staurastrum tangaroaii	9
Gymnodinium sp.	10
Oocytsis sp.	10
Staurastrum sp.	10
Synedra sp.	10

OA2 10 m 13/11/2002	**Site A**
Fragilaria crotonensis	1
Dinobryon sp.	2
Aulacoseira granulata var. *angustissima*	3
Anabaena circinalis / Anabaena flos-aquae	5
Botryococcus braunii	6
Flagellates/Unicells < 5µm	6
Nitzschia sp.	6
Asterionella formosa	7
Closterium acutm	8
Staurastrum manfeldtii var. *fluminense*	8
Closterium acutum var. *variable*	9
Lagerheimia longiseta	9
Oocytsis sp.	9
Ankistrodesmus / Monorahidium sp.	10

OB1 10 m 13/11/2002	**Site B**
Aulacoseira granulata var. *angustissima*	1
Fragilaria crotonensis	2
Asterionella formosa	3
Closterium acutm	4
Dinobryon sp.	4
Flagellates/Unicells < 5µm	5
Oocytsis sp.	6
Cyclotella stelligera	8
Synedra sp.	8
Actinastrum hantschii	9
Elakotothrix gelatinosa	9
Gymnodinium sp.	9
Nitzschia sp.	9
Anabaena circinalis / Anabaena flos-aquae	10

OB2 10 m 13/11/2002	**Site C**
Botryococcus braunii	1
Fragilaria crotonensis	1
Dinobryon sp.	2
Anabaena circinalis / Anabaena flos-aquae	3
Aulacoseira granulata var. *angustissima*	3
Flagellates/Unicells < 5µm	6
Nitzschia sp.	6
Closterium acutm	7
Cyclotella stelligera	7
Asterionella formosa	9
Gymnodinium sp.	9
Oocytsis sp.	9
Staurastrum manfeldtii var. *fluminense*	9
Ankistrodesmus / Monorahidium sp.	10

Ceratium hirundinella	10
Cyclotella stelligera	10
Eudorina elegans	10
Eunotia sp.	10
Staurastrum sp.	10
Staurodesmus unicorns var. *gracilis*	10
Synedra sp.	10

Ankistrodesmus / Monorahidium sp.	10
Botryococcus braunii	10
Chroococcus minutus	10
Closterium acutum var. *variable*	10
Eunotia sp.	10
Lyngbya contorta/Romeria leopliensis	10
Staurastrum manfeldtii var. *fluminense*	10

Closterium acutum var. *variable*	10
Eunotia sp.	10
Lagerheimia longiseta	10
Staurastrum sp.	10
Staurodesmus unicorns var. *gracilis*	10
Synedra sp.	10

OB4 10 m 28/11/2002	**Site A**
Fragilaria crotonensis	1
Dinobryon sp.	2
Aulacoseira granulata var. *angustissima*	3
Botryococcus braunii	3
Anabaena circinalis / Anabaena flos-aquae	4
Flagellates/Unicells < 5µm	6
Nitzschia sp.	6
Asterionella formosa	7
Closterium acutm	8
Staurastrum manfeldtii var. *fluminense*	8
Closterium acutum var. *variable*	9
Lagerheimia longiseta	9
Oocytsis sp.	9
Ankistrodesmus / Monorahidium sp.	10
Cyclotella stelligera	10
Eunotia sp.	10
Lyngbya contorta/Romeria leopliensis	10
Staurastrum sp.	10
Staurodesmus unicorns var. *gracilis*	10
Synedra sp.	10

OB5 10 m 28/11/2002	**Site B**

OB6 10 m 28/11/2002	**Site C**
Botryococcus braunii	1
Aulacoseira granulata var. *angustissima*	2
Anabaena circinalis / Anabaena flos-aquae	4
Flagellates/Unicells < 5µm	5
Fragilaria crotonensis	5
Cyclotella stelligera	6
Dinobryon sp.	7
Nitzschia sp.	8
Oocytsis sp.	8
Asterionella formosa	9
Ceratium hirundinella	9
Eunotia sp.	9
Lagerheimia longiseta	9
Ankistrodesmus / Monorahidium sp.	10
Closterium acutm	10
Lyngbya contorta/Romeria leopliensis	10
Staurastrum manfeldtii var. *fluminense*	10
Synedra sp.	10

PO1 10 m 18/12/2002	**Site A**

PQ1 10 m 18/12/2002	**Site B**

PQ2 10 m 18/12/2002	**Site C**

RF 10 m 30/1/2003	**Site A**
Botryococcus braunii	1
Aulacoseira granulata var. *angustissima*	2
Flagellates/Unicells < 5µm	5
Cyclotella stelligera	6
Dinobryon sp.	8
Nitzschia sp.	8
Oocytsis sp.	8
Actinastrum hantschii	9
Anabaena circinalis / Anabaena flos-aquae	9
Aphanocapsa sp.	9
Asterionella formosa	9
Ceratium hirundinella	9
Eunotia sp.	9
Fragilaria crotonensis	9
Lagerheimia longiseta	9
Ankistrodesmus / Monorahidium sp.	10
Closterium acutm	10
Lyngbya contorta/Romeria leopliensis	10
Microcytstis sp.	10
Peridinium Playfairii	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10

RG1 10 m 30/1/2003	**Site B**
Botryococcus braunii	1
Anabaena circinalis / Anabaena flos-aquae	3
Aulacoseira granulata var. *angustissima*	4
Cyclotella stelligera	4
Staurastrum manfeldtii var. *fluminense*	5
Staurastrum sp.	5
Oocytsis sp.	6
Flagellates/Unicells < 5µm	6
Actinastrum hantschii	7
Nephrocytium lunatum	8
Westella botryoides	8
Nitzschia sp.	8
Ceratium hirundinella	8
Ankistrodesmus / Monorahidium sp.	9
Eudorina elegans	9
Closterium acutm	9
Aphanocapsa sp.	10
Lagerheimia longiseta	10
Synedra sp.	10

RG2 10 m 30/1/2003	**Site C**
Anabaena circinalis / Anabaena flos-aquae	1
Botryococcus braunii	2
Cyclotella stelligera	4
Staurastrum manfeldtii var. *fluminense*	5
Staurastrum sp.	5
Oocytsis sp.	6
Aulacoseira granulata var. *angustissima*	6
Flagellates/Unicells < 5µm	6
Actinastrum hantschii	7
Nephrocytium lunatum	8
Nitzschia sp.	8
Ceratium hirundinella	8
Ankistrodesmus / Monorahidium sp.	9
Westella botryoides	9
Closterium acutm	9
Lagerheimia longiseta	10
Synedra sp.	10
Dinobryon sp.	10

RZ 10 m 13/2/2003	**Site A**
Botryococcus braunii	1
Gymnodinium sp.	2
Staurastrum sp.	2
Flagellates/Unicells < 5µm	3
Oocytsis sp.	3
Ceratium hirundinella	4
Cyclotella stelligera	5
Anabaena circinalis / Anabaena flos-aquae	6
Microcytstis sp.	8
Synedra sp.	8
Lagerheimia longiseta	9

RZ 10 m 13/2/2003	**Site B**

RZ 10 m 13/2/2003	**Site C**
Botryococcus braunii	1
Flagellates/Unicells < 5µm	1
Oocytsis sp.	2
Cyclotella stelligera	3
Anabaena circinalis / Anabaena flos-aquae	4
Ceratium hirundinella	4
Staurastrum sp.	4
Gymnodinium sp.	5
Synedra sp.	8
Lagerheimia longiseta	9

TO2 10 m 17/3/2003	**Site A**
Anabaena circinalis / Anabaena flos-aquae	1
Botryococcus braunii	3
Gymnodinium sp.	4
Flagellates/Unicells < 5µm	5
Quadrigula lacustrus	6
Ankistrodesmus / Monorahidium sp.	7
Oocytsis sp.	7
Closterium acutum var. *variable*	8
Nitzschia sp.	8
Actinastrum hantschii	9
Aulacoseira granulata var. *angustissima*	9
Chroococcus minutus	9
Ceratium hirundinella	10
Eudorina elegans	10
Eunotia sp.	10
Staurastrum manfeldtii var. *fluminense*	10
unknown diatom sp.	10
Westella botryoides	10

TP1 10 m 17/3/2003	**Site B**
Anabaena circinalis / Anabaena flos-aquae	1
Botryococcus braunii	2
Ceratium hirundinella	3
Gymnodinium sp.	4
Flagellates/Unicells < 5µm	5
Ankistrodesmus / Monorahidium sp.	7
Nitzschia sp.	8
Oocytsis sp.	8
Actinastrum hantschii	9
Aulacoseira granulata var. *angustissima*	9
Chroococcus minutus	9
Eudorina elegans	10
Eunotia sp.	10
Fragilaria crotonensis	10
Staurastrum manfeldtii var. *fluminense*	10
unknown diatom sp.	10
Westella botryoides	10

TP2 10 m 17/3/2003	**Site C**
Botryococcus braunii	1
Anabaena circinalis / Anabaena flos-aquae	2
Gymnodinium sp.	4
Flagellates/Unicells < 5µm	5
Oocytsis sp.	7
Ankistrodesmus / Monorahidium sp.	8
Lyngbya contorta/Romeria leopliensis	8
Nitzschia sp.	8
Actinastrum hantschii	9
Aulacoseira granulata var. *angustissima*	9
Closterium acutum var. *variable*	9
Dinobryon sp.	9
Aphanocapsa sp.	10
Asterionella formosa	10
Ceratium hirundinella	10
Eudorina elegans	10
Eunotia sp.	10
Fragilaria crotonensis	10
Gloeocystis planctonica	10
Microcytstis sp.	10
Staurastrum manfeldtii var. *fluminense*	10
unknown diatom sp.	10
Westella botryoides	10

UK2 10 m 3/4/2003	**Site A**
Anabaena circinalis / Anabaena flos-aquae	1
Botryococcus braunii	2
Flagellates/Unicells < 5µm	4
Nitzschia sp.	5
Oocytsis sp.	5
Ankistrodesmus / Monorahidium sp.	6
Actinastrum hantschii	7
Ceratium hirundinella	8
Closterium acutm	8
Staurastrum sp.	8
Closterium acutum var. *variable*	9
Staurastrum manfeldtii var. *fluminense*	10
Synedra sp.	10

UL1 10 m 3/4/2003	**Site B**
Anabaena circinalis / Anabaena flos-aquae	1
Botryococcus braunii	2
Ankistrodesmus / Monorahidium sp.	4
Nitzschia sp.	4
Oocytsis sp.	4
Flagellates/Unicells < 5µm	5
Cyclotella stelligera	6
Actinastrum hantschii	8
Ceratium hirundinella	9
Gymnodinium sp.	9
Nephrocytium lunatum	9
Planktosphaeria gelatinosa	9
Asterionella formosa	10
Closterium acutum var. *variable*	10
Eudorina elegans	10
Eunotia sp.	10
Lagerheimia longiseta	10
Synedra sp.	10

UL2 10 m 3/4/2003	**Site C**
Anabaena circinalis / Anabaena flos-aquae	1
Ankistrodesmus / Monorahidium sp.	4
Botryococcus braunii	4
Flagellates/Unicells < 5µm	4
Oocytsis sp.	4
Nitzschia sp.	5
Cyclotella stelligera	6
Actinastrum hantschii	8
Eudorina elegans	8
Ceratium hirundinella	9
Gymnodinium sp.	9
Nephrocytium lunatum	9
Planktosphaeria gelatinosa	9
Asterionella formosa	10
Aulacoseira granulata var. *angustissima*	10
Closterium acutum var. *variable*	10
Eunotia sp.	10
Fragilaria crotonensis	10
Staurastrum manfeldtii var. *fluminense*	10
Synedra sp.	10

VC2 10 m 28/4/2003	**Site A**
Botryococcus braunii	1
Anabaena circinalis / Anabaena flos-aquae	2
Flagellates/Unicells < 5µm	3
Aulacoseira granulata var. *angustissima*	4
Gymnodinium sp.	5
Nitzschia sp.	6
Oocytsis sp.	6
Actinastrum hantschii	7
Asterionella formosa	7
Closterium acutm	8
Staurastrum manfeldtii var. *fluminense*	8
Ceratium hirundinella	9
Closterium acutum var. *variable*	9
Fragilaria crotonensis	9
Ankistrodesmus / Monorahidium sp.	10
Cyclotella stelligera	10
Eudorina elegans	10

VD1 10 m 28/4/2003	**Site B**
Botryococcus braunii	1
Anabaena circinalis / Anabaena flos-aquae	3
Flagellates/Unicells < 5µm	4
Actinastrum hantschii	7
Asterionella formosa	7
Aulacoseira granulata var. *angustissima*	7
Nitzschia sp.	7
Oocytsis sp.	7
Closterium acutm	8
Eudorina elegans	8
Gymnodinium sp.	8
Staurastrum manfeldtii var. *fluminense*	8
Fragilaria crotonensis	9
Ankistrodesmus / Monorahidium sp.	10
Ceratium hirundinella	10
Closterium acutum var. *variable*	10
Cyclotella stelligera	10

VD2 10 m 28/4/2003	**Site C**
Botryococcus braunii	1
Anabaena circinalis / Anabaena flos-aquae	2
Aulacoseira granulata var. *angustissima*	4
Flagellates/Unicells < 5µm	4
Gymnodinium sp.	5
Oocytsis sp.	6
Actinastrum hantschii	7
Asterionella formosa	7
Nitzschia sp.	7
Closterium acutm	8
Eudorina elegans	8
Staurastrum manfeldtii var. *fluminense*	8
Closterium acutum var. *variable*	9
Fragilaria crotonensis	9
Ankistrodesmus / Monorahidium sp.	10
Ceratium hirundinella	10
Cyclotella stelligera	10

Eunotia sp.	10
Staurodesmus unicorns var. *gracilis*	10

Eunotia sp.	10
Staurodesmus unicorns var. *gracilis*	10

Eunotia sp.	10
Staurodesmus unicorns var. *gracilis*	10

WJ2 10 m 15/5/2003	**Site A**
Anabaena circinalis / Anabaena flos-aquae	1
Dinobryon sp.	2
Aulacoseira granulata var. *angustissima*	3
Botryococcus braunii	3
Ankistrodesmus / Monorahidium sp.	4
Asterionella formosa	5
Oocytsis sp.	5
Staurastrum sp.	6
Closterium acutum var. *variable*	7
Cyclotella stelligera	8
Flagellates/Unicells < 5µm	8
Nephrocytium agardhianum	8
Chlamydomonas sp.	9
Nitzschia sp.	9
Aphanocapsa sp.	10
Eudorina elegans	10
Kirchneriella sp.	10
Microcytstis sp.	10
Synedra sp.	10

WK1 10 m 15/5/2003	**Site B**
Dinobryon sp.	1
Botryococcus braunii	2
Oocytsis sp.	3
Flagellates/Unicells < 5µm	4
Ankistrodesmus / Monorahidium sp.	5
Cyclotella stelligera	5
Fragilaria crotonensis	5
Eudorina elegans	6
Lyngbya contorta/Romeria leopliensis	7
Nephrocytium agardhianum	7
Anabaena circinalis / Anabaena flos-aquae	8
Nitzschia sp.	10
Sphaerocystis schroeteri	10

WK2 10 m 15/5/2003	**Site C**
Botryococcus braunii	1
Dinobryon sp.	1
Oocytsis sp.	2
Closterium acutum var. *variable*	3
Anabaena circinalis / Anabaena flos-aquae	5
Flagellates/Unicells < 5µm	5
Eudorina elegans	8
Lyngbya contorta/Romeria leopliensis	8
Ankistrodesmus / Monorahidium sp.	9
Sphaerocystis schroeteri	9
Gymnodinium sp.	10
Nitzschia sp.	10

XR2 10 m 12/6/2003	**Site A**
Botryococcus braunii	1
Asterionella formosa	2
Aulacoseira granulata var. *angustissima*	3
Flagellates/Unicells < 5µm	4
Gymnodinium sp.	4
Anabaena circinalis / Anabaena flos-aquae	6
Oocytsis sp.	6
Closterium acutm	7
Eudorina elegans	7
Actinastrum hantschii	8
Ceratium hirundinella	8
Nitzschia sp.	9
Synedra sp.	9
Ankistrodesmus / Monorahidium sp.	10
C.f. *Chlorella* sp.	10
Closterium acutum var. *variable*	10
Cyclotella stelligera	10
Fragilaria crotonensis	10
Nephrocytium agardhianum	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10
unknown diatom sp.	10
Westella botryoides	10

XS1 10 m 12/6/2003	**Site B**
Botryococcus braunii	1
Asterionella formosa	2
Aulacoseira granulata var. *angustissima*	3
Flagellates/Unicells < 5µm	4
Gymnodinium sp.	5
Oocytsis sp.	6
Eudorina elegans	7
Actinastrum hantschii	8
Ceratium hirundinella	8
Closterium acutm	8
Cyclotella stelligera	8
Nitzschia sp.	9
Synedra sp.	9
Anabaena circinalis / Anabaena flos-aquae	10
Ankistrodesmus / Monorahidium sp.	10
C.f. *Chlorella* sp.	10
Closterium acutum var. *variable*	10
Nephrocytium agardhianum	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10
unknown diatom sp.	10
Westella botryoides	10

XS2 10 m 12/6/2003	**Site C**
Botryococcus braunii	1
Asterionella formosa	2
Aulacoseira granulata var. *angustissima*	3
Flagellates/Unicells < 5µm	4
Gymnodinium sp.	5
Anabaena circinalis / Anabaena flos-aquae	6
Oocytsis sp.	6
Ceratium hirundinella	7
Eudorina elegans	7
Actinastrum hantschii	8
Closterium acutm	8
Cyclotella stelligera	8
Ankistrodesmus / Monorahidium sp.	9
Nitzschia sp.	9
Synedra sp.	9
C.f. *Chlorella* sp.	10
Closterium acutum var. *variable*	10
Nephrocytium agardhianum	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10
unknown diatom sp.	10
Westella botryoides	10

ZF1 10 m 14/7/2003	**Site A**
Asterionella formosa	1
Actinastrum hantschii	2
Botryococcus braunii	2
Anabaena circinalis / Anabaena flos-aquae	4
Aulacoseira granulata var. *angustissima*	4
Flagellates/Unicells < 5µm	6
Ankistrodesmus / Monorahidium sp.	7
Oocytsis sp.	7
Chroococcus minutus	8
Elakotothrix gelatinosa	8
Eunotia sp.	8
Lyngbya contorta/Romeria leopliensis	8
Sphaerocystis schroeteri	9
Tetraedon gracile	9
unknown diatom sp.	10

ZG1 10 m 14/7/2003	**Site B**
Botryococcus braunii	1
Asterionella formosa	2
Aulacoseira granulata var. *angustissima*	3
Flagellates/Unicells < 5µm	4
Cyclotella stelligera	5
Oocytsis sp.	5
Closterium acutum var. *variable*	8
Lyngbya contorta/Romeria leopliensis	8
Synedra sp.	10

ZG2 10 m 14/7/2003	**Site C**
Fragilaria crotonensis	1
Asterionella formosa	2
Botryococcus braunii	2
Oocytsis sp.	3
Anabaena circinalis / Anabaena flos-aquae	4
Aulacoseira granulata var. *angustissima*	4
Flagellates/Unicells < 5µm	5
Ankistrodesmus / Monorahidium sp.	6
Cyclotella stelligera	6
Tetraedon gracile	7
Sphaerocystis schroeteri	8
Synedra sp.	10

ZY2 10 m 31/7/2003	**Site A**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	3
Cyclotella stelligera	5
Flagellates/Unicells < 5µm	5
Gymnodinium sp.	5
Ankistrodesmus / Monorahidium sp.	7
Actinastrum hantschii	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Synedra sp.	8
Aulacoseria sp.	9
C.f. *Chlorella* sp.	9
Closterium acutum var. *variable*	9
Elakotothrix gelatinosa	9
Westella botryoides	9
Anabaena circinalis / Anabaena flos-aquae	10
Eunotia sp.	10
Microcytstis sp.	10
Sphaerocystis schroeteri	10
Staurastrum manfeldtii var. *fluminense*	10
Staurastrum sp.	10
Staurodesmus unicorns var. *gracilis*	10

ZZ1 10 m 31/7/2003	**Site B**
Botryococcus braunii	1
Asterionella formosa	2
Fragilaria crotonensis	3
Aulacoseira granulata var. *angustissima*	4
Closterium acutm	4
Cyclotella stelligera	6
Ankistrodesmus / Monorahidium sp.	7
Closterium acutum var. *variable*	7
Synedra sp.	7
Actinastrum hantschii	8
Flagellates/Unicells < 5µm	8
Gymnodinium sp.	8
Oocytsis sp.	8
Elakotothrix gelatinosa	9
Eunotia sp.	9
Lyngbya contorta/Romeria leopliensis	9
Sphaerocystis schroeteri	9
Chlamydomonas sp.	10
Kirchneriella sp.	10
Nephrocytium lunatum	10
Westella botryoides	10

ZZ2 10 m 31/7/2003	**Site C**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Botryococcus braunii	3
Closterium acutm	4
Fragilaria crotonensis	5
Cyclotella stelligera	6
Gymnodinium sp.	6
Ankistrodesmus / Monorahidium sp.	7
Closterium acutum var. *variable*	7
Flagellates/Unicells < 5µm	7
Synedra sp.	7
Actinastrum hantschii	8
Oocytsis sp.	8
Elakotothrix gelatinosa	9
Lyngbya contorta/Romeria leopliensis	9
Sphaerocystis schroeteri	9
Anabaena circinalis / Anabaena flos-aquae	10
Chlamydomonas sp.	10
Kirchneriella sp.	10
Nephrocytium lunatum	10
Staurastrum tangaroaii	10
Staurodesmus unicorns var. *gracilis*	10
Westella botryoides	10

ZY4 10 m 14/8/2003	**Site A**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	4
Cyclotella stelligera	5
Gymnodinium sp.	5
Flagellates/Unicells < 5µm	6
Ankistrodesmus / Monorahidium sp.	7
Actinastrum hantschii	8
Oocytsis sp.	8
Synedra sp.	8
Aulacoseria sp.	9
Closterium acutum var. *variable*	9
Elakotothrix gelatinosa	9
Lyngbya contorta/Romeria leopliensis	9
Westella botryoides	9
C.f. *Chlorella* sp.	10
Eunotia sp.	10
Microcytstis sp.	10
Sphaerocystis schroeteri	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10

ZZ5 10 m 14/8/2003	**Site B**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	4
Cyclotella stelligera	5
Flagellates/Unicells < 5µm	6
Synedra sp.	6
Actinastrum hantschii	8
Ankistrodesmus / Monorahidium sp.	8
Closterium acutum var. *variable*	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Aulacoseria sp.	9
Botryococcus braunii	9
Staurastrum tangaroaii	9
Anabaena circinalis / Anabaena flos-aquae	10
Elakotothrix gelatinosa	10
Eudorina elegans	10
Kirchneriella sp.	10
Staurastrum sp.	10

ZZ6 10 m 14/8/2003	**Site C**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	4
Cyclotella stelligera	5
Flagellates/Unicells < 5µm	6
Gymnodinium sp.	6
Synedra sp.	7
Actinastrum hantschii	8
Ankistrodesmus / Monorahidium sp.	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Aulacoseria sp.	9
Closterium acutum var. *variable*	9
Westella botryoides	9
Anabaena circinalis / Anabaena flos-aquae	10
Botryococcus braunii	10
Elakotothrix gelatinosa	10
Eudorina elegans	10
Kirchneriella sp.	10
Staurastrum sp.	10
Staurastrum tangaroaii	10

ZY6 10 m 28/8/2003	**Site A**
Asterionella formosa	1
Fragilaria crotonensis	2
Aulacoseira granulata var. *angustissima*	3
Closterium acutm	4
Cyclotella stelligera	5
Gymnodinium sp.	5
Flagellates/Unicells < 5µm	6
Ankistrodesmus / Monorahidium sp.	7
Actinastrum hantschii	8
Oocytsis sp.	8
Synedra sp.	8
Aulacoseria sp.	9
Closterium acutum var. *variable*	9
Elakotothrix gelatinosa	9
Lyngbya contorta/Romeria leopliensis	9
Westella botryoides	9
C.f. *Chlorella* sp.	10
Eunotia sp.	10
Microcytstis sp.	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10

ZZ9 10 m 28/8/2003	**Site B**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	4
Cyclotella stelligera	5
Flagellates/Unicells < 5µm	6
Gymnodinium sp.	6
Ankistrodesmus / Monorahidium sp.	7
Synedra sp.	7
Actinastrum hantschii	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Aulacoseria sp.	9
Closterium acutum var. *variable*	9
Westella botryoides	9
Anabaena circinalis / Anabaena flos-aquae	10
Botryococcus braunii	10
C.f. *Chlorella* sp.	10
Elakotothrix gelatinosa	10
Staurastrum sp.	10
Staurastrum tangaroaii	10

ZZ10 10 m 28/8/2003	**Site C**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	3
Cyclotella stelligera	5
Flagellates/Unicells < 5µm	6
Gymnodinium sp.	6
Ankistrodesmus / Monorahidium sp.	7
Actinastrum hantschii	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Synedra sp.	8
Aulacoseria sp.	9
C.f. *Chlorella* sp.	9
Closterium acutum var. *variable*	9
Westella botryoides	9
Anabaena circinalis / Anabaena flos-aquae	10
Botryococcus braunii	10
Elakotothrix gelatinosa	10
Microcytstis sp.	10
Sphaerocystis schroeteri	10
Staurastrum manfeldtii var. *fluminense*	10
Staurastrum sp.	10
Staurodesmus unicorns var. *gracilis*	10

BP2 10 m 8/9/2003	**Site A**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	4
Cyclotella stelligera	5
Ankistrodesmus / Monorahidium sp.	7
Flagellates/Unicells < 5µm	7
Synedra sp.	7
Gymnodinium sp.	8
Oocytsis sp.	8
Actinastrum hantschii	9
Aulacoseria sp.	9
Ceratium hirundinella	9
Closterium acutum var. *variable*	9
Eudorina elegans	9
Lyngbya contorta/Romeria leopliensis	9
Anabena planktonica	10
Botryococcus braunii	10
C.f. *Chlorella* sp.	10
Elakotothrix gelatinosa	10
Staurastrum manfeldtii var. *fluminense*	10
Staurodesmus unicorns var. *gracilis*	10
Westella botryoides	10

BO1 10 m 8/9/2003	**Site B**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Fragilaria crotonensis	4
Closterium acutum var. *variable*	5
Ankistrodesmus / Monorahidium sp.	6
Cyclotella stelligera	7
Flagellates/Unicells < 5µm	7
Synedra sp.	7
Actinastrum hantschii	8
Gymnodinium sp.	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Aulacoseria sp.	9
Westella botryoides	9
Anabena planktonica	10
Botryococcus braunii	10
Elakotothrix gelatinosa	10
Staurastrum manfeldtii var. *fluminense*	10
Staurastrum sp.	10

BO2 10 m 8/9/2003	**Site C**
Asterionella formosa	1
Aulacoseira granulata var. *angustissima*	2
Closterium acutm	3
Ankistrodesmus / Monorahidium sp.	7
Flagellates/Unicells < 5µm	7
Fragilaria crotonensis	7
Synedra sp.	7
Actinastrum hantschii	8
Cyclotella stelligera	8
Gymnodinium sp.	8
Lyngbya contorta/Romeria leopliensis	8
Oocytsis sp.	8
Aulacoseria sp.	9
Closterium acutum var. *variable*	9
Westella botryoides	9
Anabena planktonica	10
Botryococcus braunii	10
C.f. *Chlorella* sp.	10
Elakotothrix gelatinosa	10
Eudorina elegans	10
Staurastrum manfeldtii var. *fluminense*	10
Staurastrum sp.	10