

# Lake Taupo long-term monitoring programme 2010–2011

Prepared by:  
Max Gibbs (NIWA)

For:  
Waikato Regional Council  
PO Box 4010  
HAMILTON EAST

June 2012

Document #: 2208110

Peer reviewed by:  
Bill Vant

Date June 2012

Approved for release by:  
Dr Edmund Brown

Date June 2012

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## Lake Taupo Long-term Monitoring Programme: 2010 - 2011

Prepared for Waikato Regional Council

May 2012

**Authors/Contributors:**

Max Gibbs

**For any information regarding this report please contact:**

Dr Max Gibbs  
Freshwater Ecology  
+64-7-856 1773  
m.gibbs@niwa.co.nz

National Institute of Water & Atmospheric Research Ltd  
Gate 10, Silverdale Road  
Hillcrest, Hamilton 3216  
PO Box 11115, Hillcrest  
Hamilton 3251  
New Zealand

Phone +64-7-856 7026  
Fax +64-7-856 0151

NIWA Client Report No:	HAM2012-016
Report date:	May 2012
NIWA Project:	EVW11210

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Reviewed by

Approved for release by

Dr P. Verburg

Dr D. Rowe



## 1. 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 to monitor the lake's water quality was commissioned by Waikato Regional council. This programme commenced in October 1994 and is conducted by NIWA with field assistance from the Department of Internal Affairs, Taupo Harbourmaster's Office. This report presents the results from the 2010/11 monitoring period.

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 chlorophyll *a*, water clarity, and nutrient (particularly nitrate) accumulation in the lake.

The long-term monitoring programme uses the historical mid-lake site, Site A. Monitoring of additional sites in the Kuratau Basin (Site B) and the Western Bays (Site C) between January 2002 and December 2004 determined that spatial variability of water quality across Lake Taupo is minimal and that it is valid to use the mid-lake site as representative of the open water quality of the lake. Further validation of the use of a single mid-lake monitoring site was obtained in a separate study over a 2-year period from February 2007 up to June 2009, which compared mid-lake nutrient and chlorophyll *a* concentrations and algal species composition with that at near-shore sites in Whangamata Bay (Kinloch) and Whakaipo Bay. This study determined that “the near-shore water quality was very similar to the mid-lake water quality” and that “within this similarity in the measured data was much variability which may be due to short period time lags between the near-shore and mid-lake sites with respect to nutrient sources, and the zones of algal growth”.

There was a long-term trend of increasing phytoplankton biomass (chlorophyll *a*) of  $0.014 \pm 0.013 \text{ mg m}^{-3} \text{ y}^{-1}$  in the upper 10 m of water column over the monitoring period. However, inter-annual variability in the data was high. As the long-term data accumulates, it is becoming apparent that the increase in chlorophyll *a* occurred mostly before 2000. The annual mean chlorophyll *a* concentration from 1994 to 2003 increased at a statistically significant rate of  $0.087 \pm 0.029 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.001$ ,  $r^2 = 0.857$ ,  $n = 10$ ), but since 2000 there has been a significant decline at a rate of  $0.024 \pm 0.023 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.05$ ,  $r^2 = 0.36$ ,  $n = 12$ ).

During this monitoring year (2010/11), highest phytoplankton biomass occurred in August 2010 when the lake had mixed, and lowest biomass occurred in the upper water column in January 2011, which is consistent with most previous monitoring periods.

Chlorophyll fluorescence profiles show that, each year during summer, a deep chlorophyll maximum (DCM) develops just below the thermocline (40 m) and has up to 70% more biomass than the epilimnion.

The 2010 winter bloom was dominated by the diatoms, *Asterionella formosa* and *Fragilaria crotonensis*, each accounting for about 40% of the biovolume in the upper 50 m of the water column. The dinoflagellate, *Gymnodinium sp.* was dominant through summer 2011. Cyanobacteria (blue-green algae) were always present in low numbers in the upper water column throughout the 2010/11 monitoring period, with *Anabaena lemmermannii* being the most common species.

Nutrient concentrations - dissolved reactive phosphorus, ammoniacal nitrogen, and nitrate nitrogen (DRP, NH<sub>4</sub>-N, and NO<sub>3</sub>-N) - in the upper water column were comparable with concentrations measured since 2003. NO<sub>3</sub>-N concentrations were lower and NH<sub>4</sub>-N concentrations were elevated in the upper water column since 2007. The elevated NH<sub>4</sub>-N concentrations may indicate water column decomposition of the winter-spring bloom, or excretion from a zooplankton bloom.

The total mass of NO<sub>3</sub>-N in the hypolimnion before winter has increased at a statistically significant rate of about 6.4 t y<sup>-1</sup> ( $P < 0.005$ ,  $r^2 = 0.31$ ,  $n = 24$ ) over the last 35 years. This value is slightly lower than the previous year, but includes a decrease of around 100 t of NO<sub>3</sub>-N in the hypolimnion in autumn compared with autumn the previous year. The total mass of NO<sub>3</sub>-N in the hypolimnion in autumn 2011 was about 280 t. The net accumulation rate of NO<sub>3</sub>-N in the hypolimnion below 70 m for the 2010/11 stratified period was 1.59 t d<sup>-1</sup>, which is similar in magnitude to the previous year. However, because of high variability in the data, the increase in the net hypolimnetic NO<sub>3</sub>-N accumulation rate during the stratified period was only weakly significant at 0.025 t d<sup>-1</sup> ( $P = 0.07$ ,  $r^2 = 0.144$ ,  $n = 24$ ) over the last 35 years.

Spring and summer water clarity during 2010/11 was slightly higher than the previous year, reaching 19 m in March 2011 before returning to 17 m for the rest of the summer. The lower than expected water clarity for the past two years coincided with a relatively wet springs. This may reflect the reduced nutrient input in surface runoff as well as a low input of sediment from erosion.

As observed in 2008, lowest water clarity values (<11 m) in 2010 occurred between August and November and were associated with a wet and windy spring. Analysis of the long term data indicates that between 2000 and 2007 the lowest water clarity was most likely to occur in August, but since 2007 the lowest water clarity was more likely to occur in October. This two month shift in water clarity was not accompanied by a comparable shift in the timing of the maximum algal biomass, indicating that in October the water clarity is most likely affected by suspended sediment from the land. Lowest water clarity occurred in November 2010.

The 2010/11 net VHOD rate at  $17.52 \pm 3.95$  mg O<sub>2</sub> m<sup>-3</sup> d<sup>-1</sup> (mean  $\pm$  95% confidence limit) was almost 2 mg O<sub>2</sub> m<sup>-3</sup> d<sup>-1</sup> lower than the previous year, which was  $19.21 \pm 1.78$  mg O<sub>2</sub> m<sup>-3</sup> d<sup>-1</sup>. Evaluation of the VHOD data shows that there has been a statistically significant ( $P < 0.00005$ ,  $r^2 = 0.79$ ,  $n = 13$ ) increase of around 1 mg m<sup>-3</sup> d<sup>-1</sup> in the VHOD rate each year since the low of 1999.

The persistent increase in hypolimnetic oxygen demand over the past 13 years implies a change in the organic carbon load on the lake around 1999 and is in contrast with steady or decreasing mean annual chlorophyll a concentrations. An increased hypolimnetic oxygen demand may be the result of higher suspended sediment inputs from the land during spring.



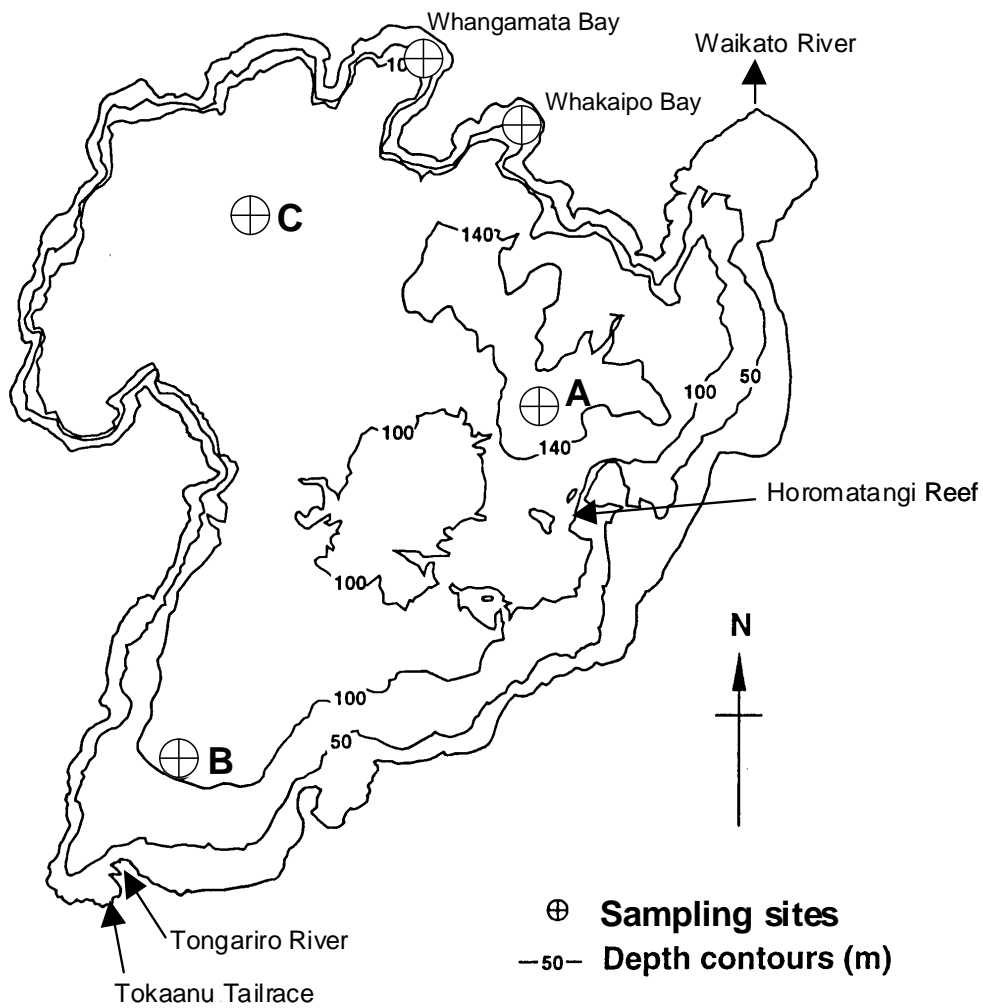


## 2. Introduction

A long term monitoring programme of Lake Taupo's water quality was commissioned by Waikato Regional Council in October 1994 in the expectation that the trophic state of the lake would change to reflect changes in land use within the lake's catchment. This programme is conducted by NIWA with field assistance from the Department of Internal Affairs, Taupo Harbourmaster's Office. Various additions and improvements to the monitoring methodology have occurred with advances in available technology but the core monitoring parameters remain unchanged (Appendix 1). This report presents data from the routine mid-lake monitoring station from August 2010 to July 2011. Additional information for water clarity, temperature, and chlorophyll *a* collected between August 2011 and the time of beginning this report has also been included in the data sets in the appendices.

In two earlier reports (Gibbs 2005, 2006), data were included from two additional sites representing those historically sampled in the 1974-76 assessments of lake water quality (White et al. 1980) (Figure 1) to evaluate spatial variability of water quality across the lake. Results from these two additional sites showed that, in general, there were minimal differences between the sites in seasonal variation and that data collected from site A (mid lake) could be used as representative of the main body of the lake. More recently, a comparison of upper water column nutrient and chlorophyll *a* concentrations and algal abundance was made between Site A and near-shore sites in Whangamata Bay (Kinloch) and Whakaipo Bay (Figure 1), over a 2-year period from February 2007 up to June 2009 (Gibbs 2010a). That study determined that, although there were small differences, "the near-shore water quality was very similar to the mid-lake water quality" and the small differences that were observed "may be due to short period time lags between the near-shore and mid-lake sites with respect to nutrient sources, and the zones of algal growth". This report presents data from site A only.

The monitoring programme has 3 components: bottom water oxygen depletion, upper water column water quality, and whole water column water quality. Bottom water oxygen depletion is estimated as the volumetric hypolimnetic oxygen depletion (VHOD) rate, which is sensitive to changes in trophic state of lakes that thermally stratify for part of the year (Burns 1995). VHOD is considered a good indicator to detect changes 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 can only indicate changes that may occur in water quality, but does not identify their underlying causes. In order to enable understanding of contributing processes, the upper water column (0-10 m depth) is sampled for nutrients, chlorophyll *a*, phytoplankton species composition and water clarity at 2-3 weekly intervals, and full depth profiles are carried out twice during the stratified period. The first profile is taken in spring, when thermal stratification has become established and is stable, the second profile in autumn the following year before thermal stratification begins to break down, as the thermocline deepens.



**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) sampled during the three-year period 2002-04. The near-shore comparison sites at Whangamata Bay and Whakaipo Bay sampled during a two-year period 2007-09 are also shown.

### 3. Methods

Detailed method descriptions are given in Appendix 1. The parameters measured routinely at 2-3 weekly intervals are:

- depth-related temperature and dissolved oxygen (DO), using the RBR XR420f CTD profiler until January 2008, thereafter using the RBR XR620f CTD profiling system. Additional parameters of conductivity and chlorophyll fluorescence, and since January 2008, PAR, recorded by the profiler sensors are available at NIWA and will only be reported as appropriate
- water clarity by Secchi disc depth (20-cm black and white quartered)
- chlorophyll *a*, nitrate+nitrite-nitrogen (NO<sub>3</sub>-N), ammoniacal-N (NH<sub>4</sub>-N), dissolved organic N (DON), particulate-N (PN), dissolved reactive phosphorus (DRP), dissolved organic phosphorus (DOP), particulate phosphorus (PP), and algal species dominance in integrated-tube water samples from the top 10 m. Concentrations of total nitrogen (TN) and total phosphorus (TP) are estimated by summing the respective measured fractions. Zooplankton net hauls from 100 m (63 µm mesh) are preserved in 4% formalin and stored pending analysis.

Since 2000, water samples have also been collected at the same time from just above the lake bed (150 m) for analysis of NO<sub>3</sub>-N, NH<sub>4</sub>-N, and DRP to assess nutrient accumulation rates in the hypolimnion and to assess the extent of winter mixing.

For whole water column sampling, carried out twice a year in spring and autumn, the parameters measured at 10 m depth intervals from the surface down to 150 m depth are:

- Conductivity, pH, temperature, DO, chlorophyll *a*, DRP, DOP, PP, TP, NO<sub>3</sub>-N, NH<sub>4</sub>-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, but not as complete profiles are:

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

Details of data handling and the treatment of values that are near analytical detection limits are described in Appendix 1.

#### 3.1 Report contents

This report presents the results from the 2010/11 stratified period plus the winter 2011 mixing, and refers to data in previous annual monitoring reports from 1995 to 2010 (e.g., Gibbs 2011; 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 (Gibbs 1995) and a copy of these methods is included in Appendix 1. The calculation of the net VHOD rate, as applied to Lake Taupo data, was described in the 1996/97 report and a copy of the methods is presented in Appendix 2. Data of temperature and dissolved oxygen from the

previous sixteen years are given in Appendix 3 and nutrient data are in Appendix 4. 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 biomass data for 2010/11 are included in Appendix 5 and discussed in the text. Historical (before 1994) nitrate and dissolved reactive phosphorus data from spring and autumn full lake profiles are presented in Appendix 6 for reference.

### **3.2 Statistical evaluation**

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

### **3.3 “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.

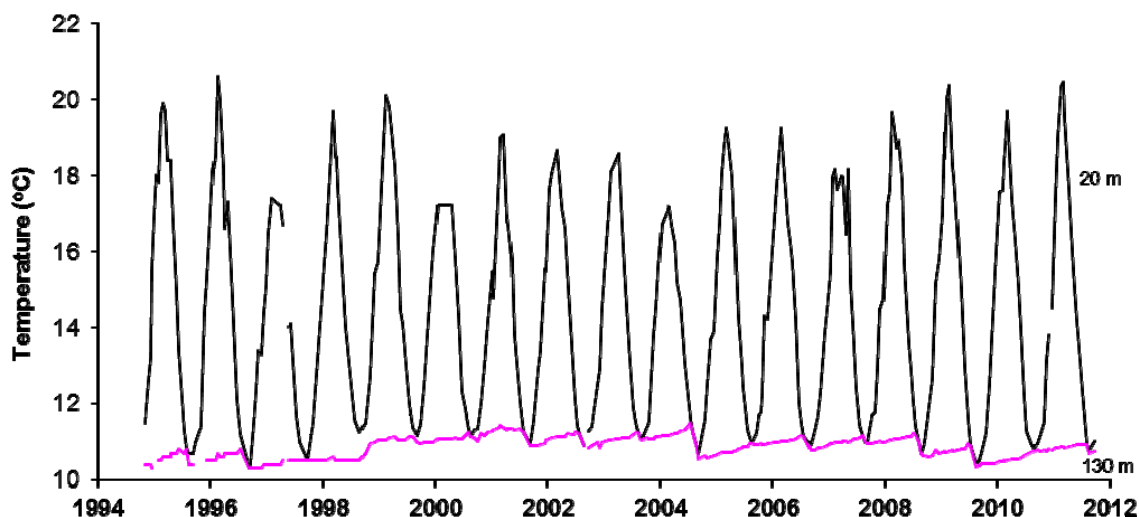


## 4. Results and discussion

### 4.1 Temperature and dissolved oxygen

The time-series of temperature and DO from 20 m depth (epilimnion) and 130 m depth (hypolimnion) collected in the monitoring programme since 1994 are presented in Figure 2 and Figure 3.

Annual maximum temperatures at 20 m are variable between 17 °C and 21 °C, reflecting warmer or cooler summers, while near bottom water temperatures have been relatively constant between 10.3 °C and 11.6 °C. Near bottom temperatures slightly increase each year during the stratified period (Fig. 2). Winter mixing occurs when the upper and lower temperatures are the same. Mixing rarely extends for more than a month (e.g., winter 2004, Figure 2), during which the whole water column cools rapidly.

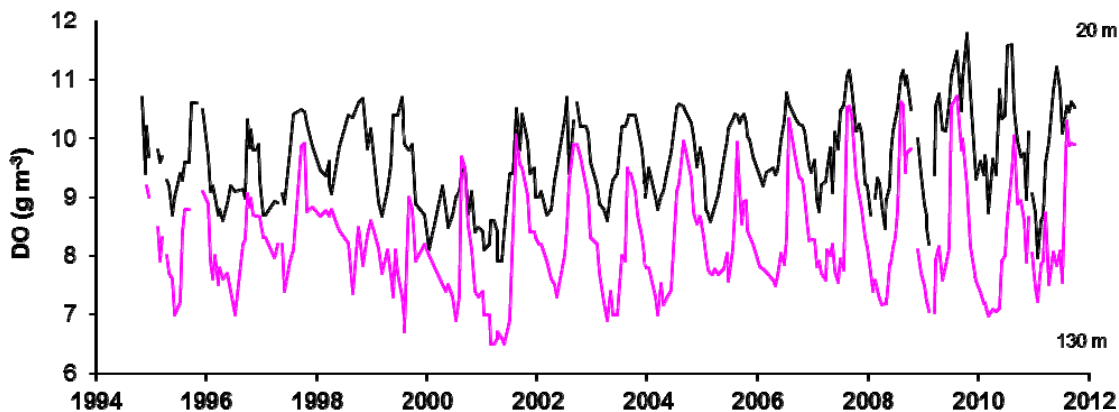


**Figure 2: Time-series temperature data.** Time-series temperature from 20 m (black line) and 130 m (pink line) depths. Winter mixing occurred where these two lines meet. The data show the lack of mixing in winter 1998 and only partial mixing in 1999 and 2005. Mixing was brief in 1997 and 2010 but strong in 1996, 2002, 2004, 2008, 2009 and 2011. Data ticks are 1 January each year.

Conversely, in some years the period of mixing may be brief or does not occur at all, for instance during winter 1998 (Figure 2) when the bottom water continued to warm throughout winter. The decrease in bottom water temperature during winter is a reasonable indicator of the strength and duration of the winter mixing. In winter 2009, there was a significant decrease in bottom water temperature during winter mixing, suggesting strong mixing for a period of at least a month. In winter 2010 there was no decrease in bottom water temperature suggesting that winter mixing was weak and of short duration.

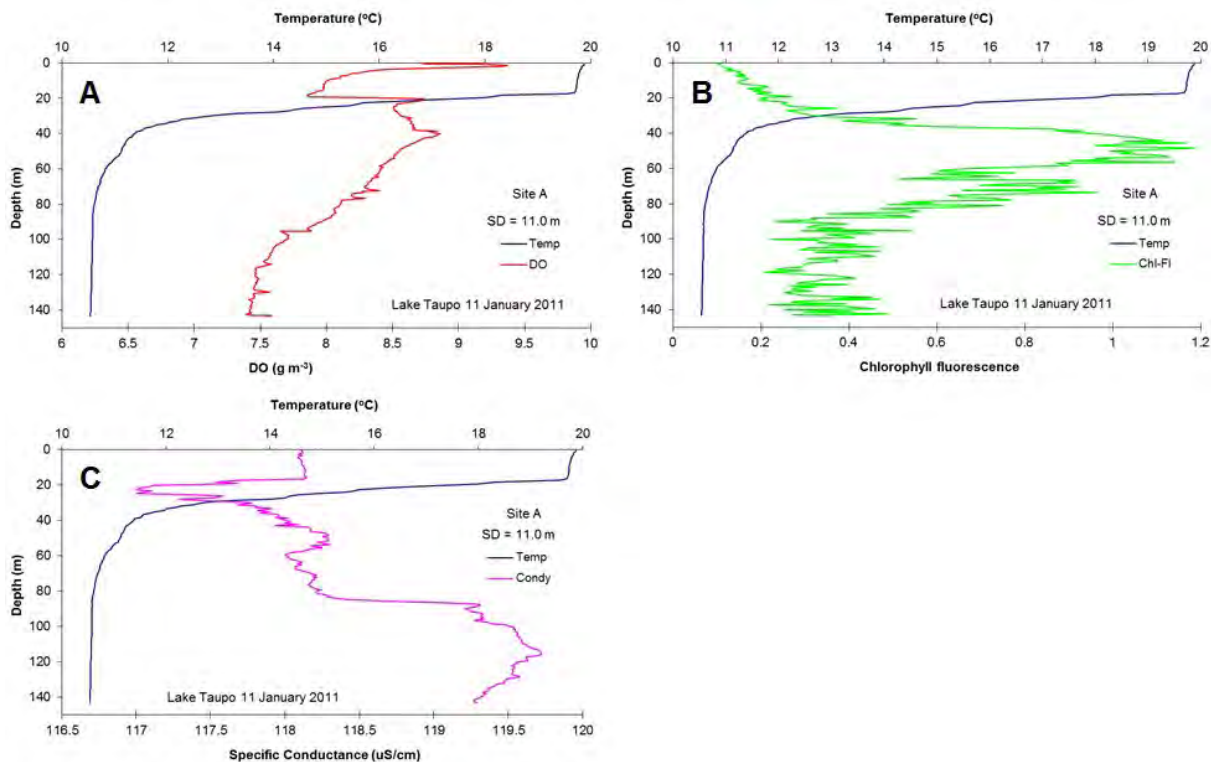
Even in years with incomplete mixing, the DO content of the hypolimnion rarely fell below 7.0 g m<sup>-3</sup>, even close to the sediment except in summer 2001 (Figure 3). However, oxygen concentrations close to the sediment were below 7.0 g m<sup>-3</sup> in 2008 and 2009 and, at the end of summer 2009/10, they were below 6.5 g m<sup>-3</sup> (Appendix. 3). In contrast, during winter mixing in 2008 and 2009 the bottom water oxygen concentrations exceeded 10.5 g m<sup>-3</sup>

(Figure 3) confirming the high degree of mixing in these years indicated by the colder bottom waters (Figure 2).



**Figure 3: Time-series dissolved oxygen data.** Time-series dissolved oxygen data from 20 m (black line) and 130 m (pink line) depths. Mixing and reoxygenation occurred where the 2 lines in the temperature data (Fig. 2) meet each winter. However, where temperature data indicate incomplete mixing there is incomplete reoxygenation of the hypolimnion. Date ticks are 1 January in each year.

In summer 2010/11, surface (<20 m) DO concentrations fell below  $8 \text{ g m}^{-3}$  for the first time since 2001 (Figure 4A), but bottom water oxygen concentrations were not much lower and remained around  $8 \text{ g m}^{-3}$  until turnover in August.



**Figure 4: Lake Taupo CTD-O profiles in January 2011.** A) Dissolved oxygen, B) Chlorophyll fluorescence and C) Specific conductance relative to temperature and depth.

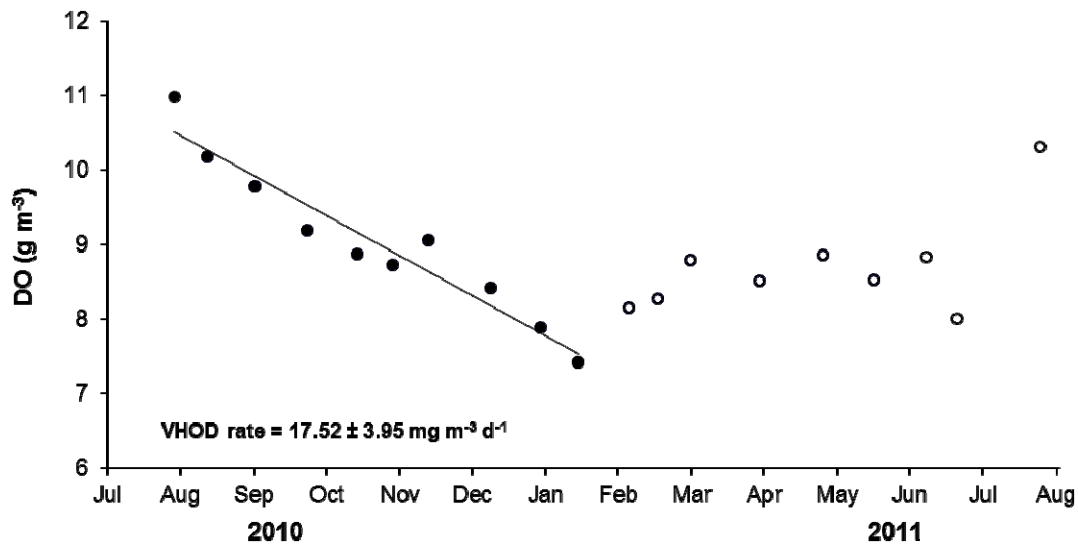
The low surface DO (Figure 4A) coincided with a period of strong conductivity anomalies (Figure 4C) associated with hydrothermal activity in the bottom of the lake. Without the hydrothermal activity, which periodically introduces hot water with dissolved salts, the specific conductance profile would be a nearly straight, vertical line. At the monitoring site, which is about 3 km from the volcanic vents in the bottom of the lake, the temperature signature from the hot water input was not measurable, but the salt content of that water remains and was detected as a conductivity anomaly.

Lake circulation currents transport the water from the vents in the lake bed past the monitoring site as the hydraulic inertia from the hydrothermal event causes the plume to rise to the thermocline or, with larger events, to the lake surface. With larger events, bottom water and surficial sediments can be entrained into the upward moving water. On January 2011 the amount of sediment entrained was sufficient to reduce the clarity from an expected Secchi depth of >18 m to 11 m (Figure 7). This has happened on other occasions (see Secchi depth section 4.3). Several rapid Secchi depth transitions from 18 m to 11 m and back within a few weeks following the initial event are consistent with several larger events occurring in summer 2011.

The entrained sediment in the water column provides an oxygen demand through decomposition processes causing the reduction in DO concentrations at all depths. The shape of the DO profile also includes the effects of primary production and the increase in DO concentration just below the thermocline is attributable to the deep chlorophyll maximum below the thermocline (Figure 4B) oxygenating the water via photosynthesis.

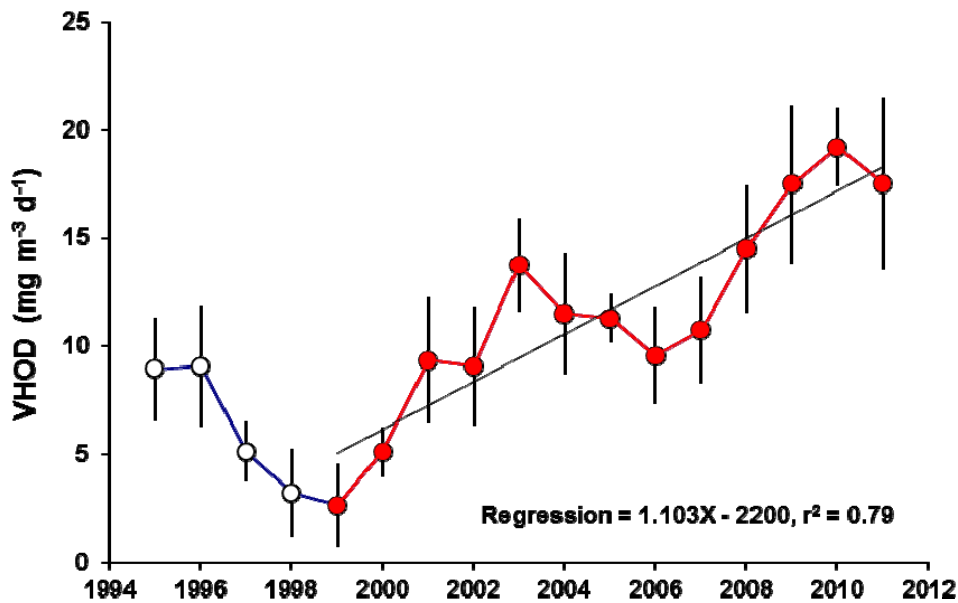
## 4.2 VHOD rate

The VHOD rate was estimated between August 2010 and the beginning of February 2011 based on oxygen profile data collected at site A. VHOD calculations were made using the volume-weighted mean DO concentration below 70 m on each sampling occasion (Figure 5) – see Appendix 2 for more detail. From February 2011 onwards the volume weighted mean DO concentration increased and became variable indicating re-oxygenation was occurring and rendering those data invalid for use in the VHOD calculation. The VHOD rate in 2010/11 was  $17.52 \pm 3.95 \text{ mg m}^{-3} \text{ d}^{-1}$  (mean  $\pm$  95% confidence limit) (Fig. 4). This value was  $1.7 \text{ mg m}^{-3} \text{ d}^{-1}$  lower than the value for 2009/10, which was  $19.21 \pm 1.79 \text{ mg m}^{-3} \text{ d}^{-1}$  (Table 1).



**Figure 5: VHOD for 2010-2011 monitoring period.** Volume-weighted mean dissolved oxygen (DO) concentrations below 70 m for 2010/11. The slope of the linear regression through the solid data points provides the VHOD rate. ( $P < 0.0001$ ,  $r^2 = 0.99$ ,  $n = 10$ ). From February 2011 the data show a slight increase, indicating re-oxygenation was occurring.

Reoxygenation of the hypolimnion beginning in February is unusual, although reoxygenation has begun around this time in the last two years. February is the hottest month, the thermocline is strongest and there is usually insufficient wind stress for deep mixing. However, from February to April 2011 the weather was fine with clear skies allowing colder night temperatures. These conditions would cause the major rivers, such as the Tongariro River, to plunge as they enter the lake at night, entraining surface oxygenated water into the hypolimnion with the under-flowing density current. It is also possible that the circulation currents associated with the hydrothermal events which began in January 2011 (Figure 4) could cause a redistribution of DO in the hypolimnion. The near bottom DO concentrations (Appendix 3) fell to below  $7 \text{ g m}^{-3}$  by February 2011 then fluctuated between 7 and  $7.5 \text{ g m}^{-3}$  until August when the lake mixed. This pattern is consistent with an intermittent oxygen source such as an underflow, rather than photosynthetic production below the thermocline. From April to August there was minimal phytoplankton abundance below the thermocline, eliminating that as a source of the DO.



**Figure 6: Time-series VHOD data.** Time-series of VHOD rates since 1994-5. The low VHOD in 1997-2000 (following the 1995/96 eruptions of Mount Ruapehu) correlates with a shift in algal dominance from diatoms to colonial greens (*Botryococcus braunii*). The regression through the solid (red) dots ( $P < 0.00005$ ,  $r^2 = 0.79$ ,  $n = 13$ ), only refers to the change in VHOD since 1998/99, the year when the VHOD rate during the monitoring programme was lowest, and the last year in which diatoms were not dominant. Data ticks are by year.

Overall, there is a statistically significant ( $P = 0.0002$ ,  $r^2 = 0.76$ ,  $n = 12$ ) trend of increase in the VHOD rate data of over  $1 \text{ mg m}^{-3} \text{ d}^{-1}$  each year since 1999 (Figure 6). The low VHOD in 1999 may be attributed to the effects of the 1995/96 eruption of Mount Ruapehu which deposited around 2 million tonnes of allophanic ash across the lake. While allophane is known to remove phosphate from water, this event also may have triggered a temporary change in the winter bloom dominant algal species from diatoms to buoyant colonial green algae (Table 1). The change from *Aulacoseira granulata*, a heavy diatom which sinks rapidly, to *Botryococcus braunii*, a large colonial green algae which floats in the upper water column, may have allowed the phytoplankton carbon to drift inshore rather than settle in the deeper parts of the lake. As a buoyant algal species, *Botryococcus braunii* behaves much like cyanobacteria in that it drifts with the wind and becomes concentrated along the shoreline and in embayments around Lake Taupo when it becomes dominant. The reduced loss of organic carbon to the deep waters could then have resulted in a lower VHOD at that time.

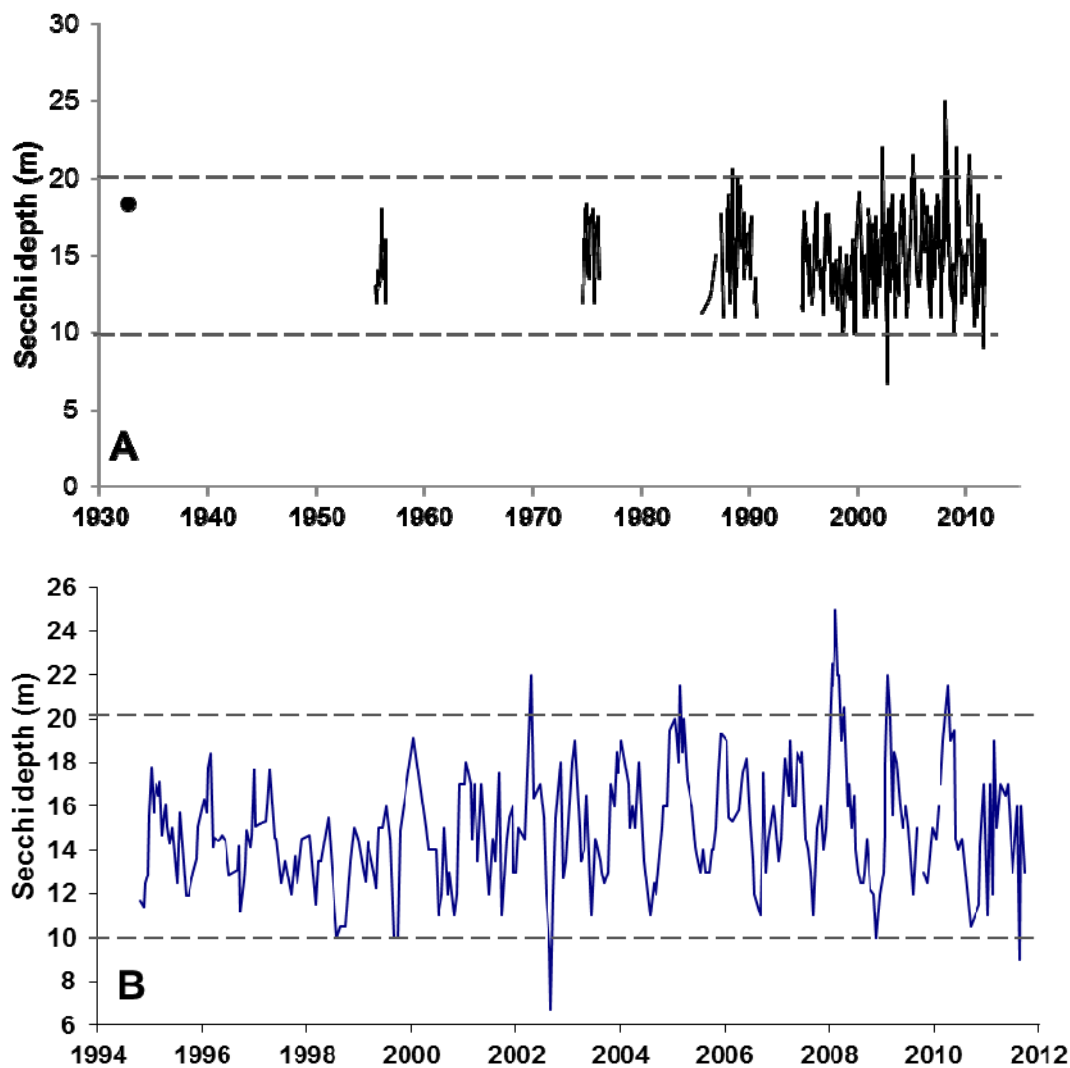
Instead of returning to the pre-eruption VHOD levels after the diatoms again dominated the algal species in the winter bloom, the VHOD rate continued to increase (Figure 6). This sustained increase in VHOD over the past 13 years suggests a change in the export of organic carbon to the hypolimnion, either from external inputs (i.e., land-use effects), or by enhanced primary production within the lake, or a combination of both.

**Table 1: Summary of VHOD rates.** Summary of the volumetric hypolimnetic oxygen depletion (VHOD) rates ( $\text{mg O}_2 \text{ m}^{-3} \text{ d}^{-1}$ ) ( $\pm$  95% confidence limit) and the dominant phytoplankton species during the preceding winter bloom. (\* not measured in winter but measured in October 1994).

Year	VHOD rate	Dominant phytoplankton species	Type
1994-95	8.93 (2.39)	<i>Aulacoseira granulata</i> *	Diatom
1995-96	9.07 (2.77)	<i>A. granulata</i>	Diatom
1996-97	5.12 (1.37)	<i>Botryococcus braunii</i>	Colonial green
1997-98	3.21 (2.03)	<i>B. braunii</i>	Colonial green
1998-99	2.64 (1.90)	<i>B. braunii</i>	Colonial green
1999-00	5.11 (1.14)	<i>B. braunii</i> + <i>A. granulata</i> + <i>Cyclotella stelligera</i>	C.G. – Diatom mix
2000-01	9.34 (2.9)	<i>A. granulata</i>	Diatom
2001-02	9.06 (2.7)	<i>Asterionella formosa</i>	Diatom
2002-03	13.76 (2.14)	<i>A. formosa</i> + <i>A. granulata</i>	Diatom
2003-04	11.50 (2.80)	<i>A. formosa</i> + <i>A. granulata</i>	Diatom
2004-05	11.30 (1.13)	<i>Fragilaria crotonensis</i> + <i>A. formosa</i>	Diatom
2005-06	9.56 (2.24)	<i>A. formosa</i> + <i>A. granulata</i>	Diatom
2006-07	10.73 (2.45)	<i>A. granulata</i>	Diatom
2007-08	14.51 (2.94)	<i>Fragilaria crotonensis</i> + <i>A. formosa</i>	Diatom
2008-09	17.50 (3.64)	<i>A. formosa</i> + <i>A. granulata</i>	Diatom
2009-10	19.21 (1.79)	<i>Fragilaria crotonensis</i> + <i>A. formosa</i> + <i>A. granulata</i>	Diatom
2010-11	17.52 (3.95)	<i>Fragilaria crotonensis</i> + <i>A. formosa</i> + <i>A. granulata</i>	Diatom

### 4.3 Secchi depth

Water clarity, as measured by Secchi depth, in Lake Taupo generally follows a seasonal pattern inversely correlating with the pattern of phytoplankton abundance. Secchi depths in the long-term record, until recently (since 2002), have mostly been between 10 m to 20 m (Figure 7A) with lowest water clarity during the winter/spring growth phase and highest water clarity during summer when the phytoplankton have settled out of the epilimnion, which is depleted in nutrients at that time.



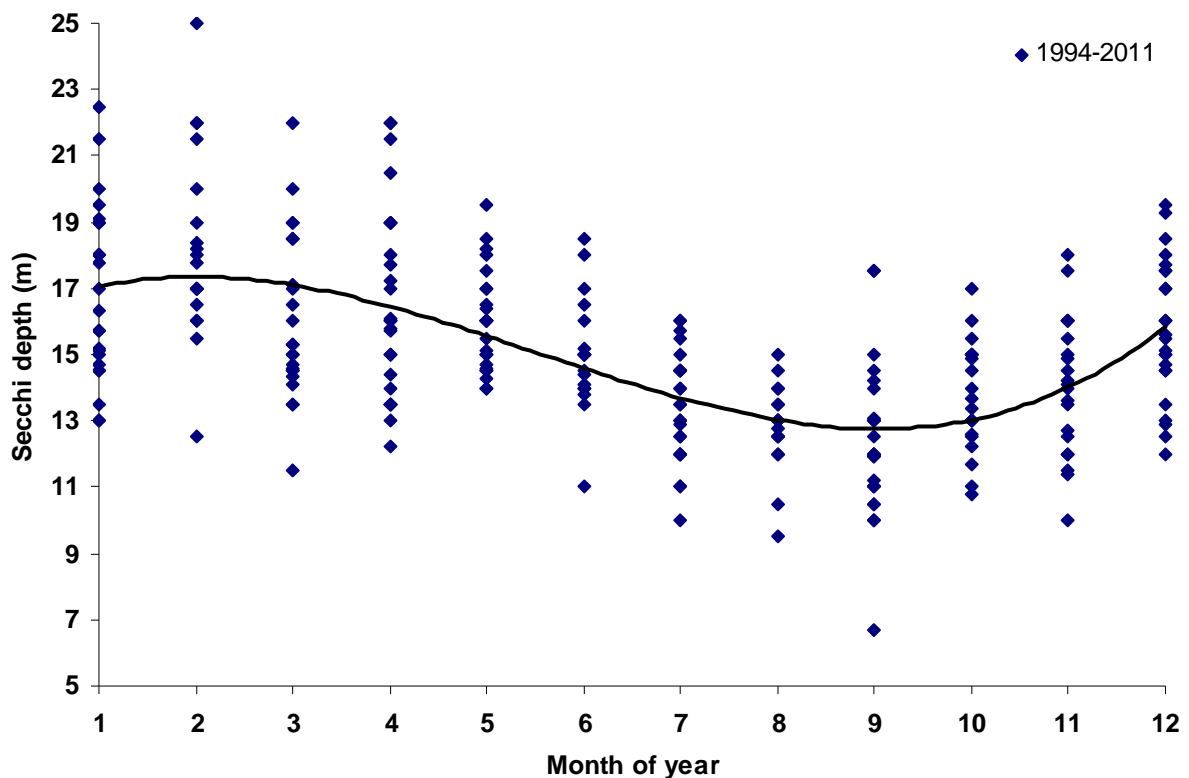
**Figure 7: Water clarity as measured by Secchi depth.** Time-series Secchi depth data A) all records since 1932 (♦), and B) all records for the present monitoring programme since 1994.

The maximum water clarity in summer 2010/11 was lower than in most recent years, with Secchi depths reaching 19 m briefly in March 2011 and being around 17 m for most of the summer (Figure 7B). The low clarity is likely to be associated with a wetter spring and summer, which is in contrast to the three previous summers which had extremely dry (drought) periods. The high variability in the clarity appeared to be associated with sediment suspension from the lake bed entrained in rising plumes of warm water from a series of hydrothermal eruptions. Sediment detritus particles were observed in the water samples on at least three occasions and there were substantial conductivity anomalies in the profile data.

Mean water clarity during winter (July – September) has increased by  $0.11 \pm 0.10 \text{ m y}^{-1}$  ( $P = 0.038$ ,  $r^2 = 0.27$ ,  $n = 16$ ) since the beginning of monitoring in 1994 (Figure 7B). However, this increase has not been consistent over the whole period. Examining the data in 5-yearly blocks shows that the mean winter water clarities for the periods 1995-1999, 2000-2004, and 2005-2009 were 12.5 m, 13.0 m, and 13.5 m, respectively, whereas the minimum values for each period were 10 m, 9.5 m, and 11 m, respectively. The monitoring period that is the subject of this report (July 2010- June 2011) was wetter than usual and produced lower

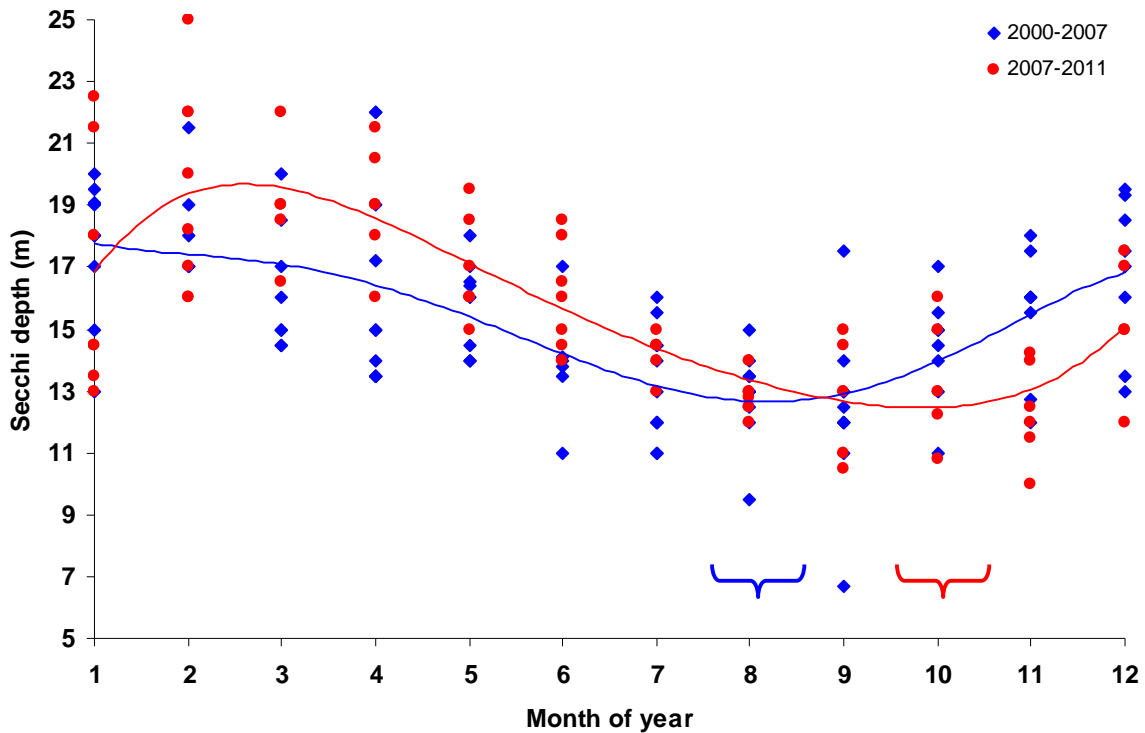
mean and minimum water clarities during the mixing period of 12.2 m and 10.5 m, respectively.

Minimum Secchi depth (1994 to 2011) usually occurs around September (Figure 8). Since 2000 the timing of minimum water clarity may have shifted by two months, from winter to spring (Figure 9). Between 2000 and 2007 the lowest Secchi depth values occurred usually in August but from 2007 to 2011 the lowest Secchi depth values occurred mostly in October. Water clarity in summer was higher after 2007 than before.



**Figure 8: Seasonal cycle of water clarity.** The annual pattern of all water clarity data has a seasonal cycle with minimum clarity occurring usually in September.



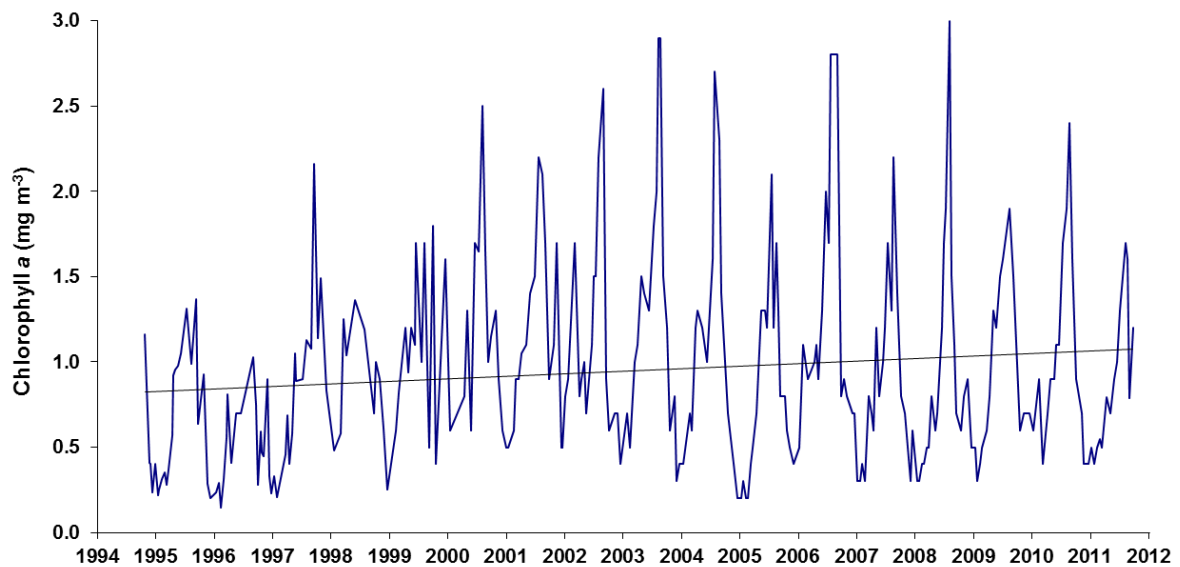


**Figure 9: The timing of minimum water clarity has recently changed.** Between 2000 and 2007 (blue), minimum water clarity occurred in winter (August). Since 2007 (red) minimum water clarity has occurred two months later in spring (October). Water clarity in summer was higher after 2007 than before. Curves are 3<sup>rd</sup> order polynomials fitted to the data.

#### 4.4 Phytoplankton

Chlorophyll *a* concentrations tend to be maximum during the winter algal bloom and minimum in summer. As would be expected, there is a statistically significant inverse logarithmic relationship between chlorophyll *a* concentration and Secchi disk depth (Gibbs 2006).

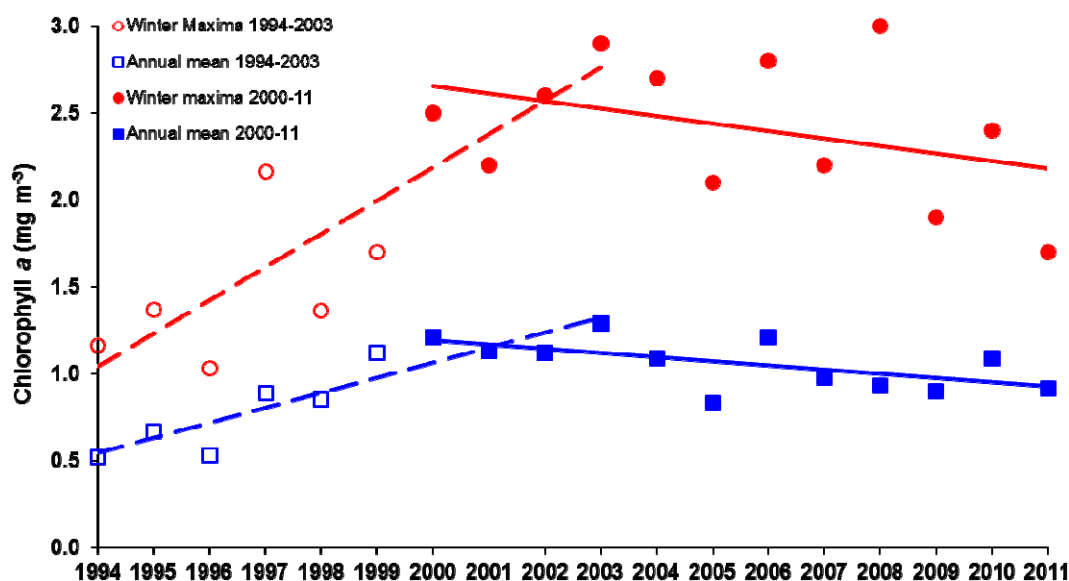
The previously reported long-term trend of increasing mean and maximum chlorophyll *a* concentrations in the upper 10 m of the water column at the mid-lake site (e.g., Gibbs 2010b), has not changed substantially. With addition of the 2010/11 data, the trend in mean concentration is statistically significant ( $P = 0.03$ ) and there is an apparent pattern of increase and decline in the overall data set (Figure 10).



**Figure 10: Time-series chlorophyll a concentrations in the upper 10 m of Lake Taupo.** The solid regression line represents a weakly statistically significant increase in the mean chlorophyll a concentrations of  $0.014 \pm 0.013 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P = 0.03$ ,  $r^2 = 0.017$ ,  $n = 285$ ). Date ticks are 1 January in each year.

The apparent increase-decrease pattern is driven by a statistically significant increase in the annual mean chlorophyll a concentrations of  $0.087 \pm 0.029 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.001$ ,  $r^2 = 0.857$ ,  $n = 10$ ) from 1994 to 2003 (Fig. 10), and a weakly statistically significant decrease of  $0.024 \pm 0.023 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P = 0.04$ ,  $r^2 = 0.36$ ,  $n = 12$ ) from 2000 to 2011 (Figure 11).

A similar pattern is seen in the annual maximum chlorophyll a concentrations with a statistically significant increase of  $0.19 \pm 0.086 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.001$ ,  $r^2 = 0.765$ ,  $n = 10$ ) from 1994 to 2003, but a non-statistically significant decrease of  $0.043 \pm 0.07 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P = 0.2$ ,  $r^2 = 0.143$ ,  $n = 12$ ) from 2000 to 2011 (Figure 10). The mean of the annual maxima was  $2.41 \pm 0.074 \text{ mg m}^{-3}$ . There was no significant change during the period 1994-2011.



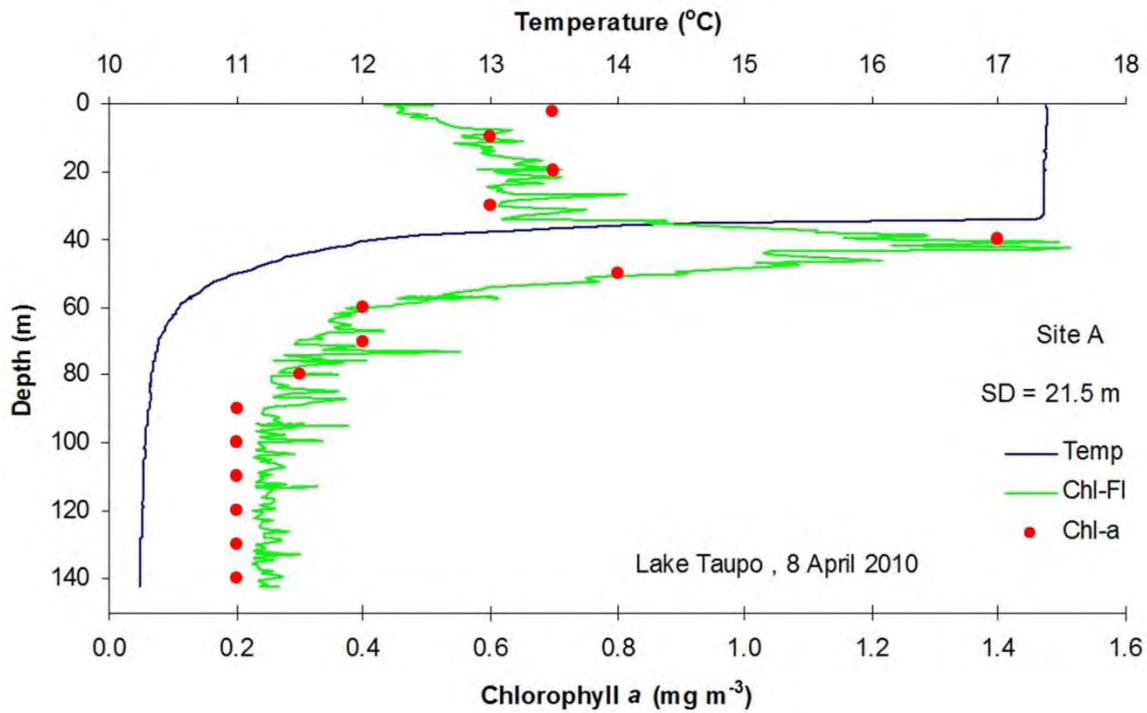
**Figure 11: Annual mean and maximum chlorophyll a concentrations.** Annual mean and winter maximum chlorophyll a concentrations from the 10-m tube samples since 1994. Regression lines indicate significant ( $P < 0.001$ ) trends of increase between 1994 and 2003 (broken lines) but non-significant ( $P = 0.2$ ; maximum) and weakly significant ( $P = 0.04$ ; mean) trends of decrease from 2000 to 2011 (solid lines). These regressions overlap between 2000 and 2003. Regression slopes are given in the text. Date ticks are 1 January in each year.

## 4.5 Deep chlorophyll maxima

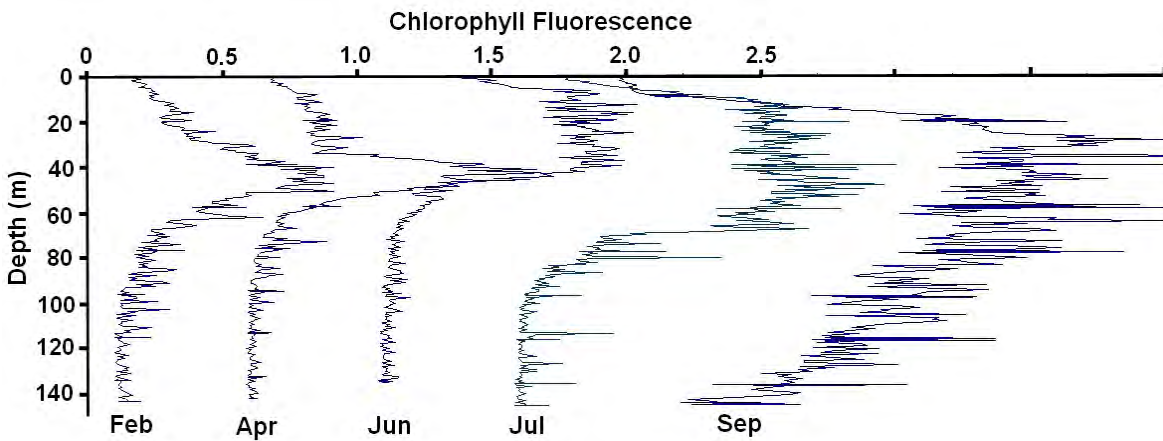
The monitoring programme uses chlorophyll a concentrations (extracted from water samples) as an indicator of algal biomass in the upper 10 m because surface layer chlorophyll a concentrations can be directly related to water clarity (Secchi depth). However, the use of the profiler fitted with a chlorophyll fluorescence sensor indicates that a large proportion of the algal biomass in Lake Taupo through spring and summer is associated with the base of the metalimnion (circa 40 to 50 m depth) as a deep chlorophyll maxima (DCM) (e.g., Figure 4B; Figure 12). The DCM may have a biomass up to 70% greater than the upper 10 m layer, as demonstrated in Gibbs (2007). The use of a 30-m integrated tube sampler in 1974/75 would have included part of the DCM, accounting for the higher chlorophyll a concentrations at that time (Gibbs 2010b). The DCM was present throughout the spring-summer phase of the 2010/11 stratified period with chlorophyll fluorescence (Chl-FI) values comparable with previous years.

The chlorophyll fluorescence profile data are calibrated against extracted chlorophyll a data from discrete water samples collected from selected depths. Below 20 m depth, the resulting chlorophyll a concentrations estimated by the fluorescence profiler are typically within 5% of concentrations measured by extraction from the discrete water samples (Figure 12).

However, above 20 m, fluorescence quenching by sunlight means the fluorescence data cannot be used directly and a correction curve is derived by regression to provide estimates closer to the surface. The integrated tube samples provide measured chlorophyll a concentrations in the upper 10 m. Differences between the two estimates below 80 m depth are in part due to reporting the analytical results to one decimal place.



**Figure 12: Deep chlorophyll maxima.** Example of a deep chlorophyll maxima in Lake Taupo measured by chlorophyll fluorescence (Chl-FI) on 8 April 2010 compared with extracted chlorophyll a (Chl-a) concentrations (red dots) from water samples collected at 10 m depth intervals on the same day. The peak algal biomass lies just below the thermocline.



**Figure 13: Fluorescence profiles in Lake Taupo.** Selected sequential chlorophyll fluorescence profiles during 2010 showing the progression from a deep chlorophyll maxima in summer to its disappearance and sedimentation of algal matter during the winter bloom. Each profile is offset to the right by successive 0.5 chlorophyll fluorescence units for clarity.

The chlorophyll fluorescence data provide an insight as to how the algal biomass (and thus the particulate nutrients) are distributed through the water column over the summer to the winter mixing period (Figure 13). In 2010, the February and April profiles show the DCM. The June profile shows that wind mixing had dispersed the algal biomass through the epilimnion. In July epilimnetic algal biomass had increased and moved down with the thermocline leaving less algal biomass near the surface. In September, after winter mixing, the algal biomass had increased even more but was settling down through the whole water column.

## 4.6 Algal species abundance

In spring 2010, the algal species assemblage was dominated by the diatoms *Asterionella formosa* and *Fragilaria crotonensis*, each accounting for about 40% of the biovolume in the upper 50 m of the water column. *Asterionella formosa* became the dominant species in mid-spring accounting for more than 65% of the biovolume, before being replaced by *Aulacoseira granulata* in late spring to early summer at much lower biovolumes. While *Botryococcus braunii* was present through summer, cell numbers were very low. Dinoflagellates, mainly *Gymnodinium sp.*, dominated through summer but were replaced in dominance by *Fragilaria crotonensis* in autumn. Cyanobacteria, mainly *Anabaena cf. lemmermannii*, were present in the surface waters at low abundance and biovolume throughout much of the 2010/11 monitoring period.

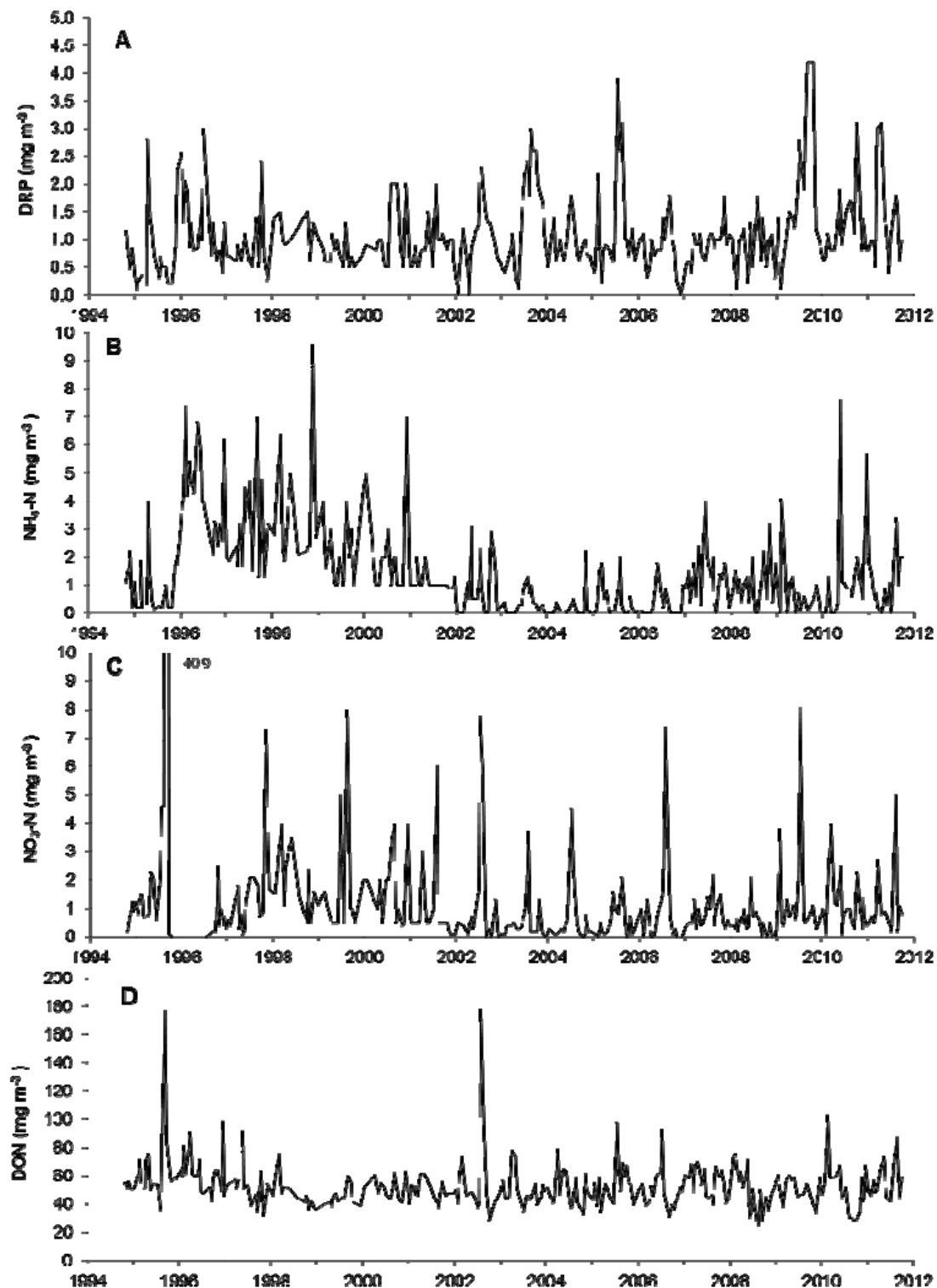
In spring, the deep chlorophyll maximum at a depth of 50m was dominated by *Asterionella formosa* and *Aulacoseira granulata* with *Fragilaria crotonensis* as a minor component of the algal assemblage. These two co-dominant species were present at 50 m depth through to autumn when *Fragilaria crotonensis* became the dominant species.

## 4.7 Nutrients in the upper waters

The 2010/11 concentrations of DRP (Figure 14A),  $\text{NH}_4\text{-N}$  (Figure 14B),  $\text{NO}_3\text{-N}$  (Figure 14C) and DON (Figure 14D), were within the range of previously measured values, except for DRP. As previously noted (Gibbs 2006), nutrient concentrations changed abruptly at the time of the Mount Ruapehu eruptions in 1995 and slowly returned to pre-eruptions levels (Figure 14). Since 2003, maximum concentrations of  $\text{NO}_3\text{-N}$  and  $\text{NH}_4\text{-N}$  in the surface layer (Figure 14B and C) have mostly coincided with winter mixing periods when vertical mixing returns nutrients from bottom waters to the surface layer.

A pattern of high DRP concentrations during winter mixing observed in winter 2009 was not repeated in winter 2010, although the concentrations were higher than the annual mean (Figure 14A). This may be explained by the higher algal biomass in the lake at that time (Figure 10) and thus higher assimilation rates of DRP (and  $\text{NO}_3\text{-N}$ ) from winter mixing (Figure 14A and C).

The  $\text{NH}_4\text{-N}$  concentrations in the upper water column have been relatively elevated since the beginning of 2007 compared with 2003 to 2007 (Figure 14B).  $\text{NH}_4\text{-N}$  usually appears in the surface water at the time of winter mixing, as occurred in winter 2010 (Figure 14B), and can be attributed to upwelling of nutrient-rich bottom water. However, occasionally elevated  $\text{NH}_4\text{-N}$  concentrations occur at other times through the year not linked to upwelling events. Elevated  $\text{NH}_4\text{-N}$  concentrations during the stratified period may be the result of microbial decomposition of senescing phytoplankton or excretion by zooplankton. The elevated  $\text{NH}_4\text{-N}$  concentrations in summer 2010/11 also coincided with a hydrothermal event identified by a conductivity anomaly in the profile data on 21 December 2010 and still present on 11 January 2011.



**Figure 14: Time series nutrient data in Lake Taupo.** Time series data from the top 10 m of the water column in Lake Taupo for (A) dissolved reactive phosphorus (DRP), (B) ammoniacal nitrogen ( $\text{NH}_4\text{-N}$ ), (C) nitrate + nitrite nitrogen ( $\text{NO}_3\text{-N}$ ), and (D) dissolved organic nitrogen (DON). Broken line indicates the long term minimum DON concentration of  $29 \text{ mg m}^{-3}$ , which may be mostly refractory organic material. Date ticks are 1 January in each year.

During the 2008/09 monitoring period, DON concentrations fell below the long-term minimum value of around  $29 \text{ mg m}^{-3}$  for the first time since the beginning of the monitoring programme. It has been assumed that the minimum amount of DON consists of refractory organic material. During the 2010/11 monitoring period, DON concentrations also fell below  $29 \text{ mg m}^{-3}$  during September and October before increasing to more typical values of 40 to  $50 \text{ mg m}^{-3}$ . Increases above  $60 \text{ mg m}^{-3}$  coincided with hydrothermal eruption events as indicated by conductivity anomalies observed in the CTD profile data. Labile DON is an intermediary product of the decomposition processes occurring in the sediment. DON accumulates in the sediment pore water where it is further mineralised to  $\text{NH}_4\text{-N}$  and can be nitrified to  $\text{NO}_3\text{-N}$ .

DRP mineralised from organic matter also accumulates in the pore water. Hot water rising to the surface during a hydrothermal event entrains bottom water, including surficial sediment pore water, bringing it to the lake surface. This may explain the sudden increase in epilimnetic nutrient concentrations from time to time (Figure 14) which would imply entrainment of hypolimnetic water may be a mechanism for pumping nutrients into the epilimnion of Lake Taupo without a full mixing event. From conductivity anomalies in the CTD profile data, hydrothermal events are relatively common in Lake Taupo. That the time-series data does not show a large peak on each occasion may be due to pore water depletion during frequent or extended events, or the sampling frequency, which may not coincide with a hydrothermal eruption event. Much of the variability in the nutrient data (Figure 14) may be due to such events.

Except during winter mixing,  $\text{NH}_4\text{-N}$  concentrations in the hypolimnion are usually very low ( $<1 \text{ mg m}^{-3}$ ) due to high rates of nitrification at the sediment–water interface and in the water column (Vincent & Downes 1981). A loss of benthic and planktonic nitrifiers associated with the volcanic ash from the Mount Ruapehu eruptions in 1995/96 may explain the absence of  $\text{NO}_3\text{-N}$  and the elevated  $\text{NH}_4\text{-N}$  concentrations in the epilimnion for about a year after the eruption (Figure 14B and C).

#### **4.8 Nutrient accumulation in the hypolimnion**

Dissolved inorganic nutrients in water samples from 150 m depth demonstrate consistent seasonal patterns driven by the mixing in winter (Figure 15). A sudden drop in DRP and  $\text{NO}_3\text{-N}$  concentrations usually occurs around the beginning of August as a result of winter mixing. In 2008 and 2009 mixing began in mid to early July, but in the 2010/11 monitoring period mixing did not occur until late September, according to temperature data (Figure 2). The 2010/11 mixed period was brief (Figure 2) and the nutrient concentrations were lower than in the previous 4 years, but were similar to the concentrations measured in the 2005/06 monitoring period, when incomplete mixing occurred (Figure 15).

Hypolimnetic  $\text{NO}_3\text{-N}$  concentrations before the onset of winter mixing have been consistently around  $32\text{-}35 \text{ mg m}^{-3}$  since 2004, after declining from a maximum of  $46 \text{ mg m}^{-3}$  in 2001. The 2010/11 results follow this pattern for  $\text{NO}_3\text{-N}$  (Figure 15). During each brief mixing period,  $\text{NH}_4\text{-N}$  is released into the bottom water (Figure 15), but its maximum concentration has decreased from around  $9 \text{ mg m}^{-3}$  in 2001 to around  $4\text{-}5 \text{ mg m}^{-3}$  during mixing in winter 2009. The source of this  $\text{NH}_4\text{-N}$  is not clear but it may be derived from pore water in the sediment which would be disturbed by the mixing currents associated with the winter mixing event. The DRP concentrations in the 2010/11 monitoring period were low from October 2010 to March 2011 when they suddenly increased.  $\text{NO}_3\text{-N}$  also increased at the same time.



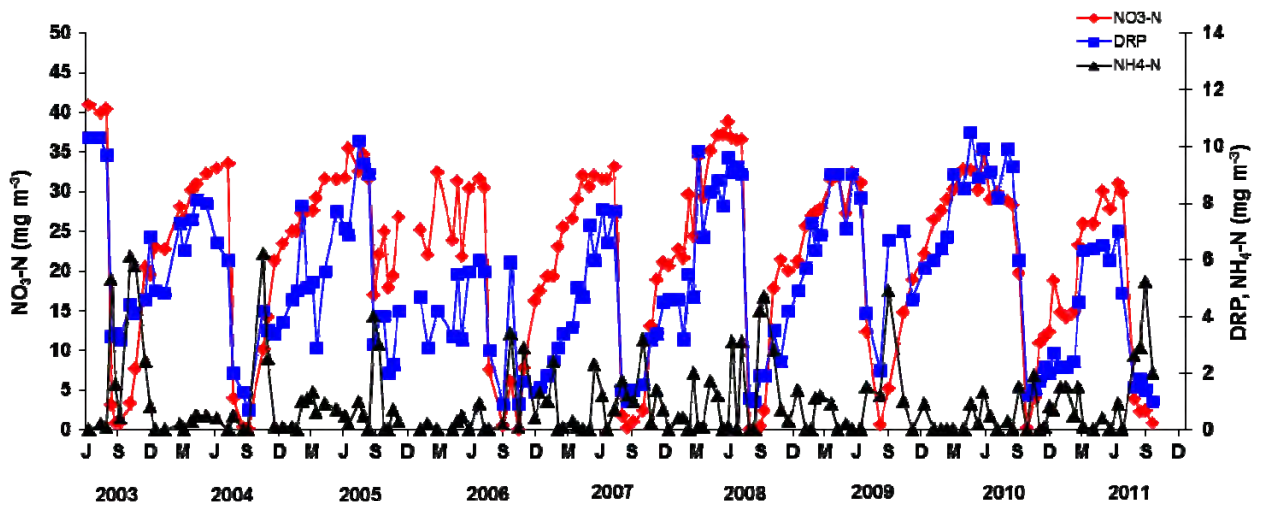


Figure 15: Time series bottom water nutrient data. DRP, NO<sub>3</sub>-N and NH<sub>4</sub>-N concentrations in the bottom waters (150 m depth) of Lake Taupo since winter mixing of 2003.

#### 4.9 Total mass accumulated

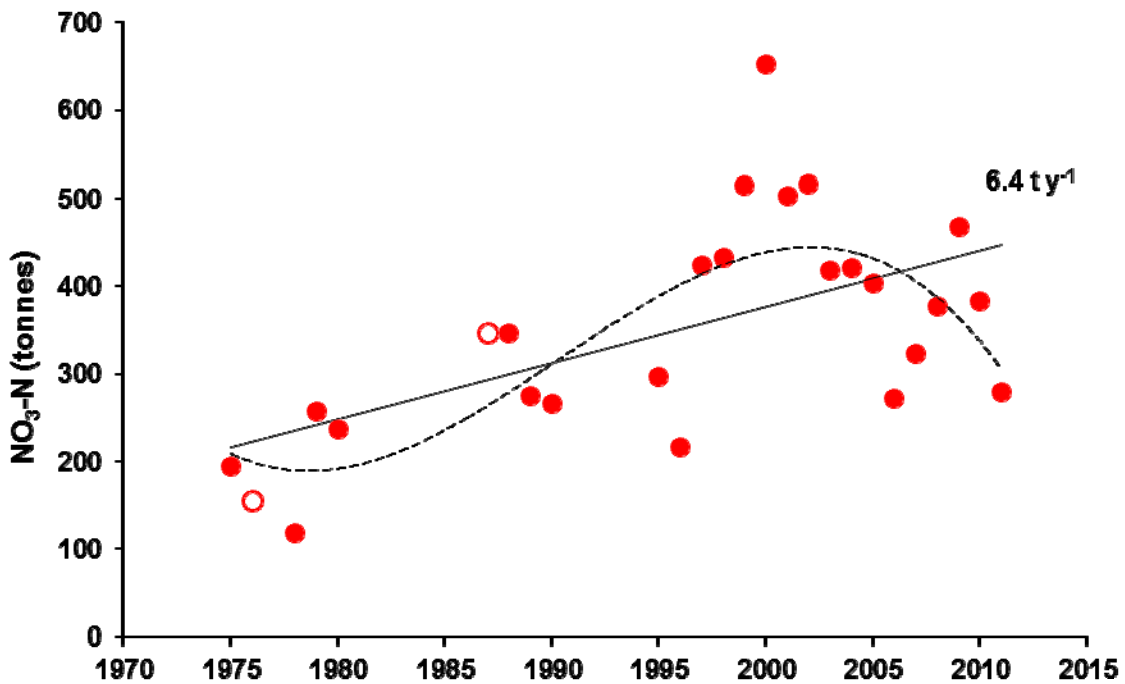


Figure 16: Total mass of NO<sub>3</sub>-N in the hypolimnion of Lake Taupo in autumn before winter mixing. The linear regression (solid line) indicates a statistically significant increase of 6.4 t y<sup>-1</sup> ( $P < 0.005$ ,  $r^2 = 0.31$ ,  $n = 24$ ). Temporal changes in the data are better described by a 3<sup>rd</sup> order polynomial (dashed line) ( $r^2 = 0.53$ ) which accommodates a rise and fall in the data over the monitoring period since 1974. Open circle data were excluded from regression as time periods and sampled depths were not the same as used for the other data. Date ticks are 1 January in each year.



The total mass<sup>1</sup> of NO<sub>3</sub>-N in the hypolimnion (below 70 m depth) in autumn each year before the onset of winter mixing has ranged from about 120 t (1978) to more than 650 t (1999) (Figure 16). While this graph is similar to those in earlier reports, it also includes additional information from historical data sets held by NIWA. The historical data used to produce the additional data points from 1988 to 1990 are given in Appendix 6. Since 1975 there has been a statistically significant ( $P < 0.005$ ,  $r^2 = 0.31$ ,  $n = 24$ ) increase in the total mass of NO<sub>3</sub>-N of around  $6.4 \text{ t y}^{-1}$  in the hypolimnion before winter mixing (Figure 16). The total mass of NO<sub>3</sub>-N in the hypolimnion in April 2011 was around 280 t, a decrease of around 100 t since 2010, but well within the range of inter-annual variability in the recent data.

It is apparent that a change in the amount of NO<sub>3</sub>-N accumulating in the hypolimnion occurred around 2000, at which time the annual amount that accumulated began to decrease. The resultant time-series of annual total mass accumulated data are better described by a 3<sup>rd</sup> order polynomial ( $r^2 = 0.53$ ) than a linear regression ( $r^2 = 0.31$ ).

These time series data could also be described by three linear regressions (not shown in Figure 16). From 1975 to 1996 there was a non-significant increase of  $4.37 \pm 0.03 \text{ t y}^{-1}$  ( $r^2 = 0.27$ ,  $P = 0.15$ ,  $n = 9$ ); from 1996 to 2000 there was a period of significant increase at  $96.3 \pm 51.4 \text{ t y}^{-1}$  ( $r^2 = 0.92$ ,  $P < 0.01$ ,  $n = 5$ ); and from 2000 to present, there was a period of significant decrease at  $21.5 \pm 14.6 \text{ t y}^{-1}$  ( $r^2 = 0.52$ ,  $P = 0.007$ ,  $n = 12$ ). The choice of temporal break points is based on the beginning of the present long-term monitoring programme (1994 on) and the shift from increase to decrease around 2000. This shift, from increase to decrease, is also seen in the chlorophyll *a* data (Figure 11). While the change in the chlorophyll *a* maximum can be explained as a response to the change in the amount of NO<sub>3</sub>-N released at winter mixing, the cause of the change in the amount of NO<sub>3</sub>-N released is not known.

#### 4.10 Net accumulation rate

The total mass of NO<sub>3</sub>-N in the hypolimnion before winter mixing is the sum of the mass of NO<sub>3</sub>-N in the hypolimnion at the beginning of the stratified period and the net mass that was released from the sediments as well as from decomposing plankton that accumulated in the hypolimnion during the stratified period. There will also be some assimilation of NO<sub>3</sub>-N by phytoplankton in the DCM during spring, but because the net accumulation rate calculation uses data below 70 m (20 – 30 m below the DCM), this effect may be minimal. The difference between the standing stock of NO<sub>3</sub>-N at the beginning and end of the stratified period is the net mass of NO<sub>3</sub>-N accumulated in the hypolimnion.

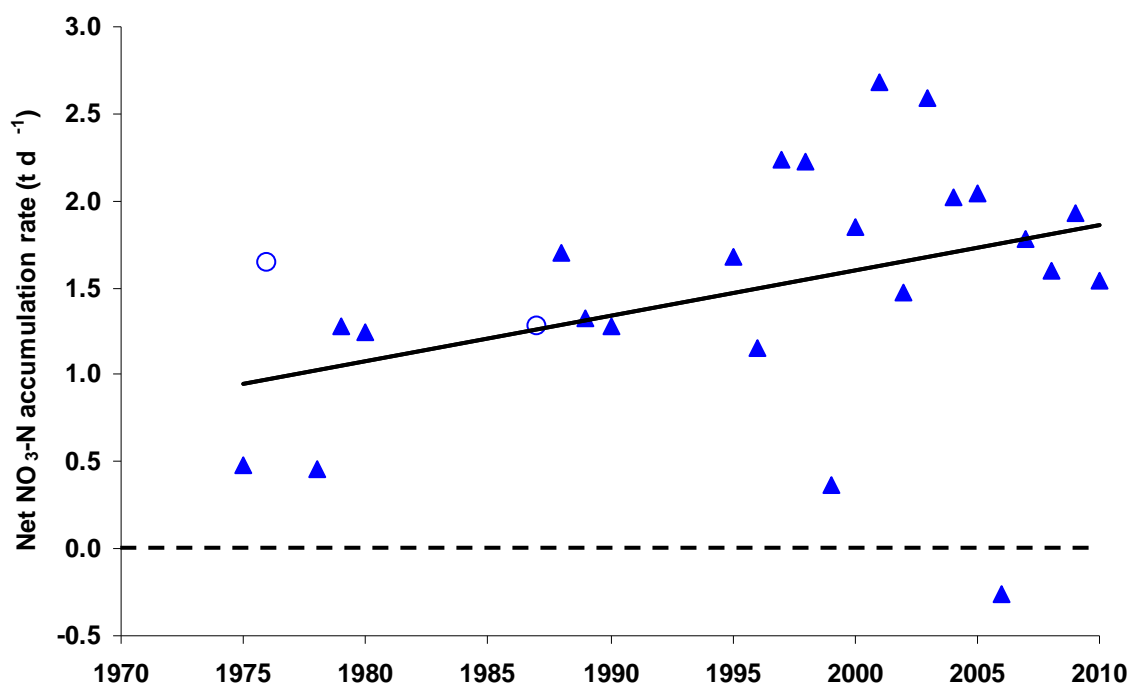
To determine the net accumulation rate of NO<sub>3</sub>-N in the hypolimnion, the total mass data below 70 m depth (Figure 16) have been transformed into accumulation rate data by subtracting the mass present in spring from the mass present in autumn and dividing by the number of days between the spring and autumn samplings (Figure 17).

Mineralisation and release of nutrients from the sediments are driven by microbial processes that are a function of temperature and dissolved oxygen concentration. As the hypolimnion is well oxygenated and the temperature remains constant within  $\pm 0.3 \text{ }^\circ\text{C}$ , a fairly constant rate of net accumulation is expected throughout the stratified season. There was a weakly

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<sup>1</sup> In earlier reports the total mass of NO<sub>3</sub>-N in the hypolimnion each year has been referred to as the “total accumulated mass” of NO<sub>3</sub>-N. It is the “standing stock” of NO<sub>3</sub>-N at that time

significant increase in the net accumulation rate of  $0.025 \pm 0.03 \text{ t d}^{-1}$  per year ( $P = 0.07$ ,  $r^2 = 0.144$ ,  $n = 24$ ) since 1975 (Figure 17), which was similar to the previous report. The data for 1976 and 1987 were excluded from the regression analysis because they were estimated using different periods than the rest of the data (see also Figure 16). The data points for 1976 and 1987 are included in Figure 17 as an indication of what the net accumulation rates may have been in those two years.

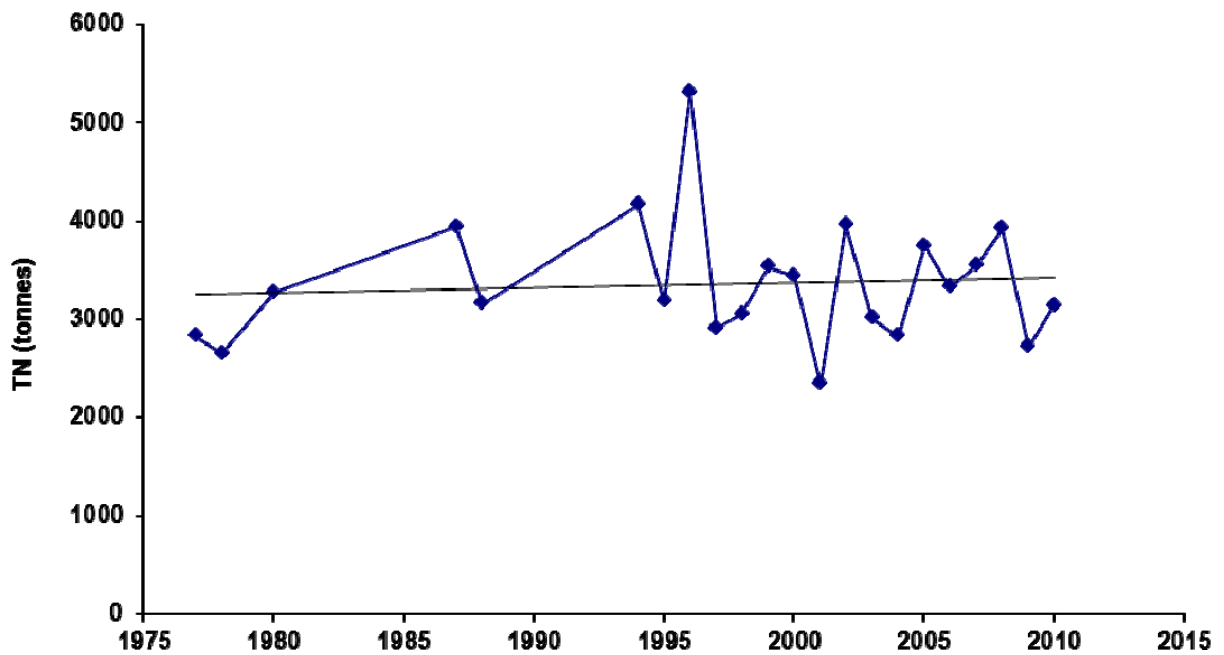


**Figure 17: Net Hypolimnetic NO<sub>3</sub>-N accumulation rates .** Net NO<sub>3</sub>-N accumulation rates ( $\text{t d}^{-1}$ ) in the hypolimnion below 70 m. The regression line shows an increase in the net accumulation rate of  $0.025 \pm 0.027 \text{ t d}^{-1}$  ( $P = 0.07$ ,  $r^2 = 0.144$ ,  $n = 24$ ). Open circle data were not included in the regression analysis (see text). Note that the Y-axis extends to  $-0.5 \text{ t d}^{-1}$  for the 2006 data point. Date ticks are 1 January in each year.

The net accumulation rate for the 2010/11 period was  $1.59 \text{ t d}^{-1}$ , which was almost the same as in the previous year ( $1.65 \text{ t d}^{-1}$ ). The time-series of net accumulation rates of NO<sub>3</sub>-N (Figure 17) show a high degree of variability between years, with the 1999 and 2006 data points falling well below the trend line. The negative net accumulation rate in 2006 indicates a net loss of NO<sub>3</sub>-N from the hypolimnion during the 2005-06 stratified period. Both of these data points are for years following a winter where there was incomplete mixing. This suggests that those two low values are anomalies relative to the rest of the data. The effect of incomplete mixing was discussed in an earlier report (Gibbs 2007). Excluding those two values, the net accumulation rates of NO<sub>3</sub>-N shows a highly significant increase of  $0.034 \pm 0.018 \text{ t d}^{-1}$  ( $P < 0.001$ ,  $r^2 = 0.45$ ,  $n = 22$ ).

## 4.11 Total N

Total nitrogen (TN) mass in Lake Taupo was estimated from the spring profile in each year. Although there was an average increase of about  $5.4 \text{ t y}^{-1}$  since 1975 there was no statistically significant trend in the total mass of TN (Figure 18). The mean was 3360 t, contrasting with a net annual external TN input to the lake of around 1200 t (W. Vant, Waikato Regional Council, pers. comm.), The total mass of TN in Lake Taupo in spring 2010 was 3140 t, 420 t more than in the previous year.



**Figure 18: Estimates of the mass of total nitrogen (TN) in Lake Taupo.** Although there was an average increase of about  $5.4 \text{ t y}^{-1}$  from 1975 to 2011, this apparent trend in the data is not statistically significant. The mean was 3360 t. Date ticks are 1 January in each year.

## 5. Knowledge gaps

An earlier report (Gibbs 2006) listed several knowledge gaps including in-lake processes in Lake Taupo, and process rates at the sediment-water interface. This report presents estimates of the net rate of  $\text{NO}_3\text{-N}$  accumulation in the hypolimnion during the stratified period as well as estimates of the net efflux of inorganic nitrogen from the sediments. Together these data indicate that the net  $\text{NO}_3\text{-N}$  accumulation rates in 1999 and 2006 may be anomalous. These years have in common that they followed a year of incomplete mixing in winter. The immediate return of the net accumulation rate to the trend in the net accumulation rate data the following year, points to water column processes being as important as sediment processes for controlling hypolimnetic  $\text{NO}_3\text{-N}$  concentrations and highlights the need to understand how the water column processes work in Lake Taupo.

The sum of the external inputs to the lake from the catchment via rivers minus the mass lost from the lake via the Waikato river is estimated to be around  $1200 \text{ t y}^{-1}$  (W. Vant, Waikato Regional Council, pers. comm.). Despite this net input of TN, which represents around a third of the average mass of N in the lake (3360 t), there is no significant long term increase in the mass of TN in the lake (Figure 18).

The total mass of  $\text{NO}_3\text{-N}$  in the hypolimnion just before winter mixing each year appears to reach a plateau (see shape of  $\text{NO}_3\text{-N}$  concentration curves, Figure 16). This may be explained by diffusion across an increasing concentration gradient in the metalimnion or assimilation by algae in the DCM.

Together these data suggest that processes at the sediment-water interface and elsewhere in the hypolimnion are capable of sequestering a very large amount of N each year. However, the net increase in accumulation rate of  $\text{NO}_3\text{-N}$  in the hypolimnion suggests that the sediment processes of nitrogen burial, decomposition, mineralisation, nitrification, denitrification and assimilation are changing.

We have little or no information on any of these N transformation and sequestration process rates in Lake Taupo.

The appearance of  $\text{NH}_4\text{-N}$  along with DRP in the upper water column during late spring and summer in 2007, 2008 and 2009 is unusual as these nutrients are usually rapidly assimilated in Lake Taupo by phytoplankton. The source of the epilimnetic  $\text{NH}_4\text{-N}$  is unknown.

In February 2010 and January 2011, sampling coincided with hydrothermal eruption events in the lake floor (e.g., Figure 4). These events brought sediment to the lake surface (personal observation), together with a pulse of  $\text{NO}_3\text{-N}$  and DON. The latter is presumed to have come from sediment pore water. This observation suggests that these periodic hydrothermal events bring additional nutrients into the upper water column. Also, it is not clear whether there are nutrients in the geothermal sources in the lake bed and whether they have a significant role in the nutrient budget of the lake.

The mean annual water clarity and the mean annual chlorophyll *a* concentrations in the upper 10 m of the water column have increased significantly since 1994. These parameters are usually inversely related and thus other factors must be influencing the relationship between water clarity and phytoplankton biomass. Notably, the DCM can contain up to 70% more chlorophyll *a* than in the upper 10 m layer. This represents a substantial amount of the algal biomass which is not being assessed in the monitoring reports, although it is measured as chlorophyll fluorescence at every sampling occasion.

## 6. Summary

- Using a linear regression through all data, the annual mean chlorophyll *a* concentration in the upper 10 m of water column in Lake Taupo, as an indicator of phytoplankton biomass, has increased at a rate of  $0.014 \pm 0.013 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.05$ ,  $r^2 = 0.017$ ,  $n = 285$ ) over the 17 year monitoring period.
- There is a substantial deep chlorophyll maxima (DCM) below the thermocline (40 m) in the lake during spring and summer with an estimated chlorophyll *a* concentration up to 70% higher than the chlorophyll *a* concentrations measured in the upper 10 m. The DCM was present through the 2010/11 spring and summer period.
- It has become apparent that the increase in chlorophyll *a* concentrations in the top 10 m may not be a linear trend. The annual mean chlorophyll *a* data from 1994 to 2003 increased at a statistically significant rate of  $0.087 \pm 0.029 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.001$ ,  $r^2 = 0.857$ ,  $n = 10$ ), but since 2000 there has been a significant trend of decline at a rate of  $0.024 \pm 0.023 \text{ mg m}^{-3} \text{ y}^{-1}$  ( $P < 0.05$ ,  $r^2 = 0.36$ ,  $n = 12$ ). These latter data suggest an improvement in lake water quality.
- After 2000, peak chlorophyll *a* concentrations in winter have become highly variable ranging from  $2.4 \text{ mg m}^{-3}$  in 2010 to  $1.9 \text{ mg m}^{-3}$  in 2009, and  $1.7 \text{ mg m}^{-3}$  in 2011.
- Algal species composition in winter 2010 was dominated by diatoms, *Asterionella formosa* and *Fragilaria crotonensis*, each initially accounting for about 40% of the biovolume in the upper 50 m of the water column. The dinoflagellate, *Gymnodinium sp.* was dominant through summer 2011. Cyanobacteria (blue-green algae) were always present in low numbers in the upper water column throughout the 2010/11 monitoring period, with *Anabaena lemmermannii* being the most common species.
- Algae collected from the DCM in October 2010 were low in biomass and numbers and were similar in composition to the surface species. The low biomass compared with the DCM as indicated by the chlorophyll fluorescence profile was probably due to the van Dorne sampler not collecting water from the centre of the DCM peak.
- There was a statistically significant trend of increase in the total mass of  $\text{NO}_3\text{-N}$  in the hypolimnion before winter mixing of around  $6.4 \text{ t yr}^{-1}$  ( $P < 0.005$ ,  $r^2 = 0.31$ ,  $n = 24$ ) which was slightly lower than determined in the previous year. The amount of  $\text{NO}_3\text{-N}$  in the hypolimnion was around 100 t lower than the previous year.
- The net accumulation rate of  $\text{NO}_3\text{-N}$  in the hypolimnion below 70 m in the last few years has been in the order of  $2 \text{ t d}^{-1}$  and regression analysis showed that there has been a weakly statistically significant trend of increase in that rate of  $0.025 \text{ t d}^{-1}$  each year ( $P = 0.07$ ,  $r^2 = 0.144$ ,  $n = 24$ ) over the last 34 years. The net accumulation rate of  $\text{NO}_3\text{-N}$  in 2010/11 was  $1.59 \text{ t d}^{-1}$ , which was similar to the 2009/10 rate of  $1.65 \text{ t d}^{-1}$ .

- There was no change in the whole lake TN, nor the long term mean load of 3360 t. The TN content of the lake in spring 2010 was 3139 t, an increase of around 420 t since the previous year.
- The 2010/11 net VHOD rate for the period from August 2010 to February 2011 was  $17.52 \pm 3.95 \text{ mg m}^{-3} \text{ d}^{-1}$  (mean  $\pm$  95% confidence limit) which was almost  $2 \text{ mg m}^{-3} \text{ d}^{-1}$  lower than the previous year at  $19.21 \pm 1.79 \text{ mg m}^{-3} \text{ d}^{-1}$ .
- There has been a statistically significant ( $P < 0.00005$ ,  $r^2 = 0.79$ ,  $n = 13$ ) increase in the VHOD rate of  $1 \text{ mg m}^{-3} \text{ d}^{-1}$  each year since the low in 1999, suggesting a decline in lake water quality. While the period of the regression analysis is selected from lowest to highest, and thus does not reflect a long-term trend in Lake Taupo, this sustained increase in VHOD over a 13-year period implies a change in the export of organic carbon to the hypolimnion over this period, either from external inputs (i.e., land-use effects), or primary production within the lake, or a combination of both.
- Nutrient concentrations (DRP,  $\text{NH}_4\text{-N}$ , and  $\text{NO}_3\text{-N}$ ) in the upper water column were generally comparable with concentrations since 2003 and are similar to historical concentrations before Mount Ruapehu erupted in 1995. However, since 2006/07 there have been elevated  $\text{NH}_4\text{-N}$  but low  $\text{NO}_3\text{-N}$  concentrations in the upper water column through summer and autumn. In winter 2010 there were elevated DRP and  $\text{NO}_3\text{-N}$  concentrations in the upper water column. In summer 2011 there was a hydrothermal event which resulted in elevated  $\text{NH}_4\text{-N}$  and  $\text{NO}_3\text{-N}$  concentrations in the surface waters.
- Bottom water temperatures fell rapidly to  $10.3 \text{ }^\circ\text{C}$  after mixing in August 2009 and have gradually increased to  $10.9 \text{ }^\circ\text{C}$  during the last two stratified period.
- Water clarity during summer 2010/11 was mostly around 17 m, but peaked at 19 m in March 2011. The lower clarity in 2009/10 and 2010/11 associated with wet spring and summers contrast with the substantially high clarity attributed to extended periods of calm weather with very low surface run-off. This implies a measurable effect from land runoff.
- From 2000 to 2007, winter minimum clarity occurred around August. Since 2007, minimum clarity occurs around October, two months later. For this monitoring period, the minimum was in November 2010.

In a previous annual report (Gibbs et al. 2002), 3 trends in the data were identified that were of concern with respect to the water quality of Lake Taupo. These were: increasing phytoplankton biomass in the upper 10 m; increasing  $\text{NO}_3\text{-N}$  mass in the lake hypolimnion prior to winter mixing; and an increasing range in the variability of water clarity.

While these trends are still present in the whole data set, there are indications that water quality may be beginning to improve, e.g., mean annual chlorophyll *a* concentrations have been more or less steady since 2000. In contrast, however, the VHOD rates have been increasing since 1999, an indication that the water quality may be declining.

These contrasting indicators are not mutually exclusive. The steady or weakly significant decline in mean annual chlorophyll *a* concentrations is consistent with the nearly constant

annual maximum hypolimnetic concentrations of DRP and NO<sub>3</sub>-N in autumn for the last 7 years (Figure 15). These nutrients become available for algal growth after winter mixing. However, the persistent increase in the net VHOD rate indicating an increase in oxygen demand implies a change in the loading of organic carbon on the lake. The temporal disassociation of the chlorophyll *a* maximum in July-August from the minimum water clarity in October (Gibbs 2011) suggests that the carbon load through suspended sediment inputs from land may have increased in spring months when high rainfall occurred.





## **7. Acknowledgements**

This report was made possible by the team effort of Philip King and Heath Cairns 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 and the team.

Water samples were processed in the NIWA chemistry laboratory and analytical results were provided by Graham Bryers, Margaret McMonagle, Cara Mackle and team. Quality control was provided by Mike Crump, Lab Manager.

Phytoplankton dominance and enumeration results were provided by Karl Safi.



## 8. Glossary of abbreviations and terms

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.
Euphotic depth	Lower limit of phytoplankton growth where light levels are 1% of surface irradiance.
Nutrients	Essential dissolved inorganic nitrogen and phosphorus compounds which can be used directly by plants for growth.
Ammoniacal nitrogen	Sum of ammonium ion ( $\text{NH}_4^+$ ) plus free (unionised) ammonia ( $\text{NH}_3$ ). Some amines ( $\text{NH}_2^-$ ) may be included as interference during analysis. Symbol, $\text{NH}_4\text{-N}$ .
Nitrate nitrogen	Used in this report as the sum of nitrate ( $\text{NO}_3^-$ ) plus nitrite ( $\text{NO}_2^-$ ). Symbol, $\text{NO}_3\text{-N}$ .
DIN	Dissolved Inorganic Nitrogen: the sum of $\text{NH}_4\text{-N}$ + $\text{NO}_3\text{-N}$ .
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.
$\text{NO}_x$	Gaseous oxides of nitrogen, including $\text{N}_2\text{O}$ , $\text{NO}$ , $\text{NO}_2$ .



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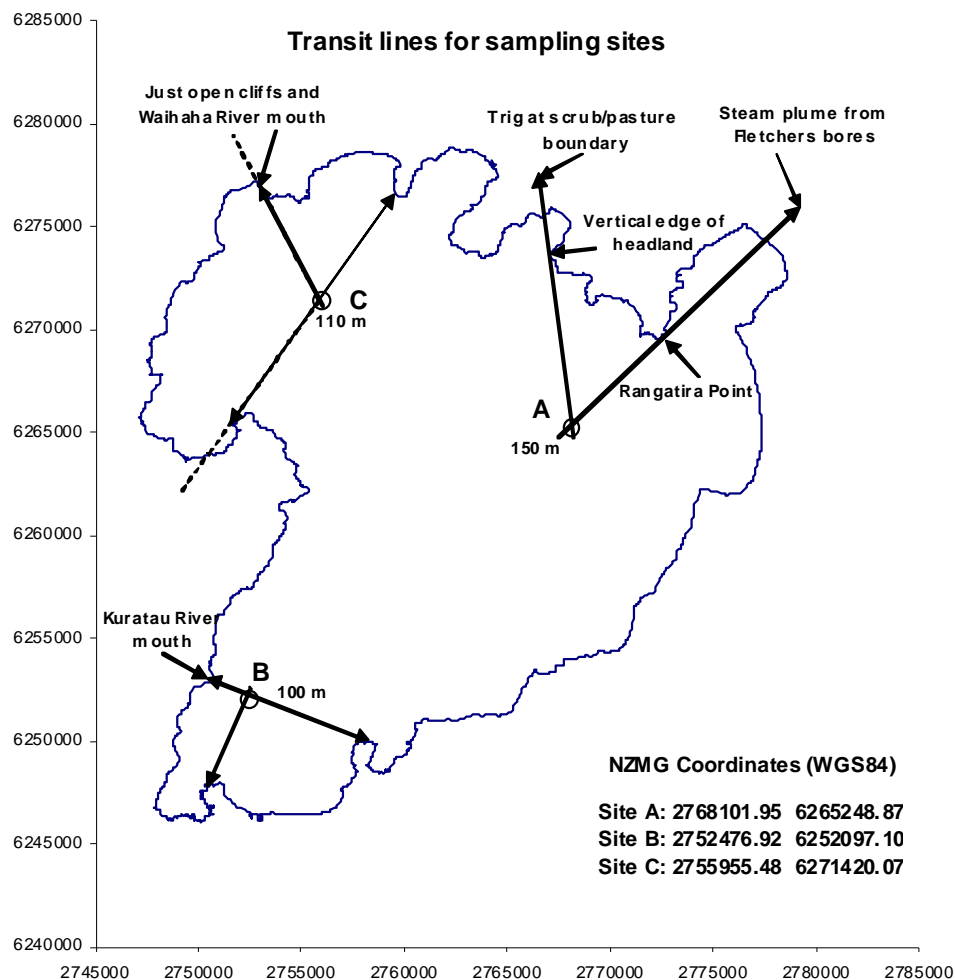
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## Appendix 1. Site map, sampling strategy and methods

### Site map

Lake monitoring sites were originally established using land-based markers (Figure 19). These have now been defined using GPS and corrected for curvature using WGS84 convention.



**Figure 19: Site map of Lake Taupo.** Site map of Lake Taupo showing location of the routine monitoring site at mid lake (A). Two additional sites at Kuratau Basin (B) and the Western Bays (C) were sampled between January 2002 and December 2004 inclusive. Data from those sites have been retained with the Site A data presented in the appendices. Map coordinates are in NZ Map Grid with WGS84 correction. Lat. Long WGS 84 corrected co-ordinates of "Site A" are 38° 46'.810 S; 175° 58'.440 E.

The following section has been copied from Gibbs 1995, and modified after 1998.

## 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. In January 2002, the TD410 CTD profiler was upgraded to an RBR model XR420f freshwater CTD profiler fitted with the YSI model 5739 DO sensor and a Seapoint chlorophyll fluorescence probe. The DO sensor was calibrated regularly by NIWA, Rotorua staff and chlorophyll fluorescence was converted to chlorophyll *a* from extracted chlorophyll *a* analyses of water samples collected beside the profiler.

In January 2008, the XR420f profiler was upgraded to a RBR model XR620f freshwater profiler/logger with improved sensitivity. The new profiler is fitted with a Sea Point chlorophyll fluorescence probe and a Li-Cor underwater photosynthetically active radiance (PAR) sensor to measure in situ light levels and light extinction ( $K_d$ ) associated with the vertical distribution of algal biomass within the lake water column. In the new system the YSI dissolved oxygen (DO) sensor was replaced with an Oxyguard DO sensor, with a temperature sensor, fitted to a separate RBR logger attached to the profiling frame.

Cross-calibration between the two profilers confirmed the quality of the data and the XR420f has been retained as a back-up.

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 ( $\text{NO}_3\text{-N}$ )\*, ammoniacal nitrogen ( $\text{NH}_4\text{-N}$ ), 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) and dissolved organic carbon (DOC). (\* Little, if any nitrite is ever found in the Lake Taupo water column, hence the use of  $\text{NO}_3\text{-N}$ ).



Note: TN and TP values are the summation of all other N and P components, respectively, excluding Urea-N which is part of the DON component.

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 on a Lachat FIA flow injection analyser.

Algal species composition and abundance were obtained by settling a measured volume of sample (up to 100 mL) in Utermöhl (1931) tubes and counting on an inverted microscope. Biovolume was estimated from cell volume tables calculated from the cell dimensions of each species. Dominance was estimated from relative biovolumes with the highest biovolume assigned dominance 1 as most common and the lowest biovolume assigned the dominance 10 as rare. Professional judgement was used to relate dominance between samplings.

Since 2007, dominance is no longer used and the algal data are reported in cell counts and biovolume.

Data for the long term 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 profiler, water clarity as Secchi disc depth, and a 10 m tube water sample was collected for measurement of chlorophyll *a*, NO<sub>3</sub>-N, NH<sub>4</sub>-N, TN, DRP, TP, and algal species dominance. Chlorophyll fluorescence, conductivity, and PAR data from the profiler are archived but not routinely included in this report.

From 2000, near-bottom water samples from 150 m were collected using a van Dorn water sampling bottle and analysed for DRP, NO<sub>3</sub>-N, and NH<sub>4</sub>-N.

## **Data handling and less than detection limit values**

All data in this report have been processed and manipulated on Excel spreadsheets. Data is rounded using the Excel protocol to an appropriate number of significant numbers based on the need for detailed knowledge tempered with the confidence in the precision and accuracy of the analytical methods used. This treatment may lead to small differences between electronic copies of the data and the values presented in this report.

The difference between the written report and the Excel spreadsheet of essentially the same data is the treatment of the less than detection limit (<DL) results. The data have in the past been written as <DL or <DL(value). For statistical analysis the excel spreadsheet replaces <DL with 0 or uses the value in brackets in place of 0. Although it is recognised that the former action will be in error, the use of the value in brackets requires some justification.

In discussion with Burns Macaskill, Graham McBride, and Mike Crump from NIWA on this issue, the following conclusions were reached:

- In general the data is reported as a series of results from analytical methods which have known limitations and precision. The raw number is reported where ever possible so that the user can draw their own conclusions about the reliability of the "last significant figure" on any result when performing data manipulations.
- The real problem arises at very low levels and the result obtained is less than the method's prescribed DL The problem is not so much the result obtained but what to do with it which in turn raises the question 'What do we mean by detection limit'?
- In the book "Statistical methods in water resources" Helsel & Hirsch 1992 [Studies in Environmental Science 49, Elsevier], and chapter 13 "Methods for data below the reporting limit" it is pointed out that the 'detection limit' is variously known as the 'reporting limit' or the 'limit of quantitation'. If no other value is available, there are 3 main options: call it zero (which is clearly an under estimate), call it the detection limit (which is clearly an over estimate), or call it half the detection limit (which gives a 50:50 chance of an over or under estimate). The choice then is one of 'which convention do you wish to use'. In the written reports, I have treated the <DL as zero for summation purposes. This is an under estimate which I should have noted on each report page so that anyone using that data is aware of the convention used.
- An alternative approach is to say that, before the sample is analysed, the DL is the predicted minimum level that will be found using the stipulated method. However, once the sample is analysed the result is what was actually measured and may be <DL on the day of analysis. As it is an actual analytical result, that value (reported in brackets) should be reported even though it is <DL. This implies that the method DL is in reality a reporting level or level of confidence.
- The "DL" was derived for the Lake Taupo data, on each analytical occasion, from a series of blanks and 1ppb standards run with the samples. The "DL" is set as 3 times the SD of the 1 ppb standard. This is actually a limit of confidence. All samples are run in duplicate and the mean of the two results becomes the concentration reported.
- With the introduction of the Lachet FIA system, the limits of detection have been confidently lowered to the point where replicate results may often be <DL. In these instances, in the written report, the value is reported as <DL(result). In the past I have still used the <DL =0 convention in summation for the TN and TP data. This is obviously wrong and the actual result should be used, as is done in the electronic spreadsheet.

**In this report the analytical value 'on-the-day' has been used wherever possible. Data reported as <DL use the <DL = DL/2 convention. Past data have not been corrected or altered to conform to this protocol.**

These technical details are incorporated in this annual report so that data users are aware of how the 'DL' or confidence limit was set and how the values <DL are treated when performing data manipulations.

There is still the question of how to deal with numbers where the result has been simply reported as <DL. The use of the DL/2 convention is probably closer to reality than the DL = 0 convention.

Helsel & Hirsch suggest an alternative method for estimating a value in the <DL range. If there is sufficient real data >DL, a probability curve can be derived and extrapolated around the DL to generate the most probable number for the <DL value.

## Statistical methods

Copied from Gibbs (2000).

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<sup>2</sup>. 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 2000) 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 2000) 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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<sup>2</sup> 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 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 transfer heat. The penetration of the thermocline by an under-flowing 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 water is always colder than the lake surface water and for at least 9 months of the year it is also colder than the minimum lake water temperature of 10.3 °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.

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. Hence, management strategies which affect the Tongariro River also impact on the lake. Hence it is appropriate to use the net VHOD rate for inter-annual comparisons rather than the true 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.

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 (hypographic 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:-

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

For each profile date:

Compute the DO 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 DO 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 Excel regression analysis tool to obtain the  $y = ax + b$  straight line fit for these data.

As the DO data are in  $\text{g m}^{-3}$ , the value of 'a' is in  $\text{g m}^{-3} \text{d}^{-1}$ . Multiply 'a' by 1000 to get the net VHOD rate in  $\text{mg m}^{-3} \text{d}^{-1}$ . The negative sign from the regression equation indicates a loss rate. By convention VHOD is always a "loss" term and thus the negative sign is omitted when reporting net VHOD rates.

The hypographic 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.

## Statistical evaluation of the VHOD rate

From the 1999-2000 monitoring report (Gibbs 2000), the VHOD rate is expressed as the calculated net VHOD rate  $\pm$  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.

**Table 2: Lake Taupo Hypsographic Data used in the Net VHOD RATE calculation.**

Slice depths (m)	Volume of slice (km <sup>3</sup> )	Upper surface area of slice (km <sup>2</sup> )
0 - 10	5.849359	600
10 - 20	5.599702	570
20 - 30	5.459951	550
30 - 40	5.359888	542
40 - 50	5.288266	530
50 - 60	5.150538	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

**Table 3: Julian Date or sequential day number.** Julian Date or sequential day number for each day of the year excluding leap years. For Leap Years, add 1 to the sequential day number from 1 March to 31 December of that 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.

For completeness, additional data from Kuratau Basin (Site B) and Western Bays (Site C) collected for the period between January 2002 and December 2004 are included as separate sheets following the mid-lake data from Site A for those years.

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.											2010-2011									
Mid-Lake site A for the period starting 13 July 2010																				
Temperature																				
Date	13/07/2010	10/08/2010	24/08/2010	13/09/2010	5/10/2010	26/10/2010	10/11/2010	25/11/2010	21/12/2010	11/01/2011	27/01/2011	17/02/2011	1/03/2011	15/03/2011	13/04/2011	10/05/2011	31/05/2011	22/06/2011	5/07/2011	9/08/2011
Depth (m)																				
0	11.31	11.01	10.92	11.37	11.90	13.00	13.98	15.96	18.32	19.75	19.62	20.54	20.47	19.94	17.68	15.51	14.13	13.11	12.35	11.07
10	11.29	10.96	10.86	11.02	11.66	11.72	13.25	15.65	18.25	19.62	19.58	20.44	20.48	19.72	17.67	15.52	14.14	13.13	12.33	10.95
20	11.29	10.95	10.85	10.95	11.23	11.53	13.13	13.81	14.51	17.39	18.98	20.35	20.48	19.53	17.64	15.50	14.15	13.12	12.33	10.94
30	11.28	10.95	10.85	10.89	11.01	11.44	11.88	12.10	12.53	12.88	15.19	16.03	15.33	15.41	17.62	15.43	14.15	13.12	12.33	10.93
40	11.28	10.95	10.85	10.85	10.96	11.37	11.54	11.42	11.66	11.62	12.22	12.26	12.17	12.27	12.12	15.32	14.15	13.13	12.33	10.94
50	11.28	10.95	10.85	10.85	10.88	11.31	11.17	11.11	11.24	11.37	11.47	12.09	11.31	11.43	11.39	12.27	11.84	13.11	12.32	10.94
60	11.26	10.94	10.83	10.83	10.85	11.21	11.02	10.98	11.03	11.08	11.13	11.33	11.10	11.11	11.12	11.28	11.31	11.38	11.41	10.94
70	11.01	10.94	10.81	10.82	10.82	11.03	10.93	10.91	10.92	10.96	10.97	11.09	10.98	11.02	10.99	11.09	11.11	11.19	11.18	10.94
80	10.96	10.92	10.80	10.81	10.80	10.89	10.85	10.87	10.88	10.89	10.90	10.96	10.93	10.97	10.95	11.00	11.03	11.07	11.03	10.94
90	10.79	10.84	10.78	10.81	10.78	10.88	10.82	10.84	10.85	10.86	10.86	10.92	10.92	10.92	10.92	10.97	11.00	11.00	11.02	10.94
100	10.75	10.81	10.76	10.80	10.76	10.83	10.81	10.83	10.84	10.86	10.85	10.89	10.90	10.90	10.89	10.93	10.97	10.97	10.98	10.93
110	10.70	10.75	10.76	10.80	10.75	10.82	10.78	10.81	10.81	10.85	10.84	10.88	10.90	10.87	10.88	10.91	10.95	10.95	10.97	10.93
120	10.68	10.73	10.75	10.80	10.75	10.80	10.77	10.81	10.80	10.84	10.84	10.87	10.88	10.87	10.87	10.90	10.95	10.94	10.97	10.93
130	10.67	10.71	10.75	10.78	10.75	10.78	10.77	10.80	10.79	10.83	10.83	10.87	10.87	10.85	10.86	10.89	10.92	10.92	10.95	10.93
140	10.66	10.71	10.74	10.76	10.75	10.79	10.77	10.80	10.79	10.83	10.83	10.85	10.85	10.85	10.84	10.87	10.92	10.91	10.92	10.92
150	10.66	10.70	10.74	10.76	10.75	10.77	10.77	10.80	10.79	10.82	10.83	10.84	10.85	10.85	10.84	10.87	10.91	10.90	10.93	10.92
Dissolved Oxygen (g m <sup>-3</sup> )																				
Depth (m)																				
0	10.50	9.50	10.64	11.24	9.90	10.12	9.83	9.57	9.00	8.73	8.76	8.60	8.64	8.30	9.17	9.54	9.85	10.07	10.22	10.49
10	11.42	11.29	10.52	10.92	9.80	9.78	9.68	9.32	8.37	8.00	7.98	8.63	8.64	8.73	9.64	10.26	10.71	10.30	10.27	10.62
20	11.57	11.60	10.50	10.62	9.68	9.76	9.52	10.10	9.06	8.74	7.96	8.61	8.69	9.15	9.93	10.81	11.21	10.84	10.09	10.53
30	11.65	11.63	10.44	10.71	9.64	9.75	9.29	10.07	9.52	8.57	7.91	8.72	8.99	9.55	9.86	10.72	10.99	10.92	10.10	10.40
40	11.35	11.59	10.41	10.13	9.51	9.54	9.18	9.70	9.31	8.86	8.23	9.26	9.40	10.06	10.23	10.51	10.91	11.05	10.07	10.32
50	11.30	11.63	10.37	10.17	9.47	9.56	9.05	9.58	9.14	8.55	8.08	9.17	9.33	9.63	9.78	10.15	10.57	10.97	10.07	10.36
60	11.04	11.67	10.31	10.03	9.34	9.32	8.86	9.24	8.86	8.41	7.90	8.84	8.84	9.13	9.67	9.44	9.26	9.54	8.80	10.34
70	10.73	11.81	10.25	10.04	9.31	9.27	8.81	9.29	8.71	8.29	7.66	8.70	8.76	9.11	9.12	9.28	9.01	9.41	8.62	10.38
80	10.04	11.58	10.22	9.85	9.25	8.90	8.75	9.03	8.49	8.10	7.51	8.28	8.43	8.92	9.08	9.13	8.65	8.96	8.10	10.29
90	9.68	11.21	10.18	9.87	9.19	8.90	8.72	9.24	8.47	7.93	7.42	8.19	8.31	9.03	8.46	9.06	8.72	8.91	8.06	10.28
100	9.25	10.56	10.15	9.64	9.17	8.78	8.73	8.80	8.31	7.70	7.33	7.93	8.03	8.53	8.22	8.59	8.37	8.68	7.81	10.31
110	9.06	10.35	10.10	9.67	9.11	8.73	8.64	9.12	8.35	7.56	7.26	7.90	8.00	8.55	8.06	8.60	8.27	8.53	7.72	10.29
120	8.71	9.83	10.06	9.43	9.04	8.61	8.66	8.84	8.07	7.46	7.18	7.86	7.95	8.40	7.92	8.27	7.91	8.45	7.67	10.29
130	8.66	9.44	10.05	9.49	8.95	8.60	8.66	8.67	8.04	7.45	7.16	7.85	7.91	8.35	7.42	8.06	7.84	8.08	7.54	10.30
140	8.59	9.34	10.10	8.83	8.84	8.36	8.66	8.62	7.50	7.42	7.16	7.80	7.79	7.43	7.48	7.72	7.62	7.81	7.15	10.25
150	8.33	9.10	9.96	8.71	8.81	8.17	8.66	8.51	7.46	7.30	7.16	7.47	7.51	7.52	6.98	7.24	7.40	7.30	7.00	10.20
Secchi depth																				
(m)	14.5	12.8	11	10.5	10.8	12.5	11.5	14.2	17	11	17	12	19	15	17	16.5	17	14	13	16

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 6 July 2009**

**2009-2010**

**Temperature**

Date	6/07/2009	13/08/2009	7/09/2009	17/09/2009	19/10/2009	12/11/2009	17/12/2009	13/01/2010	2/02/2010	11/02/2010	18/02/2010	10/03/2010	8/04/2010	28/04/2010	20/05/2010	3/06/2010	23/06/2010	13/07/2010	10/08/2010
Depth (m)																			
0	10.93	10.43	10.56	11.63	11.72	13.00	16.99	17.89	19.23	20.60	20.45	20.08	17.36	16.38	15.09	14.11	12.23	11.31	11.01
10	10.93	10.41	10.52	11.08	11.25	12.54	16.25	17.89	19.15	20.53	20.40	20.04	17.35	16.31	15.09	14.00	12.25	11.29	10.96
20	10.92	10.41	10.51	10.71	11.24	12.43	15.85	17.56	17.60	18.34	18.73	19.69	17.35	16.30	15.09	13.99	12.23	11.29	10.95
30	10.92	10.41	10.47	10.57	11.20	12.19	13.45	13.21	13.95	14.51	13.91	15.56	17.34	16.12	15.08	13.99	12.25	11.28	10.95
40	10.91	10.38	10.47	10.50	10.98	11.77	12.54	11.65	11.92	12.03	12.02	12.23	12.28	12.72	12.41	11.71	12.21	11.28	10.95
50	10.92	10.36	10.47	10.49	10.67	11.40	11.34	11.20	11.13	11.07	11.10	11.20	11.19	11.21	11.25	11.12	11.02	11.28	10.95
60	10.92	10.36	10.46	10.48	10.58	10.97	10.86	11.02	10.86	10.88	10.86	10.84	10.82	10.85	10.88	10.90	10.84	11.26	10.94
70	10.92	10.36	10.46	10.48	10.53	10.67	10.68	10.71	10.68	10.68	10.67	10.68	10.67	10.73	10.73	10.77	10.72	11.01	10.94
80	10.91	10.35	10.46	10.47	10.50	10.56	10.57	10.59	10.59	10.62	10.63	10.62	10.62	10.65	10.66	10.69	10.69	10.96	10.92
90	10.92	10.34	10.46	10.47	10.49	10.54	10.53	10.51	10.55	10.58	10.57	10.58	10.60	10.60	10.63	10.65	10.67	10.79	10.84
100	10.92	10.34	10.46	10.46	10.47	10.50	10.49	10.51	10.52	10.55	10.53	10.56	10.57	10.59	10.60	10.63	10.65	10.75	10.81
110	10.91	10.33	10.46	10.46	10.46	10.46	10.48	10.51	10.52	10.52	10.51	10.53	10.57	10.56	10.58	10.61	10.64	10.70	10.75
120	10.91	10.33	10.44	10.45	10.44	10.44	10.46	10.49	10.50	10.51	10.51	10.52	10.55	10.55	10.57	10.59	10.64	10.68	10.73
130	10.91	10.33	10.36	10.42	10.43	10.42	10.44	10.48	10.49	10.50	10.50	10.51	10.53	10.54	10.55	10.56	10.62	10.67	10.71
140	10.90	10.33	10.35	10.38	10.41	10.40	10.44	10.47	10.49	10.50	10.50	10.51	10.53	10.54	10.55	10.56	10.61	10.66	10.71
150	10.90	10.30	10.35	10.38	10.41	10.40	10.44	10.46	10.49	10.49	10.50	10.51	10.53	10.54	10.55	10.56	10.61	10.66	10.70

**Dissolved Oxygen (g m<sup>-3</sup>)**

Depth (m)	6/07/2009	13/08/2009	7/09/2009	17/09/2009	19/10/2009	12/11/2009	17/12/2009	13/01/2010	2/02/2010	11/02/2010	18/02/2010	10/03/2010	8/04/2010	28/04/2010	20/05/2010	3/06/2010	23/06/2010	13/07/2010	10/08/2010
0	8.91	9.83	9.37	10.58	11.67	9.88	9.66	9.48	9.29	9.47	9.34	8.84	9.48	10.48	10.57	10.44	10.54	10.50	9.50
10	9.88	10.72	10.29	11.08	12.13	10.80	9.63	9.18	9.26	9.40	9.32	8.28	10.17	10.17	11.29	10.25	10.86	11.42	11.29
20	11.06	11.48	10.48	11.00	11.79	10.78	9.58	9.62	9.38	9.71	9.59	8.75	9.66	9.39	10.84	10.34	10.40	11.57	11.60
30	11.31	11.57	10.49	10.68	11.78	10.84	9.71	9.34	9.17	9.65	9.45	8.92	9.43	9.09	10.63	10.39	10.38	11.65	11.63
40	11.28	11.39	10.46	10.40	11.24	10.56	9.31	9.15	8.86	8.72	8.75	8.60	9.04	8.53	9.06	9.39	10.28	11.35	11.59
50	11.29	11.39	10.36	10.31	11.10	10.47	9.29	8.78	8.36	8.21	8.44	8.14	8.57	8.13	8.68	9.26	9.46	11.30	11.63
60	11.03	11.20	10.18	10.15	10.10	9.86	8.78	8.68	8.06	7.94	7.99	7.73	8.31	7.92	8.11	8.93	9.04	11.04	11.67
70	11.05	11.16	10.21	10.12	10.02	9.86	8.60	8.31	7.88	7.76	7.97	7.59	8.11	7.84	8.08	8.84	8.82	10.73	11.81
80	10.83	10.86	10.09	10.11	9.70	9.24	8.34	8.27	7.69	7.74	7.70	7.51	7.97	7.70	8.03	8.54	8.55	10.04	11.58
90	10.87	10.97	10.16	10.02	9.72	9.26	8.25	7.97	7.47	7.55	7.68	7.38	7.74	7.56	7.70	8.44	8.37	9.68	11.21
100	10.68	10.87	10.23	10.03	9.51	8.60	8.17	7.71	7.37	7.54	7.41	7.25	7.43	7.42	7.51	8.18	8.26	9.25	10.56
110	10.72	10.90	10.30	9.95	9.50	8.60	8.05	7.50	7.23	7.37	7.43	7.22	7.27	7.27	7.39	8.10	8.09	9.06	10.35
120	10.55	10.86	9.91	10.26	9.20	8.20	7.98	7.55	7.23	7.19	7.17	7.15	7.11	7.08	7.17	7.95	8.03	8.71	9.83
130	10.55	10.71	9.80	10.00	9.18	8.15	7.87	7.37	7.18	7.20	7.12	6.98	7.09	7.05	7.11	7.90	8.00	8.66	9.44
140	10.48	10.80	9.52	9.69	8.82	7.70	7.62	7.42	6.90	6.95	6.71	6.57	6.82	6.77	6.79	7.18	7.85	8.59	9.34
150	10.30	10.77	9.46	9.47	8.79	7.72	7.41	7.25	6.88	6.93	6.65	6.46	6.75	6.75	6.73	7.17	7.84	8.33	9.10

**Secchi depth**

(m)	6/07/2009	13/08/2009	7/09/2009	17/09/2009	19/10/2009	12/11/2009	17/12/2009	13/01/2010	2/02/2010	11/02/2010	18/02/2010	10/03/2010	8/04/2010	28/04/2010	20/05/2010	3/06/2010	23/06/2010	13/07/2010	10/08/2010
	15	12	15	*	13	12.5	15	14.5	16	*	17	19	21.5	19	19.5	14.5	14	14.5	12.8

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 11 September 2007**

**2008-2009**

**Temperature**

Date	4/09/2008	16/09/2008	14/10/2008	4/11/2008	26/11/2008	22/12/2008	13/01/2009	22/01/2009	28/01/2009	11/02/2009	25/02/2009	16/03/2009	26/03/2009	15/04/2009	7/05/2009	27/05/2009	18/06/2009	6/07/2009	13/08/2009	
Depth (m)																				
0	10.97	11.34	12.59	13.37	15.45	18.84	19.67	19.84	20.88	21.42	20.46	18.71	17.96	16.60	15.05	12.97	11.60	10.93	10.43	
10	10.92	11.14	12.09	12.94	15.26	17.50	19.55	19.23	20.17	21.21	20.39	18.29	17.95	16.59	15.04	12.96	11.61	10.93	10.41	
20	10.85	10.99	11.93	12.62	15.17	15.77	16.97	19.12	18.45	20.04	20.37	18.25	17.94	16.59	15.04	12.96	11.61	10.92	10.41	
30	10.82	10.93	11.85	12.55	12.87	13.32	13.60	13.90	13.21	13.92	14.47	16.68	13.86	16.58	15.04	12.90	11.61	10.92	10.41	
40	10.79	10.91	11.75	12.35	12.07	12.27	12.19	12.11	11.90	12.09	12.84	12.43	12.13	12.53	12.55	12.62	11.60	10.91	10.38	
50	10.75	10.88	11.59	11.51	11.44	11.39	11.33	11.52	11.31	11.50	11.62	11.56	11.45	11.56	11.64	11.50	11.60	10.92	10.36	
60	10.72	10.79	10.90	10.83	10.93	11.06	11.08	11.04	11.05	11.19	11.18	11.22	11.19	11.12	11.17	11.06	11.60	10.92	10.36	
70	10.69	10.69	10.76	10.79	10.78	10.88	10.89	10.90	10.89	10.97	10.92	10.98	10.98	10.98	11.01	10.94	11.60	10.92	10.36	
80	10.66	10.68	10.71	10.72	10.76	10.81	10.82	10.87	10.84	10.86	10.87	10.88	10.89	10.92	10.93	10.90	11.59	10.91	10.35	
90	10.66	10.66	10.69	10.70	10.77	10.78	10.78	10.81	10.80	10.81	10.82	10.83	10.84	10.88	10.89	10.88	11.41	10.92	10.34	
100	10.65	10.65	10.68	10.68	10.82	10.75	10.76	10.80	10.78	10.77	10.79	10.81	10.81	10.86	10.86	10.86	11.09	10.92	10.34	
110	10.64	10.64	10.66	10.67	10.78	10.73	10.75	10.78	10.74	10.76	10.77	10.80	10.79	10.84	10.86	10.85	11.00	10.91	10.33	
120	10.63	10.64	10.64	10.65	10.78	10.71	10.73	10.77	10.74	10.75	10.76	10.79	10.78	10.82	10.84	10.84	10.98	10.91	10.33	
130	10.63	10.63	10.60	10.63	10.79	10.70	10.72	10.74	10.73	10.73	10.75	10.77	10.77	10.79	10.82	10.82	10.95	10.91	10.33	
140	10.63	10.62	10.59	10.63	10.81	10.70	10.72	10.73	10.72	10.73	10.74	10.77	10.76	10.78	10.80	10.81	10.94	10.90	10.33	
150	10.62	10.62	10.59	10.63	10.80	10.70	10.71	10.74	10.72	10.73	10.74	10.76	10.76	10.78	10.80	10.81	10.89	10.90	10.30	

**Dissolved Oxygen (g m<sup>-3</sup>)**

Depth (m)																				
0	10.03	9.84	10.29	*	10.09	9.29	8.67	9.24	8.52	8.48	*	9.26	9.44	9.33	10.05	10.13	10.47	8.91	9.83	
10	10.85	10.65	10.29	*	10.08	9.72	9.21	8.89	8.45	8.34	*	9.16	10.06	10.11	10.15	10.25	10.73	9.88	10.72	
20	10.90	11.05	10.50	*	10.00	9.39	8.88	8.68	8.47	8.19	*	9.40	10.55	10.76	10.15	10.13	10.59	11.06	11.48	
30	11.12	10.91	10.46	*	9.79	9.81	9.02	8.53	8.54	8.20	*	9.12	10.34	10.83	10.15	10.17	10.57	11.31	11.57	
40	10.76	10.82	10.34	*	9.23	9.69	8.96	8.46	8.06	8.36	*	8.24	9.86	10.39	9.15	9.78	10.56	11.28	11.39	
50	10.88	10.63	10.05	*	9.10	9.05	8.49	8.06	7.98	7.92	*	7.97	9.25	9.58	8.91	9.47	10.49	11.29	11.39	
60	10.74	10.55	9.89	*	8.54	8.77	8.25	7.91	7.81	7.80	*	7.62	8.97	9.06	8.67	8.73	10.40	11.03	11.20	
70	10.52	10.25	9.86	*	8.60	8.53	8.10	7.64	7.74	7.71	*	7.55	8.94	8.84	8.51	8.60	10.43	11.05	11.16	
80	10.48	10.20	9.81	*	8.43	8.47	7.98	7.46	7.66	7.64	*	7.44	8.54	8.21	7.79	8.25	10.43	10.83	10.86	
90	10.34	10.13	9.85	*	8.44	8.21	7.92	7.38	7.56	7.60	*	7.37	8.45	8.24	7.79	8.24	10.25	10.87	10.97	
100	10.28	10.10	10.03	*	8.20	8.22	7.78	7.25	7.53	7.44	*	7.26	8.24	8.07	7.65	8.10	8.65	10.68	10.87	
110	9.79	10.00	10.13	*	8.31	7.99	7.67	7.22	7.47	7.31	*	7.20	8.26	8.12	7.62	8.06	8.53	10.72	10.90	
120	9.62	9.97	10.09	*	8.04	7.91	7.63	7.17	7.32	7.26	*	7.01	7.94	8.02	7.63	7.79	8.17	10.55	10.86	
130	9.42	9.75	9.83	*	8.09	7.70	7.48	7.21	7.24	7.04	*	7.03	7.93	8.15	7.59	7.83	8.11	10.55	10.71	
140	9.37	9.52	9.76	*	7.88	7.59	7.40	7.24	7.08	6.92	*	6.68	7.08	8.01	7.74	7.49	7.99	10.48	10.80	
150	9.17	9.24	9.85	*	7.85	7.48	7.25	7.03	6.90	6.72	*	6.59	6.91	7.55	7.35	7.30	7.97	10.30	10.77	

**Secchi depth**

(m)	13.0	14.5	12.2	12.0	10.0	12.0	13.0	14.8	18.0	22.0	20.0	15.6	18.5	18.0	16.0	15.0	16.0	15.0	12.0	

Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 11 September 2007

2007-2008

Temperature

Date	11/9/2007	9/10/2007	30/10/2007	15/11/2007	4/12/2007	20/12/2007	17/01/2008	31/01/2008	14/02/2008	27/02/2008	13/03/2008	26/03/2008	17/04/2008	7/05/2008	22/05/2008	5/06/2008	19/06/2008	1/07/2008	15/07/2008	7/08/2008	20/08/2008	
Depth (m)																						
0	11.00	12.33	12.84	13.47	16.64	17.38	21.23	19.79	19.87	19.28	18.83	19.26	17.88	15.67	14.65	13.60	12.89	11.97	11.42	11.06	10.70	
10	10.99	11.69	11.83	13.19	16.20	17.15	19.96	19.62	19.81	19.26	18.75	19.24	17.87	15.67	14.65	13.60	12.90	12.03	11.41	10.98	10.70	
20	10.98	11.67	11.76	12.92	14.48	14.76	17.21	17.59	19.65	19.24	18.75	18.92	17.85	15.67	14.65	13.59	12.90	12.03	11.40	10.98	10.69	
30	10.99	11.44	11.70	12.86	12.58	13.19	13.64	13.82	16.07	14.08	16.20	16.92	15.58	15.67	14.65	13.60	12.90	12.01	11.40	10.98	10.69	
40	10.99	11.42	11.64	12.78	12.02	12.18	12.26	12.31	12.63	12.24	12.54	12.44	12.38	15.27	12.27	13.60	12.90	12.03	11.40	10.98	10.69	
50	10.99	11.39	11.51	11.80	11.69	11.75	11.64	11.61	11.80	11.71	11.76	11.77	11.72	12.11	11.66	11.93	12.86	12.03	11.39	10.99	10.70	
60	10.99	11.34	11.43	11.49	11.42	11.53	11.41	11.39	11.47	11.44	11.47	11.48	11.48	11.56	11.44	11.54	11.60	12.03	11.39	10.98	10.70	
70	10.99	11.16	11.32	11.37	11.29	11.33	11.23	11.26	11.33	11.30	11.34	11.29	11.34	11.37	11.32	11.37	11.36	11.61	11.38	10.98	10.70	
80	10.96	11.00	11.23	11.31	11.25	11.23	11.22	11.17	11.25	11.25	11.24	11.23	11.27	11.29	11.27	11.29	11.27	11.39	11.38	10.98	10.70	
90	10.96	10.98	11.16	11.17	11.14	11.12	11.12	11.11	11.19	11.18	11.18	11.17	11.20	11.21	11.22	11.18	11.24	11.23	11.29	11.35	10.98	10.70
100	10.96	10.98	11.07	11.10	11.10	11.09	11.12	11.09	11.15	11.14	11.14	11.14	11.17	11.16	11.18	11.21	11.21	11.28	11.30	10.98	10.70	
110	10.96	10.97	11.04	11.04	11.07	11.04	11.06	11.08	11.11	11.11	11.11	11.12	11.14	11.16	11.16	11.19	11.19	11.28	11.25	10.98	10.70	
120	10.96	10.96	11.02	11.02	11.05	11.03	11.04	11.06	11.07	11.09	11.09	11.11	11.15	11.15	11.15	11.16	11.17	11.25	11.22	10.98	10.70	
130	10.96	10.96	11.00	11.00	11.02	11.00	11.02	11.05	11.06	11.07	11.07	11.09	11.12	11.12	11.13	11.15	11.15	11.22	11.20	10.98	10.70	
140	10.96	10.96	10.98	10.97	10.99	11.01	11.00	11.05	11.05	11.06	11.06	11.08	11.11	11.11	11.12	11.13	11.15	11.17	11.19	10.98	10.70	
150	10.96	10.95	10.96	10.95	10.98	10.99	11.00	11.04	11.04	11.05	11.06	11.08	11.11	11.10	11.12	11.13	11.15	11.16	11.19	10.98	10.70	

Dissolved Oxygen (g m<sup>-3</sup>)

Depth (m)	11/9/2007	9/10/2007	30/10/2007	15/11/2007	4/12/2007	20/12/2007	17/01/2008	31/01/2008	14/02/2008	27/02/2008	13/03/2008	26/03/2008	17/04/2008	7/05/2008	22/05/2008	5/06/2008	19/06/2008	1/07/2008	15/07/2008	7/08/2008	20/08/2008
0	11.00	10.23	10.18	10.03	9.35	9.21	8.61	*	10.77	9.20	9.38	9.87	9.49	9.91	10.13	10.36	10.53	10.75	10.89	10.21	9.55
10	11.12	10.37	10.27	10.11	9.45	9.24	8.63	*	8.76	9.09	9.05	8.61	8.97	9.04	9.37	9.84	10.26	10.63	10.66	11.03	10.80
20	10.87	10.12	10.25	10.07	9.23	9.21	8.70	*	9.00	9.32	9.24	8.85	8.46	8.97	9.18	9.72	10.14	10.32	10.51	11.04	11.16
30	10.99	10.17	10.07	10.17	9.36	9.37	8.93	*	9.35	9.45	9.01	8.73	8.52	8.86	9.16	9.63	10.10	10.37	10.48	10.94	11.11
40	10.84	9.92	10.02	9.97	9.09	9.09	8.69	*	9.01	8.92	8.96	8.57	8.72	8.87	8.68	9.81	10.12	10.40	10.42	10.72	11.08
50	10.92	10.09	9.85	9.66	9.08	9.21	8.67	*	8.64	8.82	8.60	8.51	8.48	8.45	8.56	9.22	10.10	10.31	10.52	10.83	11.07
60	11.07	9.96	9.52	9.75	9.14	8.69	8.60	8.70	8.44	8.49	8.34	8.15	8.20	8.25	8.58	8.96	9.51	10.36	10.45	10.60	11.05
70	10.89	9.90	9.77	9.30	8.74	8.69	8.26	8.22	8.19	8.15	8.02	7.79	7.84	7.89	8.37	8.65	9.07	10.28	10.39	10.76	10.98
80	10.90	9.59	9.58	9.12	8.76	8.38	8.03	8.05	8.16	7.88	7.92	7.52	7.71	7.90	8.30	8.53	8.91	9.60	10.34	10.74	10.96
90	10.66	9.63	9.42	9.07	8.62	8.46	8.10	8.06	7.99	7.87	7.76	7.47	7.57	7.68	8.22	8.45	8.72	9.18	10.23	10.73	10.91
100	10.64	9.58	9.49	9.14	8.46	8.41	7.90	7.90	7.97	7.86	7.69	7.45	7.45	7.46	8.14	8.44	8.66	9.06	9.93	10.72	10.90
110	10.62	9.57	9.16	8.83	8.37	8.46	7.83	7.87	7.81	7.64	7.50	7.20	7.29	7.38	8.03	8.19	8.43	8.72	9.34	10.68	10.84
120	10.66	9.52	9.27	8.95	8.42	8.08	7.95	7.52	7.82	7.39	7.45	7.20	7.29	7.38	7.94	8.16	8.32	8.55	8.94	10.67	10.83
130	10.42	9.35	9.01	8.81	8.31	8.13	7.72	7.40	7.59	7.41	7.27	7.16	7.18	7.19	7.86	7.86	8.14	8.31	8.79	10.63	10.57
140	10.40	9.30	9.11	8.81	8.28	7.88	7.74	7.27	7.62	7.05	7.10	7.10	7.13	7.17	7.81	7.61	8.01	8.25	8.48	10.62	10.38
150	10.37	9.13	8.91	8.45	7.95	7.95	7.33	7.35	7.27	7.00	6.76	6.59	6.72	6.85	7.40	7.50	7.73	8.08	8.48	10.57	9.67

Secchi depth

(m)	11	15	16	14	15	17.5	22.5	21.5	25	22	22	19	20.5	16	17	15	16.5	14	13	12.5	12.5	

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 4 September 2006**

**2006-2007**

**Temperature**

Date	4/09/2006	26/09/2006	18/10/2006	1/11/2006	5/12/2006	19/12/2006	9/01/2007	25/01/2007	8/02/2007	21/02/2007	21/03/2007	3/04/2007	19/04/2007	8/05/2007	22/05/2007	14/06/2007	27/06/2007	18/07/2007	8/08/2007	23/08/2007	11/09/2007	
Depth (m)																						
0	11.10	11.88	11.72	12.43	15.21	15.62	16.51	18.60	19.31	19.58	18.70	18.04	16.49	19.29	15.17	13.56	12.38	11.43	11.15	11.00	11.00	
10	10.93	11.48	11.73	12.27	14.06	15.46	16.41	18.42	18.98	19.12	18.03	18.03	16.48	18.98	15.16	13.56	12.39	11.43	11.15	11.00	10.99	
20	10.93	11.29	11.72	12.25	13.87	14.45	15.44	17.96	18.16	17.62	17.99	17.94	16.47	18.16	15.16	13.56	12.39	11.43	11.16	11.00	10.98	
30	10.89	11.19	11.69	12.20	13.69	14.15	14.42	15.82	14.86	15.17	15.18	16.72	16.47	14.86	15.16	13.56	12.39	11.36	11.15	11.00	10.99	
40	10.87	11.15	11.45	12.10	13.16	12.43	12.25	13.05	12.89	13.09	12.65	13.50	13.78	12.89	15.15	13.56	12.39	11.29	11.16	11.00	10.99	
50	10.83	11.08	11.34	11.96	11.77	11.64	11.74	11.84	11.89	11.91	11.94	12.33	12.47	11.89	11.99	13.55	12.39	11.27	11.16	11.00	10.99	
60	10.82	11.06	11.25	11.34	11.20	11.36	11.29	11.47	11.39	11.46	11.51	11.65	11.69	11.39	11.54	11.77	12.38	11.25	11.15	11.00	10.99	
70	10.82	11.00	11.21	11.17	11.11	11.21	11.15	11.26	11.21	11.21	11.22	11.28	11.33	11.21	11.33	11.35	11.39	11.22	11.16	11.01	10.99	
80	10.82	10.94	11.16	11.06	11.06	11.10	11.09	11.14	11.15	11.15	11.16	11.22	11.20	11.15	11.21	11.22	11.28	11.17	11.16	11.01	10.96	
90	10.81	10.90	11.08	10.99	10.97	11.03	11.03	11.04	11.06	11.05	11.09	11.11	11.13	11.06	11.12	11.11	11.22	11.14	11.16	11.01	10.96	
100	10.81	10.87	10.97	10.94	10.94	11.00	11.00	11.00	11.03	11.05	11.05	11.10	11.09	11.03	11.10	11.10	11.16	11.13	11.16	11.01	10.96	
110	10.81	10.84	10.89	10.91	10.91	10.96	10.98	10.98	11.01	11.02	11.03	11.04	11.05	11.01	11.07	11.09	11.12	11.12	11.16	11.01	10.96	
120	10.80	10.81	10.86	10.88	10.90	10.94	10.97	10.99	11.06	11.02	11.02	11.04	11.04	11.06	11.07	11.08	11.11	11.12	11.16	11.01	10.96	
130	10.79	10.79	10.85	10.85	10.88	10.92	10.95	10.97	10.99	10.99	11.01	11.01	11.03	10.99	11.03	11.07	11.08	11.11	11.16	11.01	10.96	
140	10.76	10.78	10.83	10.84	10.88	10.89	10.94	10.97	10.97	10.98	10.99	11.00	11.02	10.97	11.03	11.05	11.07	11.10	11.16	11.01	10.96	
150	10.75	10.76	10.82	10.85	10.88	10.91	10.93	10.99	10.96	11.02	11.04	11.03	11.02	11.00	11.04	11.05	11.07	11.10	11.16	11.01	10.96	

**Dissolved Oxygen (g m<sup>-3</sup>)**

Depth (m)	4/09/2006	26/09/2006	18/10/2006	1/11/2006	5/12/2006	19/12/2006	9/01/2007	25/01/2007	8/02/2007	21/02/2007	21/03/2007	3/04/2007	19/04/2007	8/05/2007	22/05/2007	14/06/2007	27/06/2007	18/07/2007	8/08/2007	23/08/2007	11/09/2007
0	10.52	10.31	10.36	10.23	9.62	9.52	9.35	8.99	8.95	9.16	9.31	9.44	9.74	9.20	10.01	10.01	10.26	10.36	10.96	11.02	11.00
10	10.47	10.28	10.31	10.16	9.69	9.52	9.52	8.95	8.96	9.26	9.27	9.51	9.73	9.29	10.06	9.95	10.37	10.43	11.08	11.05	11.12
20	10.33	10.25	10.23	10.14	9.56	9.43	9.64	8.95	8.77	9.22	9.27	9.45	9.84	9.08	10.12	9.83	10.48	10.56	11.05	11.15	10.87
30	10.23	10.22	10.27	10.07	9.48	9.50	9.49	8.61	8.78	9.21	8.52	9.30	9.75	9.09	10.06	9.74	10.25	10.27	10.89	11.01	10.99
40	10.13	10.10	10.14	10.08	9.38	9.39	9.47	8.84	8.95	9.08	8.94	8.86	9.26	9.28	9.87	9.71	10.17	10.11	10.89	10.92	10.84
50	10.00	9.96	9.99	10.03	9.05	9.28	9.33	8.66	8.68	8.71	8.77	8.87	9.11	9.00	9.39	9.70	10.12	9.88	10.67	10.90	10.92
60	9.91	10.06	9.93	9.73	9.15	8.97	9.15	8.61	8.62	8.63	8.72	8.76	9.00	8.93	8.83	9.28	10.23	9.84	10.67	10.84	11.07
70	9.82	9.95	9.83	9.54	8.79	8.89	9.02	8.53	8.48	8.57	8.76	8.82	8.96	8.78	8.90	8.45	9.67	9.60	10.67	10.68	10.89
80	9.88	9.83	9.82	9.51	8.66	8.85	8.85	8.34	8.47	8.41	8.62	8.49	8.89	8.78	8.62	8.42	9.34	9.39	10.78	10.88	10.90
90	9.78	9.71	9.71	9.33	8.69	8.67	8.75	8.29	8.29	8.40	8.54	8.53	8.70	8.59	8.66	7.89	8.47	8.36	10.67	10.73	10.66
100	9.82	9.69	9.65	9.30	8.49	8.46	8.65	7.99	8.21	8.01	8.36	8.23	8.58	8.51	8.13	7.66	8.56	8.20	10.79	10.67	10.64
110	9.73	9.62	9.47	9.21	8.40	8.38	8.38	8.02	8.04	7.95	8.22	8.24	8.41	8.33	8.20	7.74	8.40	7.87	10.66	10.70	10.62
120	9.79	9.38	9.37	9.08	8.34	8.33	8.38	7.88	7.84	7.72	8.02	8.01	8.24	8.12	7.74	7.69	8.30	7.92	10.61	10.76	10.66
130	9.65	9.35	9.29	9.00	8.24	8.26	8.27	7.81	7.91	7.71	7.58	8.09	8.01	8.19	7.74	7.54	7.95	7.75	10.52	10.55	10.42
140	9.61	9.38	9.10	8.94	8.22	8.21	8.14	7.75	7.86	7.61	7.58	7.72	7.66	8.15	7.34	7.35	7.94	7.74	10.50	10.75	10.40
150	9.65	9.13	9.02	8.69	7.96	7.82	7.89	7.45	7.25	7.35	7.25	7.25	7.32	7.50	7.18	7.39	7.58	7.55	10.46	10.54	10.37

**Secchi depth**

(m)	4/09/2006	26/09/2006	18/10/2006	1/11/2006	5/12/2006	19/12/2006	9/01/2007	25/01/2007	8/02/2007	21/02/2007	21/03/2007	3/04/2007	19/04/2007	8/05/2007	22/05/2007	14/06/2007	27/06/2007	18/07/2007	8/08/2007	23/08/2007	11/09/2007
	11	17.5	13	14.5	16	15.5	13.5	14.5	16	18.2	16.5	19	16	16	18.5	18	18.5	14.5	14	13	11

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 17 August 2005**

**2005-2006**

**Temperature**

Date	17/08/2005	31/08/2005	14/09/2005	29/09/2005	12/10/2005	25/10/2005	10/11/2005	1/12/2005	10/01/2006	2/02/2006	1/03/2006	12/04/2006	27/04/2006	9/05/2006	30/05/2006	27/06/2006	11/07/2006	25/07/2006	4/09/2006	
Depth (m)																				
0	11.17	11.74	12.42	11.91	11.92	13.40	16.10	15.09	17.40	20.20	19.50	16.71	16.31	15.70	14.21	11.94	11.51	11.15	11.10	
10	10.98	11.24	11.76	11.68	11.79	12.84	14.59	14.93	17.10	20.11	19.50	16.72	16.29	15.70	14.21	11.99	11.51	11.15	10.93	
20	10.97	11.10	11.22	11.67	11.76	12.17	14.27	14.22	16.85	18.15	19.25	16.72	16.29	15.70	14.21	11.99	11.50	11.15	10.93	
30	10.97	11.05	11.05	11.66	11.66	11.63	12.36	13.34	14.84	15.46	16.14	16.71	16.29	15.70	14.21	11.99	11.48	11.15	10.89	
40	10.97	11.00	11.01	11.60	11.47	11.47	11.66	12.32	12.21	13.40	12.93	16.48	13.96	13.40	14.20	11.99	11.48	11.15	10.87	
50	10.97	10.98	10.98	11.18	11.39	11.29	11.27	11.66	11.60	11.75	11.57	12.00	12.20	11.94	14.16	11.99	11.48	11.15	10.83	
60	10.97	10.97	10.99	11.02	11.37	11.17	11.15	11.26	11.21	11.35	11.35	11.53	11.56	11.36	11.54	11.39	11.47	11.15	10.82	
70	10.96	10.97	10.97	10.97	11.26	11.06	11.04	11.11	11.13	11.19	11.16	11.29	11.30	11.23	11.27	11.21	11.46	11.15	10.82	
80	10.97	10.96	10.97	10.97	11.13	10.99	11.00	11.06	11.06	11.11	11.14	11.19	11.19	11.14	11.19	11.16	11.45	11.15	10.82	
90	10.96	10.96	10.96	10.96	11.07	10.97	10.98	11.01	11.05	11.06	11.06	11.12	11.12	11.10	11.16	11.15	11.42	11.15	10.81	
100	10.96	10.95	10.96	10.95	11.01	10.97	10.97	10.98	11.04	11.04	11.05	11.08	11.08	11.09	11.12	11.14	11.23	11.15	10.81	
110	10.96	10.94	10.94	10.94	10.98	10.94	10.95	10.97	11.02	11.02	11.05	11.05	11.07	11.06	11.11	11.14	11.20	11.15	10.81	
120	10.96	10.94	10.93	10.93	10.98	10.94	10.94	10.97	11.00	11.02	11.05	11.03	11.06	11.06	11.09	11.13	11.19	11.15	10.80	
130	10.96	10.93	10.93	10.92	10.96	10.93	10.93	10.96	10.99	11.00	11.03	11.02	11.05	11.04	11.07	11.13	11.18	11.15	10.79	
140	10.95	10.93	10.91	10.91	10.96	10.93	10.94	10.96	10.99	11.00	11.00	11.02	11.04	11.03	11.07	11.12	11.18	11.15	10.76	
150	10.93	10.93	10.89	10.91	10.96	10.92	10.96	10.97	10.98	10.99	11.00	11.02	11.04	11.04	11.07	11.10	11.14	11.15	10.75	

**Dissolved Oxygen (g m<sup>-3</sup>)**

Depth (m)																				
0	10.52	10.47	10.26	10.35	10.38	10.04	9.95	9.70	9.23	9.00	9.20	9.33	9.39	9.46	9.97	10.29	10.84	10.54	10.52	
10	10.55	10.47	10.26	10.47	10.49	9.98	9.99	9.94	9.38	9.39	9.24	9.15	9.96	9.59	10.49	10.27	10.88	10.94	10.47	
20	10.41	10.26	10.37	10.39	10.40	10.04	9.88	9.69	9.37	9.20	9.43	9.51	9.39	9.47	9.97	10.30	10.77	10.59	10.33	
30	10.39	10.28	10.19	10.39	10.44	9.89	9.74	9.26	8.96	8.94	8.99	9.23	9.31	9.50	10.21	10.22	10.76	10.54	10.23	
40	10.31	9.80	9.40	10.32	10.25	9.61	9.48	9.74	8.95	8.69	9.02	8.92	8.82	8.90	9.98	10.22	10.74	10.34	10.13	
50	10.29	9.66	9.39	10.20	10.23	9.51	9.36	9.63	8.61	8.59	8.91	8.61	8.70	8.51	10.10	10.16	10.71	10.54	10.00	
60	10.17	9.57	9.18	9.83	9.92	9.14	8.65	9.08	8.69	8.22	8.78	8.49	8.31	8.29	9.25	9.64	10.70	10.38	9.91	
70	10.13	9.41	9.26	9.63	9.86	9.03	8.83	8.80	8.50	8.20	8.52	8.20	8.51	8.26	8.87	8.85	10.64	10.45	9.82	
80	10.06	9.38	9.01	9.46	9.63	8.76	8.50	8.78	8.21	8.04	8.19	7.94	8.17	8.19	8.47	8.42	10.47	10.36	9.88	
90	10.05	9.42	9.07	9.38	9.68	8.76	8.59	8.40	8.12	8.07	7.82	7.98	8.10	8.08	8.33	8.15	10.46	10.44	9.78	
100	10.04	9.41	8.86	9.20	9.33	8.54	8.35	8.39	7.96	7.88	7.89	8.05	8.12	8.06	8.16	8.05	9.65	10.34	9.82	
110	10.04	9.37	8.88	9.12	9.24	8.49	8.41	8.35	7.92	7.94	7.85	7.91	7.84	7.96	8.11	7.96	8.87	10.35	9.73	
120	9.96	9.23	8.56	9.03	9.13	8.44	8.22	8.28	7.89	7.62	7.86	7.44	7.57	7.77	8.04	7.89	8.41	10.17	9.79	
130	9.93	9.14	8.56	8.96	9.07	8.40	8.27	8.20	7.82	7.78	7.72	7.58	7.49	7.66	8.04	7.84	8.31	10.33	9.65	
140	9.32	8.94	8.38	8.79	9.01	8.38	7.92	8.08	7.62	7.36	7.67	7.34	7.32	7.58	7.99	7.82	8.29	10.39	9.61	
150	8.63	8.57	8.20	8.56	8.94	8.24	7.86	8.00	7.39	7.28	7.34	7.19	7.15	7.23	7.57	7.61	8.14	10.28	9.65	

**Secchi depth**

(m)	13	13	13	14	14	15	17.5	19.3	19	15.5	15.3	15.8	17	17.5	18.2	15.2	13.5	12	11	

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 24 August 2004**

**2004-2005**

<b>Temperature</b>																					
Date	24/08/2004	7/09/2004	21/10/2004	2/11/2004	22/11/2004	15/12/2004	11/01/2005	25/01/2005	9/02/2005	22/02/2005	10/03/2005	21/03/2005	14/04/2005	18/05/2005	9/06/2005	20/06/2005	20/07/2005	3/08/2005	17/08/2005	31/08/2005	14/09/2005
Depth (m)																					
0	10.92	10.70	11.75	12.94	15.31	14.17	16.97	19.27	20.73	20.05	19.25	19.34	17.92	14.33	12.98	12.67	11.46	11.12	11.17	11.74	12.42
10	10.83	10.66	11.61	12.89	15.15	14.10	16.01	18.05	20.19	19.73	19.24	19.17	17.96	14.31	12.99	12.47	11.31	11.11	10.98	11.24	11.76
20	10.83	10.66	11.60	12.49	13.69	13.89	15.83	16.72	18.05	18.80	19.23	18.81	17.95	14.24	12.98	12.43	11.31	11.10	10.97	11.10	11.22
30	10.83	10.66	11.59	11.65	13.17	13.79	13.37	14.55	14.65	14.02	14.92	14.59	15.13	14.13	12.98	12.42	11.30	11.11	10.97	11.05	11.05
40	10.83	10.66	11.59	11.28	11.61	13.59	12.39	13.12	12.83	12.36	13.06	12.62	12.92	13.88	12.98	12.44	11.30	11.10	10.97	11.00	11.01
50	10.83	10.65	11.58	10.93	11.09	11.35	11.33	11.89	11.75	11.49	11.75	11.64	12.00	11.47	12.97	12.42	11.28	11.11	10.97	10.98	10.98
60	10.83	10.66	11.15	10.75	10.97	11.03	11.04	11.23	11.12	11.00	11.16	11.20	11.33	11.18	12.57	11.54	11.28	11.10	10.97	10.97	10.99
70	10.83	10.66	10.78	10.72	10.77	10.88	10.86	10.98	10.90	10.87	10.92	10.96	10.99	10.97	11.13	11.07	11.26	11.11	10.96	10.97	10.97
80	10.83	10.65	10.74	10.64	10.73	10.80	10.81	10.91	10.83	10.82	10.88	10.94	10.88	10.93	10.98	11.00	11.21	11.10	10.97	10.96	10.97
90	10.82	10.61	10.72	10.62	10.69	10.73	10.75	10.80	10.75	10.80	10.80	10.81	10.82	10.89	10.95	10.93	10.98	11.10	10.96	10.96	10.96
100	10.83	10.58	10.71	10.61	10.68	10.70	10.74	10.81	10.80	10.78	10.80	10.82	10.78	10.90	10.90	10.91	10.94	11.10	10.96	10.95	10.96
110	10.83	10.56	10.67	10.60	10.64	10.67	10.69	10.72	10.73	10.75	10.74	10.76	10.76	10.87	10.89	10.87	10.93	11.08	10.96	10.94	10.94
120	10.83	10.56	10.66	10.58	10.64	10.66	10.68	10.73	10.76	10.76	10.76	10.79	10.76	10.88	10.87	10.86	10.89	10.99	10.96	10.94	10.93
130	10.82	10.55	10.64	10.57	10.61	10.63	10.66	10.69	10.71	10.71	10.72	10.73	10.74	10.81	10.84	10.86	10.88	10.97	10.96	10.93	10.93
140	10.82	10.53	10.61	10.57	10.61	10.61	10.65	10.68	10.74	10.73	10.75	10.77	10.74	10.82	10.80	10.86	10.88	10.93	10.95	10.93	10.91
150	10.79	10.47	10.56	10.58	10.60	10.62	10.67	10.67	10.70	10.70	10.71	10.72	10.72	10.77	10.78	10.85	10.87	10.90	10.93	10.93	10.89
<b>Dissolved Oxygen (g m<sup>-3</sup>)</b>																					
Depth (m)																					
0	10.7	10.7	10.4	10.1	9.5	9.9	9.4	8.95	8.64	8.74	8.77	8.89	9.12	9.75	10.12	10.15	10.7	10.7	10.52	10.47	10.26
10	10.5	10.5	10.1	10.2	9.6	9.8	9.5	8.87	8.75	8.78	8.77	8.87	9.01	9.75	10.03	10.12	10.5	10.5	10.55	10.47	10.26
20	10.5	10.5	10.3	10.0	9.5	9.8	9.5	8.79	8.73	8.59	8.72	8.85	9.04	9.66	9.97	10.17	10.5	10.5	10.41	10.26	10.37
30	10.4	10.4	10.1	9.9	9.5	9.7	9.2	8.72	8.68	8.62	8.01	8.34	8.37	9.55	9.97	10.03	10.4	10.4	10.39	10.28	10.19
40	10.4	10.3	10.2	9.9	9.5	9.7	9.2	8.80	8.76	8.68	8.48	8.39	8.66	9.49	9.88	9.99	10.4	10.3	10.31	9.80	9.40
50	10.3	10.3	10.0	9.6	9.4	9.3	9.0	8.54	8.45	8.36	8.16	8.17	8.34	9.01	9.87	9.93	10.3	10.3	10.29	9.66	9.39
60	10.3	10.2	9.9	9.5	9.1	9.4	8.9	8.50	8.41	8.37	8.14	8.22	8.21	8.66	9.69	9.05	10.3	10.2	10.17	9.57	9.18
70	10.2	10.2	9.7	9.3	9.1	9.3	8.8	8.40	8.36	8.32	8.04	8.18	8.21	8.56	8.90	8.72	10.2	10.2	10.13	9.41	9.26
80	10.2	10.1	9.6	9.2	9.0	9.2	8.7	8.29	8.24	8.27	8.04	8.13	8.19	8.22	8.70	8.33	10.2	10.1	10.06	9.38	9.01
90	10.1	10.0	9.4	9.1	8.8	9.1	8.6	8.18	8.12	8.13	8.03	8.11	8.27	8.07	8.39	8.23	10.1	10.0	10.05	9.42	9.07
100	10.1	10.0	9.4	9.0	8.8	9.0	8.5	8.13	7.86	7.93	7.89	7.90	7.99	7.90	8.27	8.06	10.1	10.0	10.04	9.41	8.86
110	9.9	9.9	9.3	9.0	8.8	8.9	8.4	8.07	7.84	7.81	7.82	7.83	7.82	7.75	8.16	7.99	9.9	9.9	10.04	9.37	8.88
120	10.0	9.9	9.3	8.9	8.6	8.8	8.4	8.02	7.78	7.71	7.73	7.81	7.66	7.78	8.08	7.70	10.0	9.9	9.96	9.23	8.56
130	10.0	9.9	9.3	8.7	8.6	8.7	8.3	8.00	7.76	7.71	7.68	7.78	7.69	7.77	8.03	7.57	10.0	9.9	9.93	9.14	8.56
140	9.9	9.9	9.2	8.7	8.4	8.5	8.1	7.83	7.59	7.50	7.36	7.48	7.56	7.69	7.94	7.42	9.9	9.9	9.32	8.94	8.38
150	9.8	9.7	9.0	8.6	8.2	8.3	7.9	7.51	7.54	7.46	7.35	7.43	7.47	7.67	7.75	7.36	9.8	9.7	8.63	8.57	8.20
<b>Secchi depth</b>																					
(m)	12.5	12	15	16	16	19.5	20	19.5	18	21.5	18.5	20	17.2	16	14.1	13.8	13	14	13	13	13



**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 14 July 2003**

**2003-2004**

**Temperature**

Date	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003	7/10/2003	21/10/2003	19/11/2003	4/12/2003	18/12/2003	13/01/2004	26/02/2004	8/03/2004	31/03/2004	14/04/2004	10/05/2004	10/06/2004	13/07/2004	26/07/2004	24/08/2004	7/09/2004	
Depth (m)																						
0	11.85	11.38	11.25	11.23	11.13	11.48	13.11	13.96	16.15	17.72	20.29	17.20	17.50	16.49	15.27	14.74	13.04	11.59	11.29	10.92	10.70	
10	11.86	11.38	11.24	11.17	11.13	11.39	11.92	13.79	15.11	17.76	19.60	17.19	17.00	16.29	15.24	14.74	13.05	11.64	11.26	10.83	10.66	
20	11.86	11.38	11.24	11.12	11.11	11.37	11.53	13.78	14.53	15.57	16.72	17.18	16.70	16.23	15.21	14.74	13.04	11.62	11.25	10.83	10.66	
30	11.86	11.38	11.24	11.11	11.06	11.37	11.40	13.70	12.96	13.23	13.87	17.16	16.55	16.19	15.19	14.74	13.05	11.65	11.25	10.83	10.66	
40	11.86	11.38	11.24	11.11	11.06	11.32	11.34	12.30	12.26	12.33	12.58	12.90	13.30	16.15	15.13	14.73	13.05	11.62	11.26	10.83	10.66	
50	11.86	11.38	11.24	11.11	11.06	11.31	11.23	11.35	11.48	11.84	11.58	11.83	11.60	12.51	12.40	12.56	13.05	11.65	11.26	10.83	10.65	
60	11.86	11.38	11.24	11.11	11.06	11.31	11.19	11.28	11.41	11.39	11.33	11.53	11.60	11.59	11.67	11.66	13.05	11.64	11.26	10.83	10.66	
70	11.86	11.38	11.24	11.10	11.06	11.31	11.16	11.23	11.26	11.26	11.26	11.35	11.40	11.40	11.48	11.43	12.42	11.65	11.25	10.83	10.66	
80	11.35	11.38	11.24	11.00	11.06	11.30	11.15	11.19	11.25	11.22	11.23	11.30	11.35	11.34	11.39	11.38	11.56	11.64	11.25	10.83	10.65	
90	11.31	11.38	11.24	11.09	11.06	11.29	11.13	11.16	11.20	11.17	11.22	11.25	11.27	11.30	11.32	11.35	11.51	11.66	11.25	10.82	10.61	
100	11.27	11.35	11.24	11.09	11.06	11.25	11.11	11.15	11.18	11.17	11.21	11.23	11.27	11.27	11.30	11.32	11.39	11.65	11.25	10.83	10.58	
110	11.24	11.34	11.23	11.09	11.06	11.21	11.10	11.12	11.17	11.15	11.19	11.20	11.24	11.26	11.28	11.30	11.35	11.65	11.26	10.83	10.56	
120	11.22	11.32	11.22	11.09	11.06	11.14	11.10	11.11	11.18	11.14	11.18	11.18	11.22	11.24	11.25	11.30	11.34	11.65	11.26	10.83	10.56	
130	11.21	11.27	11.22	11.08	11.06	11.11	11.08	11.09	11.14	11.13	11.17	11.18	11.20	11.22	11.23	11.28	11.33	11.49	11.26	10.82	10.55	
140	11.21	11.26	11.21	11.08	11.06	11.09	11.08	11.09	11.15	11.13	11.16	11.17	11.20	11.21	11.21	11.27	11.32	11.39	11.26	10.82	10.53	
150	11.20	11.22	11.20	11.08	11.07	11.09	11.08	11.09	11.14	11.13	11.16	11.17	11.20	11.21	11.21	11.26	11.31	11.34	11.26	10.79	10.47	

**Dissolved Oxygen (g m<sup>-3</sup>)**

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

**Secchi depth**

(m)	14.5	14	13.5	13	12.5	13	17	16	18.5	17.5	19	17	15	16	15	18	13.5	12	11	12.5	12	

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Additional site B (Kuratau Basin ) for the period starting 14 July 2003**

**2003-2004**

**Temperature**

Date	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003	7/10/2003	21/10/2003	19/11/2003	4/12/2003	18/12/2003	13/01/2004	26/02/2004	8/03/2004	31/03/2004	14/04/2004	10/05/2004	10/06/2004	13/07/2004	26/07/2004	24/08/2004	7/09/2004	
Depth (m)																						
0	11.82	11.32	11.38	11.36	11.13	11.70	13.31	13.79	15.65	17.08	20.25	16.83	17.63	15.92	15.10	14.72	13.02	11.43	11.26	10.92	10.85	
10	11.80	11.29	11.22	11.17	11.11	11.44	12.28	13.49	15.00	16.43	19.73	16.72	16.56	15.90	15.02	14.68	12.95	11.40	11.20	10.77	10.59	
20	11.79	11.29	11.22	11.14	11.07	11.40	11.71	13.33	13.81	15.28	16.73	16.58	16.51	15.89	15.00	14.64	12.84	11.41	11.20	10.73	10.58	
30	11.79	11.29	11.21	11.13	11.03	11.35	11.46	12.22	12.37	13.38	13.74	16.16	16.40	15.88	14.99	14.47	12.71	11.41	11.20	10.72	10.57	
40	11.79	11.29	11.21	11.13	11.02	11.34	11.38	11.67	11.90	12.91	12.48	15.75	15.53	15.53	14.18	14.07	12.67	11.41	11.19	10.72	10.57	
50	11.79	11.29	11.21	11.13	11.02	11.33	11.28	11.40	11.57	11.65	11.62	12.97	12.55	12.89	12.48	12.48	12.66	11.41	11.19	10.72	10.56	
60	11.78	11.29	11.21	11.13	11.01	11.25	11.23	11.31	11.37	11.33	11.40	11.88	11.64	11.69	11.72	11.78	12.57	11.40	11.19	10.72	10.56	
70	11.78	11.29	11.21	11.12	11.01	11.12	11.15	11.24	11.25	11.27	11.28	11.55	11.47	11.49	11.51	11.47	12.51	11.41	11.18	10.72	10.56	
80	11.77	11.29	11.16	11.12	11.01	11.06	11.09	11.18	11.21	11.25	11.20	11.38	11.41	11.37	11.43	11.38	12.27	11.37	11.18	10.72	10.51	
90	11.35	11.29	11.04	11.11	11.01	11.02	11.08	11.13	11.13	11.19	11.16	11.32	11.35	11.32	11.37	11.31	11.77	11.26	11.17	10.71	10.45	
100	11.27	11.29	10.91	11.08	11.01	11.02	11.05	11.10	11.11	11.16	11.14	11.28	11.33	11.26	11.30	11.24	11.65	11.24	11.17	10.66	10.38	

**Dissolved Oxygen (g m<sup>-3</sup>)**

Depth (m)	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003	7/10/2003	21/10/2003	19/11/2003	4/12/2003	18/12/2003	13/01/2004	26/02/2004	8/03/2004	31/03/2004	14/04/2004	10/05/2004	10/06/2004	13/07/2004	26/07/2004	24/08/2004	7/09/2004
0	10.7	10.9	10.8	10.6	10.6	10.4	10.5	10.1	9.8	9.1	9.2	9.3	9.5	8.8	10.5	11.4	12.3	10.6	10.5	10.5	10.8
10	10.5	11.0	10.6	10.6	10.5	10.4	10.4	10.3	9.9	9.3	9.2	9.1	9.0	9.0	9.5	10.2	10.7	10.6	10.5	10.4	10.7
20	10.3	11.3	10.4	10.2	10.2	10.2	10.1	9.9	9.6	9.4	9.2	9.0	8.9	8.9	9.2	9.9	10.1	10.1	10.5	10.5	10.7
30	10.2	11.2	10.1	9.9	10.1	9.9	10.0	9.6	9.3	9.1	9.0	9.0	8.7	8.8	8.9	9.4	9.7	9.8	10.3	10.4	10.6
40	10.1	11.2	9.9	9.8	9.9	9.6	9.7	9.2	8.9	9.1	8.8	8.7	8.2	8.7	8.5	9.1	9.6	9.6	10.0	10.3	10.5
50	10.0	10.9	9.8	9.6	9.8	9.6	9.4	9.0	8.8	8.7	8.5	8.2	7.9	8.2	7.9	8.5	9.3	9.5	9.8	10.2	10.3
60	9.9	10.7	9.7	9.5	9.7	9.4	9.0	8.8	8.6	8.3	8.2	8.1	7.7	8.0	7.6	8.0	9.2	9.3	9.6	10.1	10.3
70	9.9	10.4	9.7	9.5	9.7	9.3	8.9	8.7	8.6	8.3	8.1	7.9	7.6	7.8	7.3	7.7	8.9	9.2	9.6	10.1	10.2
80	9.8	10.3	9.4	9.4	9.6	9.1	8.7	8.6	8.4	7.9	7.8	7.8	7.4	7.6	7.1	7.4	8.7	9.1	9.4	10.0	10.1
90	9.2	10.1	9.2	9.3	9.6	9.0	8.7	8.5	8.3	7.9	7.8	7.7	7.3	7.6	7.0	7.5	8.3	8.7	9.5	9.9	10.1
100	8.3	10.0	9.2	9.3	9.6	8.9	8.6	8.2	7.9	7.9	7.6	7.4	7.3	7.3	6.8	7.0	8.1	8.1	9.4	9.8	10.0

**Secchi depth**

(m)	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003	7/10/2003	21/10/2003	19/11/2003	4/12/2003	18/12/2003	13/01/2004	26/02/2004	8/03/2004	31/03/2004	14/04/2004	10/05/2004	10/06/2004	13/07/2004	26/07/2004	24/08/2004	7/09/2004
	12	13	13	11.5	11	9.5	15	17	17	15	16	13.5	5	11	14	15.5	12	11	10	10	11

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Additional site C (Western Bays ) for the period starting 14 July 2003**

**2003-2004**

**Temperature**

Date	14/07/2003	31/07/2003	14/08/2003	26/08/2003	8/09/2003	7/10/2003	21/10/2003	19/11/2003	4/12/2003	18/12/2003	13/01/2004	26/02/2004	8/03/2004	31/03/2004	14/04/2004	10/05/2004	10/06/2004	13/07/2004	26/07/2004	24/08/2004	7/09/2004	
Depth (m)																						
0	11.86	11.43	11.56	11.31	11.32	11.85	13.29	15.10	15.79	17.00	20.17	16.90	18.43	16.37	15.41	14.98	13.16	11.58	11.51	10.97	11.14	
10	11.80	11.36	11.26	11.21	11.13	11.24	11.93	13.84	15.29	16.33	18.89	16.69	17.02	16.35	15.18	14.80	13.08	11.61	11.32	10.94	10.73	
20	11.80	11.34	11.25	11.14	11.09	11.17	11.62	13.76	14.31	15.26	17.11	16.34	16.45	16.35	15.15	14.76	13.07	11.61	11.30	10.90	10.71	
30	11.80	11.32	11.25	11.14	11.08	11.14	11.52	13.63	12.99	13.46	13.74	14.66	15.33	15.95	15.15	14.75	13.07	11.61	11.31	10.90	10.71	
40	11.80	11.31	11.25	11.14	11.08	11.14	11.50	11.91	12.03	12.88	12.25	12.56	13.64	13.21	15.14	14.73	13.07	11.60	11.31	10.89	10.70	
50	11.80	11.31	11.25	11.14	11.07	11.13	11.46	11.42	11.43	11.64	11.57	11.63	11.64	11.68	12.68	12.57	12.80	11.61	11.30	10.90	10.70	
60	11.80	11.31	11.25	11.14	11.07	11.13	11.38	11.31	11.30	11.31	11.36	11.53	11.48	11.45	11.76	11.73	11.68	11.60	11.30	10.89	10.70	
70	11.80	11.31	11.25	11.14	11.07	11.12	11.21	11.27	11.28	11.26	11.28	11.39	11.37	11.34	11.54	11.48	11.44	11.61	11.30	10.89	10.70	
80	11.79	11.31	11.25	11.14	11.07	1.10	11.13	11.20	11.25	11.22	11.25	11.31	11.35	11.32	11.37	11.39	11.37	11.58	11.30	10.89	10.70	
90	11.60	11.29	11.25	11.14	11.07	11.04	11.07	11.14	11.21	11.19	11.21	11.26	11.33	11.29	11.30	11.32	11.33	11.61	11.30	10.89	10.70	
100	11.28	11.27	11.24	11.14	11.07	11.03	11.07	11.11	11.19	11.12	11.19	11.23	11.32	11.25	11.29	11.31	11.32	11.61	11.30	10.89	10.70	

**Dissolved Oxygen (g m<sup>-3</sup>)**

Depth (m)																						
0	10.3	10.7	10.3	10.4	10.4	11.4	10.1	9.8	9.5	9.2	9.2	9.3	9.3	9.4	10.4	10.3	10.6	10.6	11.0	10.4	10.7	
10	10.3	10.8	10.3	10.3	10.4	11.0	10.1	9.9	9.9	9.1	9.2	9.1	9.0	9.2	9.5	9.8	10.1	10.6	10.5	10.4	10.4	
20	10.1	10.3	10.1	10.1	10.2	10.8	9.9	9.9	9.5	9.2	9.1	9.2	9.1	9.0	9.1	9.7	9.9	10.6	10.2	10.3	10.4	
30	10.1	10.0	9.9	9.9	10.0	10.1	9.6	9.6	9.3	9.1	8.8	8.6	8.6	8.9	8.9	9.4	9.7	10.3	9.9	10.2	10.4	
40	10.0	10.0	9.8	9.7	9.9	9.7	9.4	9.4	9.0	9.1	8.8	8.4	8.4	8.3	8.7	9.2	9.6	9.9	9.8	10.1	10.3	
50	9.9	9.9	9.6	9.6	9.7	9.7	9.3	9.2	8.8	8.8	8.5	8.2	8.0	8.0	8.2	8.7	9.3	9.6	9.6	10.1	10.2	
60	9.8	9.6	9.6	9.5	9.6	9.5	9.2	9.0	8.5	8.5	8.2	8.0	7.9	8.0	7.8	8.2	8.6	9.5	9.5	10.1	10.2	
70	9.8	9.5	9.5	9.4	9.5	9.4	9.1	8.8	8.5	8.3	8.1	7.9	7.8	7.9	7.5	8.0	8.2	9.4	9.5	10.0	10.1	
80	9.7	9.5	9.5	9.4	9.5	9.3	8.8	8.8	8.3	8.2	7.9	7.8	7.8	7.8	7.4	7.8	8.0	9.3	9.4	10.0	10.0	
90	9.6	9.1	9.4	9.3	9.4	9.2	8.7	8.6	8.4	7.9	7.8	7.8	7.7	7.7	7.3	7.6	7.9	9.2	9.2	9.9	10.0	
100	8.8	8.8	9.0	9.3	9.4	9.1	8.7	8.5	8.3	7.9	7.7	7.6	7.7	7.5	7.3	7.5	7.8	9.1	9.3	9.9	10.0	

**Secchi depth**

(m)																						
	14	12	14.5	13	12	12.5	12	17.2	17	19	17.5	14	13	12.5	16.5	16	14	12.5	11	10	12	

**Lake Taupo Temperature, Dissolved Oxygen, and Secchi Depth Database.  
Mid-Lake site A for the period starting 1 July 2002**

**2002-2003**

**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<sup>-3</sup>)**

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

**2002-2003**

**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	11/07/2003	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<sup>-3</sup>)**

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	10.3	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.  
Additional site C (Western Bays ) for the period starting 1 July 2002**

**2002-2003**

**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	12.22	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<sup>-3</sup>)**

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	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)	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
	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 <sup>-3</sup> )																						
Depth (m)	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
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)	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
	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.  
Additional site B (Kuratau Basin ) for the period starting 8 January 2002 on**

**2001-2002**

**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<sup>-3</sup>)**

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	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**

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

**2001-2002**

**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	9/10/2002
Depth (m)													
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<sup>-3</sup>)**

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	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)	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
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.  
For the period starting 11 July 2000

2000-2001

Temperature		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	
Date																						
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 <sup>-3</sup> )																						
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.  
For the period starting 13 July 1999**

**1999-2000**

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 <sup>-3</sup> )																				
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<sup>-3</sup>)**

Depth (m)	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
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)	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
0	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.  
For the period starting 16 September 1997**

**1997-1998**

Temperature		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
Date													
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
<b>Dissolved Oxygen (g m<sup>-3</sup>)</b>													
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
<b>Secchi depth data (m)</b>													
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.**  
**For the period starting 3 September 1996**

**1996-1997**

Temperature		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)	Date																		
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
<b>Dissolved Oxygen (g m<sup>-3</sup>)</b>																			
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
<b>Secchi depth data (m)</b>																			
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	*	*	*	*	*	*	*	*
<b>Dissolved oxygen (g m<sup>-3</sup>)</b>																
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
<b>Secchi depth</b>																
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.**  
**Started 27 October 1994**

**1994-1995**

Temperature		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
Date	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 <sup>-3</sup> )																			
	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																			
	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 10-m tube data since 1994. Blank cells represent missing data.

For completeness, 10-m tube data collected from the Kuratau Basin (site B) and Western Bays (site C) from January 2002 to December 2004 are included as separate sheets following the mid-lake data from site A for those years.

In the spring/autumn profile data, two different analytical methods are used to measure particulate nitrogen:

1. 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
2. a CHN combustion method which converts all nitrogen compounds to N<sub>2</sub> 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 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<sub>4</sub>-N results are likely to be subject to interference from low molecular weight DON and hence may not be biologically available for phytoplankton growth.

From February 2002, DRP, NO<sub>3</sub>-N, and NH<sub>4</sub>-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<sup>-3</sup> for DRP and NO<sub>3</sub>-N, and 1 mg m<sup>-3</sup> for NH<sub>4</sub>-N, however, 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. TN and TP values are the sum of all N and P components, excluding Urea-N which is part of the DON component. All analytical values 'on-the-day' are used wherever possible or <DL = DL/2 for summation in TN and TP. See Appendix 1 for discussion on detection limits.

The DON value for 5/08/2000 was corrected from 12 to 43.5 in March 2006. This was a transcription error from the original analytical result sheet.

Lake Taupo cumulative database of 10m tube sample data from October 1994 to September 2002.

Samples collected from central lake site.

Date Collected	Temp. °C	Secchi m	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>	PC mg m <sup>-3</sup>
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	17.9	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	
30/06/1995	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		
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	13.9	<0.2	2.4	1.9	4.3	<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	10.1	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	12.6	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
9/10/1996	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		4.2			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		0.32
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	5.1					0.89
7/07/1997	11.6	12.5	0.6	0.9		4.7	2.1	5.3					0.90
29/07/1997	10.9	13.5	0.5	1.6		1.5	2.1	3.8					1.13
2/08/1997	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	3.5					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	5.5					0.83
21/12/1997	17.7	14.7	1.4	1.1	1.2	3.7	2.8	1.5	46.0	10.0	60.3		1.48
4/03/1998	11.0	11.5	1.5	1.7	2.6	6.4	4.0	76.0	50.8	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		
9/10/1998	12.9	10.4	1.5	<1		2.4	2.4	46.0	37.6	88.4	1.00		
11/11/1998	13.6	13.5	0.6	1.3	2.6	4.5	2.4	<0.5	56.0	15.2	52.6		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
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
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
30/04/1999	16.4	12.2	1.1	1.5	1.7	4.3	2.1	<0.5	33.0	19.6	60.2		0.94
19/05/1999	14.4	15.0	0.8	<1	1.5	5.1	1.1	<1	46.0	16.2	63.7		1.2
8/06/1999	14.1	14.5	1.0	<1	3.9	4.9	1.1	<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	4	10.0	0.7	1	4	5.7	3	1	54	32.3	90.6		1.6
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		1.8
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	1	6	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
11/07/2000	11.9	11.0	<1	4	3	7.0	3	2	46	22.5	73.5		1.65
5/08/2000	11.3	12.0	2	2	3	7.0	1	3.5	43.5	19.5	66.0		2.5
22/08/2000	11.2	15.0	2	2	2	6.0	2	4	49	16.5	71.5		1.65
12/09/2000	11.5	12.0	2	5	3.5	10.5	2	<1	63	23.5	88.5		1
29/09/2000	11.5	13.0	2	4	2	8.0	1	1	54	21	77.0		1.15
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
14/11/2000	13.1	12.0	<1	4	2	6.0	1	<1	41	14.5	56.5		0.9
7/12/2000	15.1	17.0	2	2	1.55	5.6	7	4	63	14.75	88.8		0.6
4/01/2001	18.0	14.5	<1	2	1.5	3.5	1	<1	40	11	52.0		0.5
3/09/2001	10.2	17.5	1	1	2.6	4.6	<1	<1	37	19	56.0		1.7
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
2/03/2001	20.7	14.5	<1	2	2	4.0	2	<1	53	18	73.0		0.9
20/03/2001													

Lake Taupo cumulative database of 10 m tube sample data from June 2000 on  
Samples collected from Mid Lake (Site A)

Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
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	43.5	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

Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
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
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
7/10/2003	11.4	13.0	2.6	1.6	2.8	7.0	0.3	0.2	54.5	17.8	72.8	1.2	157.5
21/10/2003	13.0	17.0	2.0	1.0	2.3	5.3	0.1	1.3	39.6	14.0	55.0	0.6	146.0
19/11/2003	13.9	16.0	1.7	1.3	2.8	5.8	0.3	0.1	45.6	20.0	66.0	0.8	148.0
4/12/2003	16.0	18.5	1.6	2.4	1.8	5.8	0.2	0.1	53.7	13.4	67.4	0.3	106.5
18/12/2003	17.7	17.5	1.1	3.9	3.1	8.1	0.0	0.0	49.0	20.6	69.6	0.4	151.5
13/01/2004	20.3	19.0	0.5	3.5	1.6	5.6	0.0	0.3	52.0	12.5	64.8	0.4	127.0
26/02/2004	17.2	17.0	1.4	1.7	1.6	4.7	0.0	0.1	40.9	15.5	56.5	0.7	139.0
8/03/2004	17.5	15.0	0.6	2.4	2.0	5.0	0.4	0.1	42.5	12.4	55.4	0.6	177.5
31/03/2004	16.4	16.0	0.8	5.2	1.9	7.9	0.2	0.2	78.6	11.5	90.5	1.2	159.5
14/04/2004	15.3	15.0	1.0	3.0	2.4	6.4	0.1	0.3	46.6	16.0	63.0	1.3	187.5
10/05/2004	14.7	18.0	0.6	4.4	1.8	6.8	0.1	0.2	64.7	16.8	81.8	1.2	215.0
10/06/2004	13.6	13.5	0.9	2.1	2.1	5.1	0.0	0.6	63.4	17.8	81.8	1.0	371.5
13/07/2004	11.6	12.0	1.8	3.2	2.4	7.4	0.3	4.5	37.2	19.4	61.4	1.6	193.3
26/07/2004	11.3	11.0	1.6	2.4	3.0	7.0	0.5	2.4	38.1	23.4	64.4	2.7	196.0
24/08/2004	10.9	12.5	0.8	3.2	2.7	6.7	0.0	0.5	58.5	18.6	77.6	2.3	181.5
7/09/2004	10.7	12.0	0.6	2.4	2.7	5.7	0.0	0.1	40.9	15.5	56.5	1.4	162.5
21/10/2004	11.6	15.0	1.0	3.0	2.0	6.0	0.0	0.0	33.0	13.0	46.0	0.7	185.0
2/11/2004	12.9	16.0	1.0	3.0	1.9	5.9	2.2	0.8	62.0	14.7	79.7	0.6	147.0
22/11/2004	15.1	16.0	0.7	2.3	2.1	5.1	0.1	0.2	49.7	16.4	66.4	0.4	195.0
15/12/2004	14.1	19.5	0.7	3.3	2.2	6.2	0.0	0.2	45.8	14.7	60.7	0.2	127.5

Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
11/01/2005	16.0	20	0.4	2.6	1.4	4.4	0	0.1	42.9	12.5	55.5	0.2	137
25/01/2005	19.3	19.5	0.5	2.5	1.5	4.5	0.0	0.1	54.9	14.5	69.5	0.3	131.0
9/02/2005	20.7	18	2.2	0.8	1.4	4.4	0.5	0.0	38.5	12.7	51.7	0.2	136.0
22/02/2005	20.0	21.5	0.8	5.2	1.7	7.7	1.5	0.5	58.0	15.8	75.8	0.2	159.0
10/03/2005	19.3	18.5	0.2	2.8	1.4	4.4	1.8	0.2	34.0	14.5	50.5	0.4	158.0
21/03/2005	19.3	20	0.8	3.2	1.2	5.2	0.5	0.1	43.4	10.0	54.0	0.5	140.0
14/04/2005	17.9	17.2	0.9	2.1	1.6	4.6	0.8	0.2	54.0	14.0	69.0	0.7	177.0
18/05/2005	14.3	16	0.8	2.2	1.9	4.9	0.0	0.5	46.5	13.9	60.9	1.3	177.5
9/06/2005	13.0	14.1	0.6	3.4	2.2	6.2	0.1	1.6	41.3	17.4	60.4	1.3	140.5
20/06/2005	12.7	13.8	0.6	3.4	2.0	6.0	0.1	1.0	39.9	18.5	59.5	1.2	158.5
20/07/2005	11.5	13	3.9	6.1	2.5	12.5	0.8	0.8	97.4	19.1	118.1	2.1	169
3/08/2005	11.1	14	2.6	1.4	2.3	6.3	2.0	1.4	61.6	20.3	85.3	1.2	116
17/08/2005	11.2	13	3.1	1	3.2	7.3	0.3	2.1	49.6	26.4	78.4	1.7	172.5
31/08/2005	11.7	13	2	1	2.4	5.4	<1	1	69	22.2	92.2	1.3	330
14/09/2005	12.4	13	1	1	2.5	4.5	<1	<1	60	19.9	79.9	0.8	243
29/09/2005	11.9	14	1	1	2.4	4.4	<1	<1	67	18	85	0.8	253.5
12/10/2005	11.9	14	0.7	2.3	2.7	5.7	0.0	0.7	56.3	23.2	80.2	0.8	301
25/10/2005	13.4	15	0.8	4.2	1.8	6.8	0.6	0.7	54.7	16.8	72.8	0.6	193
10/11/2005	16.3	17.5	1.2	3.8	1.5	6.5	0.2	0.1	52.7	15.6	68.6	0.5	160
1/12/2005	15.1	19.3	0.6	2.4	1.4	4.4	0	0.3	39.7	16.1	56.1	0.4	141
10/01/2006	17.4	19	1	2	1.4	4.4	0.1	1	49.9	17.8	68.8	0.5	167
2/02/2006	20.2	15.5	1.1	8.9	1.5	11.5	0.0	0.0	54	18	72	1.1	193.5
1/03/2006	19.5	15.3	0.3	7.7	1.6	9.6	0.0	1.3	38.7	18.5	58.5	0.9	160.5
12/04/2006	16.7	15.8	0.6	2.4	1.6	4.6	0.0	0.0	43	20.4	63.4	1.0	230
27/04/2006	16.3	17	1.0	2	1.6	4.6	0.1	0.0	52.9	17.6	70.6	1.1	196.5
9/05/2006	15.7	17.5	0.7	2.3	1.6	4.6	0.7	0.1	46.2	17.2	64.2	0.9	233
30/05/2006	14.2	18.2	0.8	2.2	1.6	4.6	1.8	0.9	61.3	16.6	80.6	1.3	233
27/06/2006	11.9	15.2	0.8	3.2	1.9	5.9	0.8	1.3	61.9	23.2	87.2	2	243
11/07/2006	11.5	13.5	1.4	5.6	2.3	9.3	0.2	1.7	93.1	21	116	1.7	209
25/07/2006	11.1	12	1.0	0	2.1	3.1	0.9	7.4	48.7	17.6	74.6	2.8	192
4/09/2006	11.1	11	1.8	1.2	2.5	5.5	0.0	0.6	31.4	24.5	56.5	2.8	218
26/09/2006	11.9	17.5	1.0	0.8	2.3	4.1	0.0	0.1	39.9	18.6	58.6	0.8	347
18/10/2006	11.7	13	0.8	1.2	2.5	4.5	0.0	0.3	35.7	18.2	54.2	0.9	227.5
1/11/2006	12.4	14.5	0.3	2.7	2.4	5.4	0.0	0.0	41	19.4	60.4	0.8	203
5/12/2006	14.7	16	0.0	3	2	5	0.0	0.0	52	20.2	72.2	0.7	186
19/12/2006	15.6	15.5	0.2	1.8	1.8	3.8	1.0	0.1	48.9	15.4	65.4	0.7	150
9/01/2007	16.5	13.5	0.5	1.5	1.6	3.6	0.9	0.4	60.7	15	77	0.3	207
25/01/2007	18.5	14.5	0.6	0	1.6	2.2	1.5	0.5	59	18.6	79.6	0.3	212
8/02/2007	19.3	16	0.6	0	1.6	2.2	0.4	0.5	58.1	16.8	75.8	0.4	156
21/02/2007	19.6	18.2	0.4	0	1.8	2.2	0.8	0.5	68.3	24.4	94	0.3	182
21/03/2007	18.6	16.5	1.1	0	2.1	3.2	1.8	1.3	47.2	22.1	72.4	0.8	175
3/04/2007	18.0	19	0.9	6.1	1.8	8.8	0.6	0.3	66.9	23.8	91.6	0.7	
19/04/2007	16.5	16	0.9	3.1	2.7	6.7	2.4	1.0	69.6	29.2	102.2	0.6	193

Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
8/05/2007	19.3	16	1.1	3.9	1.2	6.2	0.3	0.4	63.3	17.8	81.8	1.2	169
22/05/2007	15.2	18.5	0.7	2.3	1.3	4.3	2.0	0.5	53.5	15.4	71.4	0.8	201
14/06/2007	13.6	18	0.6	2.4	1.8	4.8	4.0	0.8	65.2	21.8	91.8	1	159
27/06/2007	12.4	18.5	0.8	0.2	3.6	4.6	2.1	1.4	45.5	25.8	74.8	1.2	162
18/07/2007	11.4	14.5	1.1	1.9	2.9	5.9	1.3	1.0	44.7	37.8	84.8	1.7	
8/08/2007	11.1	14	1.1	1.9	2.8	5.8	2.0	2.2	46.8	28.2	79.2	1.3	229
23/08/2007	11.0	13	0.8	2.2	2.5	5.5	0.4	0.4	39.2	30.3	70.3	2.2	202
11/09/2007	11.0	11	1	4	3.3	8.3	0	1	67	34.7	102.7	1.4	324
9/10/2007	12.1	15	1	1	2.6	4.6	1.4	1.5	59.1	23.8	85.8	0.8	184
30/10/2007	12.8	16	1.1	0.9	2.4	4.4	1.2	0.6	64.2	30.5	96.5	0.7	253
15/11/2007	13.5	14	1.8	2.2	2.1	6.1	1.8	0.3	53.9	24.8	80.8	0.5	262
4/12/2007	16.6	15	0.9	2.1	2	5	0.9	0.6	40.5	20.6	62.6	0.3	196
20/12/2007	17.4	17.5	1.1	2.9	1.1	5.1	0.2	0.4	44.4	17	62	0.6	112
17/01/2008	21.1	22.5	1	4	1.5	6.5	0.9	0.4	62.7	24.5	88.5	0.3	230
31/01/2008	19.8	21.5	0.5	1.5	1.3	3.3	1.5	0.3	75.2	17.6	94.6	0.3	190
14/02/2008	19.9	25	0.3	1.7	1.6	3.6	1.4	0.7	75.9	19.8	97.8	0.4	138
27/02/2008	19.3	22	0.1	1.9	1.6	3.6	0.7	0.2	70.1	20	91	0.4	143
13/03/2008	18.8	22	1	1	1.2	3.2	1.2	0.6	56.2	19.6	77.6	0.5	147
26/03/2008	19.3	19	1	0	0.9	1.9	0.4	0.5	63.1	17.1	81.1	0.5	160
17/04/2008	17.8	20.5	1.2	0.8	1.3	3.3	1.1	1	51.9	14.2	68.2	0.8	189
7/05/2008	15.7	16	0.7	2.3	1.5	4.5	1.3	0.3	60.4	21.1	83.1	0.6	189
22/05/2008	14.7	17	0.2	1.8	1.5	3.5	0.4	0.4	71.2	23.6	95.6	0.7	191
5/06/2008	13.6	15	1.3	0.7	1.6	3.6	1	2.1	29.9	17.5	50.5	1	177
19/06/2008	12.9	16.5	0.5	1.5	1.6	3.6	2	0.7	34.3	29.2	66.2	1.2	259
1/07/2008	12.0	14	0.9	2.1	2.15	5.15	0.6	0.7	50.7	34.6	86.6	1.7	242
15/07/2008	11.4	13	1.3	1.7	2.7	5.7	0.0	0.9	38.1	26.5	65.5	1.9	193
7/08/2008	11.1	12.5	1.8	1.2	3.4	6.4	0.0	0.7	25.3	28.8	54.8	3.0	119
20/08/2008	10.7	12.5	1.3	1.7	2.1	5.1	0.7	0.6	24.7	25	51	1.5	179
4/09/2008	11.0	13	0.6	3.4	2	6	1.0	0.0	50	21.5	72.5	1.1	217
16/09/2008	11.3	14.5	1.4	2.6	2.1	6.1	2.2	0.5	28.3	24.3	55.3	0.7	202
14/10/2008	12.6	12.2	0.5	2.5	2.6	5.6	0.5	0.0	45.5	27.1	73.1	0.6	203
4/11/2008	13.4	12	1.0	4	2.5	7.5	3.2	0.5	35.3	28.5	67.5	0.9	140
26/11/2008	15.7	10	1.1	1.9	2.4	5.4	0.4	0.0	47.6	27.6	75.6	1	217
22/12/2008	18.8	12	0.3	1.7	2.3	4.3	1.8	0.0	53.2	35.2	90.2	0.6	245
13/01/2009	19.7	13	1.4	1.6	2.1	5.1	0.3	1.4	61.3	29.4	92.4	0.5	266
28/01/2009	20.9	18	0.4	4.6	1.8	6.8	0.0	3.8	52.2	27.6	83.6	0.3	204
11/02/2009	21.4	22	0.1	4.9	1.6	6.6	4.1	0.5	49.4	25.6	79.6	0.4	185.5
25/02/2009	20.5	20	0.5	2.5	1.6	4.6	2.7	0.4	37.9	21.3	62.3	0.5	186.5
26/03/2009	18.0	18.5	1.1	1.9	2.7	5.7	0.0	1.3	56.7	25.1	83.1	0.6	285
15/04/2009	16.6	18	1.5	2.5	3.4	7.4	1.1	0.7	60.8	22.7	85.3	0.8	240
7/05/2009	15.0	16	1.4	4.6	2.3	8.3	1.3	1.1	56.6	21.7	80.7	1.3	223
27/05/2009	13.0	15	1.2	4.8	1.5	7.5	0.0	0.6	58.4	16.7	75.7	1.2	190
18/06/2009	11.6	16	1.9	0.1	1.7	3.7	0.7	1.7	45.6	23.5	71.5	1.5	201
6/07/2009	10.9	15	2.8	1.2	2.4	6.4	0.1	8.1	46.8	23.4	78.4	1.6	190
13/08/2009	10.43	12	1.9	2.1	2.7	6.7	0.6	0.5	46.9	31.4	79.4	1.9	230
7/09/2009	10.56	15	4.2	0	2.9	7.1	0.1	0.6	54.3	32.3	87.3	1.5	301

Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
19/10/2009	11.72	13	4.2	0	2.7	6.9	0.5	1.1	42.4	23.4	67.4	0.6	282.5
12/11/2009	13.00	12.5	1.2	2.8	2.4	6.4	1.0	0.3	33.7	19.5	54.5	0.7	249
17/12/2009	16.99	15	0.9	2.1	1.4	4.4	0.0	0.7	58.3	21	80.0	0.7	239.5
13/01/2010	17.89	14.5	0.6	1.4	1.8	3.8	0.0	1.0	47	21.6	69.6	0.6	306.5
2/02/2010	19.23	16	0.7	2.3	1.7	4.7	0.0	0.1	55.9	28.3	84.3	0.8	274.5
18/02/2010	20.45	17	1.1	1.9	3.9	6.9	1.3	2.3	102.4	85.4	191.4	0.9	530
10/03/2010	20.10	19	0.8	2.2	1.3	4.3	0.0	4	58	19.1	81.1	0.4	158.5
8/04/2010	17.40	21.5	0.8	2.2	1.7	4.7	0.0	1.2	58.8	26	86.0	0.7	231
28/04/2010	16.38	19	1.2	1.8	2.5	5.5	0.3	1.1	61	39.6	101.6	0.9	262
20/05/2010	15.09	19.5	1.9	1.1	2.1	5.1	7.6	2.5	66.9	25.1	102.1	0.9	248
3/06/2010	14.11	14.5	0.9	2.1	1.8	4.8	1.1	0.1	44.8	13.7	59.7	1.1	141.5
23/06/2010	12.23	14	1.1	1.9	2.4	5.4	1.1	0.8	46.1	22.1	70.1	1.1	196.5
13/07/2010	11.31	14.5	1.5	7.5	2.3	11.3	0.9	1.0	52.1	27.9	81.9	1.7	217
10/08/2010	11.01	12.8	1.7	1.3	2.6	5.6	0.9	1.0	30.1	29.7	61.7	1.9	225
24/08/2010	10.92	11	1.6	1.4	1.5	4.5	0.6	0.5	30.9	34.5	66.5	2.4	244.5
13/09/2010	11.37	10.5	1.1	0.9	3.3	5.3	1.3	0.3	28.4	33.7	63.7	1.6	342.5
5/10/2010	11.90	10.8	3.1	0	2.5	5.6	2.0	2.3	28.7	22.8	55.8	0.9	269
26/10/2010	13.00	12.5	1.7	1.3	2.4	5.4	0.9	0.9	34.2	18.2	54.2	0.8	237
10/11/2010	13.98	11.5	0.8	2.2	2.3	5.3	0.5	0.3	59.2	21.1	81.1	0.7	250.5
25/11/2010	16.14	14.2	1.4	2.6	1.7	5.7	2.9	1.4	41.7	18	64.0	0.4	184.5
8/12/2010		15.5	1.2	2.8	1.8	5.8	1.8	0.6	43.6	18.3	64.3	0.4	181
21/12/2010	18.41	17	0.8	3.2	1.8	5.8	5.7	0.4	66.9	41.4	114.4	0.4	259.5
11/01/2011	19.81	11	0.8	1.2	1.9	3.9	1.8	0.5	48.7	27.1	78.1	0.5	281.5
27/01/2011	19.69	17	1.0	1	1.7	3.7	1.4	0.7	45.9	21.5	69.5	0.4	178.5
17/02/2011	20.61	12	0.9	1.1	2.1	4.1	0.5	0.5	57	23.6	81.6	0.5	224
1/03/2011	20.41	19	0.5	2.5	1.5	4.5	0.7	0.9	48.4	19.9	69.9	0.6	150.5
15/03/2011	20.07	15	3.0	0	1.4	4.4	0.2	2.7	50.1	21.6	74.6	0.5	179.5
13/04/2011	17.62	17	3.1	0	1.5	4.6	0.0	0.8	64.2	24.7	89.7	0.8	223
10/05/2011	15.53	16.5	1.4	2.6	1.5	5.5	0.9	0.9	74.2	17.5	93.5	0.7	207
31/05/2011	14.05	17	1.2	0.8	1.6	3.6	0.3	0.8	44.9	22.5	68.5	0.9	166.5
22/06/2011	12.95	14	0.4	1.6	2	4	1.1	0.4	42.5	22	66	1.0	190.5
5/07/2011	12.13	13	1.0	1	1.8	3.8	0.0	0.2	41.8	28.8	70.8	1.3	233
9/08/2011	11.10	16	1.8	1.2	2.3	5.3	3.4	5.0	75.6	24.7	108.7	1.7	346
24/08/2011	10.86	9	1.6	1.4	2.8	5.8	1.0	0.2	86.8	39.2	127.2	1.6	311
7/09/2011	11.22	16	0.6	3.4	1.8	5.8	2.0	1.1	44.9	23.2	71.2	0.8	198
28/09/2011	10.96	13	1.0	2	2.9	5.9	2.0	0.8	59.2	32.1	94.1	1.2	341

**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 <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>	PC mg m <sup>-3</sup>
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	66.0	1.0	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	65.0	2.1	108.5
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	112.0
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	148.0
8/09/2003	11.1	11	2.5	1.5	3.3	7.3	0.4	0.1	36	23.5	60.0	1.4	196.5
7/10/2003	11.7	9.5	2.3	1.7	3.0	7.0	0.0	0.1	49.9	20.5	70.5	1.2	185.5
21/10/2003	13.2	15.0	2.2	0.8	2.7	5.7	0.3	0.2	38.5	14.9	53.9	0.8	155.5
19/11/2003	13.8	17.0	1.6	2.4	2.4	6.4	0.0	0.1	51.0	14.6	65.7	0.6	139.5
4/12/2003	15.6	17.0	1.8	2.2	1.8	5.8	0.2	0.1	44.7	13.5	58.5	0.4	126.5
18/12/2003	17.0	15.0	0.5	3.5	1.9	5.9	0.0	0.2	56.0	12.4	68.6	0.5	145.5
13/01/2004	20.3	16.0	0.4	4.6	1.8	6.8	0.0	0.2	54.0	13.7	67.9	0.5	125.0



Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
26/02/2004	16.8	13.5	1.1	1.9	1.8	4.8	0.6	0.1	42.3	15.8	58.8	0.8	157.0
8/03/2004	17.6	5.0	0.8	2.2	3.1	6.1	1.0	0.3	41.7	17.5	60.5	0.9	172.0
31/03/2004	15.9	11.0	0.8	3.2	1.8	5.8	0.7	0.2	45.1	9.9	55.9	1.4	124.5
14/04/2004	15.0	14.0	0.9	4.1	2.2	7.2	0.6	0.3	52.1	14.9	67.9	1.3	171.5
10/05/2004	14.7	15.5	0.8	2.2	1.7	4.7	0.0	0.2	59.8	15.9	75.9	1.3	179.0
10/06/2004	12.9	12.0	1.4	2.6	2.1	6.1	0.0	0.2	108.8	18.6	127.6	1.2	183.0
13/07/2004	11.4	11.0	2.1	2.9	2.5	7.5	0.0	8.4	40.6	19.3	68.3	1.4	154.0
26/07/2004	11.2	10.0	1.3	2.7	3.2	7.2	0.2	5.8	38.0	25.0	69.0	2.7	204.0
24/08/2004	10.9	10.0	0.7	3.3	3.1	7.1	0.0	0.0	47.0	20.9	67.9	2.5	158.0
7/09/2004	10.8	11.0	0.7	2.3	2.6	5.6	0.0	0.2	44.8	17.1	62.1	1.5	172.5
21/10/2004	11.7	11.0	1.2	1.8	2.1	5.1	0.2	0.0	30.8	16.1	47.1	0.8	172.5
2/11/2004	13.1	15.0	1.0	2.0	1.7	4.7	0.2	0.1	42.7	11.0	54.0	0.5	152.0
22/11/2004	14.9	15.0	0.6	3.4	1.6	5.6	0.6	0.0	33.4	9.5	43.5	0.5	141.5
15/12/2004	13.2	17.2	0.6	3.4	1.6	5.6	0.4	0.1	39.5	12.6	52.6	0.2	120.0

Lake Taupo cumulative database of 10 m tube sample data

Samples collected from Western Bays (site C)

Date Collected	Temp. °C	Secchi m	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	Chlorophyll a mg m <sup>-3</sup>	PC mg m <sup>-3</sup>
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	61.0	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	85.0
31/07/2003	11.40	12	3.1	5.9	2.8	11	0.1	4.0	55	20.3	79.4	2.3	101.5
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	92.5
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	174.5
8/09/2003	11.30	12	2.6	0.4	3	6	0.1	0.1	40	19.5	59.7	1.3	233.0
7/10/2003	11.7	12.5	2.7	1.3	2.8	6.8	0.0	0.3	44.7	18.4	63.4	1.5	157.5

Date Collected	Temp. °C	Secchi (m)	DRP (mg m <sup>-3</sup> )	DOP (mg m <sup>-3</sup> )	PP (mg m <sup>-3</sup> )	TP (mg m <sup>-3</sup> )	NH <sub>4</sub> -N (mg m <sup>-3</sup> )	NO <sub>3</sub> -N (mg m <sup>-3</sup> )	DON (mg m <sup>-3</sup> )	PN (mg m <sup>-3</sup> )	TN (mg m <sup>-3</sup> )	Chlorophyll a (mg m <sup>-3</sup> )	PC (mg m <sup>-3</sup> )
21/10/2003	13.0	12.0	1.5	1.5	3.1	6.1	0.3	0.0	44.7	17.4	62.4	1.1	195.0
19/11/2003	14.3	17.2	1.5	1.5	2.3	5.3	0.8	0.0	38.2	14.4	53.4	0.7	123.0
4/12/2003	15.5	17.0	1.7	3.3	1.7	6.7	0.0	0.2	46.8	11.2	58.2	0.5	129.0
18/12/2003	17.0	19.0	0.5	4.5	1.5	6.5	0.0	0.0	47.0	9.9	56.9	0.4	124.5
13/01/2004	20.2	17.5	0.7	4.3	1.6	6.6	0.0	0.1	53.0	11.9	65.0	0.4	118.5
26/02/2004	16.9	14.0	0.9	2.1	2.2	5.2	0.8	0.4	40.8	17.2	59.2	0.7	156.0
8/03/2004	18.4	13.0	0.8	2.2	2.0	5.0	0.7	0.1	34.2	11.1	46.1	0.6	124.0
31/03/2004	16.4	12.5	0.6	3.4	2.0	6.0	0.7	0.3	51.0	12.3	64.3	1.2	175.5
14/04/2004	15.4	16.5	0.9	3.1	2.3	6.3	0.6	0.3	50.1	14.2	65.2	1.2	159.0
10/05/2004	14.9	16.0	0.8	3.2	1.6	5.6	0.0	0.2	48.8	15.4	64.4	1.1	153.0
10/06/2004	13.1	14.0	0.8	2.2	2.0	5.0	0.0	0.2	41.8	16.6	58.6	1.0	151.0
13/07/2004	11.6	12.5	1.3	2.7	2.5	6.5	0.0	5.9	39.1	19.9	64.9	1.6	156.5
26/07/2004	11.5	11.0	1.5	2.5	2.9	6.9	0.3	2.7	46.0	22.2	71.2	2.4	180.5
24/08/2004	10.9	10.0	1.0	3.0	2.9	6.9	0.0	0.4	37.6	18.5	56.5	2.5	161.0
7/09/2004	11.1	12.0	1.2	3.8	2.6	7.6	0.0	0.0	54.0	16.8	70.8	1.5	202.0
21/10/2004	11.7	12.0	1.1	1.9	1.9	4.9	0.2	0.0	35.8	14.8	50.8	0.6	167.5
2/11/2004	12.4	17.0	1.0	3.0	1.7	5.7	0.3	1.2	45.5	16.3	63.3	0.4	173.0
22/11/2004	14.8	16.0	0.5	3.5	1.7	5.7	0.0	0.2	37.8	10.8	48.8	0.5	149.0
15/12/2004	14.2	20.8	0.9	4.1	1.4	6.4	0.0	0.0	42.0	12.2	54.2	0.2	131.0

Lake Taupo biannual nutrient database					2010-2011										Started 27 October 1994							
Collection date 10 November 2010					Secchi depth = 11.5 m																	
Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH <sub>4</sub> -N	NO <sub>3</sub> -N	DON	UREA	PN*	TN	DOC	PC	PN**	SO <sub>4</sub>
	m		µS cm <sup>-1</sup>	°C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>
KD1	1	7.8	121	14.12	9.4	1.0	<0.5	0.7	0.9	2.1	4.6	7.6	0.0	0.2	49.8	<2	20.8	70.8	503	192.0	20.0	7.4
KD2	10	7.82	120	13.46	9.1	0.8	<0.5	0.7	0.6	2.4	2.0	5.0	0.0	0.1	41.9	<2	12.1	54.1	478	182.5	12.1	7.5
KD3	20	7.77	120	13.27	9.1	0.8	<0.5	0.8	0.6	1.4	2.1	4.1	0.0	0.0	42.0	<2	14.2	56.2	536	192.5	13.4	7.5
KD4	30	7.8	119	12.24	9.0	0.7	<0.5	1.1	0.5	1.5	2.2	4.2	0.2	0.0	40.8	<2	14.2	55.2	500	211.0	13.2	7.6
KD5	40	7.72	120	11.73	9.6	0.6	<0.5	1.3	0.7	1.3	2.5	4.5	0.2	0.0	41.8	<2	14.8	56.8	447	179.0	12.5	7.7
KD6	50	7.73	119	11.33	9.9	0.9	<0.5	1.6	1.0	1.0	2.6	4.6	0.0	0.0	42.0	<2	14.7	56.7	443	173.5	13.7	7.8
KD7	60	7.57	120	11.16	9.4	0.9	<0.5	2.3	1.8	1.2	2.8	5.8	0.0	0.2	30.8	<2	13.1	44.1	433	140.5	13.3	7.8
KD8	70	7.67	120	11.03	8.3	0.9	<0.5	2.5	0.8	2.2	2.8	5.8	0.0	0.2	44.8	<2	13.1	58.1	437	150.0	14.0	7.9
KD9	80	7.62	119	10.96	8.3	0.8	<0.5	2.0	0.8	2.2	2.9	5.9	0.0	0.2	40.8	<2	14.0	55.0	427	137.5	13.3	7.9
KD10	90	7.57	120	10.89	8.3	0.6	<0.5	2.2	0.8	3.2	2.7	6.7	0.0	1.6	39.4	<2	13.2	54.2	423	70.3	10.0	8.0
KD11	100	7.58	119	10.86	8.0	<0.5	<0.5	2.0	0.8	4.2	2.8	7.8	0.0	2.1	42.9	<2	10.5	55.5	436	72.5	9.6	8.2
KD12	110	7.54	120	10.83	8.0	0.5	<0.5	2.1	1.1	2.9	2.6	6.6	0.0	2.7	40.3	<2	11.7	54.7	428	73.4	9.9	8.0
KD13	120	7.6	119	10.82	7.9	0.5	<0.5	1.7	1.0	2.0	2.5	5.5	0.0	3.8	47.2	<2	11.3	62.3	440	74.9	9.6	8.6
KD14	130	7.62	120	10.80	8.1	3.3	<0.5	2.1	0.8	2.2	3.1	6.1	0.0	7.3	37.7	<2	12.8	57.8	432	83.7	10.9	8.6
KD15	140	7.57	119	10.79	7.8	0.6	<0.5	2.1	1.5	2.5	3.1	7.1	0.0	9.3	39.7	<2	13.5	62.5	430	72.0	12.0	8.1
KD16	150	7.55	120	10.80	8.1	0.8	<0.5	2.8	1.6	2.4	4.3	8.3	0.0	10.8	41.2	<2	17.0	69.0	442	87.1	14.8	8.0
(for summations <1 use 0.5)																						
Collection date 13 April 2011					Secchi depth = 17.0 m																	
Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH <sub>4</sub> -N	NO <sub>3</sub> -N	DON	UREA	PN*	TN	DOC	PC	PN**	SO <sub>4</sub>
	m		µS cm <sup>-1</sup>	°C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>
RL1	1	7.84	116	17.62	9.2	0.4	0.3	0.46	2.0	0.0	0.8	2.8	0.0	0.1	44.7	<2	8.8	53.6	661	102.0	9.9	7.8
RL2	10	7.74	116	17.65	9.6	0.4	0.2	0.64	1.9	0.1	1.1	3.1	0.2	0.2	43.1	<2	10.8	54.3	684	109.5	9.5	7.8
RL3	20	7.73	116	17.62	9.9	0.4	0.3	0.65	1.5	0.5	1.7	3.7	0.0	0.1	40.1	<2	13.6	53.8	713	160.5	17.9	8.2
RL4	30	7.75	117	17.61	9.9	0.4	0.3	0.59	1.5	0.5	1.3	3.3	0.8	0.1	43.2	<2	12.1	56.2	669	139.0	14.7	8.1
RL5	40	7.63	117	12.52	10.2	0.2	0.1	0.74	3.2	0.8	1.1	5.1	0.0	1.2	29.2	<2	8.0	38.4	543	62.6	9.4	8.0
RL6	50	7.68	118	11.63	9.8	0.2	0.2	0.67	3.0	0.0	1.0	4.0	0.0	4.0	27.8	<2	7.3	39.1	587	58.7	5.0	7.9
RL7	60	7.56	118	11.29	9.7	0.3	0.2	0.46	2.6	0.4	0.9	3.9	0.0	6.1	28.0	<2	6.0	40.1	519	75.1	6.6	8.1
RL8	70	7.54	118	11.14	9.1	0.2	<0.1	0.18	2.7	0.3	1.0	4.0	0.0	8.7	25.8	<2	6.7	41.2	519	62.5	8.5	8.0
RL9	80	7.51	118	11.06	9.1	0.2	<0.1	0.16	2.9	0.1	0.8	3.8	0.0	11.8	31.4	<2	5.5	48.7	515	48.6	7.0	8.0
RL10	90	7.45	118	11.00	8.5	0.2	<0.1	0.15	3.4	0.6	0.9	4.9	0.9	14.0	26.3	<2	5.4	46.6	501	56.4	5.6	7.8
RL11	100	7.45	118	10.96	8.2	0.2	0.1	0.14	3.2	0.8	0.9	4.9	0.3	15.2	45.6	<2	5.5	66.6	517	86.8	8.0	8.3
RL12	110	7.40	118	10.92	8.1	0.2	<0.1	0.17	4.4	0.6	0.9	5.9	0.0	20.8	46.4	<2	4.1	71.3	512	41.0	4.2	7.8
RL13	120	7.43	118	10.90	7.9	0.1	<0.1	0.17	4.0	0.0	0.8	4.8	0.1	20.9	28.1	<2	4.5	53.6	512	51.4	5.8	7.9
RL14	130	7.45	118	10.88	7.5	0.2	0.1	0.16	4.5	0.5	1.0	6.0	0.8	23.4	43.4	<2	5.3	72.9	532	50.0		7.6
RL15	140	7.49	117	10.87	7.5	0.2	<0.1	0.17	5.1	0.9	1.0	7.0	0.2	25.1	33.3	<2	5.5	64.1	527	49.8	7.6	7.9
RL16	150	7.39	118	10.86	7.0	0.3	<0.1	0.27	6.1	0.0	1.4	7.5	0.3	28.7	28.3	<2	6.5	63.8	520	59.2	7.2	8.1

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N      \* = PN by wet digestion method, \*\* = PN by combustion furnace method.

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient database

2009-2010

Started 27 October 1994

Collection date 9 October 2009

Secchi depth = 13.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
OT1	1	7.89	118	11.72	11.67	0.6	<0.5	0.3	4.0	<0.5	2.0	6.0	0.8	<0.5	36.0	3	13.2	50.2	553	227.0	18.4
OT2	10	7.87	121	11.25	12.13	0.7	<0.5	0.5	3.5	<0.5	2.2	5.7	0.5	<0.5	39.3	<1	14.0	54.0	538	267.0	20.2
OT3	20	7.78	120	11.24	11.79	0.6	<0.5	0.5	3.8	<0.5	2.2	6.0	0.2	<0.5	33.6	1	14.7	48.7	531	288.0	24.1
OT4	30	7.87	120	11.20	11.78	0.6	<0.5	0.5	4.0	<0.5	2.4	6.4	0.4	<0.5	31.4	1	14.4	46.4	531	264.0	21.3
OT5	40	7.86	120	10.98	11.24	0.6	<0.5	0.6	4.2	<0.5	2.0	6.2	0.4	<0.5	25.4	2	12.3	38.3	522	312.0	18.4
OT6	50	7.73	121	10.67	11.10	<0.5	<0.5	0.7	4.6	<0.5	2.0	6.6	1.0	<0.5	34.8	2	12.1	48.1	521	214.2	18.5
OT7	60	7.65	121	10.58	10.10	<0.5	<0.5	0.6	4.6	<0.5	1.7	6.3	0.9	<0.5	28.9	<1	11.2	41.2	508	161.6	17.4
OT8	70	7.70	121	10.53	10.02	<0.5	<0.5	0.5	4.6	<0.5	1.9	6.5	0.8	1.2	34.0	1	10.2	46.2	505	88.9	22.7
OT9	80	7.67	121	10.50	9.70	<0.5	<0.5	0.5	5.1	<0.5	1.7	6.8	0.8	2.7	30.5	1	9.9	43.9	514	129.3	10.3
OT10	90	7.62	122	10.49	9.72	<0.5	<0.5	0.4	4.9	<0.5	1.4	6.3	0.9	4.7	40.4	2	8.2	54.2	493	121.1	9.4
OT11	100	7.61	121	10.47	9.51	<0.5	<0.5	0.4	5.2	<0.5	1.5	6.7	0.5	7.3	44.2	1	8.1	60.1	493	117.6	8.6
OT12	110	7.62	121	10.46	9.50	<0.5	<0.5	0.2	5.7	<0.5	1.2	6.9	0.8	7.6	34.6	1	7.5	50.5	494	105.6	10.4
OT13	120	7.55	122	10.44	9.20	<0.5	<0.5	0.3	5.5	<0.5	7.7	13.2	0.6	9.3	37.1	2	8.1	55.1	517	114.7	9.1
OT14	130	7.62	122	10.43	9.18	<0.5	<0.5	0.3	5.9	<0.5	1.7	7.6	0.5	12.2	31.3	<1	9.6	53.6	504	125.3	10.1
OT15	140	7.41	122	10.41	8.82	<0.5	<0.5	0.3	6.5	<0.5	1.7	8.2	1.7	13.6	29.7	1	9.0	54.0	503	149.9	13.8
OT16	150	7.71	120	10.41	8.79	<0.5	<0.5	0.5	3.4	0.6	1.6	5.6	0.4	1.0	30.6	1	10	42.0	491	135.0	12.2

Collection date 8 April 2010

Secchi depth = 21.5 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
YZ1	1	7.76	115	17.36	9.48	1.0	<0.5	0.7	0.8	1.2	3.2	5.2	0.0	0.3	69.7	8	19.6	89.6	893	173.0	21.2
YZ2	10	7.78	119	17.35	10.17	<0.5	<0.5	0.6	0.8	1.2	1.6	3.6	0.0	0.2	50.8	<2	11.5	62.5	814	142.5	16.8
YZ3	20	7.83	118	17.35	9.66	0.6	<0.5	0.7	0.8	2.2	1.4	4.4	1.9	0.2	38.9	<2	12.8	53.8	683	121.5	14.2
YZ4	30	7.79	120	17.34	9.43	<0.5	<0.5	0.6	1.1	0.9	1.4	3.4	0.8	0.0	40.2	<2	12.2	53.2	710	115.0	12.6
YZ5	40	7.74	119	12.28	9.04	<0.5	<0.5	1.4	1.0	2.0	1.9	4.9	0.7	0.1	36.2	<2	16.0	53.0	593	117.0	23.8
YZ6	50	7.71	120	11.19	8.57	<0.5	<0.5	1.4	2.2	0.8	1.4	4.4	0.7	0.5	32.8	<2	11.5	45.5	545	88.1	9.4
YZ7	60	7.61	121	10.82	8.31	<0.5	<0.5	0.8	2.2	0.8	1.1	4.1	0.0	0.6	31.4	<2	7.6	39.6	496	53.5	7.7
YZ8	70	7.59	121	10.67	8.11	<0.5	<0.5	0.4	4.4	0.6	0.6	5.6	0.0	7.7	28.3	<2	4.7	40.7	525	62.2	6.4
YZ9	80	7.52	121	10.62	7.97	<0.5	<0.5	0.3	5.2	0.8	0.6	6.6	0.0	16.8	28.2	<2	4.0	49.0	491	43.3	6.3
YZ10	90	7.55	121	10.60	7.74	<0.5	<0.5	0.2	6.2	0.8	0.6	7.6	0.0	20.8	29.2	<2	3.9	53.9	496	42.1	10.1
YZ11	100	7.53	122	10.57	7.43	<0.5	<0.5	0.2	7.2	0.0	0.6	7.8	0.0	23.8	27.2	<2	3.5	54.5	491	38.2	7.8
YZ12	110	7.53	121	10.57	7.27	<0.5	<0.5	0.2	6.5	0.5	0.5	7.5	0.0	24.3	24.7	<2	2.9	51.9	481	26.7	5.9
YZ13	120	7.46	122	10.55	7.11	<0.5	<0.5	0.2	8.3	0.7	0.9	9.9	0.0	29.4	28.6	<2	6.0	64.0	505	43.6	7.3
YZ14	130	7.68	122	10.53	7.09	<0.5	<0.5	0.2	10.1	0.0	1.1	11.2	0.0	31.5	34.5	<2	5.6	71.6	519	43.2	8.1
YZ15	140	7.4	122	10.53	6.82	<0.5	<0.5	0.1	9.3	5.7	1.0	16.0	0.0	33.3	37.7	<2	5.3	76.3	517	48.2	6.6
YZ16	150	7.4	122	10.53	6.75	<0.5	<0.5	0.2	10.4	0.6	1.4	12.4	0.0	33.4	29.6	<2	6.6	69.6	514	49.5	8.5

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient database

2008-2009

Started 27 October 1994

Collection date 14 October 2008

Secchi depth = 12.2 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
SZ1	1	7.66	119	12.59	10.29	1.1	<0.5	0.7	1.0	2.0	4.2	7.2	4.1	0.0	70.9		26.1	101.1	816	235.0	24.6
SZ2	10	7.70	121	12.09	10.29	0.7	<0.5	0.8	0.6	2.4	3.9	6.9	0.1	0.0	39.9		18.7	58.7	690	169.5	23.5
SZ3	20	7.70	121	11.93	10.50	0.8	<0.5	0.8	0.7	2.3	7.8	10.8	0.0	0.0	59.0		32.7	91.7	638	250.0	33.1
SZ4	30	7.70	120	11.85	10.46	1.0	0.6	0.7	0.7	2.3	5.6	8.6	0.0	0.0	65.0		24.2	89.2	632	195.5	31.8
SZ5	40	7.70	120	11.75	10.34	0.7	<0.5	0.9	0.3	1.7	4.6	6.6	0.0	0.0	52.0		16.2	68.2	597	162.5	15.5
SZ6	50	7.69	120	11.59	10.05	0.5	<0.5	0.9	0.4	2.6	4.5	7.5	0.5	0.0	48.5		15.6	64.6	602	139.5	29.2
SZ7	60	7.56	120	10.90	9.89	0.8	0.5	0.8	1.0	2.0	5.0	8.0	0.7	1.6	69.7		16.7	88.7	603	94.0	18.2
SZ8	70	7.52	121	10.76	9.86	0.6	<0.5	0.6	1.2	1.8	3.6	6.6	0.0	2.6	45.4		20.4	68.4	593	77.2	16.8
SZ9	80	7.45	122	10.71	9.81	0.7	<0.5	0.4	1.3	2.7	3.1	7.1	0.0	4.7	36.3		9.5	50.5	589	61.8	25.9
SZ10	90	7.49	121	10.69	9.85	0.7	<0.5	0.3	1.8	0.2	2.3	4.3	0.0	5.7	29.3		9.7	44.7	561	57.5	9.1
SZ11	100	7.23	121	10.68	10.03	0.6	<0.5	0.2	1.5	0.5	2.5	4.5	2.2	6.6	33.2		9.2	51.2	605	71.8	23.1
SZ12	110	7.32	121	10.66	10.13	<0.5	<0.5	0.3	1.5	1.5	2.2	5.2	3.5	7.4	33.1		8.0	52.0	617	46.8	10.6
SZ13	120	7.36	122	10.64	10.09	0.7	<0.5	0.2	1.2	2.8	2.5	6.5	1.6	9.5	34.9		9.9	55.9	613	57.6	28.5
SZ14	130	7.45	121	10.60	9.83	0.8	<0.5	0.2	2.6	0.4	2.1	5.1	1.6	11.7	34.7		7.5	55.5	652	56.6	27.2
SZ15	140	7.43	120	10.59	9.76	<0.5	<0.5	<0.1	2.9	3.1	2.5	8.5	1.4	17.1	37.5		8.7	64.7	686	46.6	24.1
SZ16	150	7.40	121	10.59	9.85	<0.5	<0.5	0.2	2.7	2.3	3.5	8.5	2.3	17.3	39.4		11.0	70.0	656	68.9	23.5

Collection date 15 April 2009

Secchi depth = 18.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
EU1	1	7.89	123	16.60	9.33	<0.5	<0.5	0.7	1.1	0.9	1.7	3.7	4.3	1.4	74.3	17	16.7	96.7	834	187.0	19.2
EU2	10	7.84	122	16.59	10.11	<0.5	<0.5	0.8	1.3	1.7	2.0	5.0	0.1	0.0	26.9	<1	13.1	40.1	669	116.0	16.2
EU3	20	7.83	121	16.59	10.76	<0.5	<0.5	0.9	1.2	2.8	2.0	6.0	0.3	0.0	29.7	1	17.2	47.2	691	152.0	18.4
EU4	30	7.84	123	16.58	10.83	<0.5	<0.5	0.9	0.9	3.1	1.8	5.8	0.8	0.0	38.2	2	15.8	54.8	650	143.0	19.1
EU5	40	7.8	121	12.53	10.39	<0.5	<0.5	1.0	1.4	6.6	1.5	9.5	0.7	0.1	37.3	1	13.0	51.1	627	81.9	13.2
EU6	50	7.79	121	11.56	9.58	<0.5	<0.5	0.7	2.2	3.8	1.2	7.2	0.0	2.0	20.0	<1	9.3	31.3	574	79.5	12.1
EU7	60	7.58	122	11.12	9.06	<0.5	<0.5	0.5	3.9	3.1	1.2	8.2	0.0	8.5	24.5	2	7.4	40.4	581	68.6	11.6
EU8	70	7.49	123	10.98	8.84	<0.5	<0.5	0.3	5.5	4.5	1.1	11.1	0.7	18.7	14.6	2	8.7	42.7	553	59.6	15.2
EU9	80	7.03	124	10.92	8.21	<0.5	<0.5	0.2	6.6	6.4	1.2	14.2	0.0	24.5	26.5	<1	9.3	60.3	635	51.7	11.8
EU10	90	7.03	124	10.88	8.24	12	12	0.1	7.2	2.8	1.1	11.1	0.0	27.0	16.0	1	6.7	49.7	514	46.6	9.4
EU11	100	7.16	123	10.86	8.07	<0.5	<0.5	0.1	6.3	5.7	0.9	12.9	0.0	24.7	32.3	1	5.1	62.1	554	35.9	8.8
EU12	110	7.21	124	10.84	8.12	<0.5	<0.5	0.1	7.0	4	1.0	12.0	0.2	26.3	12.5	<1	6.9	45.9	562	42.7	10.1
EU13	120	7.2	123	10.82	8.02	<0.5	<0.5	0.1	7.1	4.9	1.0	13.0	0.2	26.8	25.0	4	6.8	58.8	549	53.7	10.1
EU14	130	7.61	123	10.79	8.15	<0.5	<0.5	<0.1	7.6	8.4	1.0	17.0	0.0	27.6	<1	2	7.2	34.8	562	45.4	11.8
EU15	140	7.23	122	10.78	8.01	<0.5	<0.5	<0.1	8.1	4.9	1.1	14.1	0.0	29.0	8.0	<1	7.3	44.3	661	50.3	9.8
EU16	150	7.22	122	10.78	7.55	<0.5	<0.5	<0.1	9.0	2	1.3	12.3	1.3	30.6	21.1	1	7.1	60.1	544	42.8	12.7

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient database

2007-2008

Started 27 October 1994

Collection date 30 October 2007

Secchi depth = 12.8 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
ZA1	1	7.80	119	12.84	10.18	0.7	<0.5	0.6	1.3	0.7	2.1	4.1	1.5	0.7	79.8	16	20.1	102.1	617	170.0	19.2
ZA2	10	7.83	120	11.83	10.27	<0.5	<0.5	1.0	0.9	1.1	2.5	4.5	0.0	0.0	42.0	<5	18.5	60.5	553	204.0	19.8
ZA3	20	7.79	115	11.76	10.25	0.5	<0.5	1.1	1.1	0.9	2.6	4.6	0.2	0.0	42.8	<5	19.0	62.0	405	169.0	19.4
ZA4	30	7.76	119	11.70	10.07	0.7	<0.5	1.2	0.8	1.2	2.5	4.5	0.0	0.0	49.0	<5	19.1	68.1	417	173.5	19.0
ZA5	40	7.72	120	11.64	10.02	0.7	<0.5	1.1	1.0	1.0	2.6	4.6	0.0	0.0	36.0	<5	16.8	52.8	417	131.5	17.4
ZA6	50	7.61	121	11.51	9.85	0.8	<0.5	1.4	0.9	1.1	3.3	5.3	0.0	0.0	39.0	<5	18.3	57.3	434	140.0	18.1
ZA7	60	7.54	120	11.43	9.52	0.9	<0.5	1.4	1.2	0.8	2.7	4.7	0.2	0.0	32.8	<5	19.5	52.5	414	127.5	17.1
ZA8	70	7.46	123	11.32	9.77	0.8	<0.5	1.5	1.5	0.5	2.7	4.7	0.1	0.3	46.6	<5	19.1	66.1	443	130.0	19.0
ZA9	80	7.42	122	11.23	9.58	0.8	<0.5	1.1	1.9	1.1	2.1	5.1	0.4	2.6	41.0	5	15.8	59.8	422	95.8	14.4
ZA10	90	7.42	121	11.16	9.42	0.7	<0.5	0.9	2.1	0.9	2.1	5.1	0.3	4.8	42.9	<5	13.3	61.3	410	92.0	13.0
ZA11	100	7.38	122	11.07	9.49	<0.5	<0.5	0.7	2.8	0.2	1.8	4.8	0.0	8.5	36.5	<5	11.2	56.2	400	64.0	11.0
ZA12	110	7.40	122	11.04	9.16	0.7	<0.5	0.7	2.9	0.1	1.8	4.8	0.0	9.2	56.8	<5	11.6	77.6	386	68.3	11.1
ZA13	120	7.38	122	11.02	9.27	0.7	<0.5	0.6	2.8	1.2	2.1	6.1	0.0	10.0	46.0	<5	12.7	68.7	359	105.3	12.5
ZA14	130	7.44	120	11.00	9.01	0.6	<0.5	0.6	2.6	1.4	1.9	5.9	0.0	10.4	35.6	<5	10.9	56.9	348	61.8	10.5
ZA15	140	7.44	121	10.98	9.11	0.6	<0.5	0.6	3.0	0.0	1.7	4.7	0.0	10.8	39.2	<5	10.3	60.3	351	64.1	11.2
ZA16	150	7.42	121	10.96	8.91	<0.5	<0.5	0.6	3.5	1.5	1.8	6.8	0.0	13.3	38.7	<5	10.8	62.8	305	63.1	10.6

Collection date 17 April 2008

Secchi depth = 17.8 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
KA1	1	7.79	122	17.88	9.49	<0.5	<0.5	0.4	0.8	0.2	0.7	1.7	2.8	0.4	64.8	14	13.3	81.3	656	138.5	8.4
KA2	10	7.87	121	17.87	8.97	<0.5	<0.5	0.8	0.5	0.5	0.7	1.7	1.1	0.3	48.6	<5	12.0	62.0	576	112.5	8.3
KA3	20	7.83	124	17.85	8.46	<0.5	<0.5	0.8	0.9	0.1	0.8	1.8	0.4	0.3	38.3	<5	13.7	52.7	528	142.0	9.4
KA4	30	7.71	122	15.58	8.52	<0.5	<0.5	0.5	1.0	0.0	0.9	1.9	3.1	0.1	27.8	<5	10.9	41.9	526	110.0	9.1
KA5	40	7.58	121	12.38	8.72	<0.5	<0.5	0.6	1.7	1.3	0.8	3.8	1.8	0.8	36.4	<5	14.6	53.6	459	107.0	6.7
KA6	50	7.38	121	11.72	8.48	<0.5	<0.5	0.5	1.9	2.1	0.6	4.6	0.2	3.4	29.4	<5	10.2	43.2	417	75.1	6.1
KA7	60	7.36	122	11.48	8.20	<0.5	<0.5	0.4	3.5	0.5	0.8	4.8	0.6	5.3	32.1	<5	9.6	47.6	353	84.9	6.7
KA8	70	7.31	122	11.34	7.84	<0.5	<0.5	0.3	3.5	1.5	0.7	5.7	0.9	10.8	42.3	<5	10.7	64.7	481	85.4	6.8
KA9	80	7.25	122	11.27	7.71	<0.5	<0.5	0.2	4.2	0.8	1.2	6.2	0.4	14.7	82.9	<5	9.5	107.5	347	97.5	4.9
KA10	90	7.19	122	11.20	7.57	<0.5	<0.5	0.1	5.1	0.0	0.7	5.8	0.3	19.8	43.9	<5	10.2	74.2	370	107.0	5.4
KA11	100	7.18	122	11.17	7.45	<0.5	<0.5	0.1	4.6	0.6	0.6	5.2	0.6	21.2	30.2	<5	8.6	60.6	412	59.8	4.0
KA12	110	7.12	123	11.14	7.29	<0.5	<0.5	<0.1	5.0	1.0	0.6	6.6	0.8	28.2	26.0	<5	4.5	59.5	346	44.6	3.3
KA13	120	7.07	123	11.15	7.29	0.6	<0.5	<0.1	7.4	0.0	0.8	8.2	0.1	30.2	29.7	<5	7.9	67.9	373	85.8	5.8
KA14	130	7.28	123	11.12	7.18	<0.5	<0.5	<0.1	5.6	1.4	0.8	7.8	1.1	29.5	26.4	<5	9.0	66.0	395	89.1	4.4
KA15	140	7.12	123	11.11	7.13	<0.5	<0.5	<0.1	8.4	1.6	1.5	11.5	1.1	36.8	27.1	<5	8.5	73.5	393	72.6	4.1
KA16	150	7.11	123	11.11	6.72	<0.5	<0.5	<0.1	8.3	0.7	1.5	10.5	0.4	36.4	27.2	<5	7.2	71.2	379	98.8	4.1

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient database

2006-2007

Started 27 October 1994

Collection date 1 November 2006

Secchi depth = 14.5 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
HW1	1	7.79	118	12.43	10.2	0.5	<0.5	0.5	1.2	0.0	1.7	2.9	0.1	1.0	75.9		13.6	90.6	413	168.0	15.4
HW2	10	7.77	119	12.27	10.1	0.8	<0.5	0.6	1.0	0.0	1.9	2.9	0.0	0.1	61.9		13.8	75.8	419	187.0	13.8
HW3	20	7.77	120	12.25	10.1	0.7	<0.5	0.7	0.9	1.1	2.3	4.3	0.0	0.1	32.9		17.8	50.8	373	209.5	17.4
HW4	30	7.81	119	12.20	10.1	0.8	<0.5	0.6	1.0	0.0	2.7	3.7	0.3	0.0	38.7		22.3	61.3	456	215.5	18.1
HW5	40	7.78	119	12.10	10.1	0.9	<0.5	0.6	1.1	0.9	2.2	4.2	0.0	0.1	30.9		17.9	48.9	368	227.5	19.8
HW6	50	7.74	119	11.96	10.0	0.6	<0.5	0.7	1.2	0.0	1.9	3.1	0.0	0.2	29.8		14.0	44.0	468	169.0	13.9
HW7	60	7.67	120	11.34	9.7	0.7	<0.5	1.1	1.5	0.0	1.8	3.3	0.6	0.1	31.3		13.9	45.9	411	123.5	13.5
HW8	70	7.64	119	11.17	9.5	<0.5	<0.5	1.3	1.2	1.8	2.0	5.0	0.5	0.1	29.4		14.5	44.5	378	98.0	12.3
HW9	80	7.57	119	11.06	9.4	0.7	<0.5	1.3	1.3	0.7	2.2	4.2	2.5	1.8	27.7		14.1	46.1	330	91.5	11.2
HW10	90	7.56	119	10.99	9.3	<0.5	<0.5	1.3	1.2	0.8	2.2	4.2	2.7	2.3	52.0		14.4	71.4	352	122.5	15.3
HW11	100	7.56	119	10.94	9.3	0.5	<0.5	1.1	1.4	0.0	2.3	3.7	2.9	3.1	43.0		13.4	62.4	378	105.5	13.2
HW12	110	7.50	121	10.91	9.2	<0.5	<0.5	0.9	1.8	0.0	2.3	4.1	3.7	4.6	73.7		14.3	96.3	382	106.5	12.8
HW13	120	7.50	119	10.88	9.1	<0.5	<0.5	0.7	1.8	2.2	2.2	6.2	3.7	5.8	52.5		11.5	73.5	421	87.5	11.5
HW14	130	7.57	120	10.85	9.0	<0.5	<0.5	0.9	1.8	2.2	2.2	6.2	3.3	4.4	38.3		12.0	58.0	354	84.5	11.6
HW15	140	7.50	119	10.84	8.9	0.6	<0.5	0.8	1.4	0.6	2.3	4.3	3.0	4.5	43.5		13.4	64.4	428	110.5	12.9
HW16	150	7.49	120	10.84	8.7	<0.5	<0.5	0.7	2.0	3.0	2.4	7.4	4.7	7.6	52.7		12.8	77.8	368	98.0	10.7

Collection date 3 April 2007

Secchi depth = 19.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
HW17	1	7.94	119	18.04	9.4	<0.5	<0.5	0.7	1.6	2.4	1.4	5.4	4.7	0.9	62.4		14.9	82.9	567	122.0	18.4
HW18	10	8.09	119	18.03	9.5	<0.5	<0.5	0.8	1.1	3.9	1.8	6.8	0.0	0.1	59.9		14.9	74.9	522	317.5	19.2
HW19	20	8.09	119	17.94	9.4	<0.5	<0.5	0.8	1.2	2.8	1.6	5.6	0.0	0.2	65.8		14.8	80.8	498	177.5	16.8
HW20	30	7.95	119	16.72	9.3	<0.5	<0.5	1.2	1.0	4.0	2.0	7.0	0.0	0.1	63.9		17.5	81.5	481	133.0	19.6
HW21	40	7.73	119	13.50	8.9	<0.5	<0.5	1.2	1.8	2.2	1.6	5.6	0.0	0.3	55.7		12.3	68.3	444	76.4	12.1
HW22	50	7.62	120	12.33	8.9	<0.5	<0.5	0.8	1.5	4.5	1.3	7.3	0.1	0.8	53.2		9.0	63.1	419	68.1	10.1
HW23	60	7.54	119	11.65	8.8	<0.5	<0.5	0.7	1.2	3.8	1.5	6.5	0.1	3.4	51.5		7.7	62.7	393	49.9	6.3
HW24	70	7.48	120	11.28	8.8	<0.5	<0.5	0.9	2.0	2.0	1.3	5.3	0.0	9.7	70.2		6.4	86.3	434	68.3	8.6
HW25	80	7.43	115	11.22	8.5	<0.5	<0.5	0.6	2.0	3.0	1.2	6.2	0.0	14.6	52.4		6.4	73.4	436	58.0	8.3
HW26	90	7.39	121	11.11	8.5	<0.5	<0.5	0.3	1.7	3.3	1.0	6.0	0.1	16.3	54.7		7.1	78.2	460	62.7	8.4
HW27	100	7.35	121	11.10	8.2	<0.5	<0.5	0.3	2.5	1.5	1.1	5.1	0.0	19.4	50.5		7.0	76.9	469	48.9	6.7
HW28	110	7.31	121	11.04	8.2	<0.5	<0.5	0.2	2.7	2.3	0.9	5.9	1.5	20.9	47.1		5.9	75.4	437	40.4	7.5
HW29	120	7.32	120	11.04	8.0	<0.5	<0.5	0.2	3.0	2.0	0.9	5.9	0.0	23.8	57.7		4.9	86.4	452	48.5	7.8
HW30	130	7.73	121	11.01	8.1	<0.5	<0.5	0.2	2.7	3.3	0.9	6.9	0.0	24.8	51.2		3.8	79.8	389	42.7	6.7
HW31	140	7.30	118	11.00	7.7	<0.5	<0.5	0.2	3.7	2.3	1.3	7.3	0.0	24.6	47.4		3.8	75.8	413	43.2	6.4
HW32	150	7.25	121	10.99	7.4	<0.5	<0.5	0.2	4.5	3.5	1.6	9.6	0.0	30.5	50.5		6.1	87.1	439	51.7	9.5

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.



Lake Taupo biannual nutrient database

2005-2006

Started 27 October 1994

Collection date 25 October 2005

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH <sub>4</sub> -N	NO <sub>3</sub> -N	DON	UREA	PN*	TN	DOC	PC	PN**
	m		mS cm <sup>-1</sup>	°C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>
QD1	1	7.81	119	13.40	10.1	<0.5	<0.5	0.4	1.0	3.0	1.3	5.3	0.6	0.3	51.1	4	8.5	60.5	613	132.5	11.0
QD2	10	7.88	119	12.88	10.0	0.5	<0.5	0.5	0.7	2.3	1.9	4.9	0.1	0.0	52.9	3	12.8	65.8	623	169.0	13.5
QD3	20	7.74	119	12.17	10.1	0.6	<0.5	0.7	0.6	2.4	2.7	5.7	0.4	0.2	43.4	2	17.0	61.0	625	216.5	20.0
QD4	30	7.77	118	11.65	9.9	0.7	<0.5	0.6	0.6	5.4	2.6	8.6	0.7	0.0	57.3	2	17.3	75.3	566	212.0	16.0
QD5	40	7.68	119	11.49	9.8	<0.5	<0.5	0.9	0.6	3.4	3.1	7.1	0.0	0.2	49.8	2	22.2	72.2	581	229.5	20.5
QD6	50	7.59	119	11.29	9.5	<0.5	<0.5	1.4	0.8	1.2	2.2	4.2	1.4	0.1	35.5	2	15.9	52.9	599	172.5	14.0
QD7	60	7.46	120	11.18	9.2	0.7	<0.5	0.7	1.7	2.3	1.6	5.6	1.7	9.6	41.7	2	9.8	62.8	503	103.5	6.5
QD8	70	7.37	120	11.07	9.0	0.5	<0.5	0.8	1.9	2.1	1.5	5.5	1.6	12.8	56.6	2	9.2	80.2	482	101.5	6.0
QD9	80	7.35	120	11.01	8.8	0.6	<0.5	0.6	2.5	1.5	1.4	5.4	0.6	15.3	30.1	13	9.0	55.0	521	86.5	6.0
QD10	90	7.36	121	10.97	8.8	0.7	<0.5	0.4	2.8	1.2	1.4	5.4	0.3	17.1	47.6	2	7.3	72.3	478	62.5	4.0
QD11	100	7.29	121	10.97	8.6	<0.5	<0.5	0.5	2.8	1.2	1.4	5.4	0.4	17.4	39.2	2	7.8	64.8	476	77.5	4.5
QD12	110	7.34	120	10.94	8.5	<0.5	<0.5	0.5	3.0	1.0	1.3	5.3	1.5	18.7	48.8	2	7.4	76.4	462	92.5	3.0
QD13	120	7.29	121	10.94	8.5	<0.5	<0.5	0.5	2.8	2.2	1.2	6.2	0.8	20.4	42.8	2	6.2	70.2	549		5.0
QD14	130	7.32	120	10.93	8.4	<0.5	<0.5	0.5	2.7	1.3	1.3	5.3	0.1	20.3	35.6	3	5.9	61.9	504	69.5	6.0
QD15	140	7.34	121	10.93	8.4	<0.5	<0.5	0.6	3.0	2.0	1.4	6.4	1.4	20.9	34.7	1	7.8	64.8	352	77.5	6.5
QD16	150	7.26	120	10.92	8.2	<0.5	<0.5	0.5	3.8	1.2	1.5	6.5	0.9	23.5	29.6	3	7.1	61.1	533	66.0	6.0

Collection date 12 April 2006

Code	Depth	pH	EC @25oC	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH <sub>4</sub> -N	NO <sub>3</sub> -N	DON	UREA	PN*	TN	DOC	PC	PN**
	m		mS cm <sup>-1</sup>	°C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>
ZD1	1	7.9	119	16.72	9.6	<0.5	<0.5	1.2	1.1	0.9	1.9	3.9	0.0	0.2	50.8	2	19.2	70.2		213.5	19.0
ZD2	10	7.9	118	16.72	9.2	<0.5	<0.5	1.3	0.8	1.2	1.6	3.6	0.0	0.0	38.0	2	16.6	54.6		196.0	13.5
ZD3	20	7.9	116	16.72	9.0	0.5	<0.5	1.1	0.7	0.3	1.3	2.3	0.0	0.0	42.0	<1	15.65	57.7		235.0	15.5
ZD4	30	7.88	120	16.71	9.4	<0.5	<0.5	1.2	0.6	1.4	1.6	3.6	0.1	0.0	50.9	<1	15.45	66.5		172.0	13.5
ZD5	40	7.9	116	16.64	9.2	0.8	0.7	1.3	0.5	1.5	1.55	3.6	0.0	0.0	41.0	2	15.45	56.5		224.5	13.0
ZD6	50	7.6	119	12.11	8.7	<0.5	<0.5	1.0	0.7	2.3	1.2	4.2	0.0	0.1	33.9	8	11.4	45.4		133.0	8.5
ZD7	60	7.43	121	11.52	8.5	<0.5	<0.5	1.0	0.7	2.3	1.05	4.1	0.0	0.5	44.5	2	9.15	54.2		171.5	8.0
ZD8	70	7.49	121	11.31	8.3	<0.5	<0.5	0.9	0.7	2.3	1.15	4.2	0.0	0.7	37.3	6	9.55	47.6		130.5	9.0
ZD9	80	7.9	120	11.18	8.3	<0.5	<0.5	1.1	0.5	2.5	1.4	4.4	0.3	0.0	50.7	5	16.1	67.1		182.0	12.5
ZD10	90	7.31	122	11.11	8.1	<0.5	<0.5	0.2	3.0	1	0.45	4.5	0.0	23.0	28.0	2	4.1	55.1		62.5	6.0
ZD11	100	7.31	122	11.08	8.1	<0.5	<0.5	0.3	3.2	0.8	0.5	4.5	0.1	22.8	24.1	<1	4.95	52.0		68.5	6.5
ZD12	110	7.91	119	11.05	8.0	0.7	0.5	1.1	3.2	1.8	1.5	6.5	0.1	22.2	25.7	3	16.5	64.5		196.0	15.0
ZD13	120	7.42	122	11.03	7.9	<0.5	<0.5	0.3	3.1	1.9	0.5	5.5	0.0	21.6	27.4	<1	5.2	54.2		86.5	7.0
ZD14	130	7.5	121	11.02	7.7	<0.5	<0.5	0.3	3.0	2	0.55	5.6	0.0	19.9	32.1	2	5.45	57.5		69.5	6.5
ZD15	140	7.3	119	11.02	7.3	<0.5	<0.5	0.2	3.4	1.6	0.55	5.6	0.0	23.1	31.9	2	6.5	61.5		87.0	7.5
ZD16	150	7.24	122	11.02	7.2	<0.5	<0.5	0.3	2.9	1.1	0.55	4.6	0.2	21.0	28.8	5	5.85	55.9		77.5	7.0

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient database

2004-2005

Started 27 October 1994

Collection date 21 October 2004

Secchi depth = 15.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
VZ1	1	7.88	122	11.75	10.4	0.6	0.5	0.6	1.3	2.7	1.6	5.6	0.1	0.4	39.5	19	9.7	49.7	500	110.0	8
VZ2	10	7.82	120	11.61	10.2	0.8	0.6	0.8	1.1	2.9	2.0	6.0	0.2	0.1	35.7	24	12.8	48.8	447	157.0	8.5
VZ3	20	7.87	120	11.59	10.1	0.9	0.7	0.8	1.0	3.0	1.9	5.9	0.0	0.0	33.0	16	11.3	44.3	440	153.0	8.5
VZ4	30	7.91	123	11.59	10.2	1.5	1.0	0.7	1.0	2.0	1.9	4.9	0.0	0.0	34.0	15	11.3	45.3	490	157.5	8
VZ5	40	7.82	117	11.58	10.1	1.1	0.6	0.7	1.4	3.6	2.0	7.0	0.2	0.1	33.7	7	11.2	45.2	445	155.0	10
VZ6	50	7.83	120	11.58	9.9	1.1	0.7	0.9	1.0	4.0	2.1	7.1	0.0	0.1	33.9	9	13.2	47.2	494	197.5	15
VZ7	60	7.79	119	11.15	9.9	1.1	0.7	1.0	1.6	2.4	2.3	6.3	0.5	0.4	34.1	11	26.0	61.0	585	167.0	16
VZ8	70	7.66	118	10.79	9.7	0.7	0.5	1.0	1.9	1.1	1.9	4.9	2.4	0.8	40.8	21	11.5	55.5	468	114.0	11.5
VZ9	80	7.63	118	10.74	9.6	0.6	<0.5	0.9	2.0	1.0	1.7	4.7	2.8	1.3	47.9	16	8.9	60.9	440	103.0	9.5
VZ10	90	7.61	119	10.72	9.5	0.6	<0.5	0.7	2.0	2.0	1.6	5.6	3.9	2.2	28.9	9	9.1	44.1	633	100.5	10
VZ11	100	7.53	118	10.70	9.4	0.7	0.5	0.7	2.3	1.7	1.5	5.5	5.1	3.6	34.3	7	9.0	52.0	570	93.0	10
VZ12	110	7.56	119	10.68	9.4	0.5	<0.5	0.7	2.0	5.0	1.6	8.6	5.3	2.8	28.9	9	9.2	46.2	514	101.5	9
VZ13	120	7.49	119	10.66	9.3	0.5	<0.5	0.7	2.1	1.9	1.5	5.5	5.3	3.9	35.8	6	8.5	53.5	391	91.5	11
VZ14	130	7.48	118	10.65	9.3	<0.5	<0.5	0.6	2.5	1.5	1.6	5.6	5.8	5.3	34.9	5	8.6	54.6	366	73.5	8.5
VZ15	140	7.58	118	10.61	9.2	<0.5	<0.5	0.6	2.9	1.1	1.6	5.6	5.9	7.3	33.8	13	9.1	56.1	491	93.5	10.5
VZ16	150	7.58	119	10.56	9.1	<0.5	<0.5	0.6	2.4	1.6	1.5	5.5	4.5	3.3	35.2	21	8.7	51.7	464	78.0	9

Collection date 14 April 2005

Secchi depth = 17.2 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
GC1	1	7.85	119	17.92	9.1	0.4	0.4	0.7	0.8	1.2	1.9	3.9	1.2	0.2	64.6	7	15.1	81.1	690	176.0	19.0
GC2	10	7.86	118	17.96	9.0	0.3	0.4	0.9	0.8	2.2	1.9	4.9	0.0	0.0	46	3	14.1	60.1	580	199.5	19.0
GC3	20	7.9	119	17.95	9.0	0.3	0.3	0.9	0.8	2.2	2.0	5.0	0.0	0.1	55.9	1	14.5	70.5	580	179.0	17.0
GC4	30	7.82	118	15.13	8.4	0.3	0.3	0.9	0.8	2.2	1.8	4.8	0.0	0.3	49.7	2	12.8	62.8	570	176.5	17.0
GC5	40	7.58	121	12.92	8.7	0.2	0.2	0.8	2.3	0.7	1.2	4.2	0.3	0.6	31.1	2	8.9	40.9	510	109.5	14.0
GC6	50	7.51	120	12.00	8.3	0.1	0.1	0.6	3.1	0.9	1.0	5.0	0.0	6.4	39.6	3	6.8	52.8	480	84.0	9.0
GC7	60	7.47	121	11.33	8.2	0.1	0.1	0.5	3.6	1.4	1.1	6.1	0.0	8.3	40.7	2	8.2	57.2	510	78.5	7.5
GC8	70	7.48	120	10.99	8.2	0.1	0.1	0.3	4.2	0.8	0.9	5.9	0.0	15.7	38.3	2	6.5	60.5	490	96.0	7.0
GC9	80	7.39	121	10.88	8.2	0.2	0.2	0.3	3.8	0.2	0.8	4.8	0.1	15.7	36.2	1	4.3	56.3	480	72.5	7.5
GC10	90	7.21	121	10.82	8.3	0.0	0.1	0.1	5.6	1.4	0.9	7.9	0.2	23.8	38	2	5.6	67.6	480	64.0	7.0
GC11	100	7.31	121	10.78	8.0	0.0	0.1	0.1	5.7	1.3	0.8	7.8	0.2	23.6	53.2	2	5.0	82.0	460	78.5	7.0
GC12	110	7.32	121	10.76	7.8	0.1	0.1	0.1	5.7	1.3	0.8	7.8	0.0	25.9	47.1	2	5.6	78.6	470	43.5	6.0
GC13	120	7.33	121	10.76	7.7	0.1	0.1	<0.1	6.4	1.6	0.8	8.8	0.3	26.8	37.9	1	4.9	69.9	450	56.0	6.5
GC14	130	7.33	121	10.74	7.7	0.1	0.1	<0.1	6.1	0	0.8	6.8	0.3	26.7	57	1	4.4	88.4	470	43.5	5.5
GC15	140	7.34	121	10.74	7.6	0.1	0.1	<0.1	6.6	0.4	0.9	7.9	0.2	28.8	39	2	5.8	73.8	490	54.5	6.0
GC16	150	7.36	121	10.72	7.5	0.3	0.1	0.1	7.8	0.2	1.1	9.1	0.0	32.1	51.9	1	6.9	90.9	490	46.0	7.5

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient database

2003-2004

Started 27 October 1994

Collection date 19 November 2003

Secchi depth = 16.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
EU1	1	7.84	119	13.96	9.9	<0.5	<0.5	0.8	1.7	2.3	2.3	6.3	8.0	0.8	42.2	1	14.8	65.8	476	90.5	10.5
EU2	10	7.84	120	13.79	9.9	<0.5	<0.5	0.9	1.6	1.4	2.5	5.5	0.3	0.3	52.4	1	14.4	67.4	461	147.5	15.0
EU3	20	7.83	120	13.78	9.8	<0.5	<0.5	0.7	1.8	1.2	3.4	6.4	0.4	0.1	46.5	1	19.4	66.4	466	151.0	20.5
EU4	30	7.84	120	13.70	9.5	<0.5	<0.5	0.9	1.8	2.2	3.8	7.8	0.4	0.3	42.3	1	26.3	69.3	450	133.0	18.5
EU5	40	7.69	120	12.30	9.3	<0.5	<0.5	1.5	2.6	1.4	3.3	7.3	0.7	0.2	35.1	1	20.6	56.6	437	133.0	17.0
EU6	50	7.63	121	11.35	9.0	<0.5	<0.5	1.2	2.8	1.2	1.9	5.9	0.4	0.5	37.1	1	11.9	49.9	470	92.5	11.0
EU7	60	7.58	121	11.28	8.9	<0.5	<0.5	0.7	3.3	0.7	1.5	5.5	1.0	3.2	27.8	2	9.6	41.6	503	69.5	8.0
EU8	70	7.59	121	11.23	8.7	<0.5	<0.5	0.6	3.5	0.5	1.1	5.1	3.4	4.8	25.8	1	6.2	40.2	465	47.0	<6
EU9	80	7.6	121	11.19	8.6	<0.5	<0.5	0.5	3.6	0.4	1.1	5.1	0.6	5.9	29.5	2	5.1	41.1	430	65.0	<6
EU10	90	7.57	121	11.16	8.6	<0.5	<0.5	0.5	3.9	0.1	1.2	5.2	1.0	7.0	27	3	6.4	41.4	391	39.5	<6
EU11	100	7.59	121	11.15	8.6	<0.5	0.7	0.4	4.1	0.9	1.2	6.2	0.8	7.8	33.4	2	4.0	46.0	405	46.5	<6
EU12	110	7.6	121	11.12	8.4	<0.5	<0.5	0.4	4.1	0.9	1.1	6.1	1.1	11.8	29.1	3	3.4	45.4	428	45.5	<6
EU13	120	7.57	120	11.11	8.4	<0.5	<0.5	0.4	4.6	0.4	1.2	6.2	0.7	13.6	32.7	2	3.0	50.0	439	37.0	<6
EU14	130	7.53	121	11.09	8.3	<0.5	<0.5	0.3	5.1	0.4	1.2	6.7	0.8	16.1	32.7	3	3.7	53.3	408	33.0	<6
EU15	140	7.57	121	11.09	8.2	<0.5	<0.5	0.3	5.3	0.7	1.2	7.2	0.4	18.1	32.5	3	5.1	56.1	440	54.5	<6
EU16	150	7.54	120	11.09	8.0	0.5	<0.5	0.5	5.6	1.4	1.5	8.5	2.4	20.7	32.9	4	6.4	62.4	481	44.0	<6

Collection date 31 March 2004

Secchi depth = 16.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
MB1	1	7.86	118	16.49	9.2	<0.5	<0.5	0.7	0.9	4.1	1.4	6.4	1	0	69	-	9.7	79.7	622	91.0	-
MB2	10	7.83	118	16.29	9.1	<0.5	<0.5	1.2	0.5	3.5	2.0	6.0	0	0	47	-	12.4	59.4	548	141.5	17.0
MB3	20	7.83	118	16.23	9.0	<0.5	<0.5	1.1	0.6	3.4	2.1	6.1	1	0.2	47.8	-	14.8	63.8	561	140.5	17.0
MB4	30	7.83	118	16.19	9.0	<0.5	<0.5	1.1	0.8	3.2	1.9	5.9	1	0.2	50.8	-	13.5	65.5	749	131.5	15.5
MB5	40	7.66	118	16.15	8.9	<0.5	<0.5	0.9	1.5	1.5	1.9	4.9	1	2.8	71.2	-	11.6	86.6	560	114.5	14.0
MB6	50	7.46	120	12.51	8.2	<0.5	<0.5	0.5	3.3	2.7	1.5	7.5	1	12.1	58.9	-	7.2	79.2	467	109.0	7.5
MB7	60	7.41	121	11.59	8.0	<0.5	<0.5	0.3	4.7	2.3	1.0	8.0	1	18.0	41	-	4.2	64.2	394	54.5	7.0
MB8	70	7.36	121	11.40	8.0	<0.5	<0.5	0.2	4.5	1.5	0.8	6.8	1	19.1	36.9	-	3.7	60.7	404	45.0	<4
MB9	80	7.42	121	11.34	8.0	<0.5	<0.5	0.2	5.0	1.0	0.8	6.8	1	20.2	31.8	-	5.3	58.3	464	41.0	<4
MB10	90	7.36	121	11.30	7.9	<0.5	<0.5	0.1	5.2	1.8	0.7	7.7	3	22.1	35.9	-	3.9	64.9	453	52.0	<4
MB11	100	7.31	122	11.27	7.8	<0.5	<0.5	0.1	5.6	2.4	0.8	8.8	2	23.9	38.1	-	3.0	67.0	477	36.5	<4
MB12	110	7.29	122	11.26	7.7	<0.5	<0.5	<0.1	5.8	2.2	1.0	9.0	1	25.0	30	-	6.2	62.2	392	36.5	5.5
MB13	120	7.31	121	11.24	7.6	<0.5	<0.5	0.1	5.9	3.1	0.8	9.8	1	25.0	59	-	3.6	88.6	373	53.5	<4
MB14	130	7.3	121	11.22	7.5	<0.5	<0.5	<0.1	6.3	2.7	0.9	9.9	0	27.0	35	-	3.3	65.3	393	61.0	<4
MB15	140	7.3	121	11.21	7.4	<0.5	<0.5	<0.1	6.6	3.4	0.8	10.8	0	27.8	46.2	-	3.3	77.3	356	35.0	<4
MB16	150	7.31	120	11.21	7.1	<0.5	<0.5	0.1	7.2	2.8	1.0	11.0	0	30.1	48.9	-	4.0	83.0	394	34.0	<4

NH<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-N below nominal detection limit.

Lake Taupo biannual nutrient

2002-2003

Started 27 October 1994

Collection date 13 November 2002

Secchi depth = 18.0 m

Code	Depth m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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 m	pH	EC @25oC mS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> -N mg m <sup>-3</sup>	NO <sub>3</sub> -N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-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 <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH4-N mg m <sup>-3</sup>	NO3-N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC mg m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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 <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH4-N mg m <sup>-3</sup>	NO3-N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

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

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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<sub>3</sub>-N, and NH<sub>4</sub>-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 <sup>-1</sup>	°C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>
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 @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 <sup>-1</sup>	°C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>  
 \* = PN by wet digestion method, \*\* = PN by combustion furnace method.

Lake Taupo biannual nutrient database  
Collection date 18 October 1999

1999-2000

Started 27 October 1994

Secchi depth = 14.9 m

Code	Depth m	pH	EC @25oC $\mu\text{S cm}^{-1}$	Temp $^{\circ}\text{C}$	DO $\text{g m}^{-3}$	SS $\text{g m}^{-3}$	VSS $\text{g m}^{-3}$	Chlor_a <sup>++</sup> $\text{mg m}^{-3}$	DRP $\text{mg m}^{-3}$	DOP $\text{mg m}^{-3}$	PP $\text{mg m}^{-3}$	TP $\text{mg m}^{-3}$	NH <sub>4</sub> -N $\text{mg m}^{-3}$	NO <sub>3</sub> -N $\text{mg m}^{-3}$	DON $\text{mg m}^{-3}$	UREA $\text{mg m}^{-3}$	PN* $\text{mg m}^{-3}$	TN $\text{mg m}^{-3}$	DOC $\text{mg m}^{-3}$	PC $\text{mg m}^{-3}$	PN** $\text{mg m}^{-3}$
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 $\mu\text{S cm}^{-1}$	Temp $^{\circ}\text{C}$	DO $\text{g m}^{-3}$	SS $\text{g m}^{-3}$	VSS $\text{g m}^{-3}$	Chlor_a $\text{mg m}^{-3}$	DRP $\text{mg m}^{-3}$	DOP $\text{mg m}^{-3}$	PP $\text{mg m}^{-3}$	TP $\text{mg m}^{-3}$	NH <sub>4</sub> -N $\text{mg m}^{-3}$	NO <sub>3</sub> -N $\text{mg m}^{-3}$	DON $\text{mg m}^{-3}$	UREA $\text{mg m}^{-3}$	PN* $\text{mg m}^{-3}$	TN $\text{mg m}^{-3}$	DOC $\text{mg m}^{-3}$	PC $\text{mg m}^{-3}$	PN** $\text{mg m}^{-3}$
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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

\*\* = from calibrated chlorophyll fluorescence profiler (filters damaged)

Lake Taupo biannual nutrient database  
Collection date 1 November 1998

1998-1999

Started 27 October 1994

Secchi depth = 13.5 m

Code	Depth m	pH	EC @25oC μS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH4-N mg m <sup>-3</sup>	NO3-N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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 m	pH	EC @25oC μS cm <sup>-1</sup>	Temp °C	DO g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH4-N mg m <sup>-3</sup>	NO3-N mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N  
\* = PN by wet digestion method, \*\* = PN by combustion furnace method.



Lake Taupo biannual nutrient database

Collection Date 30 October 1997

1997-1998

Started 27 October 1994

ID	Depth m	pH	EC @25°C µS cm <sup>-1</sup>	Temp C	DO g m <sup>-3</sup>	Secchi depth = 12.5 m															
						SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> mg m <sup>-3</sup>	NO <sub>3</sub> mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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

ID	Depth m	pH	EC @25°C µS cm <sup>-1</sup>	Temp C	DO g m <sup>-3</sup>	Secchi depth = 13.5 m																
						SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> mg m <sup>-3</sup>	NO <sub>3</sub> mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>	SO <sub>4</sub> g m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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

Lake Taupo biannual nutrient database

Collection Date 24 October 1996

		1996-1997																			Started 27 October 1994	
		Secchi depth = 12.6 m																				
ID	Depth	pH	EC @25°C	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH <sub>4</sub>	NO <sub>3</sub>	DON	UREA	PN*	TN	DOC	PC	PN**	SO4
	m		µS cm <sup>-1</sup>	C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>
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

		1996-1997																			Started 27 October 1994	
		Secchi depth = 16.0 m																				
ID	Depth	pH	EC @25°C	Temp	DO	SS	VSS	Chlor_a	DRP	DOP	PP	TP	NH <sub>4</sub>	NO <sub>3</sub>	DON	UREA	PN*	TN	DOC	PC	PN**	SO4
	m		µS cm <sup>-1</sup>	C	g m <sup>-3</sup>	g m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>	mg m <sup>-3</sup>	mg m <sup>-3</sup>	g m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, Urea all as N

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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

Lake Taupo biannual nutrient database

Collection Date:- 30 October 1995

1995-1996

Secchi depth = 13.0 m

ID	Depth m	pH	EC @25°C µS cm <sup>-1</sup>	Temp C	DO g m <sup>-3</sup>	BOD <sub>5</sub> g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> mg m <sup>-3</sup>	NO <sub>3</sub> mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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 m	pH	EC @25°C µS cm <sup>-1</sup>	Temp C	DO g m <sup>-3</sup>	BOD <sub>5</sub> g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor_a mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> mg m <sup>-3</sup>	NO <sub>3</sub> mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>
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<sub>4</sub>, NO<sub>3</sub>, DON, UREA all as N

Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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

Lake Taupo biannual nutrient database

Collection date:- 27 October 1994

1994-1995

Secchi Depth = 11.7 m

ID	Depth m	Temp C	DO g m <sup>-3</sup>	BOD <sub>5</sub> g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor <sub>a</sub> mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> mg m <sup>-3</sup>	NO <sub>3</sub> mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>	LEAD mg m <sup>-3</sup>
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  
Collection date:- 19 April 1995

Secchi Depth = 16.1 m

ID	Depth m	Temp C	DO g m <sup>-3</sup>	BOD <sub>5</sub> g m <sup>-3</sup>	SS g m <sup>-3</sup>	VSS g m <sup>-3</sup>	Chlor <sub>a</sub> mg m <sup>-3</sup>	DRP mg m <sup>-3</sup>	DOP mg m <sup>-3</sup>	PP mg m <sup>-3</sup>	TP mg m <sup>-3</sup>	NH <sub>4</sub> mg m <sup>-3</sup>	NO <sub>3</sub> mg m <sup>-3</sup>	DON mg m <sup>-3</sup>	UREA mg m <sup>-3</sup>	PN* mg m <sup>-3</sup>	TN mg m <sup>-3</sup>	DOC g m <sup>-3</sup>	PC mg m <sup>-3</sup>	PN** mg m <sup>-3</sup>	LEAD mg m <sup>-3</sup>
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

\* = Sediment contamination, sample not filtered for analysis.

NH<sub>4</sub>, NO<sub>3</sub>, DON, UREA all as N Detection limits: DRP 0.5; NO<sub>3</sub>-N 0.5; NH<sub>4</sub>-N 1.0 mg m<sup>-3</sup>

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

## Appendix 5. Phytoplankton data

In this report phytoplankton abundance is reported in cell counts per ml and biovolume per ml. In the previous system reporting only algal dominance, "Dominance" (rank 1 = dominant to rank 10 = rare), was calculated from algal biovolume. For continuance of the Dominance format, the species composition is ranked by biovolume.

Note: reporting counts as cells per ml rounded to a whole number may result in cell counts of "0" despite a large biovolume where the algal species is large or colonial e.g., *Botryococcus braunii*

The new algal data has been added to this report and the data from the previous year retained to accumulate, as has been done with temperature, DO, and nutrient data.

Note: *Leptolyngbya* sp. cells on 07/09/2009 (highlighted) are likely to have been washed off something rather than being local in 150 m of water.

Name changes:

*Anabaena* has changed to *Dolichospermum* as of August 2009. It will initially be referred to as follows: *Dolichospermum* sp. (formally; *Anabaena* sp.).

Units of biomass are listed as "µm<sup>3</sup>" in the following tables. The units are actually µm<sup>3</sup> /mL.

From the 2010/11 monitoring period, phytoplankton data have been provided from a depth of 50m, which generally coincides with the deep chlorophyll a maxima in the lake. This sample was collected by van Dorne bottle and is distinguished from the 10-m tube sample by being placed in a separate table for the same dates as the 10-m tube sample.





Lake Taupo phytoplankton enumeration (10-m tube) 2009-10

Cell counts and biovolume

Cells per ml numbers may be affected by rounding

Sample code	PH1	PH1	QJ1	QJ1	TT1	TT1	VA1	VA1	VA3	VA3	XF1	XF1	ZD1	ZD1	BX1	BX1	CU1	CU1	CU3	CU3	
Sampling date	19/10/2009	19/10/2009	12/11/2009	12/11/2009	13/01/2010	13/01/2010	2/02/2010	2/02/2010	18/02/2010	18/02/2010	10/03/2010	10/03/2010	8/04/2010	8/04/2010	20/05/2010	20/05/2010	3/06/2010	3/06/2010	23/06/2010	23/06/2010	
Species composition by class	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	
<b>Blue greens (Cyanophyceae)</b>																					
<i>Dolichospermum</i> c.f. <i>lemmermannii</i> (formerly: <i>Anabaena</i> c.f. <i>lemmermannii</i> )	0.0	0	77.4	6964	3.0	270	17.6	1582	182.5	21172	4.2	492	5.6	652	3.6	418	4.6	531	1.9	218	
<i>Dolichospermum planctonicum</i> (formerly: <i>Anabaena planktonica</i> )	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.3	100	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Dolichospermum</i> sp. (formerly: <i>Anabaena</i> sp.)	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Dolichospermum circinalis</i> (formerly: <i>Anabaena circinalis</i> )	6.9	1429	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.8	11	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Microcystis</i> sp.	0.0	0	0.6	13	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Leptolyngbya</i> sp.	17.1	188	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.6	7	0.0	0	0.0	0	
<i>Snowella</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Pseudanabaena</i> sp.	0.7	14	0.0	0	0.2	4	0.0	0	0.0	0	0.1	2	0.1	1	0.8	15	0.0	0	0.4	7	
<i>Phormidium</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.2	5	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Aphanocapsa</i> sp.	4.0	36	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	2.0	18	
<i>Aphanothece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<i>Aphanizomenon</i> sp.	0.3	6	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
<b>Greens (Chlorophyceae)</b>																					
<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	67	2818	32	1341	5	227	21	863	0	0	2	68	18	750	14	591	27	1113	11	477	
<i>Stichococcus contortus</i>	11	204	0	0	0	0	9	166	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Botryococcus braunii</i> (colonies)	0	0	0.002	3900	0.000	1950	0	0	0	0	0	0	0	0	0	0	0.0	3248	0.0	1570	
<i>Chlamydomonas</i> sp.	2	341	0	0	1	227	0	0	0	0	0	0	0	0	2	454	0	0	3	568	
<i>Elakotothrix gelatinosa</i>	4	454	3	341	1	114	4	454	0	0	1	114	0	0	15	1591	6	682	2	170	
<i>Eudorina elegans</i>	8	2077	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Nephroclytium lunatum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Oocystis</i> sp.	9	1229	12	1690	22	3150	36	5070	45	6376	10	1383	34	4840	11	1613	11	1613	6	845	
<i>Tetradon gracile</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Pauschulzia</i> sp.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
<i>Dietyosphaerium</i>	45	0	0	0	6	0	8	0	0	0	0	0	0	0	0	0	4	238	0	0	
<i>Crucigeniella</i> sp.	17	1090	18	1160	77	4993	48	3095	8	492	77	0	0	0	0	0	1	70	0	0	
<i>Kirchneriella contorta</i>	10	321	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	214	0	0	
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
<i>Scenedesmus</i> sp.	0	0	0	0	4	225	0	0	0	0	0	0	0	0	0	0	4	225	0	0	
<i>Volvox aureus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	325	19476	173	10387	498	29863	
<b>Diatoms (Bacillariophyceae)</b>																					
<i>Asterionella formosa</i>	186	51958	31	8786	3	757	0	0	0	0	4	1060	0	0	4	1212	10	2727	9	2575	
<i>Aulacoseira granulata</i>	21	6541	23	7044	6	2013	0	0	0	0	0	0	0	0	12	3857	9	2683	9	2851	
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	54	13925	4	1125	1	281	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Aulacoseira</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Cyclotella stelligera</i>	10	1558	3	519	4	606	2	346	1	173	0	0	0	0	0	0	0	0	2	346	
<i>Fragilaria crotonensis</i>	158	56554	121	43190	60	21498	98	35249	8	2905	15	5229	12	4261	22	7941	57	20336	135	48226	
<i>Nitzschia</i> sp.	2	844	1	211	2	633	3	1266	0	0	1	211	2	844	7	2743	2	633	0	0	
<i>Synedra</i> sp.	1	426	0	0	1	213	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Amphora</i> sp.	0	0	0	0	2	849	0	0	0	0	0	0	0	0	0	0	1	566	1	283	
<i>Cocconeis</i>	1	566	0	0	0	0	2	849	0	0	6	3112	0	0	6	3395	8	3961	7	3678	
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	238	1	60	1	119	
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>																					
<i>Closterium aciculare</i>	0	0	1	648	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Closterium acutum</i> var. <i>variable</i>	1	408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	204	1	408	
<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	74	1	74	0	0	
<b>Chrysophyta (Chrysophyceae)</b>																					
<i>Dinobryon</i> sp.	98	5809	289	17077	16	926	37	2202	29	1692	4	223	4	223	25	1468	0	0	6	383	
<i>Cryptomonas</i> sp.	1	78	0	0	1	78	0	0	0	0	1	156	0	0	1	78	2	234	1	156	
<b>Dinoflagellates (Dinophyceae)</b>																					
<i>Ceratium hirundinella</i>	0	0	0	0	1	11361	1	22722	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Gymnodinium</i> sp. 1	0	0	0	0	0	0	0	0	1	1190	0	0	0	0	1	595	1	595	0	0	
<i>Gymnodinium</i> sp. 2	0	0	0	0	2	40575	0	0	1	27050	0	0	0	0	0	0	0	0	0	0	
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	4	15148	0	3	12984	0	0	0	1	2164	
<i>Gonyaulax</i> sp.	0	0	0	0	0	0	0	0	1	2164	0	0	3	6492	0	0	0	0	0	0	
<b>Flagellates 5µm</b>																					
Flagellates < 5µm/uncells	153	5340	61	2140	43	1496	42	1477	85	2973	34	1193	33	1155	29	1004	23	795	36	1269	



**Lake Taupo phytoplankton enumeration (10-m tube) 2009-10 (continued)**

Cell counts and biovolume		Cells per ml numbers may be affected by rounding			
Sample code Sampling date Species composition by class	EX1	EX1	FY1	FY1	
	13/07/2010 Cell (per ml)	13/07/2010 Biovolume (µm <sup>3</sup> )	10/08/2010 Cell (per ml)	10/08/2010 Biovolume (µm <sup>3</sup> )	
<b>Blue greens (Cyanophyceae)</b>					
<i>Dolichospermum c.f. lemmermannii</i> (formerly; <i>Anabaena c.f. lemmermannii</i> )	0.2	22	0.8	87	
<i>Dolichospermum planctonicum</i> (formerly; <i>Anabaena planktonica</i> )	0.0	0	0.0	0	
<i>Dolichospermum sp.</i> (formerly; <i>Anabaena sp.</i> )	0.0	0	0.0	0	
<i>Dolichospermum circinalis</i> (formerly; <i>Anabaena circinalis</i> )	0.0	0	0.3	67	
<i>Chroococcus sp.</i>	0.0	0	0.0	0	
<i>Microcystis sp.</i>	0.0	0	0.4	8	
<i>Leptolyngbya sp.</i>	0.0	0	1.3	14	
<i>Snowella sp.</i>	0.0	0	0.0	0	
<i>Pseudanabaena sp.</i>	0.5	9	0.0	0	
<i>Phormidium sp.</i>	0.3	5	0.0	0	
<i>Aphanocapsa sp.</i>	2.4	22	1.0	9	
<i>Aphanothece sp.</i>	0.0	0	0.0	0	
<i>Aphanizomenon sp.</i>	0.0	0	0.0	0	
<b>Greens (Chlorophyceae)</b>					
<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	68	2863	72	3022	
<i>Sichoecoccus contortus</i>	0	0	29	526	
<i>Botryococcus braunii</i> (colonies)	0.0	0	0.0	6160	
<i>Chlamydomonas sp.</i>	0	0	2	341	
<i>Elakothrix gelatinosa</i>	6	625	6	682	
<i>Eudorina elegans</i>	0	0	16	4155	
<i>Nephrocytium lunatum</i>	0	0	0	0	
<i>Oocystis sp.</i>	4	538	3	384	
<i>Tetraedon gracile</i>	0	0	0	0	
<i>Paulschultzia sp.</i>	0	0	0	0	
<i>Dictyosphaerium</i>	0	0	9	506	
<i>Crucigenella sp.</i>	0	0	3	211	
<i>Kirchneriella contorta</i>	0	0	0	0	
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	
<i>Scenedesmus sp.</i>	2	113	0	0	
<i>Volvox aureus</i>	87	5194	0	0	
<b>Diatoms (Bacillariophyceae)</b>					
<i>Asterionella formosa</i>	39	11058	155	43323	
<i>Aulacoseira granulata</i>	23	7044	52	16268	
<i>Aulacoseira granulata var. angustissima</i>	0	0	57	14910	
<i>Aulacoseria sp.</i>	17	0	0	0	
<i>Cyclotella stelligera</i>	8	1212	11	1818	
<i>Fragilaria crotonensis</i>	62	22273	108	38542	
<i>Nitzschia sp.</i>	1	422	3	1266	
<i>Synedra sp.</i>	1	213	6	2345	
<i>Amphora sp.</i>	0	0	0	0	
<i>Cocconeis</i>	4	2264	5	2829	
	4	417	4	417	
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>					
<i>Closterium aciculare</i>	0	0	2	1296	
<i>Closterium acutum var. variable</i>	0	0	0	0	
<i>Staurastrum sp.</i>	0	0	0	0	
<b>Chrysophyta (Chrysophyceae)</b>					
<i>Dinobryon sp.</i>	0	0	5	287	
<i>Cryptomonas sp.</i>	4	623	3	390	
<b>Dinoflagellates (Dinophyceae)</b>					
<i>Ceratium hirundinella</i>	0	0	0	0	
<i>Gymnodinium sp. 1</i>	1	595	0	0	
<i>Gymnodinium sp. 2</i>	0	0	0	0	
<i>Peridinium sp.</i>	0	0	0	0	
<i>Gonyaulax sp.</i>	0	0	0	0	
<b>Flagellates 5µm</b>					
Flagellates < 5µm/unicells	59	2064	70	2443	

Lake Taupo phytoplankton enumeration (10-m tube) 2008-09

Cell counts and biovolume

Cells per ml numbers may be affected by rounding

Sample code	RL4	RL4	SV2	SV2	UP4	UP4	XE2	XE2	XZ2	XZ2	XZ1	XZ1	AH2	AH2	AH4	AH4	DU1	DU1	EW2	EW2	GV2	GV2
Sampling date	16/09/2008	16/09/2008	14/10/2008	14/10/2008	26/11/2008	26/11/2008	22/12/2008	22/12/2008	13/01/2009	13/01/2009	28/01/2009	28/01/2009	11/02/2009	11/02/2009	25/02/2009	25/02/2009	26/03/2009	26/03/2009	15/04/2009	15/04/2009	7/05/2009	7/05/2009
Species composition by class	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume
	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>																						
<i>Anabaena lemmermannii</i>	0.0	0	0.0	0	46.5	1905	16.3	670	1.3	116	1.3	120	7.4	669	75.6	41	1.4	126	27.7	2495	13.6	1226
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.1	2	0.0	0	4.4	83	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.8	299	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	8.9	581	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.3	4
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbya</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	2.1	23
<i>Snowella</i> sp.																	0.0	0	0.0	0	0.0	0
<b>Greens (Chlorophyceae)</b>																						
<i>Monoraphidium</i> sp./ <i>Ankistrodesmus falcatus</i>	94	3956	4	172	4	172	16	688	53	2236	139	5848	56	2359	0	0	0	0	1	49	5	221
<i>Stichococcus contortus</i>	12	211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.0	218	0.0	0	0.0	8877	0.0	127636	0.0	0	0.0	1908	0.0	0	0.0	543	0	0	0.0	4213	0.0	6058
<i>Chlamydomonas</i> sp.	0	0	1	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotothrix gelatinosa</i>	4	369	0	0	0	0	0	0	5	491	12	1229	16	1720	18	1843	0	0	1	114	0	0
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	0	6	1647	0	0	0	0	0	0	0	0	3	674	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	14	1994	8	1163	5	748	5	665	0	0	2	249	5	665	0	0	0	0	5	748	4	498
<i>Tetradon gracile</i>	0	0	0	0	0	0	20	2252	9	1030	1	64	0	0	0	0	0	0	0	0	0	0
<i>Paulschalcia</i> sp.	0	0	0	0	0	0	0	18	0	0	7	0	0	0	0	0	0	0	0	0	0	0
<i>Dictyosphaerium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
<i>Crucigeniella</i> sp.	0	0	0	0	7	456	4	228	2	152	0	0	0	0	0	0	0	0	30	1969	53	3422
<b>Diatoms (Bacillariophyceae)</b>																						
<i>Asterionella formosa</i>	64	18018	42	11794	29	8190	3	819	22	6061	35	9828	5	1310	1	328	4	1147	11	3112	19	5242
<i>Aulacoseira granulata</i>	15	4534	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2539	0	0	0	0	0
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	0	0	1	304	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseira</i> sp.	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	15	2340	2	374	7	1123	0	1	187	1	187	1	187	0	1	187	1	187	1	187	4	655
<i>Fragilaria crotonensis</i>	37	13194	33	11728	99	35603	66	23456	70	25132	21	7539	48	17173	16	5864	2	838	21	7539	8	2723
<i>Nitzschia</i> sp.	0	0	0	0	0	0	4	1369	0	0	4	1597	2	913	2	913	0	0	0	0	0	0
<i>Synedra</i> sp.	1	230	0	0	0	0	2	691	0	0	0	0	0	0	0	1	230	0	0	0	0	0
<i>Amphora</i> sp.	0	0	0	0	0	0	1	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cocconeis</i>	1	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>																						
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var. <i>variable</i>	1	441	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>																						
<i>Dinobryon</i> sp.	0	0	53	3106	313	18466	23	1381	0	0	2	104	38	2243	53	3141	0	0	11	621	13	794
<i>Cryptomonas</i> sp.	0	0	0	0	1	168	0	0	0	0	0	0	1	84	0	0	0	0	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>																						
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 1	0	0	0	0	1	205	1	205	1	205	4	4505	4	4505	3	3218	0	0	1	1287	1	644
<i>Gymnodinium</i> sp. 2	0	0	0	0	1	14625	0	0	0	0	0	0	0	0	0	0	150	0	0	50	0	25
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	0	2	4680	1	2340	0	0	0	0	1	2340	0	0
<i>Gonyaulax</i> sp.																1	1170	1	1170	0	0	0
<b>Flagellates 5µm</b>																						
Flagellates < 5µm/unicells	113	3972	68	2375	78	2723	249	8722	182	6368	57	2007	51	1781	83	2907	37	1290	51	1781	145	5078

Lake Taupo phytoplankton enumeration (10-m tube) 2008-09 continued

Species composition by class	Sample code	GV4	GV4	JO1	JO1	KI1	KI1	NEW NAMES INTRODUCED	LT1	LT1	ND1	ND1
	Sampling date	27/05/2009	27/05/2009	18/06/2009	18/06/2009	6/07/2009	6/07/2009	August 2009	13/08/2009	13/08/2009	7/09/2009	7/09/2009
	Cell	Biovolume	Cell	Biovolume	Cell	Biovolume	Cell		Cell	Biovolume	Cell	Biovolume
	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )	(per ml)		(per ml)	(µm <sup>3</sup> )	(per ml)	(µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>												
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	9.4	849	5.8	41	0.3	28	28	<i>Dolichospermum c.f. lemmermannii</i> (formerly; <i>Anabaena c.f. lemmermannii</i> )	0.1	10	0.1	11
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	1.0	19	19	<i>Pseudanabaena sp.</i>	0.0	0	0.0	0
<i>Anabaena planktonica</i>	0.2	88	0.0	0	0.0	0	0	<i>Dolichospermum planctonicum</i> (formerly; <i>Anabaena planktonica</i> )	0.0	0	0.0	0
<i>Anabaena sp.</i>	2.1	188	0.3	23	0.5	46	46	<i>Dolichospermum sp.</i> (formerly; <i>Anabaena sp.</i> )	0.0	0	0.0	0
<i>Anabaena circinalis</i>	0.0	0	0.0	0	0.0	0	0	<i>Dolichospermum circinalis</i> (formerly; <i>Anabaena circinalis</i> )	0.0	0	0.0	0
<i>Chroococcus sp.</i>	0.1	1	0.0	0	0.0	0	0	<i>Chroococcus sp.</i>	0.2	2	0.8	11
<i>Microcystis sp.</i>	0.0	0	0.0	0	0.0	0	0	<i>Microcystis sp.</i>	0.0	0	2.5	53
<i>Leptolyngbya sp.</i>	0.6	6	0.1	2	0.0	0	0	<i>Leptolyngbya sp.</i>	0.0	0	120.0	1320
<i>Snowella sp.</i>	0.1	3	0.0	0	0.0	0	0	<i>Snowella sp.</i>	3.3	83	222.9	572
<b>Greens (Chlorophyceae)</b>												
<b>Greens (Chlorophyceae)</b>												
<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	14	590	42	1744	42	1750	1750	<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	24	1022	225	9459
<i>Stichococcus contortus</i>	0	0	3	53	0	0	0	<i>Stichococcus contortus</i>	19	351	63	1141
<i>Botryococcus braunii</i>	0.0	15954	0.0	14315	0.0	30946	30946	<i>Botryococcus braunii (colonies)</i>	0.0	0	0.0	205716
<i>Chlamydomonas sp.</i>	0	0	0	0	0	0	0	<i>Chlamydomonas sp.</i>	0	0	0	0
<i>Elakotothrix gelatinosa</i>	0	0	0	0	0	0	0	<i>Elakotothrix gelatinosa</i>	1	114	8	819
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	<i>Eudorina elegans</i>	0	0	0	0
<i>Nephrocytium lunatum</i>	0	0	0	0	0	0	0	<i>Nephrocytium lunatum</i>	0	0	0	0
<i>Oocystis sp.</i>	0	0	4	498	0	0	0	<i>Oocystis sp.</i>	15	2151	0	0
<i>Tetraedon gracile</i>	0	0	0	0	0	0	0	<i>Tetraedon gracile</i>	0	0	0	0
<i>Paulschulzia sp.</i>	0	0	0	0	0	0	0	<i>Paulschulzia sp.</i>	0	0	0	0
<i>Dictyosphaerium sp.</i>	0	0	0	0	0	0	0	<i>Dictyosphaerium sp.</i>	0	0	12	295
<i>Crucigeniella sp.</i>	36	2358	11	722	9	598	598	<i>Crucigeniella sp.</i>	2	141	0	0
<b>Diatoms (Bacillariophyceae)</b>												
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	10	2785	22	6143	55	15299	15299	<i>Asterionella formosa</i>	366	102400	215	60333
<i>Aulacoseira granulata</i>	7	2176	0	0	102	31529	31529	<i>Aulacoseira granulata</i>	30	9392	18	5441
<i>Aulacoseira granulata var. angustissima</i>	0	0	15	3955	0	0	0	<i>Aulacoseira granulata var. angustissima</i>	0	0	4	1014
<i>Aulacoseria sp.</i>	0	0	0	0	0	0	0	<i>Aulacoseria sp.</i>	0	0	0	0
<i>Cyclotella stelligera</i>	1	187	9	1404	2	346	346	<i>Cyclotella stelligera</i>	5	866	21	3432
<i>Fragilaria crotonensis</i>	18	6492	35	12566	24	8716	8716	<i>Fragilaria crotonensis</i>	0	0	34	12217
<i>Nitzschia sp.</i>	1	456	2	913	2	844	844	<i>Nitzschia sp.</i>	5	2110	1	380
<i>Synedra sp.</i>	0	0	0	0	0	0	0	<i>Synedra sp.</i>	1	213	0	0
<i>Amphora sp.</i>	0	0	0	0	0	0	0	<i>Amphora sp.</i>	0	0	0	0
<i>Cocconeis</i>	0	0	1	306	0	0	0	<i>Cocconeis</i>	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	1	350	0	0	0	<i>Closterium aciculare</i>	0	0	0	0
<i>Closterium acutum var. variable</i>	0	0	0	0	1	204	204	<i>Closterium acutum var. variable</i>	0	0	1	368
<b>Chrysophyta (Chrysophyceae)</b>												
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon sp.</i>	8	449	0	0	0	0	0	<i>Dinobryon sp.</i>	0	0	0	0
<i>Cryptomonas sp.</i>	0	0	1	84	1	78	78	<i>Cryptomonas sp.</i>	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>												
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Ceratium hirundinella</i>	0	0	0	0	0	0	0	<i>Ceratium hirundinella</i>	0	0	0	0
<i>Gymnodinium sp. 1</i>	1	1287	1	644	2	1785	1785	<i>Gymnodinium sp. 1</i>	0	0	0	0
<i>Gymnodinium sp. 2</i>	0	0	0	2925	0	0	0	<i>Gymnodinium sp. 2</i>	0	0	0	0
<i>Peridinium sp.</i>	0	0	0	0	0	0	0	<i>Peridinium sp.</i>	0	0	0	0
<i>Gonyaulax sp.</i>	1	2340	1	1170	0	0	0	<i>Gonyaulax sp.</i>	0	0	0	0
<b>Flagellates 5µm</b>												
<b>Flagellates 5µm</b>												
Flagellates < 5µm/unicells	67	2334	51	1781	76	2651	2651	Flagellates < 5µm/unicells	328	11494	193	6757

Lake Taupo phytoplankton enumeration (10-m tube) 2007-08

Cell counts and biovolume

Cells per ml numbers may be affected by rounding

Sample code	TZ2	TZ2	TZ4	TZ4	WF2	WF2	XX1	XX1	XX4	XX4	AM1	AM1	BM1	BM3	BM3	DT1	DT1	EO1	EO1	EO3	EO3	EO5	EO5	
Sampling date	8/08/2007	8/08/2007	23/08/2007	23/08/2007	11/09/2007	11/09/2007	9/10/2007	9/10/2007	30/10/2007	30/10/2007	15/11/2007	15/11/2007	4/12/2007	4/12/2007	20/12/2007	20/12/2007	17/01/2008	17/01/2008	31/01/2008	31/01/2008	14/02/2008	14/02/2008	27/02/2008	27/02/2008
Species composition by class	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>																								
<i>Anabaena lemmermannii</i>	2	64	3	108	1	27	17	696	51	2100	18	725	1	27	29	1175	28.7	1175	21.3	875	25.0	1025	85.8	3518
<i>Pseudanabaena limnetica</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	2	0.0	0	0.0	0	0.5	9
<i>Chroococcus</i> sp.	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Microcystis</i> sp.	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>c.f. Rivularia</i> sp.	0	0	0	0	1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanizomenon</i> sp.	0	0	1	15	0	1	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	2	30	0	0	0	0	0	0	0	0	2	32	3	48	4	78	0.0	0	0.0	0	0.0	0	4.0	76
<i>Lepolyngbya</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0.0	0	0.0	0	0.0	0	0.0	0
<b>Greens (Chlorophyceae)</b>																								
<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	20	839	17	695	3	123	6	247	10	418	28	1189	18	737	114	4785	66	2764	0	0	0	0	0	0
<i>Stichococcus contortus</i>	175	0	97	1749	25	453	0	0	0	0	0	0	3	53	0	0	0	0	0	0	0	0	0	0
<i>Kirchneriella contorta</i>	0	0	0	0	56	1853	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Botrydium braunii</i>	0	0	0	4800	0	0	0	0	0	0	0	0	1100	1	92840	0	0	0	0	0	0	0	0	259720
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakotobrix gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	5	532	0	0	0	0	0	0	0	2	246
<i>Eudorina elegans</i>	0	0	0	0	0	0	0	1	300	0	0	0	0	0	0	2	624	4	1108	0	0	0	3	749
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Oocystis</i> sp.	0	0	0	1	166	5	758	5	665	0	0	1	166	6	839	2	277	0	0	0	0	0	0	0
<i>Planktoperidinium gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quadrifidula lacustris</i>	0	0	5	788	3	490	0	0	0	0	0	0	3	554	0	0	0	0	0	0	0	0	0	0
<i>Westella baryoides</i>	10	634	29	1909	0	0	0	9	608	0	0	0	0	0	0	17	1077	0	0	0	0	0	0	0
<i>Pantoclisia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>																								
<i>Asterionella formosa</i>	275	77123	292	81787	753	210974	124	34838	62	17363	15	4187	4	983	2	473	50	14060	11	3181	0	0	2	655
<i>Aulacoseira granulata</i>	0	0	0	0	13	3990	0	0	16	5078	3	993	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	52	13436	11	2777	0	0	0	0	3	781	0	0	0	0	0	2	507	0	0	0	0	0	0	0
<i>Cyclotella stelligera</i>	14	2184	11	1709	8	1310	9	1452	11	1685	0	0	0	0	0	1	156	0	0	0	0	0	0	0
<i>Fragilaria crotonensis</i>	57	20419	27	9750	0	0	0	2	574	1	209	9	3324	19	6806	5	1743	0	0	0	0	13	4607	
<i>Nitzschia</i> sp.	0	0	5	2083	1	228	0	0	0	0	1	456	14	5596	1	380	0	0	0	0	0	2	684	
<i>Synedra</i> sp.	1	0	0	1	1638	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	60	0	0	0	0	
<b>Desmids (Mesoteniaceae, Desmidiaceae)</b>																								
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	160	0	0	1	320	1	350	1	506	0	0	0	0	0	0	0	0
<i>Closterium acutum</i> var. <i>variable</i>	1	551	1	201	1	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Chrysophyta (Chrysophyceae)</b>																								
<i>Dinobryon</i> sp.	21	1266	2	126	0	0	146	8633	297	17534	81	4789	76	4487	8	448	7	431	6	383	32	1915	73	4314
<i>Cryptomonas</i> sp.	0	0	1	77	0	0	1	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Mallomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Dinoflagellates (Dinophyceae)</b>																								
<i>Gymnodinium</i> sp. 1	0	1463	0	0	0	0	1	3204	1	1755	0	0	1	1755	1	2532	0	0	6	17853	4	10820	16	49140
<i>Gymnodinium</i> sp. 2	0	12188	1	13350	0	0	0	6675	0	0	0	0	0	7313	3	63300	0	6094	0	0	0	0	3	73125
<b>Flagellates 5µm</b>																								
Flagellates < 5µm/unicells	153	6582	296	10354	112	3911	129	4504	93	3256	78	2729	125	4382	526	18403	83	2901	99	3465	39	1373	60	2109

Sample code	HT1	HT1	HT3	HT3	KB1	KB1	LB1	LB1	LB3	LB3	MW1	MW1	MW3	MW3	OL1	OL1	OL3	OL3	QA2	QA2	QA4	QA4	RL2	RL2
Sampling date	13/03/2008	13/03/2008	26/03/2008	26/03/2008	17/04/2008	17/04/2008	7/05/2008	7/05/2008	22/05/2008	22/05/2008	5/06/2008	5/06/2008	18/06/2008	18/06/2008	1/07/2008	1/07/2008	15/07/2008	15/07/2008	7/08/2008	7/08/2008	20/08/2008	20/08/2008	4/09/2008	4/09/2008
Species composition by class	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )	Cell (per ml)	Biovolume (µm <sup>3</sup> )
<b>Blue greens (Cyanophyceae)</b>																								
<i>Anabaena lemmermannii</i>	92	3778	7.0	288	56.6	2319	120.6	4946	2.2	91	1.1	46	1.7	71	12.2	500	9.8	403	0.8	32	0.2	7	0.9	37
<i>Pseudanabaena limnetica</i>	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	2.8	53	0.3	5	0.0	0	0.0	0
<i>Chroococcus</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Microcystis</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>c.f. Rivularia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Aphanotocece</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Aphanizomenon</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
<i>Leptolyngbia</i> sp.	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	1.4	16	0.0	0
<b>Greens (Chlorophyceae)</b>																								
<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	0	0	0	0	0	0	5	197	0	0	0	0	0.0	0	198	7907	0	0	73	3047	73	3071	190	5479
<i>Stichococcus contortus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0.0	0	0	0	26	474
<i>Kirchneriella contorta</i>	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0.0	0	0	0	0	0
<i>Botryococcus braunii</i>	0.1	469151	0	14435	0.04	259837	0	104870	0	28871	0	132806	0.0	3609	0	5774	0.1	226456	0.0	5413	0	0	0.0	17746
<i>Chlamydomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Elakothrix gelatinosa</i>	2	246	6	676	1	123	4	369	2	246	1	123	0	0	1	114	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	8	2097	0	0	0	0	0	0	0	0	11	2696	0	0	0	0	0	0	0	0	9	2246	0	0
<i>Lagerheimia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1797
<i>Oocystis</i> sp.	0	0	0	1	166	5	665	2	332	0	0	0	0	0	6	914	0	0	5	665	7	997	0	0
<i>Planktosphaeria gelatinosa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1412
<i>Quadrigula lacustris</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Westella botryoides</i>	0	0	0	0	0	0	15	951	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>																								
<i>Asterionella formosa</i>	19	5242	12	3276	5	1310	10	2785	28	7862	25	6880	22	6061	25	7043	102	28501	191	53399	79	22113	94	26208
<i>Anlacostris granulata</i>	0	0	0	0	0	0	2	725	12	3808	13	4171	2	725	0	35	10700	151	46788	0	0	18	5622	
<i>Anlacostris granulata</i> var. <i>angustissima</i>	0	0	0	0	0	0	4	913	0	0	0	0	0	25	6388	0	0	0	0	57	14754	0	0	
<i>Cyclotella stelligera</i>	0	0	0	0	0	0	3	468	1	197	2	374	1	94	4	562	1	187	12	187	12	1872	18	2902
<i>Fragilaria crotonensis</i>	0	0	15	5445	4	1466	0	57	20315	61	21781	84	29948	46	16545	30	10890	18	6283	49	17592	59	20943	
<i>Nitzschia</i> sp.	1	228	1	342	3	1141	2	684	2	913	0	1	228	4	1369	4	1597	1	456	0	0	2	684	
<i>Synedra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Small unknown diatom sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>																								
<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1051
<i>Closterium acutum</i> var. <i>variable</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	221	0	0	1	441	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>																								
<i>Dinobryon</i> sp.	26	1519	2	104	4	242	8	483	8	466	9	518	0	0	9	518	0	0	0	0	0	0	20	1208
<i>Cryptomonas</i> sp.	1	84	0	0	1	84	1	168	1	84	1	84	2	337	0	0	2	337	0	0	0	0	0	0
<i>Mallomonas</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1053	0	0	0	0	0	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>																								
<i>Gymnodinium</i> sp. 1	6	19305	42	126360	12	36855	5	1843	35	12285	5	1638	4	1229	0	0	6	2048	0	0	0	0	0	0
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	0	0	0	0	0	1	29250	0	0	0	0	1	14625	0	0	0	0	0	0
<b>Flagellates 5µm</b>																								
Flagellates < 5µm/unicells	57	1986	56	1945	73	2539	131	4586	47	1638	63	2191	111	3890	121	4238	115	4013	87	3030	207	7228	104	3645

**Lake Taupo phytoplankton dominance plus enumeration (10-m tube) 2006-07**

Dominance by biovolume (rank 1 = dominant,...rank 10 = rare), plus cell counts and biovolume from May 2007

	Sample code	EM8	EM10	EM13	EM17	EM20	EM23	EM27	EM29	EM31	EM34	EM36	EM38	EM40	EM40	EM40	EM42	EM42	EM42	RY2	RY2	RY2	RY5	RY5	RY5
	Sampling date	26/09/2006	18/10/2006	1/11/2006	5/12/2007	14/12/2007	9/01/2007	8/02/2007	21/02/2007	21/03/2007	3/04/2007	19/04/2007	8/05/2007	22/05/07	22/05/07	22/05/07	14/06/07	14/06/07	14/06/07	27/06/07	27/06/07	27/06/07	18/07/2007	18/07/2007	18/07/2007
Species composition by class	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Biovolume (µm <sup>3</sup> )	cell (per ml)	Rank	Biovolume (µm <sup>3</sup> )	cell (per ml)	Rank	Biovolume (µm <sup>3</sup> )	cell (per ml)	Rank	Biovolume (µm <sup>3</sup> )	cell (per ml)
<b>Blue greens (Cyanophyceae)</b>																									
<i>Anabaena lemmermannii</i>	5	5	5	5	9	5	9	9	9	3	4	5	4	6	303	10	8	450	15	5	1091	36	4	3652	17
<i>Anabaena</i> sp.															0	0		0	0	10	29	0		0	0
<i>Aphanizomenon</i> sp.								8	8	7	7	9	9	10	5	0		0	0		0	0	10	27	1
<i>Phormidium</i> sp.										10	10	10			0	0		0	0		0	0		0	0
<b>Greens (Chlorophyceae)</b>																									
<i>Ankistrodesmus falcatus/ Schroederia</i> sp.																				9	120	5		0	0
<i>Botryococcus braunii</i>	7	2	2	3	3	1	1	1	1	1	1	5	3	1	1014600	0	1	38448	1	8	438	0		0	0
<i>Chlorosarcinopsis</i> sp.	10	10																							
<i>Elakotothrix gelatinosa</i>														6	342	4		0	0		0	0		0	0
<i>Eudorina elegans</i>	9	9	10	10	10			10	10	10	10		10		0	0		0	0		0	0		0	0
<i>Kirchneriella contorta</i>														10	0	0		157	7		0	0	10	21	1
<i>Monoraphidium</i> sp/ <i>Ankistrodesmus falcatus</i>	10	10	10	10	10	10	10	10	10	8	8	9	7	5	561	19	2	20456	259	2	5061	46	5	2574	12
<i>Oocystis</i> sp.	7	8	9	9	9	10	7	7	10	10	10	10		9	43	1	6	3210	11	4	1605	5	9	293	1
<i>Quadrigula lacustris</i>	9														0	0		0	0		0	0		0	0
<i>Stichococcus contortus</i>															0	0		0	0	7	534	4	6	1073	5
<i>Westella botryoides</i>	9	9	9	10	10	10	10	10							0	0		0	0		0	0		0	0
<b>Diatoms (Bacillariophyceae)</b>																									
<i>Asterionella formosa</i>	2	2	6	4	4			4	5						0	0	6	3173	10	3	4414	14	2	25087	81
<i>Aulacoseira granulata</i>	3	1	1	1	2	9	6	2	2	2	2	1			0	0	4	6760	22	1	7863	25	2	29167	94
<i>Aulacoseira granulata</i> var. <i>angustissima</i>													2	3	5590	8		0	0		0	0		0	0
<i>Cyclotella stelligera</i>	5	5	9	7	6	6	5	6							0	0	8	427	3	10	71	0	8	468	3
<i>Fragilaria crotonensis</i>	1	4	7				6	7	6	6	6		7	4	2294	6	3	13382	37	10	33	0	1	109152	107
<i>Gomphonema</i> sp.																	5	5559	14	5	1042	3	7	952	2
<i>Nitzschia</i> sp.	10	10	10	10	10	10	10	10	10	10	10	7		8	155	1					0	0		0	0
unknown diatom sp.												8			0	0		0	0		0	0		0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>																									
<i>Closterium acutum</i>	9	10	10	9	9	7	8	8	10	10					0	0	7	1335	3	6	668	1		0	0
<i>Closterium acutum</i> var. <i>variable</i>	10	10	10	9	8	8	8	8							0	0		0	0		0	0	7	731	1
<i>Mougeotia</i> sp.															0	0		0	0		0	0		0	0
<i>Staurastrum</i> sp.	10	10				10						9	6		0	0		0	0		0	0		0	0
<b>Chrysophyta (Chrysophyceae)</b>																									
<i>Cryptomonas</i> sp.	10	10	10				10	10	10	10	10	10			0	0	9	267	1	9	196	1	9	293	1
<i>Dinobryon</i> sp.	9	3	3	2	1	2	6	8	3	5	2	1	7		256	1		0	0		0	0		0	0
<b>Dinoflagellates (Dinophyceae)</b>																									
<i>Ceratium hirundinella</i>		10	10	10	10		4	1	3						0	0		0	0		0	0		0	0
<i>Gymnodinium</i> sp.	5	7	4	3	5	7	3	3	4	6	4		2		11748	1		0	0		0	0		0	0
<i>Gymnodinium</i> sp. 2													8		0	0		0	0	3	4450	0		0	0
<b>Flagellates 5µm</b>																									
Flagellates < 5µm/unicells	3	6	8	6	6	6	2	4	5	4	4	3	4	4	2138	50	3	16227	381	1	7521	177	3	4133	97

## Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2010-2011

From Site A (Mid Lake) 10/11/2010

Sample code Depth	KD1	KD2	KD3	KD6	KD11	KD16	KD1	KD2	KD3	KD6	KD11	KD16
	Surface	10m	20m	50m	100m	150m	Surface	10m	20m	50m	100m	150m
	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010	10/11/2010
	Cells/ml	Cells/ml	Cells/ml	Cells/ml	Cells/ml	Cells/ml	$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena c.f. lemmermannii</i>	11.4	48.7	25.5	6.1	0.0	0.0	1023	4387	2293	547	0	0
<i>Aphanocapsa sp.</i>	0.0	0.0	0.0	0.0	0.0	8.2	0	0	0	0	0	74
<i>Pseudanabaena sp.</i>	0.0	0.0	0.0	0.0	0.1	40.6	0	0	0	0	3	772
<b>Greens (Chlorophyceae)</b>												
<i>Actinastrum hantschii</i>	0	0	0.0	0	0	0.2	0	0	0	0	0	0
<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	382	539	235	115	38	0.4	16042	22631	9884	4817	1593	15
<i>Stichococcus contortus</i>	0	0	0	18	9	0.0	0	0	0	321	160	0
<i>Botryococcus braunii (colonies)</i>	0.0	0	0	0	0	0	0	0	0	0	110	0
<i>Dictyosphaerium sp.</i>	1	20	2	9	0	0	0	0	0	0	0	0
<i>Eudorina elegans</i>	1	1	1	1	0	0	277	150	138	300	0	0
<i>Oocystis sp.</i>	4	2	2	9	2	0	615	332	307	1246	229	0
<i>Scenedesmus sp.</i>	0	2	0	2	0	10	0	122	0	122	0	504
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	102	129	73	104	10	6	28630	36036	20450	29156	2711	1582
<i>Aulacoseira granulata</i>	18	137	76	235	88	140	5534	42436	23479	72903	27390	43274
<i>Aulacoseira granulata var. angustissima</i>	0	0	0	18	5	0	0	0	0	4715	1259	0
<i>Cyclotella stelligera</i>	2	2	2	4	0	4	346	374	346	655	0	581
<i>Fragilaria crotonensis</i>	16	15	6	4	0	0	5810	5236	2130	1257	0	0
<i>Nitzschia sp.</i>	0	5	3	2	4	4	0	1825	1266	684	1573	1731
<i>Synedra sp.</i>	3	0	0	1	1	0	1279	0	0	461	318	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium acutum var. variable</i>	0	0	0	2	0	1	0	0	0	662	152	456
<i>Mougeotia sp.</i>	0	0	0	2	0	0	0	0	0	0	0	0
<i>Staurastrum tangaroaii</i>	0	1	1	0	0	0	0	0	0	0	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Dinobryon sp.</i>	62	191	145	13	0	0	3639	11252	8554	759	0	0
<i>Cryptomonas sp.</i>	0	0	0	1	1	0	0	0	0	168	116	0
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Gymnodinium sp. 1</i>	0	1	1	0	0	1	0	644	1190	0	0	888
<i>Gymnodinium sp. 2</i>	0	0	1	1	0	0	0	0	27050	14625	0	0
<i>Gonyaulax sp.</i>	207	2	4	0	0	0	413324	4680	7574	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>												
<b>Flagellates &lt; 5<math>\mu\text{m}</math>/unicells</b>	214	205	188	147	26	28	7498	7166	6589	5160	918	988

Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2010-2011											
From Site A (Mid Lake) 13/04/2011											
Sample code	RL1	RL2	RL6	RL11	RL16		RL1	RL2	RL6	RL11	RL16
Depth	0m	10m	50m	100m	150m		0m	10m	50m	100m	150m
	13/04/2011	13/04/2011	13/04/2011	13/04/2011	13/04/2011		13/04/2011	13/04/2011	13/04/2011	13/04/2011	13/04/2011
	Cells/ml	Cells/ml	Cells/ml	Cells/ml	Cells/ml		$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$	$\mu\text{m}^3$
<b>Blue greens (Cyanophyceae)</b>											
<i>Dolichospermum c.f. lemmermannii</i> (formally; <i>Anabaena c.f. lemmermannii</i> )	16.7	5.0	0.4	0.0	0.0		1933	580	42	0	0
<i>Gloeocapsa sp.</i>	0.0	0.0	0.2	0.0	0.0		0	0	2	0	0
<i>Snowella sp.</i>	0.0	0.0	0.0	0.2	0.0		0	0	0	5	0
<i>Pseudanabaena sp.</i>	2.8	0.0	0.0	0.0	0.0		54	0	0	0	0
<b>Greens (Chlorophyceae)</b>											
<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	2	1	5	1	2		74	49	217	49	74
<i>Botryococcus braunii (colonies)</i>	0	1	0	0	0		8760	512447	0	0	0
<i>Dictyosphaerium</i>	2	2	2	0	0		97	97	97	0	0
<i>Elakotothrix gelatinosa</i>	2	0	0	0	0		227	0	0	0	0
<i>Eudorina elegans</i>	0	0	0	0	0		18	0	0	0	0
<i>Oocystis sp.</i>	44	55	1	0	0		6223	7808	166	0	0
<b>Diatoms (Bacillariophyceae)</b>											
<i>Asterionella formosa</i>	3	3	2	1	2		746	819	655	328	655
<i>Aulacoseira granulata</i>	6	1	4	2	2		1753	363	1088	544	725
<i>Aulacoseira granulata var. angustissima</i>	0	3	18	19	15		0	760	4563	4867	3802
<i>Cyclotella stelligera</i>	3	2	1	2	1		420	374	187	281	94
<i>Fragilaria crotonensis</i>	14	23	0	0	0		4889	8377	0	0	0
<i>Fragilaria sp.</i>	0	0	1	0	0		0	0	209	0	0
<i>Nitzschia sp.</i>	0	0	1	0	0		0	0	228	0	0
<i>Synedra sp.</i>	0	1	0	0	0		0	230	0	0	0
<i>Rhoicosphenia sp.</i>	0	0	1	0	0		0	0	306	0	0
Small unknown diatom sp.	0	0	1	0	0		0	0	129	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>											
<i>Closterium acutum var. variable</i>	0	1	1	0	0		0	221	221	0	0
<b>Chrysophyta (Chrysophyceae)</b>											
<i>Dinobryon sp.</i>	13	13	0	1	1		751	794	0	35	35
<i>Cryptomonas sp.</i>	0	1	2	0	0		0	84	253	0	0
<b>Dinoflagellates (Dinophyceae)</b>											
<i>Gymnodinium sp. 1</i>	1	1	0	0	0		595	643	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>											
Flagellates < 5 $\mu\text{m}$ /unicells	35	32	28	6	3		1214	1106	983	225	102



Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2009-2010  
From Site A (Mid Lake) 19/10/2009

Sample code	OT1	OT2	OT3	OT6	OT8	OT11	OT16	OT1	OT2	OT3	OT6	OT8	OT11	OT16	
Depth	Surface	10m	20m	50m	70m	100m	150m	Surface	10m	20m	50m	70m	100m	150m	
	Cell	Cell	Cell	Cell	Cell	Cell	Cell	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume	
	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	
<b>Blue greens (Cyanophyceae)</b>															
<i>Dolichospermum c.f. lemmermannii</i> (formally; <i>Anabaena c.f. lemmermannii</i> )															
	27.4	6.8	1.1	0.4	0.0	0.0	0.1	2470	610	99	40	0	0	9	
<i>Chroococcus</i> sp.	0.2	0.0	0.0	0.0	0.0	0.0	0.0	2	0	0	0	0	0	0	
<i>Microcystis</i> sp.	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0	19	0	0	0	0	0	
<i>Dictyosphaerium</i> sp.	18.0	31.6	31.3	7.4	2.7	0.4	0.0	451	789	782	186	67	11	0	
<i>Phormidium</i> sp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	
<i>Pseudanabaena</i> sp.	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0	0	0	0	4	0	0	
<b>Greens (Chlorophyceae)</b>															
<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>															
	2	4	0	0	12	0	0	68	147	0	0	491	0	0	
<i>Botryococcus braunii</i> (colonies)	0.0	0	0	0	0	0	0	30946	0	950	0	0	0	1900	
<i>Crucigeniella</i> sp.	4	8	0	0	0	2	0	281	494	0	0	0	152	0	
<i>Dictyosphaerium</i> sp.	0	0	0	0	0	0	9	0	0	0	0	0	0	658	
<i>Eudorina elegans</i>	0	0	0	11	0	0	0	0	0	0	2696	0	0	0	
<i>Nephrocytium agardhianum</i>	0	11	5	0	0	0	0	0	790	351	0	0	0	0	
<i>Oocystis</i> sp.	0	7	5	0	2	2	0	0	997	665	0	332	332	0	
<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Paulschulzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Diatoms (Bacillariophyceae)</b>															
<i>Asterionella formosa</i>	128	218	97	78	26	4	43	35749	60934	27191	21785	7207	983	12121	
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	17	49	43	21	65	40	36	4360	12624	11103	5476	16883	10343	9278	
<i>Cyclotella stelligera</i>	4	5	1	2	11	15	18	692	842	187	374	1778	2340	2808	
<i>Fragilaria crotonensis</i>	267	467	352	153	76	32	47	95677	167335	126077	54871	27226	11519	16754	
<i>Nitzschia</i> sp.	1	0	1	0	0	0	0	422	0	228	0	0	0	0	
<i>Synedra</i> sp.	1	2	0	0	0	0	2	213	922	0	0	0	0	691	
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>															
<i>Closterium aciculare</i>	0	1	1	0	0	0	0	0	350	350	0	0	0	0	
<i>Closterium acutum</i> var. <i>variable</i>	2	1	0	1	2	1	1	612	441	0	441	662	221	441	
<b>Chrysophyta (Chrysophyceae)</b>															
<i>Dinobryon</i> sp.	23	70	140	89	3	0	0	1373	4142	8284	5246	173	0	0	
<i>Cryptomonas</i> sp.	0	0	0	1	1	0	0	0	0	0	84	168	0	0	
<b>Dinoflagellates (Dinophyceae)</b>															
<i>Gymnodinium</i> sp. 1	1	0	0	0	0	0	0	595	0	0	0	0	0	0	
<i>Gymnodinium</i> sp. 2	0	0	0	0	0	0	0	0	0	2925	2925	0	0	0	
<i>Peridinium</i> sp.	0	0	0	0	0	0	0	0	0	1170	0	0	0	0	
<i>Gonyaulax</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Flagellates 5<math>\mu\text{m}</math></b>															
Flagellates < 5 $\mu\text{m}$ /unicells	144	294	211	172	159	79	102	5037	10299	7371	6020	5569	2764	3583	

**Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2009-2010**

From Site A (Mid Lake) 7/04/2010

	Sample code	YZ1	YZ2	YZ3	YZ6	YZ11	YZ16	YZ1	YZ2	YZ3	YZ6	YZ11	YZ16
	Depth	Surface	10m	20m	50m	100m	150m	Surface	10m	20m	50m	100m	150m
		Cell	Cell	Cell	Cell	Cell	Cell	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume
		(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>													
	<i>Anabaena c.f. lemmermannii</i>	10.2	27.6	15.4	5.3	0.3	0.6	921	2482	1390	475	27	53
	<i>Dolichospermum planctonicum</i> (formerly; <i>Anabaena planktonica</i> )	0.6	0.0	0.0	0.0	0.0	0.0	242	0	0	0	0	0
	<i>Aphanocapsa</i> sp.	0.0	0.0	0.0	0.0	0.4	0.0	0	0	0	0	4	0
	<i>cf Heteroleibleinia</i> sp.	0.0	0.0	0.3	0.0	0.0	0.0	0	0	5	0	0	0
	<i>Phormidium</i> sp.	0.0	0.0	0.0	0.0	0.0	0.4	0	0	0	0	0	8
	<i>Pseudanabaena</i> sp.	0.0	0.0	0.0	0.0	2.3	0.3	0	0	0	0	44	6
<b>Greens (Chlorophyceae)</b>													
	<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	0	0	0	111	0	0	0	0	0	4643	0	0
	<i>Botryococcus braunii</i> (colonies)	0.0	0	0	0	0	0	1200	76	6621	0	76	76
	<i>Elakothrix gelatinosa</i>	1	0	0	0	0	0	157	0	0	0	0	0
	<i>Eudorina elegans</i>	0	0	4	0	0	0	96	0	930	0	0	0
	<i>Nephrocytium agardhianum</i>	10	2	2	2	0	0		182	0	0	0	0
	<i>Nephrocytium lunatum</i>	0	5	0	0	0	0	784	387	121	121	0	0
	<i>Oocystis</i> sp.	16	28	12	23	2	15	2225	4010	1719	3208	344	2177
	<i>Quadrigula lacustris</i>	1	0	0	0	0	0	245	0	0	0	0	0
	<i>Scenedesmus</i> sp.	0	2	0	3	0	0	0	84	0	168	0	0
<b>Diatoms (Bacillariophyceae)</b>													
	<i>Asterionella formosa</i>	0	0	0	0	1	0	0	0	0	0	226	0
	<i>Aulacoseira granulata</i>	0	0	0	0	0	8	116	0	0	0	0	2626
	<i>Aulacoseira granulata</i> var. <i>angustissima</i>	0	0	0	1	5	0	0	0	0	210	1259	0
	<i>Cocconeis</i>	0	0	0	0	0	0	0	0	211	0	0	0
	<i>Cyclotella stelligera</i>	4	0	0	2	0	1	716	0	0	323	0	194
	<i>Fragilaria crotonensis</i>	0	23	7	8	2	1	134	8088	2600	2744	578	433
	<i>Nitzschia</i> sp.	2	4	4	0	1	0	873	1416	1416	0	315	0
	<i>Eunotia</i> sp.	4	0	0	0	0	0	0	0	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>													
	<i>Closterium acutum</i> var. <i>variable</i>	0	0	0	1	1	0	0	0	0	304	456	152
	<i>Staurastrum</i> sp.	0	0	0	0	0	0	0	0	0	1	0	0
<b>Chrysophyta (Chrysophyceae)</b>													
	<i>Dinobryon</i> sp.	42	13	61	6	0	0	2487	738	3618	381	0	0
	<i>Cryptomonas</i> sp.	0	0	0	2	0	0	0	0	58	232	0	0
<b>Dinoflagellates (Dinophyceae)</b>													
	<i>Ceratium hirundinella</i>	0	0	2	4	0	0	126	147	246	369	0	0
	<i>Gymnodinium</i> sp. 1	0	1	0	0	0	0	0	888	0	0	444	0
	<i>Gymnodinium</i> sp. 2	0	1	0	0	0	0	0	20172	0	0	0	0
	<i>Gonyaulax</i> sp.	6	5	3	0	0	0	12686	10490	5648	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>													
	Flagellates < 5 $\mu\text{m}$ /unicells	47	59	56	40	11	19	1658	2062	1949	1384	395	650

Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2008-2009  
From Site A (Mid Lake) 15/04/2009

	Sample code Depth	SZ1 Surface Cell (per ml)	SZ2 10m Cell (per ml)	SZ3 20m Cell (per ml)	SZ6 50m Cell (per ml)	SZ11 100m Cell (per ml)	SZ16 150m Cell (per ml)	SZ1 Surface Biovolume ( $\mu\text{m}^3$ )	SZ2 10m Biovolume ( $\mu\text{m}^3$ )	SZ3 20m Biovolume ( $\mu\text{m}^3$ )	SZ6 50m Biovolume ( $\mu\text{m}^3$ )	SZ11 100m Biovolume ( $\mu\text{m}^3$ )	SZ16 150m Biovolume ( $\mu\text{m}^3$ )
<b>Species composition by class</b>													
<b>Blue greens (Cyanophyceae)</b>													
	<i>Dolichospermum c.f. lemmermannii</i> (formally; <i>Anabaena c.f. lemmermannii</i> )	0.0	1.3	0.0	0.8	0.0	0.0	0	51	0	31	0	0
	<i>Aphanothece sp.</i>	0.0	0.0	0.0	0.0	7.3	0.0	0	0	0	0	66	0
	<i>Pseudanabaena sp.</i>	0.0	0	0.0	0.0	22.2	5.3	0	0	0	0	422	100
<b>Greens (Chlorophyceae)</b>													
	<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	68	71	0.5	55	13	6	2875	2998	22	2318	545	273
	<i>Stichococcus contortus</i>	0	0	0.0	0	17	15	0	0	0	0	302	263
	<i>Kirchneriella contorta</i>	0	0	0.0	1	0	0	0	0	0	36	0	0
	<i>Botryococcus braunii (colonies)</i>	0.0	0	0.0	0.0	0	0	0	0	21653	16240	76507.95	0
	<i>Elakothrix gelatinosa</i>	5	10	2	2	0	0	491	1044	227	227	0	0
	<i>Nephrocytium agardhianum</i>	2	0	0	0	0	0	0	0	0	0	0	0
	<i>Oocystis sp.</i>	6	1	4	1	4	1	831	166	581	166	498	166
	<i>Quadrigula lacustris</i>	2	0	0	0	0	0	384	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>													
	<i>Asterionella formosa</i>	94	71	102	71	6	2	26372	19820	28501	19984	1802	655
	<i>Aulacoseira granulata</i>	0	0	0	1	3	1	0	0	0	363	907	363
	<i>Aulacoseira granulata var. angustissima</i>	1	22	8	8	0	0	304	5628	2129	1977	0	0
	<i>Cyclotella stelligera</i>	5	4	11	4	2	2	842	562	1685	562	374	281
	<i>Fragilaria crotonensis</i>	151	42	9	183	15	7	54033	14870	3141	65552	5236	2513
	<i>Synedra sp.</i>	1	0	0	0	0	0	0	0	0	0	0	0
	<i>Eunotia sp.</i>	0	1	0	0	0	0	0	0	0	0	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>													
	<i>Closterium aciculare</i>	1	1	0	1	0	0	701	701	0	701	0	0
	<i>Closterium acutum var. variable</i>	0	0	1	0	1	1	0	0	221	0	221	221
<b>Chrysophyta (Chrysophyceae)</b>													
	<i>Dinobryon sp.</i>	1	0	32	3	0	0	69	0	1898	173	0	0
	<i>Cryptomonas sp.</i>	0	1	0	1	0	0	0	84	0	84	0	0
<b>Dinoflagellates (Dinophyceae)</b>													
	<i>Gymnodinium sp. 2</i>	1	0	1	0	0	0	14625	0	14625	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>													
	Flagellates < 5 $\mu\text{m}$ /unicells	132	201	111	140	24	13	4607	7023	3870	4914	839	450

**Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2008-2009**

From Site A (Mid Lake) 14/10/2008

	Sample code Depth	EU1 Surface Cell (per ml)	EU2 10m Cell (per ml)	EU6 50m Cell (per ml)	EU8 70m Cell (per ml)	EU11 100m Cell (per ml)	EU16 150m Cell (per ml)	EU1 Surface Biovolume ( $\mu\text{m}^3$ )	EU2 10m Biovolume ( $\mu\text{m}^3$ )	EU6 50m Biovolume ( $\mu\text{m}^3$ )	EU8 70m Biovolume ( $\mu\text{m}^3$ )	EU11 100m Biovolume ( $\mu\text{m}^3$ )	EU16 150m Biovolume ( $\mu\text{m}^3$ )
<b>Species composition by class</b>													
<b>Blue greens (Cyanophyceae)</b>													
	<i>Dolichospermum c.f. lemmermannii</i> (formally; <i>Anabaena c.f. lemmermannii</i> )	1.2	8.5	1.6	0.0	0.0	0.0	104	767	143	4	0	0
	<i>Dolichospermum sp.</i> (formally; <i>Anabaena sp.</i> )	0.5	0.9	0.0	0.0	0.0	0.0	49	83	0	0	0	0
	<i>Pseudanabaena sp.</i>	0.0	0.0	0.0	1.7	0.3	0.6	0	0	0	33	5	11
<b>Greens (Chlorophyceae)</b>													
	<i>Monoraphidium sp. / Ankistrodesmus falcatus</i>	0	0	54	2	19	2	0	0	2260	66	786	82
	<i>Botryococcus braunii</i> (colonies)	0.0	1	0	0	1	0	123784	1111500	370500	0	741000	0
	<i>Crucigeniella sp.</i>	52	53	5	3	0	0	3399	3448	304	203	0	0
	<i>Elakotothrix gelatinosa</i>	1	0	0	0	0	0	76	0	0	0	0	0
	<i>Eudorina elegans</i>	0	11	2	0	0	0	0	2796	599	0	0	0
	<i>Oocystis sp.</i>	3	0	2	0	1	0	410	0	222	0	111	0
	<i>Westella botryoides</i>	0	5	3	2	0	0	0	304	203	152	0	0
	<i>Paulschulzia sp.</i>	2	0	0	0	0	0	0	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>													
	<i>Asterionella formosa</i>	3	6	4	4	1	1	707	1638	1201	1092	218	218
	<i>Aulacoseira granulata</i>	0	2	4	9	5	1	0	605	1209	2660	1693	242
	<i>Aulacoseira granulata var. angustissima</i>	0	2	6	0	0	2	0	507	1622	0	0	406
	<i>Cyclotella stelligera</i>	1	1	4	1	0	0	115	187	686	125	62	62
	<i>Fragilaria crotonensis</i>	6	10	0	0	0	1	2066	3630	0	0	0	419
	<i>Nitzschia sp.</i>	0	0	0	0	0	0	70	152	0	0	0	152
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>													
	<i>Closterium aciculare</i>	0	0	0	0	0	0	0	0	117	0	0	0
	<i>Closterium acutum var. variable</i>	0	0	0	2	0	0	0	0	147	735	0	0
<b>Chrysophyta (Chrysophyceae)</b>													
	<i>Dinobryon sp.</i>	7	2	0	0	0	0	426	138	0	0	0	0
	<i>Cryptomonas sp.</i>	0	0	1	0	0	0	0	0	168	0	0	0
<b>Dinoflagellates (Dinophyceae)</b>													
	<i>Gymnodinium sp. 1</i>	0	2	0	0	0	0	0	2145	0	0	0	0
	<i>Gymnodinium sp. 2</i>	0	1	0	0	0	0	0	19500	0	0	0	0
	<i>Gonyaulax sp.</i>	1	1	0	0	0	0	2164	1560	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>													
	Flagellates < 5 $\mu\text{m}$ /unicells	34	46	27	22	10	9	1174	1611	956	778	355	300

**Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2007-2008**  
**From Site A (Mid Lake) 30/10/2007**

Sample code Depth	ZA1	ZA2	ZA3	ZA6	ZA8	ZA11	ZA16	ZA1	ZA2	ZA3	ZA6	ZA8	ZA11	ZA16	
	Surface cell (per ml)	10m cell (per ml)	20m cell (per ml)	50m cell (per ml)	70m cell (per ml)	100m cell (per ml)	150m cell (per ml)	Surface Biovolume ( $\mu\text{m}^3$ )	10m Biovolume ( $\mu\text{m}^3$ )	20m Biovolume ( $\mu\text{m}^3$ )	50m Biovolume ( $\mu\text{m}^3$ )	70m Biovolume ( $\mu\text{m}^3$ )	100m Biovolume ( $\mu\text{m}^3$ )	150m Biovolume ( $\mu\text{m}^3$ )	
<b>Blue greens (Cyanophyceae)</b>															
<i>Anabaena lemmermannii</i>	18.7	22.0	2.9	0.4	0.0	0.0	1.6	1683	1976	257	33	0	0	140	
<i>Chroococcus</i> sp.	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0	0	0	1	0	0	0	
<i>Aphanocapsa</i> sp.	0.0	0.0	0.0	6.9	0.0	5.8	6.6	0	0	0	62	0	52	59	
<i>Planktolyngbya</i> sp.	21.3	0.0	0.0	0.0	0.0	0.0	0.0	192	0	0	0	0	0	0	
<i>Pseudanabaena</i> sp.	0.0	0.0	0.0	0.0	0.0	4.9	0.3	0	0	0	0	0	94	6	
<b>Greens (Chlorophyceae)</b>															
<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	52	21	29	15	6	0	0	2187	885	1229	614	270	0	0	
<i>Stichococcus contortus</i>	39	6	13	15	6	2	4	706	116	242	274	116	42	63	
<i>Botryococcus braunii</i> (colonies)	0	0	0	1	0	0	0	0	0	0	235139	0	804	0	
<i>Eudorina elegans</i>	13	3	7	0	0	0	0	3295	749	1797	0	0	0	0	
<i>Crucigeniella</i> sp.	0	2	8	5	5	0	0	0	152	532	304	304	0	0	
<i>Nephrocytium agardhianum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Oocystis</i> sp.	9	4	0	1	0	9	1	1246	498	0	166	0	1246	166	
<b>Diatoms (Bacillariophyceae)</b>															
<i>Asterionella formosa</i>	33	73	102	62	34	4	14	9173	20311	28665	17363	9500	983	3931	
<i>Aulacoseira granulata</i>	15	37	91	25	9	25	13	4715	11606	28109	7617	2902	7617	4171	
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	0	0	0	0	0	3	0	0	0	0	0	0	761	0	
<i>Cyclotella stelligera</i>	6	8	22	9	5	9	10	1030	1217	3557	1404	842	1404	1591	
<i>Fragilaria crotonensis</i>	11	14	22	7	7	20	2	3770	5026	7958	2513	2513	7330	838	
<i>Nitzschia</i> sp.	0	0	0	0	0	1	0	0	0	0	0	0	228	0	
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>															
<i>Closterium aciculare</i>	1	1	0	1	1	1	1	701	350	0	526	526	350	350	
<i>Closterium acutum</i> var. <i>variable</i>	1	1	0	0	0	0	0	221	265	0	44	0	0	0	
<b>Chrysophyta (Chrysophyceae)</b>															
<i>Dinobryon</i> sp.	275	182	227	135	108	1	0	16222	10734	13392	7938	6351	69	0	
<i>Cryptomonas</i> sp.	0	0	1	1	0	0	0	0	0	168	168	0	0	0	
<b>Dinoflagellates (Dinophyceae)</b>															
<i>Gymnodinium</i> sp. 1	0	1	1	1	1	0	0	0	3510	3510	1755	1755	0	0	
<i>Gymnodinium</i> sp. 2	0	1	0	1	0	0	0	0	14044	26750	1463	0	0	0	
<b>Flagellates 5<math>\mu\text{m}</math></b>															
Flagellates < 5 $\mu\text{m}$ /unicells	139	404	406	243	144	25	13	4853	14148	14210	8497	5037	860	450	

**Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2007-2008**  
**From Site A (Mid Lake) 17/04/2008**

Species composition by class	Sample code	KA1	KA2	KA3	KA6	KA11	KA16	KA1	KA2	KA3	KA6	KA11	KA16
	Depth	Surface	10m	20m	50m	100m	150m	Surface	10m	20m	50m	100m	150m
		cell	cell	cell	cell	cell	cell	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume
		(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )
<b>Blue greens (Cyanophyceae)</b>													
	<i>Anabaena lemmermannii</i>	44.8	46.9	24.3	0.0	6.5	1.4	4031	4220	2183	0	584	16
	<i>Pseudanabaena</i> sp.	0.0	0.0	0.0	0.0	0.0	17.4	0	0	0	0	0	331
<b>Greens (Chlorophyceae)</b>													
	<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	14	3	8	8	0	1	590	123	344	344	0	49
	<i>Stichococcus contortus</i>	6	26	6	0	0	0	116	463	116	0	0	0
	<i>Botryococcus braunii</i> (colonies)	0	0	0	0	0	1	54	31352	6431	26908	1608	156759
	<i>Elakotothrix gelatinosa</i>	0	1	1	0	1	0	0	154	123	0	123	0
	<i>Eudorina elegans</i>	0	6	0	0	0	0	75	1498	75	0	0	0
	<i>Crucigeniella</i> sp.	0	0	0	1	0	0	0	0	0	76	0	0
	<i>Oocystis</i> sp.	2	10	2	0	2	1	332	1412	332	0	332	83
	<i>Westella botryoides</i>	0	0	0	0	0	0	0	0	0	8	0	0
<b>Diatoms (Bacillariophyceae)</b>													
	<i>Asterionella formosa</i>	12	23	32	12	3	4	3276	6552	8935	3276	819	983
	<i>Aulacoseira granulata</i>	5	16	5	12	5	9	1484	4946	1484	3808	1632	2720
	<i>Cyclotella stelligera</i>	2	6	2	5	1	1	340	936	340	749	94	94
	<i>Fragilaria crotonensis</i>	4	10	39	1	1	1	1523	3427	14089	419	419	209
	<i>Nitzschia</i> sp.	0	0	22	0	0	0	0	0	8442	0	0	0
	Small unknown diatom sp.	0	0	0	0	1	0	0	0	0	0	64	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>													
	<i>Closterium aciculare</i>	0	1	0	0	1	0	105	701	105	0	350	4
	<i>Closterium acutum</i> var. <i>variable</i>	0	1	2	2	0	0	0	221	662	662	0	22
<b>Chrysophyta (Chrysophyceae)</b>													
	<i>Dinobryon</i> sp.	64	164	101	0	0	0	3797	9664	5971	0	0	0
	<i>Cryptomonas</i> sp.	1	1	1	3	0	0	84	84	84	421	0	0
<b>Dinoflagellates (Dinophyceae)</b>													
	<i>Gymnodinium</i> sp. 1	1	1	1	0	0	0	3191	3191	3191	0	0	0
	<i>Gymnodinium</i> sp. 2	0	0	0	0	0	0	0	0	0	146	134	0
<b>Flagellates 5<math>\mu\text{m}</math></b>													
	Flagellates < 5 $\mu\text{m}$ /unicells	46	126	196	37	7	3	1619	4411	6850	1290	246	102

**Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2006-2007**  
**From Site A (Mid Lake) 1/11/2006**

	Sample code Depth	HW1 surface cell (per ml)	HW3 20 m cell (per ml)	HW6 50 m cell (per ml)	HW11 100 m cell (per ml)	HW16 150 m cell (per ml)	HW1 surface Biovolume ( $\mu\text{m}^3$ )	HW3 20 m Biovolume ( $\mu\text{m}^3$ )	HW6 50 m Biovolume ( $\mu\text{m}^3$ )	HW11 100 m Biovolume ( $\mu\text{m}^3$ )	HW16 150 m Biovolume ( $\mu\text{m}^3$ )
<b>Species composition by class</b>											
<b>Blue greens (Cyanophyceae)</b>											
	<i>Anabaena lemmermannii</i>	63	25	0	0	0	3488.1	1367	25	15	0
	<i>Aphanocapsa</i> sp.	0	0	2	3	0	0	0	14	31	0
<b>Greens (Chlorophyceae)</b>											
	<i>Botryococcus braunii</i> (colonies)	0	0	0	0	0	5151	5901	7321	0	0
	<i>Chlorosarcinopsis</i> sp.	3	0	2	2	0	259	0	182	208	0
	<i>Eudorina elegans</i>	2	5	6	0	0	621	1198	1498	0	0
	<i>Kirchneriella contorta</i>	5	4	0	0	0	176	116	0	0	0
	<i>Lagerheimia</i> sp.	0	1	1	0	0	0	125	166	0	0
	<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	3	0	0	0	0	143	0	0	0	0
	<i>Oocystis</i> sp.	7	6	6	6	3	1034	872	831	831	415
	<i>Westella botryoides</i>	0	0	7	0	0	0	0	0	0	0
<b>Diatoms (Bacillariophyceae)</b>											
	<i>Asterionella formosa</i>	14	8	7	8	2	3806	2129	1884	2211	573
	<i>Aulacoseira granulata</i>	63	54	49	47	54	19413	16866	15052	14689	16594
	<i>Aulacoseira granulata</i> var. <i>angustissima</i>	0	0	2	3	0	0	0	456	837	0
	<i>Cyclotella stelligera</i>	46	8	4	7	4	7301	1264	562	1123	655
	<i>Fragilaria crotonensis</i>	5	0	2	8	3	1912	0	628	2723	1047
	<i>Nitzschia</i> sp.	2	1	1	0	0	947	342	342	0	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>											
	<i>Closterium aciculare</i>	0	0	0	0	0	0	35	175	0	0
	<i>Closterium acutum</i> var. <i>variable</i>	0	0	0	0	0	0	0	110	0	0
<b>Chrysophyta (Chrysophyceae)</b>											
	<i>Dinobryon</i> sp.	8	4	6	0	0	458	242	362	0	0
<b>Dinoflagellates (Dinophyceae)</b>											
	<i>Gymnodinium</i> sp. 1	0	1	0	0	0	0	2633	1316	0	88
	<i>Gymnodinium</i> sp. 2	0	0	0	0	0	6068	0	0	0	0
<b>Flagellates 5<math>\mu\text{m}</math></b>											
	Flagellates < 5 $\mu\text{m}$ /unicells	50	19	31	23	4	1750	676	1085	788	143

**Lake Taupo phytoplankton species composition and biovolume ( $\mu\text{m}^3$ ) 2006-2007**  
**From Site A (Mid Lake) 2/04/2007**

Sample code	HW17	HW18	HW19	HW22	HW27	HW32	HW17	HW18	HW19	HW22	HW27	HW32
Depth	surface	10 m	20 m	50 m	100 m	150 m	surface	10 m	20 m	50 m	100 m	150 m
	cell	cell	cell	cell	cell	cell	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume	Biovolume
	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	(per ml)	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )	( $\mu\text{m}^3$ )
<b>Species composition by class</b>												
<b>Blue greens (Cyanophyceae)</b>												
<i>Anabaena lemmermannii</i>	36	65	56	0	2	0	1493	2655	2286	5	86	10
<b>Greens (Chlorophyceae)</b>												
<i>Botryococcus braunii</i> (colonies)	1	0	0	0	0	0	27630	0	0	41446	0	0
<i>Monoraphidium</i> sp. / <i>Ankistrodesmus falcatus</i>	49	17	17	0	1	0	2064	725	725	0	25	0
<i>Oocystis</i> sp.	2	1	1	0	1	0	332	166	125	0	166	0
<i>Stichococcus contortus</i>	0	0	0	0	0	1	0	0	0	0	0	21
<b>Diatoms (Bacillariophyceae)</b>												
<i>Asterionella formosa</i>	0	0	1	0	0	1	0	82	246	0	0	164
<i>Aulacoseira granulata</i>	2	0	0	5	11	8	544	0	0	1541	3264	2630
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	0	0	0	0	7	2	0	0	0	76	1901	608
<i>Cyclotella stelligera</i>	1	1	1	1	2	1	168	94	94	234	374	140
<i>Eunotia</i> sp.	0	0	0	0	4	0	0	0	0	0	0	0
<i>Fragilaria crotonensis</i>	0	0	0	0	0	1	0	0	0	0	0	209
<i>Nitzschia</i> sp.	2	0	1	0	0	0	799	114	228	0	0	0
Small unknown diatom sp.	0	0	0	0	1	0	0	0	0	0	64	0
<b>Desmids (Mesotaeniaceae, Desmidiaceae)</b>												
<i>Closterium aciculare</i>	0	0	0	1	4	0	0	0	0	350	2453	0
<i>Closterium acutum</i> var. <i>variable</i>	0	0	0	1	0	0	0	0	0	331	0	0
<b>Chrysophyta (Chrysophyceae)</b>												
<i>Cryptomonas</i> sp.	0	1	1	4	0	0	0	211	126	590	0	0
<i>Dinobryon</i> sp.	0	0	0	1	0	0	0	0	0	86	0	0
<b>Dinoflagellates (Dinophyceae)</b>												
<i>Gymnodinium</i> sp. 1	1	0	0	0	0	0	2106	878	878	176	0	0
<i>Gymnodinium</i> sp. 2	1	1	1	0	0	0	14625	21938	14625	0	0	0
<b>Flagellates <math>5\mu\text{m}</math></b>												
Flagellates $< 5\mu\text{m}$ /unicells	185	97	84	127	16	10	6470	3389	2928	4433	573	338



## Appendix 6. Historical data

Historical data held by NIWA has frequently been referred to and included in some analysis or comparison of the data from the long-term monitoring programme. To ensure that these data are always readily available, copies of the relevant historical data are included in this report. These data are the spring and autumn profiles of NO<sub>3</sub>-N and DRP from 1974 to 1990 extracted from archived data books. The nitrate data for 27 September 1979 was taken from Vincent (1983). Subsequent data can be found in the previous appendices.

Note that the profiles given are aligned with the spring data above the corresponding autumn data, by date. Note also that the early profiles were to a depth of 110 m rather than 150 m. Also, as there was no March or April data collected in 1976, for completeness, the last valid profile in that series (12 January 1976) has been included.

The elapsed time given is the number of days between the spring profile in about October and the autumn profile in March/April of the following year. The average elapsed time between the two samplings across all data from 1974 to 2006 is 165 days.

The historical data also include an un-paired profile from July 1987. As there were no data for April 1987 and the lake was still stratified in July, when the next period of monitoring began, the July 1987 may be used as an indication of the total mass of nutrient accumulation in that year. Because these data are for an un-paired profile in July and not April, if the data are converted to rate estimates the assumption must be made that there was no spring carryover and the elapsed time is longer, being estimated as the average elapsed time plus three months.

Because the 1976 and 1987 data are for periods other than spring (October/November) to autumn (March/April), these data points have been excluded from any regression analysis of time-series data although the data points have been plotted as an indication of levels/rates for those years.

### Historical data from Site A in Lake Taupo

#### Nitrate concentrations (mg m<sup>-3</sup>)

##### Spring

Date	18/11/1974	16/10/1975	4/10/1977	10/10/1978	27/09/1979	5/10/1987	17/10/1988	6/10/1989
Depth (m)								
0	0.8	0.3	1.1	0.0	0.0	0.3	2.6	1.2
10	0.3	0.4	1.2	1.4	0.0	0.4	2.7	1.8
20	0.0	0.0	0.6	0.8	0.5	0.5	2.8	1.0
30	0.3	0.4	0.0	0.7	0.5	0.4	2.8	1.4
40	0.8	0.0	0.1	0.6	1.0	0.6	3.0	1.3
50	2.1	0.3	0.6	0.7	1.0	0.8	2.9	1.0
60	4.9	0.0	1.0	0.8	0.5	1.2	2.5	0.8
70	4.1	0.4	1.1	0.8	1.0	1.0	2.9	1.6
80	5.3	0.0	3.2	1.2	1.5	1.4	2.9	1.6
90	5.4	0.0	1.3	1.2	1.0	1.5	2.5	1.7
100	8.4	1.8	3.3	1.4	1.5	1.2	2.6	1.7
110	12.0	4.1	2.8	1.4	1.5	6.0	2.4	0.8
120			2.8	1.7	2.5	0.7	2.7	1.6
130			2.7	2.1	5.0	1.2	2.7	1.1
140			1.7	2.1	6.0	1.2	3.1	1.1
150			1.4	2.5	7.0	1.1	2.4	0.3

##### Autumn

Date	14/04/1975	12/01/1976	14/03/1978	10/04/1979	10/03/1980	7/07/1987	5/04/1988	4/04/1989	10/04/1990
Depth (m)									
0	0.8	0.5	0.0	0.3	0.0	2.0	1.1	2.1	0.1
10	0.4	1	0.0	0.0	0.3	1.6	1.3	2.5	0.6
20	0.2	0.2	0.0	0.0	0.0	1.0	1.3	2.4	1.3
30	0.1	0	0.0	0.0	0.0	0.2	1.1	2.5	1.2
40	0.3	0.2	0.0	0.3	0.2	0.9	2.2	2.4	1.7
50	0.5	0.3	0.0	1.0	0.8	1.1	4.0	4.9	4.9
60	4.2	1.3	0.0	7.3	4.9	14.5	12.3	5.2	3.4
70	5.6	1.5	2.2	11.1	6.2	16.4	14.6	5.1	12.0
80	9.2	8.3	4.9	12.7	9.4	16.1	16.9	10.9	11.2
90	11.2	11.1	5.8	13.5	13.5	18.5	19.0	13.5	12.4
100	12.4	14	7.4	15.0	14.4	19.8	20.7	17.1	17.1
110	16.0		9.2	14.8	15.7	20.2	19.1	20.4	16.2
120			10.1	15.0	16.7	20.9	18.6	23.3	18.2
130			8.0	16.6	18.9	21.9	21.5	24.2	17.9
140			11.0	17.3	19.4	22.1	25.4	27.1	22.4
150			14.2	19.7	19.9	21.5	27.0	28.6	24.2

#### DRP concentrations (mg m<sup>-3</sup>)

##### Spring

Date	18/11/1974	16/10/1975	4/10/1977	10/10/1978	5/10/1987	17/10/1988	6/10/1989
Depth (m)							
0	8.7	1.1	0.3	0.6	0.2	0.2	0.0
10	8.0	1.2	0.0	0.6	0.1	0.1	0.2
20	8.3	1.1	0.1	0.5	0.2	0.0	0.1
30	7.5	0.9	0.0	0.3	0.3	0.1	0.0
40	8.4	0.8	0.3	0.2	0.2	0.1	0.0
50	7.6	0.8	0.2	0.3	0.4	0.1	0.0
60	8.3	0.7	0.0	0.3	0.3	0.2	0.0
70	7.7	0.7	1.1	0.4	0.3	0.2	0.0
80	8.1	0.8	0.7	0.5	0.3	0.2	0.3
90	7.9	1.0	0.8	0.4	0.2	0.3	0.1
100	8.5	1.7	0.4	0.4	0.2	0.3	0.1
110	9.8	1.6	0.4	0.4	0.4	0.5	0.1
120			0.5	0.4	0.4	0.4	0.0
130			0.4	0.3	0.4	0.4	0.2
140			0.6	0.3	0.4	0.5	0.3
150			0.5	0.4	0.3	0.5	0.2

##### Autumn

Date	14/04/1975	12/01/1976	14/03/1978	10/04/1979	10/03/1980	7/07/1987	5/04/1988	4/04/1989	10/04/1990
Depth (m)									
0	0.8	1.4	0.2	0.1	0.7	1.9	0.1	0.0	0.2
10	0.5	1.4	0.2	0.1	0.4	2.2	0.1	0.0	0.0
20	0.5	7.0	0.2	0.1	0.3	0.9	0.2	0.0	0.1
30	0.5	2.5	0.2	0.1	0.2	1.0	0.2	0.0	0.2
40	0.5	0.2	0.2	0.4	0.5	0.9	0.6	0.2	0.5
50	0.5	0.9	0.7	1.0	0.7	0.7	1.1	0.5	1.1
60	1.0	0.1	0.7	1.6	1.0	3.4	2.0	0.6	0.9
70	1.0	0.8	1.0	2.0	1.1	3.7	2.2	0.9	1.9
80	1.7	1.2	1.5	2.2	1.6	3.6	2.7	1.1	1.7
90	2.0	2.0	1.8	2.4	2.2	4.1	2.9	1.3	1.8
100	2.2	3.3	1.9	2.7	2.4	4.6	3.1	1.9	2.6
110	2.9		2.4	2.8	2.6	4.5	2.9	2.7	2.1
120			2.7	2.9	2.7	4.7	3.0	3.4	2.5
130			2.1	3.0	3.7	5.1	3.4	3.8	2.4
140			2.8	3.6	3.6	5.3	4.4	4.5	3.5
150			0.9	3.8	3.8	5.0	4.6	4.8	4.0

##### Elapsed period (days)

	147	88	161	182	165	270*	183	169	186
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??? = possible analytical problem (e.g., Si interference)

\* = average period of 165 days plus 3 months

