

# Welcome

## Lake Overview

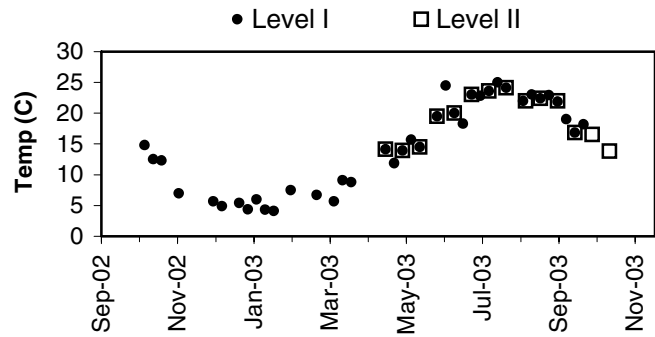
Volunteer monitoring began at Welcome Lake in 1996 and has continued through 2003. The data indicate this lake is moderate in primary productivity (mesotrophic) with good water quality. Since the lake surface makes up only 3% of the drainage area, direct precipitation is less important than watershed inputs. There are designated wetlands in the watershed (King County 1990). Land use analysis of 2002 aerial photographs showed almost 52% of the surrounding watershed has been developed for uses other than agriculture or forestry.

Welcome Lake has no public access boat launch, but residents should watch for Eurasian milfoil, Brazilian elodea, as well as other noxious weeds.

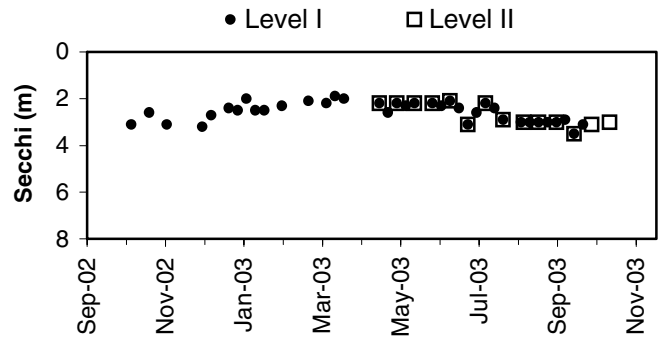
## Physical Parameters

Secchi transparency ranged from 1.9 to 3.5m through the year. Water temperatures ranged from 4.1 to 25.0 degrees Celsius. Water level and precipitation records had some gaps through the water year, but suggested the lake followed the regional pattern of winter-high – summer-low stands.

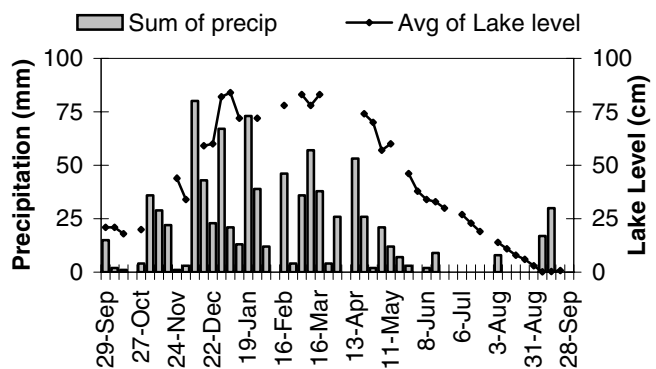
Lake Temperature



Secchi Depth

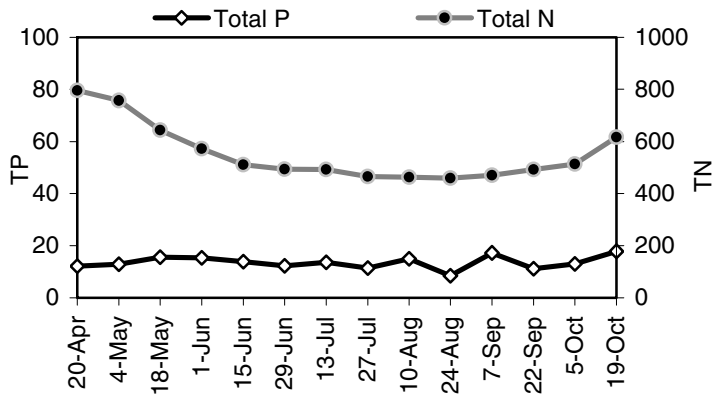


Lake Level and Precipitation

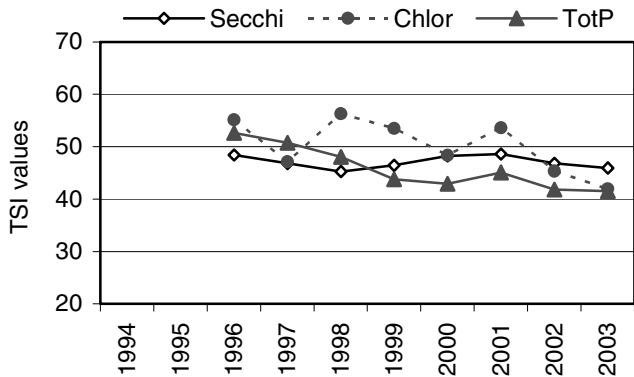


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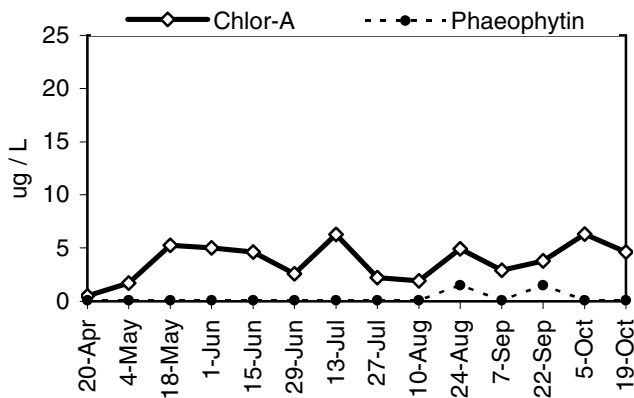
### Nutrient Analysis



### TSI Ratings



### Chlorophyll a Concentrations (ug/L)



## Nutrient Analysis and TSI Ratings

Total nitrogen declined from an initial high value through mid-June and remained stable through the rest of the season, with a small increase on the last sample date. Total phosphorus remained fairly steady throughout the period. The N:P ratio ranged from 27 to 65. In 2003 the average TSI values were in the low to mid range for mesotrophy, similar to 2002.

## Chlorophyll and Algae

Chlorophyll concentrations varied around a moderate level through the season, but never made any distinct peaks. Phytoplankton were dominated by chrysophytes and cryptophytes, with very few bluegreens occurring in the plankton.

### Common algae

### Group

unidentified species	chrysophyte
<i>Dinobryon</i> spp.	chrysophyte
<i>Cryptomonas</i> spp.	cryptophyte



Date (2003)	Temp (°C)	Secchi (m)	Chl-a (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI			Notes
								Secc	chl-a	TP	
20-Apr	14.1	2.2	0.6	12.2	795		65	48.6		40.2	Chlor-a value was <MDL. Reported as .6µgl.
4-May	13.9	2.2	1.7	12.9	757	0	59	48.6	35.9	41.0	10-12 water fleas in 2L, but no algae.
18-May	14.5	2.2	5.3	15.7	644	1	41	48.6	46.9	43.9	
1-Jun	19.5	2.2	5.0	15.4	573	1	37	48.6	46.4	43.6	
15-Jun	20.0	2.1	4.6	13.9	511	3	37	49.3	45.6	42.1	Water has briny look from dense clear .1mm spheres.
29-Jun	23.0	3.1	2.6	12.3	494	2	40	43.7	39.9	40.4	Clear ~.1mm spheres.
13-Jul	23.6	2.2	6.3	13.7	493	2	36	48.6	48.6	41.9	Briny look - clear ~.1mm spheres & water fleas.
27-Jul	24.1	2.9	2.2	11.4	465	2	41	44.6	38.5	39.3	
12-Aug	22.0	3.0	1.9	15.0	463	2	31	44.1	37.0	43.2	
24-Aug	22.4	3.0	4.9	8.5	459	2	54	44.1	46.2	35.0	
7-Sep	22.0	3.0	2.9	17.3	470	2	27	44.1	41.1	45.3	
21-Sep	16.8	3.5	3.8	11.2	492	2	44	41.9	43.7	39.0	Clear ~.1mm spheres and water fleas.
5-Oct	16.5	3.1	6.3	13.0	514	1	40	43.7	48.6	41.2	
19-Oct	13.8	3.0	4.6	17.8	617	2	35	44.1	45.6	45.7	
	<b>Temp (°C)</b>	<b>Secchi (m)</b>	<b>Chl-a (µg/l)</b>	<b>TP (µg/l)</b>	<b>TN (µg/l)</b>	<b>Algae Obsv.</b>	<b>N:P</b>	<b>Calculated TSI</b>			
								<b>Secc</b>	<b>chl-a</b>	<b>TP</b>	
<b>Mean</b>	19.0	2.7	3.8	13.6	553.4	1.7	42	45.9	43.4	41.6	<b>TSI Average = 43.6</b>
<b>Median</b>	19.8	3.0	4.2	13.4	502.5	2	40	44.4	45.6	41.5	
<b>Min</b>	13.8	2.1	0.6	8.5	459.0	0	27	41.9	35.9	35.0	
<b>Max</b>	24.1	3.5	6.3	17.8	795.0	3	65	49.3	48.6	45.7	
<b>Count</b>	14	14	14	14	14	13	14	14	13	14	