

# Steel

## Lake Overview

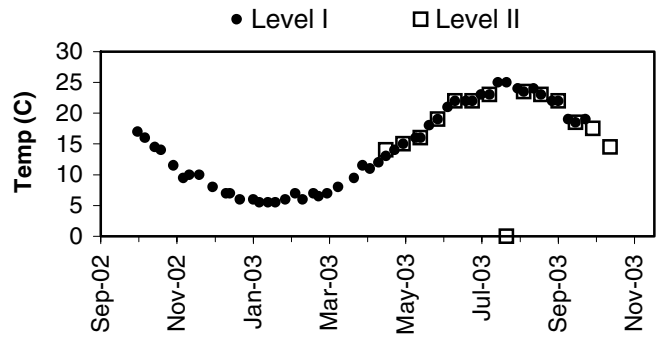
Volunteer monitoring began at Steel Lake in the 1980s and has continued through 2003, with a gap from 1991 through 1993. The data indicate this city lake (Federal Way) is relatively low in primary productivity (low mesotrophic) with very good water quality. Since the lake surface makes up 18% of the drainage area, direct precipitation is important in addition to watershed inputs. Land use analysis of 2002 aerial photographs showed slightly over 92% of the surrounding watershed has been developed for uses other than agriculture or forestry.

Steel Lake has a public access boat launch, and the lake has been recently treated for a pioneering Eurasian milfoil infestation, with a long-term plan adopted for control, including funding through the formation of a Lake Management District.

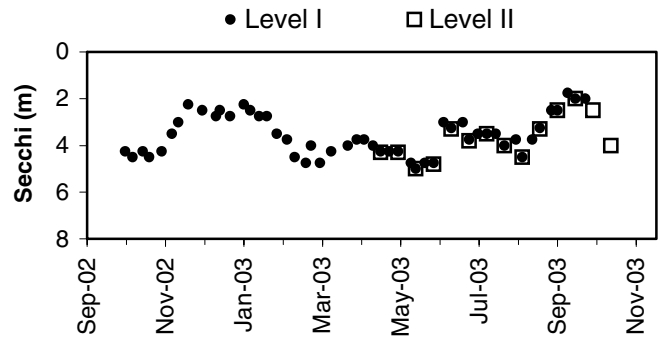
## Physical Parameters

Secchi transparency ranged from 1.8 to 5.0m through the year. Annual water temperatures ranged from 5.5 to 25.0 degrees Celsius. Excellent records were kept of local precipitation and water levels. The lake level followed the regional pattern of winter high - summer low stands related to climate.

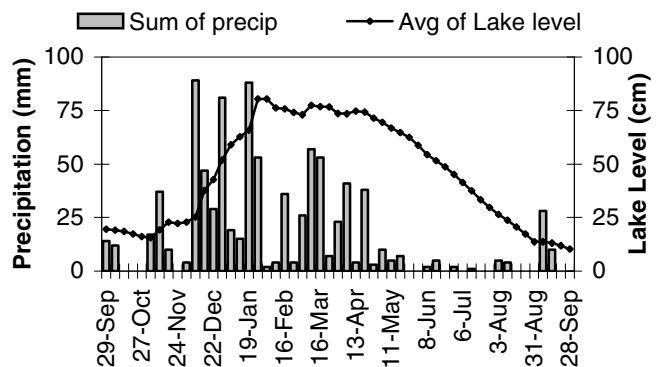
Lake Temperature



Secchi Depth

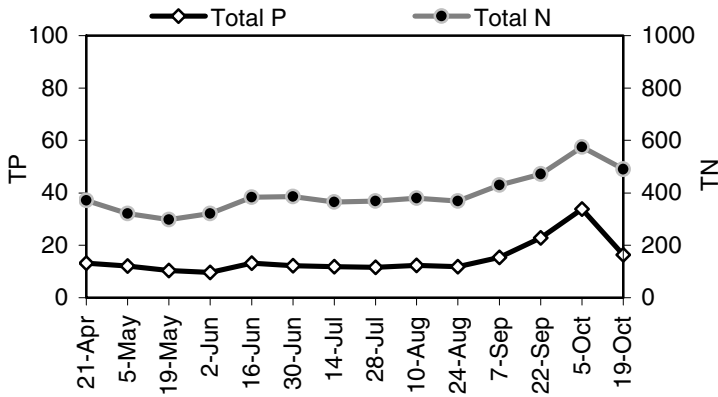


Lake Level and Precipitation

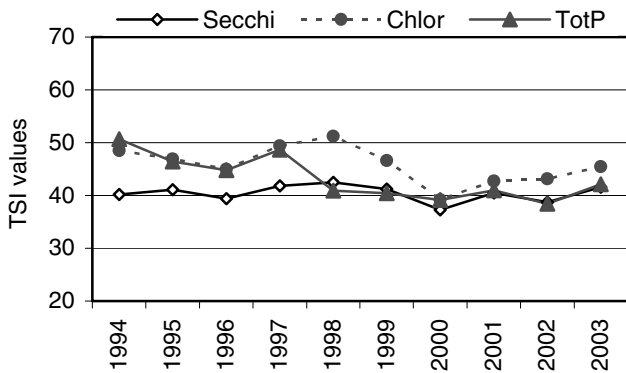


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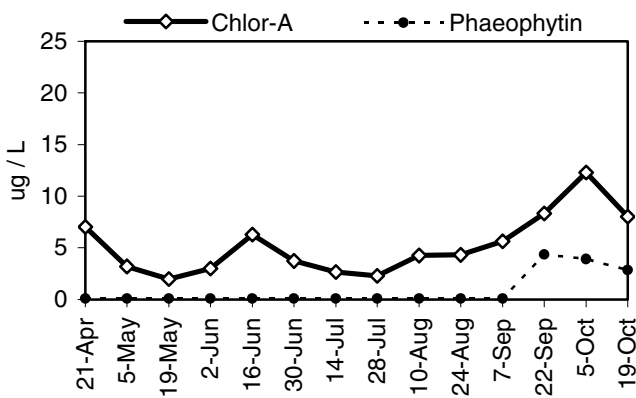
## Nutrient Analysis



## TSI Ratings



## Chlorophyll a Concentrations (ug/L)



## Nutrient Analysis and TSI Ratings

Total phosphorus and total nitrogen remained in stable proportion to each other through the sampling period, both increasing in late summer to a maximum in early October. The N:P ratio ranged from 17 to 33. In 2003 the average TSI-Chlor was higher than the other two indicators, but all were in the lower range of mesotrophy.

## Chlorophyll and Algae

Chlorophyll concentrations were moderately low through much of the season, with small peaks at the end of April and in mid-June, and a larger peak in early October. The chrysophyte *Dinobryon* and the bluegreen *Anabaena* were dominant in spring, while several cryptophyte species were common in the autumn. Other frequently occurring algae included the chlorophyte *Botryococcus braunii*, the bluegreen *Anacystis*, and the euglenophyte *Trachelomonas*.

Common algae	Group
<i>Dinobryon</i> spp.	chrysophyte
<i>Anabaena</i> sp.	bluegreen
<i>Botryococcus braunii</i>	chlorophyte

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## 2003 Level I Data

## Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
29-Sep-02	14.0	5	19.5	2
6-Oct-02	12.0	7	19.0	4
13-Oct-02	0.0	6	18.5	4
20-Oct-02	0.0	7	17.3	4
27-Oct-02	0.0	6	16.0	5
3-Nov-02	17.0	7	15.5	6
10-Nov-02	37.0	6	19.2	6
17-Nov-02	10.0	7	22.8	4
24-Nov-02	0.0	6	22.1	4
1-Dec-02	4.0	6	22.8	4
8-Dec-02	89.0	7	25.2	6
15-Dec-02	47.0	7	37.6	7
22-Dec-02	29.0	7	42.8	7
29-Dec-02	81.0	7	51.9	7
5-Jan-03	19.0	7	59.0	7
12-Jan-03	15.0	7	62.8	7
19-Jan-03	88.0	7	65.8	7
26-Jan-03	53.0	7	80.4	7
2-Feb-03	2.0	7	80.3	7
9-Feb-03	4.0	7	76.1	7
16-Feb-03	36.0	7	75.8	7
23-Feb-03	4.0	7	74.0	7
2-Mar-03	26.0	7	73.0	6
9-Mar-03	57.0	7	77.4	7
16-Mar-03	53.0	7	76.7	7
23-Mar-03	7.1	7	76.6	7
30-Mar-03	23.0	7	73.6	7
6-Apr-03	41.0	5	73.4	7
13-Apr-03	4.0	6	74.7	7
20-Apr-03	38.0	6	74.1	7
27-Apr-03	3.0	3	71.6	7
4-May-03	10.0	7	69.6	7
11-May-03	5.0	7	66.9	7
18-May-03	7.0	7	64.7	7
25-May-03	0.0	7	62.6	7
1-Jun-03	0.0	7	58.7	7
8-Jun-03	2.0	7	54.4	7
15-Jun-03	5.0	7	51.6	7
22-Jun-03	0.0	7	48.7	7
29-Jun-03	2.0	1	45.1	7
6-Jul-03			41.4	7
13-Jul-03	1.0	1	37.4	7
20-Jul-03			33.3	7
27-Jul-03	0.0	2	29.7	7
3-Aug-03	5.0	7	26.4	7
10-Aug-03	4.0	7	23.7	7
17-Aug-03	0.0	7	20.6	7
24-Aug-03	0.0	7	17.3	7
31-Aug-03	0.0	7	13.7	7
7-Sep-03	28.0	6	13.7	7
14-Sep-03	10.0	7	13.0	7
21-Sep-03	0.0	7	11.9	7
28-Sep-03	0.0	2	10.3	3
<b>Min</b>	0.0		10.3	
<b>Max</b>	89.0		80.4	
<b>Total</b>	892.1			

## Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae (Shore)	Algae (at site)	Goose Count
1-Oct-02	12:00	4.3	17.0	C1/P1	C1/P1	0
7-Oct-02	12:00	4.5	16.0	C1/P1	C1/P1	0
15-Oct-02	14:00	4.3	14.5	C1/P2	C1/P2	0
20-Oct-02	15:30	4.5	14.0	C1/P2	C1/P2	0
30-Oct-02	13:30	4.3	11.5	C1/P2	C1/P2	0
7-Nov-02	15:00	3.5	9.5	C2/P2	C2/P2	0
12-Nov-02		3.0	10.0	C2/P2	C2/P2	0
20-Nov-02	14:15	2.3	10.0	C3/P2	C3/P2	0
1-Dec-02	12:30	2.5	8.0	C3/P2	C3/P2	0
12-Dec-02	12:00	2.8	7.0	C3/P2	C3/P2	0
15-Dec-02	13:30	2.5	7.0	C3/P2	C3/P2	12
23-Dec-02	14:00	2.8	6.0	C3/P2	C3/P2	0
3-Jan-03	14:00	2.3	6.0	C3/P2	C3/P3	0
8-Jan-03	13:30	2.5	5.5	C2/P3	C2/P3	0
15-Jan-03	14:00	2.8	5.5	C2/P2	C2/P2	0
21-Jan-03	14:00	2.8	5.5	C2/P2	C2/P2	0
29-Jan-03	12:00	3.5	6.0	C1/P1	C1/P1	0
6-Feb-03	12:00	3.8	7.0	C1/P1	C1/P1	0
12-Feb-03	13:50	4.5	6.0	C1/P1	C1/P1	0
21-Feb-03	13:00	4.8	7.0	C1/P1	C1/P1	0
25-Feb-03	14:30	4.0	6.5	C2/P2	C1/P2	0
4-Mar-03	12:30	4.8	7.0	C1/P1	C1/P1	4
13-Mar-03	13:00	4.3	8.0	C1/P1	C1/P1	0
26-Mar-03	11:30	4.0	9.5	C1/P2	C1/P2	
2-Apr-03	12:45	3.8	11.5	C1/P2	C1/P2	
8-Apr-03	12:30	3.8	11.0	P2	P2	
15-Apr-03	12:00	4.0	12.0	P2	P2	
21-Apr-03	14:00	4.3	13.0	P2	P2	3
28-Apr-03	16:00	4.3	14.0	P2	P2	6
5-May-03	14:00	4.3	15.0	P1	P1	
15-May-03	15:00	4.8	16.0	P1	P1	
19-May-03	15:00	5.0	16.0	P2	P2	
26-May-03	14:30	4.8	18.0	P3	P2	
2-Jun-03	16:00	4.8	19.0	P2	P2	11
10-Jun-03	16:00	3.0	21.0	P2	P2	21
16-Jun-03	16:00	3.3	22.0	P2	P2	23
25-Jun-03	16:00	3.0	22.0	P2	P2	22
30-Jun-03	13:00	3.8	22.0	P2	P2	12
7-Jul-03	16:00	3.5	23.0	P3	P3	6
14-Jul-03	15:30	3.5	23.0	P2	P2	0
21-Jul-03	16:30	3.5	25.0	P2	P2	0
28-Jul-03	16:30	4.0	25.0	P1	P1	0
6-Aug-03	16:00	3.8	24.0	P2	P2	0
11-Aug-03	12:00	4.5	23.5	P1	P1	0
19-Aug-03	16:00	3.8	24.0	P2	P2	0
25-Aug-03	16:15	3.3	23.0	P2	P2	0
3-Sep-03	16:00	2.5	22.0	P2	P2	0
8-Sep-03	15:30	2.5	22.0	P1	P1	0
16-Aug-03	17:00	1.8	19.0	P2	P2	2
22-Sep-03	14:00	2.0	18.5	P2	P2	0
30-Sep-03	14:00	2.0	19.0	P2	P2	24
<b>Min</b>		1.8	5.5			0
<b>Max</b>		5.0	25.0			24

