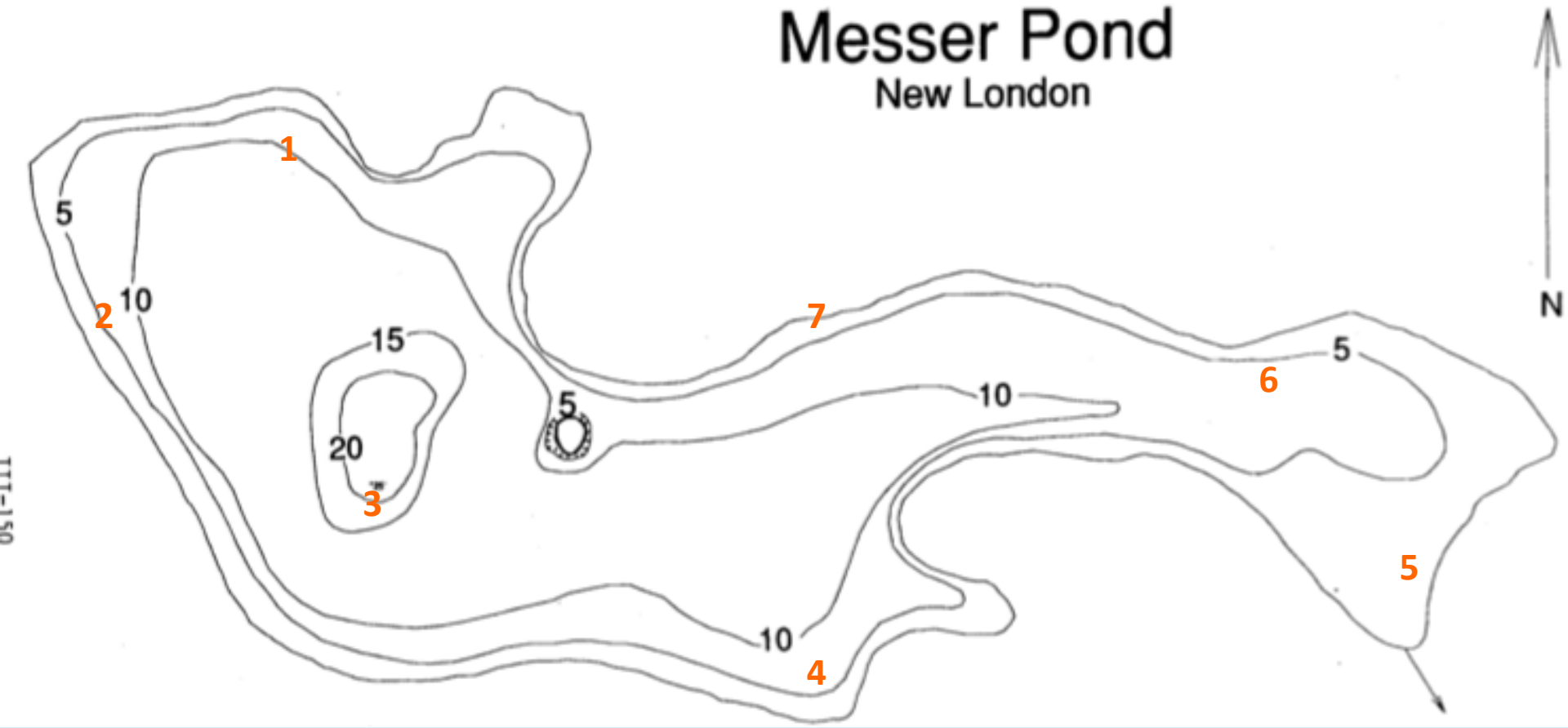
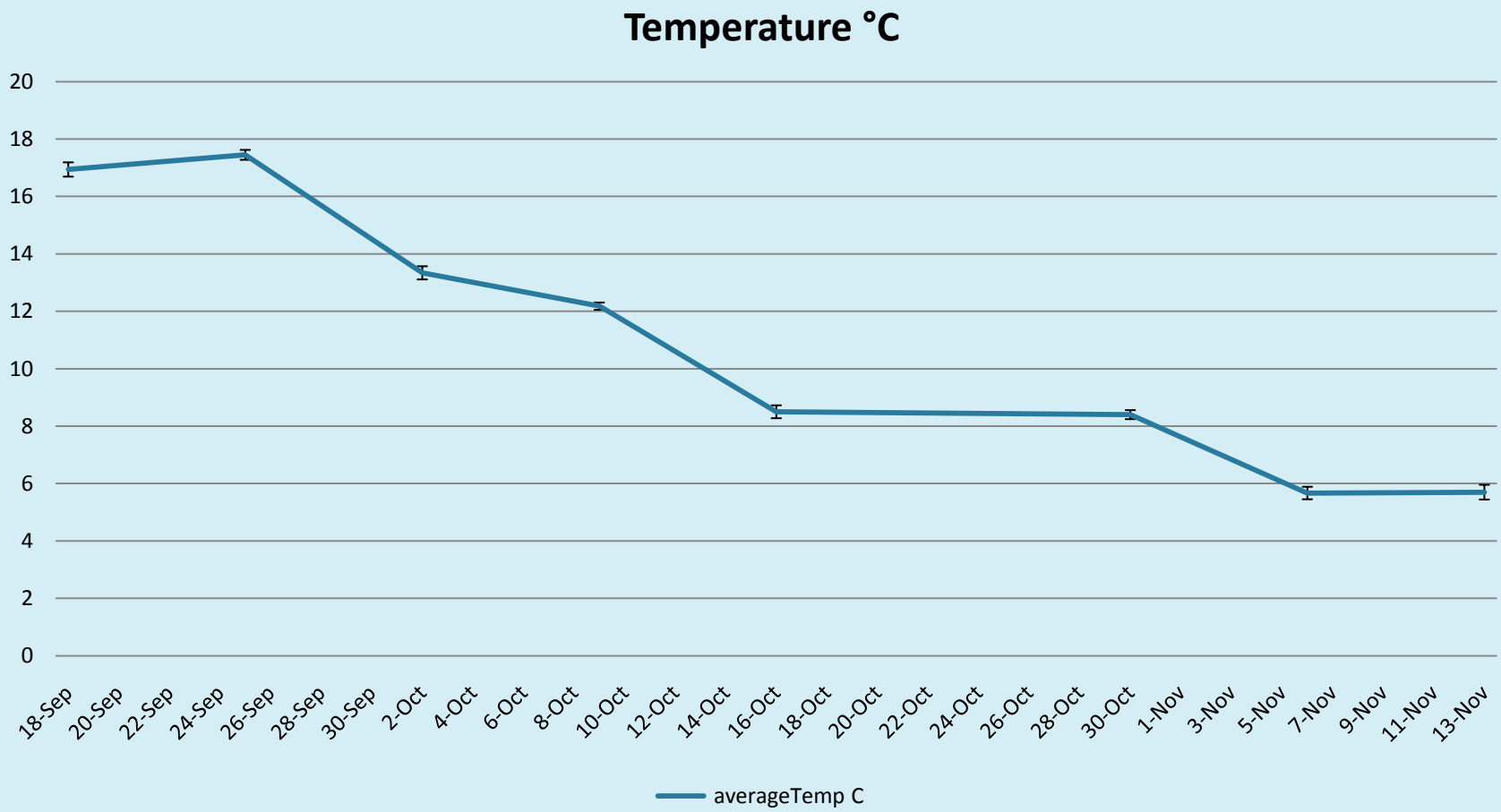
Exploring the Environmental Chemistry of Messer Pond

Devin Zylack, Aric Lantiegne, and Harvey Pine

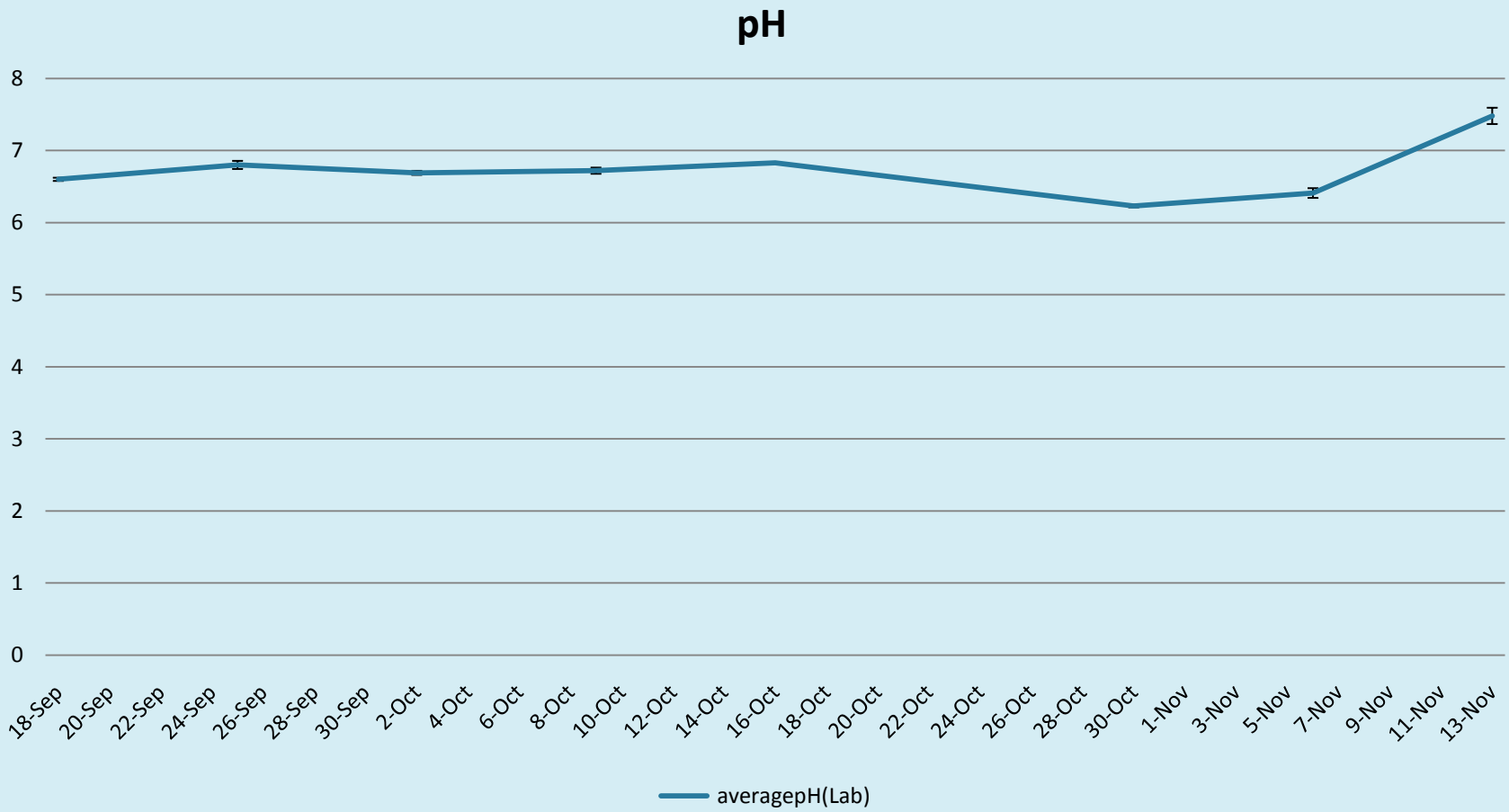

Messer Pond
New London
N
1
2
3
4
5
6
7
5
10
15
20
5
10
10
5
5
III-150


MESHWL3
MESNALC
WL 336
MESHWLH
MESNALK
MESHWLD
Messer
Pond
MESHWLHH
MESNAL21B
MESNALN
MESHWLB
MESHWL0B
MESHWL216
MESNALUB
MESHWLUN
BM 3630

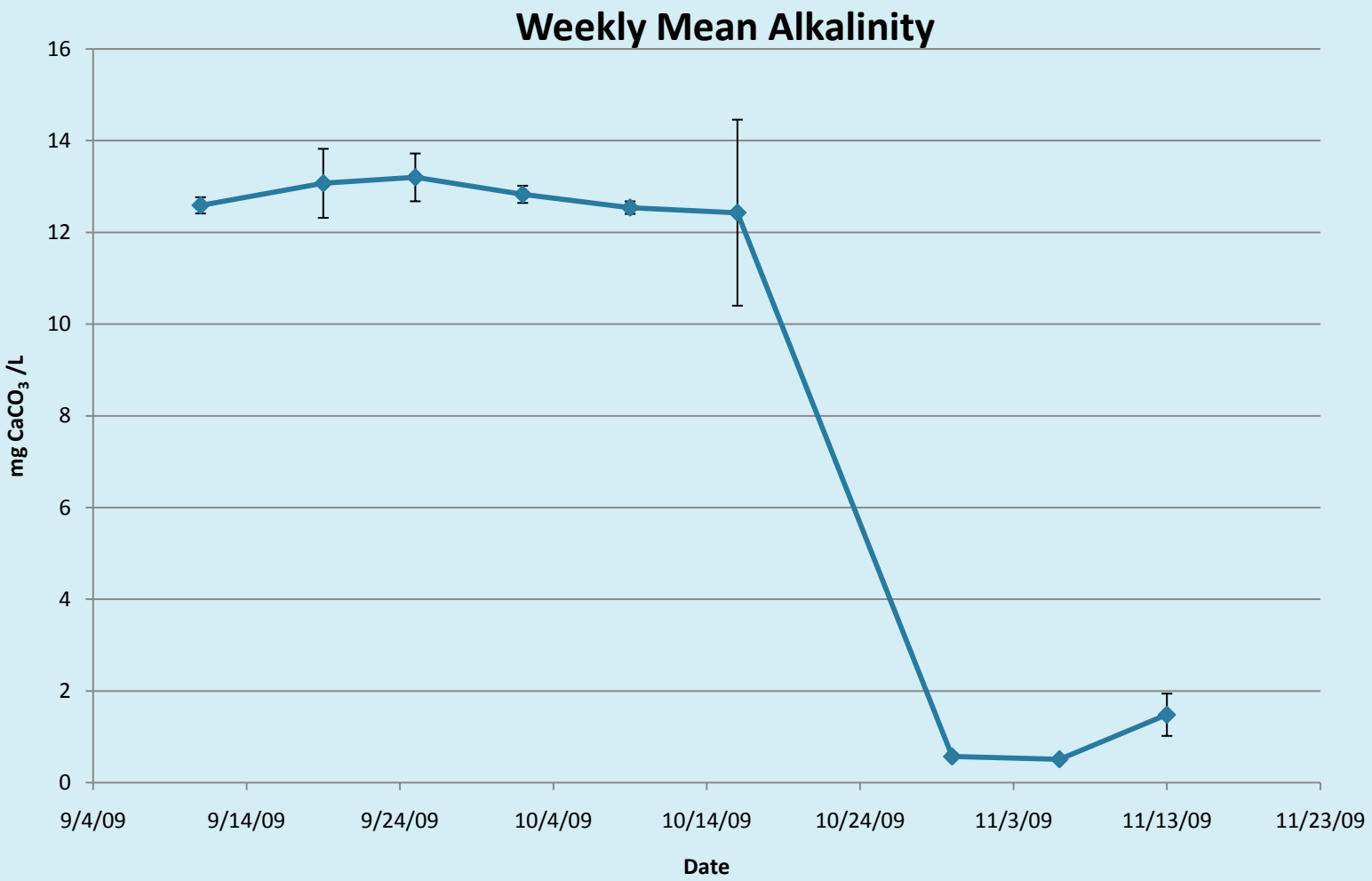
Temperature



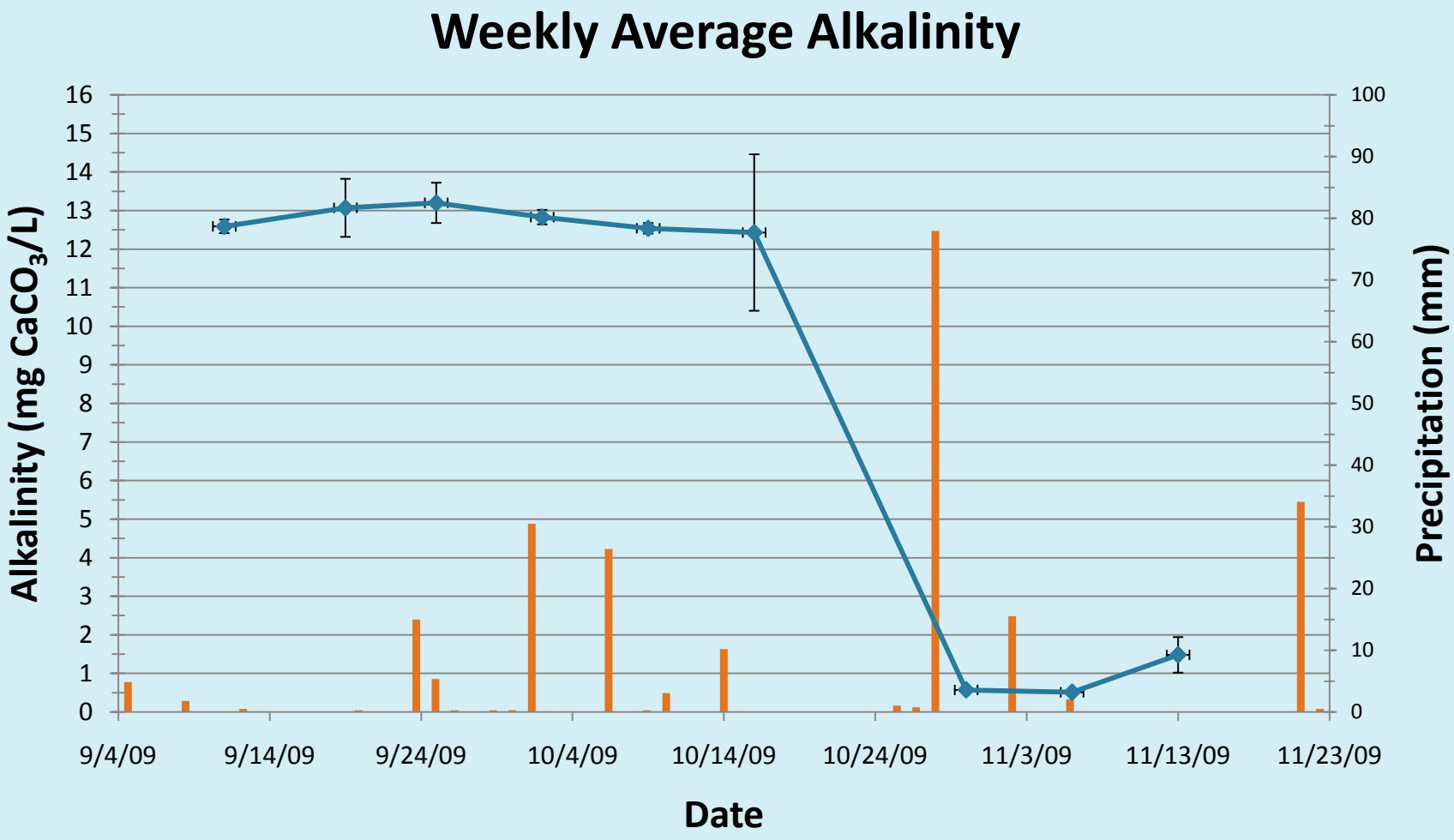
pH


pH
8
7
6
5
4
3
2
1
0
18-Sep
20-Sep
22-Sep
24-Sep
26-Sep
28-Sep
30-Sep
2-Oct
4-Oct
6-Oct
8-Oct
10-Oct
12-Oct
14-Oct
16-Oct
18-Oct
20-Oct
22-Oct
24-Oct
26-Oct
28-Oct
30-Oct
1-Nov
3-Nov
5-Nov
7-Nov
9-Nov
11-Nov
13-Nov
averagepH(Lab)

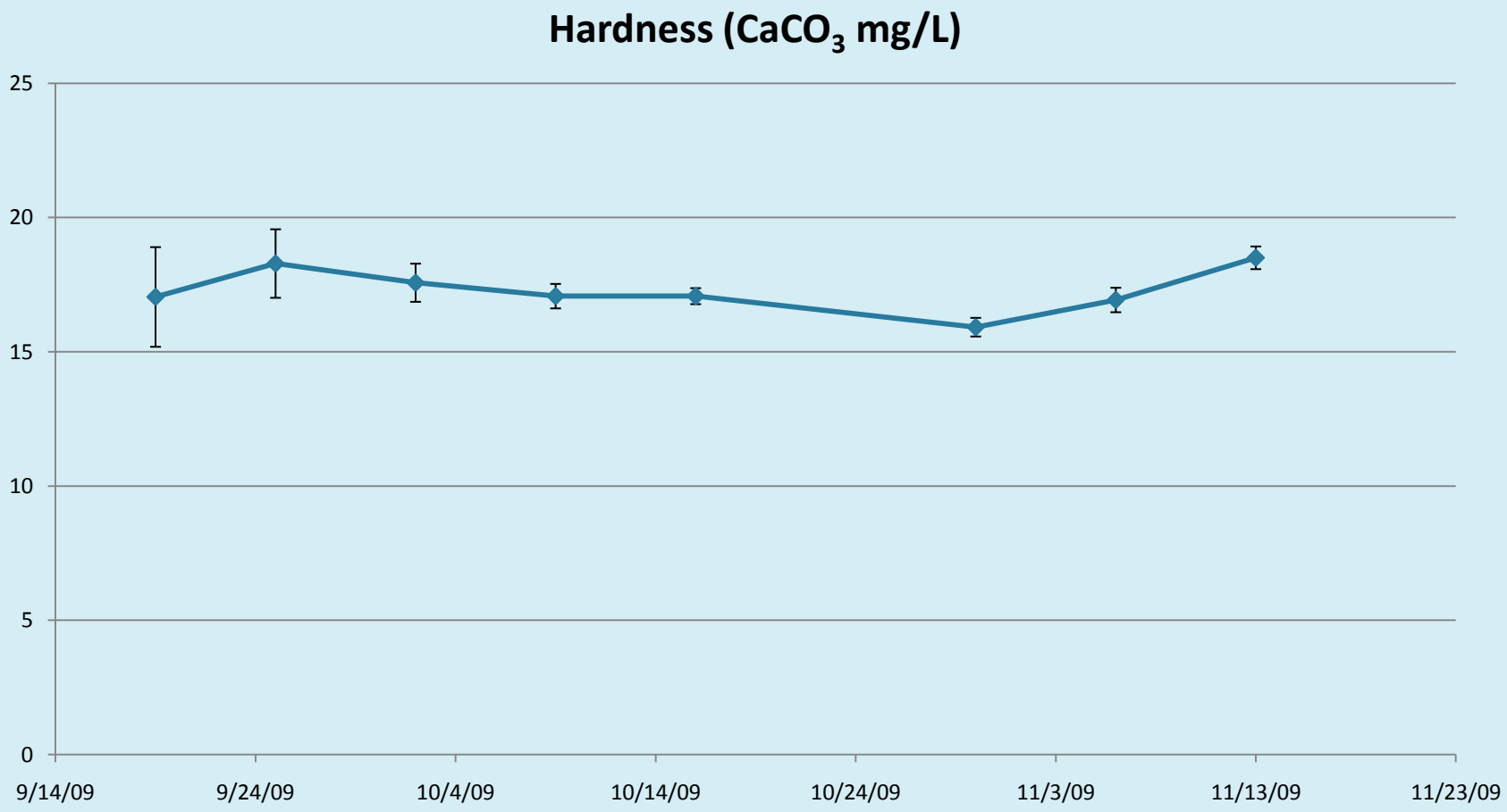
Alkalinity


Weekly Mean Alkalinity
16
14
12
10
8
6
4
2
0
mg $CaCO_3$ /L
9/4/09
9/14/09
9/24/09
10/4/09
10/14/09
10/24/09
11/3/09
11/13/09
11/23/09
Date

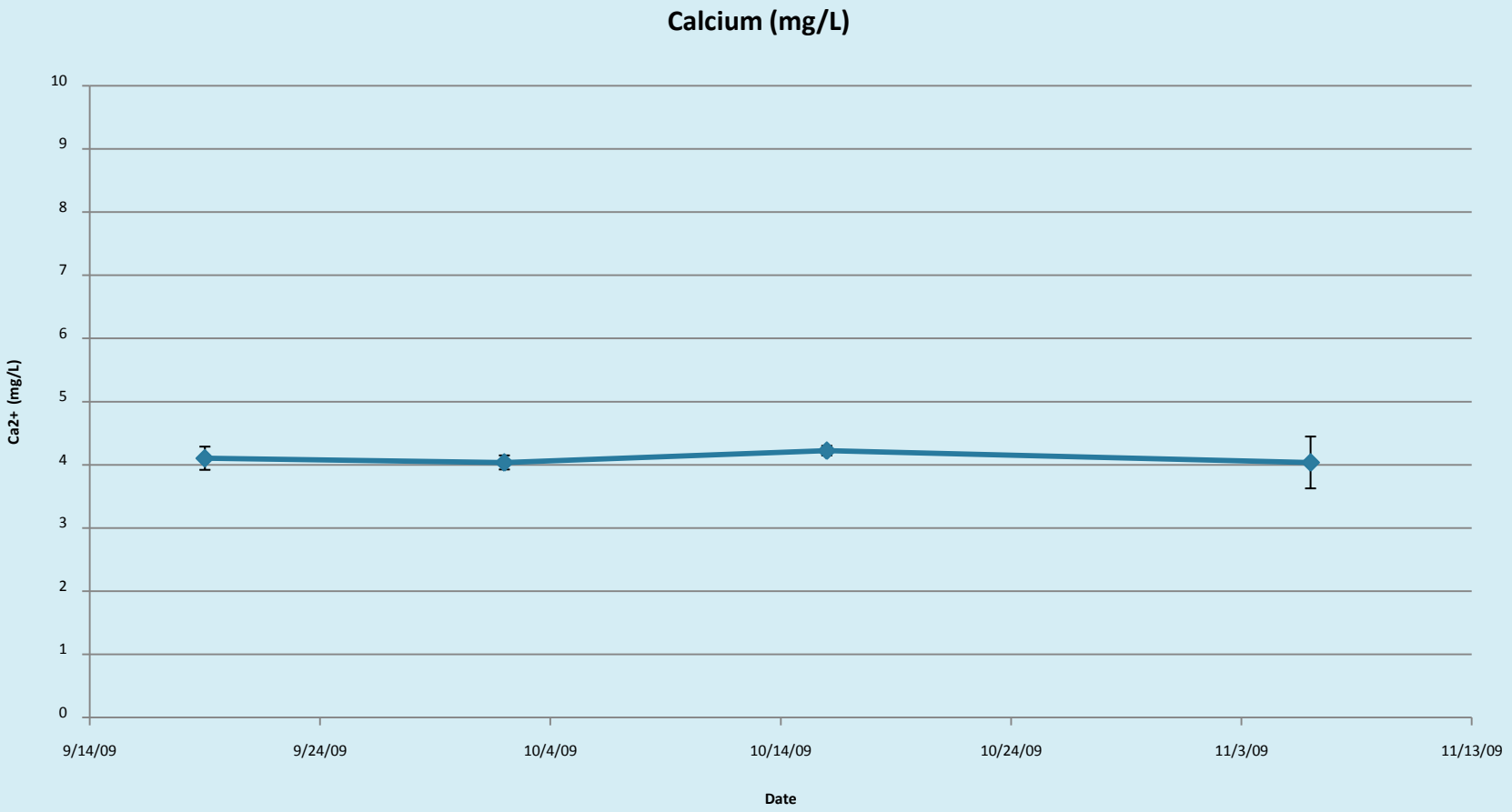
Alkalinity


Weekly Average Alkalinity
Alkalinity (mg CaCO3/L)
Precipitation (mm)
Date
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
0
10
20
30
40
50
60
70
80
90
100
9/4/09
9/14/09
9/24/09
10/4/09
10/14/09
10/24/09
11/3/09
11/13/09
11/23/09

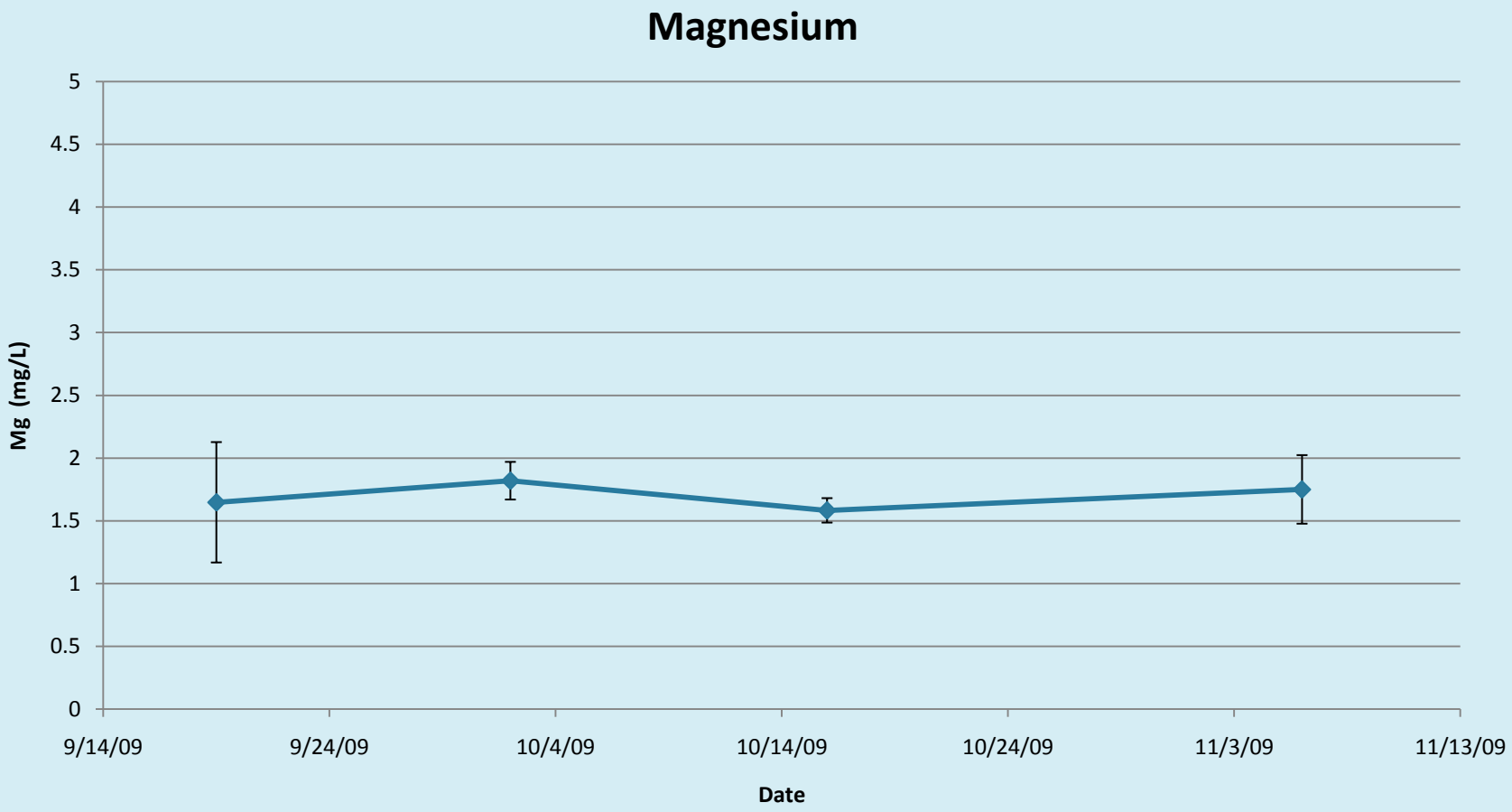
Hardness


Hardness ($CaCO_3$ mg/L)
25
20
15
10
5
0
9/14/09
9/24/09
10/4/09
10/14/09
10/24/09
11/3/09
11/13/09
11/23/09

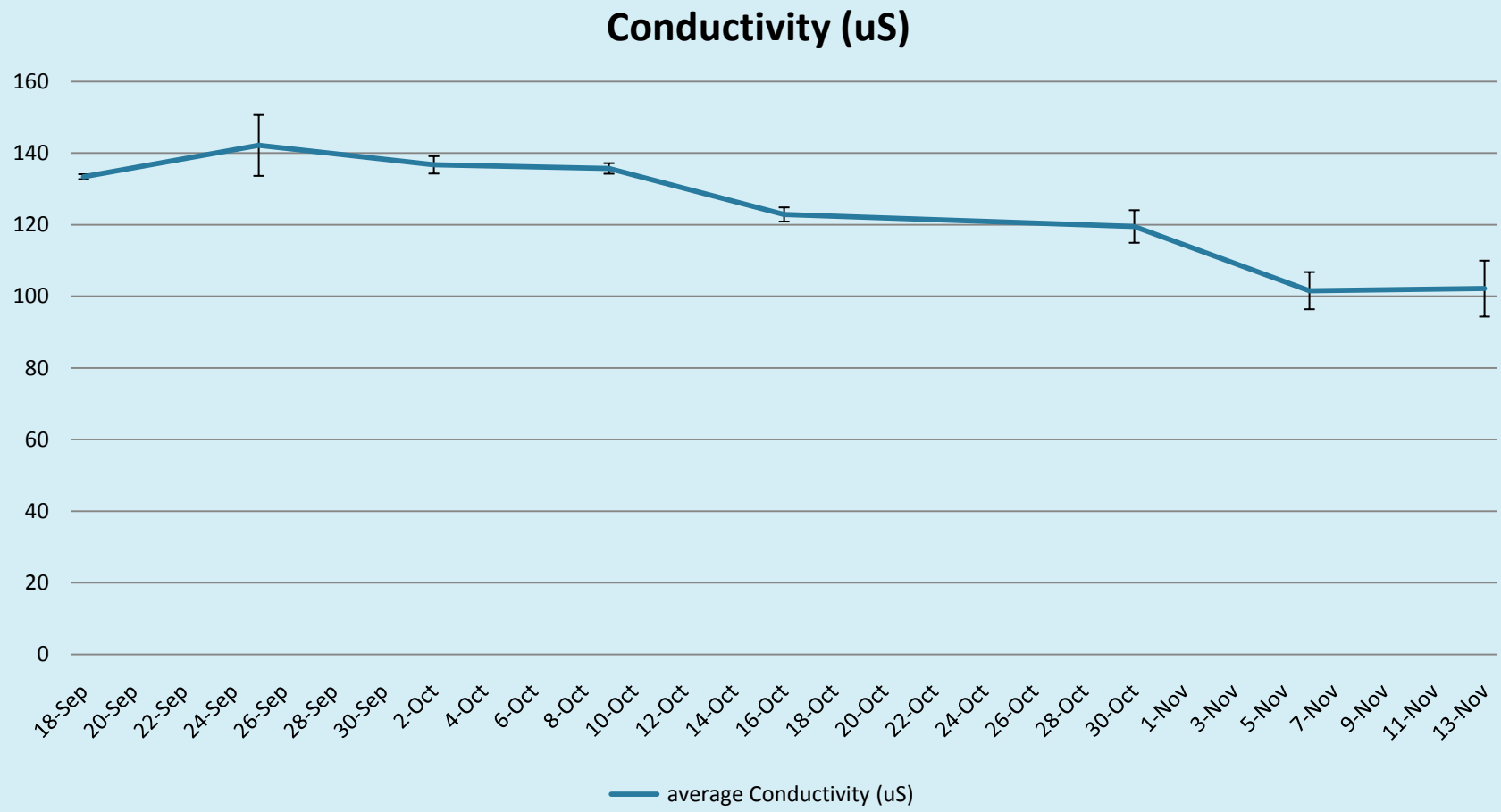
Calcium


Calcium (mg/L)
Ca2+ (mg/L)
10
9
8
7
6
5
4
3
2
1
0
9/14/09
9/24/09
10/4/09
10/14/09
10/24/09
11/3/09
11/13/09
Date

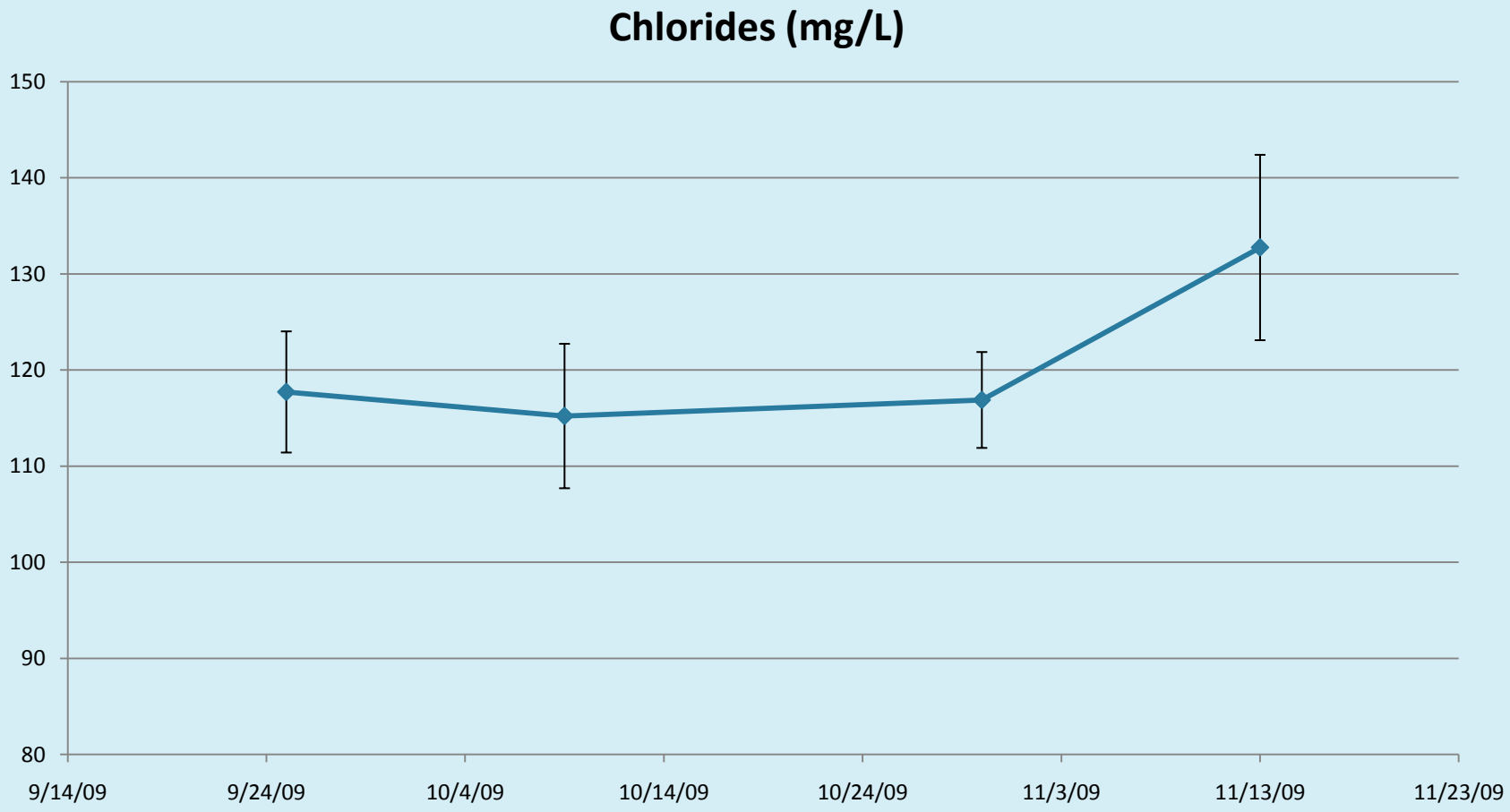
Magnesium


Magnesium
Mg (mg/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
9/14/09
9/24/09
10/4/09
10/14/09
10/24/09
11/3/09
11/13/09
Date

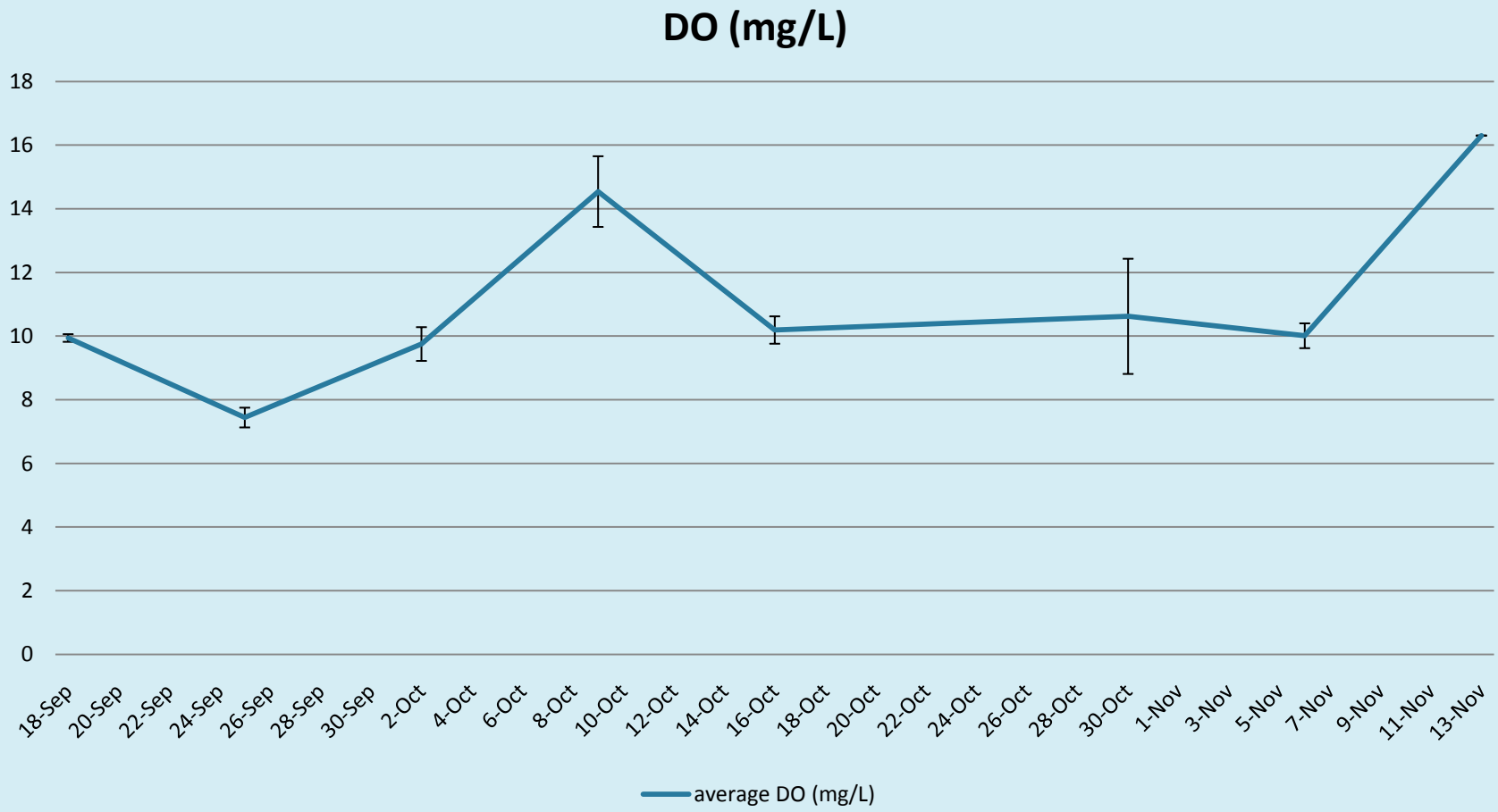
Conductivity



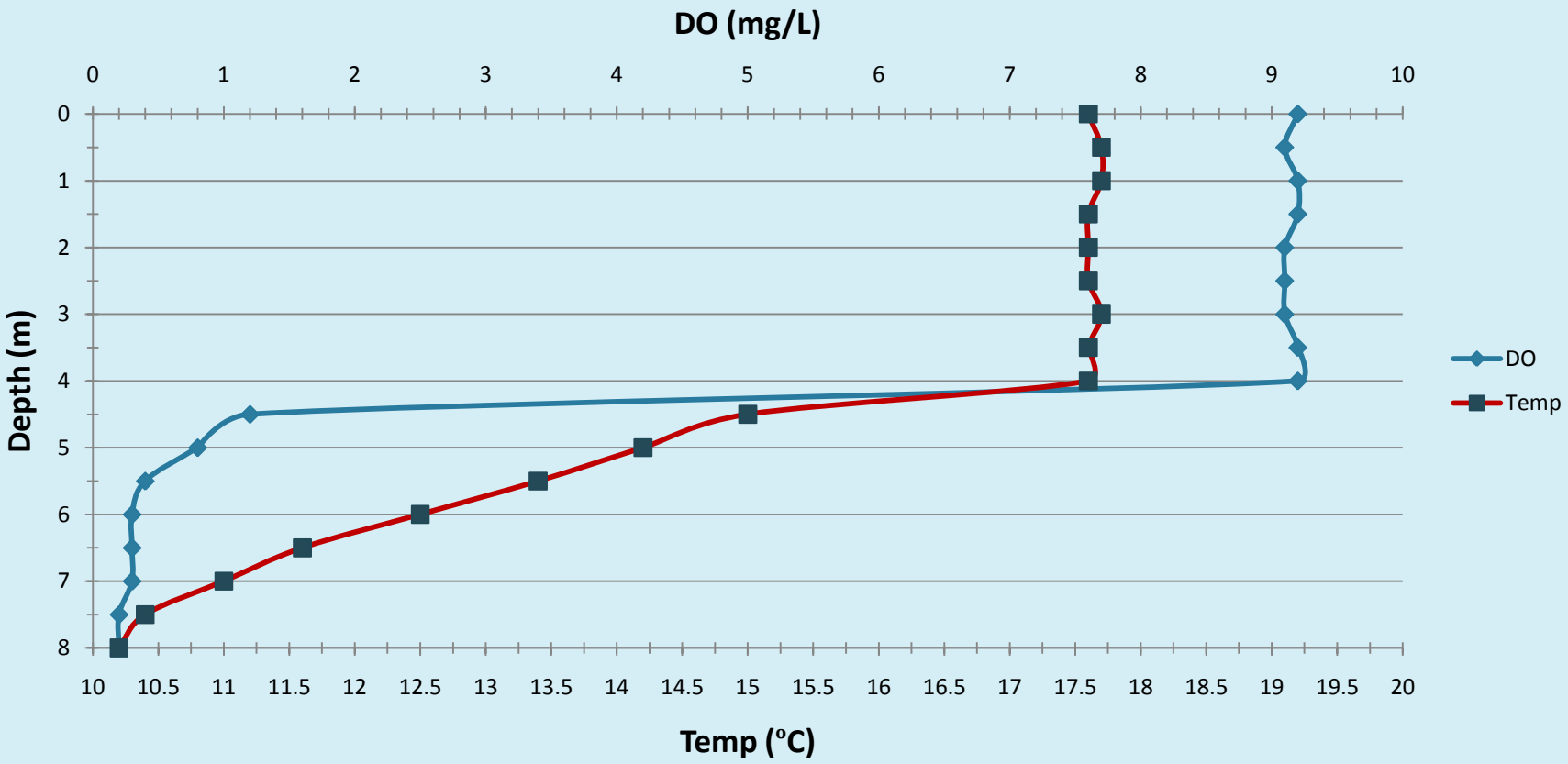
Chlorides


Chlorides (mg/L)
150
140
130
120
110
100
90
80
9/14/09
9/24/09
10/4/09
10/14/09
10/24/09
11/3/09
11/13/09
11/23/09

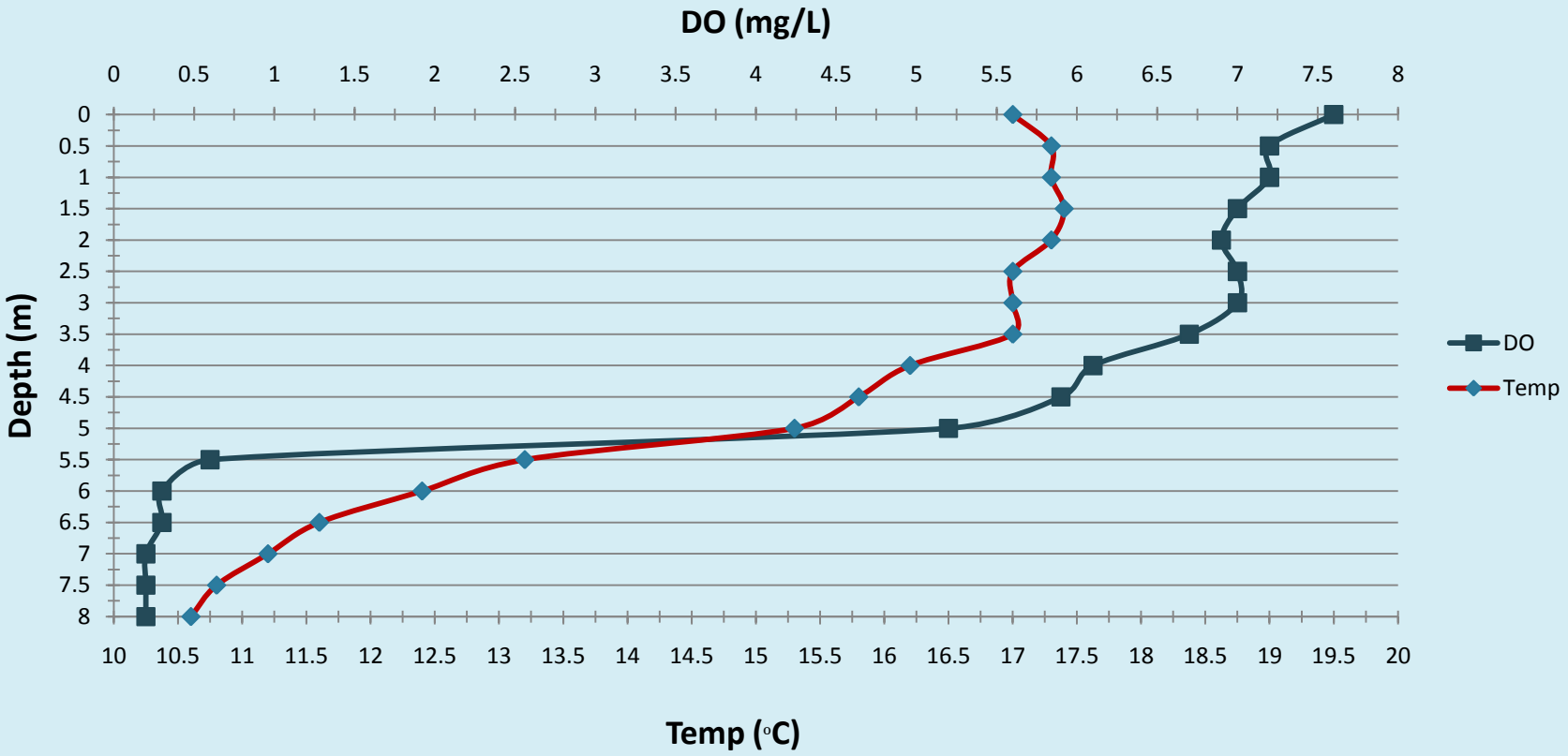
Dissolved Oxygen



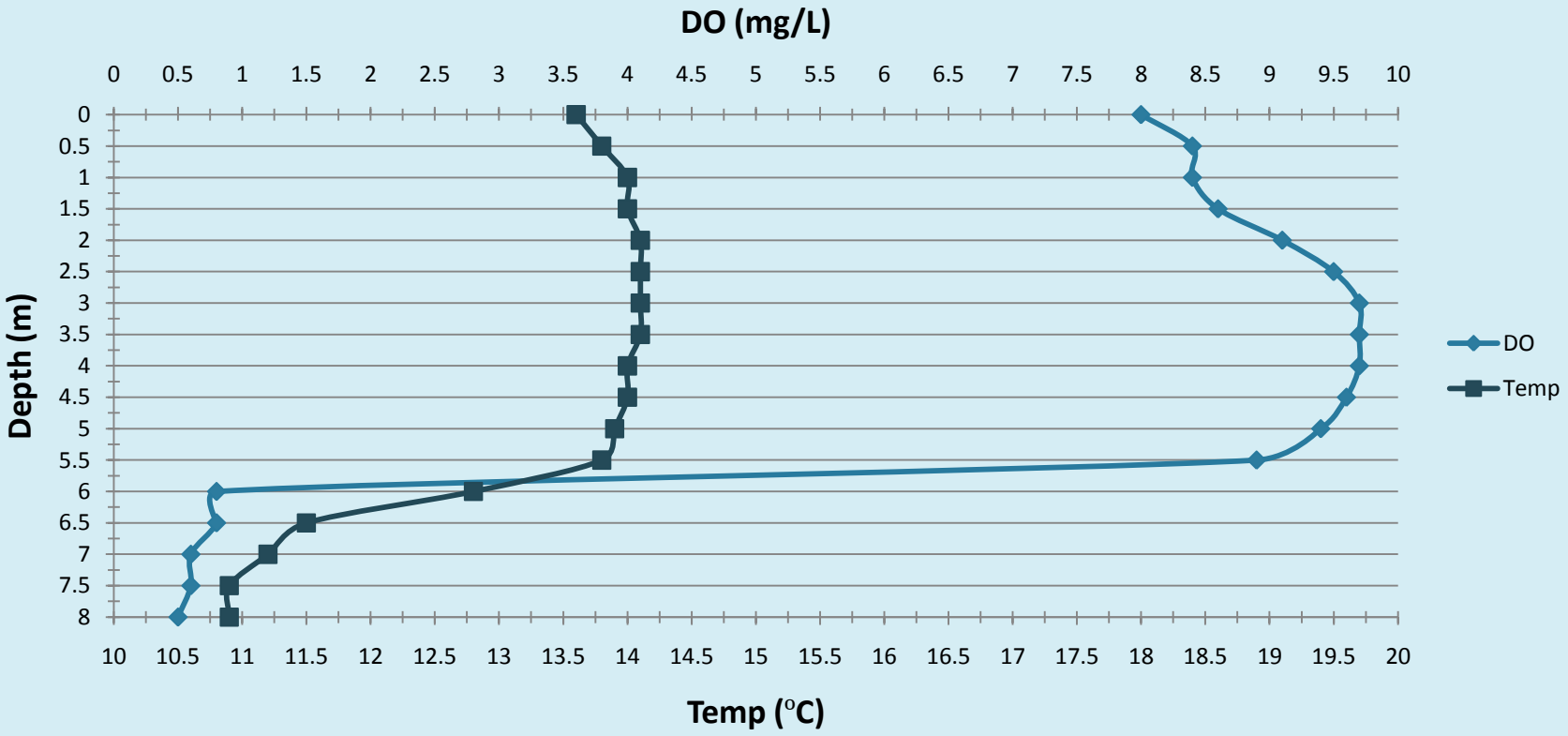
Profile Temp and DO Graph - 9/18/09



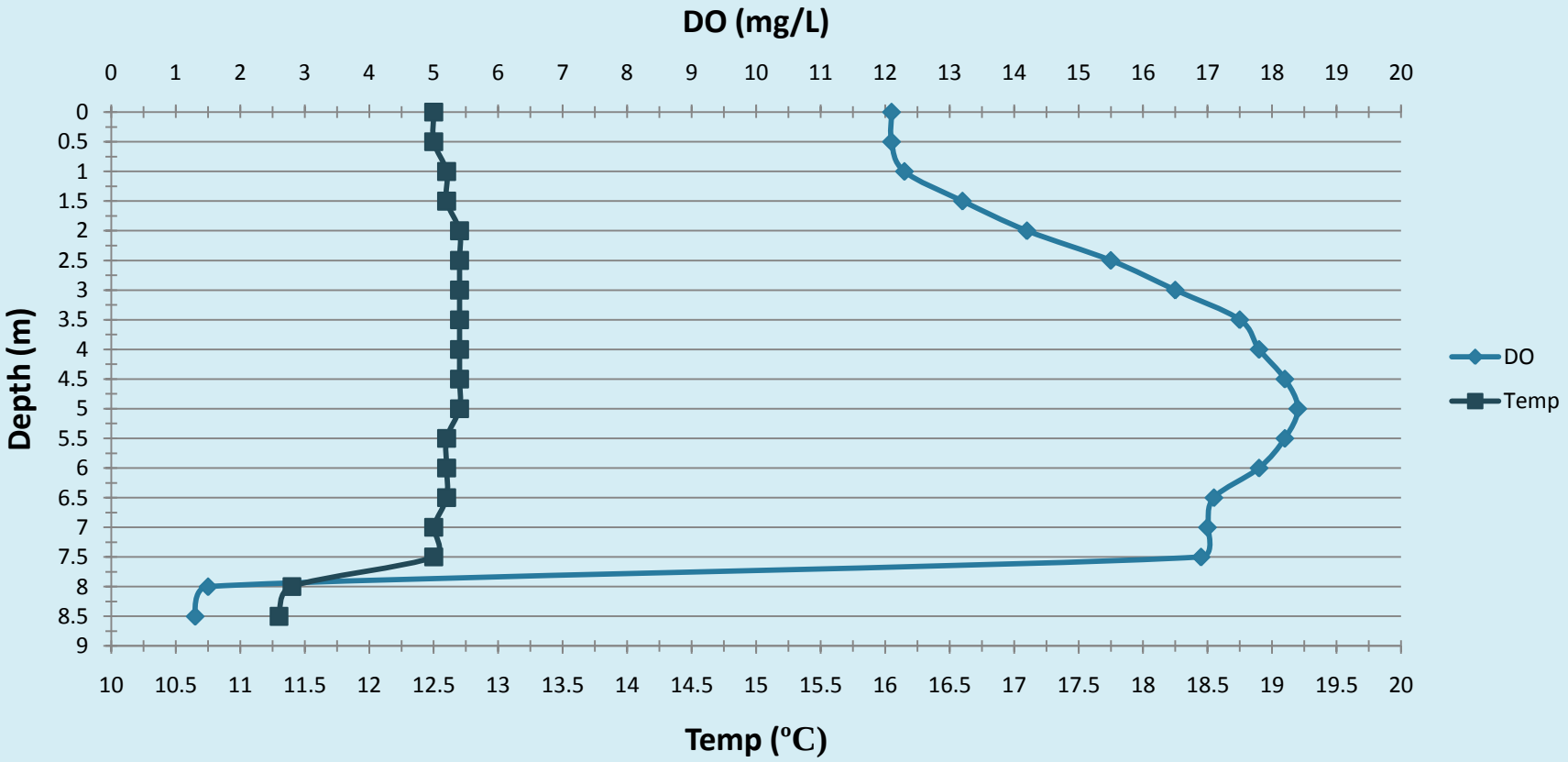
Profile Depth and DO Graph - 9/25/09



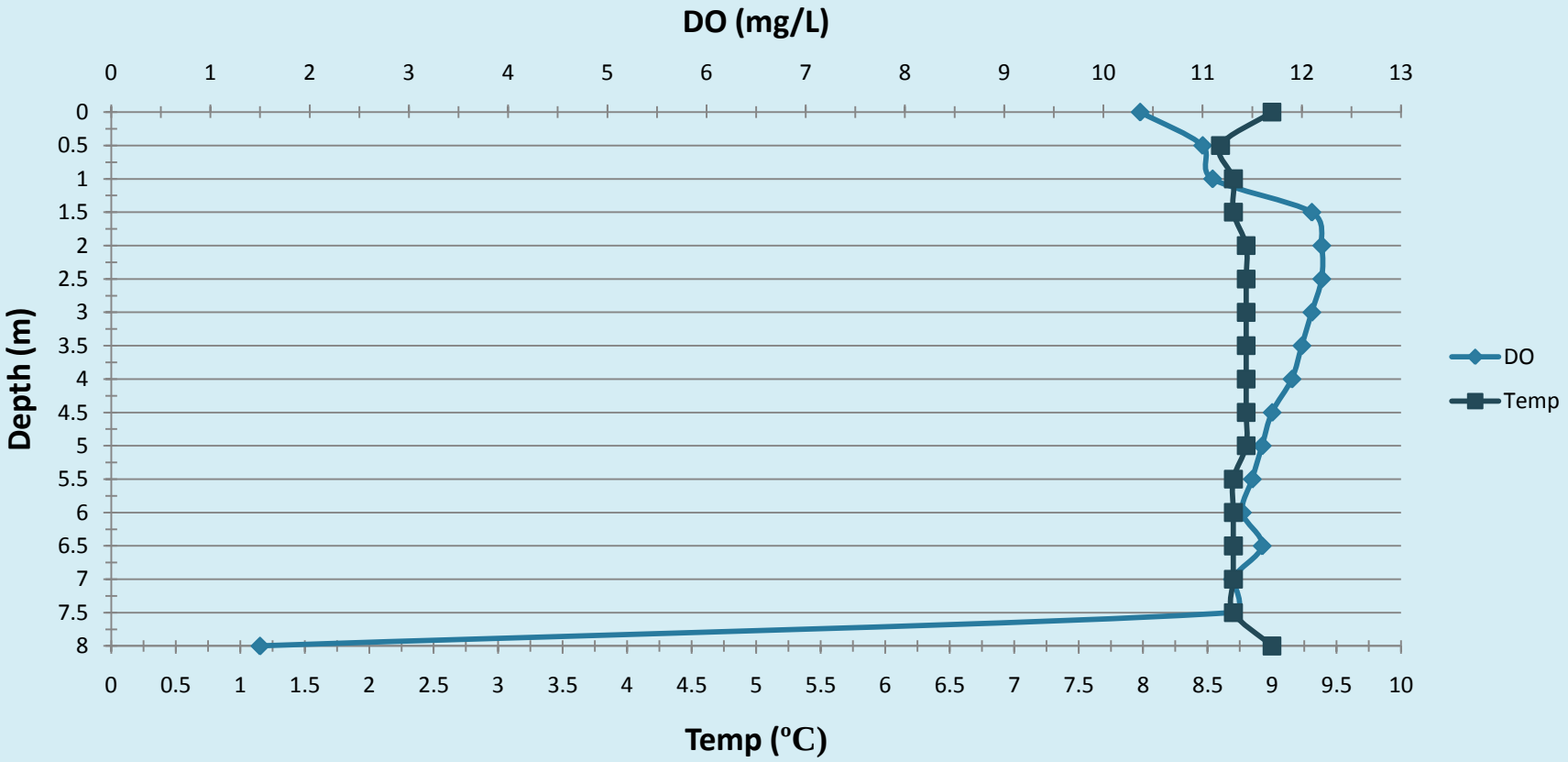
Profile Depth and DO Graph - 10/2/09



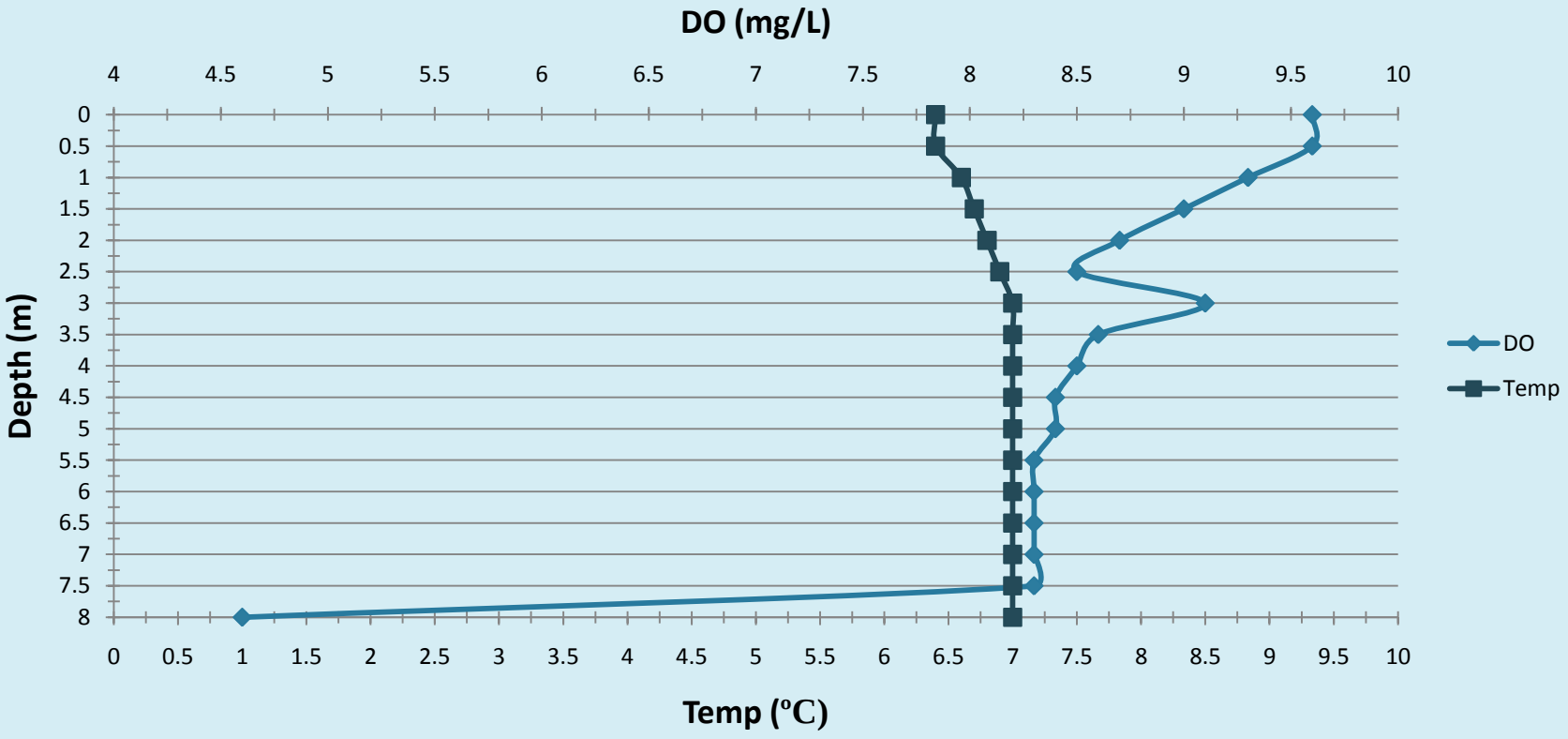
Profile Depth and DO Graph - 10/9/09



Profile Depth and DO Graph - 10/16/09



Profile Depth and DO Graph - 11/6/09



Biochemical Oxygen Demand

Site	Depth (m)	BOD_5 (mg/L)
1	0	3.10
3	0	2.05
3	4	1.65
3	8	2.35
5	0	1.00

DES LAKE ASSESSMENT PROGRAM SUMMER EPILIMNION AND UPPER LAYER BIOLOGICAL AND CHEMICAL CHARACTERISTICS (page 1 of 2)

Volume and Maximum Depth Category	Statistical Parameter	Maximum Depth (m)	Volume (m3)	Secchi (m)	Chl-a (mg/m3)	Total Phos. (ug/L)	pH (units)	Alkalinity (mg/L)	Conductivity (uMhos/cm)
GROUP 1	MIN	0.50	3000.00	0.40	0.55	1.000	4.50	-1.90	13.80
Volume = 1 - < 100,000 m3	MAX	9.80	99000.00	9.80	58.57	78.000	9.20	85.90	818.00
Maximum Depth = 0 - <10 m	MEAN	3.11	52663.54	2.16	8.23	18.888	6.36	8.35	67.57
	MEDIAN	2.50	53000.00	1.80	5.41	16.000	6.40	4.40	33.90
	COUNT	161.00	161.00	159.00	157.00	160.000	161.00	161.00	159.00
GROUP 2	MIN	1.20	100000.00	0.40	0.36	0.500	4.30	-3.00	14.80
Volume = 100,000 - < 5,000,000 m3	MAX	9.70	4696000.00	8.10	143.80	121.000	9.30	62.30	696.00
Maximum Depth = 0 - <10 m	MEAN	4.77	678122.80	2.93	8.23	15.000	6.53	6.43	67.58
	MEDIAN	4.45	341500.00	2.70	5.37	13.000	6.60	4.50	42.15
	COUNT	274.00	421.00	418.00	418.00	418.000	418.00	418.00	410.00
GROUP 3	MIN	4.9	5042000.0	2.7	1.8	7.000	6.1	1.5	27.3
Volume = 5,000,000 < 50,000,000 m3	MAX	9.7	43191500.0	8.0	6.0	18.000	6.9	15.6	77.7
Maximum Depth = 0 - <10 m	MEAN	8.0	11997600.0	3.7	4.3	11.250	6.6	5.3	47.6
	MEDIAN	7.8	8290750.0	3.3	4.5	10.000	6.8	5.0	43.3
	COUNT	10.0	10.0	10.0	10.0	8.000	10.0	10.0	10.0
GROUP 4	MIN	10.30	86000.00	5.0	5.81	10.000	5.90	0.50	18.00
Volume = 1 - < 100,000 m3	MAX	10.30	86000.00	5.0	5.81	10.000	5.90	0.50	18.00
Maximum Depth = 10 - <25 m	MEAN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	MEDIAN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	COUNT	1.00	1.00	1.00	1.00	1.000	1.00	1.00	1.00
GROUP 5	MIN	10.00	123000.00	0.60	0.36	0.500	5.10	-0.20	14.42
Volume= 100,000 - < 5,000,000 m3	MAX	24.40	4951000.00	11.40	63.68	49.000	7.90	23.80	229.00
Maximum Depth = 10 - < 25 m	MEAN	14.34	1913529.91	4.91	5.14	8.409	6.63	5.03	50.36
	MEDIAN	13.60	1586500.00	4.50	4.17	7.000	6.70	3.80	34.05
	COUNT	117.00	117.00	116.00	113.00	116.000	117.00	117.00	116.00

Messer Pond

- Sediments

Site	pH	% Organic Matter	% Ash
1	5.07	59.3	40.7
2	6.195	30.7	69.3
4	5.38	1.4	98.6
5	5.525	1.7	98.3
6	5.16	2.7	97.3
7	5.01	19.2	80.8
O	3.91	91.7	8.3
A	3.95	47.0	53.0
B	4.61	49.5	50.5