



# Cooperative Lakes Monitoring Program

## 2014 Data Report for Eagle Lake, Cass County

Michigan Lakes– Ours to Protect

The CLMP is brought to you by:



**About this report:**

This report is a summary of the data that have been collected through the Cooperative Lakes Monitoring Program. The contents have been customized for your lake. The first page is a summary of the Trophic Status Indicators of your lake (Secchi Disk Transparency, Chlorophyll-a, Spring Total Phosphorus, and Summer Total Phosphorus). Where data are available, they have been summarized for the past field season, the past five years, and since the first year your lake has been enrolled in the program.

If you did not take 8 or more Secchi disk measurements or 4 or more chlorophyll measurements, there will not be summary data calculated for these parameters. This is because missing measurements result in the data not being indicative of overall summer conditions.

If you enrolled in Dissolved Oxygen/Temperature, the summary page will have a graph of one of the profiles taken during the late summer (typically August or September). A late summer graph is used because dissolved oxygen is often depleted in the late summer, and identifying this condition and the depth at which it occurs is typically the most important use of dissolved oxygen measurements.

The back of the summary page will be the results of the Exotic Aquatic Plant Watch or Plant Identification and Mapping, if you participated in that parameter.

The rest of the report will be larger graphs, including all Dissolved Oxygen/Temperature Profiles that you recorded. For Secchi Disk, Chlorophyll, and Phosphorus parameters, you need to have two years of data for a graph to make logical sense. Therefore if this is the first year you have enrolled in the CLMP, you will not receive a graph for these parameters.

To learn more about these parameters or get definitions to unknown terms, check out the CLMP Manual found at: [http://www.micorps.net/documents/CLMP\\_Manual.pdf](http://www.micorps.net/documents/CLMP_Manual.pdf). [Please note: This is a new publication and a printed version will not be available until April 2015. The printed version will be available at the CLMP training held during the annual MLSA Conference in early May.]

**Thank you!**

The CLMP Leadership Team would like to thank you for all of your efforts over the past year. The CLMP would not exist without dedicated and hardworking volunteers!

The CLMP Leadership Team is made of: Bill Dimond, Marcy Knoll Wilmes, Jean Roth, Jo Latimore, Paul Steen, Scott Brown, Laura Kaminski, and Anne Sturm.

**Questions?**

If you have questions on this report or believe that the tabulated data for your lake in this report are in error please contact:

**Paul Steen ([psteen@hrwc.org](mailto:psteen@hrwc.org)), MiCorps Program Manager**

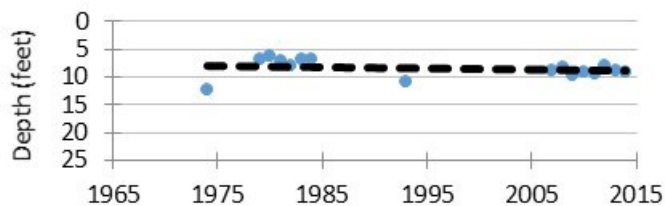
# Eagle Lake, Cass County

## 2014 CLMP Results



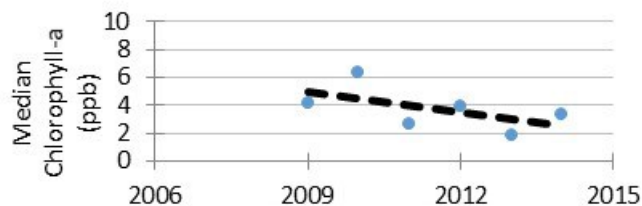
### Secchi Disk Transparency (feet)

Year	# Readings	Min	Max	Average	Std. Dev	Carlson TSI
2014	13	5.0	16.0	9.2	3.4	45
2009-2013	80	4.0	28.0	9.0	5.6	46
1974-2008	165	3.0	18.0	8.2	3.0	47
2014 All CLMP Lakes	3050	2.0	50.0	13.1	2.1	41



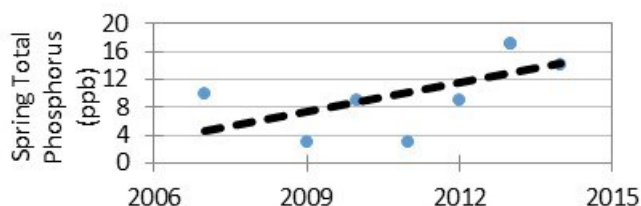
### Chlorophyll-a (parts per billion)

Year	# Samples	Min	Max	Median	Std. Dev	Carlson TSI
2014	5	<1.0	5.7	3.3	1.9	42
2009-2013	25	<1.0	9.9	3.9	2.7	44
2014 All CLMP Lakes	583	<1.0	23.5	2.0	2.9	37



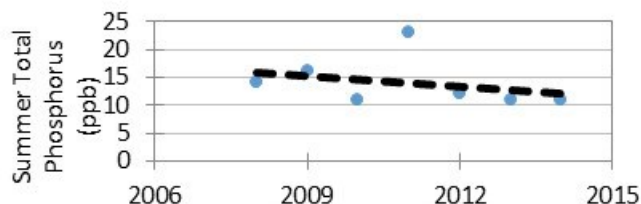
### Spring Total Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev
2014	1	14	14	14.0	NA
2009-2013	5	<=3 W	17	11.0	6.0
2007	1	10	10	10.0	NA
2014 All CLMP Lakes	164	3 W	77	13.2	11.1

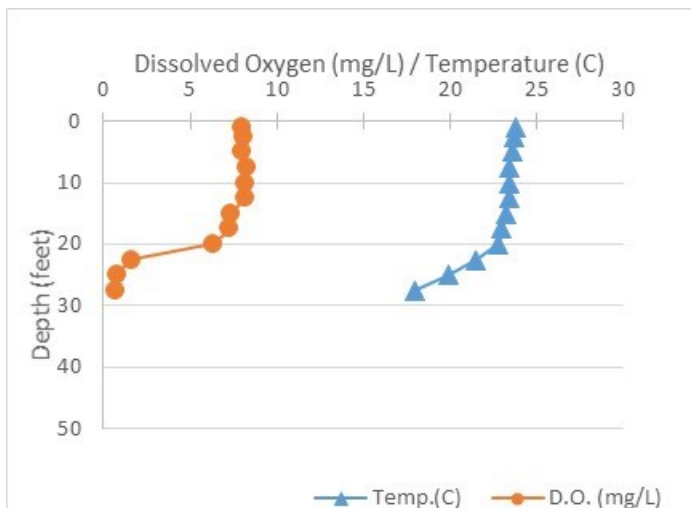


### Summer Total Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev	Carlson TSI
2014	1	11	11	11.0	NA	39
2009-2013	5	11	23	14.6	5.1	42
2008	1	14	14	14.0	NA	42
2014 All CLMP Lakes	180	4 T	62	13.5	7.9	41



### August Dissolved Oxygen and Water Temperature Profile



### Summary

Average TSI	2014	2009-2013	1974-2008
Eagle Lake	42	44	45
All CLMP Lakes	40	NA	NA

With an average TSI score of 42 based on Secchi transparency, Chlorophyll-a, and summer total phosphorus, Eagle Lake is rated as a mesotrophic lake. The lake keeps dissolved oxygen in the bottom waters through early summer, but in late summer the bottom water is devoid of oxygen. This year, by September 25 the lake had undergone fall turnover.

Long term trends indicate that transparency is remaining steady in the lake, but chlorophyll-a and summer phosphorus have decreased slightly. Spring phosphorus appears to be increasing. It is difficult to interpret what these conflicting results mean, but in general the results are good.

\*= No sample received W= Value is less than the detection limit (<3 ppb) T= Value reported is less than the reporting limit (5 ppb). Result is estimated.  
 <1 = Chlorophyll-a: Sample value is less than limit of quantification (<1 ppb).

# Eagle Lake, Cass County

## 2014 Exotic Aquatic Plant Watch Results



The Exotic Aquatic Plant Watch was conducted on Eagle Lake in 2014.

This survey involves sampling at multiple locations around the lake to detect new invaders, and document the extent of known invaders. While notes on other plant species may be recorded during the survey, the effort focuses on four highly invasive species: Eurasian watermilfoil (*Myriophyllum spicatum*), starry stonewort (*Nitellopsis obtusa*), curly-leaf pondweed (*Potamogeton crispus*), and Hydrilla (*Hydrilla verticillata*).

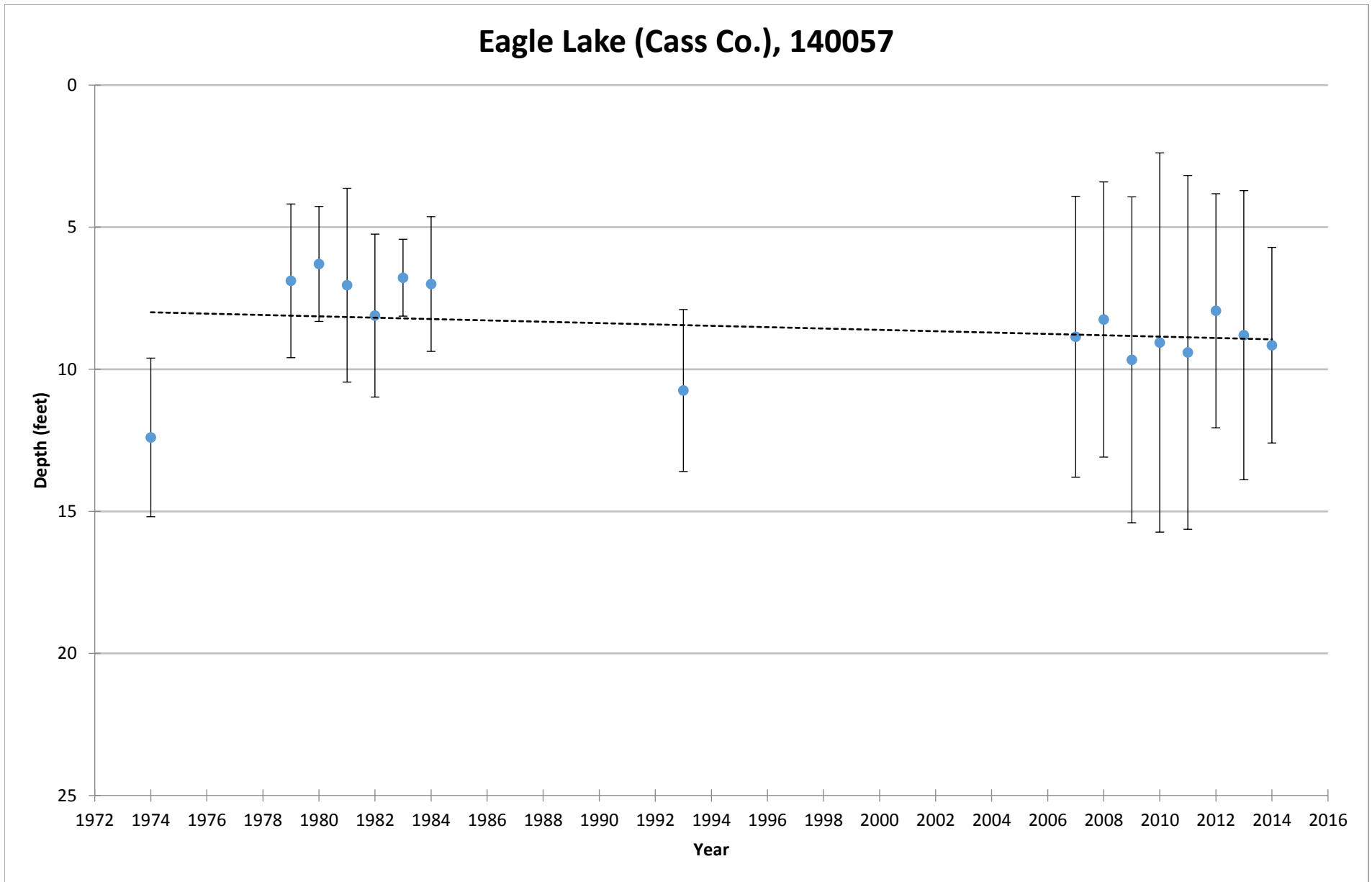
The table below summarizes the results of the 2014 Exotic Aquatic Plant Watch on Eagle Lake.

<b>Eagle Lake, Cass County</b>		
<b>2014 Exotic Aquatic Plant Watch Results</b>		
<b>Survey Date: July 16, 2014</b>		
<b><u>Species</u></b>	<b><u>Status</u></b>	<b><u>Comments</u></b>
Eurasian watermilfoil	FOUND	
Starry stonewort	Not found	
Curly-leaf pondweed	Not found	
Hydrilla	Not found	

Visit the MiCorps Data Exchange ([www.micorps.net](http://www.micorps.net)) or contact the lead volunteer on your lake for more details on the survey, including sampling locations, maps, and abundance information, and for information on past surveys.

COOPERATIVE LAKES MONITORING PROGRAM  
SUMMER MEAN TRANSPARENCY

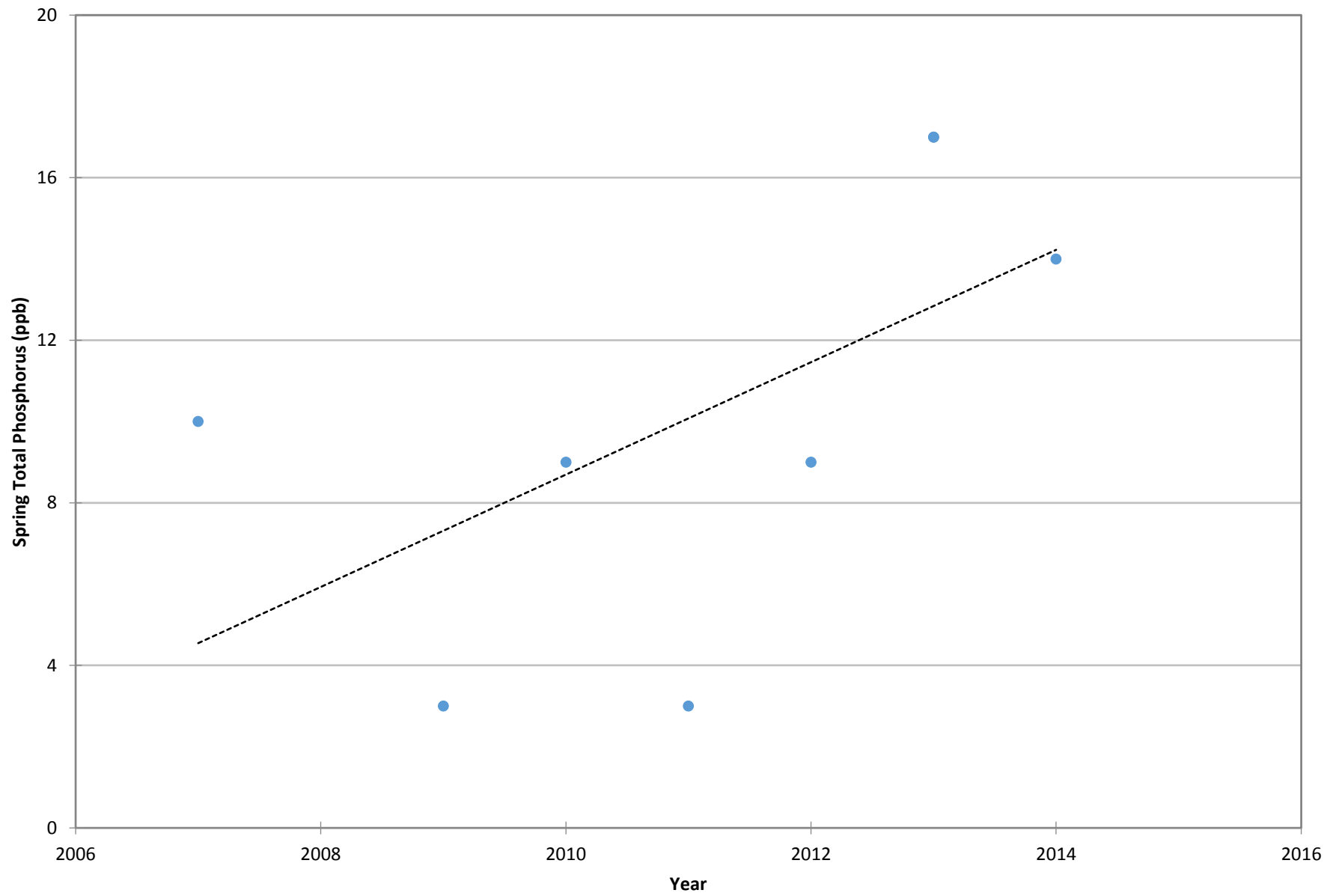
**Eagle Lake (Cass Co.), 140057**



Vertical bars indicate standard deviation

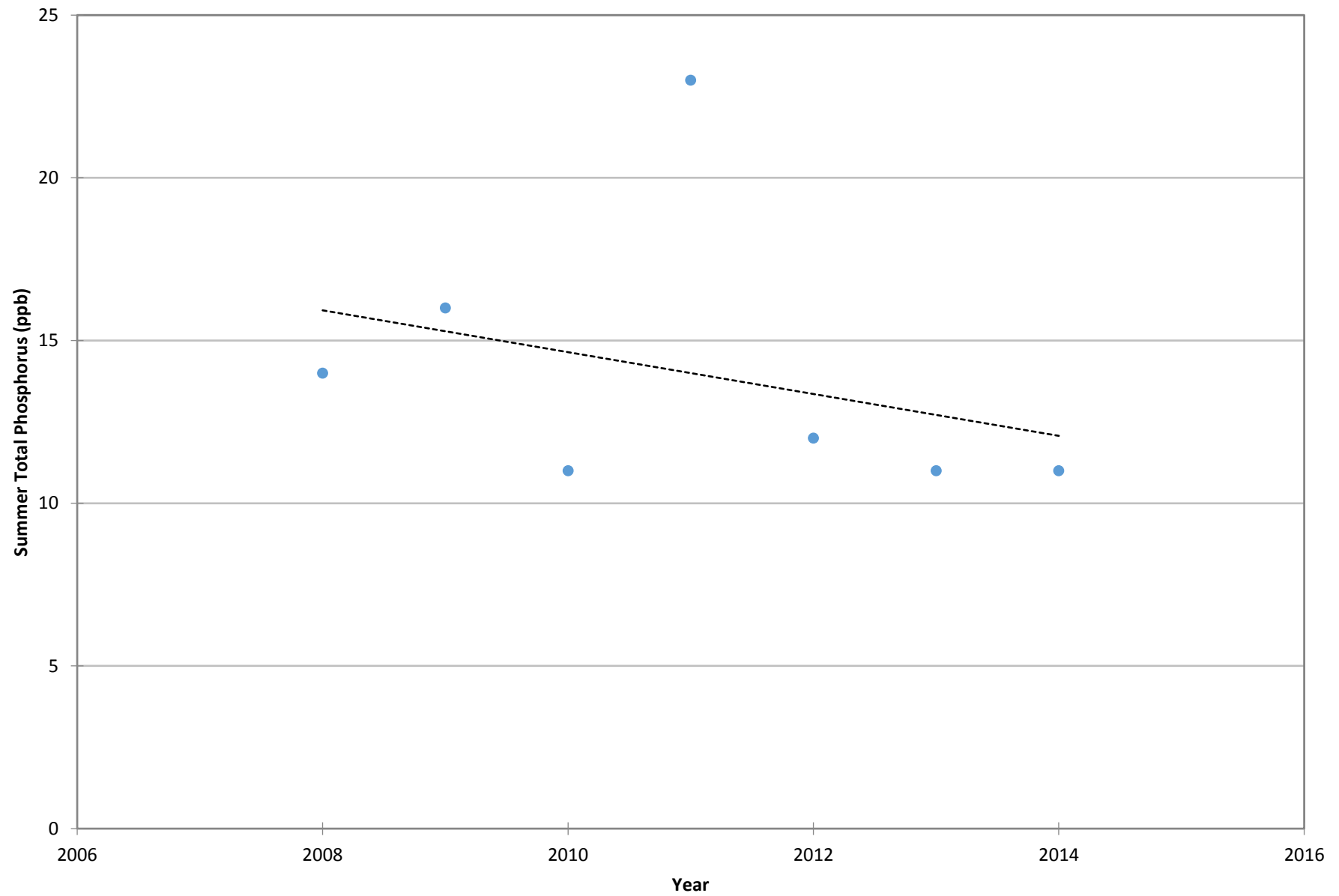
COOPERATIVE LAKES MONITORING PROGRAM  
SPRING TOTAL PHOSPHORUS

**Eagle Lake (Cass Co.), 140057**



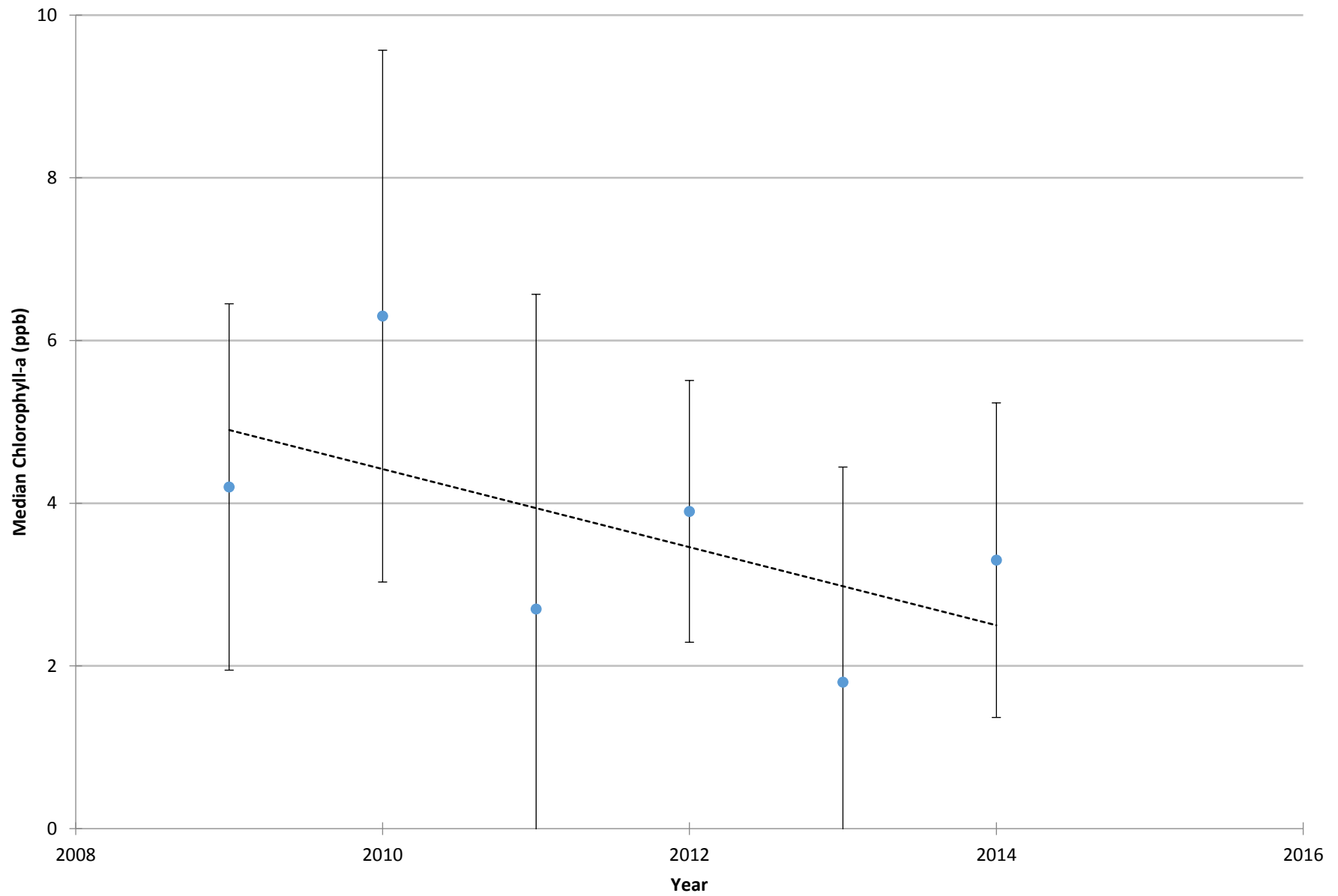
COOPERATIVE LAKES MONITORING PROGRAM  
SUMMER TOTAL PHOSPHORUS

**Eagle Lake (Cass Co.), 140057**



COOPERATIVE LAKES MONITORING PROGRAM  
SUMMER MEDIAN CHLOROPHYLL-A

**Eagle Lake (Cass Co.), 140057**



Vertical bars indicate standard deviation



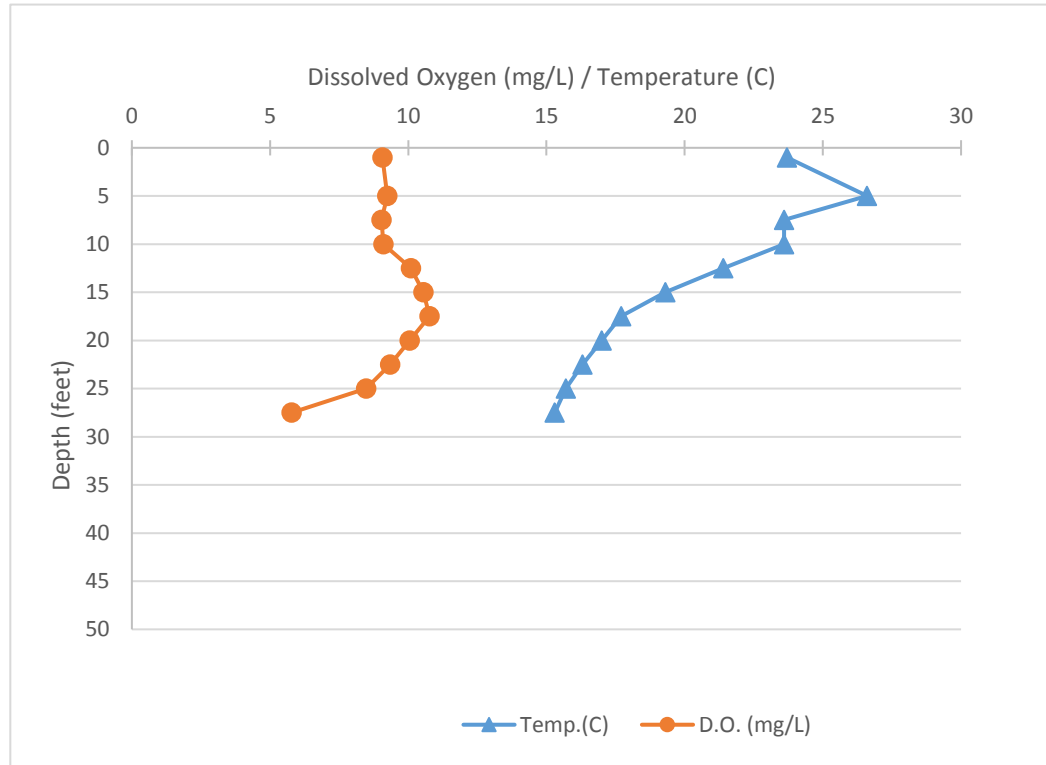
Name: Eagle  
County: Cass  
Site ID: 140057  
Date: 5/19/2014

### Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	23.7	9.07
5	26.6	9.24
7.5	23.6	9.03
10	23.6	9.1
12.5	21.4	10.1
15	19.3	10.55
17.5	17.7	10.77
20	17	10.05
22.5	16.3	9.35
25	15.7	8.48
27.5	15.3	5.78

Lake: Eagle (Cass Co.)

5/19/2014



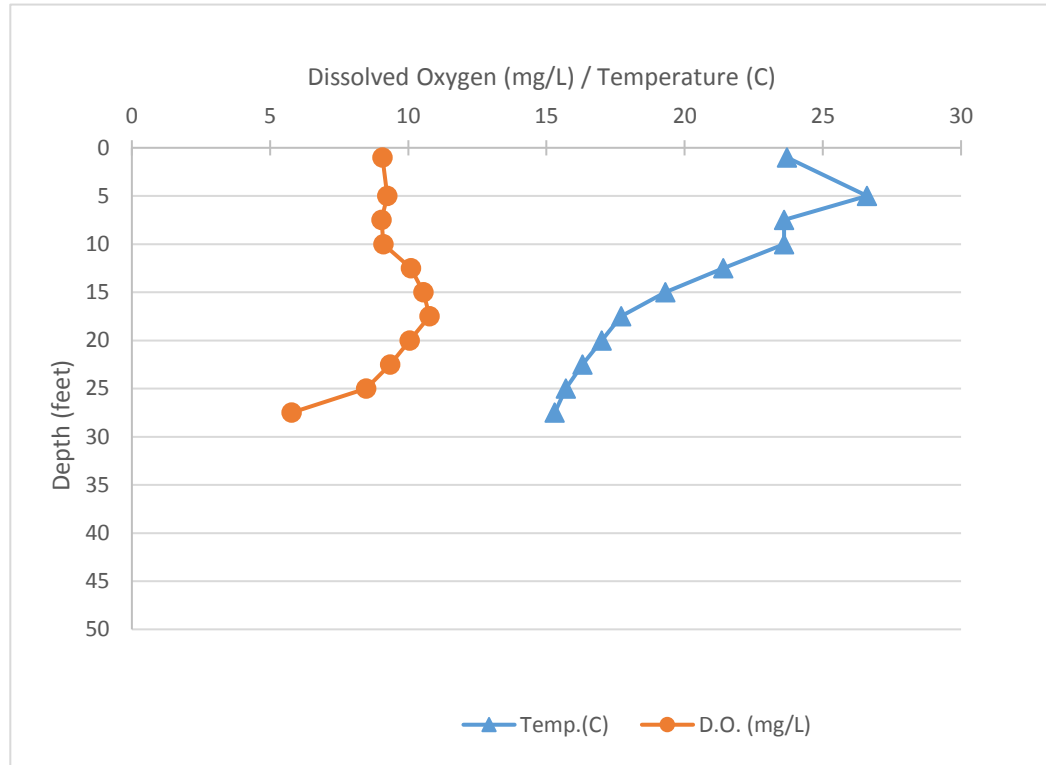
Name: Eagle  
County: Cass  
Site ID: 140057  
Date: 5/29/2014

### Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	23.7	9.07
5	26.6	9.24
7.5	23.6	9.03
10	23.6	9.1
12.5	21.4	10.1
15	19.3	10.55
17.5	17.7	10.77
20	17	10.05
22.5	16.3	9.35
25	15.7	8.48
27.5	15.3	5.78

Lake: Eagle (Cass Co.)

5/29/2014



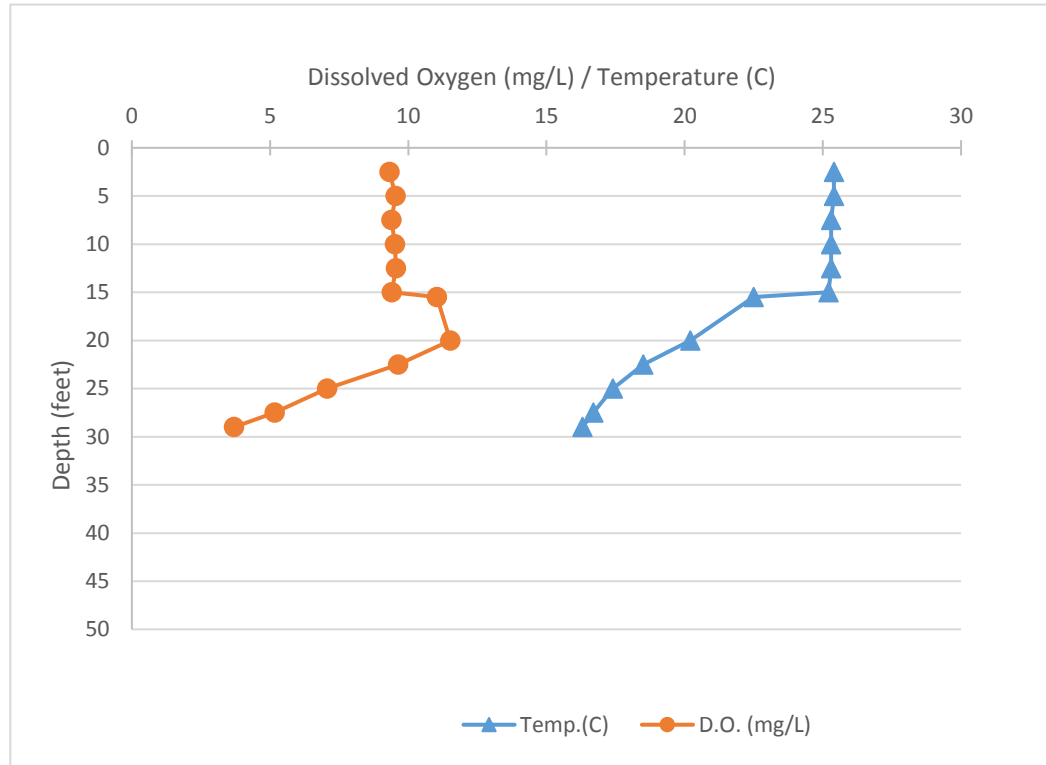
Name: Eagle  
County: Cass  
Site ID: 140057  
Date: 6/19/2014

### Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
2.5	25.4	9.32
5	25.4	9.54
7.5	25.3	9.39
10	25.3	9.52
12.5	25.3	9.55
15	25.2	9.4
15.5	22.5	11.04
20	20.2	11.52
22.5	18.5	9.63
25	17.4	7.06
27.5	16.7	5.17
29	16.3	3.7

Lake: Eagle (Cass Co.)

6/19/2014



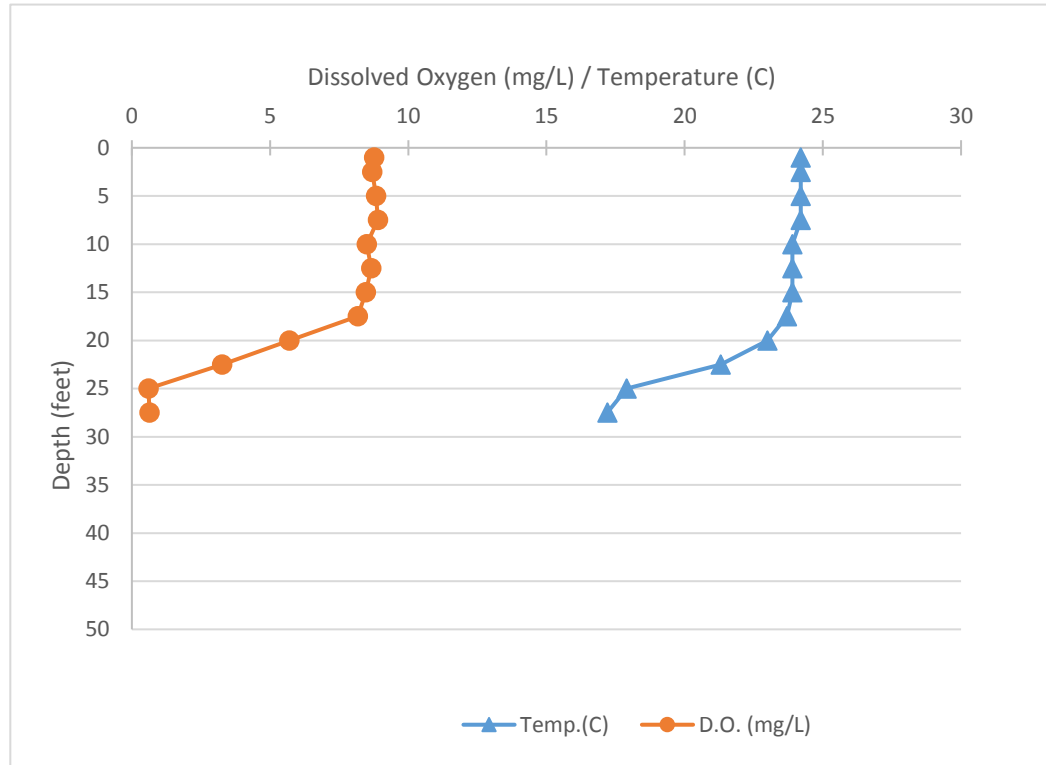
Name: Eagle  
County: Cass  
Site ID: 140057  
Date: 7/16/2014

### Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	24.2	8.77
2.5	24.2	8.7
5	24.2	8.83
7.5	24.2	8.9
10	23.9	8.5
12.5	23.9	8.66
15	23.9	8.46
17.5	23.7	8.18
20	23	5.7
22.5	21.3	3.27
25	17.9	0.6
27.5	17.2	0.64

Lake: Eagle (Cass Co.)

7/16/2014



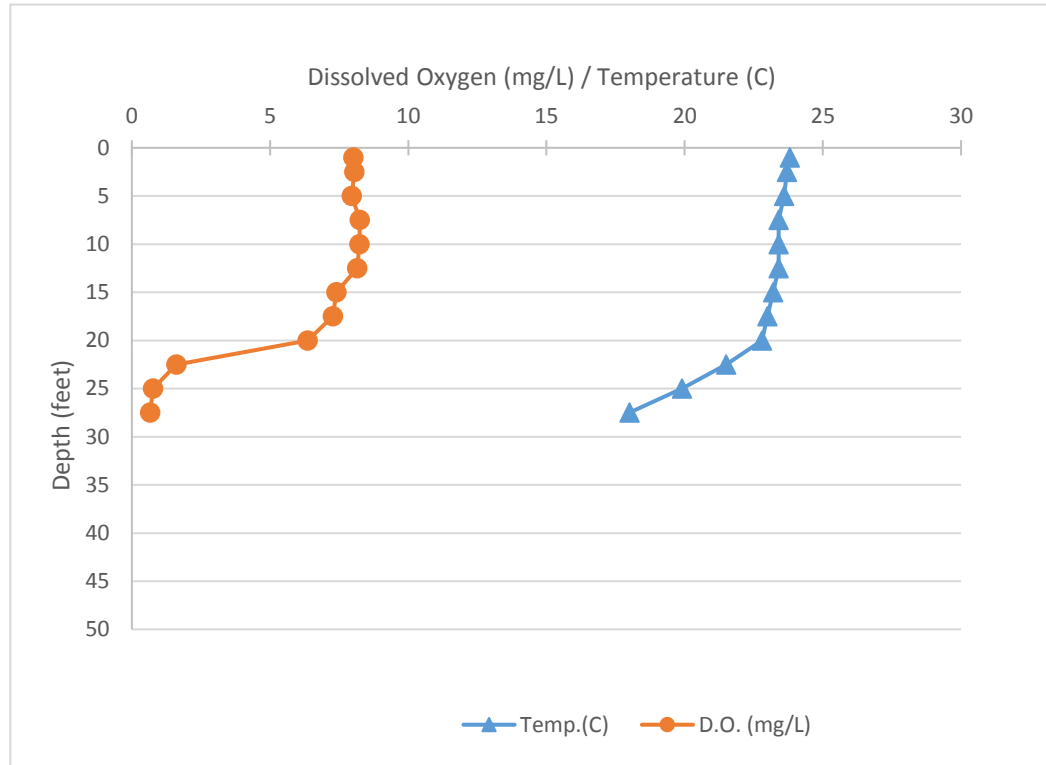
Name: Eagle  
County: Cass  
Site ID: 140057  
Date: 8/15/2014

### Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	23.8	8.01
2.5	23.7	8.05
5	23.6	7.96
7.5	23.4	8.25
10	23.4	8.23
12.5	23.4	8.15
15	23.2	7.4
17.5	23	7.27
20	22.8	6.36
22.5	21.5	1.61
25	19.9	0.76
27.5	18	0.66

Lake: Eagle (Cass Co.)

8/15/2014



Name: Eagle  
County: Cass  
Site ID: 140057  
Date: 9/25/2014

### Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	19.9	8.88
2.5	19.6	8.96
5	19.4	8.95
7.5	19.2	8.95
10	19	8.87
12.5	18.6	8.66
15	18.4	8.48
17.5	18.2	8.04
20	18	7.41
22.5	17.9	7
25	17.8	6.63
27.5	17.7	6.23
30	17.6	5.06

Lake: Eagle (Cass Co.)

9/25/2014

