

Carnelian-Marine-St. Croix Watershed District

2017 Water Quality Monitoring Report

Lake Water Quality Summary

2017 Summer Average Total Phosphorus, Chlorophyll-*a* and Secchi Disk Transparency Lake Grades, Ecoregion Values

2017 Overall Lake Grades and Trophic Status

2017 Summer Average Secchi Disk Transparencies

2017 Summer Average Total Phosphorus Concentrations

2017 Summer Average Chlorophyll-*a* Concentrations

2017 Summer Average Total Kjeldahl Nitrogen Concentrations

Table 1. 2017 Summer Average Total Phosphorus, Chlorophyll-*a* and Secchi Disk Transparency Lake Grades, Ecoregion Values

Big Marine - Big Carnelian Subwatershed					
Lake	Total Phosphorus (mg/L)	Chlorophyll-<i>a</i> (µg/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk (feet)	Secchi Disk (meters)
<i>Eco-Region Range</i>	0.023-0.050	5-22	0.60-1.20	4.9-10.5	1.50-3.20
German	0.019	4.1	0.62	8.2	2.5
Fish	0.092	37.0	1.86	3.9	1.2
Long (City of Scandia)	0.070	19.0	1.16	3.4	1.0
Jellums	0.038	12.3	0.91	4.6	1.4
Big Marine	0.020	5.4	0.64	11.7	3.6
Big Carnelian	0.036	4.4	0.60	15.2	4.6
Little Carnelian	0.012	2.3	0.48	17.9	5.5
East Boot	0.019	3.5	0.63	11.9	3.6
Barker	0.067	54.4	1.42	2.9	0.9
Turtle	0.037	5.7	0.71	2.9	0.9
Bass	0.023	4.9	0.68	7.3	2.2
Mud	0.076	56.0	1.80	1.0	0.3
Staples*					
West Boot*					

*Lake not monitored in 2017

Silver Creek Subwatershed					
Lake	Total Phosphorus (mg/L)	Chlorophyll-<i>a</i> (µg/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk (feet)	Secchi Disk (meters)
<i>Eco-Region Range</i>	0.023-0.050	5-22	0.60-1.20	4.9-10.5	1.50-3.20
North Tw in	0.022	3.3	0.73	3.7	1.14
Carol	0.028	5.9	0.68	2.6	0.80
Loon	0.085	59.1	2.21	1.1	0.34
Louise	0.074	37.4	1.09	4.4	1.33
Silver	0.023	3.7	0.53	5.6	1.70
South Tw in	0.034	14.5	0.96	5.3	1.62

St. Croix Subwatershed					
Lake	Total Phosphorus (mg/L)	Chlorophyll-<i>a</i> (µg/L)	Total Kjeldahl Nitrogen (mg/L)	Secchi Disk (feet)	Secchi Disk (meters)
<i>Eco-Region Range</i>	0.023-0.050	5-22	0.60-1.20	4.9-10.5	1.50-3.20
Alice	0.012	2.2	0.37	5.7	1.7
Goose	0.036	31.9	1.13	4.8	1.5
Hay	0.032	11.1	0.79	5.0	1.5
Square	0.012	3.1	0.45	17.9	5.5
Sand	0.031	16.7	1.09	4.4	1.4
Tw in*					
Long (May Township)*					
Terrapin*					
Mays*					
Clear*					

*Lake not monitored in 2017

Table 2. 2017 Overall Lake Grades and Trophic Status

2017 Ranking	Lake	2017 Lake Grade	Trophic Status	Most Recent Year of Data	Secchi Disk Trend	Total Phosphorus Trend	Chl-a Corrected for Pheophytin Trend
1	Little Carnelian	A	Oligotrophic	2017	Improving	No Trend	No Trend
2	Square	A	Mesotrophic	2017	Declining	No Trend	No Trend
3	East Boot	A	Mesotrophic	2017	Improving	Improving	Improving
4	Big Carnelian	A-	Mesotrophic	2017	Improving	Improving	Improving
5	Big Marine	A-	Mesotrophic	2017	No Trend	Improving	Improving
6	German	A-	Mesotrophic	2017	NA	Improving	Improving
7	North Twin	A-	Mesotrophic	2017	NA	Improving	No Trend
8	Bass	A-	Mesotrophic	2017	Improving	Improving	Improving
9	Alice	B+	Mesotrophic	2017	NA	NA	NA
10	Silver	B+	Mesotrophic	2017	NA	NA	NA
11	Carol	B	Eutrophic	2017	NA	No Trend	No Trend
12	South Twin	B-	Eutrophic	2017	Improving	Improving	Improving
13	Hay	B-	Eutrophic	2017	NA	Improving	Improving
14	Sand	B-	Eutrophic	2017	Declining	Improving	No Trend
15	Turtle	C+	Eutrophic	2017	NA	NA	NA
16	Jellums	C+	Eutrophic	2017	Improving	Improving	Improving
17	Goose	C+	Eutrophic	2017	No Trend	Improving	No Trend
18	Long (City of Scandia)	C	Eutrophic	2017	No Trend	Improving	No Trend
19	Barker	C	Eutrophic	2017	No Trend	No Trend	NA
20	Louise	C	Eutrophic	2017	No Trend	No Trend	NA
21	Fish	C-	Eutrophic	2017	Improving	Improving	Improving
22	Mud	D-	Eutrophic	2017	NA	NA	NA
23	Loon	D-	Hypereutrophic	2017	Declining	No Trend	Improving
	Clear*			2015	Declining	NA	NA
	Twin*			2015	No Trend	NA	NA
	West Boot*			2015	Improving	Improving	NA
	Staples*			2015	NA	NA	NA
	Terrapin*			2015	NA	NA	NA
	Mays*			2015	NA	NA	NA
	Long (May Township)*			2015	NA	Improving	No Trend

*Lake not monitored in 2017

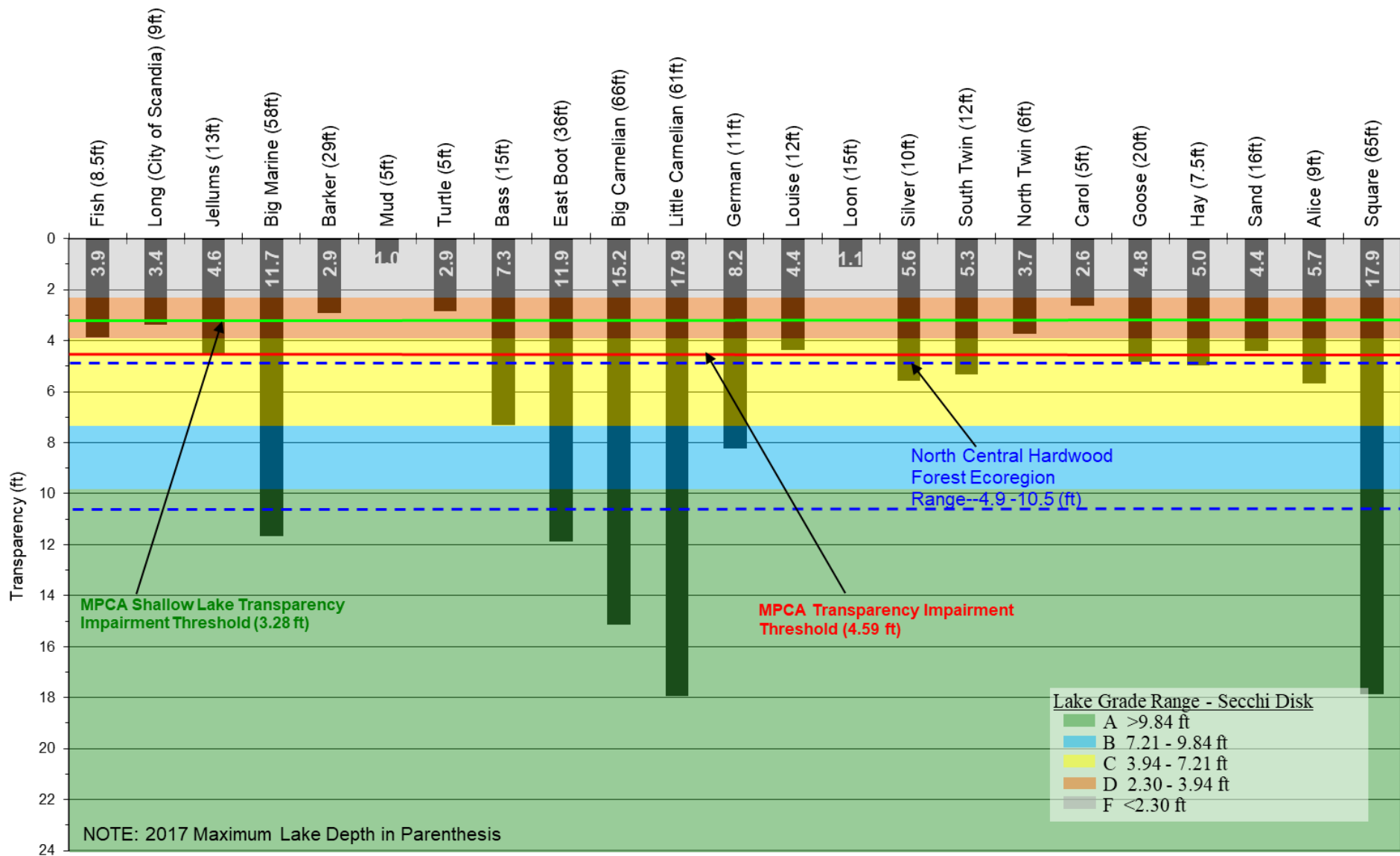


Figure 1. 2017 Summer Average Secchi Disk Transparencies

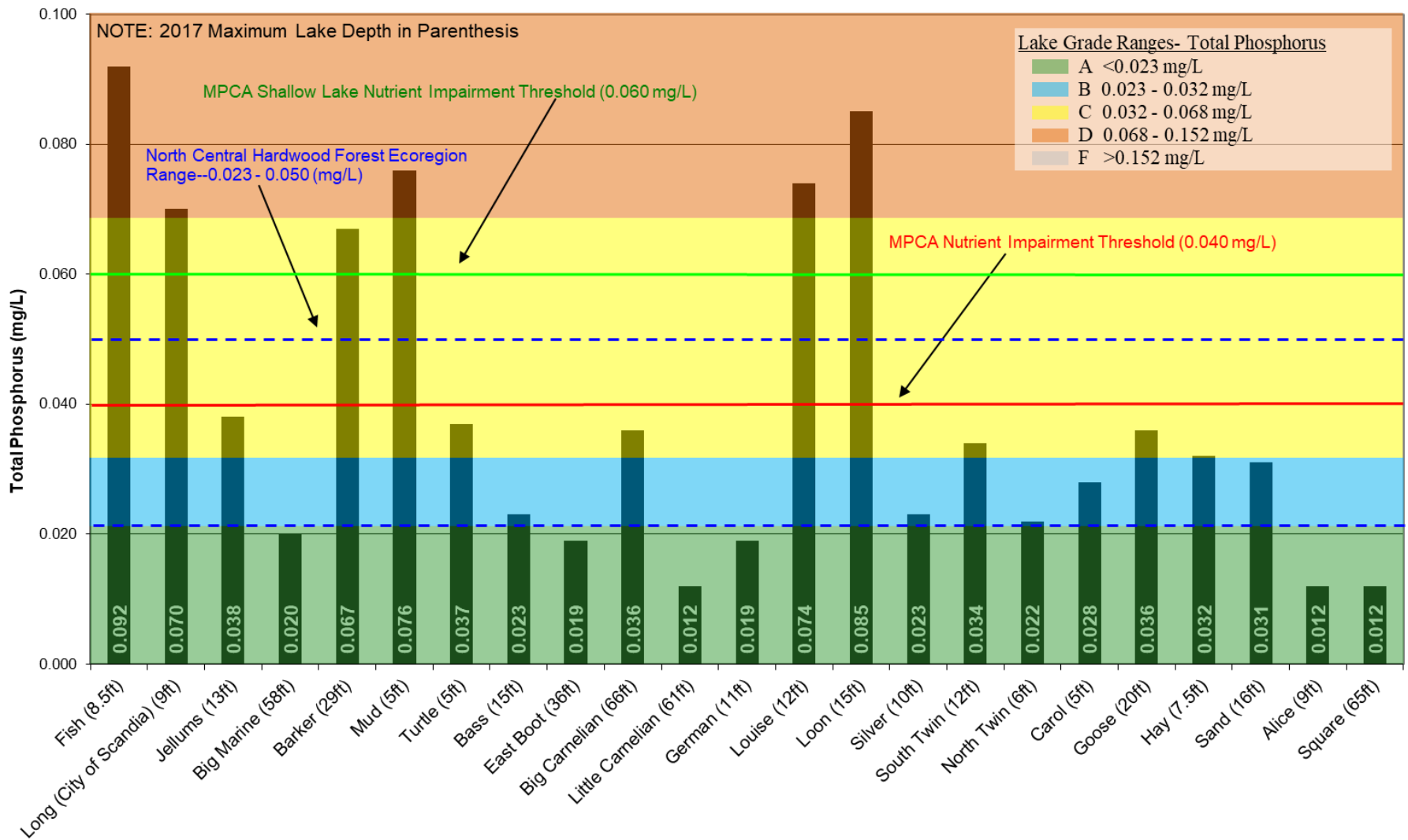


Figure 2. 2017 Summer Average Total Phosphorus Concentrations

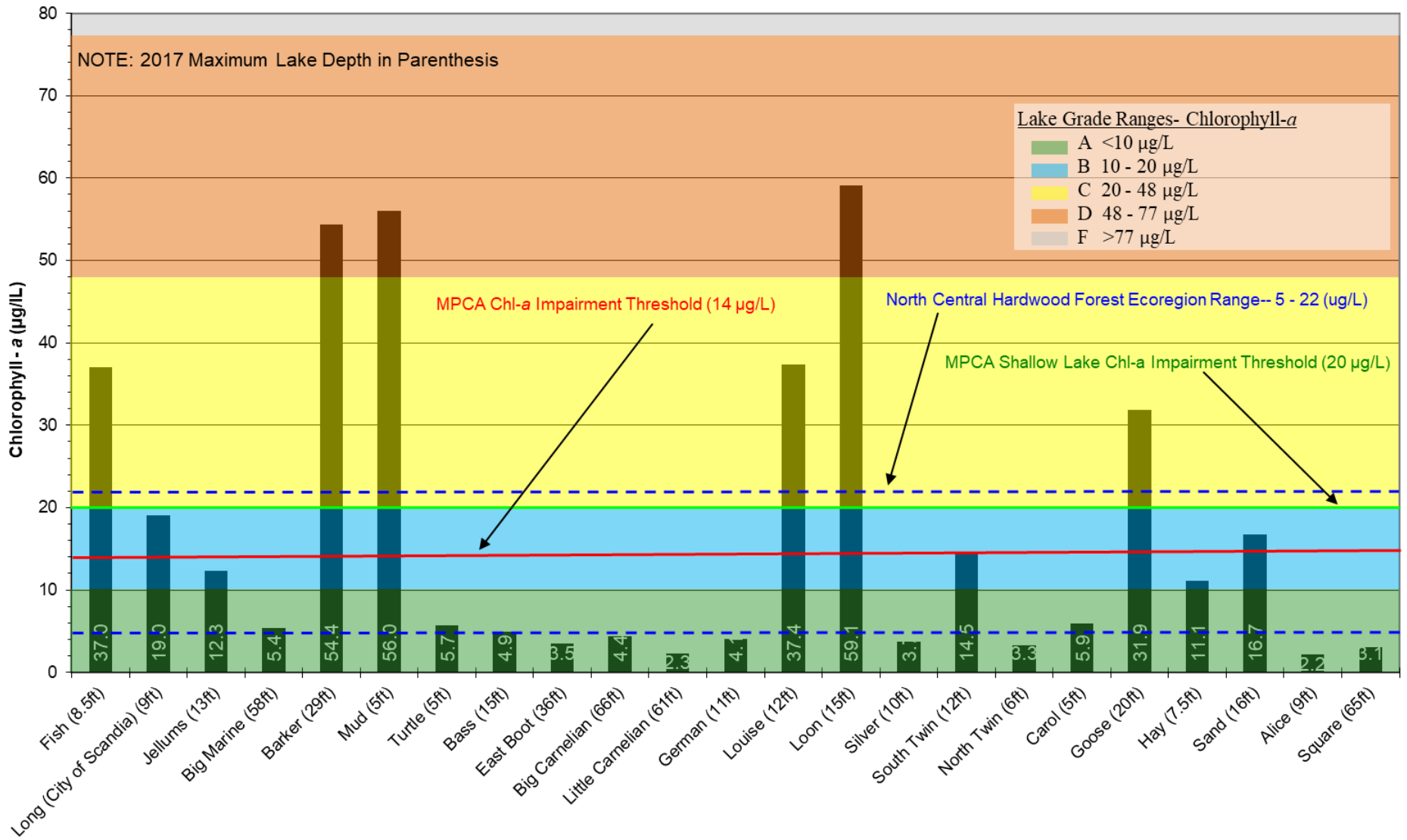


Figure 3. 2017 Summer Average Chlorophyll-a Concentrations

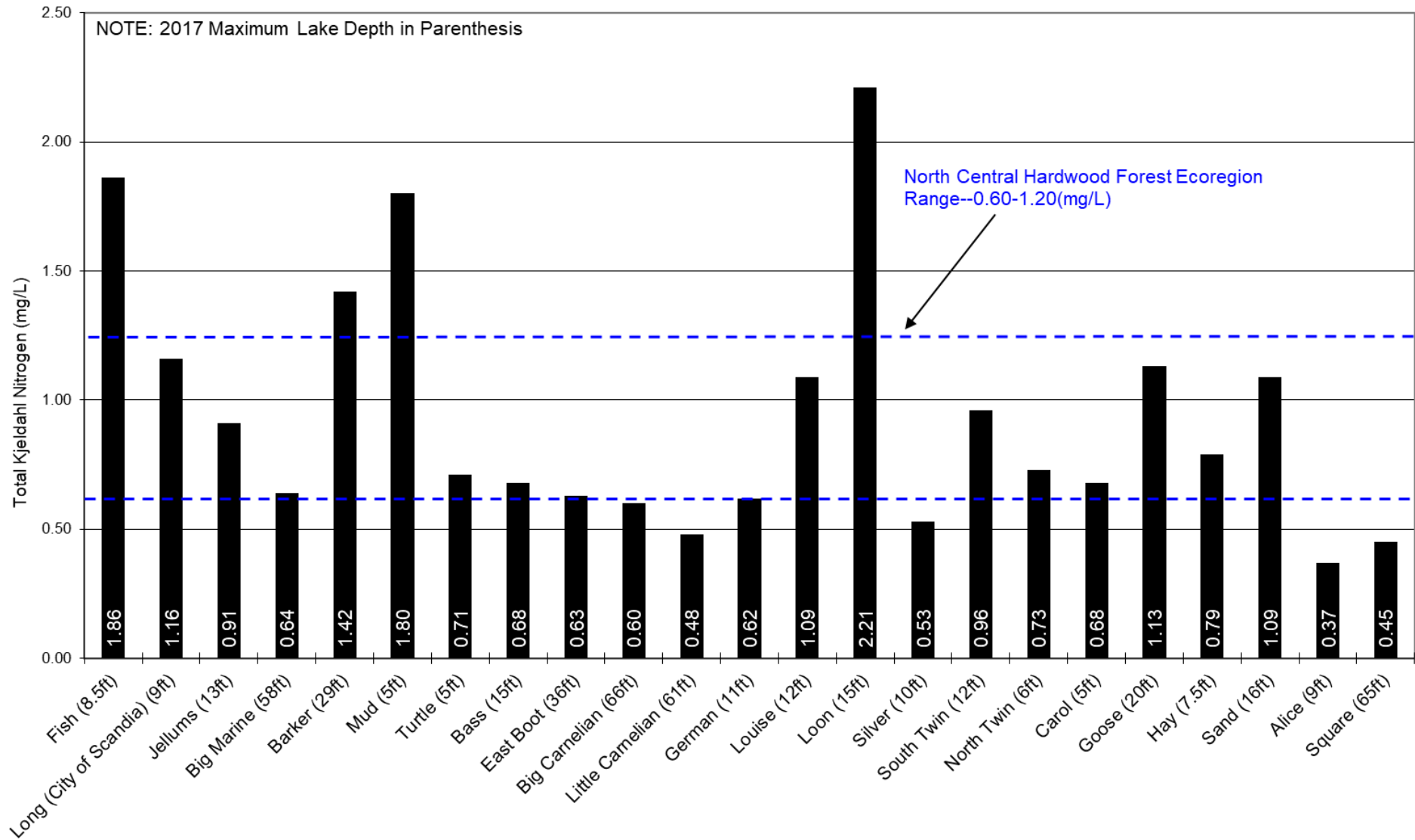


Figure 4. 2017 Summer Average Total Kjeldahl Nitrogen Concentrations