CHARLESTON LAKE WATER TESTING 2025 RESULTS

In 2025 Gary Nielsen and John Willson continued the water sampling that has been done annually for over 25 years. During the summer, forty-two phosphorus samples and water clarity recordings were collected over the period May 27th to October 26th inclusive; six samples from each of seven basins in the lake.

The 2025 total phosphorus from the MOECP Lake Partner Program showed a mean average of 9.40 ug/L compared to the average of the previous 5 test periods (2019-2024) of 9.12 ug/L. These levels are below (better) than the Provincial Water Quality Objective of 10 ug/L, and have been for over 10 years. The period of 2000-2004 had a whole lake mean value of 14.027 ug/L, so the last 10 years have shown a remarkable improvement. A big part of the initial improvement was the result of the zebra mussel colonization of the lake, but that appears to have been stable and/or declining for a number of years. The mean values (2025) for the various basins are 8.41 Donaldson Bay, 9.63 Goose Island, 9.60 Eastern Water, 9.17 Webster Bay, 8.92 Big Water, 10.15 Deep Water (Runnings Bay), 9.90 Southern Water.

The overall phosphorus levels are showing signs of sneaking up again. Compared to the average of the last 5 test periods most basins have had increases. We will continue to monitor this trend. Charleston Lake is still overall in the oligotrophic category for this parameter.

Charleston Lake experienced good water clarity (Average Secchi depth 7.78m); this value is much clearer than last year's 6.55m. 2024 was an unusual year where the ice went off in early March as opposed to 2025 ice off in early April. 2025 also had very few rains or intense storms, and much lower water levels and fewer algae blooms. 2025 levels are more comparable to ones around 2010. When compared to the first five years (2000 to 2004 4.30m) the improvement is remarkable. The largest part of that improvement in clarity was the result of the zebra mussel colonization of the lake. In 2025 Donaldson Bay had the highest average clarity at 8.55m, ranging to Goose Island at 7.40m average.

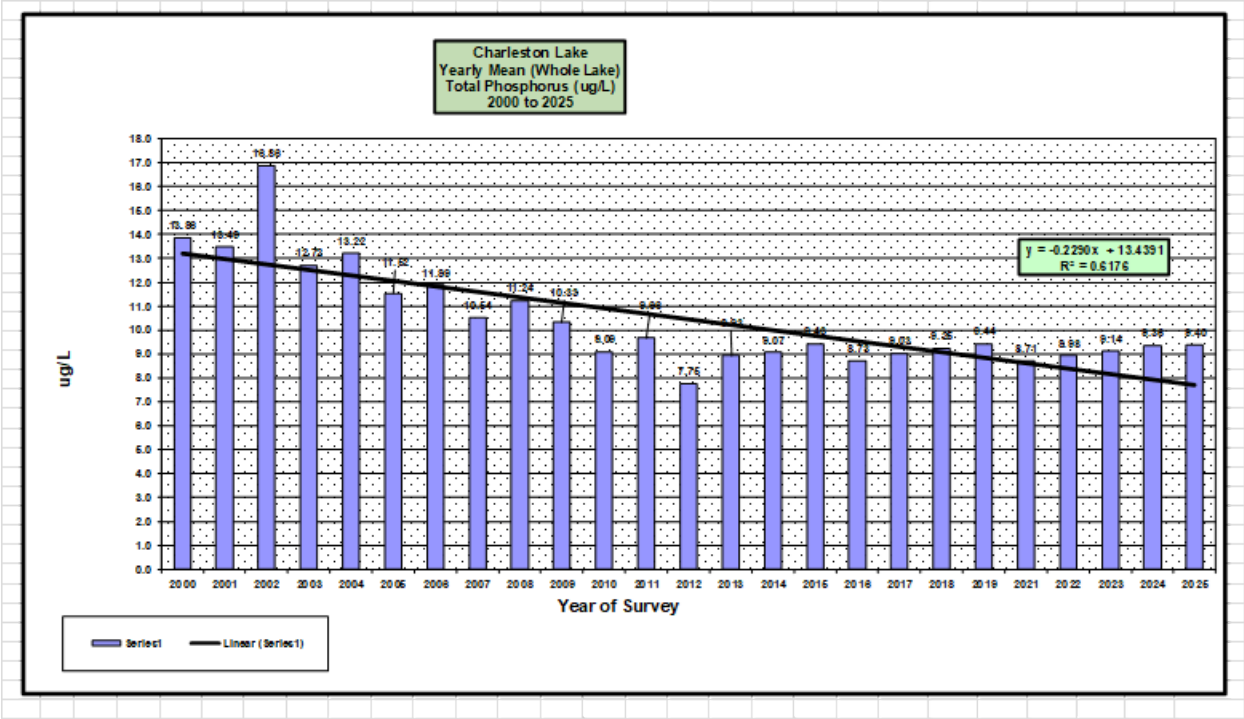
Water clarity mean value for the 25-year period of record (6.33m) places Charleston Lake in the oligotrophic category for the entire time frame, despite the fact that for the first five years of that period (2000 to 2004 inclusive) the water clarity averaged only 4.30 m. Oligotrophic lakes have a water clarity > 5.0 metres.

For comparison to other shield lakes and some local lakes, the Lake Partner Program has produced a report with data up to 2023 which is on our website under Water Testing, Charleston Lake Data Report. We expect to have an update of this report in July.

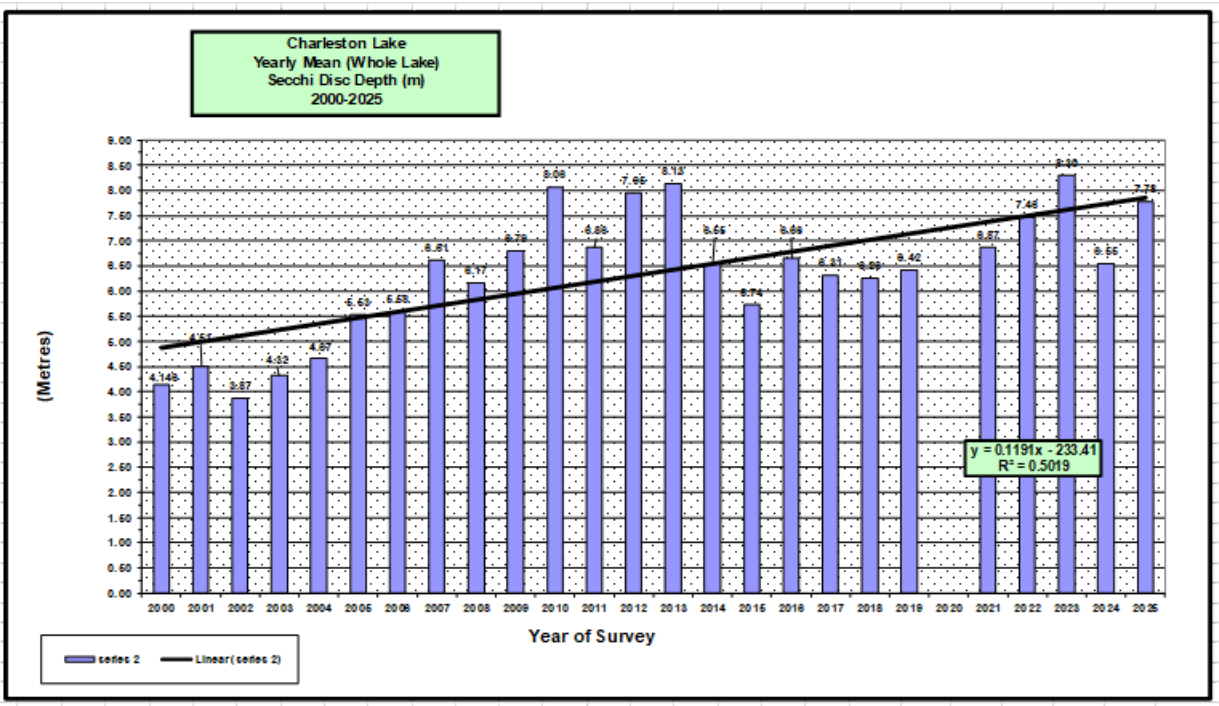
Charleston Lake is improved from where it was a generation ago, but we are seeing signs for phosphorus levels creeping up again. Climate change is having impacts, so we need to look at what we can control, which is further reducing the nutrient load by focussing on healthy, runoff-absorbing shorelines, reduced fertilizer near the water, good functioning septic systems, and minimizing boat wake impacts.

John Willson and Gary Nielsen

2025 Charleston Lake Phosphorus Results



2025 Charleston Lake Water Clarity Results


Charleston Lake
Yearly Mean (Whole Lake)
Secchi Disc Depth (m)
2000-2025
(Metres)
Year of Survey
y = 0.1191x - 233.41
R² = 0.5019
series 2
Linear (series 2)

CHARLESTON LAKE
MEAN SECCHI DISC DEPTH VALUES BY LAKE BASIN 2014-2025 AND WHOLE LAKE MEAN VALUES FOR ALL YEARS

	2014 Secchi Depth (m)	2015 Secchi Depth (m)	2016 Secchi Depth (m)	2017 Secchi Depth (m)	2018 Secchi Depth (m)	2019 Secchi Depth (m)	2021 Secchi Depth (m)	2022 Secchi Depth (m)	2023 Secchi Depth (m)	2024 Secchi Depth (m)	2025 Secchi Depth (m)
Big Water	6.62	5.59	6.42	6.09	6.58	6.38	7.12	7.18	8.23	6.27	7.57
Deep Water	6.90	5.93	6.69	6.82	6.28	6.63	6.95	6.87	8.26	6.62	8.05
Donaldson Bay	7.14	6.15	7.75	7.35	6.28	6.70	7.60	8.48	9.32	8.00	8.55
Eastern Waters	6.45	5.73	6.83	6.25	6.18	6.41	6.56	7.98	8.00	6.73	7.93
Goose Isalnd	6.05	5.22	6.27	5.85	6.67	6.43	6.78	7.17	8.42	5.50	7.40
Southern Water	6.04	5.28	5.98	5.28	5.54	5.79	6.41	7.55	7.42	6.45	7.48
Webster Bay	6.66	6.26	6.68	6.56	6.31	6.57	6.70	7.02	8.48	6.27	7.45
											7.78

CHARLESTON LAKE
MEAN TOTAL PHOSPHORUS VALUES BY LAKE BASIN 2014 - 2025

	2014 TP ug/L	2015 TP ug/L	2016 TP ug/L	2017 TP ug/L	2018 TP ug/L	2019 TP ug/L	2021 TP ug/L	2022 TP ug/L	2023 TP ug/L	2024 TP ug/L	2025 TP ug/L
Big Water	9.28	9.57	8.48	9.50	9.30	9.32	9.12	8.85	9.14	9.10	8.92
Deep Water	9.10	9.60	8.65	9.24	9.90	9.50	8.60	8.79	9.71	9.25	10.15
Donaldson Bay	8.42	9.07	8.17	7.30	8.72	9.22	7.97	7.98	8.24	8.12	8.41
Eastern Waters	8.90	9.58	9.23	9.07	9.18	9.17	8.46	8.92	8.93	9.20	9.60
Goose Isalnd	9.72	9.37	8.32	9.95	8.75	9.38	8.76	9.56	8.91	10.12	9.63
Southern Water	9.17	9.70	10.25	10.02	9.82	10.18	9.79	9.48	10.11	10.23	9.90
Webster Bay	8.90	9.12	7.98	8.10	9.08	9.28	8.28	8.95	8.95	9.50	9.17
											9.40