Cooperative Lakes Monitoring Program

Michigan Lakes– Ours to Protect

2024 Data Report for Park Lake, Clinton County

Site ID: 190099

42.7897°N, 84.4311°W

The CLMP is brought to you by:

Michigan Clean Water Corps

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

MICHIGAN STATE UNIVERSITY

MICHIGAN LAKES AND STREAMS ASSOCIATION

Huron River Watershed Council

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 most recent field season, five years prior to the most recent field season, 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. These numbers of measurements are required to ensure that the results are 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). If your lake stratifies, we will use a graph showing the earliest time of stratification, because identifying the timing of 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 an explanation of the Trophic Status Index and where your lake fits on that scale.

The rest of the report will be aquatic plant summaries, Score the Shore results, and 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.

Remember that some lakes see a lot of fluctuation in these parameters from year to year. Until you have eight years worth of data, consider all trends to be preliminary.

To learn more about the CLMP monitoring parameters or get definitions to unknown terms, check out the CLMP Manual, found at: **https://micorps.net/wp-content/uploads/2021/03/CLMP-Manual-2019update2_2021.pdf**

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: Jo Latimore, Erick Elgin, Jean Roth, Tamara Lipsey, Mike Gallagher, Melissa DeSimone, and Paul Steen

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), CLMP Data Analyst

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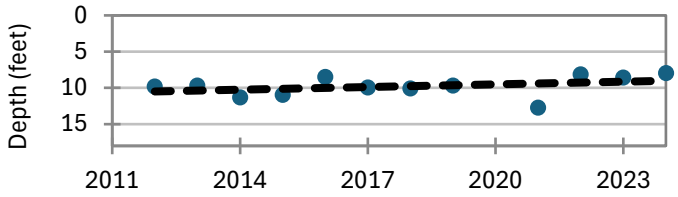
Park Lake, Clinton County
2024 CLMP Results

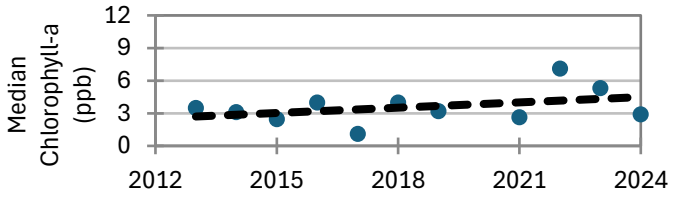
Secchi Disk Transparency (feet)

Year	# Readings	Min	Max	Average	Std. Dev	Carlson TSI
2024	18	5.0	14.0	7.9	2.7	47
2019-2023	75	5.0	16.0	9.8	1.8	44
2012-2018	119	5.0	15.0	10.0	2.0	44
2024 All CLMP Lakes	3348	0.5	85.0	11.7	6.2	43



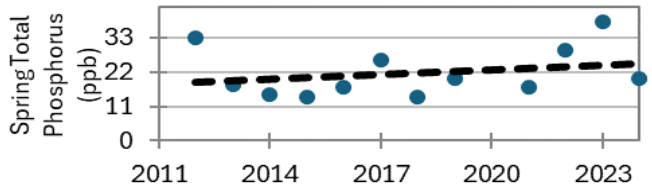
Chlorophyll-a (parts per billion)

Year	# Samples	Min	Max	Median	Std. Dev	Carlson TSI
2024	5	2.2	5.2	2.9	1.2	41
2019-2023	19	<1.0	32.0	4.3	5.9	44
2013-2018	29	<1.0	17.0	4.3	2.5	42
2024 All CLMP Lakes	708	< 1.0	63.0	2.8	7.3	41



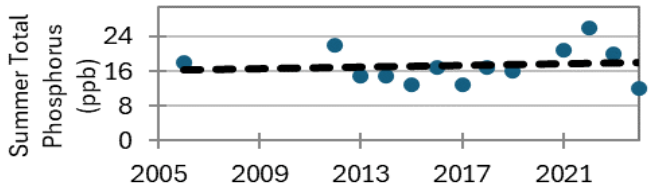
Spring Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev
2024	1	20.0	20.0	20.0	NA
2019-2023	4	17.0	38.0	26.0	9.5
2012-2018	7	14.0	33.0	19.6	7.2
2024 All CLMP Lakes	259	<= 5	140.0	14.3	39.7



Summer Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev	Carlson TSI
2024	1	12.0	12.0	12.0	NA	40
2019-2023	4	16.0	26.0	20.8	4.1	48
2006-2018	8	13.0	22.0	16.3	3.0	44
2024 All CLMP Lakes	200	<= 5	4.0	190.0	14.9	18



Dissolved Oxygen and Temperature Profile

This lake does not have recent (within 5 years) dissolved oxygen/water temperature data available. Consider enrolling in this parameter next year. Fish, insects, mollusks, and crustaceans need dissolved oxygen to live in water. By late summer, many lakes stratify, with cold anoxic water on the bottom and warm, oxygen rich water on the surface. Anoxic (oxygen-depleted) water occurring too close to the surface is a sign of nutrient enrichment. Understanding the pattern of dissolved oxygen and water temperature in a lake is important for assessing nutrient problems as well as the health of the biological community.

Summary

Average TSI	2024	2019-2023	2012-2018
Park Lake	43	46	43
All CLMP Lakes	41	42	40

With an average TSI score of 43 based on 2024 Secchi transparency, chlorophyll-a, and summer total phosphorus data, this lake is rated as mesotrophic.

Long term trends indicate that the trophic status parameters have not changed beyond minor year-to-year variation since monitoring began.

** = Minimum # samples not met for average/median/TSI value*

<1.0 = Chlorophyll-a: Sample value is less than limit of quantification (<1 ppb).

W= Value is less than the detection limit (<3 ppb) T = Value reported is less than the reporting limit (5 ppb)

Trophic Status Index Explained

In 1977, limnologist Dr. Robert Carlson developed a numerical scale (0-100) where the numbers indicate the level of nutrient enrichment. Using the proper equations, we can convert results from Summer Total Phosphorus, Secchi Depth, and Chlorophyll-a to this Trophic Status Index (TSI). The TSI numbers are furthermore grouped into general categories (oligotrophic, mesotrophic, eutrophic, and hypereutrophic), to quickly give us a way to understand the general nutrient level of any lake.

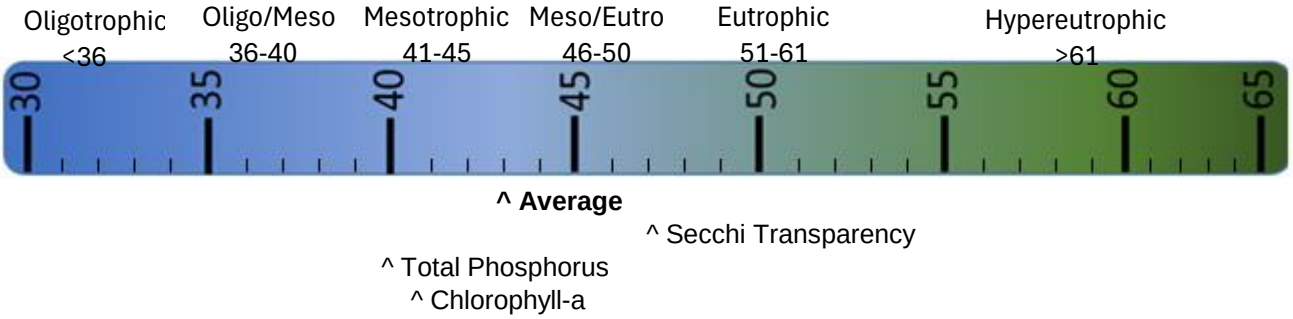
The tables below give the results-to-TSI conversions for the water quality data ranges normally seen in the CLMP. The formulas for this conversion can be found in the CLMP manual (link is on page 2 of this report).

Phosphorus (ppb)	TSI Value
<5	<27
6	30
8	34
10	37
12	40
15	43
18	46
21	48
24	50
32	54
36	56
42	58
48	60
>50	>61

Secchi Depth (ft)	TSI Value
>30	<28
25	31
20	34
15	38
12	42
10	44
7.5	48
6	52
4	57
<3	>61

Chlorophyll-a (ppb)	TSI Value
<1	<31
2	37
3	41
4	44
6	48
8	51
12	55
16	58
22	61
>22	>61

TSI for Park Lake in 2024	
Average	43
Secchi Disk	47
Summer TP	40
Chlorophyll-a	41



Oligotrophic: Generally deep and clear lakes with little aquatic plant or algae growth. These lakes maintain sufficient dissolved oxygen in the cool, deep-bottom waters during late summer to support cold water fish, such as trout and whitefish.

Mesotrophic: Lakes that fall between oligotrophic and eutrophic. Mid-ranged amounts of nutrients.

Eutrophic: Highly productive eutrophic lakes are generally shallow, turbid, and support abundant aquatic plant growth. In deep eutrophic lakes, the cool bottom waters usually contain little or no dissolved oxygen. Therefore, these lakes can only support warm water fish, such as bass and pike.

Hypereutrophic: A specialized category of euthrophic lakes. These lakes exhibit extremely high productivity, such as nuisance algae and weed growth.

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Park Lake, Clinton County
2021 CLMP Aquatic Plant Results

The Aquatic Plant Identification and Mapping survey was conducted on Park Lake in 2021.

This survey involves intensive sampling at multiple locations and depths around the lake produce a complete map of all aquatic plants present in a lake. A great deal of effort is involved both on the lake and back on shore to identify plants, compile data, and develop a detailed plant map, but the result is an extremely valuable record of the plant community of the lake.

Aquatic plants were sampled from a total of 50 locations in Park Lake in 2021. Below is a list of species reported [in order of relative abundance, if the volunteer calculated that like they are supposed to].

Park Lake, Clinton County
2021 Aquatic Plant Identification and Mapping: Species Reported

Common Name	Latin Name	Average Density*
Waterweed	*Elodea canadensis*	2.38
Starry Stonewort	*Nitellopsis obtusa*	2.08
Muskgrass/stonewort	*Chara* spp.	1.90
Variable Pondweed	*Potamogeton gramineus*	1.22
Sago Pondweed	*Stuckenia pectinata*	1.16
White water lily	*Nymphaea odorata*	0.90
Eelgrass/water celery	*Vallisneria americana*	0.74
Southern Naiad	*Najas guadelupensis*	0.56
Illinois Pondweed	*Potamogeton illinoensis*	0.44
Eurasian Water Milfoil	*Myriophyllum spicatum*	0.42
Bladderwort	*Utricularia* spp.	0.32
Floating-leaf pondweed	*Potamogeton natans*	0.30
Najas (bushy pondweed)	*Najas flexilis*	0.14
Flat-stemmed Pondweed	*Potamogeton zosteriformis*	0.10
Watershield	*Brasenia scherberi*	<0.10
Spiny naiad	*Najas marina*	<0.10

**Lakewide. Scale: 0 (absent) - 5 (dense)*

Visit the MiCorps Data Exchange (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.

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Park Lake, Clinton County
2018 CLMP Aquatic Plant Results

The Aquatic Plant Identification and Mapping survey was conducted on Park Lake in 2018.

This survey involves intensive sampling at multiple locations and depths around the lake produce a complete map of all aquatic plants present in a lake. A great deal of effort is involved both on the lake and back on shore to identify plants, compile data, and develop a detailed plant map, but the result is an extremely valuable record of the plant community of the lake.

Aquatic plants were sampled from a total of 50 locations in Park Lake in 2018. Below is a list of species reported in order of relative abundance. Survey conducted July 23, 2018.

Park Lake, Clinton County
2018 Aquatic Plant Identification and Mapping: Species Reported

Common Name	Latin name	Average Density*
Starry stonewort	*Nitellopsis obtusa*	2.20
Stonewort/muskgrass	*Chara* sp.	2.00
White water lily	*Nymphaea odorata*	1.12
Eurasian watermilfoil	Myriophyllum spicatum	1.00
Common bladderwort	*Utricularia vulgaris*	0.80
Sago pondweed	*Stuckenia pectinata*	0.72
Native milfoil	*Myriophyllum* sp.	0.54
Large-leaf pondweed	*Potamogeton amplifolius*	0.30
Variable pondweed	*Potamogeton gramineus*	0.30
Wild celery	*Vallisneria americana*	0.28
Illinois pondweed	*Potamogeton illinoensis*	0.26
Bulrushes	Scirpus sp.	0.26
Bushy pondweed	*Najas flexilis*	0.24
Floating-leaf pondweed	*Potamogeton natans*	0.20
Yellow water lily	*Nuphar* sp.	0.12
Watershield	*Brasenia schreberi*	0.08
Coontail	Ceratophyllum demersum	0.08
Spiny naiad	*Najas marina*	0.06
Southern naiad	*Najas guadalupensis*	0.04
Waterweed	*Elodea canadensis*	0.04
Pickerelweed	*Pontederia cordata*	0.02

**Lakewide. Scale: 0 (absent) - 5 (dense)*

Visit the MiCorps Data Exchange (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.

Score the Shore

Park Lake does not have Score the Shore results.

Why is the Score the Shore parameter important?

Healthy shorelines are an important and valuable component of the lake ecosystem. The shoreline area is a transition zone between water and land, and should be a very diverse environment that provides habitat for a great variety of fish, plants, birds, and other animals. A healthy shoreline area is also essential for maintaining water quality, slowing runoff, and limiting erosion.

However, Michigan's inland lake shorelines are threatened. Extensive development, often combined with poor shoreline management practices, can reduce or eliminate natural shoreline habitat and replace it with lawn and artificial erosion control such as sea walls and rock. As a result, shoreline vegetation is dramatically altered, habitat is lost, and water quality declines.

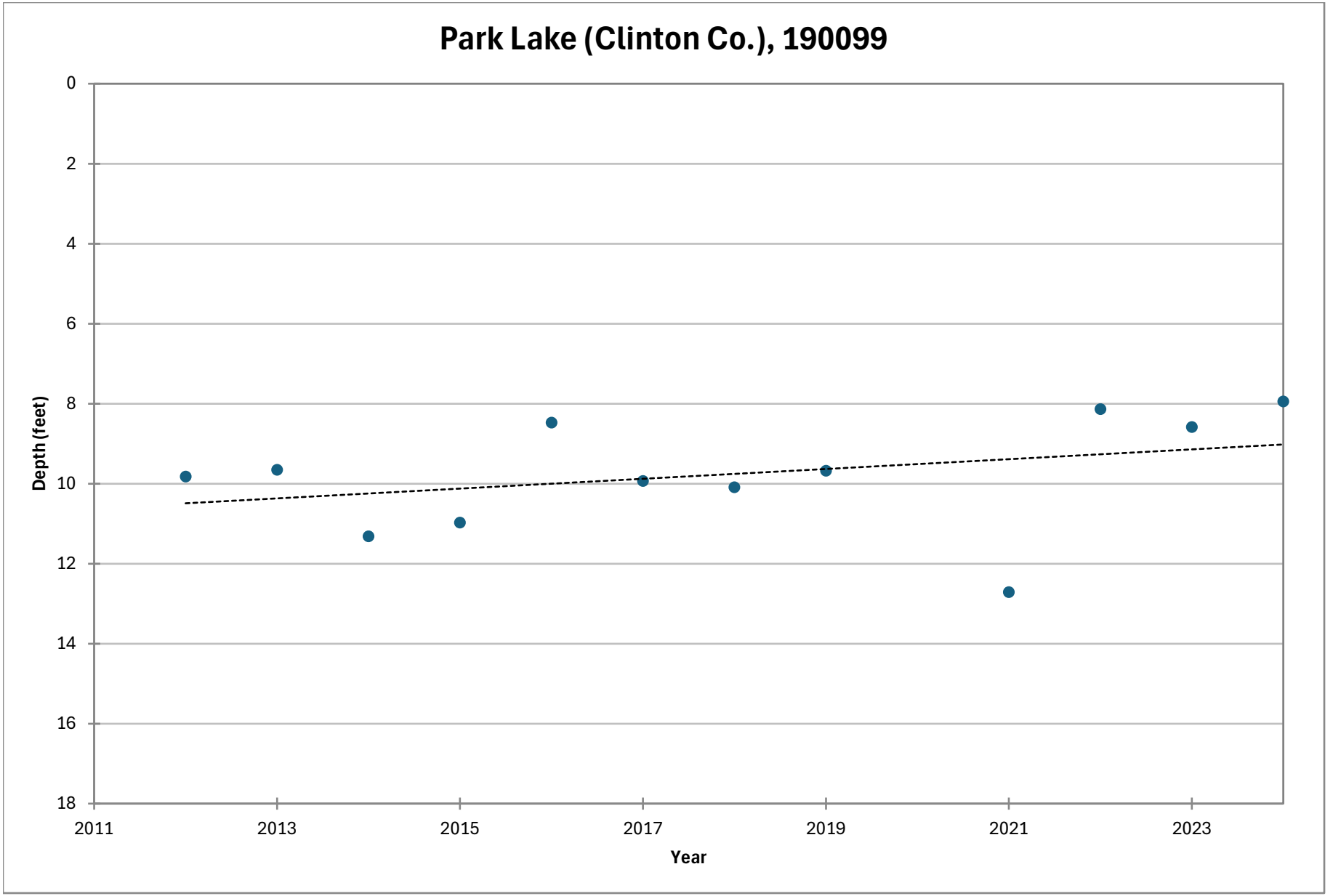
Therefore, in 2019 the MiCorps Cooperative Lakes Monitoring Program introduced a new monitoring program – Score the Shore – that enables volunteers to assess the quality of their lake's shoreline habitat.

The information gathered during this assessment will allow lake communities to identify high-quality areas that can be protected, as well as opportunities for improvement. Score the Shore data, combined with educational resources describing the value of healthy shorelines and how to restore and maintain them, can be incorporated into lake management planning and used for educating lakefront property owners. The Michigan Natural Shoreline Partnership (MNSP) is a collaboration of agencies and professionals that promotes natural shoreline practices to protect Michigan's inland lakes. The MNSP website (www.mishorelinepartnership.org) includes materials and information that can be used in educational efforts. MNSP also offers training for professional educators and landscape contractors, and maintains a list of trained educators who may be available to speak to your community about natural shorelines.

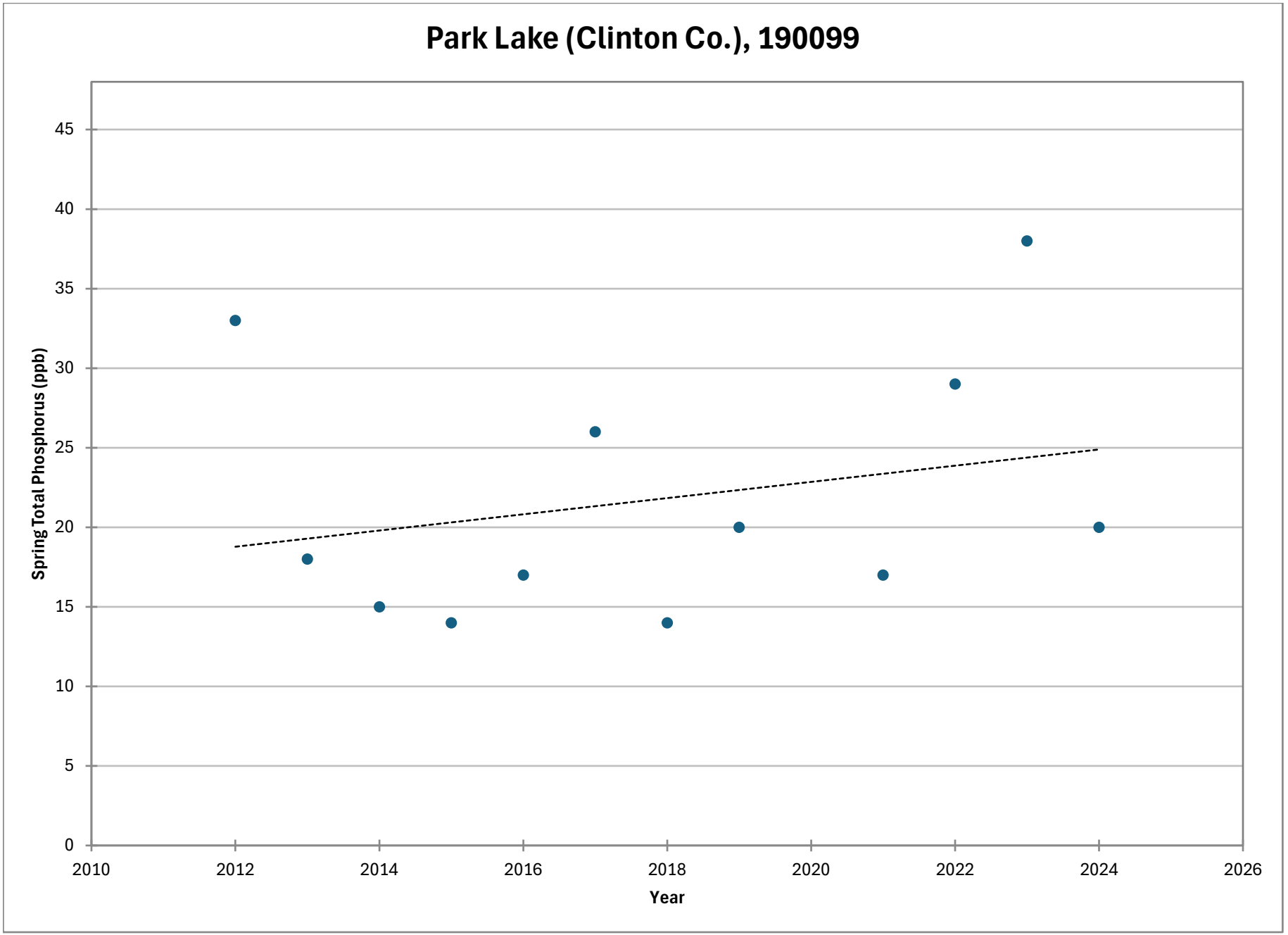
Score the Shore data, just like all CLMP data, will also be available to any interested parties through the MiCorps Data Exchange (www.micorps.net). State agency staff and researchers regularly access CLMP data to better understand and manage Michigan's inland lakes.

Score the Shore is a descriptive process for assessing shoreline quality on Michigan's inland lakes. It is also a valuable educational tool. Score the Shore is not a regulatory program, nor is it intended to tell people what they can and cannot do on their property. The Michigan Department of Environmental Quality's Inland Lakes and Streams Program has responsibility for shoreline protection on public lakes. To learn about their shoreline protection program, including construction permitting and recommendations for shoreline management, visit www.mi.gov/deqinlandlakes.

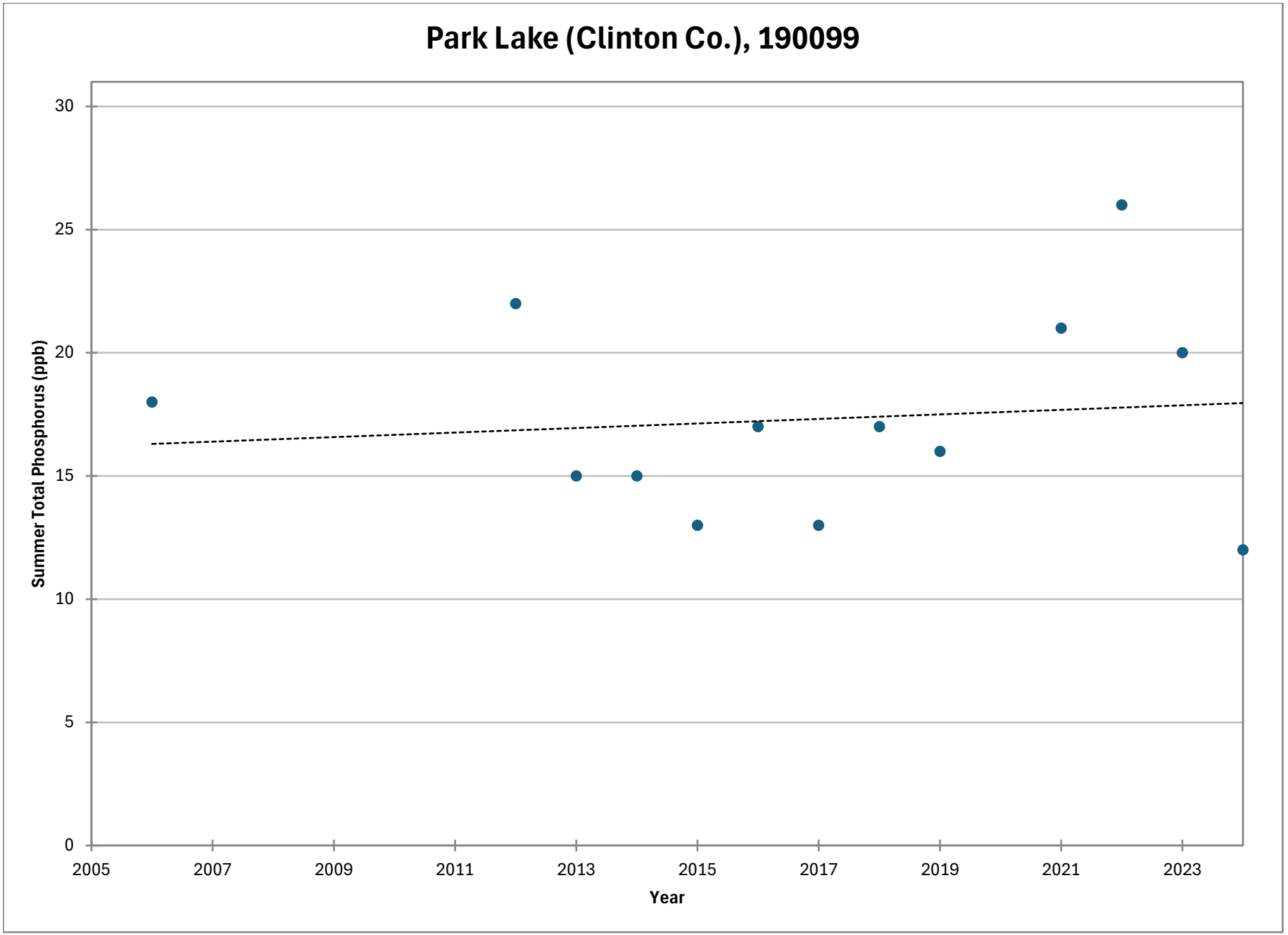
COOPERATIVE LAKES MONITORING PROGRAM
SUMMER MEAN TRANSPARENCY



COOPERATIVE LAKES MONITORING PROGRAM
SPRING TOTAL PHOSPHORUS



COOPERATIVE LAKES MONITORING PROGRAM
SUMMER TOTAL PHOSPHORUS



COOPERATIVE LAKES MONITORING PROGRAM
SUMMER MEDIAN CHLOROPHYLL-A