



Lake Lansing Special Assessment District 2021 Annual Report

Prepared for:

Charter Township of Meridian
and
Lake Lansing Special Assessment District Advisory Committee

Prepared by:

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1811 4 Mile Road, NE
Grand Rapids, MI 49525-2442
616/361-2664

October 2021

Project No: 53260102

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Table of Contents

EXECUTIVE SUMMARY	1
INTRODUCTION	2
WATER QUALITY.....	3
Lake Water Quality	3
Temperature	4
Dissolved Oxygen	4
Phosphorus	5
Chlorophyll-a	5
Secchi Transparency.....	5
pH and Total Alkalinity	6
Sampling Methods.....	7
Sampling Results and Discussion	7
NUISANCE AQUATIC PLANT CONTROL.....	13
INFORMATION AND EDUCATION	15
REFERENCES	R-1

APPENDICES

Appendix A - Lake Lansing Special Assessment District Advisory Committee 2021 Newsletters

TABLE OF CONTENTS

LIST OF TABLES

Table 1 Lake Classification Criteria	5
Table 2 pH and Alkalinity of Upper Midwest Lakes	6
Table 3 Lake Lansing 2021 Deep Basin Water Quality Data.....	9
Table 4 Lake Lansing 2021 Surface Water Quality Data	9
Table 5 Lake Lansing Summary Statistics (1999 – 2021).....	10
Table 6 Lake Lansing Aquatic Plant Frequency, August 23, 2021	13

LIST OF FIGURES

Figure 1 Nuisance Aquatic Plant Species Found in Lake Lansing.....	1
Figure 2 Lake Lansing Location Map	2
Figure 3 Lake Classification.....	3
Figure 4 Seasonal Thermal Stratification Cycles.....	4
Figure 5 Secchi Disk.....	5
Figure 6 Lake Lansing Sampling Location Map	8
Figure 7 Volume-weighted Average Total Phosphorus Concentrations, 1999-2021	11
Figure 8 Average Chlorophyll-a Concentrations, 1999-2021.....	11
Figure 9 Average Secchi Transparency Measurements, 1999-2021.	11
Figure 10 Landing Blitz Volunteers.....	15

Executive Summary

The Lake Lansing Special Assessment District (SAD) was formed in 1998 to improve conditions in Lake Lansing. In 2017, public hearings were held and the Charter Township of Meridian approved continuing the project for a ten-year period. The project includes an update of the lake and watershed management plan, water quality sampling, nuisance aquatic plant control, watershed improvements, educational programs, and grant applications. The project is overseen by the Lake Lansing SAD Advisory Committee, whose members include representatives of residents within the SAD, Meridian Township, Ingham County Parks, and the Ingham County Drain Commissioner's Office. A summary of project activities is as follows:

Water Quality Sampling: In 2021, samples were collected from Lake Lansing in spring and late summer. Lake Lansing is borderline between mesotrophic (moderately productive) and eutrophic (nutrient-enriched and productive). During the 2021 sampling period, phosphorus levels were moderately high, with the exception of the deepest samples in late summer which were high. Water clarity was poor in spring and moderate in summer, and algae growth was moderate, with the exception of the sample collected at Site 2 in August which was high.

Nuisance Aquatic Plant Control: In 2021, only 13 acres of Eurasian milfoil required treatment. However, 68 acres of curly-leaf pondweed were treated in May; 35 acres of starry stonewort were harvested in June, along with 17 acres of nuisance native plants (Figure 1). A second starry stonewort harvest occurred in September.

Information and Education: Two newsletters were mailed to update all residents on project activities, since the LLPOA annual meeting was cancelled due to Covid-19. The annual aquatic invasive species "Landing Blitz" was held at the Lake Lansing public boat launch on June 26 to raise awareness about preventing the spread of aquatic invasive species (AIS) through recreational boating and related activities.



Figure 1. Nuisance aquatic plant species found in Lake Lansing. Eurasian milfoil (left), curly-leaf pondweed (center), starry stonewort (right).

Introduction

Lake Lansing is located in Meridian Township, Ingham County, Michigan (Figure 2). The lake is 456 acres in surface area with a maximum depth of 35 feet and a mean (average) depth of 8.7 feet. In 1998, the Charter Township of Meridian established a special assessment district (SAD) under provisions of Public Act 188 of 1954 for the purposes of studying water quality, planning and implementing aquatic plant control, and developing a lake and watershed management plan for Lake Lansing. In March of 2002, a management plan was prepared for Lake Lansing and its watershed. Public hearings were held in the summers of 2002, 2007, and 2017 to continue the management program for the lake. Ongoing management is overseen by the Lake Lansing Special Assessment District Advisory Committee (hereinafter, the Advisory Committee) with assistance from the Advisory Committee’s professional consultant. The Advisory Committee includes representatives from each of the tiers in the special assessment district, Lake Lansing Property Owners Association, Meridian Township Engineering Department, Ingham County Parks Department, and Ingham County Drain Commissioner’s Office. This report includes information on 2021 Lake Lansing management activities.

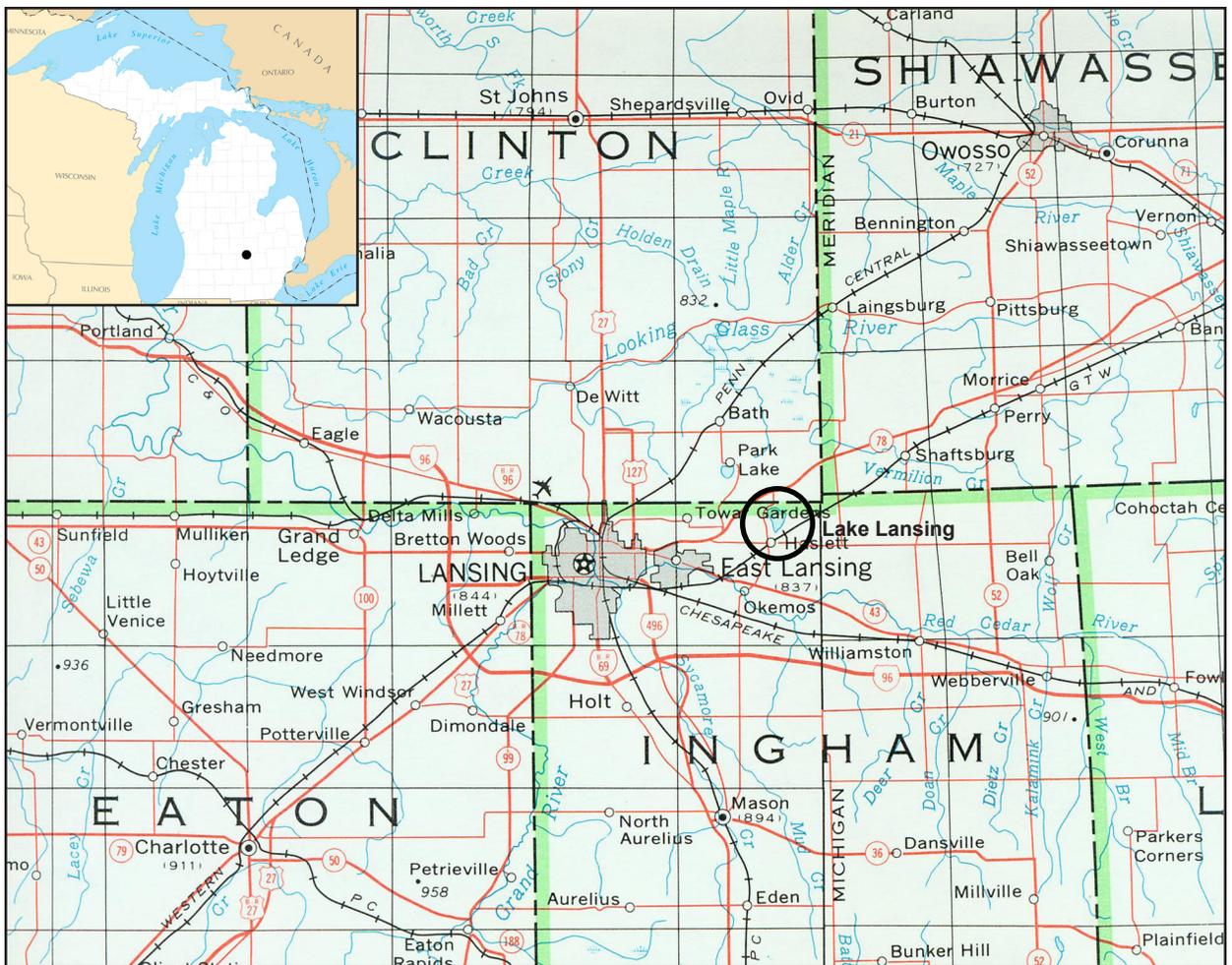


Figure 2. Lake Lansing location map. Source: United States Geological Survey.

Water Quality

Lake Water Quality

Lake water quality is determined by a unique combination of processes that occur both within and outside of the lake. In order to make sound management decisions, it is necessary to have an understanding of the current physical, chemical, and biological condition of the lake, and the potential impact of drainage from the surrounding watershed.

Lakes are commonly classified as oligotrophic, mesotrophic, or eutrophic (Figure 3). Oligotrophic lakes are generally deep and clear with little aquatic plant growth. These lakes maintain sufficient dissolved oxygen in the cool, deep bottom waters during late summer to support coldwater fish such as trout and whitefish. By contrast, 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 warmwater fish such as bass and pike. Lakes that fall between these two extremes are called mesotrophic lakes.

Under natural conditions, most lakes will ultimately evolve to a eutrophic state as they gradually fill with sediment and organic matter transported to the lake from the surrounding watershed. As the lake becomes shallower, the process accelerates. When aquatic plants become abundant, the lake slowly begins to fill in as sediment and decaying plant matter accumulate on the lake bottom.

Eventually, terrestrial plants become established and the lake is transformed to a marshland. The aging process in lakes is called "eutrophication" and may take anywhere from a few hundred to several thousand years, generally depending on the size of the lake and its watershed. The natural lake aging process can be greatly accelerated if excessive amounts of sediment and nutrients (which stimulate aquatic plant growth) enter the lake from the surrounding watershed. Because these added inputs are usually associated with human activity, this accelerated lake aging process is often referred to as "cultural eutrophication." The problem of cultural eutrophication can be managed by identifying sources of sediment and nutrient loading (i.e., inputs) to the lake and developing strategies to halt or slow the inputs. Thus, in developing a management plan, it is necessary to determine the limnological (i.e., the physical, chemical, and biological) condition of the lake and the physical characteristics of the watershed as well. Key parameters used to evaluate the limnological condition of a lake include temperature, dissolved oxygen, total phosphorus, pH and alkalinity, chlorophyll-*a*, and Secchi transparency.

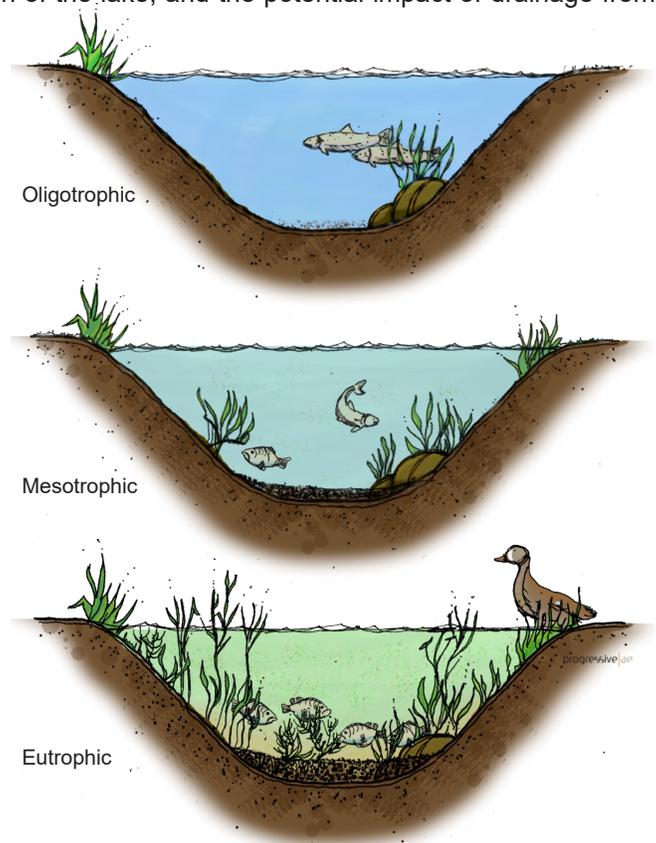


Figure 3. Lake classification.

TEMPERATURE

Temperature is important in determining the type of organisms which may live in a lake. For example, trout prefer temperatures below 68°F. Temperature also determines how water mixes in a lake. As the ice cover breaks up on a lake in the spring, the water temperature becomes uniform from the surface to the bottom. This period is referred to as "spring turnover" because water mixes throughout the entire water column. As the surface waters warm, they are underlain by a colder, more dense strata of water. This process is called thermal stratification (Figure 4). Once thermal stratification occurs, there is little mixing of the warm surface waters with the cooler bottom waters. The transition layer that separates these layers is referred to as the "thermocline." The thermocline is characterized as the zone where temperature drops rapidly with depth. As fall approaches, the warm surface waters begin to cool and become more dense. Eventually, the surface temperature drops to a point that allows the lake to undergo complete mixing. This period is referred to as "fall turnover." As the season progresses and ice begins to form on the lake, the lake may stratify again. However, during winter stratification, the surface waters (at or near 32°F) are underlain by slightly warmer water (about 39°F). This is sometimes referred to as "inverse stratification" and occurs because water is most dense at a temperature of about 39°F. As the lake ice melts in the spring, these stratification cycles are repeated.

DISSOLVED OXYGEN

An important factor influencing lake water quality is the quantity of dissolved oxygen in the water column. The major inputs of dissolved oxygen to lakes are the atmosphere and photosynthetic activity by aquatic plants. An oxygen level of about 5 mg/L (milligrams per liter, or parts per million) is required to support warmwater fish. In lakes deep enough to exhibit thermal stratification, oxygen levels are often reduced or depleted below the thermocline once the lake has stratified. This is because the oxygen has been consumed, in large part, by bacteria that use oxygen as they decompose organic matter (plant and animal remains) at the bottom of the lake. Bottom-water oxygen depletion is a common occurrence in eutrophic and some mesotrophic lakes. Thus, eutrophic and most mesotrophic lakes cannot support coldwater fish because the cool, deep water (that the fish require to live) does not contain sufficient oxygen.

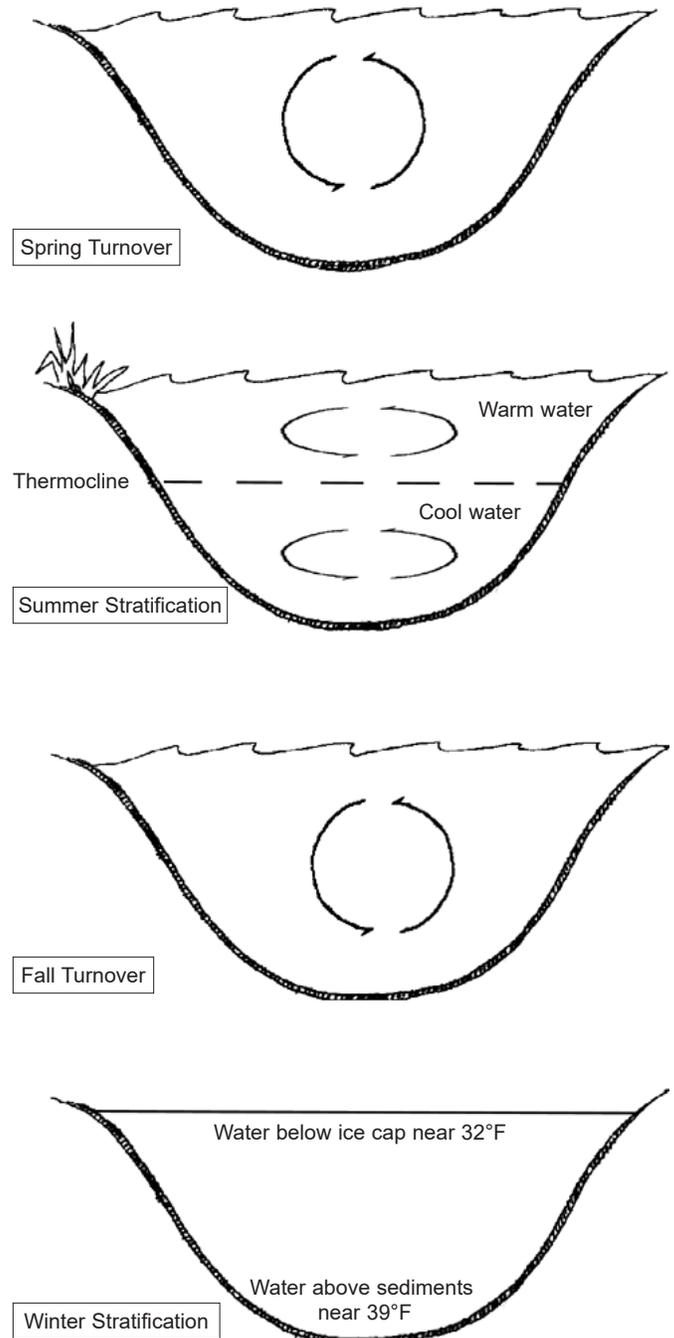


Figure 4. Seasonal thermal stratification cycles.

PHOSPHORUS

The quantity of phosphorus present in the water column is especially important since phosphorus is the nutrient that most often controls aquatic plant growth and the rate at which a lake ages and becomes more eutrophic. By reducing the availability of phosphorus in a lake, it is often possible to control the amount of aquatic plant growth. In general, lakes with a phosphorus concentration of 20 µg/L (micrograms per liter, or parts per billion) or greater are able to support abundant plant growth and are classified as nutrient-enriched or eutrophic.

Phosphorus enters the lake water either from the surrounding watershed, or from the sediments in the lake itself, or both. The input of phosphorus from the watershed is called "external loading," and from the sediments is called "internal loading." External loading occurs when phosphorus washes into the lake from sources such as fertilizers, septic systems, and eroding land. Internal loading occurs when bottom-water oxygen is depleted, resulting in a chemical change in the water near the sediments. The chemical change causes phosphorus to be released from the sediments into the lake where it becomes available as a nutrient for aquatic plants.

CHLOROPHYLL-a

Chlorophyll-a is a pigment that imparts the green color to plants and algae. A rough estimate of the quantity of algae present in lake water can be made by measuring the amount of chlorophyll-a in the water column. A chlorophyll-a concentration greater than 6 µg/L is considered characteristic of a eutrophic condition.

SECCHI TRANSPARENCY

A Secchi disk is often used to estimate water clarity. The measurement is made by fastening a round, black and white, 8-inch disk to a calibrated line (Figure 5). The disk is lowered over the deepest point of the lake until it is no longer visible, and the depth is noted. The disk is then raised until it reappears. The average between these two depths is the Secchi transparency. Generally, it has been found that aquatic plants can grow at a depth of at least twice the Secchi transparency measurement. In eutrophic lakes, water clarity is often reduced by algae growth in the water column, and Secchi disk readings of 7.5 feet or less are common.

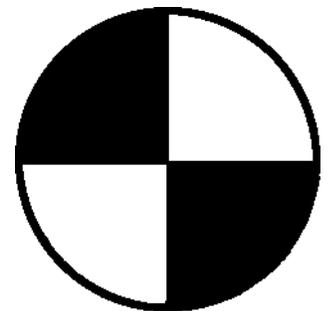


Figure 5. Secchi disk.

Ordinarily, as phosphorus inputs (both internal and external) to a lake increase, the amount of algae the lake can support will also increase. Thus, the lake will exhibit increased chlorophyll-a levels and decreased transparency. A summary of lake classification criteria developed by the Michigan Department of Natural Resources (Warbach et al. 1990) is shown in Table 1.

**TABLE 1
LAKE CLASSIFICATION CRITERIA**

Lake Classification	Total Phosphorus (µg/L) ¹	Chlorophyll-a (µg/L) ¹	Secchi Transparency (feet)
Oligotrophic	Less than 10	Less than 2.2	Greater than 15.0
Mesotrophic	10 to 20	2.2 to 6.0	7.5 to 15.0
Eutrophic	Greater than 20	Greater than 6.0	Less than 7.5

¹ µg/L = micrograms per liter = parts per billion.

pH and TOTAL ALKALINITY

pH is a measure of the amount of acid or base in the water. The pH scale ranges from 0 (acidic) to 14 (alkaline or basic) with neutrality at 7. The pH of most lakes in the Upper Midwest ranges from 6.5 to 9.0 (Michigan Department of Environmental Quality (MDEQ) 2012; Table 2). In addition, according to the Michigan Department of Environment, Great Lakes, and Energy (EGLE 2021):

While there are natural variations in pH, many pH variations are due to human influences. Fossil fuel combustion products, especially automobile and coal-fired power plant emissions, contain nitrogen oxides and sulfur dioxide, which are converted to nitric acid and sulfuric acid in the atmosphere. When these acids combine with moisture in the atmosphere, they fall to earth as acid rain or acid snow. In some parts of the United States, especially the Northeast, acid rain has resulted in lakes and streams becoming acidic, resulting in conditions which are harmful to aquatic life. The problems associated with acid rain are lessened if limestone is present, since it is alkaline and neutralizes the acidity of the water.

Most aquatic plants and animals are adapted to a specific pH range, and natural populations may be harmed by water that is too acidic or alkaline. Immature stages of aquatic insects and young fish are extremely sensitive to pH values below 5. Even microorganisms which live in the bottom sediment and decompose organic debris cannot live in conditions which are too acidic. In very acidic waters, metals which are normally bound to organic matter and sediment are released into the water. Many of these metals can be toxic to fish and humans. Below a pH of about 4.5, all fish die.

The Michigan Water Quality Standard (Part 4 of Act 451) states that pH shall be maintained within the range of 6.5 to 9.0 in all waters of the state.

Alkalinity, also known as acid-neutralizing capacity or ANC, is the measure of the pH-buffering capacity of water in that it is the quantitative capacity of water to neutralize an acid. pH and alkalinity are closely linked and are greatly impacted by the geology and soil types that underlie a lake and its watershed. According to MDEQ (2012):

Michigan’s dominant limestone geology in the Lower Peninsula and the eastern Upper Peninsula contributes to the vast majority of Michigan lakes being carbonate-bicarbonate dominant [which increases alkalinity and moderates pH] and lakes in the western Upper Peninsula having lower alkalinity and thus lesser buffering capacity.

The alkalinity of most lakes in the Upper Midwest is within the range of 23 to 148 milligrams per liter, or parts per million, as calcium carbonate (MDEQ 2012; Table 2).

**TABLE 2
pH AND ALKALINITY OF UPPER MIDWEST LAKES**

Measurement	Low	Moderate	High
pH (in standard units)	Less than 6.5	6.5 to 9.0	Greater than 9.0
Total Alkalinity or ANC (in mg/L as CaCO ₃ ¹)	Less than 23	23 to 148	Greater than 148

¹ mg/L CaCO₃ = milligrams per liter as calcium carbonate.

SAMPLING METHODS

Water quality sampling was conducted in the spring and late summer of 2021 at the two deep basins within Lake Lansing (Figure 6). Temperature was measured using a YSI Model 550A probe. Samples were collected at the surface, mid-depth, and just above the lake bottom with a Van Dorn bottle to be analyzed for dissolved oxygen, pH, total alkalinity, and total phosphorus. Dissolved oxygen samples were fixed in the field and then transported to Progressive AE for analysis using the modified Winkler method (Standard Methods procedure 4500-O C). pH was measured in the field using a Oakton EcoTestr pH2 pH meter. Total alkalinity and total phosphorus samples were placed on ice and transported to Progressive AE and to Prein and Newhof¹, respectively, for analysis. Total alkalinity was titrated at Progressive AE using Standard Methods procedure 2320 B, and total phosphorus was analyzed at Prein and Newhof using Standard Methods procedure 4500-P E. In addition to the depth-interval samples at each deep basin, Secchi transparency was measured and composite chlorophyll-a samples were collected from the surface to a depth equal to twice the Secchi transparency. Chlorophyll-a samples were analyzed by Prein and Newhof using Standard Methods procedure 10200 H.

Tributaries were monitored in spring and summer for the most significant storm drains and inlet streams (Figure 6). When streams were flowing, discharge was estimated using the U.S. Geological Survey midsection method (Buchanan and Somers 1969). Stream velocity was measured with a Pygmy Gurley flow meter. Prein and Newhof analyzed samples for total phosphorus.

Sampling Results and Discussion

Sampling results are provided in Tables 3 and 4. A graphic summary of water quality data compiled to date is shown in Figures 7 through 9 and summary statistics are included in Table 5.

In April of 2021, sampling was conducted during spring turnover when water temperatures were cool and dissolved oxygen concentrations were high. During the August sampling period, Lake Lansing was stratified; the lake was warm and well-oxygenated at the surface, and was cool with low oxygen at the bottom. In 2021, total phosphorus concentrations were moderately high, with the exception of the deepest samples in late summer which were high. The elevated bottom-water phosphorus is likely due to internal release of phosphorus from the lake sediments. However, sediment phosphorus release occurs in only a very small portion of the lake and, therefore, it is unlikely to be a significant loading source to Lake Lansing. pH and total alkalinity were generally within the moderate range for Upper Midwest lakes.

¹ Prein and Newhof Environmental and Soils Laboratory, 3260 Evergreen, NE, Grand Rapids, MI.

WATER QUALITY

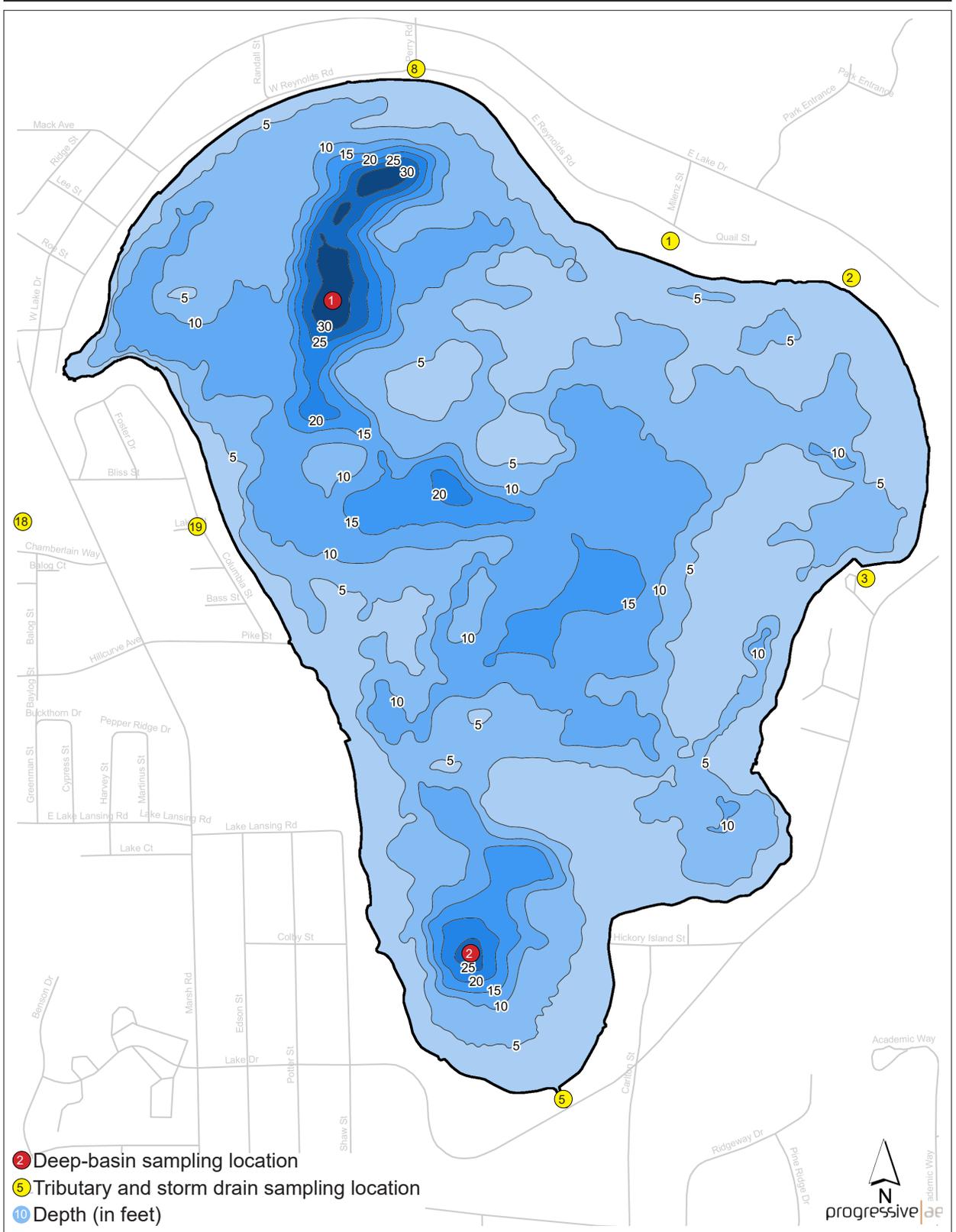


Figure 6. Lake Lansing sampling location map.

TABLE 3
LAKE LANSING
2021 DEEP BASIN WATER QUALITY DATA

Date	Station	Sample Depth (feet)	Temperature (°F)	Dissolved Oxygen (mg/L) ¹	Total Phosphorus (µg/L) ²	pH (S.U.) ³	Total Alkalinity (mg/L CaCO ₃) ⁴
14-Apr-21	1	1	58	9.8	25	8.4	131
14-Apr-21	1	15	58	9.8	35	8.3	135
14-Apr-21	1	30	50	8.0	27	7.9	136
14-Apr-21	2	1	57	10.1	30	8.3	131
14-Apr-21	2	12	53	10.0	22	8.2	131
14-Apr-21	2	24	47	8.0	29	7.9	134
23-Aug-21	1	1	81	8.4	23	8.7	96
23-Aug-21	1	15	56	3.7	29	8.0	98
23-Aug-21	1	31	56	0.3	100	7.8	157
23-Aug-21	2	1	82	8.0	23	8.9	97
23-Aug-21	2	13	77	5.0	26	8.1	102
23-Aug-21	2	25	56	0.1	104	7.6	161

TABLE 4
LAKE LANSING
2021 SURFACE WATER QUALITY DATA

Date	Station	Secchi Transparency (feet)	Chlorophyll-a (µg/L) ²
14-Apr-21	1	5.5	2
14-Apr-21	2	5.0	2
23-Aug-21	1	9.5	4
23-Aug-21	2	9.5	12

1 mg/L = milligrams per liter = parts per million.

2 µg/L = micrograms per liter = parts per billion.

3 S.U. = standard units.

4 mg/L CaCO₃ = milligrams per liter as calcium carbonate.

TABLE 5
LAKE LANSING
2021 STORM DRAIN MONITORING DATA

Date	Storm Drain Number	Drain Name	Discharge (cfs)¹	Total Phosph. (µg/L)²	Total Suspended Solids (mg/L)³
14-Apr-21	1	Barnhart	0.1	91	<4
14-Apr-21	2	Milliman	0.9	45	<4
14-Apr-21	3	Wallace	0.4	27	<4
14-Apr-21	5	South End	0		
14-Apr-21	8	Perry Road	0		
14-Apr-21	18	Marshall Upstream	0		
14-Apr-21	19	Marshall Downstream	0		
23-Aug-21	1	Barnhart	0		
23-Aug-21	2	Milliman	0		
23-Aug-21	3	Wallace	0		
23-Aug-21	5	South End	0		
23-Aug-21	8	Perry Road	0		
23-Aug-21	18	Marshall Upstream	0		
23-Aug-21	19	Marshall Downstream	0		

Chlorophyll-*a* levels indicate algae growth was moderate, with the exception of the sample collected at Site 2 in August which was high. Water clarity was poor in spring and moderate in summer (Table 4). Since 1999, water clarity has fluctuated from poor to excellent (Figure 9). Water clarity fluctuations are likely related to the presence of zebra mussels which consume algae and often increase water clarity; when the zebra mussel population decreases, water clarity decreases as well. Water clarity is also likely impacted by wave action from wind or from boating activity that stirs the shallow lake sediments into the water column. In general, plants can grow to a depth of about twice the Secchi transparency reading. With this year's Secchi transparency averaging about 7½ feet, the clarity of Lake Lansing was sufficient to allow sunlight to penetrate to about 15 feet of depth, which is over 90 percent of the lake bottom, making nearly all of Lake Lansing habitable for plant growth.

Samples were collected from the three flowing tributaries in spring of 2021, but all tributary in-flow to Lake Lansing ceased by late summer (Table 5). Phosphorus concentrations in the tributaries were elevated at the three sites. Inflow water volume (or discharge) was quite low at all sites indicating only a small quantity of phosphorus drains into Lake Lansing from the tributaries.

¹ cfs = cubic feet per second.

² µg/L = micrograms per liter = parts per billion.

WATER QUALITY

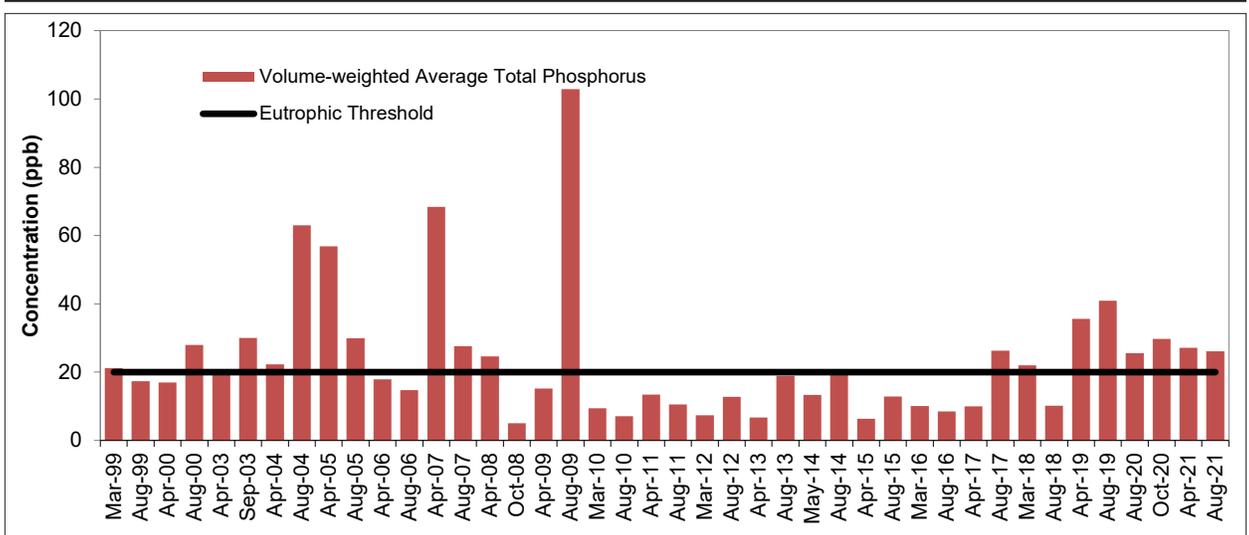


Figure 7. Volume-weighted average total phosphorus concentrations, 1999-2021.

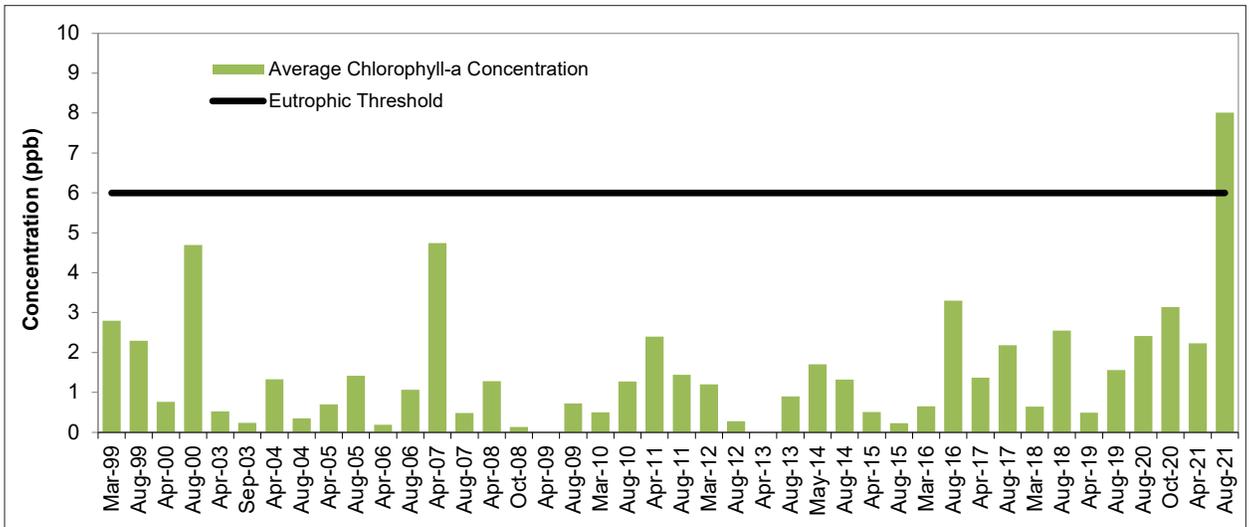


Figure 8. Average chlorophyll-a concentrations, 1999-2021.

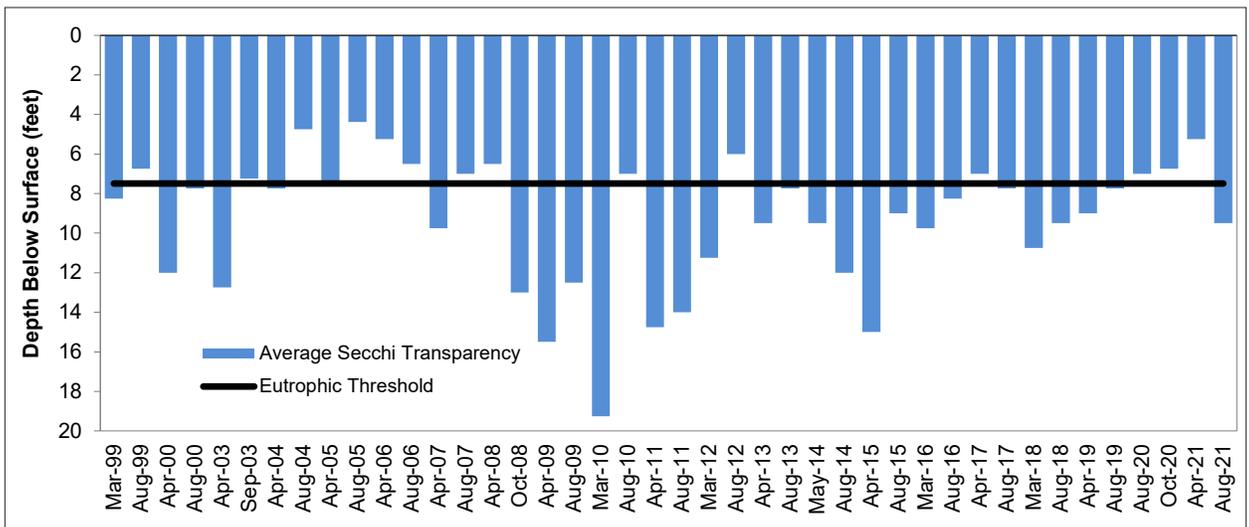


Figure 9. Average Secchi transparency measurements, 1999-2021.

TABLE 5
LAKE LANSING
SUMMARY STATISTICS (1999-2021)¹

	Total Phosphorus (µg/L)²	Chlorophyll-a (µg/L)²	Secchi Transparency (feet)
Mean	37	2	9.3
Standard deviation	54	2	3.3
Median	21	1	8.5
Minimum	5	0	4.3
Maximum	364	12	19.5
Number of samples	263	82	82

Summary statistics indicate Lake Lansing is borderline between mesotrophic (moderately productive) and eutrophic (nutrient-enriched and productive). Phosphorus levels range from moderate to high with the median phosphorus concentration just over the 20-ppb eutrophic threshold. Bottom-water oxygen is reduced, and water clarity appears to fluctuate with the zebra mussel population. Rooted plant growth in Lake Lansing is moderate to dense, and algae growth is generally moderate or low, thus it would appear that phosphorus is more readily used by rooted plants in the lake rather than algae.

¹ Summary statistics include data from sampling stations 1 and 2 only. Historically, samples were also collected from two additional stations near the shoreline, but only deep basin data is included in this analysis.

² µg/L = micrograms per liter = parts per billion.

Nuisance Aquatic Plant Control

The focus of the plant control program in Lake Lansing is control of exotic (i.e., non-native) plants (Eurasian milfoil, curly-leaf pondweed, and starry stonewort) and control of native plants that reach nuisance densities. In 2021, only 13 acres of milfoil required treatment. However, 68 acres of curly-leaf pondweed were treated in May; 35 acres of starry stonewort were harvested in June, along with 17 acres of nuisance native plants. A 36-acre starry stonewort harvest occurred in September.

On August 23, the lake was surveyed using the Department of Environment Quality's Procedures for Aquatic Vegetation Surveys. With these procedures, the type and relative abundance of all plants species present in the lake are evaluated. Lake Lansing was segmented into 70 survey sites and the type and density of plants at each site was recorded (Table 6).

TABLE 6
LAKE LANSING AQUATIC PLANT FREQUENCY
August 23, 2021

Common Name	Scientific Name	Classification	Percent of Survey Sites Where Plant Was Found
Wild celery	<i>Vallisneria americana</i>	Submersed	86
Chara	<i>Chara sp.</i>	Submersed	76
Large-leaf pondweed	<i>Potamogeton amplifolius</i>	Submersed	63
Sago pondweed	<i>Stuckenia pectinata</i>	Submersed	50
Starry stonewort	<i>Nitellopsis obtusa</i>	Submersed	43
Flat-stem pondweed	<i>Potamogeton zosteriformis</i>	Submersed	21
Richardson's pondweed	<i>Potamogeton richardsonii</i>	Submersed	21
Slender naiad	<i>Najas flexilis</i>	Submersed	21
Eurasian milfoil	<i>Myriophyllum spicatum</i>	Submersed	11
Thin-leaf pondweed	<i>Potamogeton sp.</i>	Submersed	11
Coontail	<i>Ceratophyllum demersum</i>	Submersed	9
Water stargrass	<i>Heteranthera dubia</i>	Submersed	7
Elodea	<i>Elodea canadensis</i>	Submersed	7
Yellow waterlily	<i>Nuphar sp.</i>	Floating-leaved	13
White waterlily	<i>Nymphaea odorata</i>	Floating-leaved	9
Water shield	<i>Brasenia schreberi</i>	Floating-leaved	4
Floating-leaf pondweed	<i>Potamogeton natans</i>	Floating-leaved	3
Cattail	<i>Typha sp.</i>	Emergent	13
Swamp loosestrife	<i>Decodon verticillatus</i>	Emergent	9
Lake sedge	<i>Carex lacustris</i>	Emergent	7
Purple loosestrife	<i>Lythrum salicaria</i>	Emergent	4
Pickeralweed	<i>Pontederia cordata</i>	Emergent	3
Bulrush	<i>Schoenoplectus sp.</i>	Emergent	1

NUISANCE AQUATIC PLANT CONTROL

During the August survey, twenty-three aquatic plant species were found, indicating Lake Lansing maintains a healthy diversity of aquatic plants. The native species wild celery, Chara, and large-leaf pondweed were the most common species found during the late-season survey, all of which are beneficial species for fish and wildlife.

Information and Education

The Lake Lansing Property Owners Association (LLPOA) and the Lake Lansing Advisory Committee participated in several educational efforts in 2021.

Spring Newsletter: A newsletter was mailed to all residents in March and included updates on water quality monitoring and the county drain commissioner’s Nemoka Drain project, along with information on how to distinguish between native Chara plants and invasive starry stonewort (Appendix A).

LLPOA Annual Meeting: Due to Covid-19 restrictions, the 2021 LLPOA annual meeting at the Lake Lansing Park South pavilion was cancelled. Instead, a second newsletter was mailed to all residents and included information on aquatic plant control, the Nemoka drain project, and proper shorelands management (Appendix A).

Landing Blitz. The annual aquatic invasive species “Landing Blitz” was held on June 26th at the Lake Lansing public boat launch, coordinated by several agencies who partnered with Meridian Township and the LLPOA. The Landing Blitz is a collaborative outreach campaign to raise awareness about preventing the spread of aquatic invasive species (AIS) through recreational boating and related activities (Figure 10).



Figure 10. Landing Blitz volunteers.

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Appendix A

Lake Lansing Special Assessment District Advisory Committee 2021 Newsletters



Lake Lansing Special Assessment District Advisory Committee Newsletter

March 2021

Lake Lansing Special Assessment District Advisory Committee

c/o Meridian Charter Township
5151 Marsh Road
Okemos, MI 48864

Curt Armbruster, Chair
Tier 1

Susan Andrews
Tier 1

Tim McCarthy
Tier 1

Ron Rowe
Tier 1

Steve Culling
Tier 2

Larry Wagenknecht
Tier 2

Younes Ishraidi
Charter Township of Meridian

Coe Emens
Lake Lansing County Park Supervisor

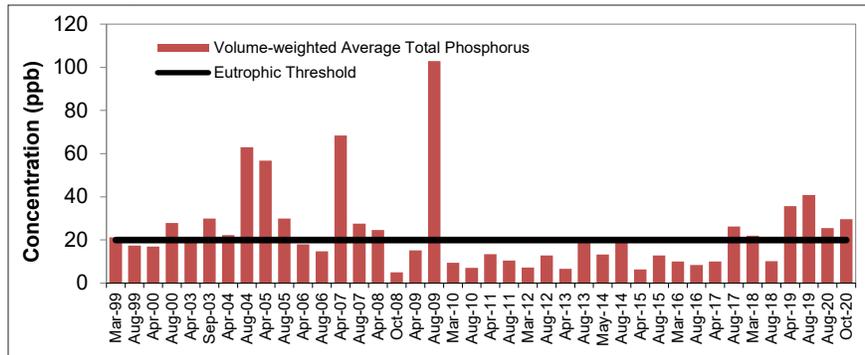
Paul Pratt
Ingham County Drain Commissioner's Office

For a full copy of the annual report and the latest updates, be sure to check www.lakelansing.org and meridian.mi.us/government/boards-and-commissions/lake-lansing-advisory-committee

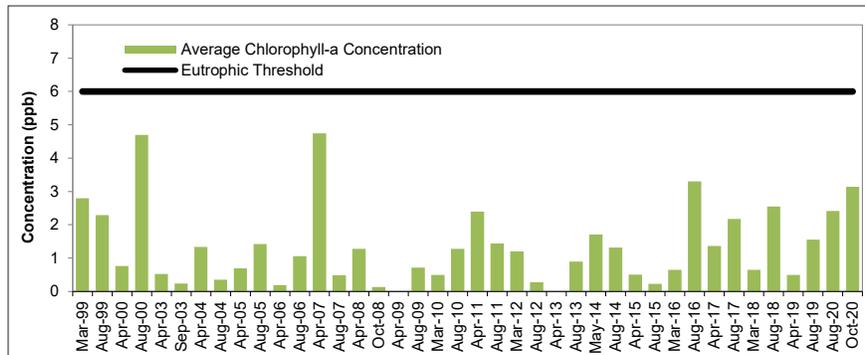
Environmental Consultant
Progressive AE

Lake Lansing Water Quality

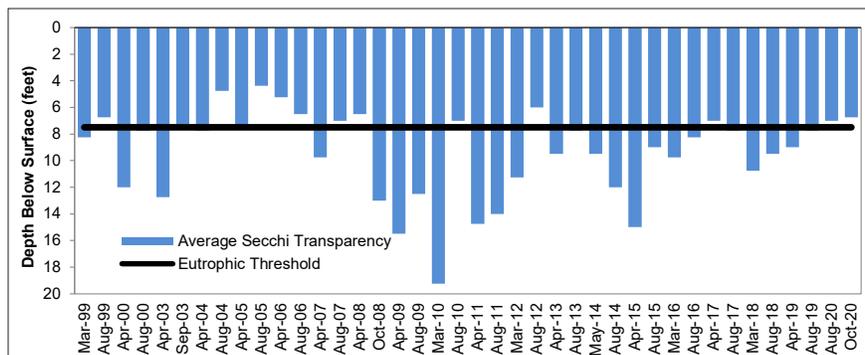
Water quality samples have been collected from Lake Lansing since 1999 and indicate the lake is borderline between mesotrophic (moderately productive) and eutrophic (nutrient-enriched and productive). During the 2020 sampling period, phosphorus levels were moderately high, with the exception of the deepest samples in late summer which were high. Chlorophyll-a (a measure of algae growth) is generally low in Lake Lansing. Secchi transparency (a measure of water clarity) often reflects fluctuations in zebra mussels which consume algae and often increase water clarity. Boating activity impacts water clarity as well.



Volume-weighted average total phosphorus concentrations, 1999-2020.



Average chlorophyll-a concentrations, 1999-2020.



Average Secchi transparency measurements, 1999-2020.

More Information

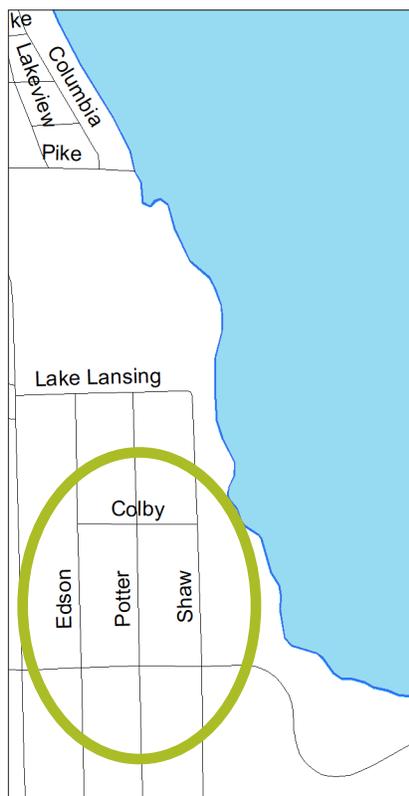
Additional lake-related topics, such as aquatic plants and lake water quality, can be found at michiganlakeinfo.com



2

Nemoka Drain Update

Construction on the Nemoka Drain continues. Jackson Dirt Works is taking a short break due to the cold weather conditions but is currently excavating and shaping the four detention areas that are proposed for the project—two of which are now complete. This spring they will install the remaining storm sewer at the south ends of Potter and Shaw Streets near Haslett Road. The project will wrap up in late spring to early summer with finish landscaping, tree planting, and long-awaited street paving in the Nemoka Village area.



We ask for your ongoing patience and cooperation. Please avoid those areas that are active construction sites—in particular the proposed detention area between Edson and Potter Streets since Japanese Knotweed was found there and we need to confine it in that location as part of our eradication effort.

Japanese knotweed is a non-native invasive plant that was introduced from Asia as an ornamental plant. Some prominent features of Japanese knotweed include:

- Perennial, herbaceous shrub that can grow from 3-10 feet high
- Hollow stalks are persistent through winter, looks similar to bamboo
- Stems have a fine white coating that rubs off easily
- Flowers arranged in spikes near the end of the stem are small, numerous, and creamy white in color
- Flowers bloom in August and September in Michigan

Japanese knotweed is legally prohibited in Michigan.



Source: Michigan Natural Features Inventory and Michigan Invasive Species webpage.

Chara v. Starry Stonewort

Chara and starry stonewort are two aquatic plants found in Lake Lansing that look very similar to one another, but Chara is considered a beneficial native plant and starry stonewort is an invasive exotic.



Chara (above) and starry stonewort (below).

Technically, both plants are algae, but grow in mats along the lake bottom. Starry stonewort has long "stems" and is identified by the hard, white, star-shaped reproductive structures known as "bulbils." Both herbicide treatments and mechanical harvesting are used to control starry stonewort in Lake Lansing.



Lake Lansing Special Assessment District Advisory Committee Newsletter

June 2021

Lake Lansing Special Assessment District Advisory Committee

c/o Meridian Charter Township
5151 Marsh Road
Okemos, MI 48864

Curt Armbruster, Chair
Tier 1

Susan Andrews
Tier 1

Ron Rowe
Tier 1

Vacant
Tier 1

Steve Culling
Tier 2

Larry Wagenknecht
Tier 2

Younes Ishraidi
Charter Township of Meridian

Coe Emens
Lake Lansing County Park Supervisor

Paul Pratt
Ingham County Drain Commissioner's Office

For the latest updates, be sure to check www.lakelansing.org and meridian.mi.us/government/boards-and-commissions/lake-lansing-advisory-committee

Nuisance Aquatic Plant Control Update

Aquatic herbicides were applied to Lake Lansing on May 20, targeting the non-native plants curly-leaf pondweed and Eurasian milfoil. A follow-up survey is scheduled for mid-June to evaluate treatment effectiveness and to map additional areas of nuisance plant growth. If warranted, additional treatments will be scheduled based on the type, density, and distribution of plants found during the survey. Mechanical harvesting is tentatively scheduled for the week of June 21. You can find the latest updates at lakelansing.org and meridian.mi.us/government/boards-and-commissions/lake-lansing-advisory-committee

Drain Project Update

Jackson Dirt Works is in the process of installing the last of the underground storm sewer for the Nemoka Drain project. Asphalt work is expected to begin Wednesday, June 9th on Colby Street, Edson Street, Lake Lansing Road, Potter Street, and Shaw Street. The work will include pulverizing and paving, surface milling and paving, and top course paving. Paving should be complete before the end of June, with shoulder work as well as driveway and landscape restoration to follow. Tree replacement throughout the project area will most likely take place in the early fall when growing conditions are more advantageous. The detention area between Edson and Potter Streets (just north of Haslett Road) will be left partially complete until we can successfully eradicate Japanese Knotweed in this area. Only then can we complete the earth excavation for the detention area and remove excess material from the site. If you have any concerns or questions regarding this work, please contact Dave Solberg, Ingham County Project Coordinator (517-719-4898) or Greg Lamkin, Resident Project Representative, LSG Engineers & Surveyors (517-393-2902, ext. 227).

Become a Shoreland Steward! Take the Survey at mishorelandstewards.org

The Michigan Shoreland Stewards program provides information on the do's and don'ts of proper shoreland management. On their website, lake residents begin by filling out a questionnaire about all aspects of their property and their use of it. Based on answers to the survey questions, the website then provides many tips and suggestions about ways to reduce runoff and pollution inputs. Lake residents can make improvements to their property, retake the survey, and improve their score. Even if you don't have frontage on Lake Lansing, runoff from your property finds its way to the lake. Tier 2 residents live in the watershed and should also take the survey.

www.mishorelandstewards.org

For more information

lakelansing.org

meridian.mi.us/government/boards-and-commissions/lake-lansing-advisory-committee

mishorelinepartnership.org

michiganlakeinfo.com



10 Things You Can Do

2

1. Take the Shoreland Steward survey at mishorelandstewards.org.
2. When the time comes, replace your old, crumbling seawall with a bio-engineered one.
3. Always pick up pet waste.
4. To reduce runoff to Lake Lansing, minimize the area of your lot that contains buildings, patios, driveways, parking areas, or other impervious surfaces; hard surfaces promote runoff to the lake. Use porous pavement or other permeable materials where possible.
5. Repair eroding areas in your yard.
6. Where possible, promote infiltration of stormwater into the ground. Build a rain garden to capture runoff from driveways and downspouts.
7. Water the lawn sparingly to avoid washing nutrients and sediments into the lake.
8. To provide habitat for fish and wildlife—and to discourage Canada geese!—replace some lawn with trees, shrubs, flowers, and native grasses, especially along the shoreline.
9. Don't burn leaves or brush near shore; the ash carries nutrients that stimulate weed growth in the lake.
10. Become a Shoreland Steward today!

