9353 Hill Road • Swartz Creek, MI 48473
(810) 635-4400 • Fax (810) 635-4404
www.lakeproinc.com

Island Lake, Oakland County *September 8th, 2015*

2015 Lake Management Summary

April 23rd	April water quality sampling and tests were completed. This included two samples to be tested for *E. coli*.
May 21st	May water quality sampling and tests were completed. This included two samples to be tested for *E. coli*.
June 3rd	LakePro surveyed the lake to locate any Eurasian Milfoil in order to treat it prior to the first harvest.
June 10th	LakePro treated 18 acres of the lake with Diquat Dibromide to control Eurasian Milfoil. Yellow notification signs were posted along the shoreline of the treatment zones.
June 22nd	June water quality sampling and tests were completed. This included two samples to be tested for *E. coli*. We also surveyed the lake to confirm treatment results and to document the vegetation prior to the first harvest. We spent time on the islands to disturb vacant nests. We also inspected the vegetation and removed vines from the evergreen trees. We also transplanted emergent vegetation from the north shoreline of the lake to the Long Lake Inlet channel. Species included Lily Pads, Pickerelweed, and Arrow Arum.
June 23rd	LakePro treated Phragmites in the pond on Lakeland Drive.
July 2nd	LakePro toured the lake to inspect the first weed harvest.
July 23rd	July water quality sampling and tests were completed. This included two samples to be tested for *E. coli*.
August 7th	LakePro surveyed the lake to document the vegetation prior to the second harvest. We spent time on the islands to disturb vacant nests. We also inspected the vegetation and removed vines from the evergreen trees.
August 21st	LakePro toured the lake to inspect the second weed harvest. August water quality sampling and tests were completed. This included two samples to be tested for *E. coli*.
September 9th	LakePro will survey the lake to document the vegetation prior to the third harvest.
September 18th	LakePro will tour the lake to inspect the third weed harvest.

LakePro Inc.
9353 Hill Road • Swartz Creek, MI 48473
(810) 635-4400 • Fax (810) 635-4404
www.lakeproinc.com

2015 Water Quality Summary

The goal of this testing protocol was to monitor various water quality parameters of the lake, compare results to historical data, and identify any potential risks to the health of Island Lake. Water samples were taken at two different locations and tested for various parameters. The data in the below table are averages of the four sites for each parameter and date.

This report describes conditions at the times the samples were taken. The quality of the water was tested only to the parameters listed below. The following data are averages of the two sampling sites and provide an indication of the water quality throughout the summer. The full water quality report with all results, discussion, and historical comparisons will be delivered in the fall.

Parameter	April 23rd	May 21st	June 22nd	July 23rd	August 21st	Target Range
Temperature	47.3 ˚F	62.8 ˚F	75.3 ˚F	77.9 ˚F	76.7 ˚F	Less Than 75 ˚F
Dissolved Oxygen	10.0 mg/L	8.2 mg/L	7.9 mg/L	7.2 mg/L	7.7 mg/L	4.0 – 12.0 mg/L
Total Phosphorus	80 ppb	100 ppb	70 ppb	55 ppb	65 ppb	0 – 100 ppb
Phosphate	25 ppb	25 ppb	20 ppb	30 ppb	30 ppb	0 – 100 ppb
Nitrate	462 ppb	308 ppb	154 ppb	242 ppb	264 ppb	0 – 1,000 ppb
Chlorophyll-a	3.3 ppb	4.0 ppb	5.0 ppb	6.1 ppb	6.5 ppb	0 – 7.3 ppb
Transparency	3.1 feet	10.7 feet	16.9 feet	14.1 feet	8.5 feet	More than 6.55 feet
pH	8.6	8.2	7.6	8.1	8.3	7.0 – 9.0 S.U.
Total Dissolved Solids	376 ppm	379 ppm	341 ppm	337 ppm	340 ppm	0 – 1,000 ppm
Conductivity	760 µS	758 µS	681 µS	674 µS	680 µS	0 – 1,500 ppm
Alkalinity	140 ppm	130 ppm	108 ppm	120 ppm	125 ppm	0 – 250 ppm
Sulfate	14.7 ppm	14.8 ppm	14.2 ppm	13.7 ppm	13.4 ppm	3 – 30 ppm
Fluoride	0.11 ppm	0.11 ppm	0.09 ppm	0.10 ppm	0.09 ppm	0.01 – 0.30 ppm
Chloride	133 ppm	131 ppm	117 ppm	121 ppm	115 ppm	0 – 230 ppm
Trophic State Index – Total Phosphorus	67	71	65	62	64	Oligotrophic: 0 - 40 Mesotrophic: 40 – 50 Eutrophic: 50 – 70 Hypereutrophic: 70+
Trophic State Index – Chlorophyll-a	42	44	46	48	49	
Trophic State Index – Transparency	61	43	36	39	46	
E. coli	0 CFU	10 CFU	0 CFU	0 CFU	0 CFU	0 – 300 CFU

LakePro Inc.
9353 Hill Road • Swartz Creek, MI 48473
(810) 635-4400 • Fax (810) 635-4404
www.lakeproinc.com

Temperature – increased each month to nearly 80 degrees in July and cooled some in August. Higher temperatures mean lower oxygen in the water. These temperatures were very good for the lake.

Dissolved Oxygen – despite the water temperatures, the oxygen stayed at very healthy levels throughout the summer. There was plenty of oxygen to support a healthy ecosystem, including the fish.

Total Phosphorus & Nitrates – These are the two main nutrients for plant growth. The nutrients were higher in April and May, when spring rains flush them into the lake. Over summer, they decreased as they were consumed or flowed out of the lake.

Chlorophyll is a direct indicator of plant growth in the lake. It showed a steady increase throughout summer. More sunlight and warmer water lead to more plant production, so this wasn't a surprise. Even at its highest in August, the Chlorophyll was within the target range for a healthy lake.

Transparency, or water clarity, started very low in April. It increased sharply by May and stayed high until a slight decrease in August. The annual average of 10.6 feet was the deepest since 2003.

All other parameters were within their target ranges and indicated Island Lake has excellent water quality.

This summer, we started testing for *E. coli*. LakePro pulled samples from two sites near shore. The critical level of E. coli is 300 Colonies. E. coli were not present in April, June, July, or August.

In May, E. coli results were

Site 1 – 0 Colonies
Site 2 – 20 Colonies

E. coli were present in the lake, but were well below the limit of 300 colonies, so there were no concerns about safety for swimmers or pets in the water.