

AGENDA

WALLED LAKE LAKE IMPROVEMENT BOARD MEETING

November 19, 2019
2:00 PM

Novi Civic Center
45175 Ten Mile Road

- I. Call Meeting to Order
- II. Roll Call
- III. Public Comment
- IV. Approval of Minutes of September 10, 2019 meeting
- V. Treasurer's Report
- VI. Discussion of 2019 Treatment Review & Water Quality Report
- VII. Discussion of 2020 Treatment Recommendations
- VIII. Approval of 2020 Budget
- IX. Discussion of Renewed Project (Years 2021-2025) Treatment Recommendations
- X. Public Comment
- XI. Other Business
- XII. Adjournment

Please visit www.cityofnovi.org/lakeboard for additional information

**WALLED LAKE
LAKE IMPROVEMENT BOARD
MEETING MINUTES
SEPTEMBER 10, 2019**

The meeting of the Lake Improvement Board for Walled Lake was held in the Council Conference Room at the Novi Civic Center at 45175 10 Mile Road on September 9, 2019. The meeting was called to order by Dave Galloway, Chairperson, at 2:09 PM.

Present:

Dave Galloway, Riparian Owner Representative (Chairperson)
Megan Mikus, City of Novi Representative (Secretary-Treasurer)
Karen Warren, Oakland County Water Resource Commissioner's Representative
Casey Ambrose, City of Walled Lake Representative
Gwen Markham, Oakland County Board of Commissioner's Representative

Also, Present:

Pete Auger, City of Novi, City Manager
Mark Roberts, Attorney, Secrest Wardle
Angela Maynard, City of Novi, DPW Customer Service Representative

Public comment:

Five residents were present.

Bill Halvangis, 202 Austin, Novi, commented he was attending the meeting because he was curious to see how it ran.

Public comment ended.

Secretary/Member Megan Mikus presented the minutes from the June 11, 2019 meeting.

**Moved by Mikus, Supported by Ambrose;
CARRIED 5-0: To approve the Minutes of June 11, 2019 meeting.**

Treasurer/ Member Mikus presented the Q2 2019 and Q3 2019 year-to-date Treasurer's Reports. The balance on hand as of September 5, 2019 is \$165,394.59.

**Moved by Mikus, Supported by Markham;
CARRIED 5-0: To accept the Q2 2019 and Q3 2019 year-to-date Treasurer's Reports.**

The City of Walled Lake reported no delinquent assessments as the assessment was paid in full on June 3, 2019. The City of Novi reported 23 parcels delinquent.

**Moved by Mikus, Supported by Ambrose;
CARRIED 5-0; To certify the 2018 delinquent assessments received from the City of Novi of \$1,997.53, plus penalty of \$59.98.**

**WALLED LAKE
LAKE IMPROVEMENT BOARD
MEETING MINUTES
SEPTEMBER 10, 2019**

Discussion of Project Renewal

Board Attorney Roberts provided the Board clarification on the project renewal timeline and parameters. The current project is through 2020 as there is one more assessment installment on the winter 2019 tax bill. If a renewal were to occur, the project renewal and assessment roll should be finalized in early 2020.

Member Mikus asked the other Board members if they wanted to continue the current project or revise the project with other types of improvements. A decision on the type of improvements would be needed in order for gather information for budgeting considerations. Member Mikus pointed out the last engineering study was completed in 2009. She asked if would the Board want the study updated.

Member Markham asked if a decision had to be made today. Board Attorney Roberts said it does not need to be today, but needs to be done in the near future because of the length of the process. Board Attorney Roberts explained the Board's project was approved for controlling invasive plants. If other improvements wanted to be explored, a new engineering study would have to be done only after a new 2/3 petition of the property owners is received along with a resolution from both Cities. To continue as-is, no engineering study would have to be done.

Member Casey asked if there were any concerns with the current treatment. Chairperson Galloway said the Lake had improved greatly since treatment began and now regular treatment is needed to manage the invasive species.

Chairperson Galloway noted there is a canal that connects Shawood Lake and Walled Lake, and he is concerned about the impact of Shawood Lake on Walled Lake.

Novi City Manager Pete Auger said the City has had discussions with DEQ/ EGLGE about Shawood Lake and there are limitations on what can be done in order to not disrupt the lake's natural environment.

Member Warren stated the lake level is determined by EGLE. They do a hydraulic study. They have the final say on how it is controlled.

Board Attorney Roberts reminded the Board that Walled Lake and Shawood Lake are two separate bodies of water would require two separate boards. The state statue limits improvements to those that can demonstrate an increase to property values around the Lake.

Moved by Ambrose, Supported by Galloway;

CARRIED 5-0: To approve the renewal of existing project for another 5-year term, project years 2021-2025.

Member Mikus brought up the question on how to proceed with the preparation of the renewal's five-year assessment roll and what information the Board would need to determine the project's five-year costs.

**WALLED LAKE
LAKE IMPROVEMENT BOARD
MEETING MINUTES
SEPTEMBER 10, 2019**

Member Markham stated she felt a proposal is necessary. For the next meeting, Member Mikus said she could ask the current contractor for five-year treatment recommendations as was done in the past and will preparing parameters for a bid request. It could then be decided at the next meeting if the Board would like to renew with the current contractor or go out to bid.

Moved by Mikus, Supported by Galloway;

CARRIED 5-0: To approve the development of parameters to prepare a bid request for the next renewed 5-year term.

Member Markham commented there has been purchase of a boat washer by the County. It would be available in the future for use. She also commented the boat launch on Endwell was not safe and will not get better. She questioned how do we want boats to access the lake in the future.

Public comment:

Michael Duchesneau of 1191 South Lake Drive, Novi, asked what he would he need to do to add 500 baby walleyes to the lake. Member Warren stated special approval was needed from DNR Fisheries.

Dorothy Duchesneau of 125 Henning Street, Novi, stated there were 23 parcels that are delinquent on their taxes. She wondered if these property owners had not paid their winter taxes in a whole, or were they just not paying the special assessments? Novi City Manager Auger stated you cannot pick and choose what you want to pay on your tax bill.

Jerry Anderson of 127 S. Pontiac Trail, Walled Lake, stated he appreciates the Board renewing the current project scope and not expanding. Also, in regards to the current vendor, the lake is as good as it has ever been. In regards to the boat wash, he feels there should be an attempt to coordinate with the City of Walled Lake to designate an area to wash boats once per year. A permanent station is not needed. Increasing public awareness is good to control invasive species.

Tina Miller of 1957 W Lake Drive, Novi, asked the Board look into and consider rain gardens on the lake to reduce runoff and filter water as she has two locations in mind. Member Markham stated there are grants available for placemaking and that she could share information about them with her later. Chairperson Galloway pointed out residents are building new sea walls and they are not being properly built. Tina Miller also wanted on record she would support the Board staying with Savin due to their history of the Lake and to provide continuity of treatment. She would oppose to public access to the lake.

Other Business

Chairperson Galloway informed the Board he plans to step down in his role as the Riparian Representative in 2020.

**WALLED LAKE
LAKE IMPROVEMENT BOARD
MEETING MINUTES
SEPTEMBER 10, 2019**

Jerry Anderson, Lake Area Homeowners' Association President, said at the February 2020 HOA meeting, three individuals will be selected as the recommended replacement for the Riparian Representative on the Board.

ADJOURNMENT: There being was no further business to come before the Lake Improvement Board; the meeting was adjourned at 3:23 PM.

The Board next meeting was tentatively scheduled for November 19, 2019 at 2:00 PM.

Megan Mikus
Secretary/ Treasurer

DRAFT

**WALLED LAKE IMPROVEMENT BOARD
QUARTERLY TREASURER'S REPORT**

September 30, 2019

BALANCE ON HAND:	06/30/19	\$179,465.03
-------------------------	-----------------	---------------------

INCOME	Quarter	YTD	Budget	Variance	Notes
Assessments (City of Novi)	\$ 226.49	\$ 39,715.05	\$42,014.79	(\$2,299.74)	1
Assessments (City of Walled Lake)	\$ -	\$ 25,421.39	\$25,421.00	\$0.39	2
TOTAL INCOME	\$ 226.49	\$ 65,136.44	\$ 67,435.79	(\$2,299.35)	
 EXPENSES					
Harvesting and Herbicide Treatments	\$ 17,913.60	\$ 44,827.58	\$85,000.00	(\$40,172.42)	
Lake Management (surveys, studies, etc.)	\$ -	\$ -	\$5,000.00	(\$5,000.00)	
Permit Fee	\$ -	\$ -	\$1,500.00	(\$1,500.00)	
Administrative & Legal	\$ 788.80	\$ 1,252.60	\$1,500.00	(\$247.40)	
Other	\$ -	\$ 799.40	\$1,000.00	(\$200.60)	
TOTAL EXPENSES	\$ 18,702.40	\$ 46,080.18	\$ 88,050.00	(\$41,969.82)	

BALANCE ON HAND:	09/30/19	\$160,989.12
-------------------------	-----------------	---------------------

Notes

- 1 Novi payment includes assessments paid to date to Novi
- 2 Walled Lake has paid the assessment in full

EXPENSE DETAIL

Description	Invoice No.	Vendor	Amount
Herbicide Treatment	4831	Savin Lake Services	\$ 14,270.30
Legal Fees through 6/30/19	1364160	Secrest Wardle	\$ 489.80
Legal Fees through 7/30/19	1354644	Secrest Wardle	\$ 26.00
Herbicide Treatment	4869	Savin Lake Services	\$ 3,643.30
Legal Fees through 8/30/19	1367849	Secrest Wardle	\$ 273.00

Submitted by _____
Megan Mikus, Secretary/Treasurer
Walled Lake Improvement Board

**WALLED LAKE IMPROVEMENT BOARD
QUARTERLY TREASURER'S REPORT**

Q4 YTD 11/7/19

BALANCE ON HAND:	09/30/19	\$160,989.12
-------------------------	-----------------	---------------------

INCOME	<u>Quarter</u>	<u>YTD</u>	<u>Budget</u>	<u>Variance</u>	<u>Notes</u>
Assessments (City of Novi)	\$ 146.49	\$ 39,861.54	\$42,014.79	(\$2,153.25)	1
Assessments (City of Walled Lake)	\$ -	\$ 25,421.39	\$25,421.00	\$0.39	2
TOTAL INCOME	\$ 146.49	\$ 65,282.93	\$ 67,435.79	(\$2,152.86)	
 EXPENSES					
Harvesting and Herbicide Treatments	\$ 34,868.34	\$ 79,695.92	\$85,000.00	(\$5,304.08)	
Lake Management Consultant	\$ -	\$ -	\$5,000.00	(\$5,000.00)	
Permit Fee	\$ -	\$ -	\$1,500.00	(\$1,500.00)	
Administrative & Legal	\$ 910.00	\$ 2,162.60	\$1,500.00	\$662.60	
Other	\$ -	\$ 799.40	\$1,000.00	(\$200.60)	
TOTAL EXPENSES	\$ 35,778.34	\$ 82,657.92	\$94,000.00	(\$11,342.08)	

BALANCE ON HAND:	11/07/19	\$125,357.27
-------------------------	-----------------	---------------------

Notes

- 1 Novi payment includes assessments paid to date to Novi
- 2 Walled Lake has paid the assessment in full

EXPENSE DETAIL

<u>Description</u>	<u>Invoice No.</u>	<u>Vendor</u>	<u>Amount</u>
Herbicide Treatment	4982	Savin Lake Services	\$ 34,868.34
Legal Fees through 9/30/19	1369638	Secret Wardle	\$ 910.00

Submitted by _____
Megan Mikus, Secretary/Treasurer
Walled Lake Improvement Board

Walled Lake 2015 – 2019 Treatment Review

2015 Treatment Summary:

In 2015 Savin Lake Services treated Walled Lake 3 different times. Treatment dates were June 8th, July 22nd, and August 31st. On June 8th we treated 77.5 acres of the lake for Curly leaf Pondweed, and Eurasian Watermilfoil utilizing contact herbicides. On July 22nd we treated 120 acres of the lake for Algae, and 18 acres for Starry Stonewort. On August 31st we returned to the lake to treat the 18 acres of Starry Stonewort a second time to minimize its densities and reduce the risk of it spreading to different areas of the lake.

Below you will find the treatment maps showing where all the treatments that took place for 2015.

June 8th treatment map:





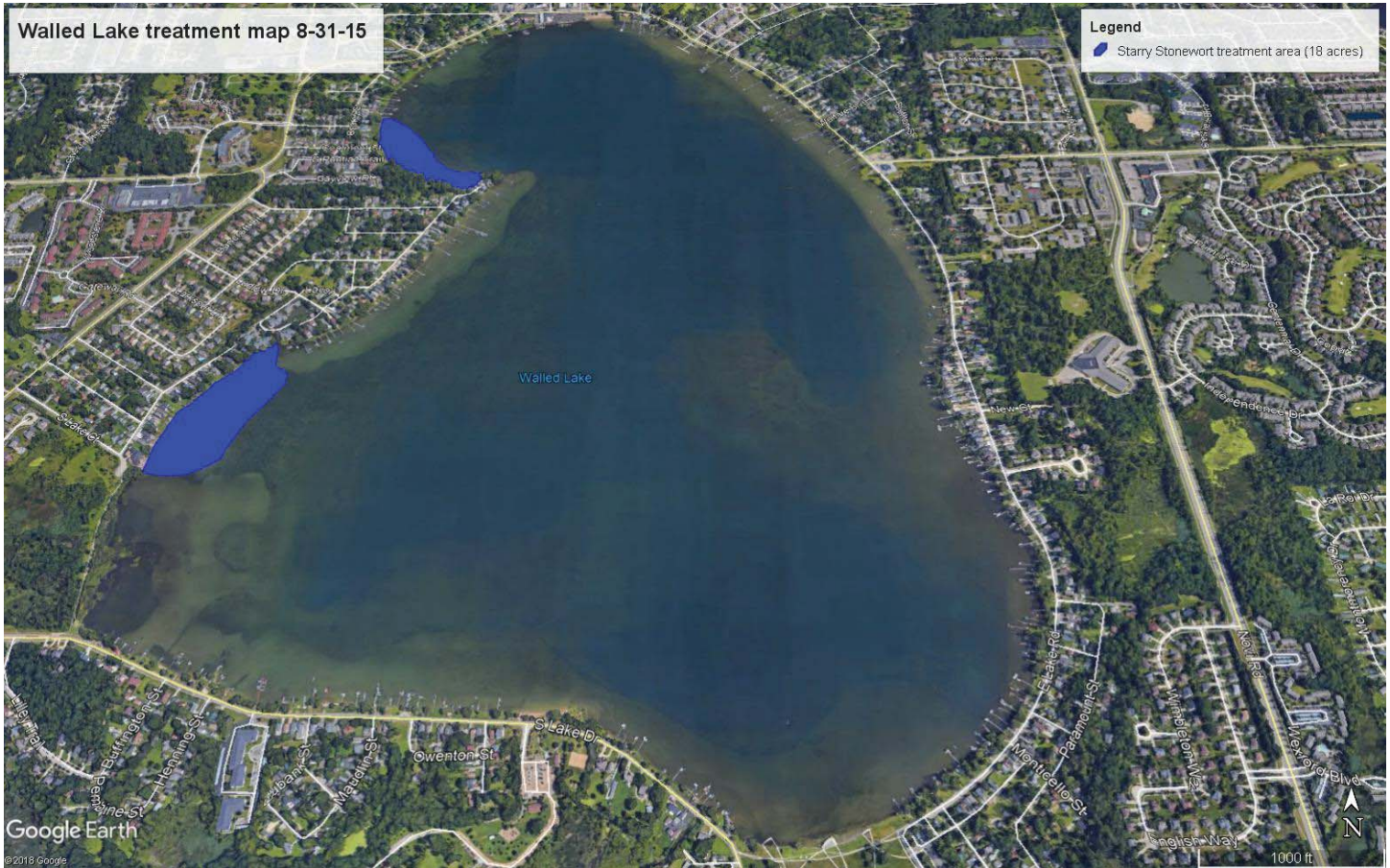
3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

July 22nd treatment map:



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com

August 31st treatment map:

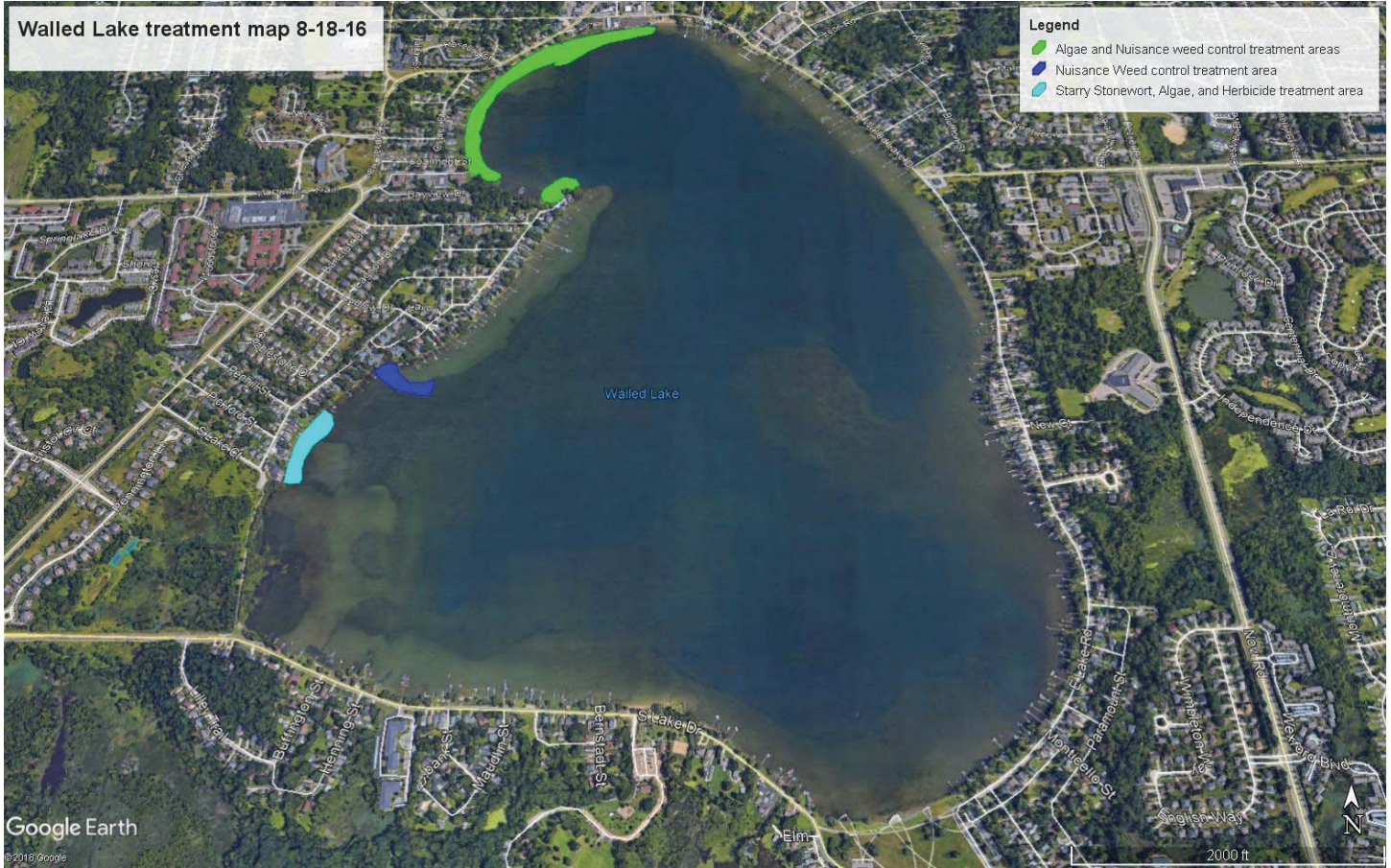


2016 Treatment Summary:

In 2016 Savin Lake Services treated Walled Lake 3 different times. Treatment dates were June 6th, August 18th, and September 27th. On June 6th we treated 75 acres of mixed weed beds containing mostly Curly Leaf Pondweed, and some contained small patches of Eurasian Watermilfoil utilizing contact herbicides. Also, during the June 6th application, we treated 14 acres of the lake containing Eurasian Watermilfoil with systemic herbicides. On August 18th we treated 17.5 acres of the lake containing Eurasian Watermilfoil, nuisance pondweeds, and algae. We also treated 2 acres of the lake containing Starry Stonewort and nuisance pondweeds during the August 18th application. On September 27th we treated 60 acres of the lake with a systemic herbicide, this treatment was for Eurasian Watermilfoil.

Below you will find the treatment maps showing where all the treatments took place for 2016







3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com

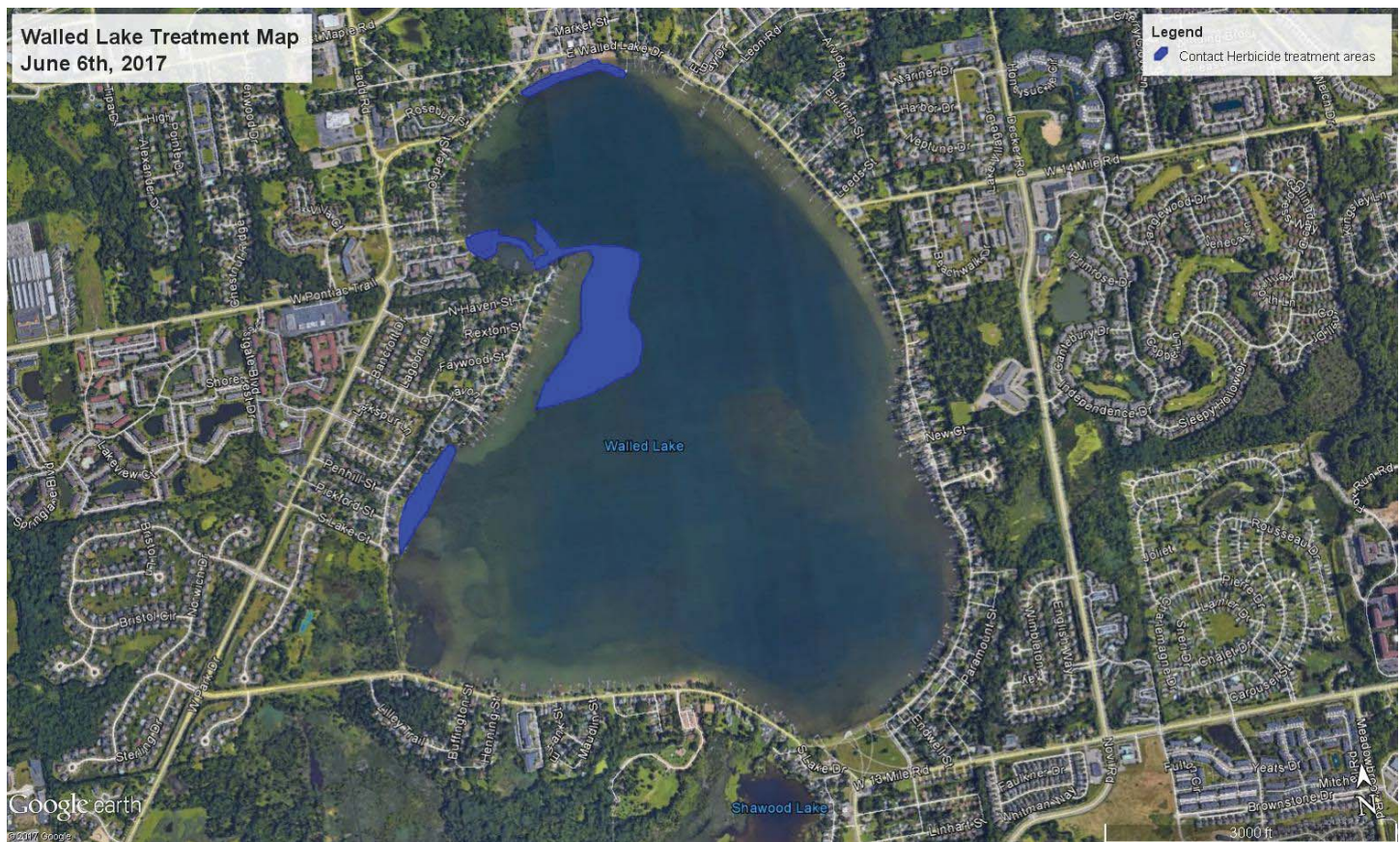


3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

2017 Treatment Summary:

In 2017 Savin Lake Services treated Walled Lake 4 different times. The treatment dates were June 6th, July 12th, August 15th, and October 17th & 18th. On June 6th we treated 35 acres of the lake with contact herbicides for mixed beds of Curly Leaf Pondweed and Eurasian Watermilfoil. On July 12th we treated 40 acres of the lake for Eurasian Watermilfoil and 22.5 acres for Starry Stonewort. On August 15th we treated 30 acres of the lake for Eurasian Watermilfoil and 15 acres for Starry Stonewort. On October 17th & 18th we did another Systemic treatment for Eurasian Watermilfoil; this treatment was 61.5 acres of the lake.

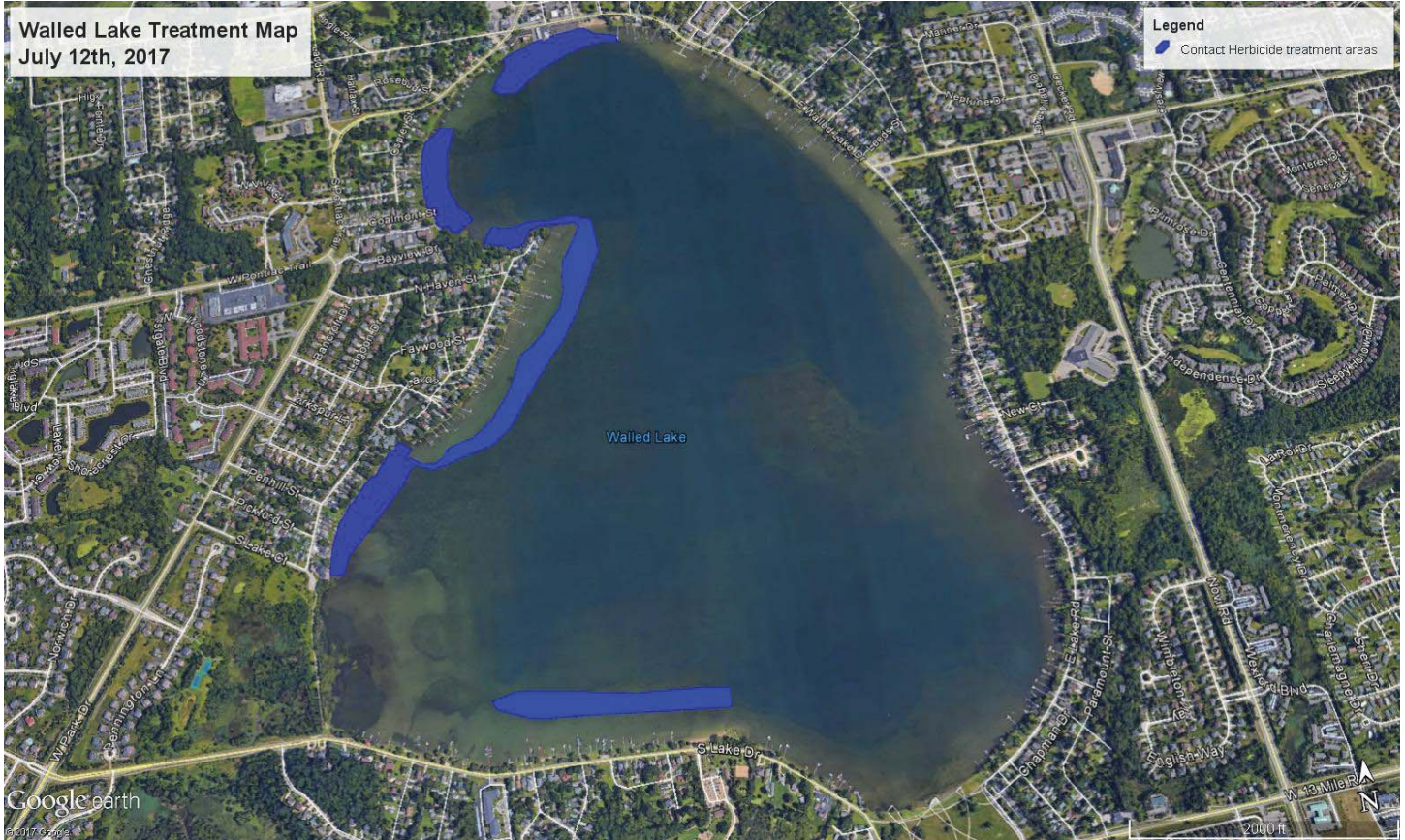
Below you will find the treatment maps showing where all the treatments that took place for 2017



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



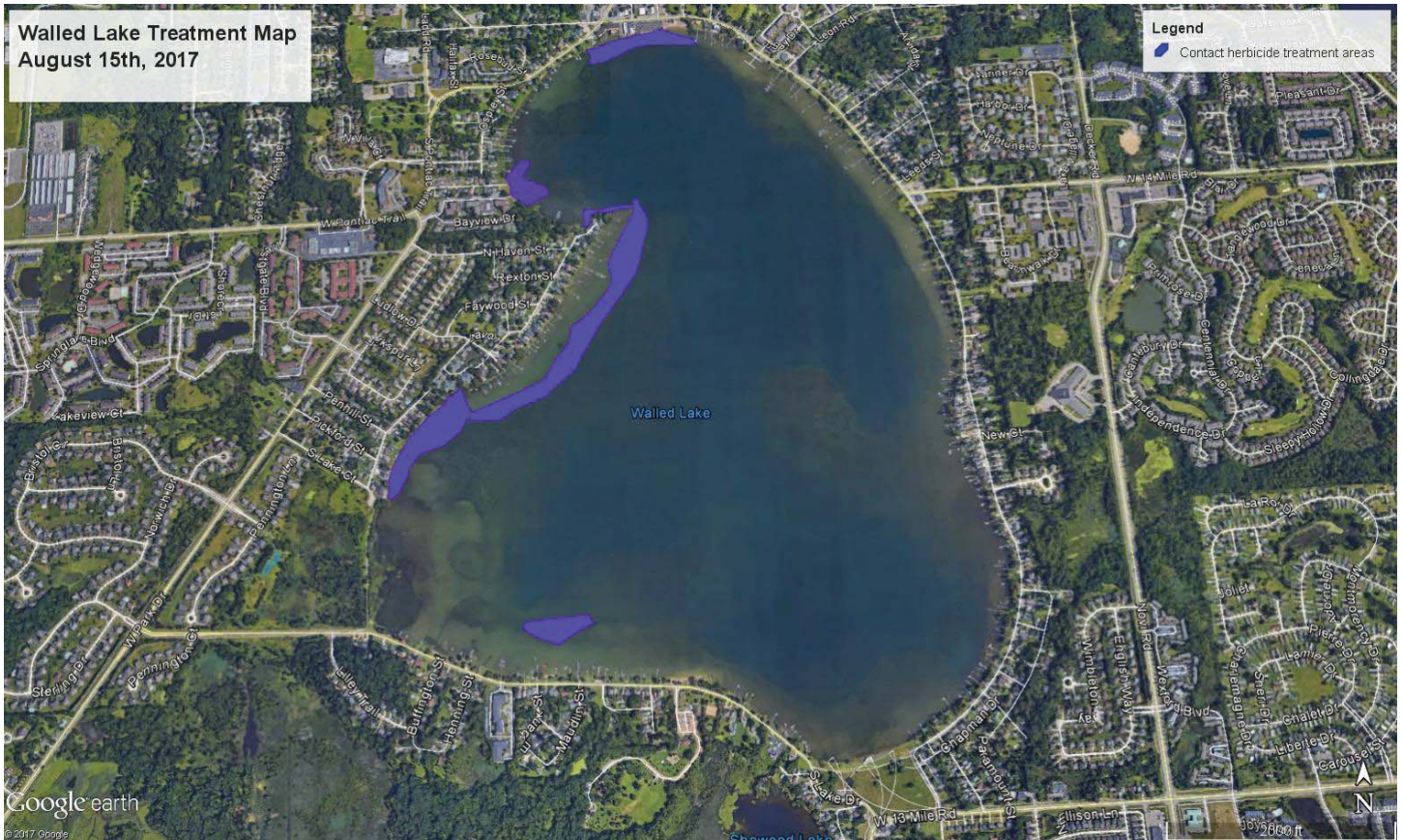
3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



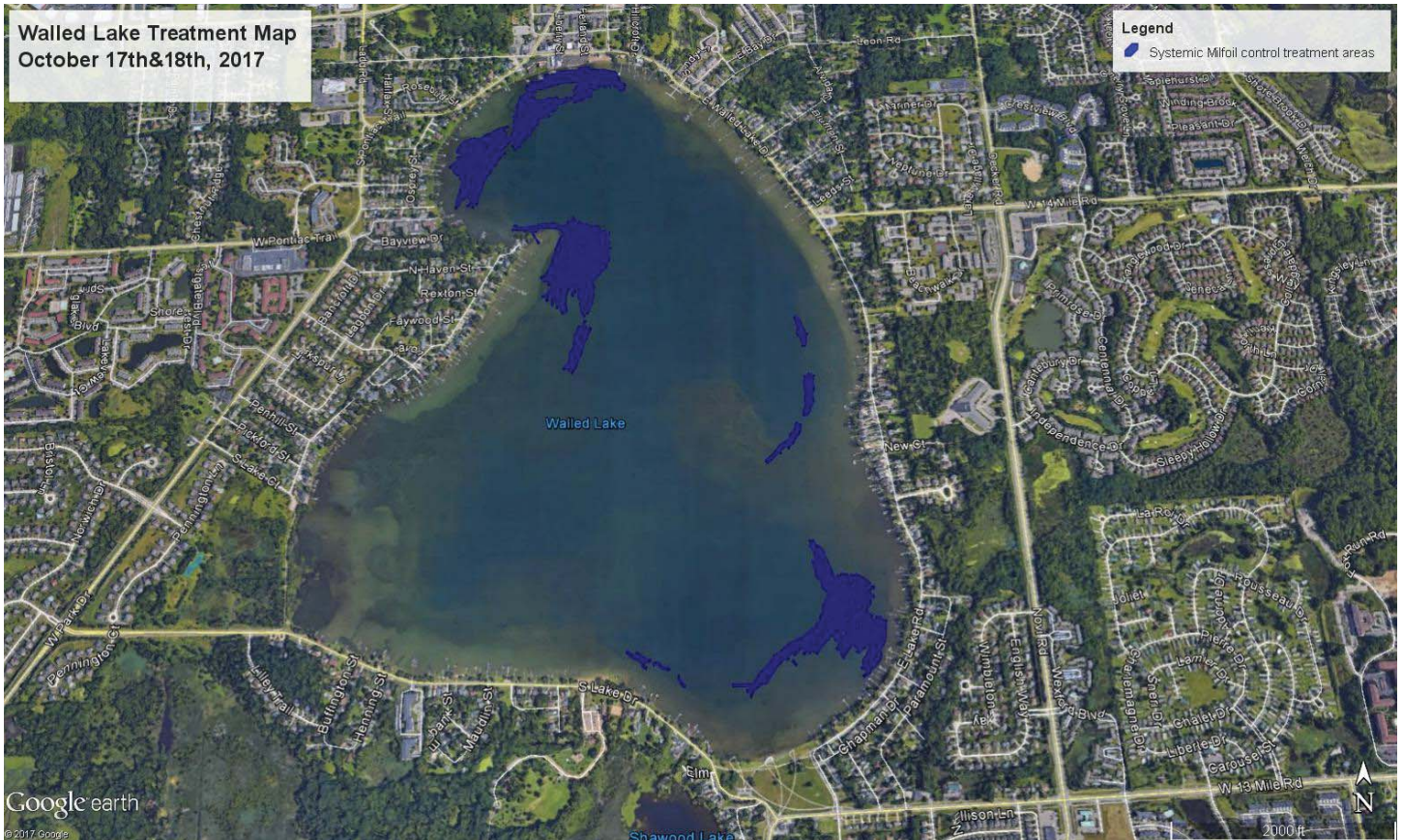
3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com

2018 Treatment Summary:

In 2018 Savin Lake Services treated Walled Lake 4 different times. The treatment dates were June 11th, July 17th, September 18th, and October 25th. On June 11th we treated 90 acres of the lake. 15 of the 90 acres treated was a systemic treatment for Eurasian Watermilfoil, 65 of the 90 was for mixed beds of Curly Leaf Pondweed and Eurasian Watermilfoil utilizing contact herbicides, and 10 acres was treated for Nuisance Pondweeds utilizing contact herbicides. On July 17th we treated 80 acres of the lake for algae, 40 acres of the lake for Eurasian Watermilfoil, and 15 acres of the lake for Starry Stonewort. On September 18th we completed a touch up treatment on only 1 acre of the lake for a resident that brought to our attention his area needed treatment. During our final treatment on October 25th we treated 53.5 acres of the lake for Eurasian watermilfoil systemically. Below you will find the treatment maps showing where all the treatments took place for 2018.





3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

2019 Treatment Summary:

In 2019 Savin Lake Services treated the lake 4 different times. Treatment dates were June 10th, July 23rd, August 22nd, and September 30th & October 1st. On June 10th we treated 87.5 acres of the lake for mixed beds of mostly Curly Leaf Pondweed and some Eurasian Watermilfoil. We also treated 42.5 acres of the lake for algae on June 10th. On July 23rd we treated 50 acres of the lake for Algae, 30 acres of the lake for Eurasian Watermilfoil and Nuisance Pondweeds, and 12 acres of the lake for Starry Stonewort. On August 22nd we treated 10 acres of the lake for Algae, Eurasian Watermilfoil, and Nuisance Pondweeds. The September 30th & October 1st treatment was another fall systemic treatment for Eurasian Watermilfoil. We treated 54 acres of Eurasian Watermilfoil systemically during this treatment.

Below you will find the treatment maps showing where all the treatments took place for 2019.



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

Walled Lake treatment map 9-30-19 & 10-1-19



Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com

Walled Lake 2019 Water Quality Report

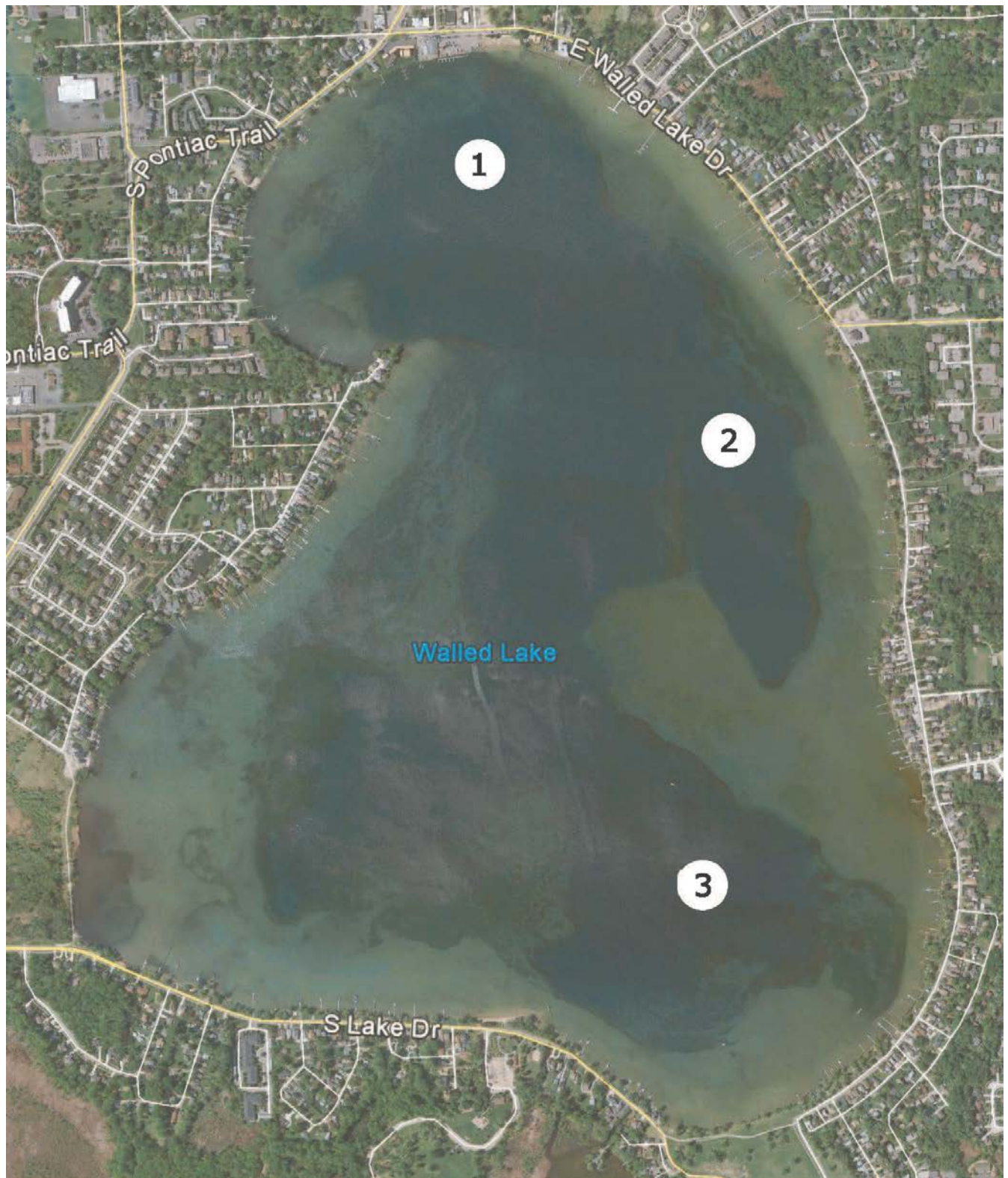
Summary:

Water Quality Testing was completed 2 times on Walled Lake in 2019 at 3 different locations around the lake. Of the parameters tested, Temperature, Dissolved Oxygen, Secchi Disk, and pH were sampled while on the lake. Chlorophyll α , Nitrate-N, Phosphorus, Alkalinity, and Conductivity were sampled by sending the water in sample bottles to an independent laboratory, White Water Associates located in Amasa, MI, where the analysis was ran.

A well known limnologist named Wally Fusilier developed a grading scale for various parameters of water quality. Data collected in 2019 is shown below and given a grade based on Fusilier's scale. Additionally, historical data and parameter descriptions are provided at the end of this report.

Because herbicide treatment of aquatic vegetation has occurred on Walled Lake, it should be noted that the application of herbicide has no direct impact to the water quality of Walled Lake.

Overall in 2019 based on the analysis results, Walled Lake's water quality remained consistent with years past. In both the spring and the fall Walled Lake had an average grade B for all 3 sites. All of the values are constant with years past. Conductivity and alkalinity were slightly lower than what has been observed recently, but only just. Walled Lake looks great.



(Walled Lake Sampling Sites)

2019 Results:

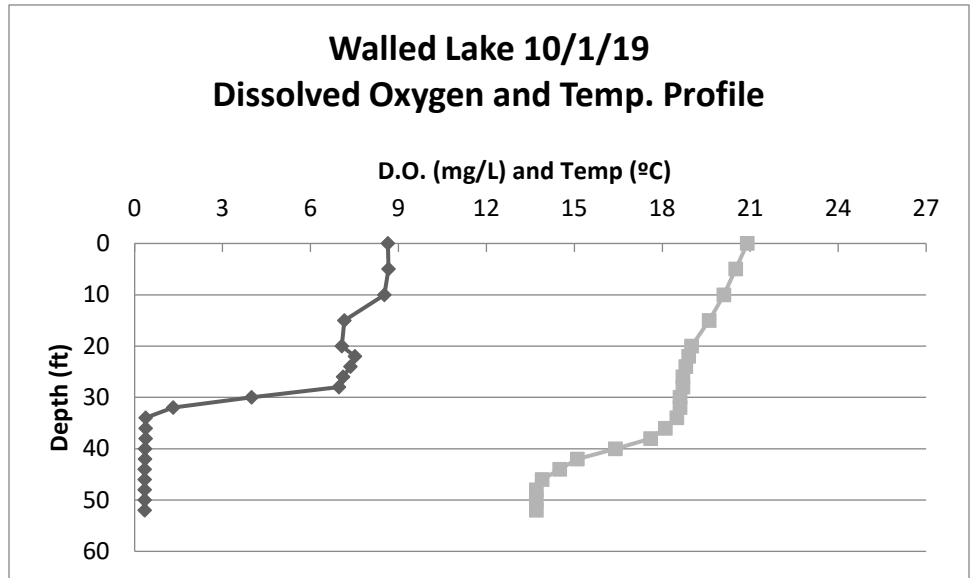
Date	5/14/2019			5/14/2019			5/14/2019			10/1/2019			10/1/2019			10/1/2019		
Station Number	1			2			3			1			2			3		
Temp (°C)	11.8	A		11.9	A		11.8	A		20.6	A		20.9	A		20.4	A	
Dissolved Oxygen (mg/L)	10.7			10.51			10.47			9.17			8.64			8.54		
Dissolved Oxygen (%saturation)	99.8	A		97.7	A		97.3	A		103.0	A		97.1	A		94.2	A	
Chlorophyll a (ug/L)	0.3	A		1.1	A		0.0	A		0.8	A		1.3	A		1.3	A	
Secchi Disk Depth (ft)	15.5	C		16.0	B		16.0	B		17.0	B		17.0	B		16.0	B	
Total Nitrate Nitrogen (ug/L)	<130	A		<130	A		<130	A		<130	A		<130	A		<130	A	
Alkalinity (mg/L)	120.0	A		120	A		130	A		97	A		98	A		100	A	
pH	8.5	C		8.20	A		8.24	A		8.56	C		8.32	B		8.50	C	
Conductivity (umhos/cm)	990.0	F		990	F		990	F		930	F		940	F		950	F	
Total Phosphorus (ug/L)	<8	A		<8	A		9	A		<8	A		<8	A		<8	A	
Overall Grade		B			B			B			B			B			B	

Scale:

Grade	Temp	Dissolved Oxygen	Chlorophyll α	Secchi Disk Depth	Total Nitrate Nitrogen	Alkalinity	pH	Conductivity	Total Phosphorus
A	0-26.5	85-115	0-2	>19	0-275	50-225	5.75-8.27	0-380	0-20
B	26.5-28.5	85-77; 115-122	2-3	19-16	275-360	50-35; 225-255	5.75-5.55; 8.27-8.47	380-590	20-28
C	28.5-30	77-69; 122-131	3-4	16-12	360-450	35-23; 255-280	5.55-5.33; 8.47-8.69	590-720	28-39
D	30-31.5	69-62; 131-140	4-5	12-9	450-540	23-17; 280-310	5.33-5.14; 8.69-8.88	720-800	39-46
F	>31.5	<62; >140	>5	<9	>540	<17; >310	<5.14; >8.88	>800	>46

Temp and D.O.:

Temp (°C)	D.O. (mg/L)	Depth (ft)
20.9	8.64	0
20.5	8.66	5
20.1	8.52	10
19.6	7.15	15
19.0	7.07	20
18.9	7.51	22
18.8	7.36	24
18.7	7.11	26
18.7	6.97	28
18.6	3.99	30
18.6	1.31	32
18.5	0.37	34
18.1	0.37	36
17.6	0.37	38
16.4	0.35	40
15.1	0.35	42
14.5	0.34	44
13.9	0.34	46
13.7	0.34	48
13.7	0.34	50
13.7	0.34	52

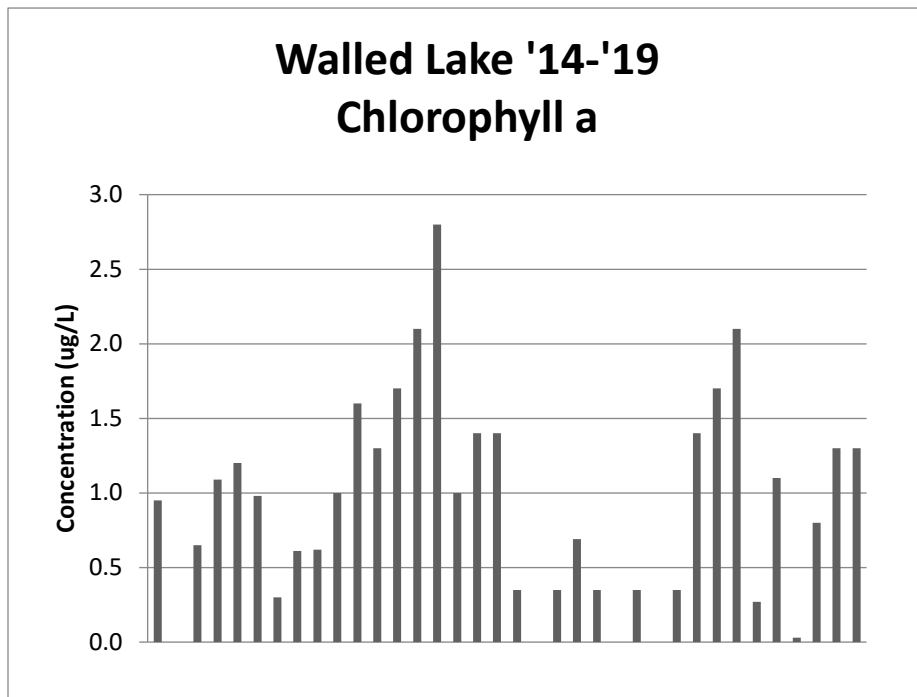
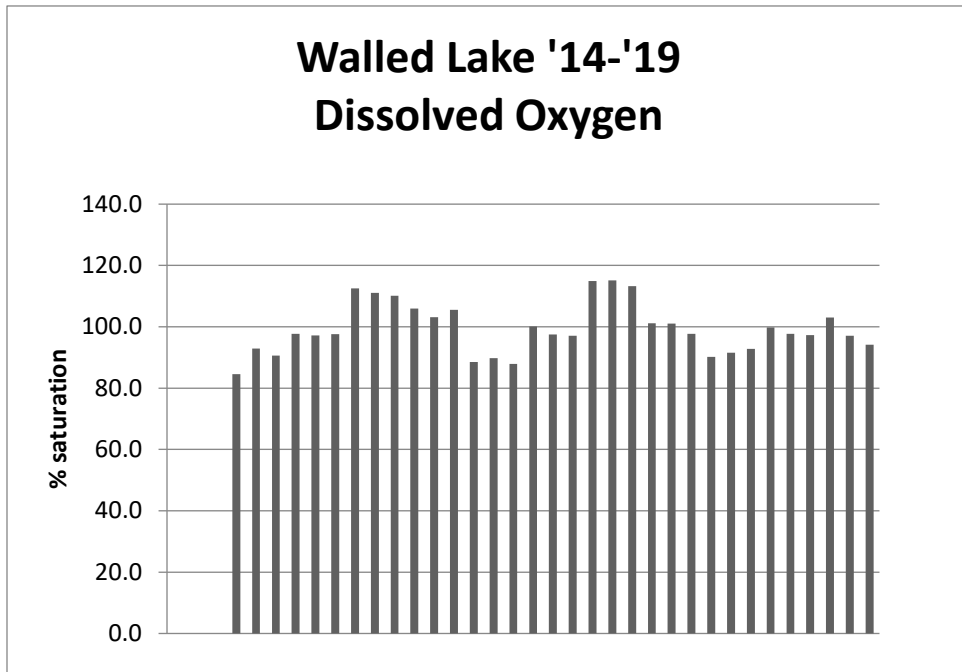


Matt Novotny

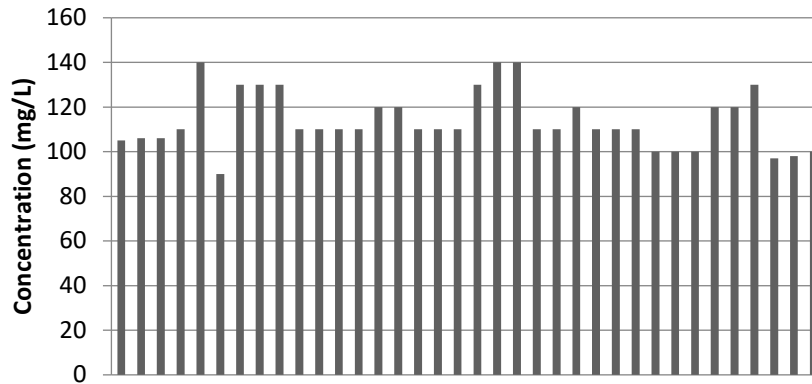
Matthew Novotny

Environmental Scientist

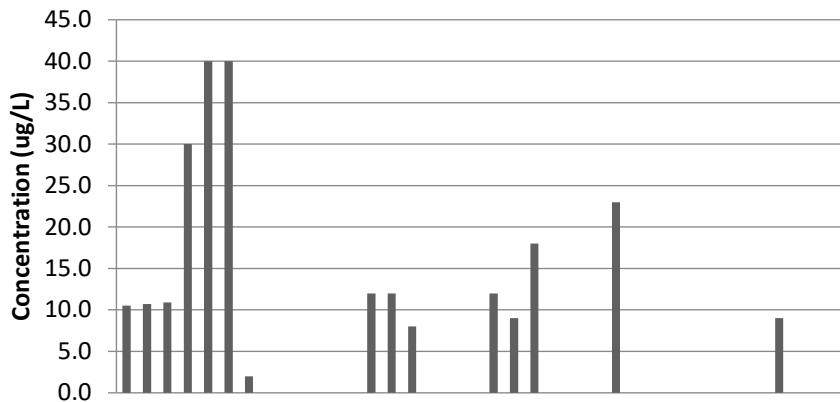
Historical Data:



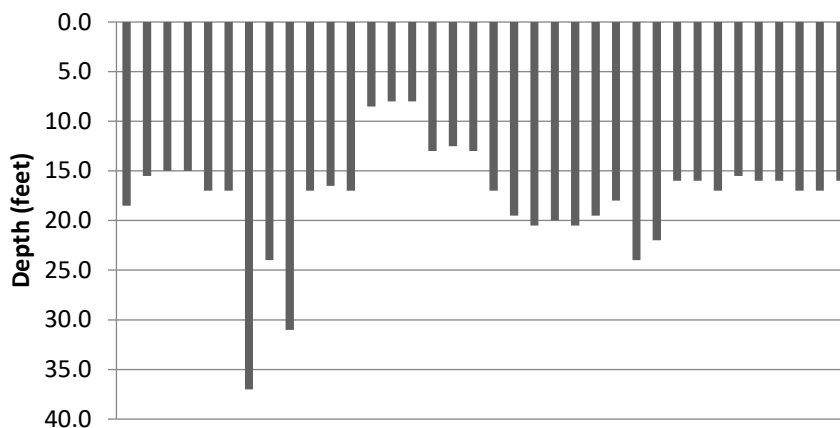
Walled Lake '14-'19 Alkalinity



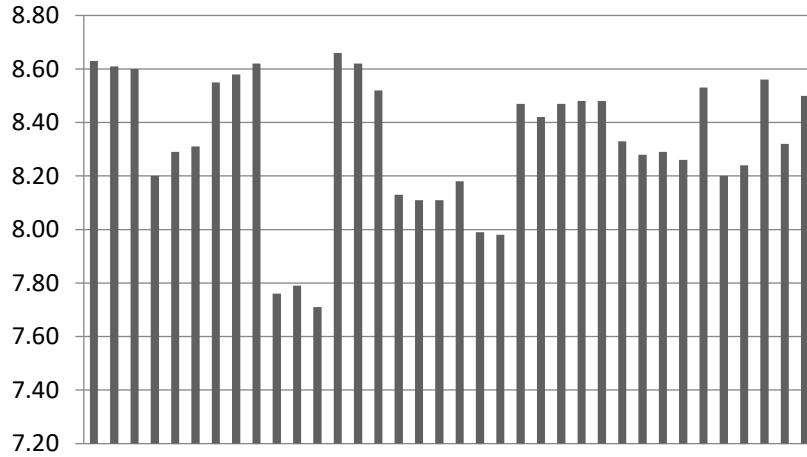
Walled Lake '14-'19 Phosphorus



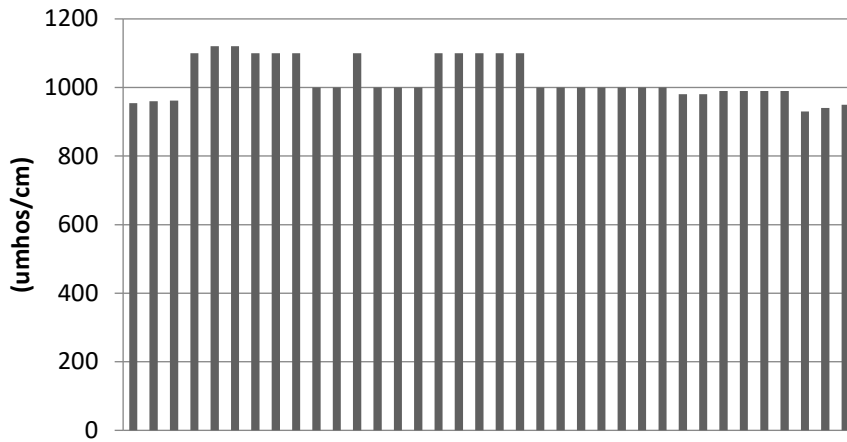
Walled Lake '14-'19 Secchi Disk Depth



Walled '14-'19 pH



Walled Lake '14-'19 Conductivity



Walled Lake Water Quality Data												
Date	Sample Station Number	Temperature (°C)	Dissolved Oxygen		Chlorophyll α (ug/L)	Secchi Disk Depth (ft)	Total Nitrate-N (ug/L)	Alkalinity (mg/L)	pH	Conductivity umhos per cm at 25 °C	Total Phosphorus (ug/L)	Grade
			(mg/L)	Percent Saturation								
6/5/2014	1	22.8	N/A	N/A	1.0	18.5	3.4	105	8.63	954	10.5	B
6/5/2014	2	22.2	N/A	N/A	N/A	15.5	3.7	106	8.61	960	10.7	B
6/5/2014	3	22.1	N/A	N/A	0.7	15.0	3.2	106	8.60	962	10.9	B
9/21/2014	1	17.7	7.99	84.6	1.1	15.0	<100	110	8.20	1100	30.0	B
9/21/2014	2	17.5	8.78	92.9	1.2	17.0	<100	140	8.29	1120	40.0	B
9/21/2014	3	17.3	8.74	90.6	1.0	17.0	<100	90	8.31	1120	40.0	B
5/20/2015	1	17.9	9.23	97.7	0.3	37	<60	130	8.55	1100	2	B
5/20/2015	2	17.7	9.18	97.1	0.61	24	<60	130	8.58	1100	<1	B
5/20/2015	3	17.9	9.22	97.6	0.62	31	<60	130	8.62	1100	<1	B
8/31/2015	1	24.5	9.5	112.5	1.0	17.0	<60	110.0	7.76	1000	<5	B
8/31/2015	2	23.7	9.3	111.1	1.6	16.5	<60	110.0	7.79	1000	<5	B
8/31/2015	3	23.4	9.4	110.2	1.3	17.0	<60	110.0	7.71	1100	<5	B
5/17/2016	1	14.7	10.67	106.0	1.7	8.5	<60	110.0	8.66	1000	12.0	B
5/17/2016	2	14.4	10.61	103.1	2.1	8.0	<60	120.0	8.62	1000	12.0	B
5/17/2016	3	14.8	10.63	105.6	2.8	8.0	<60	120.0	8.52	1000	8.0	B
9/29/2016	1	16.6	8.54	88.5	1	13.0	<60	110.0	8.13	1100.0	<9	B
9/29/2016	2	16.6	8.66	89.7	1.4	12.5	<60	110.0	8.11	1100.0	<9	B
9/29/2016	3	16.4	8.66	87.9	1.4	13.0	<60	110.0	8.11	1100.0	<9	B
5/11/2017	1	14.1	10.30	100.1	0.35	17.0	110.0	130.0	8.18	1100.0	12.0	B
5/11/2017	2	13.4	10.26	97.5	0.00	19.5	70.0	140.0	7.99	1100.0	9.0	A
5/11/2017	3	13.0	10.21	97.1	0.35	20.5	100.0	140.0	7.98	1000.0	18.0	A
9/21/2017	1	22.4	10.02	114.9	0.69	20.0	<60	110.0	8.47	1000.0	<8	B
9/21/2017	2	22.8	9.86	115.2	0.35	20.5	<60	110.0	8.42	1000.0	<8	B
9/21/2017	3	21.6	9.88	113.3	0.00	19.5	<60	120	8.47	1000	<8	B
6/11/2018	1	20.7	9	101.1	0.35	18	<80	110	8.48	1000	23.0	B
6/11/2018	2	20.7	8.99	101.0	0	24.0	<80	110	8.48	1000	<8	B
6/11/2018	3	20.6	8.70	97.8	0.35	22.0	<80	110	8.33	1000	<8	B
9/25/2018	1	20.1	8.18	90.2	1.4	16.0	<80	100	8.28	980	<8	B
9/25/2018	2	20.3	8.3	91.5	1.7	16.0	<80	100	8.29	980	<8	B
9/25/2018	3	20.4	8.42	92.8	2.1	17.0	<80	100	8.26	990	<8	B
5/14/2019	1	11.8	10.74	99.8	0.27	15.5	<130	120	8.53	990	<8	B
5/14/2019	2	11.9	10.51	97.7	1.1	16	<130	120	8.2	990	<8	B
5/14/2019	3	11.8	10.47	97.3	0.03	16	<130	130	8.24	990	9.0	B
10/1/2019	1	20.6	9.17	103.0	0.8	17	<130	97	8.56	930	<8	B
10/1/2019	2	20.9	8.64	97.1	1.3	17	<130	98	8.32	940	<8	B
10/1/2019	3	20.4	8.54	94.2	1.3	16	<130	100	8.5	950	<8	B

Parameter Descriptions:

TEMPERATURE AND DISSOLVED OXYGEN

Temperature exerts a wide variety of influences on most lakes, such as the separation of layers of water (stratification), solubility of gases, and biological activity.

Dissolved oxygen is the parameter most often selected by lake water quality scientists as being important. Besides providing oxygen for aquatic organisms in natural lakes, dissolved oxygen is involved in phenomena such as phosphorus precipitation to, and release from, the lake bottom sediments and decomposition of organic material in the lake.

Low dissolved oxygen concentrations (below 4 milligrams per liter) are generally insufficient to support fish life. In most Michigan lakes, there is no dissolved oxygen below the thermocline in late summer. Some experts like to see some dissolved oxygen in the bottom water of a lake, even if it is almost zero. This is because as long as there is some dissolved oxygen in the water at the bottom of the lake, phosphorus precipitated by iron to the bottom sediments will remain there. Once a lake runs out of dissolved oxygen in the water at the bottom iron comes back into solution. When that happens, it releases the phosphorus back into the water. This can cause additional algae to grow when the lake mixes.

DISSOLVED OXYGEN, PERCENT SATURATION

Because the amount of dissolved oxygen a water can hold is temperature dependent with cold water holding more than warm water, dissolved oxygen saturation is often a better way to determine if oxygen supplies are adequate. The best is between 90 and 110 percent.

CHLOROPHYLL α

Chlorophyll α is used by lake scientists as a measure of the biological productivity of the water. Generally, the lower the chlorophyll α , the better. High concentrations of chlorophyll α are indicative of an algal bloom in the lake, an indication of poor lake water quality. The highest surface chlorophyll α concentration found by Wallace Fusilier (Water Quality Investigators, WQI) in a Michigan lake was 216 micrograms per liter. Best is below one microgram per liter.

SECCHI DISK TRANSPARENCY (originally Secchi's disk)

In 1865, Angelo Secchi, the Pope's astronomer in Rome, Italy devised a 20-centimeter (8 inch) white disk for studying the transparency of the water in the Mediterranean Sea. Later an American limnologist (lake scientist) named Whipple divided the disk into black and white quadrants which many are familiar with today.

The Secchi disk transparency is a lake test widely used and accepted by limnologists. The experts generally felt the greater the Secchi disk depth, the better quality the water. However, one Canadian scientist pointed out acid lakes have very deep Secchi disk readings. (Would you consider a very clear lake a good quality lake, even if it had no fish in it? It would be almost like a swimming pool.) Most lakes in southeast Michigan have Secchi disk transparencies of less than ten feet. On the other hand, Elizabeth Lake in Oakland County had 34 foot Secchi disk readings in summer 1996, evidently caused by a zebra mussel invasion a couple of years earlier.

Most limnology texts recommend the following: to take a Secchi disk transparency reading, lower the disk into the water on the shaded side of an anchored boat to a point where it disappears. Then raise it to a point where it's visible. The average of these two readings is the Secchi disk transparency depth.

Secchi disk measurements should be taken between 10 AM and 4 PM. Rough water will give slightly shallower readings than smooth water. Sunny days will give slightly deeper readings than cloudy days. However, roughness influences the visibility of the disk more than sunny or cloudy days.

TOTAL PHOSPHORUS

Although there are several forms of phosphorus found in lakes, the experts selected total phosphorus as being most important. This is probably because all forms of phosphorus can be converted to the other forms. Currently, most lake scientists feel phosphorus, which is measured in parts per billion (1 part per billion is one second in 31 years) or micrograms per liter ($\mu\text{g/L}$), is the one nutrient which might be controlled. If its addition to lake water could be limited, the lake

might not become covered with the algal communities so often found in eutrophic lakes.

Based on WQI's studies of many Michigan inland lakes, they've found many lakes were phosphorus limited in spring (so don't add phosphorus) and nitrate limited in summer (so don't add nitrogen).

10 parts per billion is considered a low concentration of phosphorus in a lake and 50 parts per billion is considered a high value in a lake by many limnologists.

NITRATE NITROGEN

Nitrate, also measured in the parts per billion range, has traditionally been considered by lake scientists to be a limiting nutrient. The experts felt any concentration below 200 parts per billion was excellent in terms of lake water quality. The highest value found by Fusilier was 48,000 parts per billion in an Ottawa County river which flowed into Lake Macatawa in Holland, Michigan

On the other hand, WQI has studied hundreds of Michigan inland lakes, and many times they find them nitrate limited (very low nitrate nitrogen concentrations), especially in summer.

WQI was finding many lakes have lower nitrate nitrogen concentrations in summer than in spring. This is probably due to two factors. First, plants and algae growing in lakes as water warms can remove nitrates from the water column. And second, bacterial denitrification (where nitrates are converted to nitrogen gas by bacteria) also occurs at a much faster rate in summer when the water is warmer.

Generally limnologists feel optimal nitrate nitrogen concentrations (which encourage maximum plant and algal growth) are about 10-20 times higher than phosphorus concentrations. The reason more nitrogen than phosphorus is needed is because nitrogen is one of the chemicals used in the production of plant proteins, while phosphorus is used in the transfer of energy, but is not used to create plant material. If the nitrate concentration is less than 10-20 times the phosphorus concentration, the lake is considered nitrogen limited. If the nitrate concentration is higher than 10-20 times the phosphorus concentration, the lake is considered phosphorus limited.

TOTAL ALKALINITY

Alkalinity is a measure of the ability of the water to absorb acids (or bases) without changing the hydrogen ion concentration (pH). It is, in effect, a chemical sponge. In most Michigan lakes, alkalinity is due to the presence of carbonates and bicarbonates which were introduced into the lake from ground water or streams which flow into the lake. In lower Michigan, acidification of most lakes should not be a problem because of the high alkalinity concentrations.

HYDROGEN ION CONCENTRATION (pH)

pH has traditionally been a measure of water quality. Today it is an excellent indicator of the effects of acid rain on lakes. About 99% of the rain events in southeastern Michigan are below a pH of 5.6 and are thus considered acid. However, there seems to be no lakes in southern Michigan which are being affected by acid rain. Most lakes have pH values between 7.5 and 9.0.

SPECIFIC CONDUCTIVITY

Conductivity, measured with a meter, detects the capacity of a water to conduct an electric current. More importantly however, it measures the amount of materials dissolved in the water, since only dissolved materials will permit an electric current to flow. Theoretically, pure water will not conduct an electric current. It is the perception of the experts that poor quality water has more dissolved materials than does good quality water



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

October 25, 2019

Walled Lake Improvement Board
Attn: David Galloway/ Megan Mikkus
c/o City of Novi Clerk's Office
45175 W Ten Mile Road
Novi, MI 48375

2020 Recommendations and cost analysis

Permit fees, surveys, and studies:

2020 DEQ permit fee = \$1,500.00
2020 Water Quality study at (3) sites in spring and fall = \$1,325.00
Annual spring vegetation visual survey = \$ 475.00
Mid-Summer/Post treatment Survey = \$475.00
Annual fall vegetation visual survey = \$475.00
Annual treatment/services report including maps and 2021 recommendations = \$775.00

Total recommendations costs for permit fees, surveys, and studies/reports = \$5,025.00

In late May to early June Savin Lake Services will plan a treatment for Curly Leaf pondweed and any remaining Eurasian Watermilfoil after the annual Spring vegetation survey is completed. We anticipate this treatment to be around 80 – 100 acres of Curly Leaf pondweed (based on treatment records in the past years) with contact herbicides. If algal blooms are present during the spring survey, we will also treat them during the first application where they are present

80 – 100 acres of contact herbicides @ \$266.83/acre = \$21,346.40 - \$26,683.00
60 – 80 acres of algae control @ \$59.71/ acre = \$3,582.60 - \$4,776.80

Total projected cost range for first treatment in 2019 = \$24,929.00 - \$31,459.80

Then in late June – early July we recommend treating the entire shoreline with algaecides for filamentous algae if necessary. After treating large amounts of vegetation as they are dying off they can produce a lot of algal blooms that usually float into the shoreline areas. The water temperatures are rapidly warming during this time and can also be a contributing factor in the large amount of algal blooms. Also, during this timeframe, we would recommend providing some relief and completing a

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

treatment for the riparian owners in the near shore developed areas of the lake containing nuisance native weeds. During this treatment we will also treat the Starry Stonewort if it is present during the Mid-Summer Survey.

60 acres of shoreline algae control @ \$59.71/acre = \$3,582.60
20 - 30 acres of contact herbicides @ \$266.83/ acre = \$5,336.60 - \$8,004.90
15 -20 acres of Starry Stonewort treatment @ \$309.52/acre = \$4,642.80 - \$ 6,190.40

Total projected cost range for second treatment = \$13,562.00 – \$17,777.90

In August, we will complete another treatment for Starry Stonewort if needed and complete a touch up treatment for nuisance native vegetation in shore line areas in and around docks again.

15 - 20 acres of Starry Stonewort treatment @ \$309.52/acre = \$4,642.80 - \$ 6,190.40
15 - 20 acres of contact herbicides @ \$266.83/acre = \$4,002.45 - \$5,336.60

Total projected cost range for August treatment = \$8,645.25 - \$11,527.00

If needed Savin Lake Services would like to conduct another late fall systemic treatment for Eurasian Watermilfoil. This treatment may not be necessary with the previous systemic Milfoil treatment being completed but for budgetary purposes I think it's a good idea to plan for it just in case.

25 - 35 acres of systemic Milfoil control @ \$665.08/acre = \$16,627.00 - \$23,277.80

Total projected cost range for 2020 = \$68,788.25 - \$89,067.50

Please keep in mind that these are approximate numbers based on treatment records in the past and survey evaluations completed this year. We expect the total overall cost to fall within these parameters. There are many variables in a lakes ecosystem that can change from year to year that make it hard to give an exact number. These figures should get us real close and should not exceed the higher end of the scale. Savin Lake Services would recommend an annual budget for 2020 of \$90,000.00 for Walled Lake. Please note that this is just a recommendation and the Savin Lake Services is willing to work within the parameters of any budget provided, prioritizing the non-native species first. We will only recommend and treat what we feel is needed to improve the overall health of the lake and make it more desirable for use by the riparian owners. Our goal is to keep the non-native and exotic plant communities in check throughout the entire lake and treat nuisance natives in and around riparian owner's docks and swim areas to make those areas more desirable for use.

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

Savin Lake Services appreciates your business and we look forward to working with the Walled Lake Improvement Board to continuously improve the overall health of Walled Lake in the future. If you have any questions, comments, or require any additional information please feel free to contact us.

Sincerely,

Paul Barber – Operations Manager

Savin Lake Services Inc.

3088 Hottis Road

Hale, Michigan 48739

Hale Office: 989-728-2200

Clare Office: 989-386-0600

Toll Free: 877-SAV-LAKE

Fax: 989-516-5900

Email: Paulbarber@LakeAndPond.com

Preserving Our Lakes Today for Our Generations Tomorrow

www.LakeAndPond.com

**WALLED LAKE IMPROVEMENT BOARD
2020 ANNUAL BUDGET
PROPOSED**

<i>Description</i>	<i>Annual Budget</i>
<u>Income</u>	
City of Novi Assessments	\$42,014.79
City of Walled Lake Assessments	\$25,421.00
Use of Surplus Funds	\$30,064.21
TOTAL INCOME	\$97,500.00
<u>Expenses</u>	
Harvesting and Herbicide Treatments (including surveys and studies)	\$90,000.00
Permit Fee	\$1,500.00
Administrative & Legal	\$5,000.00
Other	\$1,000.00
TOTAL EXPENSES	\$97,500.00



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

Future Lake Management Recommendations for Walled Lake

Walled Lake currently has 3 non-native invasive plant communities that Savin Lake Services has been aggressively managing. The non-native invasive plant communities that have been detected in Walled Lake are Curly Leaf Pondweed, Starry Stonewort, and Eurasian Watermilfoil. In addition to providing non-native invasive weed control, we have also conducted algae treatments and nuisance native weed control in the near shore developed areas when/where treatment is needed.

Each year Walled Lake seems to bring its own unique set of challenges and we welcome the opportunity to meet these challenges for you each year. It has been a pleasure to see the transformation the lake has made since 2012. Which was when we first began managing the lake with herbicides. When herbicide control began the lake was severely infested with Eurasian Watermilfoil. The Eurasian Watermilfoil had already outcompeted the native plants and had pretty much taken over a lot of the littoral zone of the lake containing substrates that can sustain weed growth. In 2012 we treated a total of 168 acres of Milfoil systemically, compared to now treating approximately 60 acres or less systemically each year. Utilizing systemic herbicides like 2,4-D has greatly improved the overall health and aesthetics of Walled Lake. 2,4-D is a fantastic herbicide to use for Milfoil control because it is selective on what weeds it controls, therefore it targets the Milfoil and leaves the desirable native vegetation unharmed providing native plant communities the opportunity to outcompete the Milfoil. Walled Lake is proof that this product works. We have greatly reduced the Milfoil population and the lake now has a vast amount of plant diversity.

When herbicide treatment first started on Walled Lake, Eurasian Watermilfoil was so dominate that it required both a Spring and Fall systemic treatments. In 2019 the Spring systemic treatment was not required. Spring (early June) applications have converted to contact herbicide applications utilizing Diquat Dibromide to manage mainly Curly Leaf Pondweed and small amounts of intermixed Milfoil. Although Curly Leaf Pondweed is an exotic non-native invasive plant species and can pose a threat to the lake like Milfoil can if not properly managed, Curly Leaf Pondweed is much cheaper and easier to gain control of. Only one treatment is required per season for Curly Leaf Pondweed and that treatment is usually completed in May or early June before the plant releases its turions. The contact herbicide Diquat Dibromide that is utilized to control the Curly Leaf Pondweed will also drop the Milfoil that is intermixed for 4-8 weeks, then the Milfoil begins its growth cycle again. Even though the Milfoil does return in the same season utilizing Diquat Dibromide, by the time it does the water is warmer and its growth cycle is very slow until water temperatures start to cool. Once water temperatures begin to cool in the Fall, Milfoil goes through another active growth cycle and that is when we target to treat the Milfoil Systemically. This method of treatment has proven to be the most effective and efficient management technique for Walled Lake.

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

Starry Stonewort was detected in Walled Lake in 2015 and has been very aggressively treated ever since. We have been very successful at containing the Starry Stonewort to the areas it was originally detected in. Treatments have been very effective for density reduction and more importantly in preventing it from spreading throughout the lake. Some years we have had to complete 2 treatments to keep it under control and isolated, but many years we were able to control it with a single treatment. Monitoring the lake often and treating as soon as Starry Stonewort begins to grow greatly increase the efficacy of the treatment and reduces the risk of it being spread to other areas of the lake. At this time there is no systemic treatment for Starry Stonewort, and we are using the best treatment methodology known to the industry at this time. Many lakes in Oakland County have become infested with Starry Stonewort. It is greatly impacting the ecosystems of many lakes by rapidly outcompeting native plant communities and vastly reducing plant diversity. Fortunately, we were able to detect it early and I feel if we continue to monitor the lake often and aggressively treat known areas, we can prevent it from becoming a major problem.

It is my belief that the management program we currently have implemented for Walled Lake's weed control is the most effective and efficient way to keep Walled Lake healthy, clean, and desirable for use by the Walled Lake property owners at this time.

After reviewing all the above factors and treatment records back to 2011, Savin Lake Services recommends the following for 2020 - 2025:

- Continue to complete Water Quality Studies in both the Spring and Fall of each year.
- Complete (3) Visual Surveys per year Spring, Mid-Summer, and Fall to identify treatment areas (Pre-treatment), ensure the efficacy of treatments (Post-treatment), and most importantly to make sure the invasive species are not getting out of control or infesting new areas of the lake.
- Complete a BioBase survey in 2022 and then again in 2025.
- Continue to aggressively treat the Eurasian Watermilfoil Systemically.
- Treat the Curly Leaf Pondweed utilizing contact herbicides like Diquat Dibromide and Endothall in Late May/Early June.
- Continue to aggressively monitor and treat the Starry Stonewort anywhere it is found in the lake.
- Continue herbicide control of Algae and Nuisance Natives when/where it's needed in the near shore developed areas of the lake.

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

Future Budget Recommendations for Walled Lake 2020 - 2025

Budgeting for future years is always a daunting task. There are many unknown factors like the weather, which plants are going to grow, when/where they will grow, etc. A lake is its own unique ecosystem, that I refer to as “being the boss”. Lakes change from year to year which makes accurately predicting what will need to be done in the future nearly impossible.

We use past treatment records, surveys, water quality data, and our knowledge of the lake to provide estimated treatment and budget recommendations. Often treatment recommendations are changed throughout the year to adapt to the current condition of the lake and/or to meet budgetary restraints/concerns. Changes are only made based on what is best for the lake and the property owners.

My belief is that it is better to be proactive instead of reactive and think many things should be considered when trying to set a budget for future years.

The following are some of factors that should be taken into consideration when planning the future budget/assessment for Walled Lake:

- The lake contains (3) non-native invasive species that can spread throughout the lake very rapidly if not managed properly in a timely manner.
- The assessment should fund all required studies/treatments that need to take place each year plus additional funds to be held in reserves to be utilized later if needed.
 - Here is an example for the need of the reserve fund: Let's say the Eurasian Watermilfoil resurges and can be found in 80 acres of the lake, and we only anticipated 40 acres of treatment in the annual budget. By having additional available funds in reserve, we would be able to treat all 80 acres properly. If no funds were available 40 acres of Milfoil goes left untreated and turns into 100 acres of Milfoil the following year.
- It is always better to overfund a project and not need to use all the funds than to need the funds and not have them available. Assessments can always be reduced or returned once an adequate reserve fund is acquired.
- Awareness that plant communities can develop herbicide resistance/tolerance to a certain herbicide(s) and we may need to evaluate utilizing other herbicide options like Procellacor or Triclopyr to achieve systemic control of the Milfoil. Which are more costly herbicide applications than we are currently using.
- Native plant populations may become a nuisance in areas where herbicide management is not permitted, and we may need to implement vegetation harvesting again to manage them.

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

After evaluating all the information from past treatment records, surveys, water quality data, and our knowledge of the lake, Savin Lake Services would recommend the budget be established for 2020 – 2025 as follows:

2020 - \$90,000.00
2021 - \$95,000.00
2022 - \$95,000.00
2023 - \$100,000.00
2024 - \$100,000.00
2025 - \$100,000.00

We feel the above budgets for each year will provide adequate funding to properly manage Walled Lake.

These budgets are based on our experience on Walled Lake and the following plan each year:

25 – 50 acres of Systemic Milfoil control
80 – 120 acres of Curly Leaf Pondweed control utilizing contact herbicides
100 -140 acres of Algae control (total over 2 treatments)
20 – 40 acres of Starry Stonewort control (total over 2 treatments)
30 - 50 acres of Nuisance Natives control utilizing contact herbicides (total over 2 treatments)
All studies, surveys, and recommendations

In the case Vegetation Harvesting is desired for offshore natives additional funding of approximately \$15,000.00 may need to be budgeted each year. Currently, I don't believe vegetation harvesting is necessary. I also believe if/when it becomes necessary, we will have reduced some of the herbicide control efforts and will be able to utilize part of the above budget for all or partial cost of the harvesting depending on amount needed to be harvested.

If you have any questions, comments, or require any additional information, please feel free to contact us.

Sincerely,

Operations Manager
Savin Lake Services Inc.

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

November 11, 2019

Walled Lake Improvement Board
Attn: Ms. Megan Mikkus
26300 Lee BeGole Drive
Novi, MI 48375



Subject: 2020 – 2025 Walled Lake Aquatic Weed Control Proposal

Savin Lake Services Inc. has a sincere interest in remaining your aquatic nuisance weed control partner for Walled Lake. Savin Lake Services is a fully integrated lakes management company offering multiple aquatic nuisance plant control methods. Savin Lakes Services Inc. provides mechanical plant removal (harvesting) and aquatic herbicide control option for our customers. We also provide lake consulting services, whole lake aeration systems, lake dredging, and decorative fountains. Savin Lake Services Inc. has been servicing Michigan's lakes and ponds for over (20) years. We provide services on over (75) lakes & (200) ponds in Michigan. The lakes that we currently have under contract range in size from 10 acres to 2,500 acres.

Savin Lake Services is a licensed and insured aquatic weed control specialist with our main office located in Hale, Michigan. We are members of the Tawas Area and West Branch Chambers of Commerce and are an A+ Accredited Member of the Better Business Bureau of Michigan. We are also members of the Michigan Lakes & Streams Association, the Midwest Aquatic Plant Management Society, the Michigan Aquatic Managers Association, and the Aquatic Ecosystem Restoration Foundation.

We have built our business based on servicing our customers well, and our location will allow us to respond to any issues or concerns that may arise on Walled Lake within a (2) day timeframe. Our solid reputation speaks for itself. We are known for a high level of quality service, and we have a strong commitment to customer satisfaction.

Savin Lake Services manages our business so that we may complete all our initial aquatic herbicide lake treatments between May 15th, and June 15th, depending on the weather, water temperature, and aquatic weed growth on a lake. We feel that this management philosophy is very important.



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

If chosen as your aquatic weed control service provider, Savin Lake Services will annually mail the Michigan Department of Environment, Great Lakes, and Energy (MEGLE) required “7 Day Lake Treatment notice” to all property owners on Walled Lake to comply with the MEGLE requirements for this notice (at no additional charge). Savin Lake Services will post each lake (at no additional charge) with brightly colored 8 ½” x 11” signs prior to any lake treatment. These postings explain the planned date of treatment, the type of treatment that we are using, and the water restrictions associated with that treatment. Typically, our treatments will require a (1) day restriction of swimming, and up to a (14) day restriction on watering lawns / irrigation from the lake. The home owners are responsible for removing the signs after all water restrictions have expired.

The products that we use for aquatic nuisance weed control are of the highest quality and used in the safest manner possible. All the products are registered by the Federal EPA (Environmental Protection Agency) and controlled by the Michigan EGLE. The required permits are issued by the Michigan EGLE, and Savin Lake Services will manage the application for these permits (at no additional charge). Savin Lake Services is licensed by the State of Michigan and carries all required insurances. License and insurance will remain in effect to cover the entire treatment season. All the employees of Savin Lake Services are well trained and hold commercial certifications.

Savin Lake Services is pleased to offer the below pricing for aquatic weed and algae control services on Walled Lake. The below pricing will be held for the entire term of this contract with no increases. The below pricing will be invoiced upon completion on a price per acre/service basis.

Walled Lake 2020 – 2025 treatment/services pricing:

Annual EGLE Permit.....	\$1,500.00/year
Water Quality Studies.....	\$1,325.00/year
Visual Surveys.....	\$ 475.00/survey
Annual report w/following year recommendations.....	\$ 775.00/ report
Bio Base Survey.....	\$3,650.00/ survey
Contact Herbicides.....	\$ 266.83/ acre
Algae Control.....	\$ 59.71/ acre
Starry Stonewort Control	\$ 309.52/ acre
Systemic Milfoil Control (Navigate @ 150 lbs./acre)	\$ 665.08/ acre
Vegetation Harvesting (30-acre Minimum)	\$ 437.04/ acre
Setup and mobilization fee for harvesting.....	\$ 3,000.00/ harvest

Any unforeseen change in Federal or State Regulatory Agency requirements concerning the implementation of any part of this agreement shall nullify this agreement.

Payment Terms: Savin Lake Services will invoice the Walled Lake Improvement Board for the lake treatments/service costs upon completion of the service the payment terms are Net 30 days.



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

If this proposal meets your needs, please sign below indicating your acceptance, and return to us at your earliest convenience.

If you have any questions – please feel free to contact us at any time. We look forward to continuing working with the Walled Lake Improvement Board on the Walled Lake weed control project.

Sincerely,

A handwritten signature in black ink that reads "Paul Barber". The signature is fluid and cursive, with a long horizontal stroke at the end.

Paul Barber – Operations Manager
Savin Lake Services Inc.

Ms. Megan Mikkus
Walled Lake Improvement Board Representative

Date

INVITATION FOR BIDS

The Walled Lake Improvement Board will receive sealed bids for a project consisting of aquatic plant herbicide treatments and mechanical weed harvesting of Walled Lake, located in the cities of Novi and Walled Lake, Oakland County, Michigan. All bids shall be submitted to:

Walled Lake Improvement Board
c/o City of Novi Clerk's Office
45175 Ten Mile Road
Novi, MI 48375

by TIME, local time, on DATE. No Bids will be received after that time.

Megan Mikus, Secretary/Treasurer
Walled Lake Improvement Board

DRAFT

INSTRUCTIONS TO BIDDERS

Walled Lake Mechanical Harvesting and Herbicide Treatment of Aquatic Weeds

Definitions

“Board” shall mean the Walled Lake Improvement Board (mailing address is: c/o City of Novi Clerk, 45175 W. Ten Mile Road, Novi, MI 48375).

Background

Walled Lake is located in Sections 2 and 3 of the City of Novi and Sections 34 and 35 of the City of Walled Lake, Oakland County, Michigan. The lake has a surface area of approximately 652 acres., of which 60 acres is targeted as-needed for aquatic plant herbicide treatments and 30 acres is targeted as-needed for mechanical harvesting of aquatic weeds.

The *Lake Improvement Study for Walled Lake* contains additional information including maps and can be found at:

<https://cityofnovi.org/Government/City-Services/Public-Services/Engineering-Division/Walled-Lake-Improvement-Board/Documents/LakeImprovementBoardStudy091201.aspx>

Examination of the Contract Documents

Before submitting a Bid, each Bidder should:

- a. Examine the Bid Documents (including any Addenda and the other related data identified in the Bidding Documents) thoroughly;
- b. The bidder shall make all the investigations necessary to thoroughly inform himself/herself regarding access to the lake for the equipment he/she may require for his/her operation;
- c. Become familiar with Federal, State, and local laws, ordinances, rules and regulations affecting performance of the work; and
- d. Carefully correlate his observations with the requirements of the Bid Documents.

Where information concerning existing conditions, is provided in the Bid Documents, such information is provided for the convenience of the Bidder and not as a guarantee of conditions. The Bidder shall be satisfied as to the sufficiency and representativity of such data, and shall make all investigations necessary so that the Bid shall be based upon knowledge and estimation of conditions to be met. The Bidder shall make all the investigations necessary to become adequately informed regarding the availability of all facilities which will be required to perform the work. No plea for ignorance of existing conditions shall be accepted. No claims will be accepted for extra compensation or extensions of time. If the Contractor fails or omits to complete all of the requirements of this contract, he/she shall be responsible for corrections.

Submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with all the requirements of this Section.

Qualifications of Bidder

To demonstrate Bidder's qualifications to perform the Work, the Bidder shall furnish all of the applicable information on the enclosed Bidder Questionnaires. The aforementioned questionnaire must be submitted with the sealed Bid at the time of the Bid Opening.

Either the bidder or their subcontractor shall be certified for aquatic pest management and hold a commercial applicator license from the Michigan Department of Agriculture in accordance with Part

83 of Act 451 of 1994, as amended. If the bidder does not hold said certification, the bidder shall furnish the name and address of the subcontractor that is certified for aquatic pest management that would be used to complete the work along with the bid.

Interpretation of Bid Documents

All questions about the meaning or intent of the Bid Documents shall be submitted to the Board in writing. If a bidder finds omissions or discrepancies in the bid documents, he/she should notify the Board at once so that the Board can issue an addendum to all bidders. Replies will be issued by Addenda and mailed or delivered to all parties recorded by the Board as having received the Bidding Documents. Questions received less than seven (7) days prior to the date of opening of Bids will not be answered. Only those questions that are answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

Preparation of Bid

The Bid form is included with the Bidding Documents. All blanks on the Bid form shall be completed by printing in ink or by typewriter and the Bid signed. A Bid price shall be indicated for each unit price item listed therein, or the words "no Bid", "No Change", or "Not Applicable" entered. In case of discrepancy between the Total Amount Bid and the summation of the products of item quantity and unit price, unit prices shall govern. Only one (1) copy of the bid form is required.

Alterations to prices or amounts already entered on the Bid form may be made only by crossing out the price or amount in ink and entering the new price or amount above or below the voided price or amount in ink, with the change initialed and dated by the Bidder in ink.

The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Bid form.

Alternate Bids will not be considered unless expressly requested by the Board. Oral Bids will not be considered. A conditional Bid or conditions attached to Bids shall have no force or effect.

A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and shall be enclosed in an opaque, sealed envelope, plainly marked with "WALLED LAKE AQUATIC WEED CONTROL BID" and name and address of the Bidder. Each bidder shall complete the Bidder Questionnaire and submit it with his/her Bid Form. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED."

Bid forms with facsimile or other electronically transmitted signatures will not be considered.

Modification or Withdrawal of Bids

Any Bidder may withdraw its Bid, either personally or by written request, at any time prior to the scheduled time for Bid Opening. If, within 24 hours after Bids are opened, any Bidder files a duly signed, written notice with Board and promptly thereafter demonstrated to the reasonable satisfaction of Board that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work. No withdrawal of a Bid shall be permitted on account of mistake or any other reason after the expiration of this 24 hour period.

Bids received after the time and date specified will not be considered.

Bids shall remain firm for 120 days. If there are any reasons why the contract cannot be awarded within this specified time period, the time of award may be extended by mutual agreement between the Board and the bidder.

Opening of Bids

Bids will be opened at the time and place indicated in the Advertisement for Bids and, unless obviously nonresponsive, read aloud publicly. An abstract of the amounts of the Bids and alternates, if any, will be made available to Bidders after the opening of Bids.

Award of Contract

The Board reserves the right to accept any Bid or alternate and award the Contract to other than the lowest bidder; to waive any irregularities or informalities, or both; to reject any or all Bids; and in general to make the award of the Contract in any manner deemed by the Board, in its sole discretion, to be in the best interests of the Board. No conditional or qualified bids will be accepted.

More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of the Bidder and the rejection of all Bids in which that Bidder has an interest.

Bids will be evaluated based upon cost and prior experience. Opening and reading the Bids shall not constitute the acceptance of a Bidder as qualified. The right is reserved by the Board to determine a Bidder's qualifications, either from the Board's knowledge or from other sources.

Should the Board be unable to award the Contract within 120 calendar days following the opening of Bids, the Board reserves the right to award the Contract at a later date to the lowest qualified Bidder at its Bid price, providing said Bidder is willing to accept such award.

The Board further reserves the right to add or delete any and all items of work for any reason whatsoever, including but not limited to, budgetary constraints, court action, or the inability to obtain necessary permits.

Insurance

The successful Bidder will be required to carry and furnish proof of insurance including worker's compensation and general liability coverage for bodily injury and property damage in the minimum amount of \$1,000,000 for each occurrence of bodily injury and \$1,000,000 for each occurrence of property damage. The general liability insurance certificate must include a provision which states the insurance covers the application of aquatic herbicides to inland lake. The general liability insurance obtained must name the Walled Lake Improvement Board, the City of Novi, the City of Walled Lake, their officers, agents, servants, volunteers, and employees as additional insured.

Such insurance must be issued by companies and in a form satisfactory to the OWNER. Certificates of such insurance must be attached to each copy of the executed Contract. These certificates shall contain a provision that coverages afforded under the policies will not be cancelled or materially changed unless at least thirty (30) days prior written notice has been given to the Board, as evidenced by return receipt or registered or certified mail.

END OF SECTION

BID FORM

BID DATE: _____

BID TO: Walled Lake Improvement Board
c/o City of Novi
45175 Ten Mile Rd
Novi, MI 48375

BID FROM: _____ (Company Name of Bidder)

_____ (Company Address)

_____ (Telephone)

_____ (Email)

In compliance with your invitation for bids, bidder hereby proposes to perform all work related to aquatic herbicide treatments and mechanical harvesting of Walled Lake, Oakland County, Michigan, in strict accordance with the contract documents, within the time set forth therein, and at the prices stated below.

By submission of this bid, the bidder certifies that this bid has been arrived at independently without consultation, communication, or agreement as to any matter relating to this bid with any other bidder or with any competitor.

Further, the bidder also certifies that he/she has examined the contract documents and the location of the work described herein and is full informed as to the nature of the work and the conditions relating to its performance.

The bidder understands that the acreages listed are approximate only and subject to either increase or decrease. The bidder agrees that the unit prices named will be used if additions or deductions are made to the quantity of work.

With the exception of the permit application fee and herbicide residue analysis, if required, all work described in the contract documents and required for completion of the project shall be considered as incidental work unless designated as a pay item on the Bid Form.

The undersigned, having familiarized himself/herself with the instructions to bidders and the specifications, hereby proposes to perform everything required and to provide and furnish all of the labor, materials, equipment, and all utility and transportation services necessary to perform and complete all the work required for aquatic herbicide treatments of Walled Lake in a workmanlike manner, all in accordance with the specifications at and for the following named price to wit:

<i>Description</i>	<i>Estimated Quantities</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Total Price</i>
Systemic Milfoil Control	25-50 acres	per acre	\$	\$
Curly Leaf Pondweed Control	80-100 acres	per acre	\$	\$
Starry Stonewort Control	20-40 acres	per acre	\$	\$
Algae Control	100-400 acres	per acre	\$	\$
Nuisance Natives Control	30-50 acres	per acre	\$	\$
Mechanical Weed Harvesting	30-35 acres	per acre	\$	\$
TOTAL BID PRICE			\$	

The Bidder proposes the use of the following aquatic herbicides per the schedule below for this project:

Aquatic Herbicide Name	Application Rate (circle appropriate units per area)	Area of Treatment (acres)
	gal/acre lbs/acre	
	gal/acre lbs/acre	
	gal/acre lbs/acre	
	gal/acre lbs/acre	
	gal/acre lbs/acre	

Contract extensions beyond calendar year 2020 at the unit price bid, plus three percent of the base unit price per year, are contingent upon the discretion of the Walled Lake Improvement Board.

In the interest of expediting the award of this contract, the undersigned may be required to show that he/she has performed work similar to that included under the proposed contract for which this bid is offered.

In submitting this bid, it is understood that the right is reserved by the Walled Lake Improvement Board to reject any and all bids and to waive defects in the bids.

Signed this _____ day of _____, 20____.

SIGNATURE: _____

NAME AND TITLE: _____
(printed)

END OF SECTION

DRAFT

SPECIFICATIONS

Aquatic Herbicide Application

1. Pursuant to the provisions of Part 33, Aquatic Nuisance Control, of PA 451 of 1994 (the Natural Resources and Environmental Protection Act), as amended, the Contractor must obtain a permit from the Michigan Department of Natural Resources and Environment (MDNRE) prior to applying herbicides to Walled Lake. With the exception of the application fee, the Contractor shall be responsible for all other costs associated with acquiring approvals and permits from the MDNRE. The application for permit must be submitted to the MDNRE prior to January 15, 2020. A copy of said permit application shall be provided to the Board with 5 days of submittal to MDNRE. When received from MDNRE, contractor shall provide a copy of said permit, in its entirety, to the Board prior to initiating the herbicide treatment program. Upon receipt of permit copy, the Board will reimburse application fee to the contractor.
2. Approximately 60 acres of Walled Lake contain nuisance weed growth that is targeted for control using aquatic herbicide. Adjustment to the areas and number of acres to be treated may be made by the Board if found appropriate in view of the nature or extent of plant growth in the lake. Areas and the number of acres to be treated will be specified in writing by the Board.
3. The initial herbicide application shall be conducted in the time period between May 15 and June 15, 2020. A follow-up application shall be conducted within 30 days of the initial application at no cost to treat areas in which adequate die-back of targeted plants did not occur. The Board's representative must be present during any application of fluridone. The Board may modify the actual timing of herbicide treatments from the above requirements if found appropriate based upon the type and distribution of plants in the lake and MDNRE permit conditions. Herbicide applications shall be timed such that no swimming or fishing restrictions are in effect during legal holidays or weekends. The Contractor shall not apply herbicides to Walled Lake, under contract with any entity other than Walled Lake Improvement Board, without explicit authorization from the Walled Lake Improvement board, unless Contractor has obtained a separate permit from MDNRE.
4. The aquatic nuisance plant found in Walled Lake are Curly Leaf Pondweed, Starry Stonewort, and Eurasian milfoil.
5. The Contractor shall not apply herbicides to undeveloped shoreline areas or wetlands without explicit authorization from the Board.
6. The Contractor shall not apply herbicides to visible fish spawning beds.
7. The Contractor shall comply with a permit conditions in the MDNRE permit.
8. All herbicides applied to Walled Lake must be approved by the MDNRE and shall be handled, stored, and applied in a manner consistent with state regulations and manufacturer's instructions. The Contractor is responsible for all postings and notifications required by the MDNRE permit conditions.

Mechanical Harvesting of Aquatic Weeds

1. Approximately 30 acres of Walled Lake contains nuisance weed growth that is targeted for control using mechanical harvesting. Adjustment to the areas and number of acres to be treated may be made by the Board if found appropriate in view of the nature or extent of plant growth in the lake. Areas and the number of acres to be treated will be specified in writing by the Board.

DRAFT

CONTRACT

THIS AGREEMENT, made and entered into this _____ day of _____,
20_____, by and between the Walled Lake Improvement Board, hereinafter called the
“Board,” and _____

hereinafter called the “Contractor,” to wit:

1. That the Contractor shall furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories necessary to perform and complete in a workmanlike manner, all work required for the construction of the Project, in strict compliance with the Bid Documents herein mentioned, which are hereby made a part of the Contract.
2. That the Contractor shall indemnify the Board, its officers, agents, servants, volunteers, and employees from any and all liabilities, claims, liens, demands, and costs, including Contractor’s own employees and for loss or damage to any property in connection with or in any way incidental to or arising out of the occupancy, use, service, operations, performance or non-performance of work in connection with this contract resulting from negligent acts or omissions of Contractor, any Subcontractor, or any employee or representative of Contractor.

IN CONSIDERATION WHEREOF, said Board promises and agrees to pay to said Contractor the sum provided in the attached bid, dated _____, 20_____.

\$ _____ (_____)
_____).
(amount in figures and writing)

Payments shall be made upon satisfactory completion of the aquatic herbicide treatments and mechanical weed harvesting based on a review of the payment submittal forms and a visual inspection by the Board, in current funds at the unit prices state in the Contractor’s Bid.

For the faithful performance of all of the stipulations, terms, and conditions of this agreement, said parties respectfully bind themselves and their, executors, administrators, and assigns.

IN WITNESS WHEREOF, the parties have hereunto set their hands, in duplicate, the day and year first above written.

OWNER:

WALLED LAKE IMPROVEMENT BOARD

By: _____
(Signature)

Name: _____
(Printed)

Title: _____

WITNESS:

(Signature)

Name: _____

CONTRACTOR:

By: _____
(Signature)

Name: _____
(Printed)

Title: _____

WITNESS:

(Signature)

Name: _____
(Printed)

**Bidder Questionnaire
Walled Lake
Aquatic Herbicide Treatment Program**

Bidder: _____

- 1) How long have you (or the subcontractor you intend to use for the project) been in the aquatic herbicide treatment business?

_____ Years

- 2) During 2019, how many lakes in the various size categories listed below did you (or the subcontractor you intend to use for the project) treat with herbicides?

- 1 to 10 Acres: _____ Lakes
- 11 to 100 Acres: _____ Lakes
- 101 to 500 Acres: _____ Lakes
- Lakes > 500 Acres: _____ Lakes

- 3) Please attach a complete listing of staff and equipment or subcontractors, proposed to be utilized for the herbicide treatment program on Walled Lake.

- 4) Please attach a listing of a minimum of three references of previous work for you (or the subcontractor you intend to use for the project). For each project, provide a contact person with phone number and include the lake name, county, lake surface acreage, treatment area acreage, plants targeted for control, herbicides applied, and Michigan Department of Natural Resources and Environment permit number.

Signed this _____ day of _____, 20_____.

Signature: _____

Name and Title: _____

(Printed) _____

**Bidder Questionnaire
Walled Lake
Weed Harvesting Program**

Bidder: _____

- 5) How long have you (or the subcontractor you intend to use for the project) been in the aquatic weed harvesting business?

_____ Years

- 6) During 2019, how many lakes in the various size categories listed below did you (or the subcontractor you intend to use for the project) harvest aquatic weeds?

- 1 to 10 Acres: _____ Lakes
- 11 to 100 Acres: _____ Lakes
- 101 to 500 Acres: _____ Lakes
- Lakes > 500 Acres: _____ Lakes

- 7) Please attach a complete listing of staff and equipment or subcontractors, proposed to be utilized for the weed harvesting program on Walled Lake.

- 8) Please attach a listing of a minimum of three references of previous work for you (or the subcontractor you intend to use for the project). For each project, provide a contact person with phone number and include the lake name, county, lake surface acreage, harvested area acreage, and plants targeted for control.

Signed this _____ day of _____, 20_____.

Signature: _____

Name and Title: _____

(Printed) _____