

PLM Lake & Land Management Corp. Northern Division

P.O. BOX 424 Evart, MI 49631 800-382-4434 ext. 2200 (o) 231-372-5900(f) www.plmcorp.net

On-Site Lake Evaluation Record

Lake N	ame: Six Mil	e Lake	(County: Antrim/Ch	arlevoix
Evalua	ted by: Mitcl	h Hiler	Reviewed by: Bre G	rabill	Date: 10 September 2015
Purpos	e of evaluat	ion: End o	f season survey		
Eval	uations Po	erforme	d		
Aquat	ic Vegetatio	n Evaluatio	n	x Water quality	sampling
X	Aquatic veg	getation su	rvey		(Temperature, DO, Secchi disk)
	Aquatic ve	getation br	ief check		samples collected for P, TN, ALK analysis
	ation evalua		ods	☐ GPS data coll	ection
	Visual eval			☐ Depth su	rvey
X			h rake	☐ Shoreline	mapping
	Sonar profi GPS-mappe		ocations	☐ Reference	e point location
	ог э-шарре	eu sample l	ocations	□ Other	
Over	all Condi	tion of L	ake		
	excellent	(no proble	ems or developing prob	lems noted)	
X	very good		diate action required)	,	
	fair	(managem	nent required soon)		
	poor		nent needed as soon as	possible)	
	very poor	(managem	nent action past due—I	MMEDIATE respons	e required)
Prob	ems Note	ed			
Χ	Growth of e x Eurasiar		s (mark locations on m	ap)	
	150	af pondwee _Variable l	ed eaf milfoil		
X 		ilamentous clarity	ative plants (note plan algae growth (mark lo		(locations on map)



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RECOMMENDATIONS

X	Monitoring Program:
	Continue monitoring program next season: x Yes, □ No
X	Herbicide application: Continue Program Next Season
	Need for herbicide treatments next season: ☐ urgent, x serious, ☐ moderate, ☐ slight
X	Algaecide application: Continue Program Next Season
	Need for algae treatments next season: ☐ urgent, ☐ serious, x moderate, ☐ slight
	EC

NOTES

Six Mile Lake was surveyed on 10 September 2015. Water quality samples were collected at this time as well. The 2015 water quality report is issued with the spring results on a separate report.

Six Mile Lake was surveyed multiple times throughout the season to monitor and track exotic plants as well as native growth in the lake. In 2015, in addition to treatments for milfoil species, treatments for algae occurred as required. Algae growth will vary seasonally and is impacted daily with weather and available nutrients. Filamentous algae is permitted to be treated in developed shoreline areas of the lake. Algae was treated on Six Mile Lake on 6/16, 6/30 (partial treatment), 7/1 (partial treatment), and 7/29. Algae may need to be treated in 2016 and is only recommended for treatment when it is causing a recreational, navigational or aesthetic issue on the lake. The need for algae control will vary, as it wasn't required in previous years to the degree it was in 2015.

Eurasian watermilfoil and variable leaf milfoil were targeted for control on 6/16 and again on 8/4. Since the initial treatment, very little milfoil as been found growing. As the milfoil continues to resurge and become more evident in the water column, treatment recommendations may change; however, based on the current growth found, the treatment program has been very effective. It is recommended to continue to survey and spot treat for milfoil as found in the lake. Based on the size of the treatment beds, depth, hybrid species, etc; treatment rates have increased over the last few years and may increase again in the future. New research is showing that hybrid milfoil requires a higher application rate than its parent biotype, Eurasian watermilfoil. Currently, all treatments have fallen within and below budget and the 2016 proposed budget should be sufficient based on previous growth.

Native plants were present in the lake and by mid to late season, some plants are causing a nuisance in certain areas of the lake. Having a diverse and dense native plant community post milfoil treatment supports the selectivity and success of the treatments performed. Residents are encouraged to rake their beaches and remove debris and floating boat chop. If and when native plants become an issue requiring additional control, management options can be worked into the treatment program.

It is recommended to continue to monitor Six Mile Lake with both surveys and water quality monitoring in 2016. Management focus should remain on exotic submersed plants and if approved in the future, terrestrial plants. Additional treatment for algae and/or other concerns can again be incorporated into the program if required and approved throughout the season.

Please contact me with questions or concerns.

BreAnne Grabill, Environmental Scientist

Northern Lakes Manager

Gefine Grahll

PLM Lake & Land Management Corp. North

breg@plmcorp.net

Standard Aquatic Vegetation Summary Sheet

		A۱	tal nu /AS's	for ea	nch				Sum of Columns		Col 9 divided by Col 10	
Code				Category				ations		5-8		
No	Plant Name	A	В	C	D	Ax1			D x 80			
5000000		1	2	3	4	5	6	7	8	9	10	11
1	Eurasian watermilfoil	8	0	0	0	8	0	0	100	8	78	0.1
2	Curly leaf pondweed	0	0	0	0	0	0	0	0			
3	Chara	12	28	11	1	12	280	440	80	812	78	10.4
4	Thinleaf pondweed	5	2	0	0	5	20	0	0	25	78	0.3
5	Flatstem pondweed	14	40	21	0	14	400	840	0	1254	78	16.0
6	Robbins pondweed	2	2	0		2	20	0	0	22	78	0.2
7	Variable pondweed	3	2	0	0	3	20	0	0	23	78	0.2
8	White stem pondweed	0	0	0	0	0	0	0	0			
9	Richardsons pondweed	12	12	4	0	12	120	160	0	292	78	3.7
10	Illinois pondweed	4	1	0	0	4	10	0	0	14	78	0.1
11	Large leaf pondweed	12	32	6	0	12	320	240	0	572	78	7.3
12	American pondweed	0	0	0	0	0	0	0	0			
13	Floating leaf pondweed	1	6	3	0	1	60	120	0	181	78	2.3
14	Water stargrass	0	0	0	0	0	0	0	0			
15	Wild celery	8	37	9	0	8	370	360	0	738	78	9.4
16	Sagittaria (submersed)	0	0	0	0	0	0	0	0			
17	Northern watermilfoil	21	11	0	0	21	110	0	0	131	78	1.6
18	Green watermilfoil	0	0	0	0	0	0	0	0	131	70	1.0
19	Two-leaved watermilfoil	0	0	0	0	0	0	0	0			
20	Coontail	30	14	0	ol	30	140	0	0	170	78	2.:
21	Elodea	18	4	0	0	18	40	0	0	58	78	0.7
22	Bladderwort	17	30	10	0	17	300	400	0	717	78	9.1
23	Mini Bladderwort	0	0	0	0	0	0	0	0	717	70	9.1
24	Buttercup	0	0	0	0	0	0	0	0			
25	Naiad	5	42	8	Ö	5	420	320	0	745	78	9.5
26	Brittle naiad	0	0	0	0	0	0	0	0	773	70	9.0
27	Sago Pondweed	9	2	0	0	9	20	0	0	29	70	0.5
28	Cabomba	0	0	0	0	1 0	0	0	0	29	78	0.3
29	Starry stonewort	0	0	0	0	0	0	0	107.0			
30	Water Lily	15	36	17	1	15	360	680	0 80	1175	701	1/1
31	Spatterdock	28	31	2	1	28		200000000000000000000000000000000000000		1135	78	14.5
32	Water shield	0	0	0	0		310	80	80	498	78	6.3
33	Lemna minor	0	0	0	0	0	0	0	0			
34	Greater duckweed	0	0	0	0	0	0	0	0			
35	Watermeal	0	0	0	0	0	0	0	0			
	Arrowhead	0	0	0	0			0	0			
	Pickerelweed			11.000		0	0	0	0			
	Arrow arum	0	0	0	0	0	0	0	0			
	Cattail		0	0	0	0	0	0	0			
	Bulrush	18	35	7	1	18	350	280	80	728	78	9.3
	Charles and All Control of the Contr	8	36	26	0	8	360	1040	0	1408	78	18.0
	Iris	0	0	0	0	0	0	0	0			
	Swamp loosestrife	2	0	0	0	2	0	0	0	2	78	0.0
	Purple loosestrife	15	4	0	0	15	40	0	0	55	78	0.7
	Water Marigold	17	3	0	0	17	30	0	0	47	78	0.6
	Variable leaf milfoil	24	3	0	0	24	30	0	0	54	78	0.6
46	Slender spikerush	0	0	0	0	0	0	0	0			
47	Smartweed	0	0	0	0	0	0	0	0			
48		0	0	0	0	0	0	0	0			
	American lotus	0	0	0	0	0	0	0	0			
50		0	0	0	0		0	0	0			

Total cumulative cover

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PLM Lake and Land Management Sales by Customer Detail January through December 2015

Date	Num	Wemo	Qty	Sales Price	Amount
Six Mile Lake - E	Echo Township	ship			
06/16/2015	146465	Discount South Arm Portion (56.61%)	-0.5661	13 240 68	-7 495 55
06/16/2015	146465	Milfoil Treatment of Lake Using Renovate OTF at 200lbs/acre	15	755 00	11 325 00
06/16/2015	146465	Algae Treatment of Lake	43	40.00	1.720.00
06/16/2015	146465	Fuel Surcharge	0.015	13.045.00	195.68
06/30/2015	146649	Echo Township Portion (43.39%)	-0.5661	533.00	-301.73
06/30/2015	146649	Algae Treatment of Lake	13	40.00	520.00
06/30/2015	146649	Fuel Surcharge	0.025	520.00	13.00
07/01/2015	146790	Discount Echo Township Portion (43.39%)	-0.5661	1,552.00	-878.59
07/01/2015	146790	Algae Treatment of Lake	38.8	40.00	1,552.00
07/29/2015	147495	Discount (South Arm Portion 56.61%)	-0.5661	1,407.60	-796.84
07/29/2015	147495	Algae Treatment of Lake	34.5	40.00	1,380.00
07/29/2015	147495	Fuel Surcharge	0.02	1,380.00	27.60
08/04/2015	147648	Discount Echo Township Portion (43.39%)	-0.5661	18,549.99	-10.501.15
08/04/2015	147648	EWM Treatment of Lake Using Renovate OTF at 200lbs/acre	23.6	755.00	17,818.00
08/04/2015	147648	EWM Treatment of Lake Using Sculpin G at 200lbs/acre	_	548.33	548.33
08/04/2015	147648	Fuel Surcharge	0.01	18,366.33	183.66
09/10/2015	149523	AVAS Survey of Lake		1,030.00	1,030.00
09/10/2015	149523	Water Quality Program	_	615.00	615.00
09/10/2015	149523	Discount for South Arm Portion (56.61%)	-0.5661	1,669.68	-945.21
09/10/2015	149523	Fuel Surcharge	0.015	1,645.00	24.68
12/14/2015	14163	Reimbursement for 2016 Permit Application Fee	_	650.85	650.85
Total Six Mile Lake - Echo Township	(e - Echo T	ownship	168.5884		16,684.73
TOTAL			168.5884		16 684 73

PLM Lake and Land Management Sales by Customer Detail January through December 2015

TOTAL	Total Six Mile Lake - South Arm Township	09/10/2015	09/10/2015	09/10/2015	09/10/2015	08/04/2015	08/04/2015	08/04/2015	08/04/2015	07/29/2015	07/29/2015	07/29/2015	07/01/2015	07/01/2015	06/30/2015	06/30/2015	06/30/2015	06/16/2015	06/16/2015	06/16/2015	06/16/2015	Six Mile Lake - South Arm	Date
	Lake - South /	149524	149524					147661		147494			146795	146795	146656	146656	146656	146466	146466	146466	146466	- South Arm	Num
	\rm Township	Fuel Surcharge	Discount for Echo Township Portion (43.39%)	Water Quality Program	AVAS Survey of Lake	Fuel Surcharge	EWM Treatment of Lake Using Sculpin G at 200lbs/acre	EWM Treatment of Lake Using Renovate OTF at 200lbs/acre	Discount South Arm Township Portion (56.69%)	Fuel Surcharge	Algae Treatment of Lake	Discount (Echo Township Portion 43.39%)	Algae Treatment of Lake	Discount South Arm Portion (56.61%)	Fuel Surcharge	Algae Treatment of Lake	Discount South Arm Portion (56.61%)	Fuel Surcharge	Algae Treatment of Lake	Milfoil Treatment of Lake Using Renovate OTF at 200lbs/acre	Discount Echo Township Portion (43.39%)	Township	Memo
168.3816	168.3816	0.015	-0.4339			0.01		23.6	-0.4339	0.02	34.5	-0.4339	38.8	-0.4339	0.025	13	-0.4339	0.015	43	15	-0.4339		Qty
		1,645.00	1,669.68	615.00	1,030.00	18,366.33	548.33	755.00	18,549.99	1,380.00	40.00	1,407.60	40.00	1,552.00	520.00	40.00	533.00	13,045.00	40.00	755.00	13,240.68		Sales Price
20,919.07	20,919.07	24.68	-724.47	615.00	1,030.00	183.66	548.33	17,818.00	-8,048.84	27.60	1,380.00	-610.76	1,552.00	-673.41	13.00	520.00	-231.27	195.68	1,720.00	11,325.00	-5,745.13		Amount