

September 21, 2022



PLM
LAKE & LAND
MANAGEMENT CORP

Budd Lake Improvement Board
Mr. Carl Parks
225 West Main St
Harrison, MI 48625

PLM Lake and Land Management will provide management services for Budd Lake in 2023 as part of our current contract. The following is a review of Budd Lake with cost increases of 3% or less on some items.

Management Program for Budd Lake 2023:

In order to properly manage Budd Lake, a diverse and strong native plant community needs to be promoted. This is done in a variety of ways, including controlling the infestation of exotic and invasive plants. Controlling exotic and invasive species is vital to the overall health of the lake, however some constraints do exist and as a community, we can work through those. In addition, monitoring the lake for both plants and water quality parameters is key to the long-term success of the program. Reducing nutrient loading, promoting natural buffers and shorelines and dealing with elevated phosphorus levels are also important when managing the lakes. Educating riparians on lake ecology, protecting the environment and working with all that use Budd Lake to prevent entry of new plants will assist in the long-term lake management efforts.

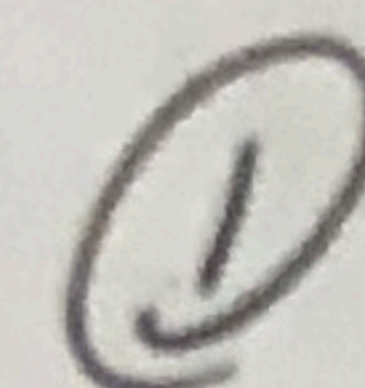
Unit Costs per Acre

Systemic Herbicides:	Cost:	Application Rate:
2,4-D (Sculpin G):	\$372.00	@120lbs/acre
Renovate OTF:	\$465.00	@120lbs/acre
Renovate 3	\$258.00	@2.5gals/acre
Contact Herbicides:		
Diquat:	\$170.00	@1gal/acre
Diquat:	\$190.00	@2gals/acre
Aquathol K:	\$175.00	@1gal/acre
Clipper:	\$350.00	@100ppb + contacts
Clipper:	\$450.00	@200ppb
Aquastrike:	\$335.00	@2.5gal/acre
Procellacor:	\$100.00	per PDU
Other Services:		
Nautique (wild celery):	\$375.00	@7.5 gals/acre (liquid)
Komeen Crystals (wild celery):	\$500.00	@ 30lbs/acre
Algaecides (per acre):	\$43.00	@5-6lbs/acre + chelated copper
Algaecides (per acre):	\$46.00	@13lbs/acre (copper only)
Algaecides (per acre):	\$125.00	@13lbs/acre copper + hydrothol
Purple Loosestrife:	\$300.00	per acre
MD Pellets:	\$230.00	per acre
AVAS Survey (annual):	\$555.00	Optional
Mid-Summer Surveys:	No Charge	
Water Quality Program:	\$630.00	Optional (per sampling site)
Lake Management Plan:	\$655.00	
Aeration Maintenance Program:	\$250.00	
Mechanical Harvesting	\$250/hour	(\$4,000.00 minimum)
EGL E Permit:	\$1,600.00	

*Unit cost application rates are provided. If the application rate is adjusted, the unit cost will be proportionally adjusted for the increase in rate.

*Hybrid milfoil populations require increased application rates and more aggressive treatment protocols, often increasing the cost/acre and overall lake budgets. It is important to stay on top of milfoil populations and manage a waterbody for changing

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genetic makeups.

Water Quality Program for Aeration Permit:

Water Quality sampling: \$ 350/ sample (2 locations needed), 3 samplings
Chlorophyll A/Algal Comp: \$350.00/sample (2 locations needed, 3 samplings)
Muck Sampling: \$300/sample

Estimated Water Quality Cost:

Sampling:	\$2,100.00
Chlorophyll A/Algal Composition:	\$2,100.00
Muck Samples:	\$ 300.00
Total:	\$4,500.00

Estimated Budget for 2023: All budgets are comprised using the unit costs per acre listed above and estimated acres. It is extremely difficult to predict how many acres will require service. All treatments will be done within your set budget as established by the SAD. This budget is designed to include a variety of management options and services, some of which may not fit within your set budget, but are given as example of other services available. Further, based on previous lake treatments, it is important to use proper application rates and vary management techniques to avoid resistance within the milfoil plants.

Sonar Treatment Sonar A.S:

Treatment with Sonar A.S @6ppb @~18' depth:	~\$18,000.00	(estimated depth)
Bump up Treatment with Sonar A.S./ppb @~18'depth:	~\$2,900.00	(estimated depth)
FasTESTs:	\$175.00	(30 samples)
LMP:	\$750.00	
Estimated Sonar A.S Cost:	~\$41,400.00	

	Minimum	Expected	Maximum
Permit:	\$ 800.00	\$ 800.00	\$ 800.00
Algae Control:	\$ 2,500.00	\$ 3,250.00	\$ 4,000.00
Weed Control (Exotics):	\$15,000.00	\$18,500.00	\$21,500.00
Weed Control (Natives):	\$13,000.00	\$15,000.00	\$16,000.00
Subtotal:	\$31,300.00	\$37,550.00	\$42,300.00
Aeration Program:			
Maintenance:	\$ 250.00	\$ 250.00	\$ 250.00
Electricity:	\$ 500.00	\$ 500.00	\$ 500.00
Muck Control:	\$11,500.00	\$11,500.00	\$11,500.00
WQ program:	\$ 4,500.00	\$ 4,500.00	\$ 4,500.00
Subtotal:	\$16,750.00	\$16,750.00	\$16,750.00
Management Services:			
WQ Program:	\$ 630.00	\$ 630.00	\$ 630.00 (optional)
AVAS Surveys (2/year):	\$ 555.00	\$ 555.00	\$ 555.00 (optional)
Subtotal:	\$ 1,185.00	\$ 1,185.00	\$ 1,185.00
Total:	\$49,235.00	\$55,485.00	\$60,235.00

Casey Shoaff, Environmental Biologist
Northeast Lakes Manager
PLM Lake & Land Management Corp.
caseys@plmcorp.net
800-382-4434 ext. 2202

PO Box 424 · Evert, Michigan 49631
phone 800.382.4434 · fax 231.372.5900
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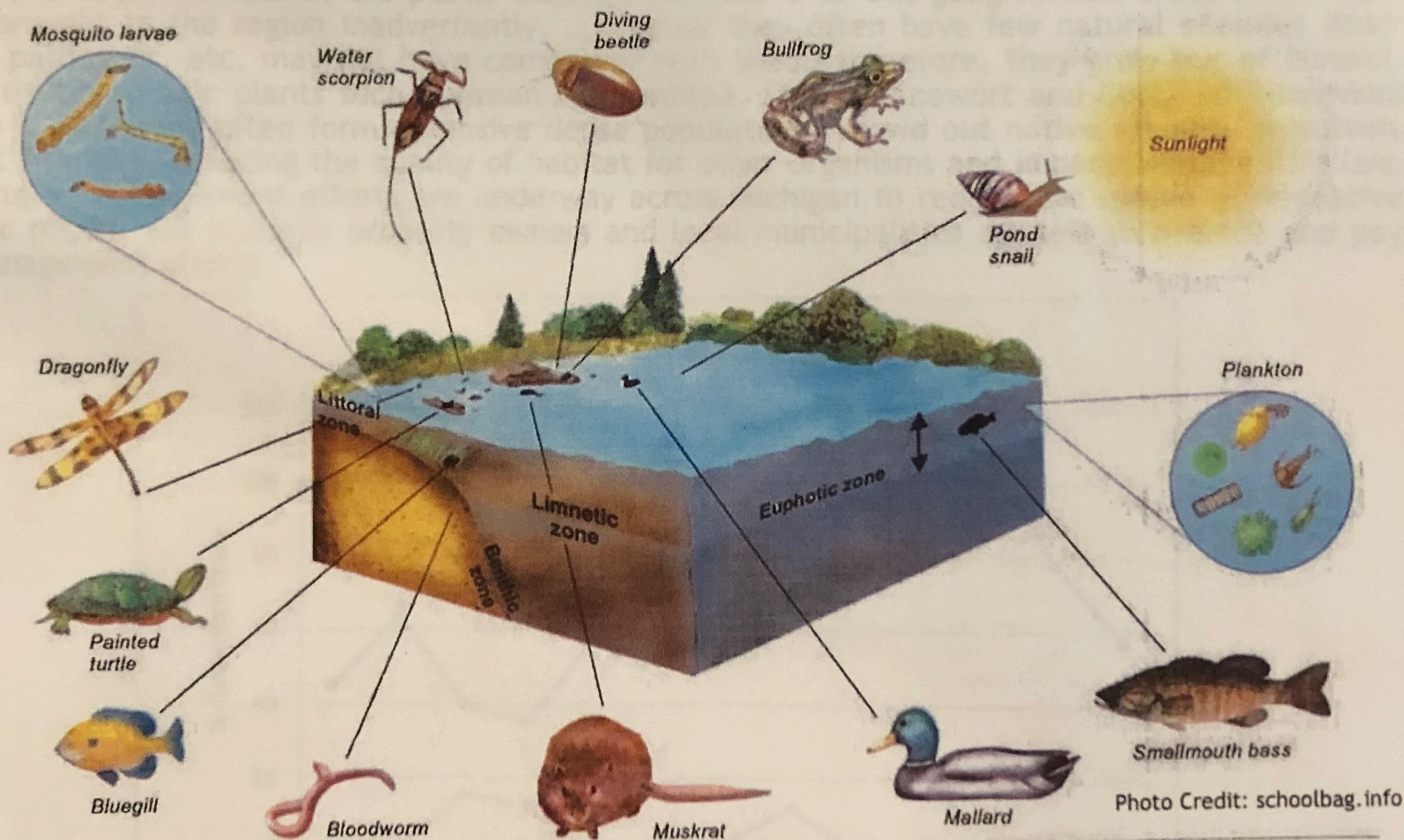
Protecting your environment today for tomorrow.

Lake Evaluation Summary

Lake Name: Budd Lake County: Clare

Evaluated by: Sal Adams Reviewed by: Casey Shoaff Date: August 2022

Purpose of evaluation: AVAS Survey Evaluation, Water Quality



Budd Lake was surveyed on 11 August 2022, by experienced PLM scientists. The goal of this survey was to identify any exotic species and document native plant diversity. An AVAS Survey was performed, using EGLE approved survey techniques which broke the lake down into segments to document all vegetation present by species and density. July through September are ideal months for finding peak biomass in this geographical area. Out of the sites surveyed, 15 native species were found and Budd Lake still has EWM and CLP. Overall, the growth in Budd Lake was good and chara, wild celery and various pondweeds were the most prevalent species found. Chara is a vital part of the lake ecosystem, providing sediment control and water clarity while providing habitat for fish. Over the past few years, Budd Lake is showing strong native trend lines with a healthy native plant community. The EWM population was treated using a full lake treatment and was controlled throughout the 2022 season. At the end of the season, the EWM was bouncing back and will likely require a sonar treatment in 2023.

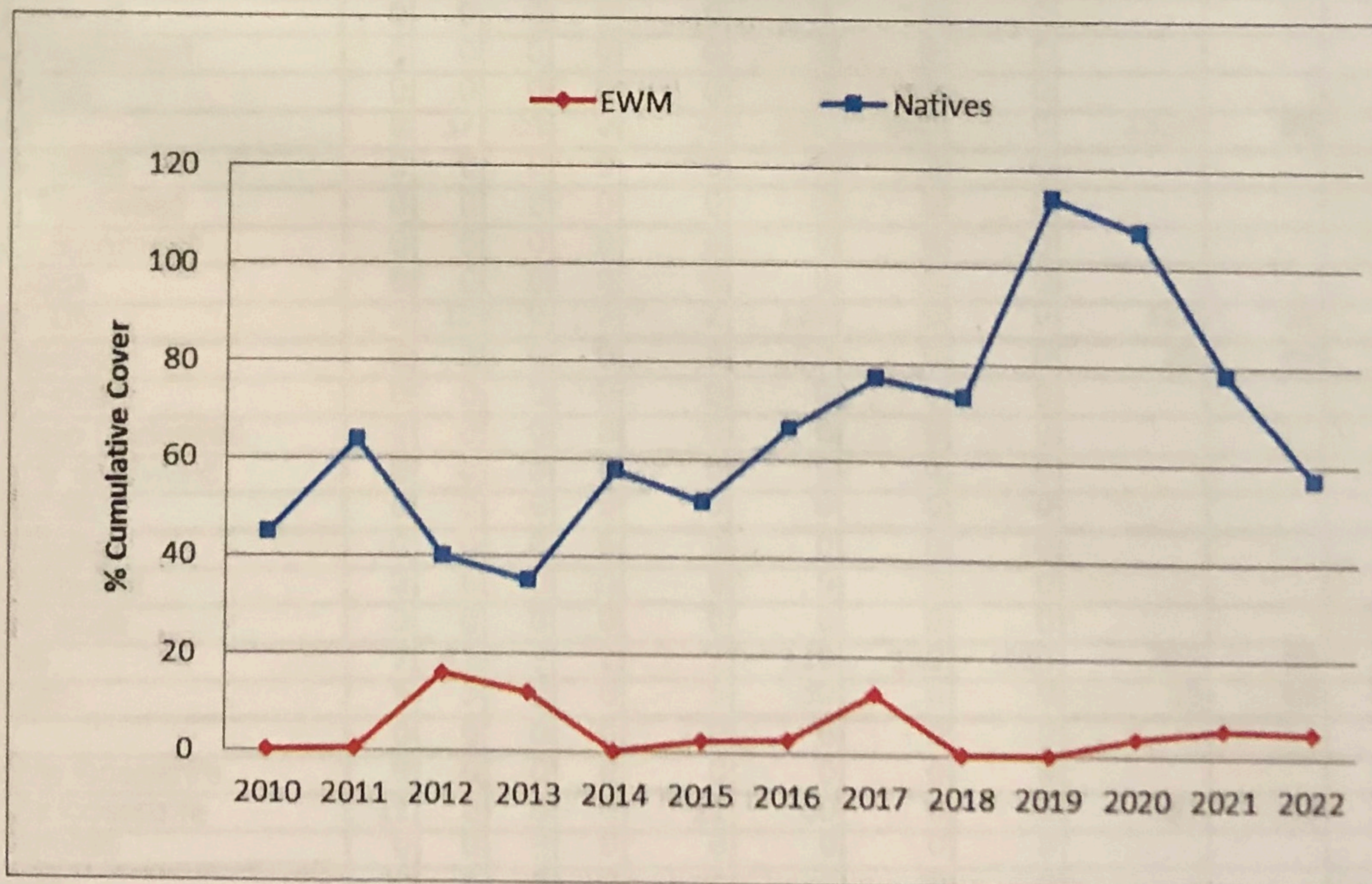
Nonnative (Eurasian) milfoil Native (Northern)

Starry stonewort

Curlyleaf pondweed



Exotic Plants—Exotic plant species cause most of the serious weed problems in Michigan’s lakes. Exotic plants (or nonnative) are plants that are not native to this geographical area, which have been brought to the region inadvertently. Because they often have few natural enemies (their pests, pathogens, etc. may not have come over with them) therefore, they grow out of control. When exotic aquatic plants such Eurasian watermilfoil, Starry stonewort and Curlyleaf pondweed invade a lake, they often form extensive dense populations, crowd out native species, negatively impact fisheries, reducing the quality of habitat for other organisms and impacting the entire lake ecosystem. Management efforts are underway across Michigan to reduce the spread of nonnative aquatic plants, yet typically property owners and local municipalities are left to oversee and pay for management efforts.



This graph compares native plant cover to nonnative plant cover throughout Budd Lake. Participating in an annual management program, allows plant trends to be tracked over time. This allows for oversight over nonnative plants as well as tracking new infestations of any plants (early detection rapid response for nonnative species) and fluctuations in the native plant community. An annual management program can be vital in tracking changes over time and a great addition to any citizen scientist programs underway. Overall, this graph shows stability in the native plant community, an excellent sign for Budd Lake!

Standard Aquatic Vegetation Summary Sheet

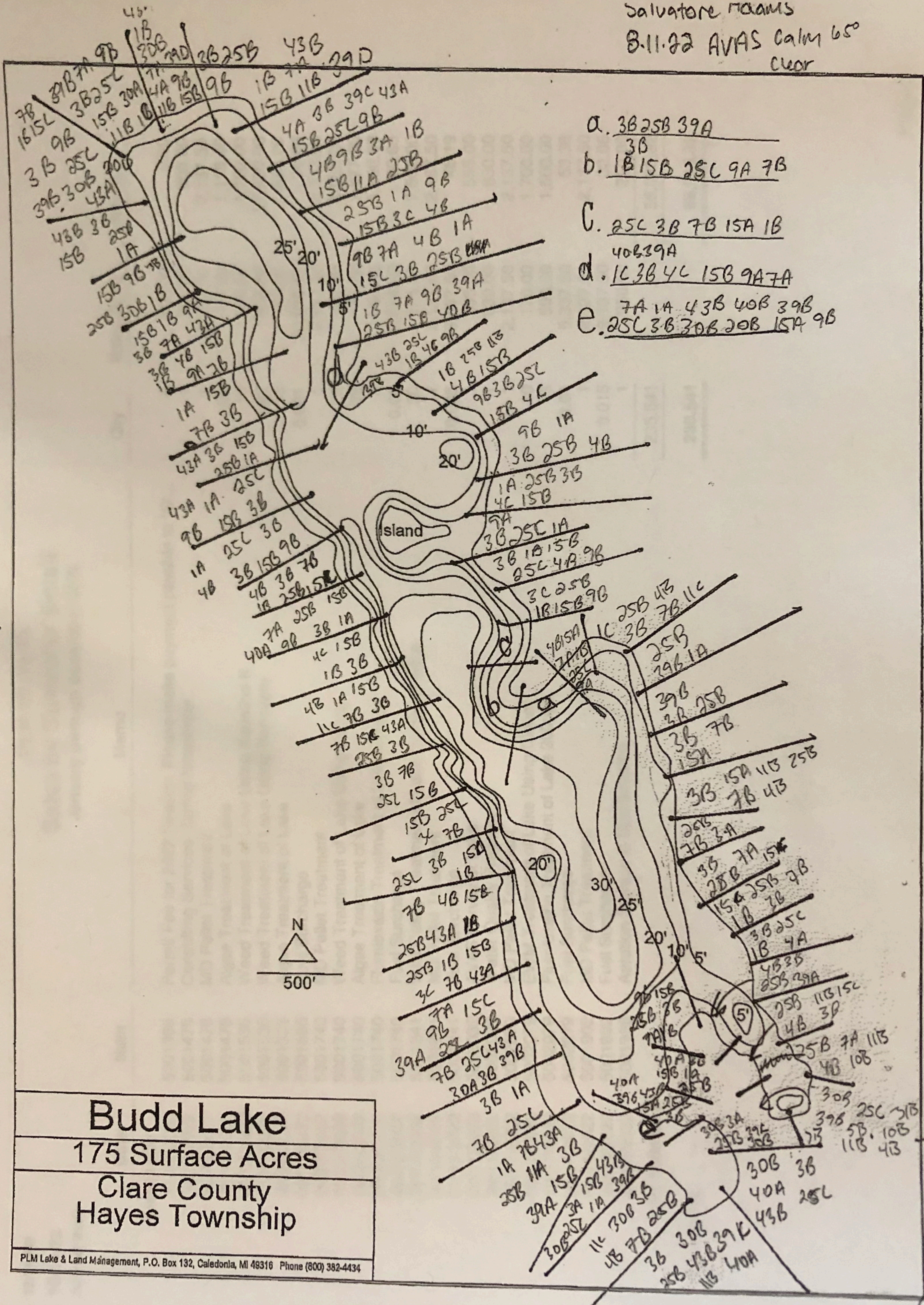
Code No	Plant Name	Total number of AVAS's for each Density Category				Calculations				Sum of Columns 5-8	Total No. of AVAS	Col 9 divided by Col 10
		A	B	C	D	A x 1	B x 10	C x 40	D x 80	9	10	11
1	Eurasian watermilfoil	18	24	2	0	18	240	80	0	338	69	4.90
2	Curly leaf pondweed	0	0	0	0	0	0	0	0			
3	Chara	4	52	4	0	4	520	160	0	684	69	9.91
4	Thinleaf pondweed	3	22	5	0	3	220	200	0	423	69	6.13
5	Flatstem pondweed	0	2	0	0	0	20	0	0	20	69	0.29
6	Robbins pondweed	0	0	0	0	0	0	0	0			
7	Variable pondweed	14	23	0	0	14	230	0	0	244	69	3.54
8	White stem pondweed	0	0	0	0	0	0	0	0			
9	Illinois pondweed	6	21	0	0	6	210	0	0	216	69	3.13
10	Richardson's pondweed	0	3	0	0	0	30	0	0	30	69	0.43
11	Large leaf pondweed	2	11	3	0	2	110	120	0	232	69	3.36
12	American pondweed	0	0	0	0	0	0	0	0			
13	Floating leaf pondweed	0	0	0	0	0	0	0	0			
14	Water stargrass	0	0	0	0	0	0	0	0			
15	Wild celery	6	33	10	0	6	330	400	0	736	69	10.67
16	Sagittaria (submersed)	0	0	0	0	0	0	0	0			
17	Northern watermilfoil	0	0	0	0	0	0	0	0			
18	Rush	0	0	0	0	0	0	0	0			
19	Variable leaf watermilfoil	0	0	0	0	0	0	0	0			
20	Coontail	0	2	0	0	0	20	0	0	20	69	0.29
21	Elodea	0	0	0	0	0	0	0	0			
22	Bladderwort	0	0	0	0	0	0	0	0			
23	Mini Bladderwort	0	0	0	0	0	0	0	0			
24	Buttercup	0	0	0	0	0	0	0	0			
25	Naiad	0	37	24	0	0	370	960	0	1330	69	19.28
26	Brittle naiad	0	0	0	0	0	0	0	0			
27	Sago Pondweed	0	0	0	0	0	0	0	0			
28	Starry Stonewort	0	0	0	0	0	0	0	0			
29	Cabomba	0	0	0	0	0	0	0	0			
30	Water Lily	2	12	0	0	2	120	0	0	122	69	1.77
31	Spatterdock	0	2	0	0	0	20	0	0	20	69	0.29
32	Water shield	0	0	0	0	0	0	0	0			
33	Common Duckweed	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			
36	Arrowhead	0	0	0	0	0	0	0	0			
37	Pickrelweed	0	0	0	0	0	0	0	0			
38	Arrow arum	0	0	0	0	0	0	0	0			
39	Cattail	7	11	3	2	7	110	120	160	397	69	5.75
40	Bulrush	5	3	0	0	5	30	0	0	35	69	0.51
41	Iris	0	0	0	0	0	0	0	0			
42	Swamp loosestrife	0	0	0	0	0	0	0	0			
43	Purple loosestrife	11	8	0	0	11	80	0	0	91	69	1.32
44	Phragmites	0	0	0	0	0	0	0	0			
45	Frogbit	0	0	0	0	0	0	0	0			
46	Slender spikerush	0	0	0	0	0	0	0	0			
47	Smartweed	0	0	0	0	0	0	0	0			
48	Water marigold	0	0	0	0	0	0	0	0			
49	American lotus	0	0	0	0	0	0	0	0			
50		0	0	0	0		0	0	0			

Total cumulative cover

71.57

5

Salvatore Adams
 8.11.22 AVAS Calm 65°
 Clear



- a. 3B25B 39A
3B
- b. 1B 15B 25C 9A 7B
- c. 25C 3B 7B 15A 1B
40B 39A
- d. 1C 3B 4C 15B 9A 7A
- e. 7A 1A 43B 40B 39B
25C 3B 30B 20B 15A 9B

Budd Lake
 175 Surface Acres
 Clare County
 Hayes Township

PLM Lake & Land Management, P.O. Box 132, Caledonia, MI 49316 Phone (800) 382-4434

12:24 PM
 10/11/22
 Accrual Basis

PLM MI North
Sales by Customer Detail
 January through December 2022

<u>Date</u>	<u>Num</u>	<u>Memo</u>	<u>Qty</u>	<u>Sales Price</u>	<u>Amount</u>
Budd Lake					
01/31/2022	5001366	Permit Fee for 2022 Season Please make payment payable to *St...	0	800.00	0.00
05/10/2022	5001478	Consulting Services- Spring Newsletter	1	200.00	200.00
05/10/2022	5001478	MD Pellet Treatment	1	2,137.50	2,137.50
05/10/2022	5001478	Algae Treatment of Lake	26	43.00	1,118.00
05/23/2022	5001535	Weed Treatment of Lake Using Aquathol K	10	175.00	1,750.00
05/23/2022	5001535	Weed Treatment of Lake Using Renovate	92	300.00	27,600.00
05/23/2022	5001535	Algae Treatment of Lake	16	43.00	688.00
05/23/2022	5001535	Fuel Surcharge	0.001	30,038.00	30.04
06/23/2022	5001740	MD Pellet Treatment	1	2,137.50	2,137.50
06/23/2022	5001740	Weed Treatment of Lake Using Diquat	7.5	180.00	1,350.00
06/23/2022	5001740	Algae Treatment of Lake	39	43.00	1,677.00
06/23/2022	5001740	Flumioxazin Treatment of Lake 200ppb	3	500.00	1,500.00
06/23/2022	5001740	Fuel Surcharge	0.01	6,664.50	66.65
07/13/2022	5001841	Wild Celery Treatment of Lake Using Nautique	20	375.00	7,500.00
07/13/2022	5001841	MD Pellet Treatment	1	2,137.50	2,137.50
07/13/2022	5001841	Fuel Surcharge	0.005	9,637.50	48.19
08/11/2022	5002032	AVAS Survey of Lake	1	555.00	555.00
08/11/2022	5002032	Water Quality Program	1	630.00	630.00
08/17/2022	5002079	MD Pellet Treatment	1	2,137.50	2,137.50
08/17/2022	5002079	EWM Treatment of Lake Using Diquat	10	170.00	1,700.00
08/17/2022	5002079	Flumioxazin Treatment of Lake 200ppb	3	500.00	1,500.00
08/17/2022	5002079	Fuel Surcharge	0.01	5,337.50	53.38
09/14/2022	5001902	MD Pellet Treatment	1	2,137.50	2,137.50
09/14/2022	5001902	Fuel Surcharge	0.015	2,137.50	32.06
09/30/2022	5001936	Aeration Storage & Maintenance	1	250.00	250.00
Total Budd Lake			235.541		58,935.82
TOTAL			235.541		58,935.82

②