

**To:** Mr. Bill Sweers  
Matteson Lake Association

**Date:** August 18, 2016

**From:** Patty Hoch-Melluish, Project Scientist  
Kieser & Associates, LLC

**cc:** Mark Kieser, Senior Scientist  
Kieser & Associates, LLC

**RE:** **Matteson Lake, Branch County**  
**Aquatic Vegetation Survey, July 25, 2016**

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This memorandum presents the results of the Matteson Lake aquatic vegetation survey conducted by Kieser & Associates (K&A) on July 25, 2016. The survey followed the protocols set forth in the Michigan Department of Environmental Quality (MDEQ) *Procedures for Aquatic Vegetation Surveys*.

**2016 Survey:**

The Matteson Lake Association requested that the 2016 survey (Attachment A) assess the 51 aquatic vegetation assessment sites (AVAS) used during the 2005 MDEQ survey. K&A also surveyed some deeper areas of 15+ feet to check for submerged vegetation. No vegetation was observed beyond the littoral (near shore) zone. Twelve species were observed during the survey with yellow water lily, bulrush, white water lily and Eurasian watermilfoil the four most dominant, at 11.40, 4.73, 4.60 and 4.51 percent cumulative cover, respectively.

**1995, 2005 and 2016 Data Comparison:**

The findings of the July 25, 2016 survey were compared to survey data from August 14, 1995 (Doug Pullman) and September 20, 2005 (MDEQ), provided by Lisa Huberty of the Aquatic Nuisance Control Division of MDEQ. These data are presented in Attachment B. The 1995 study surveyed 66 AVAS and the 1995 and 2016 surveys monitored 51 AVAS. A summary of these data are presented below.

Matteson Lake Aquatic Vegetation  
Percent Cumulative Cover Comparison

Plant Name	Survey Year		
	1995	2005	2016
Eurasian milfoil	20.64	2.35	4.51
White water lily	11.67	2.94	4.60
Swamp Loosestrife	8.20	0.53	
Yellow water lily	5.32	2.06	11.40
Cattails	4.26	0.33	1.04
Bulrushes	1.27	1.22	4.73
Coontail	1.11	0.10	0.02
Thinleaf pondweed	0.94		
Illinois pondweed	0.92	0.06	
Common bur-reed	0.30		
Flatstem pondweed	0.17		
Smartweed	0.02		
Sago pondweed		0.02	0.14
Chara			0.06
Naiad			0.02
Needle spikerush			0.02
Pickereelweed		0.12	
Duckweed			0.02
Purple loosestrife			0.02

During the 1995, 2005 and 2016 surveys, 12, 10 and 12 species, respectively, were observed in Matteson Lake. Eurasian watermilfoil was observed at a percent cumulative cover of nearly 21 in 1995 compared to 4.5 in 2016. Yellow water lily, bulrushes, sago pondweed, chara, naiad, needle spikerush, duckweed and purple loosestrife increased from 1995 to 2016. White water lily, cattails, swamp loosestrife, coontail, thinleaf pondweed, Illinois pondweed, common bur-reed, flatstem pondweed and smartweed decreased from 1995 to 2016.

**Water Clarity:**

K&A staff noted water clarity of less than about two feet during the July 25, 2016 survey. Light can typically penetrate two times the Secchi depth (water clarity) which equates to the depth where plants can grow in a lake. This means that plants will likely not grow below four feet in Matteson Lake. Measures to address water clarity issues are recommended by K&A to increase the diversity and abundance of native aquatic plants in the lake. Watershed loading to Matteson Lake should be investigated to better understand the sources and impacts on the water quality, aquatic vegetation and biota.

If you have any questions regarding this memo, please contact Kieser & Associates at (269) 344-7117.

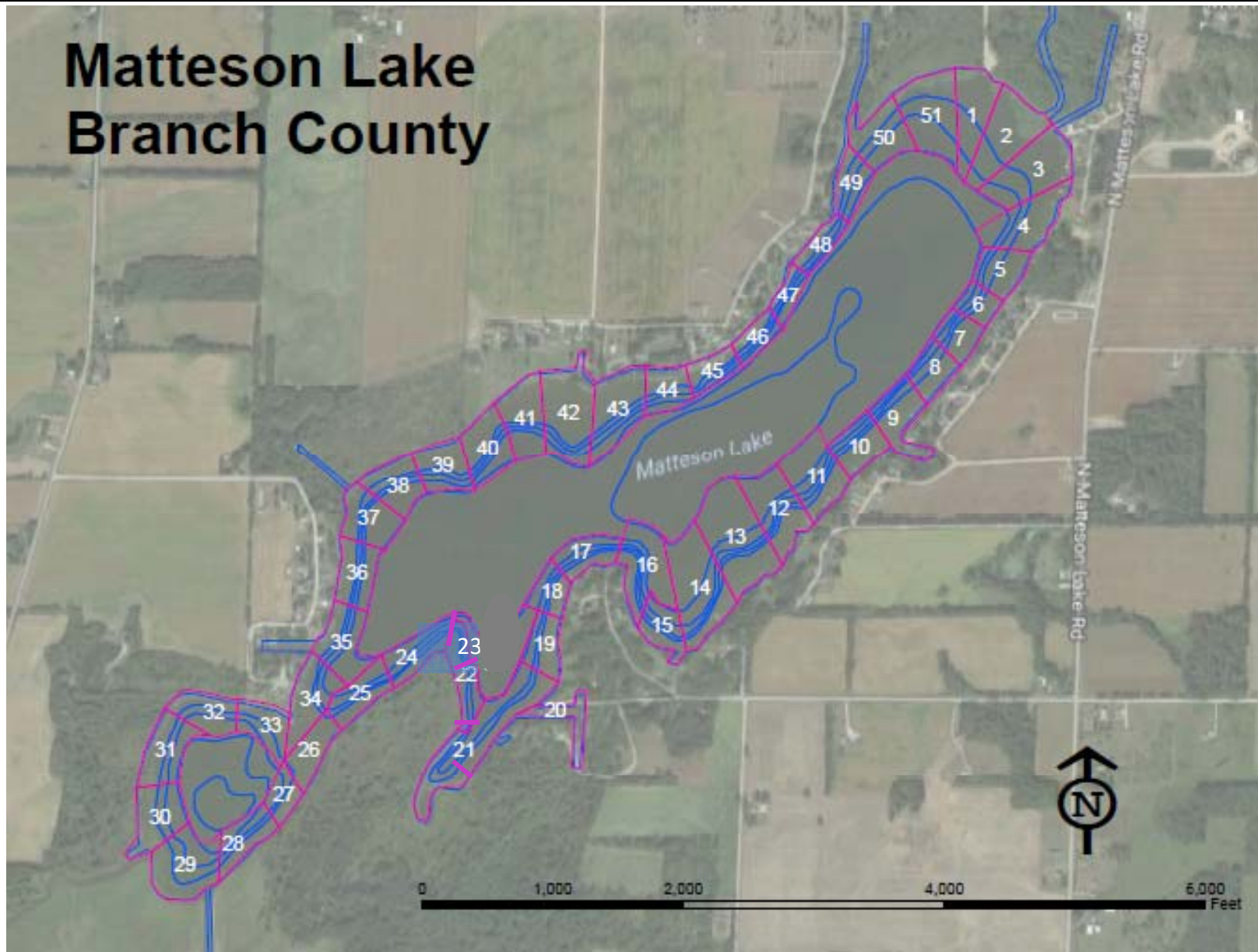
# Attachment A

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2016 Aquatic Vegetation Survey Data Sheet and Map



# Matteson Lake Branch County



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Aquatic Vegetation Assessment Sites, July 25, 2016  
Matteson Lake, Branch County, MI

# Attachment B

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1995, 2005 and 2016 Aquatic Vegetation Survey Data Comparison

## Standard Aquatic Vegetation Summary Sheet

SURVEY BY: Doug Pullman

		Total number of AVAS's for each Density Category				Calculations				Sum of Previous Four Columns	Total Number of AVAS's	Quotient of Column 9 divided by Column 10		
						Category A x 1	Category B x 10	Category C x 40	Category D x 80					
Code No	Plant Name	A	B	C	D	5	6	7	8	9	10	11	Code No	Plant Name
1	Eurasian milfoil	2	16	12	9	2	160	480	720	1362	66	20.6	1	Eurasian milfoil
4	Thinleaf pondweed	2	2	1	0	2	20	40	0	62	66	0.9	4	Thinleaf pondweed
5	Flatstem pondweed	1	1	0	0	1	10	0	0	11	66	0.2	5	Flatstem pondweed
10	Illinois pondweed	1	2	1	0	1	20	40	0	61	66	0.9	10	Illinois pondweed
20	Coontail	3	3	1	0	3	30	40	0	73	66	1.1	20	Coontail
29	Smartweed	1	0	0	0	1	0	0	0	1	66	0.0	29	Smartweed
30	White water lily	1	11	6	0	1	110	240	0	351	66	5.3	30	White water lily
31	Yellow water lily	0	5	12	3	0	50	480	240	770	66	11.7	31	Yellow water lily
35	Common bur-reed	0	2	0	0	0	20	0	0	20	66	0.3	35	Common bur-reed
39	Cattails	1	12	4	0	1	120	160	0	281	66	4.3	39	Cattails
40	Bulrushes	4	8	0	0	4	80	0	0	84	66	1.3	40	Bulrushes
42	Swamp Loosestrife	1	6	12	0	1	60	480	0	541	66	8.2	42	Swamp Loosestrife

(12 species: 6 submergent, 6 emergent)



## Standard Aquatic Vegetation Summary Sheet

SURVEY BY: MDEQ

		Total number of AVAS's for each Density Category				Calculations				Sum of Previous Four Columns	Total Number of AVAS's	Quotient of Column 9 divided by Column 10		
						Category A x 1	Category B x 10	Category C x 40	Category D x 80					
Code No	Plant Name	A	B	C	D	5	6	7	8	9	10	11	Code No	Plant Name
1	Eurasian milfoil	40	4	1	0	40	40	40	0	120	51	2.4	1	Eurasian milfoil
10	Illinois pondweed	3	0	0	0	3	0	0	0	3	51	0.1	10	Illinois pondweed
20	Coontail	5	0	0	0	5	0	0	0	5	51	0.1	20	Coontail
27	Sago pondweed	1	0	0	0	1	0	0	0	1	51	0.0	27	Sago pondweed
30	White water lily	25	4	1	0	25	40	40	0	105	51	2.1	30	White water lily
31	Yellow water lily	10	10	1	0	10	100	40	0	150	51	2.9	31	Yellow water lily
37	Pickerelweed	6	0	0	0	6	0	0	0	6	51	0.1	37	Pickerelweed
39	Cattails	17	0	0	0	17	0	0	0	17	51	0.3	39	Cattails
40	Bulrushes	12	5	0	0	12	50	0	0	62	51	1.2	40	Bulrushes
42	Swamp Loosestrife	7	2	0	0	7	20	0	0	27	51	0.5	42	Swamp Loosestrife

**(10 species, 4 submergent, 6 emergent)**

## Standard Aquatic Vegetation Summary Sheet

SURVEY BY: Kieser &amp; Associates

		Total number of AVAS's for each Density Category				Calculations				Sum of Previous Four Columns	Total Number of AVAS's	Quotient of Column 9 divided by Column 10		
		A	B	C	D	Category A x 1	Category B x 10	Category C x 40	Category D x 80				Code No	Plant Name
Code No	Plant Name	1	2	3	4	5	6	7	8	9	10	11	Code No	Plant Name
1	Eurasian milfoi	10	2	1	2	10	20	40	160	230	51	4.5	1	Eurasian milfoi
3	Chara	3	0	0	0	3	0	0	0	3	51	0.1	3	Chara
20	Coontail	1	0	0	0	1	0	0	0	1	51	0.0	20	Coontail
25	Najas spp.	1	0	0	0	1	0	0	0	1	51	0.0	25	Najas spp.
27	Sago pondweed	7	0	0	0	7	0	0	0	7	51	0.1	27	Sago pondweed
28	Needle spikerush	1	0	0	0	1	0	0	0	1	51	0.0	28	Needle spikerush
30	White water lily	5	11	1	1	5	110	40	80	235	51	4.6	30	White water lily
31	Yellow water lily	2	10	8	2	2	100	320	160	582	51	11.4	31	Yellow water lily
33	Lemna minor	1	0	0	0	1	0	0	0	1	51	0.0	33	Lemna minor
39	Cattails	3	5	0	0	3	50	0	0	53	51	1.0	39	Cattails
40	Bulrushes	1	8	4	0	1	80	160	0	241	51	4.7	40	Bulrushes
43	Purple Loosestrife	1	0	0	0	1	0	0	0	1	51	0.0	43	Purple Loosestrife

(12 species: 6 submergent, 1 floating, 5 emergent)

**Matteson Lake, Branch County, MI**  
**Aquatic Vegetation Survey**  
**Cumulative Cover Percent Comparison**  
**1995, 2005, 2016**

