2016 EWM Levels and Aquatic Plant Management Plan Recommendations (LEAPS 11-89-2016)

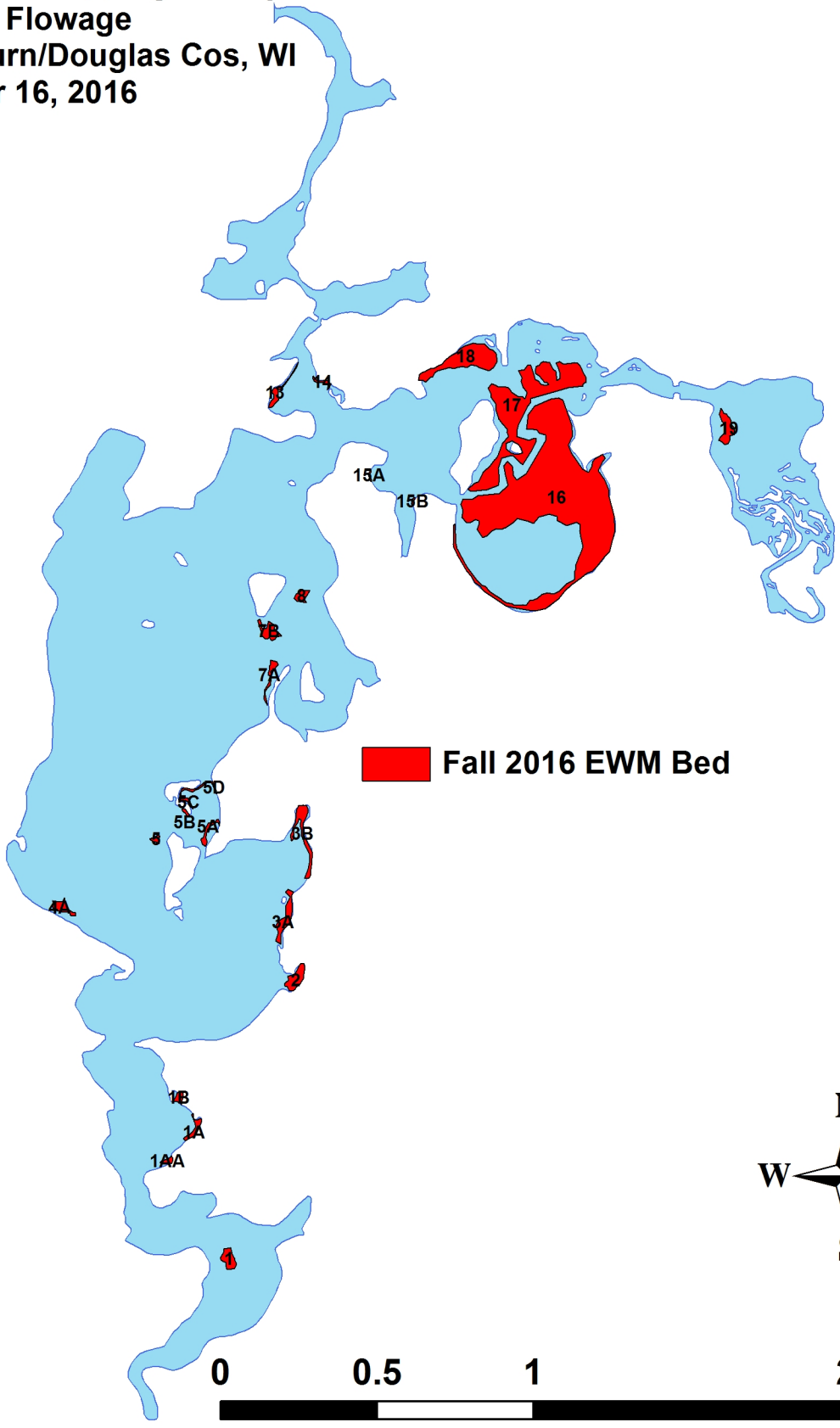
1. **Management Goal of the APM Plan is to prevent EWM from exceeding 10% of the roughly 950 acre littoral zone.**
    a. Up to About 95 acres of EWM in the Minong Flowage is "acceptable".
    b. 2016 EWM levels at 125.58 acres exceed 10% of the littoral zone
2. **Management by drawdown should be considered when EWM levels in the Shallow-water Serenity Bay Stump Field exceeds 70-80 acres and the density of that EWM reaches or exceeds a "2" rake fullness rating based on a 0-3 scale.**
    a. EWM levels at 83.96 acres in the Shallow-water Serenity Bay Stump Field exceeds 70-80 acres
    b. EWM density (rake fullness rating) does not reach or exceed "2" in the Shallow-water Serenity Bay Stump Field
    c. No drawdown would be proposed in 2017, but could be in 2018
3. **Consider EWM chemical management when all areas of EWM outside of the Shallow-water Serenity Bay Stump Field reach or exceed 20 acres**
    a. The EWM level in the Main Basin (15.42 acres) and in Serenity Bay, but outside of the Shallow-water Stump Field (15.62 acres) exceeds 20 acres.
    b. The EWM level in the North Basin is at 7.80 acres, but 7.61 acres of it is too close to the wild rice beds to chemically manage.
    c. The EWM level East of Smith Bridge in the wild rice beds is at 1.80 acres, but is too close to the wild rice beds to chemically manage.
4. **EWM chemical management outside of the Shallow-water Serenity Bay Stump Field can be managed if an area of EWM reaches or exceeds 3.0 acres and a rake fullness rating of "2" or more.**
    a. EWM bed #18 in the North Basin at 7.61 acres exceeds 3.0 acres, but it does not reach or exceed a rake fullness rating of 2 or more, and is too close to the wild rice areas to consider chemical management.
    b. EWM bed #19 (1.8 acres) could be considered a nuisance bed, encroaching on the wild rice after a bad year, and does reach or exceed a rake fullness rating of 2 or more, however, because it is located in the wild rice beds, chemical treatment in the spring is not an option.
    c. The southern portion of EWM bed #16 in Serenity Bay at 15.62 acres exceeds 3.0 acres, but it does not reach or exceed a rake fullness rating of 2 or more
    d. EWM Beds 2 (1.8 acres), 3A (2.06 acres), and 3B (2.55 acres) are close to 3.0 acres and if combined would exceed 6.0 acres , but do not reach or exceed a rake fullness rating of 2 or more
    e. EWM Bed 4A at 1.05 acres does reach or exceed 3.0 acres or a rake fullness rating of 2 or more, but is on the flat where swimming occurs from the County Campground, so could be considered a nuisance bed.
    f. EWM Beds 7A (0.74 acres), 7B (1.46 acres), and 8 (0.76 acres) if combined would likely exceed 3.0 acres but do not reach or exceed a rake fullness rating of 2 or more, and are not near enough to Swift Nature Camp to warrant nuisance consideration.

5. **Based on these findings via the 2016 Fall EWM survey, there would be no EWM chemical management proposal made. However, a case could be made for chemically treating EWM beds 4A, 2-3A-3B, and the southern half of Serenity Bay Bed 16.**
    a. Beds 4A and 2-3A-3b would be treated with diquat (<10 acres).
    b. The southern half of Bed 16 could be treated using 2,4-D, although an argument could be made to use diquat instead.
    c. The total treatment area would be 28.87 acres as initially constructed.
    d. The total treatment cost using diquat would be around $8,700.00.

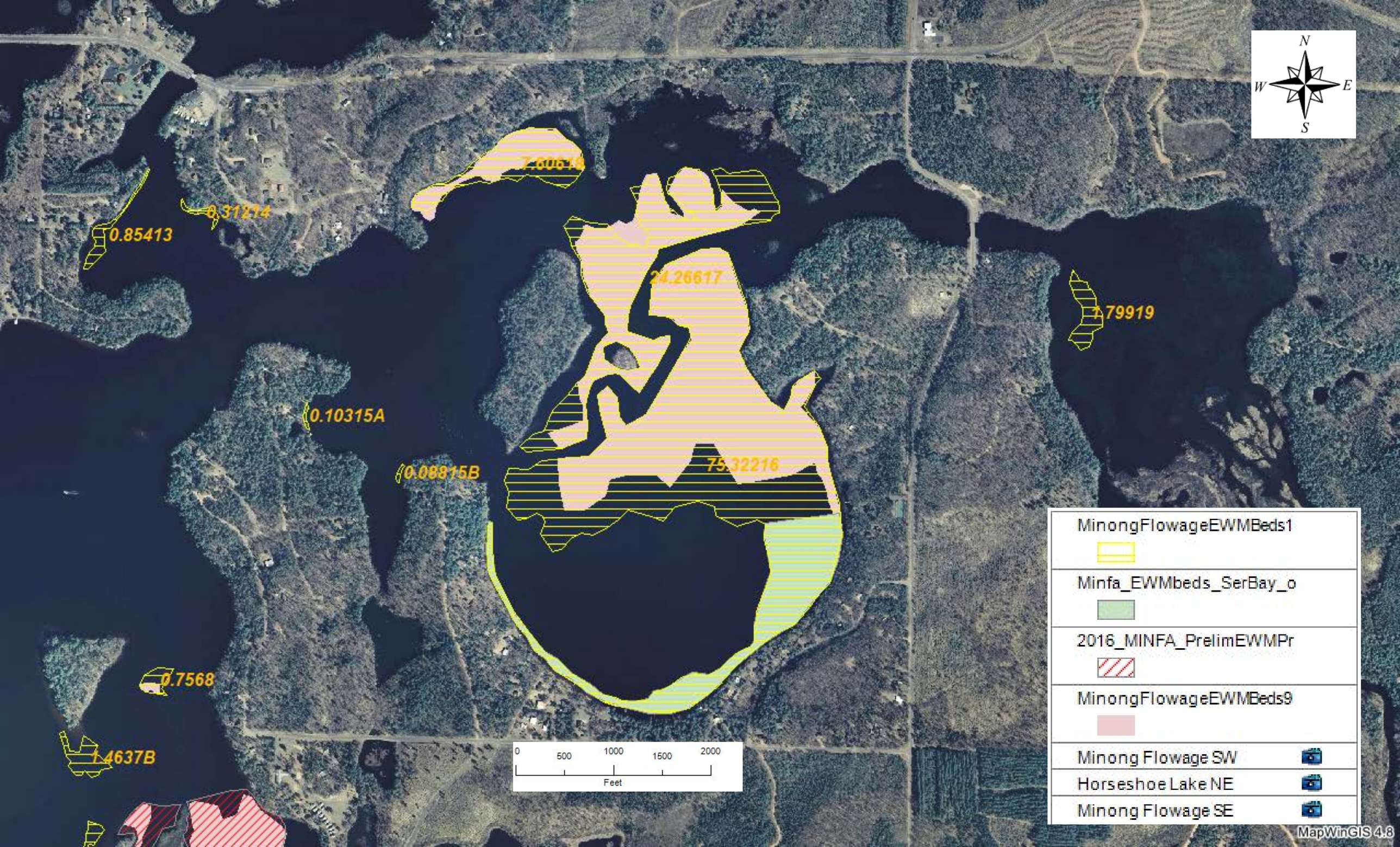
Shallow Water Stump Fields

Eurasian water-milfoil (*Myriophyllum spicatum*)

EWM Bed Mapping Survey
Minong Flowage
Washburn/Douglas Cos, WI
October 16, 2016



Bed Number	2016 Area in Acres	2015 Area in Acres	2014 Area in Acres	2016 Change in Acreage from 2015	2016 Change in Acreage from 2014	2016 Mean Rake Fullness	Field Notes
1	1.40	0.50	0.32	+0.90	+1.08	2	Main Basin
1A	.81	0.58	0	+0.23	+0.81	<1	Main Basin
1AA	.33	-	-	+0.33	+0.33	<1	Main Basin
1B	.48	0.31	0	+0.17	+0.48	1	Main Basin
2	1.80	1.40	0	+0.40	+1.80	1	Main Basin
3	-	0	2.68	-	-2.68		
3A	2.06	-	-	+2.06	+2.06	<1	Main Basin
3B	2.55	1.96	1.42	+0.59	+1.13	1	Main Basin
4	-	0	0	-	-		
4A	1.05	-	-	+1.05	+1.05		
5	.30	0	0	+0.30	+0.30	<1	Main Basin
5A	.66	-	-	+0.66	+0.66	<1	Main Basin
5B	.16	-	-	+0.16	+0.16	<1	Main Basin
5C	.58	-	-	+0.58	+0.58	<1	Main Basin
5D	.09	-	-	+0.09	+0.09	<1	Main Basin
6	-	16.39	0	-16.39	-		
7	-	1.23	0	-1.23	-		
7A	.74	-	-	+0.74	+0.74	<1	Main Basin
7B	1.46	-	-	+1.46	+1.46	<1	Main Basin
8	.76	0.18	0	+0.58	+0.76	<1	Main Basin
9	-	0	0	-	-		
10	-	0	0	-	-		
11	-	0	0	-	-		
12	-	0	1.90	-	-1.90		
13	.85	0	1.57	+0.85	-0.72	<1	Channel to Cranberry
14	.31	0	0.05	+0.31	+0.26	<1	Channel to Cranberry
15	-	0	0	-	-		
15A	.10	0	0.57	+0.10	-0.47	<1	North Basin
15B	.09	0	0.85	+0.09	-0.76	<1	North Basin
16	75.32	43.08	4.58	+32.24	+70.74	1	Serenity Bay
17	24.27	19.43	0	+4.84	+24.27	1	Serenity Bay
18	7.61	5.30	0	+2.31	+7.61	1	North Basin
19	1.80	-	0.10	+1.80	+1.70	2	Wild rice beds in the East of Smith Bridge
Total	**125.58**	**90.36**	**14.02**	**+35.03**	**+111.54**		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2017 Minong Flowage Potential Spring EWM Chemical Treatment (November 9, 2016 LEAPS)							
Treament Area Characteristics					**Eurasian Watermilfoil — Diquat (Reward)**		
Treatment Location	Site Name	Acreage	Mean Depth (feet)	Volume (acre-feet)	Treatment a.i. ppm	Treatment application (gal)	Application rate (gal/acre)
South Shore Serenity Bay	Bed16-South	15.62	5.0	78.10	NA	31.2	2.00
East Bay	Beds2-3A-3B	9.97	3.5	34.90	NA	19.9	2.00
County Park Flat	Bed4A	3.28	4.0	13.12	NA	6.6	2.00
Total		*28.87*		*126.12*	NA	*57.7*	
					EWM Treatment (28.87 acres); early spring application		

Estimated Herbicide Cost (Reward) = 58 gallons x $150/gallon = $8,700.00
Estimated Herbicide Cost (DMA 4) = 313 gallons x $40/gallon = $12,520.00

Reward (liquid diquat) (EWM)

Max Label Rate = 2 gallons/acre
Max Application Rate = 0.37 parts per million

DMA 4 (liquid, 2,4-D)

a Treated at 1.50 parts per million (1.07 gal/acre-ft)
b Treated at 2.00 parts per million (1.42 gal/acre-ft)
c Treated at 2.50 parts per million (1.78 gal/acre-ft)
d Treated at 3.00 parts per million (2.13 gal/acre-ft)
d Treated at 3.50 parts per million (2.48 gal/acre-ft)
d Treated at 4.00 parts per million (2.84 gal/acre-ft)(max label rate)