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## Hess Lake Muck Monitoring 2017

For the last two years, Savin Lake Services has been collecting muck thickness measurements in two coves on the south side of Hess Lake. The reason for this is to determine the efficacy of bacterial augmentation treatments in both coves and the affect the aeration system is having in the larger cove in combination with the treatments. For each of the last two years Savin Lake Service has measured the thickness (as depth) of the muck three different times, once in the spring, the summer, and the fall.

In 2016 for the first two measurements, a device was used that had a disc mounted on a solid pole that had notches. As the pole was pushed into the muck, the disc would rise up the pole due to the muck interface. Once the bottom was hit with the pole, the pole would be raised out of the water and the disc would stay at the max height due to the notches (which would prevent the disc from falling). The distance from the disc to the bottom of the pole was the thickness of the muck. However, after the summer measurements, it was noticed that the disc would in face slip at times when raising the pole out of the water giving false measurements. Also at other times the disc would sink a bit in the muck, then be pulled off the pole as it was raised out. Obviously, this was a problem and this method could not be relied upon.

For the Fall measurements in 2016, and all measurements in 2017, a new method was developed. Like the first method, a solid bar was pushed into the muck until a solid bottom was reached. The distance to the water's surface was taken. Then a disc was lowered separately into the water, until it rested on the muck's surface. That distance was also taken. Simply subtract the two values and what remains is the muck's thickness in depth. This method seems to be very consistent. There are fewer factors that could lead to a false reading. One reason that has been seen are 'false bottoms', where no solid ground can be reached. This is most likely due to a muck, clay, and sand slurry that exists at the bottom. In order to reduce this error, 3 separate measurements are taken at each location, and averaged. This average is what is shown in the results.

The next page will show the muck monitoring results, as well as the map where each site location is found.

Sincerely,  
Matt Novotny  
October 2017

## Muck Measurement Results

Site #	Small Cove						Large Aeration Cove										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
2016	Spring	N/A	19"	45"	N/A	39"	N/A	21"	N/A	N/A	N/A	50"	N/A	45"	16"	N/A	N/A
	Summer	27"	39"	65"	73"	81"	19"	13"	12"	19"	39"	29"	84"	48"	19"	68"	45"
	Fall	27"	36"	96"	107"	195"	18"	15"	12"	33"	24"	42"	144"	48"	21"	81"	42"
2017	Spring	25"	34"	104"	108"	82"	12"	11"	11"	24"	22"	40"	140"	50"	21"	86"	42"
	Summer	22"	33"	98"	106"	70"	7"	12"	9"	21"	22"	35"	139"	49"	19"	82"	40"
	Fall	21"	34"	97"	100"	54"	9"	11"	9"	15"	24"	34"	135"	47"	19"	78"	38"

## Monitoring Location Map

