

# Emma Lake

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## Emma Lake AIS Monitoring and Water Clarity Report

Field Date: June 14<sup>th</sup>, 2018  
WBIC: 983500  
Previous AIS Findings: None  
New AIS Findings: None  
Field Crew: Stephanie Boismenuue, AIS Coordinator, Aubrey Nycz, AIS Project Leader, Vanessa Niemczyk, AIS Project Assistant, and Jody Partin, AIS Project Assistant, Oneida County Land and Water Conservation Department  
Report By: Vanessa Niemczyk

On June 14<sup>th</sup>, 2018, Stephanie, Aubrey, Jody, and I went to Emma Lake to implement AIS monitoring along with water clarity and quality assessments. Emma Lake is a 227 acre mesotrophic lake located in Oneida County and has one public boat launch. The shoreline along Emma Lake is composed of private owners and public land. A narrow strip of public land connects Emma Lake and Crescent Lake, which is part of a portage trail. The lake has a maximum depth of 17 feet, and the substrate is reported to be 65% sand, 5% gravel, 5% rock, and 25% muck. Along with reporting the depth and substrate, the Wisconsin Department of Natural Resources also reports that the lake has musky, smallmouth bass, largemouth bass, and panfish present. We observed this firsthand as panfish and spawning beds were seen in moderate quantities along the shoreline.

The weather while conducting research on Emma Lake was ideal. The outside temperature was 79 degrees Fahrenheit, the sky was sunny, there was little to no wind, and the water clarity was good. There was no adverse weather to impede our measurements in any way.

When conducting our AIS lake survey, the AIS team did a complete shoreline scan while meandering in and out between different depths. We looked on the shoreline itself and also in the water, noting the plants and animals we had observed in the process. When possible, we got in the water and used the aquascopes to have a closer look at the bottom composition.

To observe the water clarity and quality of Emma Lake, the AIS team went to the deep hole towards the center of the lake. After locating the deep hole with our sonar unit, we used a Secchi disk to measure water clarity and a dissolved oxygen meter to measure water health. Oxygen is needed for a healthy fish population, and also for plants to respire at night. The measurements from the dissolved oxygen meter can tell us if the organisms in the lake would be under stress. Thankfully, both of these measurements were relatively average in nature, and there should be no concern for the health of Emma Lake. The Secchi disk reading was 4 feet, and the dissolved oxygen readings can be found in table 2.

The AIS team was glad to see that no new invasive species were present at this time. The lake seems to be healthy, and many native plants were present and thriving. The three most common native plants we observed were Pickerel Weed, Bullhead Pond Lily, and Wild Calla. These plants, along with others, can be seen below in table 1.

**Findings:** Taken 11:00 a.m. – 4:00 p.m. on June 14<sup>th</sup>, 2018

Aquatic Invasive Species: We did not find any new invasive species along the perimeter of Emma Lake.



Secchi: The Secchi reading on this lake was 4 feet out of a 17 foot maximum depth. The water color was a brownish color, and appeared murky when glancing across the lake.

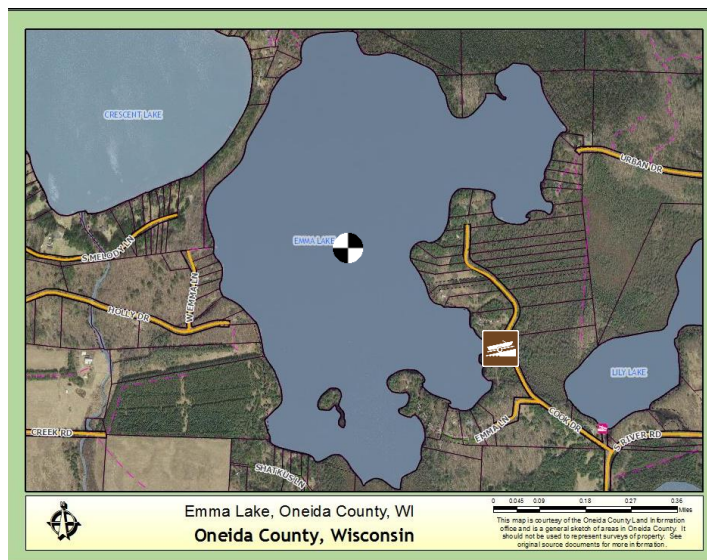
Dissolved Oxygen: These measurements can be seen in Table 2.

Figure 1. Map of Oneida County, WI with Emma Lake circled in red (approximate location).










Figure 2. Map of Emma Lake with boat landing and location of Secchi disk reading labeled.

-  Public boat landing
-  Deep hole & location of Secchi disk reading



**Table 1.** Common plants found in Emma Lake when monitoring.

Common Plant Name Scientific Plant Name	Description	Image
<p>Pickereel Weed <i>Pontederia cordata</i></p>	<p>An aquatic plant with thin, bright green leaves. Emergent leaves tend to be arrow shaped with 6 parted, blue flowers. This plant is native.</p>	 <p>Photo Credit: Jody Partin</p>
<p>Bullhead Pond Lily (Spatterdock) <i>Nuphar variegata</i></p>	<p>An aquatic plant with heart-shaped leaves that can grow to be 15 inches long. This plant also has a yellow, cup-shaped flower. This plant is native.</p>	 <p>Photo Credit: Jomegat's Weblog</p>
<p>Wild Calla <i>Calla Palustris</i></p>	<p>A native plant common in more acidic, shallow water and bogs. They typically bloom between May and June, and can be identified by having waxy smooth, heart-shaped leaves, and nearly cylindrical white flowers called the spadix.</p>	 <p>Photo Credit: Gowganda Photography</p>

<p>Blue-Flag Iris</p> <p><i>Iris versicolor &amp; Iris virginica</i></p>	<p>A flowering plant with light green leaves and petals. This plant grows to be 2-4 feet tall. The center of the leaf is thicker than the bottom and tip. This plant is native.</p>	 <p>Photo Credit: Prairie Moon Nursery</p>
<p>Water Smartweed</p> <p><i>Persicaria amphibia</i></p>	<p>An aquatic, floating plant with swollen leaf nodes. Leaves tend to be smooth and rounded. Water smartweed has pink flowers that are raised a few inches above the water. This plant is native.</p>	 <p>Photo Credit: Superior National Forest/CCSA</p>
<p>Water Shield</p> <p><i>Brasenia schreberi</i></p>	<p>An aquatic plant with stems up to 2 meters long. This plant has small floating leaves and reddish purple flowers that have 6-8 petals. This plant is native.</p>	 <p>Photo Credit: Shannon Sharp</p>
<p>Common Bladderwort</p> <p><i>Utricularia macrohiza</i></p>	<p>An aquatic plant with leaves containing small sacks that trap small invertebrates. This plant usually has unrooted stems that easily tangle with other plants. In the water, this plant tends to look cloudy or slimy. This plant is native.</p>	 <p>Photo Credit: frenchhill.org</p>

**Table 2.** Dissolved oxygen levels and temperatures at the deep hole.

<b>Depth (Feet)</b>	<b>Dissolved Oxygen Levels (mg/L)</b>	<b>Temperature (F)</b>	<b>Percent Dissolved Oxygen</b>
2	8.18	73.8°	101.2%
4	8.11	7.0°	98.4%
6	7.51	70.3°	89.5%
8	68.6	6.37°	74.5%
10	4.26	66.1°	48.5%
12	0.18	60.4	1.9

## Emma Lake AIS Monitoring and Water Clarity Report

WBIC: 983500  
Previous AIS Findings: None  
New AIS Findings: None  
Field Date: July 15, 2016  
Field Crew: Stephanie Boismenu, AIS Coordinator, and Aubrey Nycz, AIS Project Assistant, Oneida County Land and Water Conservation Department  
Report By: Aubrey Nycz

Stephanie and I monitored Emma Lake on July 15, 2016. Emma Lake is located South-West of Rhinelander, WI in Oneida County, and the boat launch is located on Cook Drive. It is a seepage lake of 227 acres with a maximum depth of 17 feet. The substrate on the lake is 65% sand, 5% gravel, 5% rock, and 25% muck. The lake has musky, panfish, largemouth bass, smallmouth bass, and walleye. Emma Lake's trophic state is mesotrophic, meaning it has a moderate amount of dissolved nutrients. No alga was found on this lake, but the water's surface was covered with water shield, making it difficult to navigate through parts of the lake. Despite the fact that this lake has many homes around its perimeter, the lake did not appear to have much boat traffic.

There is only one public boat landing on Emma Lake, located on Cook Drive, so Stephanie and I launched our canoe at this landing. Before we began paddling around the lake's perimeter, we used our aqua scopes to check the shoreline for any invasive species. We did find some snails, but fortunately, they were all native brown mystery snails. We visually monitored the entire perimeter of Emma Lake, and we stopped to do three AIS checks with the aqua scopes throughout the day. No invasive species were found during our aquatic invasive species checks.

The weather was fairly nice the entire day. The wind was blowing in from the north at six miles per hour, it was cloudy, and the air temperature was 64 degrees Fahrenheit. We used a contour map of Lake Emma to assist us in finding the deep hole, but we still had some difficulties finding it because the map had not been updated since January of 1940. After locating the deep hole, we took GPS coordinates, tested the water clarity using the Secchi disk, obtained the dissolved oxygen levels using the dissolved oxygen meter, and obtained the water temperature levels (Table 1). The wind did make it difficult to obtain dissolved oxygen readings, but fortunately, we were still able to get six accurate readings.

**Findings:** All taken starting at 12:14 p.m.

Aquatic Invasive Species:



We did not find any new invasive species along the perimeter of Emma Lake.

Secchi:

The Secchi reading on this lake was 3.5 feet out of a 17 foot max depth. The water color was a dark tea color, so I was not surprised that we could not see very far into the water.

Dissolved Oxygen:

These measurements can be seen in Table 1 at two foot increments.

**Figure 1.** Map of Oneida County, WI with Emma Lake circled in red.



**Figure 2.** Map of Emma Lake; the red circle shows where we entered the lake, the yellow square shows where the deep hole can be found, the green triangle shows where we obtained our Secchi Disk coordinates.



WDNR Secchi Disk Readings: Emma Lake - Deep Hole LATITUDE 45.59 LONGITUDE -89.50

**Table 1.** Dissolved oxygen levels and temperatures at the deep hole.

Depth (Feet)	Dissolved Oxygen Levels (mg/L)	Temperature (F)
2	7.09	73.1°
4	6.88	73.0°
6	6.77	72.9°
8	6.42	72.5°
10	6.40	72.4°
12	6.36	72.4°

**Resources:**

<http://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=983500>

<https://oneida-county.maps.arcgis.com/apps/webappviewer/index.html?id=c0144697a23243d6beb981727c3e6e2b>