Hilderbrand Lake

Lincoln County and
Oneida County, Wisconsin

Aquatic Invasive Species (AIS) Monitoring and

Water Clarity Report

Oneida COUNTY
Land & Water Conservation Department

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Hilderbrand Lake AIS Monitoring and Water Clarity Report

Field Date:	August 5, 2022
WBIC:	990100
Previous AIS Findings:	None
New AIS Findings:	No new AIS findings.
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Report By:	Aubrey Nycz

Purpose: Water is Wisconsin's most precious resource. It provides an essential lifeline between wildlife, recreation, public trust resources, agriculture, industry, health and safety, and environmental, urban and rural interests throughout the state. With a growing population and a treasured supply of fresh water, the protection of water for designated and beneficial uses is of paramount importance.

Each year, Aquatic Invasive Species (AIS) program staff throughout the state of Wisconsin conduct AIS early detection monitoring and baseline water quality monitoring in local waterbodies. In addition, staff conducts AIS monitoring at boat landings, rivers, streams, wetlands, roadsides, culverts, and Organisms in Trade. Monitoring takes place from June through September of each year.

AIS early detection monitoring is the most effective approach to locating pioneer populations of WI Chapter NR 40 regulated AIS, species not widely established, and newly introduced species to Wisconsin. Early detection of AIS is crucial for rapid response, containment, management, preventing their spread, and reducing management costs. Implementation of rapid response activities is vital in maintaining the stability of a waterbodies ecosystem services, habitats, fisheries, recreational opportunities, property values, economy, and human health.

Water quality monitoring provides information on the physical, chemical, and biological characteristics of water. Monitoring aims at assessing the environmental state, detecting trends, and identifying potential problems in the water or watershed. The state of water quality is the result of complex natural and manmade conditions and the consequent of those interactions over time. Evaluating trends determines whether water quality is changing relative to land use and natural conditions. Water quality data provides important and useful information to lake groups, local and regional resource managers, community stakeholders, and provides guidance with protecting and enhancing our waters, watersheds and development to new approaches to water quality management.

AIS monitoring programs are in collaboration with the Wisconsin Department of Natural Resources (WDNR), UW Extension's Citizens Lake Monitoring Network Program, and Great Lakes

Indian Fish Wildlife Commission. All AIS staff are trained in the in the DNR's AIS monitoring, identification, collection, verification, reporting, and decontamination protocols.

Data Collected: AIS identification, live specimens, photos, population densities, distribution, locations and GPS coordinates. Other observations may include species size, characteristics, and impact to native habitat. Water quality data includes Secchi disc, dissolved oxygen, temperature, water characteristics, and GPS coordinates.

Areas Observed: Perimeter of lake's littoral zone, including beaches and boat landings, inlets and outlets, and under and around docks and piers, and other areas identified as most vulnerable to the introduction of AIS.

Methodology: Searching for AIS in the water and along the shoreline is achieved by slowly canoeing around the entire lake's littoral zone, meandering between shallow and maximum rooting depth or 100' from shore (whichever comes first). Additionally, targeted sites considered high risk of invasive species introductions, such as boat landings, access points, parks, beaches, and inlets receive comprehensive AIS monitoring. Several methods and tools are utilized to achieve the survey: survey from the canoe, walking along the shoreline and shallows, using aqua view scopes, snorkeling to examine underwater solid surfaces, sifting through vegetation, and analyzing plant rake samples, veliger tows, and D-net sediment samples.

Targeted Chapter NR40 Invasive Species Include: Asian clams, banded mystery snails, Chinese mystery snails, Faucet Snails, New Zealand mudsnail, quagga mussels, zebra mussels, rusty crayfish, spiny waterfleas, Eurasian watermilfoil, curly leaf pondweed, flowering rush, non-native phragmites, purple loosestrife, yellow iris, and variegated reed manna grass (Glyceria Maxima 'Variegated').

Other priority species include: red swamp crayfish, Japanese knotweed, Japanese hops, European frog-bit, yellow floating heart, water chestnut, Brazilian waterweed, Hydrilla, fanwort, parrot feather, water, hyacinth, water lettuce, and rock snot.

Hilderbrand Lake Data: Hilderbrand Lake is a 59 acre lake located in both Lincoln and Oneida Counties (**Figure 1**). This waterbody is a seepage lake, meaning is does not have an inlet or an outlet. The maximum depth was recorded at 24 feet, however, the water level can fluctuate, as the principal source of water on this lake is precipitation or runoff. There is one public boat landing on Hilderbrand Lake located at the end of Hilderbrand Lake Road (**Figure 2**). Due to the condition of the boat landing, it is recommended that this boat landing on be used for carry in vessels. The substrate is 25% sand, 15% gravel, 25% rock, and 35% muck. Along with reporting the depth and substrate, the Wisconsin Department of Natural Resources (WDNR) reports that the lake has panfish, largemouth bass, and northern pike. Panfish and largemouth bass were both observed during our monitoring.

Field Notes

Weather: The weather while conducting research on Hilderbrand Lake was warm and sunny. The air temperature was 82 degrees Fahrenheit. The winds were blowing at 12 miles per hour from the southeast.

AIS Monitoring: No new aquatic invasive species were found during our monitoring. We completed a visual meander survey around the entire lake's perimeter, searching both sides of the canoe, and moving in and out between various water depths. Polarized sunglasses were used to aide in looking at the bottom substrate. Throughout our monitoring, we stopped at five targeted search sites and did multiple rake tosses to check for plant growth at each location, while also still looking in the water at various depth. The five search sites were selected based on areas that seemed to receive more boat or foot traffic. Please see **Figure 2** for more information.

Water Quality Monitoring: To observe the water clarity and quality on Hilderbrand Lake, we used a depth finder and maps indicating where data had been collected in the past to locate the deep hole. After locating the deep hole, we used a Secchi disk to measure water clarity. The Secchi disk reading was at 12.75 feet out of a maximum depth of 25 feet. Even though the WDNR has the maximum depth listed at 24 feet, we recorded 25 feet on our depth finder. The last time data was collected on Hilderbrand Lake was in 1979, so some change in depth at the deep hole was expected. While at the deep hole, we also used a dissolved oxygen meter to measure water quality. 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 are under stress. The dissolved oxygen measurements on Hilderbrand Lake looked healthy. These measurements can be found in **Table 1**.

Native Plants: Native plants play an important role in all waterbodies. When allowed to take root, native plants will provide a food source to aquatic animals, provide fish and wildlife habitat, improve water quality, stabilize the shoreline and the waterbody's bottom, and prevent erosion and the accumulation of sediment along the edge of a waterbody. When there are native plants along the edge of a waterbody, they can help filter trash, fertilizers, and other large amounts of runoff. Furthermore, aquatic vegetation can attract desirable wildlife, such as deer and pollinators, while also deterring undesirable animals, such as geese. While we did not observe a large variety of native plants growing in the lake, Hilderbrand Lake still had a healthy native plant population. The most common native plants we observed can be found in **Table 2**.

Figure 1. Map of Lincoln and Oneida Counties, WI with the location of Hilderbrand Lake circled in red.

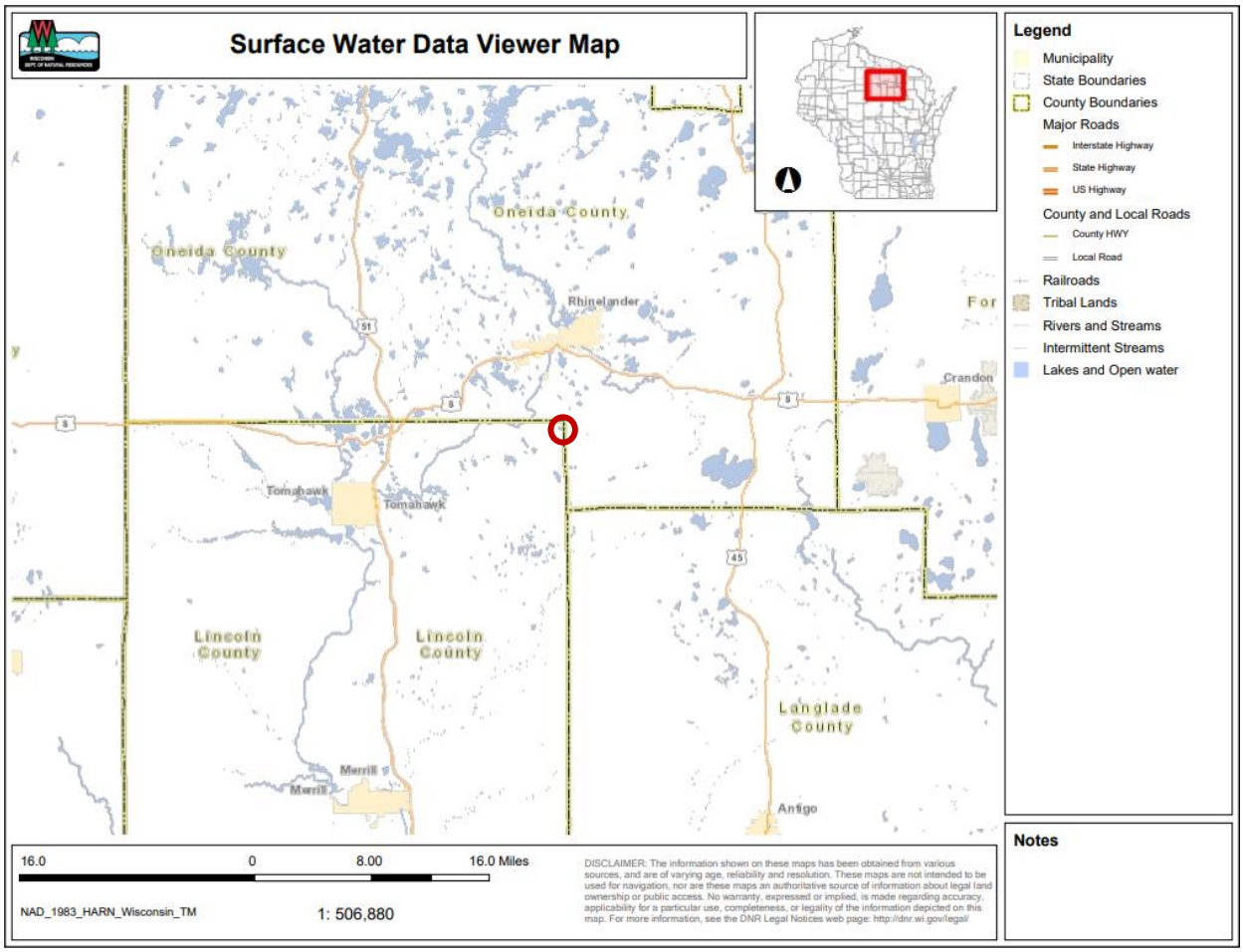
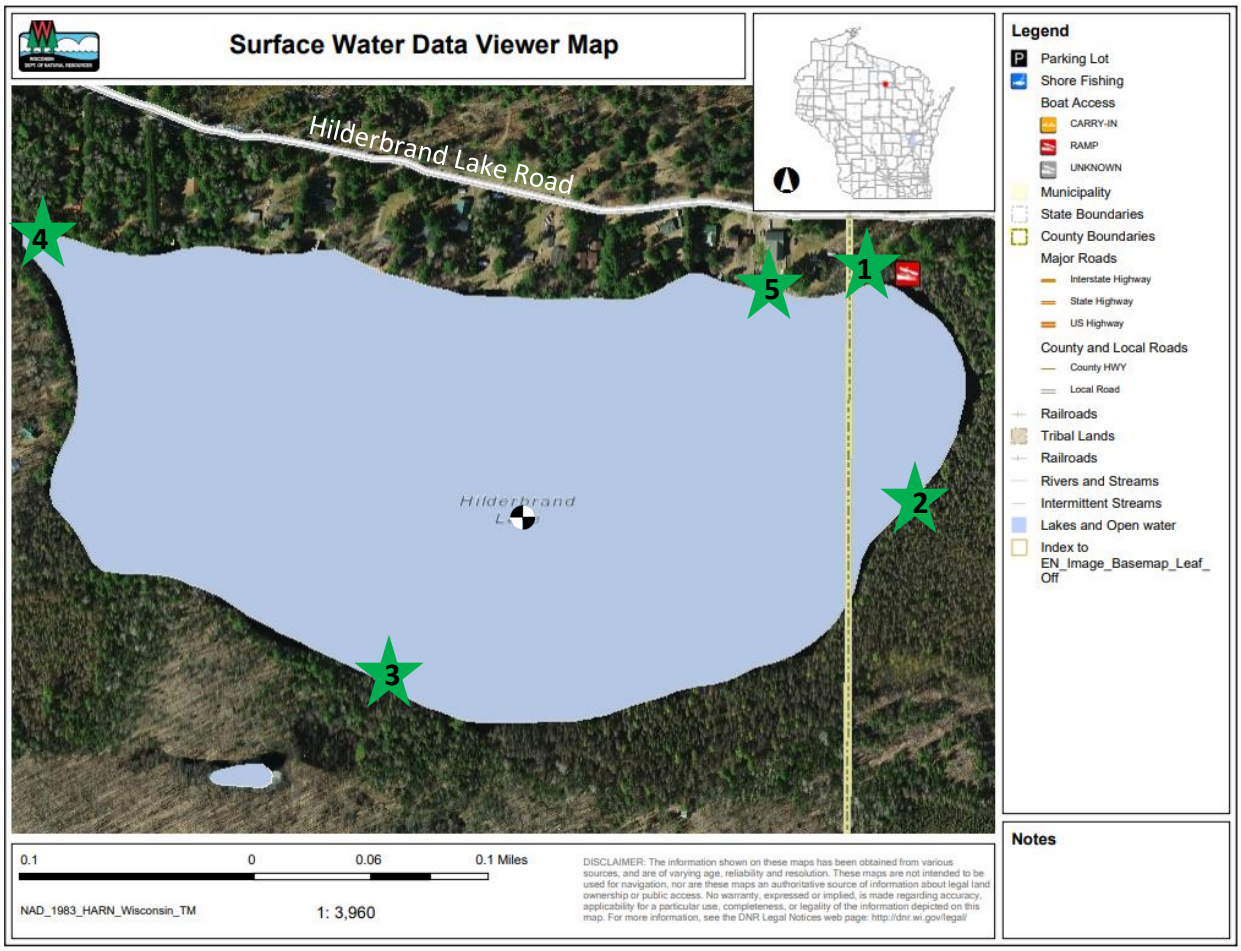


Figure 2. Map of Hilderbrand Lake.



Map Key	
	Boat Landing
	Location of Secchi Disk and Dissolved Oxygen reading Coordinates: 45.547, -89.432
	Targeted Search Sites: **Search Site 1:** Public Boat Landing (45.549, -89.428) **Search Site 2:** Area of deeper water with limited visibility (45.548, -89.427) **Search Site 3:** Walking trails near the shore and sandy substrate, heavy foot traffic (45.546, -89.433) **Search Site 4:** Private Boat Landing (45.550, -89.437) **Search Site 5:** Private Boat Landing (45.549, -89.429)

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

Depth (Feet)	Temperature (°F)	Percent of Dissolved Oxygen	Dissolved Oxygen Levels (mg/L)
1	76.0	104.0%	8.06
2	75.9	104.0%	8.06
3	75.7	103.8%	8.06
4	75.5	103.5%	8.06
5	75.2	102.9%	8.04
6	75.0	102.8%	8.04
7	74.9	102.2%	8.01
8	74.8	100.0%	7.85
9	74.6	98.7%	7.76
10	74.2	95.9%	7.57
11	72.4	84.4%	6.79
12	69.0	72.4%	6.04
13	60.4	17.4%	1.60
14	55.7	6.7%	0.65
15	52.8	3.5%	0.35
16	50.9	2.1%	0.22
17	49.1	1.7%	0.81
18	48.0	1.2%	0.13
19	47.3	0.9%	0.10
20	47.2	0.7%	0.08
21	46.3	0.4%	0.05
22	46.2	0.4%	0.04
23	46.3	0.3%	0.03
24	46.3	0.0.2%	0.03
25	46.2	0.01%	0.02

Table 2. Common plants found in Hilderbrand Lake while monitoring.

Blue Flag Iris *(Iris versicolor)* **Description:** A semi-aquatic to emergent perennial. Flowers are deep blue to purple, 6 parted, 6-8 cm wide. Sepals may have greenish-yellow markings at the base surrounded by a white zone. Leaves are narrow, sword-like; arranged in flattened, fan-like clusters. Flowers stalks (20-80 cm high) are taller than the leaves. **Status:** Native *Photo Credit: Wisconsin Department of Natural Resources*	
Bullhead Pond Lily *(Nuphar variegata)* **Description:** An aquatic plant with heart-shaped leaves that can grow to be 15 inches long. This plant also has a yellow, cup-shaped flower. **Status:** Native *Photo Credit: Jomegat's Weblog*	
Floating Bur-reed *(Sparganium fluctuans)* **Description:** An emergent plant. Stem is usually submerged can can be up to 5 feet long. Lesves are flat, spear-like, and can grow 40 inches long. Flowers are small and are in globular clusters. **Status:** Native *Photo Credit: science.halleyhosting.com*	
Large Duckweed *(Spirodela polyrhiza)* **Description:** Free-floating. Leaves (fronds) are circular, 3-8mm long, green above and purplish below, with multiple roots per frond. **Status:** Native *Photo Credit: Heiko Muth*	
Steeplebush *(Spiraea tomentosa)* **Description:** Mound-shaped shrub 2-4 feet tall. Usually unbranched. Leaves are alternate, abundant along the stem, and are coarsely toothed along their margins. Central stem terminates in a desce panicle of pink flowers 4-8 inches long. **Status:** Native *Photo Credit: wildseedproject.net*	

Resources:

Wisconsin Department of Natural Resources' Find a Lakes Page:
https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=990100

Wisconsin Department of Natural Resources' Surface Water Data Viewer:

https://dnrmaps.wi.gov/H5/?viewer=SWDV&runWorkflow=search&param=LAKE,WATERBODY_WBIC,990100

Wisconsin Department of Natural Resources' Wisconsin Water Page:

https://dnr.wi.gov/water/waterDetail.aspx?key=128803

Lincoln County Conservation Program:

https://co.lincoln.wi.us/land-services/page/conservation

Oneida County Land and Water Conservation Department:

https://www.oclw.org/

For more information, please contact:

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