

1.0 INTRODUCTION

Found Lake is a 336-acre drainage lake in Vilas County that has a maximum depth of 21 feet (Photo 1.0-1). Found Lake is located within the St. Germain River Watershed. The Found Lake Property Owners Association (FLPOA) contracted Onterra to conduct an AIS monitoring survey during 2018 as outlined within their lake management plan (*Town of Saint Germain Lake Management Plan - April 2013*).

During a June 2018 survey conducted by Onterra, LLC, a few single plants of Eurasian watermilfoil (*Myriophyllum spicatum* - EWM), a non-native invasive aquatic plant species, were located in the bay on the west side of lake in approximately six to eight feet of water. Eurasian watermilfoil is present in nearby waterbodies including Lost Lake and Little Saint Germain Lake. Following discussion with WDNR, a hand-harvesting firm was contracted for the removal of the small number of isolated EWM plants as well as to conduct scuba reconnaissance near the public access location. A professional hand harvesting firm conducted hand-harvesting of EWM on Found Lake on July 6, 2018. Harvesting efforts included six hours on the lake and resulted in the harvest of approximately 0.25 cubic feet of EWM. The divers noted smaller (< 6 inches) EWM plants growing in the immediate area near the mapped occurrences. No EWM was located near the public boat launch during the diver search.



Photo 1.0-1. Found Lake, Vilas County. Photo credit: Onterra, LLC

The FLPOA successfully applied for a WDNR AIS-EDR grant during the February 2019 grant cycle. The project included funding for a continuation of EWM monitoring and control activities from 2018-2020. A summary of the professional EWM monitoring and hand harvesting activities that took place during 2019-2020 was reported within the *Found Lake 2018-2020 EWM Management & Monitoring Summary Report – March 2021*). Analysis of a 2020 whole-lake point intercept survey was also included within the report. Since initial discovery in June 2018 and subsequent harvesting efforts, EWM was not observed in Found Lake in any of the professional monitoring surveys conducted during 2019 or 2020. The FLPOA extended the project to utilize the remaining funds in their open WDNR grant. Monitoring continued during 2021 and 2022 with the completion of early season and late-season EWM mapping surveys. This report details the results of the 2021 and 2022 EWM monitoring and hand harvesting activities that occurred on Found Lake.

The FLPOA created an updated lake management plan in November 2021 as part of a town-wide effort by the Town of Saint Germain Lakes Committee (TSGLC). Within this Plan, a goal was created to “*Actively Manage Existing and Reduce the Likelihood of Future Invasive Species Introductions in the Town of Saint Germain Lakes*”. Actions under this goal included annual volunteer AIS monitoring and periodic professional monitoring, initiating a rapid response plan upon discovery of a new infestation, and investing in AIS prevention through the Clean Boats Clean Waters program.

2.0 MONITORING METHODS

A series of EWM mapping surveys were used within this project to monitor the EWM population and guide potential hand harvesting efforts (Photo 2.0-1). In late-spring/early summer, an Early Season Aquatic Invasive Species Survey (ESAIS) was completed. The ESAIS survey is completed at a time when water is often clearer, and EWM is often growing taller in the water column than most native aquatic plants. The survey timing also corresponds to the timing of the expected peak growth stage of another aquatic invasive species, curly-leaf pondweed (CLP) which is known to be within nearby lakes including Little Saint Germain Lake and Lost Lake. The results of the ESAIS survey are used to determine the hand-harvesting strategy for the summer. The second monitoring survey is the Late-Summer EWM Mapping Survey which is conducted towards the end of the growing season and corresponds with the expected peak growth state of EWM. The Late-Summer survey is used to evaluate any hand harvesting activities that have taken place and is important in development of the following years' monitoring or control strategy.



Photograph 2.0-1. EWM mapping survey on a Wisconsin lake. Photo credit Onterra.

3.0. 2021 EWM MONITORING & MANAGEMENT ACTIVITIES

3.1 Early Season Aquatic Invasive Species Survey (ESAIS)

Onterra staff completed the ESAIS survey on June 23, 2021 on Found Lake. Conditions were favorable during the survey with clear skies and moderate winds. The entire littoral zone for surveyed for EWM and crews supplemented the visual survey with underwater video transects and strategically placed rake tows.

During the survey, crews located three EWM plants just north of island in about 6 feet of water (Map 1). The plants were growing up to the surface and slightly canopying. One of Onterra's ecologists got in the water, followed the plants down, and removed them by the roots. All three plants were removed with a high confidence level of removing the entire root crown. The other crew member on the boat kept a look out for fragments during the process. The extracted plants are shown in Photo 3.1-1. Following the removal efforts, the crew continued to scour the area both from the surface and with the submersible camera, not locating any additional EWM. The crew also searched the original area located in June 2018 from the surface and with the underwater camera, not detecting any EWM.



Photograph 3.1-1. EWM harvested from Found Lake during Onterra's June 23, 2021 Survey. Photo credit Onterra.

3.2 Professional Hand Harvesting Activities

Following Onterra's June 2021 survey, the FLPOA elected to contract with Aquatic Plant Management, LLC to conduct a dive search for EWM in the sites where EWM had been located in the past. On August 6, 2021, divers from APM, LLC visited Found Lake and located and removed approximately 18 EWM plants near the island area of the lake. Dive searches also took place in the west bay where EWM was initially discovered in 2018 and no EWM was located in that area of the lake. Details of the dive efforts are included in an EWM Removal Report authored by APM, LLC and included within Appendix A of this report.

3.3 Late-Summer EWM Mapping Survey

Onterra conducted a late-summer EWM Mapping Survey on Found Lake on August 24, 2021. Weather conditions were favorable with partly sunny conditions and low winds. During the course of the day, the crews searched the entire littoral area of the lake and gave an extra level of focus in all sites where EWM had been located in the past. One EWM plant was located in the vicinity of the island where harvesting efforts took place earlier in the year. The plant was growing up to near the water's surface in approximately four feet of water as displayed on the Map 2. The crew successfully extracted this plant by the roots. A submersible camera was deployed in this area as well and numerous transects through the site yielded no additional EWM occurrences. The crew did not observe any northern watermilfoil in the site while it was present elsewhere around the lake. Crews did not find any other EWM occurrences in the lake including the former 2018 location.

4.0. 2022 EWM MONITORING & MANAGEMENT ACTIVITIES

4.1 Early Season Aquatic Invasive Species Survey (ESAIS)

Onterra completed an ESAIS survey on Found Lake on June 27, 2022. The survey crew meandered the entire littoral zone with good conditions, as skies were sunny and the wind decreased throughout the day. The survey crew encountered a clump of EWM plants (5-6 individual plants in close proximity) and an additional single plant on the north side of the island (Map 3). This was the same location of the EWM that was mapped during the 2021 surveys. These plants were reaching the waters' surface and easily spotted. The crew conducted several transects with a submersible camera around this area but could not locate any additional EWM plants. A submersible camera was also used on the 2018 EWM location in the west end of the lake but no EWM was found in this area.

4.2 Professional Hand Harvesting Activities

The FLPOA contracted with APM, LLC again in 2022 to harvest the EWM plants that were located during Onterra's June 2022 survey. A dive team from APM, LLC visited Found Lake on July 25, 2022. The dive crew harvested approximately one cubic foot of EWM from the site north of the island. Dive notes indicated highly scattered EWM plants in the site. A dive search was also completed in the west bay in the vicinity where EWM was originally found within the lake, and no EWM was observed in that location. Additional details of the professional harvesting efforts are included within the EWM Removal Summary report authored by APM, LLC and included in Appendix A.

4.3 Late-Summer EWM Mapping Survey

Two of Onterra's field survey crews completed a late-season EWM mapping survey on Found Lake on September 21, 2022. The purpose of the survey was to search for and map all occurrences of EWM in the lake. The crew conducted a visual meander survey through all littoral areas of the lake. All previously documented EWM locations were loaded onto the on-board GIS software, and these sites were given added focus including the deployment of a submersible camera. The results of the survey are displayed on Map 4. In total, the crews marked three *single or few plants* occurrences in the same general area of the lake as most past findings, just north of the island. These plants were not visible from the surface and were spotted on the submersible camera. The crew noted the plants were a couple feet tall.

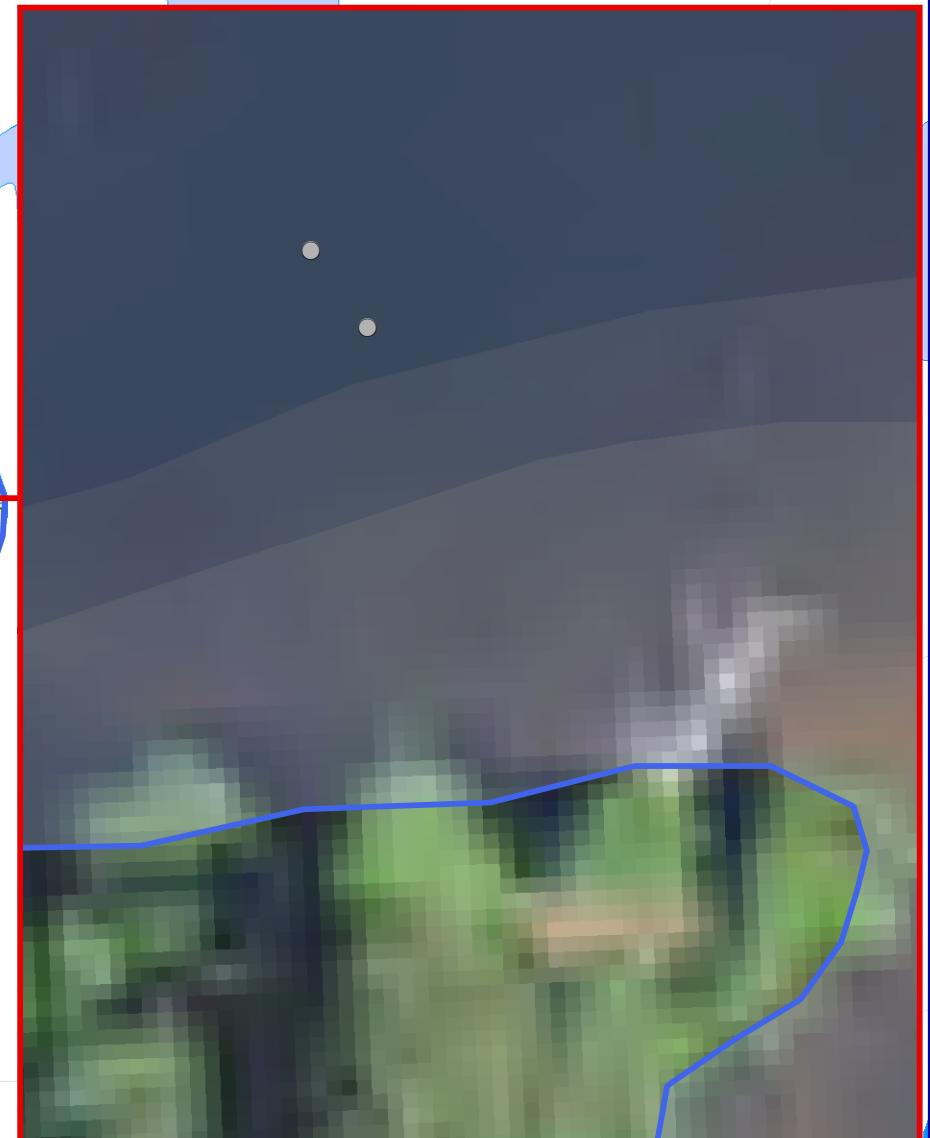
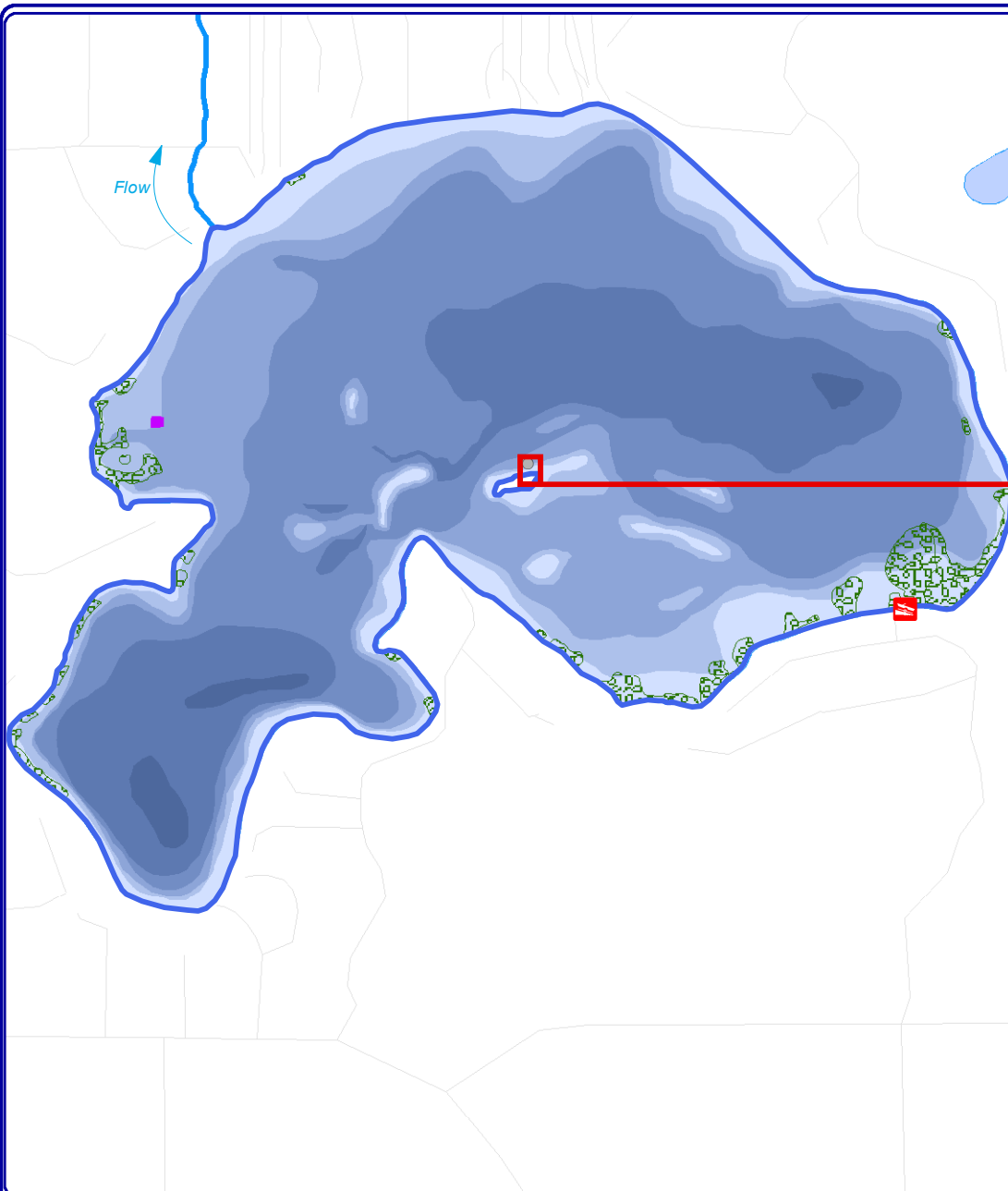
5.0 CONCLUSIONS AND DISCUSSION

The FLPOA has continued to strive for eradication of EWM from Found Lake through an aggressive monitoring and harvesting effort since initial detection in 2018. Although eradication of established EWM populations is very unlikely, it is possible that eradication could be achieved when the population is very low in a lake as is the case for Found Lake. Continued monitoring will be very important in ensuring that EWM does not gain a foothold in Found Lake.

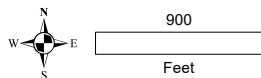
The most recent survey shows that EWM continues to be present in Found Lake at very low levels. In recent surveys, all EWM occurrences have been located in a relatively small area in the lake just north of the island in approximately 4-6 feet of water. Continued harvesting efforts have likely contributed to keeping EWM from expanding in size/density or becoming established within the lake.

5.1 2023 Management & Monitoring Strategy

The FLPOA plans to move forward with an EWM harvesting effort in 2023 by a local volunteer diver. The EWM plants located in the last mapping survey will be searched for and harvested by the diver. A late-summer professional EWM mapping survey is planned to occur in 2023 which the FLPOA would pay for without the aid of state grant funds. Considerations will be made to schedule the late-summer mapping survey on the earlier side of the seasonal spectrum (ie. early/mid-August) such that in the event EWM is located, the FLPOA could mobilize another harvesting effort following the survey. Once again, the FLPOA is encouraged to conduct volunteer EWM surveillance efforts in 2023 to supplement the professional monitoring efforts. Volunteer monitoring should prioritize search efforts in areas where EWM has been located in the past.



Density Label	Notes	Depth (ft)	Longitude	Latitude
Single or Few Plants	Extracted	6	-89.452503	45.950450
Single or Few Plants	Extracted	6	-89.452474	45.950422



Onterra LLC
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Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2021
Bathymetry: WDNR, 1973;
digitized by Onterra
Orthophoto: NAIP, 2020

Map date: June 2, 2021 - EJH



Project Location in Wisconsin

Legend

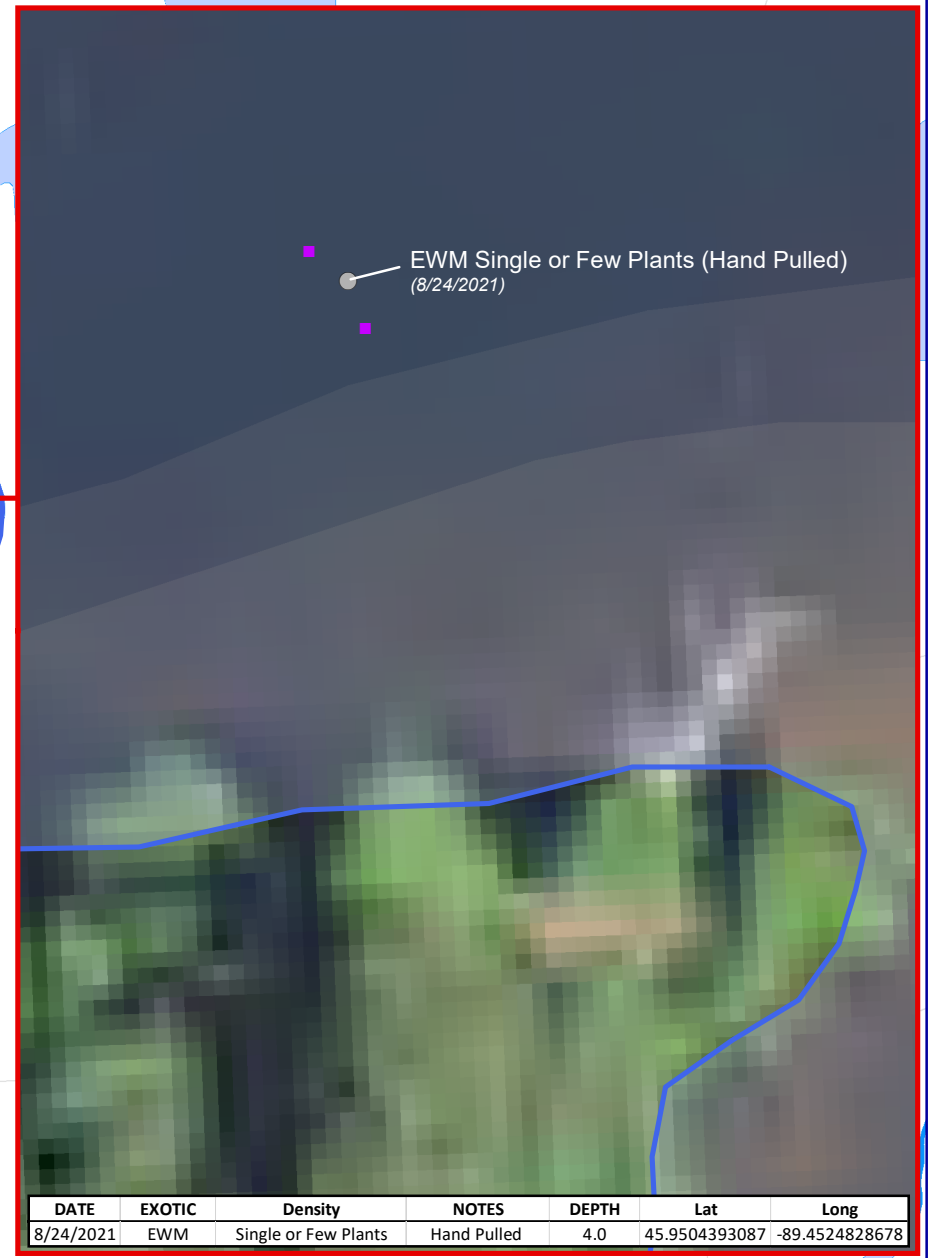
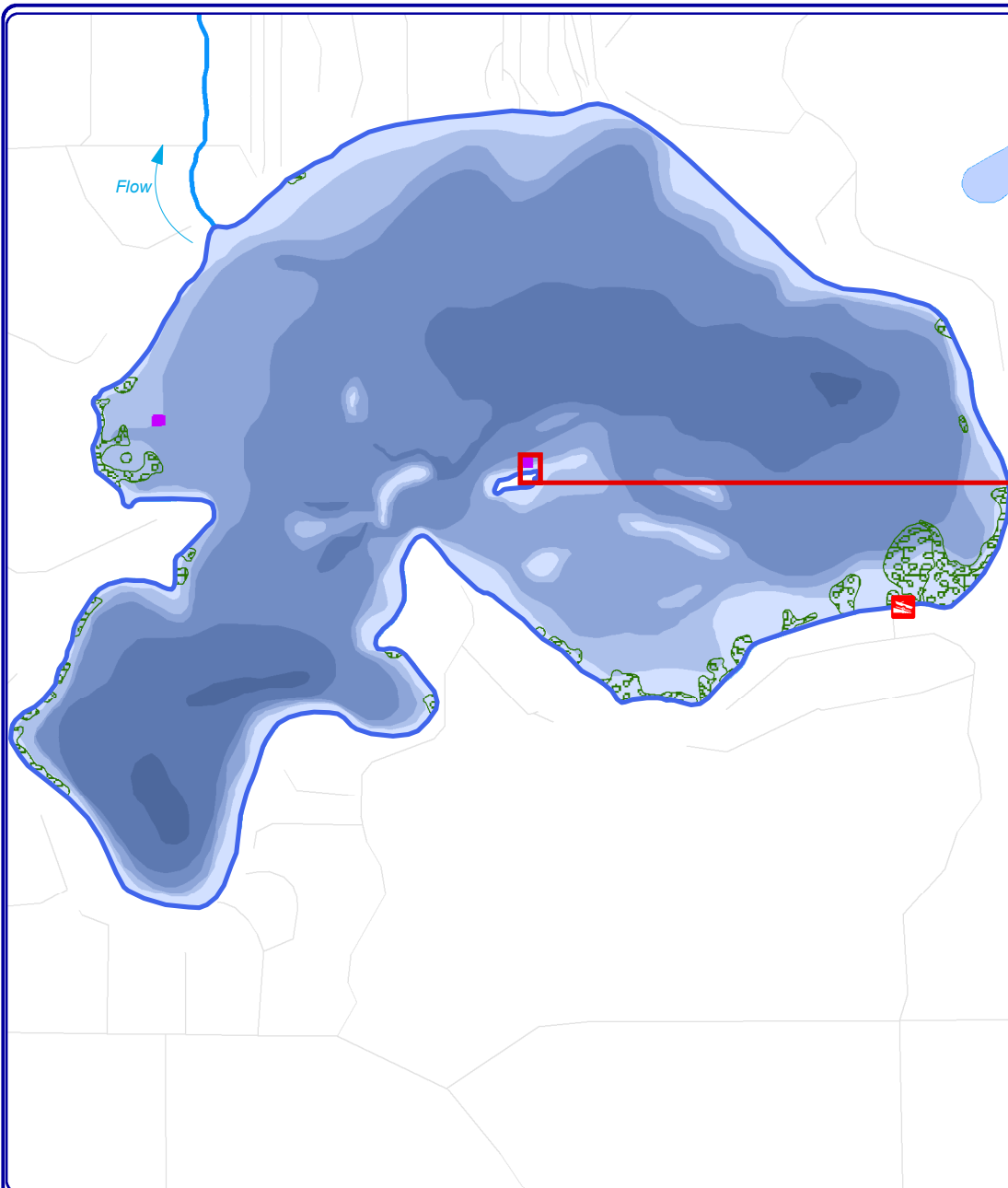
- EWM Single or Few Plants
(6/23/2021)
- Historic EWM Occurrence
(6/21/2018)



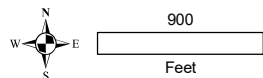
Floating-Leaf and/or
Emergent Plant Community
(Mapped August 2019)

Map 1
Found Lake
Vilas County, Wisconsin

June 2021
EWM Survey Results



DATE	EXOTIC	Density	NOTES	DEPTH	Lat	Long
8/24/2021	EWM	Single or Few Plants	Hand Pulled	4.0	45.9504393087	-89.4524828678



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Bathymetry: WDNR, 1973;
digitized by Onterra
Orthophoto: NAIP, 2020

Map date: August 30, 2021 - TWH



Project Location in Wisconsin

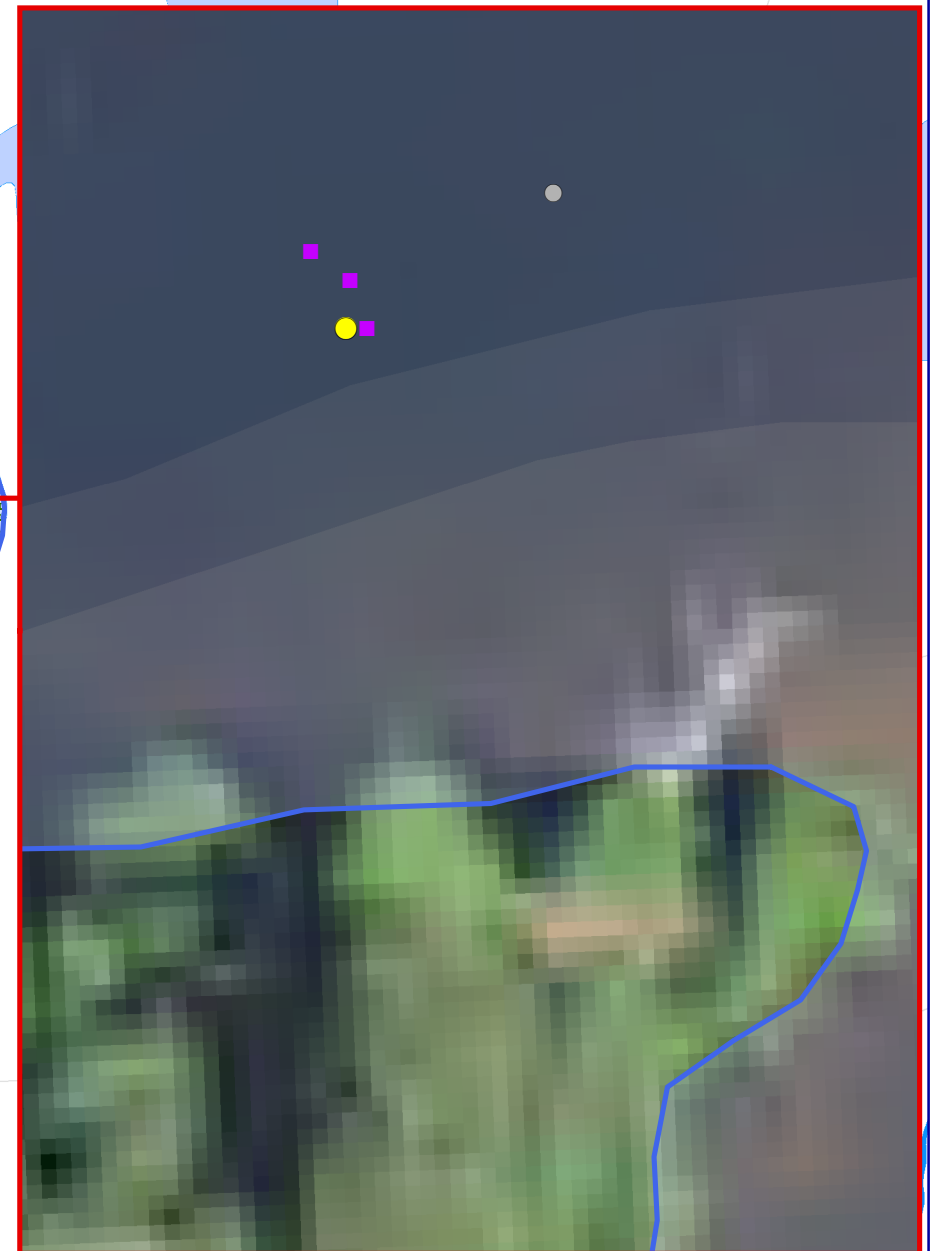
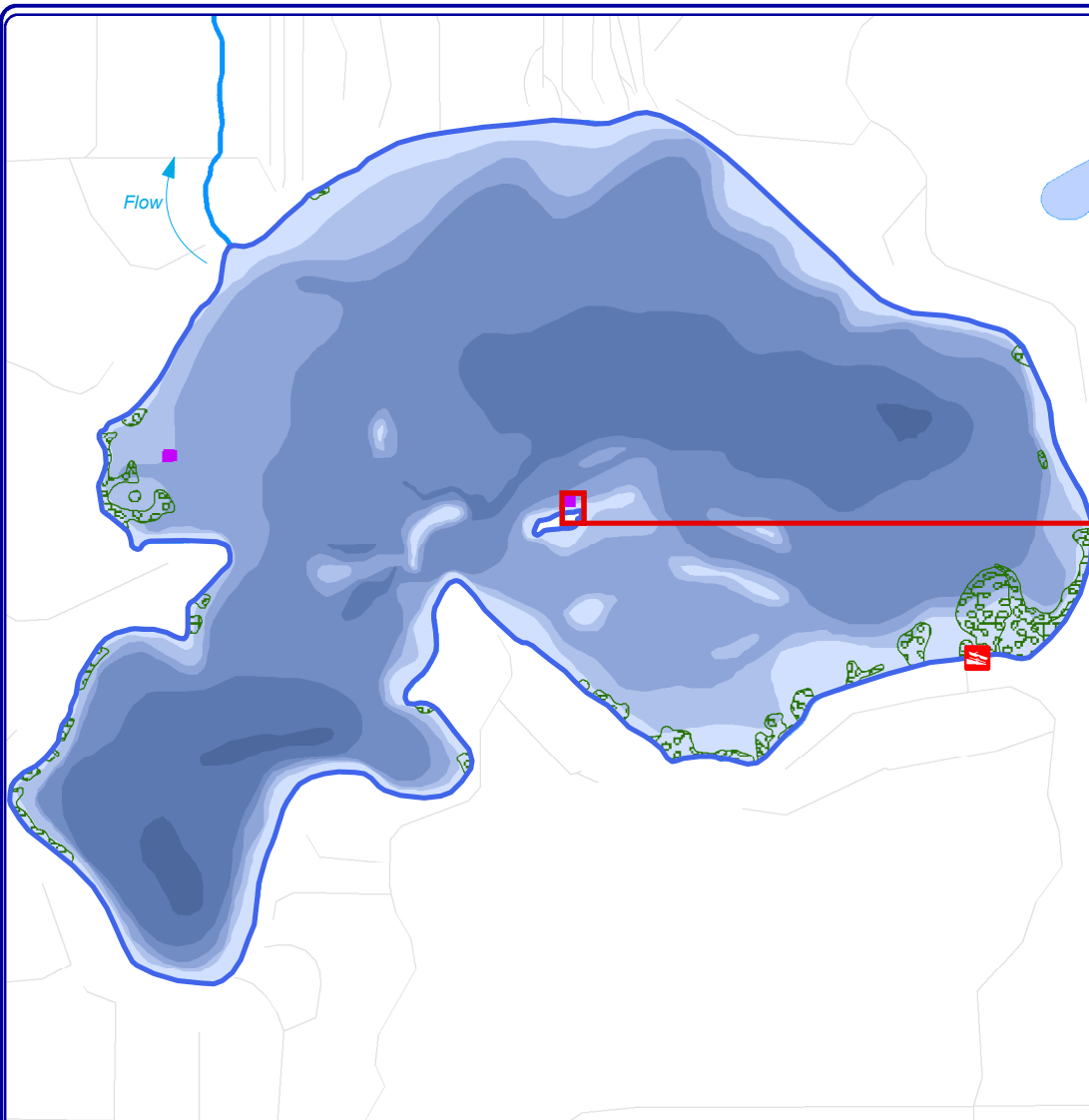
Legend

- EWM Single or Few Plants (8/24/2021)
- Historic EWM Occurrences (2018 and June 2021)

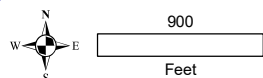


Floating-Leaf and/or
Emergent Plant Community
(Mapped August 2019)

Map 2
Found Lake
Vilas County, Wisconsin
August 2021
EWM Survey Results



Exotic	Density	Depth (ft)	Latitude	Longitude
EWM	Single or Few Plants	5	45.95047	-89.452378
EWM	Clump of Plants	6	45.950422	-89.452485



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Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2022
Bathymetry: WDNR, 1973;
digitized by Onterra
Orthophoto: NAIP, 2020
Map date: July 1, 2022 AMS



Project Location in Wisconsin

Legend

Survey Date: June 27, 2022

- Clump of Plants
- Single or Few Plants



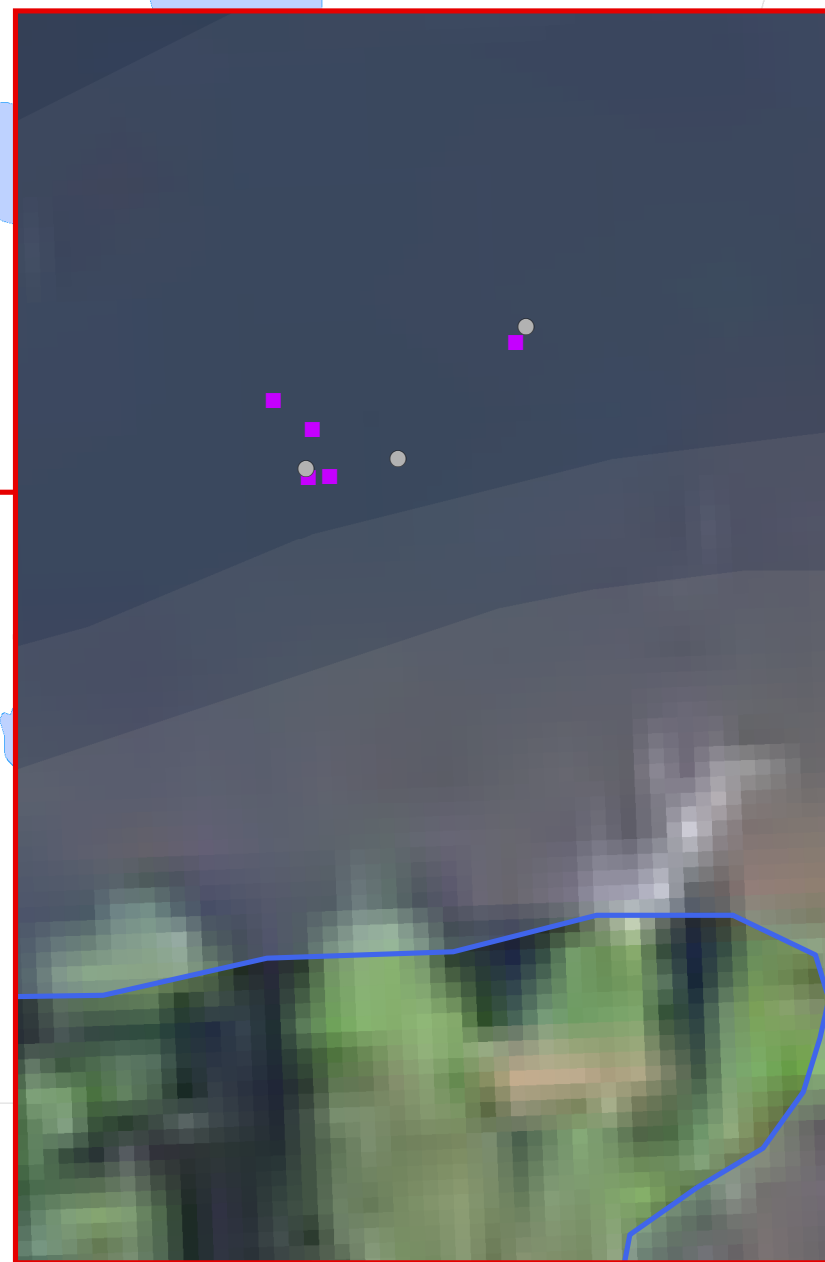
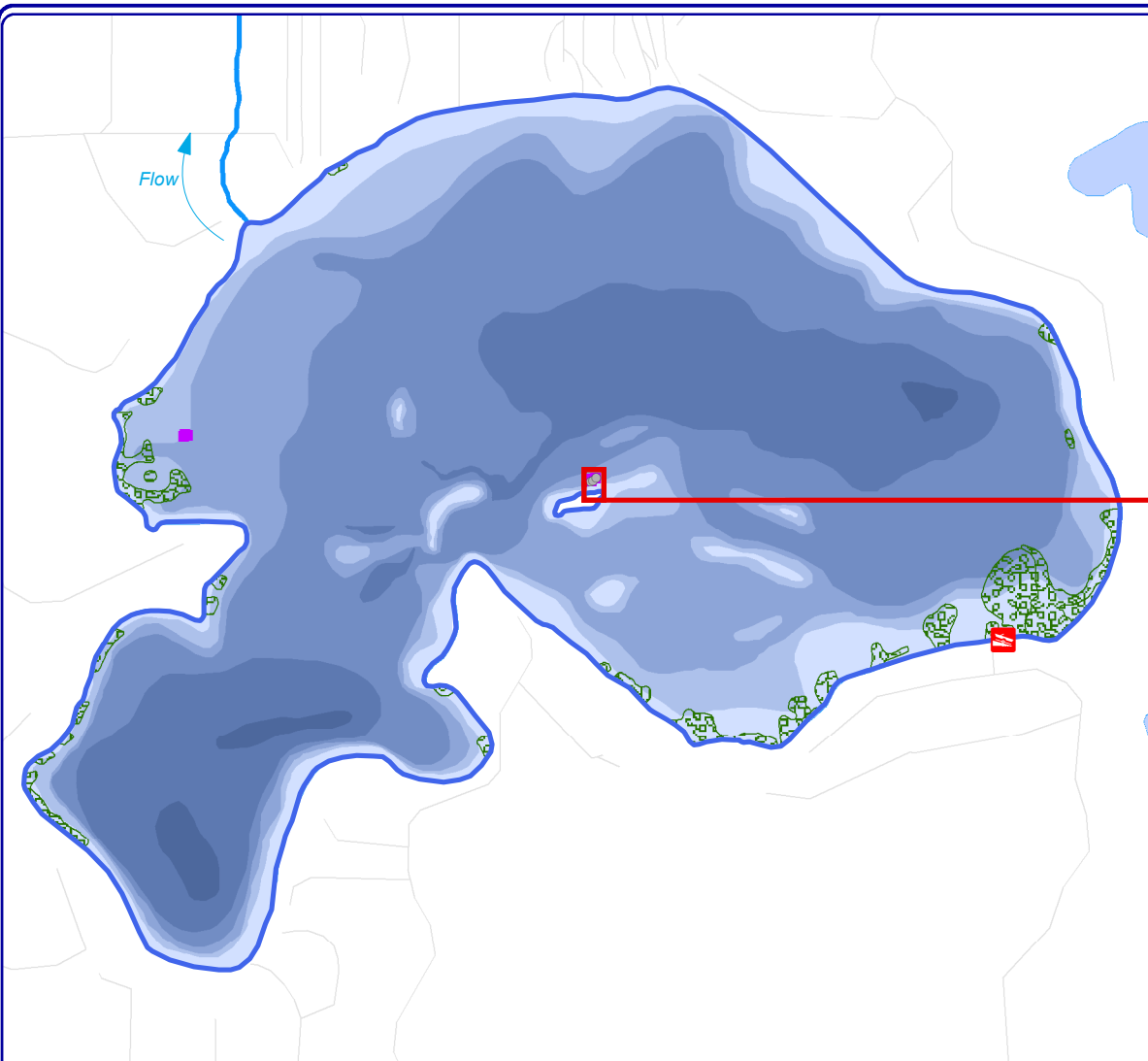
Floating-Leaf and/or
Emergent Plant Community
(Mapped August 2019)



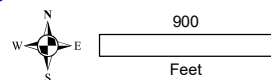
Historic EWM Occurrences
(2018 and 2021)

Map 3
Found Lake
Vilas County, Wisconsin

June 2022
EWM Survey Results



Exotic	Density	Depth (ft)	Latitude	Longitude
EWM	Single or Few Plants	5	45.9504251920	-89.4524864345
EWM	Single or Few Plants	5	45.9504283420	-89.4524391178
EWM	Single or Few Plants	5	45.9504752253	-89.4523730178



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Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2022
Bathymetry: WDNR, 1973;
digitized by Onterra
Orthophoto: NAIP, 2020

Map date: October 18, 2022 JMB



Project Location in Wisconsin

Legend

Survey Date: September 21, 2022

● Single or Few Plants



Floating-Leaf and/or
Emergent Plant Community
(Mapped August 2019)



Historic EWM Occurrences
(2018, 2021, and June 2022)

Map 4
Found Lake
Vilas County, Wisconsin

September 2022
EWM Survey Results

A

APPENDIX A

**Found Lake 2021-2022 EWM Manual Removal Summary Reports –
Aquatic Plant Management, LLC**



Found Lake EWM Removal Report 2021

PO Box 1134 Minocqua, WI 54548



Found Lake EWM Manual Removal Summary 2021

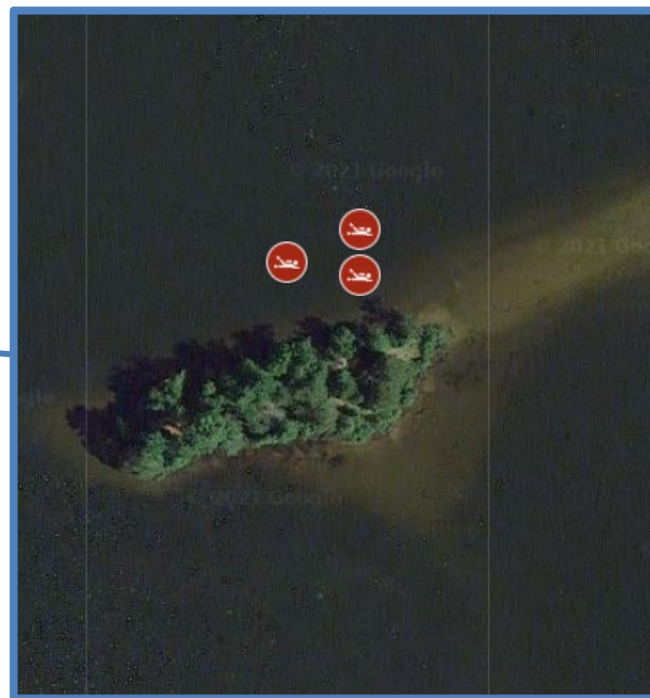
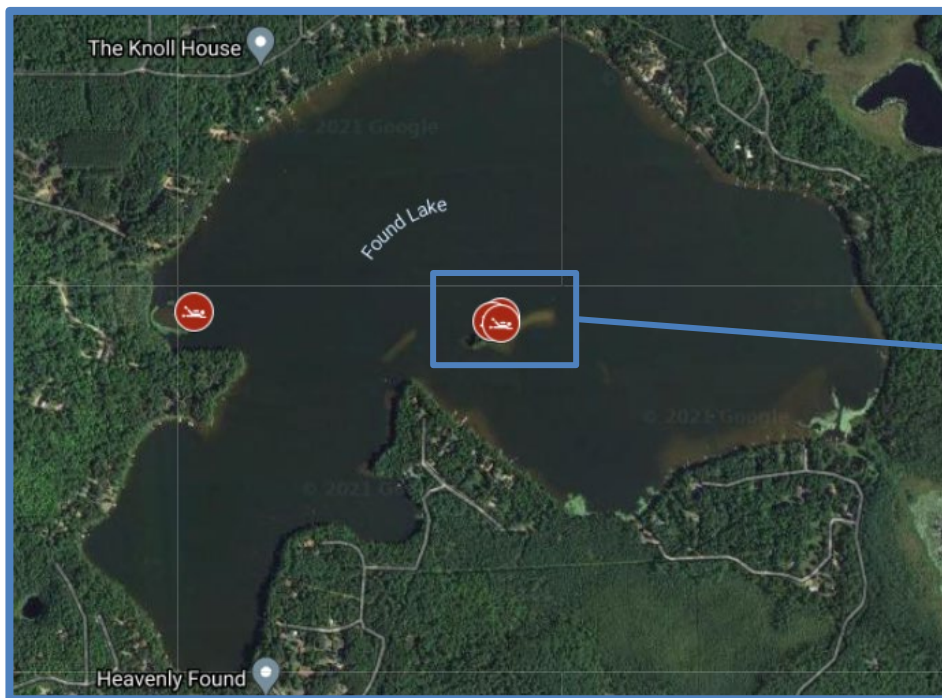
Dive Background: On August 6th, Aquatic Plant Management LLC (APM) conducted 1 day of traditional hand harvesting of Eurasian Watermilfoil (EWM) on Found Lake in Vilas County, WI. The team, consisting of four divers, focused their efforts at sites identified by Onterra LLC. In total APM was able to remove **1.0 cubic foot of EWM** from Found Lake.

Date	Weather Conditions	Water Temp (F)	Underwater Dive Time (hrs)	AIS Removed (cubic ft)
8/6/2021	Cloudy	71	4.6	1.0
Grand Total			4.6	1.0

Dive Location	Avg. Water Depth	# of Dives	Underwater Dive Time	AIS Removed (cubic feet)
E Bay	5.5	1	1.2	0.0
Island	6.0	3	3.4	1.0
Grand Total	5.9	4	4.6	1.0

Dive Highlights and Recommendations: The dive team spent the majority of their time on the north end of the island in the center of Found Lake. On the first dive near the island the team found 14 EWM plants. As the team moved east, they covered a larger surface area, but only located 2 plants. The team shifted efforts to the eastern bay where EWM had historically been found. After locating no plants during their third dive, the team shifted back near the island where they located 2 more plants. Continued monitoring and management efforts are important to prevent the spread of EWM throughout Found Lake.

Map of Found Lake Dive Sites



Dive Site



Detailed Diving Activities

Date	Dive Location	Latitude	Longitude	Underwater Dive Time (hrs)	AIS Removed (cubic ft)	AIS Density	Avg Water Depth (ft)	Native Species	Native By-Catch	Substrate Type
8/6/2021	Island	45.95051	-89.45250	1.17	0.5	Single or Few	6.0	Pondweeds	0.0	Organic
8/6/2021	Island	45.95043	-89.45275	0.75	0.0	Single or Few	6.0	Pondweeds	0.0	Organic
8/6/2021	E Bay	45.95063	-89.46126	1.17	0.0	None	5.5	Wild Celery	0.0	Sand
8/6/2021	Island	45.95040	-89.45250	1.50	0.5	Single or Few	6.0	Pondweeds	0.0	Organic
Total	4			4.59	1.0					



Found Lake EWM Removal Report 2022

PO Box 1134 Minocqua, WI 54548



Found Lake EWM Removal Summary 2022

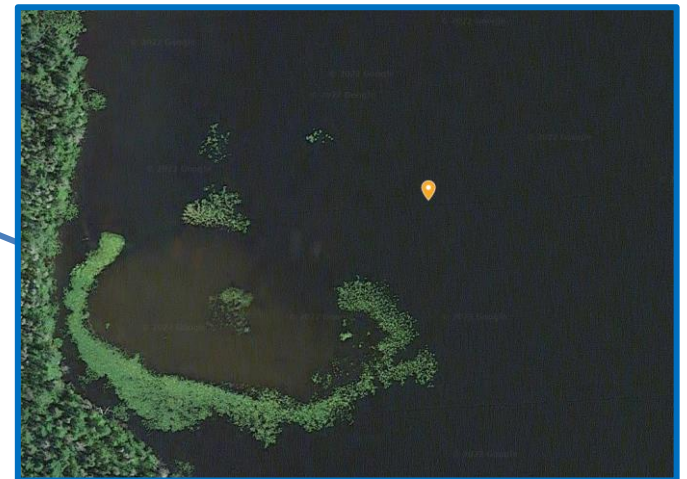
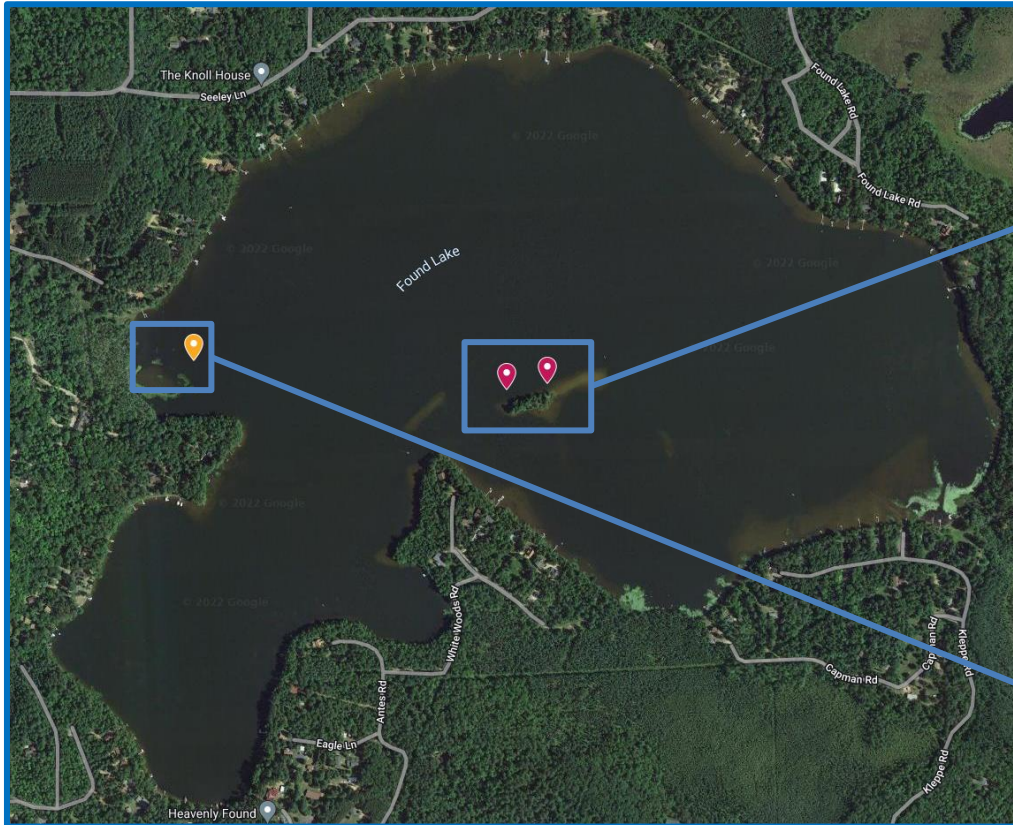
Dive Background: In June and August Aquatic Plant Management LLC (APM) conducted one (1) day of hand harvesting for Eurasian Watermilfoil (EWM) on Found Lake in Vilas County, WI. The team focused their efforts at two sites as prioritized by the Found Lake Association. In total APM was able to remove **1.0 cubic feet of EWM** from Found Lake.

Date	Weather Conditions	Water Temp (F)	Underwater Dive Time (hrs)	AIS Removed (cubic ft)
7/25/2022	Partly Cloudy	75	3.6	1.0
Grand Total			3.6	1.0

Dive Location	Avg. Water Depth	# of Dives	Underwater Dive Time	AIS Removed (cubic feet)
Island	5.0	2	2.5	1.0
W Bay	7.0	1	1.1	0.0
Grand Total	5.7	3	3.6	1.0

Dive Highlights and Recommendations: The dive team spent the bulk of their time at the island, where they removed 1 cubic feet of EWM. Overall, Found Lake should continue to take an Integrated Pest Management (IPM) approach and evaluate different strategies to manage the EWM population on the lake. Continued monitoring and management efforts are important to prevent the spread of EWM throughout Found Lake.

Map of Found Lake Dive Sites





Detailed Diving Activities

Date	Dive Location	Latitude	Longitude	Underwater Dive Time (hrs)	AIS Removed (cubic ft)	AIS Density	Avg Water Depth (ft)	Native Species	Native By- Catch	Substrate Type
7/25/2022	Island	45.95045	-89.45241	1.00	0.5	Highly Scattered	5.0	None	0.0	Organic/Sand
7/25/2022	W Bay	45.95084	-89.46099	1.08	0.0	None	7.0	None	0.0	Organic
7/25/2022	Island	45.95034	-89.45339	1.50	0.5	Single or Few	5.0	None	0.0	Organic/Sand
Total		3		3.58	1.0					