

2023 Aquatic Vegetation Management Program

Plunkett Reservoir

Hinsdale, MA

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In accordance with the existing aquatic plant management contract between SÖLitude Lake Management and the Town of Hinsdale for Plunkett Reservoir, the following document provides the 2023 survey and treatment results, as well as management recommendations for next season.

All management activities were consistent with the Order of Conditions (DEP# 181-86) and the License to Apply Chemicals issued by the MA DEP – Office of Watershed Management (WM04-0000748).

2023 Management Program Summary:

- Early Season Survey 06/01/2023
- Herbicide Treatment 06/12/2023
- Interim Survey 07/13/2023
- Late-Season Survey 08/24/2023

PRE-MANAGEMENT SURVEY

On June 1st, SÖLitude Biologists conducted a pre-management survey at Plunkett Reservoir. The purpose of this survey was to document and analyze the distribution of aquatic vegetation within the waterbody, specifically Eurasian watermilfoil (*Myriophyllum spicatum*) and curly-leaf pondweed (*Potamogeton crispus*), to determine the efficacy of previous management and provide treatment recommendations for the upcoming season.



Eurasian watermilfoil was found in two distinct patches on the western side of the Reservoir. Curly-leaf pondweed was found in two large patches in trace to dense amounts (see **Figure 1**). Observed vegetation species can be found in the following **Table 1**.

Table 1. Vegetative species observed during surveys on Plunkett Reservoir.

Common Name	Scientific Name
Bladderwort	<i>Utricularia spp.</i>
Cattails	<i>Typha sp.</i>
Clasping-leaf Pondweed	<i>Potamogeton perfoliatus</i>
Common Reed	<i>Phragmites australis</i>
Eurasian Watermilfoil	<i>Myriophyllum spicatum</i>
Filamentous Algae	
Large-leaf Pondweed	<i>Potamogeton amplifolius</i>
Macroalgae	<i>Chara/ Nitella spp.</i>
Ribbon-leaf Pondweed	<i>Potamogeton epihydrus</i>

Red text indicates invasive species.

HERBICIDE APPLICATION SUMMARY

An herbicide treatment for targeted nuisance and non-native growth was conducted on June 12th. Prior to treatment, a notice was posted on the Town's website, and the lake shoreline was posted with signs warning of the treatment and the subsequent, temporary water-use restrictions. For 24 hours following the treatment, the lake was closed for all activities. Per label instructions, irrigation was restricted for five days and domestic use was restricted for three days.

Corresponding to the pre-treatment survey (Figure 1), A total of 3 areas equaling approximately 12 acres were treated with Tribune (diquat) herbicide. Herbicide usage depended on the presence of target vegetation. Treatment was performed using an Airboat equipped with a calibrated spray system, which applied a subsurface treatment to avoid aerial drift. GPS was used to provide and document real-time tracking of the treatment boat to ensure that the herbicide was evenly applied throughout the designated areas. The areas of target species identified during the pre-management survey were treated with herbicide during this event.

No fish mortalities or significant non-target impacts to other aquatic organisms were observed or reported.



INTERIM SURVEY

On July 13th, an interim survey was conducted to determine the efficacy of the treatment. Neither curly-leaf pondweed nor Eurasian watermilfoil was observed during this survey (see **Figure 2** for aquatic vegetation observations).

Several of the same native species from the early-season survey listed in Table 1 were again observed, in addition to tapegrass (*Vallisneria americana*), slender naiad (*Najas flexilis*), small pondweed (*Potamogeton pusillus*), big-leaf pondweed (*Potamogeton amplifolius*), water stargrass (*Heteranthera dubia*), and an additional macroalgae (*Chara spp.*).

LATE-SEASON SURVEY

On August 24th, SOLitude Biologists performed a final, late-season survey to assess the overall management success and document the late-season aquatic vegetation assemblage. Eurasian watermilfoil was only observed near the inlet to the Reservoir. Curly-leaf pondweed was not observed during this survey, but invasive brittle naiad (*Najas minor*) was observed. The growing season for brittle naiad appears to be during this late-season survey and as such, a focus should be placed on this species to track its spread and plan management as necessary.

Native vegetation observed included many of the species listed in Table 1, as well as the addition of common waterweed (*Elodea canadensis*). Tapegrass was observed at nuisance densities along much of the shoreline (see **Figure 3** for all vegetation observed).

ADDITIONAL SURVEY OBSERVATIONS

SOLitude was contacted in early September by a resident of Plunkett Reservoir, Mr. Fred Wang, who shared his observations with us in order to incorporate into this report. **Figure 4** illustrates his personal observations that there were several areas of Eurasian watermilfoil that experienced regrowth after the treatment. Several small and one large area of watermilfoil were hand-pulled in order to remove these patches and keep them from spreading to other locations.

MANAGEMENT RECOMMENDATIONS

Based on the results of the late-season survey and the additional survey by Fred Wang, the treatment, while successful at initially knocking down the target species, did allow for some watermilfoil re-growth to appear later in the summer. Although initial control was vastly improved and less overall regrowth was observed this year, late season watermilfoil regrowth has been consistently noted in recent years. Since diquat is a contact herbicide (does not kill the root systems), this is expected to some degree but seems to be a particular issue at Plunkett Reservoir. We recommend considering the use of a systemic herbicide for future treatments of watermilfoil. ProcellaCOR is the best systemic option based on the size and characteristics of the current watermilfoil infestation.

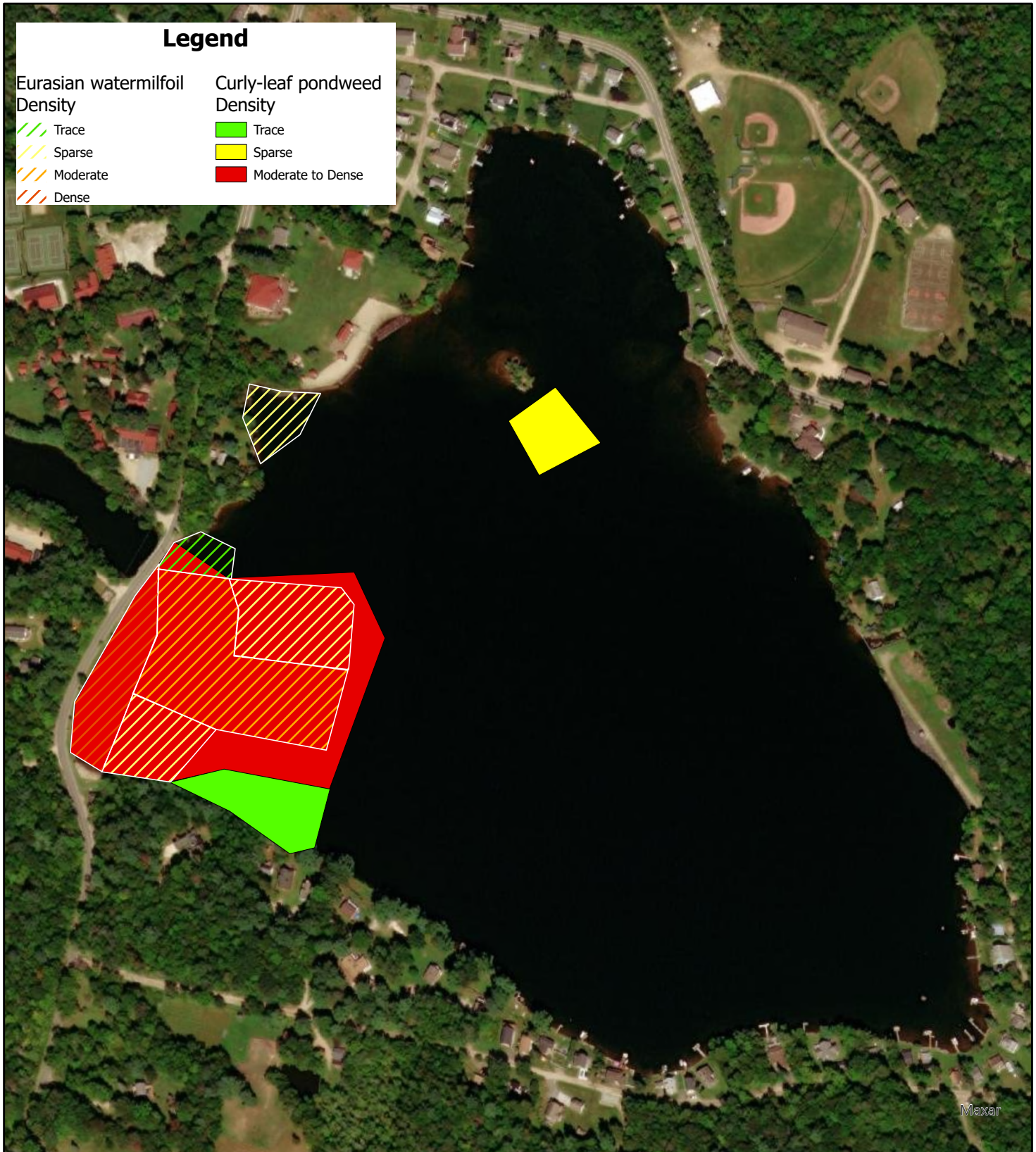
Pre, interim and post management surveys should continue to be conducted to document the distribution of nuisance and non-native aquatic species, in order to best determine the timing for treatment and finalize treatment plans. Although not conducted this past season,, we recommend budgeting for a mid-season treatment to target tapegrass and spiny naiad



if needed. These species grow in mid-late June-July and can grow in tall, dense patches, impeding recreational activities.

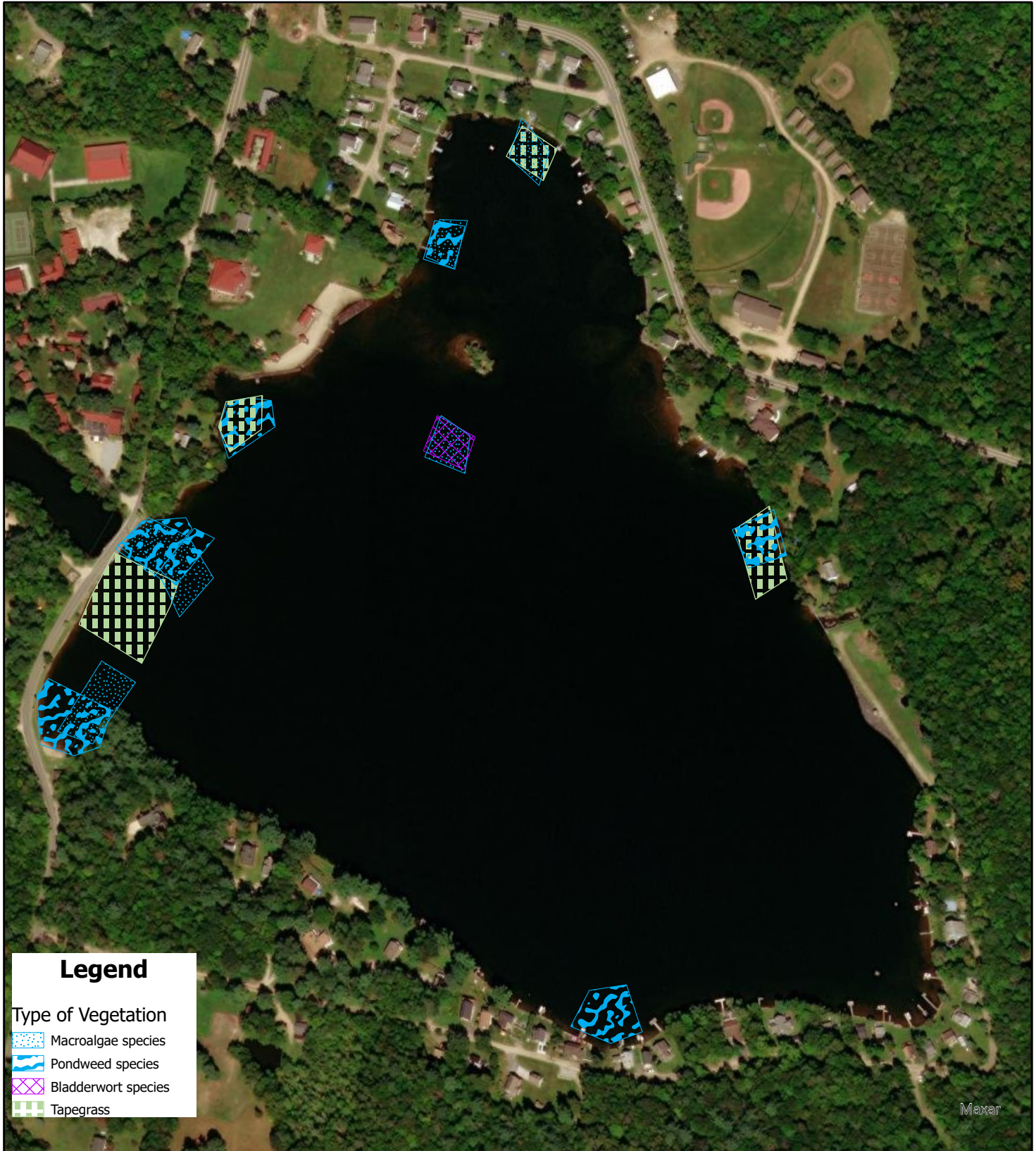
We look forward to working with you again in the 2024 season.

FIGURE 1: Pre-Management Survey Invasive Vegetation Density and Distribution







<p>Plunkett Pond Hinsdale/Peru, MA</p>	<p>Plunkett Pond</p> <p>0 145 290 580 Feet</p> <p>1:4,207</p> <p>N</p>	<p>Survey Date: 06/01/2023 Map Date: 06/06/2023 Prepared by: KV Office: Shrewsbury, MA</p>
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FIGURE 2: Interim Vegetation Survey July 13, 2023



Legend

Type of Vegetation

-  Macroalgae species
-  Pondweed species
-  Bladderwort species
-  Tapegrass

Maxar


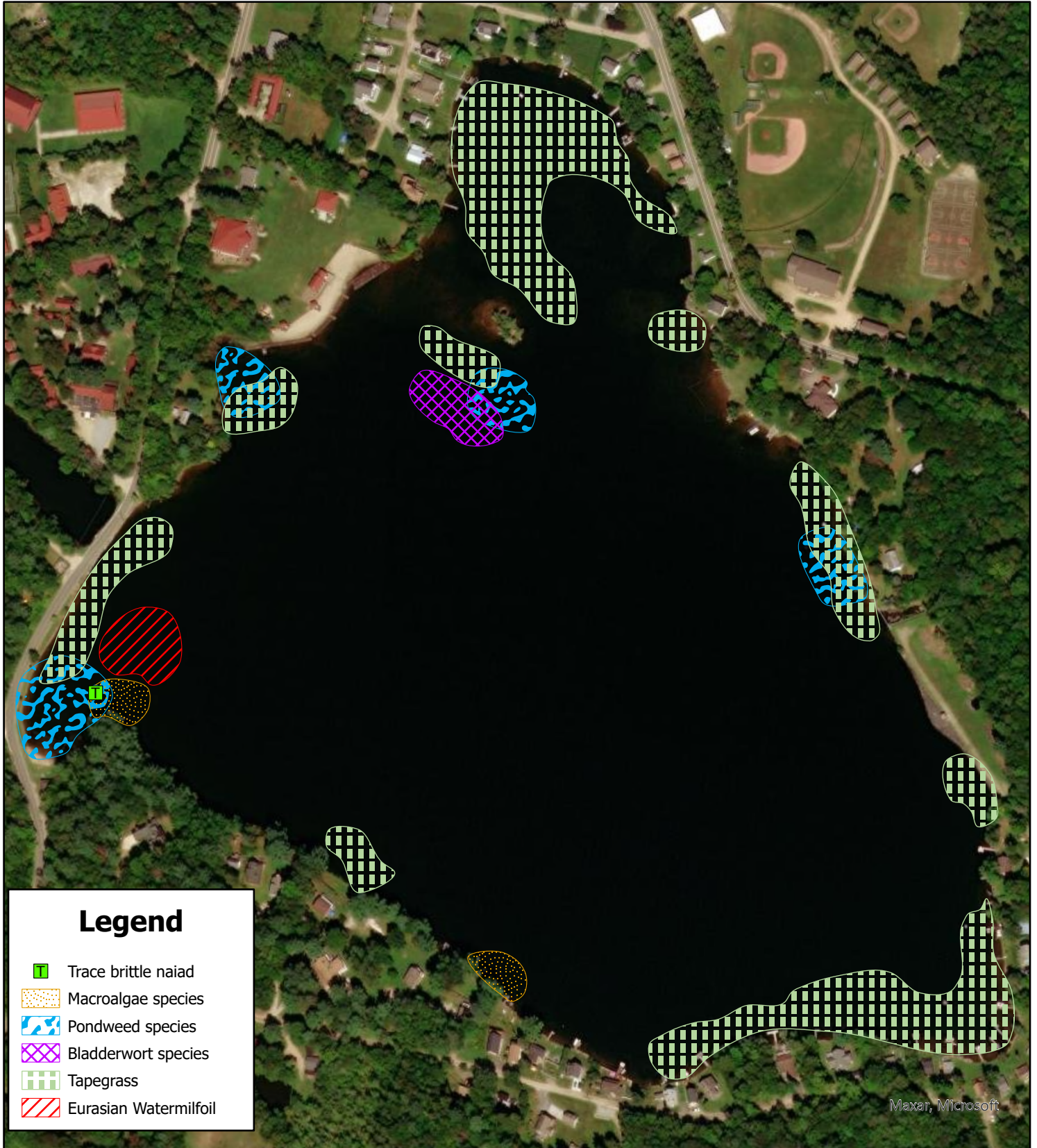
<p>Plunkett Pond Peru/Hinsdale, MA</p>	<p>Plunkett Pond</p> <p>0 105 210 420  Feet</p> <p>1:4,267</p>	<p>Map Date: 7/25/2023 File: Plunkett23_IntVeg Prepared by: KV Office: Shrewsbury, MA</p>
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FIGURE 3: Post Vegetation Survey
August 24, 2023



Plunkett Reservoir
Peru/Hinsdale, MA



Plunkett Reservoir

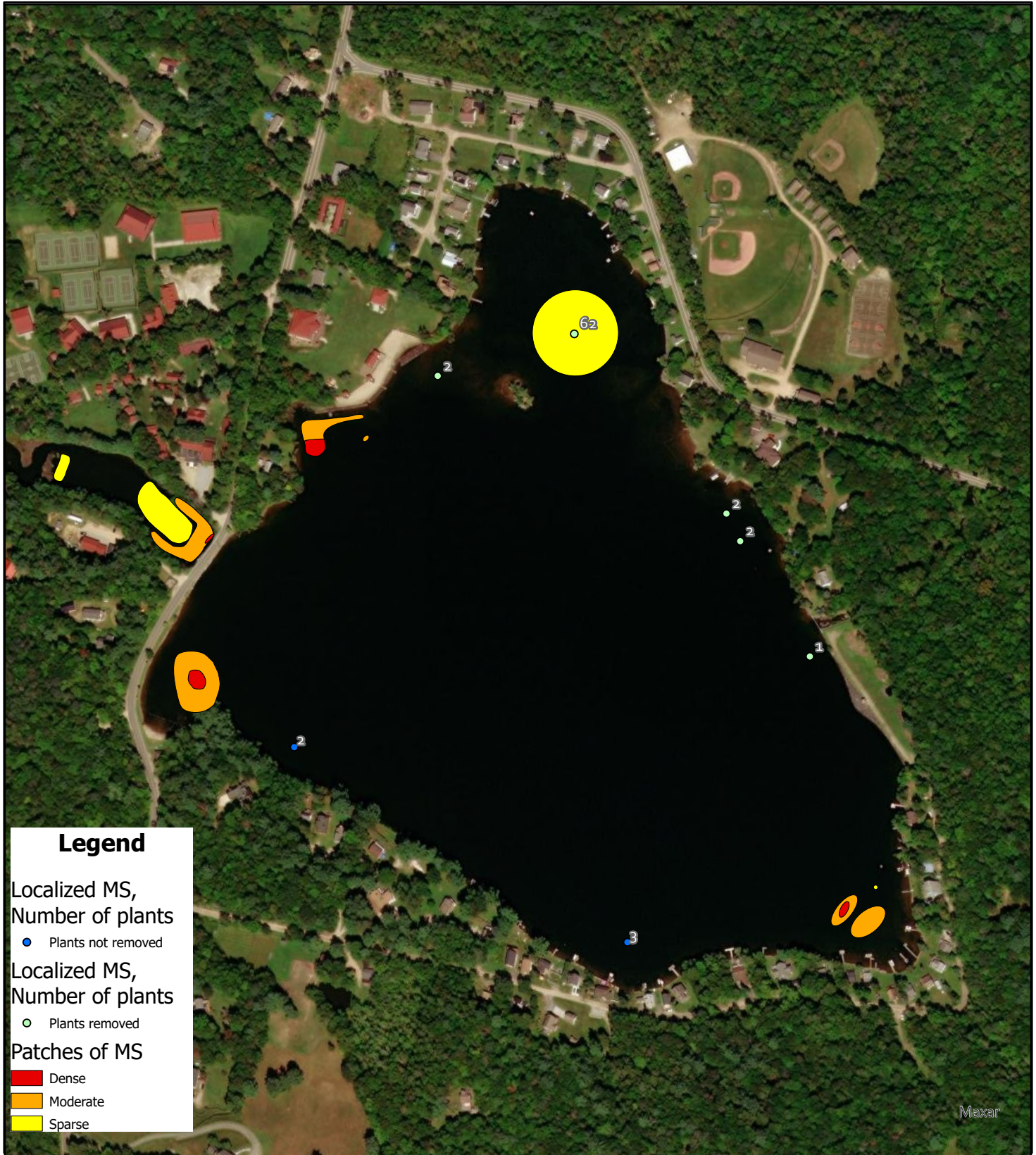
0 210 420
Feet

1:3,827



Survey Date: 08/24/2023
Prepared by: SB
Office: SHREWSBURY, MA

FIGURE 4: Additional Observations of Eurasian Watermilfoil
August 28, 2023



Legend

Localized MS,
Number of plants

- Plants not removed
- Plants removed

Localized MS,
Number of plants

- Plants removed

Patches of MS

- Dense
- Moderate
- Sparse

Plunkett Reservoir
Peru/Hinsdale, MA

Plunkett Reservoir

0 125 250 500
Feet

1:4,940

N

Map Date: 11/14/2023
File: Plunkett23
Prepared by: KV
Office: Shrewsbury, MA