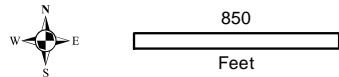
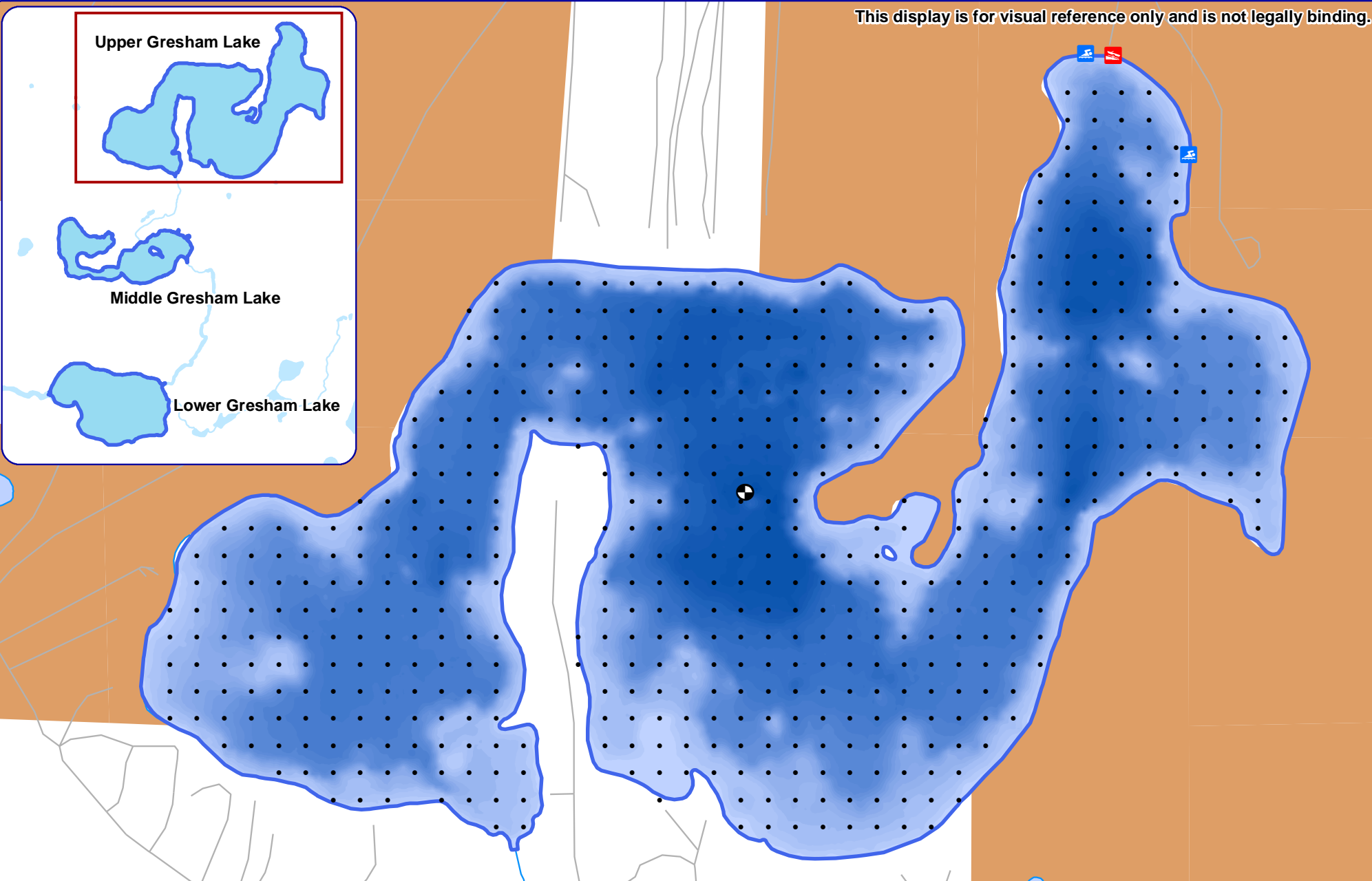
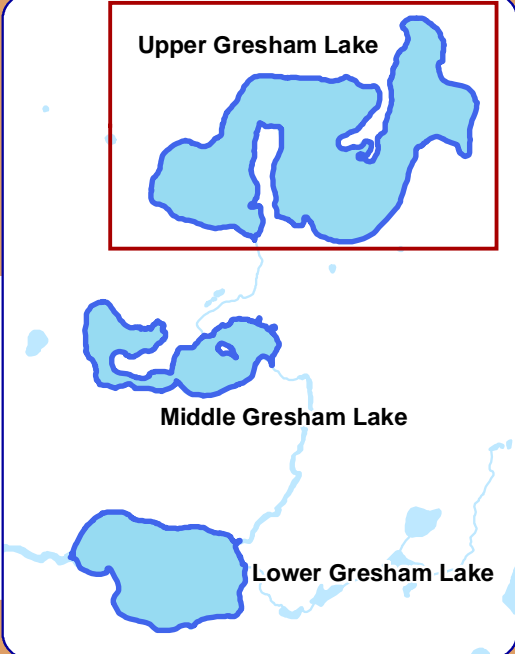


This display is for visual reference only and is not legally binding.



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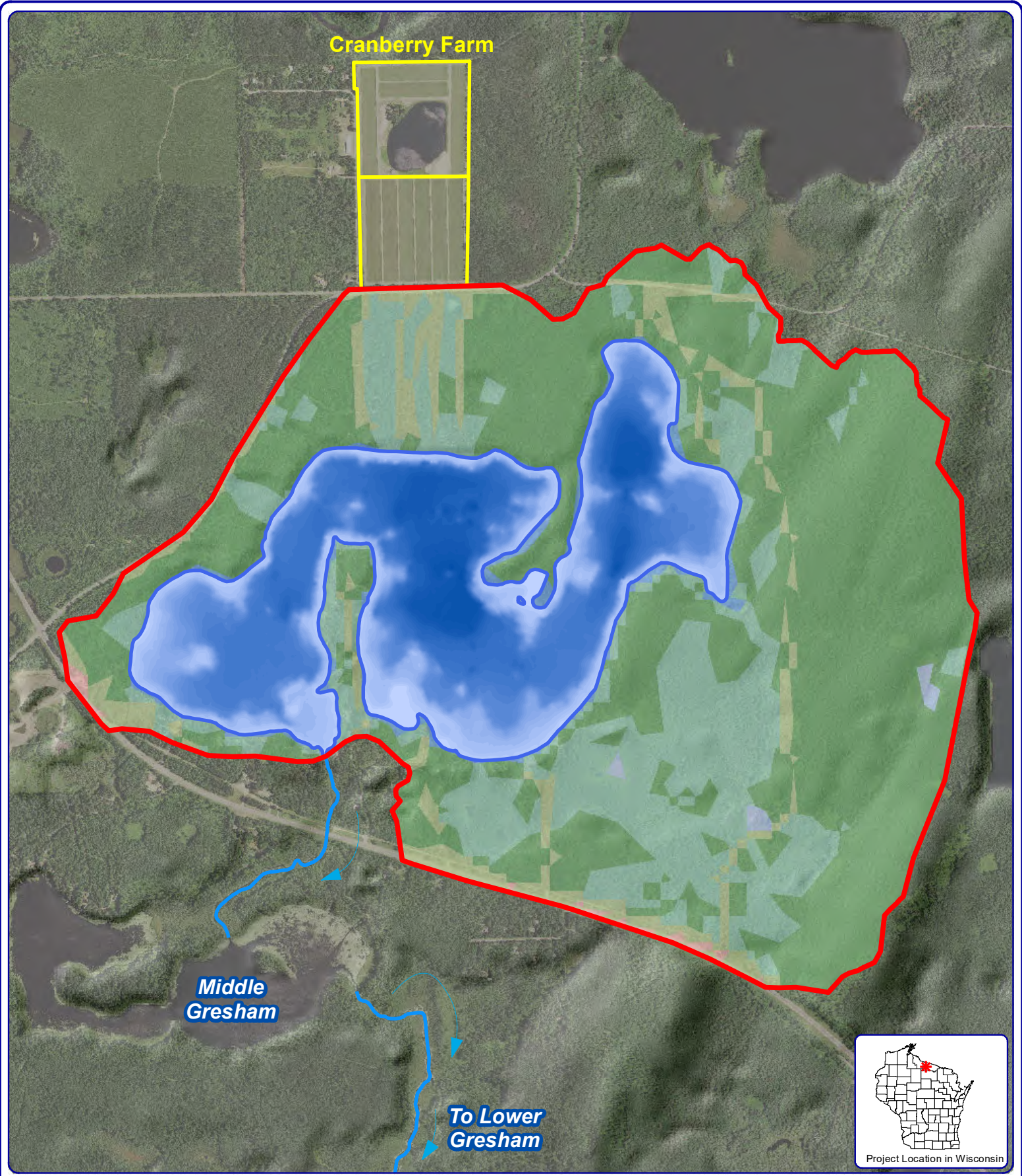
Sources:
 Roads and Hydro: WDNR
 Bathymetry: Onterra, 2017;
 digitized by C-Map USA
 Map Date: April 16, 2018 JLW
 Filename: Map1_UGL_Vilas_Location.mxd



Legend

- Upper Gresham Lake ~ 376 acres
Onterra Definition
- WDNR Managed Lands
- Point-intercept Sample Location
50 meter points
- Public Access
- Swimming Beach
- Water Quality Sampling Location

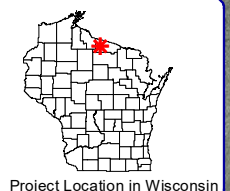
Map 1
 Upper Gresham Lake
 Vilas County, Wisconsin
**Project Location
 & Lake Boundaries**



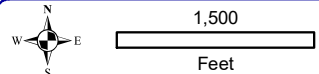
Cranberry Farm

Middle Gresham

To Lower Gresham



Project Location in Wisconsin



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Sources:
 Hydro: WDNR
 Bathymetry: Onterra, 2017
 Orthophotography: NAIP, 2017
 Land Cover: NLCD, 2011
 Watershed Boundaries: Onterra, 2017
 Map Date: July 8, 2019 - E/JH

Legend

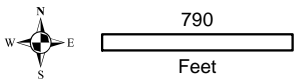
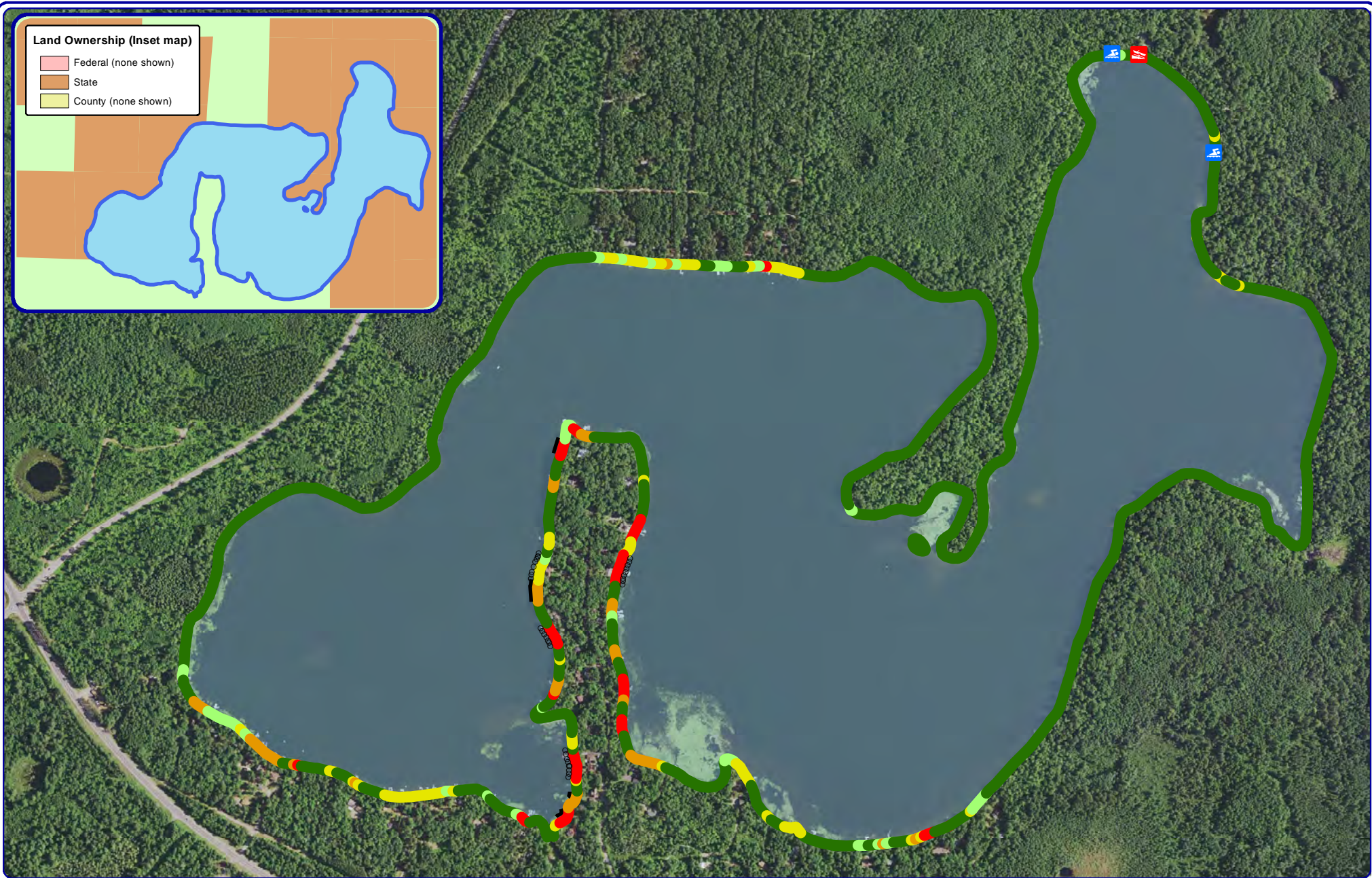
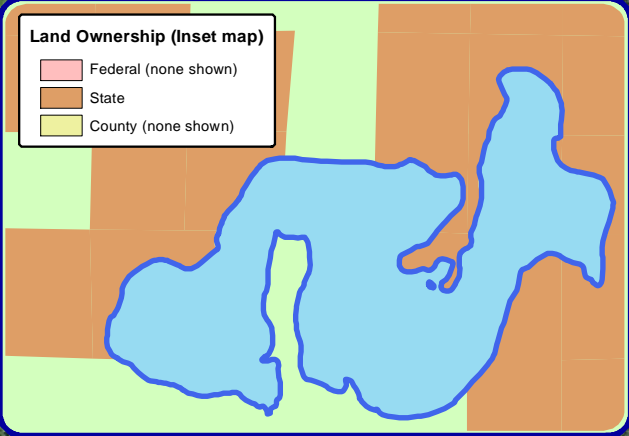
Land Cover Types

- Forest
- Forested Wetlands
- Wetlands
- Open Water
- Rural Open Space
- Rural Residential
- Upper Gresham Lake Watershed Boundary

Map 2
 Upper Gresham Lake
 Vilas County, Wisconsin
**Watershed Boundaries
 & Land Cover Types**

Land Ownership (Inset map)

- Federal (none shown)
- State
- County (none shown)



Project Location in Wisconsin

Legend

- Natural/Undeveloped
- Developed-Natural
- Developed-Semi-Natural
- Developed-Unnatural
- Urbanized
- Seawall
- Rip-Rap
- Wood/Masonry/Metal

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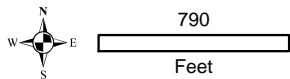
Sources:
 Hydro: WDNR
 Orthophotography: NAIP, 2015
 Shoreline Assessment: Onterra, 2017
 Map Date: November 2, 2017 JLW
 Filename: Map3_UGL_ShorelandCondition_2017.mxd

Map 3
 Upper Gresham Lake
 Vilas County, Wisconsin
**2017 Shoreland
 Condition**



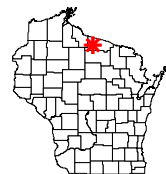
Land Ownership (Inset map)

- Federal (none shown)
- State
- County (none shown)



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Sources:
 Hydro: WDNR
 Orthophotography: NAIP, 2015
 Coarse Woody Habitat Survey: Onterra, 2017
 Map Date: November 2, 2017 JLW
 Filename: Map4_UGL_CWH_2017.mxd



Project Location in Wisconsin

2-8 Inch Pieces

- No Branches
- Minimal Branches
- Moderate Branches
- Full Canopy (none)

Legend

8+ Inch Pieces

- No Branches
- Minimal Branches
- Moderate Branches
- Full Canopy (none)

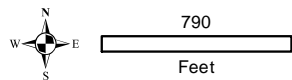
Cluster of Pieces

- No Branches (none)
- Minimal Branches (none)
- Moderate Branches (none)
- Full Canopy (none)

Map 4

Upper Gresham Lake
 Vilas County, Wisconsin

**Coarse Woody
 Habitat**



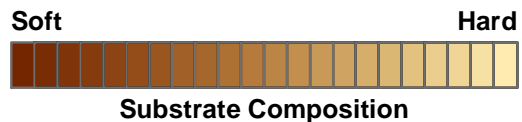
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Sources:
 Hydro: WDNR
 Substrate Hardness: Onterra 2017
 Orthophotography: NAIP 2015
 Map Date: October 23, 2017 JLW
 Filename: Map5_UGL_Acoustic_Sediment.mxd

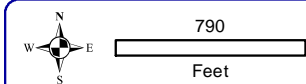
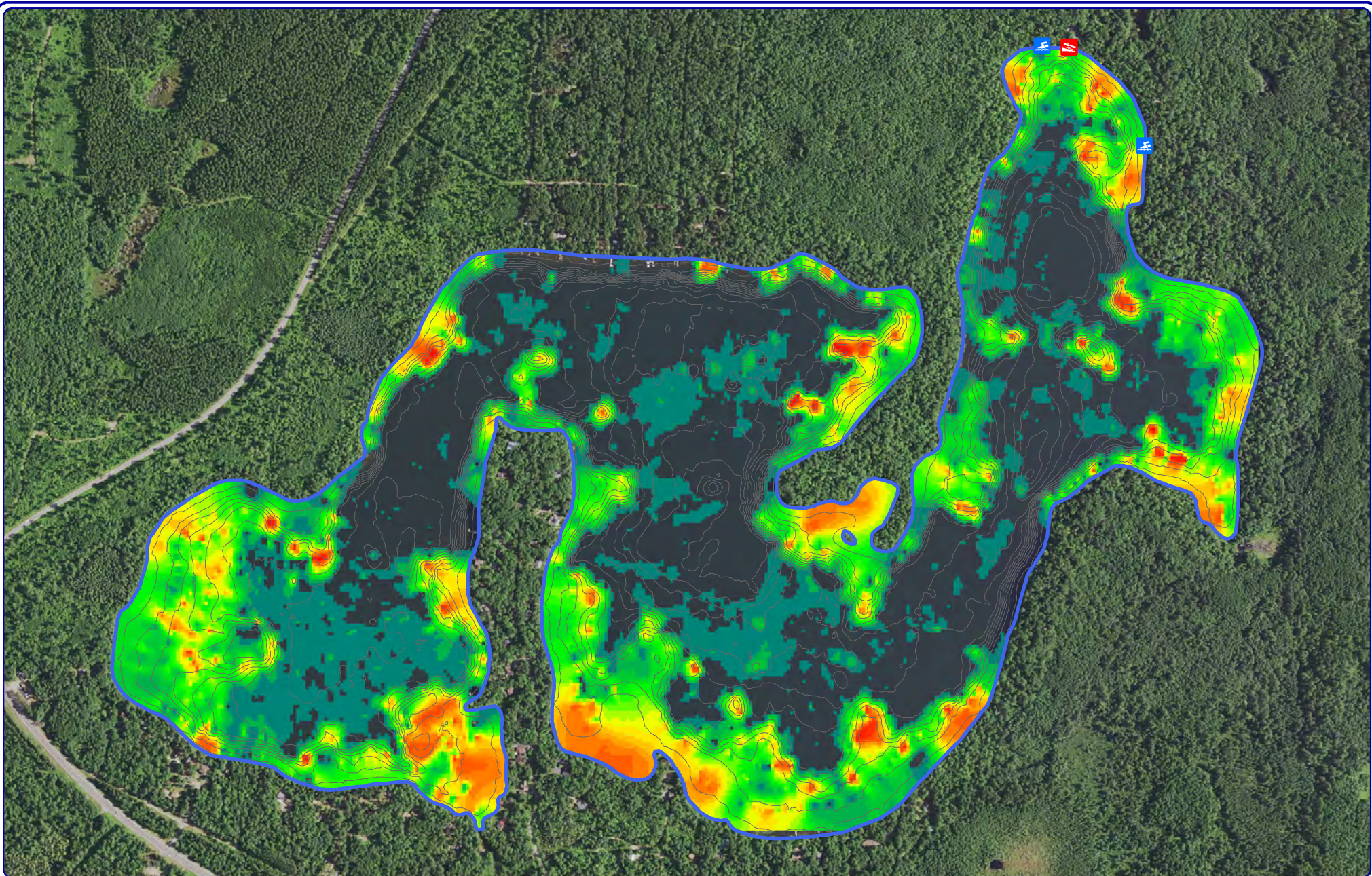


Project Location in Wisconsin

Legend



Map 5
 Upper Gresham Lake
 Vilas County, Wisconsin
**2017 Acoustic
 Survey Results:
 Substrate Hardness**

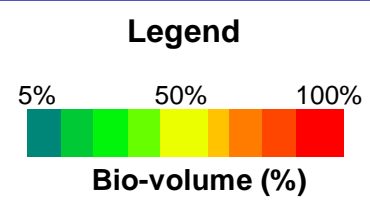


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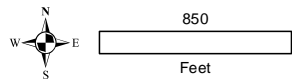
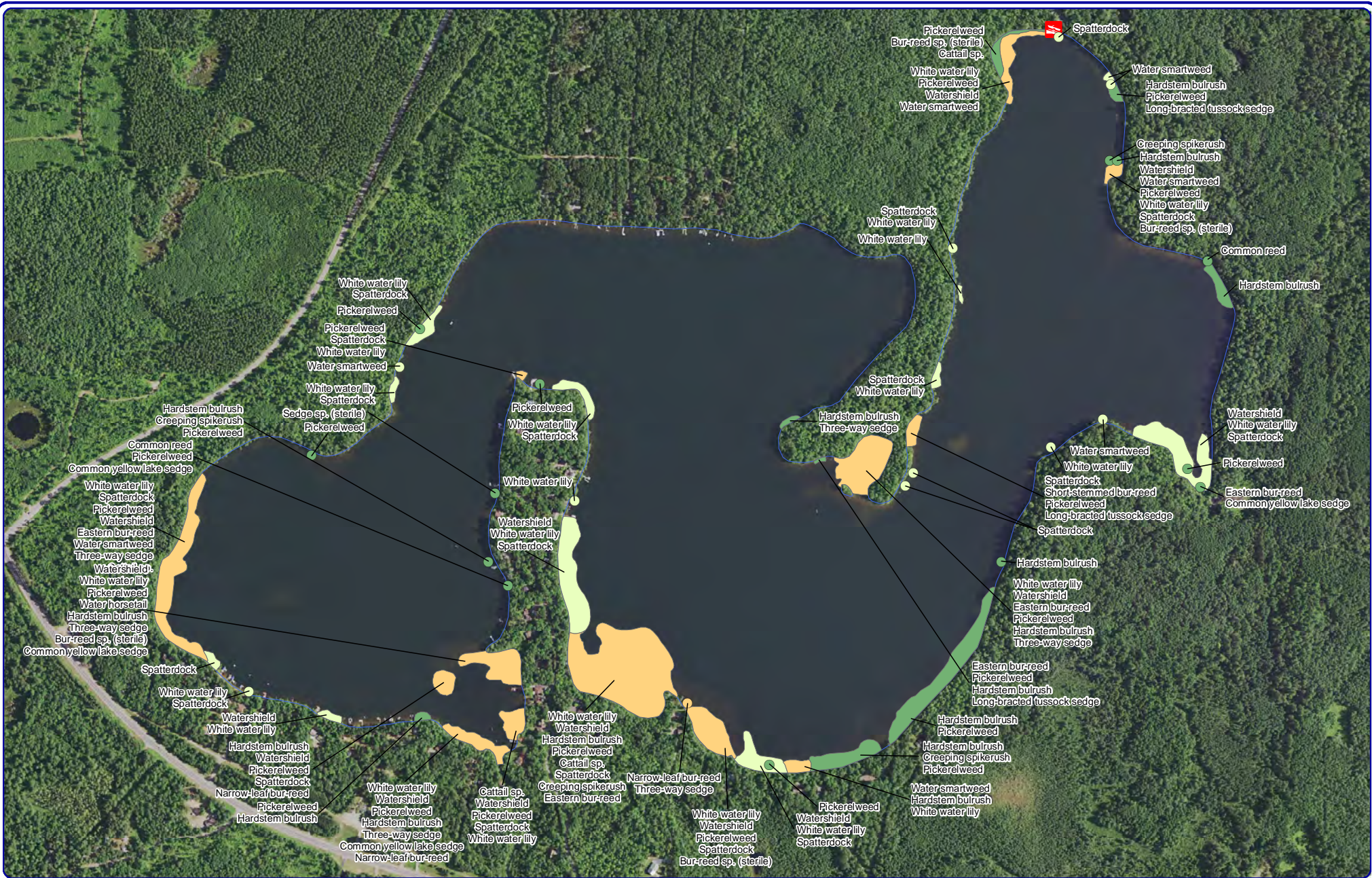
Sources:
 Hydro: WDNR
 Bio-volume: Onterra 2017
 Orthophotography: NAIP 2015
 Map Date: October 23, 2017 JLW
 Filename: Map6_UGL_Acoustic_Veg.mxd



Project Location in Wisconsin



Map 6
 Upper Gresham Lake
 Vilas County, Wisconsin
**2017 Acoustic
 Survey Results:
 Aquatic Plant Bio-Volume**



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Sources:
 Aquatic Plants: Onterra, 2017
 Orthophotography: NAIP, 2015
 Map Date: October 26, 2017 JLW & EEH
 Filename: Map7_UGL_Comm_2017.mxd



Project location in Wisconsin

Small Plant Communities

- Emergent
- Floating-leaf
- Mixed Floating-leaf & Emergent

Legend

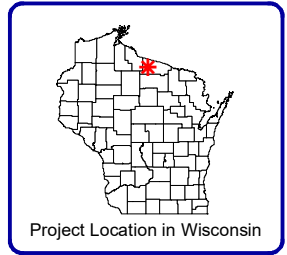
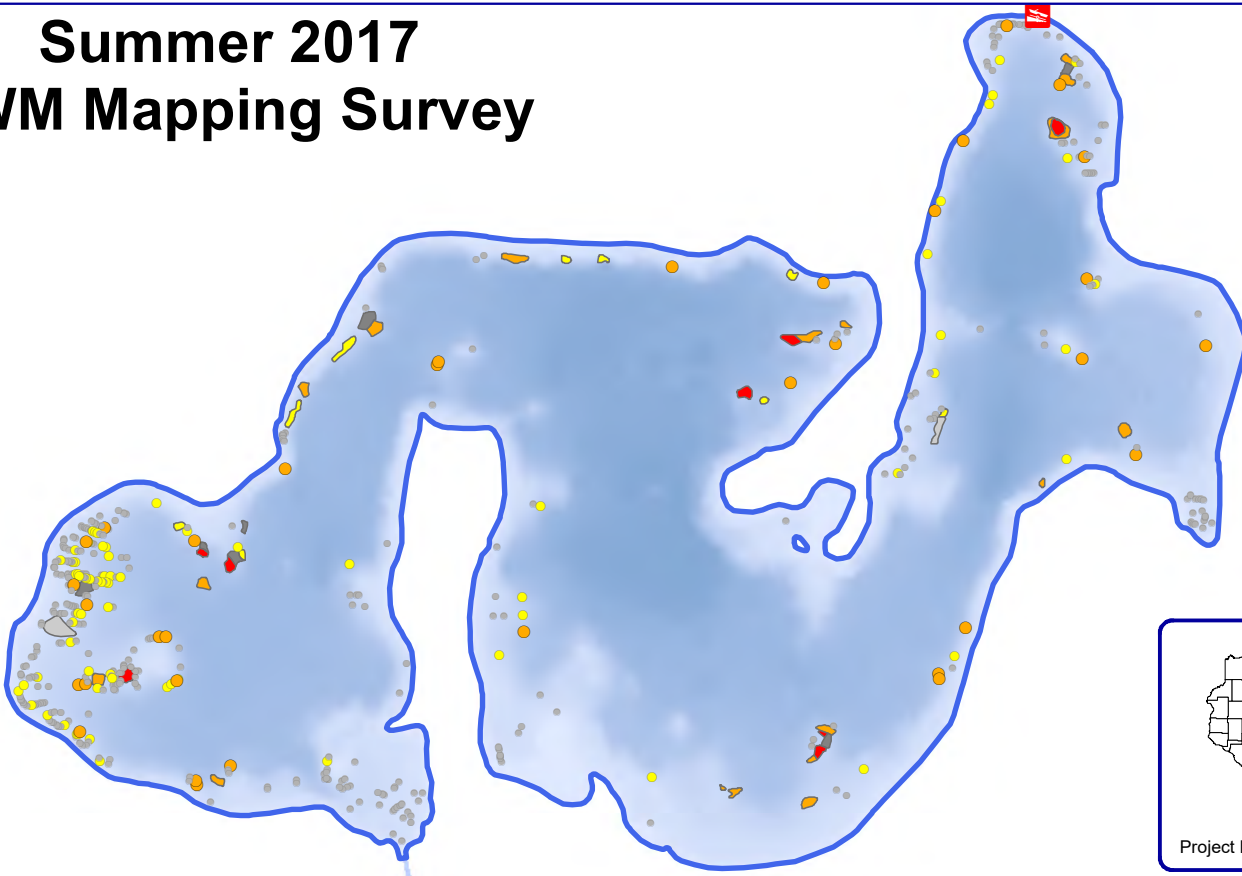
Large Plant Communities

- Emergent
- Floating-leaf
- Mixed Floating-leaf & Emergent

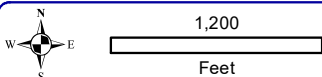
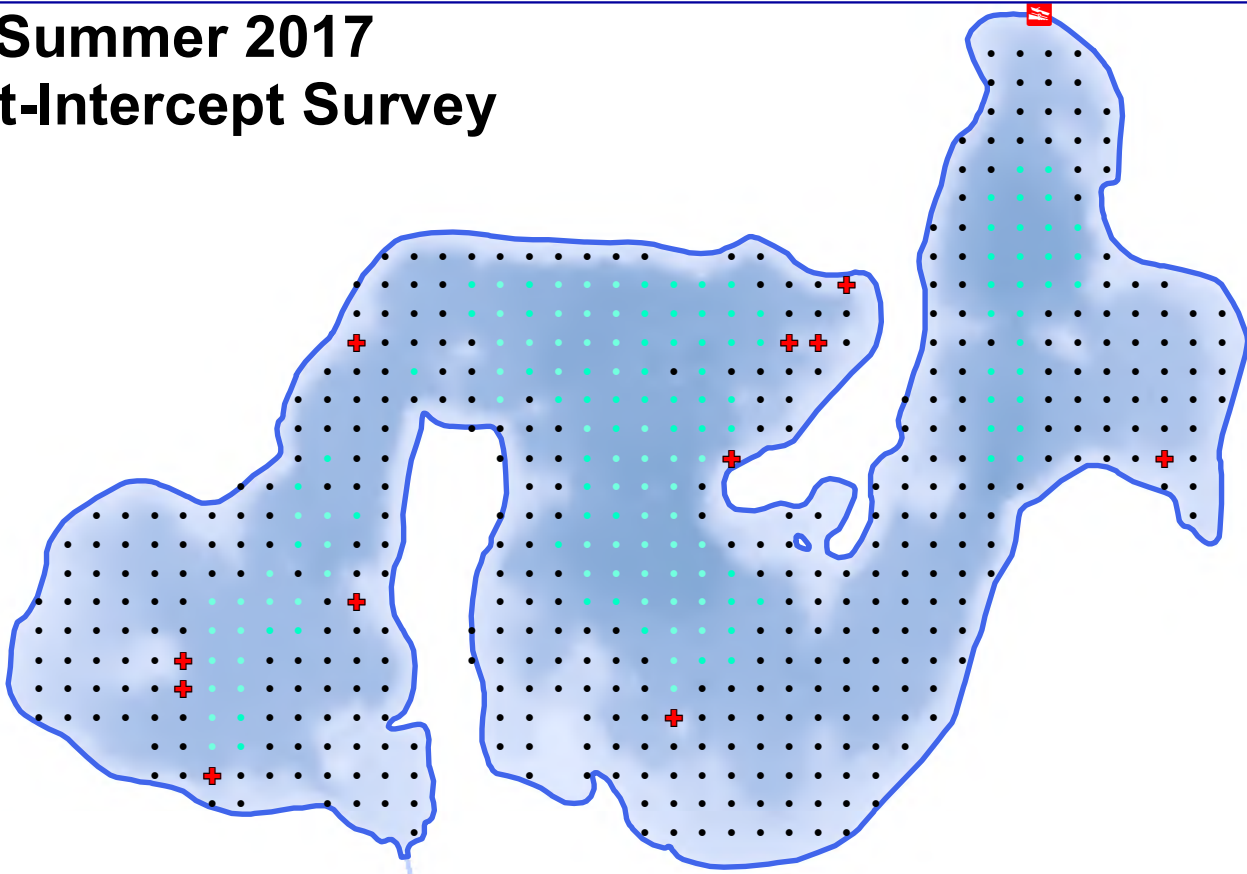
Map 7

Upper Gresham Lake
 Vilas County, Wisconsin
Aquatic Plant Communities

Summer 2017 EWM Mapping Survey



Summer 2017 Point-Intercept Survey



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Sources:
Hydro: WDNR
Plant Survey: Onterra, Oct2018
Bathymetric Survey: Onterra, 2019
Map Date: June 6, 2019 - EJH

Bottom Frame (PI Survey)

- > Max Depth of Plant Growth
- No EWM, Within Littoral Zone
- + EWM Present

Legend

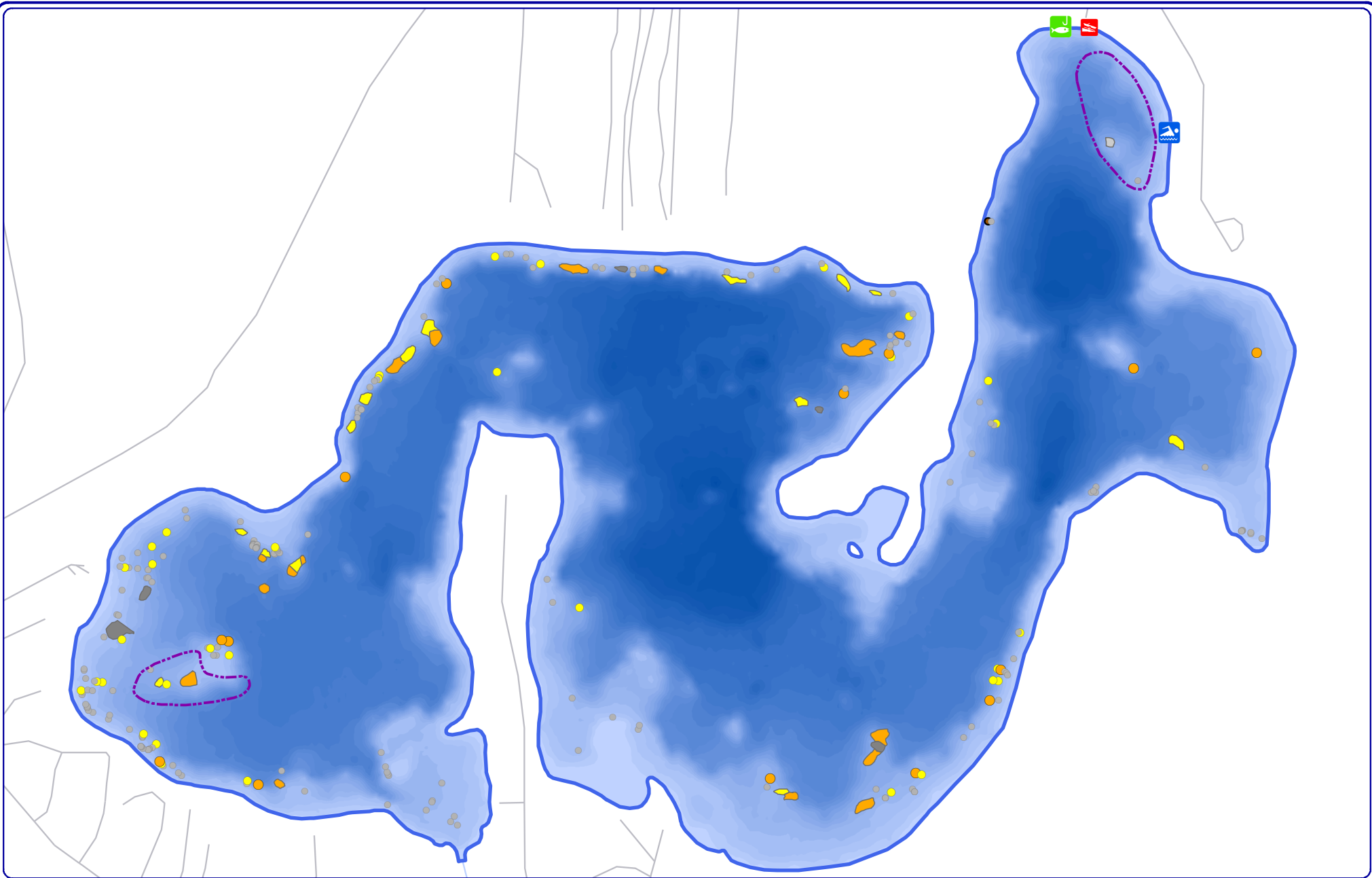
Top Frame (EWM Mapping Survey)

- | | | | |
|--|------------------|--|----------------------|
| | Highly Scattered | | Single or Few Plants |
| | Scattered | | Clumps of Plants |
| | Dominant | | Small Plant Colony |
| | Highly Dominant | | |
| | Surface Matting | | |

Map 8

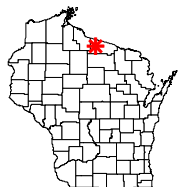
Upper Gresham
Vilas County, Wisconsin

**2017 Comparison
EWM Mapping
vs PI Survey**



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Sources:
 Roads & Hydro: WDNR
 Bathymetry: Onterra 2017
 EWM Survey: Onterra, 2018
 Map date: March 19, 2018 JLW



Project Location in Wisconsin

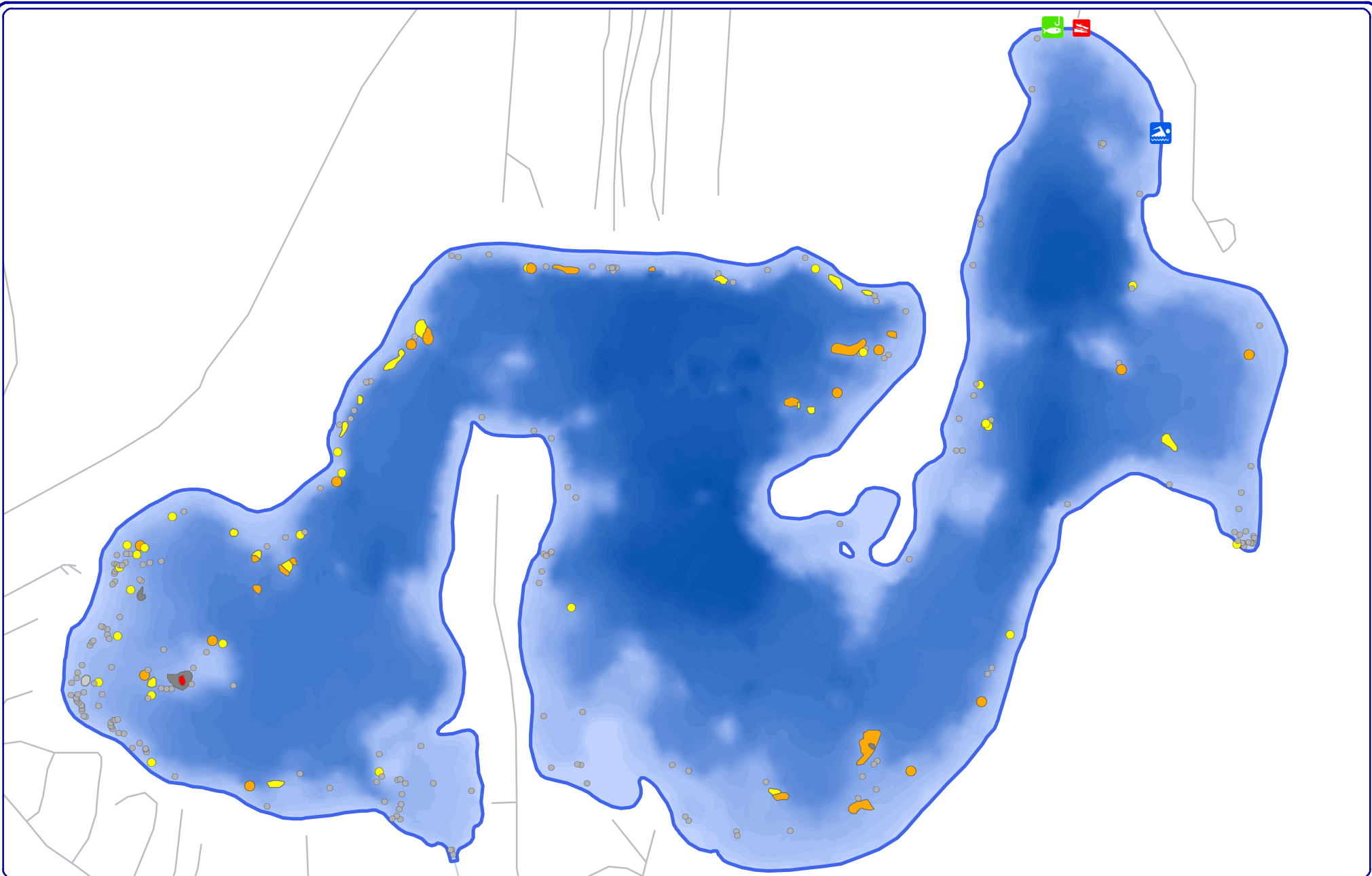
Legend

EWM Survey Results (September 2018)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clump of Plants
- Small Plant Colony

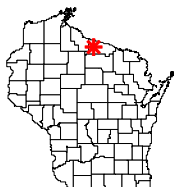
Herbicide Treatment Area
 (June 8, 2018)

Map 9
Upper Gresham Lake
 Vilas County, Wisconsin
2018 Late-Season
EWM Survey Results



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Sources:
 Roads & Hydro: WDNR
 Bathymetry: Onterra 2017
 EWM Survey: Onterra, 2019
 Map date: November 4, 2019 JMB



Project Location in Wisconsin

Legend

EWM Survey Results (September 2019)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clump of Plants
- Small Plant Colony

Map 10

Upper Gresham Lake
 Vilas County, Wisconsin

**2019 Late-Season
 EWM Survey Results**