Designation of Critical Habitat
Lake Ripley, Jefferson County, Wisconsin

Wisconsin Department of Natural Resources

Draft Report

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Acknowledgments

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Note: A detailed description of the Critical Habitat Designation program, associated methods, and the values of Critical Habitat can be found at http://dnr.wi.gov/lakes/criticalhabitat/.

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I. EXECUTIVE SUMMARY

A Critical Habitat study was conducted from 2005-2022 on Lake Ripley, Jefferson County, Wisconsin by lakes, fisheries, wildlife, ecology, and water management specialists with the Wisconsin Department of Natural Resources. Key partners in the study were the Lake Ripley Management District and The Jefferson County Land and Water Conservation Department. The project would not have gone forward without the very large commitments from these key partners.

Lake Ripley was chosen for the study for two primary reasons:

1) To protect areas within the lake that are most important for preserving the character and qualities of the lake; and
2) To preserve the reaches of shore that are predominately natural in appearance or that screen man-made or artificial features for the enjoyment of lake residents and visitors.

Lake Ripley has sensitive habitat areas that support fish and wildlife, harbor quality plant communities that protect water quality in the lake, as well as unique natural scenic beauty for south central Wisconsin. The Department has determined that specific locations in Lake Ripley contain Critical Habitats that ensure a healthy aquatic system and maintain the cultural and aesthetic values of the lake. Figure 1 shows the location of important near-shore and shallow water habitats about which Critical Habitat designations are most concerned.

Critical Habitats are called Public Rights Features in Wisconsin Administrative Code NR1.06. They are characteristics of a lake that fulfill the rights of the public for quality and quantity of water, fishing, swimming, navigation, and reaches of the shore, which are predominately natural in appearance or that screen man-made or artificial features.

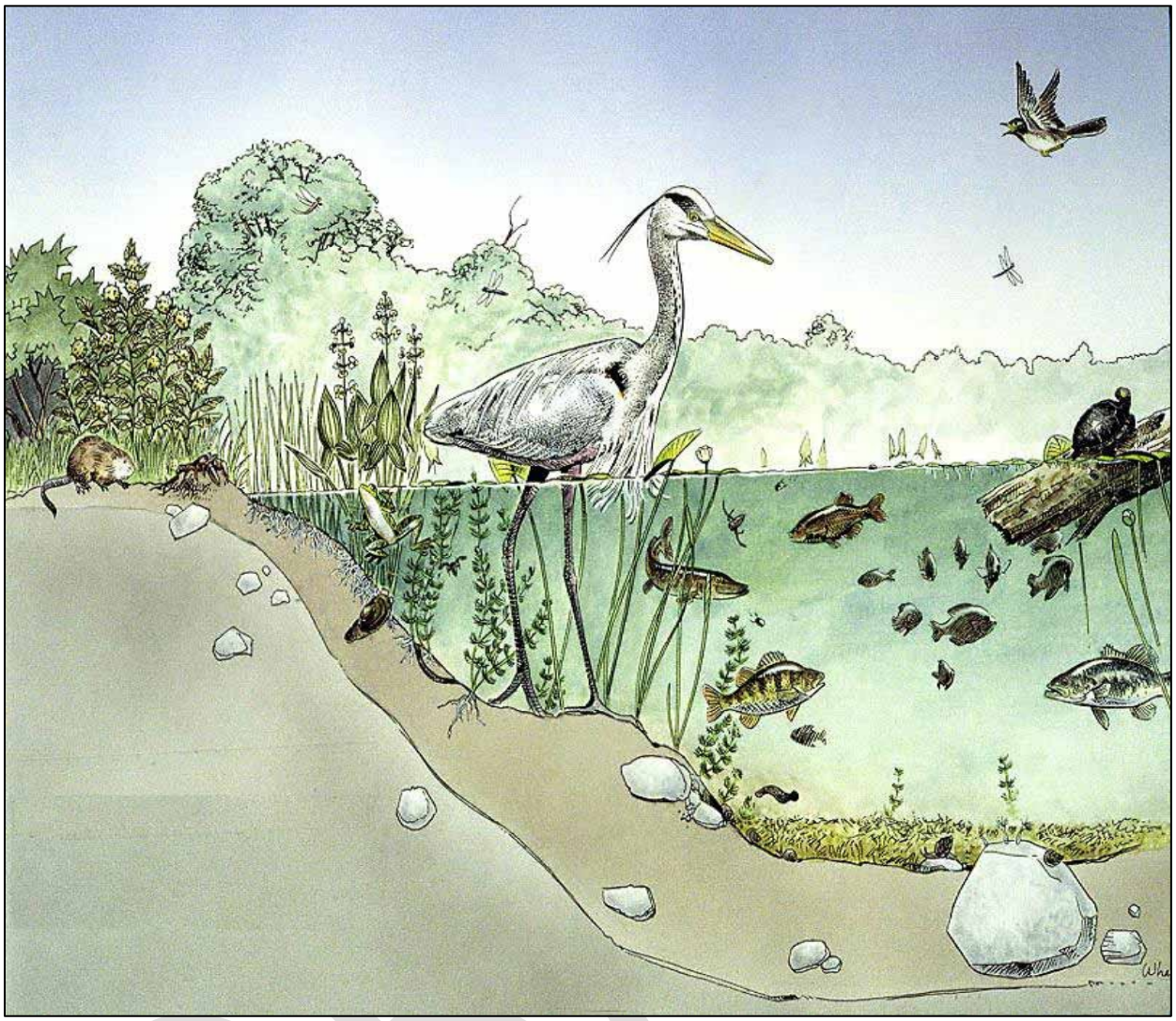

Figure 1. *Location of important near-shore and shallow water habitats about which Critical Habitat designations are the most concerned.*

Lake Ripley Background

Lake Ripley is a 423-ac, glacial kettle lake located in the Town of Oakland in western Jefferson County. The lake is classified as a natural drainage lake fed by streams, groundwater, precipitation, and runoff and drained by an outlet stream. Drainage lakes tend to be higher in nutrients than other lake types, and watershed conditions largely determine their water quality. Lake Ripley is fed by an inlet stream and drained by an outlet stream that flows to Koshkonong Creek over a low-head, rubble sill, referred to locally as a dam. This rubble dam was created in 1932 by the Lake Ripley Betterment Club at the outlet to maintain water levels during drought conditions. Koshkonong Creek flows into Lake Koshkonong, ultimately connecting to the Rock River. The lake and Koshkonong Creek are part of the Lower Rock and Upper Mississippi River Drainage Basins. Lake Ripley's watershed, or the land that drains surface water to the lake, covers just over 7 square miles. The watershed is primarily rural, includes the immediate lake area, and extends 2.7 mi east of the lake.

Lake Ripley has 5.62 mi of shoreline, a maximum depth of 44 ft, an average depth of 18 ft, and a volume of 7,561- ac ft. Approximately 34% of the lake's surface area is less than five ft deep, and 41% is greater than 20 ft deep. The lake has extensive shallow areas supporting rooted aquatic plants and a single deep basin near its center.

Public access is provided at a public boat landing, a public pier on the south shoreline at Island Lane, and a public beach on the west shoreline at Lake Ripley Park. A private marina is located on the southwest shoreline. Most of the lake's shoreline has been developed into residential and recreational housing, except for portions of the southeastern lobe of the lake, known locally as Milwaukee Bay.

One measure of a lake's health is the trophic state index, which relates to the volume of algae in the water. The average summer trophic state index for the last five years was 49.8 (mesotrophic) and was determined using chlorophyll data. For a Deep-Lowland lake, this is considered "Good." The Deep-Lowland lake designation is based on the state's Natural Communities Determination. These lakes stratify, forming separate layers of water due to temperature variations during the summer months.

Lake Ripley has many areas that support fish, wildlife, and harbor high-quality plant communities that protect water quality in the lake. The lake and watershed contain numerous endangered, threatened, and/or special concern species.

II. LAKE RIPLEY CRITICAL HABITAT STUDY

Purpose of the Study and Definitions

Critical Habitat Designations are intended to identify areas, which if disturbed, would adversely affect public use and enjoyment of the lake. Such areas include locations important in maintaining fish and wildlife habitat, water quality, water quantity, or reaches of shore that are predominately natural in appearance or that screen man-made or artificial features. As described in the state administrative code (specifically, NR 1.06), examples of applicable areas include stands of aquatic plants, shorelines with abundant large woody material lying in the water, shorelines with overhanging shrubs or trees like snag trees, areas with substrate necessary for fish spawning, or reaches of shore that are predominately natural in appearance or that screen man-made or artificial features.

Areas fulfilling these criteria are designated as **Public Rights Features (PRFs)**, which include two groups:

Sensitive Areas are Public Rights Features defined specifically for stands of aquatic vegetation that provide critical or unique fish and wildlife habitat, including seasonal or life-stage requirements, or offer water quality or erosion control benefits to the area.

Other PRFs are all Public Rights Features that provide fish and wildlife habitat, water quality protection, or that have reaches of shore that are predominately natural in appearance or that screen man-made or artificial features and are not necessarily dependent on the presence of aquatic vegetation.

How will this impact waterfront owners?

DNR waterway exemptions (Wis. Stats. Chapter 30) that may apply to waterfront property development projects are generally limited within PRFs with few exceptions. Due to the sensitivity of habitat associated with PRFs, waterway projects within these areas would be subject to a higher level of DNR review or oversight.

The DNR maintains webpages to provide updated waterway exemption and general permit checklists to aid the public in navigating the DNR waterway permitting process and regulations.

Waterways | Wisconsin DNR (https://dnr.wisconsin.gov/topic/Waterways)

Learn about why the DNR regulates waterways, the various water permits with general permit checklists, the water permit process, waterway contacts, FAQ, etc.…

Exemptions | Waterway protection | Wisconsin DNR (https://dnr.wisconsin.gov/topic/Waterways/Permits/Exemptions.html)

Provides information and checklists the public will need to identify DNR exemptions that may apply to their waterfront property development projects.

Aquatic Plant Management Implications

Chapter NR 107- Aquatic Plant Management

Wisconsin Legislature: Chapter NR 107

(3) The department may deny issuance of the requested permit if:

(i) The proposed chemical application is in locations identified by the department as sensitive areas, except when the applicant demonstrates to the satisfaction of the department that treatments can be conducted in a manner that will not alter the ecological character or reduce the ecological value of the area.

1. Sensitive areas are areas of aquatic vegetation identified by the department as offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the body of water.

2. The department shall notify any affected property owners' association, inland lake district, and riparian property owner of locations identified as sensitive areas.

Chapter NR 109- Aquatic Plants: Introduction, Manual Removal, and Mechanical Control Regulations

Wisconsin Legislature: Chapter NR 109

https://docs.legis.wisconsin.gov/document/administrativecode/NR%20109.05(3)(f)

(3) The department may deny issuance of the requested permit if the department determines any of the following:

(f) The proposed introduction or control is in locations identified by the department as sensitive areas, under s. NR 107.05 (3) (i) 1., except when the applicant demonstrates to the satisfaction of the department that the project can be conducted in a manner that will not alter the ecological character or reduce the ecological value of the area.

https://docs.legis.wisconsin.gov/document/administrativecode/NR%20109.06(2)(b)

(2) A riparian owner who manually removes aquatic plants from a body of water or uses mechanical devices designed for cutting or mowing vegetation to control plants on an exposed lake bed that abuts the owner's property provided that the removal meets all of the following:

(b) Is not located in a sensitive area as defined by the department under s. NR 107.05 (3) (i) 1., or in an area known to contain threatened or endangered resources or floating bogs.

Critical Habitat Designations may also provide information for the DNR, other state agencies, and local agencies. Other local agencies include the Jefferson County Land and Water Conservation Department and the Lake Ripley Management District. This information may be used to guide future management and regulatory decisions made by these organizations. The purpose of this designation is to protect public rights on Lake Ripley, including water quality, healthy fish and wildlife, natural or screened shorelines and beneficial aquatic plants that help water quality, prevent erosion, and reduce invasion by new exotic plants and support a healthy fishery.

General Recommendations for Lake Ripley

The following are the general recommendations of the study to promote and protect the health of Lake Ripley:

1) Maintain natural shoreland buffers of native vegetation to protect water quality, fish and wildlife habitat, and areas with a natural appearance;
2) Maintain snag and cavity trees for cavity nesting species, canopy trees for roosting and perching of birds, and downed trees for wildlife habitat;
3) Maintain overhanging trees and shrubs, fallen trees along the shoreline, and large woody cover and boulders in the water for fish and wildlife habitat;
4) Encourage lakefront property owners to plant native vegetation (trees, shrubs, perennial forbs, and grasses) as a buffer zone to protect fish and wildlife habitat, reduce shoreline erosion, runoff of nutrients, and other pollutants that impact water quality;
5) Encourage lakefront property owners to implement healthy lakes practices through the surface water grant program to aid in funding future projects to improve water quality on Lake Ripley;
6) Minimize removal of native aquatic vegetation to protect water quality, reduce shoreline erosion, and preserve fish and wildlife habitat;
7) Limit aquatic plant management to methods specific to invasive species and/or for navigation channels;
8) Update the Aquatic Plant Management Plan every five years to reflect current lake conditions, plant populations, and emerging management techniques;
9) Maintain aquatic invasives signs at all boat landings to educate lake users about protecting the lake from the introduction of new exotic species and continue the Clean Boats, Clean Waters watercraft inspection program;
10) Limit activities (human disturbance or structures) adjacent and within Public Rights Features in order to protect water quality, fish and wildlife habitat and natural appearance.
11) Encourage the use of integrated shoreline stabilization structures and native vegetation for shoreline erosion control. Integrated structures based on site-specific wave energy calculations could include biologs, riprap with native vegetation or other biological shore protection in combination with native aquatic vegetation.

Methods

The Critical Habitat designations for Lake Ripley were based on data collected during whole-lake point-intercept aquatic plant surveys completed by the Lake Ripley Management District (2011, 2015, 2020), historical fish surveys, Natural Heritage Inventory reports, the Wisconsin Wetlands Inventory, a substrate survey, and Department staff knowledge of the wildlife that inhabits the area were used for this report. The Lake Ripley Management district has also provided significant local knowledge and advocated heavily for these designations.

Public input on the factual information relating to the location or presence of Critical Habitats (Public Rights Features) was welcomed at the public hearing held on May 11th, 2023 at the Oakland Town Hall (N4450 County Road A, Cambridge, WI 53523), written comments will be accepted until June 15, 2023.

Table 1. Critical Habitat Justification Descriptions

Justification #	Justification Description	Classification
1	Bio-diverse Submerged Aquatic Vegetation (SAV)	Sensitive Area
2	SAV Important to Fish and Wildlife Habitat	Sensitive Area
3	Emergent and Floating Leaf Vegetation	Sensitive Area
4	Rush Beds	Sensitive Area
5	Wild Rice Beds	Sensitive Area
6	Extensive Riparian Wetland	Sensitive Area
7	Woody Habitat	Public Rights Feature
8	Spawning Substrate	Public Rights Feature
9	Water Quality (springs, etc.)	Public Rights Feature
10	Natural Scenic Beauty	Public Rights Feature
11	Extensive Public Use	Public Rights Feature

III. LAKE RIPLEY CRITICAL HABITAT SITES

Figure 2 shows the eight sites that were designated Critical Habitat in Lake Ripley and five of these were classified as Sensitive Areas for their aquatic vegetation and associated fish, wildlife, and water quality benefits (Critical Habitats LR-1, LR-2, LR-5, LR-6, LR-7). Three sites were classified as Other Critical Habitats for their natural or screened shoreline and/or fish and wildlife habitat values (Critical Habitats LR-3, LR-4, and LR8). All eight sites are classified as Public Rights Features.
While aquatic vegetation was present at all sites surveyed on Lake Ripley, only those with the most native aquatic plants and high native aquatic plant diversity were classified as Sensitive Areas.

All areas designated as Critical Habitat were geo-referenced and mapped (Figure 2). These areas are described in the following sections.

Table 2: Lake Ripley Critical Habitat Polygon Justifications

Critical Habitat Polygon ID	Justifications	Classification
LR-1	1, 2, 3, 6, 10	Sensitive Area
LR-2	1, 2, 8	Sensitive Area
LR-3	8	Public Rights Feature
LR-4	8	Public Rights Feature
LR-5	1, 2, 3, 7, 10	Sensitive Area
LR-6	1, 2, 3, 6, 10	Sensitive Area
LR-7	1, 2, 3, 6, 10	Sensitive Area
LR-8	8, 10	Public Rights Feature

Figure 2. *Location of Lake Ripley Critical Habitat: Sensitive Areas (SAD) and Other Public Rights Features (PRF).*

Aquatic Plants

In the last three whole lake point-intercept plant surveys on Lake Ripley (2011, 2015, 2020) plants have been found at a maximum depth of 16, 15, and 21 feet of water. Lake Ripley's floristic quality index scores from the three surveys were 23.77, 25.92, and 25.94 respectively. The FQI scores consistently rank above the median (21.10) and average (20.00) values for lakes in the Southeast Wisconsin Till Plains ecoregion. There were 17 species of plants sampled in 2011, 19 species in 2015, and 20 species in 2020. More information about the aquatic plants in Lake Ripley can be observed in Appendix A.

Figure 3. *Sensitive Area in Lake Ripley. Photograph provided by the Lake Ripley Management District*

Fishery

Table 4: Lake Ripley fish diversity.

Species	Classification
Northern Pike	G
Walleye	G
Largemouth and Smallmouth Bass	G
Bluegill	G
Yellow Perch	G
Pumpkinseed	G
Green Sunfish	G
Rock Bass	G
Black Crappie	G
Bowfin	NG
Grass Pickerel	NG
White Sucker	NG
Brook Silverside,	NG
Golden, Emerald, and Mimic Shiner	NG
Bluntnose and Fathead Minnow	NG
Yellow, Black, and Brown Bullhead	NG
Longnose Gar	NG
Central Mudminnow	NG
Blackstripe Topminnow	NG
Johnny and Iowa Darter	NG
Bigmouth Buffalo	NG
Common Carp	NG

(*) Game Species = G, Non-Game Species = NG

Historically, Lake Ripley also supported populations of several intolerant fish species, including blackchin and blacknose shiner, and Banded Killifish (also a State Special Concern (SC) species). It also supported two additional SC species, the Lake Chubsucker, Least Darter, and one Threatened (T) species, the Pugnose Shiner.

Lake Ripley Critical Habitat (LR 1) – SE Shoreline, Milwaukee Bay and Main Lake

This Critical Habitat encompasses most of Milwaukee Bay in the southeast corner of the lake, including the unnamed inlet channel to Lake Ripley, which flows through the wetlands in the bay's southeast corner (Figure 4). This area represents a substantial portion of Lake Ripley's remaining natural, undeveloped shoreline with comparatively less shoreline development than other parts of the lake. Except for 400 linear feet of residential development, wetlands border the entire shoreline of the site. The site is primarily protected from motorboat disturbance because of a slow-no-wake-ordinance in the bay. LR-1 is designated as a sensitive area for bio-diverse submerged aquatic vegetation, submersed aquatic vegetation important to fish and wildlife, emergent and floating leaf vegetation, extensive riparian wetland, and natural scenic beauty.

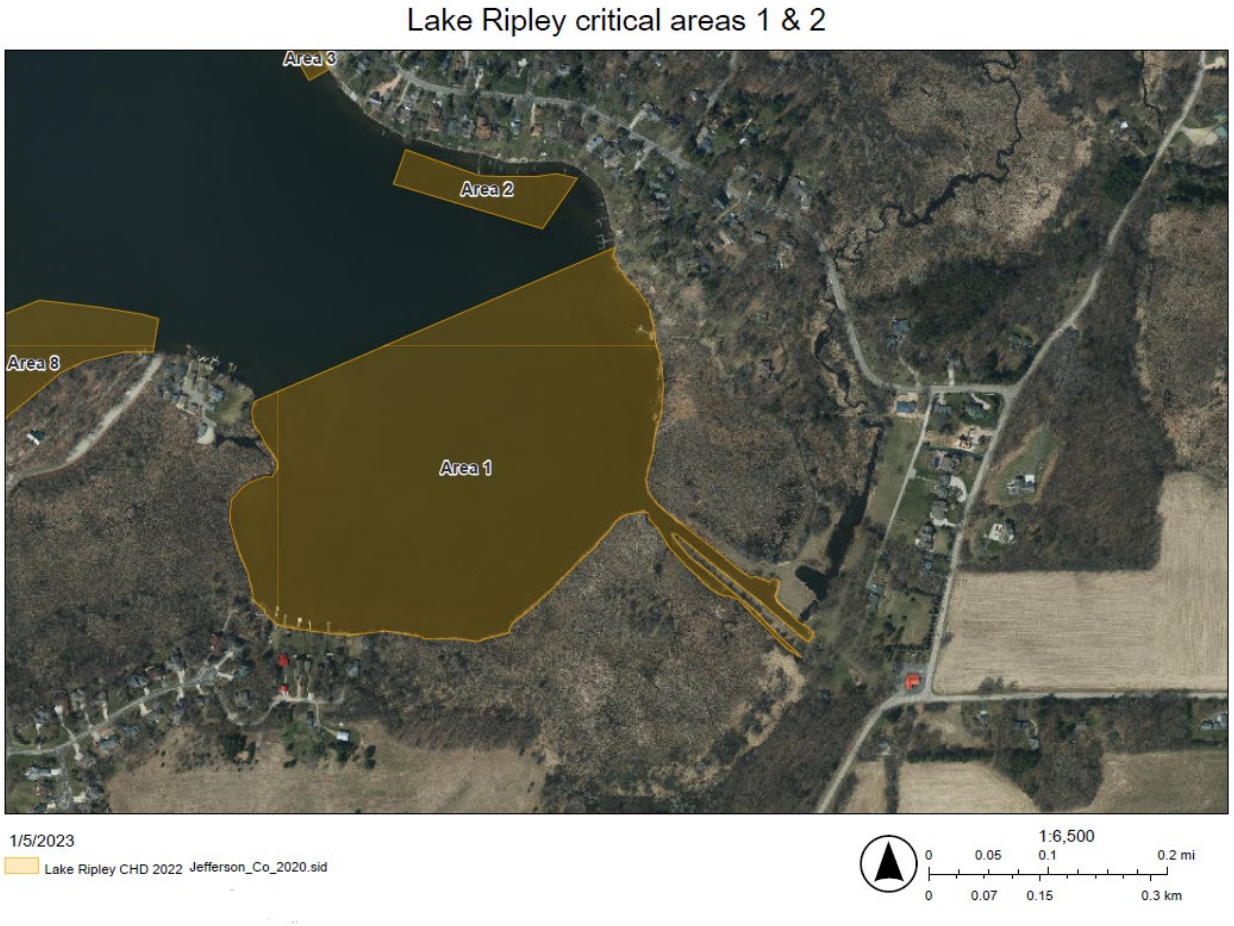

Figure 4. *Designated Sensitive Area LR-1 and LR-2 (map created by Jefferson Co LWCD)*

Table #5: LR-1 Aquatic Plants				
Scientific Name	**Common Name**	**Plant Type**	**Coefficient of Conservatism**	**Ecological Significance**
Nuphar variegata	Spatterdock	Floating-leaved	6	Provides shade and structural habitat for fish and invertebrates; Fruits are food source for waterfowl.
Nymphaea odorata	Whitewater Lily	Floating-leaved	6	Provides shade and structural habitat for fish and invertebrates; Fruits are food source for waterfowl.
Utricularia vulgaris	Common Bladderwort	Submergent	7	Habitat for fish and invertebrates
Chara spp.	Muskgrasses	Submergent	7	Habitat for invertebrates and juvenile fish; Stabilizes bottom sediments
Lemna minor	Small duckweed	Free-floating	4	Food source for waterfowl; provides shade and cover for fish and invertebrates
Heteranthera dubia	Water star grass	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Vallisneria americana	Eel grass/water celery	Submergent	6	Food source for waterfowl; habitat for fish and invertebrates
Elodea canadensis	Common waterweed	Submergent	3	Habitat for fish and invertebrates
Ranunculus aquatilis	Whitewater crowfoot	Submergent	8	Habitat for fish and invertebrates
Potamogeton friesii	Fries' pondweed	Submergent	8	Habitat for fish and invertebrates; Turions are important food source for waterfowl
Potamogeton pusillus	Small pondweed	Submergent	7	Habitat for fish and invertebrates
Potamogeton illinoensis	Illinois Pondweed	Submergent	6	Habitat for fish and invertebrates

Stuckenia pectinate	Sago pondweed	Submergent	3	Habitat for fish and invertebrates; Nutlets are important food source for waterfowl
Ceratophyllum demersum	Coontail	Submergent	3	Habitat for fish and invertebrates
Potamogeton strictifolius	Stiff Pondweed	Submergent	8	Habitat for fish and invertebrates
Najas flexilis	Slender naiad	Submergent	6	Habitat for fish and invertebrates
Myriophyllum sibiricum	Northern watermilfoil	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton gramineus	Variable pondweed	Submergent	7	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton cripus	Curly-leaf pondweed	Submergent	-	Non-native; provides winter and spring habitat for fish; summer die-offs can lead to nutrient release; Can outcompete more desirable native species
Myriophyllum spicatum	Eurasian watermilfoil	Submergent	-	Non-native; Habitat for fish and invertebrates; Food for waterfowl; Can outcompete more desirable natives
Najas marina	Spiny naiad	Submergent	-	Non-native; Habitat for fish and invertebrates; Stabilizes bottom sediments

Lake Ripley Critical Habitat (LR 2) – SE Shoreline, Main Lake

This Critical Habitat is along the lake's southeast shoreline, north of Milwaukee Bay (Figure 5). Area LR-2 is designated as a sensitive area for bio-diverse submerged aquatic vegetation, submersed aquatic vegetation important to fish and wildlife, and spawning substrate.

Figure 5: *Designated Sensitive Area LR-2 and LR-3 (map created by Jefferson Co LWCD)*

Table #6: LR-2 Historical Aquatic Plants

Scientific Name	Common Name	Plant Type	Coefficient of Conservatism	Ecological Significance
Utricularia vulgaris	Common Bladderwort	Submergent	7	Habitat for fish and invertebrates
Chara spp.	Muskgrasses	Submergent	7	Habitat for invertebrates and juvenile fish; Stabilizes bottom sediments
Heteranthera dubia	Water star grass	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Vallisneria americana	Eel grass/water celery	Submergent	6	Food source for waterfowl; Habitat for fish and invertebrates
Potamogeton friesii	Fries' pondweed	Submergent	8	Habitat for fish and invertebrates; Turions are important food source for waterfowl
Potamogeton pusillus	Small pondweed	Submergent	7	Habitat for fish and invertebrates
Stuckenia pectinate	Sago pondweed	Submergent	3	Habitat for fish and invertebrates; Nutlets are important food source for waterfowl
Ceratophyllum demersum	Coontail	Submergent	3	Habitat for fish and invertebrates
Potamogeton strictifolius	Stiff Pondweed	Submergent	8	Habitat for fish and invertebrates
Najas flexilis	Slender naiad	Submergent	6	Habitat for fish and invertebrates
Myriophyllum sibiricum	Northern watermilfoil	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton gramineus	Variable pondweed	Submergent	7	Habitat for fish and invertebrates; Food source for waterfowl

Potamogeton cripus	Curly-leaf pondweed	Submergent	-	Non-native; Provides winter and spring habitat for fish; Summer die-offs can lead to nutrient release; Can outcompete more desirable native species
Myriophyllum spicatum	Eurasian watermilfoil	Submergent	-	Non-native; Habitat for fish and invertebrates; Food source for waterfowl; Can outcompete more desirable natives

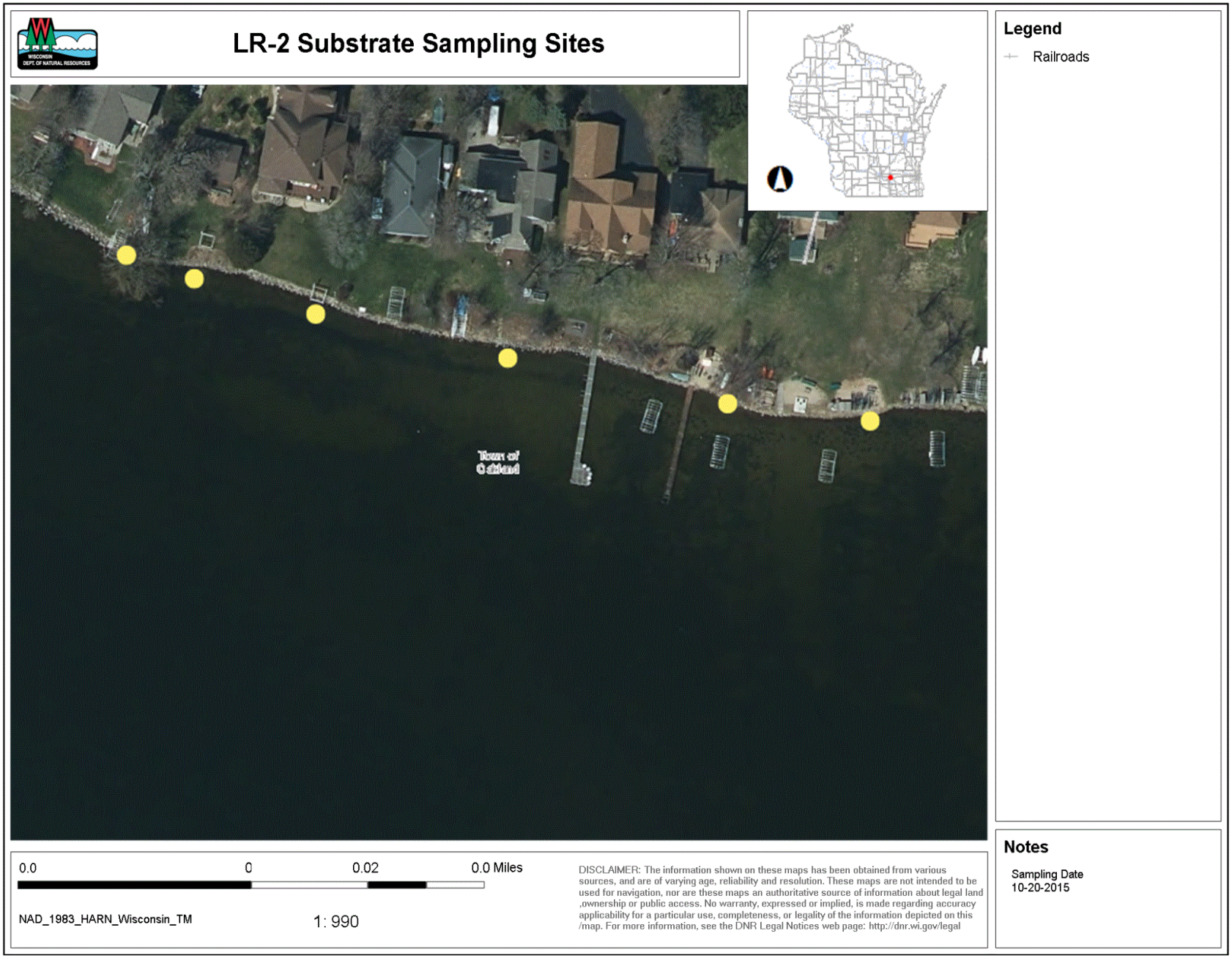

Figure 6: *LR-2 Substrate Sampling Sites*

Table # 7: LR-2 Substrate Survey Results 10-20-2015

Transect #	Quadrant #	Band Dimension (m)	Embeddedness (1-5)	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Course Gravel	Rubble/Cobble	Small Boulder	Large Boulder	Bedrock
1	1	0.5	1									25	75	
1	2	1	5						25	50	25			
1	3	13.5+	-	60			30	10						
2	1	1	3						15	15	50		20	
2	2	1.5	3	10					40	40	10			
2	3	2.5		50				20	30					
2	4	10+		30				30	30	10				
3	1	1.3	3						10			30	60	
3	2	1.5	2	5					25	35	35			
3	3	2.7		30				30	30	10				
3	4	9.5+		45				45	10					
4	1	1							5			15	80	
4	2	1.5	1	15					30	40	15			
4	3	2.5		15					30	30	25			
4	4	4		60				20	20					
4	5	6+		80				20						
5	1	1.5	3						30	20		20	30	
5	2	2.5		45	5			45	5					
5	3	10+		5				5	40	50				
6	1	1	1	10					40	10			40	
6	2	4	3	10					20	30	40			
6	3	5+		65				35						

Lake Ripley Critical Habitat (LR_3) – E Shoreline, Main Lake

This Critical Habitat is on the eastern shore of the main lake (Figure 7). This stie encompasses one a single-home property with one simple pier and outfall pipe. This site was selected for its spawning substrate, and it is classified as Other Public Rights Feature.

Figure 7: *Designated Sensitive Area LR-2 and LR-3 (map created by Jefferson Co LWCD)*

Figure 8: *LR-3 Substrate Sampling Sites*

Table #8: LR-3 Substrate Survey Results 10-20-2015

Transect #	Quadrant #	Band Dimension (m)	Embeddedness (1-5)	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Course Gravel	Rubble/Cobble	Small Boulder	Large Boulder	Bedrock
1	1	1.5	1							45	30	15	10	
1	2	1	1					15	35	30	20			
1	3	2.5	2					10		40	50			
1	4	10+		40				40	20					
2	1	5	3					15	15	15	55			
2	2	3.5	3					10	25	35	30			
2	3	6.5+	1	35				35	20	10				
3	1	2.5	1						30		30	40		
3	2	3	3					20	20	10	50			
3	3	9.5+					35	35	30					

Lake Ripley Critical Habitat (LR_4) – NE Shoreline, Main Lake

This Critical Habitat is the northeast area of the lake (Figure 9). This site was selected for its spawning substrate, and it is classified as Other Public Rights Feature.

Figure 9: *Designated Sensitive Area LR-4 (map created by Jefferson Co LWCD)*

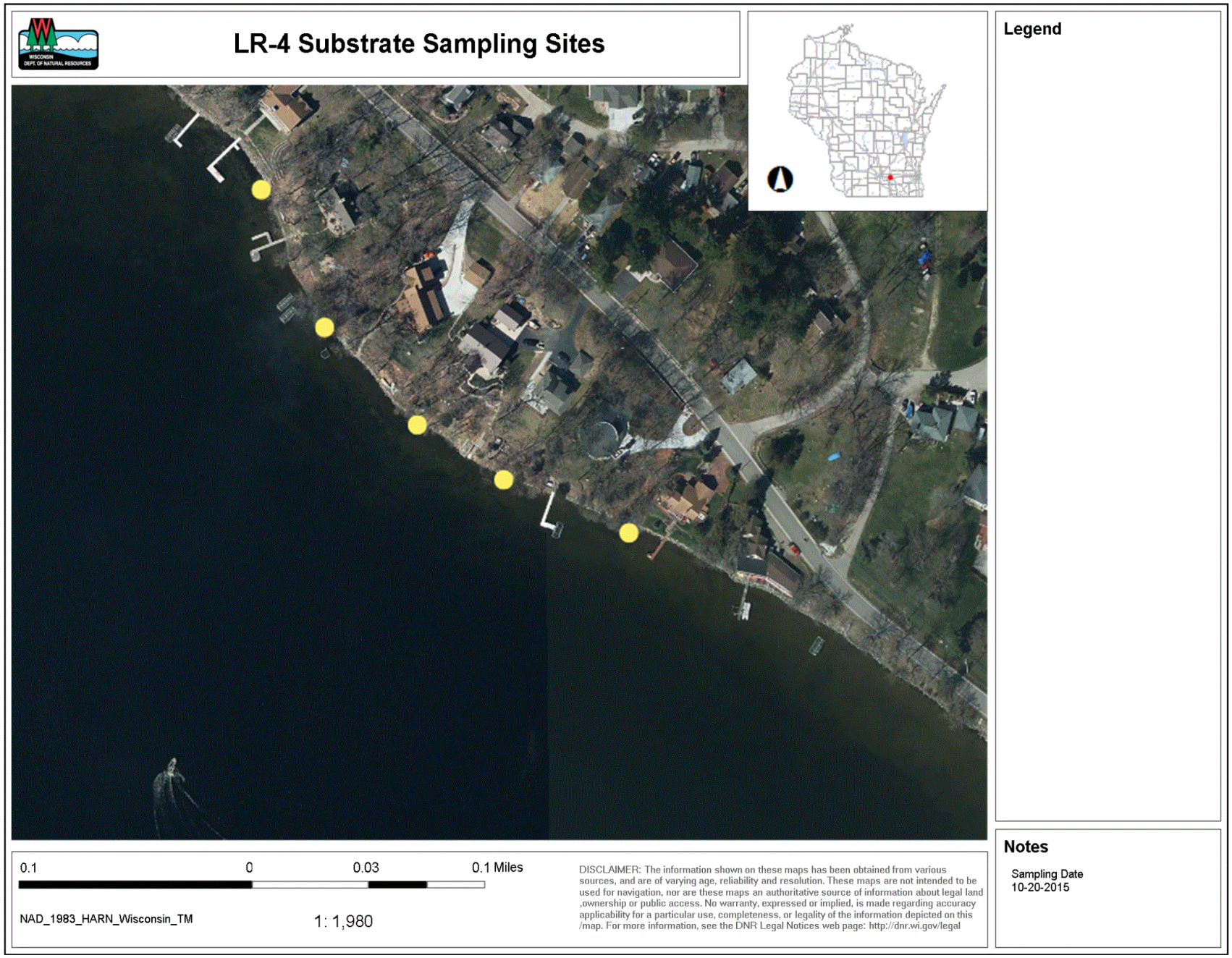

Figure 10: *LR-4 Substrate Sampling Sites*

Table #9: LR-4 Substrate Survey Results 10-20-2015

Transect #	Quadrant #	Band Dimension (m)	Embeddedness (1-5)	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Course Gravel	Rubble/Cobble	Small Boulder	Large Boulder	Bedrock
1	1	0.5											100	
1	2	4	2					5	20	25	50			
1	3	3		25				25	25	25				
1	4	.5		10				40	50					
1	5	7+		70				30						
2	1	1.5	1						45		5	25	25	
2	2	3.5	3					10	60	20	10			
2	3	6		40				30	30					
2	4	4+		5				35	60					
3	1	1							30		20		50	
3	2	5						15	10	15	60			
3	3	9+		35				35	30					
4	1	3.5						5	15	15	65			
4	2	3		15				15	40	30				
4	3	4.5	5	30				30	20	20				
4	4	4+		40				40	20					
5	1	6	3					10	35	40	15			
5	2	2	4	30				30	20	20				
5	3	7+		60				35	5					

Lake Ripley Critical Habitat (LR 5) – W Shoreline, Main Lake

This Critical Habitat is located along the western shore of the main lake (Figure 11). It is encompasses the shoreline of the Lake Ripley cemetery and extends east ~ 235 ft within Lake Ripley. LR-5 is designated as a sensitive area for bio-diverse submerged aquatic vegetation, submersed aquatic vegetation important to fish and wildlife, emergent and floating leaf vegetation, woody habitat, and natural scenic beauty.

Figure 11: *Designated Sensitive Area LR-5 (map created by Jefferson Co LWCD)*

Table #10: LR-5 Aquatic Plants				
Scientific Name	**Common Name**	**Plant Type**	**Coefficient of Conservatism**	**Ecological Significance**
Nymphaea odorata	Whitewater Lily	Floating-leaved	6	Provides shade and structural habitat for fish and invertebrates; Fruits are food source for waterfowl.
Utricularia vulgaris	Common Bladderwort	Submergent	7	Habitat for fish and invertebrates
Chara spp.	Muskgrasses	Submergent	7	Habitat for invertebrates and juvenile fish; Stabilizes bottom sediments
Vallisneria americana	Eel grass/water celery	Submergent	6	Food source for waterfowl; habitat for fish and invertebrates
Potamogeton friesii	Fries' pondweed	Submergent	8	Habitat for fish and invertebrates; Turions are important food source for waterfowl
Potamogeton illinoensis	Illinois Pondweed	Submergent	6	Habitat for fish and invertebrates
Stuckenia pectinata	Sago pondweed	Submergent	3	Habitat for fish and invertebrates; Nutlets are important food source for waterfowl
Ceratophyllum demersum	Coontail	Submergent	3	Habitat for fish and invertebrates
Najas flexilis	Slender naiad	Submergent	6	Habitat for fish and invertebrates
Myriophyllum sibiricum	Northern watermilfoil	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton gramineus	Variable pondweed	Submergent	7	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton cripus	Curly-leaf pondweed	Submergent	-	Non-native; provides winter and spring habitat for fish; summer die-offs can lead

				to nutrient release; Can outcompete more desirable native species
Myriophyllum spicatum	Eurasian watermilfoil	Submergent	-	Non-native; Habitat for fish and invertebrates; Food for waterfowl; Can outcompete more desirable natives
Najas marina	Spiny naiad	Submergent	-	Non-native; Habitat for fish and invertebrates; Stabilizes bottom sediments

Lake Ripley Critical Habitat (LR 6) – W Shoreline, Main Lake

This Critical Habitat encompasses the western shoreline between Golf Side Ln to the north and Sleepy Hollow Rd to the south (Figure 12). LR-6 is designated as a sensitive area for bio-diverse submerged aquatic vegetation, submersed aquatic vegetation important to fish and wildlife, emergent and floating leaf vegetation, extensive riparian wetland, and natural scenic beauty.

Figure 12: *Designated Sensitive Area LR-6 (map created by Jefferson Co LWCD)*

Table #11: LR-6 Aquatic Plants				
Scientific Name	**Common Name**	**Plant Type**	**Coefficient of Conservatism**	**Ecological Significance**
Nymphaea odorata	Whitewater Lily	Floating-leaved	6	Provides shade and structural habitat for fish and invertebrates; Fruits are food source for waterfowl.
Utricularia vulgaris	Common Bladderwort	Submergent	7	Habitat for fish and invertebrates
Chara spp.	Muskgrasses	Submergent	7	Habitat for invertebrates and juvenile fish; Stabilizes bottom sediments
Vallisneria americana	Eel grass/water celery	Submergent	6	Food source for waterfowl; habitat for fish and invertebrates
Elodea canadensis	Common waterweed	Submergent	3	Habitat for fish and invertebrates
Potamogeton friesii	Fries' pondweed	Submergent	8	Habitat for fish and invertebrates; Turions are important food source for waterfowl
Potamogeton pusillus	Small pondweed	Submergent	7	Habitat for fish and invertebrates
Potamogeton illinoensis	Illinois Pondweed	Submergent	6	Habitat for fish and invertebrates
Stuckenia pectinate	Sago pondweed	Submergent	3	Habitat for fish and invertebrates; Nutlets are important food source for waterfowl
Ceratophyllum demersum	Coontail	Submergent	3	Habitat for fish and invertebrates
Najas flexilis	Slender naiad	Submergent	6	Habitat for fish and invertebrates

Najas marina	Spiny naiad	Submergent	-	Non-native; Habitat for fish and invertebrates; Stabilizes bottom sediments

Lake Ripley Critical Habitat (LR_7) – SW, South Bay (Marina Bay), Main Lake

This Critical Habitat encompasses majority of the South Bay and includes Vasby's Channel (Figure 13). LR-7 is designated as a sensitive area for bio-diverse submerged aquatic vegetation, submersed aquatic vegetation important to fish and wildlife, emergent and floating leaf vegetation, extensive riparian wetland, and natural scenic beauty.

Figure 13: *Designated Sensitive Area LR-7 (map created by Jefferson Co LWCD)*

Table #12: LR-7 Aquatic Plants				
Scientific Name	**Common Name**	**Plant Type**	**Coefficient of Conservatism**	**Ecological Significance**
Nuphar variegata	Spatterdock	Floating-leaved	6	Provides shade and structural habitat for fish and invertebrates; Fruits are food source for waterfowl.
Nymphaea odorata	Whitewater Lily	Floating-leaved	6	Provides shade and structural habitat for fish and invertebrates; Fruits are food source for waterfowl.
Utricularia vulgaris	Common Bladderwort	Submergent	7	Habitat for fish and invertebrates
Chara spp.	Muskgrasses	Submergent	7	Habitat for invertebrates and juvenile fish; Stabilizes bottom sediments
Spirodela polyrhiza	Large duckweed	Free-flaoting		
Lemna minor	Small duckweed	Free-floating	4	Food source for waterfowl; provides shade and cover for fish and invertebrates
Heteranthera dubia	Water star grass	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Vallisneria americana	Eel grass/water celery	Submergent	6	Food source for waterfowl; habitat for fish and invertebrates
Potamogeton friesii	Fries' pondweed	Submergent	8	Habitat for fish and invertebrates; Turions are important food source for waterfowl
Potamogeton pusillus	Small pondweed	Submergent	7	Habitat for fish and invertebrates
Potamogeton illinoensis	Illinois Pondweed	Submergent	6	Habitat for fish and invertebrates

Stuckenia pectinata	Sago pondweed	Submergent	3	Habitat for fish and invertebrates; Nutlets are important food source for waterfowl
Ceratophyllum demersum	Coontail	Submergent	3	Habitat for fish and invertebrates
Najas flexilis	Slender naiad	Submergent	6	Habitat for fish and invertebrates
Myriophyllum sibiricum	Northern watermilfoil	Submergent	6	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton gramineus	Variable pondweed	Submergent	7	Habitat for fish and invertebrates; Food source for waterfowl
Potamogeton Natans	Floating-leaf pondweed	Submergent	5	Provides shade and structural habitat for fish and invertebrates
Potamogeton cripus	Curly-leaf pondweed	Submergent	-	Non-native; provides winter and spring habitat for fish; summer die-offs can lead to nutrient release; Can outcompete more desirable native species
Myriophyllum spicatum	Eurasian watermilfoil	Submergent	-	Non-native; Habitat for fish and invertebrates; Food for waterfowl; Can outcompete more desirable natives
Najas marina	Spiny naiad	Submergent	-	Non-native; Habitat for fish and invertebrates; Stabilizes bottom sediments

Lake Ripley Critical Habitat (LR_8)

This Critical Habitat is the shoreline along the southern the southern end of the lake between the southwest bay and Milwaukee Bay (Figure 14). The area begins at the western property line of the Hoard and Curtis Scout Camp and ends at the eastern property line. This site was selected for its spawning substrate and natural scenic beauty. It is classified as Other Public Rights Feature.

Figure 14: *Designated Sensitive Area LR-8 (map created by Jefferson Co LWCD)*

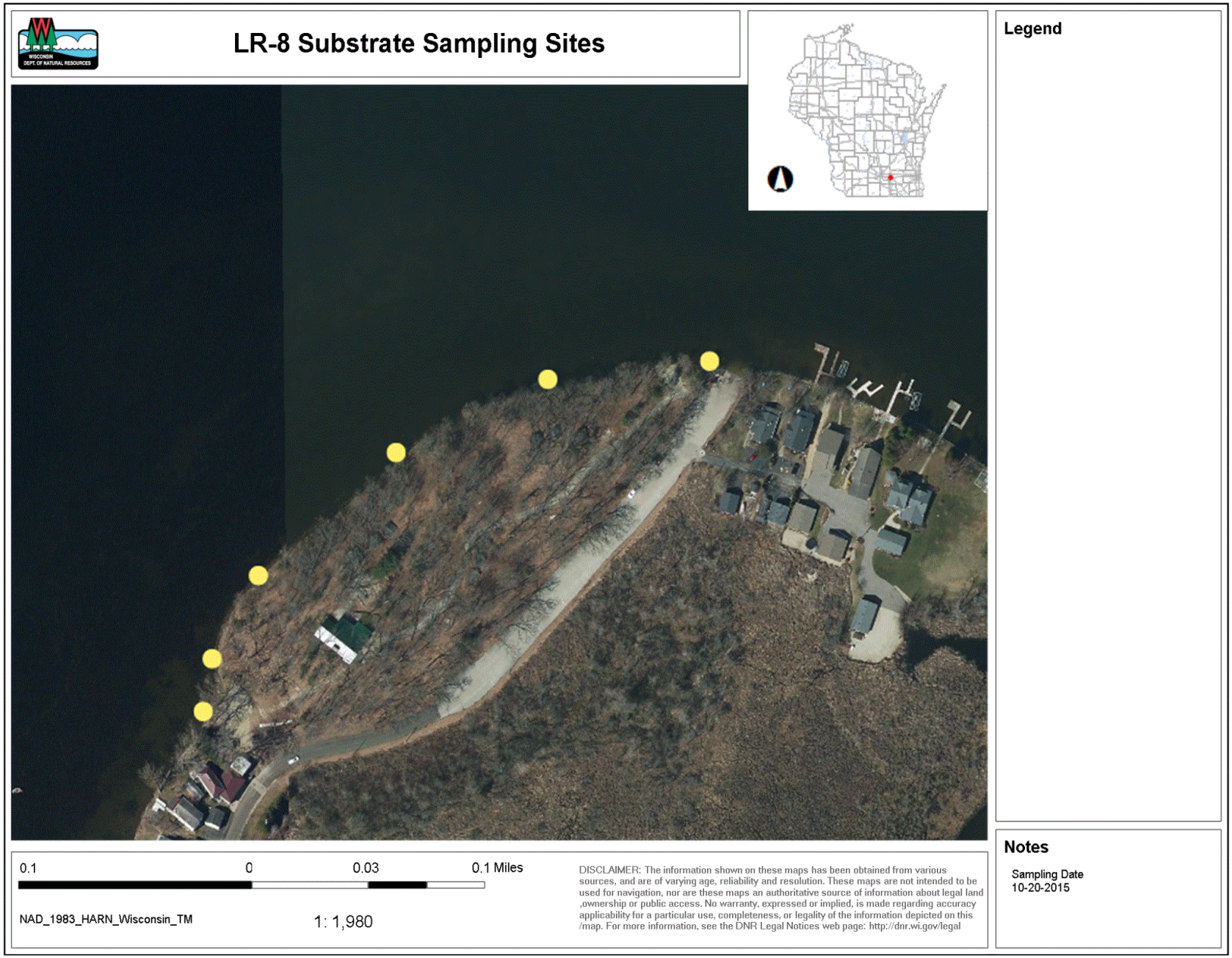

Figure 15: *Substrate Sampling Sites LR-8*

Table #13 LR-8 Substrate Survey Results 10-20-2015

Transect #	Quadrant #	Band Dimension (m)	Embeddedness (1-5)	Marl	Detritus	Clay	Silt	Sand	Fine Gravel	Course Gravel	Rubble/Cobble	Small Boulder	Large Boulder	Bedrock
1	1	2	5					5					95	
1	2	3	3	50				50						
1	3	5	1	45				45		10				
2	1	.5	5				10	10				80		
2	2	2.5	3					10					90	
2	3	9	1	55			5	40						
2	4	15	1	15				15	30	40				
3	1	1.5	5									10	90	
3	2	2.5	3	10			40	20				30		
3	3	5.5	1	45				45	10					
4	1	1.5	5	5				5				45	45	
4	2	1	3	10				10		30		50		
4	3	5	1	50			50							
4	4	6	1	25			25		30	20				
5	1	1.5	5									40	60	
5	2	2.5	3	25			25		25	25				
5	3	4	1				10		30	30		30		
6	1	3	5						5	10			85	
6	2	8	3				20		40	30		10		
6	3	6.5	1	10					35	35		20		

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APPENDIX A

AQUATIC PLANT INFORMATION

LAKE RIPLEY, JEFFERSON COUNTY, WISCONSIN

From data collected in 2011, 2015, and 2020 by the Lake Ripley Management District and Jefferson Co LWCD

Tables and charts from Jefferson Co LWCD, Lake Ripley Management District

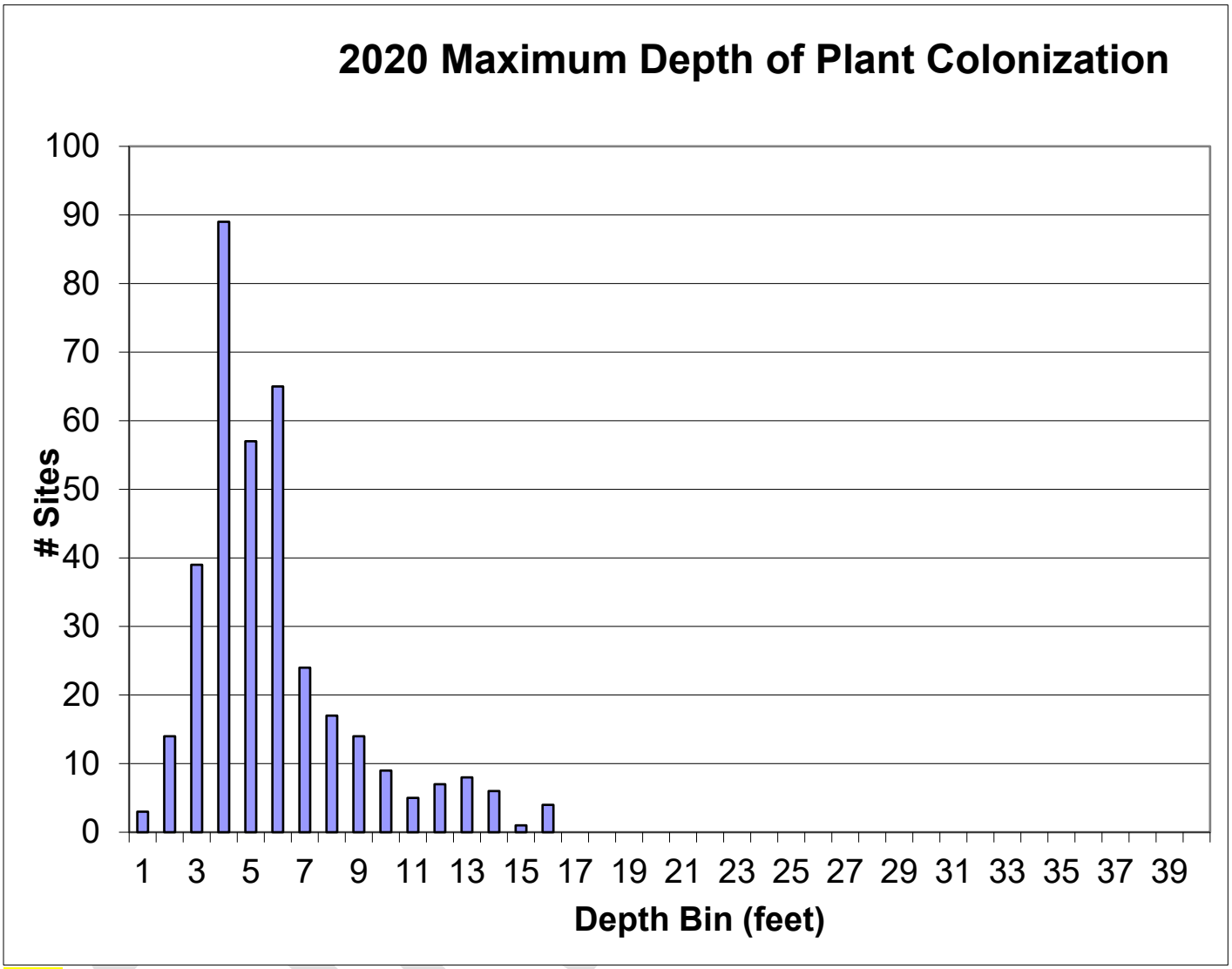


Figure 1: Maximum Depth of Plant Colonization in 2020

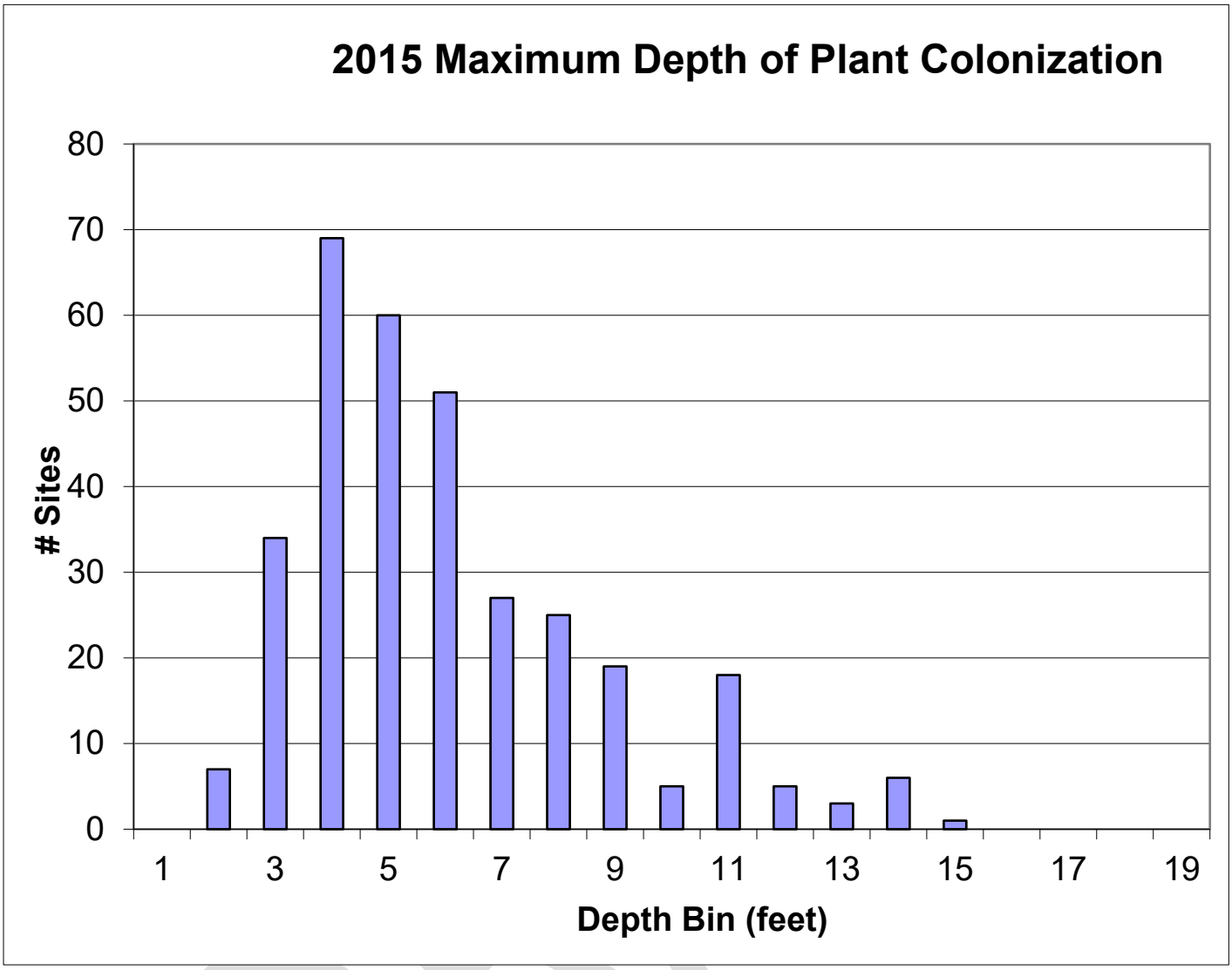


Figure 2: Maximum Depth of Plant Colonization in 2015

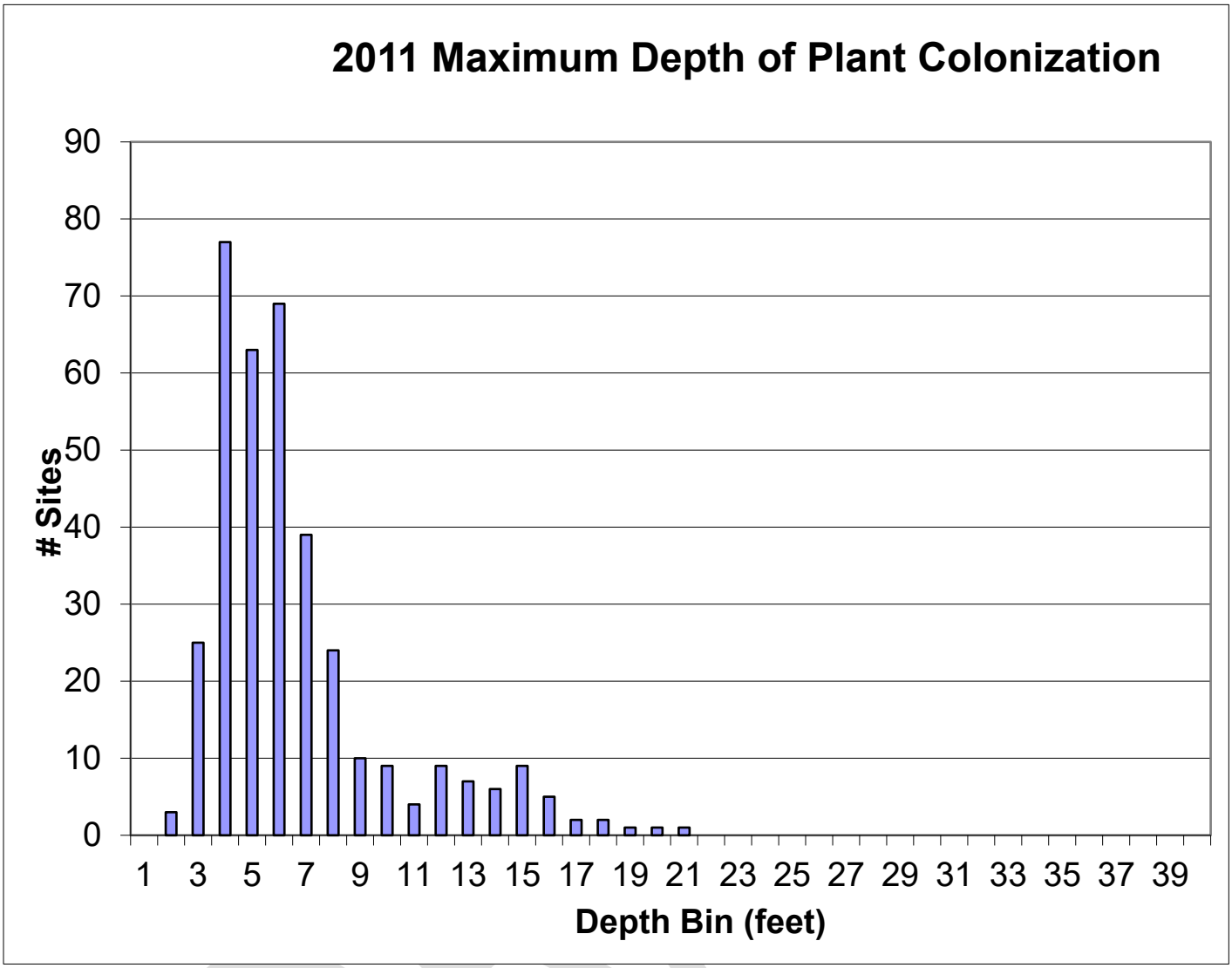
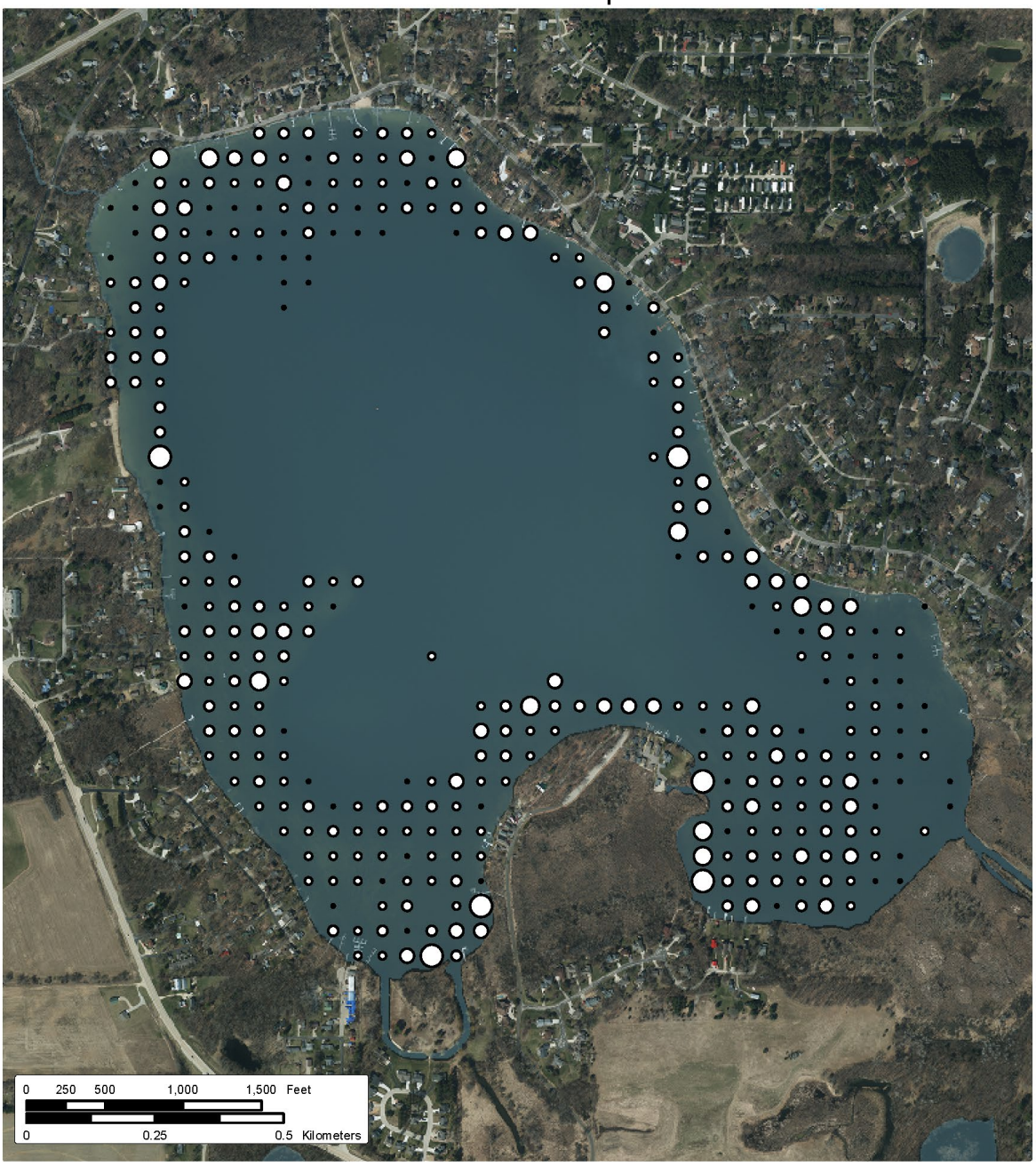


Figure 3: Maximum Depth of Plant Colonization in 2011

Aquatic Plant Survey
Lake Ripley - Jefferson County - June 2020
Total Number of Species



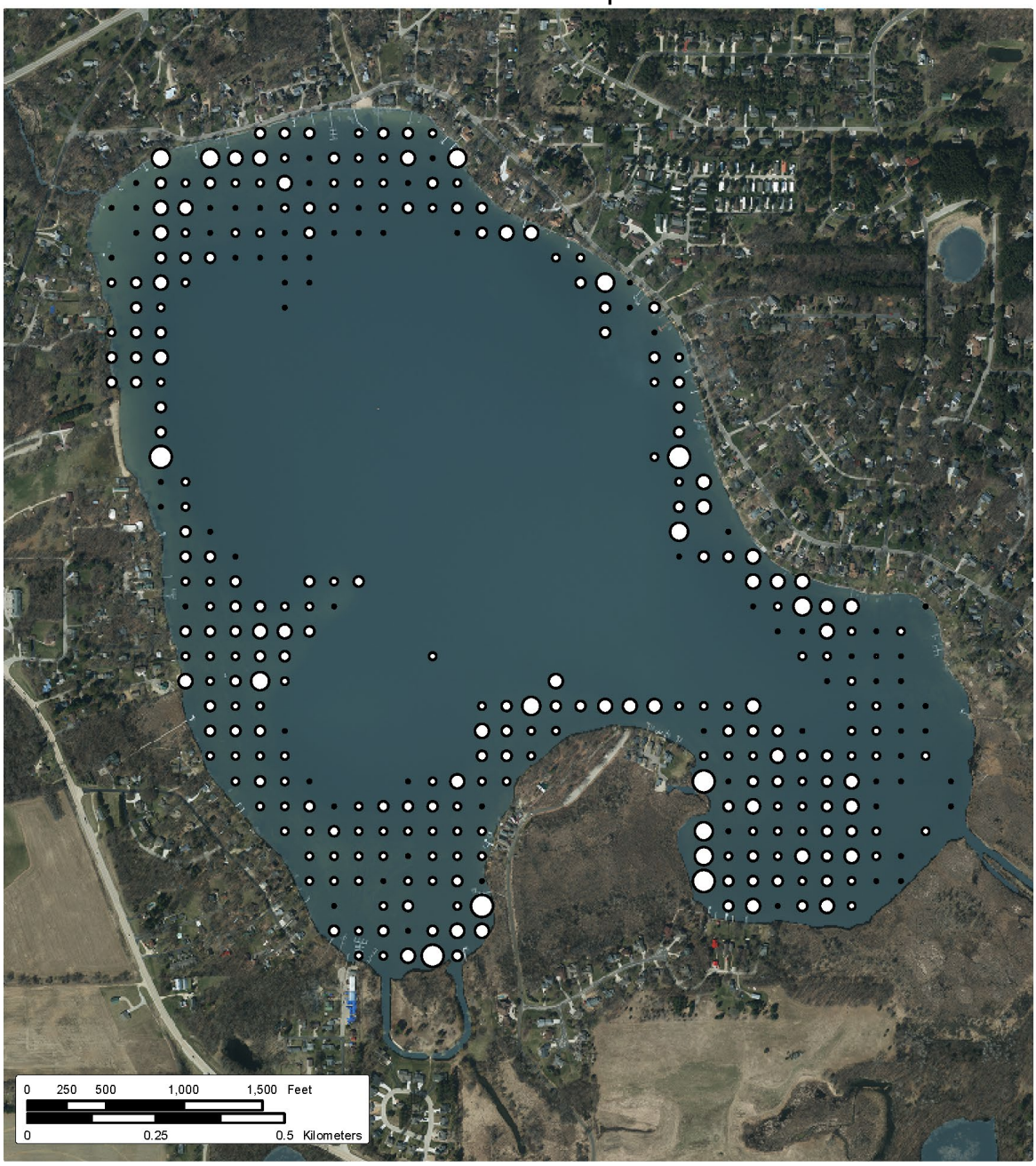
Total # of Species at each Survey Site

• 1	○ 3	○ 5
○ 2	○ 4	○ 6

Spring 2020
Aerial

Author:
Jefferson County Land
& Water Conservation Dept Date: 11/27/2020

Aquatic Plant Survey
Lake Ripley - Jefferson County - June 2020
Total Number of Species



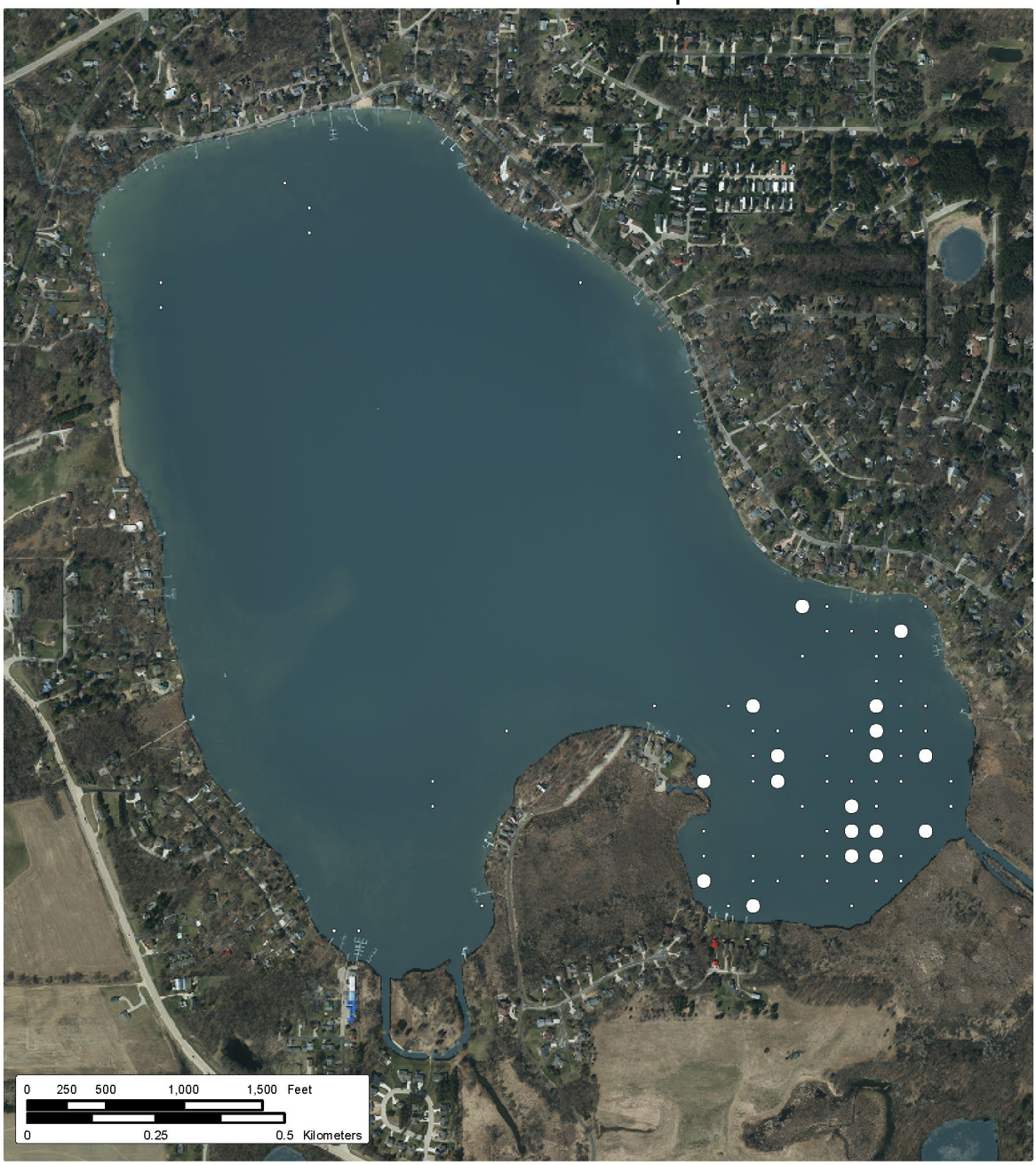
Total # of Species at each Survey Site

• 1 ○ 3 ○ 5
○ 2 ○ 4 ○ 6

Spring 2020
Aerial

Author:
Jefferson County Land
& Water Conservation Dept Date: 11/27/2020

Aquatic Plant Survey
Lake Ripley - Jefferson County - June 2020
Total Number of Invasive Species



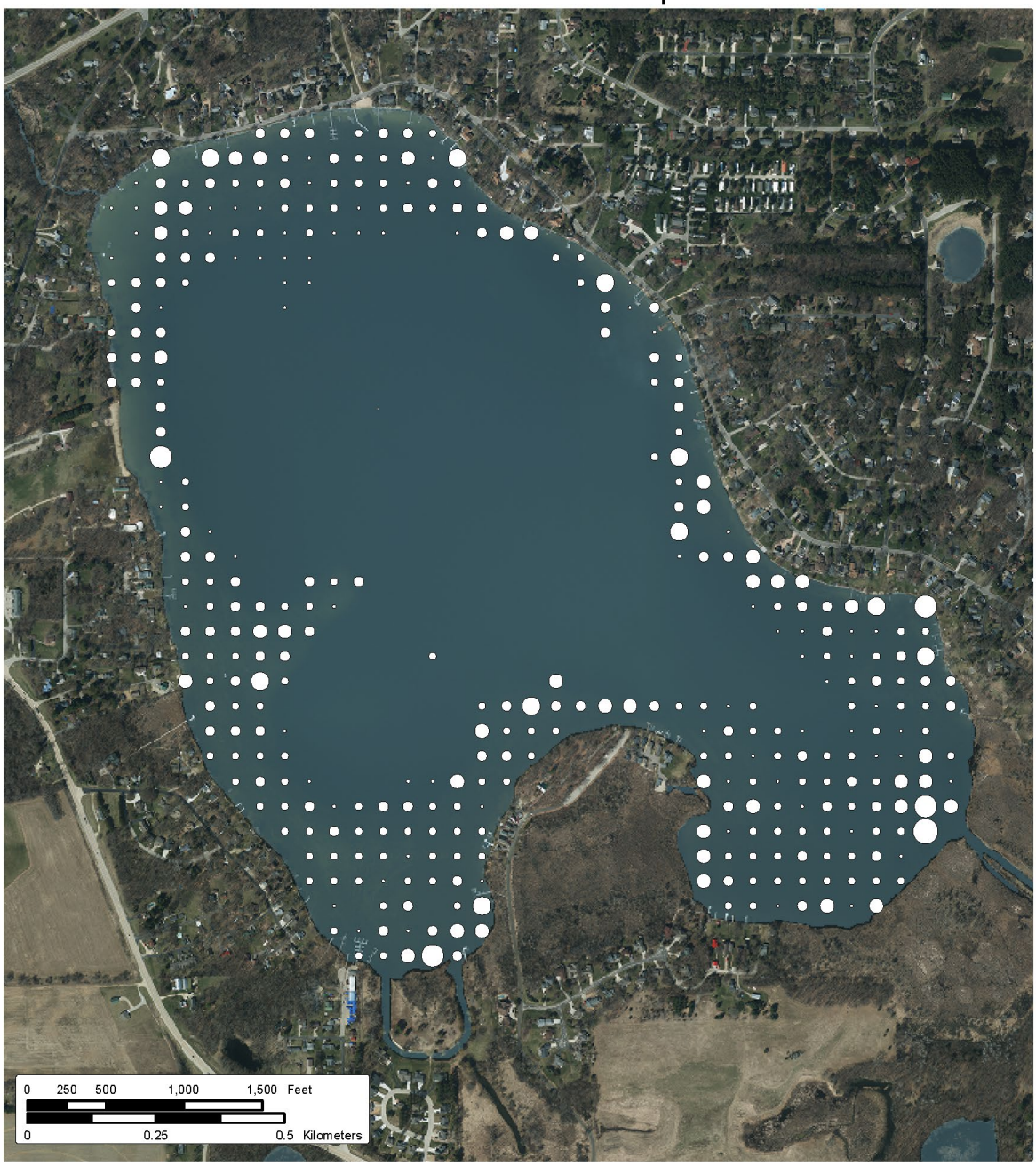
Total # of Species at each Survey Site

◦ 1 ○ 2

Spring 2020
Aerial

Author:
Jefferson County Land
& Water Conservation Dept Date: 11/27/2020

Aquatic Plant Survey
Lake Ripley - Jefferson County - June 2020
Total Number of Native Species



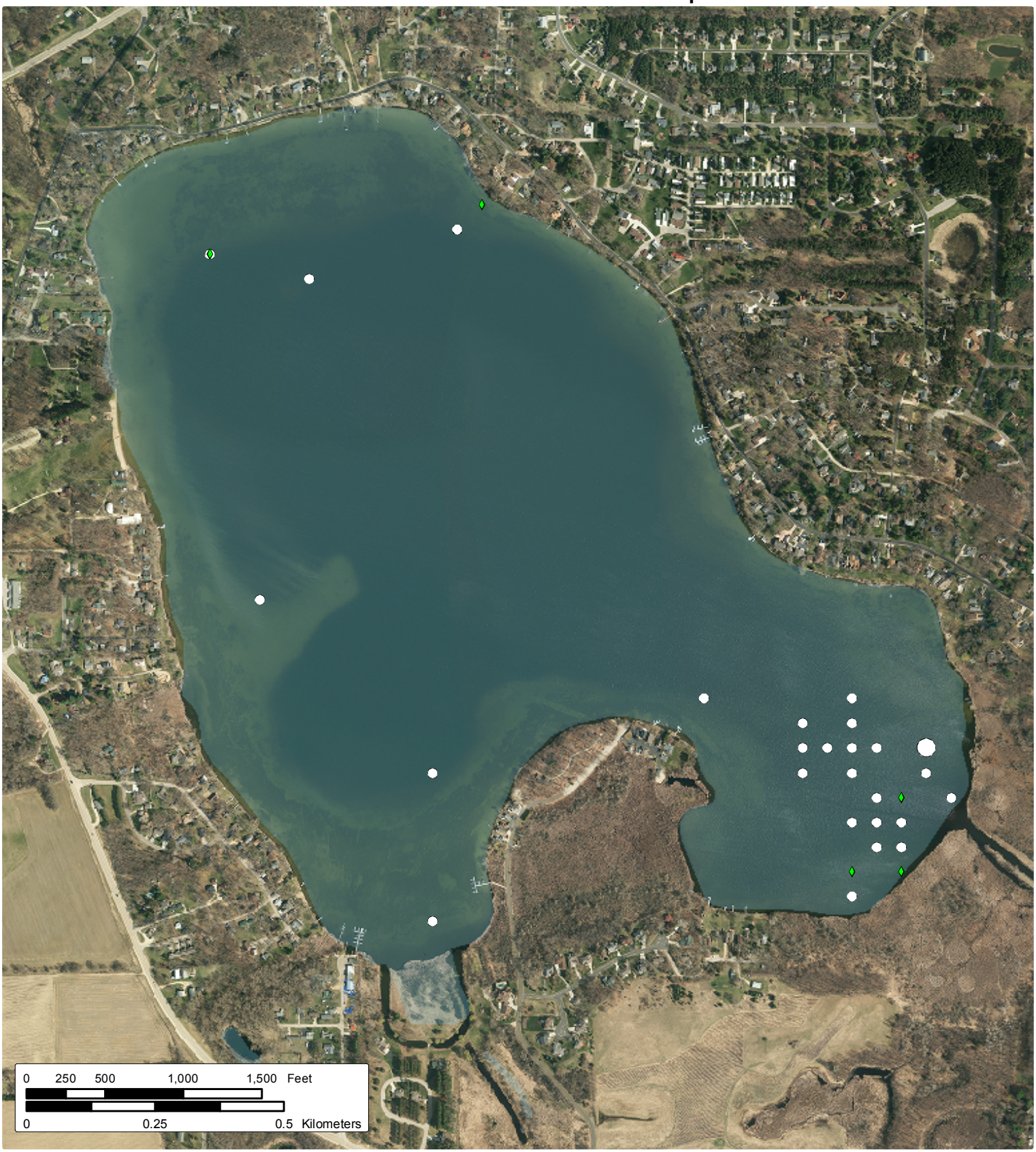
Total # of Species at each Survey Site

1	3	5	7 - 8
2	4	6	

Spring 2020
Aerial

Author:
Jefferson County Land
& Water Conservation Dept Date: 11/30/2020

Aquatic Plant Survey
Lake Ripley - Jefferson County - August 2015
Total Number of Invasive Species



Total # of Species at each Survey Site

Visual 1 2

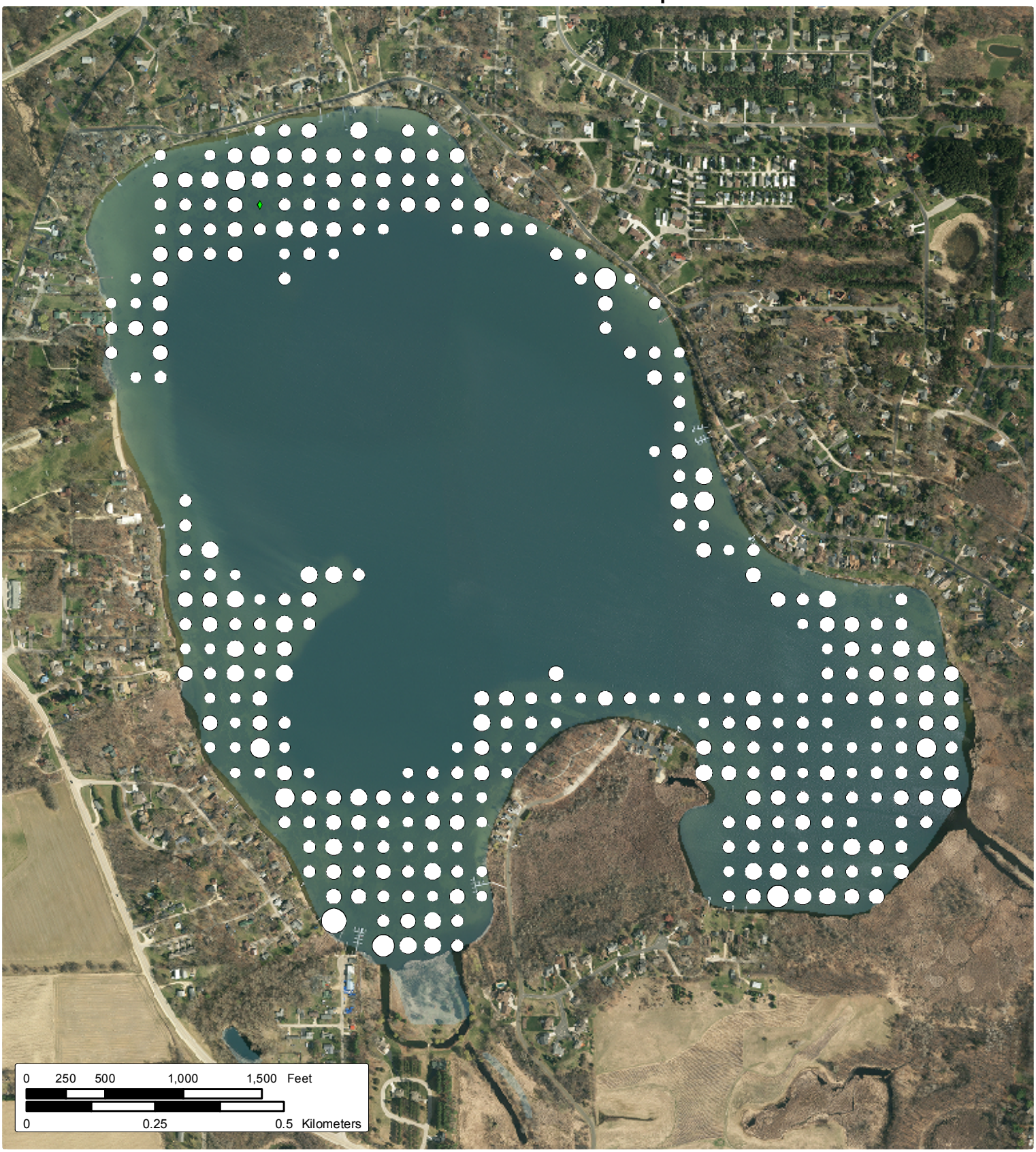
N

Author:
Jefferson County Land
& Water Conservation Dept

Spring 2015
Aerial

Date: 7/19/2016

Aquatic Plant Survey
Lake Ripley - Jefferson County - August 2015
Total Number of Native Species



Total # of Species at each Survey Site

Visual	3	6
1	4	11
2	5	

Spring 2015
Aerial

Author:
Jefferson County Land
& Water Conservation Dept

Date: 7/19/2016

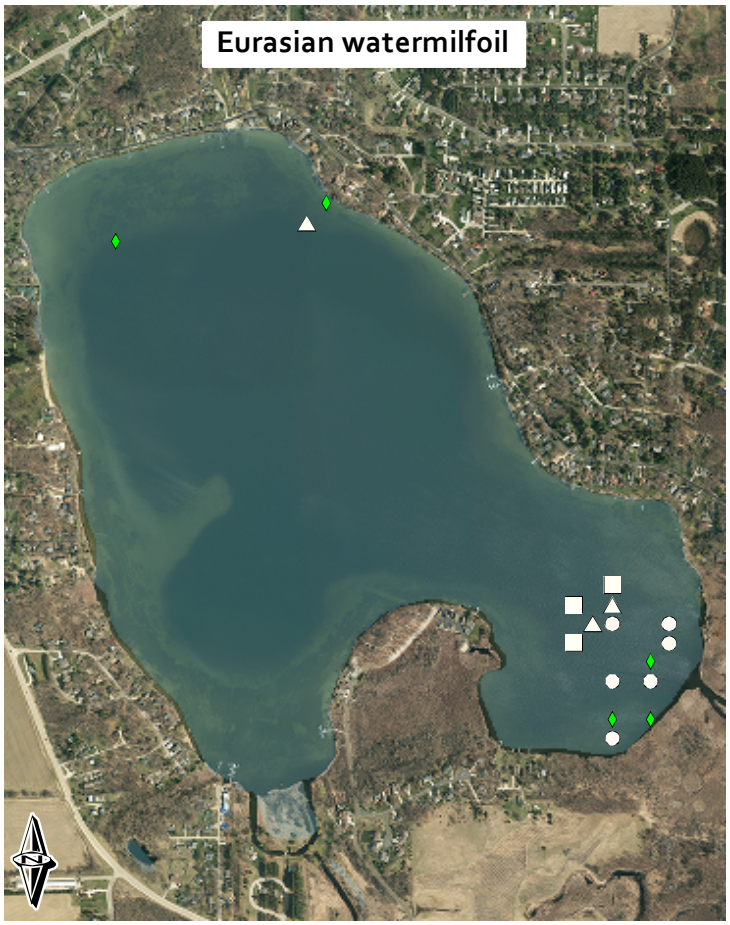
Total Rake Fullness Rating

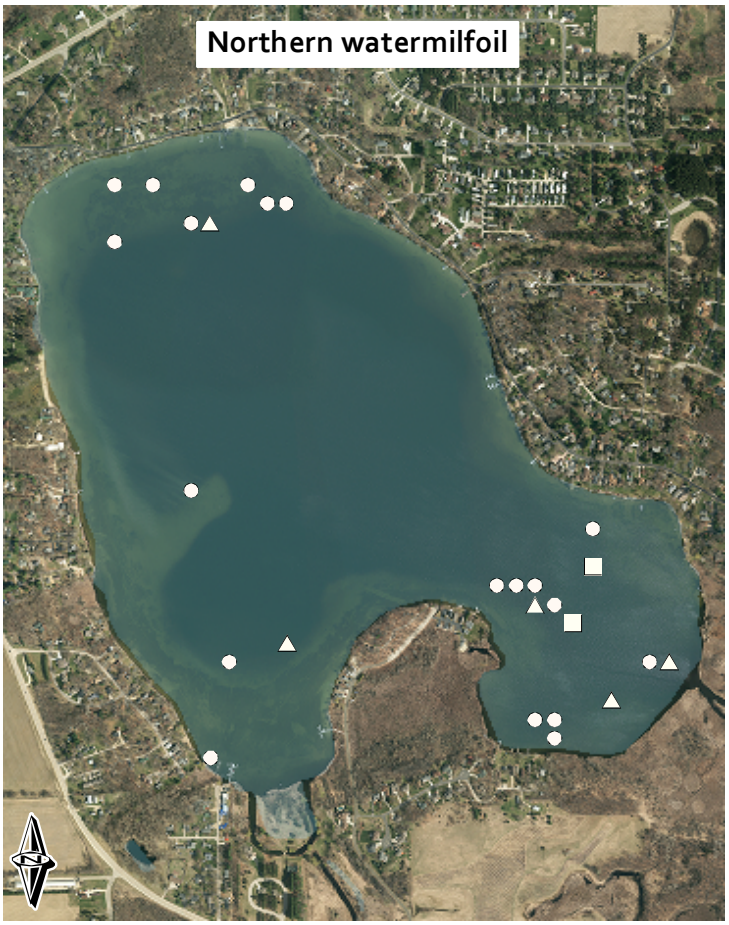
1 3

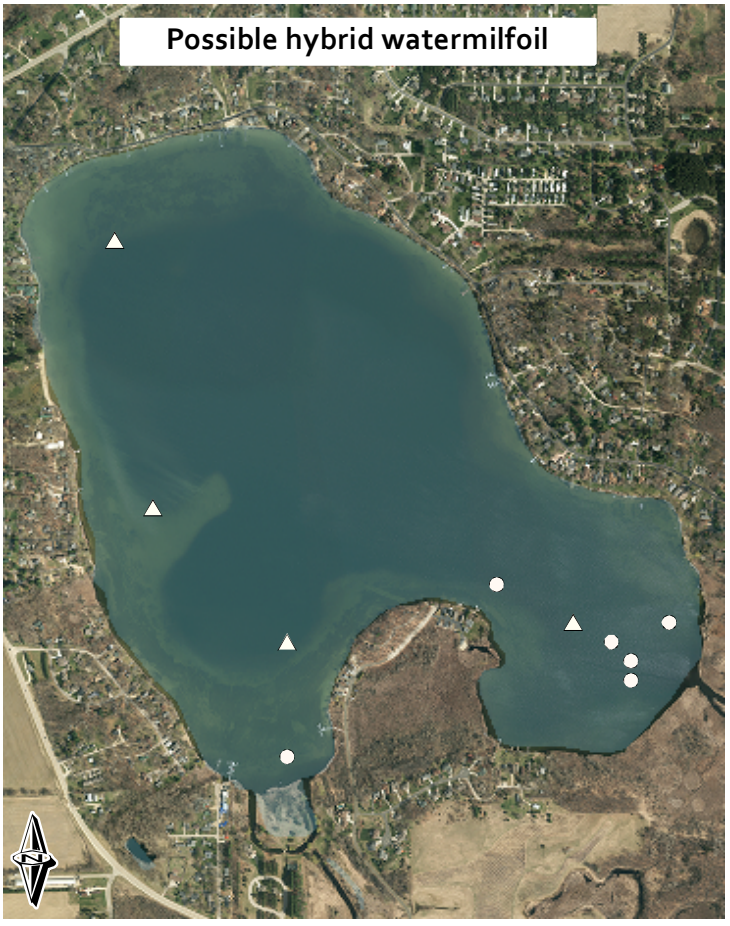
2 Visual

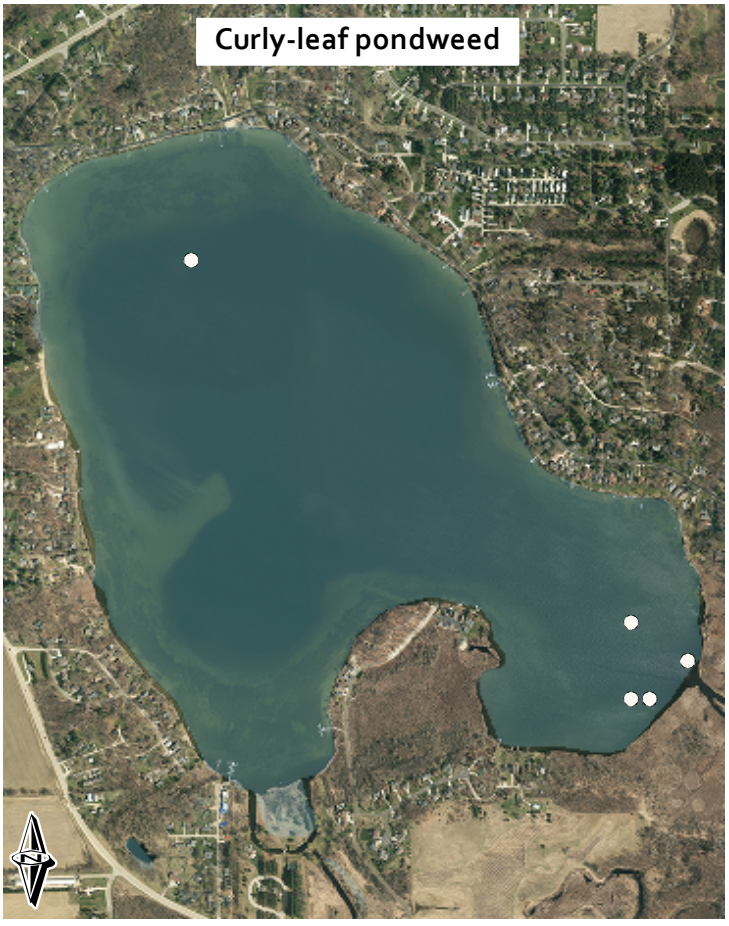
Lake Ripley - Jefferson County
August 2015

Illustration of
Rake Fullness Rating









Total Rake Fullness Rating

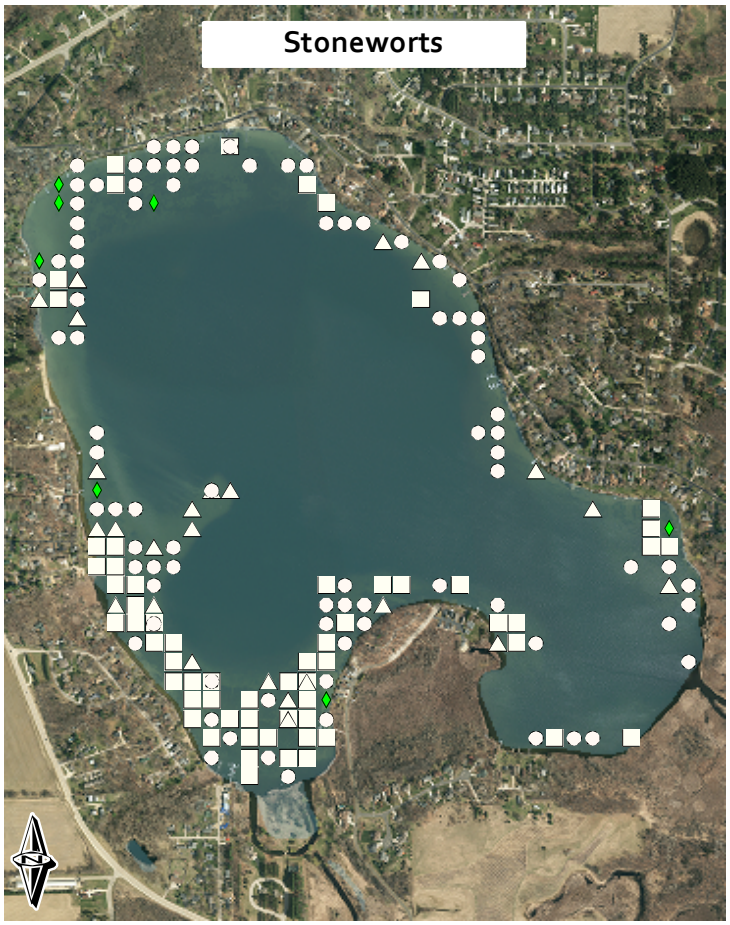
1 3

2 Visual

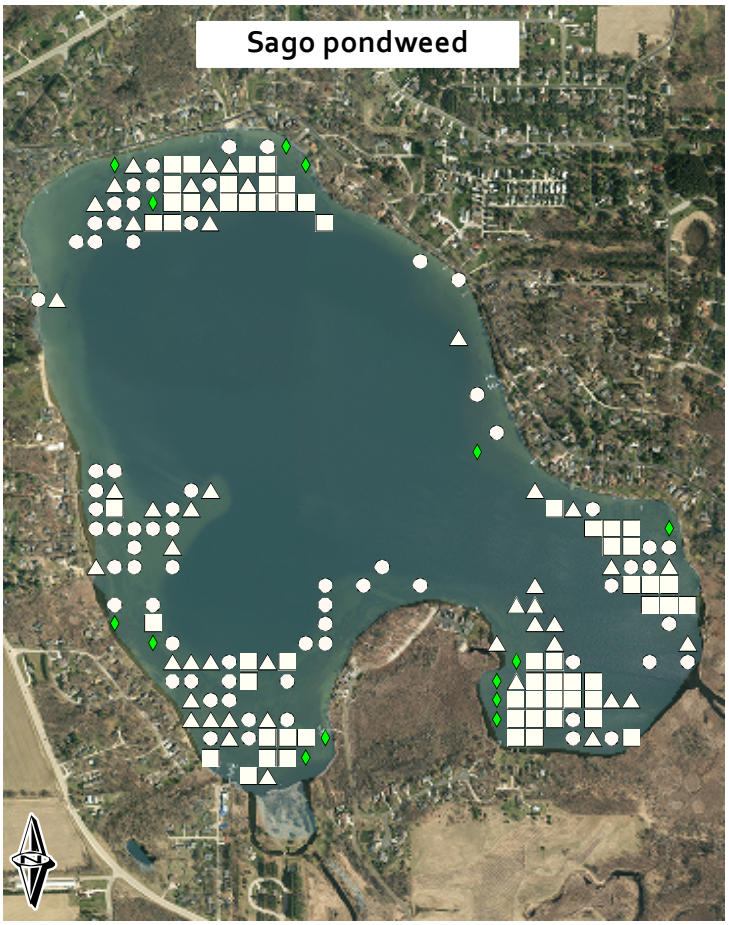
Lake Ripley - Jefferson County
August 2015

Illustration of
Rake Fullness Rating

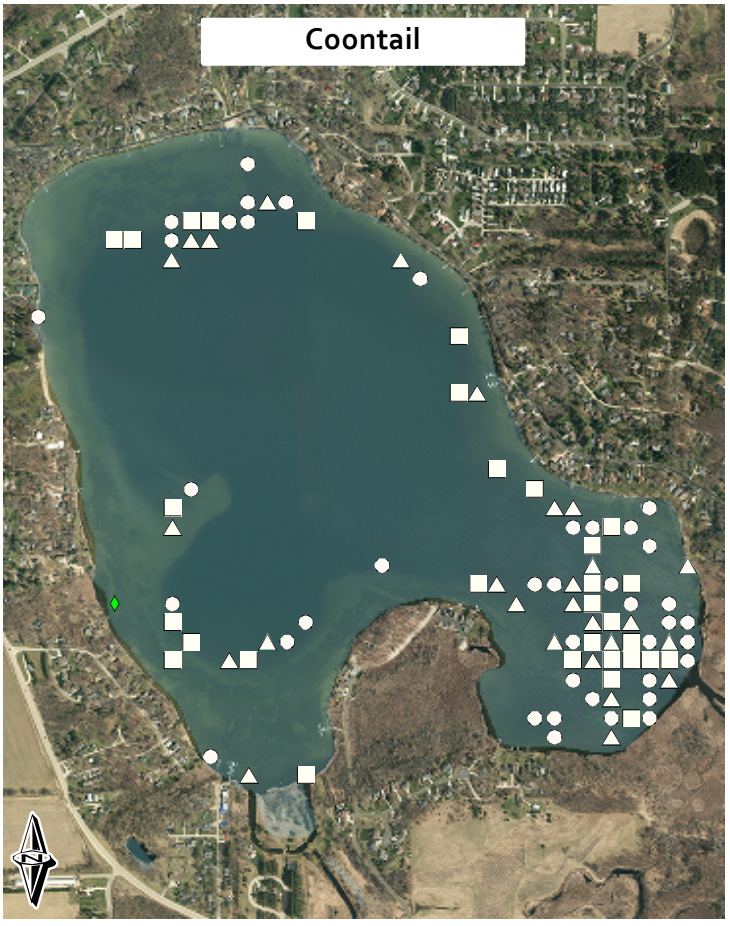
Stoneworts



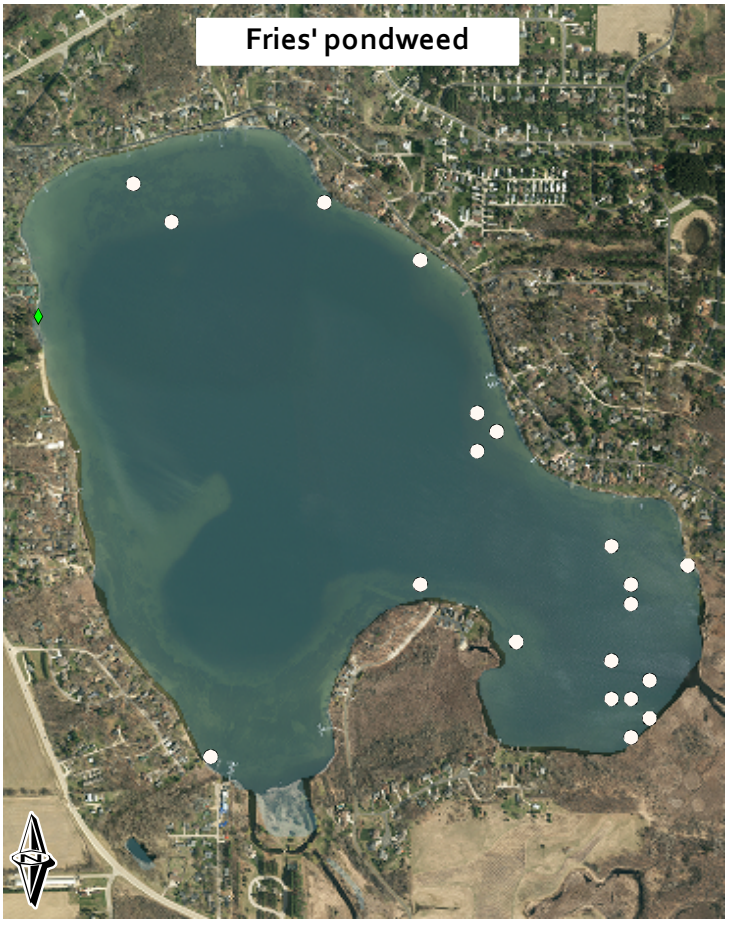
Sago pondweed



Coontail



Fries' pondweed



Total Rake Fullness Rating

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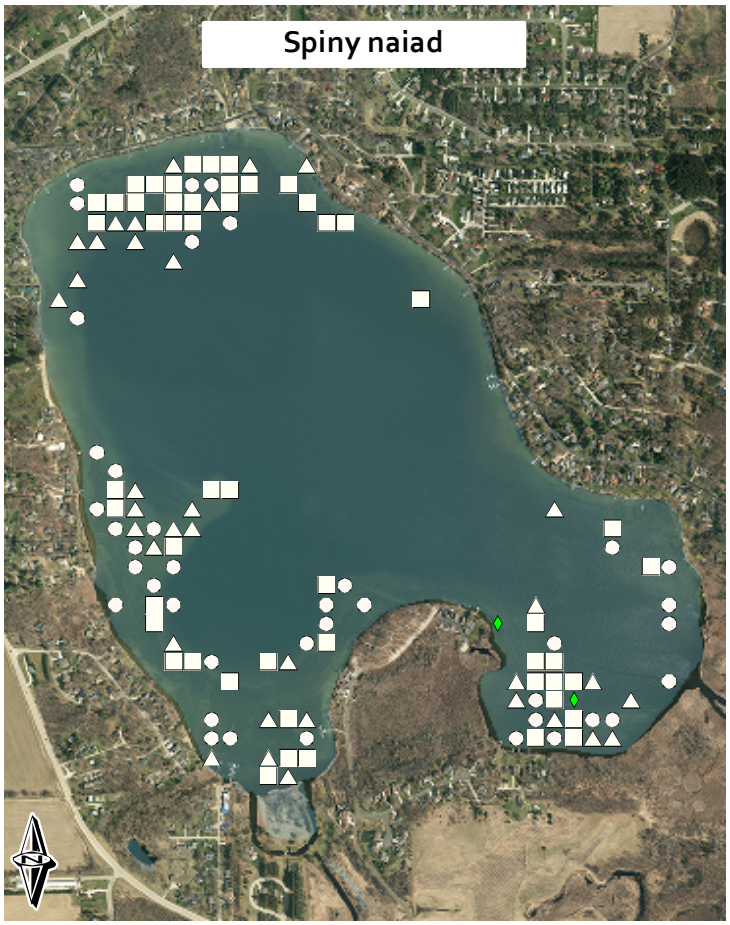
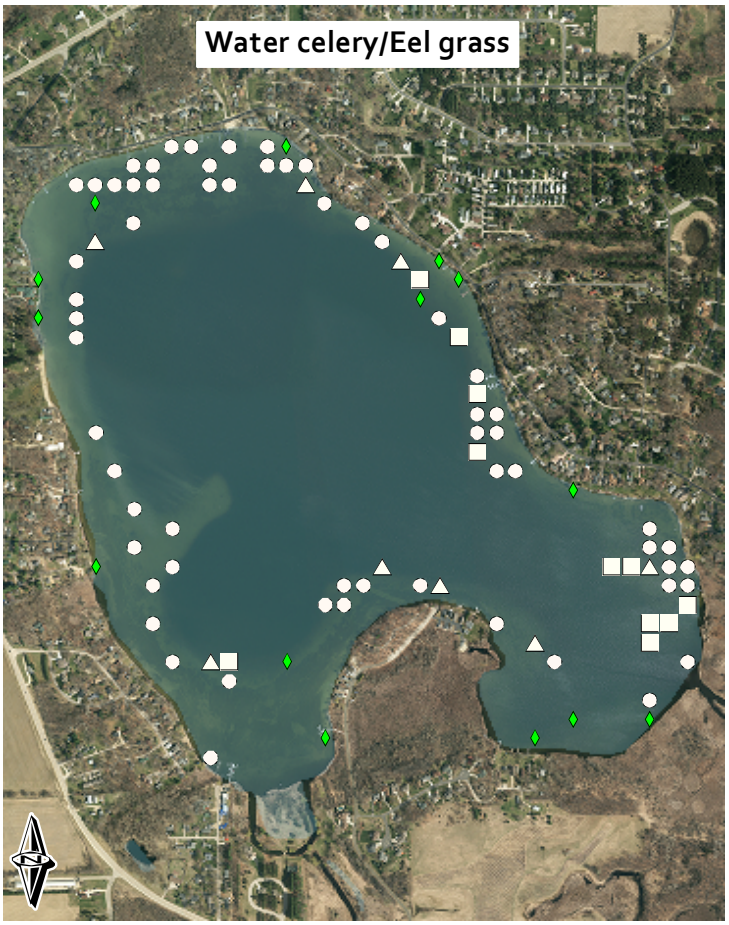
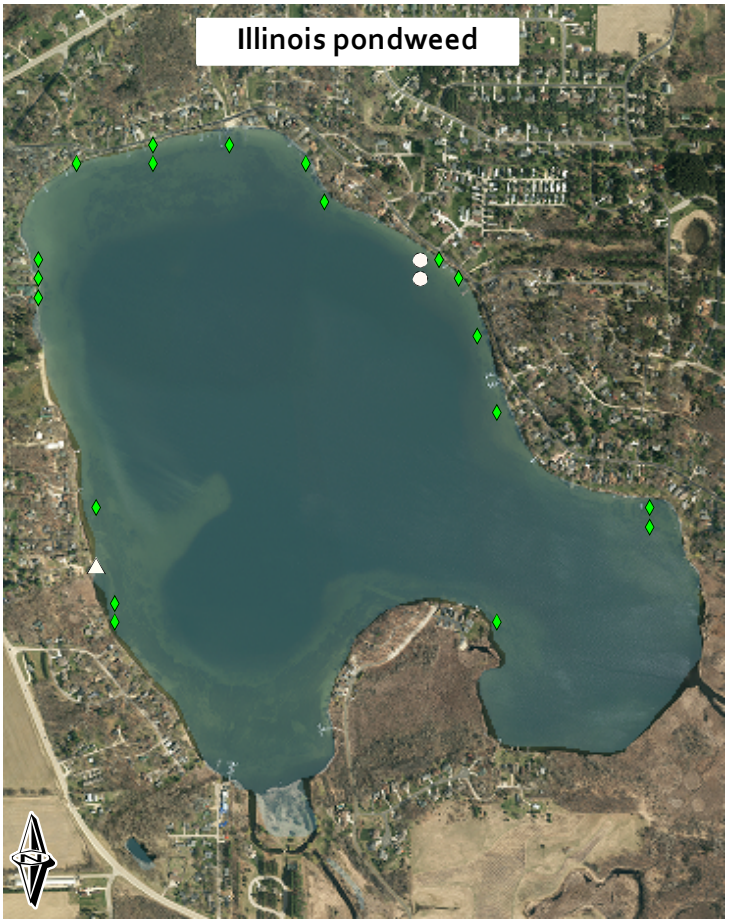
2 Visual

Lake Ripley - Jefferson County
August 2015

Illustration of
Rake Fullness Rating







Total Rake Fullness Rating

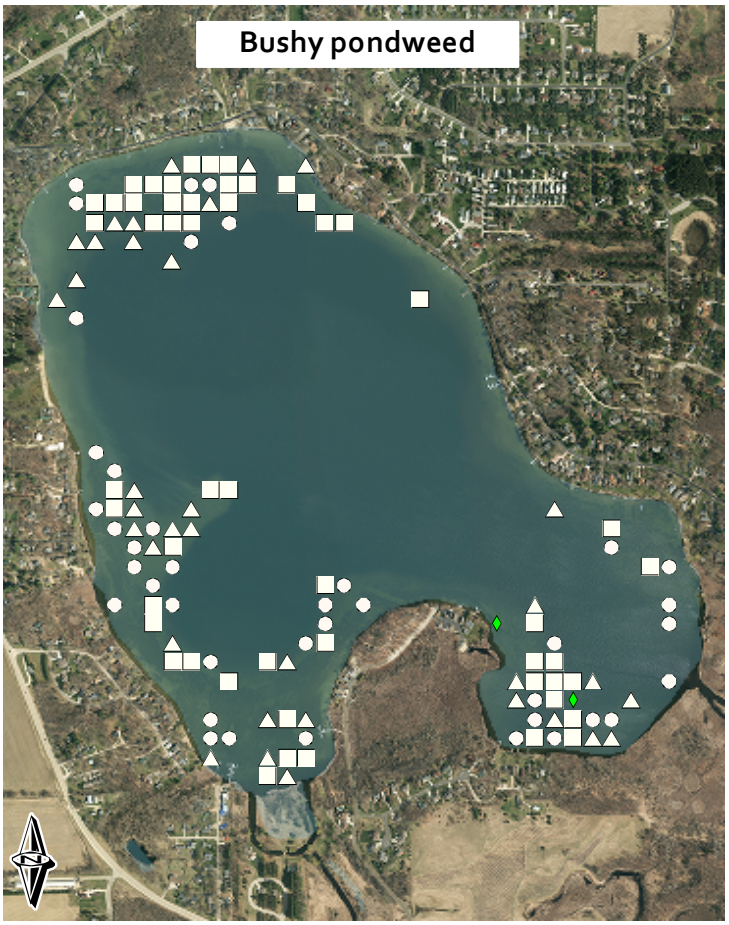
1 3

2 Visual

Lake Ripley - Jefferson County
August 2015

Illustration of
Rake Fullness Rating

1 2 3



Total Rake Fullness Rating

1 3

2 Visual

Lake Ripley - Jefferson County
August 2015

Illustration of
Rake Fullness Rating

Total Rake Fullness Rating

1 3

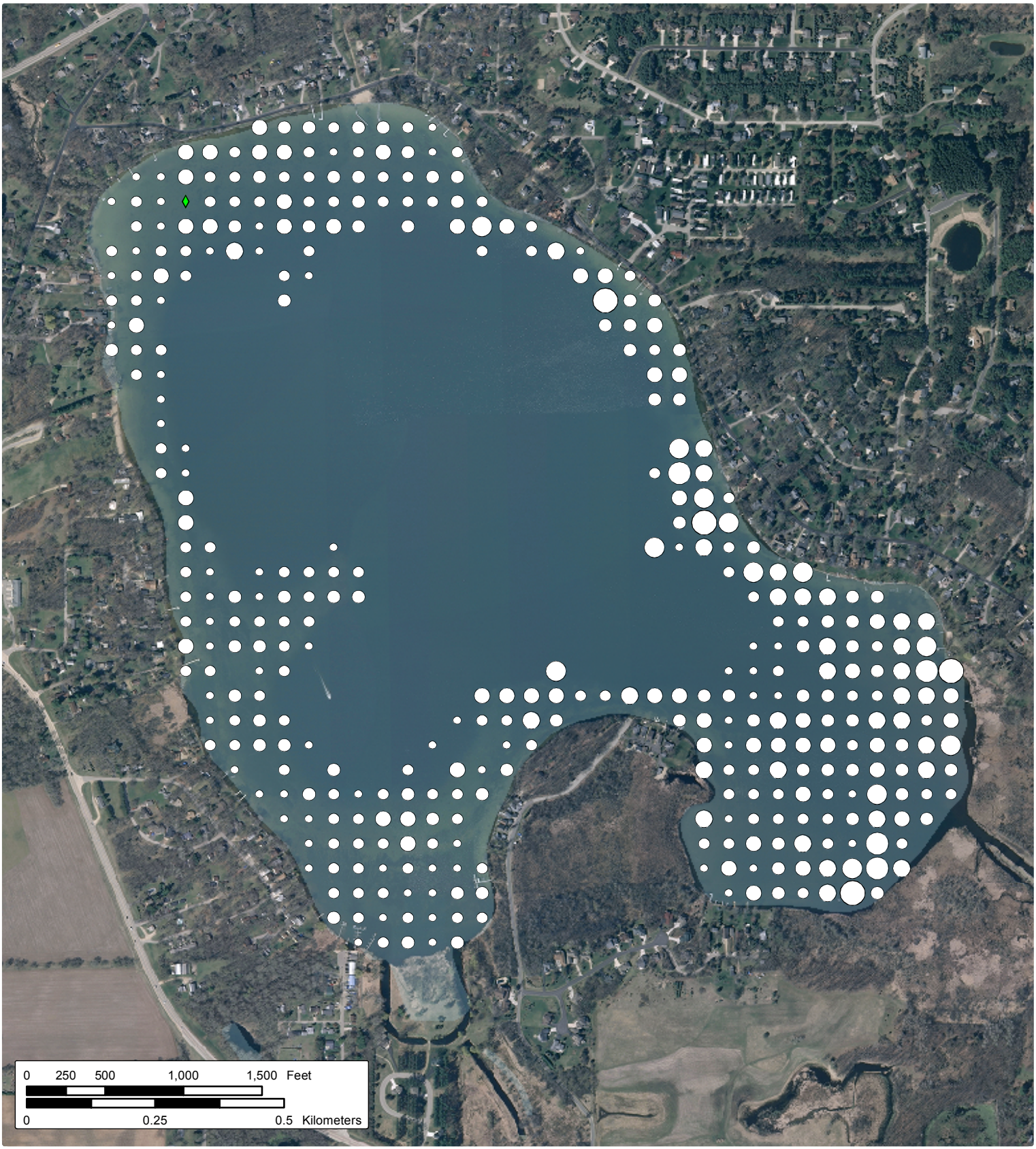
2 Visual

Lake Ripley - Jefferson County
August 2015

Illustration of
Rake Fullness Rating

1 2 3

Aquatic Plant Survey
Lake Ripley - Jefferson County - June 2011
Native Plants



Total # of Species at each Survey Site

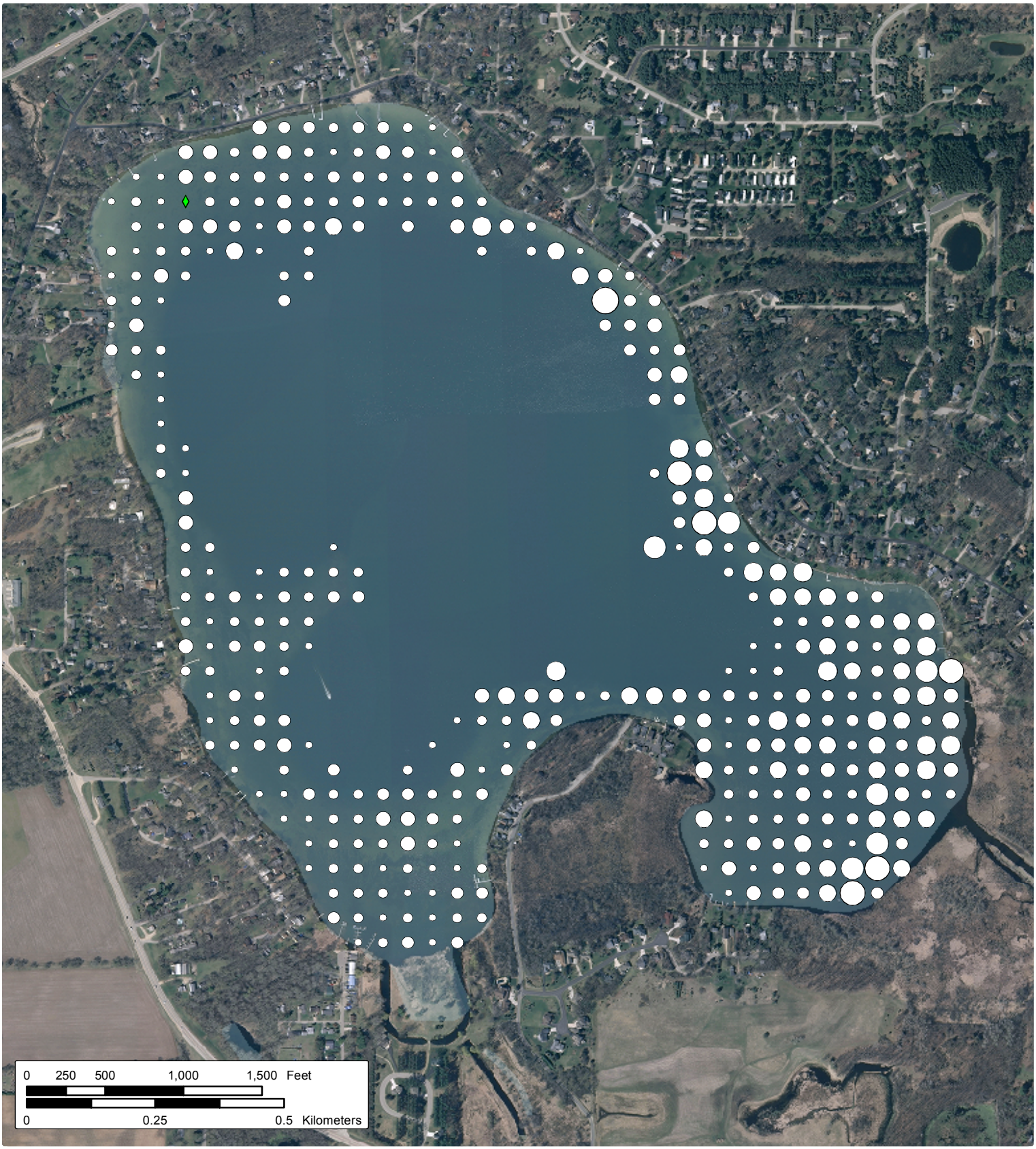
1	4	7
2	5	8
3	6	Visual

Spring 2010
Aerial

Author:
Jefferson County Land
& Water Conservation Dept

Date: 11/3/2011

Aquatic Plant Survey
Lake Ripley - Jefferson County - June 2011
Native and Exotic Plants



Total # of Species at each Survey Site

1	4	7	Visual
2	5	8	
3	6	9	

Spring 2010
Aerial

Author:
Jefferson County Land
& Water Conservation Dept

Date: 11/3/2011

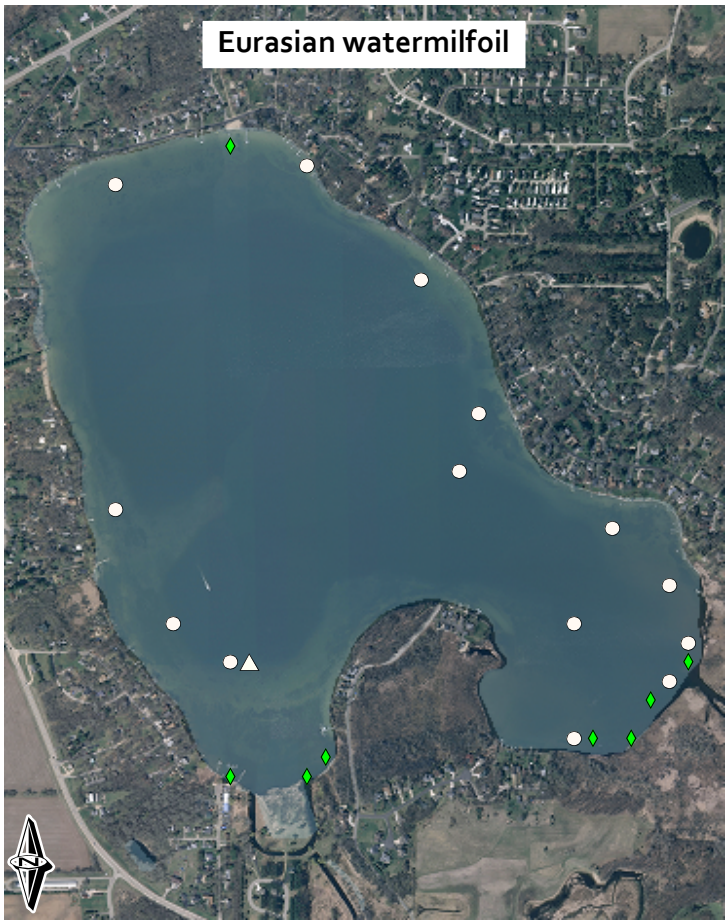
Total Rake Fullness Rating

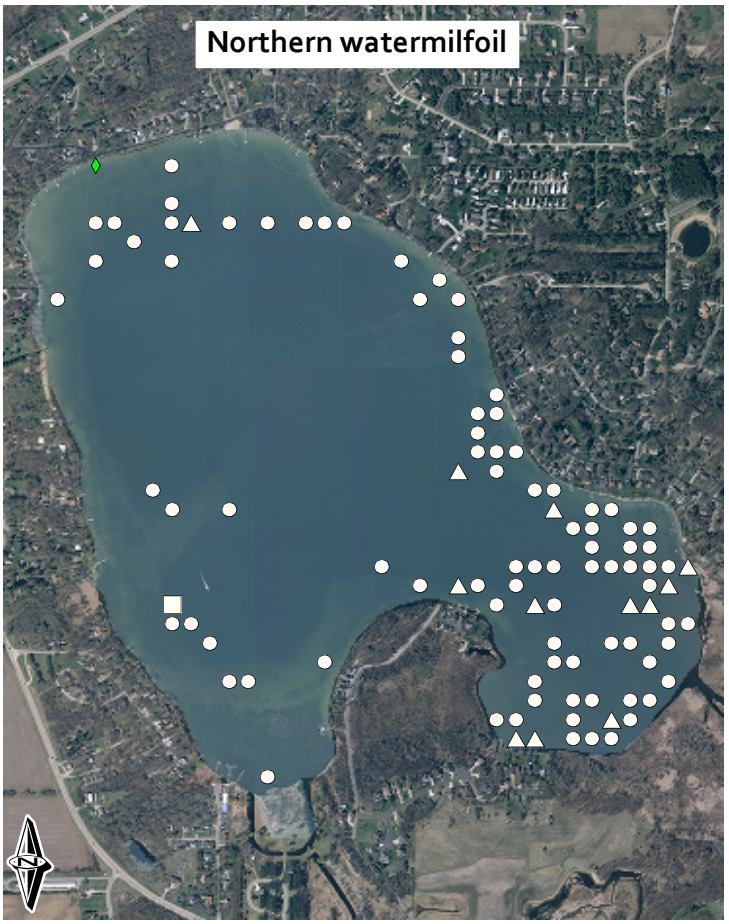
1 3

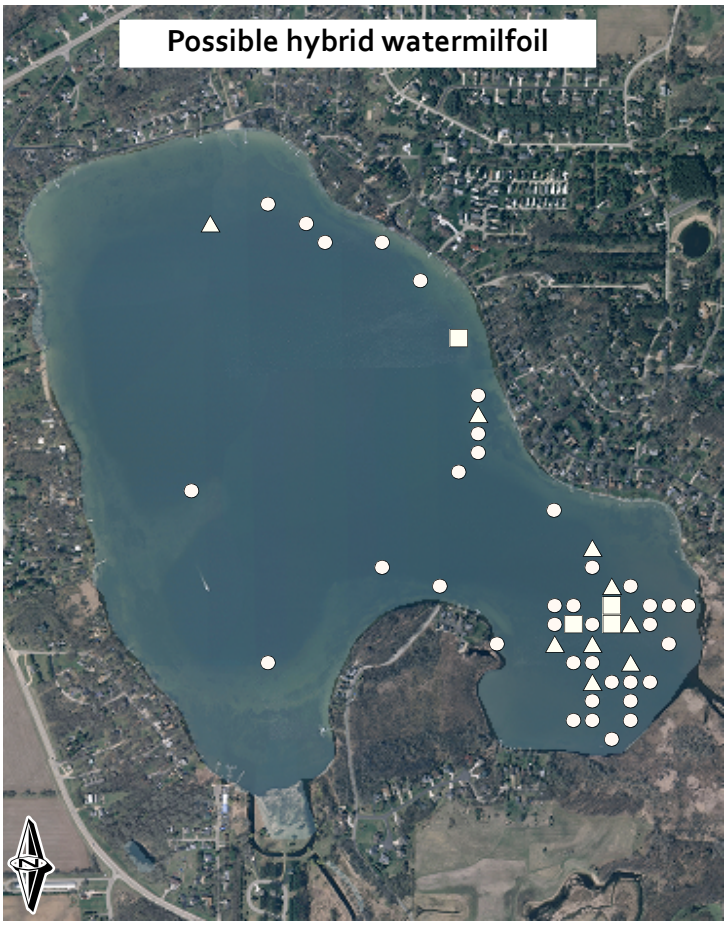
2 Visual

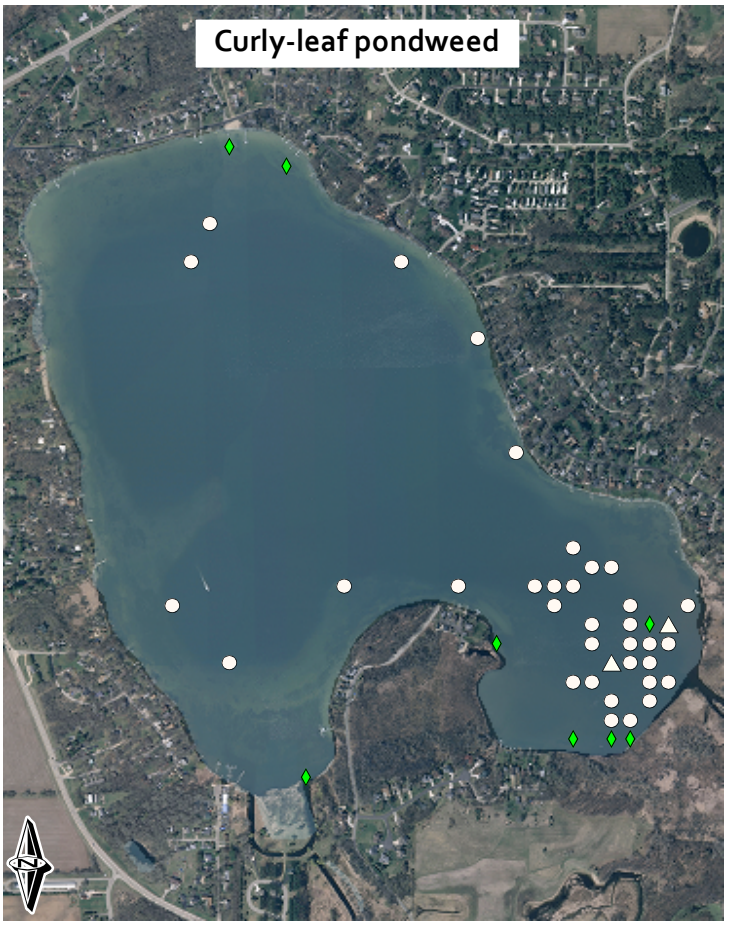
Lake Ripley - Jefferson County
June, 2011

Illustration of
Rake Fullness Rating









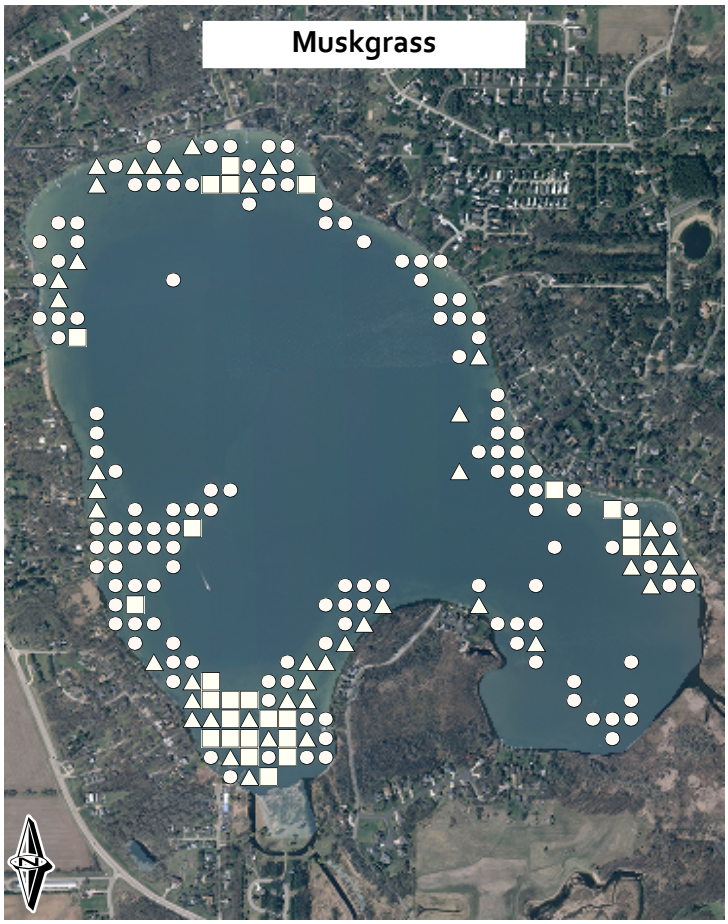
Total Rake Fullness Rating

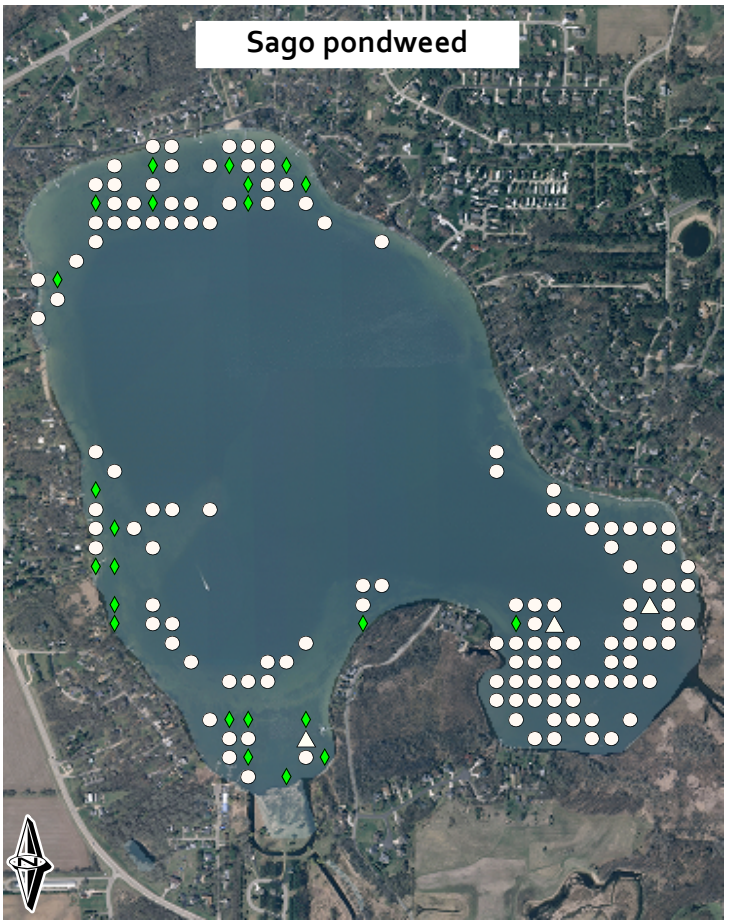
○ 1 □ 3

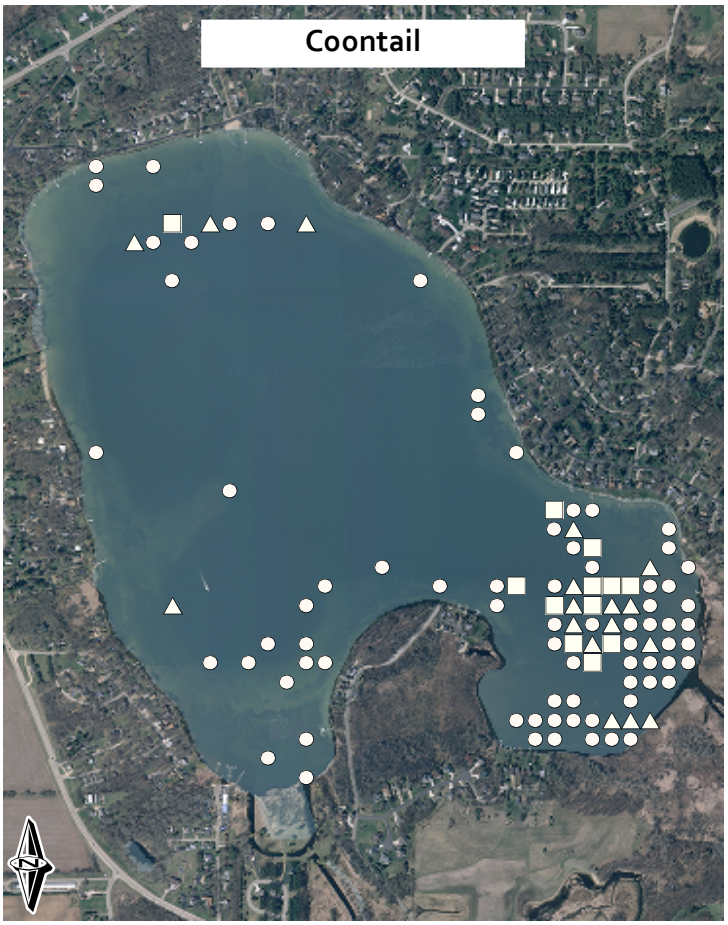
△ 2 ◊ Visual

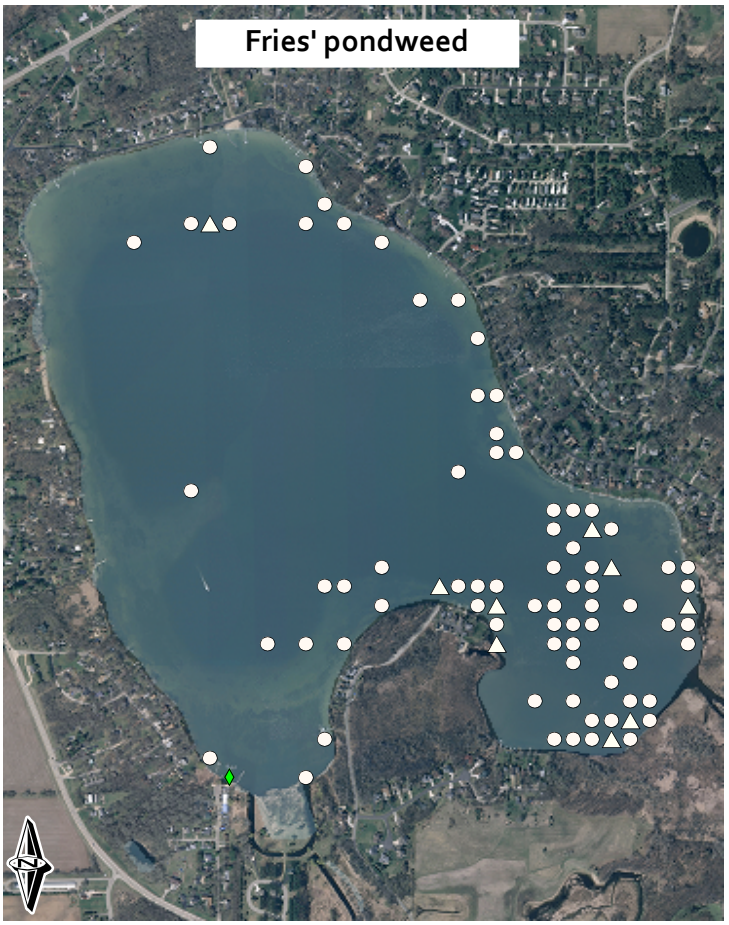
Lake Ripley - Jefferson County
June, 2011

Illustration of
Rake Fullness Rating









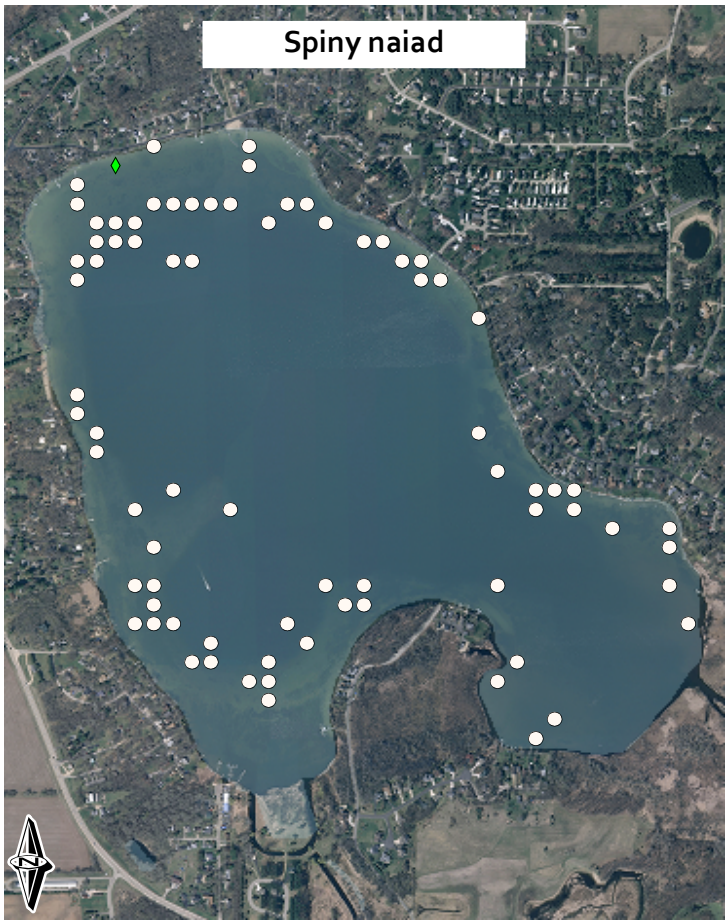
Total Rake Fullness Rating

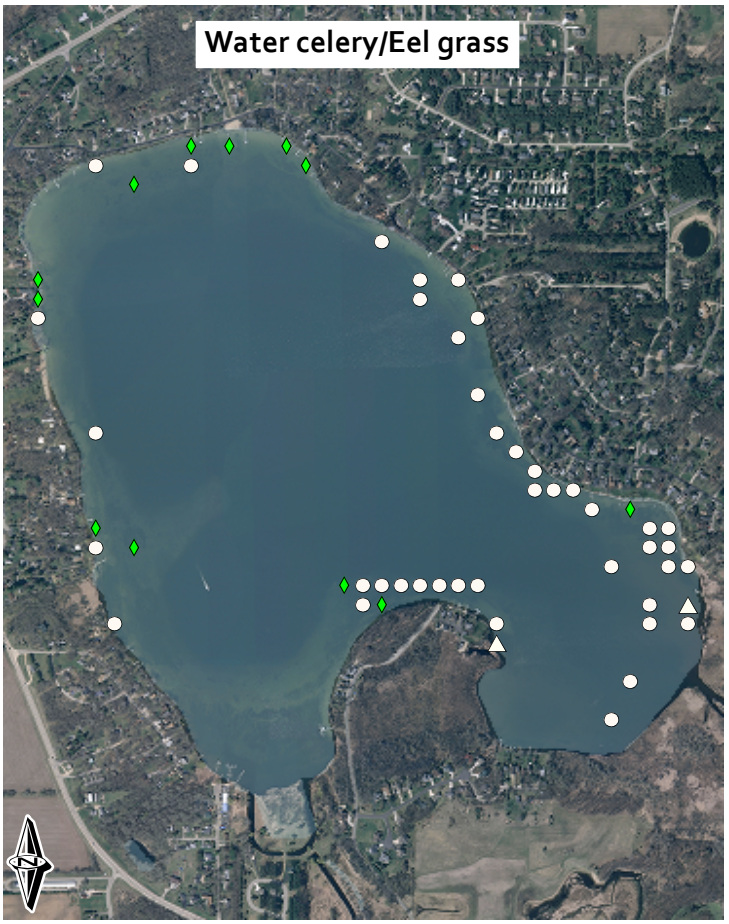
1 3

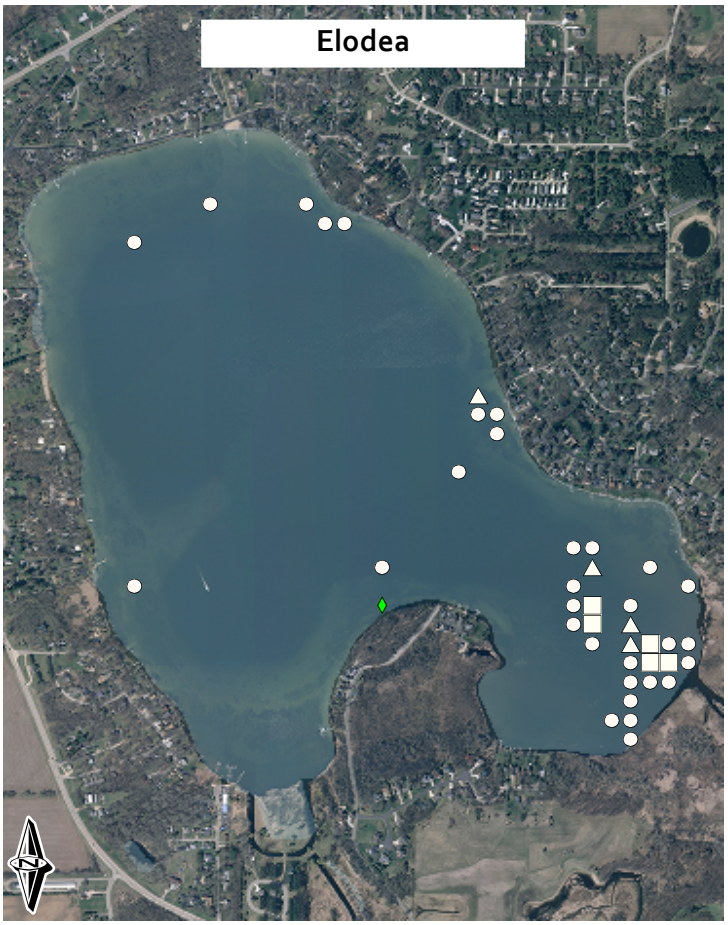
2 Visual

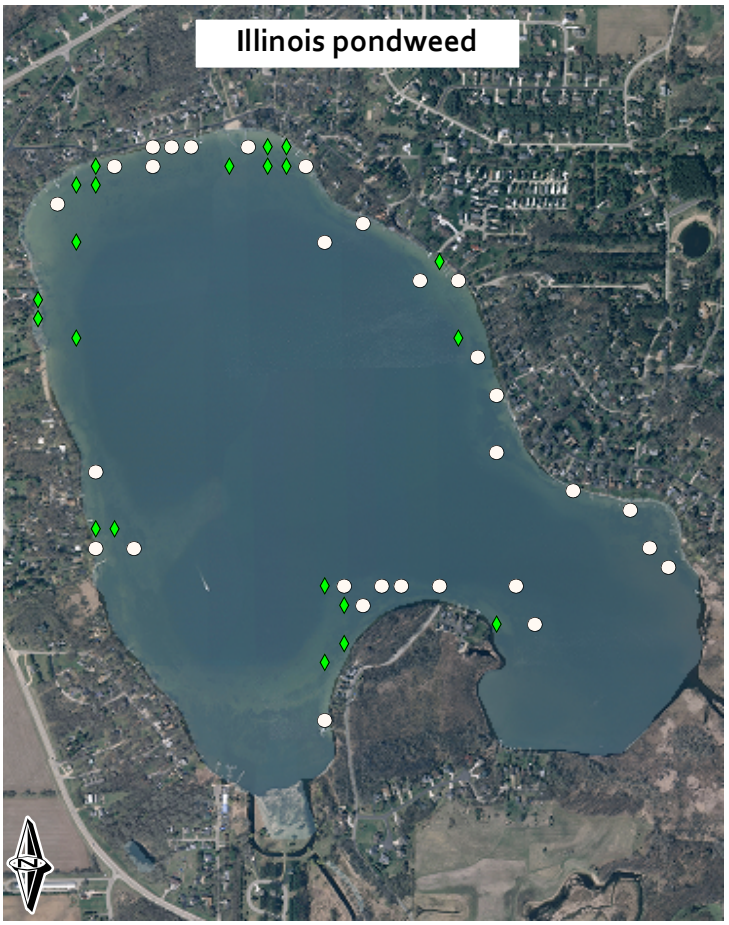
Lake Ripley - Jefferson County
June, 2011

Illustration of
Rake Fullness Rating









Total Rake Fullness Rating

○ 1 □ 3

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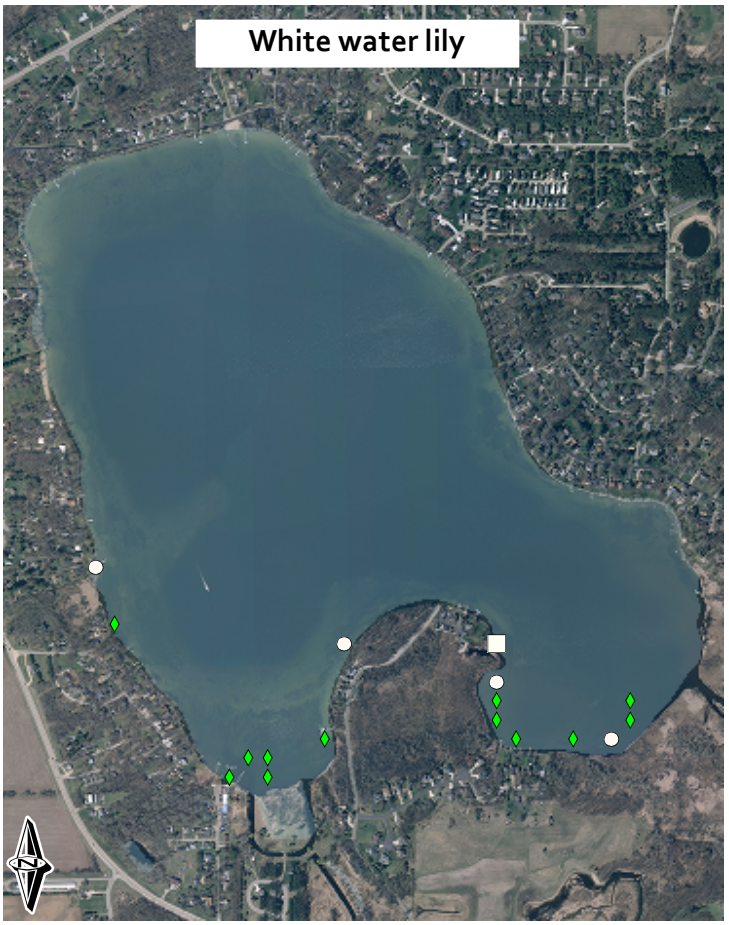
Lake Ripley - Jefferson County
June, 2011

Illustration of
Rake Fullness Rating



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Lake Ripley - Jefferson County
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1 2 3