

1250 Centennial Centre Blvd. • Hobart, WI 54155

Serving **Wisconsin, Michigan, Minnesota** and **Illinois**



Lower Menominee River Area of Concern Menekaunee Harbor Restoration Project Great Lakes Restoration Initiative Grant Grant/Project No. GL-00E01312-0

Prepared for

City of Marinette

1905 Hall Avenue

Marinette, Wisconsin 54143

Project No. 13775005

Authored By:

NES Staff

February 1, 2019

www.NESWI.com

TABLE OF CONTENTS

Project Overview	2
Goals, Objectives & Performance Standards	2
Goals	2
Objectives	2
Ecological Performance Standards	3
Summary Data	6
Methods	6
Vegetation/Floristic Diversity.....	6
Results.....	6
Vegetation/Floristic Diversity.....	6
Native Species Dominance	6
Invasive/Non-native Species.....	8
Conclusions & Recommendations	11

Tables

Table 1. Status of Ecological Performance Standard Achievement	4
Table 2. Vegetation Data Summary.....	7
Table 3. Plant Species Dominance.....	7
Table 4. Invasive/Non-native Species Coverage (%).	9
Table 5. Wildlife Observations	11

Figures

- Figure 1. Project Location
- Figure 2. Vegetation Community Zones & Habitat Structures
- Figure 3. Photo Points & Track Log

Appendices

- Appendix A – Vegetation Survey Data
- Appendix B - Timed-Meander Sampling Protocol
- Appendix C – Photo Log

Project Overview

NES Ecological Services (NES) – A Division of Robert E. Lee and Associates, Inc. (REL), was contracted by the City of Marinette to provide vegetation monitoring services at Menekaunee Harbor located in Sections 4 & 9, T30N, R24E, City of Marinette, Marinette County, Wisconsin (Figure 1). The City began restoration at Menekaunee Harbor (herein referred to as the “Harbor”) as part of a Great Lakes Restoration Initiative (GLRI) Grant to restore the Lower Menominee River Area of Concern (AOC). In the summer of 2015 NES/REL finalized a Restoration Plan for the Harbor and the Quality Assurance Project Plan (QAPP) was signed in October 2015. The Project area is approximately 16.77 acres in size and is designed to encompass 1.0 acre of emergent aquatic, 1.07 acres of emergent aquatic – wild rice (redefined in 2017 due to higher water levels), 0.05 acres of ephemeral pool, 0.32 acres of mesic to wet-mesic prairie, 0.82 acres of northern sedge meadow, 1.22 acres of wet mesic forest, 4.07 acres of open water (redefined in 2017 due to higher water levels), 0.32 acres of prairie, 0.51 acres of shrub-carr and 0.03 acres of submergent aquatic. Additional areas were added (0.06 acres of emergent/wet meadow, 0.22 acres of shady woodland and 7.08 acres of invasive species control) to the project site towards the end of the 2016 growing season due to acquiring additional funding (Figure 2).

NES ecologists conducted the third year of monitoring on June 20th, August 30th and September 6th, 2018. An additional trip was made on December 10th to survey the microhabitat structures (bat houses, osprey nesting platform, screech owl nest boxes, tree swallow/eastern bluebird boxes & wood duck boxes). The completion and submittal of this monitoring report (Year 3), satisfies the requirements outlined in the QAPP. Report submittals are required for three consecutive post-construction growing seasons.

Goals, Objectives & Performance Standards

Goals

The purpose of the Menekaunee Harbor ecological restoration is to restore native vegetation and habitat within a degraded wetland complex. Per the QAPP, the goals of the site are as follows:

- Long-term protection is in place for natural areas and wetlands within the AOC.
- Nesting populations of a diverse array of wetland-dependent and riparian-associated birds are consistently present within the AOC.
- The lake sturgeon (*Acipenser fulvescens*) population is enhanced.
- Diverse and functional native fish and mussel assemblages are present in the AOC that sustain natural recruitment.
- A healthy and diverse native vegetation community has been restored.

Objectives

In support of these goals, the objectives and related target criteria of this restoration are as follows:

1. Restore benthic habitats for use by invertebrates and native fish species, which historically utilized the harbor including: walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), muskellunge (*Esox masquinongy*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), northern pike (*Esox lucius*), and bluegill (*Lepomis macrochirus*).
 - a) Eliminate contaminated sediments and establish water depths averaging 6-7 feet.
 - b) Install fish sticks, log structures, woody debris and rock structures to increase cover

- and feeding opportunities.
- c) Establish small populations of submergent native vegetation in the harbor.
- d) Eliminate and control invasive species within emergent aquatic communities, while establishing native plants to provide spawning habitat.
- 2. Establish healthy and diverse native vegetation communities.
 - a) Restore/create community types found to be high priority communities within the Northern Lake Michigan Coastal Ecological Landscape.
 - b) Install a variety of ferns, grasses, sedges, forbs, shrubs, and trees currently and historically found within Marinette County. Wild rice (*Zizania palustris*) was historically found within the Menominee River; therefore, an attempt will be made to re-establish a viable population.
 - c) Increase plant diversity by adding a few species typically found more often within southern Wisconsin to account for temperature increases due to global climate shifts.
 - d) Absolute cover of invasive species will be < 15% within each community type.
- 3. Restore wetland and upland habitat for use by invertebrates, amphibians, reptiles, mammals and birds.
 - a) Native vegetation capable of providing a variety of food and cover will be established throughout the restored/created communities.
 - b) Existing snags will be left and protected to provide food sources and potential future nesting sites.
 - c) Rock and brush piles will be added to provide cover.
 - d) Downed woody debris will be placed in the emergent aquatic and wet meadow communities to provide sites for loafing and basking.
 - e) Nesting boxes and platforms will be installed to increase suitable nesting sites.
 - f) Bat houses will be erected to provide roosting sites.

Over the course of the monitoring period it is expected that site functions will improve in all of the above categories.

Ecological Performance Standards

Performance standards are the measures utilized to determine whether desired objectives regarding the overall mitigation goal have been met. Post-construction monitoring activities are performed throughout the duration of a project to evaluate progress toward achieving the functional objectives. The below performance standards in Table 1, as outlined in the approved QAPP, will be used to verify the success of the emergent aquatic, emergent aquatic- wild rice, open water & submergent aquatic, ephemeral pool, mesic to wet mesic prairie & prairie, northern sedge meadow, wet mesic forest, and shrub-carr communities.

Table 1. Status of Ecological Performance Standard Achievement

Ecological Performance Standards (PS) For Year Two	PS Achievement			Monitoring Results			Discussion of Monitoring Results/Trends
	2016	2017	2018				
Aerial coverage of invasive, non-native species such as giant reed grass, reed canary grass, cattail spp., purple loosestrife and spotted knapweed will not be >5% after two years.	Y	Y	Y	Invasive, non-native species	% Cover	% Relative Cover	The five main invasive species of concern currently have <5% total coverage within the project area.
				Giant reed grass	0.125	0.08	
				Reed canary grass	0.89	0.60	
				Cattail spp.	0.63	0.42	
				Purple loosestrife	0.63	0.42	
				Spotted knapweed	0.22	0.15	
After two years, >80% of the vegetative cover within the restoration site will be native species, <20% of the cover will be invasive, non-native species.	Y	Y	Y	Species	Percent cover		Vegetative cover is currently exceeding the 80% minimum native species cover after three years. <i>Calamagrostis canadensis</i> (blue-joint grass), <i>Elodea canadensis</i> (Canadian waterweed), a submergent aquatic, <i>Schoenoplectus tabernaemontani</i> (soft-stem bulrush) and <i>Acer negundo</i> (box elder) are accounting for the largest portion of vegetative cover of native species with 10.18, 9.25, 5.38 & 5.30% relative cover, respectively.
				Native	89.51		
				Invasive / Non-native	10.49		
Eighty five percent of the site will be vegetated within two years.	Y	Y	Y	Sum of average percent cover across the site = 148.60%			Based on the sum of average percent cover across all communities this criterion has been met. The lowest percent cover across all communities was the prairie at 119%.
520 of the 650 planted shrubs within the Shrub-Carr community will be present and healthy two years after installation.	Y	IP	N	30 of 650 shrubs were present and healthy within the shrub-carr community. Shrub count was gathered by surveying a portion (0.24 acres) of the shrub-carr community then averaging that number across the entire community (0.51 acres) using the total number of shrubs installed (650).			Due to a significant water level increase, the majority of shrubs installed within the shrub-carr community did not survive. However the community is in excellent shape regarding native species dominance.
800 of the 1,000 planted trees and shrubs within the Wet Mesic Forest community will be present and healthy after two years of installation.	Y	IP	N	352 of 1,000 trees and shrubs were present and healthy within the wet mesic forest community. Tree and shrub count was gathered by surveying a portion (0.35 acres) of the wet mesic forest zone then averaging that number across the entire community (1.22 acres) using the total number of trees and shrubs installed (1,000).			Due to a significant water level increase, the majority of trees and shrubs installed within the wet mesic forest community did not survive. However the community is in excellent shape regarding native species dominance.
The Open Water with Submergent Vegetation community shall have a minimum of 5 native species present.	Y	Y	Y	This community had 14 native species identified during the vegetation survey			Planted species along with naturally occurring species allowed this performance standard to be met.
The Emergent Aquatic, Northern Sedge Meadow, Shrub-Carr, Wet Mesic Forest and Mesic to Wet Mesic Prairie & Prairie communities shall each have a minimum of 15 native, non-invasive species present.	P	Y	Y	Community	Number of Native, Non-invasive Species		All communities for this performance standard currently meet the goal.
				Emergent Aquatic & Emergent Aquatic –Wild Rice	37		
				Northern Sedge Meadow	47		
				Shrub-Carr	52		
				Wet-Mesic Forest, Ephemeral Pool & Mesic to Wet-Mesic Prairie	87		
				Prairie	41		

Table 1. Continued

Ecological Performance Standards (PS) For Year Two	PS Achievement			Monitoring Results				Discussion of Monitoring Results/Trends
	2016	2017	2018					
To ensure the restored communities have natural significance, the floristic quality index (FQI) and Coefficient of Conservatism (Mean C) for each shall be ≥ 22 and ≥ 3.8, respectively, after two years. FQI values will be calculated utilizing all species present: non-native species will be assigned a value of zero.	P	P	P	Community	FQI	Mean C		The prairie & open water w/submergent veg communities have not met the criteria for this performance standard. However, the prairie did trend positively in regards to both FQI (13.42 to 15.90) and mean C (1.43 to 1.90) since 2017. Because this community was established from bare soil and seed it will take more time to become established. Although the prairie is not currently meeting the standard it is trending correctly and should meet the standard in the near future. The open water w/submergent veg stayed relatively the same regarding FQI and mean C since 2017 (21.00 to 19.51 & 5.25 to 5.21, respectively). The open water w/submergent veg community is only short of the FQI standard. The FQI is high however and should meet the standard soon.
				Emergent Aquatic & Emergent Aquatic – Wild Rice	27.96	4.37		
				Northern Sedge Meadow	31.20	4.33		
				Shrub-Carr	32.32	4.28		
				Wet-Mesic Forest, Ephemeral Pool & Mesic to Wet-Mesic Prairie	38.69	3.89		
				Prairie	15.90	1.90		
				Open Water w/Submergent Veg	19.51	5.21		
Seven of the fifteen nesting and roosting structures shall be utilized or occupied annually by year three.	IP	IP	Y	7 tree swallow nest boxes, 2 screech owl nest boxes and 2 wood duck nest boxes were identified as utilized or occupied while 2 Bat houses, 1 wood duck box and the osprey platform were identified as not being utilized or occupied.				Based on the monitoring results there were 11 utilized or occupied structures and 4 that were not utilized or occupied. As time continues and with further development of the site, continued use of nesting and roosting structures should continue and increase.
Twenty avian species, five species of reptiles and amphibians, and five mammal species will be recorded, either through direct observation, calls or sign left by the species, utilizing the site after three years.	IP	IP	Y	Species Type	2016	2017	2018	Based on the information in Table 5 there were 23 different avian species, 5 different herptiles and 5 different mammals recorded over the 3 year monitoring period.
				Avian	9	9	15	
				Herptiles	3	3	4	
				Mammals	3	3	3	

NA = Not Applicable

IP = In Progress

P = Performance Standard is Partially Met

Y = Performance Standard is Met

N = Performance Standard is Not Met

Summary Data

Methods

Vegetation/Floristic Diversity

Meander surveys (Figure 3) were conducted within the project area to gather a representative sample of the floristic diversity of each plant community. Surveys were completed between the months of June and September to compile a list of plant species and their associated coverages found within each community. A comprehensive species list of the entire site can be found in Appendix A.

In 2018 NES used the timed-meander sampling protocol for vegetation monitoring developed by the Wisconsin Department of Natural Resources (Appendix B). On June 20th, August 30th and September 6th timed meanders were conducted in the wet mesic forest, shrub-carr, emergent aquatic, emergent aquatic – wild rice, northern sedge meadow, submergent aquatic, open water, mesic to wet-mesic prairie, prairie, ephemeral pond and two newly added zones (shady woodland planting & emergent/wet meadow planting). Additionally, the invasive species control area was surveyed to document the presence and cover of invasive species within its boundaries.

Due to the similarity of species in the herbaceous layer and the wet mesic forest being in the early stages of development, NES combined the wet-mesic forest, ephemeral pool and mesic to wet-mesic prairie community data. Additionally, due to the similarity of species present the emergent aquatic and emergent aquatic – wild rice community data was also combined.

Results

Vegetation/Floristic Diversity

A list of species found during the meander surveys and a summary of each community type can be found in Appendix A. These data were used to compute the information reported in Table 2 below. A total of 237 plant species were recorded during the 2018 surveys.

Photos (Appendix C) documenting existing site conditions within each community type were taken throughout the site (Figure 3).

Native Species Dominance

All communities had a greater coverage of native plant species. Since 2017 there are an additional 76 native species and the percent native coverage has remained relatively the same across the entire site (91.39% in 2017 & 89.51% in 2018). All dominant species are native in each of the communities that were surveyed with the exception of the Emergent/Wet Meadow planting around the pond where one of the 13 dominant species was non-native (*Agrostis gigantea*). Table 3 contains a list of dominant species found within the Harbor communities. Additional information pertaining to the percent areal coverage of native and invasive species can be found in the community summary data (Appendix A).

Table 2. Vegetation Data Summary.

Community	# Total Species	# Native Species	FQI	Mean C	% Native Coverage	% Invasive Species Coverage
Open Water & Submergent Aquatic	14	14	19.51	5.21	100.00	0.0
Emergent Aquatic & Emergent Aquatic – Wild Rice	41	37	27.96	4.37	97.98	2.02
Northern Sedge Meadow	52	47	31.20	4.62	97.14	2.86
Shrub-Carr	57	52	32.32	4.28	96.00	4.00
Wet-Mesic Forest, Ephemeral Pool & Mesic to Wet-Mesic Prairie	99	87	38.69	3.89	93.64	6.36
Prairie	70	41	15.90	1.90	75.63	24.37
Shady Woodland Planting	85	69	35.03	3.80	90.06	9.94
Emergent/Wet Meadow Planting	66	54	26.34	3.24	86.09	13.91
Invasive Species Control Area	-	-	-	-	-	5.00
Entire Site	237	199	60.47	3.93	89.51	10.49

Table 3. Plant Species Dominance.

Community Type	Dominant Species
Open Water & Submergent Aquatic	<i>Myriophyllum sibiricum</i>
	<i>Stuckenia pectinata</i>
Emergent Aquatic & Emergent Aquatic – Wild Rice	<i>Elodea canadensis</i>
	<i>Schoenoplectus tabernaemontani</i>
Northern Sedge Meadow	<i>Calamagrostis canadensis</i>
	<i>Elodea canadensis</i>
Shrub-Carr	<i>Calamagrostis canadensis</i>
	<i>Carex aquatilis</i>
	<i>Carex lacustris</i>
	<i>Elodea canadensis</i>
	<i>Populus deltoides</i>

Table 3. Continued.

Community Type	Dominant Species
Wet-Mesic Forest, Ephemeral Pool & Mesic to Wet – Mesic Prairie	<i>Calamagrostis canadensis</i>
	<i>Carex aquatilis</i>
	<i>Carex bebbii</i>
	<i>Carex hystericina</i>
	<i>Carex vulpinoidea</i>
	<i>Juncus effusus</i>
	<i>Juncus tenuis</i>
	<i>Populus deltoides</i>
	<i>Schoenoplectus tabernaemontani</i>
	<i>Juncus balticus</i>
	<i>Solidago canadensis</i>
Prairie	<i>Conyza canadensis</i>
	<i>Monarda fistulosa</i>
	<i>Ratbida pinnata</i>
	<i>Rudbeckia hirta</i>
	<i>Rudbeckia triloba</i>
	<i>Solidago canadensis</i>
	<i>Sorghastrum nutans</i>
	<i>Verbena hastata</i>
	<i>Zizia aurea</i>
Emergent/Wet Meadow Planting	<i>Agrostis gigantea</i>
	<i>Calamagrostis canadensis</i>
	<i>Carex aquatilis</i>
	<i>Carex hystericina</i>
	<i>Carex retrorsa</i>
	<i>Carex scoparia</i>
	<i>Carex vulpinoidea</i>
	<i>Glyceria striata</i>
	<i>Impatiens capensis</i>
	<i>Juncus tenuis</i>
	<i>Lemna minor</i>
	<i>Schoenoplectus tabernaemontani</i>
	<i>Sparganium americanum</i>
Shady Woodland Planting	<i>Acer negundo</i>
	<i>Adiantum pedatum</i>
	<i>Elymus hystrix</i>
	<i>Impatiens capensis</i>
	<i>Parthenocissus quinquefolia</i>
	<i>Cornus sericea</i>
	<i>Populus deltoides</i>

Invasive/Non-native Species

Based on the information in Table 4, there are currently 37 invasive and/or non-native species found across all communities with an overall coverage of 10.49%. The percent coverage of invasive species increased by 1.88% from 2017 to 2018. The increase in percent cover is not of great concern as this slight

jump could be accounted for within the margin of error from visual cover estimates from year to year. Please see the plot data sheets in Appendix A for specific sample plot percentages. Table 4 includes a list of all non-native species identified during plant surveys in 2018. Several of the species listed below often invade newly seeded sites such as the Prairie community which has the largest number of non-native species present; however, many of these biennial and perennial weeds quickly disappear with proper maintenance and native species establishment. Continued monitoring and management of non-native species will eliminate or suppress their threat to spread throughout the site.

Table 4. Invasive/Non-native Species Coverage (%).

Species		Community						
Common Name	Scientific Name	Northern Sedge Meadow	Shrub- Carr	WetMesic Forest	Prairie	Emergent Aquatic	Emergent/Wet Meadow	Shady Woodland
Alfalfa	<i>Medicago sativa</i>	-	-	-	0.85	-	-	-
Barnyard Grass	<i>Echinochloa crus-galli</i>	-	-	0.57	-	-		0.62
Bittersweet Nightshade	<i>Solanum dulcamara</i>	-	-	-	-	-	0.87	-
Bladder Campion	<i>Silene vulgaris</i>	-	-	-	0.85	-	-	-
Black Medic	<i>Medicago lupulina</i>	-	-	-	0.85	-	-	0.62
Bull Thistle	<i>Cirsium vulgare</i>	-	-	-	0.85	-	-	0.62
Butter-and-Eggs	<i>Linaria vulgaris</i>	-	-	-	0.85	-	-	-
Canada Thistle	<i>Cirsium arvense</i>	-	-	0.57	0.85	-		0.62
Common Burdock	<i>Arctium minus</i>	-	-	-		-	0.87	0.62
Common Daisy	<i>Leucantemum vulgare</i>	-	-	-	0.85	-	-	-
Common Mullein	<i>Verbascum thapsus</i>	-	-	-	0.85	-	-	0.62
Common Plantain	<i>Plantago major</i>	-	-	-	0.85	-	0.87	0.62
Common Reed	<i>Phragmites australis</i>	0.57	0.80	0.57	-	0.51	0.87	-
Curly Dock	<i>Rumex crispus</i>	-	0.80	-	0.85	-	-	-
Creeping Charlie	<i>Glechoma hereracea</i>	-	-	-	-	-	0.87	-
Dandelion	<i>Taraxacum officinale</i>	-	-	-	0.85	-	-	0.62
Birdsfoot Trefoil	<i>Lotus corniculatus</i>	-	-	-	0.85	-	-	-
Field Sow Thistle	<i>Sonchus arvensis</i>	-	-	0.57	0.85	-	-	0.62

Table 4. Continued

Common Name	Scientific Name	Northern Sedge Meadow	Shrub- Carr	WetMetic Forest	Prairie	Emergent Aquatic	Emergent/Wet Meadow Planting	Shady Woodland Planting
Fistulous Goat's-Beard	<i>Tragopogon dubius</i>	-	-	0.57	-	-	-	-
Foxtail Barley	<i>Hordeum jubatum</i>	-	-	-	0.84	-	-	-
Garlic Mustard	<i>Alliaria petiolata</i>	-		-	-	-	0.87	-
Glossy Buckthorn	<i>Frangula alnus</i>	-	-	0.57		-	-	-
Hoary-Alysum	<i>Berteroa incana</i>	-	-	-	0.84	-	-	-
Hybrid Cattail	<i>Typha x glauca</i>	0.57	0.80	0.57	-	0.51	0.87	-
Kentucky Bluegrass	<i>Poa pratensis</i>	-	-	-	0.84	-	0.87	0.62
Purple Loosestrife	<i>Lythrum salicaria</i>	0.57	0.80	0.57		0.51	0.87	-
Quackgrass	<i>Elymus repens</i>	-	-	-	0.84	-	-	0.62
Queen Anne's-Lace	<i>Daucus carota</i>	-	-	-	0.84	-	-	0.62
Red Clover	<i>Trifolium pretense</i>	-	-	-	0.85	-	-	-
Reed Canary Grass	<i>Phalaris arundinacea</i>	0.57	0.80	0.57	0.84	0.51	0.87	0.62
Redtop	<i>Agrostis gigantea</i>	-	-	0.57	0.84	-	4.35	-
Showy-Bush Honeysuckle	<i>Lonicera x bella</i>	-	-	-	0.84	-	0.87	-
Smooth Brome	<i>Bromus inermis</i>	-	-	-	0.84	-	-	0.62
Spotted Knapweed	<i>Centaurea maculosa</i>	-	-	-	0.84	-	-	-
Timothy	<i>Phleum pretense</i>	-	-	-	0.84	-	-	-
White Clover	<i>Trifolium repens</i>	-	-	0.57	0.85	-	-	0.62
Yellow foxtail	<i>Setaria pumila</i>	-	-	-	0.85	-	-	0.62

Wildlife Species

A total of 23 species were noted during the 2018 field season. There were three mammals (one new in 2018), five herptiles (two new in 2018) and fifteen avian species (14 new in 2018). Observations were noted when personnel were on-site for monitoring activities (Table 5).

Table 5. Wildlife Observations

Species		Year Observed		
Common Name	Scientific Name	2016	2017	2018
Mammals				
Little Brown Bat	<i>Myotis lucifugus</i>			
American Mink	<i>Neovision vision</i>			
Muskrat	<i>Ondatra zibethicus</i>			
White-tailed Deer	<i>Odocoileus virginianus</i>			
Raccoon	<i>Procyon lotor</i>			
Herptiles				
Eastern American Toad	<i>Bufo americanus americanus</i>			
Common Snapping Turtle	<i>Chelydra serpentina</i>			
Painted Turtle	<i>Chrysemys picta</i>			
Leopard Frog	<i>Lithobates pipiens</i>			
Garter Snake	<i>Thamnophis sirtalis</i>			
Birds				
Red-Winged Blackbird	<i>Agelaius phoeniceus</i>			
Wood Duck	<i>Aix sponsa</i>			
Mallard	<i>Anas platyrhynchos</i>			
Great Egret	<i>Ardea alba</i>			
Great Blue Heron	<i>Ardea herodias</i>			
Canada Goose	<i>Branta canadensis</i>			
Killdeer	<i>Charadrius vociferus</i>			
Northern Flicker	<i>Colaptes auratus</i>			
Bald Eagle	<i>Haliaeetus leucocephalus</i>			
Caspian Tern	<i>Hydroprogne caspia</i>			
Baltimore Oriole	<i>Icterus galbula</i>			
Herring Gull	<i>Larus argentatus</i>			
Ringed-bill Gull	<i>Larus delawarensis</i>			
Belted Kingfisher	<i>Megascops alcyon</i>			
Screech Owl	<i>Megascops asio</i>			
Osprey	<i>Pandion haliaetus</i>			
Grackle	<i>Quiscalus quiscula</i>			
American Yellow Warbler	<i>Setophaga petechia</i>			
Common Tern	<i>Stirna herundo</i>			
White-Breasted Nuthatch	<i>Sitta carolinensis</i>			
Tree Swallow	<i>Tachycineta bicolor</i>			
American Robin	<i>Turdus migratorius</i>			
Mourning Dove	<i>Zenaidura macroura</i>			

Conclusions & Recommendations

Overall, the condition of the Harbor three years after restoration is exceptional. All of the vegetation communities have greater than 90% native species coverage with the exception of the emergent/wet meadow planting (86.09%) and the prairie (75.63%). Although the prairie has lower native species coverage, it is not unusual since the community is still developing. A native coverage of 75.63% is considered good after 3 years of establishment because of the typical influx of weed species that emerge from the seed bank in the earlier years. Since restoration efforts included only seeding within this community, the number of annual, non-native species was expected to be higher during the first few years of establishment. As time progresses, this community will continue to develop greater native species coverage through succession. Continued monitoring and maintenance activities will also help ensure further development.

Although control has been very successful and invasive species coverage is limited to 10.49% throughout the entire project area including the invasive species treatment area. Species of greatest concern including reed canary grass, *Phragmites*, purple loosestrife, spotted knapweed and hybrid cattail each have coverages less than 1.0%; however, continued aggressive treatment throughout the upcoming growing seasons will be required to maintain these levels. Herbicide treatments and mowing operations should be conducted at the appropriate time of year to achieve best results. In some cases, maintenance activities should be conducted 2 or 3 times throughout the growing season in order to more effectively reduce populations. Invasive species control efforts will be minimal but critical moving forward in order to keep the invasive species of concern at bay and prevent any significant development of those species.

The new timed meander sampling protocol (adapted in 2017) appears to have been efficient in capturing the total number of species recorded for the harbor site. During the 2018 surveys a total of 237 species were recorded across all communities which is 76 and 109 more species than were recorded during the 2017 and 2016 surveys, respectively. Of those 237 species 37 are non-native, and of those only 5 are of greater concern (reed canary grass, *Phragmites*, hybrid cattail, purple loosestrife & spotted knapweed). The greater concern non-natives are currently under good control but will continue to need aggressive monitoring and treatments in order to maintain their suppression and inhibit their ability to become re-established.

In an attempt to re-establish wild rice (*Zizania aquatica*) within the Harbor, the original delineated area was modified in 2017 due to an unforeseen increase in water levels which was no longer conducive to the development of a wild rice plant community. The new planting zone was seeded with wild rice at a rate of 100 pounds/acre in the fall of 2017 and again in 2018. The new wild rice zone took exceptionally well to the 2017 seeding but will require continued seeding to become a self-sustaining population. Because the harbor system is more dynamic and less pristine than the typical location where you would find wild rice, additional years of seeding are required to reach the goal of a self-sustaining population where as a more pristine system would require less seeding to reach that goal.

Unforeseen, significant rises in water levels resulted in the loss of many of the planted woody species throughout the shrub-carr and wet mesic forest planting zones; therefore, performance standards regarding their establishment were not met. The unfortunate outcome reiterates that weather and site conditions will dictate the outcome of a restoration project no matter how much planning, preparation and maintenance goes into a project. Although not as many woody species survived as originally intended, shrubs and trees persist throughout the two communities and the native, herbaceous vegetation is thriving. As water levels recede, woody species will have the opportunity to expand and occupy those areas currently under water within the original designated, planting zones. Although not necessary, additional species could be planted at that time to increase diversity.

The shift in plant community zones and lack of woody species coverage should not reflect negatively on the overall outcome of the restoration activities completed within Menekaunee Harbor. The project resulted in the establishment of a healthy and diverse native vegetation community which increased wildlife use within the area, thus meeting the objectives and goals of the restoration project.

A

APPENDIX A

Vegetation Survey Data

SITE NAME: Menekaunee Harbor
COMMUNITY: Wet MesicForest, Ephemeral Pool, Mesic to Wet Mesic Prairie
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

173 100 162

1 1

ENTER SPECIES CODE (i.e. Carex stricta) CARSTR	ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant
abibab	1	0.578034682	Abies balsamea	balsam fir	5	0.01	0.01	0.03086	0.02890	FACW	Native	perennial	tree	-3	
acerub	1	0.578034682	Acer rubrum	red maple	3	0.01	0.01	0.01852	0.01734	FAC	Native	perennial	tree	0	
achmil	1	0.578034682	Achillea millefolium	common yarrow,	1	0.01	0.01	0.00617	0.00578	FACU	Native	perennial	forb	3	
agapau	1	0.578034682	Agalinis paupercula	small-flowered	7	0.01	0.01	0.04321	0.04046	OBL	Native	annual	forb	-5	
agr/gE	1	0.578034682	Agrostis gigantea	redtop	0	0	0.01	0.00000	0.00000	FACW	Introduced	perennial	grass	-3	
altri	1	0.578034682	Alisma triviale	northern water-	4	0.01	0.01	0.02469	0.02312	OBL	Native	perennial	semi-aquatic	-5	
altri	1	0.578034682	Alisma triviale	northern water-	4	0.01	0.01	0.02469	0.02312	OBL	Native	perennial	semi-aquatic	-5	
alnic	1	0.578034682	Alnus incana	speckled alder, tag	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	shrub	-3	
anecan	1	0.578034682	Anemone canadensis	Canada anemone	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	forb	-3	
ascinc	1	0.578034682	Asclepias incarnata	swamp milkweed	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	forb	-5	
ascyr	1	0.578034682	Asclepias syriaca	common	1	0.01	0.01	0.00617	0.00578	UPL	Native	perennial	forb	5	
betall	1	0.578034682	Betula alleghaniensis	yellow birch	7	0.01	0.01	0.04321	0.04046	FAC	Native	perennial	tree	0	
bidfro	1	0.578034682	Bidens frondosa	common beggar-	1	0.01	0.01	0.00617	0.00578	FACW	Native	annual	forb	-3	
calcan	25	14.45086705	Calamagrostis canadensis	blue-joint grass	5	0.15	0.14	0.77160	0.72254	OBL	Native	perennial	grass	-5	X
caraqu	2	2.89017341	Carex aquatilis	water sedge	7	0.03	0.03	0.21605	0.20231	OBL	Native	0	0	-5	X
carbeb	5	1.156069364	Carex bebbii	Bebb's sedge	4	0.01	0.01	0.04938	0.04624	OBL	Native	perennial	sedge	-5	X
carcom	1	0.578034682	Carex comosa	bristly sedge	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	sedge	-5	
carhys	5	2.89017341	Carex hystericina	bottlebrush sedge,	3	0.01	0.03	0.09259	0.08671	OBL	Native	perennial	sedge	-5	X
carlac	1	0.578034682	Carex lacustris	common lake	6	0.01	0.01	0.03704	0.03468	OBL	Native	perennial	sedge	-5	
carret	1	0.578034682	Carex retrorsa	deflexed	6	0.01	0.01	0.03704	0.03468	OBL	Native	perennial	sedge	-5	
carsco	1	0.578034682	Carex scarpaea	broom sedge	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	sedge	-3	
carvul	2	1.156069364	Carex vulpinoidea	brown fox sedge	2	0.01	0.01	0.02469	0.02312	OBL	Native	perennial	sedge	-5	X
cicmac	1	0.578034682	Cicuta maculata	spotted water-	6	0.01	0.01	0.03704	0.03468	OBL	Native	perennial	forb	-5	
cicrav	1	0.578034682	Cirsium arvense	Canada thistle,	0	0	0.01	0.00000	0.00000	FACU	Introduced	perennial	forb	3	
corser	1	0.578034682	Cornus sericea	red osier dogwood	3	0.01	0.01	0.01852	0.01734	FACW	Native	perennial	shrub	-3	
cypesc	1	0.578034682	Cyperus esculentus	field nut sedge	0	0.01	0.01	0.00000	0.00000	FACW	Native	0	0	-3	
echcru	1	0.578034682	Echinochloa crus-galli	barnyard grass,	0	0	0.01	0.00000	0.00000	FACW	Introduced	annual	grass	-3	
elephl	1	0.578034682	Eleocharis palustris	common spike-	6	0.01	0.01	0.03704	0.03468	OBL	Native	perennial	sedge	-5	
elycan	1	0.578034682	Elymus canadensis	Canada wild-rye,	4	0.01	0.01	0.02469	0.02312	FACU	Native	perennial	grass	3	
equarv	1	0.578034682	Equisetum arvense	field horsetail	1	0.01	0.01	0.00617	0.00578	FAC	Native	perennial	fern ally	0	
equarv	1	0.578034682	Equisetum arvense	field horsetail	1	0.01	0.01	0.00617	0.00578	FAC	Native	perennial	fern ally	0	
equhye	1	0.578034682	Equisetum hyemale	0	3	0.01	0.01	0.01852	0.01734	FACW	Native	perennial	fern ally	-3	
eristr	1	0.578034682	Erigeron strigosus	rough fleabane	2	0.01	0.01	0.01235	0.01156	FACU	Native	annual	forb	3	
eupper	1	0.578034682	Eupatorium perfoliatum	boneset	6	0.01	0.01	0.03704	0.03468	FACW	Native	perennial	forb	-3	
eutgra	1	0.578034682	Euthamia graminifolia	grass-leaved	4	0.01	0.01	0.02469	0.02312	FAC	Native	perennial	forb	0	
fraaln	1	0.578034682	Frangula alnus	glossy buckthorn	0	0	0.01	0.00000	0.00000	FAC	Introduced	perennial	shrub	0	
frapen	1	0.578034682	Fraxinus pennsylvanica	green ash, red ash	2	0.01	0.01	0.01235	0.01156	FACW	Native	perennial	tree	-3	
fravir	1	0.578034682	Fragaria virginiana	wild strawberry	1	0.01	0.01	0.00617	0.00578	FACU	Native	perennial	forb	3	
glystr	1	0.578034682	Glyceria striata	fowl manna grass	4	0.01	0.01	0.02469	0.02312	OBL	Native	perennial	grass	-5	
helaut	1	0.578034682	Helenium autumnale	common	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	forb	-3	
ilever	1	0.578034682	Ilex verticillata	common	7	0.01	0.01	0.04321	0.04046	FACW	Native	perennial	shrub	-3	
impcap	1	0.578034682	Impatiens capensis	orange jewelweed	2	0.01	0.01	0.01235	0.01156	FACW	Native	annual	forb	-3	
iriver	1	0.578034682	Iris versicolor	northern blue flag	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	forb	-5	
junbal	2	1.156069364	Juncus balticus	Baltic rush	5	0.01	0.01	0.06173	0.05780	OBL	Native	perennial	rush	-5	X
juneff	5	2.89017341	Juncus effusus	common rush, soft	4	0.03	0.03	0.12346	0.11561	OBL	Native	perennial	rush	-5	X
junnod	1	0.578034682	Juncus nodosus	joint rush	6	0.01	0.01	0.03704	0.03468	OBL	Native	perennial	rush	-5	
junten	2	1.156069364	Juncus tenuis	path rush	1	0.01	0.01	0.01235	0.01156	FAC	Native	perennial	rush	0	X
larlar	1	0.578034682	Larix laricina	larch, tamarack	8	0.01	0.01	0.04938	0.04624	FACW	Native	perennial	tree	-3	
latjap	1	0.578034682	Lathyrus japonicus	beach pea	9	0.01	0.01	0.05556	0.05202	FACU	Native	perennial	forb	3	
lobcar	1	0.578034682	Lobelia cardinalis	cardinal-flower	7	0.01	0.01	0.04321	0.04046	OBL	Native	0	0	-5	
lobsip	1	0.578034682	Lobelia siphilitica	great blue lobelia	5	0.01	0.01	0.03086	0.02890	FACW	Native	perennial	forb	-3	
lycame	1	0.578034682	Lycopus americanus	common water-	4	0.01	0.01	0.02469	0.02312	OBL	Native	perennial	forb	-5	
lytsal	1	0.578034682	Lythrum salicaria	purple loosestrife	0	0	0.01	0.00000	0.00000	OBL	Introduced	perennial	forb	-5	
mencan	1	0.578034682	Mentha canadensis	field mint, wild	3	0.01	0.01	0.01852	0.01734	FACW	Native	perennial	forb	-3	
myrgal	1	0.578034682	Myrica gale	meadow-fern,	9	0.01	0.01	0.05556	0.05202	OBL	Native	perennial	shrub	-5	
noscen	1	0.578034682	Onoclea sensibilis	sensitive fern	5	0.01	0.01	0.03086	0.02890	FACW	Native	perennial	fern	-3	
osmcin	1	0.578034682	Osmunda cinnamomea	cinnamon fern	7	0.01	0.01	0.04321	0.04046	0	Native	perennial	fern	X	
pedcan	1	0.578034682	Pedicularis canadensis	Canadian	8	0.01	0.01	0.04938	0.04624	FACU	Native	0	0	3	
phaarv	1	0.578034682	Phalaris arundinacea	reed canary grass	0	0	0.01	0.00000	0.00000	FACW	Introduced	perennial	grass	-3	
phraus	1	0.578034682	Phragmites australis	common reed	0	0	0.01	0.00000	0.00000	FACW	Introduced	perennial	grass	-3	
phvir	1	0.578034682	Physostegia virginiana	obedience plant	7	0.01	0.01	0.04321	0.04046	FACW	Native	0	0	-3	
picgla	1	0.578034682	Picea glauca	white spruce	7	0.01	0.01	0.04321	0.04046	FACU	Native	perennial	tree	3	
poapal	1	0.578034682	Poa polystris	marsh bluegrass	5	0.01	0.01	0.03086	0.02890	FACW	Native	perennial	grass	-3	
popdel	30	17.34104046	Populus deltoides	eastern	2	0.19	0.17	0.37037	0.34682	FAC	Native	perennial	tree	0	X
potans	1	0.578034682	Potentilla anserina	silver-weed	4	0.01	0.01	0.02469	0.02312	FACW	Native	0	0	-3	
potnat	1	0.578034682	Potamogeton natans	common	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	aquatic	-5	
pyciv	1	0.578034682	Physanthemum virginianum	common	6	0.01	0.01	0.03704	0.03468	FACW	Native	perennial	forb	-3	
quebic	1	0.578034682	Quercus bicolor	swamp white oak	7	0.01	0.01	0.04321	0.04046	FACW	Native	perennial	tree	-3	
quemac	1	0.578034682	Quercus macrocarpa	bur oak	5	0.01	0.01	0.03086	0.02890	FACU	Native	perennial	tree	3	
ransce	1	0.578034682	Ranunculus sceleratus	celery-leaf	3	0.01	0.01	0.01852	0.01734	OBL	Native	annual/perennial	forb	-5	
ribame	1	0.578034682	Ribes americanum	American black	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	shrub	-3	
saglat	1	0.578034682	Sagittaria latifolia	broad-leaved	3	0.01	0.01	0.01852	0.01734	OBL	Native	perennial	semi-aquatic	-5	
salamy	1	0.578034682	Salix amygdaloides	peach-leaved	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	tree	-3	
salint	1	0.578034682	Salix interior	sandbar willow	2	0.01	0.01	0.01235	0.01156	FACW	Native	perennial	shrub	-3	
salnig	1	0.578034682	Salix nigra	black willow	4	0.01	0.01	0.02469	0.02312	OBL	Native	perennial	tree	-5	
samcan	1	0.578034682	Sambucus canadensis	elderberry	3	0.01	0.01	0.01852	0.01734	FACU	Native	perennial	shrub	3	
schpun	1	0.578034682	Schoenoplectus pungens	common three-	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	sedge	-5	
schtab	5	2.89017341	Schoenoplectus tabernaemontani	soft-stem bulrush	4	0.03	0.03	0.12346	0.11561	OBL	Native	perennial	sedge	-5	X
sciact	1	0.578034682	Scirpus atrovirens	dark-green	3	0.01	0.01	0.01852	0.01734	OBL	Native	perennial	sedge	-5	
scugal	1	0.578034682	Scutellaria galericulata	common skullcap,	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	forb	-5	
skusua	1	0.578034682	Slum suave	hemlock water-	5	0.01	0.01	0.03086	0.02890	OBL	Native	perennial	forb	-5	
solcan	2	1.156069364	Solidago canadensis	Canadian	1	0.01	0.01	0.01235	0.01156	FACU	Native	perennial	forb	3	X
solgig	1	0.578034682	Solidago gigantea	giant goldenrod	3	0.01	0.01	0.01852	0.01734	FACW	Native	perennial	forb	-3	
sonarv	1	0.578034682	Sonchus olerensis	field sow-thistle	0	0	0.01	0.00000	0.00000	FACU	Introduced	perennial	forb	3	
sonumt	1	0.578034682	Sorghastrum nutans	yellow Indian	5	0.01	0.01	0.03086	0.02890	FACU	Native	perennial	grass	3	
spialb	1	0.578034682	Spiraea alba	white	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	shrub	-3	
spicer	1	0.578034682	Spiranthes cernua	nodding lady's-	5	0.01	0.01	0.03086	0.02890	FACW	Native	perennial	forb	-3	
symlan	1	0.578034682	Symphytichnum lanceolatum	lance-leaved	4	0.01	0.01	0.02469	0.02312	FACW	Native	perennial	forb	-3	
thuocc	1	0.578034682	Thuja occidentalis	northern white-	9	0.01	0.01	0.05556	0.052						

SITE NAME: Menekaunee Harbor
COMMUNITY: Emergent Aquatic, Emergent Aquatic - Wild Rice
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta CARSTR)		198	100	194	1 1											
ENTER COVER	Relative Cover	Latin Name		Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant	
alitri	1	0.505050505	Alisma triviale	northern water-plantain	4	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5		
calcan	1	0.505050505	Calamagrostis canadensis	blue-joint grass	5	0.01	0	#####	####	OBL	Native	perennial	grass	-5		
caraqu	2	1.01010101	Carex aquatilis	water sedge	7	0.01	0	#####	####	OBL	Native	0	0	-5		
carhys	1	0.505050505	Carex hystericina	bottlebrush sedge, porcupine sedge	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5		
carlac	2	1.01010101	Carex lacustris	common lake sedge	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5		
carvul	1	0.505050505	Carex vulpinoidea	brown fox sedge	2	0.01	0	#####	####	OBL	Native	perennial	sedge	-5		
cerdem	2	1.01010101	Ceratophyllum demersum	coon's-tail, hornwort	3	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5		
cicbul	1	0.505050505	Cicuta bulbifera	bulblet water-hemlock	7	0.01	0	#####	####	OBL	Native	perennial	forb	-5		
cimac	1	0.505050505	Cicuta maculata	spotted water-hemlock	6	0.01	0	#####	####	OBL	Native	perennial	forb	-5		
elepal	1	0.505050505	Eleocharis palustris	common spike-rush, marsh spike-	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5		
elocan	50	25.25252525	Elodea canadensis	Canadian waterweed, common	3	0.26	0.3	#####	####	OBL	Native	perennial	aquatic	-5	X	
eupper	1	0.505050505	Eupatorium perfoliatum	boneset	6	0.01	0	#####	####	FACW	Native	perennial	forb	-3		
iriver	1	0.505050505	Iris versicolor	northern blue flag	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5		
junbal	1	0.505050505	Juncus balticus	Baltic rush	5	0.01	0	#####	####	OBL	Native	perennial	rush	-5		
junten	1	0.505050505	Juncus tenuis	path rush	1	0.01	0	#####	####	FAC	Native	perennial	rush	0		
leeroy	1	0.505050505	Leersia oryzoides	rice cutgrass	3	0.01	0	#####	####	OBL	Native	perennial	grass	-5		
lemmin	1	0.505050505	Lemna minor	common duckweed	4	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5		
ludpal	1	0.505050505	Ludwigia palustris	marsh purslane, marsh seed-box,	4	0.01	0	#####	####	OBL	Native	perennial	forb	-5		
lycame	1	0.505050505	Lycopus americanus	common water-horehound	4	0.01	0	#####	####	OBL	Native	perennial	forb	-5		
lytsal	1	0.505050505	Lythrum salicaria	purple loosestrife	0	0	0	#####	####	OBL	Introduced	perennial	forb	-5		
myrsib	5	2.525252525	Myriophyllum sibiricum	common water-milfoil, short-spike	6	0.03	0	#####	####	OBL	Native	perennial	aquatic	-5		
najfle	1	0.505050505	Najas flexilis	Nodding water-nymph	6	0.01	0	#####	####	OBL	Native	annual	aquatic	-5		
nupvar	1	0.505050505	Nuphar variegata	bull-head pond-lily	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5		
nymodo	1	0.505050505	Nymphaea odorata	fragrant water-lily	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5		
phaaru	1	0.505050505	Phalaris arundinacea	reed canary grass	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3		
phraus	1	0.505050505	Phragmites australis	common reed grass	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3		
potfol	10	5.050505051	Potamogeton foliosus	leafy pondweed	6	0.05	0.1	#####	####	OBL	Native	0	0	-5		
potnat	2	1.01010101	Potamogeton natans	common pondweed	5	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5		
potnod	5	2.525252525	Potamogeton nodosus	long-leaf pondweed, long-leaved	7	0.03	0	#####	####	OBL	Native	perennial	aquatic	-5		
potper	1	0.505050505	Potamogeton perfoliatus	perfoliate pondweed	0	0.01	0	#####	####	OBL	Native	0	0	-5		
potric	5	2.525252525	Potamogeton richardsonii	Richardson's pondweed	5	0.03	0	#####	####	OBL	Native	perennial	aquatic	-5		
potzos	5	2.525252525	Potamogeton zosteriformis	flat-stem pondweed, flat-stemmed	6	0.03	0	#####	####	OBL	Native	perennial	aquatic	-5		
saglat	2	1.01010101	Sagittaria latifolia	broad-leaved arrowhead	3	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5		
schacu	1	0.505050505	Schoenoplectus acutus		0	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
schpun	1	0.505050505	Schoenoplectus pungens	common three-square bulrush	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5		
schtab	50	25.25252525	Schoenoplectus tabernaemontani	soft-stem bulrush	4	0.26	0.3	#####	####	OBL	Native	perennial	sedge	-5	X	
susua	1	0.505050505	Sium suave	hemlock water-parsnip, common	5	0.01	0	#####	####	OBL	Native	annual	forb	-5		
spaame	15	7.575757576	Sparganium americanum	American bur-reed	8	0.08	0.1	#####	####	OBL	Native	perennial	aquatic	-5		
stupec	2	1.01010101	Stuckenia pectinata	camb pondweed, sago pondweed	3	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5		
typgla	1	0.505050505	Typha X glauca	hybrid cat-tail, white cat-tail	0	0	0	#####	####	OBL	Introduced	perennial	semi-aquatic	-5		
zizpal	15	7.575757576	Zizania palustris	northern wild rice	8	0.08	0.1	#####	####	OBL	Native	annual	grass	-5		

Species Richness:	
Total Species	41
Native Species	37
Non-Native Species	4
Proportion Native Cover	90.24
Percent Cover Native	97.98
Percent Cover Non-Native	2.02

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	4.84
Unweighted FQI	29.43
Weighted Mean C (wC)	4.76
Weighted FQI (wFQIn)	28.94

Floristic Quality Metrics: All Species	
Unweighted Mean C	4.37
Unweighted FQIa	27.96
Weighted Mean C (wCa)	4.66
Weighted FQI (wFQIa)	29.85

Wetland Species:	
Mean W	-4.73
Native Wetland Species	37
Percent Native Wetland Species	90.24
Percent Cover Native Wetland Species	98
Percent Wetland Cover	100

Dominance	
Percent Total Aerial Coverage	198
50%	99
20%	39.6

SITE NAME: Menekaunee Harbor
COMMUNITY: Northern Sedge Meadow
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta- CA65TR)	ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant
altri	1	0.574712644	Alisma triviale	northern water-	4	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
bidcer	1	0.574712644	Bidens cernua	nodding beggar-	4	0.01	0	#####	####	OBL	Native	annual	forb	-5	
bolflu	1	0.574712644	Balboschoenus fluviatilis	river bulrush	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
calcan	50	28.73563218	Calamagrostis canadensis	blue-joint grass	5	0.29	0.3	#####	####	OBL	Native	perennial	grass	-5	
caraqu	20	11.49425287	Carex aquatilis	water sedge	7	0.12	0.1	#####	####	OBL	Native		0	0	-5
carcom	1	0.574712644	Carex comosa	bristly sedge	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carhys	1	0.574712644	Carex hystericina	bottlebrush	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carlac	5	2.873563218	Carex lacustris	common lake	6	0.03	0	#####	####	OBL	Native	perennial	sedge	-5	
carret	1	0.574712644	Carex retrorsa	deflexed	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carsco	1	0.574712644	Carex scoparia	broom sedge	4	0.01	0	#####	####	FACW	Native	perennial	sedge	-3	
cicbul	1	0.574712644	Cicuta bulbifera	bulblet water-	7	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
cicmac	2	1.149425287	Cicuta maculata	spotted water-	6	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
elepal	1	0.574712644	Eleocharis palustris	common spike-	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
elocan	40	22.98850575	Elodea canadensis	Canadian	3	0.24	0.2	#####	####	OBL	Native	perennial	aquatic	-5	
eupper	1	0.574712644	Eupatorium perfoliatum	boneset	6	0.01	0	#####	####	FACW	Native	perennial	forb	-3	X
glygra	1	0.574712644	Glyceria grandis	American manna	6	0.01	0	#####	####	OBL	Native	perennial	grass	-5	
irirver	1	0.574712644	Iris versicolor	northern blue	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
jundud	1	0.574712644	Juncus dudleyi	Dudley's rush	4	0.01	0	#####	####	FACW	Native	perennial	rush	-3	
juneff	1	0.574712644	Juncus effusus	common rush,	4	0.01	0	#####	####	OBL	Native	perennial	rush	-5	
junnod	1	0.574712644	Juncus nodosus	joint rush	6	0.01	0	#####	####	OBL	Native	perennial	rush	-5	
junten	1	0.574712644	Juncus tenuis	path rush	1	0.01	0	#####	####	FAC	Native	perennial	rush	0	
leeroy	2	1.149425287	Leersia oryzoides	rice cutgrass	3	0.01	0	#####	####	OBL	Native	perennial	grass	-5	
lemmin	1	0.574712644	Lemna minor	common	4	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
lycame	1	0.574712644	Lycopus americanus	common water-	4	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
lysthy	1	0.574712644	Lysimachia thyrsiflora	tufted loosestrife	7	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
lytsal	1	0.574712644	Lythrum salicaria	purple loosestrife	0	0	0	#####	####	OBL	Introduced	perennial	forb	-5	
mencan	1	0.574712644	Mentha canadensis	field mint, wild	3	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
mysrib	2	1.149425287	Myriophyllum sibiricum	common water-	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
najfle	1	0.574712644	Najas flexilis	Nodding water-	6	0.01	0	#####	####	OBL	Native	annual	aquatic	-5	
nupvar	1	0.574712644	Nuphar variegata	bull-head pond-	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
phaaru	1	0.574712644	Phalaris arundinacea	reed canary grass	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
phraus	1	0.574712644	Phragmites australis	common reed	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
popdel	1	0.574712644	Populus deltoides	eastern	2	0.01	0	#####	####	FAC	Native	perennial	tree	0	
potfol	2	1.149425287	Potamogeton foliosus	leafy pondweed	6	0.01	0	#####	####	OBL	Native		0	0	-5
potnat	2	1.149425287	Potamogeton natans	common	5	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	X
potnat	2	1.149425287	Potamogeton natans	common	5	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
potnod	2	1.149425287	Potamogeton nodosus	long-leaf	7	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
potric	2	1.149425287	Potamogeton richardsonii	Richardson's	5	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
saglat	1	0.574712644	Sagittaria latifolia	broad-leaved	3	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
saglat	1	0.574712644	Sagittaria latifolia	broad-leaved	3	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
salint	1	0.574712644	Salix interior	sandbar willow	2	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
schpun	2	1.149425287	Schoenoplectus pungens	common three-	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
schtap	2	1.149425287	Schoenoplectus	soft-stem bulrush	4	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
sciatr	1	0.574712644	Scirpus atrovirens	dark-green	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
sciatr	1	0.574712644	Scirpus atrovirens	dark-green	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
sliusua	2	1.149425287	Slum suave	hemlock water-	5	0.01	0	#####	####	OBL	Native		perennial	forb	-5
spaame	2	1.149425287	Sparganium americanum	American bur-	8	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
spapec	1	0.574712644	Spartina pectinata	prairie cord grass	5	0.01	0	#####	####	FACW	Native	perennial	grass	-3	
stupec	1	0.574712644	Stuckenia pectinata	comb pondweed,	3	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
typgla	1	0.574712644	Typha X glauca	hybrid cat-tail,	0	0	0	#####	####	OBL	Introduced	perennial	semi-aquatic	-5	
zizpal	1	0.574712644	Zizania palustris	northern wild rice	8	0.01	0	#####	####	OBL	Native	annual	grass	-5	

Species Richness:	
Total Species	51
Native Species	47
Non-Native Species	4
Proportion Native Cover	92.16
Percent Cover Native	97.70
Percent Cover Non-Native	2.30

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	4.79
Unweighted FQI	32.82
Weighted Mean C (wC)	4.76
Weighted FQI (wFQIn)	32.62

Floristic Quality Metrics: All Species	
Unweighted Mean C	4.41
Unweighted FQIa	31.51
Weighted Mean C (wCa)	4.65
Weighted FQI (wFQIa)	33.20

Wetland Species:	
Mean W	-4.49
Native Wetland Species	47
Percent Native Wetland Species	92.16
Percent Cover Native Wetland Species	98
Percent Wetland Cover	100

Dominance	
Percent Total Aerial Coverage	174
50%	87
20%	34.8

SITE NAME: Menekaunee Harbor
COMMUNITY: Prairie
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex 10102a+ CARES)		ENTER COVER		1181009011												
Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/N/CNE)	Origin	Duration	Form	W	Dominant			
aceneg	1 0.847457627 Acer negundo	box elder	0	0.01	0	#####	####	FAC	Native	perennial	tree	0				
aceneg	1 0.847457627 Acer negundo	box elder	0	0.01	0	#####	####	FAC	Native	perennial	tree	0				
achmil	1 0.847457627 Achillea millefolium	common yarrow, milfoil	1	0.01	0	#####	####	FACU	Native	perennial	forb	3				
agrigig	1 0.847457627 Agrostis gigantea	redtop	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3				
ambart	1 0.847457627 Ambrosia artemisiifolia	short ragweed	0	0.01	0	#####	####	FACU	Native	annual	forb	3				
ascyir	1 0.847457627 Asclepias syriaca	common milkweed	1	0.01	0	#####	####	UPL	Native	perennial/perennial	forb	5				
berinc	1 0.847457627 Berteroa incana	hoary false madwort, hoary-	0	0	0	#####	####	0	Introduced	annual/perennial	forb	x				
bidfro	1 0.847457627 Bidens frondosa	common beggar-ticks	1	0.01	0	#####	####	FACW	Native	annual	forb	-3				
boucru	1 0.847457627 Bouteloua curtipendula	side-oats grama	6	0.01	0	#####	####	0	Native	0	0 x					
broine	1 0.847457627 Bromus inermis	Smooth brome	0	0	0	#####	####	UPL	Introduced	perennial	grass	5				
carvul	1 0.847457627 Carex vulpinoidea	brown fox sedge	2	0.01	0	#####	####	0BL	Native	perennial	sedge	-5				
censto	1 0.847457627 Centaurea stoebe	spotted knapweed	0	0	0	#####	####	UPL	Introduced	perennial/perennial	forb	5				
cicmac	1 0.847457627 Cicuta maculata	spotted water-hemlock	6	0.01	0	#####	####	0BL	Native	perennial	forb	-5				
ciraru	1 0.847457627 Cirsium arvense	Canada thistle, creeping thistle,	0	0	0	#####	####	FACU	Introduced	perennial	forb	3				
cirvul	1 0.847457627 Cirsium vulgare	bull thistle, common thistle	0	0	0	#####	####	FACU	Introduced	biennial	forb	3				
concan	2 1.694915254 Coryza canadensis	Canadian horseweed, fleabane,	0	0.02	0	#####	####	0	Native	0	0 x		x			
corame	1 0.847457627 Corylus americana	American hazelnut	5	0.01	0	#####	####	FACU	Native	perennial	shrub	3				
corpal	1 0.847457627 Coreopsis palmata	finger tickseed, prairie coreopsis,	8	0.01	0	#####	####	0	Native	perennial	forb	x				
corser	1 0.847457627 Cornus sericea	red osier dogwood	3	0.01	0	#####	####	FACW	Native	perennial	shrub	-3				
daiapur	1 0.847457627 Dalea purpurea	purple prairie-clover	7	0.01	0	#####	####	0	Native	0	0 x					
daucar	1 0.847457627 Daucus carota	Queen Anne's-lace	0	0	0	#####	####	UPL	Introduced	biennial	forb	5				
elycan	1 0.847457627 Elymus canadensis	Canada wild-rye, Great Plains	4	0.01	0	#####	####	FACU	Native	perennial	grass	3				
elyrep	1 0.847457627 Elymus repens	quackgrass	0	0	0	#####	####	FACU	Introduced	perennial	grass	3				
equaru	1 0.847457627 Equisetum arvense	field horsetail	1	0.01	0	#####	####	FAC	Native	perennial	fern ally	0				
equaru	1 0.847457627 Equisetum arvense	field horsetail	1	0.01	0	#####	####	FAC	Native	perennial	fern ally	0				
eristr	1 0.847457627 Erigeron strigosus	rough fleabane	2	0.01	0	#####	####	FACU	Native	annual	forb	3				
eusper	1 0.847457627 Eupatorium perfoliatum	boneset	6	0.01	0	#####	####	FACW	Native	perennial	forb	-3				
eugtra	1 0.847457627 Euthamia graminifolia	grass-leaved goldenrod	4	0.01	0	#####	####	FAC	Native	perennial	forb	0				
fravir	1 0.847457627 Fragaria virginiana	wild strawberry	1	0.01	0	#####	####	FACU	Native	perennial	forb	3				
helaut	1 0.847457627 Helenium autumnale	common sneezeweed	4	0.01	0	#####	####	FACW	Native	perennial	forb	-3				
helgro	1 0.847457627 Helianthus	saw-tooth sunflower	2	0.01	0	#####	####	FACW	Native	perennial	forb	-3				
helhel	1 0.847457627 Heliopsis helianthoides	false sunflower, ox-eye, sunflower-	5	0.01	0	#####	####	FACU	Native	perennial	forb	3				
horjub	1 0.847457627 Hordeum jubatum	foxtail barley, squirrel-tail grass	0	0	0	#####	####	FAC	Introduced	perennial	grass	0				
leuvul	1 0.847457627 Leucanthemum vulgare	common daisy, field daisy,	0	0	0	#####	####	UPL	Introduced	perennial	forb	5				
linvul	1 0.847457627 Linaria vulgaris	butter-and-eggs	0	0	0	#####	####	UPL	Introduced	perennial	forb	5				
lobspi	1 0.847457627 Lobelia siphilitica	great blue lobelia	5	0.01	0	#####	####	FACW	Native	perennial	forb	-3				
lonbel	1 0.847457627 Loniceria X bella	showy bush honeysuckle, white-	0	0	0	#####	####	FACU	Introduced	perennial	shrub	3				
lotcor	1 0.847457627 Lotus corniculatus	bird's-foot trefoil	0	0	0	#####	####	FACU	Introduced	perennial	forb	3				
medlup	1 0.847457627 Medicago lupulina	black medick	0	0	0	#####	####	FACU	Introduced	perennial/biennial	forb	3				
medsat	1 0.847457627 Medicago sativa	alfalfa	0	0	0	#####	####	UPL	Introduced	perennial	forb	5				
monfis	2 1.694915254 Monarda fistulosa	bee balm, wild bergamot	3	0.02	0	#####	####	FACU	Native	perennial	forb	3	x			
monpun	1 0.847457627 Monarda punctata	horsemint, spotted bee balm	3	0.01	0	#####	####	FACU	Native	0	0	5				
parqui	1 0.847457627 Parthenocissus	Virginia creeper, woodbine	5	0.01	0	#####	####	FACU	Native	perennial	vine	3				
pendig	1 0.847457627 Penstemon digitalis	false foxglove, foxglove beard-	0	0	0	#####	####	FAC	Introduced	perennial	forb	0				
pengra	1 0.847457627 Penstemon gracilis	lilac penstemon, slender beard-	5	0.01	0	#####	####	UPL	Native	perennial	forb	5				
phaaru	1 0.847457627 Phalaris arundinacea	reed canary grass	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3				
phlpra	1 0.847457627 Phleum pratense	timothy	0	0	0	#####	####	FACU	Introduced	perennial	grass	3				
plamaj	1 0.847457627 Plantago major	common plantain	0	0	0	#####	####	FAC	Introduced	perennial	forb	0				
poapra	1 0.847457627 Poa pratensis	Kentucky bluegrass	0	0	0	#####	####	FAC	Introduced	perennial	grass	0				
popdel	1 0.847457627 Populus deltoides	eastern cottonwood	2	0.01	0	#####	####	FAC	Native	perennial	tree	0				
potnor	1 0.847457627 Potentilla norvegica	Norwegian cinquefoil	0	0.01	0	#####	####	FAC	Native	annual/perennial	forb	0				
pycvir	1 0.847457627 Pycnanthemum	common mountain mint	6	0.01	0	#####	####	FACW	Native	perennial	forb	-3				
ratpin	25 21.18644068 Ratibida pinnata	pinnate prairie coneflower	4	0.28	0.2	#####	####	UPL	Native	perennial	forb	5	x			
rudhir	2 1.694915254 Rudbeckia hirta	black-eyed Susan	4	0.02	0	#####	####	FACU	Native	0	0	3	x			
rudtri	5 4.237288136 Rudbeckia triloba	brown-eyed Susan, three-lobed	4	0.06	0	#####	####	FACU	Native	0	0	3	x			
rumcru	1 0.847457627 Rumex crispus	curly dock	0	0	0	#####	####	FAC	Introduced	perennial	forb	0				
setpum	1 0.847457627 Setaria pumila	pigeon grass, yellow foxtail	0	0	0	#####	####	FAC	Introduced	annual	grass	0				
silvul	1 0.847457627 Silene vulgaris	bladder-campion, maiden's-tears	0	0	0	#####	####	0	Introduced	perennial	forb	x				
solcan	5 4.237288136 Solidago canadensis	Canadian goldenrod	1	0.06	0	#####	####	FACU	Native	perennial	forb	3	x			
solrig	1 0.847457627 Solidago rigida	rigid goldenrod, stiff goldenrod	5	0.01	0	#####	####	FACU	Native	perennial	forb	3				
sonarv	1 0.847457627 Sonchus arvensis	field sow-thistle	0	0	0	#####	####	FACU	Introduced	perennial	forb	3				
sornut	10 8.474576271 Sorghastrum nutans	yellow Indian grass	5	0.11	0.1	#####	####	FACU	Native	perennial	grass	3	x			
sympil	1 0.847457627 Symphyotrichum	frost aster	1	0.01	0	#####	####	FACU	Native	perennial	forb	3				
taroff	1 0.847457627 Taraxacum officinale	common dandelion	0	0	0	#####	####	FACU	Introduced	perennial	forb	3				
tripra	1 0.847457627 Trifolium pratense	red clover	0	0	0	#####	####	FACU	Introduced	perennial	forb	3				
trirep	1 0.847457627 Trifolium repens	white clover	0	0	0	#####	####	FACU	Introduced	perennial	forb	3				
verhas	2 1.694915254 Verbena hastata	blue vervain, simpler's-joy,	3	0.02	0	#####	####	FACW	Native	perennial/perennial	forb	-3	x			
vertha	1 0.847457627 Verbascum thapsus	common mullein	0	0	0	#####	####	UPL	Introduced	biennial	forb	5				
zizaur	5 4.237288136 Zizia aurea	golden alexanders	7	0.06	0	#####	####	FAC	Native	perennial	forb	0	x			

Species Richness:	
Total Species	69
Native Species	41
Non-Native Species	28
Proportion Native Cover	59.42
Percent Cover Native	76.27
Percent Cover Non-Native	23.73

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	3.24
Unweighted FQI	20.77
Weighted Mean C (wC)	3.69
Weighted FQI (wFQIn)	23.62

Floristic Quality Metrics: All Species	
Unweighted Mean C	1.93
Unweighted FQIa	16.01
Weighted Mean C (wCa)	2.81
Weighted FQI (wFQIa)	23.37

Wetland Species:	
Mean W	1.48
Native Wetland Species	18
Percent Native Wetland	26.09
Percent Cover Native Wetland	19
Percent Wetland Cover	26

Dominance	
Percent Total Aerial Coverage	118
50%	59
20%	23.6

SITE NAME: Menekaunee Harbor
COMMUNITY: Shrub Carr
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta- CAE5TR)	ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant
acerub	1	0.8	Acer rubrum	red maple	3	0.01	0	#####	####	FAC	Native	perennial	tree	0	
acesac	1	0.8	Acer saccharinum	silver maple, soft	2	0.01	0	#####	####	FACW	Native	perennial	tree	-3	
alitr1	1	0.8	Alisma triviale	northern water-	4	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
alninc	1	0.8	Alnus incana	speckled alder,	4	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
ascinc	1	0.8	Asclepias incarnata	swamp milkweed	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
bolflu	1	0.8	Bolboschoenus fluviatilis	river bulrush	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
calcan	40	32	Calamagrostis canadensis	blue-joint grass	5	0.33	0.3	#####	####	OBL	Native	perennial	grass	-5	X
caraqu	10	8	Carex aquatilis	water sedge	7	0.08	0.1	#####	####	OBL	Native	0	0	-5	X
carcom	1	0.8	Carex comosa	bristly sedge	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carhys	1	0.8	Carex hystericina	bottlebrush	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carlac	5	4	Carex lacustris	common lake	6	0.04	0	#####	####	OBL	Native	perennial	sedge	-5	X
carret	1	0.8	Carex retrorsa	deflexed	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carsco	1	0.8	Carex scoparia	broom sedge	4	0.01	0	#####	####	FACW	Native	perennial	sedge	-3	
cicmac	1	0.8	Cicuta maculata	spotted water-	6	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
coramo	1	0.8	Cornus amomum	silky dogwood	4	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
corser	1	0.8	Cornus sericea	red osier	3	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
elepala	1	0.8	Eleocharis palustris	common spike-	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
elocan	10	8	Elodea canadensis	Canadian	3	0.08	0.1	#####	####	OBL	Native	perennial	aquatic	-5	X
eutmac	1	0.8	Eutrochium maculatum	spotted Joe-Pye-	4	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
frapen	1	0.8	Fraxinus pennsylvanica	green ash, red	2	0.01	0	#####	####	FACW	Native	perennial	tree	-3	
glygra	1	0.8	Glyceria grandis	American manna	6	0.01	0	#####	####	OBL	Native	perennial	grass	-5	
illever	1	0.8	Ilex verticillata	common	7	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
iriver	1	0.8	Iris versicolor	northern blue	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
junbre	1	0.8	Juncus brevicaudatus	narrow-panicle	6	0.01	0	#####	####	OBL	Native	perennial	rush	-5	
jundud	1	0.8	Juncus dudleyi	Dudley's rush	4	0.01	0	#####	####	FACW	Native	perennial	rush	-3	
juneff	1	0.8	Juncus effusus	common rush,	4	0.01	0	#####	####	OBL	Native	perennial	rush	-5	
leeroy	2	1.6	Leersia oryzoides	rice cutgrass	3	0.02	0	#####	####	OBL	Native	perennial	grass	-5	
lobcar	1	0.8	Lobelia cardinalis	cardinal-flower	7	0.01	0	#####	####	OBL	Native	0	0	-5	
ludpal	1	0.8	Ludwigia palustris	marsh purslane,	4	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
lysthy	1	0.8	Lysimachia thyrsiflora	tufted loosestrife	7	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
lytsal	1	0.8	Lythrum salicaria	purple loosestrife	0	0	0	#####	####	OBL	Introduced	perennial	forb	-5	
mimir	1	0.8	Mimulus ringens	monkey-flower	6	0.01	0	#####	####	OBL	Native	0	0	-5	
nupvar	1	0.8	Nuphar variegata	bull-head pond-	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
nymodo	1	0.8	Nymphaea odorata	fragrant water-	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
onoson	1	0.8	Onoclea sensibilis	sensitive fern	5	0.01	0	#####	####	FACW	Native	perennial	fern	-3	
phaaru	1	0.8	Phalaris arundinacea	reed canary grass	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
phraus	1	0.8	Phragmites australis	common reed	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
popdel	5	4	Populus deltoides	eastern	2	0.04	0	#####	####	FAC	Native	perennial	tree	0	X
potnat	1	0.8	Potamogeton natans	common	5	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
potric	1	0.8	Potamogeton richardsonii	Richardson's	5	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
quebic	1	0.8	Quercus bicolor	swamp white oak	7	0.01	0	#####	####	FACW	Native	perennial	tree	-3	
ribame	1	0.8	Ribes americanum	American black	4	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
rumcri	1	0.8	Rumex crispus	curly dock	0	0	0	#####	####	FAC	Introduced	perennial	forb	0	
saglat	1	0.8	Sagittaria latifolia	broad-leaved	3	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
salamy	1	0.8	Salix amygdaloides	peach-leaved	4	0.01	0	#####	####	FACW	Native	perennial	tree	-3	
salbeb	1	0.8	Salix bebbiana	Bebb's willow	7	0.01	0	#####	####	FACW	Native	perennial	tree	-3	
salint	1	0.8	Salix interior	sandbar willow	2	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
schpun	1	0.8	Schoenoplectus pungens	common three-	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
schtat	2	1.6	Schoenoplectus	soft-stem bulrush	4	0.02	0	#####	####	OBL	Native	perennial	sedge	-5	
sciatr	1	0.8	Scirpus atrovirens	dark-green	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
scicyp	1	0.8	Scirpus cyperinus	wool-grass	4	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
siusua	2	1.6	Slum suave	hemlock water-	5	0.02	0	#####	####	OBL	Native	perennial	forb	-5	
spapec	1	0.8	Spartina pectinata	prairie cord grass	5	0.01	0	#####	####	FACW	Native	perennial	grass	-3	
spialb	1	0.8	Spiraea alba	white	4	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
typgla	1	0.8	Typha X glauca	hybrid cat-tail,	0	0	0	#####	####	OBL	Introduced	perennial	semi-aquatic	-5	
verhas	1	0.8	Verbena hastata	blue vervain,	3	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
zizpal	1	0.8	Zizania palustris	northern wild rice	8	0.01	0	#####	####	OBL	Native	annual	grass	-5	

Species Richness:	
Total Species	57
Native Species	52
Non-Native Species	5
Proportion Native Cover	91.23
Percent Cover Native	96.00
Percent Cover Non-Native	4.00

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	4.69
Unweighted FQI	33.84
Weighted Mean C (wC)	4.78
Weighted FQI (wFQIn)	34.43

Floristic Quality Metrics: All Species	
Unweighted Mean C	4.28
Unweighted FQIa	32.32
Weighted Mean C (wCa)	4.58
Weighted FQI (wFQIa)	34.61

Wetland Species:	
Mean W	-4.07
Native Wetland Species	52
Percent Native Wetland Species	91.23
Percent Cover Native Wetland Species	96
Percent Wetland Cover	100

Dominance	
Percent Total Aerial Coverage	125
50%	62.5
20%	25

SITE NAME: Menekaunee Harbor
COMMUNITY: Emergent/Wet Meadow Planting (Pond)
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta CARSTR)	ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant
aceneg	1	0.869565217	Acer negundo	box elder	0	0.01	0	#####	####	FAC	Native	perennial	tree	0	
achmil	1	0.869565217	Achillea millefolium	common yarrow,	1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
agapau	1	0.869565217	Agalinis paupercula	small-flowered	7	0.01	0	#####	####	OBL	Native	annual	forb	-5	
agrglg	5	4.347826087	Agrostis gigantea	redtop	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	X
alitri	2	1.739130435	Alisma triviale	northern water-	4	0.02	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
alitri	1	0.869565217	Alisma triviale	northern water-	4	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
allpet	1	0.869565217	Alliaria petiolata	garlic mustard	0	0	0	#####	####	FAC	Introduced	biennial	forb	0	
ambtri	1	0.869565217	Ambrosia trifida	giant ragweed	0	0.01	0	#####	####	FAC	Native	annual	forb	0	
arcmim	1	0.869565217	Arctium minus	common burdock,	0	0	0	#####	####	FACU	Introduced	biennial	forb	3	
ascinc	1	0.869565217	Asclepias incarnata	swamp milkweed	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
ascysr	1	0.869565217	Asclepias syriaca	common	1	0.01	0	#####	####	UPL	Native	perennial	forb	5	
bidcer	1	0.869565217	Bidens cernua	nodding beggar-	4	0.01	0	#####	####	OBL	Native	annual	forb	-5	
calcan	5	4.347826087	Calamagrostis canadensis	blue-joint grass	5	0.05	0	#####	####	OBL	Native	perennial	grass	-5	X
caraqu	2	1.739130435	Carex aquatilis	water sedge	7	0.02	0	#####	####	OBL	Native	0	0	-5	X
carcom	1	0.869565217	Carex comosa	bristly sedge	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carhys	5	4.347826087	Carex hystericina	bottlebrush	3	0.05	0	#####	####	OBL	Native	perennial	sedge	-5	X
carret	1	0.869565217	Carex retrorsa	deflexed	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	X
carasco	5	4.347826087	Carex scaparia	broom sedge	4	0.05	0	#####	####	FACW	Native	perennial	sedge	-3	X
carvul	2	1.739130435	Carex vulpinoidea	brown fox sedge	2	0.02	0	#####	####	OBL	Native	perennial	sedge	-5	X
corser	1	0.869565217	Cornus sericea	red osier	3	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	
cypesc	1	0.869565217	Cyperus esculentus	field nut sedge	0	0.01	0	#####	####	FACW	Native	0	0	-3	
echlob	1	0.869565217	Echinocystis lobata	balsam-apple,	2	0.01	0	#####	####	FACW	Native	annual	vine	-3	
elepal	1	0.869565217	Eleocharis palustris	common spike-	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
equarv	1	0.869565217	Equisetum arvense	field horsetail	1	0.01	0	#####	####	FAC	Native	perennial	fern ally	0	
eupper	1	0.869565217	Eupatorium perfoliatum	boneset	6	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
fravir	1	0.869565217	Fragaria virginiana	wild strawberry	1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
galbor	1	0.869565217	Galium boreale	northern	5	0.01	0	#####	####	FAC	Native	perennial	forb	0	
geuale	1	0.869565217	Geum alepicum	yellow avens	3	0.01	0	#####	####	FAC	Native	perennial	forb	0	
gliehed	1	0.869565217	Glechoma hederacea	creeping-Charlie	0	0	0	#####	####	FACU	Introduced	perennial	forb	3	
glystr	2	1.739130435	Glyceria striata	fowl manna grass	4	0.02	0	#####	####	OBL	Native	perennial	grass	-5	X
impcap	2	1.739130435	Impatiens capensis	orange	2	0.02	0	#####	####	FACW	Native	annual	forb	-3	X
iriver	1	0.869565217	Iris versicolor	northern blue	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
jundud	1	0.869565217	Juncus dudleyi	Dudley's rush	4	0.01	0	#####	####	FACW	Native	perennial	rush	-3	
juneff	1	0.869565217	Juncus effusus	common rush,	4	0.01	0	#####	####	OBL	Native	perennial	rush	-5	
junten	2	1.739130435	Juncus tenuis	path rush	1	0.02	0	#####	####	FACU	Native	perennial	rush	0	X
latjap	1	0.869565217	Lathyrus japonicus	beach pea	9	0.01	0	#####	####	FACU	Native	perennial	forb	3	
leecor	1	0.869565217	Leersia oryzoides	rice cutgrass	3	0.01	0	#####	####	OBL	Native	perennial	grass	-5	
lemmin	10	8.695652174	Lemna minor	common	4	0.1	0.1	#####	####	OBL	Native	perennial	aquatic	-5	X
lobsip	1	0.869565217	Lobelia siphilitica	great blue lobelia	5	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
lonxbl	1	0.869565217	Lonicera X bella	showy bush	0	0	0	#####	####	FACU	Introduced	perennial	shrub	3	
lycame	1	0.869565217	Lycopus americanus	common water-	4	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
lytsal	1	0.869565217	Lythrum salicaria	purple loosestrife	0	0	0	#####	####	OBL	Introduced	perennial	forb	-5	
mencan	1	0.869565217	Mentha canadensis	field mint, wild	3	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
osmcin	1	0.869565217	Osmunda cinnamomea	cinnamon fern	7	0.01	0	#####	####	0	Native	perennial	fern	x	
osmcia	1	0.869565217	Osmunda claytoniana	interrupted fern	6	0.01	0	#####	####	FAC	Native	perennial	fern	0	
osmreg	1	0.869565217	Osmunda regalis	royal fern	7	0.01	0	#####	####	0	Native	perennial	fern	x	
phaaru	1	0.869565217	Phalaris arundinacea	reed canary grass	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
phraus	1	0.869565217	Phragmites australis	common reed	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
phyvir	1	0.869565217	Physostegia virginiana	obedience plant	7	0.01	0	#####	####	FACW	Native	0	0	-3	
plamaj	1	0.869565217	Plantago major	common plantain	0	0	0	#####	####	FAC	Introduced	perennial	forb	0	
poapra	1	0.869565217	Poa pratensis	Kentucky	0	0	0	#####	####	FAC	Introduced	perennial	grass	0	
ranpen	1	0.869565217	Ranunculus pensylvanicus	Pennsylvania	5	0.01	0	#####	####	OBL	Native	annual/perennial	forb	-5	
ransce	1	0.869565217	Ranunculus sceleratus	celery-leaf	3	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
rubida	1	0.869565217	Rubus idaeus	wild red	3	0.01	0	#####	####	FAC	Native	perennial	shrub	0	
saglat	1	0.869565217	Sagittaria latifolia	broad-leaved	3	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
schpun	1	0.869565217	Schoenoplectus pungens	common three-	5	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
schtat	5	4.347826087	Schoenoplectus	soft-stem bulrush	4	0.05	0	#####	####	OBL	Native	perennial	sedge	-5	X
sciatr	1	0.869565217	Scirpus atrovirens	dark-green	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
scicyp	1	0.869565217	Scirpus cyperinus	wool-grass	4	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
solcan	1	0.869565217	Solidago canadensis	Canadian	1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
soldul	1	0.869565217	Solanum dulcamara	bittersweet	0	0	0	#####	####	FAC	Introduced	perennial	vine	0	
solgig	1	0.869565217	Solidago gigantea	giant goldenrod	3	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
spaame	15	13.04347826	Sparganium americanum	American bur-	8	0.15	0.1	#####	####	OBL	Native	perennial	aquatic	-5	X
stapal	1	0.869565217	Stachys palustris	hedge-nettle,	5	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
thadio	1	0.869565217	Thalictrum dioicum	early meadow-	7	0.01	0	#####	####	FACU	Native	perennial	forb	3	
typgla	1	0.869565217	Typha X glauca	hybrid cat-tail,	0	0	0	#####	####	OBL	Introduced	perennial	semi-aquatic	-5	

Species Richness:	
Total Species	66
Native Species	54
Non-Native Species	12
Proportion Native Cover	81.82
Percent Cover Native	86.09
Percent Cover Non-Native	13.91

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	3.96
Unweighted FQI	29.12
Weighted Mean C (wC)	4.51
Weighted FQI (wFQIn)	33.11

Floristic Quality Metrics: All Species	
Unweighted Mean C	3.24
Unweighted FQIa	26.34
Weighted Mean C (wCa)	3.88
Weighted FQI (wFQIa)	31.51

Wetland Species:	
Mean W	-2.47
Native Wetland Species	46
Percent Native Wetland Species	69.70
Percent Cover Native Wetland Species	79
Percent Wetland Cover	90

Dominance	
Percent Total Aerial Coverage	115
50%	57.5
20%	23

SITE NAME: Menekaunee Harbor
COMMUNITY: Open Water & Submergent Aquatic
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

	124	100	124																		1	1
ENTER SPECIES CODE (i.e. Carex stricta- CARSTR)	ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant							
cerdem	10	8.064516129	Ceratophyllum demersum	coon's-tail,	3	0.08	0.1	#####	####	OBL	Native	perennial	aquatic	-5								
elocan	10	8.064516129	Elodea canadensis	Canadian	3	0.08	0.1	#####	####	OBL	Native	perennial	aquatic	-5								
hetdub	1	0.806451613	Heteranthera dubia	water star-grass	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5								
mysrib	35	28.22580645	Myriophyllum sibiricum	common water-	6	0.28	0.3	#####	####	OBL	Native	perennial	aquatic	-5	X							
nupvar	1	0.806451613	Nuphar variegata	bull-head pond-	6	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5								
nymodo	15	12.09677419	Nymphaea odorata	fragrant water-	6	0.12	0.1	#####	####	OBL	Native	perennial	aquatic	-5								
potnat	30	24.19354839	Potamogeton natans	common	5	0.24	0.2	#####	####	OBL	Native	perennial	aquatic	-5	X							
potnod	2	1.612903226	Potamogeton nodosus	long-leaf	7	0.02	0	#####	####	OBL	Native	perennial	aquatic	-5								
potric	2	1.612903226	Potamogeton richardsonii	Richardson's	5	0.02	0	#####	####	OBL	Native	perennial	aquatic	-5								
potzos	5	4.032258065	Potamogeton zosteriformis	flat-stem	6	0.04	0	#####	####	OBL	Native	perennial	aquatic	-5								
saglat	1	0.806451613	Sagittaria latifolia	broad-leaved	3	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5								
spaame	1	0.806451613	Sparganium americanum	American bur-	8	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5								
stupec	1	0.806451613	Stuckenia pectinata	comb pondweed,	3	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5								
valame	10	8.064516129	Vallisneria americana	American	6	0.08	0.1	#####	####	OBL	Native	perennial	aquatic	-5								

Species Richness:		
Total Species	14	
Native Species	14	
Non-Native Species	0	
Proportion Native Cover	100.00	
Percent Cover Native	100	
Percent Cover Non-Native	0	

Floristic Quality Metrics: Native Species Only		
Unweighted Mean C	5.21	
Unweighted FQI	19.51	
Weighted Mean C (wC)	5.24	
Weighted FQI (wFQIn)	19.61	

Floristic Quality Metrics: All Species		
Unweighted Mean C	5.21	
Unweighted FQIa	19.51	
Weighted Mean C (wCa)	5.24	
Weighted FQI (wFQIa)	19.61	

Wetland Species:		
Mean W	-5.00	
Native Wetland Species	14	
Percent Native Wetland Species	100.00	
Percent Cover Native Wetland Species	100	
Percent Wetland Cover	100	

Dominance		
Percent Total Aerial Coverage	124	
50%	62	
20%	24.8	

SITE NAME: Menekaunee Harbor
COMMUNITY: Shady Woodland Planting
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta- CA65TR)		ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant
aceneg	60	37.26708075	Acer negundo	box elder		0	0.41	0.4	#####	####	FAC	Native	perennial	tree	0	X
actpac	1	0.621118012	Actaea pachypoda	doll's-eyes, white		6	0.01	0	#####	####	UPL	Native	perennial	forb	5	
actrub	1	0.621118012	Actaea rubra	red baneberry		7	0.01	0	#####	####	FACU	Native	perennial	forb	3	
adiped	2	1.242236025	Adiantum pedatum	maidenhair fern,		7	0.01	0	#####	####	FACU	Native	perennial	fern	3	X
agafoe	1	0.621118012	Agastache foeniculum	blue giant		6	0.01	0	#####	####	0	Native	perennial	forb	X	
agealt	1	0.621118012	Ageratina altissima	white snakeroot		1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
agealt	1	0.621118012	Ageratina altissima	white snakeroot		1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
alltri	1	0.621118012	Allium tricoccum	ramp, wild leek		6	0.01	0	#####	####	FACU	Native	perennial	forb	3	
ambart	1	0.621118012	Ambrosia artemisiifolia	short ragweed		0	0.01	0	#####	####	FACU	Native	annual	forb	3	
aneacu	1	0.621118012	Anemone acutiloba	sharp-lobed		7	0.01	0	#####	####	0	Native	perennial	forb	X	
aqucan	1	0.621118012	Aquilegia canadensis	Canadian		5	0.01	0	#####	####	FACU	Native	perennial	forb	3	
aranud	1	0.621118012	Aralia nudicaulis	wild sarsaparilla		6	0.01	0	#####	####	FACU	Native	perennial	forb	3	
ararac	1	0.621118012	Aralia racemosa	American		7	0.01	0	#####	####	FACU	Native	perennial	forb	3	
arcmim	1	0.621118012	Arctium minus	common burdock,		0	0	0	#####	####	FACU	Introduced	biennial	forb	3	
aritri	1	0.621118012	Arisaema triphyllum	Jack-in-the-pulpit		5	0.01	0	#####	####	FACU	Native	perennial	forb	-3	
asacan	1	0.621118012	Asarum canadense	Canadian wild-		7	0.01	0	#####	####	UPL	Native	perennial	forb	5	
asscyr	1	0.621118012	Asclepias syriaca	common		1	0.01	0	#####	####	UPL	Native	perennial	forb	5	
athflr	1	0.621118012	Athyrium filix-femina	common lady		5	0.01	0	#####	####	FAC	Native	perennial	fern	0	
blehir	1	0.621118012	Blephilia hirsuta	hairy pogoda-		7	0.01	0	#####	####	FACU	Native		0	3	
broine	1	0.621118012	Bromus inermis	Smooth brome		0	0	0	#####	####	UPL	Introduced	perennial	grass	5	
carpen	1	0.621118012	Carex pensylvanica	Pennsylvania		3	0.01	0	#####	####	0	Native	perennial	sedge	X	
carrose	1	0.621118012	Carex rosea	rosy sedge		4	0.01	0	#####	####	FACU	Native	perennial	sedge	3	
cautha	1	0.621118012	Caulophyllum thalictroides	blue cohosh,		8	0.01	0	#####	####	0	Native	perennial	forb	X	
cirarv	1	0.621118012	Cirsium arvense	Canada thistle,		0	0	0	#####	####	FACU	Introduced	perennial	forb	3	
cirvul	1	0.621118012	Cirsium vulgare	bull thistle,		0	0	0	#####	####	FACU	Introduced	biennial	forb	3	
clivul	1	0.621118012	Clinopodium vulgare	wild-basil		3	0.01	0	#####	####	0	Native	perennial	forb	X	
corfoe	1	0.621118012	Cornus foemina	gray dogwood		2	0.01	0	#####	####	FAC	Native	perennial	shrub	0	
corser	2	1.242236025	Cornus sericea	red osier		3	0.01	0	#####	####	FACW	Native	perennial	shrub	-3	X
daucar	1	0.621118012	Daucus carota	Queen Anne's-		0	0	0	#####	####	UPL	Introduced	biennial	forb	5	
diccuc	1	0.621118012	Dicentra cucullaria	Dutchman's-		7	0.01	0	#####	####	0	Native	perennial	forb	X	
dryint	1	0.621118012	Dryopteris intermedia	intermediate		7	0.01	0	#####	####	FAC	Native	perennial	fern	0	
drymar	1	0.621118012	Dryopteris marginalis	marginal shield		9	0.01	0	#####	####	FACU	Native	perennial	fern	3	
echcrs	1	0.621118012	Echinochloa crus-galli	barnyard grass,		0	0	0	#####	####	FACW	Introduced	annual	grass	-3	
echlob	1	0.621118012	Echinocystis lobata	balsam-apple,		2	0.01	0	#####	####	FACW	Native	annual	vine	-3	
elyfhs	2	1.242236025	Elymus hystrix	bottlebrush grass,		6	0.01	0	#####	####	FACU	Native	perennial	grass	3	X
elyrep	1	0.621118012	Elymus repens	quackgrass		0	0	0	#####	####	FACU	Introduced	perennial	grass	3	
erehie	1	0.621118012	Erechtites hieracifolius	fireweed		2	0.01	0	#####	####	UPL	Native	annual	forb	5	
eurnmac	1	0.621118012	Eurybia macrophylla	big-leaved aster,		4	0.01	0	#####	####	UPL	Native	perennial	forb	5	
eutpur	1	0.621118012	Eutrochium purpureum	purple Joe-Pye-		6	0.01	0	#####	####	FAC	Native	perennial	forb	0	
fravir	1	0.621118012	Fragaria virginiana	wild strawberry		1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
germac	1	0.621118012	Geranium maculatum	wild geranium		4	0.01	0	#####	####	FACU	Native	perennial	forb	3	
geufra	1	0.621118012	Geum fragarioides	barren-		6	0.01	0	#####	####	0	Native		0	0	X
impcap	10	6.211180124	Impatiens capensis	orange		2	0.07	0.1	#####	####	FACW	Native	annual	forb	-3	X
linbor	1	0.621118012	Linnaea borealis	twinflower		9	0.01	0	#####	####	FAC	Native	perennial	forb	0	
luzacu	1	0.621118012	Luzula acuminata	hairy wood rush		6	0.01	0	#####	####	FACU	Native		0	0	3
maican	1	0.621118012	Maianthemum canadense	Canada		5	0.01	0	#####	####	FAC	Native	perennial	forb	0	
malirac	1	0.621118012	Maianthemum racemosum	false Solomon's-		5	0.01	0	#####	####	FACU	Native		0	0	3
maiste	1	0.621118012	Maianthemum stellatum	starry false		5	0.01	0	#####	####	FAC	Native	perennial	forb	0	
matstr	1	0.621118012	Matteuccia struthiopteris	ostrich fern		5	0.01	0	#####	####	FACW	Native	perennial	fern	-3	
medlup	1	0.621118012	Medicago lupulina	black medick		0	0	0	#####	####	FACU	Introduced	annual/perennial	forb	3	
mervir	1	0.621118012	Mertensia virginica	eastern bluebells,		4	0.01	0	#####	####	FACW	Native	perennial	forb	-3	
mitdip	1	0.621118012	Mitella diphylla	bishop's-cap, two-		8	0.01	0	#####	####	FACU	Native	perennial	forb	3	
osmcin	1	0.621118012	Osmunda cinnamomea	cinnamon fern		7	0.01	0	#####	####	0	Native	perennial	fern	X	
osmcla	1	0.621118012	Osmunda claytoniana	interrupted fern		6	0.01	0	#####	####	FAC	Native	perennial	fern	0	
pancap	1	0.621118012	Panicum capillare	witch grass		1	0.01	0	#####	####	FAC	Native		0	0	0
parqui	2	1.242236025	Parthenocissus quinquefolia	Virginia creeper,		5	0.01	0	#####	####	FACU	Native	perennial	vine	3	X
phaaru	1	0.621118012	Phalaris arundinacea	reed canary grass		0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
phldiv	1	0.621118012	Phlox divaricata	forest phlox, wild		7	0.01	0	#####	####	FACU	Native		0	0	3
plamaj	1	0.621118012	Plantago major	common plantain		0	0	0	#####	####	FAC	Introduced	perennial	forb	0	
poapra	1	0.621118012	Poa pratensis	Kentucky		0	0	0	#####	####	FACU	Introduced	perennial	grass	0	
podpel	1	0.621118012	Podophyllum peltatum	May-apple, wild		4	0.01	0	#####	####	FACU	Native	perennial	forb	3	
polrep	1	0.621118012	Polemonium reptans	spreading Jacob's-		6	0.01	0	#####	####	FAC	Native		0	0	0
popdel	5	3.105590062	Populus deltoides	eastern		2	0.03	0	#####	####	FAC	Native	perennial	tree	0	X
prealb	1	0.621118012	Prenanthes alba	rattlesnake-root,		5	0.01	0	#####	####	0	Native	perennial	forb	X	
primea	1	0.621118012	Primula meadia	eastern shooting-		7	0.01	0	#####	####	0	Native	biennial/perennial	forb	0	X
ranabo	1	0.621118012	Ranunculus abortivus	little-leaf		1	0.01	0	#####	####	FAC	Native		forb	0	
rubida	1	0.621118012	Rubus idaeus	wild red		3	0.01	0	#####	####	FAC	Native	perennial	shrub	0	
samcan	1	0.621118012	Sambucus canadensis	elderberry		3	0.01	0	#####	####	FACU	Native	perennial	shrub	3	
sancan	1	0.621118012	Sanicula canadensis	Canadian black		6	0.01	0	#####	####	FACU	Native	biennial	forb	3	
setpum	1	0.621118012	Setaria pumila	pigeon grass,		0	0	0	#####	####	FAC	Introduced	annual	grass	0	
solcan	1	0.621118012	Solidago canadensis	Canadian		1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
solcan	1	0.621118012	Solidago canadensis	Canadian		1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
solfle	1	0.621118012	Solidago flexicaulis	broad-leaved		6	0.01	0	#####	####	FACU	Native	perennial	forb	3	
sonarv	1	0.621118012	Sanctus arvensis	field sow-thistle		0	0	0	#####	####	FACU	Introduced	perennial	forb	3	
symcor	1	0.621118012	Symphyotrichum cordifolium	common blue		6	0.01	0	#####	####	0	Native		0	0	X
symeri	1	0.621118012	Symphyotrichum ericoides	heath aster		4	0.01	0	#####	####	FACU	Native		0	0	3
sympil	1	0.621118012	Symphyotrichum pilosum	frost aster		1	0.01	0	#####	####	FACU	Native	perennial	forb	3	
taroff	1	0.621118012	Taraxacum officinale	common		0	0	0	#####	####	FACU	Introduced	perennial	forb	3	
thadio	1	0.621118012	Thalictrum dioicum	early meadow-		7	0.01	0	#####	####	FACU	Native	perennial	forb	3	
tiacor	1	0.621118012	Tiarella cordifolia	false miterwort,		10	0.01	0	#####	####	FACU	Native	perennial	forb	3	
trigra1	1	0.621118012	Trillium grandiflorum	large-flowered		6	0.01	0	#####	####	0	Native	perennial	forb	X	
trirep	1	0.621118012	Trifolium repens	white clover		0	0	0	#####	####	FACU	Introduced	perennial	forb	3	
urtdio	1	0.621118012	Urtica dioica	stinging nettle		1	0.01	0	#####	####	FAC	Native	perennial	forb	0	
uvugra	1	0.621118012	Uvularia grandiflora	large-flowered		7	0.01	0	#####	####	0	Native	perennial	forb	X	
vertha	1	0.621118012	Verbascum thapsus	common mullein		0	0	0	#####	####	UPL	Introduced	biennial	forb	5	

Species Richness:	
Total Species	85
Native Species	69
Non-Native Species	16
Proportion Native Cover	81.18
Percent Cover Native	90.06
Percent Cover Non-Native	9.94

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	4.68
Unweighted FQI	38.88
Weighted Mean C (wC)	2.55
Weighted FQI (wFQIn)	21.20

Floristic Quality Metrics: All Species	
Unweighted Mean C	3.80
Unweighted FQIa	35.03
Weighted Mean C (wCa)	2.30
Weighted FQI (wFQIa)	21.19

Wetland Species:	
Mean W	1.81
Native Wetland Species	21
Percent Native Wetland Species	24.71
Percent Cover Native Wetland Species	58
Percent Wetland Cover	61

Dominance	
Percent Total Aerial Coverage	161
50%	80.5
20%	32.2

SITE NAME: Menekaunee Harbor
COMMUNITY: Invasive Species
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

5		10		0		0		1								
ENTER SPECIES CODE (i.e. Carex stricta= CARSTR)	ENTER COVER	Daubenmire Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant	
allpet	1	2.5	Alliaria petiolata	garlic mustard	0	0	0.2	#####	####	FAC	Introduced	biennial	forb	0		
censto	1	2.5	Centaurea stoebe	spotted	0	0	0.2	#####	####	UPL	Introduced	biennial/perennial	forb	5		
phaaru	1	2.5	Phalaris arundinacea	reed canary grass	0	0	0.2	#####	####	FACW	Introduced	perennial	grass	-3		
phraus	2	2.5	Phragmites australis	common reed	0	0	0.4	#####	####	FACW	Introduced	perennial	grass	-3		

Species Richness:	
Total Species	4
Native Species	0
Non-Native Species	4
Proportion Native Cover	0.00
Percent Cover Native	0
Percent Cover Non-Native	5

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	#DIV/0!
Unweighted FQI	#DIV/0!
Weighted Mean C (wC)	0.00
Weighted FQI (wFQIn)	0.00

Floristic Quality Metrics: All Species	
Unweighted Mean C	0.00
Unweighted FQIa	0.00
Weighted Mean C (wCa)	0.00
Weighted FQI (wFQIa)	0.00

Wetland Species:	
Mean W	-0.25
Native Wetland Species	0
Percent Native Wetland Species	0.00
Percent Cover Native Wetland Species	0
Percent Wetland Cover	8

Dominance	
Percent Total Aerial Coverage	10
50%	5
20%	2

SITE NAME: Menekaunee Harbor
COMMUNITY: Site Summary (All communities & Invasive Species Control Area)
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta- CA65TR)	ENTER COVER	Relative Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland	Origin	Duration	Form	W	Dominant
										Indicator Status (MW/NCNE)					
abibai	0.125	0.084118439	Abies balsamea	balsam fir	5	0	0	#####	####	FACW	Native	perennial	tree	-3	
aceneg	7.875	5.299461642	Acer negundo	box elder	0	0.06	0.1	#####	####	FAC	Native	perennial	tree	0	
acerub	0.25	0.168236878	Acer rubrum	red maple	3	0	0	#####	####	FAC	Native	perennial	tree	0	
acesac	0.125	0.084118439	Acer saccharinum	silver maple, soft	2	0	0	#####	####	FACW	Native	perennial	tree	-3	
achmil	0.375	0.252355316	Achillea millefolium	common yarrow,	1	0	0	#####	####	FACU	Native	perennial	forb	3	
actpac	0.125	0.084118439	Actaea pachypoda	doll's-eyes, white	6	0	0	#####	####	UPL	Native	perennial	forb	5	
actrub	0.125	0.084118439	Actaea rubra	red baneberry	7	0	0	#####	####	FACU	Native	perennial	forb	3	
adiped	0.25	0.168236878	Adiantum pedatum	maidenhair fern,	7	0	0	#####	####	FACU	Native	perennial	fern	3	
agafoe	0.125	0.084118439	Agastache foeniculum	blue giant	6	0	0	#####	####	0	Native	perennial	forb	x	
agapau	0.25	0.168236878	Agalinis paupercula	small-flowered	7	0	0	#####	####	OBL	Native	annual	forb	-5	
agealt	0.25	0.168236878	Ageratina altissima	white snakeroot	1	0	0	#####	####	FACU	Native	perennial	forb	3	
agrigr	0.875	0.588829071	Agrostis gigantea	redtop	0	0	0	#####	####	FACW	Introduced	perennial	grass	-3	
altri	1	0.67294751	Alisma triviale	northern water-	4	0.01	0	#####	####	OBL	Native	perennial	semi-aquatic	-5	
allpet	0.222222222	0.149543891	Alliaria petiolata	garlic mustard	0	0	0	#####	####	FAC	Introduced	biennial	forb	0	
alltri	0.125	0.084118439	Allium tricoccum	ramp, wild leek	6	0	0	#####	####	FACU	Native	perennial	forb	3	
alninc	0.25	0.168236878	Alnus incana	speckled alder,	4	0	0	#####	####	FACW	Native	perennial	shrub	-3	
ambart	0.25	0.168236878	Ambrosia artemisiifolia	short ragweed	0	0	0	#####	####	FACU	Native	annual	forb	3	
ambtri	0.125	0.084118439	Ambrosia trifida	giant ragweed	0	0	0	#####	####	FAC	Native	annual	forb	0	
aneacu	0.125	0.084118439	Anemone acutiloba	sharp-lobed	7	0	0	#####	####	0	Native	perennial	forb	x	
aneacan	0.125	0.084118439	Anemone canadensis	Canada anemone	4	0	0	#####	####	FACW	Native	perennial	forb	-3	
aquan	0.125	0.084118439	Aquilegia canadensis	Canadian	5	0	0	#####	####	FACU	Native	perennial	forb	3	
aranud	0.125	0.084118439	Aralia nudicaulis	wild sarsaparilla	6	0	0	#####	####	FACU	Native	perennial	forb	3	
ararac	0.125	0.084118439	Aralia racemosa	American	7	0	0	#####	####	FACU	Native	perennial	forb	3	
arcmim	0.25	0.168236878	Arctium minus	common burdock,	0	0	0	#####	####	FACU	Introduced	biennial	forb	3	
aritri	0.125	0.084118439	Arisaema triphyllum	Jack-in-the-pulpit	5	0	0	#####	####	FACW	Native	perennial	forb	-3	
asacan	0.125	0.084118439	Asarum canadense	Canadian wild-	7	0	0	#####	####	UPL	Native	perennial	forb	5	
ascinc	0.375	0.252355316	Asclepias incarnata	swamp milkweed	5	0	0	#####	####	OBL	Native	perennial	forb	-5	
ascscr	0.5	0.336473755	Asclepias syriaca	common	1	0	0	#####	####	UPL	Native	perennial	forb	5	
athfil	0.125	0.084118439	Athyrium filix-femina	common lady	5	0	0	#####	####	FAC	Native	perennial	fern	0	
berinc	0.125	0.084118439	Berteroa incana	hoary false	0	0	0	#####	####	0	Introduced	annual/perennial	forb	x	
betall	0.125	0.084118439	Betula alleghaniensis	yellow birch	7	0	0	#####	####	FAC	Native	perennial	tree	0	
bidcer	0.25	0.168236878	Bidens cernua	nodding beggar-	4	0	0	#####	####	OBL	Native	annual	forb	-5	
bidfro	0.25	0.168236878	Bidens frondosa	common beggar-	1	0	0	#####	####	FACW	Native	annual	forb	-3	
blehir	0.125	0.084118439	Blephilia hirsuta	hairy pagoda-	7	0	0	#####	####	FACU	Native	0	0	3	
boiflu	0.25	0.168236878	Bolboschoenus fluviatilis	river bulrush	6	0	0	#####	####	OBL	Native	perennial	sedge	-5	
boucur	0.125	0.084118439	Bouteloua curtipendula	side-oats grama	6	0	0	#####	####	0	Native	0	0	x	
broine	0.25	0.168236878	Bromus inermis	Smooth brome	0	0	0	#####	####	UPL	Introduced	perennial	grass	5	
calcan	15.125	10.17833109	Calamagrostis canadensis	blue-joint grass	5	0.11	0.1	#####	####	OBL	Native	perennial	grass	-5	
caraqu	4.875	3.280619112	Carex aquatilis	water sedge	7	0.04	0	#####	####	OBL	Native	0	0	-5	
carbeb	0.25	0.168236878	Carex bebbii	Bebb's sedge	4	0	0	#####	####	OBL	Native	perennial	sedge	-5	
carcom	0.5	0.336473755	Carex comosa	bristly sedge	5	0	0	#####	####	OBL	Native	perennial	sedge	-5	
carhys	1.625	1.093539704	Carex hystericina	bottlebrush	3	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carlac	1.625	1.093539704	Carex lacustris	common lake	6	0.01	0	#####	####	OBL	Native	perennial	sedge	-5	
carpen	0.125	0.084118439	Carex pennsylvanica	Pennsylvania	3	0	0	#####	####	0	Native	perennial	sedge	x	
carret	0.5	0.336473755	Carex retrorsa	deflexed	6	0	0	#####	####	OBL	Native	perennial	sedge	-5	
carrose	0.125	0.084118439	Carex rosea	rosy sedge	4	0	0	#####	####	FACU	Native	perennial	sedge	3	
carsco	1	0.67294751	Carex scoparia	broom sedge	4	0.01	0	#####	####	FACW	Native	perennial	sedge	-3	
carvul	0.25	0.168236878	Carex vulpinoidea	brown fox sedge	2	0	0	#####	####	OBL	Native	perennial	sedge	-5	
cautha	0.125	0.084118439	Caulophyllum thalictroides	blue cohosh,	8	0	0	#####	####	0	Native	perennial	forb	x	
censto	0.222222222	0.149543891	Centaurea stoebe	spotted	0	0	0	#####	####	UPL	Introduced	biennial/perennial	forb	5	
cerdem	1.5	1.009421265	Ceratophyllum demersum	coon's-tail,	3	0.01	0	#####	####	OBL	Native	perennial	aquatic	-5	
cicbul	0.25	0.168236878	Cicuta bulbifera	bulblet water-	7	0	0	#####	####	OBL	Native	perennial	forb	-5	
cicmac	0.75	0.504710633	Cicuta maculata	spotted water-	6	0.01	0	#####	####	OBL	Native	perennial	forb	-5	
cicrar	0.375	0.252355316	Cirsium arvense	Canada thistle,	0	0	0	#####	####	FACU	Introduced	perennial	forb	3	
clivul	0.375	0.252355316	Cirsium vulgare	bull thistle,	0	0	0	#####	####	FACU	Introduced	biennial	forb	3	
concan	0.25	0.168236878	Clinopodium vulgare	wild-basil	3	0	0	#####	####	0	Native	perennial	forb	x	
corame	0.125	0.084118439	Coryza canadensis	Canadian	0	0	0	#####	####	0	Native	0	0	x	
coramo	0.125	0.084118439	Corylus americana	American	5	0	0	#####	####	FACU	Native	perennial	shrub	3	
corfoe	0.125	0.084118439	Cornus amomum	silky dogwood	4	0	0	#####	####	FACW	Native	perennial	shrub	-3	
corpai	0.125	0.084118439	Cornus foemina	gray dogwood	2	0	0	#####	####	FAC	Native	perennial	shrub	0	
corser	0.75	0.504710633	Careopsis palmata	finger tickseed,	8	0.01	0	#####	####	0	Native	perennial	forb	x	
cypesc	0.25	0.168236878	Cornus sericea	red osier	3	0	0	#####	####	FACW	Native	perennial	shrub	-3	
daiapur	0.125	0.084118439	Cyperus esculentus	field nut sedge	0	0	0	#####	####	FACW	Native	0	0	-3	
daucar	0.25	0.168236878	Dalea purpurea	purple prairie-	7	0	0	#####	####	0	Native	0	0	x	
dicuc	0.125	0.084118439	Daucus carota	Queen Anne's-	0	0	0	#####	####	UPL	Introduced	biennial	forb	5	
dryntr	0.125	0.084118439	Dicentra cucullaria	Dutchman's-	7	0	0	#####	####	0	Native	perennial	forb	x	
drymar	0.125	0.084118439	Dryopteris intermedia	intermediate	7	0	0	#####	####	FAC	Native	perennial	fern	0	
echcru	0.25	0.168236878	Dryopteris marginalis	marginal shield	9	0	0	#####	####	FACU	Native	perennial	fern	3	
echlob	0.25	0.168236878	Echinochloa crus-galli	barnyard grass,	0	0	0	#####	####	FACW	Introduced	annual	grass	-3	
elepal	0.625	0.420592194	Echinocystis lobata	balsam-apple,	2	0	0	#####	####	FACW	Native	annual	vine	-3	
elocan	13.75	9.253028264	Eleocharis palustris	common spike-	6	0.1	0.1	#####	####	OBL	Native	perennial	sedge	-5	
elycan	0.25	0.168236878	Elodea canadensis	Canadian	3	0	0	#####	####	OBL	Native	perennial	aquatic	-5	
elythys	0.25	0.168236878	Elymus canadensis	Canada wild-rye,	4	0	0	#####	####	FACU	Native	perennial	grass	3	
elyrep	0.25	0.168236878	Elymus hystrix	bottlebrush grass,	6	0	0	#####	####	FACU	Native	perennial	grass	3	
equarv	0.625	0.420592194	Elymus repens	quackgrass	0	0	0	#####	####	FACU	Introduced	perennial	grass	3	
equhye	0.125	0.084118439	Equisetum arvense	field horsetail	1	0	0	#####	####	FAC	Native	perennial	fern ally	0	
erehie	0.125	0.084118439	Equisetum hyemale		0	3	0	#####	####	FACW	Native	perennial	fern ally	-3	
eristr	0.25	0.168236878	Erechtites hieracifolius	fireweed	2	0	0	#####	####	UPL	Native	annual	forb	5	
eupper	0.625	0.420592194	Erigeron strigosus	rough fleabane	2	0	0	#####	####	FACU	Native	annual	forb	3	
eurmuc	0.125	0.084118439	Eupatorium perfoliatum	boneset	6	0	0	#####	####	FACW	Native	perennial	forb	-3	
eutgra	0.25	0.168236878	Eurybia macrophylla	big-leaved aster,	4	0	0	#####	####	UPL	Native	perennial	forb	5	
eutmuc	0.125	0.084118439	Euthamia graminifolia	spotted-leaved	4	0	0	#####	####	FAC	Native	perennial	forb	0	
eutpur	0.125	0.084118439	Eutrochium maculatum	grasses Joe-Pye-	4	0	0	#####	####	OBL	Native	perennial	forb	-5	
fraaln	0.125	0.084118439	Eutrochium purpureum	purple Joe-Pye-	6	0	0	#####	####	FAC	Native	perennial	forb	0	
frapen	0.25	0.168236878	Frangula alnus	glossy buckthorn	0	0	0	#####	####	FAC	Introduced	perennial	shrub	0	

fravir	0.5	0.336473755	<i>Fraxinus pennsylvanica</i>	green ash, red	2	0	0	####	####	FACW	Native	perennial	tree	-3
galbor	0.125	0.084118439	<i>Fragaria virginiana</i>	wild strawberry	1	0	0	####	####	FACU	Native	perennial	forb	3
germac	0.125	0.084118439	<i>Galium boreale</i>	northern	5	0	0	####	####	FAC	Native	perennial	forb	0
geuale	0.125	0.084118439	<i>Geranium maculatum</i>	wild geranium	4	0	0	####	####	FACU	Native	perennial	forb	3
geufra	0.125	0.084118439	<i>Geum alepnicum</i>	yellow avens	3	0	0	####	####	FAC	Native	perennial	forb	0
glehed	0.125	0.084118439	<i>Geum fragarioides</i>	barren-	6	0	0	####	####	0	Native	0	0	x
glygra	0.25	0.168236878	<i>Glechoma hederacea</i>	creeping-Charlie	0	0	0	####	####	FACU	Introduced	perennial	forb	3
glystr	0.375	0.252355316	<i>Glyceria grandis</i>	American manna	6	0	0	####	####	OBL	Native	perennial	grass	-5
helauf	0.25	0.168236878	<i>Glyceria striata</i>	fowl manna grass	4	0	0	####	####	OBL	Native	perennial	grass	-5
helgro	0.125	0.084118439	<i>Helenium autumnale</i>	common	4	0	0	####	####	FACW	Native	perennial	forb	-3
helhel	0.125	0.084118439	<i>Helianthus grosseserratus</i>	saw-tooth	2	0	0	####	####	FACW	Native	perennial	forb	-3
hetdub	0.125	0.084118439	<i>Heliopsis helianthoides</i>	false sunflower,	5	0	0	####	####	FACU	Native	perennial	forb	3
horjub	0.125	0.084118439	<i>Heteranthera dubia</i>	water star-grass	6	0	0	####	####	OBL	Native	perennial	aquatic	-5
ilever	0.25	0.168236878	<i>Hordeum jubatum</i>	foxtail barley,	0	0	0	####	####	FAC	Introduced	perennial	grass	0
impcap	1.625	1.093539704	<i>Ilex verticillata</i>	common	7	0.01	0	####	####	FACW	Native	perennial	shrub	-3
iriver	0.625	0.420592194	<i>Impatiens capensis</i>	orange	2	0	0	####	####	FACW	Native	annual	forb	-3
junbal	0.375	0.252355316	<i>Iris versicolor</i>	northern blue	5	0	0	####	####	OBL	Native	perennial	forb	-5
junbre	0.125	0.084118439	<i>Juncus balticus</i>	Baltic rush	5	0	0	####	####	OBL	Native	perennial	rush	-5
jundud	0.375	0.252355316	<i>Juncus brevicaudatus</i>	narrow-panicle	6	0	0	####	####	OBL	Native	perennial	rush	-5
juneff	1	0.67294751	<i>Juncus dudleyi</i>	Dudley's rush	4	0.01	0	####	####	FACW	Native	perennial	rush	-3
junmod	0.25	0.168236878	<i>Juncus effusus</i>	common rush,	4	0	0	####	####	OBL	Native	perennial	rush	-5
junten	0.75	0.504710633	<i>Juncus nodosus</i>	joint rush	6	0.01	0	####	####	OBL	Native	perennial	rush	-5
larlar	0.125	0.084118439	<i>Juncus tenuis</i>	path rush	1	0	0	####	####	FAC	Native	perennial	rush	0
latjap	0.25	0.168236878	<i>Larix laricina</i>	larch, tamarack	8	0	0	####	####	FACW	Native	perennial	tree	-3
leeroy	0.75	0.504710633	<i>Lathyrus japonicus</i>	beach pea	9	0.01	0	####	####	FACU	Native	perennial	forb	3
lemmin	1.5	1.009421265	<i>Leersia oryzoides</i>	rice cutgrass	3	0.01	0	####	####	OBL	Native	perennial	grass	-5
leuvul	0.125	0.084118439	<i>Lemna minor</i>	common	4	0	0	####	####	OBL	Native	perennial	aquatic	-5
linbor	0.125	0.084118439	<i>Leucanthemum vulgare</i>	common daisy,	0	0	0	####	####	UPL	Introduced	perennial	forb	5
linvul	0.125	0.084118439	<i>Linnaea borealis</i>	twinflower	9	0	0	####	####	FAC	Native	perennial	forb	0
lobcar	0.25	0.168236878	<i>Linaria vulgaris</i>	butter-and-eggs	0	0	0	####	####	UPL	Introduced	perennial	forb	5
lobsip	0.375	0.252355316	<i> Lobelia cardinalis</i>	cardinal-flower	7	0	0	####	####	OBL	Native	0	0	-5
lontat	0.25	0.168236878	<i> Lobelia siphilitica</i>	great blue lobelia	5	0	0	####	####	FACW	Native	perennial	forb	-3
lotcor	0.125	0.084118439	<i>Lonicera tatarica</i>	Tatarian	0	0	0	####	####	FACU	Introduced	perennial	shrub	3
ludpal	0.25	0.168236878	<i>Lotus corniculatus</i>	bird's-foot trefoil	0	0	0	####	####	FACU	Introduced	perennial	forb	3
luzacu	0.125	0.084118439	<i>Ludwigia palustris</i>	marsh purslane,	4	0	0	####	####	OBL	Native	perennial	forb	-5
lycame	0.5	0.336473755	<i>Luzula acuminata</i>	hairy wood rush	6	0	0	####	####	FACU	Native	0	0	3
lysthy	0.25	0.168236878	<i>Lycopus americanus</i>	common water-	4	0	0	####	####	OBL	Native	perennial	forb	-5
lytsal	0.625	0.420592194	<i>Lysimachia thyrsiflora</i>	tufted loosestrife	7	0	0	####	####	OBL	Native	perennial	forb	-5
maican	0.125	0.084118439	<i>Lythrum salicaria</i>	purple loosestrife	0	0	0	####	####	OBL	Introduced	perennial	forb	-5
mairac	0.125	0.084118439	<i>Maianthemum canadense</i>	Canada	5	0	0	####	####	FAC	Native	perennial	forb	0
maiste	0.125	0.084118439	<i>Maianthemum racemosum</i>	false Solomon's-	5	0	0	####	####	FACU	Native	0	0	3
matstr	0.125	0.084118439	<i>Maianthemum stellatum</i>	starry false	5	0	0	####	####	FAC	Native	perennial	forb	0
mediup	0.25	0.168236878	<i>Matteuccia struthiopteris</i>	ostrich fern	5	0	0	####	####	FACW	Native	perennial	fern	-3
medsat	0.125	0.084118439	<i>Medicago lupulina</i>	black medick	0	0	0	####	####	FACU	Introduced	perennial	forb	3
mencan	0.375	0.252355316	<i>Medicago sativa</i>	alfalfa	0	0	0	####	####	UPL	Introduced	perennial	forb	5
mervir	0.125	0.084118439	<i>Mentha canadensis</i>	field mint, wild	3	0	0	####	####	FACW	Native	perennial	forb	-3
mimirn	0.125	0.084118439	<i>Mertensia virginica</i>	eastern bluebells,	4	0	0	####	####	FACW	Native	perennial	forb	-3
mitdip	0.125	0.084118439	<i>Mimulus ringens</i>	monkey-flower	6	0	0	####	####	OBL	Native	0	0	-5
monfis	0.25	0.168236878	<i>Mitella diphylla</i>	bishop's-cap, two-	8	0	0	####	####	FACU	Native	perennial	forb	3
monpun	0.125	0.084118439	<i>Monarda fistulosa</i>	bee balm, wild	3	0	0	####	####	FACU	Native	perennial	forb	3
myrgal	0.125	0.084118439	<i>Monarda punctata</i>	horsemint,	3	0	0	####	####	OBL	Native	0	0	5
myrsib	5.25	3.532974428	<i>Myrica gale</i>	meadow-fern,	9	0.04	0	####	####	UPL	Native	perennial	shrub	-5
najfle	0.25	0.168236878	<i>Myriophyllum sibiricum</i>	common water-	6	0	0	####	####	OBL	Native	perennial	aquatic	-5
nupvar	0.5	0.336473755	<i>Najas flexilis</i>	Nodding water-	6	0	0	####	####	OBL	Native	annual	aquatic	-5
nymodo	2.125	1.430013459	<i>Nuphar variegata</i>	bull-head pond-	6	0.02	0	####	####	OBL	Native	perennial	aquatic	-5
onosen	0.25	0.168236878	<i>Nymphaea odorata</i>	fragrant water-	6	0	0	####	####	OBL	Native	perennial	aquatic	-5
osmicin	0.375	0.252355316	<i>Onoclea sensibilis</i>	sensitive fern	5	0	0	####	####	FACW	Native	perennial	fern	-3
osmicla	0.25	0.168236878	<i>Osmunda cinnamomea</i>	cinnamon fern	7	0	0	####	####	0	Native	perennial	fern	x
osmreg	0.125	0.084118439	<i>Osmunda claytoniana</i>	interrupted fern	6	0	0	####	####	FAC	Native	perennial	fern	0
pancap	0.125	0.084118439	<i>Osmorhiza claytonii</i>	blond sweet	5	0	0	####	####	FACU	Native	perennial	forb	3
parqui	0.375	0.252355316	<i>Osmunda regalis</i>	royal fern	7	0	0	####	####	0	Native	perennial	fern	x
pedcan	0.125	0.084118439	<i>Panicum capillare</i>	witch grass	1	0	0	####	####	FAC	Native	0	0	0
pendig	0.125	0.084118439	<i>Parthenocissus quinquefolia</i>	Virginia creeper,	5	0	0	####	####	FACU	Native	perennial	vine	3
pengra	0.125	0.084118439	<i>Pedicularis canadensis</i>	Canadian	8	0	0	####	####	FACU	Native	0	0	3
phausu	0.88888889	0.598175565	<i>Penstemon digitalis</i>	false foxglove,	0	0	0	####	####	FAC	Introduced	perennial	forb	0
phidiv	0.125	0.084118439	<i>Penstemon gracilis</i>	lilac penstemon,	5	0	0	####	####	UPL	Native	perennial	forb	5
phlpra	0.125	0.084118439	<i>Phalaris arundinacea</i>	reed canary grass	0	0	0	####	####	FACW	Introduced	perennial	grass	-3
phraus	0.88888889	0.598175565	<i>Phlox divaricata</i>	forest phlox, wild	7	0.01	0	####	####	FACU	Native	0	0	3
phvivr	0.25	0.168236878	<i>Phleum pratense</i>	timothy	0	0	0	####	####	FACU	Introduced	perennial	grass	3
picgia	0.125	0.084118439	<i>Phragmites australis</i>	common reed	0	0	0	####	####	FACW	Introduced	perennial	grass	-3
plamaj	0.375	0.252355316	<i>Physostegia virginiana</i>	obedience plant	7	0	0	####	####	FACW	Native	0	0	-3
poapal	0.125	0.084118439	<i>Picea glauca</i>	white spruce	7	0	0	####	####	FACU	Native	perennial	tree	3
poapra	0.375	0.252355316	<i>Plantago major</i>	common plantain	0	0	0	####	####	FAC	Introduced	perennial	forb	0
podpel	0.125	0.084118439	<i>Poa palustris</i>	marsh bluegrass	5	0	0	####	####	FACW	Native	perennial	grass	-3
polrep	0.125	0.084118439	<i>Poa pratensis</i>	Kentucky	0	0	0	####	####	FAC	Introduced	perennial	grass	0
popdel	5.25	3.532974428	<i>Podophyllum peltatum</i>	May-apple, wild	4	0.04	0	####	####	FACU	Native	perennial	forb	3
potans	0.125	0.084118439	<i>Polemonium reptans</i>	spreading Jacob's-	6	0	0	####	####	FAC	Native	0	0	0
potfol	1.5	1.009421265	<i>Populus deltoides</i>	eastern	2	0.01	0	####	####	FAC	Native	perennial	tree	0
potnat	4.75	3.196500673	<i>Potentilla anserina</i>	silver-weed	4	0.04	0	####	####	FACW	Native	0	0	-3
potnod	1.125	0.757065949	<i>Potamogeton foliosus</i>	leafy pondweed	6	0.01	0	####	####	OBL	Native	0	0	-5
potnor	0.125	0.084118439	<i>Potamogeton natans</i>	common	5	0	0	####	####	OBL	Native	perennial	aquatic	-5
potper	0.125	0.084118439	<i>Potamogeton nodosus</i>	long-leaf	7	0	0	####	####	OBL	Native	perennial	aquatic	-5
potric	1.25	0.841184388	<i>Potentilla norvegica</i>	Norwegian	0	0.01	0	####	####	FAC	Native	perennial	forb	0
potzos	1.25	0.841184388	<i>Potamogeton perfoliatus</i>	perfoliate	0	0.01	0	####	####	OBL	Native	0	0	-5
prealb	0.125	0.084118439	<i>Potamogeton richardsonii</i>	Richardson's	5	0	0	####	####	OBL	Native	perennial	aquatic	-5
primea	0.125	0.084118439	<i>Potamogeton zosterifolius</i>	flat-stem	6	0	0	####	####	OBL	Native	perennial	aquatic	-5
pycvir	0.25	0.168236878	<i>Prenanthes alba</i>	rattlesnake-root,	5	0	0	####	####	0	Native	perennial	forb	x
quebic	0.25	0.168236878	<i>Primula meadia</i>	eastern shooting-	7	0	0	####	####	0	Native	0	0	x
quemac	0.125	0.084118439	<i>Pycnanthemum virginianum</i>	common	6	0	0	####	####	FACW	Native	perennial	forb	-3
ranabo	0.125	0.084118439	<i>Quercus bicolor</i>	swamp white oak	7	0	0	####	####	FACW	Native	perennial	tree	-3
ranpen	0.125	0.084118439	<i>Quercus macrocarpa</i>	bur oak	5	0	0	####	####	FACU	Native	perennial	tree	3
ransce	0.25	0.168236878	<i>Ranunculus abortivus</i>	little-leaf	1	0	0	####	####	FAC	Native	perennial	forb	0
ratpin	3.125	2.102960969	<i>Ranunculus pensylvanicus</i>	Pennsylvania	5	0.02	0	####	####	OBL	Native	perennial	forb	-5
ribame	0.25	0.168236878	<i>Ranunculus sceleratus</i>	celery-leaf	3	0	0	####	####	OBL	Native	perennial	forb	-5
rubida	0.25	0.168236878	<i>Ratibida pinnata</i>	pinnate prairie	4	0	0	####	####	UPL	Native	perennial	forb	5
rudhir	0.25	0.168236878	<i>Ribes americanum</i>	American black	4	0	0	####	####	FACW	Native	perennial	shrub	-3

rudtri	0.625	0.420592194	<i>Rubus idaeus</i>	wild red	3	0	0	#####	FAC	Native	perennial	shrub	0	
rumcri	0.375	0.252355316	<i>Rudbeckia hirta</i>	black-eyed Susan	4	0	0	#####	FACU	Native		0	3	
saglat	1	0.67294751	<i>Rudbeckia triloba</i>	brown-eyed	4	0.01	0	#####	FACU	Native		0	3	
salamy	0.25	0.168236878	<i>Rumex crispus</i>	curly dock	0	0	0	#####	FAC	Introduced	perennial	forb	0	
salbeb	0.125	0.084118439	<i>Sagittaria latifolia</i>	broad-leaved	3	0	0	#####	OBL	Native	perennial	semi-aquatic	-5	
salint	0.375	0.252355316	<i>Salix amygdaloides</i>	peach-leaved	4	0	0	#####	FACW	Native	perennial	tree	-3	
salnig	0.125	0.084118439	<i>Salix bebbiana</i>	Bebb's willow	7	0	0	#####	FACW	Native	perennial	tree	-3	
samcan	0.25	0.168236878	<i>Salix interior</i>	sandbar willow	2	0	0	#####	FACW	Native	perennial	shrub	-3	
sancan	0.125	0.084118439	<i>Salix nigra</i>	black willow	4	0	0	#####	OBL	Native	perennial	tree	-5	
schacu	0.125	0.084118439	<i>Sambucus canadensis</i>	elderberry	3	0	0	#####	FACU	Native	perennial	shrub	3	
schpun	0.75	0.504710633	<i>Sanicula canadensis</i>	Canadian black	6	0.01	0	#####	FACU	Native	biennial	forb	3	
schtab	8	5.383580081	<i>Schoenoplectus acutus</i>		0	6	0.06	0.1	#####	OBL	Native	perennial	sedge	-5
sciatr	0.625	0.420592194	<i>Schoenoplectus pungens</i>	common three-	5	0	0	#####	OBL	Native	perennial	sedge	-5	
scicyp	0.25	0.168236878	<i>Schoenoplectus</i>	soft-stem bulrush	4	0	0	#####	OBL	Native	perennial	sedge	-5	
scugal	0.125	0.084118439	<i>Scirpus atrovirens</i>	dark-green	3	0	0	#####	OBL	Native	perennial	sedge	-5	
setpum	0.25	0.168236878	<i>Scirpus cyperinus</i>	wool-grass	4	0	0	#####	OBL	Native	perennial	sedge	-5	
silul	0.125	0.084118439	<i>Scutellaria galericulata</i>	common skullcap	5	0	0	#####	OBL	Native	perennial	forb	-5	
silusua	0.75	0.504710633	<i>Setaria pumila</i>	pigeon grass	0	0	0	#####	FAC	Introduced	annual	grass	0	
solcan	1.25	0.841184388	<i>Silene vulgaris</i>	bladder-campion	0	0	0	#####	0	Introduced	perennial	forb	x	
soldul	0.125	0.084118439	<i>Sium suave</i>	hemlock water-	5	0	0	#####	OBL	Native	perennial	forb	-5	
solfle	0.125	0.084118439	<i>Solidago canadensis</i>	Canadian	1	0	0	#####	FACU	Native	perennial	forb	3	
sollig	0.25	0.168236878	<i>Solanum dulcamara</i>	bittersweet	0	0	0	#####	FAC	Introduced	perennial	vine	0	
solrig	0.125	0.084118439	<i>Solidago flexicaulis</i>	broad-leaved	6	0	0	#####	FACU	Native	perennial	forb	3	
sonarv	0.375	0.252355316	<i>Solidago gigantea</i>	giant goldenrod	3	0	0	#####	FACW	Native	perennial	forb	-3	
sonnut	1.375	0.925302826	<i>Solidago rigida</i>	rigid goldenrod	5	0.01	0	#####	FACU	Native	perennial	forb	3	
spaame	4.125	2.775908479	<i>Santhus arvensis</i>	field sow-thistle	0	0	0	#####	FACU	Introduced	perennial	forb	3	
spapac	0.25	0.168236878	<i>Sorghastrum nutans</i>	yellow Indian	5	0	0	#####	FACU	Native	perennial	grass	3	
spialb	0.25	0.168236878	<i>Sparganium americanum</i>	American bur-	8	0	0	#####	OBL	Native	perennial	aquatic	-5	
spicer	0.125	0.084118439	<i>Spartina pectinata</i>	prairie cord grass	5	0	0	#####	FACW	Native	perennial	grass	-3	
stapal	0.125	0.084118439	<i>Spiraea alba</i>	white	4	0	0	#####	FACW	Native	perennial	shrub	-3	
stupac	0.5	0.336473755	<i>Spiranthes cernua</i>	nodding lady's-	5	0	0	#####	FACW	Native	perennial	forb	-3	
symcor	0.125	0.084118439	<i>Stachys palustris</i>	hedge-nettle	5	0	0	#####	OBL	Native	perennial	forb	-5	
symeri	0.125	0.084118439	<i>Stuckenia pectinata</i>	comb pondweed	3	0	0	#####	OBL	Native	perennial	aquatic	-5	
symlan	0.125	0.084118439	<i>Symphyotrichum cordifolium</i>	common blue	6	0	0	#####	0	Native		0	0	
sympil	0.25	0.168236878	<i>Symphyotrichum ericoides</i>	heath aster	4	0	0	#####	FACU	Native		0	3	
taroff	0.25	0.168236878	<i>Symphyotrichum lanceolatum</i>	lance-leaved	4	0	0	#####	FACW	Native	perennial	forb	-3	
thadio	0.25	0.168236878	<i>Symphyotrichum pilosum</i>	frost aster	1	0	0	#####	FACU	Native	perennial	forb	3	
thuocc	0.125	0.084118439	<i>Taraxacum officinale</i>	common	0	0	0	#####	FACU	Introduced	perennial	forb	3	
tiacor	0.125	0.084118439	<i>Thalictrum dioicum</i>	early meadow-	7	0	0	#####	FACU	Native	perennial	forb	3	
tradub	0.125	0.084118439	<i>Thuja occidentalis</i>	northern white-	9	0	0	#####	FACW	Native	perennial	tree	-3	
trigra1	0.125	0.084118439	<i>Tiarella cordifolia</i>	false miterwort	10	0	0	#####	FACU	Native	perennial	forb	3	
tripra	0.125	0.084118439	<i>Tragopogon dubius</i>	fistulous goat's-	0	0	0	#####	0	Introduced	biennial	forb	x	
trirep	0.375	0.252355316	<i>Trillium grandiflorum</i>	large-flowered	6	0	0	#####	0	Native	perennial	forb	x	
tsucan	0.125	0.084118439	<i>Trifolium pratense</i>	red clover	0	0	0	#####	FACU	Introduced	perennial	forb	3	
typgla	0.625	0.420592194	<i>Trifolium repens</i>	white clover	0	0	0	#####	FACU	Introduced	perennial	forb	3	
ulmruv	0.125	0.084118439	<i>Tsuga canadensis</i>	northern hemlock	8	0	0	#####	FACU	Native	perennial	tree	3	
urtidio	0.125	0.084118439	<i>Typha X glauca</i>	hybrid cat-tail	0	0	0	#####	OBL	Introduced	perennial	semi-aquatic	-5	
uvugra	0.125	0.084118439	<i>Ulmus rubra</i>	red elm, slippery	4	0	0	#####	FAC	Native	perennial	tree	0	
valame	1.25	0.841184388	<i>Urtica dioica</i>	stinging nettle	1	0.01	0	#####	FAC	Native	perennial	forb	0	
verhas	0.5	0.336473755	<i>Uvularia grandiflora</i>	large-flowered	7	0	0	#####	0	Native	perennial	forb	x	
vertha	0.25	0.168236878	<i>Vallisneria americana</i>	American	6	0	0	#####	OBL	Native	perennial	aquatic	-5	
vibtri	0.125	0.084118439	<i>Verbena hastata</i>	blue vervain	3	0	0	#####	FACW	Native	perennial	forb	-3	
vitrip	0.125	0.084118439	<i>Verbascum thapsus</i>	common mullein	0	0	0	#####	UPL	Introduced	biennial	forb	5	
xanstr	0.125	0.084118439	<i>Viburnum trilobum</i>	American	6	0	0	#####	FAC	Native	perennial	shrub	0	
zizaur	0.75	0.504710633	<i>Vitis riparia</i>	river bank grape	2	0.01	0	#####	FAC	Native	perennial	vine	0	
zizpal	2.125	1.430013459	<i>Xanthium strumarium</i>	common	1	0.02	0	#####	FAC	Native	annual	forb	0	

SITE NAME: Menekaunee Harbor
COMMUNITY: Comprehensive Species List
COUNTY: Marinette
PLOT NUMBER:
SURVEYORS: LaPlant/Kintopf
SURVEY DATE: August 30th/September 6th, 2018
COMMENTS:

ENTER SPECIES CODE (i.e. Carex stricta- CA65TR)	ENTER COVER	Daubenmire Cover	Latin Name	Common Name	C-Value	p(n)	p(a)	pC(n)	pC(a)	Wetland Indicator Status (MW/NCNE)	Origin	Duration	Form	W	Dominant
abibal			Abies balsamea	balsam fir	5	####	####	####		FACW	Native	perennial	tree	-3	
aceneg			Acer negundo	box elder	0	####	####	####		FAC	Native	perennial	tree	0	
acerub			Acer rubrum	red maple	3	####	####	####		FAC	Native	perennial	tree	0	
acesac			Acer saccharinum	silver maple, soft	2	####	####	####		FACW	Native	perennial	tree	-3	
achmil			Achillea millefolium	common yarrow,	1	####	####	####		FACU	Native	perennial	forb	3	
actpac			Actaea pachypoda	doll's-eyes, white	6	####	####	####		UPL	Native	perennial	forb	5	
actrub			Actaea rubra	red baneberry	7	####	####	####		FACU	Native	perennial	forb	3	
adiped			Adiantum pedatum	maidenhair fern,	7	####	####	####		FACU	Native	perennial	fern	3	
agafoe			Agastache foeniculum	blue giant	6	####	####	####	0	Native	perennial	forb	x		
agapau			Agalinis poupercula	small-flowered	7	####	####	####		OBL	Native	annual	forb	-5	
agealt			Ageratina altissima	white snakeroot	1	####	####	####		FACU	Native	perennial	forb	3	
agrgig			Agrostis gigantea	redtop	0	0	####	####		FACW	Introduced	perennial	grass	-3	
alitri			Alisma triviale	northern water-	4	####	####	####		OBL	Native	perennial	semi-aquatic	-5	
allpet			Alliaria petiolata	garlic mustard	0	0	####	####		FAC	Introduced	biennial	forb	0	
alltri			Allium tricoccum	ramp, wild leek	6	####	####	####		FACU	Native	perennial	forb	3	
alninc			Alnus incana	speckled alder,	4	####	####	####		FACW	Native	perennial	shrub	-3	
ambart			Ambrosia artemisiifolia	short ragweed	0	####	####	####		FACU	Native	annual	forb	3	
ambtri			Ambrosia trifida	giant ragweed	0	####	####	####		FAC	Native	annual	forb	0	
aneacu			Anemone acutiloba	sharp-lobed	7	####	####	####	0	Native	perennial	forb	x		
anecan			Anemone canadensis	Canada anemone	4	####	####	####		FACW	Native	perennial	forb	-3	
aquan			Aquilegia canadensis	Canadian	5	####	####	####		FACU	Native	perennial	forb	3	
aranud			Aralia nudicaulis	wild sarsaparilla	6	####	####	####		FACU	Native	perennial	forb	3	
ararac			Aralia racemosa	American	7	####	####	####		FACU	Native	perennial	forb	3	
arcmn			Arctium minus	common burdock,	0	0	####	####		FACU	Introduced	biennial	forb	3	
aritr			Arisaema triphyllum	Jack-in-the-pulpit	5	####	####	####		FACW	Native	perennial	forb	-3	
asacan			Asarum canadense	Canadian wild-	7	####	####	####		UPL	Native	perennial	forb	5	
ascinc			Asclepias incarnata	swamp milkweed	5	####	####	####		OBL	Native	perennial	forb	-5	
ascysr			Asclepias syriaca	common	1	####	####	####		UPL	Native	perennial	forb	5	
athfil			Athyrium filix-femina	common lady	5	####	####	####		FAC	Native	perennial	fern	0	
berinc			Berteroa incana	hoary false	0	0	####	####	0	Introduced	perennial	forb	x		
betall			Betula alleghaniensis	yellow birch	7	####	####	####		FAC	Native	perennial	tree	0	
bidcer			Bidens cernua	nodding beggar-	4	####	####	####		OBL	Native	annual	forb	-5	
bidfro			Bidens frondosa	common beggar-	1	####	####	####		FACW	Native	annual	forb	-3	
blehir			Blephilia hirsuta	hairy pagoda-	7	####	####	####		FACU	Native	0	0	3	
bolflu			Bolboschoenus fluvialis	river bulrush	6	####	####	####		OBL	Native	perennial	sedge	-5	
boucur			Bouteloua curtipendula	side-oats grama	6	####	####	####	0	Native	0	0	x		
broine			Bromus inermis	Smooth brome	0	0	####	####		UPL	Introduced	perennial	grass	5	
calcan			Calamagrostis canadensis	blue-joint grass	5	####	####	####		OBL	Native	perennial	grass	-5	
caragu			Carex aquatilis	water sedge	7	####	####	####		OBL	Native	0	0	-5	
carbeb			Carex bebbii	Bebb's sedge	4	####	####	####		OBL	Native	perennial	sedge	-5	
carcom			Carex comosa	bristly sedge	5	####	####	####		OBL	Native	perennial	sedge	-5	
carhys			Carex hystericina	bottlebrush	3	####	####	####		OBL	Native	perennial	sedge	-5	
carlac			Carex lacustris	common lake	6	####	####	####		OBL	Native	perennial	sedge	-5	
carpen			Carex pensylvanica	Pennsylvania	3	####	####	####	0	Native	perennial	sedge	x		
carret			Carex retrorsa	deflexed	6	####	####	####		OBL	Native	perennial	sedge	-5	
carrose			Carex rosea	rosy sedge	4	####	####	####		FACU	Native	perennial	sedge	3	
carsco			Carex scoparia	broom sedge	4	####	####	####		FACW	Native	perennial	sedge	-3	
carvul			Carex vulpinoidea	brown fox sedge	2	####	####	####		OBL	Native	perennial	sedge	-5	
cautha			Caulophyllum thalictroides	blue cohosh,	8	####	####	####	0	Native	perennial	forb	x		
censto			Centaurea stoebe	spotted	0	0	####	####		UPL	Introduced	perennial	forb	5	
cerdem			Ceratophyllum demersum	coon's-tail,	3	####	####	####		OBL	Native	perennial	aquatic	-5	
cicbul			Cicuta bulbifera	bulblet water-	7	####	####	####		OBL	Native	perennial	forb	-5	
cicmac			Cicuta maculata	spotted water-	6	####	####	####		OBL	Native	perennial	forb	-5	
cirarv			Cirsium arvense	Canada thistle,	0	0	####	####		FACU	Introduced	perennial	forb	3	
cirvul			Cirsium vulgare	bull thistle,	0	0	####	####		FACU	Introduced	biennial	forb	3	
clivul			Clinopodium vulgare	wild-basil	3	####	####	####	0	Native	perennial	forb	x		
concan			Coryza canadensis	Canadian	0	####	####	####	0	Native	0	0	x		
corame			Corylus americana	American	5	####	####	####		FACU	Native	perennial	shrub	3	
coramo			Cornus amomum	silky dogwood	4	####	####	####		FACW	Native	perennial	shrub	-3	
corfoe			Cornus foemina	gray dogwood	2	####	####	####		FAC	Native	perennial	shrub	0	
corpai			Coreopsis palmata	finger tickseed,	8	####	####	####	0	Native	perennial	forb	x		
corser			Cornus sericea	red osier	3	####	####	####		FACW	Native	perennial	shrub	-3	
cypesc			Cyperus esculentus	field nut sedge	0	####	####	####		FACW	Native	0	0	-3	
daipur			Dalea purpurea	purple prairie-	7	####	####	####	0	Native	0	0	x		
daucar			Daucus carota	Queen Anne's-	0	0	####	####		UPL	Introduced	biennial	forb	5	
dicuc			Dicentra cucullaria	Dutchman's-	7	####	####	####	0	Native	perennial	forb	x		
dryint			Dryopteris intermedia	intermediate	7	####	####	####		FAC	Native	perennial	fern	0	
drymar			Dryopteris marginalis	marginal shield	9	####	####	####		FACU	Native	perennial	fern	3	
echclu			Echinochloa crus-galli	barnyard grass,	0	0	####	####		FACW	Introduced	annual	grass	-3	
echlob			Echinocystis lobata	balsam-apple,	2	####	####	####		FACW	Native	annual	vine	-3	
elepai			Eleocharis palustris	common spike-	6	####	####	####		OBL	Native	perennial	sedge	-5	
elocan			Elodea canadensis	Canadian	3	####	####	####		OBL	Native	perennial	aquatic	-5	
elycan			Elymus canadensis	Canada wild-rye,	4	####	####	####		FACU	Native	perennial	grass	3	
elyhys			Elymus hystrix	bottlebrush grass,	6	####	####	####		FACU	Native	perennial	grass	3	
elyrep			Elymus repens	quackgrass	0	0	####	####		FACU	Introduced	perennial	grass	3	
equarv			Equisetum arvense	field horsetail	1	####	####	####		FAC	Native	perennial	fern ally	0	
equhye			Equisetum hyemale	0	3	####	####	####		FACW	Native	perennial	fern ally	-3	
erehie			Erechtites hieracifolius	fireweed	2	####	####	####		UPL	Native	annual	forb	5	
eristr			Erigeron strigosus	rough fleabane	2	####	####	####		FACU	Native	annual	forb	3	
eupper			Eupatorium perfoliatum	boneset	6	####	####	####		FACW	Native	perennial	forb	-3	
eumrac			Eurybia macrophylla	big-leaved aster,	4	####	####	####		UPL	Native	perennial	forb	5	
eutgra			Euthamia graminifolia	grass-leaved	4	####	####	####		FAC	Native	perennial	forb	0	
eutnac			Eutrochium maculatum	spotted Joe-Pye-	4	####	####	####		OBL	Native	perennial	forb	-5	
eupur			Eutrochium purpureum	purple Joe-Pye-	6	####	####	####		FAC	Native	perennial	forb	0	
fraaln			Frangula alnus	glossy buckthorn	0	0	####	####		FAC	Introduced	perennial	shrub	0	

Species Richness:	
Total Species	239
Native Species	201
Non-Native Species	38
Proportion Native Cover	
Percent Cover Native	0
Percent Cover Non-Native	#VALUE!

Floristic Quality Metrics: Native Species Only	
Unweighted Mean C	4.71
Unweighted FQI	66.73
Weighted Mean C (wC)	
Weighted FQI (wFQIn)	

Floristic Quality Metrics: All Species	
Unweighted Mean C	3.96
Unweighted FQIa	61.19
Weighted Mean C (wCa)	
Weighted FQI (wFQIa)	

Wetland Species:	
Mean W	-0.94
Native Wetland Species	131
Percent Native Wetland Species	54.81
Percent Cover Native Wetland Species	0
Percent Wetland Cover	0

Dominance	
Percent Total Aerial Coverage	
50%	#VALUE!
20%	#VALUE!

frapen	<i>Fraxinus pennsylvanica</i>	green ash, red	2	####	#####	FACW	Native	perennial	tree	-3
fravir	<i>Fragaria virginiana</i>	wild strawberry	1	####	#####	FACU	Native	perennial	forb	3
galbor	<i>Galium boreale</i>	northern	5	####	#####	FAC	Native	perennial	forb	0
germac	<i>Geranium maculatum</i>	wild geranium	4	####	#####	FACU	Native	perennial	forb	3
geuale	<i>Geum aleppicum</i>	yellow avens	3	####	#####	FAC	Native	perennial	forb	0
geufra	<i>Geum fragarioides</i>	barren-	6	####	#####	0	Native	0	0	x
glehed	<i>Glechoma hederacea</i>	creeping-Charlie	0	0	#####	FACU	Introduced	perennial	forb	3
glygra	<i>Glyceria grandis</i>	American manna	6	####	#####	OBL	Native	perennial	grass	-5
glystr	<i>Glyceria striata</i>	fowl manna grass	4	####	#####	OBL	Native	perennial	grass	-5
helaut	<i>Helenium autumnale</i>	common	4	####	#####	FACW	Native	perennial	forb	-3
helgro	<i>Helianthus grosseserratus</i>	saw-tooth	2	####	#####	FACW	Native	perennial	forb	-3
helhel	<i>Heliopsis helianthoides</i>	false sunflower,	5	####	#####	FACU	Native	perennial	forb	3
hetdub	<i>Heteranthera dubia</i>	water star-grass	6	####	#####	OBL	Native	perennial	aquatic	-5
horjub	<i>Hordeum jubatum</i>	foxtail barley,	0	0	#####	FAC	Introduced	perennial	grass	0
ilever	<i>Ilex verticillata</i>	common	7	####	#####	FACW	Native	perennial	shrub	-3
impcap	<i>Impatiens capensis</i>	orange	2	####	#####	FACW	Native	annual	forb	-3
iriver	<i>Iris versicolor</i>	northern blue	5	####	#####	OBL	Native	perennial	forb	-5
junbal	<i>Juncus balticus</i>	Baltic rush	5	####	#####	OBL	Native	perennial	rush	-5
junbre	<i>Juncus brevicaudatus</i>	narrow-panicle	6	####	#####	OBL	Native	perennial	rush	-5
jundud	<i>Juncus dudleyi</i>	Dudley's rush	4	####	#####	FACW	Native	perennial	rush	-3
juneff	<i>Juncus effusus</i>	common rush,	4	####	#####	OBL	Native	perennial	rush	-5
junnod	<i>Juncus nodosus</i>	joint rush	6	####	#####	OBL	Native	perennial	rush	-5
juntten	<i>Juncus tenuis</i>	path rush	1	####	#####	FAC	Native	perennial	rush	0
larlar	<i>Larix laricina</i>	larch, tamarack	8	####	#####	FACW	Native	perennial	tree	-3
latjap	<i>Lathyrus japonicus</i>	beach pea	9	####	#####	FACU	Native	perennial	forb	3
leory	<i>Leersia oryzoides</i>	rice cutgrass	3	####	#####	OBL	Native	perennial	grass	-5
lemmin	<i>Lemna minor</i>	common	4	####	#####	OBL	Native	perennial	aquatic	-5
leuvul	<i>Leucanthemum vulgare</i>	common daisy,	0	0	#####	UPL	Introduced	perennial	forb	5
linbor	<i>Linnaea borealis</i>	twinflower	9	####	#####	FAC	Native	perennial	forb	0
linvul	<i>Linaria vulgaris</i>	butter-and-eggs	0	0	#####	UPL	Introduced	perennial	forb	5
lobcar	<i>Lobelia cardinalis</i>	cardinal-flower	7	####	#####	OBL	Native	0	0	-5
lobsip	<i>Lobelia siphilitica</i>	great blue lobelia	5	####	#####	FACW	Native	perennial	forb	-3
lontat	<i>Lonicera tatarica</i>	Tartarian	0	0	#####	FACU	Introduced	perennial	shrub	3
lotcor	<i>Lotus corniculatus</i>	bird's-foot trefoil	0	0	#####	FACU	Introduced	perennial	forb	3
ludpal	<i>Ludwigia palustris</i>	marsh purslane,	4	####	#####	OBL	Native	perennial	forb	-5
luzacu	<i>Luzula acuminata</i>	hairy wood rush	6	####	#####	FACU	Native	0	0	3
lycame	<i>Lycopus americanus</i>	common water-	4	####	#####	OBL	Native	perennial	forb	-5
lysthy	<i>Lysimachia thyrsiflora</i>	tufted loosestrife	7	####	#####	OBL	Native	perennial	forb	-5
lytsal	<i>Lythrum salicaria</i>	purple loosestrife	0	0	#####	OBL	Introduced	perennial	forb	-5
maican	<i>Maianthemum canadense</i>	Canada	5	####	#####	FAC	Native	perennial	forb	0
mairac	<i>Maianthemum racemosum</i>	false Solomon's-	5	####	#####	FACU	Native	0	0	3
maiste	<i>Maianthemum stellatum</i>	starry false	5	####	#####	FAC	Native	perennial	forb	0
matstr	<i>Matteuccia struthiopteris</i>	ostrich fern	5	####	#####	FACW	Native	perennial	fern	-3
medlup	<i>Medicago lupulina</i>	black medick	0	0	#####	FACU	Introduced	annual/perennial	forb	3
medsat	<i>Medicago sativa</i>	alfalfa	0	0	#####	UPL	Introduced	perennial	forb	5
mencan	<i>Mentha canadensis</i>	field mint, wild	3	####	#####	FACW	Native	perennial	forb	-3
mervir	<i>Mertensia virginica</i>	eastern bluebells,	4	####	#####	FACW	Native	perennial	forb	-3
mimrin	<i>Mimulus ringens</i>	monkey-flower	6	####	#####	OBL	Native	0	0	-5
mitdip	<i>Mitella diphylla</i>	bishop's-cap, two-	8	####	#####	FACU	Native	perennial	forb	3
monfis	<i>Monarda fistulosa</i>	bee balm, wild	3	####	#####	FACU	Native	perennial	forb	3
monpun	<i>Monarda punctata</i>	horsemint,	3	####	#####	UPL	Native	0	0	5
myrgal	<i>Myrica gale</i>	meadow-fern,	9	####	#####	OBL	Native	perennial	shrub	-5
myrsib	<i>Myriophyllum sibiricum</i>	common water-	6	####	#####	OBL	Native	perennial	aquatic	-5
naifle	<i>Najas flexilis</i>	Nodding water-	6	####	#####	OBL	Native	annual	aquatic	-5
nupvar	<i>Nuphar variegata</i>	bull-head pond-	6	####	#####	OBL	Native	perennial	aquatic	-5
nymodo	<i>Nymphaea odorata</i>	fragrant water-	6	####	#####	OBL	Native	perennial	aquatic	-5
onosen	<i>Onoclea sensibilis</i>	sensitive fern	5	####	#####	FACW	Native	perennial	fern	-3
osmcin	<i>Osmunda cinnamomea</i>	cinnamon fern	7	####	#####	0	Native	perennial	fern	x
osmcia	<i>Osmunda claytoniana</i>	interrupted fern	6	####	#####	FAC	Native	perennial	fern	0
osmda1	<i>Osmorhiza claytonii</i>	bland sweet	5	####	#####	FACU	Native	perennial	forb	3
osmreg	<i>Osmunda regalis</i>	royal fern	7	####	#####	0	Native	perennial	fern	x
pancap	<i>Panicum capillare</i>	witch grass	1	####	#####	FAC	Native	0	0	0
parqui	<i>Parthenocissus quinquefolia</i>	Virginia creeper,	5	####	#####	FACU	Native	perennial	vine	3
pedcan	<i>Pedicularis canadensis</i>	Canadian	8	####	#####	FACU	Native	0	0	3
pendig	<i>Penstemon digitalis</i>	false foxglove,	0	0	#####	FAC	Introduced	perennial	forb	0
pengra	<i>Penstemon gracilis</i>	lilac penstemon,	5	####	#####	UPL	Native	perennial	forb	5
phaaru	<i>Phalaris arundinacea</i>	reed canary grass	0	0	#####	FACW	Introduced	perennial	grass	-3
phidiv	<i>Phlox divaricata</i>	forest phlox, wild	7	####	#####	FACU	Native	0	0	3
phipra	<i>Phileum pratense</i>	timothy	0	0	#####	FACU	Introduced	perennial	grass	3
phraus	<i>Phragmites australis</i>	common reed	0	0	#####	FACW	Introduced	perennial	grass	-3
phyvir	<i>Physostegia virginiana</i>	obedience plant	7	####	#####	FACW	Native	0	0	-3
picgla	<i>Picea glauca</i>	white spruce	7	####	#####	FACU	Native	perennial	tree	3
plamaj	<i>Plantago major</i>	common plantain	0	0	#####	FAC	Introduced	perennial	forb	0
poapal	<i>Poa palustris</i>	marsh bluegrass	5	####	#####	FACW	Native	perennial	grass	-3
poagra	<i>Poa pratensis</i>	Kentucky	0	0	#####	FAC	Introduced	perennial	grass	0
podpel	<i>Podophyllum peltatum</i>	May-apple, wild	4	####	#####	FACU	Native	perennial	forb	3
polrep	<i>Polemonium reptans</i>	spreading Jacob's-	6	####	#####	FAC	Native	0	0	0
popdel	<i>Populus deltoides</i>	eastern	2	####	#####	FAC	Native	perennial	tree	0
potans	<i>Potentilla anserina</i>	silver-weed	4	####	#####	FACW	Native	0	0	-3
potfol	<i>Potamogeton foliosus</i>	leafy pondweed	6	####	#####	OBL	Native	0	0	-5
potnat	<i>Potamogeton natans</i>	common	5	####	#####	OBL	Native	perennial	aquatic	-5
potnod	<i>Potamogeton nodosus</i>	long-leaf	7	####	#####	OBL	Native	perennial	aquatic	-5
potnor	<i>Potentilla norvegica</i>	Norwegian	0	####	#####	FAC	Native	perennial	forb	0
potper	<i>Potamogeton perfoliatus</i>	perfoliate	0	####	#####	OBL	Native	0	0	-5
potric	<i>Potamogeton richardsonii</i>	Richardson's	5	####	#####	OBL	Native	perennial	aquatic	-5
potzos	<i>Potamogeton zosteriformis</i>	flat-stem	6	####	#####	OBL	Native	perennial	aquatic	-5
prealb	<i>Prenanthes alba</i>	rattlesnake-root,	5	####	#####	0	Native	perennial	forb	x
primea	<i>Primula meadia</i>	eastern shooting-	7	####	#####	0	Native	0	0	x
pycvir	<i>Pycnanthemum virginianum</i>	common	6	####	#####	FACW	Native	perennial	forb	-3
quebic	<i>Quercus bicolor</i>	swamp white oak	7	####	#####	FACW	Native	perennial	tree	-3
quemac	<i>Quercus macrocarpa</i>	bur oak	5	####	#####	FACU	Native	perennial	tree	3
ranabo	<i>Ranunculus abortivus</i>	little-leaf	1	####	#####	FAC	Native	perennial	forb	0
ranpen	<i>Ranunculus pensylvanicus</i>	Pennsylvania	5	####	#####	OBL	Native	perennial	forb	-5
ransce	<i>Ranunculus sceleratus</i>	celery-leaf	3	####	#####	OBL	Native	perennial	forb	-5
ratpin	<i>Ratibida pinnata</i>	pinnate prairie	4	####	#####	UPL	Native	perennial	forb	5
ribame	<i>Ribes americanum</i>	American black	4	####	#####	FACW	Native	perennial	shrub	-3

rubida	<i>Rubus idaeus</i>	wild red	3	####	####	FAC	Native	perennial	shrub	0
rudhir	<i>Rudbeckia hirta</i>	black-eyed Susan	4	####	####	FACU	Native	0	0	3
rudtri	<i>Rudbeckia triloba</i>	brown-eyed	4	####	####	FACU	Native	0	0	3
rumcri	<i>Rumex crispus</i>	curly dock	0	0	####	FAC	Introduced	perennial	forb	0
saglat	<i>Sagittaria latifolia</i>	broad-leaved	3	####	####	OBL	Native	perennial	semi-aquatic	-5
salamy	<i>Salix amygdaloides</i>	peach-leaved	4	####	####	FACW	Native	perennial	tree	-3
salbeb	<i>Salix bebbiana</i>	Bebb's willow	7	####	####	FACW	Native	perennial	tree	-3
salint	<i>Salix interior</i>	sandbar willow	2	####	####	FACW	Native	perennial	shrub	-3
salnig	<i>Salix nigra</i>	black willow	4	####	####	OBL	Native	perennial	tree	-5
samcan	<i>Sambucus canadensis</i>	elderberry	3	####	####	FACU	Native	perennial	shrub	3
sancan	<i>Sanicula canadensis</i>	Canadian black	6	####	####	FACU	Native	biennial	forb	3
schacu	<i>Schoenoplectus acutus</i>		0	6	####	OBL	Native	perennial	sedge	-5
schpun	<i>Schoenoplectus pungens</i>	common three-	5	####	####	OBL	Native	perennial	sedge	-5
schtat	<i>Schoenoplectus</i>	soft-stem bulrush	4	####	####	OBL	Native	perennial	sedge	-5
sciatr	<i>Scirpus atrovirens</i>	dark-green	3	####	####	OBL	Native	perennial	sedge	-5
scicyp	<i>Scirpus cyperinus</i>	wool-grass	4	####	####	OBL	Native	perennial	sedge	-5
scugum	<i>Scutellaria galericulata</i>	common skullcap	5	####	####	OBL	Native	perennial	forb	-5
setpum	<i>Setaria pumila</i>	pigeon grass	0	0	####	FAC	Introduced	annual	grass	0
silvul	<i>Silene vulgaris</i>	bladder-campion	0	0	####	0	Introduced	perennial	forb	x
siusua	<i>Sium suave</i>	hemlock water-	5	####	####	OBL	Native	perennial	forb	-5
solcan	<i>Solidago canadensis</i>	Canadian	1	####	####	FACU	Native	perennial	forb	3
soldul	<i>Solanum dulcamara</i>	bittersweet	0	0	####	FAC	Introduced	perennial	vine	0
soffie	<i>Solidago flexicaulis</i>	broad-leaved	6	####	####	FACU	Native	perennial	forb	3
soigig	<i>Solidago gigantea</i>	giant goldenrod	3	####	####	FACW	Native	perennial	forb	-3
solrig	<i>Solidago rigida</i>	rigid goldenrod	5	####	####	FACU	Native	perennial	forb	3
sonarv	<i>Sonchus arvensis</i>	field sow-thistle	0	0	####	FACU	Introduced	perennial	forb	3
sornut	<i>Sorghastrum nutans</i>	yellow indian	5	####	####	FACU	Native	perennial	grass	3
spaame	<i>Sparganium americanum</i>	American bur-	8	####	####	OBL	Native	perennial	aquatic	-5
spapec	<i>Spartina pectinata</i>	prairie cord grass	5	####	####	FACW	Native	perennial	grass	-3
spialb	<i>Spiraea alba</i>	white	4	####	####	FACW	Native	perennial	shrub	-3
spicer	<i>Spiranthes cernua</i>	nodding lady's-	5	####	####	FACW	Native	perennial	forb	-3
stapal	<i>Stachys palustris</i>	hedge-nettle	5	####	####	OBL	Native	perennial	forb	-5
stupec	<i>Stuckenia pectinata</i>	comb pondweed	3	####	####	OBL	Native	perennial	aquatic	-5
symcor	<i>Symphyotrichum cordifolium</i>	common blue	6	####	####	0	Native	0	0	x
symeri	<i>Symphyotrichum ericoides</i>	heath aster	4	####	####	FACU	Native	0	0	3
symlan	<i>Symphyotrichum lanceolatum</i>	lance-leaved	4	####	####	FACW	Native	perennial	forb	-3
sympil	<i>Symphyotrichum pilosum</i>	frost aster	1	####	####	FACU	Native	perennial	forb	3
taroff	<i>Taraxacum officinale</i>	common	0	0	####	FACU	Introduced	perennial	forb	3
thadio	<i>Thalictrum dioicum</i>	early meadow-	7	####	####	FACU	Native	perennial	forb	3
thuocc	<i>Thuja occidentalis</i>	northern white-	9	####	####	FACW	Native	perennial	tree	-3
tiacor	<i>Tiarella cordifolia</i>	false miterwort	10	####	####	FACU	Native	perennial	forb	3
tradub	<i>Tragopogon dubius</i>	fistulous goat's-	0	0	####	0	Introduced	biennial	forb	x
trigra1	<i>Trillium grandiflorum</i>	large-flowered	6	####	####	0	Native	perennial	forb	x
tripra	<i>Trifolium pratense</i>	red clover	0	0	####	FACU	Introduced	perennial	forb	3
trirep	<i>Trifolium repens</i>	white clover	0	0	####	FACU	Introduced	perennial	forb	3
tsucan	<i>Tsuga canadensis</i>	northern hemlock	8	####	####	FACU	Native	perennial	tree	3
typgla	<i>Typha X glauca</i>	hybrid cat-tail	0	0	####	OBL	Introduced	perennial	semi-aquatic	-5
ulmrub	<i>Ulmus rubra</i>	red elm, slippery	4	####	####	FAC	Native	perennial	tree	0
urtdio	<i>Urtica dioica</i>	stinging nettle	1	####	####	FAC	Native	perennial	forb	0
uvugra	<i>Uvularia grandiflora</i>	large-flowered	7	####	####	0	Native	perennial	forb	x
valame	<i>Vallisneria americana</i>	American	6	####	####	OBL	Native	perennial	aquatic	-5
verhas	<i>Verbena hastata</i>	blue vervain	3	####	####	FACW	Native	perennial/per	forb	-3
vertha	<i>Verbascum thapsus</i>	common mullein	0	0	####	UPL	Introduced	biennial	forb	5
vibtri	<i>Viburnum trilobum</i>	American	6	####	####	FAC	Native	perennial	shrub	0
vitrip	<i>Vitis riparia</i>	river bank grape	2	####	####	FAC	Native	perennial	vine	0
xanstr	<i>Xanthium strumarium</i>	common	1	####	####	FAC	Native	annual	forb	0
zizaur	<i>Zizia aurea</i>	golden	7	####	####	FAC	Native	perennial	forb	0
zizpal	<i>Zizania palustris</i>	northern wild rice	8	####	####	OBL	Native	annual	grass	-5

B

APPENDIX B

Timed-Meander Sampling Protocol

Timed-Meander Sampling Protocol for Wetland Floristic Quality Assessment

Wisconsin Department of Natural Resources

INTRODUCTION

This standard operating procedure (SOP) describes the methods used by the Wisconsin Department of Natural Resources to conduct timed-meander surveys of wetland plant communities to determine wetland plant community condition. This SOP should be used in conjunction with the Floristic Quality Assessment Methodology for Wisconsin (Bernthal 2003). This SOP is based on and modified from procedures first developed and employed by the Lake Superior Research Institute (LSRI) (LSRI 2013). Possible uses for this protocol include Natural Heritage Inventory (NHI) surveys of State Natural Area wetland plant communities, FQA Benchmark Project surveys, water quality standards compliance surveys, wetland restoration site monitoring and wetland assessments for regulatory purposes.

DESCRIPTION

In this method, wetland types are first identified using aerial photographs and/or site investigations of the potential wetland(s) to be sampled. Assessment Areas (AAs) composed of relatively homogenous vegetation, are defined prior to sampling but can be modified after the survey based upon the conditions and features encountered during the survey. Natural communities, as defined by the NHI natural community classification, serve as the foundational unit of sampling (Table 1). When multiple types are present at a site, multiple Assessment Areas must be defined. Assign a wetland AA to the natural plant community type that it most closely resembles. If the AA's plant assemblage does not match any Natural Heritage Inventory community the dominant vegetation type (e.g., herbaceous, shrub, forested) may be noted. Table 1 contains a crosswalk to the Eggers and Reed classification system (2014).

Timed-meander start locations should begin far enough from the edge of a community type or from an anthropogenic disturbance (i.e., roadway, residential development, etc.) to avoid including transition zones from other plant communities in the survey. However, if the assessment area is surrounded by roadways, residential development, or other anthropogenic disturbance the timed-meander start location may be located at the edge of the disturbance. The survey consists of a search for all plant species present within a pre- or post- defined Assessment Area and an estimate of abundance and percent areal cover for each species at the end of the search period. The search takes place during timed intervals documented by the time keeper. The timer is paused when surveyors need to divert their attention from the search for any reason, such as conferring on an identification, documenting a rare species, or investigating an area with a plant composition different from the target community. The total time spent searching is an indication of search effort. All plant species are recorded when first observed and search intervals are documented on the Field Sheet. After all search intervals are complete, abundance and percent areal cover over the entire Assessment Area is estimated for each plant species, and notes on disturbance and other observations are documented.

The assessment areas must have homogeneous representation of wetland plants associated with each wetland community type. If a different wetland community type is encountered during a timed-meander survey of a given targeted community type, the timer is paused and the size of the new plant community is evaluated. If the new type is greater than 900 m² (30m x

Timed Meander Sampling Protocol for Wetland FQA

30m) (9688 ft², 98ft x 98ft or approximately 0.09 hectare (0.25 acre), then the area is excluded from the Assessment Area and the search remains paused until the surveyors return to the targeted plant community. If necessary, the new community would need to be evaluated by a separate survey. If the new type is less than 900 m² in size, the search is resumed and the small pocket can be treated as an inclusion within the primary wetland type.

Invasive plant species and anthropogenic disturbances should be observed during the walk to and from the Assessment Area, and noted in comments on the Timed-Meander Survey Field Sheet. Additional condition assessment tools may also be used to evaluate the wetland's health. For regulatory decisions, the Condition Assessment in Section 3 of the Wisconsin Rapid Wetland Assessment Methodology version 2 (Trochlell 2014) should be used. A Disturbance Factor Checklist is used for rating disturbance levels for the FQA Benchmark Project surveys. For future wetland condition surveys the Disturbance Factors Checklist or a modification of it will be used to assess stressors that may be causing an impairment to the wetland.

Table 1: Examples of Wetland NHI Natural Communities and Crosswalk to Eggers and Reed (2014).¹

NHI Natural community	Eggers and Reed (2014)	Dominant vegetation type
Submergent Marsh	Shallow Open Water Communities	Aquatic Herbaceous
Emergent Marsh	Shallow Water Marsh	Herbaceous
Northern Sedge Meadow	Sedge Meadow	Herbaceous
Southern Sedge Meadow	Sedge Meadow	Herbaceous
Wet-mesic Prairie	Wet/Wet-mesic Prairie	Herbaceous
Calcareous Fen	Calcareous Fen	Herbaceous
Boreal Rich Fen	N/A	Herbaceous
Central Poor Fen	N/A	Herbaceous
Ephemeral pond	Seasonally Flooded Basin	Herbaceous
Open Bog	Open Bog	Herbaceous/Low Shrub
Alder Thicket	Alder Thicket	Shrub
Shrub-carr	Shrub Carr	Shrub
Black Spruce Swamp	Coniferous Bog	Forested
Northern Wet-mesic Forest	Coniferous Swamp	Forested
Floodplain Forest	Floodplain Forest	Forested
Southern Hardwood Swamp	Hardwood Swamp	Forested

¹ Additional wetland community types, e.g., muskeg, interdunal, etc., may be surveyed. For a detailed description of each Natural Community, please refer to "Wisconsin's Natural Communities" on the WDNR [NHI website](#).

Timed Meander Sampling Protocol for Wetland FQA

DEFINITIONS

Assessment Area (AA): Discrete, homogenous area of a target plant community that is to be thoroughly sampled during the timed meander survey. Large wetlands/wetland complexes may contain multiple wetland assessment areas.

EO - Element Occurrence: In the Natural Heritage Inventory, a population of a species or an example of a natural community or natural feature naturally occurring at a specific, ecologically appropriate location.

Search: Locating, identifying and documenting plant species presence, while mentally noting percent cover. Previously un-documented plant species are continuously added until the search interval is paused or ends.

Search Interval: A pre-defined time interval, maintained by the time keeper. The search time may be paused whenever the active search for additional species stops for various reasons, including taking time to work out difficult identifications, documenting rare species, adjusting the Assessment Area or other reasons.

REFERENCES

Bernthal, Thomas W. 2003. Development of a Floristic Quality Assessment Methodology for Wisconsin.

Eggers, S.D. and D.M. Reed. 2014. Wetland Plants and Plant Communities of Minnesota and Wisconsin, Version 3.1. US. Army Corps of Engineers, S. Paul District, St. Paul, MN.

Lake Superior Research Institute (LSRI). 2013. Timed-meander Sampling Protocol for Forested and Non-forested Wetland Floristic Quality Assessment. University of Wisconsin-Superior. Superior, WI.

Trochlell, Patricia A. 2014. Wisconsin Rapid Wetland Assessment Methodology, version 2.

EQUIPMENT LIST

- ◆ Clipboard
- ◆ Compass
- ◆ Digital Camera
- ◆ Field Guides
- ◆ GPS Unit
- ◆ Digital watch with countdown timer
- ◆ Hand Lens (10X objective)
- ◆ Maps
- ◆ Markers
- ◆ Pencils (and sharpener/extra lead)
- ◆ Plant Collection Bags (i.e., Ziploc® Big Bags)
- ◆ Weather-Proof Datasheets

PROCEDURE

1. Upon arrival at the site, the survey team of two or more people must completely fill out the top portion of the WDNR Timed Meander Survey Sheet (Field Sheet) in Attachment 1 or other form for the Assessment Area (AA) to be surveyed. Use the Natural Heritage Inventory (NHI) Natural Community Descriptions to determine the appropriate plant community classification for the AA to be surveyed. If the survey involves an existing NHI Element Occurrence note the EO code. If the plant assemblage does not appear to match a natural community, note the dominant vegetation type from Table 1.
2. Start locations on the AA must begin at a point clearly within the target community type, away from transitional areas or anthropogenic disturbance (i.e., roadway, residential development, logging, ditching, etc.). The exception to this is that if an AA is immediately adjacent to an anthropogenic disturbance, then the start location may be located near the edge of this disturbance.
3. Travel to the AA start location and record any disturbance (e.g., invasive plants, logging, ditches) encountered while traveling to the survey start-up point on side 2 of the Field Sheet. This can also be completed at the end of the survey after the entire AA has been surveyed.
4. Take a waypoint at the survey start point using a handheld GPS unit. Record the starting point on the Field Sheet in decimal degrees. Indicate whether the GPS is set to a tracking function. This will create a record of survey locations over the course of the search.
5. Designate a lead observer and a data recorder for each survey; the observer will conduct the taxonomic identification and the recorder will complete the survey Field Sheet and operate the timer.
6. Set the countdown timer on the watch for 5 minutes. Start the stop watch and begin timing the first, 5-minute interval of the timed-meander survey. Standing at the start point, record all plants (ideally to species) that can be seen from the four cardinal directions before moving forward in search of new species. Upon reaching the end of a 5 minute interval, the timekeeper should instruct other observer(s) to stop searching until the next time interval begins.
7. Record plants using the full species name. Because there are numerous and often conflicting resources for accepted plant names (USDA Plants, Flora of North America, various state herbaria lists etc.), it is important to limit confusion caused by using multiple names for the same species. Therefore, this protocol follows the Wisconsin State Herbarium's list of vascular flora, which has recently been updated to reflect the most recent taxonomic information and is available online. The State Herbarium nomenclature should be used for conducting plant surveys in Wisconsin whenever possible.

Timed Meander Sampling Protocol for Wetland FQA

8. Record on the Field Sheet and collect all unknown, uncertain, and/or difficult-to-identify plant species, which will later be keyed or identified by experts (or eliminated from the analysis if identification is not possible).
9. Advance the search from the start point once the initial plants from the area surrounding the start point are recorded. Proceed walking through the site, taking care to identify all species encountered and making sure to investigate all vegetation layers. The search must always stay within the targeted plant community type for the duration of the survey, with one exception:
 - a. If a different plant community type is encountered during the search, stop the watch to pause the elapsed time and evaluate the size of the community. If the new community type is less than 900 m² (30m x 30m or 0.09 hectares, 9688 ft² (98 ft x 98 ft) or 0.25 acres) the timed meander survey can continue through that community type.
 - b. If the new community type is greater than 900 m², pause the survey until the surveyors have returned to the target plant community.
10. After each 5 minute time interval, the recorder should note on the Field Sheet the time interval in which those plant species were observed (i.e. 0-5 minutes, 5-10 minutes, 10-15 minutes, etc.). At the end of each time interval the observers may wish to briefly confer over any unknown species before resuming the next time interval. This reduces the number of unknown species for later office determination.
11. If an interruption of the process is necessary (e.g., intensive consulting with field guides and conferring with other surveyors over a difficult identification, bathroom breaks, difficult terrain, or vegetation encountered), stop the timer to pause the interval, eliminating these interruptions from the elapsed search time.
12. Pause the search if a rare, threatened, and/or endangered species is observed. Record the plant species on the Field Sheet, the location of the plant using the handheld GPS, take a digital photo of the species, and note associated species and other relevant information needed for the NHI Rare Plant Form. Collect a specimen if authorized and warranted. Resume the stop watch after all field recording is noted.
13. Typically a minimum of 30 minutes of total search time is needed to thoroughly search an AA. Stop the search when:
 - a. A pre-defined area has been completely searched. For some uses of this SOP a search of an entire pre-defined area may be required, regardless of the time it takes, even if no new species are observed in a search interval, OR
 - b. After 30 minutes of search time, one or no new species is found during the most recent 5 minute interval, OR
 - c. After 30 minutes of search time, the number of species observed in the most recent 5 minute interval is less than 5% of the running total of recorded species (including unknowns). For example, if, after the 10th five-minute interval (50 minutes of elapsed search time), 100 species have been observed, and 4 or fewer species were observed in the 10th 5-minute interval, the survey should be ended. The justification for ending is that the survey has reached the point of

Timed Meander Sampling Protocol for Wetland FQA

diminishing returns and has likely captured 90-95% of the species richness, and has likely captured 100% of the dominant and common species.

- d. The search may end earlier than 30 minutes only if the entire AA has been thoroughly searched and no species were found in the final interval.
14. After the last search interval is completed take a waypoint at the survey end point using a handheld GPS unit. Record the waypoint on the Field Sheet in decimal degrees.
15. Once the species list is complete assign each species a percent cover based on an ocular estimate of the percent of the AA covered by the canopy of that species (see Figures 1 and 2). Estimate to the nearest whole number. For species that cover 1% or less, use 1.
16. For each species, assign an abundance code based upon the class categories listed in Table 2 below. Abundance estimates give a qualitative estimate of relative frequency and can be used to make comparisons with historically gathered site data. They also provide valuable data to compare species with small areal percent cover.
17. Record other data on the Field Sheet, including soil texture and pH on side 1, if taken. Animal species observed and other observations are recorded on side 2.

Table 2. Abundance Classification

Symbol	Abundance Code	Description
A	Abundant	The dominant plants throughout the site
C	Common	Locally abundant or frequently encountered
O	Occasional	Occasionally encountered, or locally common but absent or infrequent across much of site
U	Uncommon	Infrequently encountered
R	Rare	Very few plants seen

Figure 1: Comparison chart for visual percentage estimation. NPS US Dept. of the Interior, Damage Assessment Handbook, 2002.

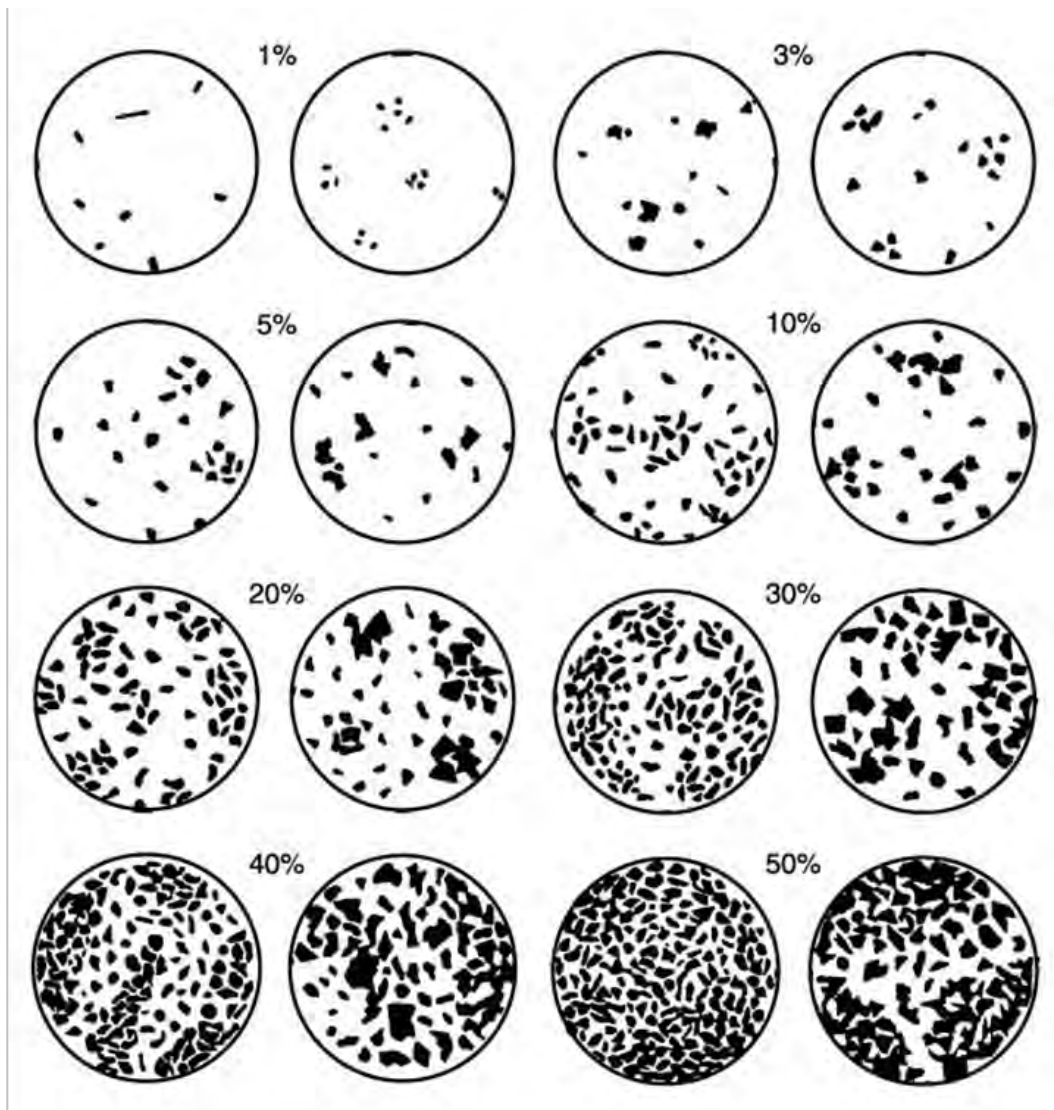
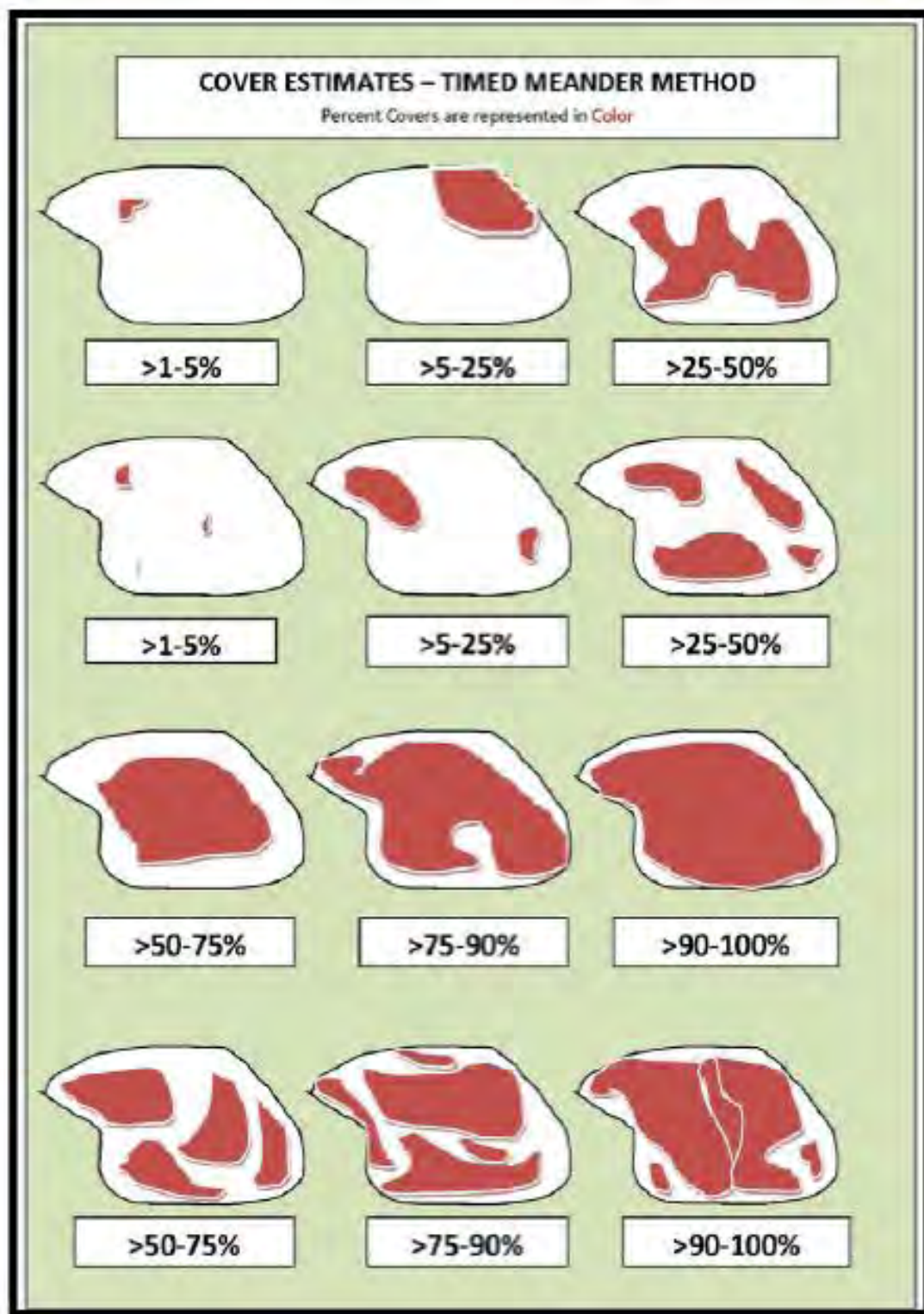


Figure 2: Cover estimates for timed meander method. LSRI 2013.



WDNR Timed Meander Survey Field Sheet

Observers _____ Date _____

Property _____ Site Name _____ County _____

Access _____

Community Type _____ EOID (if existing EO) _____

GPS Used _____ Start point (Dec Deg) _____ End point (Dec Deg) _____ Track Taken? Y N

Total Elapsed Search Time _____ (mins) Soils & pH _____

Time		Species	%	AC	Notes	Time		Species	%	AC	Notes
0	1						36				
	2						37				
	3						38				
	4						39				
	5						40				
	6						41				
	7						42				
	8						43				
	9						44				
	10						45				
	11						46				
	12						47				
	13						48				
	14						49				
	15						50				
	16						51				
	17						52				
	18						53				
	19						54				
	20						55				
	21						56				
	22						57				
	23						58				
	24						59				
	25						60				
	26						61				
	27						62				
	28						63				
	29						64				
	30						65				
	31						66				
	32						67				
	33						68				
	34						69				
	35						70				

Estimate % areal cover and abundance code for each species

AC: Abundance codes: A (abundant), C (common), O (occasional), U (uncommon), R (rare)

WDNR Timed Meander Survey Field Sheet

Time		Species	%	AC	Notes
	71				
	72				
	73				
	74				
	75				
	76				
	77				
	78				
	79				
	80				
	81				
	82				
	83				
	84				
	85				
	86				
	87				
	88				
	89				
	90				
	91				
	92				
	93				
	94				
	95				
	96				
	97				
	98				
	99				
	100				
	101				
	102				
	103				
	104				
	105				
	106				
	107				
	108				
	109				
	110				
	111				
	112				

Wetland Observation Notes
Waypoint #
Waypoint #
Waypoint #
Waypoint #
Waypoint #
Waypoint #
Animal Observations
Structural Notes
Invasive Species (note distance to AA if observed outside the AA)
Anthropogenic Disturbances
Other Notes

Estimate % areal cover and abundance code for each species
Abundance codes: A (abundant), C (common), O (occasional), U (uncommon), R (rare)

C

APPENDIX C

Photo Log



Emergent Aquatic Facing N



Emergent Aquatic Facing NE 1



Emergent Aquatic Facing NE 2



Emergent Aquatic Facing NW



Emergent Aquatic Facing SE



Emergent Aquatic Facing SW



Emergent Aquatic-Wild Rice Facing E 1



Emergent Aquatic-Wild Rice Facing E 2



Emergent Aquatic-Wild Rice Facing N



Emergent Aquatic-Wild Rice Facing S



Emergent Aquatic-Wild Rice Facing SE



Emergent-Wet Meadow Planting Facing N



Emergent-Wet Meadow Planting Facing S 1



Emergent-Wet Meadow Planting Facing S 2



Emergent-Wet Meadow Planting Facing S 3



Emergent-Wet Meadow Planting Facing W



Ephemeral Pool Facing E



Invasive Species Control Area Facing N



Invasive Species Control Area Facing NE



Invasive Species Control Area Facing SE



Mesic to Wet Mesic Prairie Facing N



Northern Sedge Meadow Facing NE



Northern Sedge Meadow Facing NW



Northern Sedge Meadow Facing S



Northern Sedge Meadow Facing SW 1



Northern Sedge Meadow Facing SW 2



Northern Sedge Meadow Facing W



Open Water Facing E 1



Open Water Facing E 2



Open Water Facing NE



Open Water Facing NW



Open Water Facing S



Open Water Facing SW



Open Water Facing W



Open Water Vegetation 1



Open Water Vegetation 2



Open Water Vegetation 3



Open Water Vegetation 4



Prairie Facing E



Prairie Facing N



Prairie Facing NE



Prairie Facing NW



Prairie Facing SW



Prairie Facing W



Shady Woodland Planting Facing E 1



Shady Woodland Planting Facing E 2



Shady Woodland Planting Facing E 3



Shady Woodland Planting Facing N



Shady Woodland Planting Facing NW



Shady Woodland Planting Facing SW



Shady Woodland Planting Facing W



Shrub Carr Facing E



Shrub Carr Facing NE



Shrub Carr Facing S



Shrub Carr Facing SE



Shrub Carr Facing SW



Site Shot Facing N



Site Shot Facing NE



Snapping Turtle



Submergent Aquatic Facing S



Wet Mesic Forest Facing E



Wet Mesic Forest Facing N 1



Wet Mesic Forest Facing N 2



Wet Mesic Forest Facing N 3



Wet Mesic Forest Facing NE 1



Wet Mesic Forest Facing NE 2



Wet Mesic Forest Facing NE 3



Wet Mesic Forest Facing NE 4



Wet Mesic Forest Facing NE 5



Wet Mesic Forest Facing S 1



Wet Mesic Forest Facing S 2



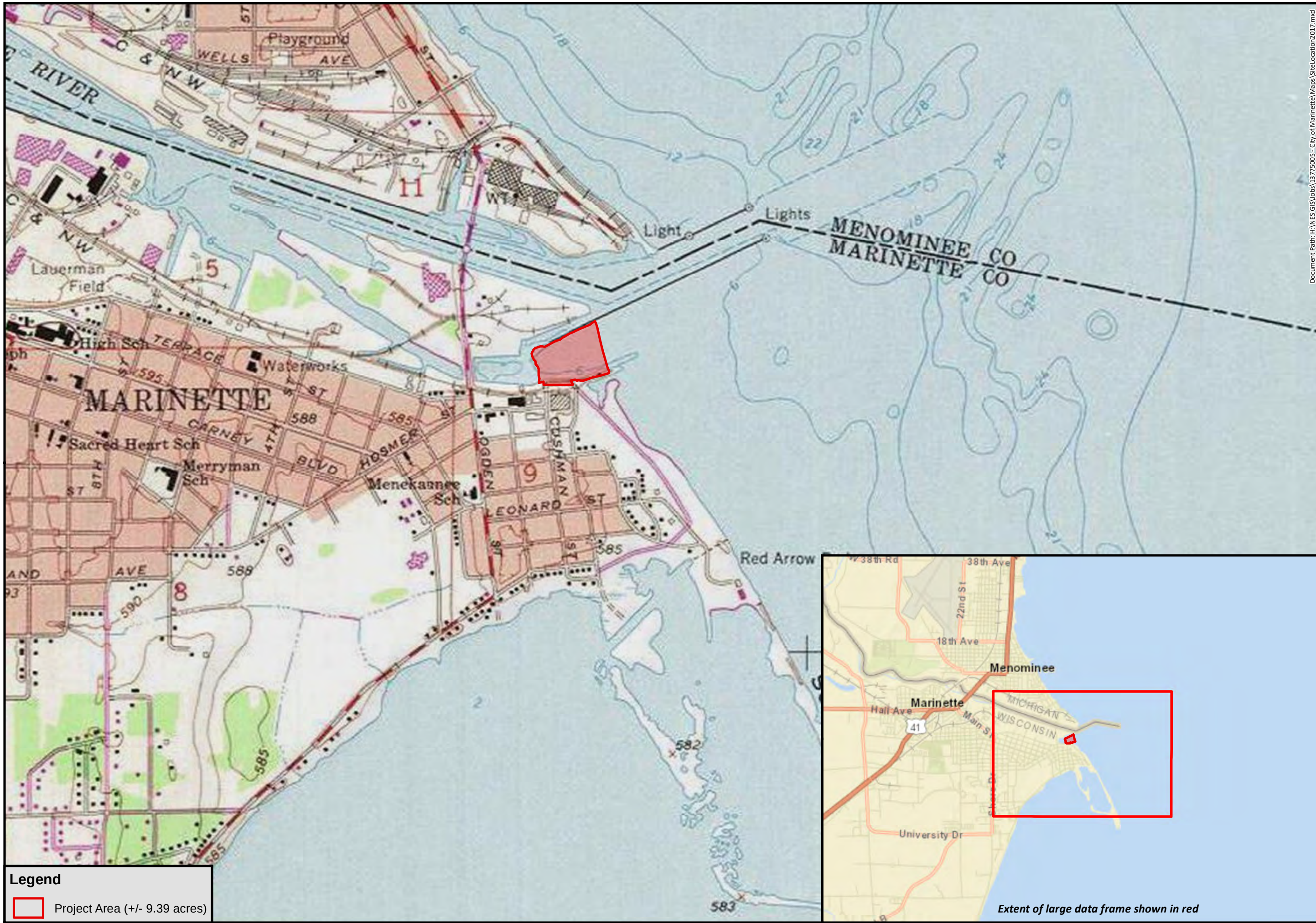
Wet Mesic Forest Facing SE



Wet Mesic Forest Facing SW



Wet Mesic Forest Facing W



Legend

 Project Area (+/- 9.39 acres)



Robert E. Lee
& Associates, Inc.

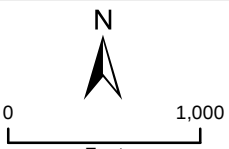
Engineering, Surveying,
Environmental Services

Figure 1
Site Location

2/5/2019

Lower Menominee River Area of Concern
Menominee Harbor Restoration Project
City of Marinette-Grant/Proj. No. GL-00E01312-0
REL Project No. 13775005
Marinette, Marinette County, WI

Located in parts of:
Section 4 & 9
T30N, R24E
City of Marinette
Marinette County
Wisconsin



0 1,000
Feet

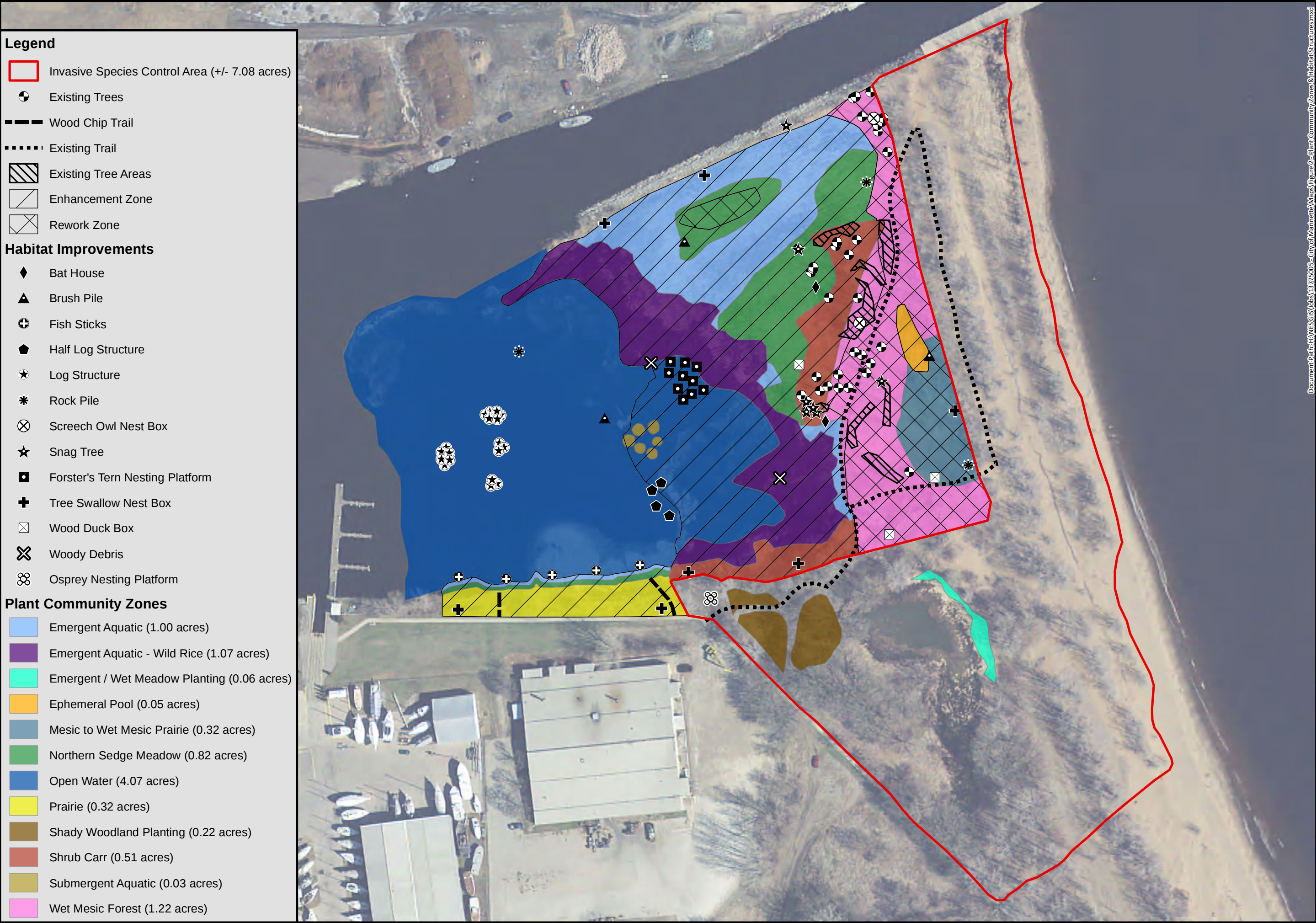
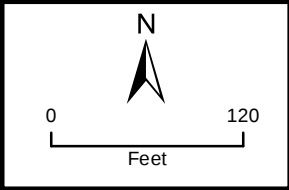


Figure 2
Plant Community Zones
& Habitat Structures

2/5/2019

Lower Menominee River Area of Concern
Menominee Harbor Restoration Project
City of Marinette-Grant/Proj. No. GL-00E01312-0
REL Project No. 13775005
Marinette, Marinette County, WI

Located in parts of:
Section 4 & 9
T30N, R24E
City of Marinette
Marinette County
Wisconsin



Document Path: H:\WES GIS\Jobs\13775005-City of Marinette\Maps\Figure 2-Plant Community Zones & Habitat Structures.mxd

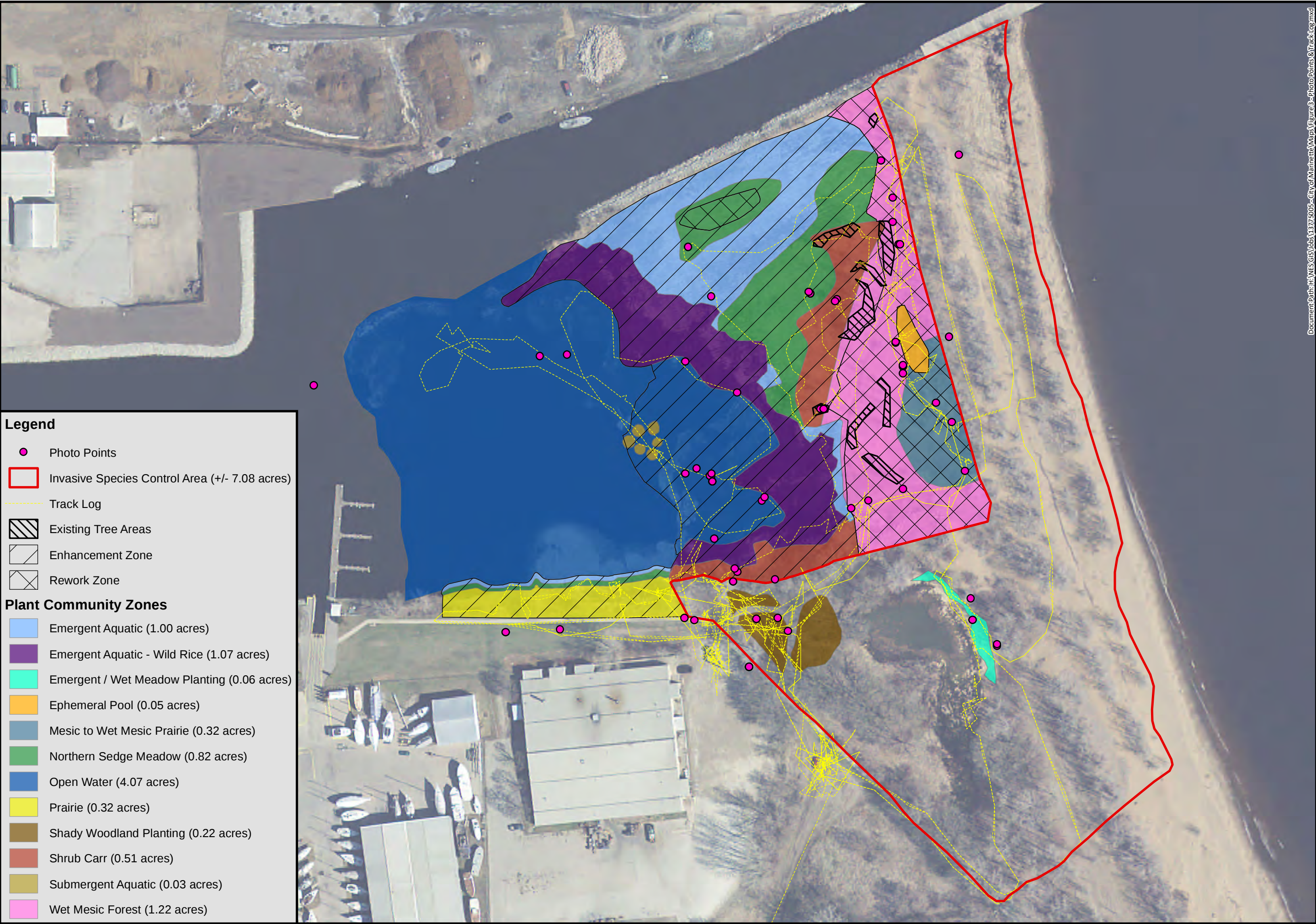


Figure 3
Photo Points &
Track Log

2/5/2019

Lower Menominee River Area of Concern
Menominee Harbor Restoration Project
City of Marinette-Grant/Proj. No. GL-00E01312-0
REL Project No. 13775005
Marinette, Marinette County, WI

Located in parts of:
Section 4 & 9
T30N, R24E
City of Marinette
Marinette County
Wisconsin

