Wetland & Waterway Consulting, LLC
Dave Meyer
S83 W23915 Artesian Avenue • Big Bend, WI 53103
262-719-4286 • Fax • 262-364-2197
E-Mail • *wetland@wi.rr.com*

5-6-15

Mr. Adam Artz
Pinnacle Engineering Group
15850 W. Bluemound Road Suite 310
Brookfield, WI 53005

Dear Mr. Artz:

Wetland & Waterway Consulting (WWC) has conducted a wetland delineation on property located in Sec.34, T7N, R19E, City of Waukesha. The delineation was conducted on 4-15-15 at your request. This site is under consideration for future development; therefore, location of the wetlands prior to construction is necessary. The purpose of the delineation was to identify and flag all wetlands within the boundaries identified on the attached maps

Investigator

David Meyer is an independent environmental consultant providing environmental permitting services, site assessments, wetland delineations, and planning advice. He obtained a master's degree in Natural Resources Management from Southern Illinois University-Carbondale in 1977. Mr. Meyer has held technical and administrative positions in wetland and water resources specialties with the Wisconsin Department of Natural Resources and the U.S. Army Corps of Engineers. He has satisfactorily completed the Reg IV Wetland Delineation training offered by the U.S. Army Corps of Engineers, the Advanced Wetland Delineation training conducted by the University of Wisconsin-LaCrosse in 2002 and 2007, the USACOE/WIDNR 1987 Wetland Delineation Manual Midwest Region Supplement Training in 2009, the USACOE/WIDNR 1987 Wetland Delineation Manual Northcentral/Northeast Region Supplement Training in 2010, the Basic Hydric Soil ID training conducted by the University of Wisconsin-LaCrosse in 2011, and the SEWRPC Environmental Corridor Delineation Workshops in 2004 and 2015.

Methods

The site visit was conducted according to the guidelines identified in the U.S. Army Corps of Engineers' 1987 manual and the Northcentral/Northeast Regional Supplement. The plot size used was a 30 foot radius circle for trees, shrub/saplings, and woody vines, and a 5 foot radius circle for herbaceous vegetation. Resources utilized in the investigation included the NRCS county soil survey, Wisconsin Wetland Inventory mapping, topo mapping, aerial photos, county plat mapping, *The Vegetation of Wisconsin, Wetland Plants and Plant Communities of Minnesota and Wisconsin – 3rd Edition, A Field Guide to Wildflowers of Northeastern and Northcentral North America,* and *Plants of the Chicago Region*. Sampling points were located in the areas that exhibited wetland characteristics as well as upland characteristics. Data was collected on the vegetation, soils, and hydrology at each sampling point. The

wetlands were identified using the technical approach described in the USACOE 1987 Manual. Areas displaying a predominance of hydric vegetation, hydric soils, and wetland hydrology were flagged within the wetland boundaries. Refer to the wetland map attached to the end of this report for locations.

Results and Discussion

This approximately 3 acre site is situated on the west side of Aviation Drive, just south of Northview Road/CTH "FT". The subject property is the southern portion of a parcel that is currently developed with a commercial building and parking lot. Development plans are to demolish the existing building and construct a new facility. Identification of the wetlands prior to construction is necessary to avoid impacts.

This site has not been previously delineated.

The Wisconsin Wetland Inventory map shows a W0Hx complex located on the south side of the subject property. The field investigation revealed a narrow band of lowland hardwood trees and shrubs and shallow water marsh (Data point #'s 1 and 3) occupying the perimeter of the small pond. The mapped soil types are Houghton muck (Ht), Pistakee silt loam (PrA), and Hochheim loam (HmD2, HmC2). Only a very small percentage of these soil profiles are still intact due to the extensive development that has taken place. The northern portion of the subject property is an asphalt parking lot. From the edge of the parking lot a steep slope (15—20%) has been created with fill material down to the edge of the pond (Data point #'s 2 and 4). Lowland hardwood trees and shrubs have established themselves in the fill material over the years as well as at the water's edge where a band of narrow leaf cattail is present. This narrow band of hydric vegetation was flagged (Data point #'s 1 and 3).

Precipitation Data

Precipitation data from the websites of the USDA Natural Resource Conservation Service and the National Oceanic and Atmospheric Administration (NOAA) was reviewed.

Long Term Conditions--- The NRCS WETS tables indicate that in the subject area, the 30-year normal range of precipitation for the three full months (January, February, March) prior to the delineation is between 2.64 and 5.43 inches. Actual precipitation for this 3 month period recorded on the National Oceanic and Atmospheric Administration (NOAA) website was 2.87 inches. Longer-term conditions were within the normal range.

Short term Conditions---The 30-year normal range for the month of April is between 2.39 and 3.81 inches. The actual precipitation for the 14 day period immediately preceding the delineation was 0.93 inches. Shorter-term conditions were drier than the normal range.

Conclusion

The wetland lines staked in the field and referred to in this report are the best estimate of the wetland boundaries based on the conditions present at the time of delineation. Concurrence with these wetland lines by the U.S. Army Corps of Engineers and the Wisconsin Department of Natural Resources must be obtained before undertaking any alterations or modifications of this property. Input from these agencies may result in adjustments to the wetland/upland boundaries.

Activities affecting wetlands or surface waters may require permits from the U.S. Army Corps of Engineers, the Wisconsin Department of Natural Resources, and local municipal authorities. The client must obtain authorization from all proper regulatory authorities before altering, modifying, or using the property. If the required authorizations are not obtained, Wetland & Waterway Consulting, LLC shall not be liable or responsible for any resulting damages.

Sincerely,

Dave Meyer

Dave Meyer

Attachments

1. Data points
2. Soil Survey maps
3. Wisconsin Wetland Inventory map
4. USGS topo map
5. Location map
6. Site photographs
7. Literature cited
8. Delineation checklist
9. Wetland boundary map

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Aviation Drive City/County: Waukesha Sampling Date: 4-15-15
Applicant/Owner: State: WI Sampling Point: # 1 wet
Investigator(s): Meyer Section, Township, Range: Sec. 34 T7N R19E
Landform (hillslope, terrace, etc.): depressional basin Local relief (concave, convex, none): Concave
Slope (%): ≈3 Lat.: Long.: Datum:
Soil Map Unit Name: Houghton muck HtA NWI Classification: WDHx
Are climatic/hydrologic conditions of the site typical for this time of the year? See report (If no, explain in remarks)
Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal
Are vegetation N, soil N, or hydrology N naturally problematic? circumstances" present? Y
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)
- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ✓	No ___	Depth (inches):	3
Water table present?	Yes ✓	No ___	Depth (inches):	Surface
Saturation present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches):	Surface

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: 1

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	Populus deltoides	45	✓	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		45	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	Populus deltoides	5	✓	FAC
2				
3				
4	Cornus stolonifera	5		FACW
5				
6				
7	Lonicera x bella	5		FACU
8				
9	Salix interior	10	✓	FACW
10	Rhamnus cathartica	5		FAC
		30	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	Typha angustifolia	100	✓	OBL
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2	Vitis riparia	5	✓	FAC
3				
4				
5				
		5	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	1	
Sapling/Shrub Stratum	5	
Herb Stratum	1	
Woody Vine Stratum		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 88 (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	x 1 =		
FACW species	x 2 =		
FAC species	x 3 =		
FACU species	x 4 =		
UPL species	x 5 =		
Column totals	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✓ Rapid test for hydrophytic vegetation
- ✓ Dominance test is >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-20	Gley1 3/10GY	100					silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Aviation Drive City/County: Waukesha Sampling Date: 4-15-15
Applicant/Owner: State: WI Sampling Point: #2 UP
Investigator(s): Meyer Section, Township, Range: Sec. 34 T7N R19E
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): None
Slope (%): ~15 Lat.: Long.: Datum:
Soil Map Unit Name: Houghton muck Ht A NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? See report (If no, explain in remarks)
Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal
Are vegetation N, soil N, or hydrology N naturally problematic? circumstances" present? Y
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Data point located on steep hillslope bordering the north side of the pond / wetland

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)
___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes ___ No ✓ Depth (inches): ___
Water table present? Yes ___ No ✓ Depth (inches): ___
Saturation present? Yes ___ No ✓ Depth (inches): ___
(includes capillary fringe)

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: 2

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 Populus deltoides		75	✓	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		75	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 Cornus stolonifera		5	✓	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 Dipsacus laciniatus		60	✓	UPL
2				
3				
4 Poa pratensis		40	✓	FACU
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
			= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum		1
Sapling/Shrub Stratum		1
Herb Stratum	1	1
Woody Vine Stratum		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species		x 1 =	
FACW species	5	x 2 =	10
FAC species	75	x 3 =	225
FACU species	40	x 4 =	160
UPL species	60	x 5 =	300
Column totals	180 (A)		695 (B)

Prevalence Index = B/A = 3.86

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-11	10YR 3/2	100					silt loam	
11-20	10YR 3/2	100					silt loam w/	30% gravel

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? _____

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Aviation Drive City/County: Waukesha Sampling Date: 4-15-15
Applicant/Owner: State: WI Sampling Point: #3 wet
Investigator(s): Meyer Section, Township, Range: Sec. 34 T7N R19E
Landform (hillslope, terrace, etc.): depressional basin Local relief (concave, convex, none): Concave
Slope (%): ~3 Lat.: Long.: Datum:
Soil Map Unit Name: Pistakee Silt loam PtA NWI Classification: WetL
Are climatic/hydrologic conditions of the site typical for this time of the year? See report (If no, explain in remarks)
Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal
Are vegetation N, soil N, or hydrology N naturally problematic? circumstances" present? Y
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y Hydric soil present? Y Indicators of wetland hydrology present? Y	**Is the sampled area within a wetland?** Y If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes ___	No ✓	Depth (inches):	
Water table present?	Yes ✓	No ___	Depth (inches):	Surface
Saturation present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches):	Surface

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: 3

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 Salix nigra		45	✓	OBL
2				
3				
4				
5				
6				
7				
8				
9				
10				
		45 = Total Cover		

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 Salix interior		60	✓	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
		60 = Total Cover		

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1 Typha angustifolia		100	✓	OBL
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100 = Total Cover		

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum		1
Sapling/Shrub Stratum		1
Herb Stratum		1
Woody Vine Stratum		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	x 1 =		
FACW species	x 2 =		
FAC species	x 3 =		
FACU species	x 4 =		
UPL species	x 5 =		
Column totals	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✓ Rapid test for hydrophytic vegetation
- ✓ Dominance test is >50%
- Prevalence index is ≤3.0*
- Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	10YR2/1	100					silt loam	
4-16	10YR5/1	100					silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ✓ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

Three soil pits were dug in this area. Hard-packed gravel was encountered in all three between 13" and 16". The perimeter of this small pond has been filled in conjunction with the adjacent obvious Fill in the hillside. Years of erosion have covered the Fill/gravel with soil that has been populated with hydric vegetation.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Aviation Drive City/County: Waukesha Sampling Date: 4-15-15
Applicant/Owner: State: WI Sampling Point: #4UP
Investigator(s): Meyer Section, Township, Range: Sec. 34 T7N R19E
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex
Slope (%): ≈15 Lat.: Long.: Datum:
Soil Map Unit Name Pistakee silt loam PrA NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? See report (If no, explain in remarks)
Are vegetation N, soil N, or hydrology N significantly disturbed? Are "normal
Are vegetation N, soil N, or hydrology N naturally problematic? circumstances" present? Y
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Y
Hydric soil present? N
Indicators of wetland hydrology present? N

Is the sampled area within a wetland? N

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Data point located in steep hillslope bordering north side of pond

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)
___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Microtopographic Relief (D4)

Field Observations:
Surface water present? Yes ___ No ✓ Depth (inches): ___
Water table present? Yes ___ No ✓ Depth (inches): ___
Saturation present? Yes ___ No ✓ Depth (inches): ___
(includes capillary fringe)

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: 4

Tree Stratum (Plot Size ( ))	Absolute % Cover	Dominant Species	Indicator Status
1 Salix nigra	35		OBL
2			
3			
4			
5			
6			
7			
8			
9			
10			
	35 = Total Cover		

Sapling/Shrub Stratum (Plot Size ( ))	Absolute % Cover	Dominant Species	Indicator Status
1 Salix interior	60		FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	60 = Total Cover		

Herb Stratum (Plot Size ( ))	Absolute % Cover	Dominant Species	Indicator Status
1 Alliaria petiolata	70		FACU
2			
3			
4 Geum canadense	5		FAC
5			
6			
7 Dipsacus laciniatus	5		UPL
8			
9			
10			
11			
12			
13			
14			
15			
	80 = Total Cover		

Woody Vine Stratum (Plot Size ( ))	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	= Total Cover		

50/20 Thresholds

	20%	50%
Tree Stratum		
Sapling/Shrub Stratum		
Herb Stratum		
Woody Vine Stratum		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column totals	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ✓ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-7	10YR3/2	100					silt loam	
7-15	10YR3/2	100					silt loam w/	30% gravel + rocks

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

Soil pit could not be dug past 15" due to hard-packed Fill material.

Surface Water Data Viewer Map

Legend

NRCS Wisconsin Soils

- Soil Mapping Unit
- Water

Rivers and Streams

Open Water

2010 Air Photos (WROC)

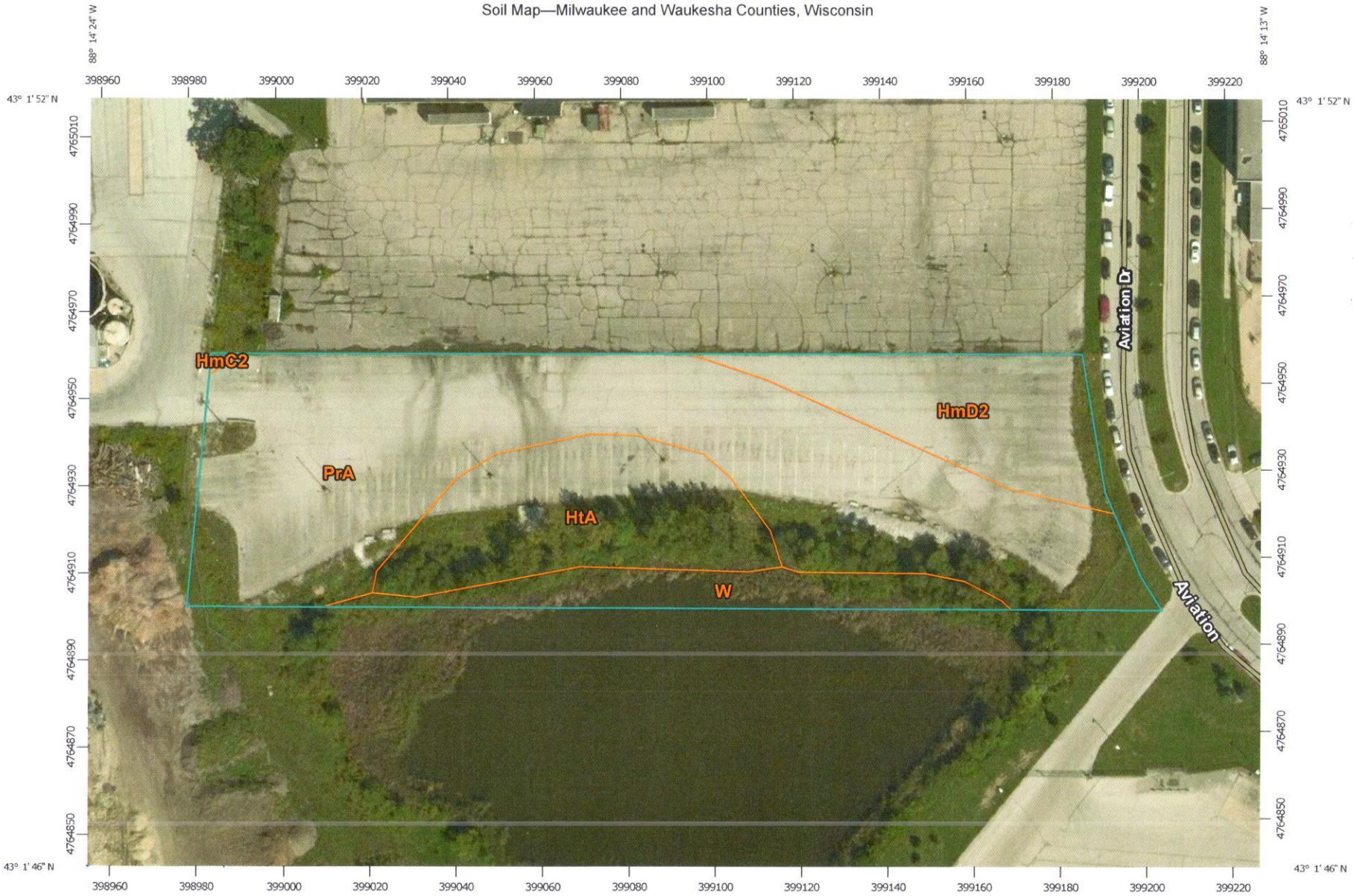
Notes

0.1 0 0.03 0.1 Miles

NAD_1983_HARN_Wisconsin_TM

© Latitude Geographics Group Ltd.

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made aregarding accuracy, applicability for a particular use, completemenss, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/org/legal/



Map Scale: 1:1,240 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Map Unit Legend

Milwaukee and Waukesha Counties, Wisconsin (WI602)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
HmC2	Hochheim loam, 6 to 12 percent slopes, eroded	0.0	0.1%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	0.4	14.1%
HtA	Houghton muck, 0 to 2 percent slopes	0.6	18.5%
PrA	Pistakee silt loam, 1 to 3 percent slopes	1.8	58.5%
W	Water	0.3	8.7%
Totals for Area of Interest		**3.1**	**100.0%**

Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Milwaukee and Waukesha Counties, Wisconsin (WI602)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
HmC2	Hochheim loam, 6 to 12 percent slopes, eroded	0	0.0	0.1%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	0	0.4	14.1%
HtA	Houghton muck, 0 to 2 percent slopes	100	0.6	18.5%
PrA	Pistakee silt loam, 1 to 3 percent slopes	0	1.8	58.5%
W	Water	0	0.3	8.7%
Totals for Area of Interest			**3.1**	**100.0%**

Surface Water Data Viewer Map

Legend

Wetland Class Points
- Dammed pond
- Excavated pond
- Filled excavated pond
- Filled/drained wetland
- Wetland too small to delineate

Filled Points

Wetland Class Areas
- Wetland
- Upland

Filled Areas

Rivers and Streams

Open Water

2010 Air Photos (WROC)

Notes

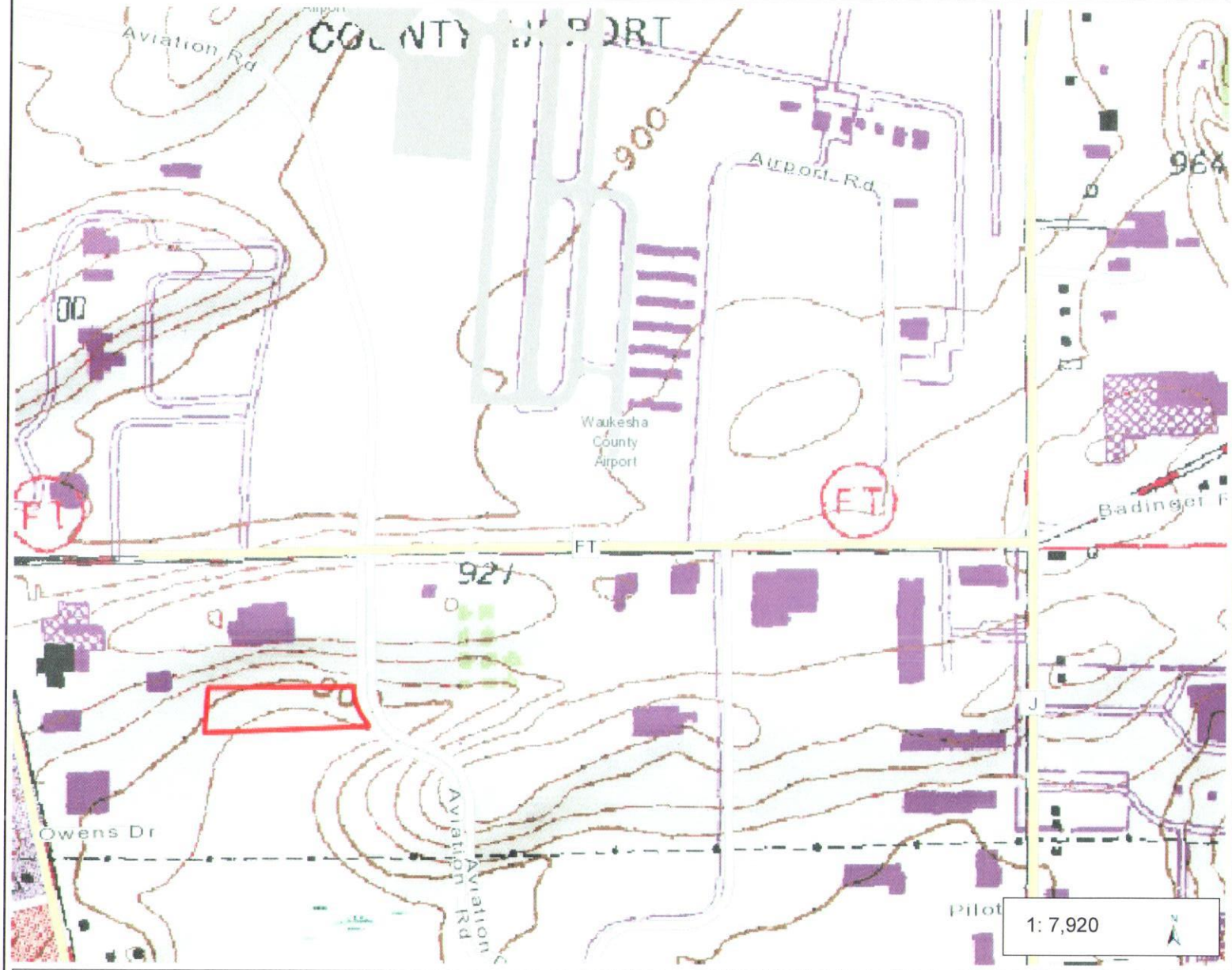
0.1 0 0.03 0.1 Miles

NAD_1983_HARN_Wisconsin_TM

© Latitude Geographics Group Ltd.

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made aregarding accuracy, applicability for a particular use, completemenss, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/org/legal/

Surface Water Data Viewer Map



Legend

- Rivers and Streams
- Open Water

Notes

0.3 0 0.13 0.3 Miles

NAD_1983_HARN_Wisconsin_TM

© Latitude Geographics Group Ltd.

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made aregarding accuracy, applicability for a particular use, completemenss, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/org/legal/

Surface Water Data Viewer Map

Legend

- Rivers and Streams
- Open Water

Notes

0.3 0 0.13 0.3 Miles

NAD_1983_HARN_Wisconsin_TM

© Latitude Geographics Group Ltd.

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made aregarding accuracy, applicability for a particular use, completemenss, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/org/legal/

PHOTOGRAPHS

Photo A.....Viewing east across wetland complex.

Photo B.....View of hillslope that forms the northern boundary of the subject property.


A

B

LITERATURE CITED

Curtis, John. 1971. *The Vegetation of Wisconsin*. University of Wisconsin Press, Madison, Wisconsin. 173 pp.

Eggers, Steve and Donald Reed. 2011. *Wetland Plants and Plant Communities of Minnesota and Wisconsin – 3rd Edition.* St. Paul District, U.S. Army Corps of Engineers, St. Paul, MN 478 pp.

Peterson, Roger and Margaret McKenny. 1968. *A Field Guide to Wildflowers of Northeastern and Northcentral North America.* Houghton Mifflin Company, Boston, Mass. 420 pp.

Swink, Floyd and Gerould Wilhelm. 1994. *Plants of the Chicago Region.* The Morton Arboretum, Lisle, Illinois. 921 pp.

WETLAND DELINEATION CONFIRMATION REQUEST CHECKLIST

✓ Introductory Section

- Why the delineation was undertaken
- Date the field work was completed
- Who conducted the fieldwork
- Qualifications

✓ Methods used during the wetland delineation

- Description of methods
- Sources Reviewed (WWI mapping, Soil Survey, etc.)
- Description of any site specific agency guidance (site meetings, etc.)

✓ Results and Discussion

- Antecedent hydrologic condition analysis
- Previous wetland delineation mapping
- Existing environmental mapping (WWI mapping, Soil Survey, etc.)
- Amount and types of wetland located within the project area
- Discussion explaining how the wetland/upland boundary was differentiated
- Disturbed and problematic areas encountered during the delineation
- Other water resources located in the project area (navigable streams, etc.)

✓ Topographic mapping

✓ WWI mapping

✓ Soil survey mapping

✓ Wetland Delineation map

✓ Data Forms

✓ Site Photos

N/A Previous delineation information

N/A FSA Slide Review

✓ Literature Cited

WETLANDS EXHIBIT

CLIENT

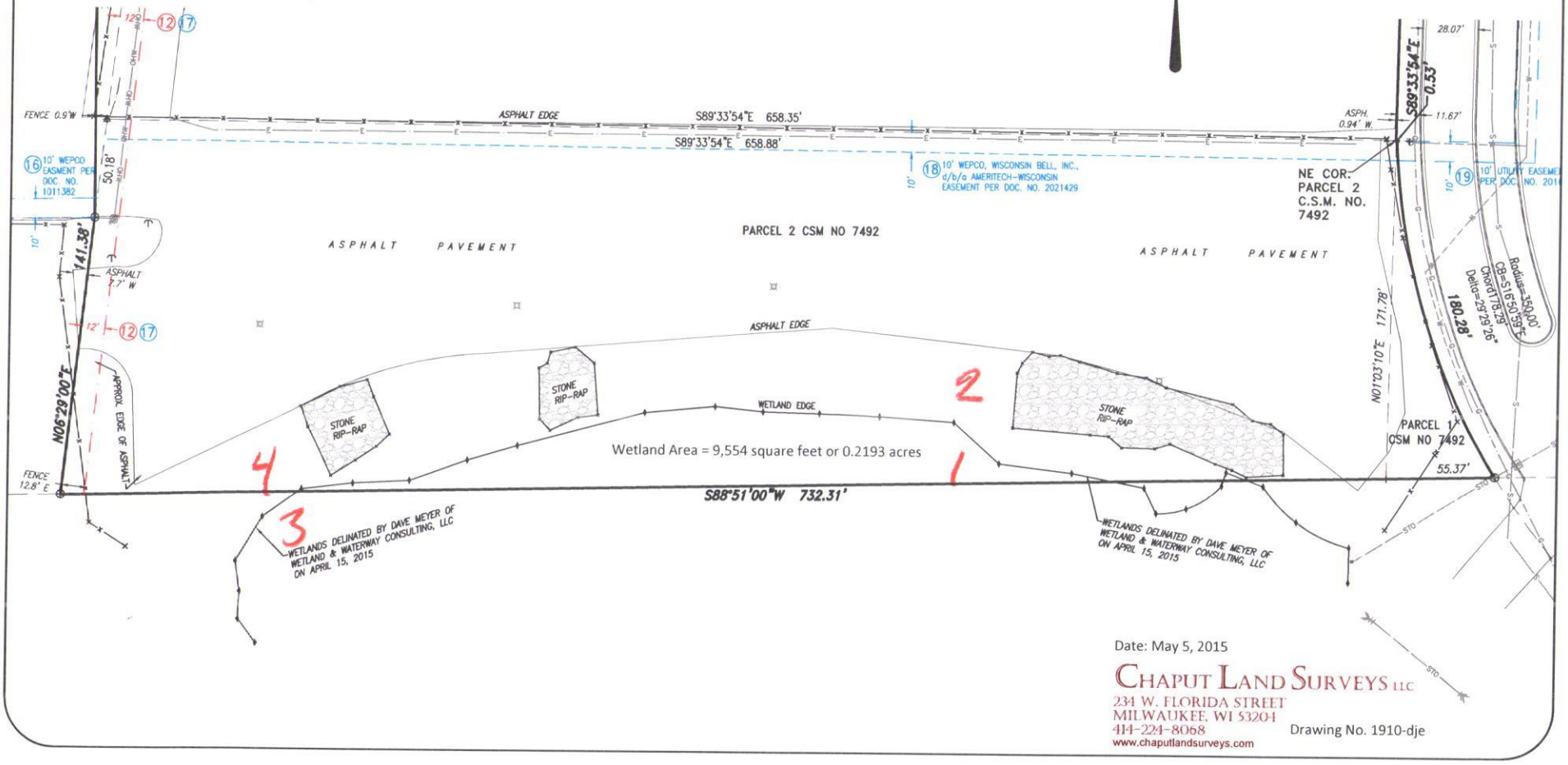
HSA Acquisitions, Inc.

SITE ADDRESS

901 Northview Road, City of Waukesha, Waukesha County, Wisconsin.

LAND AREA

The Land Area of the site is 514,394 square feet or 11.8089 acres



Date: May 5, 2015

CHAPUT LAND SURVEYS LLC
234 W. FLORIDA STREET
MILWAUKEE, WI 53204
414-224-8068
www.chaputlandsurveys.com

Drawing No. 1910-dje