Wetland Delineation Report

Proposed Good Harvest Market Outlot Site

City of Waukesha, Waukesha County, Wisconsin

RASN Project No. 1130220

May 27th, 2014

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Proposed Good Harvest Market Outlot
City of Waukesha, Waukesha County, Wisconsin

Prepared by:

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Prepared for:

Good Harvest Market
1850 Meadow Lane
Pewaukee, WI 53072

May 27th, 2014

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INTRODUCTION

R.A. Smith National, Inc. (RASN) is pleased to provide this Wetland Delineation Report for an approximately 0.71-acre outlot in between Silvernail Road and Meadow Lane of in the City of Waukesha, Waukesha County, Wisconsin (Appendix 1, Figure 1). The wetland delineation was requested by Good Harvest Market, Inc.

The vacant 0.71-acre outlot is specifically located at the end of Meadow Lane where it meets Silvernail Rd in the NW ¼ of Section 28, Township 7 North, Range 19 East (Appendix A, Figure 1). The property is bordered by vacant lands (wetland) to the south and west, Silvernail Road and commercial development to the north and residential & commercial development to the east.

The purpose of the wetland delineation was to identify the proximity and extent of wetlands within the outlot in association with a commercial development project. One wetland, hereby referred to as "W-1", was identified within the project area. The delineation is presented here in terms of qualifications, methodology, results, and conclusions.

STATEMENT OF QUALIFICATIONS

RASN provides wetland and ecological services including wetland delineation, assessment, permitting, and restoration. RASN ecologists offer a wide variety of technical experience in the natural resource field, and have successfully completed projects throughout the Midwestern and Northeastern United States.

Ms. Heather Patti, PWS and Ecologist with RASN, earned a Masters Degree in Botany and a minor in Ecology from North Carolina State University. Ms. Patti is experienced with a variety of aspects of ecological restoration, including wetland, mixed hardwood, and prairie restoration. She provides over 15 years of experience in wetland delineation, assessment, and mitigation. Ms. Patti attended the Basic & Advanced Wetland Delineation course offered by UW-LaCrosse in 2005 & 2013, became a WDNR Assured Wetland Delineator in 2009, attends the annual Critical Methods in Wetland Delineation refresher course in Madison, and recently attended the Hydric Soil Identification Course offered by UW-LaCrosse in 2011.

METHODOLOGY

The wetland delineation consisted of a map review followed by fieldwork to delineate the on-site wetlands. The fieldwork documented the presence and absence of hydrophytic vegetation, wetland hydrology, and hydric soil indicators outlined in the *U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual*, Technical Report Y-87-1 (1987) and subsequent guidance documents (USACE 1991, 1992), Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers (USACE 1996), the *Basic Guide to Wisconsin's Wetlands and Their Boundaries* (Wisconsin Department of Administration Coastal Management Program, 2005), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral & Northeast Region, Version 2.0*, the guide for the USDA Natural Resources Conservation Services (NRCS) Field Indicators of Hydric Soils (version 7.0) in the United States, and in general accordance with Wisconsin Department of Natural Resources (WDNR) guidelines. The Northcentral & Northeast Regional USACE supplement was recently drafted for the purpose of bringing the existing 1987 Manual up to date for wetland delineations. This supplement is intended to be used as an additional guidance to the 1987 Manual, and is not its replacement.

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Prior to conducting fieldwork, RASN reviewed several maps for the property, including the United States Geological Survey (USGS) 7.5-minute quadrangle topographic map (Appendix 1, Figure 1), the NRCS Soil Survey Report for Waukesha County (Appendix 1, Figure 3), the Southeastern Wisconsin Regional Planning Commission (SEWRPC) historical aerial photographs dated 2000, 2005, and 2010 (Appendix 1, Figures 4A-C), the Wisconsin Wetland Inventory Map (Appendix 1, Figure 5), and NOAA's Advanced Hydrologic Prediction Service Map (Appendix 1, Figure 6).

Areas having wetland field indicators were evaluated in the field by RASN wetland scientist Ms. Heather Patti during a site visit on April 22nd, 2014 and photo documented (Appendix 2). According to guidance described in the 1987 Manual and Northcentral & Northeast Regional Supplement, areas that under normal circumstances reflect a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology are considered wetlands. RASN collected field data at four (4) sample points, using a transect and data point approach following the USACE Northcentral/Northeast Supplement wetland determination forms (Appendix 3). A sharpshooter shovel was used to dig the soil pits and to refine the wetland boundary. The delineated wetland areas were flagged and then surveyed by McClure Engineering, Inc. surveyors. Pink wire flags with the words "Wetland Delineation" were used to stake the wetland boundaries and data point locations. The wetland boundaries and data point locations are depicted on Appendix 1, Figure 2. Observations were made at representative sample points along transects extending through upland and wetland areas.

RESULTS

The USGS topographic map (Appendix 1, Figure 1) depicts the location of the property and the Wetland Boundary Map (Appendix 1, Figure 2) depicts the delineated wetland boundaries overlaid onto a recent aerial photo. In general, the site is depressional but drainage is northwesterly towards an un-named tributary to the Upper Fox River.

According to the NRCS Soil Survey Report of Waukesha County, Wisconsin (Appendix 1, Figure 3), mapped soils within the outlot consist of Hochheim loam with 2-6% slopes (HmB2), Hochheim loam with 12-20% slopes (HoD3) and Ogdon muck (Oc). Of these soil types, the NRCS hydric soil list classifies Ogdon muck as a very poorly drained, hydric soil.

A review of aerial photographs from the years 2000, 2005, and 2010 (Appendix 1, Figures 4-C) was completed by RASN prior to the site visit. During this timeframe, there were essentially no changes to the land use within the outlot. The un-named tributary to the Upper Fox River just west of the outlot is evident on each of the aerials; at the time of the site visit it appeared to be approximately 5 feet wide with a defined bed and bank.

The Wisconsin Wetland Inventory (WWI) Map (Appendix 1, Figure 5) depicts the E2K cover type within the vicinity of W-1, symbolized by E2K, Emergent (E), narrow-leaved persistent (2), palustrine (K). The wetland cover types depicted on the WWI are in the same approximate location as W-1.

Recent precipitation data are used to assess the current season's hydrology. Precipitation data can help make determinations as to whether or not the wetland hydrology criterion has been met at recorded data points. Rainfall data recorded by the local WETS table and the National Weather Service's Advanced Hydrologic Prediction Service (AHPS) were used to evaluate the hydrology of the site prior to the April 22nd site visit (Appendix 1, Figure 6). According to the local WETS table (Waukesha, WI 8937), average precipitation in the Waukesha County area for the three months prior to the April site visit (January through March) is 5.07 inches. Average rainfall for the month of April is typically 3.53 inches. According to the AHPS map (Appendix 1, Figure 6), the late winter – early spring precipitation in the City of Waukesha was approximately 1-2 inches above the normal range. This suggests that the surface or near-surface hydrology at the time of the April 22nd site visit was normal for this time of year. The normal conditions were noted on the datasheets in Appendix 3.

Field Investigation

All areas on the above-mentioned maps as being wetland or having wetland characteristics were evaluated in the field. A total of four (4) data points were examined and one (1) wetland totaling 0.08 acres (3,321 square feet) was delineated and surveyed (Appendix 1, Figure 2). Data points in both upland and wetland areas were sampled in the field to determine the wetland boundaries. The data sheets were compiled and are included in Appendix 3. The following is a description of the delineated wetland.

Wetland 1 – Shrub-carr / Fresh (wet) Meadow Drainageway

Wetland 1 (W-1) is an approximately 0.08 acre (3,321 square feet) shrub-carr/fresh (wet) meadow depression (Appendix 1, Figure 2). Dominant plant species include box elder (*Acer negundo*), common buckthorn (*Rhamnus cathartica*), reed canary grass (*Phalaris arundinacea*), garlic mustard *(Alliaria petiolata*), and black willow (*Salix nigra*). The immediate adjacent upland consists mostly of disturbed shrub thicket and old field dominated by young box elder, Kentucky blue grass (*Poa pratensis*), Canada goldenrod (*Solidago canadensis*), Queen Anne's lace (*Daucus carota*), and other old-field weeds.

Hydrology in W-1 is sustained by surfacewater runoff from the surrounding landscape as this is a depressional area. Water is conveyed into the area from the Silvernail Road road shoulder and the commercial development to the east. There is not a discernible surfacewater connection between W-1 and the larger wetland associated with the tributary to the west (see Site Photographs in Appendix 2), but it is likely that water flows in that direction after heavy storm events. Physical on-site evidence of wetland hydrology within W-1 included high water table, saturation in the upper 12 inches, geomorphic position, and a positive FAC-Neutral test (see DP-2 and DP-4 in Appendix 3).

In general, there was a subtle to moderate topographic break between the upland and wetland along most of the delineated boundary. Topography sloped away from the wetland in all directions, and the transition in vegetation was visible as the reed canary grass and garlic mustard transitioned towards shrub thicket and old-field weeds.

According to the NRCS Soil Survey of Waukesha County, Ogdon muck (Oc) is the dominant mapped soil type within W-1. As mentioned earlier, the NRCS hydric soil list classifies Ogdon muck as a very poorly drained, hydric soil. Two wetland data points were taken within W-1 (Appendix 3) within representative shrub-carr and fresh (wet) meadow plant communities. The wetland soil samples resembled the typical profile descriptions of Ogdon muck; all contained hydric soil characteristics that met the A1 (Histosol) or F6 (Redox dark Surface) NRCS Hydric Soil Indicators.

CONCLUSION

Based on the wetland assessment completed by RASN, one (1) wetland was identified and surveyed within the outlot. A total of 0.08 acres (3,321 square feet) of wetland was delineated and surveyed by McClure Engineering, Inc. surveyors.

This report is limited to the delineation of state and/or federally regulated wetlands on the property. However, there may be other regulated environmental features within the property (e.g., historical, archaeological, threatened or endangered species). Federal, state and/or local units of government may have regulatory authority to restrict land use within or close in proximity to other environmental features. For example, Wisconsin Adm. Code NR 151.12 requires buffers or a "protective area" from the top of the channel of streams, rivers and lakes, or at the delineated boundary of wetlands. The jurisdictional decision on the width of wetland buffers rests with the WDNR. The local unit(s) of government may also have protective area buffers from wetlands than that imposed under NR 151.

The U.S. Army Corps of Engineers has regulatory authority over waters of the U.S. including adjacent wetlands, and the WDNR has regulatory authority over wetlands, navigable waters, and adjacent lands under Ch. 30 Wisconsin State Statues, Act 6, and NR 103 Wisconsin Administrative Code. Local jurisdictions may also have regulations through zoning ordinances. Our client, Good Harvest Market, respectfully requests verification of the delineated wetlands by the USACE.

APPENDICES

Appendix 1: Figures
- **Figure 1: USGS Map/Site Location Map**
- **Figure 2: Wetland Boundary Map (McClure Engineering, Inc)**
- **Figure 3: NRCS Soil Survey of Waukesha County**
- **Figures 4 A-C: Aerial Photographs (2000, 2005 & 2010)**
- **Figure 5: Wisconsin Wetland Inventory Map**
- **Figure 6: NOAA Advanced Hydrologic Prediction Service Map**

Appendix 2: Site Photos
Appendix 3: Wetland Delineation Data Forms – Northcentral/Northeast Region

Appendices

Appendix 1: Figures

Appendix 2: Site Photographs

Appendix 3: Wetland Determination Data Forms – Northcentral/Northeast Region

Appendix 1: Figures

Figure 1: USGS Map/Site Location Map

Figure 2: Wetland Boundary Map (McClure Engineering, Inc.)

Figure 3: NRCS Soil Survey of Waukesha County

Figures 4A-C: Aerial Photographs (2000, 2005, 2010)

Figure 5: Wisconsin Wetland Inventory Map

Figure 6: 90-day Departure from Normal Precipitation Map

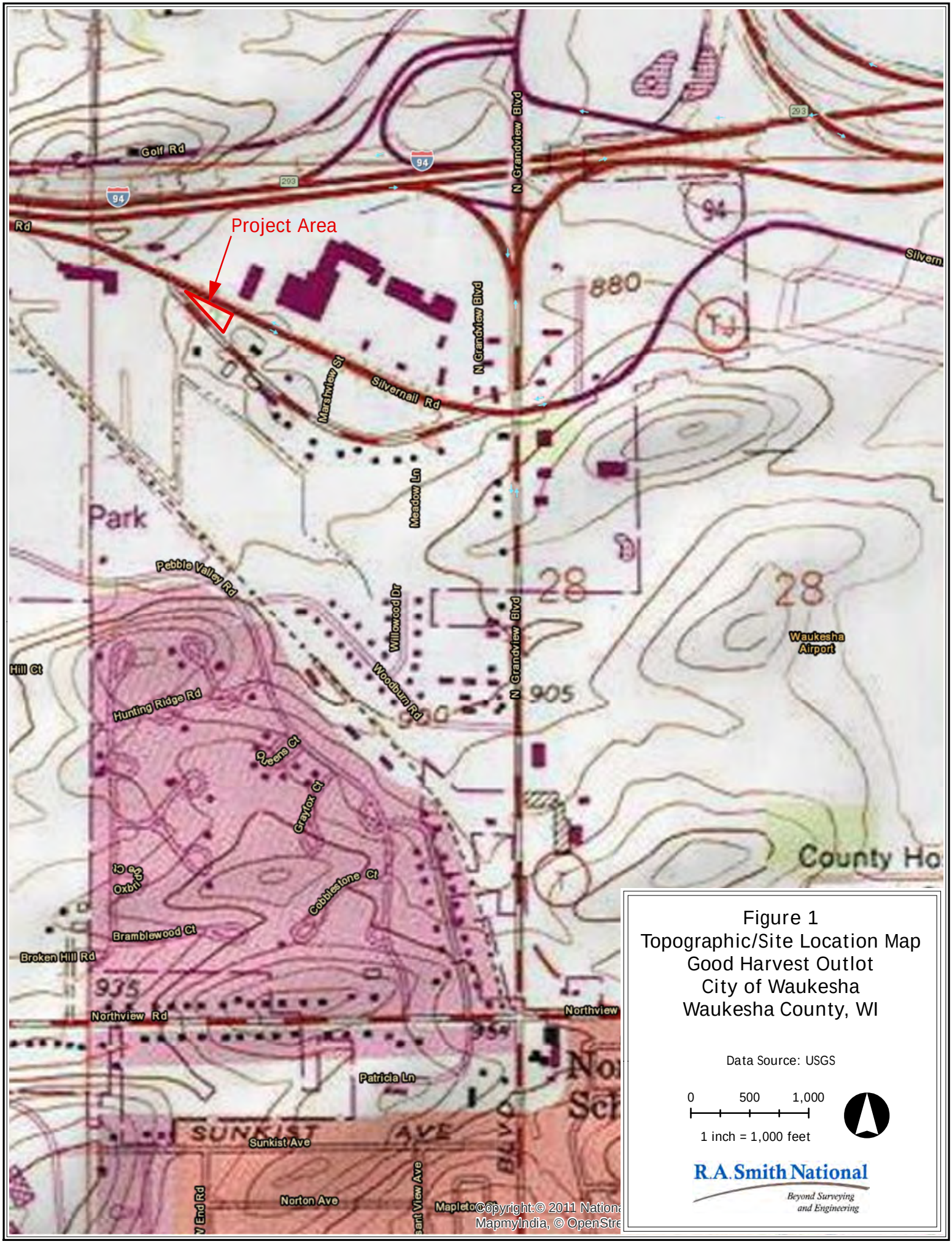

Figure 1
Topographic/Site Location Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source: USGS

0 500 1,000

1 inch = 1,000 feet

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Legend

- DATA POINT
- Wetland Boundary

Figure 2
Wetland Boundary Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source:
Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

0 25 50

1 inch = 50 feet

R.A. Smith National
Beyond Surveying and Engineering

Legend	
Map Unit Symbol	Map Unit Name
HmB2	Hochheim loam, 2 to 6 percent slopes, eroded
HtA	Houghton muck, 0 to 2 percent slopes (C)
Oc	Ogden muck (C)

Figure 3
NRCS Web Soil Survey Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source:
USGS, NRCS Web Soil Survey

0 50 100

1 inch = 100 feet

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Figure 4A
2000 Aerial Photo Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source:
Southeastern Wisconsin
Regional Planning Commission

0 25 50

1 inch = 50 feet

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Figure 4B
2005 Aerial Photo Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source:
Southeastern Wisconsin
Regional Planning Commission

0 25 50

1 inch = 50 feet

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Figure 4C
2010 Aerial Photo Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source:
Southeastern Wisconsin
Regional Planning Commission

0 25 50

1 inch = 50 feet

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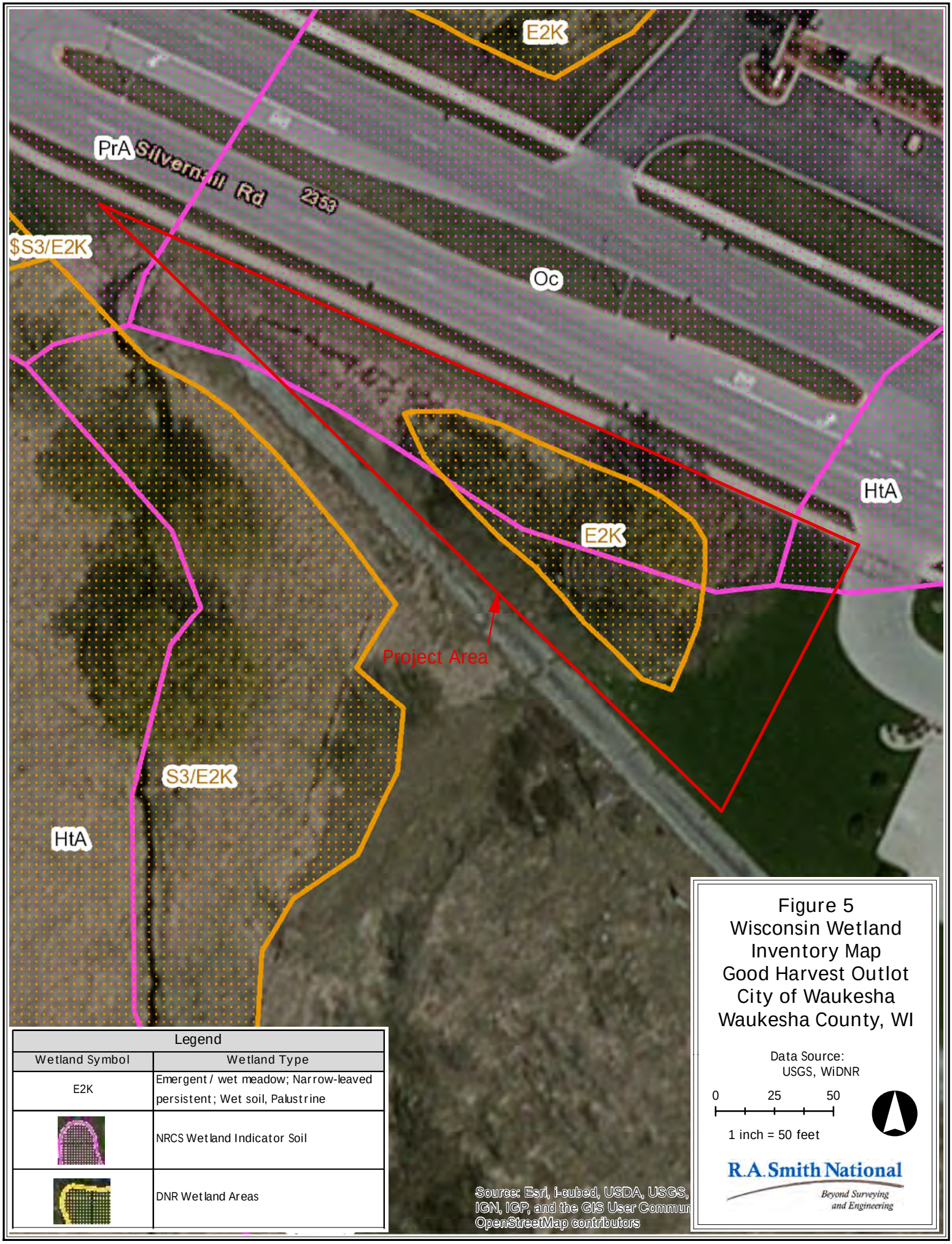

Legend	
Wetland Symbol	Wetland Type
E2K	Emergent / wet meadow; Narrow-leaved persistent; Wet soil, Palustrine
	NRCS Wetland Indicator Soil
	DNR Wetland Areas

Figure 5
Wisconsin Wetland Inventory Map
Good Harvest Outlot
City of Waukesha
Waukesha County, WI

Data Source:
USGS, WiDNR

0 25 50

1 inch = 50 feet

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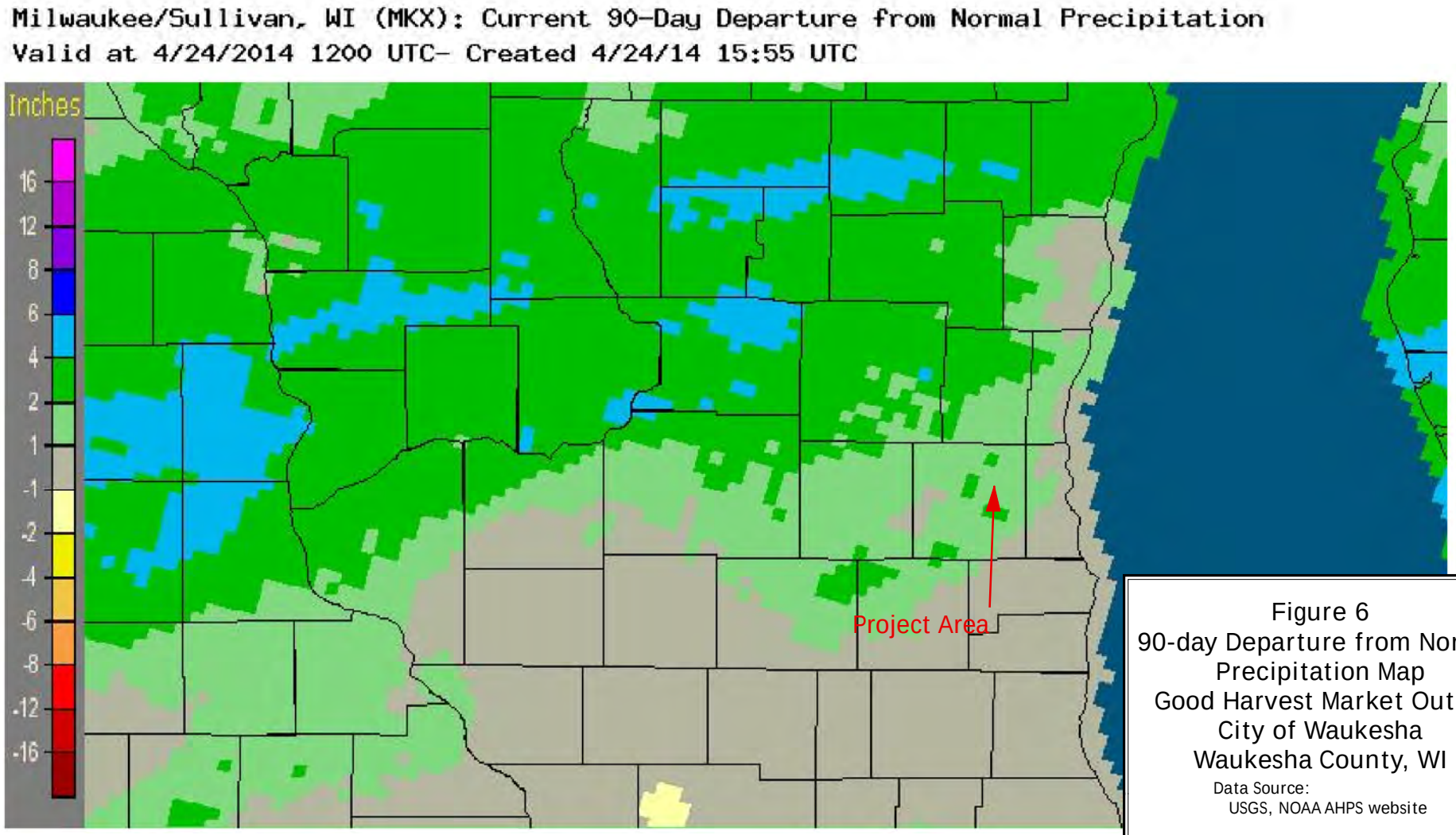

The project area falls within 1" to 2" of the normal precipitation range.

Figure 6
90-day Departure from Normal Precipitation Map
Good Harvest Market Outlot
City of Waukesha
Waukesha County, WI

Data Source:
USGS, NOAA AHPS website

NOT TO SCALE

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Appendix 2:

Site Photographs

Appendix 3:

Wetland Determination Data Forms – Northcentral/Northeast Region

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: **Waukesha Good Harvest Market Outlot** City/County: **Waukesha/Waukesha** Sampling Date: **April 22, 2014**

Applicant/Owner: **Good Harvest Market, Inc** State: **WI** Sampling Point: **T-1 DP-1 upl**

Investigator(s): **Heather Patti, PWS** Section, Township, Range: **NW 1/4 Sec 28, T7N R19E**

Landform (hillslope, terrace, etc.): **slight hillslope** Local relief (concave, convex, none): **slightly convex**

Slope % **5%** Lat: Long: Datum:

Soil Map Unit Name: **Hochheim soils (HoD2), 2-6% slopes, non-hydric** WWI Classification: **E2K**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (if no, explain in Remarks)

Are Vegetation **Y*** Soil **N** or Hydrology **N** significantly disturbed? Are "Normal Circumstances" present? Yes ____ No **X**

Are Vegetation **N** Soil **N** or Hydrology **N** naturally problematic? (if needed, explain any answers in Remarks)

SUMMARY OF FINDINGS --- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No	Is the Sampled Area		
Hydric Soil Present?	Yes	No **X**	within a Wetland?	Yes	No **X**
Wetland Hydrology Present?	Yes	No **X**	If yes, optional wetland site ID:		

Remarks: **Vegetation has been recently disturbed in a portion of the uplands to due soil boring and survey activities. The soils are very dark in chroma, but topography and lack of hydrology indicators in this area indicate uplands.**

HYDROLOGY

Wetland Hydrology Indicators:

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)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches):
Water Table Present?	Yes ____	No **X**	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ____	No **X**	Depth (inches):

Indicators of Wetland Hydrology Present? Yes ____ No **X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

USGS Topographic Map (Figure 1), NRCS Soil Survey (Figure 3), 2000, 2005, and 2010 aerial photographs (Figures 4A-C), Wisconsin Wetland Inventory (Figure 5), and AHPS precipitation map (Figure 6)

Remarks: **No wetland hydrology indicators are present.**

VEGETATION - Use scientific names for plants.

Sampling Point: **T-1 DP-1 upl**

Tree Stratum (Plot size: **30'R**)	Absolute % Cover	Dominant Species	Indicator Status
1. *Acer negundo*	70	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	70 = Total Cover		

Sapling/Shrub Stratum (Plot size: **15'R**)			
1. *Acer negundo*	10	Y	FAC
2. *Rhamnus cathartica*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
	15 = Total Cover		

Herb Stratum (Plot size: **5'R**)			
1. *Alliaria petiolata*	60	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
	60 = Total Cover		

Woody Vine Stratum (Plot size: **n/a**)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **4** (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
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
- X Dominance Test is >50%
- ___ Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] 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 brest height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) 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? Yes **X** No ___

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

The hydrophytic vegetation criterion is met due to the dominance of disturbance-loving FAC species. This is a disturbed shrub thicket community upslope of the wetland boundary.

SOIL

Sampling Point: **T-1 DP-1 upl**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 14	10YR 3/1	100	-				silt loam	
14-22+	10 YR 5/2	90	10 YR 5/6	10	C	M	silty clay	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (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**)
- ____ Plolyvalue 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[3]:

- _____ 2cm Muck (A10) (**LRR K, L, MLRA 149B**)
- _____ Coast Prairie Redox (A16) (**LRR K, L, R**)
- _____ 5cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- _____ Dark Surface (S7) (**LRR K, L**)
- _____ Plolyvalue 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)

3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: **n/a**

Depth (inches): **n/a**

Hydric Soil Present? **Yes** ____ **No** **X**

Remarks: **Soils have a dark surface horizon, more closely resembling the Ogdon series which is mapped adjecent to this data point. However, no redoximorphic concentrations were observed, and the topography and lack of wetland hydrology indicators indicated uplands. The wetland boundary is very close by (just downslope of this data point).**

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: **Waukesha Good Harvest Market Outlot** City/County: **Waukesha/Waukesha** Sampling Date: **April 22, 2014**

Applicant/Owner: **Good Harvest Market, Inc** State: **WI** Sampling Point: **T-1 DP-2 wtd**

Investigator(s): **Heather Patti, PWS** Section, Township, Range: **NW 1/4 Sec 28, T7N R19E**

Landform (hillslope, terrace, etc.): **toeslope** Local relief (concave, convex, none): **slightly concave**

Slope % **n/a** Lat: Long: Datum:

Soil Map Unit Name: **Ogdon muck (Oc), hydric** WWI Classification: **E2K**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ***X** (if no, explain in Remarks)

Are Vegetation **Y*** Soil **N** or Hydrology **N** significantly disturbed? Are "Normal Circumstances" present? Yes ____ No **X**

Are Vegetation **N** Soil **N** or Hydrology **Y** naturally problematic? (if needed, explain any answers in Remarks)

SUMMARY OF FINDINGS --- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No ____	Is the Sampled Area		
Hydric Soil Present?	Yes **X**	No ____	within a Wetland?	Yes **X**	No ____
Wetland Hydrology Present?	Yes **X**	No ____	If yes, optional wetland site ID:	**W-1**	

Remarks: ***Vegetation in a portion of this wetland was recently disturbed due to soil boring and survey activities. This is a depressional wetland with seasonal hydrology, and is thus a natural problem area.**
All three wetland criteria have been met.

HYDROLOGY

Wetland Hydrology Indicators:

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)
- **X** Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- **X** FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No **X**	Depth (inches):	
Water Table Present?	Yes ____	No **X**	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes **X**	No ____	Depth (inches):	**18"**

Indicators of Wetland Hydrology Present? Yes **X** No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

USGS Topographic Map (Figure 1), NRCS Soil Survey (Figure 3), 2000, 2005, and 2010 aerial photographs (Figures 4A-C), Wisconsin Wetland Inventory (Figure 5), and AHPS precipitation map (Figure 6)

Remarks: **Wetland hydrology criterion has been met due to the presene of secondary indicators.**

VEGETATION - Use scientific names for plants.

Sampling Point: **T-1 DP-2 wtd**

Tree Stratum (Plot size: **30'R**)	Absolute % Cover	Dominant Species	Indicator Status
1. *Salix nigra*	20	Y	OBL
2. *Acer nedundo*	10	Y	FAC
3. *Ulmus americana*	10	Y	FACW
4.			
5.			
6.			
7.			
	40	= Total Cover	

Sapling/Shrub Stratum (Plot size: **15'R**)			
1. *Rhamnus cathartica*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	

Herb Stratum (Plot size: **5'R**)			
1. *Phalaris arundinacea*	5	Y	FACW
2. *Alliaria petiolata*	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
	10	= Total Cover	

Woody Vine Stratum (Plot size: **n/a**)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **6** (A)

Total Number of Dominant Species Across All Strata: **6** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
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
- X Dominance Test is >50%
- ___ Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] 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 brest height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) 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? **Yes** X **No** ___

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

The hydrophytic vegetation criterion is met. The shrubby vegetation in this area was recently disturbed from the soil boring and survey activities. This is a shrub-carr community.

SOIL

Sampling Point: **T-1 DP-2 wtd**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	**10YR 2/1**	**100**	**-***				**silt loam**	
8-18	**10 YR 2/1**	**90**	**10YR 5/6**	**10**	**C**	**M**	**silt loam**	
18-24+	**10YR 5/1**	**90**	**10YR 5/6**	**10**	**C**	**M**	**silty clay loam**	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- X 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**)
- ___ Plolyvalue 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Plolyvalue 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)

3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: **n/a**

Depth (inches): **n/a**

Hydric Soil Present? Yes X No ___

Remarks: **The hydric soil criterion is met.**

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Waukesha Good Harvest Market Outlot | City/County: Waukesha/Waukesha | Sampling Date: April 22, 2014

Applicant/Owner: Good Harvest Market, Inc | State: WI | Sampling Point: T-2 DP-3 upl

Investigator(s): Heather Patti, PWS | Section, Township, Range: NW 1/4 Sec 28, T7N R19E

Landform (hillslope, terrace, etc.): toeslope (base of road ROW) | Local relief (concave, convex, none): concave

Slope %: 15% | Lat: | Long: | Datum:

Soil Map Unit Name: Ogden muck (Oc), hydric | WWI Classification: E2K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (if no, explain in Remarks)

Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N or Hydrology N naturally problematic? (if needed, explain any answers in Remarks)

SUMMARY OF FINDINGS --- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	Is the Sampled Area		
Hydric Soil Present?	Yes X	No	within a Wetland?	Yes	No X
Wetland Hydrology Present?	Yes	No X	If yes, optional wetland site ID:		

Remarks: The hydric soil criterion is met, but the topography, lack of hydrology and vegetation indicators indicate uplands. The soil profile contained gravel fill likely from the construction of Silvernail road and adjacent ROW.

HYDROLOGY

Wetland Hydrology Indicators:

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)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):	
Water Table Present?	Yes	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches):	16"

Indicators of Wetland Hydrology Present? Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

USGS Topographic Map (Figure 1), NRCS Soil Survey (Figure 3), 2000, 2005, and 2010 aerial photographs (Figures 4A-C), Wisconsin Wetland Inventory (Figure 5), and AHPS precipitation map (Figure 6)

Remarks: No wetland hydrology indicators are present. Saturation in the profile is due to recent rain events.

VEGETATION - Use scientific names for plants.

Sampling Point: **T-2 DP-3 upl**

Tree Stratum (Plot size: **30'R**)	Absolute % Cover	Dominant Species	Indicator Status
1.			**FAC**
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: **n/a**)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		

Herb Stratum (Plot size: **5'R**)			
1. ***Poa pratensis***	**85**	**Y**	**FACU**
2. ***Bromus inermis***	**15**	**N**	**UPL**
3. ***Pastinaca sativa***	**10**	**N**	**UPL**
4. ***Daucus carota***	**10**	**N**	**UPL**
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
	120 = Total Cover		

Woody Vine Stratum (Plot size: **n/a**)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **1** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
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[1]
_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on separate sheet)
_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] 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 brest height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) 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? **Yes** _____ **No** **X**

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

The hydrophytic vegetation criterion is not met. This is a disturbed old field plant community.

SOIL

Sampling Point: T-2 DP-3 upl

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100	-				silt loam	small gravel fill throughout profile
				10	C	M		
6-13*	10YR 3/2	90	10YR 5/6	10	C	M	silty clay	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (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**)
- ___ Plolyvalue 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Plolyvalue 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)

3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: *small gravel fill

Depth (inches): 13"

Hydric Soil Present? Yes X No ___

Remarks: **Hydric soil criterion has been met. Profile contains gravel fill from years of road runoff and/or grading activities during the construction os Silvernail Road. Lack of hydrology and hydrophytic vegetation indicators indicate uplands at this data point.**

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: **Waukesha Good Harvest Market Outlot** City/County: **Waukesha/Waukesha** Sampling Date: **April 22, 2014**

Applicant/Owner: **Good Harvest Market, Inc** State: **WI** Sampling Point: **T-2 DP-4 wtd**

Investigator(s): **Heather Patti, PWS** Section, Township, Range: **NW 1/4 Sec 28, T7N R19E**

Landform (hillslope, terrace, etc.): **drainage swale** Local relief (concave, convex, none): **concave**

Slope % **0%** Lat: Long: Datum:

Soil Map Unit Name: **Ogdon muck (Oc), hydric** WWI Classification: **E2K**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes **X** No (if no, explain in Remarks)

Are Vegetation **N** Soil **N** or Hydrology **N** significantly disturbed? Are "Normal Circumstances" present? Yes **X** No

Are Vegetation **N** Soil **N** or Hydrology **Y** naturally problematic? (if needed, explain any answers in Remarks)

SUMMARY OF FINDINGS --- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes **X**	No	Is the Sampled Area		
Hydric Soil Present?	Yes **X**	No	within a Wetland?	Yes **X**	No
Wetland Hydrology Present?	Yes **X**	No	If yes, optional wetland site ID:	**W-1**	

Remarks: **This is a depressional wetland with seasonal hydrology, and is thus a natural problem area. There is no apparent inlet or outlet to this wetland. It does not immediately connect to the wetland complex to the west (see Site Photos). All 3 wetland criteria are met.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

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)
X	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No **X**	Depth (inches):		
Water Table Present?	Yes **X**	No	Depth (inches):	**6"**	
Saturation Present? (includes capillary fringe)	Yes **X**	No	Depth (inches):	**surface**	

Indicators of Wetland Hydrology Present? Yes **X** No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

USGS Topographic Map (Figure 1), NRCS Soil Survey (Figure 3), 2000, 2005, and 2010 aerial photographs (Figures 4A-C), Wisconsin Wetland Inventory (Figure 5), and AHPS precipitation map (Figure 6)

Remarks: **The wetland hydrology criterion has been met.**

VEGETATION - Use scientific names for plants.

Sampling Point: **T-2 DP-4 wtd**

Tree Stratum (Plot size: **30'R**)	Absolute % Cover	Dominant Species	Indicator Status
1. ***Ulmus americana***	**5**	**Y**	**FACW**
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		

Sapling/Shrub Stratum (Plot size: **15'R**)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		

Herb Stratum (Plot size: **5'R**)			
1. ***Typha x glauca***	**70**	**Y**	**OBL**
2. ***Phalaris arundinacea***	**70**	**Y**	**FACW**
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
	140 = Total Cover		

Woody Vine Stratum (Plot size: **n/a**)			
1.			
2.			
3.			
4.			
	0 = Total Cover		

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:		Multiply by:
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
- **X** Dominance Test is >50%
- ___ Prevalence Index is ≤ 3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] 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 brest height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) 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? **Yes X** **No** ___

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

The hydrophytic vegetation criterion is met. This is a disturbed shallow marsh swale.

SOIL

Sampling Point: **T-2 DP-4 wtd**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100	-				silt loam	
6-13	10YR 2/1	90	10YR 5/6	10	C	M	silty clay loam	
13-20+	10YR 5/2	80	10YR 5/6	20	C	M	clay loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- X 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**)
- ___ Plolyvalue 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Plolyvalue 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)

3 Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: **n/a**

Depth (inches): **n/a**

Hydric Soil Present? Yes X No ___

Remarks: **The hydric soil criterion is met.**

***Redox features may be partially masked by the very dark matrix color.**

Photograph 1 (4/22/2014): General view of the western portion of W-1, facing east.

Photograph 2 (4/22/2014): General view of the eastern portion of W-1, facing northwest. The vegetation in this portion of the wetland was disturbed from the soil borings.

Photograph 3 (4/22/2014): View of wetland data point T-1 DP-2, facing west.

Photograph 4 (4/22/2014): View of T-2 DP-4 within W-1.

Photograph 5 (4/22/2014): View of upland data point T-2 DP-3, facing east towards W-1.

Photograph 6 (4/22/2014): View of the upland area between W-1 and the larger wetland/ Upper Fox River tributary area to the west.