evergreen consultants LLC
PO Box 680 • Pulaski, WI 54162
Phone: 920.615.0019 • Website: www.evergreenwis.com

Ravoori Property

Professionally Assured Wetland Delineation Report

Project Number: MIL25-041-01
Property Address: 7750 S 13th Street, City of Oak Creek, Milwaukee County, Wisconsin
Part of Parcel ID: 7839062000

May 22, 2025



Report Request by
Vijay Raavori
5742 N Lydell Avenue
Whitefish Bay, WI 53217

evergreen consultants LLC
PO Box 680 • Pulaski, WI 54162
Phone: 920.615.0019 • Website: www.evergreenwis.com

Field Work Certification:



Chad M Fradette, EP, Chemist, Wetland Scientist
Wisconsin DNR Professional Assured Wetland Delineator
Lead Wetland Delineator
(920) 615-0019 chad@evergreenwis.com



Shyann P Banker, Environmental Scientist
Wisconsin DNR Professional Assured Wetland Delineator
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Ashley Poehls, Biologist
ashley@evergreenwis.com

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
1027 W. Saint Paul Avenue
Milwaukee WI 53233

Tony Evers, Governor
Karen Hyun, Ph.D., Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

April 1, 2025

Chad M Fradette, EP
Evergreen Consultants LLC
1138 State Highway 32
P.O. Box 680
Pulaski, WI 54162

Subject: 2025 Assured Wetland Delineator Confirmation

Dear Chad Fradette:

This letter provides Wisconsin Department of Natural Resources (WDNR) confirmation for the wetland delineations you conduct during the 2025 growing season. You and your clients will not need to wait for the WDNR to review your wetland delineations before moving forward with project planning. This will help expedite the review process for WDNR's wetland regulatory program. Your name and contact information will continue to be listed on our website at: http://dnr.wi.gov/topic/wetlands/assurance.html.

In the instance where a municipality may require a letter of confirmation for your work prior to moving forward in the local regulatory process, this letter shall serve as that confirmation. Although your wetland delineations do not require WDNR field review, inclusion of a Wetland Delineation Report is required for projects needing State authorized wetland, waterway and/or storm water permit approvals.

To comply with Chapter 23.321, State Statutes, please supply the department with a polygon shapefile of the wetland boundaries delineated within the project area. Please do not include data such as parcel boundaries, project limits, wetland graphic representation symbols, etc. If internal upland polygons are found within a wetland polygon, then please label as UPLAND. The shapefile should utilize a State Plane Projection and be overlain onto recent aerial photography. If a different projection system is used, please indicate in which system the data are projected. In the correspondence sent with the shapefile, please supply a brief description of each wetland's plant community (eg: wet meadow, floodplain forest, etc.). Please send these data to Calvin Lawrence (608-266-0756 or email at calvin.lawrence@wisconsin.gov).

If you or any client has a question regarding your status in the Wetland Delineation Professional Assurance Program, contact me by email at kara.brooks@wisconsin.gov or phone at 414-308-6780. Thank you for all your hard work and best wishes for the upcoming field season.

Sincerely,

Kara Brooks
Wetland Identification Coordinator
Bureau of Watershed Management

PRINTED ON RECYCLED PAPER

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Introduction

Evergreen was retained by Vijay Ravoori to perform a professionally assured wetland delineation. The property is located at 7750 S 13th Street, City of Oak Creek, Wisconsin. The study area is approximately 0.696 acres in size and is in part of the Southwest ¼ of the Southwest ¼ of Section 08, Township 05 North, Range 22 East, City of Oak Creek, Milwaukee County, Wisconsin. Site Maps can be found in Appendix A.

The wetland delineation was conducted on May 22, 2025, by Chad Fradette, a Wisconsin Department of Natural Resources (WDNR) Professionally Assured Wetland Delineator with assistance from Shyann Banker, Sara Marcinkus, and Ashley Poehls. The delineation was conducted for development planning for a residence. The study area consists of an historically filled area, cattail marsh, scrub/shrub wetland, and cottonwood maple forest.

The WDNR Wisconsin Wetland Inventory (WWI) Map was reviewed and indicates the presence of forested and emergent wetlands in most of the east half of the study area. The WWI wetland indicator soils layer was also reviewed and indicates the presence of indicator soils throughout most of the east half of the study area. The study area is mapped as having Predominantly Non-Hydric soils. Indicator soils are soils which are commonly found in wetlands or have inclusions of soils that are commonly found in wetlands. The WDNR Surface Water Data Viewer (SWDV) was also reviewed and indicates the absence of waterways within the study area, but an unnamed Order 1 stream is located to the north of the study area and becomes an Order 2 stream to the east, and an Order 3 stream to the southeast of the study area. A second unnamed Order 1 stream is located to the west of the study area and becomes an Order 2 stream to the southwest.

One wetland was delineated during the site visit. The Wetland Data Sheets classify the wetland according to the Cowardin classification system[1].

Wetland ID	Wetland Description[2]	Cowardin Classification[3]	*Surface Water Connections	*NR151 Protective Area	Acreage On-site
Wetland 1	Ruderal Marsh, Ruderal Shrub Swamp, Ruderal Flooded and Swamp Forest	PFO1C, PSS1C, PEM1C	Isolated wetland in a closed depression	Less susceptible, 10-30 feet	12,109 sf 0.278 acres
*These are based on professional opinion. Local zoning ordinances may have additional restrictions. US Army Corps of Engineers has authority for determining federal jurisdiction of wetlands and waterways.					**0.278 ac**

[1] Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

[2] WI Department of Natural Resources, *Natural Heritage Conservation Key to Wetland Natural Communities,* Version 1.3, 4/8/2022

[3] Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

An antecedent precipitation evaluation was conducted for the three months prior to the site visit. It was determined climatic conditions were wetter than normal at the time of the site visit during the wet season. The antecedent precipitation evaluation, WETS data and Palmer Drought Index reports for the area at the time of the site visit are included in Appendix F.

The areas identified as wetland were identified based on transitions from wetland to upland vegetation, hydrology indicators and hydric soil indicators, or lack thereof, in wetland areas versus upland areas, topographical position and best professional judgment. See Appendix A for the Wetland Determination Map. Wetland data sheets are included in Appendix G.

Personnel

Mr. Fradette is an Environmental Professional, Analytical Chemist, WDNR Professionally Assured Wetland Delineator and has over twenty years of experience working on public and private infrastructure, community development, and industrial projects throughout the entire Midwest and Northeast, including Wisconsin. His expertise is in completing wetland delineations, reports, permit applications, exemptions, compliance cases, compensatory wetland mitigation plans, endangered species assessments, and floristic habitat assessments. Mr. Fradette is professionally trained and experienced in the practice of wetland delineation.

Mrs. Shyann Banker, Environmental Scientist and WDNR Professionally Assured Wetland Delineator and has nine years of experience conducting wetland delineations for utility, municipal, residential, and industrial projects in Wisconsin. Her expertise is in completing wetland delineations, reports, and exemption applications.

Ms. Ashley Poehls, Biologist, has two years of professional experience in working on utility, municipal, residential, and industrial projects in Wisconsin.

Methodology

Available topographic maps, survey maps, WWI and NWI maps, County Soil Survey maps, wetland indicator and hydric soil maps and all available aerial photos were reviewed prior to visiting the property to identify potential wetland areas. These figures are included in Appendix A.

Antecedent precipitation information was evaluated through use of available local WETS data for the three months prior to the delineation to determine if conditions were within normal, wetter than normal or drier than normal at the time of the site visit. The Antecedent Precipitation Evaluation, WETS Data and the Palmer Drought Index reports are included in Appendix F.

Aerial images on cultivated or previously cultivated sites were reviewed for wet signatures following the Minnesota Board of Water and Soil Resources (BWSR) and St Paul District Corps of Engineers *Guidance for Offsite Hydrology/Wetland Determinations.*[4]

Examination of vegetation, soils, and hydrology, as outlined in the Corps of Engineers Wetlands Delineation Manual[5] and the Midwest Regional Supplement[6], were used to characterize, and determine wetland boundaries. The Natural Resources Conservation Service (NRCS) Field Indicators of Hydric Soils in the United States Guide[7] was also utilized to help identify hydric soils at the site and the Wetland Training Institute field guide[8]. All available information including transitions in vegetation, soils and hydrology, review of aerial photos, antecedent precipitation analysis, topographic position, along with best professional judgment was applied.

Sample transects were established in a representative wetland to upland transition zone. The transects were comprised of two or more sample points located along a line running perpendicular to the wetland edge, with at least one point in obvious wetland and one point in obvious upland. A field data form was completed for each of the upland and wetland sample points. The sample locations were also located with a GPS and are indicated on Wetland Delineation Map within Appendix A. Field data forms are included in Appendix G.

Wetland classification was performed according to Cowardin Classification. Vegetation was identified using suitable keys (Eggers[9]; Chadde[10]) and a plant's hydrophytic status was determined using the most recent Midwest Region – National Wetland Plant List[11]. Wetland boundaries were determined based on

[4] USACE, MN Board of Water & Soil Resources, *Guidance for Offsite Hydrology/Wetland Determinations,* 2016

[5] USACE, Waterways Experiment Station, Wetlands Research Program Technical Report Y-87-1

[6] *Regional Supplement to the 1987 Corps of Engineers Wetland Delineation Manual: Midwest Regions,* 2012

[7] USDA, Natural Resources Conservation Service (NRCS), *Field Indicators of Hydric Soils in the United States, Guide for Identifying and delineating Hydric Soils*, Version 9.0, 2024

[8] Wetland Training Institute, Inc., *2013 Pocket Guide to Hydric Soil Field Indicators,* Wetland Training Institute, Inc., Glenwood, NM, 2013

[9] *Eggers, Steve D., and Reed, Donald M., U.S. Army Corps of Engineers, St. Paul District, Wetland Plants and Plant Communities of Minnesota & Wisconsin, Version 3.2, July 2015*

[10] Chadde, Steve W., *Wetland Plants of Wisconsin, Second Edition,* Steve Chadde, United States, 2013

[11] U.S. Army Corps of Engineers. (2023). 2022 National Wetland Plant List, version 3.6. U.S. Army Engineer Research and Development Center, Vicksburg, MS. http://wetland-plants.usace.army.mil/

the comprehensive wetland delineation method as defined in the Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement.

Mapping

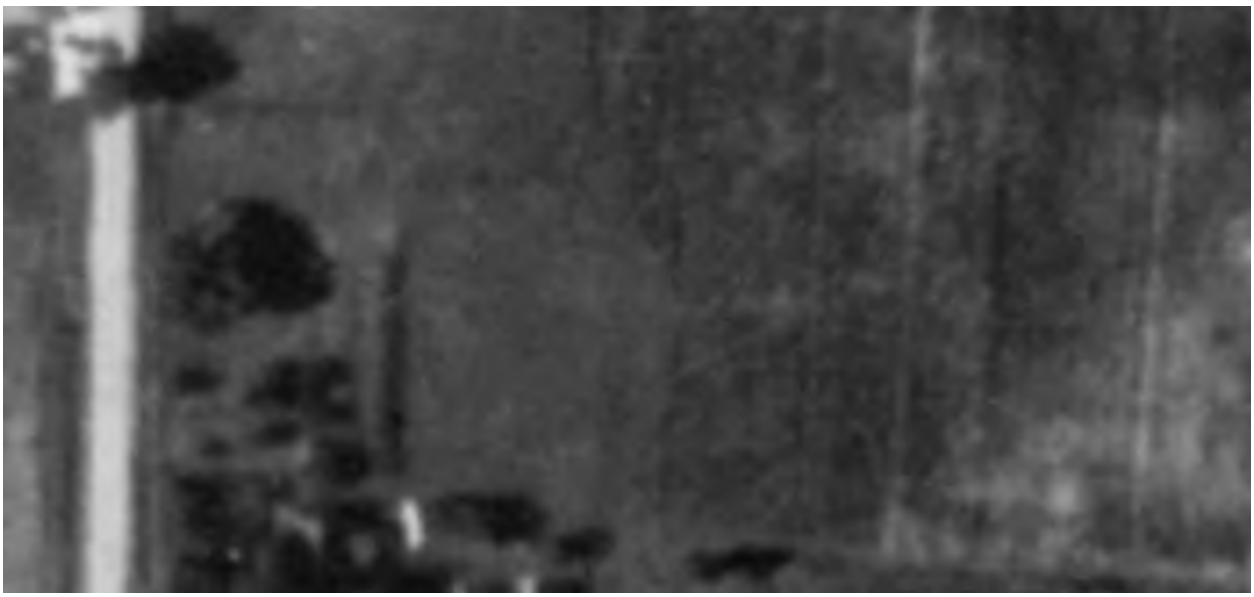
The Wetland boundaries and Wetland edges were flagged with pink "Wetland Delineation" flags and/or ribbon. Boundary and sample plot locations were located with a Leica Zeno GG04 Global Positioning System (GPS) with sub-inch accuracy and are shown on the Wetland Delineation Map, located in Appendix A, Site Maps.

Results

Off Site Analysis

Land Use

Aerial photographs from 1937 through 2025 were reviewed. The 1937 photograph showed the study area as cropland with some trees up until the 1975 photograph. The 1980 aerial photograph shows grading in the west half of the study area that continued into 1981. The lot was left fallow and trees grew in much of the area. The Historic Aerial Photographs are in Appendix D.[12] [13] [14]

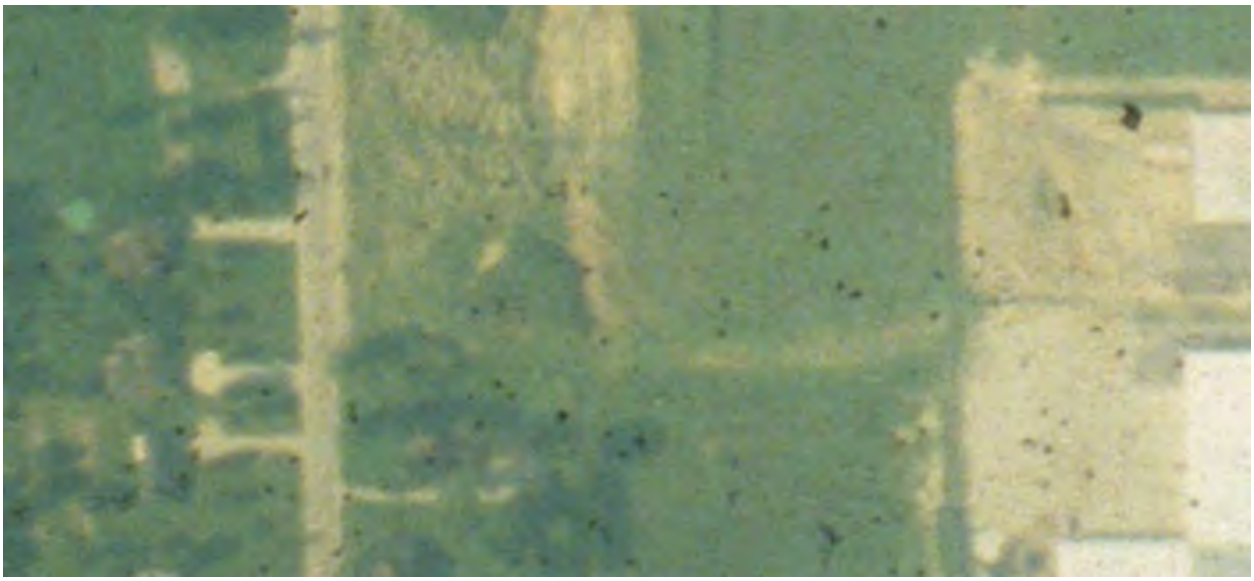


1937 Aerial Photograph

[12] Milwaukee County, GIS, *aerial photographs*, *topography*, Milwaukee County, WI

[13] USDA, FSA, Service Center, *FSA Slides for years 1981 through 2002*. Milwaukee County, WI

[14] University of Wisconsin, *Wisconsin Historic Aerial Image Finder,* 2025



1980 Aerial Photograph



2024 Aerial Photograph

Original Land and Bordner Surveys

The Original Survey shows the site located in the Southwest ¼ of the Southwest ¼ of Section 08. The Original Survey Notes describe the vegetation in this area as white oak, black ash, and hickory.[15]

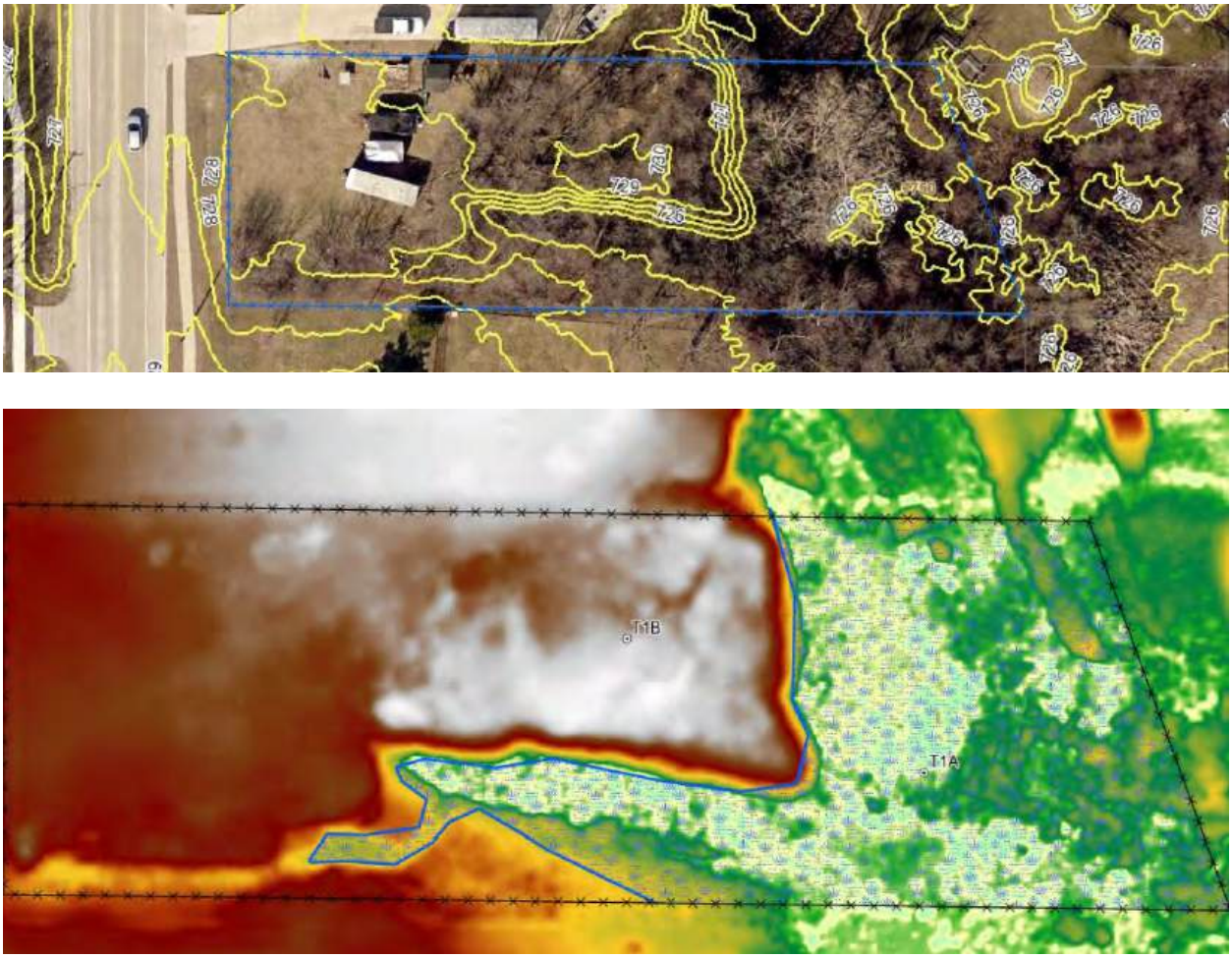
The Bordner Survey was not conducted for Milwaukee County[16]. The Original Survey Map and Survey Notes are in Appendix C.

[15] Board of Commissioners of Public Lands, *Wisconsin Public Land Survey Records: Original Field Notes and Plat Maps*, Madison, Wisconsin, 2025

[16] University of Wisconsin Digital Collections Center, *Wisconsin Land Economic Inventory Maps (Bordner Survey)*, Madison, WI, 2025

Topography

The topography at the Site ranges from an elevation of 730 feet down to 726 feet. The topography of the Site slopes down towards the east half of the study area.[17] The Topographic Map is in Appendix A.



WDNR LiDAR with colorized elevation.

Precipitation

An antecedent precipitation evaluation was conducted for the three months prior to the site visit. Precipitation data from the Milwaukee Mitchell Airport WETS station indicates climatic conditions were wetter than normal at the time of the site visit during the wet season. The drought index recorded an incipient drought. The Palmer Drought Index also indicates conditions were normal (Mid-Range, -1.99 to +1.99) for this location at the time of the site visit. Based on evaluation of both sources of data, it was determined climatic conditions were wetter than normal at the time of the site visit. The antecedent precipitation evaluation, WETS data and Palmer Drought Index reports for the area at the time of the site visit are included in Appendix F.

[17] Milwaukee County GIS

Wetland Mapping

The WDNR Wisconsin Wetland Inventory (WWI) Map was reviewed and indicates the presence of forested and emergent wetlands in most of the east half of the study area.[18] The WWI wetland indicator soils layer was also reviewed and indicates the presence of indicator soils throughout most of the east half of the study area. The study area is mapped as having Predominantly Non-Hydric soils. Indicator soils are soils which are commonly found in wetlands or have inclusions of soils that are commonly found in wetlands. The WDNR Surface Water Data Viewer (SWDV) was also reviewed and indicates the absence of waterways within the study area, but an unnamed Order 1 stream is located to the north of the study area and becomes an Order 2 stream to the east, and an Order 3 stream to the southeast of the study area. A second unnamed Order 1 stream is located to the west of the study area and becomes an Order 2 stream to the southwest.

The NWI Map was reviewed and indicates the presence of emergent wetlands within the east half of the study area.[19] The WWI, SWDV, and NWI Maps are in Appendix A.

Mapped Soils

The NRCS Web Soil Survey indicates the presence of the following soil types[20]:

Report—Hydric Rating by Map Unit (WI)

Hydric Rating by Map Unit (WI)–Milwaukee County, Wisconsin				
Map Unit Symbol	**Map Unit Name**	**Hydric Percent of Map Unit**	**Hydric Category**	**Landform Hydric Minor Components**
BIA	Blount silt loam, 1 to 3 percent slopes	10	WI Predominantly Nonhydric	Depressions
OzaB2	Ozaukee silt loam, 2 to 6 percent slopes, eroded	6	WI Predominantly Nonhydric	End moraines

NRCS County Soil Survey Report is in Appendix E.

[18] WDNR, *Surface Water Data LiDAR Viewer*, 2025

[19] U.S. Fish and Wildlife Service, National Wetlands Inventory, Wetlands Mapper, 2025

[20] USDA, NRCS, *Web Soil Survey,* 2025

Field Investigation

One wetland was identified and delineated within the Study Area. Wetland determination data sheets (Appendix G) were completed at 2 sample points that were representative of the wetland and upland conditions near the boundary and where potential wetlands may be present based on the desktop review and field reconnaissance. Appendix B provides photographs, typically at the sample point locations of the wetlands and adjacent uplands. The wetland boundary and sample point locations are shown on Wetland Delineation Map within Appendix A and the wetlands are summarized in Table 1 and detailed in the following section.

Wetland 1

Wetland 1 is 0.278-acres of cattail marsh/shrub scrub, and cottonwood/maple forest. The wetland continues beyond the study area to the north, east, and south. All three wetland parameters were met.

The wetland boundary followed a well-defined topographic break mostly at the toe slope of an old fill line and wetland hydrology indicators. Soil in the uplands consist of fill and are vastly different that soil in the wetlands and lacked any hydric soil indicators.

Dominant vegetation observed included eastern cottonwood (*Populus deltoides*, FAC) and hybrid cattail (*Typha x glauca*, OBL).

Redox Dark Surface (F6) hydric soil indicator was observed.

The primary wetland hydrology indicators that were observed included Surface Water (A1) and Inundation Visible on Aerial Imagery (B7). The secondary indicators that were observed include Geomorphic Position (D2) and a Positive FAC-Neutral Test (D5). Surface water was present at a depth of 6 to 20 inches.



View of standing water within cottonwood/maple swamp.

Uplands

Uplands within the study area consist of ruderal shrubland and woodland infested with common buckthorn growing on filled land.



View of boxelder maple, common buckthorn, and black walnut woodland growing on historically filled land.

Conclusion

This report is limited to the identification and delineation of wetlands within the Delineation Area as shown on Figure 1, Appendix A. Other regulated environmental resources that result in land use restrictions may be present (e.g. navigable waterways, floodplains, cultural resources, and threatened or endangered species).

Wetlands

Investigation of the area determined that wetlands exist as shown on the attached figures and Wetland Delineation Map.

Table 1. Summary of Wetlands Identified within the Study Area

Wetland ID	Wetland Description[21]	Cowardin Classification [22]	*Surface Water Connections	*NR151 Protective Area	Acreage On-site
Wetland 1	Ruderal Marsh, Ruderal Shrub Swamp, Ruderal Flooded and Swamp Forest	PFO1C, PSS1C, PEM1C	Isolated wetland in a closed depression	Less susceptible, 10-30 feet	12,109 sf 0.278 acres
*These are based on professional opinion. Local zoning ordinances may have additional restrictions. US Army Corps of Engineers has authority for determining federal jurisdiction of wetlands and waterways.					**0.278 ac**

The wetlands identified for this report may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers, state regulation under the jurisdiction of Wisconsin DNR, and local jurisdiction under Milwaukee County, and the City of Oak Creek.

[21] WI Department of Natural Resources, *Natural Heritage Conservation Key to Wetland Natural Communities,* Version 1.3, 4/8/2022

[22] Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

Protective Areas

WI Admin. Code[23] requires that impervious surfaces shall be kept out of the "protective area" to the maximum extent practicable. Protective area is an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface.

Protective area does not include any area of land adjacent to any stream enclosed within a pipe or culvert, such that runoff cannot enter the enclosure at this location.

a. For outstanding resource waters and exceptional resource waters, and for wetlands in areas of special natural resource interest as specified in s. NR 103.04, 75 feet.

b. For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.

c. For lakes, 50 feet.

d. For highly susceptible wetlands, 50 feet. Highly susceptible wetlands include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins.

e. For less susceptible wetlands, 10% of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass.

Protective Areas do not apply to the following:

1. Redevelopment post-construction sites.
2. In-fill development areas less than 5 acres.
3. Structures that cross or access surface waters such as boat landings, bridges and culverts.
4. Structures constructed in accordance with s. 59.692 (1v), Stats.
5. Post-construction sites from which runoff does not enter the surface water, except to the extent that vegetative ground cover is necessary to maintain bank stability.
6. Wetlands that have been completely filled in accordance with all applicable state and federal regulations.

Authority to apply wetland and waterway protective areas under NR 151 lies with the WDNR. Some local zoning authorities and regional planning organizations may have adopted protective areas as setbacks as part of their zoning codes or may have additional land use restrictions within or adjacent to wetlands.

Concurrence and Certification

If wetlands are proposed to be impacted a Section 404 Letter of Permission Authorization will need to be obtained from USACE and according to Section 281.36, Wisconsin Statutes and NR 299 and NR 103, Wisconsin Administrative Code a permit from the WDNR would be necessary.

For wetlands to be confirmed as exempt from state regulatory authority an exemption determination application must be submitted to the DNR Wetland ID Program whose staff makes the final decision.

Chad M Fradette is a WDNR Professionally Assured Wetland Delineator and WDNR concurrence is granted for five years unless site conditions are significantly altered.

[23] Wisconsin Administrative Code, NR 151.245

Plant Identification References

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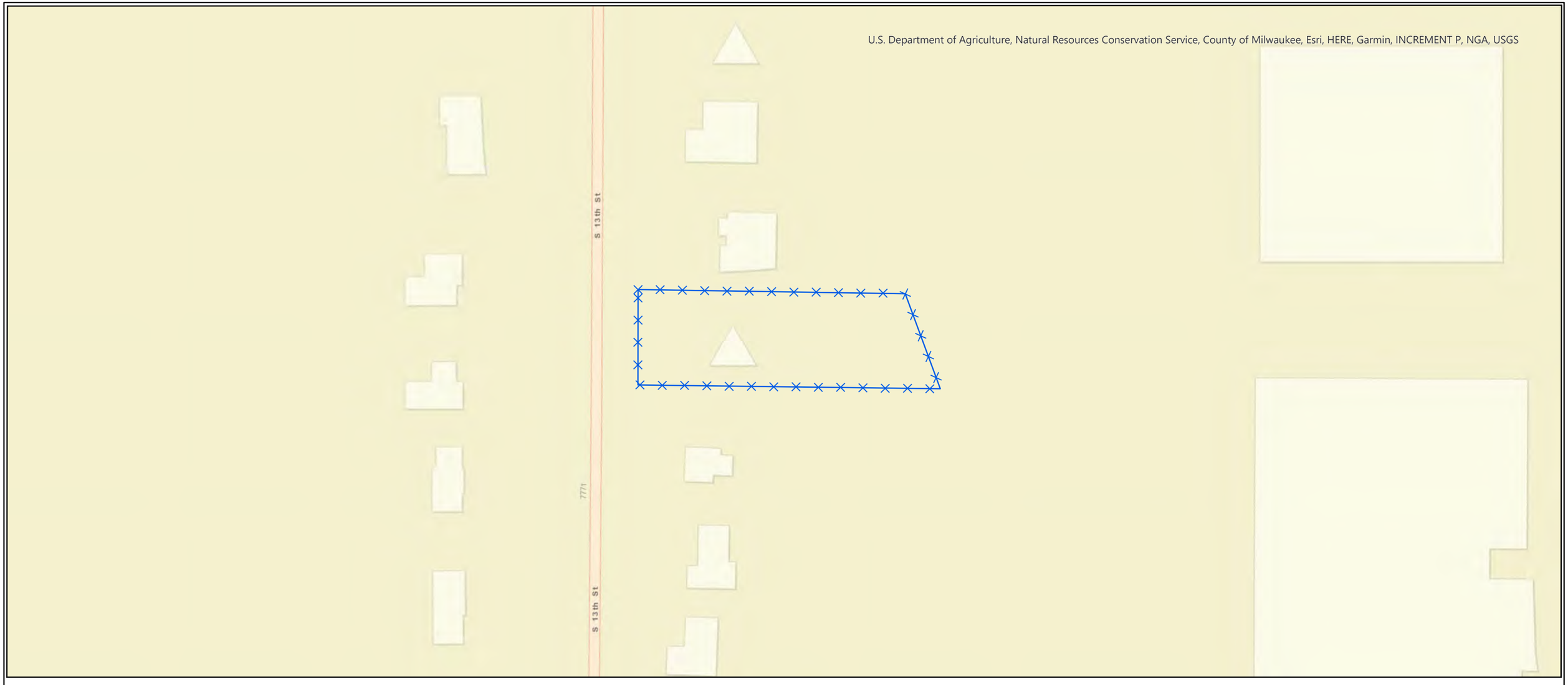
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Vascular Plants of Northeastern United States and Adjacent Canada, The New York Botanical Garden, 1998

Appendix A:

Figures and Site Maps



U.S. Department of Agriculture, Natural Resources Conservation Service, County of Milwaukee, Esri, HERE, Garmin, INCREMENT P, NGA, USGS

Ravoori Property
Site Location Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

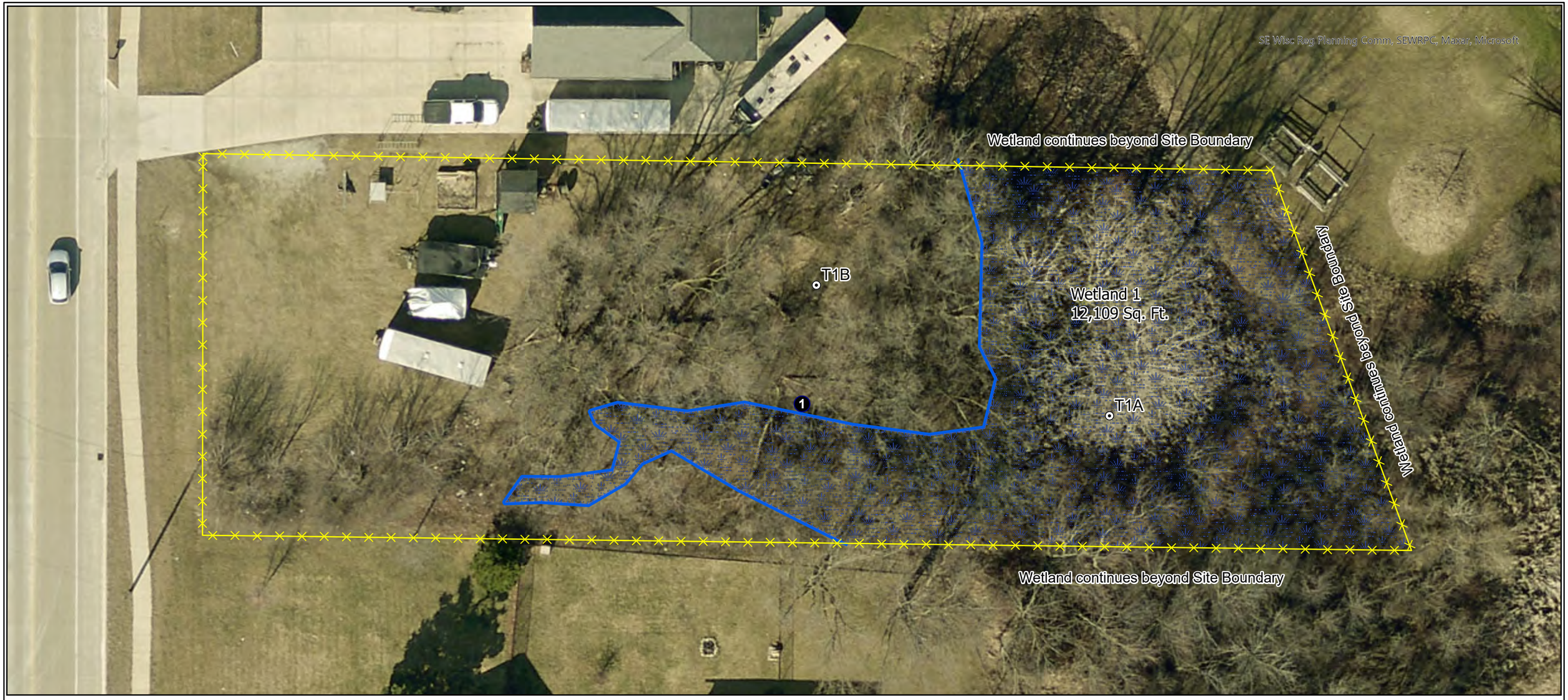
Legend

Site Boundary

0 50 100 200 Feet

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evergreen consultants LLC
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Phone: 920.615.0019 • Website: www.evergreenwis.com



Legend

- Site Boundary
- Sample Point
- Picture Location
- Wetland Line
- Wetland

Wetland Delineation was conducted by
Chad Fradette, EP, Chem,
WDNR Professionally Assured Wetland Delineator
with assistance from
Shyann Banker, Environmental Scientist,
WDNR Professionally Assured Wetland Delineator

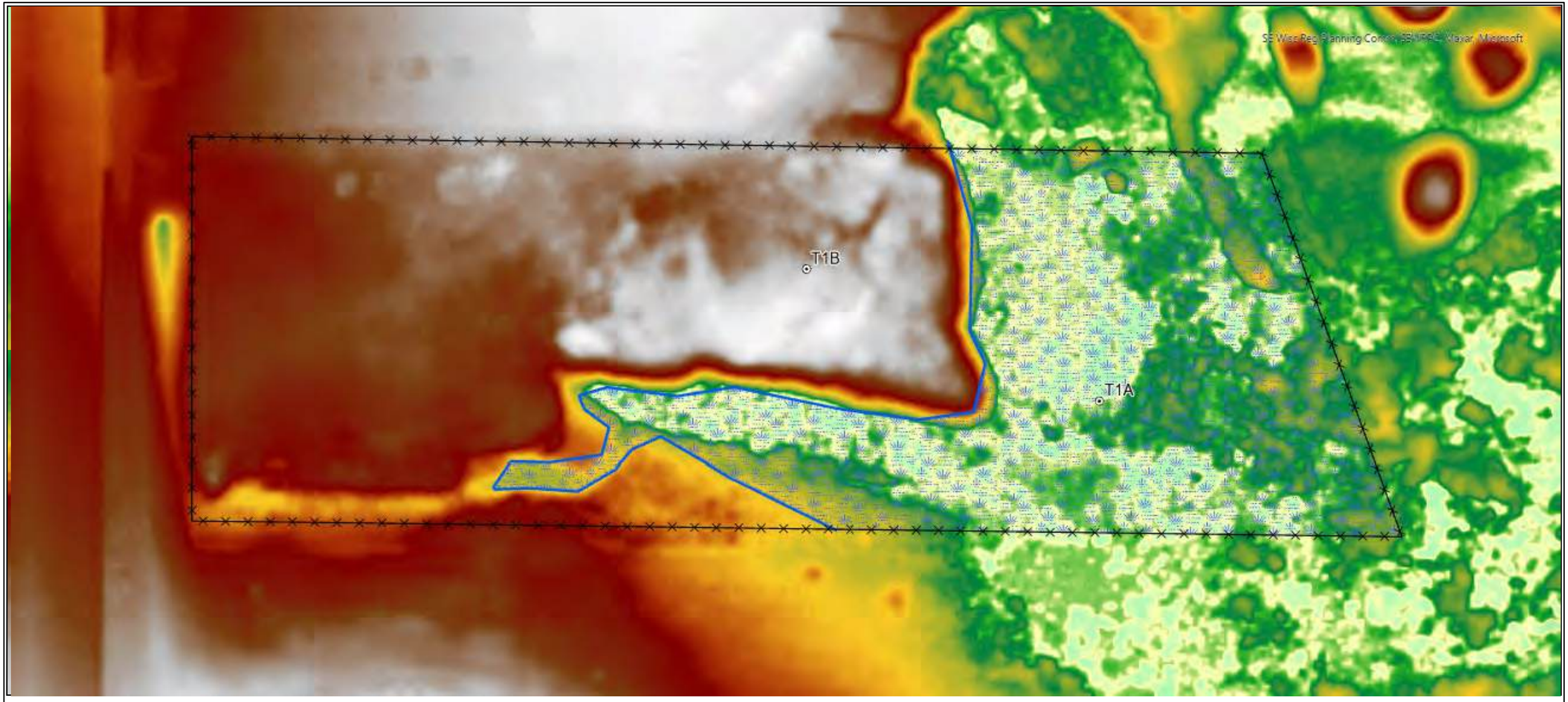
Ravoori Property
Wetland Delineation Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

0 12.5 25 50 Feet

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Ravoori Property
WDNR LiDAR Viewer Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

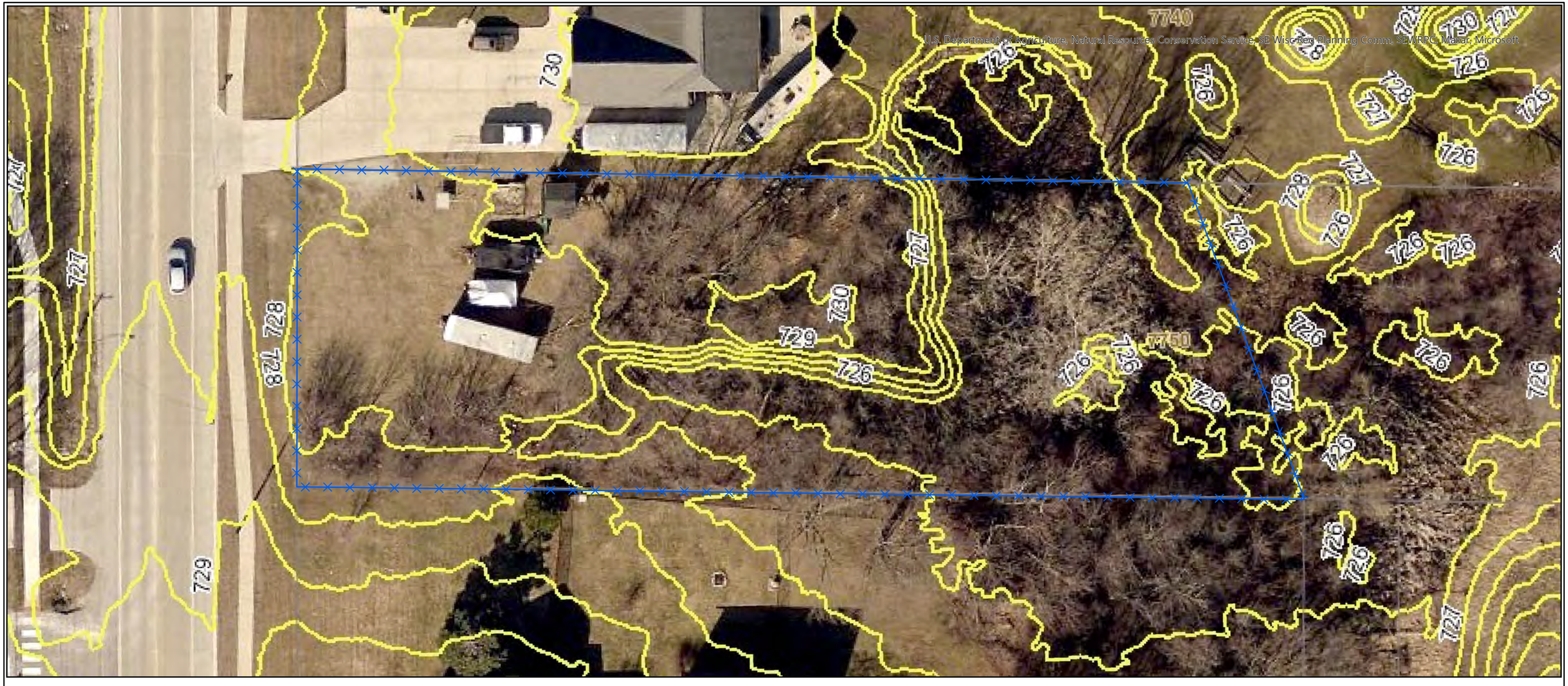
Project: MIL25-041-01

Legend
- Wetland Line
- Wetland
- Sample Point
- Site Boundary

0 12.5 25 50 Feet

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Ravoori Property
Topographic Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

Legend

Site Boundary

0 15 30 60 Feet

N W E S

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Ravoori Property
Wisconsin Wetland Inventory Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

Legend
- Site Boundary
- USDA Wetspots
- Maximum Extent Wetland Indicators
- Wisconsin Wetland Inventory
- Wetland Points

0 15 30 60
Feet

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Ravoori Property
National Wetland Inventory Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

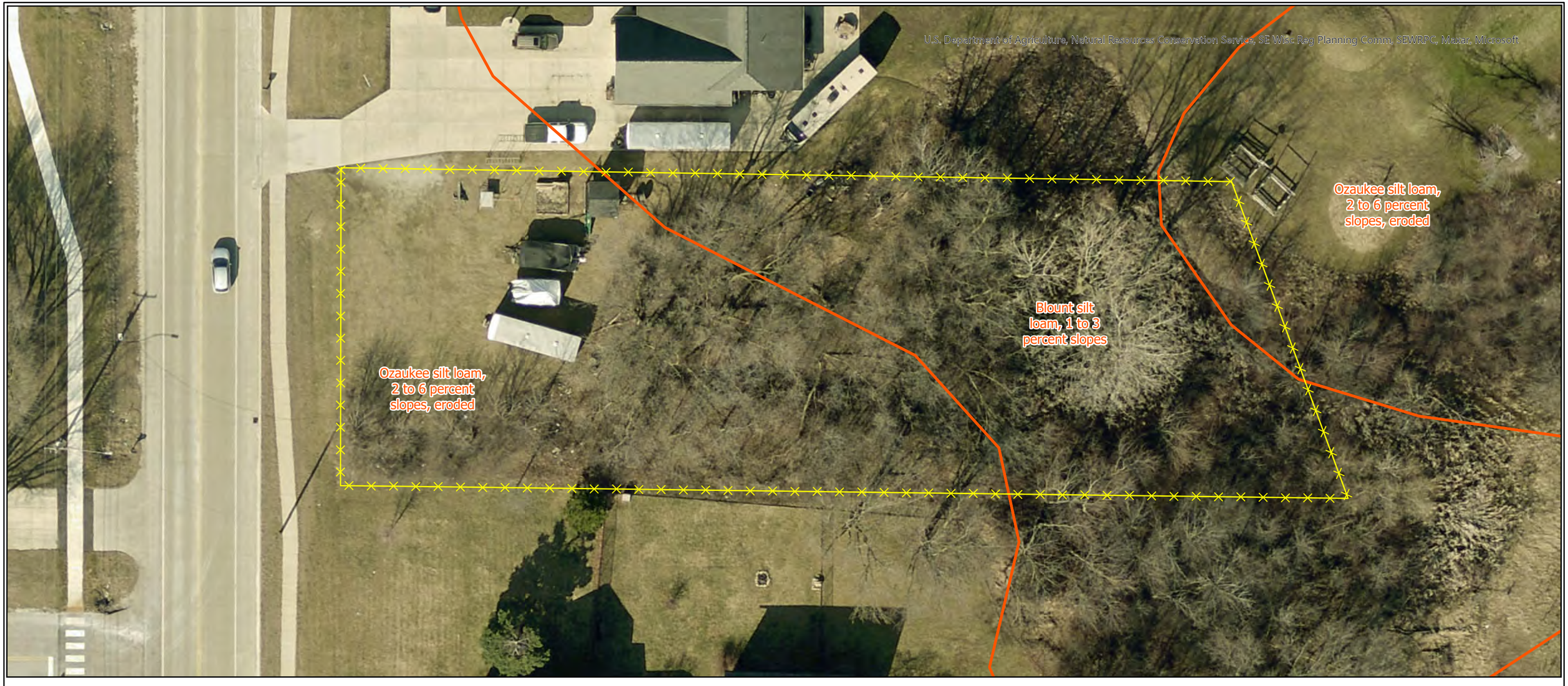
Legend

- Site Boundary
- NWI Wetlands

0 15 30 60 Feet

N
W E
S

evergreen consultants LLC
PO Box 680 Pulaski, WI 54162
Phone: 920.615.0019 • Website: www.evergreenwis.com



Ravoori Property
NRCS Soil Survey Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

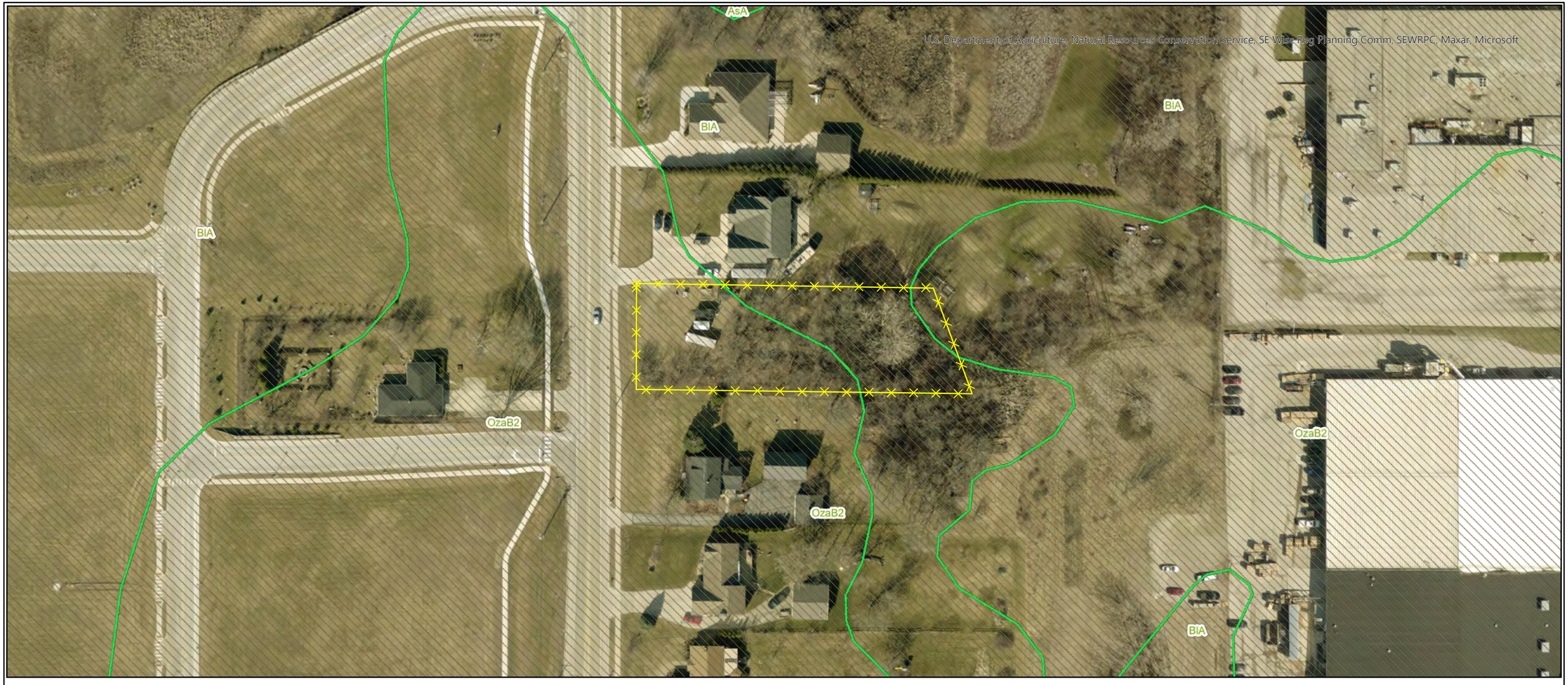
Legend

- Site Boundary
- USA Soils Map Units

0 15 30 60 Feet

N W E S

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Ravoori Property
NRCS Soil Hydric Ratings Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

Legend

- Site Boundary

Hydric Rating

- Hydric
- Predominantly Hydric
- Partially Hydric
- Predominantly Non-Hydric

0 45 90 180 Feet

N W E S

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U.S. Department of Agriculture, Natural Resources Conservation Service, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Copyright:© 2013 National Geographic Society, i-cubed



Ravoori Property
USGS Topographic Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Project: MIL25-041-01

Legend

Site Boundary

0 320 640 1,280

Feet

N

W E

S

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Appendix B:

Site Pictures



Standing at photo location 1.



Standing near T1A within Wetland 1.



Standing near T1A within Wetland 1.



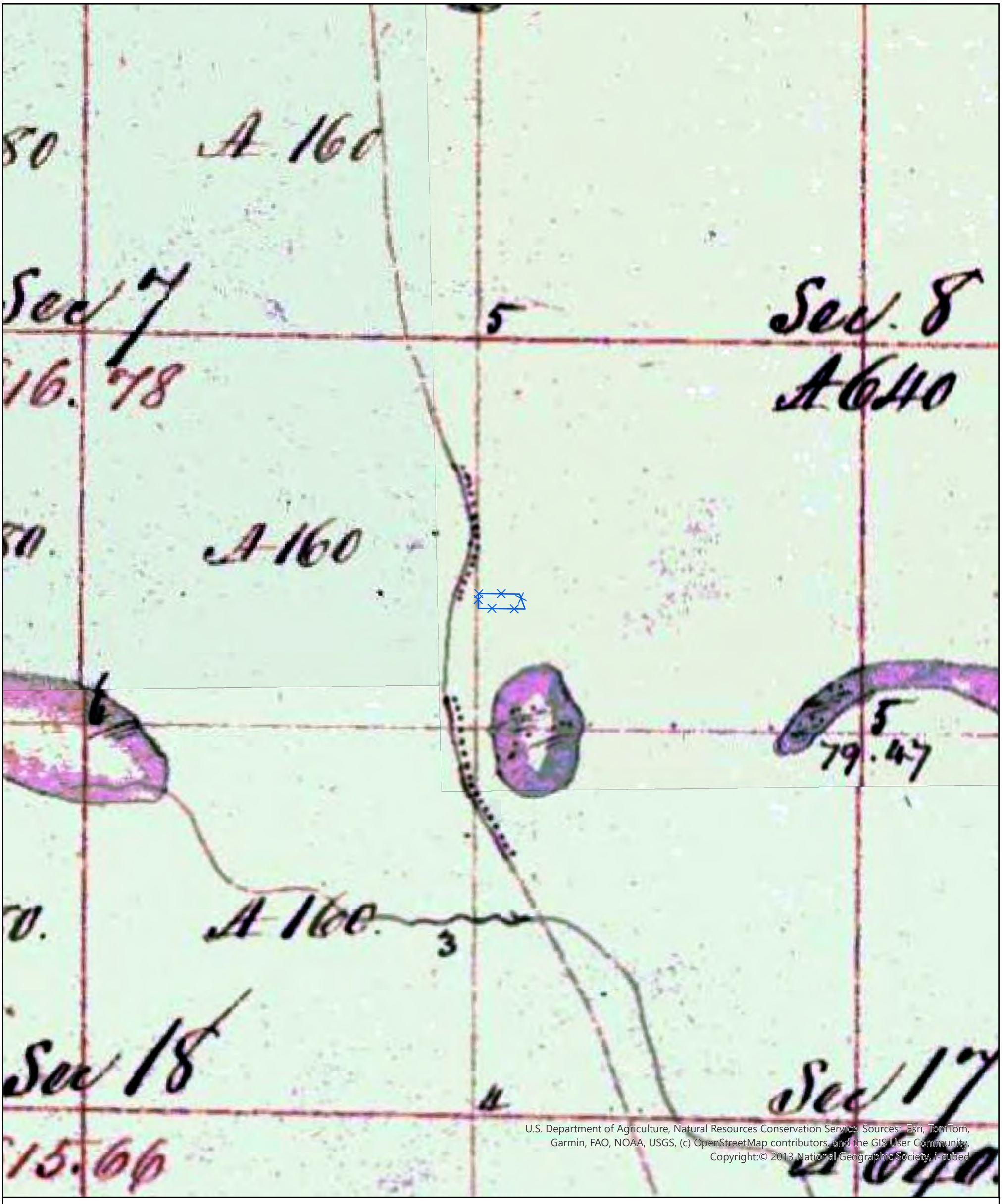
Standing near T1B.



Standing near T1B facing north.

Appendix C:

Original Survey Map and Notes



Ravoori Property
Original Survey Map
7750 S 13th Street
City of Oak Creek
Milwaukee County, WI

Legend

Site Boundary

N
W E
S

Project: MIL25-041-01

0 325 650 1,300
Feet

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T. 5, R. 22 E. 4th. Mer.

4.30

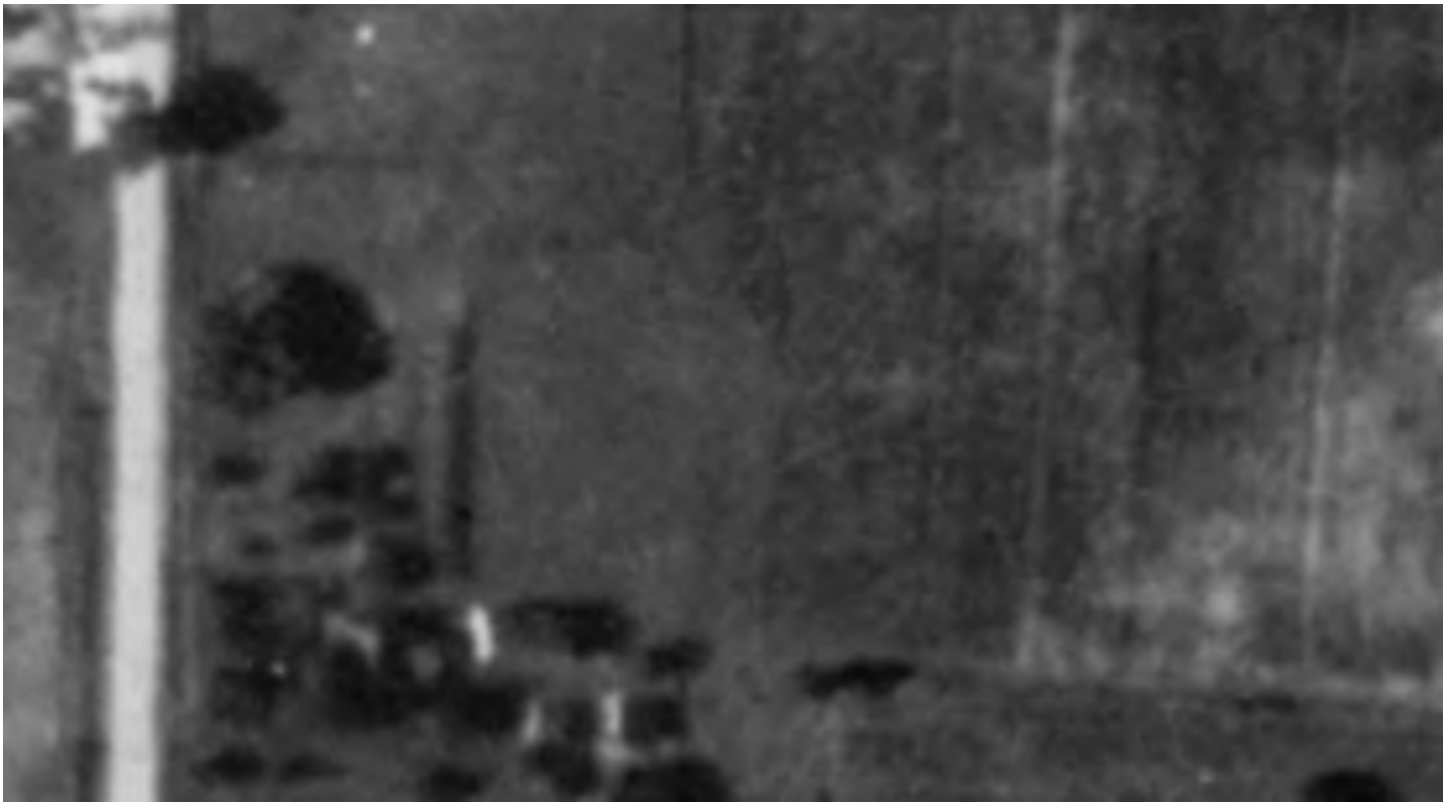
East on random bet. Sec. 8 & 17

1.10	Enter Marsh
10.10	Leave Do
32.50	Enter Marsh
35.00	Leave Do.
57.50	Enter Marsh
67.00	Leave Marsh
79.47	Intersected N & S. line 25 lks. N. of Post
	Land good 2d. rate – Marsh excepted – Timber, Sugar, R & W. Oak &c.
West	Corrected
29.47	W. Oak 11
39.73½	Set ¼ Sec. Post
	B. Ash 11 N 5½ W. 27
	Do. 5 S. 34 E. 16½
55.90	Hickory 10
79.47	Section Corner

Original Survey Notes

Appendix D:

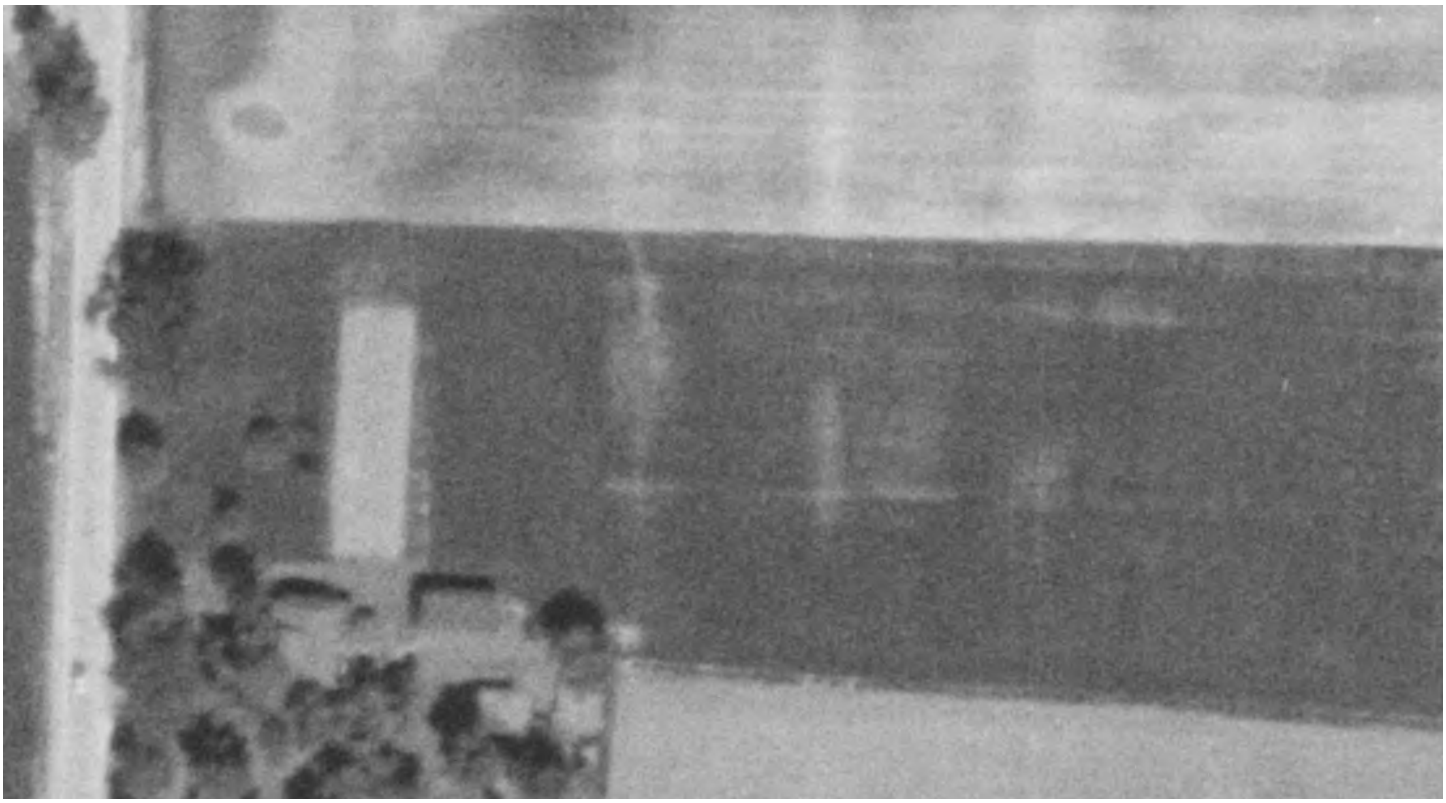
Historic Aerial Photographs



1937 Milwaukee County



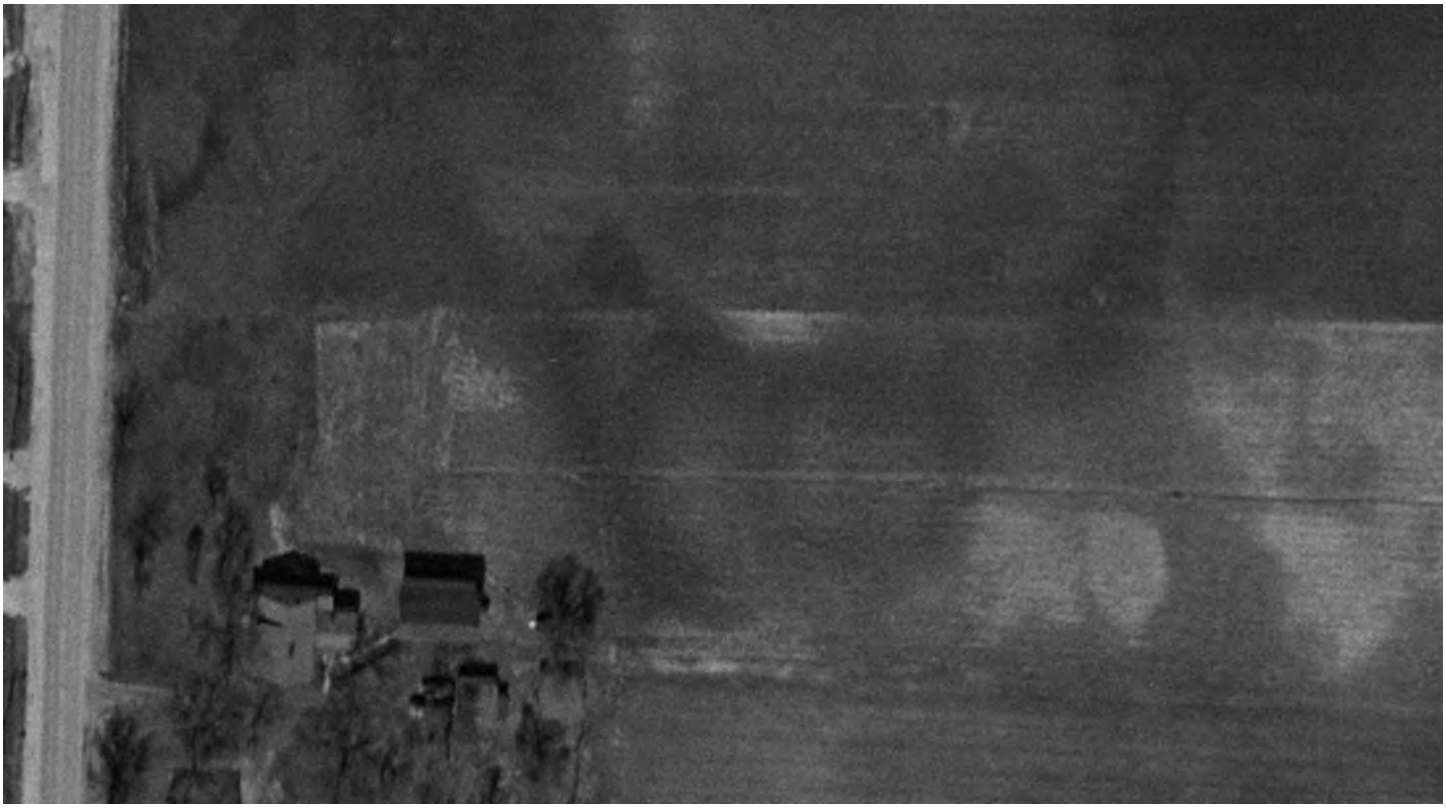
1951 Milwaukee County



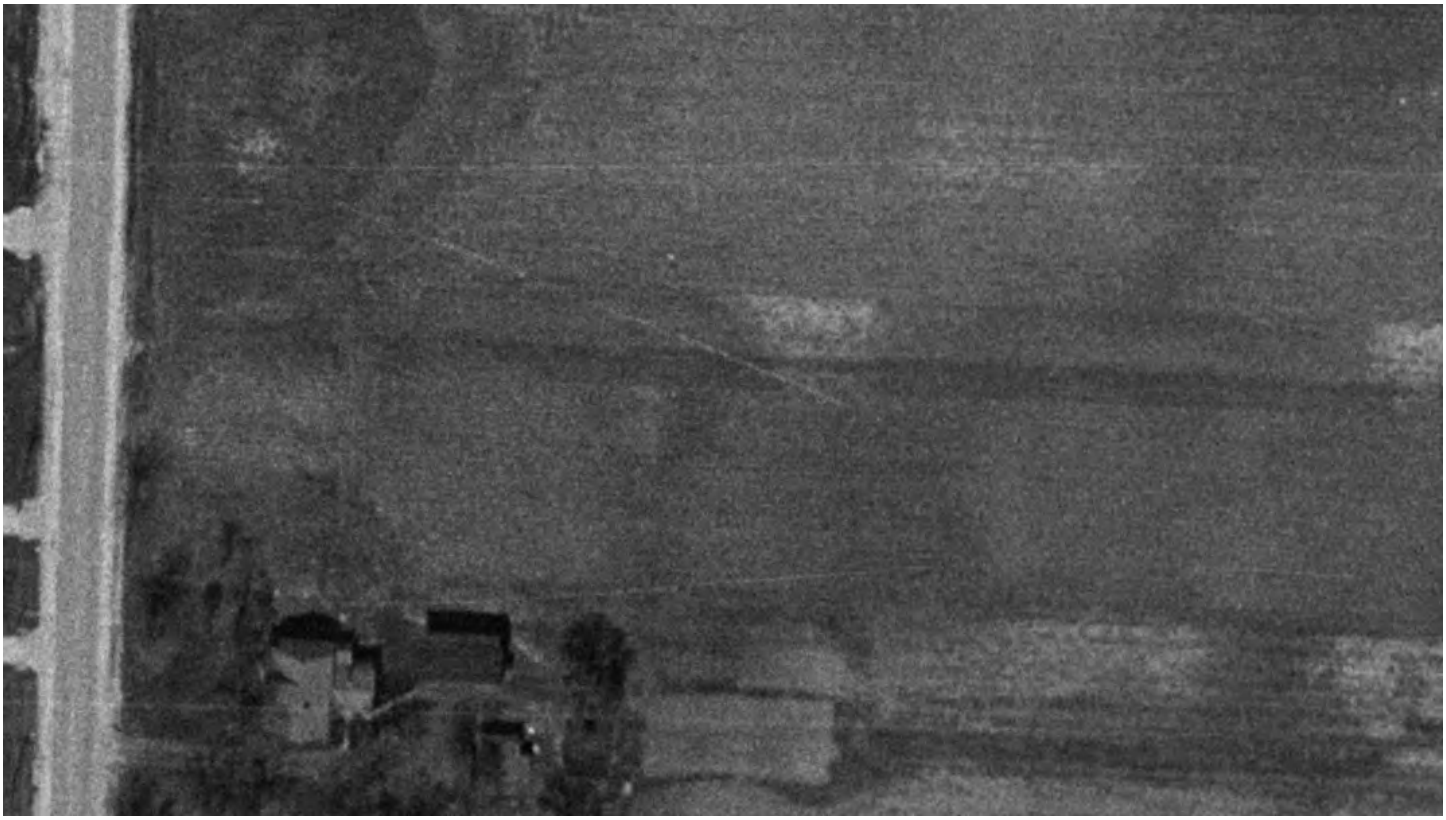
1956 Milwaukee County



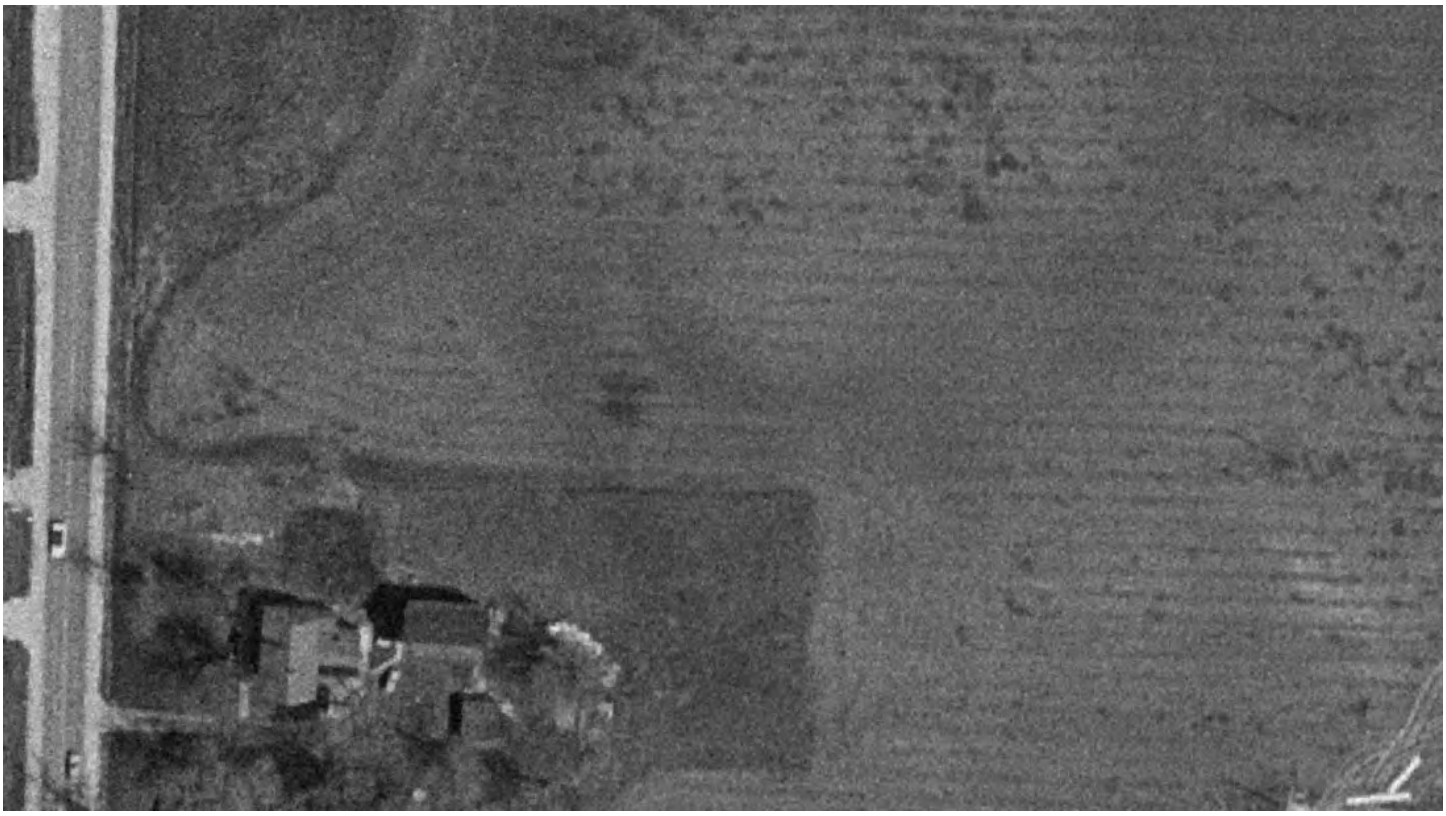
1963 Milwaukee County



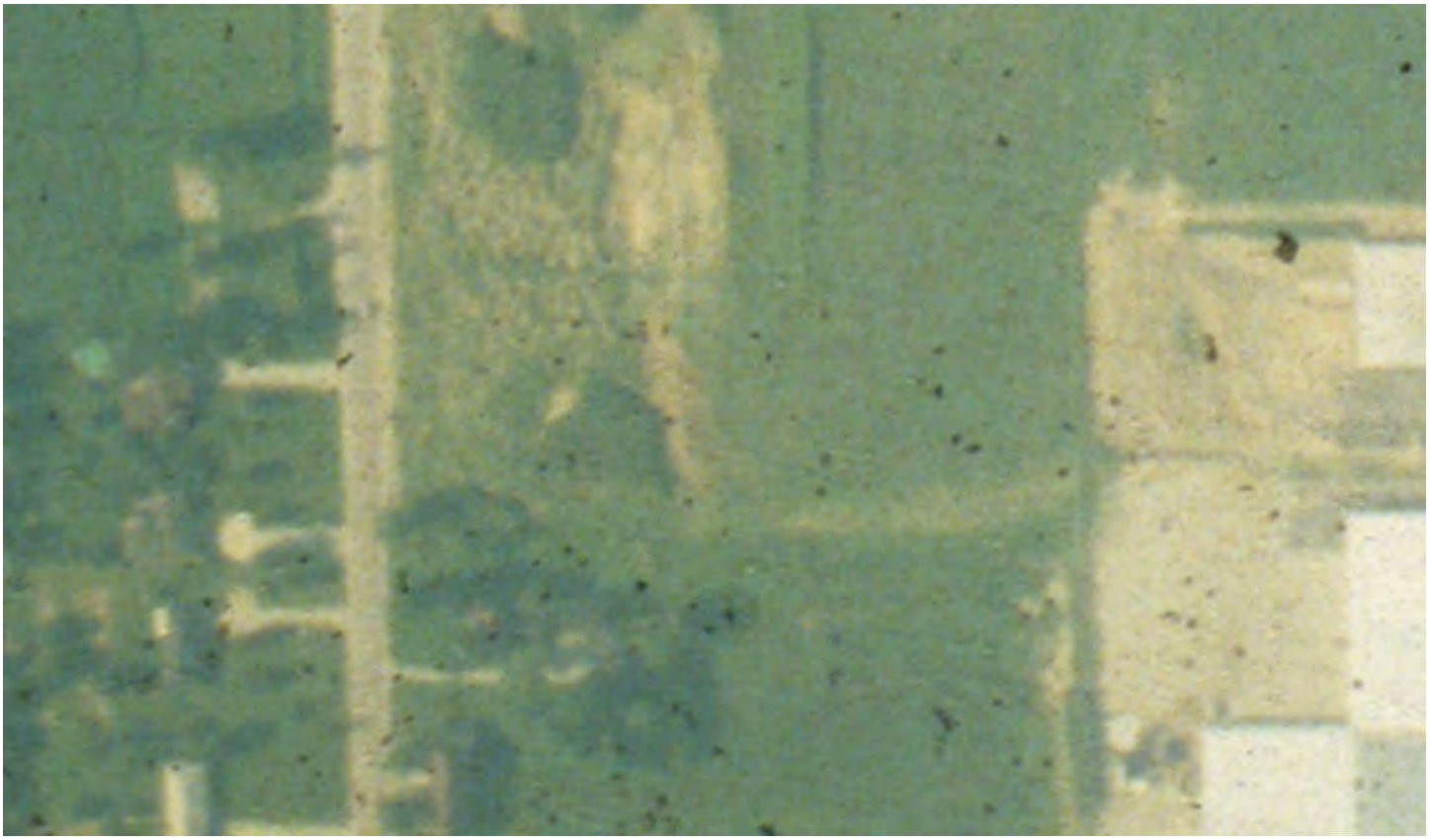
1967 Milwaukee County



1970 Milwaukee County



1975 Milwaukee County



1980 FSA



1981 FSA



1982 FSA



1983 FSA



1984 FSA



1985 FSA



1986 FSA



1987 FSA



1988 FSA



1989 FSA



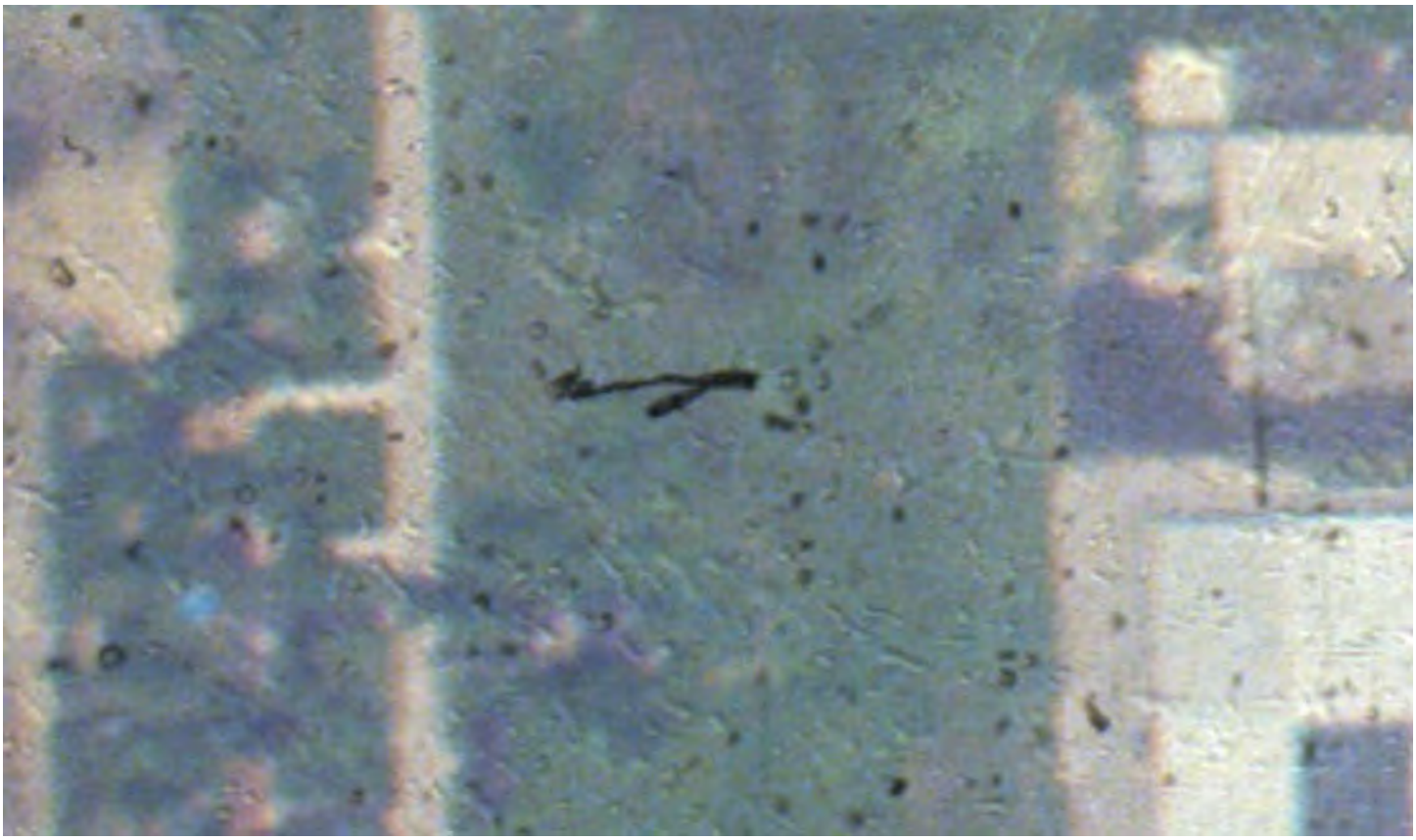
1990 FSA



1991 FSA



1992 FSA



1993 FSA



1994 FSA



1995 FSA



1996 FSA



1997 FSA



1998 FSA



1999 FSA



2000 FSA



2001 FSA



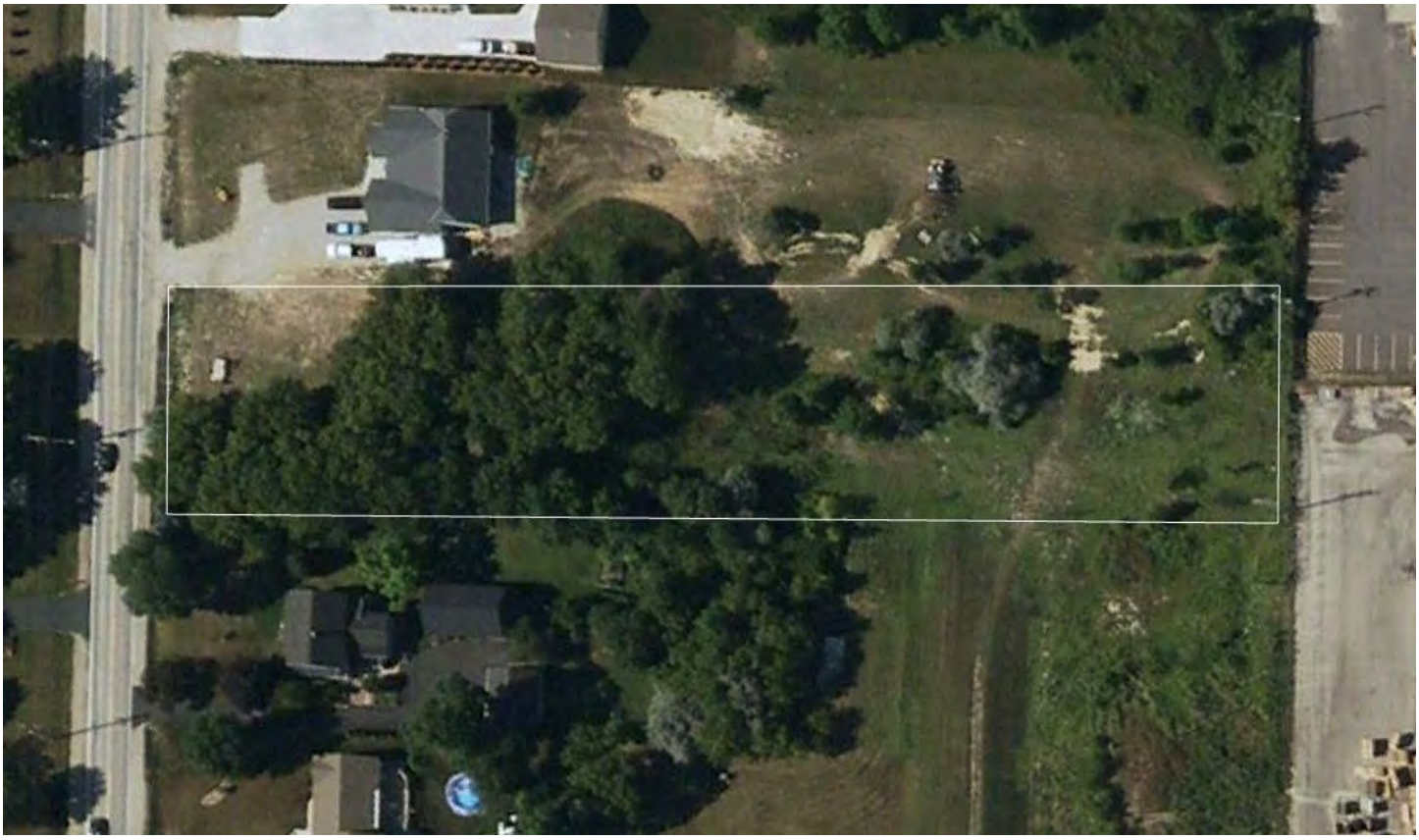
2004 Maxar Technologies



2005 USGS



2006 Maxar Technologies



2007 Google Earth



2008 USDA



2010 Google Earth



2011 Google Earth



2013 Milwaukee County



2014 Google Earth



2015 Google Earth



2017 Maxar Technologies



2018 Google Earth



2019 Google Earth



2020 Airbus



2021 Airbus



2022 Google Earth



2023 Airbus



2024 Google Earth



2025 Airbus

Appendix E:

NRCS County Soil Survey Report

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,190 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 LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Milwaukee County, Wisconsin
Survey Area Data: Version 3, Dec 10, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 25, 2022—Aug 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BlA	Blount silt loam, 1 to 3 percent slopes	1.1	23.7%
OzaB2	Ozaukee silt loam, 2 to 6 percent slopes, eroded	3.4	76.3%
Totals for Area of Interest		**4.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Milwaukee County, Wisconsin

BlA—Blount silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: g92m
Elevation: 670 to 1,100 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 37 to 55 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Blount and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blount

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over calcareous clayey till

Typical profile

Ap,E - 0 to 8 inches: silt loam
BA,2Bt1,2BC - 8 to 34 inches: silty clay loam
2C - 34 to 60 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F110XY012IL - Moist Glacial Drift Upland Forest
Forage suitability group: Mod AWC, high water table (G095BY004WI)
Other vegetative classification: Mod AWC, high water table (G095BY004WI)
Hydric soil rating: No

Minor Components

Ashkum

Percent of map unit: 10 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

OzaB2—Ozaukee silt loam, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2sn0d
Elevation: 600 to 930 feet
Mean annual precipitation: 31 to 42 inches
Mean annual air temperature: 46 to 51 degrees F
Frost-free period: 135 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ozaukee, eroded, and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ozaukee, Eroded

Setting

Landform: Ground moraines, end moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over wisconsinan age silty and clayey till

Typical profile

Ap - 0 to 8 inches: silt loam
Bt1 - 8 to 11 inches: silty clay loam
2Bt2 - 11 to 29 inches: silty clay
2BCt - 29 to 34 inches: silty clay loam
2Cd - 34 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 23 to 43 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F110XY012IL - Moist Glacial Drift Upland Forest
Forage suitability group: Mod AWC, adequately drained with limitations (G095BY006WI)
Other vegetative classification: Mod AWC, adequately drained with limitations (G095BY006WI)
Hydric soil rating: No

Minor Components

Ashkum, drained

Percent of map unit: 3 percent
Landform: End moraines, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Pewamo, drained

Percent of map unit: 3 percent
Landform: Drainageways on ground moraines, depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit (WI)

This Hydric Soil Category rating indicates the components of map units that meet the criteria for hydric soils. Map units are composed of one or more major soil components or soil types that generally make up 20 percent or more of the map unit and are listed in the map unit name, and they may also have one or more minor contrasting soil components that generally make up less than 20 percent of the map unit. Each major and minor map unit component that meets the hydric criteria is rated **hydric.** The map unit class ratings based on the hydric components present are: WI Hydric, WI Predominantly Hydric, WI Partially Hydric, WI Predominantly Nonhydric, and WI Nonhydric. The report also shows the total representative percentage of each map unit that the hydric components comprise.

"WI Hydric" means that all major and minor components listed for a given map unit are rated as being hydric. *"WI Predominantly Hydric"* means that all major components listed for a given map unit are rated as hydric, and at least one contrasting minor component is not rated hydric.*"WI Partially Hydric"* means that at least one major component listed for a given map unit is rated as hydric, and at

least one other major component is not rated hydric. *"WI Predominantly Nonhydric"* means that no major component listed for a given map unit is rated as hydric, and at least one contrasting minor component is rated hydric. *"WI Nonhydric"* means no major or minor components for the map unit are rated hydric. The assumption is that the map unit is nonhydric even if none of the components within the map unit have been rated.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they typically exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Vasilas, Hurt, and Noble, 2010).

The NTCHS has developed criteria to identify those soil properties unique to hydric soils (Federal Register, 2012). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria use selected soil properties that are described in “Field Indicators of Hydric Soils in the United States” (Vasilas, Hurt, and Noble, 2010), "Soil Taxonomy" (Soil Survey Staff, 1999), "Keys to Soil Taxonomy" (Soil Survey Staff, 2010), and the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

The criteria for hydric soils are represented by codes, for example, 2 or 3. Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. February, 28, 2012. Hydric soils of the United States.
Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Rating by Map Unit (WI)

Hydric Rating by Map Unit (WI)–Milwaukee County, Wisconsin				
Map Unit Symbol	**Map Unit Name**	**Hydric Percent of Map Unit**	**Hydric Category**	**Landform Hydric Minor Components**
BlA	Blount silt loam, 1 to 3 percent slopes	10	WI Predominantly Nonhydric	Depressions
OzaB2	Ozaukee silt loam, 2 to 6 percent slopes, eroded	6	WI Predominantly Nonhydric	End moraines

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil

Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Soil List - All Components

Hydric Soil List - All Components–WI079-Milwaukee County, Wisconsin					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
BlA: Blount silt loam, 1 to 3 percent slopes	Blount	90	Moraines	No	—
	Ashkum	10	Depressions	Yes	2,3
OzaB2: Ozaukee silt loam, 2 to 6 percent slopes, eroded	Ozaukee-Eroded	88-100	Ground moraines,end moraines	No	—
	Ashkum-Drained	0-7	End moraines,ground moraines	Yes	2
	Pewamo-Drained	0-7	Drainageways on ground moraines,depressions on ground moraines	Yes	2
	Urban land	0-5	Ground moraines	No	—

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and

duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
    A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
Federal Register. September 18, 2002. Hydric soils of the United States.
Federal Register. July 13, 1994. Changes in hydric soils of the United States.
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
National Research Council. 1995. Wetlands: Characteristics and boundaries.
Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

Report—Hydric Soils

Hydric Soils–Milwaukee County, Wisconsin				
Map symbol and map unit name	**Component**	**Percent of map unit**	**Landform**	**Hydric criteria**
BlA—Blount silt loam, 1 to 3 percent slopes				
	Ashkum	10	Depressions	2, 3
OzaB2—Ozaukee silt loam, 2 to 6 percent slopes, eroded				
	Ashkum, drained	3	End moraines, ground moraines	2
	Pewamo, drained	3	Drainageways on ground moraines, depressions on ground moraines	2

Taxonomic Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. This table shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Alfisols.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalfs (*Ud*, meaning humid, plus *alfs*, from Alfisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalfs*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

References:
Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. (The soils in a given survey area may have been classified according to earlier editions of this publication.)

Report—Taxonomic Classification of the Soils

[An asterisk by the soil name indicates a taxadjunct to the series]

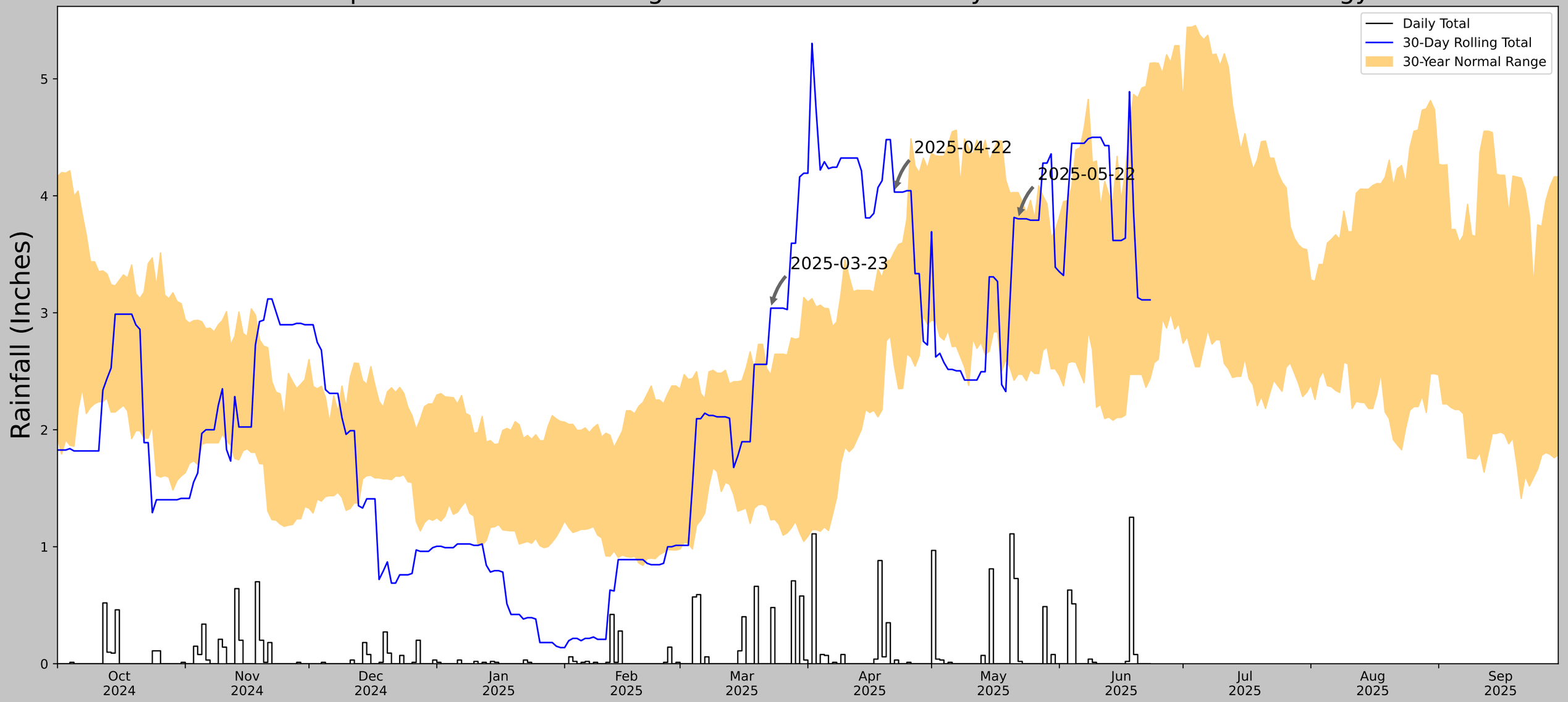
Taxonomic Classification of the Soils–Milwaukee County, Wisconsin	
Soil name	**Family or higher taxonomic classification**
Ashkum	
Ashkum	Fine, mixed, superactive, mesic Typic Endoaquolls
Blount	Fine, illitic, mesic Aeric Epiaqualfs
Ozaukee	Fine, illitic, mesic Oxyaquic Hapludalfs

Taxonomic Classification of the Soils–Milwaukee County, Wisconsin	
Soil name	**Family or higher taxonomic classification**
Pewamo	Fine, mixed, active, mesic Typic Argiaquolls
Urban land	

Appendix F:

Precipitation Information

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



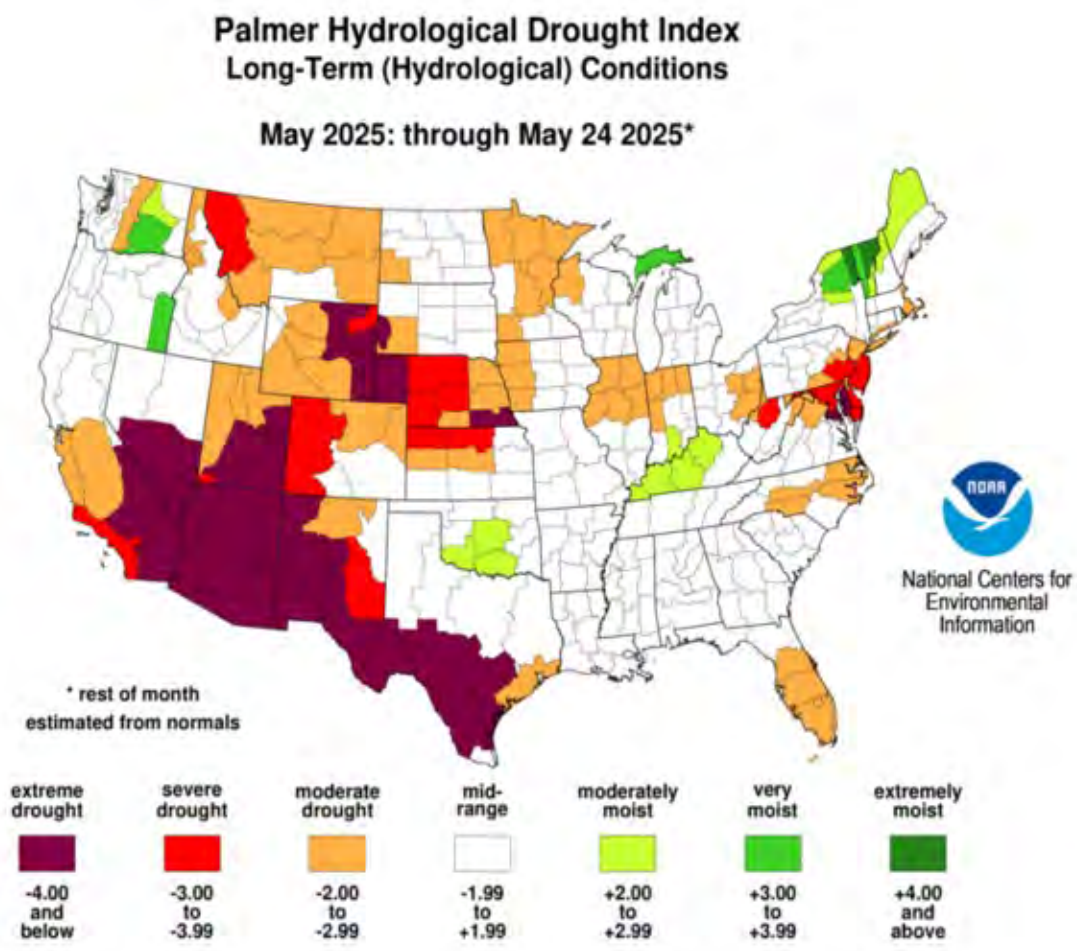
Coordinates	42.9040132, -87.9305450
Observation Date	2025-05-22
Elevation (ft)	729.682
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-05-22	2.47441	4.027559	3.80315	Normal	2	3	6
2025-04-22	2.540551	3.520866	4.031496	Wet	3	2	6
2025-03-23	1.229134	2.470473	3.03937	Wet	3	1	3
Result							Wetter than Normal - 15

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	3.763	62.687	1.929	11353	90



Sources: National Oceanic & Atmospheric Administration, Palmer Hydrological Drought Index

Appendix G:

Wetland Determination Data Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 09/30/2027
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: MIL25-041-01 Ravoori Property | City/County: Oak Creek/Milwaukee | Sampling Date: 2025-05-22
Applicant/Owner: Vijay Ravoori | State: Wisconsin | Sampling Point: T1A
Investigator(s): Chad M Fradette, Sara Marcinkus | Section, Township, Range: S08 T5N R22E
Landform (hillside, terrace, etc.): Closed Depression | Local relief (concave, convex, none): Concave
Slope (%): 0-1 | Lat: 42.9039434 | Long: -87.9301320 | Datum: WGS 84
Soil Map Unit Name: BIA - Blount silt loam, 1 to 3 percent slopes | NWI classification: PEM1C
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)
Are Vegetation____, Soil____, or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation____, Soil____, or Hydrology____ 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 ____
Hydric Soil Present? Yes ✔ No ____
Wetland Hydrology Present? Yes ✔ No ____

Is the Sampled Area within a Wetland? Yes ✔ No ____

Remarks:
Sample plot is in cattail marsh/shrub scrub and cottonwood maple forest.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	40	✔	FAC
2.			
3.			
4.			
5.			
	40	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Acer saccharinum	2		FACW
2.			
3.			
4.			
5.			
	2	=Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Typha X glauca	10	✔	OBL
2. Acer saccharinum	2		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	12	=Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 10	x 1 = 10
FACW species 4	x 2 = 8
FAC species 40	x 3 = 120
FACU species 0	x 4 = 0
UPL species 0	x 5 = 0
Column Totals: 54 (A)	138 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:
____ 1 - Rapid Test for Hydrophytic Vegetation
✔ 2 - Dominance Test is >50%
✔ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
Two hydrophytic vegetation indicators present.

SOIL

Sampling Point: T1A

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Silty Clay Loam	
2 - 6	7.5YR 4/4	90	7.5YR 4/6	10	C	M	Silty Clay	
6 - 24	10YR 3/1	90	7.5YR 3/4	10	C	M	Silty Clay	
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21) Very
- ___ Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** ___

Remarks:

One hydric soil indicator, F6 is present.

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)
- ___ True Aquatic Plants (B14)
- ___ 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)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✔	No ___	Depth (inches): 6-20
Water Table Present?	Yes ___	No ✔	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✔	Depth (inches): ___

Wetland Hydrology Present? **Yes** ✔ **No** ___

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

Antecedent precipitation has been wetter than normal during the wet season. The drought index has indicated an incipient drought.

Remarks:

Hydrology is met with three primary and two secondary indicators present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 09/30/2027
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: MIL25-041-01 Ravoori Property | City/County: Oak Creek/Milwaukee | Sampling Date: 2025-05-22
Applicant/Owner: Vijay Ravoori | State: Wisconsin | Sampling Point: T1B
Investigator(s): Chad M Fradette, Sara Marcinkus | Section, Township, Range: S08 T5N R22E
Landform (hillside, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex
Slope (%): 2-4 | Lat: 42.9040426 | Long: -87.9304183 | Datum: WGS 84
Soil Map Unit Name: BIA - Blount silt loam, 1 to 3 percent slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)
Are Vegetation____, Soil____, or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation____, Soil____, or Hydrology____ 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

Remarks:
Historically filled area with adjacent wetland area at toe slope of the fill boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	30	✔	FAC
2.			
3.			
4.			
5.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Rhamnus cathartica	40	✔	FAC
2. Juglans nigra	1		FACU
3.			
4.			
5.			
	41	=Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	20	✔	FACW
2. Rhamnus cathartica	20	✔	FAC
3. Solidago canadensis	10		FACU
4. Arctium minus	5		FACU
5. Galium aparine	5		FACU
6. Taraxacum officinale	5		FACU
7.			
8.			
9.			
10.			
	65	=Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		=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: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	90	x 3 =	270
FACU species	26	x 4 =	104
UPL species	0	x 5 =	0
Column Totals:	136 (A)		414 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:
____ 1 - Rapid Test for Hydrophytic Vegetation
✔ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
One hydrophytic vegetation indicator present.

SOIL

Sampling Point: T1B

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 24	10YR 3/2	100					Silty Clay Loam	fill
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21) Very
- ___ Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** ✔

Remarks:

Fill. No hydric soil indicators present.

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)
- ___ True Aquatic Plants (B14)
- ___ 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)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✔	Depth (inches): ___
Water Table Present?	Yes ___	No ✔	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✔	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** ✔

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

Antecedent precipitation has been wetter than normal during the wet season. The drought index has indicated an incipient drought.

Remarks:

Hydrology not met with only one secondary indicator present.