Wetland Delineation Report

Waunakee Veterinary Service – 5636 County Road V

Town of Vianna, Dane County, Wisconsin

November 3, 2020

Project Number: 20200415

506 Springdale Street | Mount Horeb, WI 53572 | www.heartlandecological.com

Waunakee Veterinary Service – 5636 County Road V

Town of Vienna, Dane County, Wisconsin

November 3, 2020

Prepared for:

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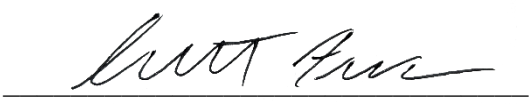

Scott Fuchs, Environmental Technician

Jeff Kraemer, Principal

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1.0 Introduction

Heartland Ecological Group, Inc. ("Heartland") completed a wetland determination and delineation on the Waunakee Veterinary Service – 5636 County Road V site on October 23, 2020 at the request of Waunakee Veterinary Service. Fieldwork was completed by Scott Fuchs, Environmental Technician (Appendix E, Qualifications). The 3.74-acre site (the "Study Area") is located north of County Road V, approximately 1/3 mile west of its intersection with Patton Road, in the southeast ¼ of Section 6, T9N, R9E, Town of Vienna, Dane County, WI (Figure 1, Appendix A). The purpose of the wetland delineation was to determine the location and extent of wetlands within the Study Area.

One (1) wetland area of approximately 1.78 acres was delineated and mapped within the Study Area (Figure 6, Appendix A). Wetlands discussed in this report may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers (USACE), state regulation under the jurisdiction of the WDNR, and local zoning authorities. Heartland recommends this report be submitted to local authorities, the WDNR, and USACE for final jurisdictional review and concurrence.

2.0 Methods

2.1 Wetlands

Wetlands were determined and delineated using the criteria and methods described in the USACE Wetlands Delineation Manual, T.R. Y-87-1 ("1987 Corps Manual") and the applicable *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*. In addition, the *Guidance for Submittal of Delineation Reports to the St. Paul District USACE and the WDNR* (WDNR, 2015) was followed in completing the wetland delineation and report.

Determinations and delineations utilized available resources including the U.S. Geological Survey's (USGS) *WI 7.5 Minute Series (Topographic) Map* (Figure 2, Appendix A), the Natural Resource Conservation Service's (NRCS) Soil Survey Geographic Database (SSURGO), U.S. Department of Agriculture's (USDA) *Web Soil Survey* (Figure 3, Appendix A), the Wisconsin Department of Natural Resources' *Surface Water Data Viewer's* wetland indicator data layer (Figure 4, Appendix A), the WDNR's *Wisconsin Wetland Inventory* data layer (Figure 5, Appendix A), and aerial imagery available through the USDA Farm Service Agency's (FSA) National Agriculture Imagery Program (NAIP), Google Earth™, and Dane County's interactive mapping. The USGS *National Hydrography Dataset* is included on Figures 2 and 5, Appendix A.

Wetland determinations were completed on-site at sample points, often along transects, using the three (3) criteria (vegetation, soil, and hydrology) approach per the 1987 Corps Manual and the Regional Supplement. Procedures in these sources were followed to demonstrate that, under normal circumstances, wetlands were present or not present based on a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology.

In actively farmed areas within the Study Area where hydric soils may be present, methods described in Chapter 5 (Difficult Wetland Situations) of the Regional Supplement were followed. Available aerial imagery was analyzed using procedures described in the *Guidance for Offsite Hydrology/Wetland Determinations* (USACE and Minnesota Board of Water and Soil Resources, July 2016 – "July 2016 Guidance"). An off-site aerial imagery analysis (Off-Site Analysis) was completed to document the presence or absence of wetland signatures and assist in the wetland determination. A wetland signature is evidence, recorded by aerial imagery, of ponding, flooding, or impacts of saturation for sufficient duration to meet

wetland hydrology and possibly wetland vegetation criteria. Wetland signatures often vary based on the type and seasonal date of the aerial imagery. For example, there are seven (7) standardized signature types in actively farmed settings described in the July 2016 Guidance. To assist in interpretations of wetland signatures, a WETS analysis was used to compare antecedent precipitation in the three (3) months leading up to each aerial image to the long-term (30-year) precipitation averages and standard deviation to determine if each year was normal, wet, or dry.

Areas within agricultural fields are typically determined to be wetland if hydric soils are present and 50 percent or more of the aerial images taken in the five (5) (or more) most recent normal precipitation years show at least one (1) of the wetland signatures per the July 2016 Guidance. Although the off-site analysis concentrates on wetland signatures in normal precipitation years, the years determined to be wet and dry were also analyzed and considered. Determinations and delineation of wetlands in agricultural areas are typically based on an outline of the largest wetland signature on an image taken in a "normal" precipitation year, and if signatures were visible in at least 50 percent of the years (USDA, NRCS 1998).

Recent weather conditions influence the visibility or presence of certain wetland hydrology indicators. An assessment of recent precipitation patterns helps to determine if climatic/hydrologic conditions were typical when the field investigation was completed. Therefore, a review of the antecedent precipitation in the three (3) months leading up to the field investigation was completed. Using a WETS analysis developed by the NRCS, the amounts of precipitation in these three (3) months were compared to averages and standard deviation thresholds over the past 30 years to generally represent if conditions encountered during the investigation were normal, wet, or dry. Recent precipitation events in the week prior to the investigation were considered while interpreting wetland hydrology indicators. In some cases, the Palmer Drought Index was checked for long-term drought or moist conditions (NOAA, 2018).

The uppermost wetland boundary and sample points were identified and marked with wetland flagging and located with a Global Positioning System (GPS) capable of sub-meter accuracy. In some cases, wetland flagging was not utilized to mark the boundary and the

location was only recorded with a GPS unit, particularly in active agricultural areas. The GPS data was then used to map the wetlands using ESRI ArcMap™ 10.6 software.

3.0 Results and Discussion

3.1 Desktop Review

Climatic Conditions

According to the WETS analysis using the previous three (3) months of precipitation data, conditions encountered at the time of the fieldwork were expected to be wet for the time of year (Appendix B). There was a total of 3.31 inches of precipitation in the two weeks prior to the field investigation, 1.88 inches of which was recorded the day before the field investigation. On site conditions were interpereted to be wet / very wet at the time of field work. The Palmer Drought Index was checked on line and the long-term conditions at the time of the fieldwork were in the extremely moist range. Fieldwork was completed outside the dry-season based on long-term regional hydrology data utilized in the WebWIMP Climatic Water Balance web site.

General Topography and Land Use

The topography within the Study Area was moderately sloping downhill to the south, levelling out within the southern 1/3 of the Study Area. A topographic high of approximately 983 feet above mean sea level (msl) is present along the northern boundary of the Study Area, and a topographic low of approximately 961 feet above msl is present within the southern 1/3 of the Study Area (Figures 2 and 6, Appendix A). Land uses within the Study Area consist of agricultural row cropping. Surrounding areas are primarily agricultural fields and wetlands. General drainage is to the south towards County Road V.

Soil Mapping

Soils mapped by the NRCS Soil Survey within the Study Area and their hydric status are summarized in Table 1. Wetlands identified during the field investigation are located primarily within areas mapped as hydric or partially hydric soils including wetland indicator soils (Figures 3 and 4, Appendix A).

Table 1. Summary of NRCS Mapped Soils within the Study Area

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
DsC2: Dresden silt loam, 6 to 12 percent slopes, eroded	Dresden-Eroded	85-95	Plains	No
	Casco-Eroded	3-8	Moraines	No
	Kegonsa	2-7	Plains	No
EgA: Elburn silt loam, gravelly substratum, 0 to 3 percent slopes	Elburn-Gravelly substratum	85-95	Till plains	No
	Sable	2-5	Drainageways	Yes
	Drummer	2-5	Drainageways	Yes
	Mahalasville	1-5	Drainageways	Yes
KeB: Kegonsa silt loam, 2 to 6 percent slopes	Kegonsa	100	Outwash plains	No
SaA: Sable silty clay loam, 0 to 2 percent slopes	Sable	85-100	Swales	Yes
	Ipava	0-7	Ground moraines	No
	Muscatune	0-6	Ground moraines	No
	Buckhart	0-4	Knolls	No
	Elburn	0-3	Outwash plains	No

Wetland Mapping

The Wisconsin Wetlands Inventory (WWI) mapping (Figure 5, Appendix A) depicts one (1) wetland within the Study Area. One (1) emergent / wet meadow wetland is identified within the southern 1/3 of the Study Area.

Off-Site Analysis

Agricultural fields within the Study Area have significant mapped hydric or potentially hydric soils and were the focus of the off-site aerial imagery analysis (Appendix F). Potential wetland areas identified during the imagery analysis included Area 1: a rarely farmed, near-permanently saturated/inundated depression, and Area 2: the farmed wet meadow fringe of the depression, which appears to be planted in approximately 50% of the years reviewed. From the aerial imagery, the primary wetland hydrology indicator of "Inundation Visible on Aerial Imagery" (B7) was noted within Area 1. The secondary wetland hydrology indicators

of "Saturation Visible on Aerial Imagery" (C9) and "Stunted or Stressed Plants" (D1) were noted in Area 2.

A total of 20 years was selected and reviewed based on availability and quality of the imagery. Of these images, eight (8) were within the normal precipitation range. The 2004 NAIP image was discarded for analysis of Area 2; the image is too pixelated at this scale to identify signatures. Signatures were noted in two (2) areas within the Study Area within landscape positions described by the NRCS to support hydric soil components and were the focus of the off-site analysis. At least one (1) of the seven (7) described wetland signatures per the July 2016 Guidance were noted in both of these areas in 50 percent or more of the normal precipitation years.

Based on the off-site analysis, two (2) areas were likely to be wetland prior to the fieldwork. These areas consisted of a shallow marsh depression adjacent to County Road V and a low-lying farmed wetland along the fringes of the depression.

3.2 Field Review

One (1) wetland was identified and delineated within the Study Area. Wetland determination data sheets (Appendix C) 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 D provides photographs, typically at the sample point locations of the wetlands and adjacent uplands. The wetland boundary and sample point locations are shown on Figure 6 (Appendix A) and the wetlands are summarized in Table 2 and detailed in the following sections.

Table 2. Summary of Wetlands Identified within the Study Area

Wetland ID	Wetland Description	*Surface Water Connections	*NR151 Protective Area	Acreage (on-site)
W-1	Farmed Wet Meadow / Shallow Marsh	Contiguous to Offsite Wetlands	Less susceptible, 10-30 feet	1.78
				1.78

**Classification based on Heartland's professional opinion. Jurisdictional authority of wetland and waterway protective areas under NR 151 lies with the WDNR. Local zoning authorities may have additional restrictions. USACE has authority for determining federal jurisdiction of wetlands and waterways.*

Wetland 1 (W-1)

Wetland 1 (W-1) is a 1.78-acre shallow marsh with a farmed wet meadow fringe and occupies the southern ½ of the Study Area.

Dominant vegetation observed in W-1 consisted of narrow-leaved cattail (*Typha angustifolia,* OBL) and reed canary grass (*Phalaris arundinacea,* FACW). W-1's farmed wet meadow fringe was dominated by fall panic grass (*Panicum dichotomiflorum,* FACW) and barnyard grass (*Ecinochloa crus-galli,* FACW).

The Thick Dark Surface (A12) and Loamy Mucky Mineral (F1) hydric soil indicators were observed at the sample point completed within W-1.

The primary wetland hydrology indicators of Surface Water (A1), High Water Table (A2), and Saturation (A3) were noted within W-1, while secondary indicators included Geomorphic Position (D2) and a positive FAC-Neutral Test (D5).

Wetland W-1 is contiguous with offsite wetlands via culverts underneath County Road V and underneath the driveway just west of the Study Area. The boundary of W-1 followed a moderately-defined topographic break along the agricultural field edge and a well-defined topographic break along the driveway embankment at the western boundary of the Study Area.

3.3 Other Considerations

This report is limited to the identification and delineation of wetlands within the Study Area. Other regulated environmental resources that result in land use restrictions may be present within the Study Area that were not evaluated by Heartland (e.g. navigable waterways, floodplains, cultural resources, and threatened or endangered species).

Wisconsin Act 183 provides exemptions to permitting requirements for certain nonfederal wetlands. Nonfederal wetlands are wetlands that are not subject to federal jurisdiction. Exemptions apply to projects in urban areas with wetland impacts up to 1-acre per parcel. An urban area is defined as an incorporated area; an area within ½ mile of an incorporated area; or an area served by a sewerage system. Exemptions for nonfederal wetlands also apply to projects in rural areas with wetland impacts up to three (3) acres per parcel. Exemptions in rural areas only apply to structures with an agricultural purpose such as buildings, roads, and driveways. The determination of federal and nonfederal wetlands MUST be made by the USACE through an Approved Jurisdictional Determination (AJD). This report may be submitted to the USACE to assist with their determination.

Wis. Adm. Code NR 151 ("NR 151") requires that a "protective area" (buffer) be determined from the Ordinary High-Water Mark (OHWM) of lakes, streams and rivers, or at the delineated boundary of wetlands. Per NR 151.12, the protective area width for "less susceptible" wetlands is determined by using 10% of the average wetland width, no less than 10 feet or more than 30 feet. "Moderately susceptible" wetlands, lakes, and perennial and intermittent streams identified on recent mapping require a protective area width of 50 feet; while "highly susceptible wetlands" are associated with outstanding or exceptional resource waters in areas of special natural resource interest and require protective area width of 75 feet. Table 2 above lists the potential wetland buffers per NR 151 for each wetland identified based on Heartland's professional opinion. Please note that jurisdictional authority on wetland and waterway protective areas under NR 151 lies with the WDNR. Local zoning authorities and regional planning organizations may have additional land use restrictions within or adjacent to wetlands.

4.0 Conclusion

Heartland completed a wetland determination and delineation within the Waunakee Veterinary Service – 5636 County Road V site on October 23, 2020 at the request of Waunakee Veterinary Service. Fieldwork was completed by Scott Fuchs, Environmental Technician. The Study Area lies in Section 16, T9N, R9E, Town of Vienna, Dane County, WI.

One (1) wetland area was delineated and mapped within the 3.74-acre Study Area. The wetland, which may be classified as a shallow marsh with a farmed wet meadow fringe, totals approximately 1.78 acres within the Study Area.

Wetlands and waterways discussed in this report may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers (USACE), state regulation under the jurisdiction of the WDNR, and the local zoning authority. Heartland recommends this report be submitted to the USACE and WDNR for final jurisdictional review and concurrence. Review by local authorities may be necessary for determination of any applicable zoning and setback restrictions.

Heartland recommends that all applicable regulatory agency reviews and permits are obtained prior to beginning work within the Study Area or within or adjacent to wetlands or waterways. Heartland can assist with evaluating the need for additional environmental reviews, surveys, or regulatory agency coordination in consideration of the proposed activity and land use as requested but is outside of the scope of the wetland delineation.

Experienced and qualified professionals completed the wetland determination and delineation using standard practices and professional judgment. Wetland boundaries may be affected by conditions present within the Study Area at the time of the fieldwork. All final decisions on wetlands and their boundaries are made by the USACE, the WDNR, and/or sometimes a local unit of government. Wetland determination and boundary reviews by regulatory agencies may result in modifications to the findings presented to the Client. These modifications may result from varying conditions between the time the wetland delineation was completed and the time of the review. Factors that may influence the findings may include but not limited to precipitation patterns, drainage modifications, changes or modification to vegetation, and the time of year.

5.0 References

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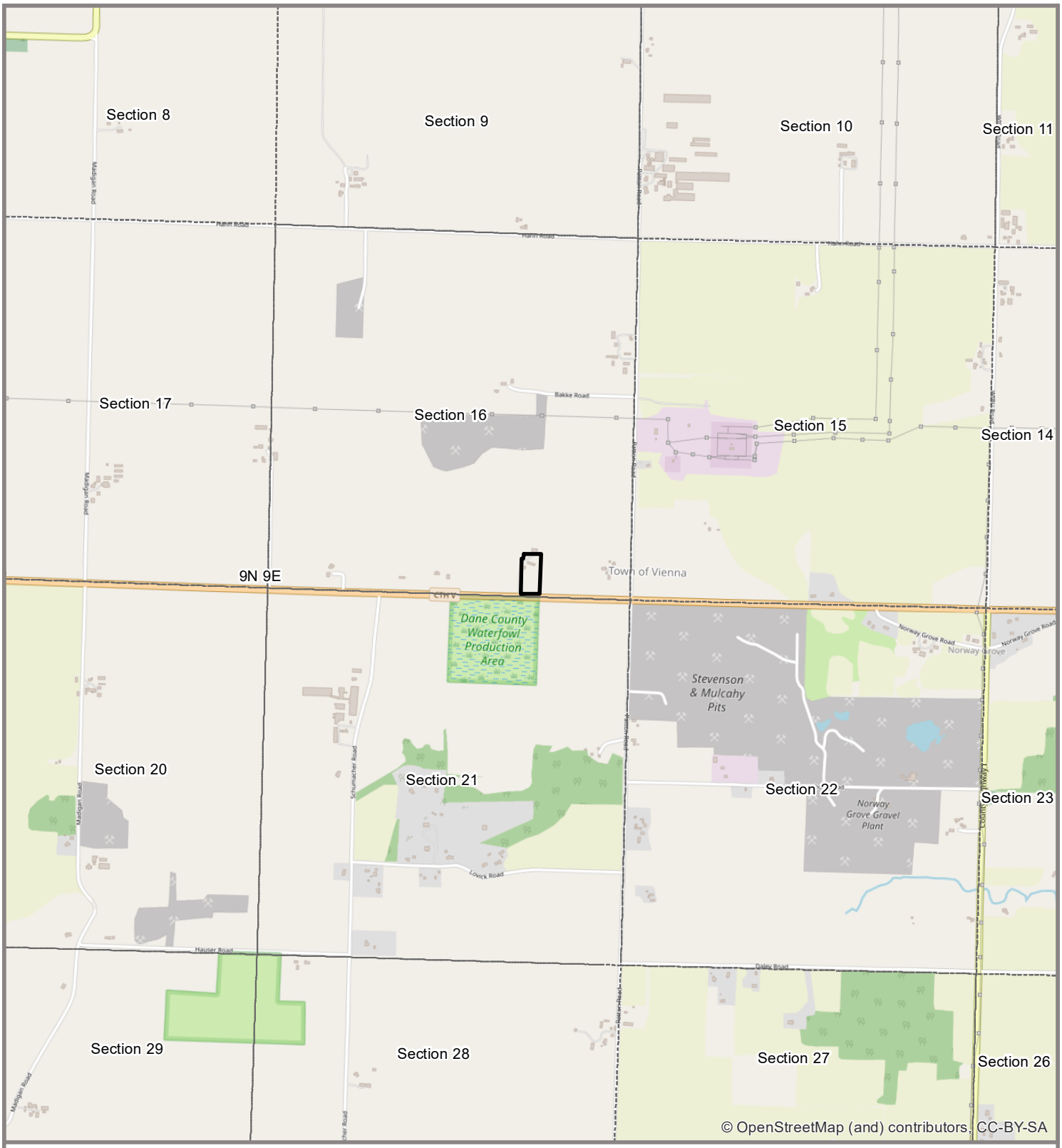
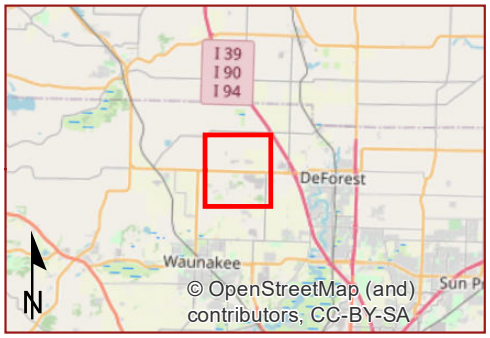
Appendix A | Figures





Study Area (3.74 ac)
Township
Section

0 1,000 2,000 Ft

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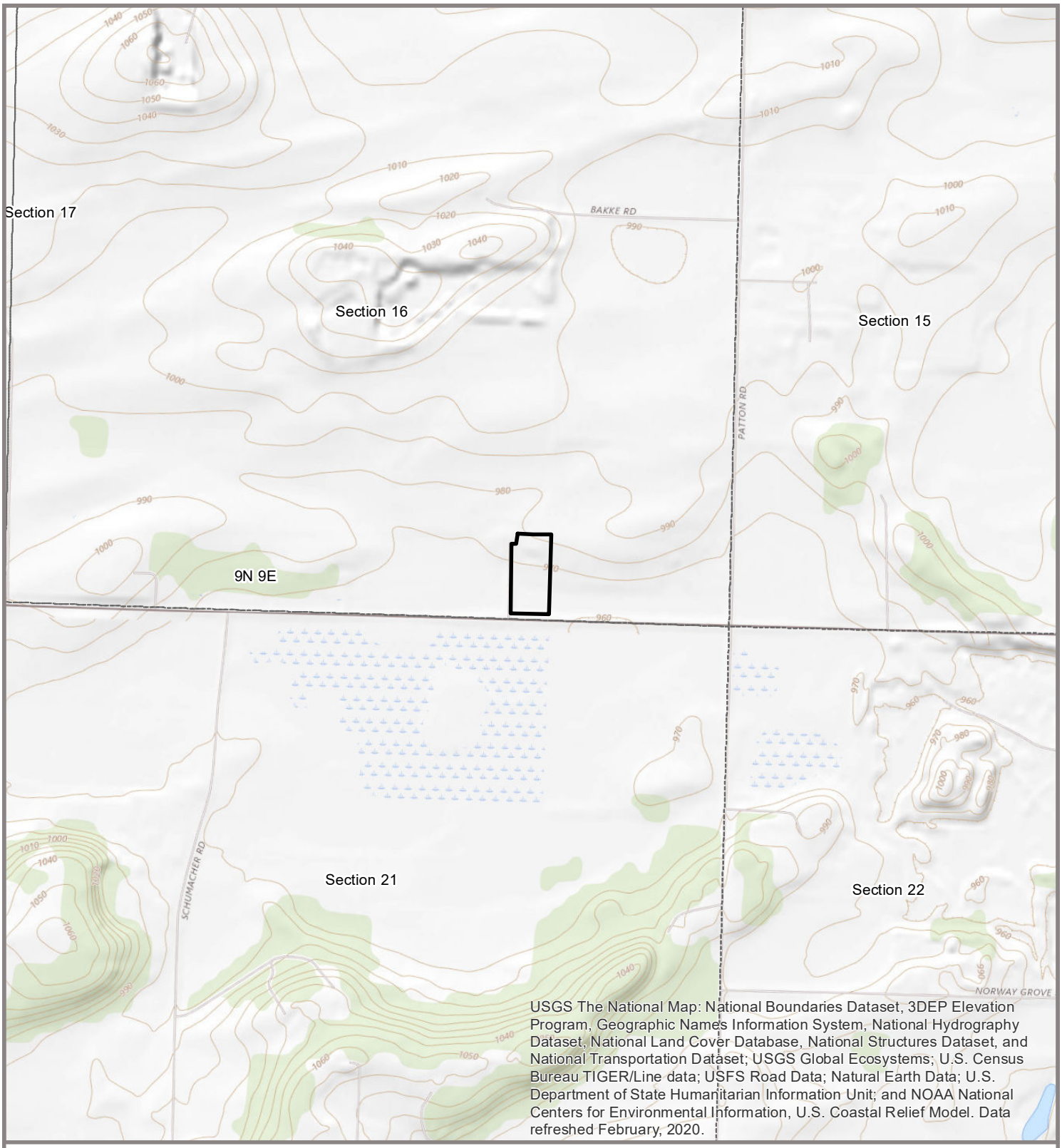
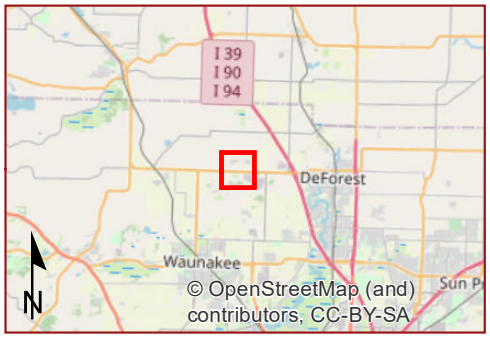
Figure 1. Project Location

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

OpenStreetMap
Data: ESRI 10/22/2020





Study Area (3.74 ac)

Township

Section

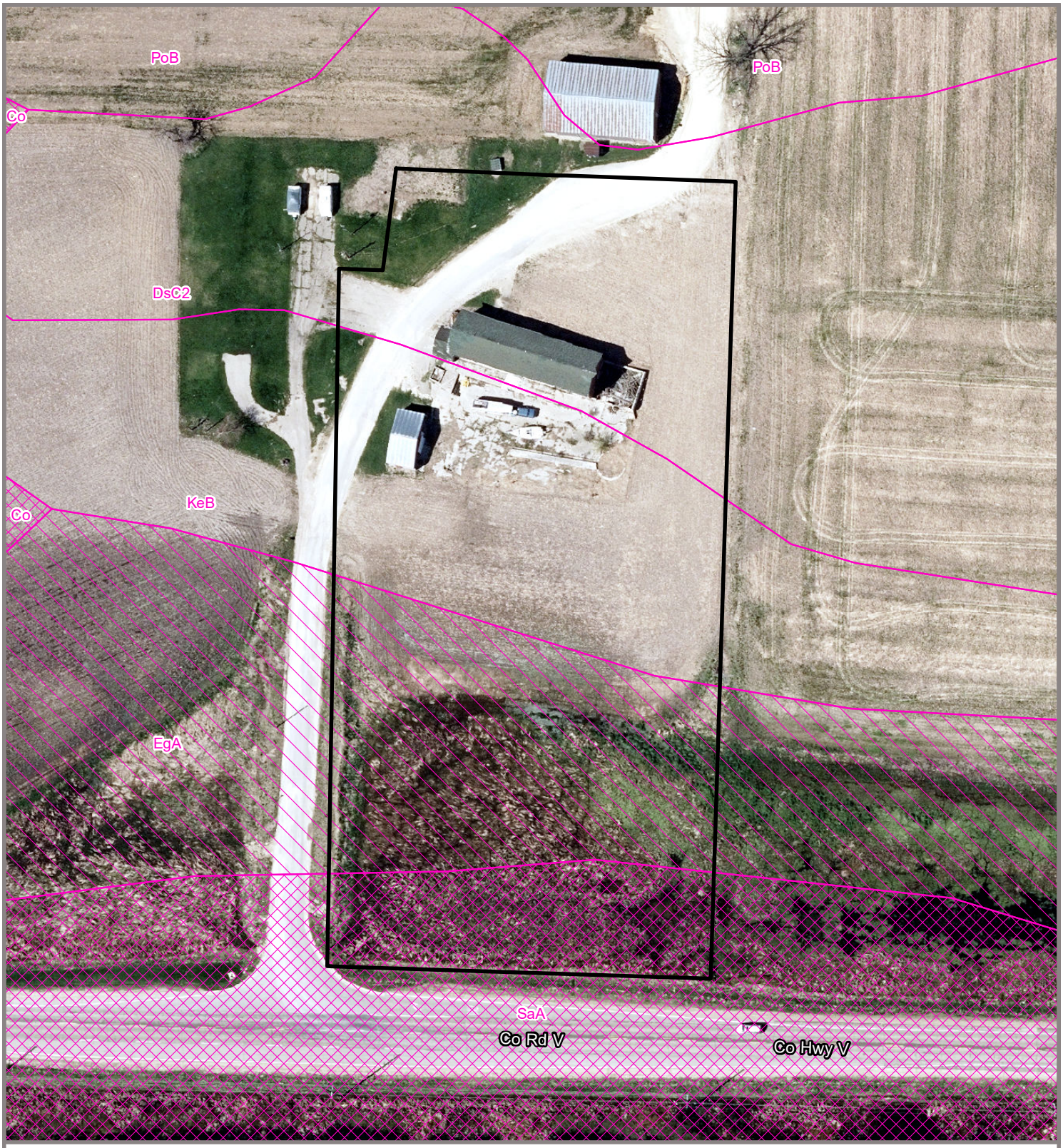
0 500 1,000 Ft

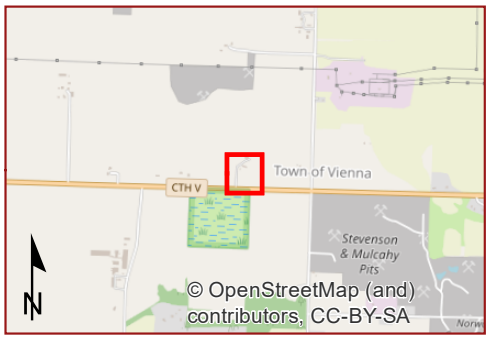
Heartland ECOLOGICAL GROUP INC

Figure 2. USGS Topography

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

USGSTopo
Data: USGS *10/22/2020*





Study Area (3.74 ac)

0 50 100 Ft

NRCS Soil Survey Data

- Predominantly Hydric (85-100%)
- Partially Hydric (15-84%)
- Predominantly Non-Hydric (1-14%)
- Non-Hydric (0%)

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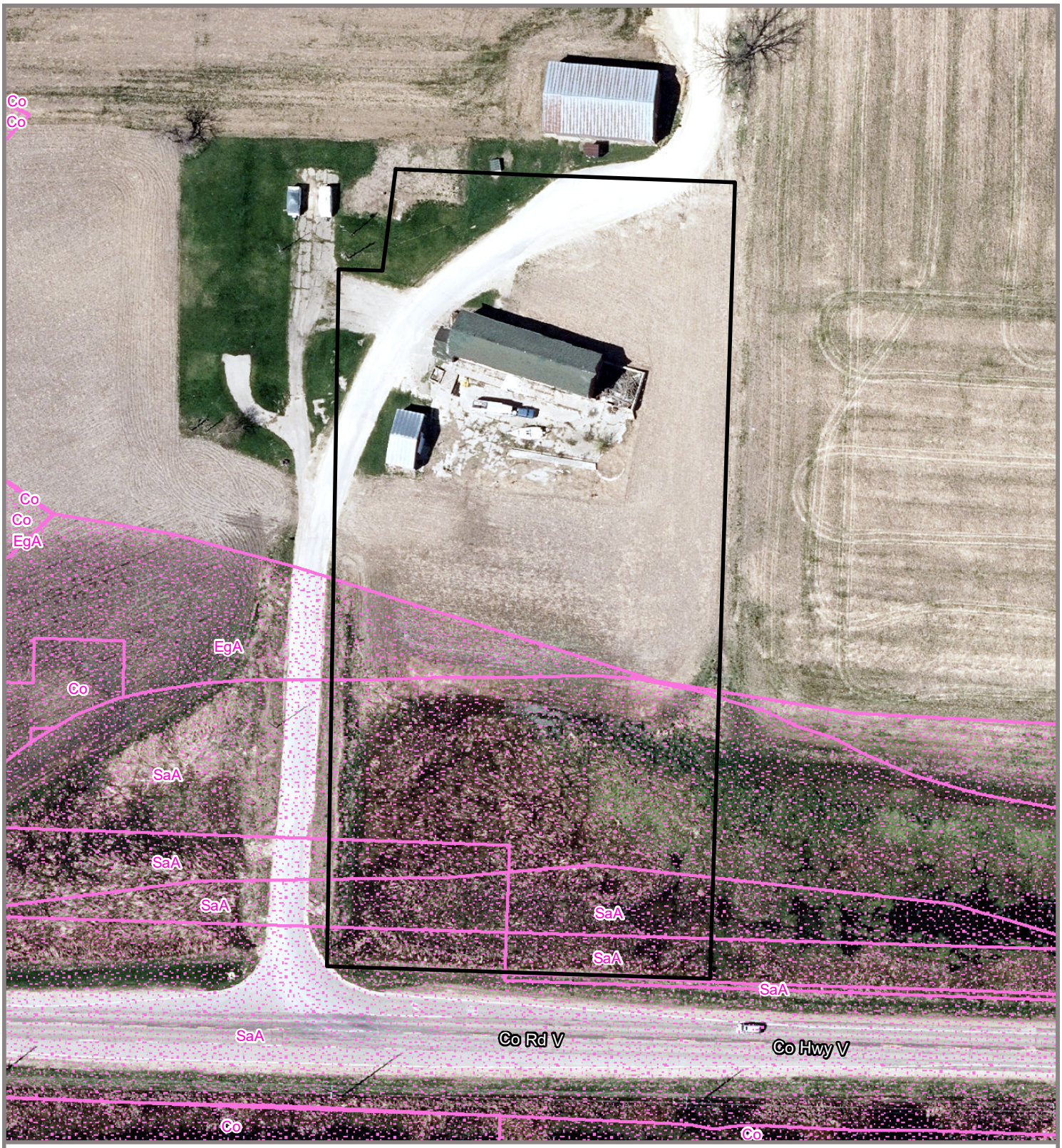
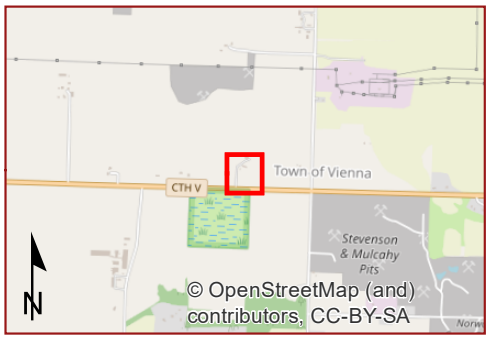
Figure 3. NRCS Hydric Soils

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2017 Orthophoto
Data: NRCS *10/22/2020*





Study Area (3.74 ac)

Maximum Extent Wetland Indicators

0 50 100 Ft

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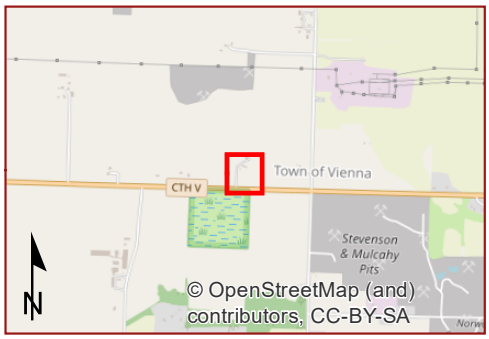
Figure 4. SWDV Wetland Indicators

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2017 Orthophoto
Data: WDNR *10/22/2020*



Study Area (3.74 ac)

WWI Wetlands

NHD Waterway (No Features in Map Extent)

0 50 100 Ft

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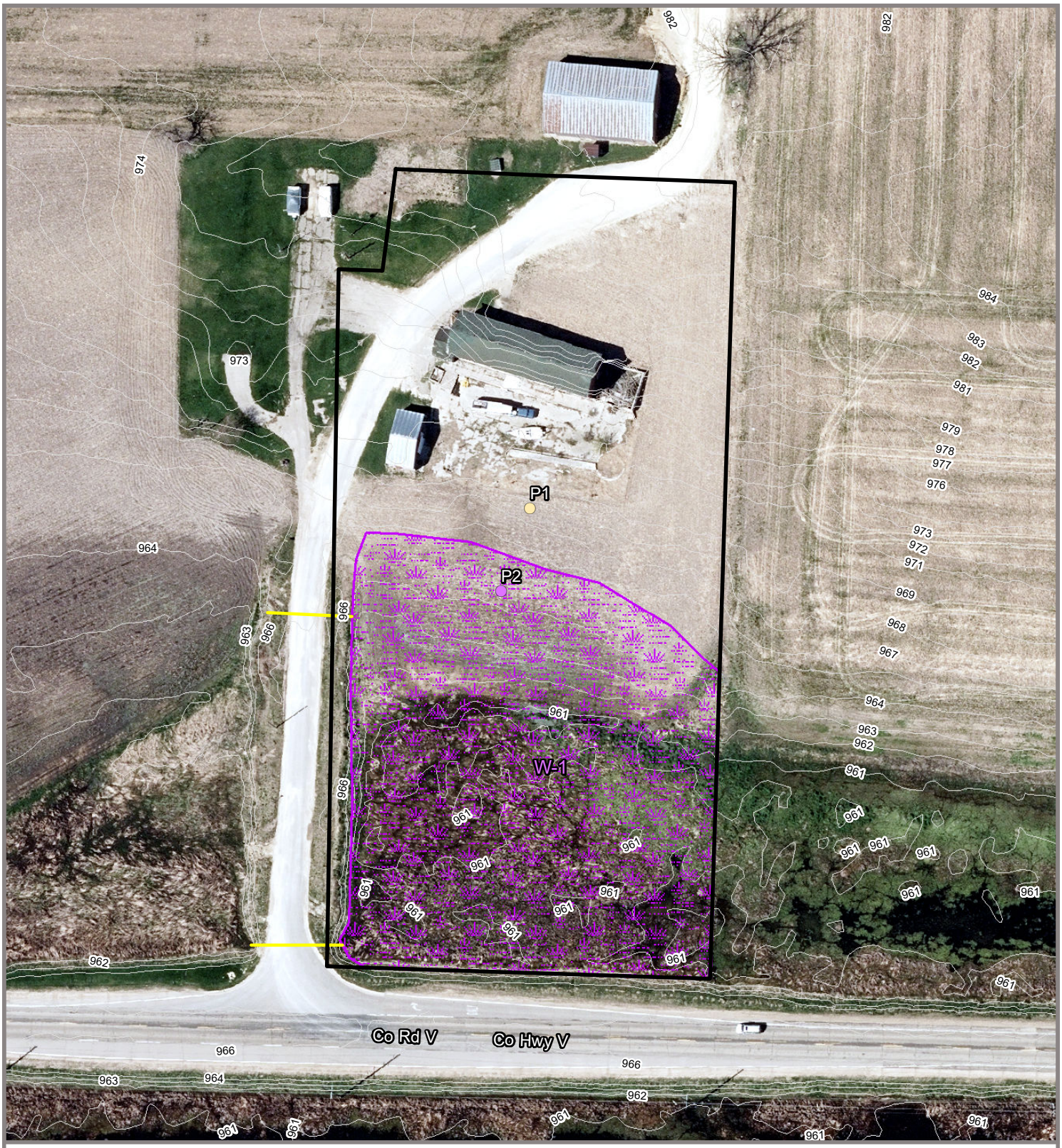
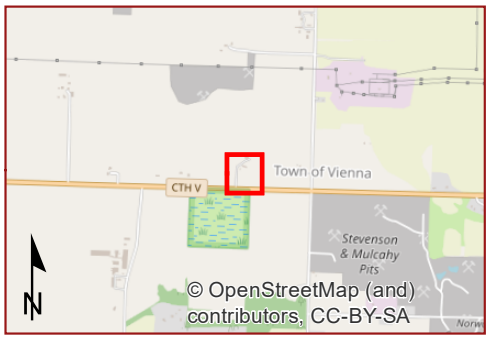
Figure 5. Wisconsin Wetland Inventory

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2017 Orthophoto
Data: WDNR, USGS *10/22/2020*





Study Area (3.74 ac)

Dane Co 1' Contours

Culverts

Field Delineated Wetlands (1.78 ac)

0 50 100 Ft

Sample Points

Upland

Wetland

Heartland ECOLOGICAL GROUP INC

Figure 6. Field Delineated Wetlands

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2017 Orthophoto
Data: Dane Co *11/1/2020*

Appendix B | WETS Analysis

WETS Analysis Worksheet

Project Name: Waunakee Veterinary Service
Project Number: 20200415
Period of interest: August - October 2020
Station: Dane County Regional Airport
County: Dane County

Long-term rainfall records (from WETS table)

	Month	3 years in 10 less than	Normal	3 years in 10 greater than
1st month prior:	October	1.75	2.76	3.33
2nd month prior:	September	2.17	3.43	4.13
3rd month prior:	August	2.55	4.16	5.04
		Sum =	**10.35**	

Site determination

	Site Rainfall (in)	Condition Dry/Normal*/Wet	Condition** Value	Month Weight	Product
	3.38	Wet	3	3	9
	3.41	Normal	2	2	4
	2.88	Normal	2	1	2
Sum =	**9.67**			Sum*** =	**15**

*Normal precipitation with 30% to 70% probability of occurrence

Determination: **X** Wet
_____ Dry
_____ Normal

**Condition value:
Dry = 1
Normal = 2
Wet = 3

***If sum is:
6 to 9 then period has been drier than normal
10 to 14 then period has been normal
15 to 18 then period has been wetter than normal

Precipitation data source: Midwest Regional Climate Center, cli-MATE: MRCC Application Tools Environment

Reference: Donald E. Woodward, ed. 1997. *Hydrology Tools for Wetland Determination*, Chapter 19. Engineering Field Handbook. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX.

Date	Precipitation (Inches)
10/10/2020	0.00
10/11/2020	0.00
10/12/2020	0.26
10/13/2020	T
10/14/2020	T
10/15/2020	0.00
10/16/2020	0.02
10/17/2020	T
10/18/2020	0.09
10/19/2020	0.00
10/20/2020	0.13
10/21/2020	0.22
10/22/2020	1.88
10/23/2020	0.71
Total	3.31

Appendix C | Wetland Determination Data Sheets

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Waunakee Veterinary Service - 5636 County Road V City/County: T Vienna, Dane Co Sampling Date: 10/23/2020

Applicant/Owner: Waunakee Veterinary Service State: WI Sampling Point: P1

Investigator(s): Scott Fuchs - Heartland Ecological Group Section, Township, Range: T9N, R9E, S16

Landform (hillside, terrace, etc.): Sideslope Local relief (concave, convex, none): None/Linear Slope %: 3 - 5

Subregion (LRR or MLRA): LRR K Lat: Long: Datum:

Soil Map Unit Name: Kegonsa silt loam (KeB) NWI classification: N/A

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

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

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 X	**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: (Explain alternative procedures here or in a separate report.)
A WETS analysis was conducted and indicates that conditions are wetter than normal for the time of year. Additionally, there was 1.88 inches of precipitation recorded the day prior to the field investigation and 0.71 inches of rain the day of the field investigation. Conditions on site were interepreted to be wet/very wet. Sample point P1 recorded in a recently harvested and replanted agricultural field - not normal circumstances.

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): ___

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

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

Remarks:
Upper few inches of soil wet from recent/ongoing rain, but not associated with a water table.

VEGETATION – Use scientific names of plants. Sampling Point: P1

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Taraxacum officinale*	3	Yes	FACU
2. *Plantago major*	2	Yes	FACU
3. *Daucus carota*	1	No	UPL
4. *Trifolium repens*	1	No	FACU
5. *Panicum dichotomiflorum*	1	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	8	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
3.			
4.			
		=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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	0	x 3 =	0
FACU species	6	x 4 =	24
UPL species	1	x 5 =	5
Column Totals:	8 (A)		31 (B)

Prevalence Index = B/A = 3.88

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.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Sample point completed within a recently harvested corn field. Field has been replanted with grain crop, believed to be winter wheat with 40% cover. No evidence of crop stress from remaining corn stubble.

SOIL

Sampling Point P1

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 - 10	10YR 3/2	80					Loamy/Clayey	SiL
	10YR 4/3	20						
10 - 20	10YR 4/3	100					Loamy/Clayey	Sandy SiL w/ 20% gravel

[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)
- ___ 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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

Depth (inches): 20

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

Remarks:

Could not sample below 20 inches due to dense gravel - attempted two additional samples nearby, same gravel layer encountered.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Waunakee Veterinary Service - 5636 County Road V City/County: T Vienna, Dane Co Sampling Date: 10/23/2020

Applicant/Owner: Waunakee Veterinary Service State: WI Sampling Point: P2

Investigator(s): Scott Fuchs - Heartland Ecological Group Section, Township, Range: T9N, R9E, S16

Landform (hillside, terrace, etc.): Toe of Slope Local relief (concave, convex, none): Concave Slope %: 1 - 3

Subregion (LRR or MLRA): LRR K Lat: Long: Datum:

Soil Map Unit Name: Kegonsa silt loam (KeB) NWI classification: N/A

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 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:

Remarks: (Explain alternative procedures here or in a separate report.)
A WETS analysis was conducted and indicates that conditions are wetter than normal for the time of year. Additionally, there was 1.88 inches of precipitation recorded the day prior to the field investigation and 0.71 inches of rain the day of the field investigation. Conditions on site were interepreted to be wet/very wet. Sample point P2 recorded within shallow marsh vegetation ~25 feet from edge of the agricultural field.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Saturation Visible on Aerial Imagery (C9)
- X 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 X	No ____	Depth (inches): 1
Water Table Present?	Yes X	No ____	Depth (inches): 5
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

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

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
This area (Area 2) features wetland signatures (C9 and/or D2 hydrology indicators) in 57% of the normal precipitation years reviewed durnig the offsite analysis.

Remarks:
Some standing water present and saturated to the soil surface.

VEGETATION – Use scientific names of plants. Sampling Point: P2

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Typha angustifolia*	80	Yes	OBL
2. *Phalaris arundinacea*	30	Yes	FACW
3. *Epilobium coloratum*	5	No	OBL
4. *Lycopus americanus*	3	No	OBL
5. *Alisma triviale*	3	No	OBL
6. *Cirsium vulgare*	1	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	122	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
3.			
4.			
		=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: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	91	x 1 =	91
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	122 (A)		155 (B)

Prevalence Index = B/A = 1.27

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 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.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by ruderal shallow marsh plants.

SOIL

Sampling Point P2

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 - 13	2.5Y 2.5/1	100					Mucky Loam/Clay	Mucky silt loam
13 - 20	2.5Y 4/1	95	2.5Y 5/6	5	C	M	Loamy/Clayey	SiC

[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)
- ___ 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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- X 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (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** X **No** ___

Remarks:

Appendix D | Site Photographs

Photo #1 Sample point P1

Photo #2 Sample point P1

Photo #3 Sample point P1

Photo #4 Sample point P1

Photo #5 Sample point P2

Photo #6 Sample point P2

Photo #7 Sample point P2

Photo #8 Sample point P2

Photo #9 East edge of driveway fill / western boundary of wetland area

Photo #10 View east along wetland boundary, taken from driveway edge

Photo #11 View west along wetland boundary, taken from eastern Study Area boundary

Appendix E | Delineator Qualifications

Scott Fuchs

Environmental Scientist
506 Springdale Street
Mount Horeb, WI 53572
scott@heartlandecological.com
(608) 490-2450

Scott is a natural resource professional with expertise in botany, wetland assessment, natural plant communities of Wisconsin, and geographic information systems (GIS). Scott has been involved in the field of ecological restoration and conservation for over five years working as a field restoration ecologist and crew leader, and ecology research assistant for both non-profit and private sector employers. Since joining Heartland, Scott has provided support for completion of hundreds of wetland delineations and determinations, data collection, and served as lead delineator on many delineations that were subsequently confirmed by WI DNR wetland regulatory staff. Scott also provides technical support by assisting with natural areas restoration planning, monitoring, and management, developing GIS based project mapping and planning, collecting and interpreting historic aerial imagery, and performing analysis of GIS data sets.

His experience includes: wetland determination and delineation, collecting and processing monitoring well hydrology data, wetland mitigation bank viability analysis and planning, preparing state artificial wetland exemption requests, preparing wetland and waterway permit applications, compiling wetland delineation reports, long-term vegetation and wildlife monitoring, rare species surveys, invasive species control, conducting prescribed burns, and invasive brush and tree removal.

Education

BS, Biology (Emphasis in Ecology), University of Wisconsin – Whitewater, Whitewater, WI, 2015

Basic Wetland Delineation Training, Continuing Education and Extension, UW-La Crosse, La Crosse WI, 2019

Advanced Wetland Delineation Training, Continuing Education and Extension, UW-La Crosse, La Crosse WI, 2019

Critical Methods in Wetland Delineation, Continuing Education and Extension, UW-La Crosse, Madison WI, 2019, 2020

Certifications and Training

Wildland Fire Fighter Type 2, National Wildfire Coordinating Group, Incident Management Specialists, LLC, Madison WI, 2017

Level One Chainsaw Safety Training, Forest Industry Safety & Training Alliance, Eau Claire WI, 2016

Certified Pesticide Applicator (Category 6), Wisconsin Department of Trade and Consumer Protection, Madison WI, 2016

Project Experience

Wetland Determinations and Delineations

Nuemann Development: Port Washington Road Subdivision, Ozaukee Co., WI
Performed a wetland determination and delineation within a 50-acre agricultural field. Compiled historic information to support an approved WI Act 183 artificial wetland exemption for wetlands located on site.

1520 LLC: Port Washington Road Commercial Development, Ozaukee Co., WI
Performed a wetland determination and delineation within a highly disturbed 3-acre parcel containing clayey soils that was subsequently confirmed by WI DNR wetland regulatory staff. Compiled historic information to support an approved WI Act 183 artificial wetland exemption for wetlands located on site.

Private Landowner: Bear Creek Wetland Delineation and Driveway Crossing Permitting, Monroe Co., WI
Performed a wetland determination and delineation along a section of Bear Creek with several old oxbows to support culvert installation and minor wetland disturbance permitting for the purposes of installation of a rural driveway. This wetland delineation was subsequently confirmed by WI DNR wetland regulatory staff and was utilized in obtaining necessary state and federal permits. Prepared and obtained culvert installation and general wetland disturbance permits from the WI DNR and USACE.

Hydrology Monitoring Well Data Analysis

Bear Development: Barnes Prairie Mitigation Bank Site, Kenosha Co., WI
Performed collection and processing of data from 46 hydrology monitoring wells located throughout a 230-acre agricultural field. Analyzed data to determine if wetland hydrology was present in the location of the sampling wells. Produced graphical representations of precipitation and ground water level data.

Wisconsin DNR: Evansville ILF Mitigation Bank Site, Rock Co., WI
Performed collection and processing of data from 9 hydrology monitoring wells within agricultural fields, disturbed wet meadow, and shrub-carr communities across a 40-acre site. Analyzed data to determine if wetland hydrology was present in the location of the sampling wells and to compile baseline information prior to wetland restoration work. Produced graphical representations of precipitation and ground water level data.

Vegetation, Wildlife, and Rare Species Monitoring

Kreyer Creek Compensatory Wetland Mitigation Bank Site, Monroe County, WI
Conducted quantitative vegetation monitoring of this 200+ acre compensatory wetland mitigation site. Vegetation monitoring was completed to assess progression of the site towards meeting regulatory performance standards. Vegetation monitoring including sample plot surveys and timed meander surveys. The results were summarized to assess the various performance metrics including florist quality assessments and diversity, invasive and noninvasive species relative cover, and prevalence indices of hydrophytic vegetation. The vegetation data and results were incorporate into the annual monitoring report required by the U.S. Army Corps of Engineers and Interagency Review Team.

Soik Wetland Mitigation Bank Site, Portage County, WI
Established quantitative vegetation monitoring plots and performed vegetation monitoring of a 60-acre wetland mitigation bank in Wisconsin's central sands region. Vegetation monitoring was completed to assess progression of the site towards meeting regulatory performance standards. Vegetation monitoring including sample plot surveys and timed meander surveys. The results were summarized to assess the various performance metrics across a variety of wetland vegetative community and compensation types.

Nantucket Conservation Foundation: Head of the Plains, Nantucket County, MA
Conducted vegetation monitoring, small mammal live-trapping, and insect pitfall trapping to collect data that is being used in a longitudinal study exploring the viability of different ecological management and restoration techniques in sandplain grassland habitat, a globally rare ecological community.

Nantucket Conservation Foundation: Head of the Plains, Nantucket County, MA
Installed acoustic bat monitoring devices and regularly downloaded the recorded data to determine the presence of different bat species. Assisted in mist-netting and radio telemetry tracking of federally threatened northern long-eared bats. Performed emergence counts of bat roosting locations discovered via radio telemetry tracking.

Nantucket Conservation Foundation: Coatue, Nantucket County, MA
Conducted vegetation monitoring for a graduate level study investigating the effects of cormorant nesting on plant communities in remote sand dune/shoal habitats.

Ecological Restoration and Invasive Species Management

Big Hollow Compensatory Wetland Mitigation Bank, Sauk County, WI
Assisted with the development of a Compensation Site Plan (CSP) for a nearly 200-acre compensatory wetland mitigation bank site as part of the Mitigation Banking Instrument (MBI). Completed various technical components of the CSP including assessment of the overall site characteristics and history, vegetation restoration plan, development of regulatory performance standards, and monitoring and management plan. Completed all site mapping and plans utilizing GIS.

Good Oak Ecological Services, Numerous Locations Throughout Dane County and Surrounding Areas, WI
Performed invasive species management and ecological restoration activities in prairie, oak savanna, and oak woodland habitats throughout Dane County and surrounding areas. Activities included chemical and mechanical control of invasive species, invasive brush and tree removal with chainsaws and brush cutters, prescribed burns on small to medium (1-15 acres) sized prairies and oak woodlands, native plant seeding, and erosion control installation.

UW-Madison, UW-Madison Lakeshore Preserve, Dane County, WI
Performed invasive species management on thistle, garlic mustard, dame's rocket, and porcelain berry via chemical spraying and cut-and-treat methods.

Nantucket Conservation Foundation: Head of the Plains, Sanford Farm / Ram Pasture, Madequecham Valley, Nantucket County, MA
Performed cut-and-treat management of invasive Phragmites in salt marsh habitats.

Appendix F | Off-Site Analysis

Heartland
ECOLOGICAL GROUP INC

Field data sheet reference (if applicable): _____

TABLE A1

Wetland Hydrology from Aerial Imagery - Recording Form*

Project Name: **Waunakee Veterinary Service** *Date:* **11/2/2020** *County:* **Dane**

Investigator: **Scott Fuchs** *Legal Description (T, R, S):* **T9N** **R9E** **Sec. 16**

Summary Table

Date Image Taken (M-Y)	Image Source	Climate Condition (wet, dry, normal)	Image Interpretation(s)				
			See Offsite Analysis Review Areas image for general outlines of Area 1				
			Area: 1	Area 2			
Jul-93	FSA Slide	Wet	SW	NV/NSS			
Jul-94	FSA Slide	Dry	SW	CS/DO			
Sep-95	FSA Slide	Normal	**SW**	**CS**			
Oct-96	FSA Slide	Dry	SW	CS/DO			
Jul-97	FSA Slide	Dry	SW	NV/NSS			
Jul-98	FSA Slide	Wet	SW	NV/NSS			
Jul-99	FSA Slide	Normal	**SW**	NV/NSS			
Jul-00	FSA Slide	Wet	SW	NV/NSS			
Jul-01	FSA Slide	Normal	**SW**	**SS**			
Jul-02	FSA Slide	Normal	**SW**	**SS**			
Jul-03	FSA Slide	Dry	SW	NV/NSS			
Jul-04	NAIP	Normal	**SW/WS**	**SW***			
Jun-05	NAIP	Normal	**SW/WS/SS**	NV/NSS			
Jul-06	NAIP	Normal	**WS**	NV/NSS			
Jul-08	NAIP	Normal	**SW**	**CS/SS**			
Jul-10	NAIP	Wet	SW	WS			
Jul-13	NAIP	Wet	SW/WS	SS/WS			
Oct-15	NAIP	Wet	WS	NV/NSS			
Sep-17	NAIP	Wet	WS	WS			
Oct-18	NAIP	Wet	WS	WS			
* = Images is pixellated at this scale and difficult to make accurate determination, 2004 image discarded from calculations for this area							
Normal Climate Condition			**Area: 1**	**Area 2**			
		Number	8	7			
		Number with wet signatures	8	4			
		Percent with wet signatures	100%	57%			

Key		
WS - Wetland Signature	SS - Soil Wetness Signature	CS - Crop Stress
NC - Not Cropped	AP - Altered Pattern	NV - Normal Vegetative Cover
DO - Drowned Out	SW - Standing Water	NSS - No Soil Wetness Signature
Other labels or comments:		

- Use above key to label image interpretations. It is imperative that the reviewer read and understand the guidance associated with the use of these labels. If alternate If alternate labels are used, indicate in box above.
- If less than five (5) images taken during normal climate conditions are available, use an equal number of images taken during wet and dry climate conditions and use as many images as you have available. Describe the results using this methodology in your report.

* Source: http://www.bwsr.state.mn.us/wetlands/delineation/Guidance_for_Offsite_Hydrology_and_Wetland_Determinations.pdf

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Field data sheet reference (if applicable): _____

Wetland Determination from Aerial Imagery - Recording Form*

Project Name: Waunakee Veterinary Service *Date:* **11/2/2020** *County:* **Dane County**

Investigator: **Scott Fuchs** *Legal Description (T, R, S):* **T9N** **R9E** **S16**

Use the decision matrix below to create Table A2

Hydric Soils Present?[1]	Identified on NWI or WWI?[2]	Percent with Wet Signatures from TABLE A1	Field Verification Required?[3]	Wetland?
Yes	Yes	>50%	No	**Yes**
Yes	Yes	30-50%	No	**Yes**
Yes	Yes	<30%	Yes	**Yes, if other hydrology indicators are present**
Yes	No	>50%	No	**Yes**
Yes	No	30-50%	Yes	**Yes, if other hydrology indicators are present**
Yes	No	<30%	No	**No**
No	Yes	>50%	No	**Yes**
No	Yes	30-50%	No	**Yes**
No	Yes	<30%	No	**No**
No	No	>50%	Yes	**Yes, if other hydrology indicators are present**
No	No	30-50%	Yes	**Yes, if other hydrology indicators are present**
No	No	<30%	No	**No**

[1] The presence of hydric soils can be determined from the "Hydric Rating by Map Unit Feature" under "Land Classifications" from the Web Soil Survey. "Not Hydric" is the only category considered to not have hydric soils. Field sampling for the presence/absence of hydric soil indicators can be used in lieu of the hydric rating if appropriately documented by providing completed field data sheets.

[2] At minimum, the most updated NWI data available for the area must be reviewed for this step. Any and all other local or regional wetland maps that are publically available should be reviewed.

[3] Area should be reviewed in the field for the presence/absence of wetland hydrology indicators per the applicable 87 Manual Regional Supplement, including the D2 indicator (geomorphic position).

TABLE A2

Area	Hydric Soils Present?[1]	Identified on NWI or WWI?	Percent with Wet Signatures from TABLE A1	Other Hydrology Indicators Present?[1]	Wetland?
1	Yes	Yes	100%	Yes	**Yes**
2	Yes	No	57%	Yes	**Yes**
3					
4					
5					
6					
7					
8					
9					

[1] Answer "N/A" if field verification is not required and was not conducted.

* Source: http://www.bwsr.state.mn.us/wetlands/delineation/Guidance_for_Offsite_Hydrology_and_Wetland_Determinations.pdf

June Aerial Imagery

Off-Site Aerial Imagery Analysis

Date	Monthly Rainfall in Inches [1]						Weighted Sum	Relative Wetness
	March	Weighted Precip	April	Weighted Precip	May	Weighted Precip		
June-05	1.56	2	1.68	2	3.96	6	10	Normal
30% chance less than**	1.32		2.95		2.75			
30 Year Average**	2.26		3.78		4.10			
30% chance more than**	2.74		4.36		4.91			

Dane County Regional Airport Weather Station
30-Year Precipitation Data (1991-2020) from NOAA Website
http://agacis.rcc-acis.org/

July Aerial Imagery

Off-Site Aerial Imagery Analysis

Date	Monthly Rainfall in Inches [1]						Weighted Sum	Relative Wetness
	April	Weighted Precip	May	Weighted Precip	June	Weighted Precip		
July-93	5.33	3	3.81	4	6.67	9	16	Wet
July-94	2.57	1	1.33	2	5.66	6	9	Dry
July-97	2.50	1	1.94	2	5.23	6	9	Dry
July-98	4.10	2	4.58	4	7.46	9	15	Wet
July-99	6.91	3	3.72	4	5.57	6	13	Normal
July-00	3.18	2	9.63	6	8.63	9	17	Wet
July-01	3.07	2	4.16	4	5.40	6	12	Normal
July-02	3.45	2	2.92	4	3.70	6	12	Normal
July-03	2.95	2	3.67	4	2.10	3	9	Dry
July-04	1.76	1	10.84	6	3.93	6	13	Normal
July-06	5.04	3	4.61	4	2.29	3	10	Normal
July-08	6.43	3	2.55	2	10.93	9	14	Normal
July-10	3.65	2	3.79	4	8.38	9	15	Wet
July-13	5.83	3	6.57	6	10.86	9	18	Wet
30% chance less than**	2.95		2.75		3.22			
30 Year Average**	3.78		4.10		5.27			
30% chance more than**	4.36		4.91		6.39			

Dane County Regional Airport Weather Station
30-Year Precipitation Data (1991-2020) from NOAA Website
http://agacis.rcc-acis.org/

September Aerial Imagery

Off-Site Aerial Imagery Analysis

Date	Monthly Rainfall in Inches [1]						Weighted Sum	Relative Wetness
	June	Weighted Precip	July	Weighted Precip	August	Weighted Precip		
September-95	1.22	1	4.36	4	5.58	9	14	**Normal**
September-17	6.73	3	6.52	6	3.85	6	15	**Wet**
30% chance less than**	3.22		3.31		2.55			
30 Year Average**	5.27		4.51		4.16			
30% chance more than**	6.39		5.30		5.04			

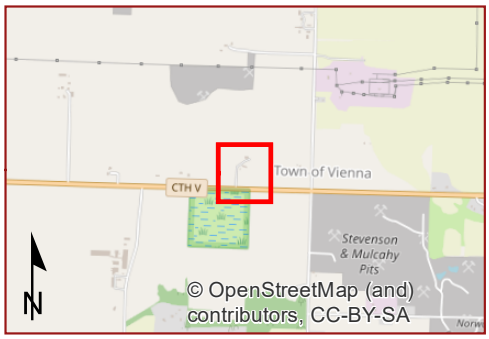
Dane County Regional Airport Weather Station
30-Year Precipitation Data (1991-2020) from NOAA Website
http://agacis.rcc-acis.org/

October Aerial Imagery

Off-Site Aerial Imagery Analysis

Date	Monthly Rainfall in Inches [1]						Weighted Sum	Relative Wetness
	July	Weighted Precip	August	Weighted Precip	September	Weighted Precip		
October-96	4.08	2	1.84	2	1.07	3	7	**Dry**
October-15	5.02	2	4.10	4	5.99	9	15	**Wet**
October-18	3.12	1	10.40	6	5.46	9	16	**Wet**
30% chance less than**	3.31		2.55		2.17			
30 Year Average**	4.51		4.16		3.43			
30% chance more than**	5.30		5.04		4.13			

Dane County Regional Airport Weather Station
30-Year Precipitation Data (1991-2020) from NOAA Website
http://agacis.rcc-acis.org/



Study Area (3.74 ac)

Offsite Analysis Review Areas

0 75 150 Ft

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Offsite Analysis Review Areas

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2008 NAIP
Data: USDA *11/2/2020*

July 1993 Wet

July 1994 Dry

September 1995 Normal

October 1996 Dry

July 1997 Dry

July 1998 Wet

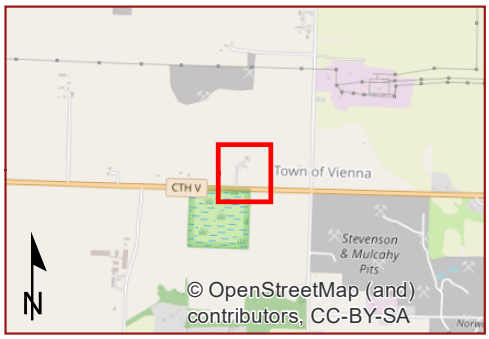
July 1999 Normal

July 2000 Wet

July 2001 Normal

July 2002 Normal

July 2003 Dry



Study Area (3.74 ac)

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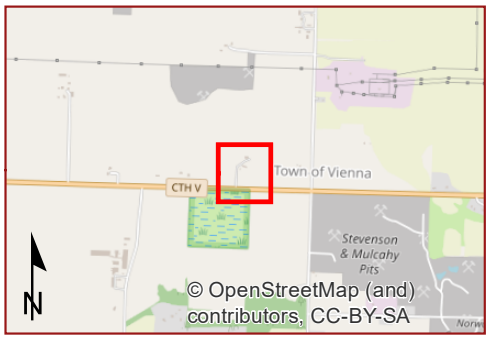
Appendix: 2004-07-28 NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2004 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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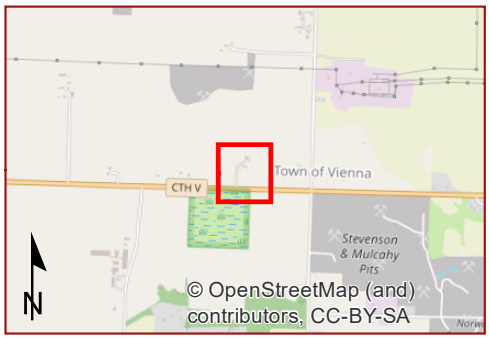
Appendix: 2005-06-23 NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2005 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

0 75 150
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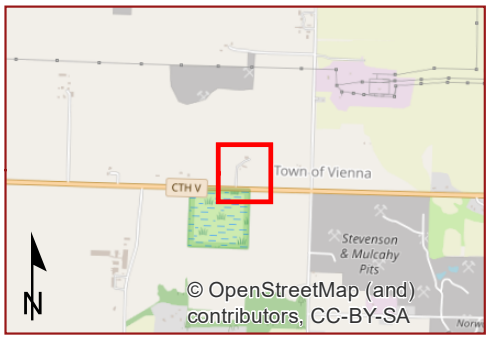
Appendix: 2006-07-15
NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2006 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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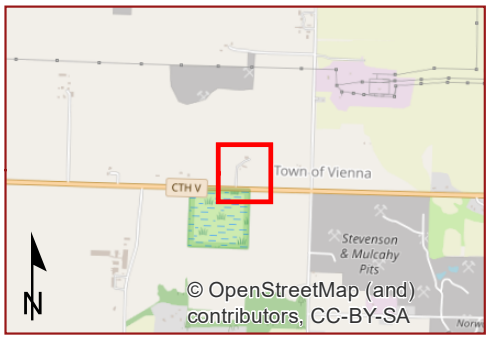
Appendix: 2008-07-09 NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2008 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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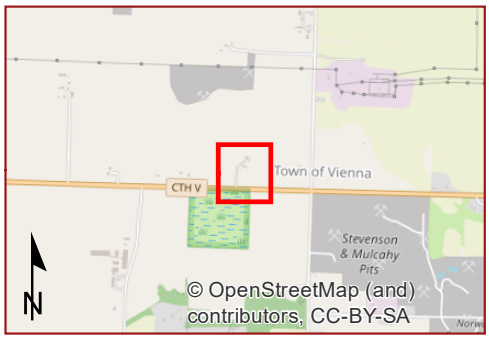
Appendix: 2010-07-02
NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2010 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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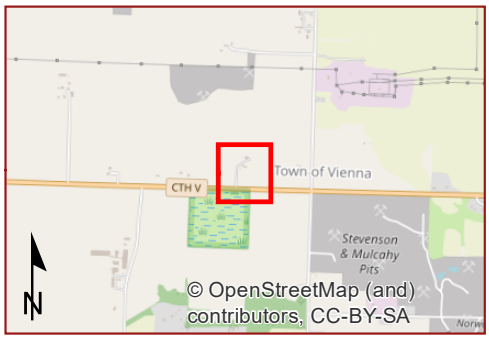
Appendix: 2013-07-04
NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2013 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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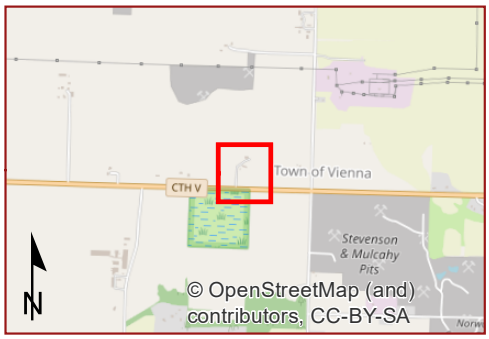
Appendix: 2015-10-11
NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2015 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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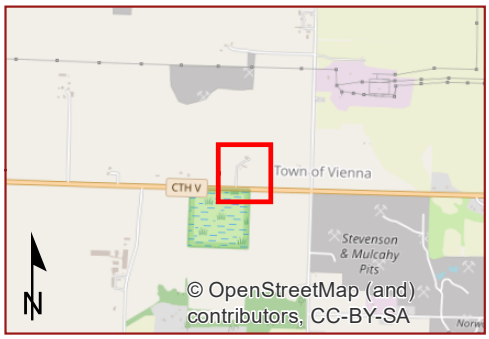
Appendix: 2017-09-03
NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2017 NAIP
Data: USDA *10/22/2020*



Study Area (3.74 ac)

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Appendix: 2018-10-04
NAIP Aerial Imagery

Waunakee Veterinary Service
Project #20200415
T9N, R9E, S16
T Vienna, Dane Co, WI

2018 NAIP
Data: USDA *10/22/2020*