

June 12, 2024

Lisa Steinhauer  
Frostwood Farm VI, LLC  
4601 Frey St, Suite 400  
Madison, WI, 53705

**RE: Wetland Determination Summary – Frostwood Farm 6, Town of Verona, Dane County, Wisconsin**

Dear Ms. Steinhauer:

Heartland Ecological Group, Inc. (“Heartland”) completed an assured wetland determination on the Frostwood Farm 6 site on May 22, 2024 at the request of Frostwood Farm VI, LLC. Fieldwork was completed by Scott Fuchs, Environmental Scientist, an assured delineator qualified via the Wisconsin Department of Natural Resources (WDNR) Wetland Delineation Assurance Program (Attachment 5, Delineator Qualifications). The 38.15-acre site (the “Study Area”) lies southwest of the intersection of Fitchrona Road and Tonto Trail, in the southeast ¼ of Section 13, T6N, R8E, Town of Verona, Dane County, Wisconsin (Attachment 1, Figure 1). The purpose of the wetland delineation was to determine the location and extent of wetlands within the Study Area. There were no wetlands identified within the Study Area (Attachment 1, Figure 7).

## Methods

Wetland determinations were based upon the criteria and methods described in the USACE Wetland 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 determination and report.

Wetland determinations utilized available resources including the U.S. Geological Survey’s (USGS) *WI 7.5 Minute Series (Topographic) Map* (Figure 2, Appendix A), the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service’s (NRCS) Soil Survey Geographic Database (SSURGO) *Web Soil Survey* (Figure 3, Appendix A), the WDNR’s *Wetland Indicator* data layer (Figure 4, Appendix A), the WDNR’s *Wisconsin Wetland Inventory* data layer (Figure 5, Appendix A), the WDNR’s *24k Hydro Flowlines (Rivers and Streams)* data layer (Figure 2 and 5, Appendix A), the WDNR’s *Color-Stretch LiDAR and Hillshade Image Service Layer* (Figure 6, Appendix A), and aerial imagery available through the USDA Farm Service Agency’s (FSA) National Agriculture Imagery Program (NAIP) and Dane County’s Land Information Office.

Wetland determinations were completed on-site at sample points, often along transects if wetlands were determined to be present, 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.

Atypical conditions were encountered within the Study Area due to the presence of agricultural fields in areas with soils that may be hydric based on the *Web Soil Survey* and the WDNR *Surface Water Data Viewer's* wetland indicator data layer. Therefore, procedures for managed plant communities in the *Problematic hydrophytic vegetation* section described in Chapter 5 of the Regional Supplement were used. NAIP imagery were reviewed for evidence of crop stress, saturation, or inundation signatures. Sample point placements for the wetland delineation were partially determined based on such signatures.

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 or OSA) 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 antecedent precipitation conditions for each image was normal, wet, or dry. Areas within agricultural fields are typically determined to be wetland if hydric soils and wetland hydrology indicators are present and aerial images taken in the five (5) (or more) most recent normal antecedent precipitation images show at least one (1) of the wetland signatures per the July 2016 Guidance. Although the off-site analysis concentrates on imagery taken under normal antecedent precipitation conditions, the images determined to be taken under wet and dry antecedent precipitation conditions 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 under “normal” antecedent conditions, and based on the consistency of the signatures (USDA, NRCS 1998).

Fieldwork was completed in the spring when conditions are typically wet in most types of wetlands in southern Wisconsin. Typically, primary indicators such as High-Water Table (A2) and Saturation (A3) are expected to be present in seasonal wetlands at this time of year. Sample point placements for the wetland determinations were based on topography, the presence of potentially hydric soils as indicated by NRCS-mapped soil units and the WDNR's SWDV, and wetland hydrology signatures observed during the OSA.

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 antecedent precipitation in the 90 days leading up to the field investigation was completed. Using an Antecedent Precipitation Tool (APT) analysis developed by the USACE (Deters & Gutenson 2021), the amount of precipitation over these



90 days was compared to averages and standard deviation thresholds observed over the past 30 years to generally represent if conditions encountered during the investigation were normal, wet, or dry. Recent precipitation events in the weeks prior to the investigation were also considered while interpreting wetland hydrology indicators. Additionally, the Palmer Drought Severity Index was checked for long-term drought or moist conditions (NOAA, 2018).

The sample point locations were recorded with a Global Navigation Satellite System (GNSS) receiver capable of sub-meter accuracy. Wetland flagging was not utilized and sample point locations were only recorded with a GNSS receiver. The GNSS data was then used to map the sample point locations using ESRI ArcGIS Pro™ software.

## Results

According to the APT analysis using the previous 90 days of precipitation data, conditions encountered at the time of the fieldwork were expected to be wetter than normal for the time of year (Appendix B). Additionally, Dane County experienced intense storms and approximately 1.5 inches of precipitation the evening before the field investigation. The Palmer Drought Severity Index was checked as part of the APT analysis, and the long-term conditions at the time of the fieldwork were in the mild wetness range. Fieldwork was completed outside the dry season based on long-term regional hydrology data utilized in the WebWIMP Climatic Water Balance and computed as part of the APT analysis.

The topography within the Study Area was rolling, with various rises, depressions, slopes, and drainageways present. A topographic high of approximately 1,043 feet above mean sea level is present along the southern boundary of the Study Area, and a topographic low of approximately 996 feet above mean sea level is present within a mapped intermittent drainageway along the northern boundary (Attachment 1, Figures 2 and 7). Land use within the Study Area primarily consists of agricultural fields, although an unfarmed, wooded area is present in the northeastern portion. Surrounding areas are also primarily agricultural with isolated residential areas and woodlands also present.

Soils mapped by the NRCS Soil Survey within the Study Area and their hydric status are summarized in Table 1 and illustrated on Figure 3. Those portions of the Study Area with hydric or potentially hydric soils mapped by the NRCS were the primary focus of the field wetland determination.

The Wisconsin Wetland Inventory (WWI) mapping (Attachment 1, Figure 5) does not identify wetlands within the Study Area.

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
DnB: Dodge silt loam, 2 to 6 percent slopes	Dodge	80-95	Drumlins	No
	St. Charles	3-10	Drumlins	No
	Mayville	2-7	Drumlins	No
	Lamartine	0-3	Drumlins	No



Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
DnC2: Dodge silt loam, 6 to 12 percent slopes, eroded	Dodge-Eroded	80-90	Drumlins	No
	St. Charles-Eroded	7-13	Till plains	No
	McHenry-Eroded	3-7	Moraines	No
MdD2: McHenry silt loam, 12 to 20 percent slopes, eroded	McHenry-Eroded	85-95	Moraines	No
	Dodge-Eroded	3-6	Moraines	No
	Wyocena	1-5	Moraines	No
	Lapeer	1-4	Moraines	No
PnB: Plano silt loam, till substratum, 2 to 6 percent slopes	Plano-Till substratum	80-90	Till plains	No
	Griswold	5-11	Till plains	No
	Elburn	5-9	Till plains	No
ScB: St. Charles silt loam, 2 to 6 percent slopes	St. Charles	80-90	Till plains	No
	St. Charles-Moderately well drained	5-10	Till plains	No
	Virgil	3-5	Till plains	No
	Pella	2-5	Drainageways	Yes
TrB: Troxel silt loam, 0 to 3 percent slopes	Troxel-Wet substratum	80-90	Depressions, moraines	No
	Elburn	5-11	Drainageways	No
	Plano	5-9	Till plains	No

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 (OSA) (Attachment 5). From the aerial imagery, the secondary wetland hydrology indicators “Saturation Visible on Aerial Imagery” (C9) and “Stunted or Stressed Plants” (D1) were noted within two (2) depressions and one (1) swale.

A total of 19 aerial images were selected and reviewed based on availability and quality of the imagery. Of these images, eleven (11) were taken under normal antecedent precipitation conditions. Signatures were noted in three (3) areas within the Study Area



within landscape positions described by the NRCS to support hydric soil components and were the focus of the OSA. At least one (1) of the seven (7) described wetland signatures per the July 2016 Guidance were consistently noted in one (1) of these areas on imagery taken under normal antecedent precipitation conditions. Based on the off-site analysis, one (1) area was likely to be wetland prior to the fieldwork. However, this signature area is a moderately sloping grass swale that appears to go unfarmed to prevent erosion within the swale, rather than due to wetland hydrology. No wetland hydrology indicators and no hydric soils were observed within the swale. The swale was dominated by upland grass.

Wetland determination data sheets (Attachment 3) were completed at eight (8) sample points where potential wetlands may be present based on the desktop review and field reconnaissance. Attachment 4 provides photographs, typically recorded at the sample point locations. The sample point locations are shown on Figure 7.

Sample points recorded within agricultural fields were nearly completely devoid of volunteer vegetation and planted corn seedlings were just emerging from the soil. The unfarmed grass swale (sample point P02) was dominated by a near-monoculture of smooth brome (*Bromus inermis*, UPL). Vegetation at sample points completed within the wooded portion of the Study Area adjacent to the northern boundary was dominated by dame's rocket (*Hesperis matronalis*, FACU), Japanese hedge parsley (*Torilis japonicus*, UPL), jewelweed (*Impatiens capensis*, FACW), wood violet (*Viola sororia*, FAC), buckthorn (*Rhamnus cathartica*, FAC), box elder (*Acer negundo*, FAC), and white oak (*Quercus alba*, FACU). The hydrophytic vegetation criteria was satisfied within wooded portions of the Study Area but was not met at sample points completed within the agricultural fields.

The Geomorphic Position (D2) secondary wetland hydrology indicator was noted within two (2) depressions and within the drainageway in the northern portion of the Study Area. The FAC-Neutral Test (D5) was also noted at one (1) of the sample points completed within the drainageway.

The Redox Dark Surface (F6) and Redox Depressions (F8) hydric soil indicators were noted in the two (2) depressions within the agricultural field, but wetland hydrology indicators aside from Geomorphic Position (D2) were not observed. Additionally, these depressions only featured wetland hydrology signatures in 18% and 27% of the normal precipitation years reviewed during the OSA, respectively.

Although some sample point locations met either the hydrophytic vegetation, hydric soil, or wetland hydrology indicators, no sample points met all three (3) of these criteria and therefore no wetlands were determined to be present within the limits of the Study Area.

Heartland recommends that all applicable regulatory agency reviews and permits are obtained prior to beginning work within the Study Area. 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 determination.

Experienced and qualified professionals completed the wetland determination using standard practices and professional judgment. Wetland determinations may be affected by conditions present within the Study Area at the time of the fieldwork. All final decisions on wetlands are made by the USACE, the WDNR, and/or sometimes a local unit of government. Wetland determination reviews by regulatory agencies may result in modifications to the findings presented to the Client. These modifications may result from varying conditions



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between the time the wetland determination 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.

Please feel free to contact me if you have any questions regarding this wetland determination.

Regards,

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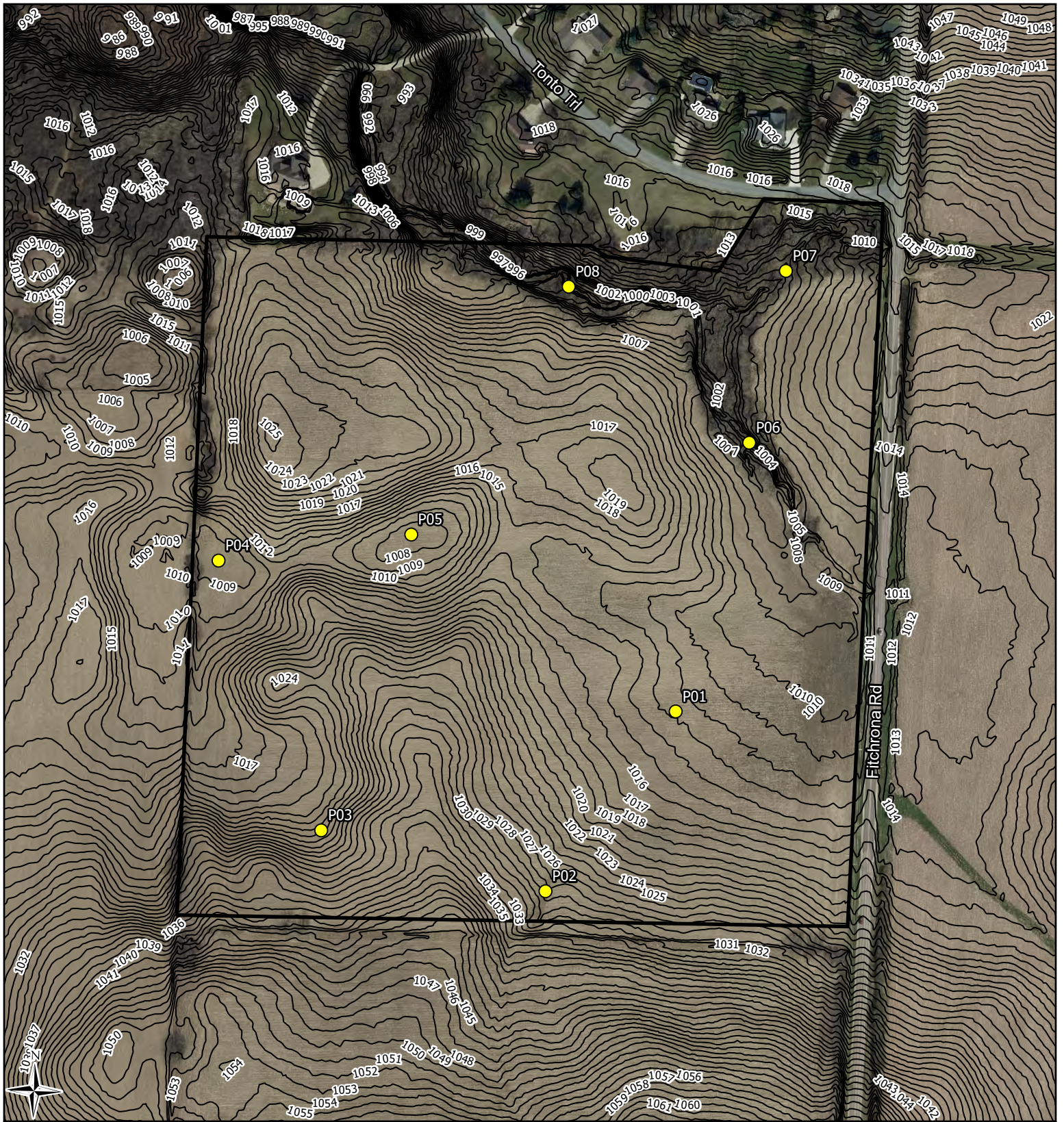
Attachments:




- 1 – Figures 1-7
- 2 – APT Analysis
- 3 – Wetland Determination Data Sheets
- 4 – Site Photographs
- 5 – Off-Site Analysis
- 6 – Delineator Qualifications

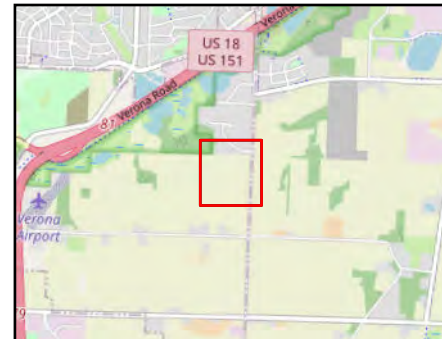


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## Attachment 1 | Figures



-  Study Area (38.15 ac)
  -  Dane Co 1' Contours
  -  Field Delineated Wetlands (No Wetlands Identified)
- ### Sample Points
-  Upland



**Heartland**  
 ECOLOGICAL GROUP INC

Figure 7. Field Delineated Wetlands  
 Frostwood Farm 6  
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 T6N, R8E, S13  
 T Verona, Dane Co

2022 Orthophoto  
 Dane Co, HEG LRR: NCNE  
 Figure Created: 5/29/2024