TETRA TECH

September 1, 2022

Carolyn Cooper
Senior Hydrogeologist
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711-5367

Re: Initial Site Report – Proposed Dane County Landfill Site No. 3
Dane County Department of Waste & Renewables
WDNR License No. 4911, FID No. 113450480

Dear Ms. Cooper,

On behalf of Dane County Department of Waste & Renewables (Dane County), Cornerstone Environmental Group - a Tetra Tech Company (Tetra Tech) is pleased to submit to the Wisconsin Department of Natural Resources (WDNR) the Initial Site Report (ISR) for the proposed Dane County Landfill Site No. 3.

The ISR was prepared in accordance with Wisconsin Administration Code NR 509. Per your request, three (3) hard copies and an electronic copy of the ISR are included for your review. Additional copies of the ISR have been distributed according to the attached distribution list.

If you have any questions or comments regarding the ISR, please call me at (630) 410-7231. We look forward to receiving your response on the proposed Dane County Landfill Site No. 3.

Sincerely,

CORNERSTONE ENVIRONMENTAL GROUP, LLC – A TETRA TECH COMPANY

Teri Daigle
Project Manager

Enclosure: Initial Site Report - Dane County Landfill Site No. 3

cc: Per the attached distribution list

TETRA TECH
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Dane County Department of Waste & Renewables
Proposed Dane County Landfill Site No. 3
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Mr. John Oswald Tetra Tech 8413 Excelsior Drive, Ste 160 Madison, WI 53717	Electronic Copy (Email)

Initial Site Report

Dane County Landfill Site No. 3

SEPTEMBER 2022
209-4221302

PREPARED FOR

Dane County Department of Waste & Renewables
1919 Alliant Energy Center Way
Madison, WI 53713

SUBMITTED BY

Cornerstone Environmental Group, LLC,
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8413 Excelsior Drive, Ste. 160
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REPORT CERTIFICATION

I, Mark J. Torresani, hereby certify that I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 500 to 538, Wis. Adm. Code.

Mark Torresani, P.E.

Signature

Vice President / Engineer

Title

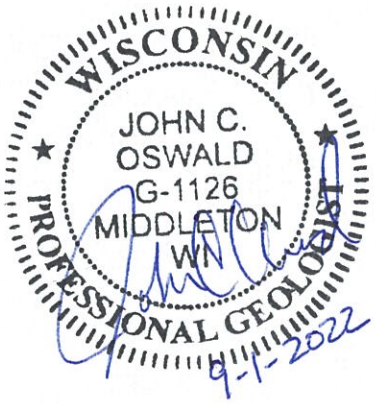
I, John C. Oswald, hereby certify that I am a licensed professional geologist in the State of Wisconsin in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code; that the preparation of this document has not involved any unprofessional conduct as detailed in ch. GHSS 5, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 500 to 538, Wis. Adm. Code.

John C. Oswald, P.G.

Signature

Central Region Area Manager / Geologist

Title



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1.0 INTRODUCTION

This Initial Site Report (ISR) has been prepared for Dane County Department of Waste & Renewables (Dane County) by Cornerstone Environmental Group, LLC, a Tetra Tech Company (Tetra Tech), for the proposed Dane County Landfill Site No. 3, located in the City of Madison, Dane County, Wisconsin. Figure 1 shows the location of the proposed landfill on a United States Geological Survey (USGS) map. Figure 1A provides the same USGS map as Figure 1 but is provided on a larger page size in order to meet the minimum 1 inch=500 feet scale, required by NR 509.04(4)(d).

The site for development of the proposed Dane County Landfill Site No. 3 is located on two parcels of land (Property Parcel No. 251/0710-254-0099-7 and 251/0710-361-0099-0) totaling approximately 230-acres (Figure 2). This land is currently owned by the City of Madison and pending purchase through a Land Sale Agreement by Dane County. That agreement was executed on June 1, 2022 with closing to occur in December 2022. The site is located in the SE ¼ of Section 25 and N ½ of NE ¼ of Section 36, T7N, R10E, City of Madison, Dane County, Wisconsin, within a portion of the existing Yahara Hills Golf Course. The site is located south of US Highway (USH) 12 & 18, northeast of Interstate I-90/I-39 and west of County Highway (CTH) AB.

The proposed Dane County Landfill Site No. 3 limits of waste are shown on Figures 1-14 of this ISR and include approximately 83.1-acres of new waste disposal area. The land within the future property boundary will include the proposed limits of waste, surrounding area for perimeter berms, soil stockpiles, stormwater management features and other ancillary features. Figure 14 provides the proposed top of waste grades and anticipated perimeter berms for the proposed Dane County Landfill Site No. 3. Setback requirements shown on the ISR figures and evaluated in this ISR are based on the proposed limits of waste boundary.

1.1 PURPOSE AND SCOPE

The ISR presents information required for the Wisconsin Department of Natural Resources (WDNR) to determine the potential for development of the proposed Dane County Landfill Site No. 3. The report and information submitted herein were prepared in accordance with the requirements of Ch. NR 509, Wisconsin Administrative Code (WAC). A completeness checklist identifying the locations of the required information in the report is provided in Appendix A.

The scope of work conducted during preparation of this report included the following tasks:

- Content as required by NR 509.05(3)
- Land use information as required by NR 509.06
- Regional geotechnical information as required by NR 509.07
- Development and illustration of preliminary design concepts

Potential local and regional impacts that may result from the proposed Dane County Landfill Site No. 3 are expected to be similar to those of the existing Dane County Landfill Site No. 2 (Rodefeld). The proposed Dane County Landfill Site No. 3 will be managed to minimize impacts to the environment and surrounding properties.

1.2 EXEMPTION REQUEST

Four requests for exemption are anticipated to be included in the Feasibility Report (FR), based on the preliminary geotechnical investigation data and review of locational, performance, and design information to date. Detailed information supporting these exemption requests will be furnished with the FR. If additional exemption requests are required, they will be included in the FR. The anticipated requests for exemption will include the following:

Landfill Locational Criteria per NR 504.04(3):

- An exemption to WAC NR 504.04(3)(a) will be requested to allow the proposed limits of waste be located within 1,000 feet of a pond. The unnamed, man-made pond, located within the proposed limits of waste will be filled in to construct the proposed landfill. A preliminary review of historical aerial imagery indicates this unnamed pond is not naturally occurring but was constructed during development of the golf course. More information on the unnamed pond is discussed in Section 2.1.1.
- An exemption to WAC NR 504.04(3)(f) will be requested to allow the proposed limits of waste be located within 1,200 feet of up to four water supply wells. Three known on-site private water supply wells (to be abandoned prior to landfill construction) and four known off-site private water supply wells are currently located within 1,200 feet of the proposed limits of waste. More information on the water supply wells within 1,200 feet of the proposed limits of waste are discussed in Section 2.1.6.

Minimum Design and Construction Criteria for Landfills per NR 504.06:

- An exemption to WAC NR 504.06(2)(b) will be requested to allow the bottom of the clay component of a composite liner be constructed within the 10-foot separation distance to the seasonal high groundwater table. The proposed Dane County Landfill Site No. 3 subbase and base grades will be above but within 10 feet of the seasonal high groundwater table. A groundwater gradient control system will likely be proposed to underlie the entire landfill.
- An exemption to WAC NR 504.06(2)(c) may be requested to allow the bottom of the clay component of a composite liner be constructed within the 10-foot separation distance to the underlying competent bedrock surface. A distinction between weathered bedrock and competent bedrock surfaces will be discussed as part of the FR. It is expected the design of the landfill and underlying components will encroach or be within the weathered bedrock surface.

1.3 GENERAL INFORMATION

Project Title	Dane County Department of Waste & Renewables Dane County Landfill Site No. 3 WDNR License No. (4911) FID No. 113450480
Present Land Owner	City of Madison Parks Yahara Hills Park West 7101 US Highway 12 & 18 Madison, WI 53718 (608) 266-4601
Present Land Owner Contact	Eric Knepp Parks Superintendent City-County Building, Room 104 210 Martin Luther King Jr. Blvd Madison, WI 53703 (608) 266-4711
Proposed Landfill Owner & Operator	Dane County Department of Waste & Renewables 1919 Alliant Energy Center Way Madison, WI 53713 (608) 266-4018
Proposed Landfill Contact	John Welch Director, Dane County Department of Waste & Renewables 1919 Alliant Energy Center Way Madison, WI 53713 (608) 516-4154
Consultant	Tetra Tech 8413 Excelsior Drive, Suite 160 Madison, WI 53717 (877) 294-9070
Consultant Contact	Mrs. Teri Daigle Project Manager 8413 Excelsior Drive, Suite 160 Madison, WI 53717 (630) 410-7231
Proposed Facility Location	Property Parcel No. 251/0710-254-0099-7 and 251/0710-361-0099-0 SE ¼ of Section 25 and N ½ of NE ¼ of Section 36, T7N, R10E, City of Madison, Dane County, Wisconsin.
Present Land Use	Recreation (Golf Course) and Water (man-made Pond)
Property Acreage & Anticipated Limits of Filling	230 Acres (pending purchase from City of Madison) where 83.1 acres is anticipated to be used for landfilling
Service Area	Primary service area will be Dane County. Waste may be accepted from outside Dane County, depending on local negotiations.
Design Capacity	10.3 million cubic yards
Site Life	Approximately 14-15 years

Anticipated Waste Types	Category 1 waste: 60-80% (municipal solid waste) Remaining waste categories: 20-40% (primarily construction and demolition (C&D) waste, material recycling facility (MRF) residuals, other non-hazardous waste, and alternative daily cover (ADC) materials)
Anticipated Total Waste Intake	Approximately 375,000 – 625,000 tons of waste are expected annually between 2030-2045. The range accounts for an annual increase of 3.71% based on average % increase recorded between 2017-2021 at Dane County Landfill Site No. 2 (Rodefeld). The first year of waste intake at Dane County Landfill Site No. 3 is anticipated to be in 2030 but may be earlier depending on permitting timeline and remaining Rodefeld landfill capacity.
Anticipated Volume of Each Major Waste Stream	Category 1 (MSW): Approximately 262,400 - 437,000 tons Category 6 (non-hazardous solid waste): Approximately 2,300 – 3,900 tons Category 19 (alternative daily cover): Approximately 41,800 – 69,700 tons Category 25 (C&D waste): Approximately 21,300 – 35,500 tons Category 27 (waste generated by non-profit organizations): Approximately 5,200 – 8,700 tons Category 30 (MRF residuals): Approximately 8,000 – 13,400 tons Category 31 (C&D residuals): Approximately 34,300 – 57,200 tons Categories not specifically identified will be accepted under the special waste acceptance plan, in limited quantities. Waste volumes tend to increase in summer months by approximately 10% and decrease in winter months by approximately 15%.
Anticipated Cover Frequency	The working face will be covered with a minimum six inches of daily cover soils or approved alternate daily cover (ADC) at the end of each working day.
Mode of Operation	Phased area filling
Conceptual Design	See Section 5.0
Base and Subbase Grades	See Section 5.0
Conceptual Final Grades	See Section 5.0

1.4 INITIAL SITE INSPECTION RESPONSE

A request for an Initial Site Inspection (ISI) was submitted to the WDNR on March 17, 2022. The ISI Request is provided in Appendix B. The ISI Request Letter included information regarding the locational criteria and performance standards.

WDNR performed a site inspection on April 14, 2022 and issued an ISI Response Letter dated May 11, 2022 documenting the ISI (Appendix C). The letter indicates that the site is potentially suitable for a landfill. The landfill will need to comply with the standards of NR 504.04 less any justified and granted exemptions. The anticipated exemptions are identified and summarized in Section 1.2 of this ISR.

2.0 INITIAL SITE INSPECTION

The WDNR requires a review and evaluation of the Locational Criteria and Performance Standards for the submittal of an ISR. The following is a summary of conditions in the vicinity of the proposed Dane County Landfill Site No. 3 relative to the NR 504.04 Locational Criteria and Performance Standards.

2.1 NR 504.04(3) LOCATIONAL CRITERIA

2.1.1 Within 1,000 Feet of Any Navigational Lake, Pond or Flowage

The proposed limits of waste are located within 1,000 feet of a navigable lake, pond or flowage. According to the WDNR Surface Water Data Viewer, an unnamed pond (WBIC 5575561) is located within the proposed limits of waste. As noted in the WDNR ISI Response, in Appendix C, a preliminary review of historical aerial imagery indicates this unnamed pond is not naturally occurring but was constructed during development of the golf course.

Construction of the proposed Dane County Landfill Site No. 3 would remove the unnamed man-made pond as well as any unsuitable soils prior to constructing the landfill liner system. Surface water features from the WDNR's Surface Water Data Viewer are shown on Figure 3.

2.1.2 Within 300 Feet of Any Navigable River or Stream

The proposed limits of waste are not located within 300 feet of any navigable stream or river. An unnamed river or stream (WBIC 803000) is located southeast of the proposed limits of waste. At its nearest point, the unnamed stream located east of CTH AB is approximately 1,390-feet from the proposed limits of waste. This unnamed stream flows to the northeast and discharges into Door Creek (WBIC 802800). Surface water features are shown on Figure 3.

2.1.3 Within a Floodplain

The proposed Dane County Landfill Site No. 3 is not located within a floodplain, as shown on Figure 3.

2.1.4 Within 1,000 Feet of the Nearest Edge of the Right-of-Way of Any State Trunk Highway, Interstate, Federal Aid Primary Highway or the Boundary of Any Public Park Unless the Landfill is Screened by Natural Objects, Plantings, Fences or Other Appropriate Means so That It Is Not Visible from the Highway or Park

The proposed limits of waste will be located approximately 385 feet to the south of USH 12 & 18 and approximately 150 feet to the west of CTH AB. Interstate I-90/I-39 is approximately 1,850 feet southwest from the proposed limits of waste as shown in Figure 2. The proposed limits of waste is currently located on land zoned as Parks and Recreation and owned by the City of Madison Yahara Hills Golf Course.

The City of Madison plans to maintain at least 18 holes of the Yahara Hills Golf Course until at least 2042. This will be facilitated through a lease agreement between Dane County and the City of Madison, where approximately 76 acres will be leased back to the City of Madison. The anticipated 18-hole golf course configuration and the lease boundary are shown on Figure 2. Dane County and City of Madison have a mutual understanding that there may be a need to construct berms and stormwater management features within the leased boundary. Dane County, in accordance with the approved neighborhood development plan, will maintain at least a 150-foot buffer around the landfill limits of waste and provide appropriate screening. Additionally, a parcel to the south of the golf course is owned by the City of Madison Parks Yahara Hills Park South, which is also zoned as Parks and Recreation and approximately 700 feet from the proposed limits of waste.

Dane County will propose appropriate screening measures from USH 12 & 18, CTH AB, and the Yahara Hills Golf Course, as required in future submittals for the proposed Dane County Landfill Site No. 3. Screening will be used to mitigate visual impacts to surrounding highways and recreational areas.

2.1.5 Within an Area Where the Design or Operations of the Landfill Would Pose a Significant Bird Hazard to Aircraft

There are no airports designed or planned to be designed within 5,000 feet or 10,000 feet of the proposed limits of waste. The nearest public airports are the Blackhawk Airfield, located in Cottage Grove, Wisconsin and the Dane County Regional Airport, located in Madison, Wisconsin. Blackhawk Airfield and Dane County Regional Airport are located approximately 5.25 miles and 7 miles from the proposed limits of waste, respectively. The nearest private use airport is the Uff-Da Airport, located in Stoughton, approximately 6.5 miles from the proposed limits of waste. The location of airports in relation to the proposed Dane County Landfill Site No. 3 is shown on Figure 4.

2.1.6 Within 1,200 Feet of a Public or Private Well

There are five known and active water supply wells (PW-A, B, C, D and E) that serve the Yahara Hills Golf Course which are owned by the City of Madison. Three of these wells (PW-C, D and E) are located within the proposed limits of waste (Figure 5). These three private wells are proposed to be abandoned prior to constructing the proposed Dane County Landfill Site No. 3. As noted in the WDNR ISI Response, in Appendix C, Dane County acknowledges that the WDNR may require additional well filling and sealing requirements for the abandonment of the aforementioned wells.

Private water supply wells PW-A and PW-B are located approximately 1,940 feet south and approximately 1,220 feet west of the proposed limits of waste, respectively. Another known private water supply well (Biogas Well YZ391) is located approximately 985 feet north of the proposed limits of waste, adjacent to the Biogas Facility for the Dane County Landfill Site No. 2 (Rodefeld). Well Construction Reports for these known and active water supply wells are provided in Appendix D.

There are three known private water supply wells located east of CTH AB where four residences are located on Hope Hollow Trail (two residences share a well). These private wells are assumed to be located approximately 400, 795 and 1,030 feet from the proposed limits of waste. Dane County will evaluate if exemption requests are applicable for the three wells or if they need to be abandoned and redrilled further away from the proposed limits of waste, as part of the FR. Additionally, water supply well documentation for these wells will be included in the FR.

Other assumed or known private and public water supply wells are located beyond 1,200 feet from the proposed limits of waste. Refer to Figure 5 for assumed and known public and private water supply well locations.

2.1.7 Within 200 Feet of a Fault that has Displaced in Holocene Time

The proposed Dane County Landfill Site No. 3 is not located within 200 feet of a fault that has had displacement in Holocene times. No faults in Wisconsin are known to have had displacements since the Holocene time. It should be noted, fault lines are depicted on a Wisconsin Geological and Natural History Survey map (Figure 10) in and around the proposed landfill. However, the origin and geologic time of this fault line is not known at this time. Additional discussion on the fault lines is provided in Section 4.3.1.

2.1.8 Within Seismic Impact Zones

The proposed Dane County Landfill Site No. 3 is not within a seismic impact zone.

2.1.9 Within Unstable Areas

The bedrock beneath the proposed Dane County Landfill Site No. 3 consists of Prairie du Chien Group dolomite and sandstone and/or Cambrian Sandstone. Based on previous site geologic studies at the Dane County Landfill Site No. 2 (Rodefeld) and borings and wells drilled at the Yahara Hills Golf Course, there is no evidence of unstable conditions.

2.2 NR 504.04(4) PERFORMANCE STANDARDS

2.2.1 A Significant Adverse Impact on Wetlands

The 230-acre property where the Dane County Landfill Site No. 3 is proposed has been evaluated for wetlands. TRC Environmental Corporation (TRC) performed a wetland delineation study in November 2021 within the northern property parcel (Parcel No. 251/0710-254-0099-7) and identified five (5) wetlands and one pond, outlined below:

1. W-1 located in a depressional swale on the NE corner of the project area (3.66 acres),
2. W-2 located in a swale on the NW corner of the project area (0.08 acres),
3. W-3 located in a swale on the NW corner of the project area (0.01 acres),
4. W-4 located as an isolated wetland contained within a shallow depression on the eastern portion of the project area (0.18 acres),
5. W-5 located around the edge of a manmade pond in the central portion of the project area (0.11 acres), and
6. P-1 is a manmade pond located in the central portion of the project area (2.02 acres).

Heartland Ecological Group (Heartland) performed a wetland delineation study in April 2022 within the southern property parcel (Parcel No. 251/10-361-0099-0). Heartland prepared a Wetland Determination Summary letter, dated May 23, 2022, and determined there were no wetlands present. The wetland delineation reports by TRC and Heartland are provided in Appendix E.

Based on a review of the delineated wetlands, the proposed limits of waste and additional area for perimeter berms (Figure 14) may directly impact three delineated wetlands (W-1, W-4 and W-5). A large portion of W-1, approximately 3.05 acres, will be disturbed in 2022-2023 as part of the Wisconsin Department of Transportation (WisDOT) US 12/18 and County AB Interchange Project (Project ID 3080-01-40/75/76).. Area outside of the planned WisDOT work for W-1, approximately 0.50 acres, may be impacted by landfill or perimeter berm construction. Additionally, all of W-4 and W-5 (totaling approximately 0.29 acres) may be impacted by landfill or perimeter berm construction. Figures 2 and 6 include the known wetland boundaries from the WDNR Mapped Wetlands and the delineated wetlands from TRC. Furthermore, the WDNR ISI Response, in Appendix C, noted the pond is considered to be an artificial wetland which would likely qualify as exempt from state permitting requirements.

Dane County submitted a Jurisdictional Determination request to the U.S. Army Corps of Engineers on July 22, 2022 and received an acknowledgement letter with a file number on July 29, 2022 (Appendix C). Following the jurisdictional determination, Dane County will initiate the appropriate wetland permitting process for the impacted wetlands as a result of the proposed Dane County Landfill Site No. 3.

2.2.2 A Significant Adverse Effect on Critical Habitat Areas

The proposed Dane County Landfill Site No. 3 is not anticipated to pose significant adverse effects on critical habitat areas. The proposed landfill is located on land previously disturbed by agriculture then by the construction and operation of the Yahara Hills Golf Course.

An Endangered Resources Review Request application was submitted to the WDNR Endangered Resources Review Program on June 10, 2022 for the entire 230-acre property. The WDNR determined the project is covered

under the Broad Incidental Take Permit/Authorization for No/Low Impact Activities and does not require an Endangered Resources Review. The Endangered Resources (ER) Review Verification application form from the WDNR Endangered Resources Review Program, which was signed June 10, 2022, is provided in Appendix C.

2.2.3 A Detrimental Effect on Any Surface Water

No naturally occurring surface water is located in or immediately adjacent to the proposed limits of waste or limits of disturbance. Surface water runoff from the proposed Dane County Landfill Site No. 3 will be managed in accordance with NR 216 and NR 500 and will pose no detrimental effect on surface water.

3.0 EXISTING LAND USE INFORMATION

The WDNR requires a summary of the land use information for the submittal of an ISR. The following is a discussion of land uses in the vicinity of the proposed Dane County Landfill Site No. 3 in accordance with the NR 509.06 requirements.

3.1 ADJACENT LANDOWNERS

A property ownership map is provided on Figure 7. Property owners of parcels located contiguous to the proposed landfill's property and within 1,200 feet of the proposed limits of waste boundary are listed in the table included on Figure 7. Please note, areas immediately adjacent to USH 12 & 18 and CTH AB are right-of-ways owned by the State of Wisconsin (WisDOT).

3.2 LAND USE ZONING

The property is currently zoned as parks and recreation (PR) and will require rezoning to be used as a landfill (Figure 8). The rezoning application has been submitted to the City of Madison to rezone the property from PR to Industrial – General (IG). A conditional use permit may be required for some landfill operations and will be submitted as part of the local approval process.

The existing zoning conditions within one mile of the proposed limits of waste are shown on Figure 8 and include planned developments, mixed uses, employment districts, commercial, residential (varying grades), agricultural (varying grades), conservancy, and recreational district. Zoning information exists from the City of Madison Zoning Districts, the County of Dane Rural Zoning and the Village of McFarland.

3.3 PRESENT LAND USES

The present land use of the proposed landfill property is a municipal golf course (recreation). The existing land use conditions within one mile of the proposed limits of waste are shown on Figure 9. There are predominantly scattered rural residences, agriculture, woodlands and open land located to the east and south of the proposed landfill. Land uses to the west predominantly include recreation, commercial, woodlands, agriculture, open land, water and vacant subdivided land. There is a developing and expanding small tract residential subdivision located to the southwest of the proposed landfill. To the north there is industrial, commercial, open land, agriculture, some residential, institutional/governmental and the existing Dane County Landfill Site No. 2 (Rodefeld) which is shown as communication/utilities.

3.3.1 Known Recreational Areas

The Yahara Hills Golf Course immediately to the west and an adjacent property to the south of the proposed landfill property are zoned as a parks and recreation, both of which are owned by the City of Madison (Figure 8). Dane County will be working closely with the City of Madison to mitigate any potential impacts to golf. The adjacent property to the southeast of the golf course is currently used for agriculture, open land, and woodlands (Figure 9).

3.3.2 Known Historical or Archeological Areas

Archaeological Consulting Services, Inc. (ACS) reviewed available literature and records on previously reported cultural resources in and around the Yahara Hills Golf Course. The reviewed study area included the proposed limits of disturbance. A Literature and Records Search Report was prepared by ACS in November 2021 which was included in the ISI Request submittal (Appendix B). The results of this study found no previously reported

archaeological sites within the study area. According to ACS, the closest archaeological site is approximately 350-meters to the north of the Yahara Hills Golf Course but several Euro-American farmsteads were located within the study area prior to the development of the golf course. No standing buildings or other structures in the study area are listed on the Wisconsin Architecture and History Inventory. The 1967 Club House has been identified as potentially significant and is located to the west (see Figure 2).

An Archaeological Survey Field Report, prepared by Commonwealth Heritage Group, Inc. in October 2020, was provided to Dane County by the State Historical Preservation Office which reported results of the cultural resources field survey for the proposed WisDOT USH 12 & 18, CTH AB Interchange project (Appendix B). A portion of the proposed limits of disturbance was previously studied as part of this WisDOT project. The reported findings stated, “no cultural materials or features were identified during survey”.

ACS performed an archaeological survey of the proposed landfill property (230-acres) in April and May 2022. A summary of the results is below:

- No previously reported Native American archaeological sites lie within the project area.
- No Native American artifacts were found and Euro-American materials were limited to items of recent age.
- A concrete foundation and a concrete slab were found, but no artifacts and no evidence of a house foundation was found.
- Yahara Hills Golf Course and Clubhouse has been determined eligible for the National Register of Historic Places.
- No additional archeological work is recommended for the proposed landfill property.

The ACS report on the archaeological survey of the project area, dated May 2022, was submitted to Felipe Avila, with the Wisconsin State Historic Preservation Office (SHPO) on July 22, 2022. Dane County, Tetra Tech, SHPO, ACS, and WDNR held an initial meeting on July 28, 2022. Dane County will continue to work with these agencies to determine any applicable permitting steps.

3.3.3 Areas that Contain Threatened or Endangered Species

An Endangered Resources Review Request application was submitted to the WDNR Endangered Resources Review Program on June 10, 2022 for the entire 230-acre property. The WDNR determined the project is covered under the Broad Incidental Take Permit/Authorization for No/Low Impact Activities and does not require an Endangered Resources Review. The Endangered Resources (ER) Review Verification application form from the WDNR Endangered Resources Review Program, which was signed June 10, 2022, is provided in Appendix C.

3.3.4 State or Local Natural Areas and County Forest Land

The proposed landfill property does not contain state or local natural areas or county forest land.

3.3.5 Airports

See Section 2.1.5 for discussion on nearby public and private airports to the proposed landfill. The Quale Airport and the Little Wheel Field Airport, both located in Cottage Grove, Wisconsin, were once privately owned airports within 5 miles of the proposed landfill. However, these private airports have been closed and are no longer in use. Refer to Appendix F for e-mail correspondences from the owners, or family members, confirming that the Little Wheel Field Airport was closed in 2018/2019 and the Quale Airport was closed in 2021.

Tetra Tech notified the Federal Aviation Administration (FAA) and the Quale Airport owner of the proposed landfill on June 22, 2022. The Quale Airport owner was notified before it was known that the private airport had been closed. The FAA acknowledged receipt of the notification letter via email on August 10, 2022. The notification letters to the Quale Airport owner and the FAA, delivery receipts from UPS, as well as the acknowledgement

email from FAA, are provided in Appendix F. A response letter from the FAA has not yet been received but will be included as part of the FR.

3.4 TRANSPORTATION AND ACCESS

The proposed Dane County Landfill Site No. 3 is currently accessed from the north via USH 12 & 18 at the Yahara Hills Golf Course entrance, located off Millpond Road, or from the east via CTH AB using Yahara Hills Golf Course service driveways.

WisDOT has awarded a contract and will begin construction of an overpass with a series of roundabouts for the USH 12 & 18 and CTH AB interchange. These road improvements have been designed to accommodate typical landfill customer vehicles. The WisDOT changes will impact traffic routes and access to the proposed landfill, resulting in most traffic using the new interchange and roundabouts to travel from USH 12/18 to CTH AB or a service road. The proposed access to the landfill may be split between large haulers and residential customers. Under this scenario, large haulers may access the proposed landfill directly off CTH AB while residential customers may use an entrance off of the extended Millpond service road.

The proposed transportation routes, within the proposed landfill, will be similar to the existing Dane County Landfill Site No. 2 (Rodefeld) where service roads are used around the perimeter to provide access to the landfill disposal area.

There are no known weight restrictions for vehicles using USH 12 & 18 or CTH AB.

4.0 REGIONAL GEOTECHNICAL INFORMATION

The WDNR requires a summary of the regional geotechnical information for the submittal of an ISR. The following is a discussion of the regional setting in the vicinity of the proposed Dane County Landfill Site No. 3 in accordance with the NR 509.07 requirements.

Regional geotechnical information contained in Section 4 is compiled from previous permitting documents prepared by Donohue, RMT, Inc. and TRC, Inc. for the Dane County Landfill Site No. 2 (Rodefeld).

4.1 TOPOGRAPHY

The proposed Dane County Landfill Site No. 3 is located in the Drumlin Zone of Dane County (Clayton and Attig, 1997). This region is characterized by generally flat to slightly hilly topography with abundant drumlins or drumlinoid hills. Topography within one-mile of the proposed landfill is shown on Figures 1 and 1A.

The proposed landfill property is generally flat and gently rises to the southeast and southwest. The current ground surface ranges in elevation from 870 feet above mean sea level (M.S.L) in the northwestern portion of the property to 930 feet above M.S.L. in the far southern portions of the property (Figure 2). Based on a review of historical topography from 1961, the current elevations are a result of ground surface modifications during the development of the Yahara Hills Golf Course. The existing contours provided on Figure 2 reflect topography from 2017 that was retrieved from the Wisconsin State Cartographer's Office.

4.2 HYDROLOGY

The proposed Dane County Landfill Site No. 3 is located within the Yahara River and Lake Monona Watershed. The Yahara River, Lake Monona, Lake Waubesa and Lake Kegonsa are the major surface water features in the study area, according to the watershed data provided by the WDNR. Most of the streams in the study area flow into the lakes and/or the Yahara River. Two unnamed streams are the closest water features to the proposed Dane County Landfill Site No. 3. One, located west of the proposed landfill property, flows to the north and northwest toward a floodplain which then drains towards Lake Waubesa via Upper Mud Lake. The other unnamed stream which may not be part of the site surface water drainage is located to the southeast of the proposed Dane County Landfill Site No. 3 and flows northeast before draining into Door Creek, eventually reaching Lake Kegonsa. Wetlands and several small unnamed lakes exist in the watershed area. Most of the wetlands are associated with creeks where topography is lowest. However, many small, isolated wetlands are present in topographic lows across the area due to the hummocky terrain. Lake Monona, Lake Waubesa and Lake Kegonsa located to the west and south of the Yahara Hills Golf Course, are the largest lakes in the surrounding area. Both Lake Monona and Lake Wabesa have an elevation of approximately 845 ft above M.S.L and Lake Kegonsa has an elevation of approximately 843 ft above M.S.L. Surface water features in the vicinity of the golf course area can be seen on Figures 1, 1A and 3.

4.3 GEOLOGY

The region near the proposed Dane County Landfill Site No. 3 contains Ordovician Dolomite, Cambrian Sandstone and Pleistocene to Holocene sediment of glacial origin. The rocks and sediments range in age from about 541 million years old to modern (Mudrey, 1982).

4.3.1 Bedrock

Regional information suggests that the uppermost bedrock under a majority of the proposed site consists of Ordovician dolomite of the Prairie du Chien group, and in the northeastern portion of the proposed Dane County

Landfill Site No 3, Cambrian sandstone of the Trempealeau, Tunnel City, and Elk Mound groups (Figure 10). Logs from wells and borings drilled at the proposed Dane County Landfill Site No. 3 indicate competent dolomitic bedrock occurs at depths ranging from 18 to greater than 60 feet below ground surface (bgs), where encountered (Tetra Tech, 2022). The dolomitic rock is thickest (over 400 feet) to the northwest of the proposed Dane County Landfill Site No. 3 and thins to a few feet to the southeast of the proposed Dane County Landfill Site No. 3. Generally, the dolomite is underlain by shale and/or sandstone, based on the available well log information. Wells drilled at the Dane County Landfill Site No. 2 (Rodefeld), located north of USH 12 & 18, encountered bedrock at depths ranging from 70 to 195 feet bgs.

In the area of the proposed Dane County Landfill Site No. 3, there is also a fault complex, informally called the "Yahara Hills Complex", where the disturbed area is subdivided into discrete blocks separated by normal faults. A report titled “Geologic Structure in the Yahara Hills Golf Course Area in Southeast Madison, Wisconsin” by P. G. Olcott was published in 1968. The study and subsequent report stemmed from abnormalities observed during water supply well installations by personnel from the Wisconsin Geologic Survey that indicated the presence of a relatively complex fault system in the bedrock. This preliminary report presented an interpretation of the fault complex and its effects on hydrology in southeast Madison and points out locations of suspected faults in the area. The report described the potential implications it could have on groundwater movement but clearly states further exploration (geophysical survey and/or drilling program) is warranted for an accurate description of the geology of the area. There is no evidence of faults in Wisconsin that are known to have had displacements since the Holocene time.

An additional geotechnical and hydrogeologic investigation in and around the proposed footprint is planned to commence in late 2022 or early 2023. The investigation will provide additional information to further define the subsurface conditions in the proposed landfill area.

4.3.2 Glacial Deposits

The proposed Dane County Landfill Site No. 3. area is underlain by a relatively thin sequence of unconsolidated glacial drift of the Horicon Formation deposited over dolomite bedrock of Ordovician age. This sequence thickens to the west. The Horicon Formation generally consists of brown sandy till, but also includes sand and gravel deposited by glacial meltwater and clay, silt and sand deposited in glacial lakes. This till was deposited by the Wisconsin Valley Lobe during the Wisconsin Stage of continental glaciations. On-site well and boring logs encountered glacial material noted as clay, sand and gravel, and drift that extend to 60 feet bgs. The regional surficial or glacial geology is shown on Figure 11. The area to the west of proposed Dane County Landfill Site No. 3 was formerly the bed of a large proglacial lake called Glacial Lake Yahara (Mickelson, 1983) and contains lake sediments.

4.3.3 Soils

The mapped soils in the proposed Dane County Landfill Site No. 3 footprint and surrounding area are shown on Figure 12. Development and construction of the existing Yahara Hills Golf Course included substantial regrading of the historical topography and has subsequently impacted the soils on the site. A brief description of the soils from the USDA soil survey is provided below and more detail can be found in Appendix G:

- Dodge silt loam (DnB), 2 to 6 percent slopes, not hydric, well drained, and prime farmland. Most commonly found on drumlins and is formed from loess overlying calcareous loamy glacial till.
- Virgil silt loam (VwA), 6 to 12 percent slopes, not hydric, well drained and farmland of statewide importance. Most commonly found on moraines and is formed from loess overlying loamy glacial till.
- Orion silt loam, (Os), 0 to 2 percent slopes, hydric, poorly drained, and prime farmland if drained. Most commonly found on floodplains and is formed from silty alluvium.
- McHenry silt loam (MdC2), 6 to 12 percent slopes, not hydric, well drained, and farmland of statewide importance. Most commonly found on moraines and is formed from loess overlying loamy glacial till.

- Saint Charles silt loam (ScB), 2 to 6 percent slopes, not hydric, well drained, and prime farmland. Most commonly found on till plains and is formed from loess overlying loamy glacial till.
- Kidder loam (KdD2), 12 to 20 percent slopes, not hydric, well drained, and not prime farmland. Most commonly found on moraines and is formed from loamy till.

4.4 HYDROGEOLOGY

The elevation of the regional water table in this area is approximately 880 feet above M.S.L. (Figure 13). In the area of the proposed landfill, the groundwater system consists of two distinct hydrostratigraphic units, a bedrock aquifer, and the surficial glacial deposits. According to regional sources, the flow direction in the bedrock aquifer is generally to the southwest toward the Yahara River basin. The uppermost hydrostratigraphic unit in the vicinity of the proposed site generally occurs within the till and outwash glacial deposits. However, where bedrock is shallower, the first occurrence of groundwater may be in the upper bedrock unit. In general, based on observed conditions at a limited amount of monitoring wells, it is suspected shallow groundwater flow is to the northwest in the northern portion of the proposed landfill property and the groundwater flows to the southeast in the southern portion of the proposed landfill property. A groundwater model performed by the Wisconsin Geological and Natural History Survey (WGHNS), that simulates 2010 shallow and deep groundwater flow conditions in Dane County, indicates groundwater flow is primarily to the west/southwest near the proposed Dane County Landfill Site No. 3 (Parsens, 2016).

Three major aquifers and one aquitard exist in Dane County. The aquifers consist of the Mount Simon (Cambrian sandstone), the Upper Paleozoic, and unlithified aquifers, while the aquitard is the Eau Claire Formation. The unlithified sand and gravel aquifers can yield economically useful quantities of water in some areas of Dane County. However, the Cambrian sandstone units are considered to be the principal aquifer in Dane County (Bradbury et al, 1999). Municipal and production water supply wells in the Madison area primarily draw water from the Cambrian sandstone.

Additional analysis of the subsurface conditions is planned to commence in late 2022 or early 2023 within and around the proposed limits of waste. The data and information collected during the investigation will further define the groundwater movement and potential groundwater divides within the study area.

4.5 WATER QUALITY

4.5.1 Groundwater Quality

According to the watershed detail for the Yahara River and Lake Monona Watershed, published on the WDNR website (https://dnr.wi.gov/water/watershedDetail.aspx?key=924664), the principal groundwater concern is the decrease in groundwater levels due to urban pumping and increasing numbers of impervious surfaces that limit surface water infiltration. Both changes affect base flow and thus water temperature and quality in streams. In addition, elevated chloride and sodium levels in groundwater exist due to winter road salting. According to Geology and Ground-Water Resources of Dane County, Wisconsin report by Denzel Cline in 1965, Dane County groundwater is naturally high in calcium, magnesium and bicarbonate. Average hardness is 326 parts per million (ppm) and average dissolved solids is 348 ppm. Iron concentrations in the county range from less than 0.05 to 6.6 ppm with higher concentrations tending to occur in glacial deposits and poorly drained areas. Other constituents noted in the groundwater at insignificant levels include silicon (Si), manganese (Mn), sodium (Na), potassium (K), sulfate (SO4), chlorine (Cl), nitrite (NO2), nitrate (NO3), fluorine (F), and hydrogen sulfide (H2S). Although very hard, most of the groundwater in Dane County is in good chemical quality for most applications.

4.5.2 Surface Water Quality

According to the same WDNR watershed detail, the surface water quality in the Yahara River and Lake Monona Watershed is characterized as 70% urban; meaning the water quality is impacted by urban runoff such as nutrients, solids, organic contaminants, heavy metals, oil and grease, etc. The biggest concerns are nutrients, sediment, and contaminants attached to the sediment. Chloride and sodium levels in surface water are elevated due to winter road salting. According to the WDNR website (https://dnr.wi.gov/water/waterSearch.aspx), the streams that eventually drain the proposed Dane County Landfill Site No. 3 (unnamed, WBIC 804100 and Door Creek, WBIC 802800) are listed as impaired due to degraded biological community and unknown impairment, respectively. Total phosphorus is a known pollutant for both streams.

5.0 PROPOSED CONCEPTUAL DESIGN

The proposed Dane County Landfill Site No. 3 solid waste footprint will encompass approximately 83.1-acres of horizontal area (Figure 2) within the eastern portion of the existing Yahara Hills Golf Course. Primary access to the proposed Dane County Landfill Site No. 3 is anticipated to be from USH 12 & 18 to CTH AB, east of the proposed landfill or a service road north of the proposed landfill. However, access may be split between large haulers and residential customers. Under this scenario, large haulers may access the proposed landfill from the primary access directly off CTH AB while residential customers may use an entrance off of the extended Millpond service road as discussed in Section 3.4.

The design for the proposed Dane County Landfill Site No. 3 will be developed to provide efficient, environmentally sound, and cost-effective disposal for approximately 10.3 million cubic yards of waste, and approximately 14-15 years of site life based on estimated filling rates. Conceptual top of waste grades are shown on Figure 14. The proposed design will meet the requirements of NR 500 through 520, the WDNR permitting process review conditions, as well as site-specific conditions.

The proposed Dane County Landfill Site No. 3 will be area filled over a series of contiguous liner cells. The intermediate waste grades are proposed to be extended to a point 5% higher (measured by waste depth) than the conceptual final top of waste grades to allow for settlement prior to final cover placement. Prior to placing final cover, waste volume will be verified and established as to not exceed the maximum waste capacity of 10.3 million cubic yards. The proposed landfill will include environmental monitoring, a landfill gas conveyance and control system and surface water management features.

The proposed Dane County Landfill Site No. 3 will be sized to accept the projected annual waste tonnages for an approximate 14-15 year period, with acceptance of waste anticipated to start in 2030. The criteria considered when determining the conceptual design of the proposed landfill include the following:

- Locational criteria setbacks specified in NR 504.04(3), except as noted in Section 2.1;
- Subbase and base grades established to maintain a separation to the seasonally high groundwater table and/or competent bedrock surface with a gradient control system underlying the composite liner system as noted in Section 1.2;
- Optimum use of available land and soil balance across the property, while also meeting requirements specified in NR 504;
- Maximum elevation based on landfill slope requirements specified in NR 504;
- Waste grades that will provide the greatest practicable volume for waste, while also meeting requirements specified in NR 504;
- Final cover system design in accordance with requirements specified in NR 504.07;
- Visual screening to be implemented between the proposed landfill and surrounding area as outlined in Section 2.1.4; and
- Revegetation in accordance with requirements specified in NR 504.07(8).

The proposed Dane County Landfill Site No. 3 will be located and designed to minimize the impacts to adjacent properties. Preliminary design concepts to minimize potential impacts that may be identified during subsequent investigations and analysis will be presented in the FR. Sedimentation basins, diversions berms and/or perimeter drainage swales will be constructed to contain surface water runoff from the proposed development and to release collected surface water in a controlled manner.

6.0 LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone Environmental Group, LLC shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

7.0 REFERENCES

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FIGURES

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback

One Mile Setback

1,000-Ft Setback

Hope

MCFARLAND

Madison Media Institute

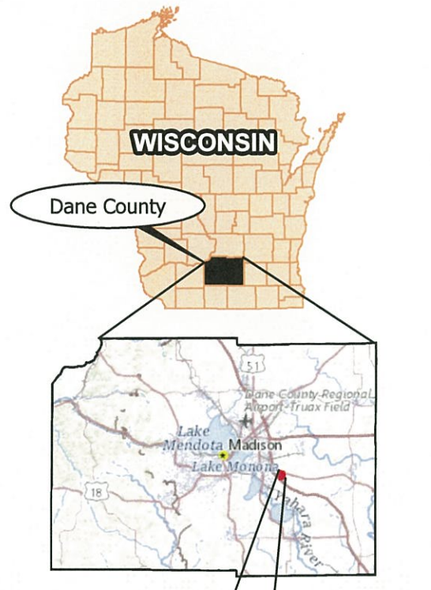
Hope Evangelical Cem

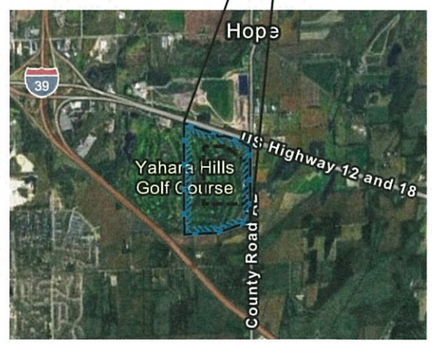
Hope Cottage Grove Cem

McFarland Lutheran Cem

McFarland Lutheran Cem East

Private Cem





SITE LOCATOR

BASEMAP SOURCE:
USGS Topographic Quadrangles 7.5 Minute
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Series: Cottage Grove, WI (2022)

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

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FEET
1" = 2,000'

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DATE OF ISSUE 8/31/2022 DESIGNED BY SSW CHECKED BY TD DRAWN BY SSW APPROVED BY TD

TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

SITE LOCATION MAP

FIGURE NO. 1

PROJECT NO. 4221302

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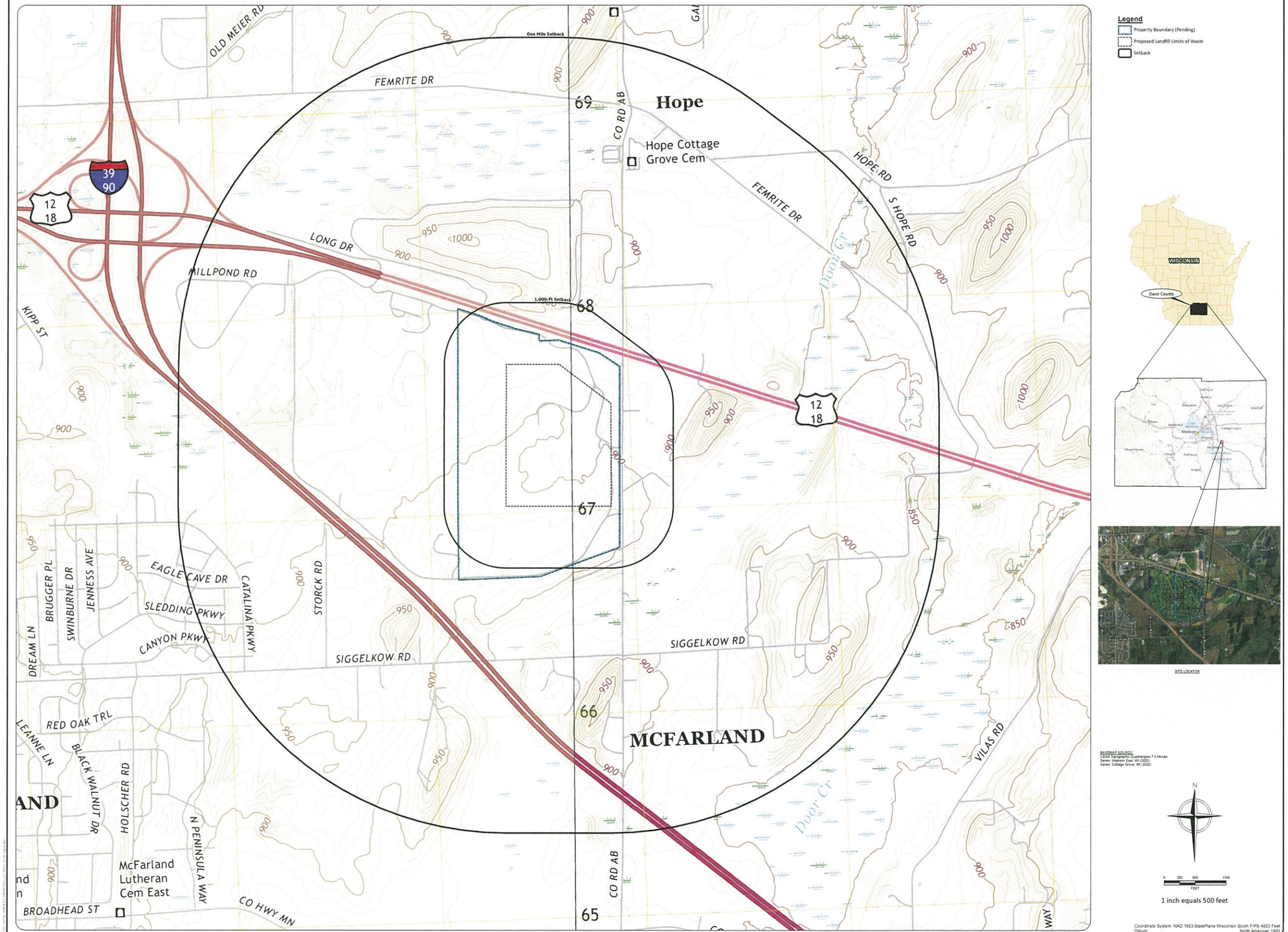

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback

SITE LOCATOR

BASEMAP SOURCE:
USGS Topographic Quadrangles 7.5 Minute
Series: Madison East, WI (2022)
Series: Cottage Grove, WI (2022)

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FEET

1 inch equals 500 feet

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

TETRA TECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

SITE LOCATION MAP

SHEET NO.
1A

PROJECT NO.
4221302

N 382,000 | N 381,500 | N 381,000 | N 380,500 | N 380,000 | N 379,500 | N 379,000 | N 378,500 | N 378,000 | N 377,500 | N 377,000 | N 376,500 | N 376,000 | N 375,500 | N 375,000

E 2171000 | E 2170500 | E 2170000 | E 2169500 | E 2169000 | E 2168500 | E 2168000 | E 2167500 | E 2167000 | E 2166500 | E 2166000

UNNAMED STREAM (WBIC 803000)

SEC 30 T7N R11E

SEC 31 T7N R11E

SEC 25 T7N R10E

SEC 36 T7N R10E

CTH AB

USH 12-18

M17AR M17BR M29 301A

M303AR YZ391 M23 MW-208RR M14B M14A M22 P119B WT119A WT206AR

DANE COUNTY LANDFILL SITE NO. 2 (RODEFELD)

PROPOSED WASTE FOOTPRINT (83.1 ACRES)

EXISTING MAINTENANCE BUILDINGS

UNNAMED POND (WBIC 5575561)

UNNAMED POND (WBIC 5575477)

UNNAMED POND (WBIC 5575502)

EXISTING YAHARA HILLS GOLF COURSE CLUB HOUSE

PARCEL NO. 251/0710-254-0099-7

PARCEL NO. 251/0710-361-0099-0

W-1 W-2 W-3 W-4 W-5 P-1

CP102 CP101 CP103 PW-E PW-D PW-C PW-A PW-B PW-49 PW-88

I-90 / I-39

LEGEND

- PROPERTY BOUNDARY (PENDING)
- SIXTEENTH SECTION LINE
- SEC 25 T7N R10E — SECTION-TOWNSHIP-RANGE DESIGNATION
- 920 — EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING BUILDING / STRUCTURE
- CP101 — EXISTING SURVEY CONTROL POINT
- PW-E — KNOWN YAHARA HILLS PRIVATE WELL, APPROXIMATE LOCATION
- ASSUMED OFFSITE PRIVATE WELL, APPROXIMATE LOCATION
- KNOWN PRIVATE WELL, APPROXIMATE LOCATION
- PW-49 — ABANDONED YAHARA HILLS PRIVATE WELL
- FIELD DELINEATED WETLANDS (SEE NOTE 4)
- DELINEATED WETLANDS (SEE NOTE 4)
- STREAM / SHORELINE LIMITS
- PROPOSED LIMITS OF WASTE
- APPROXIMATE LIMITS OF WEST 18 HOLE GOLF COURSE
- LIMITS OF GOLF COURSE LEASE BOUNDARY PER AGREEMENT BETWEEN DANE COUNTY AND CITY OF MADISON

NOTES:

1. TOPOGRAPHIC SURVEY OF THE DEVELOPMENT AREA TAKEN FROM THE WISCONSIN VIEW PORTAL LIDAR DATA, YEAR OF ACQUISITION: 2017. TOPOGRAPHIC SURVEY DATA PROVIDED BY STATE CARTOGRAPHER'S OFFICE.
2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM (NAD 83), US SURVEY FEET.
3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988. CONTOUR INTERVAL IS TWO FEET.
4. FIELD WETLAND DELINEATIONS PROVIDED BY TRC, DATED DECEMBER 2021, AND ADDITIONAL WETLAND BOUNDARIES TAKEN FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, BUREAU OF WATERSHED MANAGEMENT - WETLANDS SECTION, DATED JULY 28, 2021.
5. STREAM AND SHORELINE TAKEN FROM WDNR SURFACE WATER DATA VIEWER. STREAM AND SHORELINE TAKEN FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES DATA CURATOR, PUBLISHED AUGUST 9, 2017 AND UPDATED AUGUST 16, 2021. STREAM AND WATERBODY IDENTIFICATION (WBIC#) TAKEN FROM WDNR SURFACE WATER DATA VIEWER.

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SCALE IN FEET

1" 1/2" 0" 1"

File: X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING_Plan Set\09-DCL_ISR-S-EC.dwg Layout: 3 User: RANDY.NOLDEN Aug 31, 2022 - 2:17pm

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DATE OF ISSUE SEPT. 2022

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TETRA TECH

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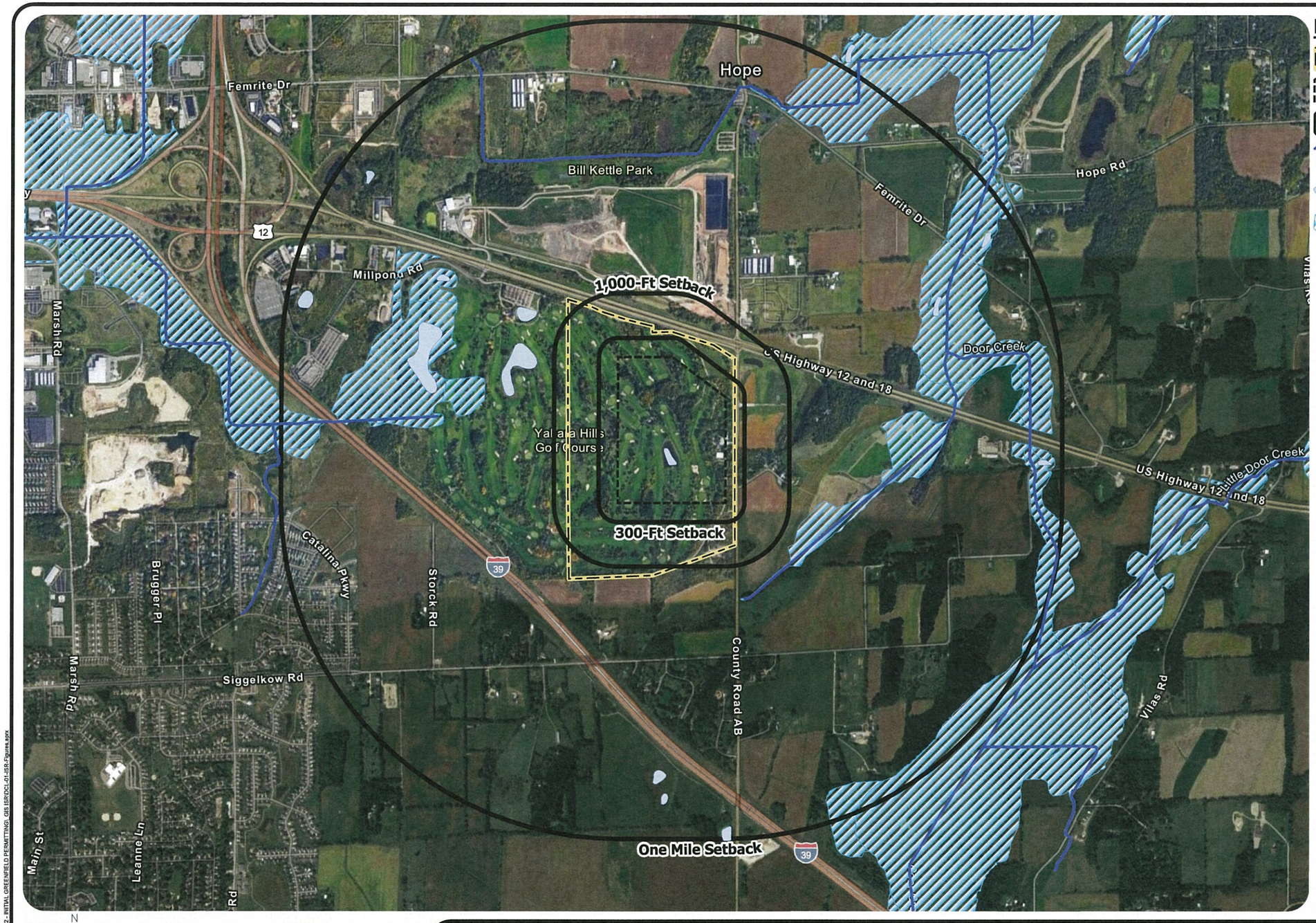
DANE COUNTY WASTE & RENEWABLES DEPARTMENT
PROPOSED DANE COUNTY LANDFILL SITE NO. 3
CITY OF MADISON, DANE COUNTY, WISCONSIN

INITIAL SITE REPORT
EXISTING CONDITIONS

FIGURE NO. **2**

PROJECT NO. 4221302



Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback
- Stream
- Waterbody
- FEMA 100-Year Floodplain

NOTES:

1. Waterbodies and Streams from US Geology Survey, National Hydrography Dataset, Wisconsin, 2022.
2. Floodplain sources is FEMA National Flood Hazard Layer.
3. Aerial Imagery Source is Google Imagery, 2022..

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

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FEET

1" = 1,600'

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DATE OF ISSUE 8/31/2022 | DESIGNED BY SSW | DRAWN BY SSW | CHECKED BY TD | APPROVED BY TD

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PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

FLOODPLAIN AND SURFACE WATER FEATURES MAP

FIGURE NO. **3**

PROJECT NO. 4221302

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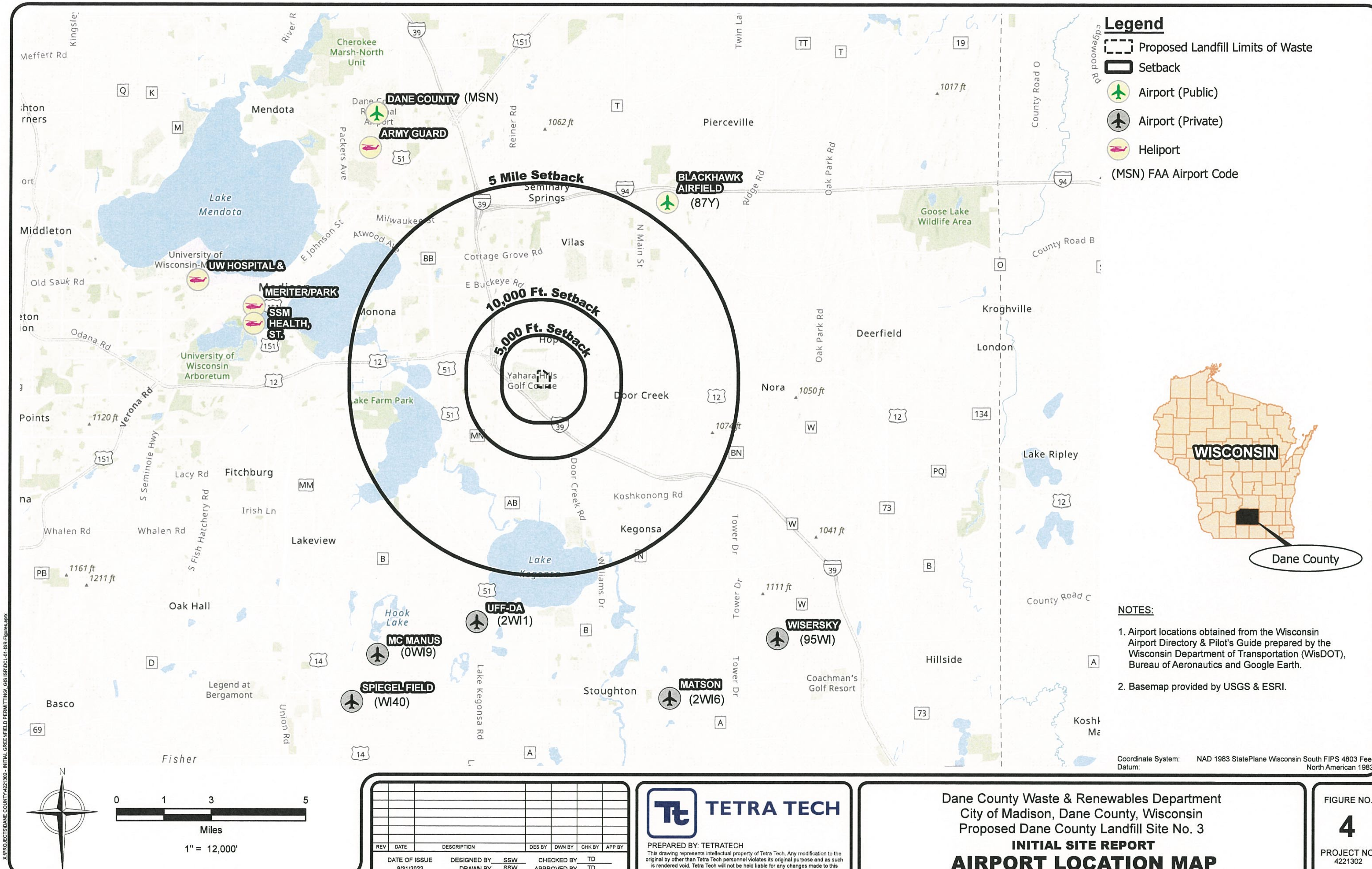

Legend
Proposed Landfill Limits of Waste
Setback
Airport (Public)
Airport (Private)
Heliport
(MSN) FAA Airport Code
5 Mile Setback
10,000 Ft. Setback
5,000 Ft. Setback
DANE COUNTY (MSN)
ARMY GUARD
BLACKHAWK AIRFIELD (87Y)
UW HOSPITAL &
MERITER/PARK
SSM HEALTH, ST.
UFF-DA (2WI1)
MC MANUS (0WI9)
SPIEGEL FIELD (WI40)
MATSON (2WI6)
WISERSKY (95WI)
Lake Mendota
Middleton
Mendota
Monona
Fitchburg
Lakeview
Oak Hall
Basco
Fisher
Cottage Grove Rd
Vilas
Seminary Springs
Pierceville
Yahara Hills Golf Course
Door Creek
Kegonsa
Nora
Deerfield
Kroghville
London
Lake Ripley
Hillside
Stoughton
Coachman's Golf Resort
Goose Lake Wildlife Area
University of Wisconsin Arboretum
Lake Farm Park
Hook Lake
Legend at Bergamont
Cherokee Marsh-North Unit
WISCONSIN
Dane County
NOTES:
1. Airport locations obtained from the Wisconsin Airport Directory & Pilot's Guide prepared by the Wisconsin Department of Transportation (WisDOT), Bureau of Aeronautics and Google Earth.
2. Basemap provided by USGS & ESRI.
Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983
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Miles
1" = 12,000'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 8/31/2022 DESIGNED BY SSW DRAWN BY SSW CHECKED BY TD APPROVED BY TD

TETRA TECH

PREPARED BY: TETRATECH

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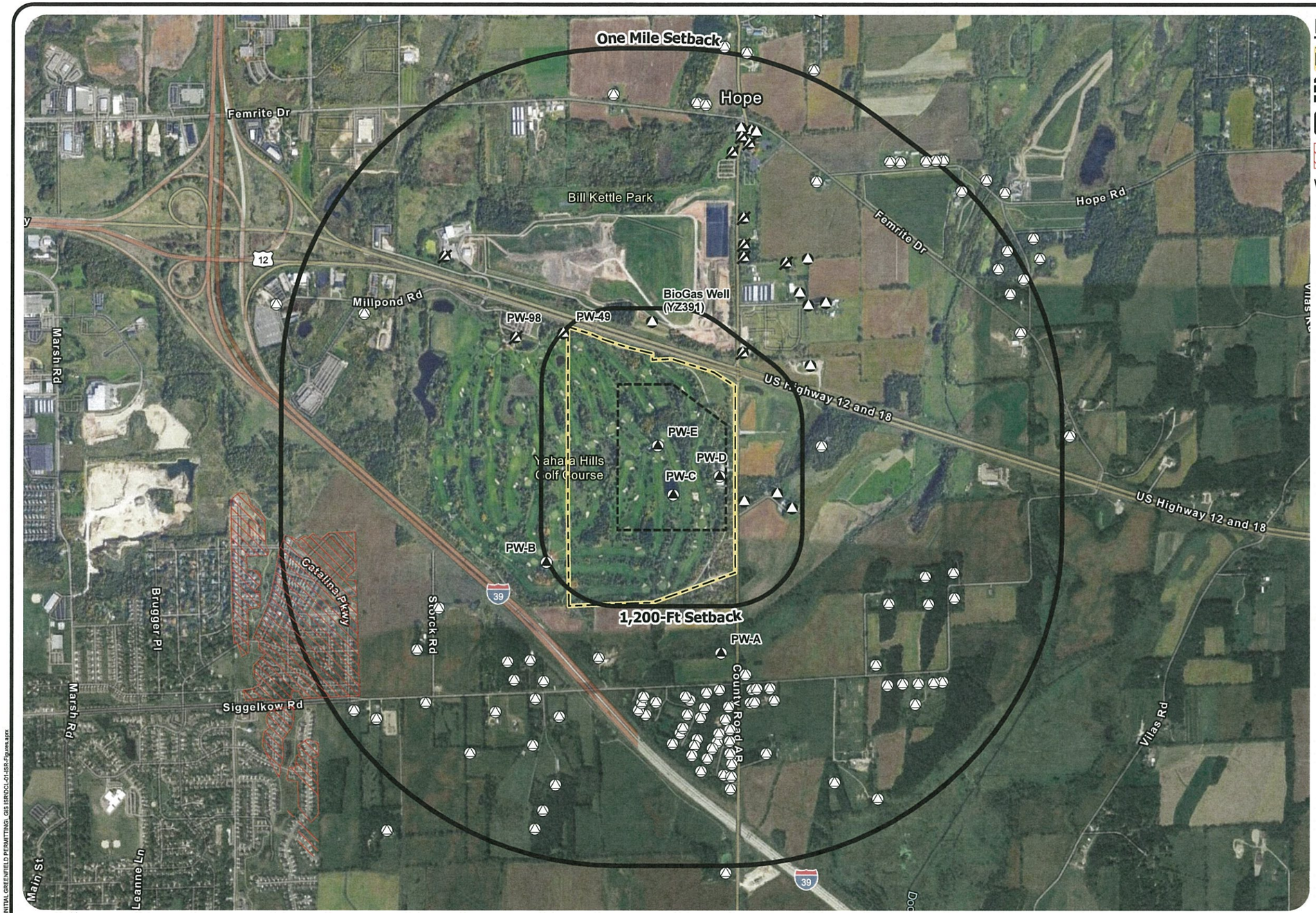
Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

AIRPORT LOCATION MAP

FIGURE NO. 4

PROJECT NO. 4221302



Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback
- Residential Developement on City Water Supply

Water Wells

- Assumed Offsite Private Well, Approximate Location
- Known Offsite Private Well, Approximate Location
- Known Yahara Hills Private Well, Approximate Location
- Abandoned Private Well

NOTES:

1. The assumed offsite private water supply well locations are based on a review of aerials for potential residences/structures and also data points provided in the WDNR and WGNHS databases.
2. The abandoned and known offsite private water supply well locations are based on private well locations provided on the Existing Conditions Map (Sheet 2) of the Dane County Landfill Site No. 2 Feasibility Report – Eastern Vertical Expansion, dated 5/31/2021.
3. Aerial Imagery Source is Google Imagery, 2022.
4. PW-B is approximately 1,220 feet from the proposed limits of waste, at its nearest point.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 500 1000 2000

FEET

1" = 1,600'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 8/31/2022 | DESIGNED BY SSW | DRAWN BY SSW | CHECKED BY TD | APPROVED BY TD

TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

WATER SUPPLY WELL LOCATION MAP

FIGURE NO. **5**

PROJECT NO. 4221302

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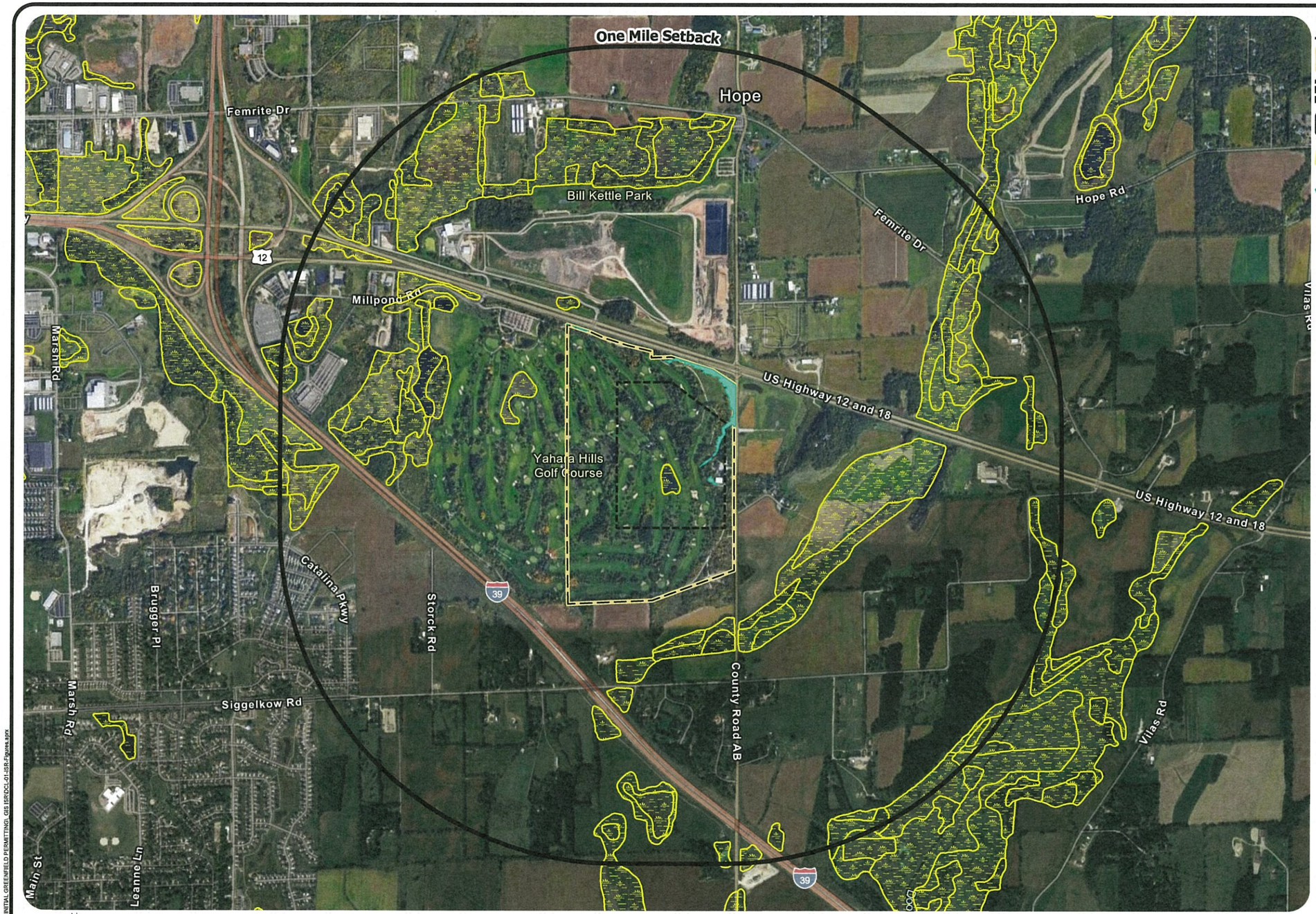

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback
- Wetlands, Wisconsin DNR
- Field Delineated Wetland (See Note 2)

NOTES:

1. Wisconsin Department of Natural Resources, Bureau of Watershed Management - Wetlands Section, July 28, 2021.
2. TRC Environmental Corporation performed a wetland study of Parcel 251/0710-361-0099-0 in November 2021 and Heartland Ecological Group performed a wetland study of Parcel 251/0710-254-0099-7 in April 2022. TRC prepared a Wetland and Waterway Delineation Report dated December 8, 2021 which included the delineated wetlands shown on this figure. Heartland Ecological Group determined no wetlands were present within the study area in a report dated May 23, 2022.
3. See Figure 2 of the Initial Site Report or Exhibit A provided in the TRC Wetland and Waterway Delineation Report for delineated wetland IDs.
4. Basemap imagery from Google Earth 2022.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 500 1000 2000

FEET

1" = 1,600'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

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TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

WETLAND INVENTORY MAP

FIGURE NO. **6**

PROJECT NO. 4221302

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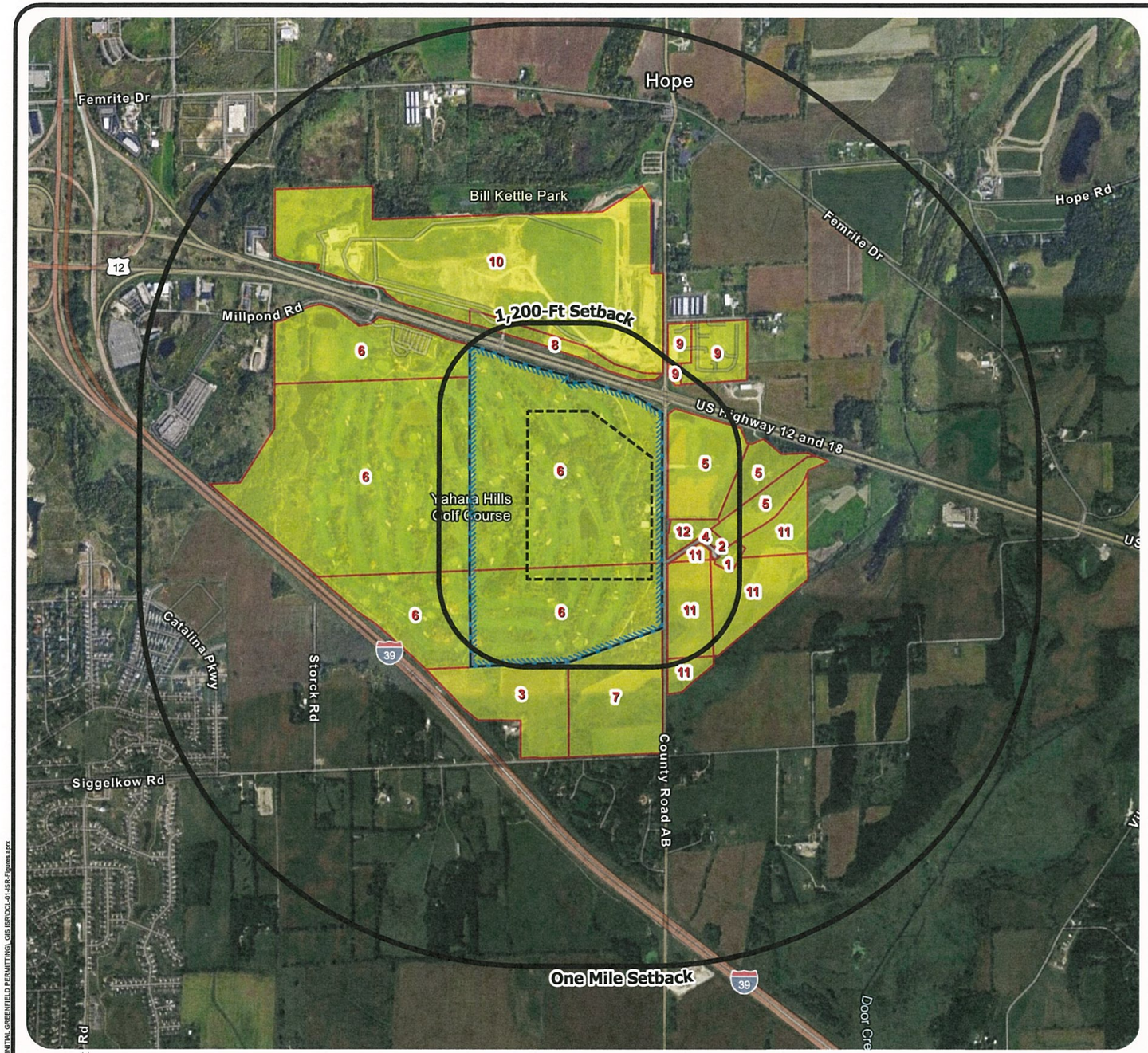

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback
- 13 — Properties within 1,200-ft of proposed limits of waste and/or contiguous with the proposed property boundary

MAPID	Owner	Mailing Address	City, State
1	AMY M FLUKE	3104 HOPE HOLLOW TRL	MCFARLAND WI 53558
2	AMY MARLENE FLUKE	3098 HOPE HOLLOW TRL	MCFARLAND WI 53558
3	ARLEN M ALGREM & CAROL ALGREM	5034 HOUGH ST	MCFARLAND WI 53558
4	BRIAN D ROGERS	3108 HOPE HOLLOW TRL	MCFARLAND WI 53558
5	C & L INVESTMENT PARTNERSHIP	W1085 COUNTY HIGHWAY K	COLUMBUS WI 53925
6	CITY OF MADISON PARKS YAHARA HILLS GOLF COURSE	210 MLK JR BLVD RM 104	MADISON WI 53703-3342
7	CITY OF MADISON PARKS YAHARA HILLS PARK SOUTH	210 MLK JR BLVD RM 104	MADISON WI 53703-3342
8	CITY OF MADISON STREETS YAHARA WOOD PROCESS SITE	4502 SYCAMORE AVE	MADISON WI 53704-6461
9	DANE COUNTY	RM 114 210 MARTIN LUTHER KING JR BLVD	MADISON WI 53703-3342
10	DANE COUNTY PUBLIC WORKS RODEFELD LANDFILL	1919 ALLIANT ENGY CTR WAY	MADISON WI 53713-1400
11	LARRY G SKAAR	4374 SECRETARIAT CT	COTTAGE GROVE WI 53527
12	VERNON J RATHERT	3124 HOPE HOLLOW TRL	MCFARLAND WI 53558

NOTES:

1. Parcel Source is the Dane County GIS (Geographic Information System) and LIO (Land Information Office) services, Open Data Portal, Dated April 21, 2022.
2. The unassigned areas around US Highway 12 and 18 and County Road AB are rights-of-way owned by the State of Wisconsin (WisDOT).
3. Current ownership verified in Dane County DCiMap Viewer (June 2022).
4. Aerial Imagery Source is Google Imagery, 2022.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 500 1000 2000
FEET
1" = 1,600'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

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TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
INITIAL SITE REPORT
PROPERTY OWNERSHIP MAP

FIGURE NO. **7**
PROJECT NO. 4221302

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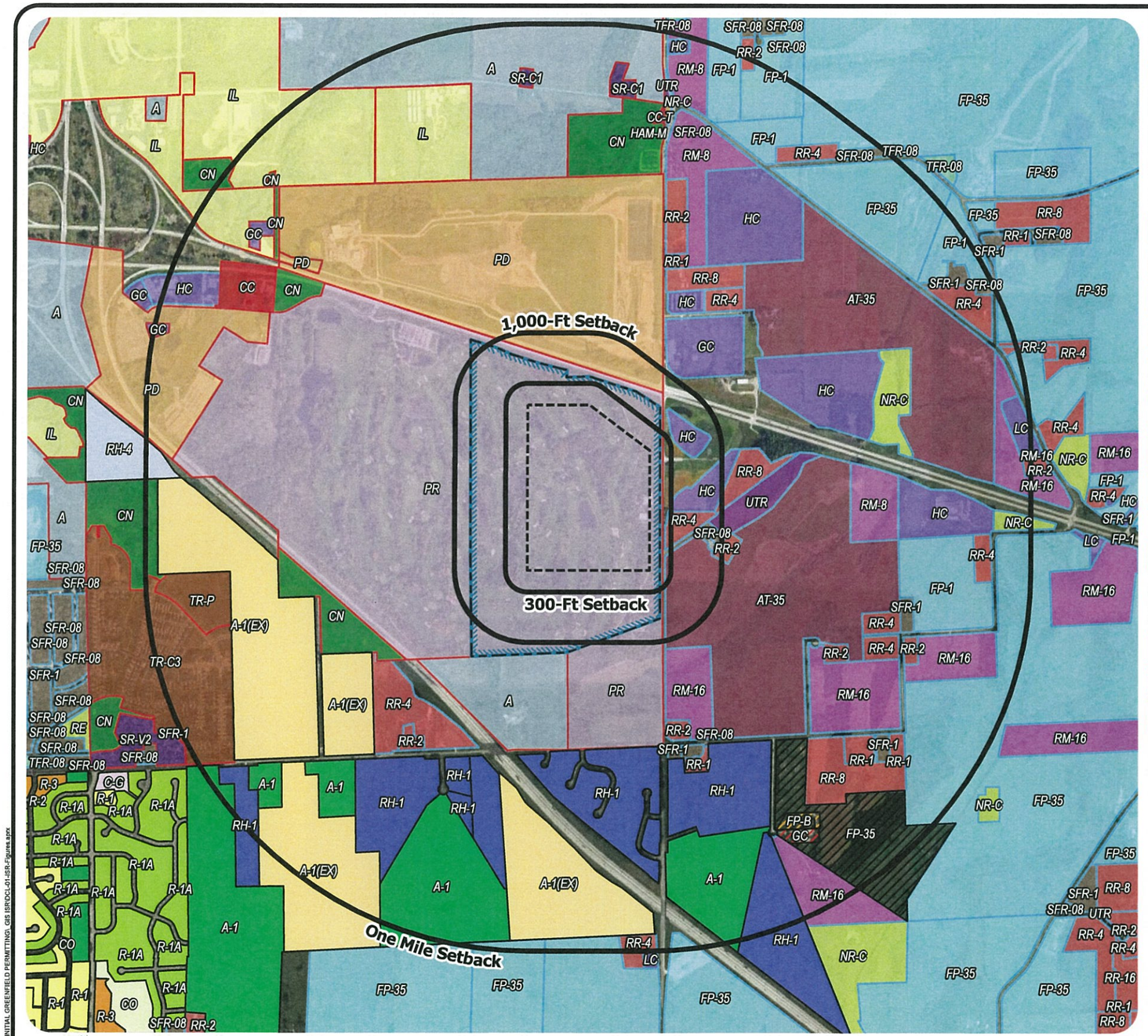

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback

County of Dane, Rural Zoning

Zoning Code

- Transitional Districts (AT-35 ST-5 AT-B)
- Farmland Preservation (FP-1 FP-35 FP-B)
- Commercial (GC HC LC)
- Hamlet District (HAM-M HAM-R)
- Natural Resource and Recreation (RE NR-C)
- Rural, Mixed Use (RM-8 RM-16)
- Residential, Rural (RR-1 RR-2 RR-4 RR-8 RR-16)
- Residential, Single Family (SFR-1 SFR-2 SFR-08)
- Residential, Two Family (TFR-08)
- Special Use (UTR)

City of Madison, Zoning Districts

Zoning Code

- Agricultural (A)
- Conservancy (CN)
- Mixed Use and Commercial (LMX NMX TSS MXC CC-T CC)
- Planned Development (PD)
- Parks and Recreation (PR)
- Suburban Residential (SR-C1 SR-C2 SR-C3 SR-V1 SR-V2)
- Employment District (TE SE SEC EC IL IG)
- Traditional Residential (TR-C1 TR-C2 TR-C3 TR-C4 TR-P TR-R TR-U1 TR-U2 TR-V1 TR-V2)

Village of McFarland Zoning

Zoning Code

- A-1 (Exclusive Agriculture Dane County)
- A-1 (Agriculture-Transition Village)
- CO (Conservancy)
- R-1 (Single Family Residence)
- R-1A (Single Family Residence)
- R-2 (Single & Two-Family Residence)
- R-3 (General Residence)
- RH-1 (Rural Homes)
- RH-4 (Dane County)
- C-G (General Commercial)
- GC (Dane County)
- FP-35 (Dane County)
- FP-B (Dane County)

NOTES:

1. City of Madison Zoning Districts data from City of Madison Department of Planning and Community and Economic, Development, Planning Division City of Madison Department of Planning and Community and Economic, Development, Building Inspection, Dated September 7, 2017.

https://data-cityofmadison.opendata.arcgis.com/datasets/cityofmadison::zoning-districts/about

2. Dane County Rural Zoning data from the Dane County Land Information Office, Dated December 27, 2021.

https://gis-countyofdane.opendata.arcgis.com/datasets/countyofdane::rural-zoning/about

3. Village of McFarland zoning layer is maintained by Dane County. Contact Aaron Krebs for updates or additional information (AaronK@countyofdane.com). Last update received from Aaron on 7-27-2018.

4. The unassigned areas around US Highway 12 and 18 and County Road AB are rights-of-way owned by the State of Wisconsin (WisDOT).

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 500 1000 2000

FEET

1" = 1,600'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 8/31/2022 | DESIGNED BY SSW | DRAWN BY SSW | CHECKED BY TD | APPROVED BY TD

TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
INITIAL SITE REPORT
ZONING MAP

FIGURE NO. **8**

PROJECT NO. 4221302

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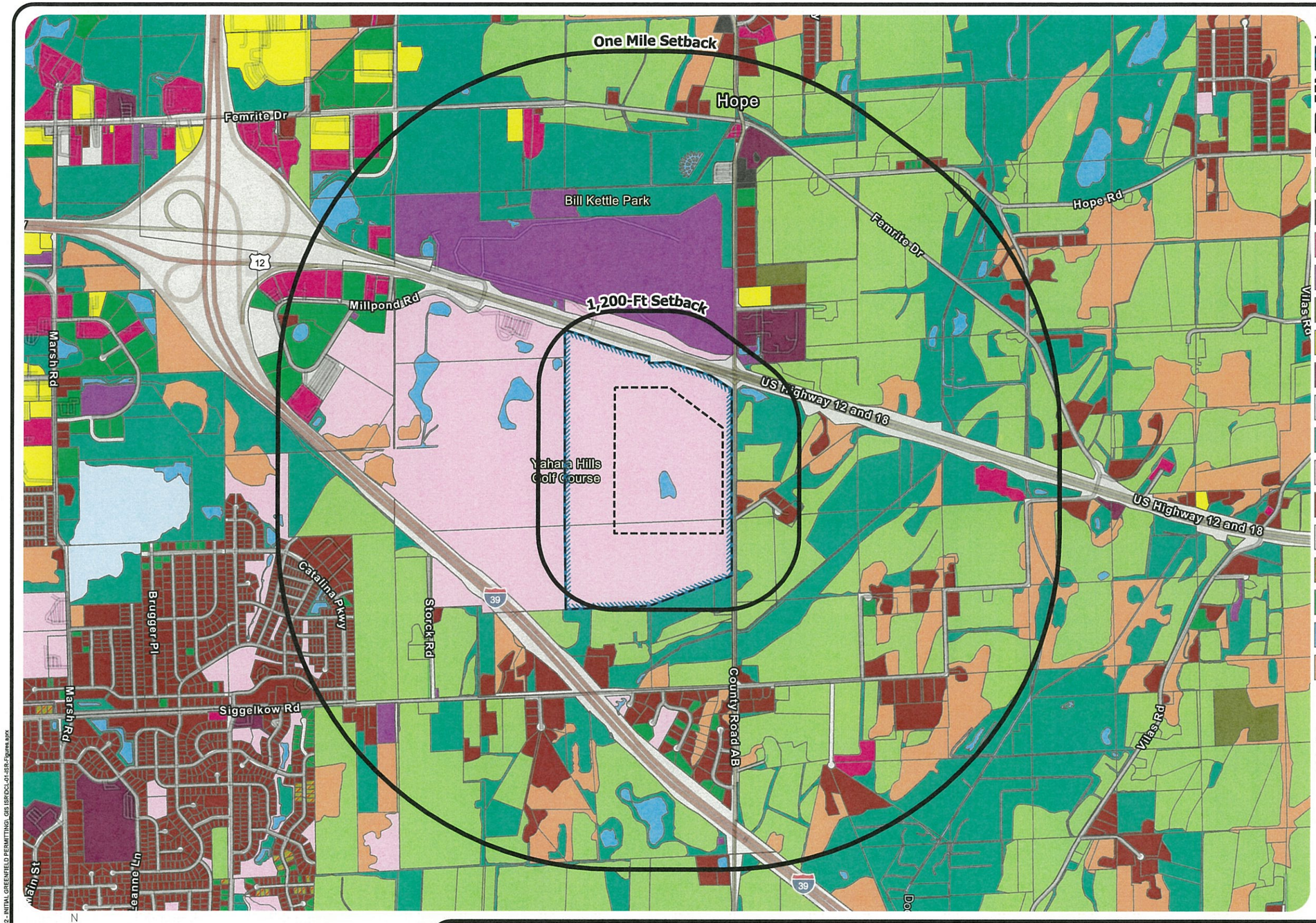

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback

Land Use

- Agriculture
- Cemetery
- Commercial
- Communication/Utilities
- Fallow Farm Field
- Industrial
- Institutional/Governmental
- Mineral Extraction
- Open Land
- Recreation
- Residential
- Transportation
- Under Construction
- Vacant Subdivided Land
- Water
- Woodlands

NOTES:

1. Land Use data from Dane County Land Information Office, Dated October 12, 2020. https://gis-countyofdane.opendata.arcgis.com/documents/countyofdane::land-use/explore

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 500 1000 2000

FEET

1" = 1,600'

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PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

LAND USE MAP

FIGURE NO. **9**

PROJECT NO. 4221302

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Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste

BEDROCK GEOLOGIC UNITS

Cambrian System

- Cu — Sandstone with some dolomite and shale, undivided; includes Trempealeau, Tunnel City, and Elk Mound Groups.

Ordovician System

- Os — Sinnipee Group - dolomite with some limestone and shale; includes Galena, Decorah, and Platteville Formations.
- Oa — Ancel Group - orthoquartzitic sandstone with minor limestone, shale, and conglomerate; includes Glenwood and St. Peter Formations.
- Opc — Prairie du Chien Group - dolomite with some sandstone and shale; includes Shakopee and Oneota Formations.

- Fault Line
- Waterbody

NOTES:

1. Geology from "Bedrock Geologic Map of Wisconsin", WGNHS, 1982.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 5000 10000 20000

FEET

1" = 10,000'

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DATE OF ISSUE 8/31/2022 DESIGNED BY SSW DRAWN BY SSW CHECKED BY TD APPROVED BY TD

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PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

REGIONAL BEDROCK GEOLOGY

FIGURE NO. **10**

PROJECT NO. 4221302

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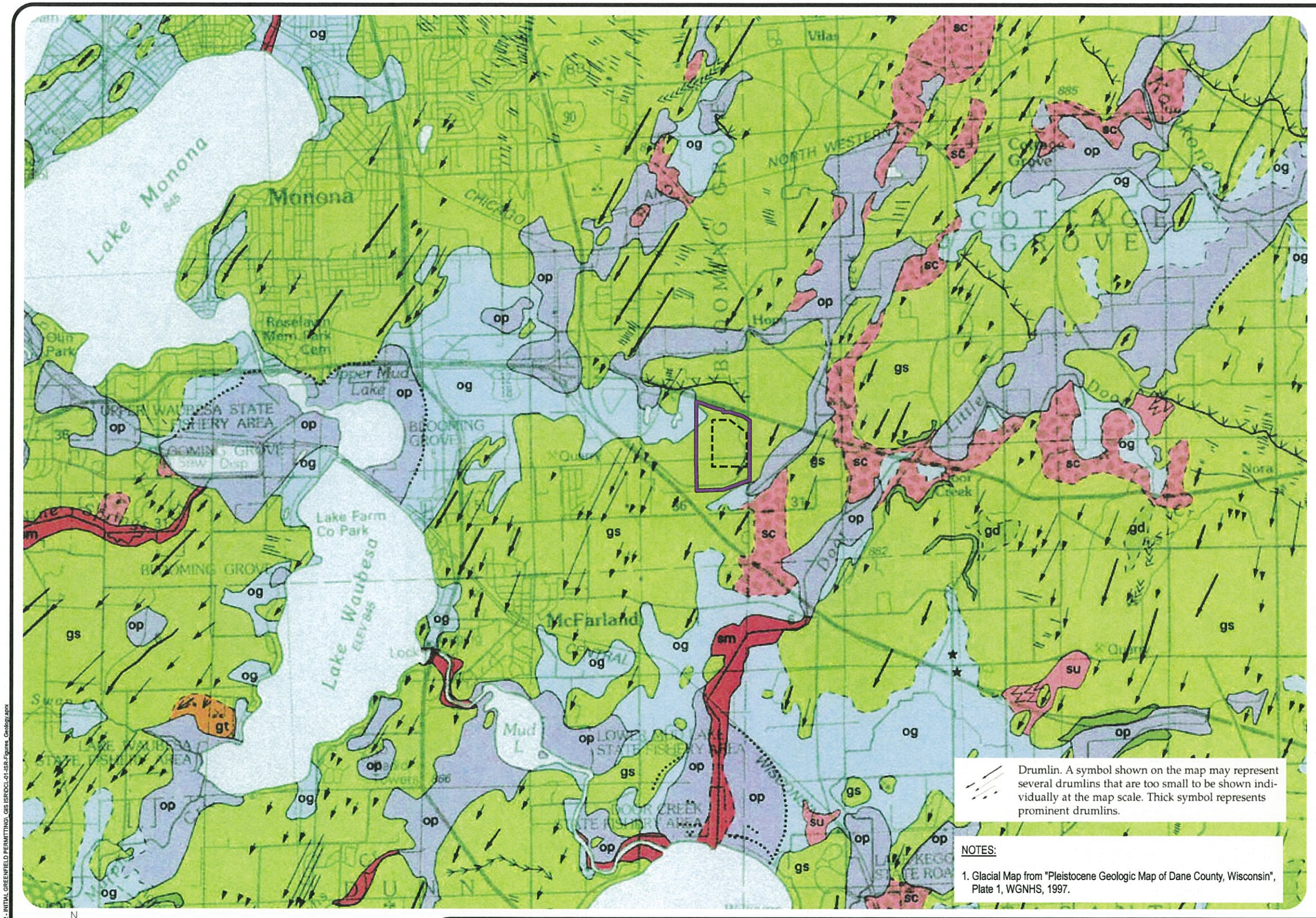

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste

- w — Windblown sand
- sm, sp — Nonglacial-stream sediment
- su, sc, se, so — Meltwater-stream sediment
- og, op, oe — Offshore lake sediment
- gs, gt, gh, gt, gb, gp — Till
- gd — Glacially scoured dolomite plateaus
- ge — Steep eroded slopes in glaciated areas

Drumlin. A symbol shown on the map may represent several drumlins that are too small to be shown individually at the map scale. Thick symbol represents prominent drumlins.

NOTES:

1. Glacial Map from "Pleistocene Geologic Map of Dane County, Wisconsin", Plate 1, WGNHS, 1997.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 2500 5000 10000

FEET

1" = 5,000'

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TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
INITIAL SITE REPORT
REGIONAL GLACIAL GEOLOGY

FIGURE NO. **11**

PROJECT NO. 4221302

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Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste
- Setback

NRCS Soils Data

MUSYM,muname

- 1180D2,Newglarus-Dunbarton silt loams, 12 to 20 percent slopes, moderately eroded
- Ad,Adrian muck, 0 to 2 percent slopes
- BbA,Batavia silt loam, gravelly substratum, 0 to 2 percent slopes
- BbB,Batavia silt loam, gravelly substratum, 2 to 6 percent slopes
- Co,Colwood silt loam, 0 to 2 percent slopes
- Cu,Cut and fill land
- DnB,Dodge silt loam, 2 to 6 percent slopes
- DnC2,Dodge silt loam, 6 to 12 percent slopes, eroded
- DrD2,Dresden loam, 12 to 20 percent slopes, eroded
- DsB,Dresden silt loam, 2 to 6 percent slopes
- DsC2,Dresden silt loam, 6 to 12 percent slopes, eroded
- Ev,Elvers silt loam
- GP,Gravel pit
- Gn,Granby loamy sand
- HaA,Hayfield silt loam, 0 to 3 percent slopes
- Ho,Houghton muck
- KcB,Kickapoo fine sandy loam, 2 to 6 percent slopes
- KdC2,Kidder loam, 6 to 12 percent slopes, eroded
- KdD2,Kidder loam, 12 to 20 percent slopes, eroded
- KeA,Kegonsa silt loam, 0 to 2 percent slopes
- KeB,Kegonsa silt loam, 2 to 6 percent slopes
- KrD2,Kidder soils, 10 to 20 percent slopes, eroded
- KrE2,Kidder soils, 20 to 35 percent slopes, eroded
- LDF,Landfill
- Mc,Marshan silt loam
- MdB,McHenry silt loam, 2 to 6 percent slopes
- MdC2,McHenry silt loam, 6 to 12 percent slopes, eroded
- MdD2,McHenry silt loam, 12 to 20 percent slopes, eroded
- MhC2,Military loam, 6 to 12 percent slopes, eroded
- MhD2,Military loam, 12 to 20 percent slopes, eroded
- Os,Orion silt loam, wet
- Ot,Otter silt loam
- Pa,Palms muck, 0 to 2 percent slopes
- PeC2,Pecatonica silt loam, 6 to 12 percent slopes, eroded
- PnA,Plano silt loam, till substratum, 0 to 2 percent slopes
- PnB,Plano silt loam, till substratum, 2 to 6 percent slopes
- PoA,Plano silt loam, gravelly substratum, 0 to 2 percent slopes
- RaA,Radford silt loam, 0 to 3 percent slopes
- RnB,Ringwood silt loam, 2 to 6 percent slopes
- SaA,Sable silty clay loam, 0 to 2 percent slopes
- ScB,St. Charles silt loam, 2 to 6 percent slopes
- ScC2,St. Charles silt loam, 6 to 12 percent slopes, eroded
- TrB,Troxel silt loam, 0 to 3 percent slopes
- VrB,Virgil silt loam, 1 to 4 percent slopes
- VwA,Virgil silt loam, gravelly substratum, 0 to 3 percent slopes
- W,Water
- Wa,Wacousta silty clay loam, 0 to 2 percent slopes
- WxB,Whalan silt loam, 2 to 6 percent slopes
- WxC2,Whalan silt loam, 6 to 12 percent slopes, eroded

NOTES:

1. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey. Available online at https://websoilsurvey.nrcs.usda.gov/.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 500 1000 2000

FEET

1" = 1,600'

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TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
INITIAL SITE REPORT
REGIONAL NRCS SOIL MAP

FIGURE NO. **12**

PROJECT NO. 4221302

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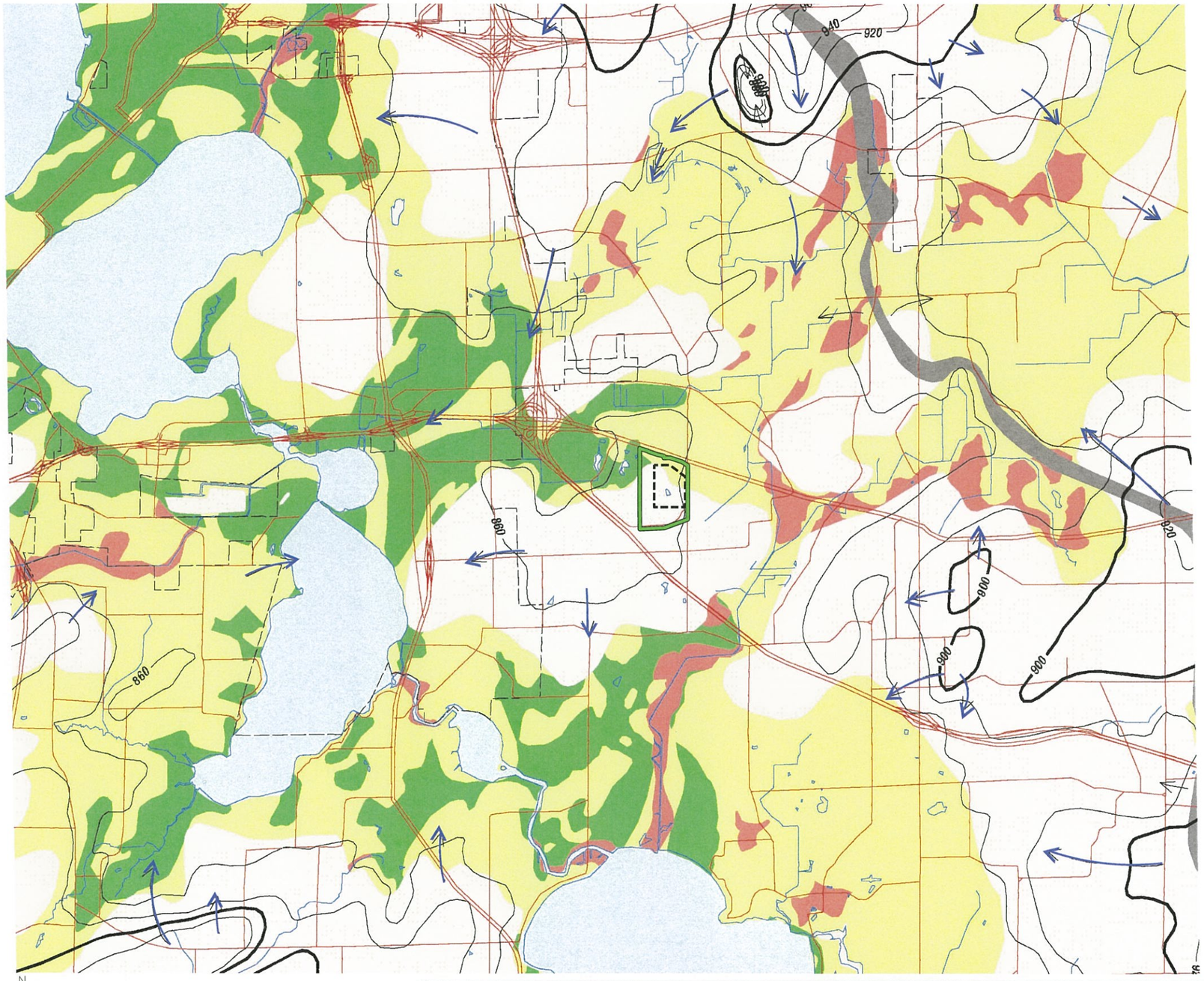

Legend

- Property Boundary (Pending)
- Proposed Landfill Limits of Waste

Type 1 - Unconfined

- Well sorted sand and gravel deposited as stream sediment

Type 2 - Unconfined

- Poorly sorted sand, gravel and silt deposited as diamiction or well sorted offshore glacial lake sediment

Type 3 Confined or partially confined

- Well to moderately well sorted sand and gravel overlain by silty or slayey lake sediments
- Area is not considered an unlithified surficial aquifer
- Water
- Contours of equal elevation of the water table, in feet above sea level; contour interval 100 ft.
- Contours of equal elevation of the water table, in feet above sea level; contour interval 20 ft.
- General direction of shallow groundwater flow
- Approximate location of groundwater divideds; width indicates interpreted uncertainty.

NOTES:

1. Wisconsin geological and Natural History Survey Open-File Report 1999-04 Plate 1.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 3000 6000 12000

FEET

1" = 6,000'

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DATE OF ISSUE 8/31/2022 | DESIGNED BY SSW | DRAWN BY SSW | CHECKED BY TD | APPROVED BY TD

TETRA TECH

PREPARED BY: TETRATECH

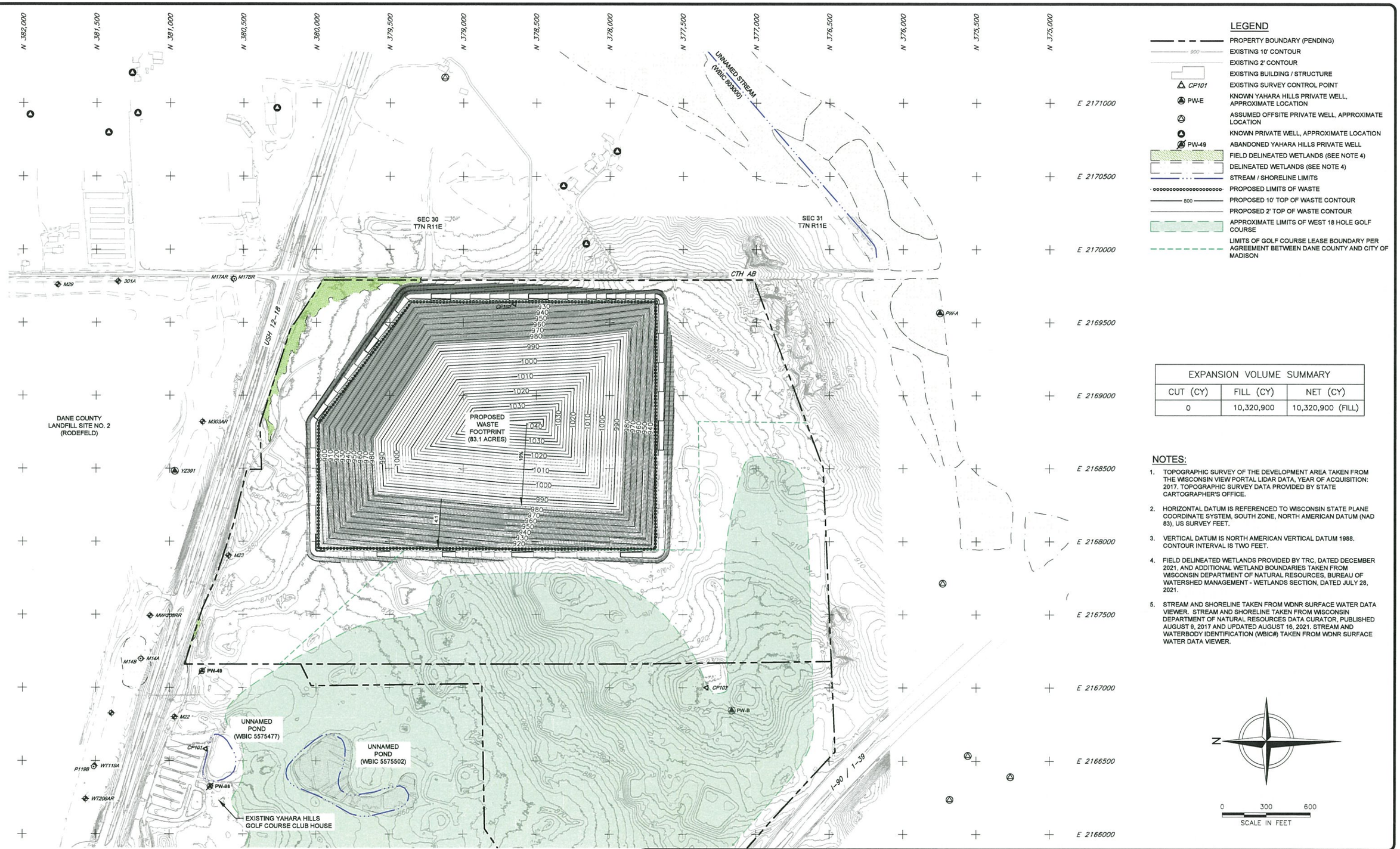
Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE REPORT

REGIONAL WATER TABLE MAP

FIGURE NO. **13**

PROJECT NO. 4221302



LEGEND

- PROPERTY BOUNDARY (PENDING)
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING BUILDING / STRUCTURE
- CP101 — EXISTING SURVEY CONTROL POINT
- PW-E — KNOWN YAHARA HILLS PRIVATE WELL, APPROXIMATE LOCATION
- ASSUMED OFFSITE PRIVATE WELL, APPROXIMATE LOCATION
- KNOWN PRIVATE WELL, APPROXIMATE LOCATION
- PW-49 — ABANDONED YAHARA HILLS PRIVATE WELL
- FIELD DELINEATED WETLANDS (SEE NOTE 4)
- DELINEATED WETLANDS (SEE NOTE 4)
- STREAM / SHORELINE LIMITS
- PROPOSED LIMITS OF WASTE
- PROPOSED 10' TOP OF WASTE CONTOUR
- PROPOSED 2' TOP OF WASTE CONTOUR
- APPROXIMATE LIMITS OF WEST 18 HOLE GOLF COURSE
- LIMITS OF GOLF COURSE LEASE BOUNDARY PER AGREEMENT BETWEEN DANE COUNTY AND CITY OF MADISON

EXPANSION VOLUME SUMMARY		
CUT (CY)	FILL (CY)	NET (CY)
0	10,320,900	10,320,900 (FILL)

NOTES:

1. TOPOGRAPHIC SURVEY OF THE DEVELOPMENT AREA TAKEN FROM THE WISCONSIN VIEW PORTAL LIDAR DATA, YEAR OF ACQUISITION: 2017. TOPOGRAPHIC SURVEY DATA PROVIDED BY STATE CARTOGRAPHER'S OFFICE.
2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM (NAD 83), US SURVEY FEET.
3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988. CONTOUR INTERVAL IS TWO FEET.
4. FIELD DELINEATED WETLANDS PROVIDED BY TRC, DATED DECEMBER 2021, AND ADDITIONAL WETLAND BOUNDARIES TAKEN FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, BUREAU OF WATERSHED MANAGEMENT - WETLANDS SECTION, DATED JULY 28, 2021.
5. STREAM AND SHORELINE TAKEN FROM WDNR SURFACE WATER DATA VIEWER. STREAM AND SHORELINE TAKEN FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES DATA CURATOR, PUBLISHED AUGUST 9, 2017 AND UPDATED AUGUST 16, 2021. STREAM AND WATERBODY IDENTIFICATION (WBIC#) TAKEN FROM WDNR SURFACE WATER DATA VIEWER.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE SEPT. 2022 — DRAWN BY RBN — DESIGNED BY RBN — CHECKED BY TD — APPROVED BY MJT

TETRA TECH

ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
PROPOSED DANE COUNTY LANDFILL SITE NO. 3
CITY OF MADISON, DANE COUNTY, WISCONSIN

INITIAL SITE REPORT
CONCEPTUAL TOP OF WASTE

FIGURE NO. **14**

PROJECT NO. 4221302

1" 1/2" 0" 1"

File: X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING_Plan Set\23-DCL_ISR-S-TM.dwg Layout: 14 User: RANDY.NOLDEN Aug 31, 2022 - 2:21pm

APPENDIX A

ISR CHECKLIST

Initial Site Report Completeness Checklist – Chapter NR 509, Wis. Adm. Code

Initial Site Report Completeness Checklist
Chapter NR 509, Wis. Adm. Code

Revised January 2018

Waste & Materials Management
P.O. Box 7921
Madison, WI 53707-7921

Instructions: This checklist is intended for use by department staff for the review of landfill initial site reports to determine completeness. The checklist may also be used by applicants and submitted with a landfill initial site report to facilitate department review. Refer to applicable statues and codes for exact requirements.

General Information

Facility Name: Dane County Landfill Site No. 3

Facility Type: Solid Waste Landfill > 500,000 Cu Yd

Initial Submittal: Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Addendum # __ Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Addendum # __ Date Received: ____/____/____ Completeness Due: ____/____/____ DNR Response: ____/____/____ (Complete: __ yes __ no)

Proposed Waste Types: Non-hazardous MSW, C&D Waste, Industrial Waste, Special Waste

Proposed Total Design Capacity: 10.3 million cubic yards (including daily and intermediate covers)

Y	N	Have office and work copies been designated?
Y	N	Has each copy been stamped with the date received?
Y	N	Has the initial submittal been entered into the FIST database?
Y	N	Have all additional information submittals been entered into FIST database?
Y	N	Have the acknowledgment letter and invoice been sent to the applicant? (if yes, date sent: ____/____/____)
Y	N	Has the invoiced plan review fee been paid? (if yes, date received: ____/____/_____)

Facility Name: Dane County Landfill Site No. 3

COMPLETENESS REQUIREMENTS	COMPLETE? Y	N	NA	LOCATION	COMMENTS
NR 509.04 INITIAL INSPECTION					
Has the department completed an initial site inspection? Date of inspection: 04 / 14 / 22 Date of ISI letter: 05 / 11 / 22	X			Section 1.4 and Appendix C	
NR 509.05 GENERAL SUBMITTAL REQUIREMENTS					
(1) Has the review fee specified in s. 520.04 been submitted? Note: The department sends an invoice for the plan review fee to the applicant upon receipt of the report. The applicant must send payment to the department within 30 days after receipt of the invoice.	X				
(2) Has a cover letter detailing desired action been submitted?	X				
(3) Have 3 paper copies been submitted to the regional office (and 1 additional paper and electronic copy submitted to the bureau office, unless otherwise specified by the department)?	X				See Cover Letter
(4) Are the report and plan sheets submitted under seal of P.E. and P.G.?	X				See Certification Page
Note: Subsections (5), (6), (7), and (8) below are typically not applicable unless information from ch. NR 510 is included in the ISR.					
(5) TECHNICAL PROCEDURES:					
Were all test procedures specified in the report?			X		
Were all technical procedures used to investigate the facility considered current standard procedures (ASTM, USGS, etc.)? __ yes __ no If no, was explanation and reasoning provided for any deviation from a standard method? __ yes __ no			X		
(6) VISUALS: Do all maps, plan sheets, drawings, isometrics, cross-sections, and aerial photographs meet the following requirements:					
(a) No larger than 24 inches by 36 inches and no smaller than 8-1/2 x 11 inches?	X			Figures 1-14	
(b) Appropriate scale to show required detail?	X				
(c) Do the visuals meet the following requirements? X numbered X legends for all symbols X referenced in the narrative X horizontal/vertical scales X titled X drafting or origination dates	X				
(d) Were uniform scales used?					Figures were scaled to provide the
(e) Were north arrows provided?	X				required setback radii and/or provide
(f) Was a USGS datum used as a basis for all elevations?	X				clarity and detail of the information
(g) Do visuals contain a survey grid based on monuments established in the field that are referenced to state plane coordinates?	X				being presented on each figure.

Facility Name: Dane County Landfill Site No. 3

COMPLETENESS REQUIREMENTS	COMPLETE? Y	N	NA	LOCATION	COMMENTS
(h) Are the original topography and a grid system contained on the plan sheets that show construction, operation or closure topography?	X			Figures 1-14	
(i) Do the cross-sections meet the following requirements? ___ show survey grid locations ___ reference major plan sheets ___ provide a reduced diagram of a cross-section location map (plan view)			X		
(7) Was a table of contents provided listing all sections of the submittal?	X				See Table of Contents
(8) Was an appendix provided listing names of all references, all raw data, testing and sampling procedures and calculations?	X				See list in Table of Contents
NR 509.05(2) Is the department's initial site inspection evaluation and all pertinent information submitted for the initial site inspection included in the report?	X			Section 1.4 Appendix B	
NR 509.05(3) Content - The ISR shall identify the following:					
(a) Project title	X			Section 1.3	
(b) Name, address & phone number of primary contacts, including the landfill's owner, operator and any consultants	X				
(c) Present property owner	X				
(d) Proposed facility owner & operator	X				
(e) Proposed landfill location (by ¼-¼ section)	X				
(f) Total acreage of property and anticipated limits of filling	X				
(g) Proposed landfill life and design capacity	X				
(h) Municipalities and industries to be served	X				
(i) Anticipated waste types and characteristics:	X				
(j) Anticipated volumes of each major waste stream and any seasonal fluctuations taking into account waste reduction, reuse, recycling, composting and the recovery of energy from solid waste	X				
(k) Anticipated cover frequency	X				
(l) Mode of operation	X				
(m) Anticipated sub-base, base and final grades	X			Section 1.3	Section 5.0
NR 509.06 LAND USE INFORMATION - At a minimum, the land uses in the area within one mile of the anticipated limits of filling must be discussed in the report.					
Must discuss: X land uses which may have an impact on the suitability of the property for waste disposal X land uses which may have an impact on groundwater quality X address all areas where land use may affect or be affected by the proposed landfill	X			Section 3	

Facility Name: Dane County Landfill Site No. 3

COMPLETENESS REQUIREMENTS	COMPLETE? Y	N	NA	LOCATION	COMMENTS
(1) Does the report locate and identify all adjacent landowners whose property is contiguous to the proposed landfill's property boundaries and all residences within 1,200 feet of the anticipated limits of filling (may be presented on a plat map if it clearly and accurately shows current land ownership conditions).	X			Figure 7	
(2) Does the report include a discussion of land use zoning. Note areas zoned as floodplain, conservancy, shoreland, or wetland.	X			Figure 3 / Section 3.2	
Are zoning variances required? X yes __ no	X				Property will be re-zoned and may require a conditional use permit
If required, has an agricultural impact statement (AIS) been completed? __ yes X no Note: An AIS is required if a municipality or utility will need agricultural lands and have not yet purchased or obtained an option to purchase the land.			X		
(3) Does the report include a description of present land uses including known recreational, historical, archaeological, critical habitat areas, county forest lands and state or local natural areas.	X			Section 3.3 and Figure 9	
(4) Does the report include all initial communications from FAA concerning any airports within five miles of the anticipated limits of filling if landfill owner proposes to accept municipal solid waste or other putrescible waste.	X			Sections 2.1 & 3.3, Figure 4, Appendix F	
(4) Does the report discuss existing or proposed transportation routes and access roads (including any weight restrictions).	X			Section 3.4	
NR 509.07 REGIONAL GEOTECHNICAL INFORMATION - Information may be limited to available publications. At a minimum, the regional setting within one mile of the anticipated limits of filling must be discussed, and when available, supplemented with maps of regional bedrock and glacial geology, along with USGS topographical maps, NRCS soil maps and regional water table maps.					
(1) Topography (the existing topography including predominant topographic features)	X			Section 4.1	Figures 1, 1A & 2
(2) Hydrology (surface water drainage patterns and significant hydrologic features, including surface waters, springs, surface water drainage basins, divides, and wetlands)	X			Section 4.2 Figure 3	
(3) Geology (origin, nature and distribution of bedrock; origin, texture, thickness and distribution of the unconsolidated units; and texture and classification of surficial soils)	X			Section 4.3 Figures 10 & 11	
(4) Hydrogeology: X depth to groundwater X aquifer(s) X groundwater flow directions X principal aquifers used by water supply wells X groundwater divides	X			Section 4.4	
(5) Water quality (information on groundwater and surface water quality available from the USGS, WSGNHS, DNR, UW-Extension, and regional planning commissions)	X			Section 4.5	

Facility Name: Dane County Landfill Site No. 3

Legal Note: This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

APPENDIX B

ISI REQUEST LETTER

Tetra Tech, Request for Initial Site Inspection – Proposed Dane County Landfill Site No. 3 (3/17/2022)

TETRA TECH

March 17, 2022

Carolyn Cooper
Hydrogeologist
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711-5367

Re: Request for Initial Site Inspection – Proposed Dane County Landfill Site No. 3
Dane County Department of Waste & Renewables

Dear Ms. Cooper:

On behalf of Dane County Department of Waste and Renewables (Dane County) and in accordance with the Wisconsin Administrative Code (WAC) NR 509.04, Cornerstone Environmental Group, a Tetra Tech company (Tetra Tech) is requesting an Initial Site Inspection (ISI) of the proposed Dane County Landfill Site No. 3, located in the City of Madison, Dane County, Wisconsin within a portion of the existing Yahara Hills Golf Course (Figure 1).

Included with this letter is the NR 509.04 Landfill ISI Request Completeness Checklist (Attachment 1). Tetra Tech, on behalf of Dane County, respectfully requests an initial site inspection at your earliest convenience.

Background

The proposed Dane County Landfill Site No. 3 will be a new landfill with an organics management area located contiguously with the new landfill. The precise location and orientation of these areas are still being evaluated; therefore, the limits of waste will be refined to an area of approximately 40 acres that is located within the approximately 115-acre area shown on Figures 1 and 3.

This ISI request identifies a proposed limits of disturbance to include additional area surrounding the proposed limits of waste to account for ancillary features such as perimeter berms, visual screening, soil stockpiles and stormwater management basins. The total area of the proposed limits of disturbance is approximately 230-acres. Dane County is in the process of purchasing the 230-acre area that includes property parcels 251/0710-254-0099-7 and 251/0710-361-0099-0 from the City of Madison.

Tetra Tech is providing the following information in accordance with WAC NR 509.04 (4):

Applicant:	Dane County Department of Waste & Renewables 1919 Alliant Energy Center Way, Madison, WI 53713
Authorized Facility Contact:	John Welch, Director of Waste & Renewables Phone: (608) 516-4154
Property Ownership:	City of Madison Parks Yahara Hills Golf Course (currently) Dane County (pending purchase)
Existing Facility Type:	Municipal Golf Course (Yahara Hills Golf Course)

Cornerstone – A Tetra Tech Company
8413 Excelsior Drive, Suite 160, Madison, WI 53717
Tel 877.294.9070 Fax 877.845.1456 tetratech.com

Operation Proposed:	Non-hazardous Municipal Solid Waste (MSW) Landfill using Area Fill
Site Location:	Property Parcel No. 251/0710-254-0099-7 and 251/0710-361-0099-0 SE ¼ of Section 25 and N ½ of NE ¼ of Section 36, T7N, R10E, City of Madison, Dane County, Wisconsin.
Present Land Use:	Recreation (Golf Course) and Water (man-made Pond)

Surrounding Land Use and Residence Information

Residences within one mile of the proposed limits of disturbance are shown on Figure 1. There are no residences within the proposed limits of waste or proposed limits of disturbance. The nearest resident and assumed off-site private water supply well to the proposed limits of disturbance and proposed limits of waste is approximately 250 feet and 380 feet to the east, respectively. The Yahara Hills Golf Course has three water supply wells within the proposed limits of disturbance.

The land use within one mile of the proposed limits of disturbance is shown on Figure 2. The land use information was provided by Dane County Land Information Office. The land use for the proposed limits of disturbance area is entirely Recreation with one man-made pond. The proposed limits of disturbance is bound to the north by U.S. Highway 12 & 18 with the Dane County Landfill Site No. 2 beyond. County Highway AB bounds the eastern side of the proposed limits of disturbance with a mixture of agriculture, woodlands, open land and residential beyond. The Yahara Hills Golf Course continues to the west of the proposed limits of disturbance with agriculture, residential, and open land to the south. Land uses identified within one mile of the proposed limits of disturbance include agriculture, cemetery, commercial, communication/utilities, industrial, institutional/ governmental, open land, recreation, residential, transportation, under construction, vacant subdivided land, water and woodlands.

Known or Potential Impacts to Endangered and Threatened Species

An Endangered Resources Preliminary Assessment was conducted through the WDNR Natural Heritage Inventory (NHI) public portal, accessed online on March 10, 2022, for the proposed limits of disturbance area. The results of this assessment stated further actions are required to verify compliance. According to this preliminary assessment, the project site overlaps the Karner Blue Butterfly High Potential Range and the Rusty Patched Bumble Bee High Potential Zone. A copy of the preliminary assessment is provided as Attachment 2.

The WDNR published a Karner Blue Butterfly High Potential Range map in 2019. This map shows the approximate project location within Dane County which is outside the Karner Blue Butterfly High Potential Range (Attachment 3). The US Fish and Wildlife Service (USFWS) publishes an interactive map of the Rusty Patched Bumble Bee High and Low Potential Zones. According to this map, the proposed limits of disturbance is not located within the high potential zone.

A list of known endangered species present in Dane County, according to the USFWS, is included in Attachment 3. There are eight species currently recognized as endangered, threatened or proposed within Dane County - Northern Long-Eared Bat, Whooping Crane, Higgins Eye Pearly mussel, Sheepnose mussel, Rusty Patched Bumble Bee, Eastern Prairie Fringed Orchid, Mead's Milkweed and Prairie Bush-clover. Based on the habitat description for the listed species, the historical and existing land use of the proposed limits of disturbance are not applicable or conducive to support these species. Of note, the non-suitable habitat for the Rusty Patched Bumble Bee includes "areas mowed too frequently to allow development of foraging resources." The Yahara Hills Golf Course has been in operation since the late-1960s and requires frequent and routine mowing. It is believed that the golf course would be a non-suitable habitat for the Rusty Patched Bumble Bee with the potential presence being very low.

Known or Potential Impacts to Historic, Scientific or Archeological Areas

The proposed Dane County Landfill Site No. 3 is located on land previously disturbed by agriculture then by the construction and operation of the Yahara Hills Golf Course. If cultural resources were once within the proposed limits of disturbance, it is unlikely these still exist after the land was shaped and graded for the golf course.

Archaeological Consulting Services, Inc. (ACS) reviewed available literature and records on previously reported cultural resources in and around the Yahara Hills Golf Course. The reviewed study area included the proposed limits of disturbance. A report of investigations was prepared by ACS in November 2021 (Attachment 4). The results of this study found no previously reported archaeological sites within the study area. According to ACS, the closest archaeological site is approximately 350-meters to the north of the Yahara Hills Golf Course but several Euro-American farmsteads were located within the study area prior to the development of the golf course. No standing buildings or other structures in the study area are listed on the Wisconsin Architecture and History Inventory. The 1967 Club House has been identified as potentially significant and is located to the west (see Figure 3).

An Archaeological Survey Field Report, prepared by Commonwealth Heritage Group, Inc. in October 2020, was provided to Dane County by the State Historical Preservation Office which reported results of the cultural resources field survey for the proposed Wisconsin Department of Transportation (WisDOT) US Highway 12 & 18, County Highway AB Interchange project (Attachment 5). A portion of the proposed limits of disturbance was previously studied as part of this WisDOT project. The reported findings stated, “no cultural materials or features were identified during survey”.

Locational Criteria and Performance Standard Review

NR 504.04(3) and NR 502.12(8) Locational Criteria Assessment

NR 504.04(3)(a) within 1,000 feet of any navigable lake, pond or flowage:

The proposed limits of waste is located within 1,000 feet of a navigable lake, pond or flowage. According to the WDNR Surface Water Data Viewer, an unnamed pond (WBIC 5575561) is located within the proposed limits of waste. A preliminary review of historical aerial imagery indicates this unnamed pond is not naturally occurring but was man-made for operation and maintenance of the golf course. Construction of the proposed Dane County Landfill Site No. 3 would remove the unnamed man-made pond as well as any unsuitable soils prior to constructing the landfill liner system. Surface water features from the WDNR’s Surface Water Data Viewer are shown on Figures 1 and 3.

NR 504.04(3)(b) within 300 feet of any navigable river or stream:

The proposed limits of waste is not located within 300 feet of any navigable stream or river. An unnamed river or stream (WBIC 803000) is located southeast of the proposed limits of waste. At its nearest point, the unnamed stream is approximately 850-feet from the proposed limits of disturbance and approximately 950-feet from the proposed limits of waste. This unnamed stream flows to the northeast and discharges into Door Creek (WBIC 802800). Surface water features are shown on Figures 1 and 3.

NR 504.04(3)(c) within a floodplain:

The proposed limits of waste is not located within a floodplain, as shown on Figure 1.

NR 504.04(3)(d) within 1,000 feet of the nearest edge of the right-of-way of any state trunk highway, interstate, federal aid primary highway or the boundary of any public park unless the landfill is screened by natural objects, plantings, fences or other appropriate means so that it is not visible from the highway or park:

The proposed limits of waste will be located approximately 425 feet to the south of US Highway 12 & 18 and approximately 150 feet to the west of County Highway AB. Interstate I-90/I-39 is approximately 1,350 feet southwest from the proposed limits of waste.

The City of Madison has indicated that they plan to maintain at least 18 holes of the Yahara Hills Golf Course after the proposed Dane County Landfill Site No. 3 is constructed. The proposed limits of waste, as shown in Figure 3, overlaps portions of the currently proposed 18-hole golf course. The final routing of the golf course may be subject to change through the City of Madison's reconfiguration of the golf course and Dane County would not utilize this area if it conflicted with the plans for golf. Dane County has included this area for the ISI request to depict the maximum limits of waste in the event golf does not remain in that area at the time that it would need to be developed for landfill use.

Dane County will propose appropriate screening measures from US Highway 12 & 18, County Highway AB and the Yahara Hills Golf Course, as required in future submittals for the proposed Dane County Landfill Site No. 3.

NR 504.04(3)(e) within an area where the design or operations of the landfill would pose a significant bird hazard to aircraft.

There are no airports designed or planned to be designed within 5,000 feet or 10,000 feet of the proposed limits of waste. The nearest public airport is the Blackhawk Airfield, located in Cottage Grove, and Dane County Regional Airport, located in Madison, Wisconsin. Blackhawk Airfield and Dane County Regional Airport are located approximately 5.25 miles and 7 miles from the proposed limits of waste, respectively. The nearest private use airport is the Quale Airport, located in Cottage Grove, approximately 3 miles from the proposed limits of waste.

NR 504.04(3)(f) within 1,200 feet of a public or private well:

Three private water supply wells (PW-C, PW-D and PW-E), owned by the City of Madison, are used to service the Yahara Hills Golf Course and are located within the proposed limits of waste (Figure 3). These private wells are proposed to be abandoned prior to constructing the proposed Dane County Landfill Site No. 3. Private water supply wells PW-A and PW-B are located approximately 1,250 feet south and approximately 1,100 feet west of the proposed limits of waste, respectively (Figure 3).

Four assumed private water supply wells are located east of County Highway AB where residences are located. These private wells are assumed to be located approximately 380, 800, 1,000 and 1,030 feet from the proposed limits of waste. One assumed private water supply well associated with a residence is located approximately 1,100 feet southwest of the proposed limits of waste. A known private water supply well (Biogas Well YZ391) is located approximately 990 feet north of the proposed limits of waste, adjacent to the Biogas Facility for the Dane County Landfill Site No. 2.

Other assumed or known private and public water supply wells are located beyond 1,200 feet from the proposed limits of waste. See Figures 1 and 3 for assumed and known public and private water supply well locations.

NR 504.04(3)(g) within 200 feet of a fault that has had displacement in Holocene time:

The proposed Dane County Landfill Site No. 3 is not located within 200 feet of a fault that has had displacement in Holocene times. No faults in Wisconsin are known to have had displacements since the Holocene time.

NR 504.04(3)(h) within seismic impact zones:

The proposed Dane County Landfill Site No. 3 is not within a seismic impact zone.

NR 504.04(3)(i) within unstable areas:

The bedrock beneath the proposed Dane County Landfill Site No. 3 consists of Prairie du Chien Group dolomite and sandstone and/or the Cambrian Sandstone. Based on previous site geologic studies at the Dane County Landfill Site No. 2 and supply wells drilled at the golf course, there is no evidence of unstable conditions.

NR 504.04(4) and NR 502.04(1) Performance Standards Assessment

NR 504.04(4)(a) A significant adverse impact on wetlands:

Based on a review of the WDNR mapped wetlands, the proposed limits of disturbance would directly impact one wetland. The WDNR Surface Water Data Viewer showed a wetland overlapping the unnamed man-made pond within the limits of waste. This wetland is classified as W0Hx (Open water, Subclass unknown, Wet soil - Palustrine, Excavated) and is approximately 2.27-acres in size. The WDNR also indicated the presence of “wetlands too small to delineate” in the northeast corner of the proposed limits of disturbance. Figure 3 includes the known wetland boundaries from the WDNR Mapped Wetlands.

Wetland indicators within the northeast portion of the proposed limits of disturbance include Os (Orion silt loam, wet) and VwA (Virgil silt loam, gravelly substratum, 0 to 3 percent slopes) soil descriptions. A map of the known wetlands and wetland indicators prepared from the WDNR Surface Water Data Viewer on March 11, 2022 is provided in Attachment 6.

Dane County will conduct wetland delineations and initiate the appropriate wetland permitting process if the field delineations indicate wetlands will be impacted as a result of the proposed Dane County Landfill Site No. 3.

NR 504.04(4)(b) A take of an endangered or threatened species:

According to the USFWS interactive map and WDNR published map, there is a low potential for the presence of the Rusty Patched Bumble Bee and Karner Blue Butterfly identified through the NHI public portal, as previously discussed. The proposed limits of disturbance are not anticipated to take an endangered or threatened species.

An Environmental Resources Review (ERR) application will be submitted to the WDNR following this ISI request. A copy of the ERR application and response from the WDNR will be included with future permitting submittals to the WDNR for the proposed Dane County Landfill Site No. 3.

NR 504.04(4)(c) A detrimental effect on any surface water:

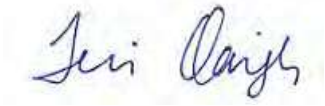
No naturally occurring surface water is located in or immediately adjacent to the proposed limits of disturbance. Surface water runoff from the proposed Dane County Landfill Site No. 3 will be managed in accordance with NR 216 and NR 500 and will pose no detrimental effect on surface water.

NR 504.04(4) subsections (d) through (f) are not required to be evaluated as part of the NR 509.04(4) requirements for an ISI request.

Please contact Teri Daigle at (630) 410-7231 or teri.daigle@tetratech.com with any questions regarding the provided information. Dane County will transmit the required inspection fee in a separate submittal.

Sincerely,

CORNERSTONE ENVIRONMENTAL GROUP, LLC – A TETRA TECH COMPANY



Teri Daigle
Project Manager

Enclosures:

Figures:

Figure 1 – Site Location Map

Figure 2 – Land Use Map

Figure 3 – Existing Conditions Map

Attachments:

Attachment 1 – WDNR NR 509.04 Initial Site Inspection Request Completeness Checklist

Attachment 2 – Endangered Resources Preliminary Assessment (March 10, 2022)

Attachment 3 – USFWS List of Current Federally Listed Endangered, Threatened and Proposed Species for Dane County (January 2018)
WDNR Karner Blue Butterfly High Potential Range Map (2019)

Attachment 4 – A Literature and Records Search on the Previously Reported Cultural Resources in and Near the Yahara Hills Golf Course in Madison, Dane County, Wisconsin (ACS, November 2021)

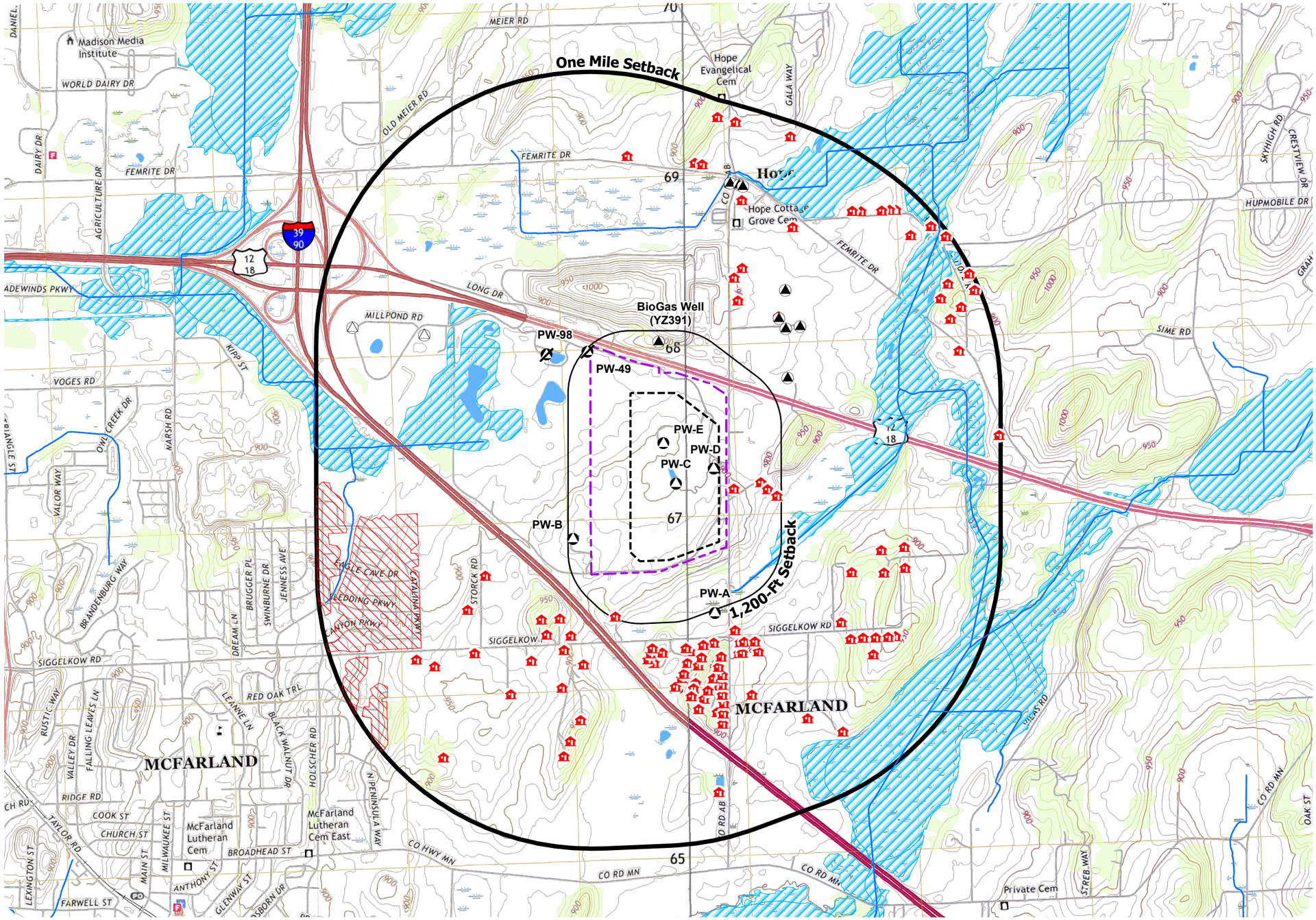
Attachment 5 – Archaeological Survey Field Report, USH 12/18, CTH AB Interchange, Dane County, Wisconsin (Commonwealth Heritage Group, October 2020)

Attachment 6 – WDNR Surface Water Data Viewer Map of Wetlands and Wetland Indicator Soils (March 11, 2022)

cc: Ann Bekta, WDNR (1 Hard Copy and Electronic Copy)
Valerie Joosten, WDNR (Electronic Copy)
Joe Lourigan, WDNR (Electronic Copy)
John Welch, Dane County (1 Hard Copy and Electronic Copy)
Allison Rathsack, Dane County (1 Hard Copy and Electronic Copy)
John Oswald, P.G., Tetra Tech (Electronic Copy)
Mark Torresani, P.E., Tetra Tech (Electronic Copy)

X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING\ISI\Dane Co Landfill Site No 3 ISI Request FINAL_3-17-22.docx

FIGURES



Legend

- Proposed Landfill Limits of Disturbance
- Proposed Landfill Limits of Waste
- Setback 1-Mile from Limits of Disturbance
- Setback 1,200-ft from Limits of Waste
- Stream
- Waterbody
- FEMA 100-Year Floodplain
- Assumed Offsite Private Well, Approximate Location
- Known Offsite Private Well, Approximate Location
- Known Yahara Hills Private Well, Approximate Location
- Abandoned Private Well
- Residence and Assumed Offsite Private Well, Approximate
- Residential Developement on City Water Supply

NOTES:
1. Streams, Waterbodies and Floodplains are from WDNR Surface Water Data Viewer.

BASEMAP SOURCE:
USGS Topographic Quadrangles 7.5 Minute
Series: Madison East, WI (2022)
Series: Cottage Grove, WI (2022)

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 1000 2000 4000
FEET
1" = 2,000'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 3/17/2022
DESIGNED BY SSW
DRAWN BY SSW
CHECKED BY TD
APPROVED BY JO

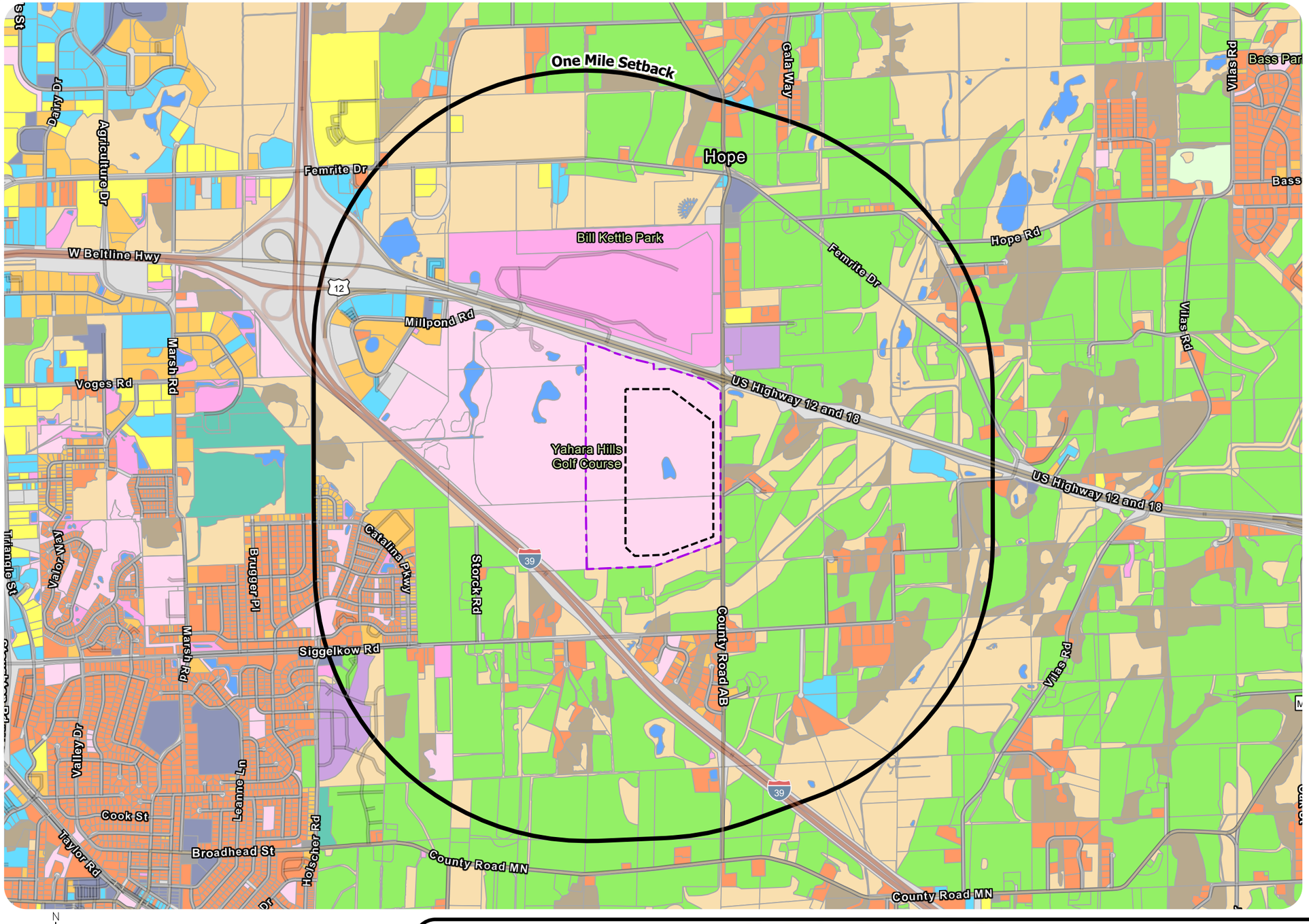
TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
INITIAL SITE INSPECTION
SITE LOCATION MAP

FIGURE NO. **1**
PROJECT NO. 4221302

X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING_GIS\DCI_01-IISI-Site Location.aprx



Legend

- Proposed Landfill Limits of Disturbance
- Proposed Landfill Limits of Waste
- Setback

Land Use

- Agriculture
- Cemetery
- Commercial
- Communication/Utilities
- Fallow Farm Field
- Industrial
- Institutional/Governmental
- Mineral Extraction
- Open Land
- Recreation
- Residential
- Transportation
- Under Construction
- Vacant Subdivided Land
- Water
- Woodlands

SOURCE:
Land use information is from 2015 and supplied by Dane County.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 1000 2000 4000

FEET

1" = 2,000'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 3/17/2022
DESIGNED BY SSW
DRAWN BY SSW
CHECKED BY TD
APPROVED BY JO

TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

INITIAL SITE INSPECTION

LAND USE MAP

FIGURE NO.
2
PROJECT NO.
4221302

X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING\GIS\DCL-02-ISI-Land Use.aprx

N 382,000 | N 381,500 | N 381,000 | N 380,500 | N 380,000 | N 379,500 | N 379,000 | N 378,500 | N 378,000 | N 377,500 | N 377,000 | N 376,500 | N 376,000 | N 375,500 | N 375,000

E 2171000 | E 2170500 | E 2170000 | E 2169500 | E 2169000 | E 2168500 | E 2168000 | E 2167500 | E 2167000 | E 2166500 | E 2166000

UNNAMED STREAM (WBIC 6035000)

SEC 30 T7N R11E

SEC 31 T7N R11E

CTH AB

USH 12-18

PW-A

PW-D

EXISTING MAINTENANCE BUILDINGS

PW-C

UNNAMED POND (WBIC 5575561)

PW-E

YZ391

SEC 25 T7N R10E

SEC 36 T7N R10E

PARCEL NO. 251/0710-254-0099-7

PARCEL NO. 251/0710-361-0099-0

1000'

1200'

PW-49

PW-B

UNNAMED POND (WBIC 5575477)

UNNAMED POND (WBIC 5575502)

PW-98

EXISTING YAHARA HILLS GOLF COURSE CLUB HOUSE

I-90 / I-39

LEGEND

- PARCEL BOUNDARY (TO BE PURCHASED)
- SIXTEENTH SECTION LINE
- SEC 25 T7N R10E — SECTION-TOWNSHIP-RANGE DESIGNATION
- 900 — EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING BUILDING / STRUCTURE
- PW-E — KNOWN YAHARA HILLS PRIVATE WELL, APPROXIMATE LOCATION
- ASSUMED OFFSITE PRIVATE WELL, APPROXIMATE LOCATION
- KNOWN PRIVATE WELL, APPROXIMATE LOCATION
- PW-49 — ABANDONED YAHARA HILLS PRIVATE WELL
- WNDR MAPPED WETLANDS
- WETLAND LOCATION TOO SMALL TO DELINEATE
- STREAM / SHORELINE LIMITS
- PROPOSED LIMITS OF WASTE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED LIMITS OF WASTE SETBACK
- APPROXIMATE LIMITS OF WEST 18 HOLE GOLF COURSE

NOTES:

1. TOPOGRAPHIC SURVEY OF THE DEVELOPMENT AREA TAKEN FROM THE WISCONSIN VIEW PORTAL LIDAR DATA, YEAR OF ACQUISITION: 2017. TOPOGRAPHIC SURVEY DATA PROVIDED BY STATE CARTOGRAPHER'S OFFICE.
2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM (NAD 83), US SURVEY FEET.
3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988. CONTOUR INTERVAL IS TWO FEET.
4. WETLAND BOUNDARIES TAKEN FROM WDNR SURFACE WATER DATA VIEWER.
5. STREAM AND SHORELINE TAKEN FROM WDNR SURFACE WATER DATA VIEWER.
6. STREAM AND WATERBODY IDENTIFICATION (WBIC#) TAKEN FROM WDNR SURFACE WATER DATA VIEWER.
7. LIMITS OF DISTURBANCE LINE IS OFFSET FROM PARCEL BOUNDARY (TO BE PURCHASED) FOR CLARITY.

N

0 300 600

SCALE IN FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE MAR. 2022 | DRAWN BY RBN | DESIGNED BY RBN | CHECKED BY TD | APPROVED BY JCO

TETRA TECH

ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
PROPOSED DANE COUNTY LANDFILL SITE NO. 3
CITY OF MADISON, DANE COUNTY, WISCONSIN

INITIAL SITE INSPECTION
EXISTING CONDITIONS MAP

FIGURE NO. **3**

PROJECT NO. 4221302

1" 1/2" 0" 1"

File: X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING_Plan Set\01-DCL_ISI-S-EC.dwg Layout: 3 User: RANDY.NOLDEN Mar 17, 2022 - 12:03pm

ATTACHMENT 1

WDNR NR 509.04 Initial Site Inspection Request Completeness Checklist

LANDFILL INITIAL SITE INSPECTION REQUEST
COMPLETENESS CHECKLIST

SECTION NR 503.07, WISCONSIN ADMINISTRATIVE CODE – C&D AND ONE-TIME DISPOSAL LANDFILLS
SECTION NR 509.04, WISCONSIN ADMINISTRATIVE CODE – ALL OTHER LANDFILLS

Refer to Applicable Codes for Exact Requirements

General Information

Applicant:

Applicant Name: Dane County Dept. of Waste & Renewables

Contact/Title: John Welch, Director of Waste & Renewables

Address: 1919 Alliant Center Way, Madison, WI 53713

Phone #: (608) 516-4154

FID #: Not assigned

Site Location: Yahara Hills Golf Course

6701 U.S. Highway 12 & 18, Madison, WI 53718

Date of Initial Site Inspection Request: _____

Consultant:

Consultant Name: Tetra Tech

Contact/Title: Teri Daigle, Project Manager

Address: 8413 Excelsior Drive, Suite 160, Madison, WI 53717

Phone #: 630-410-7231

Date Project Entered into FIST System: _____

Date ISI is Due (Max. 22 bus. Days after receipt of request):

_____

Legal Note:
This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

GENERAL SUBMITTAL REQUIREMENTS - NR 503.07(2) or 509.04(2)	Y	N	NA	LOCATION	COMMENTS
1. Report sent to region and central office	Y				
2. Current standard technical procedures used and test methods specified – NR 500.05(5)	Y				
3. Visuals - NR 500.05(6)					
a. 8.5x11 to 32x44 inches in size	Y				
b. Appropriate scale to show all required details with sufficient clarity	Y				
c. Be numbered; referenced in the narrative; have a title, legend, horizontal and vertical scales; and drafting or origination dates	Y				
d. Uniform scales	Y				Figure 3 provided at 1"=300' to show greater detail for review
e. North arrow	Y				
f. Mean sea level as basis for all elevations	Y				
g. Survey grid based on field monuments and utilizing a coordinate system acceptable to the department	Y				
h. Original topography and grid system on plan sheets showing construction, operation or closure topography	Y				
i. Cross-sections include survey grid location, reference to major plan sheets and reduced diagram of cross-section location plan view map			X		
3. Table of contents – NR 500.05(7)			X		
4. Appendix listing all references, raw data, testing and sampling procedures and calculations – NR 500.05(8)			X		

LANDFILL REQUEST MINIMUM REQUIREMENTS - NR 503.07(4) or 509.04(4)	Y	N	NA	LOCATION	COMMENTS
1. Cover Letter					
a. Applicant identified	Y			Page 1	
b. Authorized contact identified	Y			Page 1	
c. Current property owner identified	Y			Page 1	
d. Type of landfill being proposed	Y			Page 2	
e. Project location by ¼, ¼ section	Y			Page 2	
f. Present land use	Y			Page 2	
2. Known potential impacts to endangered and threatened species - NR 29	Y			Page 2	
3. Known potential impacts to historic, scientific or archeological areas, including prior studies or surveys, identified - s. 44.40, Wis. Stats.	Y			Page 3	
4. Enlarged 7.5 minute USGS map or equivalent (minimum 1"=500')					
a. Ground surface relief within one mile of project	Y			Figure 1	
b. Surface water bodies within one mile of project	Y			Figure 1	
c. Floodplains within one mile of project	Y			Figure 1	
d. Existing land use within one mile of project	Y			Figure 2	
e. All water supply wells and residences within one mile of project	Y			Figure 1	
5. Preliminary identification of all potential conflicts with locational criteria and performance standards in: ● for C&D and one-time disposal landfills, NR 503.04 ● for all other landfills, NR 504.04 excluding NR 504.04(4)(d) to (f)	Y			Pages 3 - 6	

ATTACHMENT 2

Endangered Resources Preliminary Assessment (March 10, 2022)

Endangered Resources Preliminary Assessment

Created on **3/10/2022**. This report is good for one year after the created date.

DNR staff will be reviewing the ER Preliminary Assessments to verify the results provided by the Public Portal. ER Preliminary Assessments are only valid if the project habitat and waterway-related questions are answered accurately based on current site conditions. If an assessment is deemed invalid, a full ER review may be required even if the assessment indicated otherwise.

Results

A search was conducted of the NHI Portal within a 1-mile buffer (for terrestrial and wetland species) and a 2-mile buffer (for aquatic species) of the project area. Based on these search results, below are your follow-up actions.

Further actions are required to ensure compliance with Wisconsin's Endangered Species Law (s. 29.604 Wis. Stats.) and the Federal Endangered Species Act (16 USC ss 1531-43).

One or more of the following situations apply:

- The species recorded are state or federal threatened or endangered animals.
- The species recorded are state threatened or endangered plants on public land.
- The species recorded are federal threatened or endangered plants on federal land or involve federal funds or a federal permit.
- The project site overlaps the Karner Blue Butterfly High Potential Range.
- The project overlaps the Rusty Patched Bumble Bee High Potential Zone.

Therefore you should request an Endangered Resources Review https://dnr.wi.gov/topic/ERReview/Review.html. An ER Review is the mechanism to ensure compliance with Wisconsin's Endangered Species Law (s. 29.604 Wis. Stats.) and the Federal Endangered Species Act (16 USC ss 1531-43). The ER Review will list the endangered resources that have been recorded within the vicinity of the project area and follow-up actions may be necessary.

A copy of this document can be kept on file and submitted with any other necessary DNR permit applications to show that the need for an ER Review has been met. This notice only addresses endangered resources issues. This notice does not constitute DNR authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the DNR and/or other permitting authorities.

Project Information

Landowner name	**Yahara Hills Golf Course**
Project address	**7101 US Highway 12 & 18, Madison, WI 53718**
Project description	**Potential Greenfield SIte**

Project Questions

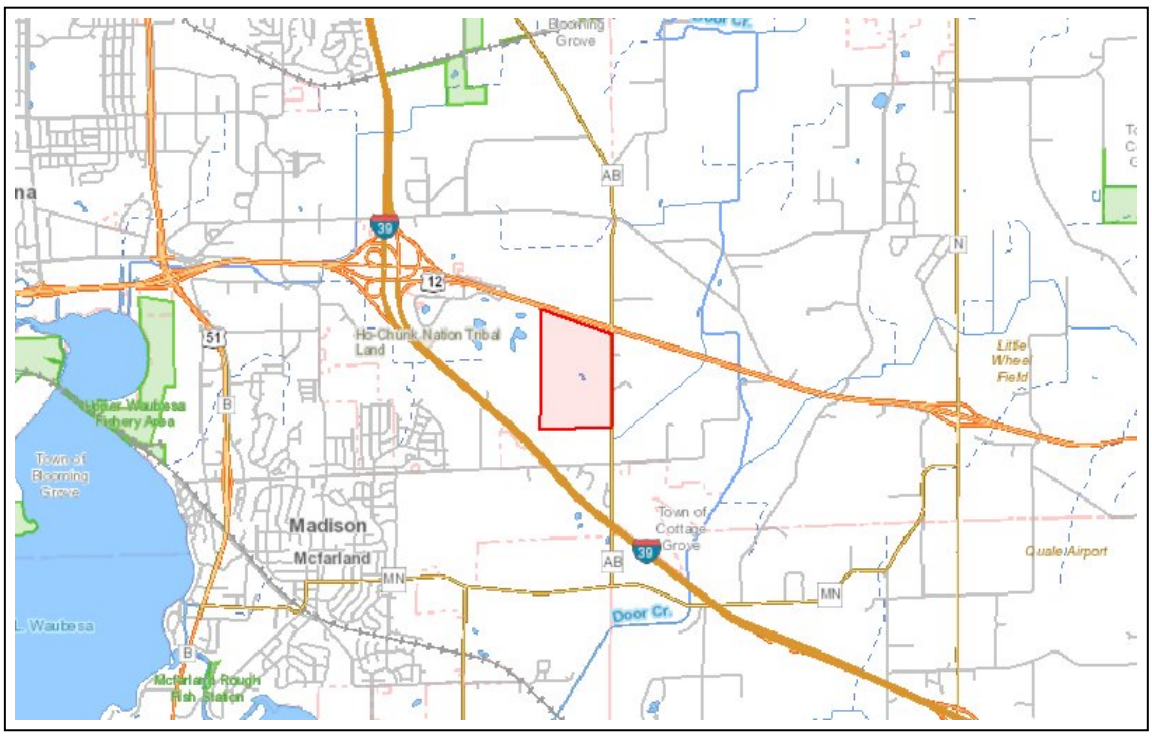
Does the project involve a public property?	**Yes**
Is there any federal involvement with the project?	**No**
Is the project a utility, agricultural, forestry or bulk sampling (associated with mining) project?	**No**
Is the project property in Managed Forest Law or Managed Forest Tax Law?	**No**
Project involves tree removal?	**Yes**
Is project near (within 300 ft) a waterbody or a shoreline?	**Yes**

Is project within a waterbody or along the shoreline?	**Yes**

Does the project area (including access routes, staging areas, laydown yards, select sites, source/fill sites, etc.) occur **entirely within** one or more of the following habitats?

Urban/residential	**No**
Manicured lawn	**No**
Artificial/paved surface	**No**
Agricultural land	**No**
Areas covered in crushed stone or gravel	**No**

Project Area Maps



ATTACHMENT 3

USFWS List of Current Federally Listed Endangered, Threatened and Proposed Species for Dane County (January 2018)

WDNR Karner Blue Butterfly High Potential Range Map (2019)

Wisconsin

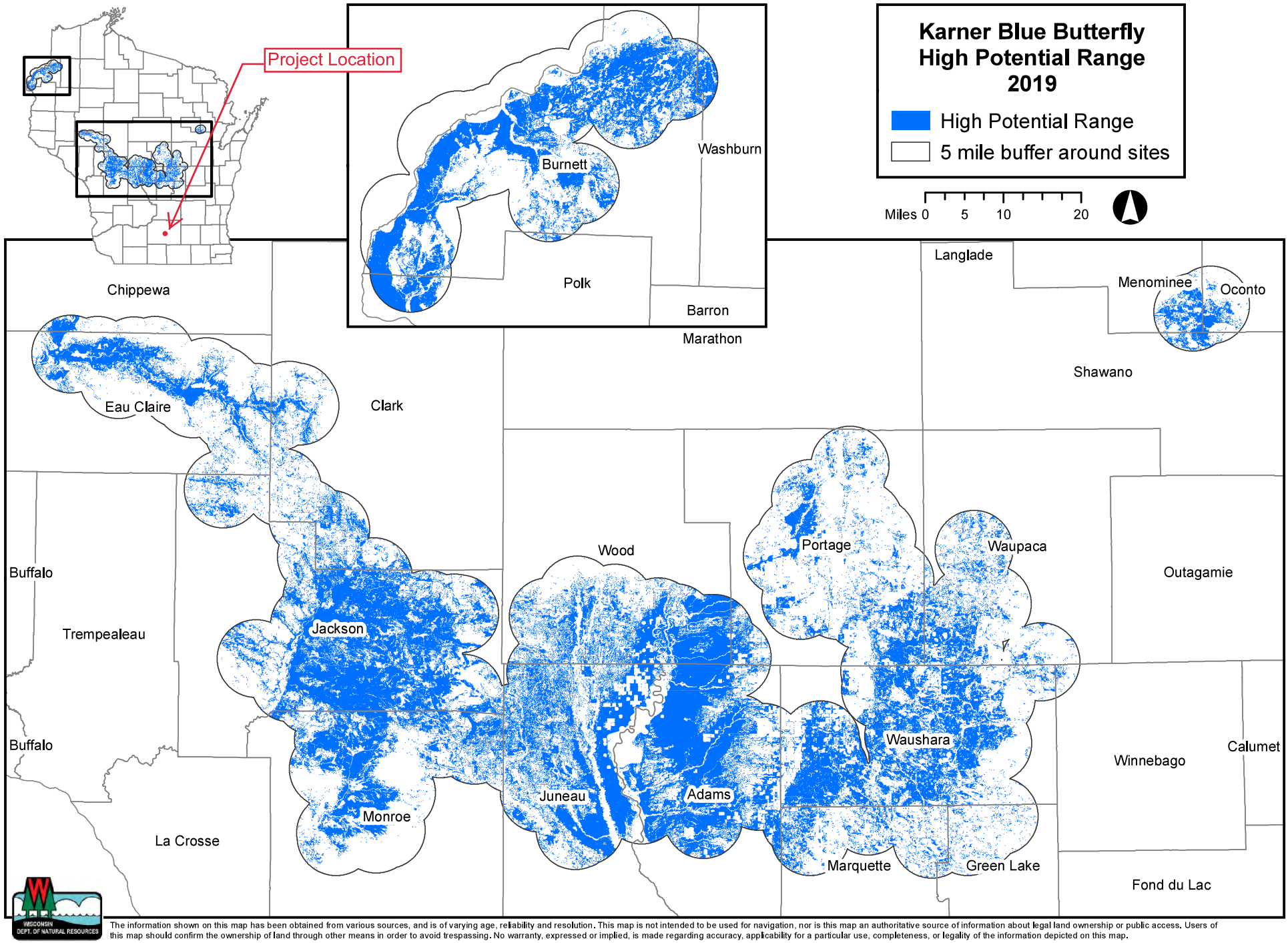
County Distribution of Federally-listed Endangered, Threatened and Proposed Species

Jan. 10, 2018

County	Species	Status	Habitat
Adams	Gray wolf *Canis lupus*	Endangered	Northern forested areas
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests and woods.
	Kirtland's warbler *Setophaga kirtlandii*	Endangered	Young jack pine stands (5 to 25 years old)
	Whooping crane Grus americanus	**Non-essential experimental population	Open wetlands and lakeshores Whooping cranes have nested in this county
	Karner blue butterfly *Lycaeides melissa samuelis*	Endangered	Prairie, oak savanna, and jack pine areas with wild lupine
Ashland	Canada lynx *Lynx canadensis*	Threatened	While no resident populations are known from Wisconsin, the species occasionally occurs in northern forested areas, and counties listed are those with the highest likelihood of occurrence.
	Gray wolf *Canis lupus*	Endangered	Northern forested areas
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.
	Piping plover *Charadrius melodus*	Endangered	Sandy beaches; bare alluvial and dredge spoil islands
	Piping plover *Charadrius melodus*	Critical Habitat Designated	
	Rufa red knot *(Calidris canutus rufa)*	Threatened	Along Lake Superior
Barron	Gray wolf *Canis lupus*	Endangered	Northern forested areas
	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.

County	Species	Status	Habitat
	Mead's milkweed *(Asclepias meadii)*	Threatened	Upland tallgrass prairie or glade/barren habitat **Note:** all the Mead's milkweed sites in Wisconsin are reintroduction attempts and occur on protected conservation lands.
	Prairie bush-clover *(Lespedeza leptostachya*)	Threatened	Dry to mesic prairies with gravelly soil
Crawford	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.
	Whooping crane (*Grus americanus*)	**Non-essential experimental population	Open wetlands and lakeshores
	Higgins eye pearly mussel *(Lampsilis higginsii)*	Endangered	Mississippi River
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams
	Spectaclecase (*Cumberlandia monodonta*)	Endangered	Mississippi River **Note:** EO for Crawford county is historic-last observation 1982
	Rusty patched bumble bee *Bombus affinis* **Note for project proponents**: this bee is not known to occur throughout the entire counties. To determine if your project or ongoing action is within an area that is likely to have the rusty patched bumble bee, use our online tool at https://ecos.fws.gov/ipac/	Endangered	Grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter.
Dane	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.
	Whooping crane (*Grus americanus*)	**Non-essential experimental population	Open wetlands and lakeshores
	Higgins eye pearly mussel *(Lampsilis higginsii)*	Endangered	Lower Wisconsin River
	Sheepnose (*Plethobasus cyphyus*)	Endangered	Shallow areas in larger rivers and streams

County	Species	Status	Habitat
	Rusty patched bumble bee *Bombus affinis* **Note for project proponents**: this bee is not known to occur throughout the entire counties. To determine if your project or ongoing action is within an area that is likely to have the rusty patched bumble bee, use our online tool at https://ecos.fws.gov/ipac/	Endangered	Grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter.
	Eastern prairie fringed orchid *(Platanthera leucophaea)*	Threatened	Wet grasslands
	Mead's milkweed *(Asclepias meadii)*	Threatened	Upland tallgrass prairie or glade/barren habitat **Note:** all the Mead's milkweed sites in Wisconsin are reintroduction attempts and occur on protected conservation lands.
	Prairie bush-clover *(Lespedeza leptostachya)*	Threatened	Dry to mesic prairies with gravelly soil
Dodge	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.
	Whooping crane (*Grus americanus*)	**Non-essential experimental population	Open wetlands and lakeshores
	Rusty patched bumble bee *Bombus affinis* **Note for project proponents**: this bee is not known to occur throughout the entire counties. To determine if your project or ongoing action is within an area that is likely to have the rusty patched bumble bee, use our online tool at https://ecos.fws.gov/ipac/	Endangered	Grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter.
Door	Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. During summer, roosts and forages in upland forests.
	Hine's emerald dragonfly *(Somatochlora hineana)*	Endangered	Calcareous streams & associated wetlands overlying dolomite bedrock



ATTACHMENT 4

A Literature and Records Search on the Previously Reported Cultural Resources in and Near the Yahara Hills Golf Course in Madison, Dane County, Wisconsin (ACS, November 2021)

A LITERATURE AND RECORDS SEARCH ON THE PREVIOUSLY REPORED CULTURAL RESOURCES IN AND NEAR THE YAHARA HILLS GOLF COURSE IN MADISON, DANE COUNTY, WISCONSIN

REPORT OF INVESTIGATIONS NO. 2185

PREPARED BY:

PHILIP H. SALKIN
ARCHAEOLOGICAL CONSULTING AND SERVICES, INC.
POB 260274
MADISON, WISCONSIN 53726-02274

NOVEMBER, 2021

PROJECT SUMMARY

Title: A Literature and Records Search on the Previously Reported Cultural Resources in and Near the Yahara Hills Golf Course in Madison, Dane County, Wisconsin

I.D.: ACS 2185

Principal Investigator: Philip H. Salkin
Archaeological Consulting and Services, Inc.
POB 260274
Madison, Wisconsin 53526-0274

Project Personnel: Lauren Glover

Contractor: Dane County Department of Waste and Renewables
7102 USH 12
Madison, Wisconsin 533718

Methods: Literature and Records Search

Results of the Study:
No previously reported archaeological sites lie within the project area, although the closest is approximately 350 meters to the north. Several Euro-American farmsteads were within the project area prior to the development of the golf course. No standing buildings or other structures in the project area are listed on the Wisconsin Architectural/Historical Inventory, but the 1967 Club House is immediately to the west.

Recommendations:
Portions of the project area to be disturbed by the potential landfill should be archaeologically survey prior to construction. However, portions of the project area were not well-drained in the past and most of it has been disturbed by cultivation and then the construction of the golf course. Consultation with the State Historic Preservation Office and the Wisconsin DNR will help to craft the best approach to any archaeological studies, considering the lack of previously reported archaeological sites and wet and/or disturbed conditions.

Date of Research: November, 2021
Date of Report: November, 2021

Abstract

In November, 2021, the author conducted a literature and records search on the previously reported cultural resources associated with the potential redevelopment of a portion of the Yahara Golf Course into a landfill in the City of Madison, Wisconsin. In the course of the study, various data sources were checked on the previously reported Native American and Euro-American archaeological resources in and around the project area. The Wisconsin Architectural and Historical Inventory was examined to see if any potential significant architectural resources might be impacted.

The study indicated that no previously reported archaeological sites lie in the project area. However, sites are reported for the Rodenfeld Landfill area north of USH 12/18 in Sec. 25, T7N, R10E, the closest within about 350 meters of the project area. Other sites lie with 1.6km away in surrounding sections. Using old maps and plats and the 1937 aerial photos, it is clear that a small number of mid-19th to mid-20th century farmsteads were located within the project area. The Yahara Hills Club House is listed on the Wisconsin Architectural and Historical Inventory. While not in the project area, it might be visually impacted depending on the design of the proposed landfill.

This study indicated several things about the physical setting of the golf course. As indicated by the 1939 Wisconsin Economic Inventory Map, much of the area was cultivated for generations prior to the development of the golf course. This would have impacted archaeological sites within the project area, although deeper deposits may have survived undisturbed. Most of the project area was impacted by grading for its development. Depending on the depth of the excavations, this may have further impacted any archaeological resources present. Importantly, the 1978 soil manual indicates the presence of somewhat poorly or poorly drained soils in portions of the golf course. This is also indicated by early maps. Such areas have a lower archaeological potential, although sites may present on their periphery. Any draining and filling of wetlands would have also impacted potential sites.

The recommendations for this project are to examine any records on the construction of the course. This will help determine which areas were disturbed beyond typical agricultural impacts. In coordination with the State Historical Preservation Office and the Wisconsin DNR, this may help to eliminate the need for archaeological survey in some areas. This is also true for poorly drained soils, especially those impacted by drainage and filling activities, or it could call for less intensive archaeological investigations.

Table of Contents

Figures

Introduction

In November, 2021, the author conducted a literature and records search on the previously reported cultural resources in and near a portion of the Yahara Hills Golf Course in Madison, Wisconsin. The project relates to the potential redevelopment of a portion of the golf course into a landfill. The project area is approximately 149.4 hectares (369 acres) in size. It includes most of the SE1/4, Sec. 25, and portions of the SW1/4, Sec. 25, the SE1/4, NW1/4, Sec. 25, the SW1/4, NE1/4, Sec. 25 and the N1/2, N1/2, Sec. 36, T7N, R10E, Dane County.

The study was conducted by the author with the assistance of Lauren Glover of Archaeological Consulting and Services, Inc. of Madison, Wisconsin. It was conducted for Dane County Department of Waste and Renewables.

The General Area

The project area is located in east-central Dane County in the south-central portion of the state (Figs. 1-2). This part of Wisconsin lies in the Eastern Ridges and Lowlands Province, a region distinguished by a relatively level topography with elevations from about 140 to 378 meters m.s.l. It is dominated by cuestas; ridges with steep escarpments on one side and long, gentle slopes on the other (Martin 1965: 212). The bedrock in the general project area is complex with Cambrian sandstones, dolomites and shales, sandstones, limestones and conglomerates of the St. Peter Formation and dolomites, sandstones and shales of the Prairie du Chien Group (Wisconsin Geological and Natural History Survey 1981). This is covered in this area with ground moraines, with small areas of end moraines and outwash deposits (Wisconsin Geological and Natural History Survey 1976). Numerous drumlins are found in this portion of Wisconsin (Martin 1965: 258, Fig. 91).

Prior to the intensive utilization of the region by Euro-American populations, the vegetation cover consisted of oak-savanna and prairie. The former included upland stands of bur, white and black oak, with a mesic prairie understory and lowland stands of swamp white oak with a wet, mesic prairie understory (Curtis 1959: 326). The latter were dominated by non-arboreal species of grasses (such as bluestem), forbs and some woody plants (ibid: 262). Finley (1976) shows the area as covered by oak stands, mixed hardwood stands and marsh and sedge meadows.

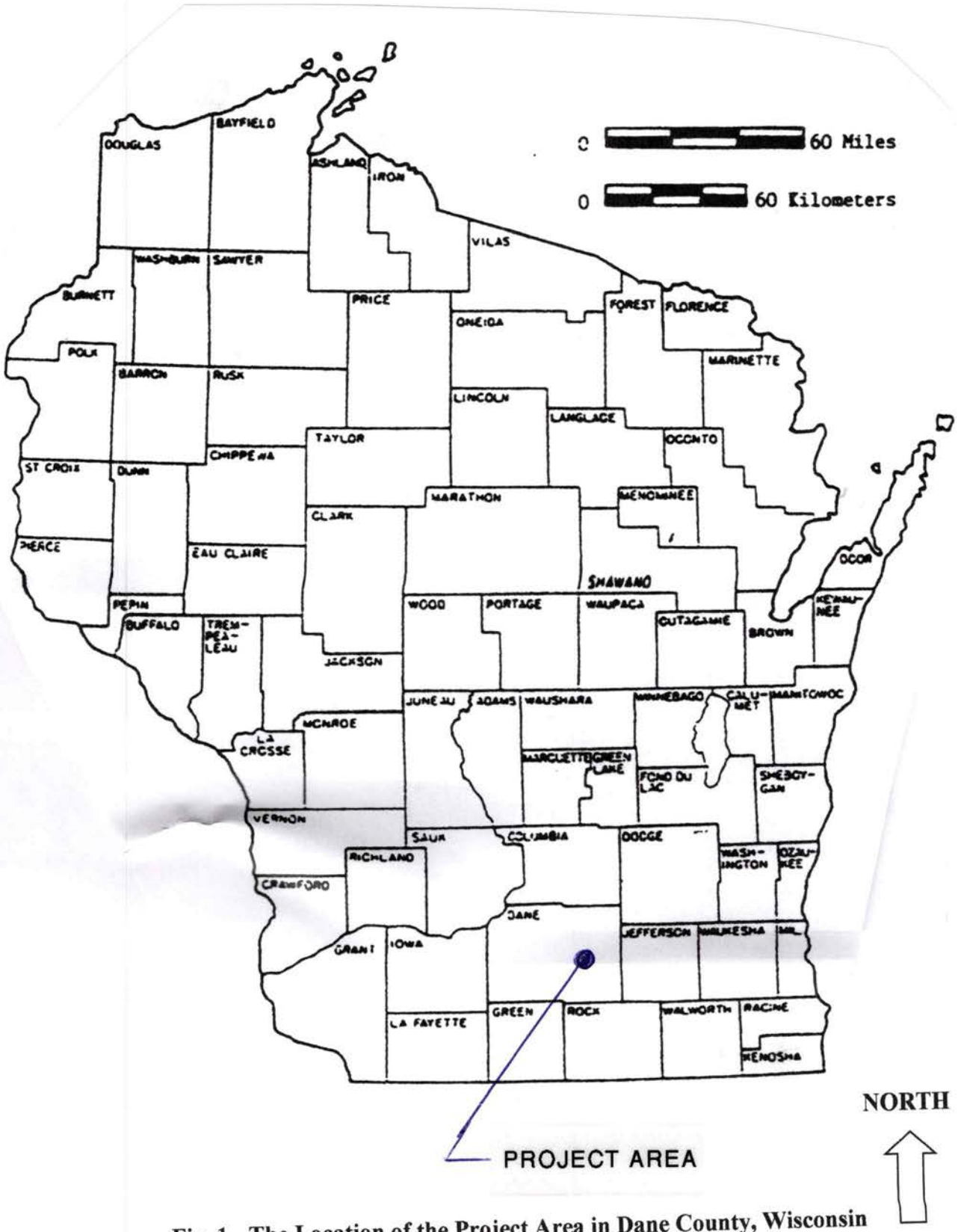


Fig. 1 - The Location of the Project Area in Dane County, Wisconsin

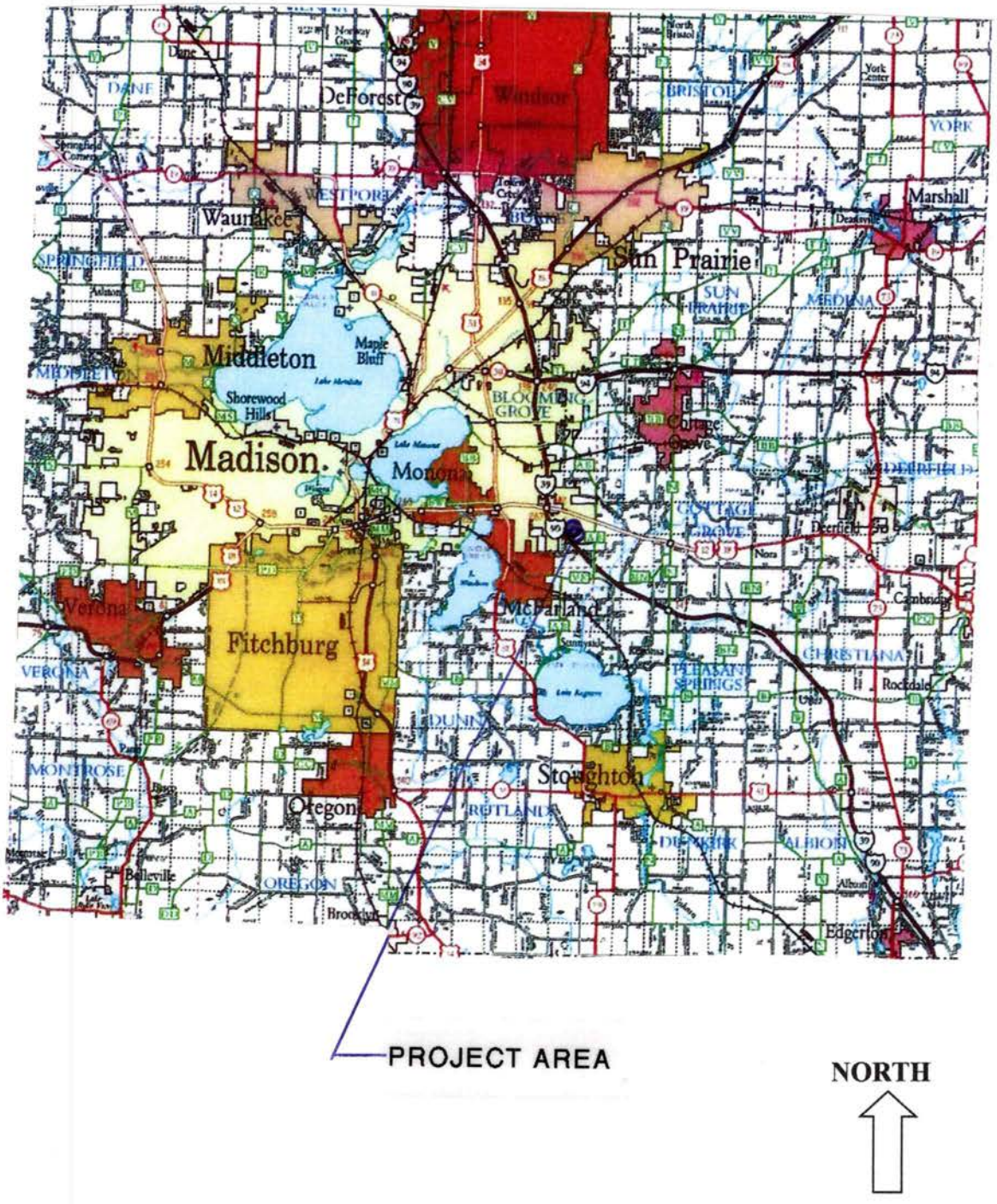


Fig. 2 - The Location of the Project Area in Dane County (WisDOT Map)

The Project Area

The project area is located south of USH 12/18 and north of I-90. To the east is CTH 'AB" (Figs. 3-5). Much of the golf course can be described as level to gently rolling, but there is a general slope uphill to the southeast, Elevations range from approximately 265 meters m.s.l. near the club house to 280 meters m.s.l. in the southeastern corner.

In terms of vegetation, the project area was developed as two golf courses in the 1960's. It opened as a 122 ha. (400 acre) facility in 1968. The 1939 Wisconsin Economic Inventory Map (Fig. 5) shows most of the project area in agricultural use. However, it does show an area covered by marsh grass in the NE1/4, SW1/4, Sec. 25 into the SE1/4, NW1/4, Sec. 25, T7N, R10E.

As might be expected in a facility this size, there are a variety of soil types present. The largest portion lies in an area of Dodge silt loam, 2-6% slopes soils (Fig. 7), This a well-drained soil found of the tops of ridges and on upper side slopes. They form in loess over sandy loam glacial till under a cover of mixed hardwoods (Glocker and Patzer 1978: 22). Another well-drained soil present is the McHenry silt loam, 6-12% slopes, eroded type. This is found on middle side slopes. It forms in thin loess and sandy loam glacial till under thin stands of mixed hardwoods (ibid: 43-44).

The project area also has significant areas with less well-drained soils. These include:

Orion silt loam, wet – somewhat poorly drained soil found on low bottoms in stream valleys – formed in recent silty alluvium and dark colored, older silty alluvium under a cover of mixed hardwoods (Glocker and Patzer 1978: 48) – areas of such soils may require deeper shovel testing as older archaeological materials might lie in the older alluvial layer

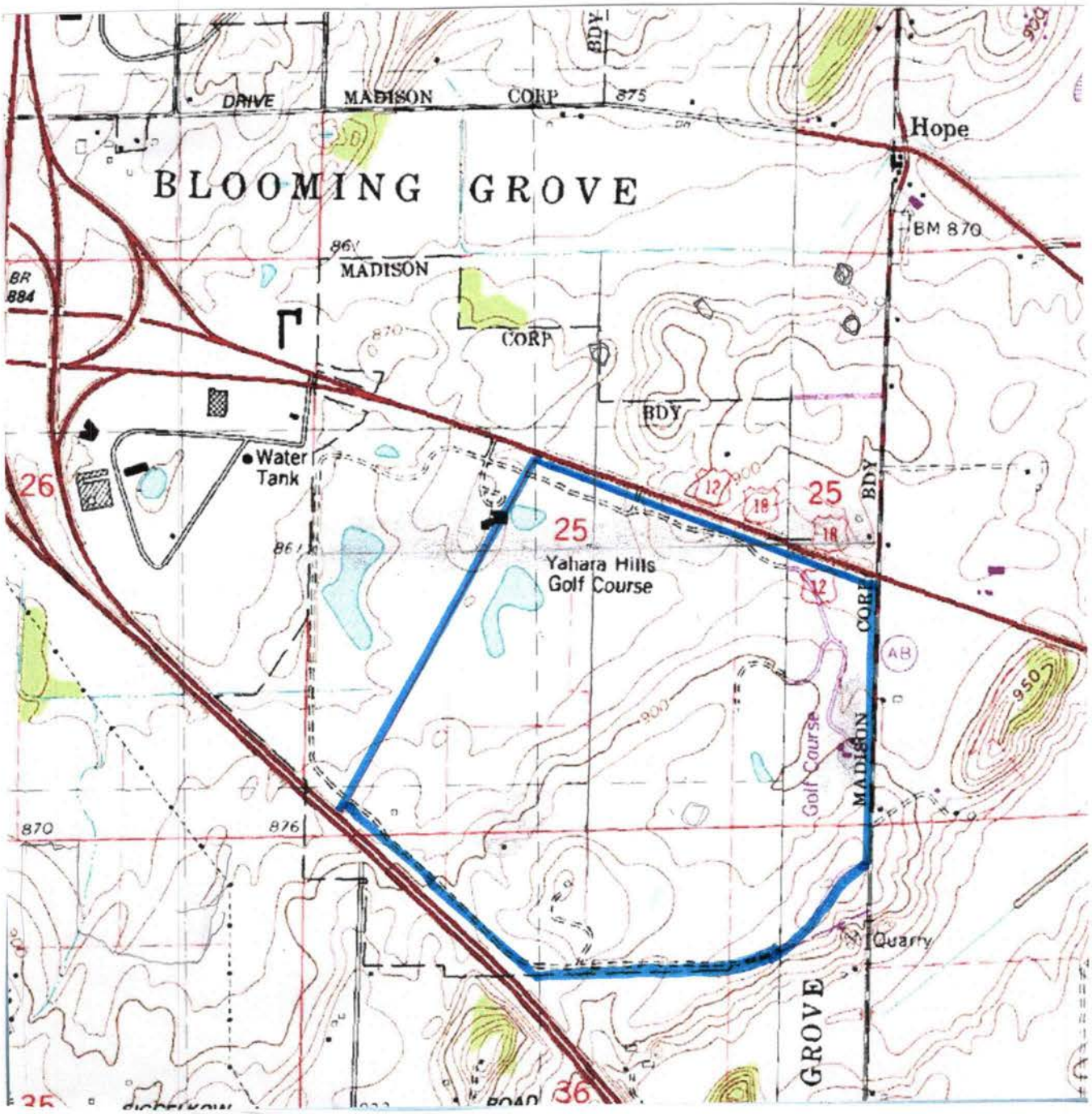


Fig. 3 – The Topography of the General Project Area

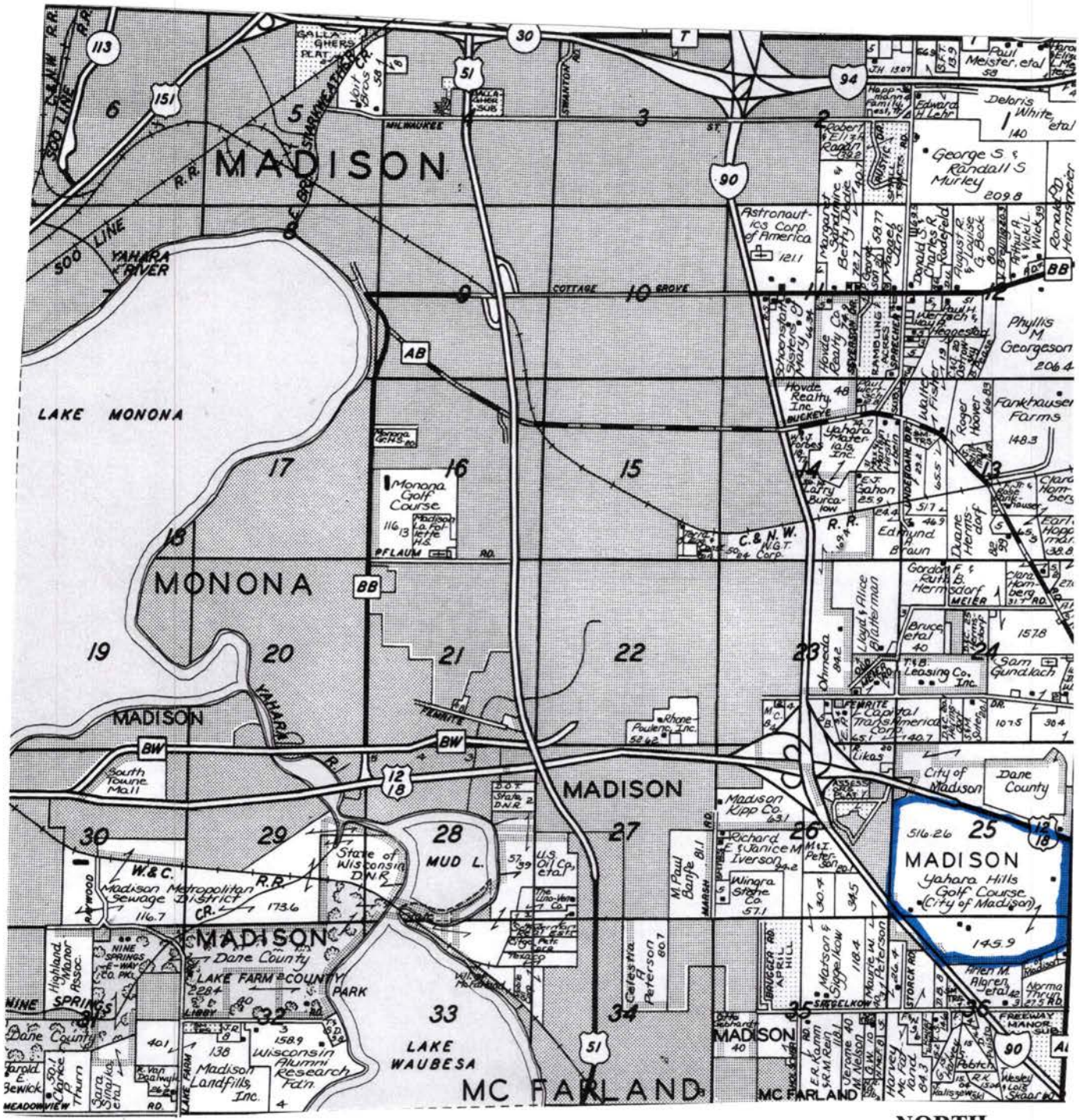


Fig. 4 – The Location of the Project Area in the City of Madison

Fig. 5 – Aerial View of the Yahara Hills Golf Course

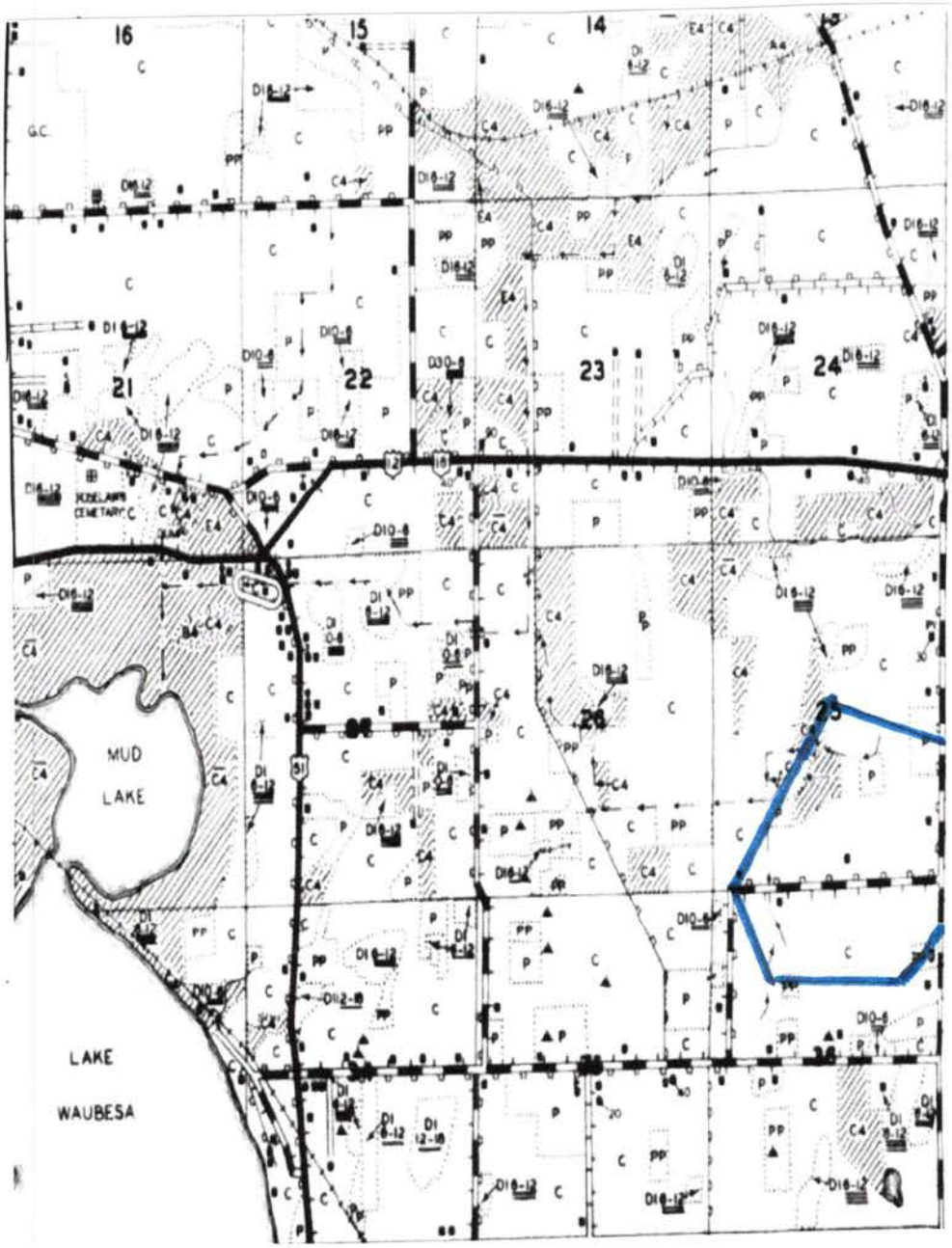


Fig. 6 – The Land Use in the General Project Area in 1939
(Wisconsin Economic Inventory Map)
C – Cropland C4 – Marsh Grass

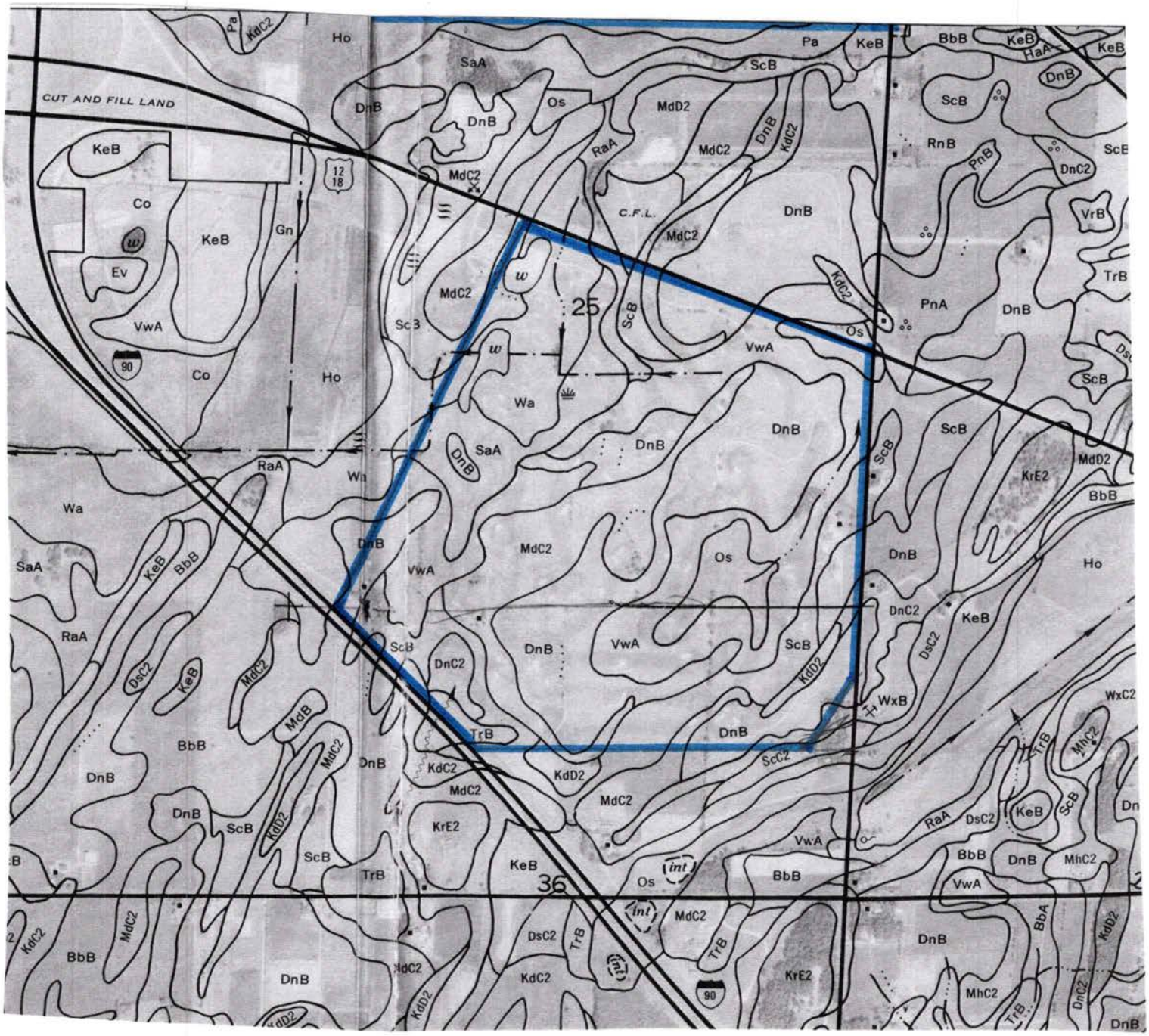


Fig. 7 – Soils in the General Project Area
(Glocker and Patzer 1978)
DnB – Dodge silt loam, 2-6% slopes Or – Orion silt loam, wet
VwA – Virgil silt loam, gravel substratum 0-3% slopes
Wa – Wacousta silty clay loam MdC2 – McHenry silt loam, 6-12% slopes, eroded

Virgil silt loam, gravelly substratum, 0-3% slopes – somewhat poorly drained soil found on convex benchlands on outwash plains – formed in loess and glacial till or sand and gravel outwash under a cover of mixed hardwoods with a grassy understory (Glocker and Patzer 1978: 69)

Wacousta silty clay loam – poorly drained soil found on low benches in old lake basins – formed under sedges in silt with some fine layers of sand (ibid: 70).

The significance of these areas with somewhat poorly to poorly drained soils is that archaeological sites, especially larger occupations are less likely to be found in these locations.

There are only limited water resources in the project area at this time. These include the two ponds in the project area and the two immediately to the west (Fig. 3). However, the ponds relate to the development of the golf course. They do not appear on the 1937 aerial photograph of the area. The ponds suggest relatively wet conditions in the area. This is supported by the soils present. Further, the 1834 G.L.O. map (Fig. 8), the 1862 plat map (Ligowsky 1862) and the 1904 U.S.G.S. map show significant marshes in the western portion of the project area .

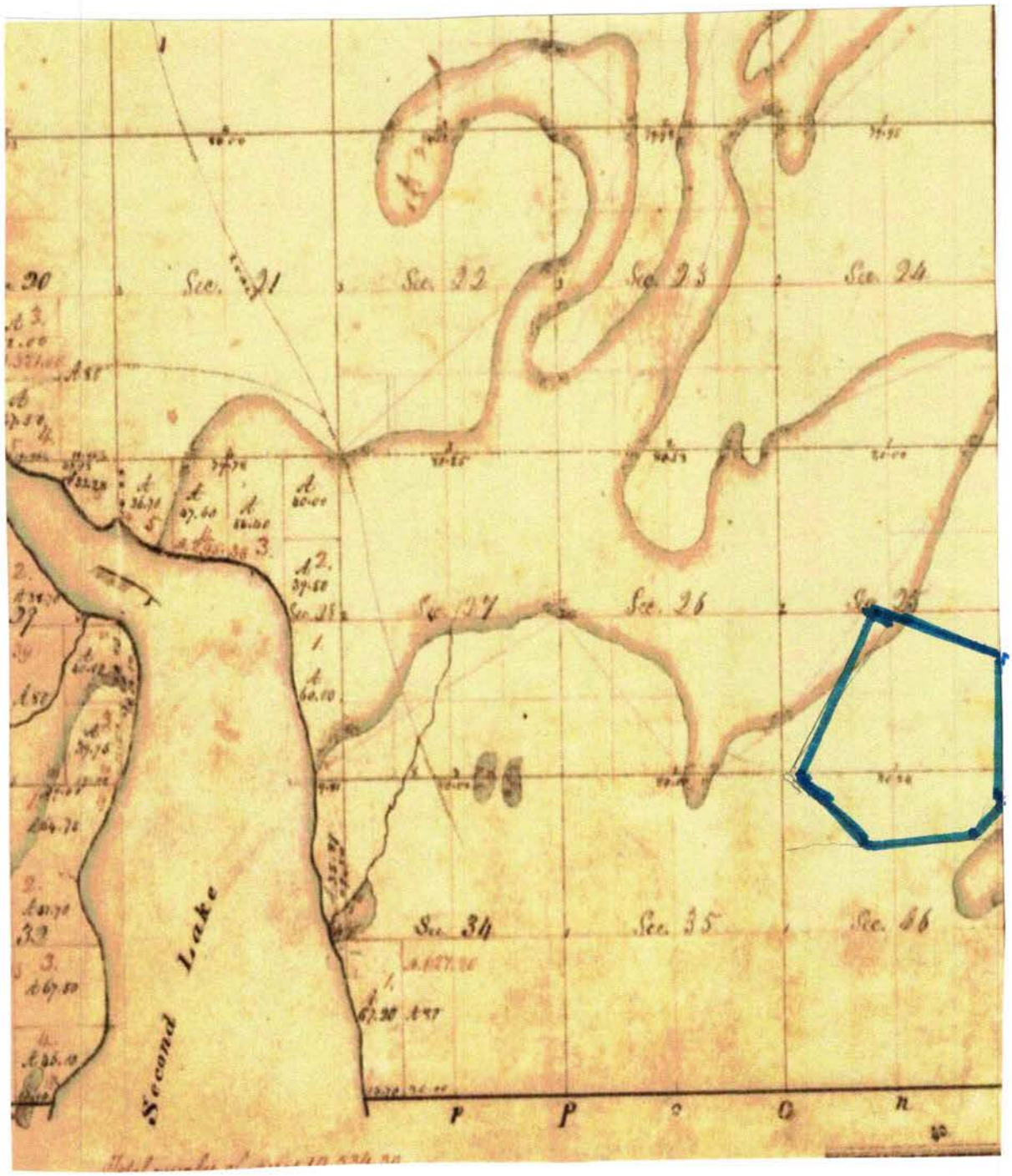


Fig. 8 – The General Project Area on the 1834 G.L.O. Map

Previously Reported Cultural Resources in and Near the Project Area

In conducting the literature and records search was conducted on the project area, the following data sources were reviewed:

Site files and archives of the Wisconsin Historic Preservation Division

Archives Division of the State Historical Society of Wisconsin

Archives of Archaeological Consulting and Services, Inc. (various reports on projects within 2.0km of this project area)

"A Literature and Records Search on the Prehistoric Cultural Resources o Dane County, Wisconsin" (Salkin 1983)

National Register of Historic Places

Charles E. Brown Atlas

Charles E. Brown Manuscripts

Wisconsin Archeologist

Local and County Histories.

The literature and records search indicated that the following sites are those closest to the project area (all sites in T7N, R10E);

47DA-1068 – Locus 1 – Sec. 25 – Native American occupation – 7 artifacts – approx. 350m north of the project area

47DA-1070 – Locus 3 – Sec. 25 – isolate Native American artifact – approx. 515m north of the project area

47DA-0049 – Sigglekow Mounds – Sec. 35 – Native American mound group – approx.. 525m southwest of the project area

47DA-1071 – Locus 4 – Sec. 25 – isolated Native American artifact – approx.. 680m north of the project area

47DA-1069 – Locus 2 – Sec. 25 – Native American occupation – approx. 850m north of the project area

47DA-0624 – Sec. 35 - Koch 4 Site – Native American occupation with a Woodland Tradition component – approx. 900m southwest of the project area

47DA-0306 – Soiney Group - Sec. 26 – Native American mound group – probably destroyed – approx. 1.0km west of the project area

47DA-0034 – Schimming Mound – Sec. 24 – single linear Native American mound – approx. 1.15km northwest of the project area.

47DA-1358 – Marsh Road I Site – Sec. 26 – Native American occupation – approx.. 1.6km west of the project area

Thus, no Native American sites were previously located in, or immediately near the project area. The nearest sites were those identified within the bounds of a survey area for the Rodenfeld Landfill north of USH 12/18 (Stoltman 1982, Salkin 2012).

In terms of Euro-American resources, a review of available plats from 1862 to 1955, show a small number of Euro-American farmsteads located within the project area. For example, the 1862 plat shows the following farmsteads:

Sec. 25 – SE1/4, SW1/4, SE1/4 – Lamp
Sec. 25 – C., S1/2, SW1/4, SW1/4 – Messner
Sec. 36 – NW1/4, NE1/4, NW1/4 – Sigglekow.

In 1873, the following farms are noted:

Sec. 25 – SE1/4, SW1/4, SE1/4 – Lamp
Sec. 25 – SE1/4, NE1/4, SE1/4 – Keen (?)
Sec. 25 – C., S1/2, SW1/4, SW1/4 – Messner
Sec. 36 – NE1/4, NE1/4, NW1/4 – Messner

Houses remained in those approximate locations into the 1950's. The 1937 aerial appears to show four farms with the addition of the E. Brand property in the NE1/4, SE1/4, SE1/4, Sec. 25, T7N, R10E.

It can be difficult to rely on plat maps for the location of structures. Some maps do not show houses at all. The location of homes may vary from map to map. The significance of mid-19th to 20th century farmsteads as archaeological sites varies. Sites with extant basements might be the location of interesting artifacts, although if the farm was long-lived, such materials are often overwhelmed by more modern mass-produced items.

A review of the Wisconsin Architectural Historical Inventory indicated that no listed properties lie in the project area. However, the Yahara Hills Golf Club, immediately to the west is listed (Ref. 227030). The potential visual impact of the development of a landfill should be investigated.

Summation and Recommendations

In November, 2021, the author conducted a literature and records search on the previously reported cultural resources associated with the potential redevelopment of a portion of the Yahara Golf Course into a landfill in the City of Madison, Wisconsin. In the course of the study, various data sources were checked on the previously reported Native American and Euro-American archaeological resources in and around the project area. The Wisconsin Architectural and Historical Inventory was examined to see if any potential significant architectural resources might be impacted.

The study indicated that no previously reported archaeological sites lie in the project area. However, sites are reported for the Rodenfeld Landfill area north of USH 12/18 in Sec. 25, T7N, R10E, the closest within about 350 meters of the project area. Other sites lie with 1.6km away in surrounding sections. Using old maps and plats and the 1937 aerial photos, it is clear

that a small number of mid-19th to mid-20th century farmsteads were located within the project area. In some situations, these might provide information on the early Euro-American settlement of the area. Finally, the Yahara Hills Club House is listed on the Wisconsin Architectural and Historical Inventory. While not in the project area, it might be visually impacted depending on the design of the proposed landfill.

This study indicated several things about the physical setting of the golf course. As indicated by the 1939 Wisconsin Economic Inventory Map, much of the area was cultivated for generations prior to the development of the golf course. This would have impacted archaeological sites within the project area, although deeper deposits may have survived undisturbed. Most of the project area was impacted by grading for its development. Depending on the depth of the excavations, this may have further impacted any archaeological resources present. Importantly, the 1978 soil manual indicates the presence of somewhat poorly or poorly drained soils in portions of the golf course. This is also indicated by early maps. Such areas have a lower archaeological potential, although sites may present on their periphery. Any draining and filling of wetlands would have also impacted potential sites.

The recommendations for this project are to examine any records on the construction of the course. This will help determine which areas were disturbed beyond typical agricultural impacts. In coordination with the State Historical Preservation Office and the Wisconsin DNR, this may help to eliminate the need for archaeological survey in some areas. This is also true for poorly drained soils, especially those impacted by drainage and filling activities, or it could call for less intensive archaeological investigations.

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Curtis, John T.
1959 The Vegetation of Wisconsin. University of Wisconsin Press. Madison.

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Glocker, Carl L. and Robert A. Patzer.
1978 Soil Survey of Dane County, Wisconsin. USDA Soil Conservation Services. Washington, D.C.

Martin, Lawrence.
1965 The Physical Geography of Wisconsin. University of Wisconsin Press. Madison.

Salkin, Philip H.
1983 A Literature and Records Search on the Prehistoric Cultural Resources of Dane County, Wisconsin. Reports of Investigations, No. 111. Archaeological Consulting and Services, Inc. Verona.

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1991 An Archaeological Survey of Proposed Improvement to the Odana Hills Golf Course. Reports of Investigations, No. 692. Archaeological Consulting and Services, Inc. Verona.

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2012 An Archaeological Survey of a Proposed Expansion Area for the Rodenfeld Landfill in Madison, Dane County, Wisconsin. Reports of Investigations, No. 1905. Archaeological Consulting and Services, Inc. Verona.

Salzer, Robert J. and Larry A. Johns.
1992 Final Report of the Dane County Indian Mounds Identification Project. Unpublished Manuscript on file at the Wisconsin Historical Society. Madison.

Stoltman, James B.
1982 A Report of Archaeological Survey on the Site of Possible Landfill Construction East of Madison in Dane County, Wisconsin.

Wisconsin Geological and Natural History Survey.
1976 Geological Deposits of Wisconsin. Wisconsin Geological and Natural History Survey, Map 10. Madison.

Wisconsin Geological and Natural History Survey.
1981 Bedrock Geology of Wisconsin. Wisconsin Geological and Natural History Survey. Madison

Maps and Plats

1862 - Map of Dane County, Wisconsin - A. Ligowsky - Madison

1873 - Atlas of Dane County, Wisconsin - Harrison and Warner - Madison

1890 - Plat Book of Dane County, Wisconsin - C.M. Foote and Co. - Minneapolis

1899 - New Atlas of Dane County, Wisconsin - Leonard W. Gray and Co. - Madison

1904 - Atlas of Dane County, Wisconsin - Democrat Printing Co. - Madison

1911 - Standard Historical Atlas of Dane County, Wisconsin - Cantwell Printing Co. - Madison

1922? - Plat Book of Dane County, Wisconsin - W.W. Hixson and Co. - Rockford

1926 - New Atlas of Dane County, Wisconsin - Dane County Atlas Co. - Madison

1931 - Atlas and Plat Book of Dane County, Wisconsin - The Thrift Press – Rockford

1937 – Aerial Photographic Map of 1937

1939 – Wisconsin Economic Inventory Map, Town of Blooming Grove – Wisconsin Economic Inventory Map

1940 - Dane County Plat Book - W.W. Hixson and Co. - Rockford

1947 - Ownership Plat Book of Dane County, Wisconsin - Marathon Map Service – Milwaukee

1955 – Plat Book of Dane County, Wisconsin – Derr Map Studios - Madison

1993 – Plat Book of Dane County – Rockford Map Publishers - Rockford

ATTACHMENT 5

Archaeological Survey Field Report, USH 12/18, CTH AB Interchange, Dane County, Wisconsin (Commonwealth Heritage Group, October 2020)

ARCHAEOLOGICAL SURVEY FIELD REPORT

Wisconsin Department of Transportation
DT1978 6/2007 (Replaces ED864)

PROJECT INFORMATION

Project ID	Highway/Street	County	SHSW Compliance Number
3080-01-05	USH 12/18	Dane	

Project Termini	Project Size
CTH AB Overpass/Interchange	1.7 miles 206.08 acres

Township(s)	Town/Range	Sections
City of Madison, Town of Cottage Grove	7N/10E | 7N/11E	25, 26 | 30

Project Type

☒ Reconstruction ☐ Reconditioning ☐ Bridge ☐ Wetland Mitigation ☐ Other

Landowners Contacted - If No, Explain	Permits Obtained - If Yes, Attach
☒ Yes ☐ No	☒ Yes ☐ No

LITERATURE SEARCH

Previously Reported Sites in Project Area	Archaeology and Records Literature Search	Cemetery in Project Area
☒ Yes ☐ No	☒ Attached	☒ Yes ☐ No

FIELDWORK

Dates of Field Work	Crew Size	Area Surveyed
8/13/2020, 8/27/2020, 10/8/2020	1	72.95 acres

SURVEY TECHNIQUES - Attach project plans showing survey coverage.

☒ Shovel Testing	☐ Surface Collection	☒ Other - Describe 133.13 ac previously surveyed; visual observation of disturbed (23.18 ac) and wet (5.74 ac) areas
44.03 acres	acres	
15 m interval	interval	

Describe Visibility

0% - Entire APE was paved, covered in vegetation, or golf course ponds

LAND USE – Describe. Also, attach map, showing location.

Were there area(s), which were not surveyed? If yes, show on project plans and explain.

☐ Yes ☒ No

Were there area(s), which were extensively impacted? If yes, show on project plans and explain.

☒ Yes ☐ No Most of current survey area was in a heavily disturbed golf course

Comments

One previously identified mound site in APE located within previously surveyed area. Site was described as destroyed by previous construction. Current survey area was shovel tested where possible, obvious areas of disturbance (paved areas, golf course fairways/tees, sand traps) and wet areas were visually inspected

ISOLATED FINDS – Describe. Also, attach map, showing location.

n/a

I certify that the literature search and all fieldwork conducted for this report was done according to the Wisconsin Archeological Survey Guidelines. No archeological sites were identified in the project area.

Commonwealth Heritage Group
(Print Name of Firm or Institution)

Richard W. Edwards VI, PhD, RPA
(Print Name of Archaeologist)

Richard W Edwards IV
(Signature of Archaeologist)

10/13/2020
(Date)

Note: Current archaeological methods may not detect buried sites or burial areas. If artifacts, or human remains are discovered during construction, immediately stop construction in that area and notify the Wisconsin Department of Transportation, Bureau of Equity & Environmental Services.

ARCHAEOLOGICAL LITERATURE AND RECORDS REVIEW

Wisconsin Department of Transportation
DT1459 2/2013

PROJECT INFORMATION

Project ID	Highway/Street	County	SHSW Compliance Number
3080-01-05	USH 12/18	Dane	

Project Termini
CTH AB Overpass/Interchange

Township(s)	Town/Range	Sections
City of Madison, Town of Cottage Grove	7N/10E | 7N/11E	25, 26 | 30

USGS Quadrangle(s)
Madison East (1983), Cottage Grove (1991)

SOURCES RESEARCHED

☒ See Continuation Sheet

☒ OSA USGS Maps ☒ Previous Surveys ☒ CEB Atlas
☒ WI Land Economic Inventory (WLEI) ☐ County History ☒ CEB Manuscripts
☒ Burial Sites Office ☐ Archival Maps:

Publisher	Year	Publisher	Year
Harrison and Warner	1873	Leonard W. Gray & Co.	1899
C.M. Foote & Co.	1890	Democrat Printing Co.	1904

☒ Other GLO survey maps (Lyon 1834)

SITES IN PROJECT AREA

☐ See Continuation Sheet

Total Number of Sites	Prehistoric	Historic	Cemeteries/Burials
	1	0	1

CODE	TYPE	AFFILIATION
#47 DA – 0062/BDA-0334	Mound(s) Linear	Late Woodland
#47 –		
#47 –		

SITES WITHIN ONE MILE OF THE PROJECT AREA

☒ See Continuation Sheet

Total Number of Sites	Prehistoric	Historic	Cemeteries/Burials
	20	4	11

CODE	TYPE	AFFILIATION
# BDA – 0030	Cemetery/Burial	Historic Euroamerican
# BDA – 0031	Cemetery/Burial	Historic Euroamerican
#47 DA – 0034/BDA-0314	Mound(s) Linear	Late Woodland

☒ Sites Reported in the Project Area ☒ Sites Reported Within One Mile ☒ No Sites Reported in the Project Area

Research Conducted by: Elissa Hulit; Richard Edwards
Date (m/d/yy): 8/4/2020

I certify that the literature search was done according to the Wisconsin Survey Guidelines.

Richard W. Edwards IV, PhD, RPA
(Print Name of Archaeologist)

Commonwealth Heritage Group, Inc.
(Print Name of Firm or Institution)

X Richard W Edwards IV
(Signature of Archaeologist)

08/05/2020
(Date – m/d/yy)

SOURCES RESEARCHED *(continued)*

Publisher	Year	Publisher	Year
Cantwell Printing Co.	1911		
W.W. Hixson and Co.	1922		
Dane County Atlas Co.	1926		
Thrift Press	1931		

SITES IN PROJECT AREA *(continued)*

CODE	TYPE	AFFILIATION
#47 –		
#47 –		
#47 –		
#47 –		

SITES WITHIN ONE MILE OF THE PROJECT AREA *(continued)*

Total Number of Sites	Prehistoric	Historic	Cemeteries/Burials
	20	4	11

CODE	TYPE	AFFILIATION
#47 DA – 0035/BDA-0315	Mound (s) Effigy	Late Woodland
#47 DA – 0036/BDA-0316	Mound (s) Conical	Late Woodland
#47 DA – 0063/BDA0332	Mound (s) Linear	Late Woodland
#47 DA – 0064/BDA0333	Mound (s) Linear	Late Woodland
#47 DA – 0065/BDA0330	Mound (s) Linear	Late Woodland
#47 DA – 0066/BDA0335	Mound (s) Linear	Late Woodland
#47 DA – 0067/BDA0331	Mound (s) Other/Unknown	Late Woodland
#47 DA – 0492	Campsite/Village	Unknown Prehistoric
#47 DA – 0493	Campsite/Village	Unknown Prehistoric
#47 DA – 0601	Campsite/Village	Unknown Prehistoric
#47 DA – 0723/BDA0525	Mound (s) Effigy; Lithic Scatter	Late Woodland
#47 DA – 1069	Lithic Scatter	Unknown Prehistoric
#47 DA – 1071	Isolated Finds	Unknown Prehistoric
#47 DA – 1358	Lithic Scatter	Unknown Prehistoric
#47 DA – 1468	Lithic Scatter	Unknown Prehistoric
#47 DA – 1469	Lithic Scatter	Unknown Prehistoric
#47 DA – 1470	HCM Concentration	Unknown Historic
#47 DA – 1471	Isolated Finds	Unknown Prehistoric
#47 DA – 1483	Isolated Finds	Unknown Prehistoric
#47 DA – 1523	Isolated Finds	Unknown Prehistoric
#47 DA – 1524	Isolated Finds	Unknown Historic

Attachment 1

WISCONSIN PUBLIC LANDS FIELD ARCHAEOLOGICAL PERMIT

REQUIRED TO CONDUCT ARCHAEOLOGY ON ALL NON-FEDERAL PUBLIC LAND UNDER WIS. STAT. § 44.47

Wisconsin Historical Society

Name/Organization/Contact: Robert Watson Telephone#: 414-446-4121 ext 104

Address: 8669 N Deerwood Dr City: Milwaukee State: WI Zip Code: 53209

E-mail Address: rwatson@chg-inc.com FAX#: 414-446-4325

Institutional Affiliation: Commonwealth Heritage Group, Inc.

Location: County: WisDOT Properties Civil Town: _____

Town: _____ Range: _____ Section: _____ Quarter Sections: _____

Hwy/Rd ☐ Hwy/Rd: _____ Other Type of Project ☐

Project Description: _____

Type of fieldwork: Phase I/Survey ☑ Phase II/Testing ☐ Phase III/Excavation ☐ Monitoring ☑

Purpose of the fieldwork: Federal Compliance ☑ State Compliance ☑ Education ☐ Other ☑

Site #: _____ Burial Site#: _____ Burial Permit Secured? Y ☐ N ☐

Dates of field work: Begin date: January 6, 2020 End date: December 31, 2020

What institution will curate recovered artifacts, notes, and records? UWM or MVAC

(*Curation agreement must be on file with WHS; all materials must be curated in an appropriate, staffed facility.*)

Print name: Robert Watson ☐ see attachments

Signature of Archaeologist Robert J Wat Date: 1-6-2020

Maps and/or Letters of explanation can accompany this application

---

Landowner or custodian name (**print**): Jason Kennedy Phone: 608-267-6693

Affiliation: Wisconsin Department of Transportation

Signature of Landowner Jason Kennedy Date: 01/06/2020

DO NOT WRITE BELOW THIS LINE

Permit Approved: John H. Broihahn Date: 8 Jan 2020

PLP # 20 002

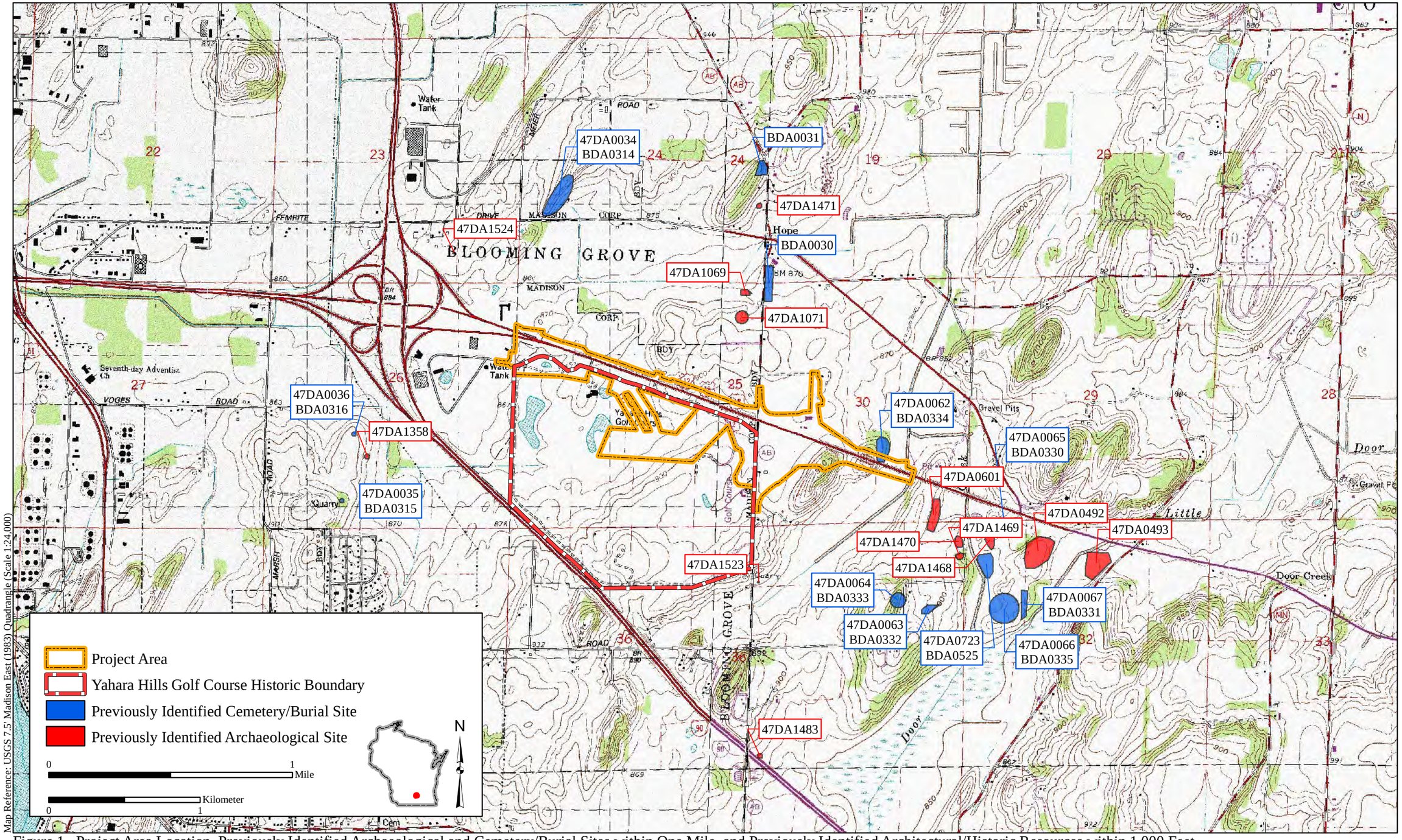
John H. Broihahn
State Archaeologist
Wisconsin Historical Society
816 State Street Madison, WI 53706
FAX: 608-264-6504 / PH 608-264-6496
Email: john.broihahn@wisconsinhistory.org

WISCONSIN HISTORICAL SOCIETY

One paper copy and one PDF copy of the final report must be submitted to the State Historic Preservation Office.

Additional authorization or permitting is necessary to conduct work within the boundaries of uncataloged and cataloged human burial sites under Wis. Stat. § 157.70. For additional information please see: http://wihist.org/10WqFCf

WisDOT ID 3080-01-05
USH 12/18, CTH AB Overpass/Interchange
Dane County



Map Reference: USGS 7.5' Madison East (1983) Quadrangle (Scale 1:24,000)

Job: W-1756; Date Saved: 10/1/2020 3:17:00 PM

Figure 1. Project Area Location, Previously Identified Archaeological and Cemetery/Burial Sites within One Mile, and Previously Identified Architectural/Historic Resources within 1,000 Feet

WisDOT ID 3080-01-05
USH 12/18, CTH AB Overpass/Interchange
Dane County

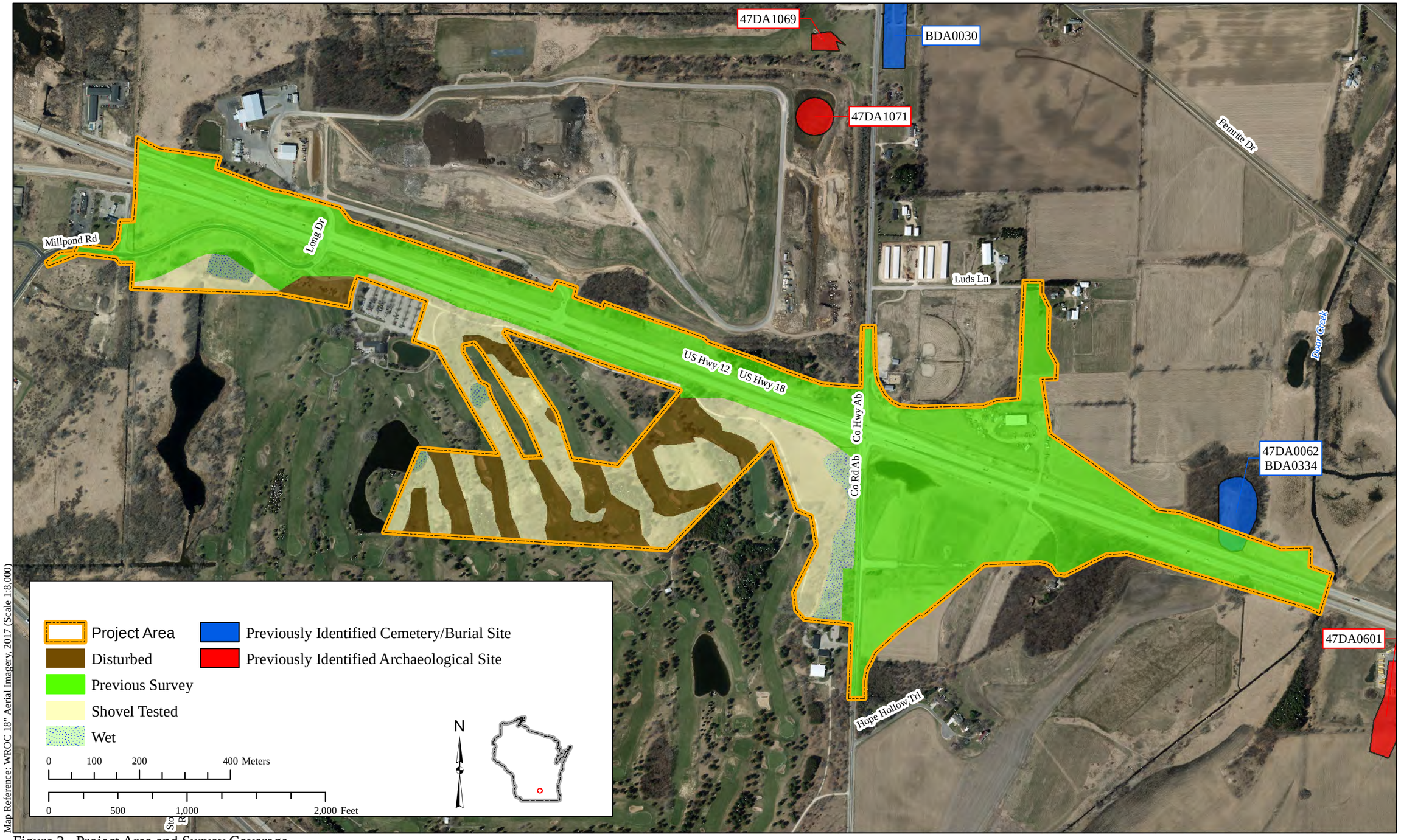


Figure 2. Project Area and Survey Coverage

Figure 3. Project Area Overview, Shovel Tested Portion of Golf Course, View East

Figure 4. Project Area Overview, Wetland at West Edge of APE, View East

Figure 5. Project Area Overview, Shovel Tested Portion East of Golf Course, View Southeast

Figure 6. Project Area Overview, Wetland East of Golf Course, View South

ARCHAEOLOGICAL REPORT INVENTORY FORM

WHS/SHSW # COUNTY Dane

AUTHORS: Richard W. Edwards, IV

REPORT TITLE: Archaeological Survey Field Report, USH 12/18, CTH AB Overpass/Interchange, Dane County, Wisconsin.

DATE OF REPORT (MONTH AND YEAR): October 2020

SERIES/NUMBER: WR-1762

PLACE OF PUBLICATION: Commonwealth Heritage Group, Inc., Milwaukee, Wisconsin

LOCATIONAL INFORMATION [LEGAL DESCRIPTION OF SURVEY AREA (T-R-S)]
T7N-R10E-25, 26 | T7N-R11E-30

U.S.G.S. QUAD MAP(S): Madison East (1983), Cottage Grove (1991)

SITE(S) INVESTIGATED: None

ACRES INVESTIGATED: 72.95 AGENCY # 3080-01-05

INVESTIGATION TECHNIQUES COMPLETED (Check all that apply.)

☐ Avocational Survey	☐ Chance Encounter	☐ Historical Research
☐ Faunal Analysis	☐ Floral Analysis	☐ Interview/Informant
☒ Literature Background Research	☐ Major Excavation/Phase III	☐ Mechanical Stripping
☐ Monitoring	☐ Osteological Analysis	☐ Geomorphology
☒ Records/Background	☒ Surface Survey	☐ Soil Core
☐ Remote Sensing	☐ Shovel Testing/Probing	
☐ Test Excavation/Phase II	☐ Traditional Knowledge	
☐ Underwater	☒ Walk Over /Visual Inspection	

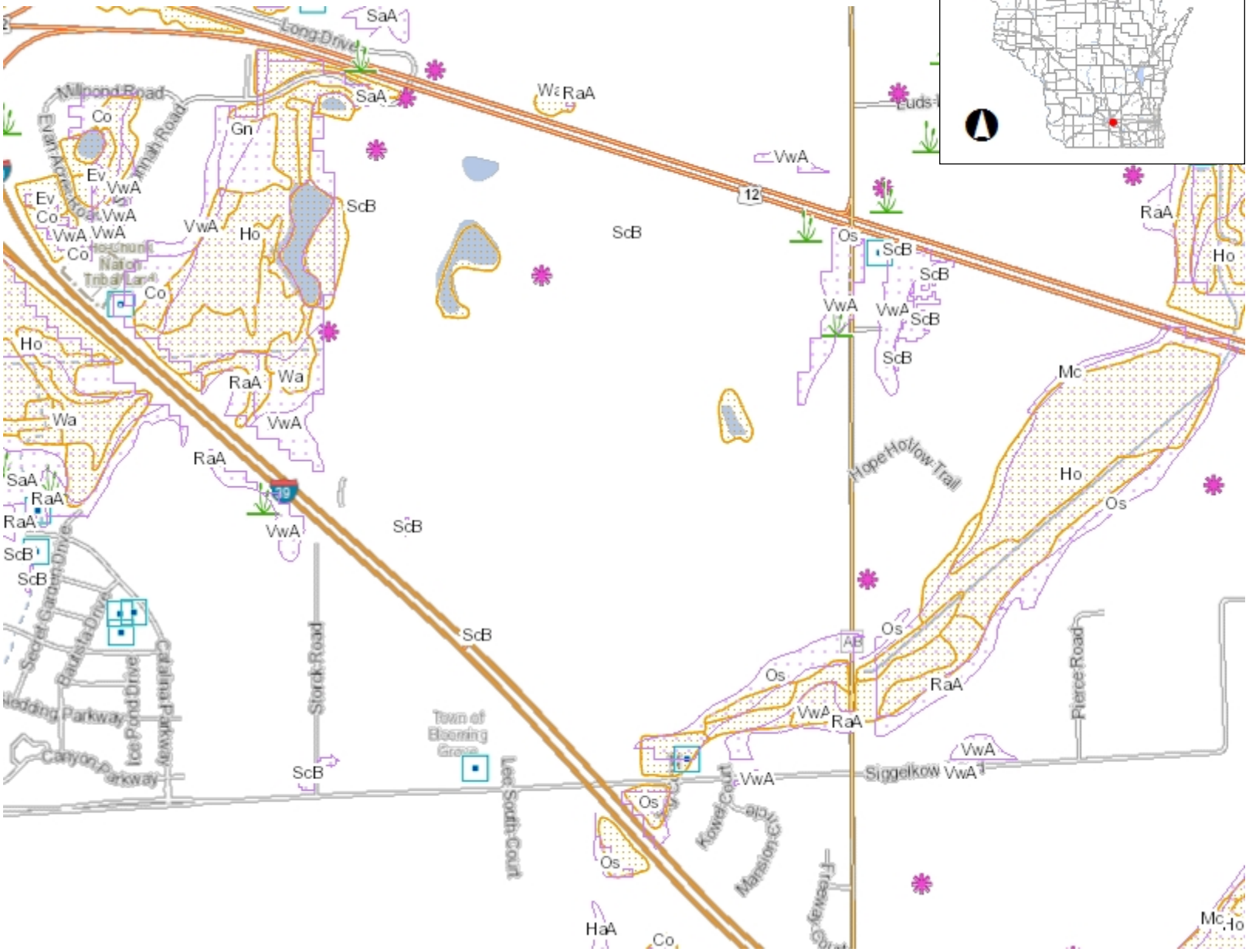
ABSTRACT: ☐ Included in report ☒ Written in space below

In August and October 2020, Commonwealth Heritage Group, Inc. (Commonwealth) conducted archaeological survey for a proposed WisDOT project in Dane County to remove the at-grade Millpond Road/Long Drive and CTH AB intersections on USH 12/18 and construct a new grade-separated interchange at CTH AB. Most of the Area of Potential Effects (APE) was previously surveyed (133.13 ac), including one previously identified mound site (47DA0062/BDA0334) that was determined to have been destroyed. The portion of the APE not previously surveyed included paved surfaces, vegetated areas, and an active golf course. Shovel testing was implemented throughout this portion of the APE (44.03 ac). No cultural materials or features were identified during survey. Based on the results of the archaeological survey, Commonwealth concludes that the project will have no effect on archaeological historic properties.

ATTACHMENT 6

WDNR Surface Water Data Viewer Map of Wetlands and Wetland Indicator Soils (March 11, 2022)

Surface Water Data Viewer Map
Wetlands and Wetland Indicator Soils



Legend

- Wetland Indicators
- Wetland Class Areas
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
  - Filled excavated pond
- Filled Points
- Wetland Class Areas
- Filled Areas
- Wetland Class Areas
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
  - Filled excavated pond
- Filled Points
- Wetland Class Areas
- Filled Areas
- Wetland Identifications and Confirmations
- NRCS Wetspots
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads

Notes

0.5 0 0.25 0.5 Miles

NAD_1983_HARN_Wisconsin_TM

1: 15,840

APPENDIX C

CORRESPONDENCE

5/11/2022	WDNR Initial Site Inspection Response Letter – Proposed Dane County Landfill Site #3
6/10/2022	WDNR Endangered Resources Review Verification Form – Proposed Dane County Landfill Site No. 3
7/29/2022	USACE Acknowledgement Letter for Jurisdictional Determination Request – Proposed Dane County Landfill Site No. 3

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
3911 Fish Hatchery Road
Fitchburg WI 53711-5397

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

May 11, 2022

File Ref: FID 113450480
Dane County
SW/CORR

Mr. John Welch
Director of Waste & Renewables
Dane County Landfill
1919 Alliant Energy Center Way
Madison, WI 53713

Subject: Initial Site Inspection Response - Proposed Dane County Landfill Site #3
6701 US Highway 12 & 18, Madison, Wisconsin

Dear Mr. Welch:

This letter documents the initial site inspection (ISI) performed by the Department of Natural Resources (department) on April 14, 2022, for the proposed Dane County Landfill Site #3, and the department's preliminary opinion regarding the suitability of the site location. Department staff conducted the initial site inspection with staff from Dane County Waste & Renewables (county) and representatives from Tetra Tech, the county's consultant. The purpose of the inspection was to identify any potential conflicts the proposed development might have with the location and performance standards in s. NR 504.04, Wis. Adm. Code.

As part of the inspection, the department evaluated the information in Tetra Tech's March 17, 2022 ISI request letter submitted on behalf of the county. According to the letter, the proposed development consists of an approximate 230-acre parcel located in the SE¼ of Section 25 and the N½ of the NE¼ of Section 36, T17N, R10E, and is currently developed as the City of Madison Yahara Hills Golf Course.

Based on the review of the March 17, 2022 ISI request and observations from the ISI, the department's preliminary opinion regarding the suitability of site location is that the site location has potential. However, there may be some conflicts with the locational criteria contained in s. NR 504.04(3), Wis. Adm. Code, that will need to be addressed. If there are conflicts that cannot be satisfactorily addressed in accordance with applicable requirements, the conflicts would be constraints to site development.

Summary of Locational Criteria: As described in s. NR 504.04(3)(a) to (i), Wis. Adm. Code, there are several locational criteria that apply to the proposed landfill development. The proposed limits of filling may not be located within:

(a) *1,000 feet of any navigable lake, pond or flowage.* According to the ISI request, the proposed limits of waste are located within 1,000 feet of a navigable lake, pond or flowage. According to the department's Surface Water Data Viewer (SWDV), an unnamed pond (WBIC 5575561) is located within the proposed limits of waste. A preliminary review of historical aerial imagery indicates this unnamed pond is not naturally occurring but was constructed during development of the golf course. The pond would be removed prior to constructing the landfill liner system.

Based on the information provided in the ISI request and consultation with Al Ramminger, department Water Regulation and Zoning Specialist, the pond is considered to be an artificial wetland which would

likely qualify as exempt from state permitting requirements. Consultation with the department's Watershed Management Program, and possibly the U.S. Army Corps of Engineers (ACOE), will be conducted again by department Waste and Materials Program plan review staff during review of the Initial Site Report (ISR) and the feasibility report to ensure that there are no areas of the pond, or around the pond, that may be regulated under wetland or waterway rules and to assess if an artificial wetland determination would be needed by the department or the ACOE.

(b) *300 feet of any navigable river or stream*. According to the ISI request, no navigable rivers or streams are located within 300 feet of the proposed site. An unnamed stream (WBIC 803000) is located approximately 850 feet southeast of the proposed limits of disturbance and approximately 950 feet from the proposed limits of waste. The stream flows to the northeast and discharges into Door Creek.

(c) *A floodplain*. According to the ISI request, the proposed development is not within a floodplain. The SWDV also indicates this area is not in a floodplain.

(d) *1,000 feet of the nearest edge of the right-of-way of any state trunk highway, interstate or federal aid primary highway or the boundary of any public park or state natural area, unless the landfill is screened.* According to the ISI request, the proposed limits of waste would be located approximately 425 feet south of US Highway 12 & 18 and 150 feet west of County Highway AB. Interstate 90/39 (I-90/I-39) is approximately 1,350 feet southwest of the proposed limits of waste. The City of Madison intends to maintain 18 holes of the Yahara Hills Golf Course after the proposed landfill is constructed. The proposed limits of waste overlap portions of the currently proposed 18-hole golf course; however, the final reconfiguration of the golf course has not been determined. The department understands that the county will propose screening measures from US Highway 12 & 18 and the Yahara Hills Golf Course, as required in future submittals for the proposed landfill. Screening is also proposed for County Highway AB although it is not considered a state trunk highway that requires screening. Screening should also be considered for I-90/I-39. Screening should be utilized to the maximum extent practicable.

(e) *An area where the design or operation of the landfill would pose a significant bird hazard to aircraft.* The ISI request states that there are no airports designed or planned within 5,000 feet of the proposed limits of waste. The nearest public airport is the Blackhawk Airfield, located in Cottage Grove, and Dane County Regional Airport (DCRA), located in Madison. Blackhawk Airfield and DCRA are located approximately 5.25 miles and 7 miles from the proposed limits of waste, respectively. The nearest private use airport is the Quale Airport, located in Cottage Grove, about three miles from the proposed site.

(f) *1,200 feet of any public or private water supply well*. The ISI request states that three private water supply wells (PW-C, PW-D and PW-E) are located within the proposed limits of waste. These wells are owned by the City of Madison and serve the Yahara Hills Golf Course. The county would abandon these wells prior to constructing the proposed landfill. Golf course private water supply wells PW-A and PW-B are located approximately 1,250 feet south and approximately 1,100 feet west of the proposed limits of waste, respectively, and are not anticipated to be abandoned as part of the proposed development. If the county pursues landfill development that would result in the limits of waste to include the areas where water supply wells are located, then the department may require additional well filling and sealing requirements that would involve either complete removal of the well casing or perforation of the well casing to ensure the annular space is filled and sealed with impermeable material. This has successfully been done in the past at other facilities and provides protection to the groundwater quality for the surrounding area. The department is happy to share and discuss the methods and procedures that may be used.

Four assumed private water supply wells are located at residences east of County Highway AB. Based on mapping estimates, the wells are approximately 380, 800, 1,000 and 1,030 feet from the proposed limits

of waste. Another assumed private water supply well associated with a residence is located approximately 1,100 feet southwest of the proposed limits of waste. A known private water supply well (Biogas Well YZ391) is located approximately 990 feet north of the proposed limits of waste, adjacent to the Biogas Facility for the Dane County Landfill Site No. 2. The ISR and feasibility report for the proposed facility should verify and document the actual locations and separation distances of these water supply wells.

(g) *200 feet of a fault that has had displacement in Holocene time*. The ISI request states that the proposed development is not within 200 feet of a fault that has had displacement since Holocene time and that no faults in Wisconsin are known to have had displacements since the Holocene time. This assessment will be completed during the ISR and feasibility reviews.

(h) *Seismic impact zone*. The ISI request concludes that the site is not in a seismic impact zone based on United States Geological Survey (USGS) information. This assessment will be completed during the ISR and feasibility reviews.

(i) *Unstable areas*. The ISI request states that the bedrock beneath the proposed landfill site consists of Prairie du Chien Group dolomite and sandstone and/or the Cambrian Sandstone. Based on previous site geologic studies at the Dane County Landfill Site No. 2 and supply wells drilled at the golf course, there is no evidence of unstable conditions. This assessment will be completed during the ISR and feasibility reviews.

It appears that the site meets, or could be constructed and operated to meet, the performance standards in s. NR 504.04 (4), Wis. Adm. Code.

(a) Wetland Areas –Based on a review of the department's SWDV, the proposed landfill would directly impact one wetland. The SWDV shows an approximate 2.27-acre wetland overlying the unnamed pond that is proposed for removal and is located within the proposed limits of waste. The SWDV also indicated the presence of "wetlands too small to delineate" in the northeast corner of the proposed limits of disturbance. The department understands that the county will conduct wetland delineations in these areas and will initiate the wetland permitting process if the field delineations indicate wetlands would be impacted as a result of the proposed development.

(b) Critical Habitat Areas - Based on a review of the Natural Heritage Inventory (NHI), it appears unlikely that there would be any significant adverse impact on critical habitat areas or endangered or threatened species due to the proposed landfill development. The department understands that the county will submit an Environmental Resources Review application to the NHI Program. A copy of the application and response from the NHI Program should be included with future submittals for the proposed landfill. The department requests that any documentation identifying locations of specific endangered or threatened species from the NHI review be submitted as a stand-alone document to the department, so the department can maintain confidentiality of this information. Locations of endangered or threatened species are considered confidential information under Wisconsin's endangered species law in order to protect those species from collectors and poachers.

(c) Archaeological Resources: According to the ISI request, the county's archaeological consultant reviewed available literature and records on previously reported cultural resources in and around the Yahara Hills Golf Course. The study found no previously reported archaeological sites within the study area and no standing buildings or other structures that are listed on the Wisconsin Architecture and History Inventory. The 1967 Club House, located to the west of the proposed site and within the property that the City of Madison would maintain, has been identified as potentially significant.

Archaeological issues and historical structures for the site were cleared by Richard Kubicek, Departmental Archaeologist/Departmental Historic Preservation Officer, on March 23, 2022. The department understands that the county will conduct additional archaeological investigation at the site to satisfy the requirements of the State Historic Preservation Office.

The performance criteria outlined in s. NR 504.04 (4) (c) through (f), Wis. Adm. Code include evaluation of surface water, groundwater, gas migration and air contaminant impacts. These performance criteria would be evaluated during the department's review of a feasibility report for the proposed development.

Please remember that s. NR 504.04 (4) (d), Wis. Adm. Code, requires submittal of a 7.5 Minute USGS map or equivalent with a minimum scale of 1 inch=500 feet. The ISI request included a 1 inch=2,000 feet scale topographic map; however, a 1 inch=500 feet scale map will be required in the ISR submittal. Several maps at this scale may be needed to show all items listed in this code section, which include the depiction of contour intervals to sufficiently show relief, surface waters, floodplains, existing land use conditions including the location of public parks, and all water supply wells and residences located within one mile of the property boundaries of the proposed landfill.

Please note that s. NR 504.09 (2) (f), Wis. Adm. Code, requires a minimum separation distance of 100 feet be maintained between the limits of filling and the adjacent property line. A minimum distance of 50 feet must be maintained between any permanent berms or excavations associated with the landfill, excluding stormwater diversion structures, and the adjacent property line.

The locational and performance criteria will be evaluated again as the department reviews the ISR and feasibility report. Please keep in mind that as the department continues its review of the proposed development and as new information is presented, the department may have additional questions, concerns or requests for further information before a feasibility determination is made.

Please do not hesitate to contact me at 608-931-9387 or by email at carolyn.cooper@wisconsin.gov with any questions about this letter.

Sincerely,

Carolyn Cooper

Carolyn Cooper
Hydrogeologist
South Central Region

cc: Roxanne Wienkes - Dane County (e-copy)
Bridget Kelly, DNR-WA (e-copy)
Ann Bekta, DNR-WA (e-copy)
Joe Lourigan, DNR-WA (e-copy)
Valerie Joosten, DNR-WA (e-copy)
Teri Daigle - Tetra Tech (e-copy)
John Oswald - Tetra Tech (e-copy)

State of Wisconsin
Department of Natural Resources
Bureau of Natural Heritage Conservation
Endangered Resources Review Program
PO Box 7921, Madison WI 53707-7921
https://dnr.wi.gov/topic/ERReview/
DNRERReview@wisconsin.gov

Endangered Resources (ER) Review Verification

Broad Incidental Take Permit/Authorization for No/Low Impact Activities

Form 1700-079 (R 1/20)

Notice: This form is authorized by s. 29.604, Wis. Stats. This completed signed form, once submitted to DNRERReview@wi.gov using the Submit by Email button at the bottom of the form, fulfills the requirement of an Endangered Resources Review and should be attached to other permits requiring an ER Review to show that Endangered Resources requirements have been met. Personal information collected on this form will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law [ss. 19.31-19.39, Wis. Stats.].

Instructions: Complete this form if your project is covered under the Broad Incidental Take Permit/Authorization for No/Low Impact Activities and therefore does not require an Endangered Resources Review.

Section 1: Applicant and Project Information

Requester Name	Organization or Agency Name
John Welch	Dane County Department of Waste and Renewables

Project Name	County	Township	Range	Section
Dane County Landfill site No. 3	Dane	07 N	10 (◉E ○W)	25

Telephone Number	Email Address
(608) 516-4154	welch@countyofdane.com

Project Description

The proposed Dane County Landfill Site No. 3 will include an approximately 40-acre waste footprint for a municipal solid waste disposal facility and approximately 20-acre organics management (compost) facility within the eastern 230-acre portion of the existing Yahara Hills Golf Course.

Indicate who you are completing this form as:

- ◉ DNR Staff
- ○ Certified Reviewer
- ○ Other: _____

Section 2: Broad Incidental Take Permit/Authorization Coverage Information

How is your project covered under the Broad Incidental Take Permit/Authorization for No/Low Impact Activities?

- ☐ It is included in the list of activities in Table 1 – No/Low Impact Table for All Species at All Times of the Year.
- ☒ It is included in the list of activities in Table 2 – No/Low Impact Table by Taxa Group for DNR Staff and ER Certified Reviewers Only and the Taxa groups for the species of concern are covered.
- ☐ It is included in the list of activities in Table 2 – No/Low Impact Table by Taxa Group for DNR Staff ER Certified Reviewers Only and the species of concern are covered by the Avoidance Measures document.

Activity Number(s)

2-A3: Any activity with no element occurrences (EOs)--no species, natural communities, natural features or high potential zone/range

Section 3: Applicant Certification

By my signature below, I certify that to the best of my knowledge, the information stated above is complete and accurate.

NOTE: If submitting this verification electronically, please type your name on the signature line. Your typed name, along with the email message generated from electronic submittal of this form, will be used as an electronic signature which is the legal equivalent to an actual signature.

Angela White	6/10/2022	Angela White
Signature	Date Signed	Requester/Submitter Name (please print)

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1678

07/29/2022

Regulatory File No. MVP-2022-01337-BJL

THIS IS NOT A PERMIT

John Welch
1919 Alliant Energy Center Way
Madison, WI 53713

Dear Mr. Welch:

We have received your submittal described below. You may contact the Project Manager with questions regarding the evaluation process. The Project Manager may request additional information necessary to evaluate your submittal.

File Number: MVP-2022-01337-BJL

Applicant: John Welch

Project Name: City of Madison Landfill site 3

Project Location: Section 25 of Township 7 N, Range 10 E, Dane County, Wisconsin (Latitude: 43.036198; Longitude: -89.251204)

Received Date: 07/22/2022

Project Manager: Ben Lacount
(651) 290-5315
benjamin.j.lacount@usace.army.mil

Additional information about the St. Paul District Regulatory Program can be found on our web site at http://www.mvp.usace.army.mil/missions/regulatory.

Please note that initiating work in waters of the United States prior to receiving Department of the Army authorization could constitute a violation of Federal law. If you have any questions, please contact the Project Manager.

Thank you.

U.S. Army Corps of Engineers
St. Paul District
Regulatory Branch

APPENDIX D

WATER SUPPLY WELLS INFORMATION

PW-A Well Construction Report for KU336 (4/8/1996)

PW-B Well Constructor's Report for DN-987 (3/18/1970)

PW-C Well Constructor's Report for DN-988 (3/18/1970)

PW-D Well Constructor's Report for DN-985 (3/18/1970)

PW-E Well Constructor's Report for DN-986 (3/18/1970)

PW-129 (BioGas Well) Well Construction Report for YZ391 (8/20/2018)

PW-A

Well Construction Report For WISCONSIN UNIQUE WELL NUMBER KU336

State of WI - Private Water Systems - DG/2
Department of Natural Resources, Box 7921
Madison, WI 53707
Please type or Print using a black Pen
Please Use Decimals Instead of Fractions.

Form 3300-77A
(R 8/00)

Property Owner: CITY OF MADISON PARKS DIVISION
Telephone -- Number:
Mailing Address: PO BOX 2987
City: MADISON
State: WI
Zip Code: 53701
County of Well Location: Dane
County Well Permit No.: W
Well Completion Date: 04/08/1996

1. Well Location: [X] Town [ ] City [ ] Village of BLOOMING GROVE
Fire # (if available):
Grid or Street Address or Road Name and Number: US HWY 12 18
Subdivision Name / Lot # / Block #:

Well Constructor (Business Name): SAMS ROTARY DRILLERS INC
License #: 370
Facility ID Number (Public Wells):
Address: PO BOX 150
Public Well Plan Approval #: W--
City: RANDOLPH
State: WI
Zip Code: 53956-0150
Date of Approval (mm/dd/yyyy): 02/05/1996

Gov't Lot # / or SE 1/4 of NE 1/4 of
Section 36 T 7 N; R 10 [X] E [ ] W
Latitude Deg. Min.
Longitude Deg. Min.

2. Well Type: [X] New [ ] Reconstruction [ ] Replacement
Lat/Long Method: GPS008
of previous unique well # constructed in
Reason for replaced or Reconstructed Well?

Hicap Permanent well #: 1668
Common Well #:
Specific Capacity: 6.8 gpm/ft

3. Well serves 1 # of homes and or GOLF COURSE
(e.g. barn, restaurant, church, school, industry, etc.)
High capacity Well? [X] Yes [ ] No
Property? [X] Yes [ ] No

[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other:

4. Is the well located upslope or sideslope and not downslope from any contamination source, including those on neighboring properties? [ ] Yes [ ] No
Well located within 1,200 feet of a quarry? [ ] Yes [ ] No If yes, distance in feet from quarry:
Well located in floodplain? [ ] Yes [ ] No
Distance in Feet from Well to Nearest:

1. Landfill
2. Building Overhang
3. Septic [ ] Holding Tank [ ]
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline [ ] Swimming Pool [ ]
9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain [ ] Cast Iron or Plastic [ ] Other
14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
15. Collector or Street Sewer: [ ] Sanitary units in. diam. [ ] Storm [ ] =< 6 [ ] > 6
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
23. Other Manure Storage
24. Ditch
25. Other NR 812 Waste Storage

5. Drillhole Dimensions and Construction Method

Dia (in.)	From (ft.)	To (ft.)
17.5	0	300
12	300	400
11.88	400	700
9	700	895

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] ---1. Rotary - Mud Circulation----------
[X] ---2. Rotary - Air----------
[ ] ---3. Rotary - Air and Foam----------
[ ] ---4. Drill-Through Casing Hammer
[ ] ---5. Reverse Rotary
[ ] ---6. Cable-tool Bit in. dia------
[ ] 7. Dual Rotary
[ ] 8. Temp. Outer Casing in. dia. depth (ft)
Removed? [ ] Yes [ ] No
If no, why not?

8. Geology

Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
--C- CLAY	0	4
--Y- SAND @ GRAVEL	4	36
--L- LIMEROCK	36	45
--N- SANDROCK	45	895

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification	From (ft.)	To (ft.)
12	STD BLK PIPE 330 WALL WLD JTS A53 PUSAN	0	300

Dia. (in.)	Screen type, material & slot size		

9. Static Water Level
ft. above ground surface
25 ft. below ground surface

10. Pump Test
Pumping Level 142 ft. below surface
Pumping at 800 GPM for 4 hours

11. Well is: [X] Above Grade 18 in. [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

7. Grout or Other Sealing Material. Method
Method: TREMIE BRADEN HEAD
Kind of Sealing Material

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
CEMENT	0	300	200

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? [ ] Yes [ ] No If no, explain:

13. Signature of the Well Constructor or Supervisory Driller: SVJ — Date signed: 04/19/1996
Signature of Drill Rig Operator (Mandatory unless same as above): SCK — Date signed: 04/19/1996

Make additional comments on reverse side about geology, additional screens, water quality, etc.

Variance issued [ ] Yes [X] No

APR 7 1970

MAY 19 1970

PW-B DN-987

WELL CONSTRUCTOR'S REPORT

Wel—6

STATE OF ~~WISCONSIN~~
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin

DN-987

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

Well # 5

1. COUNTY: Dane

CHECK ONE: ☐ Town ☐ Village ☒ City

NAME: ~~Madison~~ Blooming Grove

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

✓in portions of ~~So. 25~~ & 36 T7N R10E SE, SW, SE, NE, NE, NW Sec. 36

3. OWNER AT TIME OF DRILLING

Yahara Hills Golf Course

4. OWNER'S COMPLETE MAIL ADDRESS

Madison, Wis. Perm * 77022, Dane Co. Misc. #14

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
There was nothing else in at the time the								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
			wells were		drilled				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

none

6. Well is intended to supply water for:

sanitary & drinking purposes

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	50			
6	50	330			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
10	P. E. New black steel 35 lbs per ft.	Surface	29
6	New black steel PE ~~19,45~~ 18,97 lbs per ft. ASTM - A53 Grade B	0	66

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Cement & water	Surface	50

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	29
Linerock	29	190
Red Scale	190	280
White Sandstone	280	330

Well construction completed on 3-18 1970

Well is terminated 13 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: Hrs. at GPM

Pump tested data attached

Depth from surface to normal water level 73 ft.

Depth to water level when pumping ft.

Water sample sent to to be retested when final pumps are installed laboratory on: 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE

Norman Hagen Registered Well Driller

COMPLETE MAIL ADDRESS

R. # 1 Box 105, Oxford, Wis.

9522

Please do not write in space below

774060 plot

COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS
High Capacity Water Supply Approved 10/22/69 File Madison			cc: M.E. Ostrom 8/13/70	

REV. 11-68

APR 7 1970 MAY 19 197

Pw-C DN-988

WELL CONSTRUCTOR'S REPORT

Wel-6

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

Well # 6 DN-988

COUNTY	CHECK ONE	NAME
Dane	☐ Town ☐ Village ☒ City	~~Madison~~ BLOOMING GROVE

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

✓in portions of ~~Sec 25 & 36~~ T7N R10E SE,SE,SE,NW,SW,SE,SE / Sec 25

OWNER AT TIME OF DRILLING

Yahara Hills Golf Course

OWNER'S COMPLETE MAIL ADDRESS

Madison, Wis. Perm # 77023, Dane Co. Misc. #14

Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
There	was	nothing	else		in at the time the well			

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE
					was drilled				

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

none

Well is intended to supply water for:

sanitary & drinking purposes

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
18	Surface	~~50~~ 49	10	750	890
12	~~50~~ 60	750	17½	29	60

CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
18	new black steel P. E. 70.59 lbs per ft.	Surface	29
12	new black steel P. E. 49.56 lbs per ft. ASTM – A53 Grade B	0	65

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
cement & water	Surface	50

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	29
Limestone	29	200
Red Schale	200	285
White sandstone	285	370
Yellow sandstone	370	420
White sandstone	420	890

Well construction completed on 3-18 19 70

Well is terminated 13 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: Hrs. at GPM

Pump test data attached

Depth from surface to normal water level 44 ft.

Depth to water level when pumping ft.

Water sample sent to to be retested when final pumps are installed laboratory on: 19

In your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE		COMPLETE MAIL ADDRESS
Warren Eaton	Registered Well Driller	R. # 1, Box 105, Oxford, Wis.

9325 Please do not write in space below 774062 plat

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS
High Capacity Water Supply Approved 10/22/69 File Madison				cc: M.E. Ostrom 8/13/70

Rev. 11-68

PW-D

DN-985

WELL CONSTRUCTOR'S REPORT

Wel–6

7 1970,

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin

Well # 3

DN-985

1. COUNTY: Dane

CHECK ONE: ☐ Town ☐ Village ☒ City

NAME: ~~Madison~~ Blooming Grove

MAY 19 1970

2. LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

✓ Located in portions of Sec. 25 & ~~36~~ T7N R10E

3. OWNER AT TIME OF DRILLING: Yahara Hills Golf Course

NW,NE,NW,NE,SE,SE,SE, sec 25

4. OWNER'S COMPLETE MAIL ADDRESS: Madison, Wis.

Perm # 77020, Dane Co. Misc. # 14

5. Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
There was nothing there at time wells wer drilled								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

none

6. Well is intended to supply water for:

sanitary & drinking purposes

7. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	50			
6	50	360			

8. CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
10	P.E. New black steel 35 lbs per ft.	Surface	48
6	New black steel PE ~~19.45~~ 18.97 lbs per ft. ASTM – D53 Grade B	0	73

9. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Cement & Water	Surface	50

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	55
Limerock	55	185
Red Schale	185	330
White Sandstone	330	360

Well construction completed on 3-18 1970

Well is terminated 13 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

11. MISCELLANEOUS DATA

Yield test: Pump test data attached Hrs. GPM

Depth from surface to normal water level 48 ft.

Depth to water level when pumping ft.

Water sample sent to to be retested when final pumps are installed laboratory on: 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Marvin Hansen Registered Well Driller

COMPLETE MAIL ADDRESS: R. # 1, Box 105, Oxford, Wis.

9327

Please do not write in space below 100' 902' 775103 plot

COLIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS
High Capacity Water Supply File Madison	Approved 10/22/69		cc: M. E. Ostrom 5/13/70	

RE... 11–69

PW-E

DN-986

7 1970

MAY 19 70

WELL CONSTRUCTOR'S REPORT

Wel–6

WHITE COPY – DIVISION'S COPY
GREEN COPY – DRILLER'S COPY
YELLOW COPY – OWNER'S COPY

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
Box 450
Madison, Wisconsin

Well # 4

DN-986

COUNTY: Dand

CHECK ONE: ☐ Town ☐ Village ☒ City

NAME: ~~Madison~~ BLOOMING GROVE

LOCATION (Number and Street or ¼ section, section, township and range. Also give subdivision name, lot and block numbers when available.)

✓ in portions of Sec. 25 & ~~36~~ T7N R10E NE,NW,NW,NE,SE,SE,SE, Sec. 25

OWNER AT TIME OF DRILLING: Yahara Hills Golf Course

OWNER'S COMPLETE MAIL ADDRESS: Madison, Wisc. Perm # 77021 ; Dane Co. Misc. # 14

Distance in feet from well to nearest: (Record answer in appropriate block)

BUILDING	SANITARY SEWER C. I.	SANITARY SEWER TILE	FLOOR DRAIN C. I.	FLOOR DRAIN TILE	FOUNDATION DRAIN SEWER CONNECTED	FOUNDATION DRAIN INDEPENDENT	WASTE WATER DRAIN C. I.	WASTE WATER DRAIN TILE
There was nothing esle here at time wells were dri led								

CLEAR WATER DRAIN C. I.	CLEAR WATER DRAIN TILE	SEPTIC TANK	PRIVY	SEEPAGE PIT	ABSORPTION FIELD	BARN	SILO	ABANDONED WELL	SINK HOLE

OTHER POLLUTION SOURCES (Give description such as dump, quarry, drainage well, stream, pond, lake, etc.)

none

Well is intended to supply water for:

sanitary & drinking purposes

DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	50			
6	50	455			

CASING, LINER, CURBING, AND SCREEN

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
10	P.E. New black steel 35 lbs per ft.	Surface	34
6	New black steel PE ~~19.45~~ 18.97 lbs per ft. ASTM – A53 Grade B	0	57

GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Cement & water	Surface	50

10. FORMATIONS

Kind	From (ft.)	To (ft.)
Clay	Surface	29
lime stone	29	265
red schale	265	345
white sandstone	345	455

Well construction completed on 3-18 1970

Well is terminated 13 inches ☒ above ☐ below final grade

Well disinfected upon completion ☒ Yes ☐ No

Well sealed watertight upon completion ☒ Yes ☐ No

MISCELLANEOUS DATA

Yield test: Hrs. at GPM

Pump test data attached

Depth from surface to normal water level 40 ft.

Depth to water level when pumping ft.

Water sample sent to to be retested when final pumps are installed laboratory on: 19

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE: Hansen Hagen Registered Well Driller

COMPLETE MAIL ADDRESS: R. # 1, Box 105, Oxford, Wis.

93126

Please do not write in space below

774063 plot

UNIFORM TEST RESULT	GAS – 24 HRS.	GAS – 48 HRS.	CONFIRMED	REMARKS
High Capacity Water Supply Approved 10/22/69 File Madison				cc: M.E. Ostrom 8/18/70

Well Construction Report
WISCONSIN UNIQUE WELL NUMBER YZ391

Drinking Water and Groundwater - DG/5
Department of Natural Resources, Box 7921
Madison WI 53707

Form 3300-077A

Property Owner: DANE COUNTY DEPT OF PUBLIC WORKS	Phone #
Mailing Address: 1919 ALLIANT ENERGY CENTER WAY	
City: MADISON	State: WI / Zip Code: 53713

County	Co. Permit #	Notification #	Completed
Dane	00136	7335913201	08-20-2018

Well Constructor (Business Name)	Lic. #	Facility ID # (Public Wells)
SAM'S WELL DRILLING INC	370	

Address: PO BOX 150 N9935 PLEASANT RD RANDOLPH WI 53956

Well Plan Approval #

Approval Date (mm-dd-yyyy)

Hicap Permanent Well #	Common Well #	Specific Capacity
	B	0.1

3. Well serves 1 # of INDUSTRY

Heat Exchange____# of drillholes

Hicap Well ? No
Hicap Property ? No
Hicap Potable ? No

1. Well Location

Town of BLOOMING GROVE

Fire # (if avail.): 7102

Street Address or Road Name and Number: US HWY 12 & 18

Subdivision Name	Lot #	Block #

Latitude / Longitude in Decimal Degree (DD)	Method Code
43.0428 °N -89.2519 °W	GPS008

NW or Govt Lot #	NE	Section	Township	Range
		25	7 N	10 E

2. Well Type New Well

of previous unique well # constructed in

Reason for replaced or reconstructed well ?

Construction Type: Drilled

4. Potential Contamination Sources - ON REVERSE SIDE

5. Drillhole Dimensions and Construction Method

Dia. (in.)	From (ft.)	To (ft.)
8.75	Surface	123
6	123	540

Upper Enlarged Drillhole		Lower Open Bedrock
Yes	Rotary - Mud Circulation	No
No	Rotary - Air	Yes
No	Rotary - Air & Foam	No
No	Drill-Through Casing Hammer	
No	Reverse Rotary	
No	Cable-tool Bit ____in. dia...	No
No	Dual Rotary	No
Yes	Temp. Outer Casing 10in. dia	
Yes	Removed? 3depth ft. (If NO explain on back side)	

8. Geology

Geology Codes				8. Geology Type, Caving/Noncaving, Color, Hardness, etc...	From (ft.)	To (ft.)
		X		X-SAND & CLAY	Surface	11
		C		C-CLAY	11	35
		Z	S	Z-CLAY & GRAVEL S-SANDY	35	87
		L	H	L-LIMESTONE/DOLOMITE H-SHALEY	87	109
		L		L-LIMESTONE/DOLOMITE	109	342
		N		N-SANDSTONE	342	387
		L		L-LIMESTONE/DOLOMITE	387	540

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
6	STD BLK, PIPE, .280 WALL, P.E., A53B TEXAS TUBULAR	Surface	123
Dia. (in.)	Screen type, material & slot size	From (ft.)	To (ft.)

7. Grout or Other Sealing Material

Method BRADENHEAD

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
NEAT CEMENT GROUT	Surface	123	35 S

9. Static Water Level

23 ft. below ground surface

10. Pump Test

Pumping level 300 ft. below surface

Pumping at 15 GP M for 1 Hrs.

Pumping Method ? Airlift

11. Well Is

72 in. above grade

Developed ? Yes
Disinfected ? Yes
Capped ? Yes

12. Notified Owner of need to fill & seal ? No

Filled & Sealed Well(s) as needed? No

13. Constructor / Supervisory Driller	Lic #	Date Signed
JVG	6026	08-23-2018
Drill Rig Operator	**Lic or Reg #**	**Date Signed**
JS	7377	08-20-2018

4a. Potential Contamination Sources Is the well located in floodplain ? No

Type	Qualifier	Distance	Type	Qualifier	Distance
Sewer - Collector - Storm	=	10	Other Contamination Sources	=	55

Comment:

Water Quality Text:

Water Quantity Text:

Difficulty Text:

Variance or Exception Type	Date	Reason	Granted
Separation Distance Variance	08/14/2018	< REQUIRED 100' FROM A STORMWATER INFILTRATION BASIN	Y

Created On: 08-23-2018 Created by: swdlabs Updated On: 12-11-2019 Updated by: PARCEL_MATCH_LL_OK

APPENDIX E

WETLAND DELINEATION REPORTS

TRC Environmental Corporation, Wetland and Waterway Delineation Report for Yahara Hills Golf Course (12/8/2021)

Heartland Ecological Group, Wetland Determination Summary – Dane County Landfill Site No. 3 at Yahara Hills Golf Course (5/23/2022)

Yahara Hills Golf Course

6701 US-12
Madison, WI 53718

Wetland and Waterway Delineation Report

Date: December 8, 2021

TRC Project No. 275981.00004

Prepared For:

Dane County, Waste & Renewables
7102 U.S. Hwy 12 & 18
Madison, WI 53718

Prepared By:

Amanda Larsen and Ron Londré
WDNR Assured Wetland Delineators
TRC Environmental Corporation
6737 W Washington St., Suite 2100
West Allis, WI 53214

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TABLES

APPENDICES

1.0 Introduction

On behalf of Dane County, Waste & Renewables, TRC Environmental Corporation (TRC) conducted a wetland and waterway delineation within a designated Study Area at Yahara Hills Golf Course (Figure 1, Appendix A). The Study Area was an approximately 157 acres portion of the Yahara Hills Golf Course, located in Section 25, Township 07 North, Range 10 East in the City of Madison, Dane County, Wisconsin.

Landowner Information:
City of Madison Parks – Yahara Hills Golf Course
4422 Brandt Road
Madison, WI 53718

The purpose of this wetland and waterway delineation was to determine the current location and extent of wetlands and waterways within a designated Study Area for the purpose of future land use changes. Our study is presented here in terms of methodology, results, and conclusions.

The wetland and waterway delineation field investigation was conducted by TRC scientists Amanda Larsen and Ron Londré on November 9, 2021. Amanda Larsen and Ron Londré were lead investigators and the authors of this report.

1.1 Statement of Qualifications

TRC has extensive experience managing and conducting wetland delineations across the United States. TRC's biologists and ecologists have been trained to properly and consistently apply the methods set forth in the 1987 Corps of Engineers Wetland Delineation Manual and applicable regional supplements. They have direct experience identifying and documenting indicators of hydrophytic vegetation, wetland hydrology, and hydric soil and are experienced in dealing with naturally problematic and disturbed conditions.

TRC's large natural resources staff have the capability to coordinate wetland survey teams to meet fast-track project schedules and satisfy the challenges of complex or controversial projects.

Ms. Amanda Larsen, WDNR Assured Wetland Delineator and Senior Biologist with TRC and has over ten years of experience working on a variety of natural resource projects throughout the United States. She specializes in conducting wetland delineations and assessments, biological surveys, water monitoring, habitat restoration, and invasive species control. Ms. Larsen has a B.S. degree in Conservation and Environmental Science from UW-Milwaukee with a focus on water resources. She has taken the following technical trainings related to wetland delineation: Problematic Wetland Delineation (2018) provided by the Wetland Training Institute; Advanced Wetland Delineation (2019), Hydric Soils (2017), Basic Wetland Delineation (2013), provided by UW-La Crosse; and Significant Nexus Determination (2014) provided by the Swamp School. She also attends the Annual UW La Crosse one-day Critical Methods in wetland delineation class. Ms. Larsen is a part of the Wetland Delineation Professional Assurance Initiative of the Wisconsin Department of Natural Resources (WDNR). This means her work is assured for purposes of State of Wisconsin wetland delineations.

Mr. Ron Londré, PWS, WDNR Assured Wetland Delineator, is a Senior Ecologist at TRC with over 14 years of professional experience in wetland ecology. He is certified by the Society of Wetland Scientists

Professional Certification Program as a Professional Wetland Scientist (PWS # 2436) and is certified by the Ecological Society of America as a Senior Ecologist. His academic studies, from which he earned M.S. and B.S. Degrees in Biological Science, focused on plant community ecology and restoration ecology. Mr. Londré has completed the following wetland delineation technical training workshops provided by UW-La Crosse: Advanced Wetland Delineation; Basic Wetland Delineation; Critical Methods in Wetland Delineation; Hydric Soils; and Grasses, Sedges, and Rushes. Additionally, he has completed the Regional Supplement Seminar and Field Practicum training and Advanced Hydrology for Jurisdictional Determinations provided by the Wetland Training Institute and the Wetland Delineation Training Workshop provided by the University of Wisconsin-Milwaukee. Mr. Londré is a part of the Wetland Delineation Professional Assurance Initiative of the Wisconsin Department of Natural Resources (WDNR). This means his work is assured for purposes of State of Wisconsin wetland delineations.

1.2 Agency Regulatory Authority

The wetlands and/or waterways identified 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 Wisconsin Department of Natural Resources (WDNR), and local jurisdiction under county, town, city, or village.

2.0 Methods

This wetland and waterway delineation was conducted in accordance with the guidelines of the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0, 2012) and in general accordance with Wisconsin Department of Natural Resources guidelines. National Wetland Indicator status and taxonomic nomenclature is referenced from 2020 Corps of Engineers National Wetland Plant List Version 3.5. National Wetland Indicator status is based on the Northcentral and Northeast Region, Northern Great Lakes sub-region. Indicators of hydric soil are based on the Field Indicators of Hydric Soils in the United States guide Version 8.2 (USDA NRCS 2018). This report has also been prepared in accordance with the guidelines set forth in the "Guidance for Submittal of Delineation Reports to the St. Paul District Corps of Engineers and the Wisconsin Department of Natural Resources" document issued March 4, 2015.

2.1 Off-Site Review

Prior to conducting fieldwork, several maps were reviewed including the United States Geological Survey (USGS) 7.5' Quadrangle Map, Natural Resource Conservation Service (NRCS) Soil Survey Map, Wisconsin Wetland Inventory (WWI) Map, and aerial imagery. These sources were used to identify areas likely to contain wetlands and waterways.

Precipitation data from approximately 90 days prior to the field investigation were obtained from a weather station near the Study Area and compared with 30-year average precipitation data obtained from a NRCS WETS Table for the County where the Study Area was located to determine if antecedent hydrologic conditions at the time of the site visit were normal, wetter, or drier than the normal range.

2.2 On-Site Field Investigation

Areas having wetland indicators within the Study Area were evaluated in the field by TRC wetland scientists Amanda Larsen and Ron Londré on November 9, 2021. Sample points were located in areas exhibiting wetland and upland characteristics to document the presence and/or absence of wetlands and to provide support for the delineated wetland boundaries. At each sample point, data were collected to document the vegetation and hydrophytic vegetation indicators, soil profile and hydric soil indicators, and wetland hydrology indicators.

Plant species were identified at each sample point and their wetland indicator status; obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL); was determined by referencing the 2020 Corps of Engineers National Wetland Plant List Version 3.5; Northcentral and Northeast Region, Northern Great Lakes sub-region. Soil pits were dug to the depth needed to document a hydric soil indicator or confirm the absence of indicators. Soil color was determined using a Munsell soil color chart. The sample point plots and soil pits were evaluated for presence of wetland hydrology indicators.

The wetland boundaries were delineated using a hand-held GPS unit with sub-meter accuracy. Wetland boundaries were generally determined by distinct to subtle differences in the abundance of hydrophytic vegetation and non-hydrophytic vegetation, presence versus absence of hydric soil indicators, and presence versus absence of wetland hydrology indicators.

3.0 Results

3.1 Off-Site Review

The 2-Foot Contour Map (Appendix A, Figure 2) shows elevations ranging from 872 to 924 above sea level. Based on the Contour Map , site topography is sloped, and surface water would flow from higher elevations in the south and west to lower elevations to the north.

According to the NRCS Soil Survey map (Appendix A, Figure 3) nine mapped soil units are located within the Study Area. The soils mapped within the Study Area are listed on Table 1 below.

Table 1 Mapped Soils

Map Unit Symbol	Soil Series Name	Drainage Class	Hydric Rating	% of Study Area
DnB	Dodge silt loam, 2 to 6 percent slopes	Well drained	0	39.6
DnC2	Dodge silt loam, 6 to 12 percent slopes, eroded	Well drained	0	0.3
MdC2	McHenry silt loam, 6 to 12 percent slopes, eroded	Well drained	0	12.0
Os	Orion silt loam, wet	Poorly drained	100	6.0
RaA	Radford silt loam, 0 to 3 percent slopes	Well drained	10	2.0
SaA	Sable silty clay loam, 0 to 2 percent slopes	Somewhat poorly drained	85	5.0

Table 1 Mapped Soils

ScB	St. Charles silt loam, 2 to 6 percent slopes	Well drained	3	6.2
VwA	Virgil silt loam, gravelly substratum, 0 to 3 percent slopes	Somewhat poorly drained	10	28.0
Wa	Wacousta silty clay loam, 0 to 2 percent slopes	Very poorly drained	100	0.9

The Wisconsin Wetland Inventory (WWI) map (Appendix A, Figure 4) depicts three wetlands within the Study Area. Two of the wetlands depicted are shown as symbols which indicate a wetland too small to delineate. The third wetland is mapped as an open waterbody, subclass unknown, with standing water, palustrine that has been excavated (W0Hx).

A review of aerial imagery from 2000, 2005, 2010, 2014, and 2020 (Appendix A, Figures 5-9) shows the Study Area as a maintained golf course with no noticeable changes between 2000 and 2020. The golf course continues south and west of the Study Area, a paved two-lane road boarder the Study Area to the east and a divided highway borders the Study Area to the north.

Prior to conducting the field visit, antecedent precipitation data were analyzed. Data were obtained from the same weather station and WETS station (UW Arboretum - Madison, WI). The precipitation data for the 90-day period prior to the field visit (Appendix B, Table 2) were entered into a WETS analysis worksheet (Appendix B, Table 3) to weight the information from each preceding month to analyze hydrologic conditions. Based on this analysis, the antecedent hydrologic conditions were considered to be above a normal range, suggesting that climatic/hydrologic conditions were not normal for this time of year. The most recent rainfall event prior to the site visit was 0.15 inches, which occurred on November 8, 2021. Precipitation for the 14 days prior to the site visit was 0.65 inches.

3.2 On-Site Field Investigation

3.2.1 Site Description

The Study Area is an active golf course. The majority of the course is maintained through frequent mowing. Areas that are unmanaged separate managed areas and were observed to be primarily old field and upland woodland, as well as some wetland. The site generally had hilly topography with the highest elevations to the south and west, and generally sloped down to lower elevations in the north and northeast. It is assumed that there is an active, functioning drain tile system throughout much of the golf course. This was communicated to TRC by City of Madison Parks Department staff and there were drain tiles observed at the pond where it is expected the drain tiles would discharge to.

Vegetation managed through mowing is considered to be disturbed (atypical) and circumstances would not be normal for any data collected in areas were vegetation was mowed.

3.2.2 Uplands

Upland plant communities observed in the Study Area included old field, shrub dominated upland, and upland woodland. Sample point SP-12 was located in an upland area where there was a mapped wetland indicator soil based on review of the DNR Surface Water Data Viewer. The remaining upland sample points discussed below were paired with wetland sample points to document the delineated wetland boundaries.

3.2.3 Wetlands

Five wetlands (W-1 through W-5) were delineated. The delineated wetland boundaries and sample points are shown on a map (Exhibit A) in Appendix C. Data, including photographs, were collected and recorded on Wetland Determination Data Forms at 17 sample points to document wetland and upland locations (Appendix D). The five delineated wetlands are summarized below in Table 4.

3.2.4 Other Aquatic Resources

One pond (P-1) totaling 2.02 acres was delineated within the Study Area and is shown on the wetland delineation map (Appendix D, Exhibit A). Photographs of pond P-1, as well as additional site photographs, can be found in Appendix E.

3.2.5 Professional Opinion On Wetland Susceptibility Per NR 151

Table 5 in Appendix F lists a professional opinion on wetland susceptibility, based on a request by the WDNR, to do so per revised NR 151 guidance (Guidance #3800-2015-02). Please note that the final determination of wetland susceptibility rests with the WDNR.

Table 4 Delineated Wetlands Summary

Wetland ID, Sampling Points, & Size (Acres)	Wetland Type	Hydrology Indicators	Dominant Plant Species (stratum not listed indicates no species were present at sample point(s) for that stratum)	Hydric Soil Indicator(s)	Comments
W-1 Wetland SP-02, SP-04, SP-06, SP-11 Upland SP-01, SP-03, SP-05, SP-10 3.66-ac	Fresh (wet) Meadow / Shrub-Carr / Floodplain Forest	B8 – Sparsely Vegetated Concave Surface B10 – Drainage Patterns D2 - Geomorphic Position D5 - Positive FAC-Neutral Test	Tree *Quercus bicolor* (swamp white oak) Sapling/Shrub *Fraxinus pennsylvanica* (green ash) *Cornus racemosa* (grey dogwood) Herbaceous *Phalaris arundinacea* (reed canary grass)	A11 - Depleted Below Dark Surface F3 - Depleted Matrix	Wetland W-1 is located in a depressional swale that extends out of the Study Area to the north and east. The boundary of W-1 was based on changes in topography, abundance of hydrophytic vegetation, and hydric soils.
W-2 Wetland SP-09 Upland SP-07 0.08-ac	Floodplain Forest	D2 - Geomorphic Position D5 - Positive FAC-Neutral Test	Tree *Fraxinus pennsylvanica* Herbaceous *Phalaris arundinacea* *Carex lacustris* (lakebank sedge) Woody Vine *Vitis riparia* (riverbank grape)	A11 - Depleted Below Dark Surface F6 – Redox Dark Surface	Wetland W-2 is located within a swale and extends out of the Study Area to the north. The boundary of W-2 was based on changes in topography, abundance of hydrophytic vegetation, and hydric soils.
W-3 Wetland SP-08 Upland SP-07 0.01-ac	Fresh (wet) Meadow	D2 - Geomorphic Position D5 - Positive FAC-Neutral Test	Tree *Acer negundo* (boxelder) Sapling/Shrub *Acer negundo* *Rhamnus cathartica* (common buckthorn) Herbaceous *Phalaris arundinacea*	A12 – Thick Dark Surface F6 – Redox Dark Surface	Wetland W-3 is located within a swale and extends out of the Study Area to the north and west. The boundary of W-3 was based on changes in topography, abundance of hydrophytic vegetation, and hydric soils.
W-4 Wetland SP-13 Upland SP-14 0.18-ac	Fresh (wet) Meadow	D2 - Geomorphic Position D5 - Positive FAC-Neutral Test	Tree *Acer saccharinum* (silver maple) *Juglans nigra* (black walnut) Herbaceous *Phalaris arundinacea*	A11 - Depleted Below Dark Surface F3 - Depleted Matrix F6 – Redox Dark Surface	Wetland W-4 is an isolated wetland contained within a shallow depression and does not extend out of the Study Area. The boundary of wetland W-4 was based on slight changes in topography, abundance of hydrophytic vegetation, and hydric soils.
W-5 Wetland SP-15, SP-17 Upland SP-16 0.11-ac	Fresh (wet) Meadow / Shrub-Carr	D2 - Geomorphic Position D5 - Positive FAC-Neutral Test	Sapling/Shrub *Salix interior* (sandbar willow) Herbaceous *Phalaris arundinacea* *Agrostis stolonifera* (spreading bentgrass)	F6 – Redox Dark Surface	Wetland W-5 is located around the edge of pond P-1, which is an excavated feature and has a slight berm around the perimeter which prevents W-5 from expanding further away from the edge of P-1. Fill associated with the pond prevented digging below 5-6 inches, therefore determination of a water table within 12 inches was not possible. The boundary of wetland W-5 was based on the toe of the berm.

4.0 Conclusions

Based on the wetland delineation completed by TRC, five wetlands (W-1, W-2, W-3, W-4 and W-5) were delineated totaling 4.04 acres of wetland within the 157-acre Study Area. One other aquatic resource, pond P-1, totaling 2.02 acres was also delineated within the Study Area.

Wetlands and other aquatic resources delineated and identified in this report are a professional finding based on current regulatory guidelines published by the USACE and WDNR at the time the resources were delineated. Unknown and future conditions that affect observations of field indicators or change in interpretation of regulatory policy or methods may modify future findings.

The ultimate authority to determine the location of the wetland boundary and jurisdictional authority over the wetlands and other aquatic resources identified in this report resides with the USACE and WDNR. Decisions made by staff of these regulatory agencies may result in modifications to the location of the wetland or other aquatic resource boundaries shown in this report. In addition, the USACE and WDNR have jurisdictional authority to determine which features are exempt from regulation or non-jurisdictional. If the client proposes to modify a potentially exempt or non-jurisdictional feature, a WDNR Artificial Determination Exemption and USACE Approved Jurisdictional Determination (AJD) would be needed. Furthermore, municipalities, townships and counties may have local zoning authority over certain areas or types of wetlands and waterways. The determination that a wetland or waterway is subject to regulatory jurisdiction is made independently by the agencies.

Any activity in a delineated wetland or below the Ordinary High-Water Mark of other aquatic resources may require USACE and WDNR permits, and local government permits. If the Client proceeds to change, modify or utilize the property in question without obtaining authorization from the appropriate regulatory agency, it will be done at the Client's own risk and TRC Environmental Corporation shall not be responsible or liable for any resulting damages.

5.0 References

Charts, Munsell Soil Color. 1994. "Munsell color." Macbeth Division of Kollmorgen Instruments Corporation, New Windsor, NY 12553.

cli-MATE: Online Data Portal. Midwestern Regional Climate Center. Purdue University. cli-MATE: MRCC Application Tools Environment (purdue.edu) accessed on: 11/09/2021

Eggers, Steve D. and Donald M. Reed. 1997. Wetland Plants and Plant Communities of Minnesota and Wisconsin. 2nd Ed. U.S. Army Corps of Engineers, St. Paul District.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Natural Resources Conservation Service (NRCS). 2015. Hydrology Tools for Wetland Identification and Analysis, Chapter 19. In: National Engineering Handbook, Part 650 Engineering Field Handbook, U.S. Department of Agriculture, Washington D.C.

U.S. Army Corps of Engineers 2020. National Wetland Plant List, version 3.5 (Web address: http://wetland-plants.usace.army.mil/) U.S. Army Corps of Engineers, Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, NH

U.S. Army Corps of Engineers. 2015. St. Paul District Regulatory. Special Public Notice. Issued: March 4, 2015. Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and the Wisconsin Department of Natural Resources.

U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0),* ed. J.S. Wakeley, R. W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

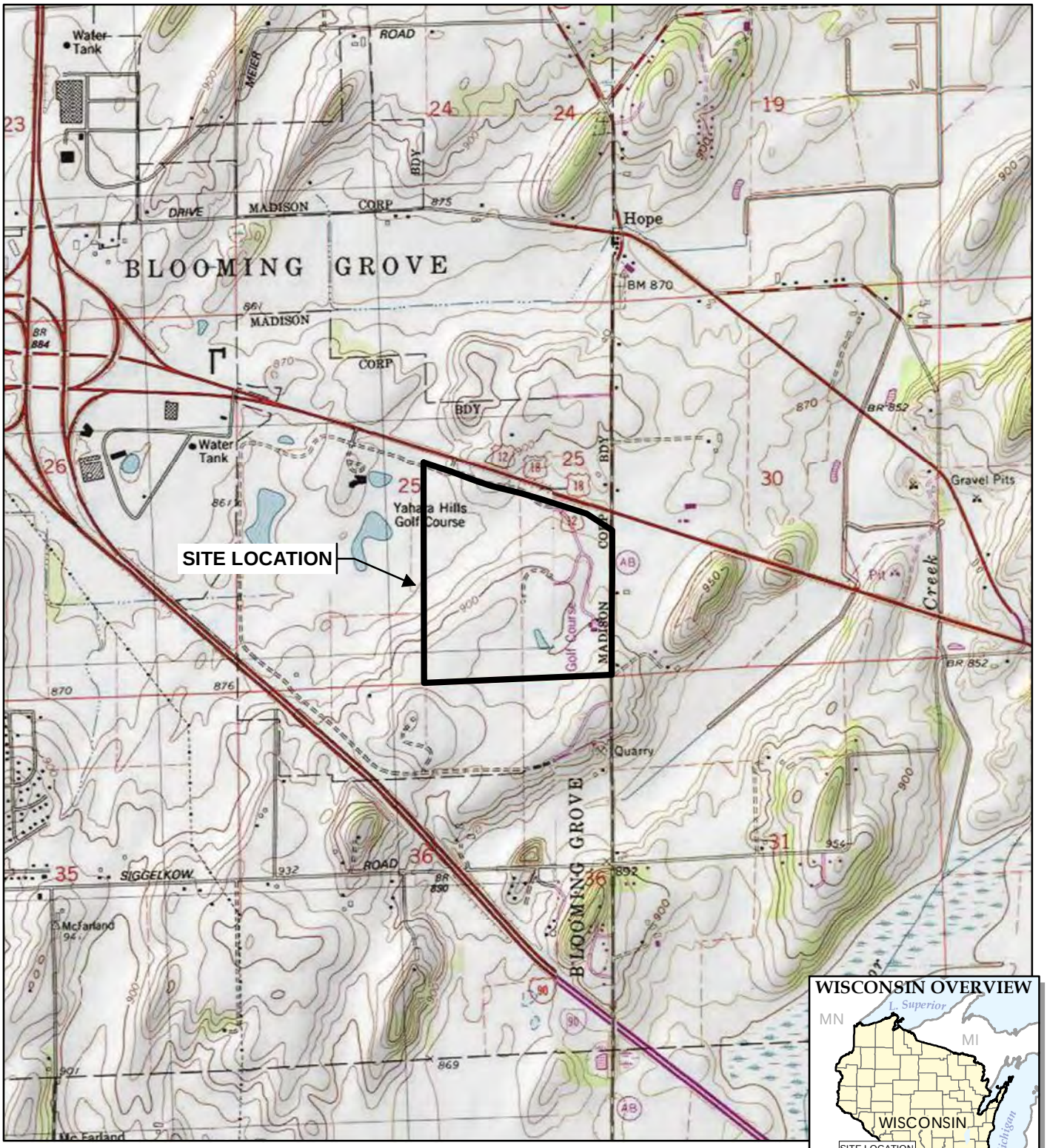
United States Department of Agriculture *(USDA)*, Natural Resources Conservation Service *(NRCS)*. 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

USDA Natural Resources Conservation Service Web Soil Survey (Web Address: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

USDA NRCS Climate Analysis by County Web Site (WETS). (Web Address: http://www.wcc.nrcs.usda.gov/climate/wetlands.html)

Wisconsin Department of Natural Resources, 2016. Surface Water Data Viewer: http://dnrmaps.wi.gov/sl/?Viewer=SWDV.

Appendix A: Figures



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

N

1 " = 2,000 '
1:24,000

0 2,000 4,000
FEET

TRC
6737 W Washington St.
Suite 2100
West Allis, WI 53214
Phone: 262.879.1212
TRC - GIS

PROJECT:
DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:
SITE LOCATION MAP

DRAWN BY:	R. SUEMNICHT
CHECKED BY:	A. LARSEN
APPROVED BY:	R. LONDRE
DATE:	DECEMBER 2021
PROJ. NO.:	275981
FILE:	275981-001slm.mxd

FIGURE 1

T:\1-PROJECTS\Dane_County_Public_Works\275981_Yahara_Hills_Golf_Course\275981-001slm.mxd -- Saved By: RSUEMNICHT on 12/7/2021, 14:55:03 PM

LEGEND

- 2' MINOR CONTOUR
- 10' MAJOR CONTOUR
- STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2020.
2. CONTOURS FROM DANE COUNTY.

N

0 175 350 Feet

1 " = 350 '

1:4,200

PROJECT:

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:

CONTOUR MAP

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		**FIGURE 2**
DATE:	DECEMBER 2021		

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FILE NO.: 275981-002.mxd

Plot Date: 12/7/2021, 14:55:47 PM by RSUEMNICHT – LAYOUT: ANSI B (11"x17")
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Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
TRC - GIS

TRC - GIS

Plot Date: 12/7/2021, 14:56:29 PM by RSUEMNICHT -- LAYOUT: ANSI B(11"x17")
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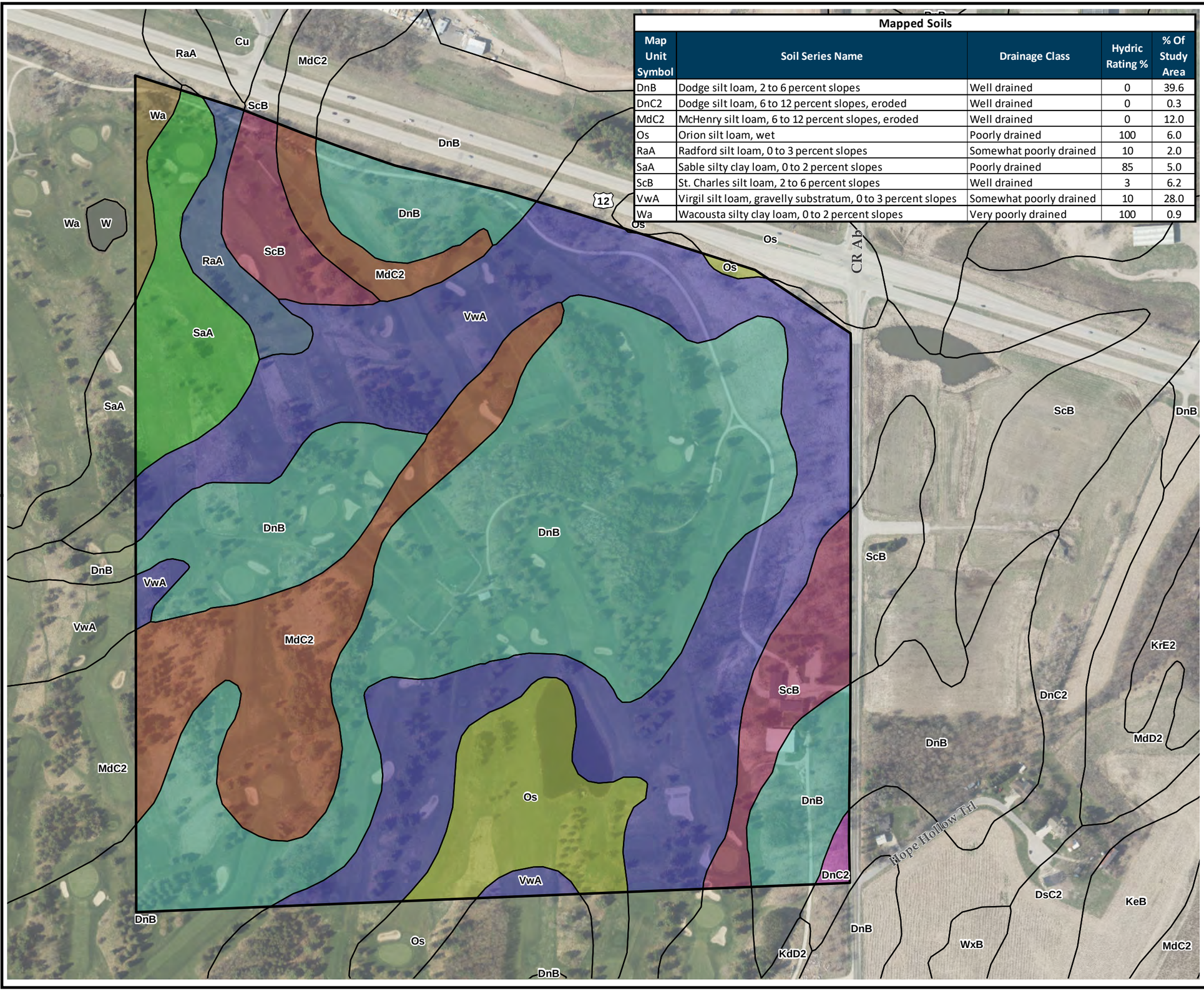
Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0



Mapped Soils

Map Unit Symbol	Soil Series Name	Drainage Class	Hydric Rating %	% Of Study Area
DnB	Dodge silt loam, 2 to 6 percent slopes	Well drained	0	39.6
DnC2	Dodge silt loam, 6 to 12 percent slopes, eroded	Well drained	0	0.3
MdC2	McHenry silt loam, 6 to 12 percent slopes, eroded	Well drained	0	12.0
Os	Orion silt loam, wet	Poorly drained	100	6.0
RaA	Radford silt loam, 0 to 3 percent slopes	Somewhat poorly drained	10	2.0
SaA	Sable silty clay loam, 0 to 2 percent slopes	Poorly drained	85	5.0
ScB	St. Charles silt loam, 2 to 6 percent slopes	Well drained	3	6.2
VwA	Virgil silt loam, gravelly substratum, 0 to 3 percent slopes	Somewhat poorly drained	10	28.0
Wa	Wacousta silty clay loam, 0 to 2 percent slopes	Very poorly drained	100	0.9

LEGEND

STUDY AREA

SOIL CLASSIFICATION

- DODGE SILT LOAM, 2 TO 6 PERCENT SLOPES
- DODGE SILT LOAM, 6 TO 12 PERCENT SLOPES, ERODED
- MCHENRY SILT LOAM, 6 TO 12 PERCENT SLOPES, ERODED
- ORION SILT LOAM, WET
- RADFORD SILT LOAM, 0 TO 3 PERCENT SLOPES
- SABLE SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES
- ST. CHARLES SILT LOAM, 2 TO 6 PERCENT SLOPES
- VIRGIL SILT LOAM, GRAVELLY SUBSTRATUM, 0 TO 3 PERCENT SLOPES
- WACOUSTA SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2020.
2. SOILS DATA ACQUIRED FROM USDA/NRCS SSURGO DATABASE.

0 175 350 Feet

1 " = 350 '

1:4,200

PROJECT:

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:

NRCS SOILS MAP

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		
DATE:	DECEMBER 2021		

FIGURE 3

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FILE NO.: 275981-003.mxd

LEGEND

- EXCAVATED POND
- WETLAND TOO SMALL TO DELINEATE
- WWI WETLAND
- NHD WATERBODY
- STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2020.
2. WETLAND DATA FROM WISCONSIN DNR, WISCONSIN WETLAND INVENTORY (WWI).
3. WATERBODY DATA FROM USGS, NATIONAL HYDROGRAPHY DATASET (NHD).

0 175 350 Feet

1 " = 350 '

1:4,200

PROJECT:

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:

WISCONSIN WETLAND INVENTORY MAP

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		**FIGURE 4**
DATE:	DECEMBER 2021		

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FILE NO.: 275981-004.mxd

Plot Date: 12/7/2021, 14:57:11 PM by RSUEMNICHT -- LAYOUT: ANSI B(11"x17")
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Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
TRC - GIS

LEGEND

STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2000.

N

0 175 350
Feet

1 " = 350 '

1:4,200

PROJECT:

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:

2000 AERIAL IMAGERY

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		**FIGURE 5**
DATE:	DECEMBER 2021		

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FILE NO.: 275981-005.mxd

Plot Date: 12/7/2021, 14:57:47 PM by RSUEMNICHT - LAYOUT: ANSI B (11"x17")
Path: T:\1-PROJECTS\Dane_County_Public_Works\275981_Yahara_Hills_Golf_Course\275981-005.mxd
Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0

TRC - GIS

LEGEND

STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2005.

0 175 350
Feet

1 " = 350 '
1:4,200

PROJECT:
DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:
2005 AERIAL IMAGERY

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		
DATE:	DECEMBER 2021		

FIGURE 6

TRC
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FILE NO.: 275981-006.mxd

Plot Date: 12/7/2021, 14:58:20 PM by RSUEMNICHT -- LAYOUT: ANSI B(11"x17")
Path: T:\1-PROJECTS\Dane_County_Public_Works\275981_Yahara_Hills_Golf_Course\275981-006.mxd
Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
TRC - GIS

LEGEND

STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2010.

0 175 350 Feet

1 " = 350 '

1:4,200

PROJECT:

DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:

2010 AERIAL IMAGERY

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		**FIGURE 7**
DATE:	DECEMBER 2021		

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FILE NO.: 275981-007.mxd

Plot Date: 12/7/2021, 14:58:53 PM by RSUEMNICHT -- LAYOUT: ANSI B(11"x17")
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Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
TRC - GIS

LEGEND

STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2014.

N

0 175 350
Feet

1 " = 350 '
1:4,200

PROJECT:
DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:
2014 AERIAL IMAGERY

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		
DATE:	DECEMBER 2021		

FIGURE 8

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FILE NO.: 275981-008.mxd

TRC - GIS
Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
Plot Date: 12/7/2021, 14:59:30 PM by RSUEMNICHT -- LAYOUT: ANSI B(11"x17")
Path: T:\1-PROJECTS\Dane_County_Public_Works\275981_Yahara_Hills_Golf_Course\275981-008.mxd

LEGEND

STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2020.

N

0 175 350
Feet

1 " = 350 '
1:4,200

PROJECT:
DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:
2020 AERIAL IMAGERY

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		**FIGURE 9**
DATE:	DECEMBER 2021		

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FILE NO.: 275981-009.mxd

Plot Date: 12/7/2021, 15:00:09 PM by RSUEMNICHT – LAYOUT: ANSI B (11"x17")
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Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet (Foot US)
Map Rotation: 0
TRC - GIS

Appendix B:
Antecedent Precipitation Data / WETS Analysis

Table 2. Antecedent Precipitation Data					
August 1, 2021 - October 31, 2021					
Precipitation Data Source Location UW Arboretum - Madison, WI USC00470273					
3rd Month Prior		**2nd Month Prior**		**1st Month Prior**	
Date	**PPT**	**Date**	**PPT**	**Date**	**PPT**
8/1/2021	0.01	9/1/2021	0.00	10/1/2021	0.00
8/2/2021	0.00	9/2/2021	0.00	10/2/2021	0.00
8/3/2021	0.00	9/3/2021	0.00	10/3/2021	0.05
8/4/2021	0.00	9/4/2021	0.20	10/4/2021	0.29
8/5/2021	0.00	9/5/2021	0.00	10/5/2021	0.04
8/6/2021	0.09	9/6/2021	0.00	10/6/2021	0.00
8/7/2021	0.06	9/7/2021	0.00	10/7/2021	0.16
8/8/2021	1.40	9/8/2021	0.15	10/8/2021	1.27
8/9/2021	0.79	9/9/2021	0.00	10/9/2021	0.02
8/10/2021	0.37	9/10/2021	0.00	10/10/2021	0.00
8/11/2021	0.47	9/11/2021	0.00	10/11/2021	0.11
8/12/2021	0.02	9/12/2021	0.00	10/12/2021	0.35
8/13/2021	0.00	9/13/2021	2.11	10/13/2021	0.00
8/14/2021	0.00	9/14/2021	0.10	10/14/2021	0.20
8/15/2021	0.00	9/15/2021	0.00	10/15/2021	0.01
8/16/2021	0.00	9/16/2021	0.00	10/16/2021	0.01
8/17/2021	0.00	9/17/2021	0.00	10/17/2021	0.00
8/18/2021	0.00	9/18/2021	0.00	10/18/2021	0.00
8/19/2021	0.00	9/19/2021	0.00	10/19/2021	0.00
8/20/2021	0.00	9/20/2021	0.00	10/20/2021	T
8/21/2021	0.40	9/21/2021	0.65	10/21/2021	0.10
8/22/2021	0.02	9/22/2021	0.00	10/22/2021	0.09
8/23/2021	T	9/23/2021	0.00	10/23/2021	0.00
8/24/2021	0.23	9/24/2021	0.00	10/24/2021	0.00
8/25/2021	0.35	9/25/2021	0.03	10/25/2021	0.55
8/26/2021	0.00	9/26/2021	0.00	10/26/2021	0.03
8/27/2021	0.00	9/27/2021	0.00	10/27/2021	0.00
8/28/2021	0.30	9/28/2021	0.00	10/28/2021	0.01
8/29/2021	0.00	9/29/2021	0.00	10/29/2021	0.31
8/30/2021	0.00	9/30/2021	0.00	10/30/2021	0.05
8/31/2021	0.00			10/31/2021	0.00
Total =	**4.51**	**Total =**	**3.24**	**Total =**	**3.65**

PPT - Precipitation in inches

T - Trace

M - Missing

Table 3. WETS Analysis

Project Site: Yahara Hills Golf Course
Period of interest: August - October, 2021
County: Dane

Long-term rainfall records (from WETS table)

	Month	3 years in 10 less than	Average	3 years in 10 greater than
1st month prior:	Oct	1.72	2.73	3.29
2nd month prior:	Sept	2.42	3.72	4.48
3rd month prior:	August	2.91	4.24	5.05
		Sum =	**10.69**	

Site determination

	Site Rainfall (in)	Condition Dry/Normal*/Wet	Condition** Value	Month Weight	Product
	3.65	Wet	3	3	9
	3.24	Normal	2	2	4
	4.51	Normal	2	1	2
Sum =	**11.40**			Sum*** =	**15**

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

Determination: **Wet**

**Condition value:

Dry = 1
Normal = 2
Wet = 3

***If sum is:

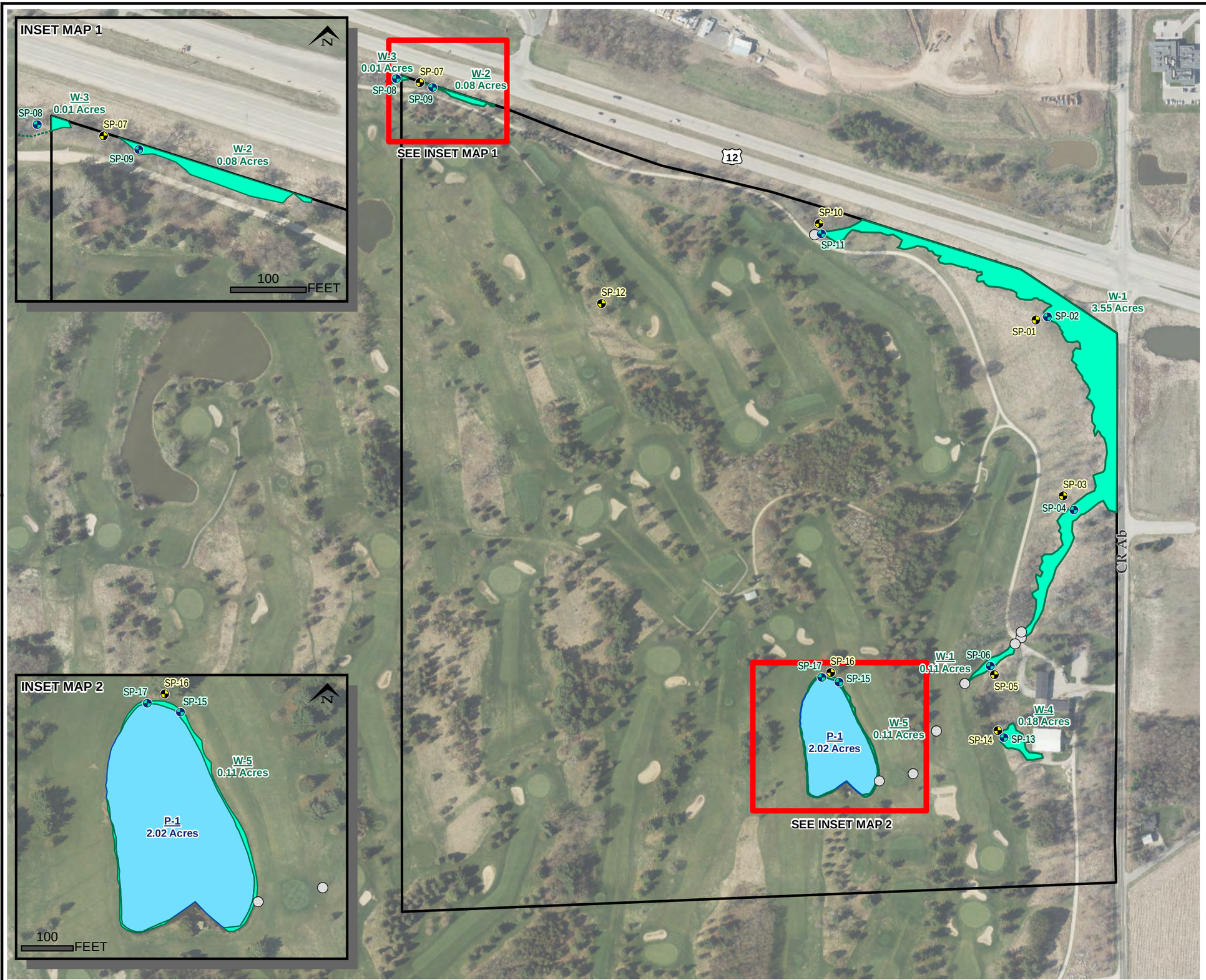
6 to 9	then period has been drier than normal
10 to 14	then period has been normal
15 to 18	then period has been wetter than normal

Precipitation data source: UW Arboretum - Madison, WI USC00470273

WETS Station: UW Arboretum - Madison, WI (1981 - 2010)

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.

Appendix C:
Wetland and Waterway Delineation Map



LEGEND

- WETLAND SAMPLE LOCATION
- UPLAND SAMPLE LOCATION
- CULVERT
- OFFSITE WETLAND BOUNDARY
- WETLAND
- POND
- STUDY AREA

NOTES

1. BASE MAP IMAGERY FROM DANE COUNTY, 2020.

N

0 175 350
Feet

1 " = 350 '
1:4,200

PROJECT:
DANE COUNTY WASTE & RENEWABLES DEPARTMENT
YAHARA HILLS GOLF COURSE DELINEATION
MADISON, DANE COUNTY, WISCONSIN

TITLE:
WETLAND AND WATERWAY DELINEATION MAP

DRAWN BY:	R. SUEMNICHT	PROJ. NO.:	275981
CHECKED BY:	A. LARSEN		
APPROVED BY:	R. LONDRE		
DATE:	DECEMBER 2021		

EXHIBIT A

TRC
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FILE NO.: 275981-010.mxd

TRC - GIS
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Plot Date: 12/7/2021, 15:00:44 PM by RSUEMNICHT -- LAYOUT: ANSI B(11"x17")
Path: T:\1-PROJECTS\Dane_County_Public_Works\275981_Yahara_Hills_Golf_Course\275981-010.mxd

Appendix D:
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-01
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Back slope **Local relief (concave, convex, none):** Convex **Slope (%):** 3-6
Subregion (LRR or MLRA): LRR K **Lat:** 43.04013 **Long:** -89.2481 **Datum:** WGS84
Soil Map Unit Name: Dodge silt loam, 2 to 6 percent slopes **WWI 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 ✓		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of two of three parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-01

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Fraxinus pennsylvanica*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Poa pratensis*	90	Yes	FACU
2. *Cirsium arvense*	30	Yes	FACU
3. *Phalaris arundinacea*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	130	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	120	x 4 =	480
UPL species	0	x 5 =	0
Column Totals	135	(A)	510 (B)
Prevalence Index = B/A =	3.8		

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 ✓

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

The criterion for hydrophytic vegetation is not met. Fallow field.

SOIL

Sampling Point: SP-01

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 - 22	10YR 4/1	90	10YR 4/4	10	C	M	Silt Loam	
22 - 26	10YR 5/1	80	10YR 4/6	20	C	M	Silt Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
_✓_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

Southwest

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-02
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Foot slope **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.04016 **Long:** -89.24794 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-01

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-01

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-02

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Fraxinus pennsylvanica*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	100	Yes	FACW
2. *Symphyotrichum lateriflorum*	5	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= 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	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	110	(A)	225 (B)
Prevalence Index = B/A =	2		

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 ____

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

The criterion for hydrophytic vegetation is met. Fresh (wet) Meadow plant community.

SOIL

Sampling Point: SP-02

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 - 15	10YR 4/2	95	10YR 4/6	5	C	M	Silt Loam	
15 - 24	10YR 4/1	80	10YR 4/6	20	C	M	Silt Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
_✓_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

Northeast

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-03
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Back slope **Local relief (concave, convex, none):** Convex **Slope (%):** 3-6
Subregion (LRR or MLRA): LRR K **Lat:** 43.03834 **Long:** -89.24775 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of all three parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-03

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Poa pratensis*	90	Yes	FACU
2. *Securigera varia*	50	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	140	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	50	x 5 =	250
Column Totals	155	(A)	640 (B)
Prevalence Index = B/A =	4.1		

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 ✓

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

The criterion for hydrophytic vegetation is not met. Fallow field.

SOIL

Sampling Point: SP-03

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 - 15	10YR 3/2	100					Silt Loam	
15 - 24	10YR 4/3	100					Silty Clay Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ____ No ✓

Remarks:

The criterion for hydric soil is not met.

Photo of Sample Plot

Northwest

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-04
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Foot slope **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.0382 **Long:** -89.2476 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-01

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-01

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-04

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Fraxinus pennsylvanica*	3	No	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	3	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	103	x 2 =	206
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	103	(A)	206 (B)
Prevalence Index = B/A =	2		

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 ____

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

The criterion for hydrophytic vegetation is met. Fresh (wet) Meadow plant community.

SOIL

Sampling Point: SP-04

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 - 3	10YR 2/2	100					Silt Loam	
3 - 15	10YR 4/2	75	10YR 4/6	25	C	M	Silty Clay Loam	
15 - 24	10YR 5/1	80	10YR 5/6	20	C	M	Clay Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
_✓_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

Northeast

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-05
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Back slope **Local relief (concave, convex, none):** Convex **Slope (%):** 6-9
Subregion (LRR or MLRA): LRR K **Lat:** 43.03653 **Long:** -89.24872 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of all three parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-05

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tilia americana*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2. *Lonicera tatarica*	10	Yes	FACU
3. *Cornus racemosa*	5	No	FAC
4.			
5.			
6.			
7.			
	45	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Solidago altissima*	40	Yes	FACU
2. *Phalaris arundinacea*	20	Yes	FACW
3. *Alliaria petiolata*	15	No	FACU
4. *Symphyotrichum pilosum*	10	No	FACU
5. *Nepeta cataria*	5	No	FACU
6. *Rubus alumnus*	5	No	FACU
7. *Arctium minus*	5	No	FACU
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= 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:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	40	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	5	x 3 =	15
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column Totals	150	(A)	495 (B)

Prevalence Index = B/A = 3.3

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 ✓

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

The criterion for hydrophytic vegetation is not met. Upland shrub dominated plant community.

SOIL

Sampling Point: SP-05

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	10YR 2/2	100					Silty Clay Loam	
13 - 24	10YR 4/4	98	10YR 4/4	2	C	M	Clay Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ____ No ✓

Remarks:

The criterion for hydric soil is not met.

Photo of Sample Plot

Southeast

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-06
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Toe slope **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.03662 **Long:** -89.24878 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-01

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-01

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-06

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	100	Yes	FACW
2. *Typha X glauca*	10	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	10	x 1 =	10
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	110	(A)	210 (B)
Prevalence Index = B/A =	1.9		

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 ____

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

The criterion for hydrophytic vegetation is met. Fresh (wet) Meadow plant community.

SOIL

Sampling Point: SP-06

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 - 3	10YR 2/2	100					Loam	
3 - 10	10YR 4/2	70	7.5YR 4/6	30	C	M	Clay Loam	
10 - 20	10YR 4/1	80	10YR 5/6	20	C	M	Clay Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
_✓_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

West

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-07
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Toe slope, ditch **Local relief (concave, convex, none):** Concave **Slope (%):** 3-6
Subregion (LRR or MLRA): LRR K **Lat:** 43.04259 **Long:** -89.2566 **Datum:** WGS84
Soil Map Unit Name: Wacousta silty clay loam, 0 to 2 percent slopes **WWI 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 ✓		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of two of three parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-07

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	50	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Lonicera tatarica*	40	Yes	FACU
2. *Sambucus racemosa*	5	No	FACU
3.			
4.			
5.			
6.			
7.			
	45	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Glechoma hederacea*	80	Yes	FACU
2. *Poa pratensis*	25	Yes	FACU
3. *Solidago altissima*	10	No	FACU
4. *Symphyotrichum pilosum*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	120	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	165	x 4 =	660
UPL species	0	x 5 =	0
Column Totals	215	(A)	760 (B)
Prevalence Index = B/A =	3.5		

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 ✓

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

The criterion for hydrophytic vegetation is not met. Upland woodland.

SOIL

Sampling Point: SP-07

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 - 11	10YR 2/1	100					Clay Loam	
11 - 24	10YR 5/2	98	10YR 5/6	2	C	M	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)
_✓_ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

Southeast

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-08
Investigator(s): Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** Flat **Slope (%):** 0-1
Subregion (LRR or MLRA): LRR K **Lat:** 43.04264 **Long:** -89.25693 **Datum:** WGS84
Soil Map Unit Name: Wacousta silty clay loam, 0 to 2 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-3

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-3

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-08

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Acer negundo*	5	Yes	FAC
2. *Rhamnus cathartica*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	100	Yes	FACW
2. *Solanum dulcamara*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	130	(A)	290 (B)

Prevalence Index = B/A = 2.2

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 ____

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

The criterion for hydrophytic vegetation is met. Fresh (wet) Meadow plant community.

SOIL

Sampling Point: SP-08

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 3/1	80	10YR 5/8	20	C	M	Clay Loam	
10 - 15	10YR 2/1	85	10YR 5/8	15	C	M	Loam	
15 - 24	10YR 5/1	60					Clay	Mixed
15 - 24	5G 6/1	40						

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
_✓_ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

West

East

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-09
Investigator(s): Ron Londre, Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Toe slope, ditch **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.04254 **Long:** -89.25643 **Datum:** WGS84
Soil Map Unit Name: Wacousta silty clay loam, 0 to 2 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-02

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-02

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-09

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	40	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Carex lacustris*	40	Yes	OBL
3. *Cirsium arvense*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1. *Vitis riparia*	15	Yes	FAC
2.			
3.			
4.			
	15	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	40	x 1 =	40
FACW species	110	x 2 =	220
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals	170	(A)	325 (B)
Prevalence Index = B/A =	1.9		

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 ____

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

The criterion for hydrophytic vegetation is met. Floodplain Forest plant community.

SOIL

Sampling Point: SP-09

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 - 9	10YR 3/1	90	10YR 5/8	10	C	M	Loam	
9 - 12	10YR 2/1	95	10YR 5/8	5	C	M	Clay Loam	
12 - 24	10YR 4/1	90	10YR 6/6	10	C	M	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)
_✓_ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
_✓_ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

East

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-10
Investigator(s): Amanda Larsen, Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** Convex **Slope (%):** 3-6
Subregion (LRR or MLRA): LRR K **Lat:** 43.04112 **Long:** -89.25109 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of the wetland hydrology and hydric soil parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-10

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Yes	FAC
2. *Quercus bicolor*	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Lonicera tatarica*	20	Yes	FACU
2. *Acer negundo*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Rhamnus cathartica*	10	Yes	FAC
2. *Solanum dulcamara*	5	Yes	FAC
3. *Geum canadense*	5	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	85.7	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	45	x 3 =	135
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals	70	(A)	225 (B)
Prevalence Index = B/A =	3.2		

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 ____

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

The criterion for hydrophytic vegetation is met. Upland woodland.

SOIL

Sampling Point: SP-10

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 - 15	10YR 3/2	100					Loam	
15 - 24	2.5Y 4/3	95	10YR 6/6	5	C	M	Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ____ No ✓

Remarks:

The criterion for hydric soil is not met.

Photo of Sample Plot

North

West

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-11
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Toe slope **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.04102 **Long:** -89.25106 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-01

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-01

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-11

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	50	Yes	FACW
2. *Acer negundo*	5	No	FAC
3.			
4.			
5.			
6.			
7.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Cornus racemosa*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= 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	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	60	(A)	130 (B)

Prevalence Index = B/A = 2.2

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 ____

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

The criterion for hydrophytic vegetation is met. Floodplain Forest plant community.

SOIL

Sampling Point: SP-11

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	10YR 4/1	90	7.5YR 4/6	10	C	M	Silty Clay Loam	
13 - 24	10YR 5/1	90	10YR 5/6	10	C	M	Silty Clay Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
_✓_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

East

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-12
Investigator(s): Ron Londre **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Back slope **Local relief (concave, convex, none):** Convex **Slope (%):** 3-6
Subregion (LRR or MLRA): LRR K **Lat:** 43.04033 **Long:** -89.25411 **Datum:** WGS84
Soil Map Unit Name: St. Charles silt loam, 2 to 6 percent slopes **WWI 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 ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of all three parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-12

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Poa pratensis*	70	Yes	FACU
2. *Festuca rubra*	15	No	FACU
3. *Glechoma hederacea*	15	No	FACU
4. *Cirsium arvense*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column Totals	105	(A)	420 (B)
Prevalence Index = B/A =	4		

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 ✓

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

The criterion for hydrophytic vegetation is not met. Deep rough.

SOIL

Sampling Point: SP-12

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	10YR 4/3	100					Silty Clay Loam	
13 - 24	10YR 5/3	95	10YR 4/6	5	C	M	Silty Clay Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ____ No ✓

Remarks:

The criterion for hydric soil is not met.

Photo of Sample Plot

North

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-13
Investigator(s): Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Depression **Local relief (concave, convex, none):** Flat **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.03589 **Long:** -89.2486 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ____		
Hydric Soil Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-4

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-4

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ✓ No ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-13

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	5	Yes	FACW
2. *Juglans nigra*	3	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	8	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= 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:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals	108	(A)	222 (B)
Prevalence Index = B/A =	2.1		

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 ____

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

The criterion for hydrophytic vegetation is met. Fresh (wet) Meadow plant community.

SOIL

Sampling Point: SP-13

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 - 4	10YR 3/2	90	10YR 5/8	10	C	M	Loam	
4 - 14	10YR 4/1	85	10YR 5/8	15	C	M	Silty Clay Loam	
14 - 24	10YR 4/3	100					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)
_✓_ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
_✓_ Depleted Matrix (F3)
_✓_ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes _✓_ No ____

Remarks:

The criterion for hydric soil is met.

Photo of Sample Plot

Southeast

Northeast

Southwest

North

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-14
Investigator(s): Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Hillslope **Local relief (concave, convex, none):** Flat **Slope (%):** 2-5
Subregion (LRR or MLRA): LRR K **Lat:** 43.03596 **Long:** -89.24868 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI 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 ✓		
Hydric Soil Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of all three parameters, this area is an upland.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-14

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	15	Yes	FACW
2. *Juglans nigra*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. *Rubus idaeus*	20	Yes	FACU
2. *Juglans nigra*	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Glechoma hederacea*	60	Yes	FACU
2. *Phalaris arundinacea*	20	Yes	FACW
3. *Arctium minus*	15	No	FACU
4. *Pastinaca sativa*	10	No	UPL
5. *Elymus repens*	10	No	FACU
6. *Cirsium discolor*	5	No	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	120	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= 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:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33.3	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	120	x 4 =	480
UPL species	15	x 5 =	75
Column Totals	170	(A)	625 (B)

Prevalence Index = B/A = 3.7

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 ✓

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

The criterion for hydrophytic vegetation is not met. Fallow field.

SOIL

Sampling Point: SP-14

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 - 11	10YR 3/3	100					Loam	
11 - 24	10YR 5/4	100					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)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ____ No ✓

Remarks:

The criterion for hydric soil is not met.

Photo of Sample Plot

East

North

West

Southeast

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-15
Investigator(s): Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Toe slope **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.03647 **Long:** -89.25088 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI classification:** W0Hx
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 ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-5

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland fringe on pond edge. Wetland ID: W-5

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ✓ No ____	Depth (inches):	0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal. Soil is episaturated.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-15

Tree Stratum (Plot size: 5' x 40')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5' x 40')			
1. *Salix interior*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Herb Stratum (Plot size: 5'x 40')			
1. *Phalaris arundinacea*	60	Yes	FACW
2. *Agrostis stolonifera*	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: 5' x 40')			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals	105	(A)	210 (B)
Prevalence Index = B/A =	2		

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 ____

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

The criterion for hydrophytic vegetation is met. Fresh (wet) Meadow plant community.

SOIL

Sampling Point: SP-15

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/2	95	10YR 5/8	5	C	M	Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
✓ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ✓ No ____

Remarks:

The criterion for hydric soil is met. Refusal on rocks at 6 inches.

Photo of Sample Plot

South

East

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-16
Investigator(s): Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** Convex **Slope (%):** 3-6
Subregion (LRR or MLRA): LRR K **Lat:** 43.03657 **Long:** -89.25099 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI classification:** W0Hx
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 ✓	**Is the Sampled Area within a Wetland?**	**Yes ____ No ✓**
Wetland Hydrology Present?	Yes ____ No ✓	**If yes, optional Wetland Site ID:**	

Remarks: (Explain alternative procedures here or in a separate report)
Based on the absence of all three parameters, this area is an upland. Circumstances are not normal due to mowing of vegetation.

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	**Wetland Hydrology Present?** Yes ____ No ✓
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is not met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-16

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. *Poa compressa*	80	Yes	FACU
2. *Poa pratensis*	30	Yes	FACU
3. *Taraxacum officinale*	15	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	125	= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	155	x 4 =	620
UPL species	0	x 5 =	0
Column Totals	155	(A)	620 (B)
Prevalence Index = B/A =	4		

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 ✓

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

The criterion for hydrophytic vegetation is not met. Vegetation significantly disturbed as a result of mowing. Planted turf grass area.

SOIL

Sampling Point: SP-16

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 - 5	10YR 3/1	100					Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ____ No ✓

Remarks:

The criterion for hydric soil is not met. Refusal on fill at 5 inches.

Photo of Sample Plot

East

West

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yahara Hills Golf Course **City/County:** Madison, Dane **Sampling Date:** 2021-Nov-09
Applicant/Owner: Dane County Waste & Renewables **State:** Wisconsin **Sampling Point:** SP-17
Investigator(s): Amanda Larsen **Section, Township, Range:** 25-T7N-R10E
Landform (hillslope, terrace, etc.): Toe slope **Local relief (concave, convex, none):** Concave **Slope (%):** 1-3
Subregion (LRR or MLRA): LRR K **Lat:** 43.03652 **Long:** -89.25112 **Datum:** WGS84
Soil Map Unit Name: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes **WWI classification:** W0Hx
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 ____	**Is the Sampled Area within a Wetland?**	**Yes ✓ No ____**
Wetland Hydrology Present?	Yes ✓ No ____	**If yes, optional Wetland Site ID:**	W-5

Remarks: (Explain alternative procedures here or in a separate report)
Based on the presence of all three parameters, this area is a wetland. Wetland ID: W-5

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 ✓	Depth (inches):	
Water Table Present?	Yes ____ No ✓	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ✓ No ____	Depth (inches):	0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Topo maps, soils map, WWI map, aerial imagery

Remarks:
The criterion for wetland hydrology is met. Based on WETS analysis, antecedent hydrologic conditions are wetter than normal. Soil is episaturated. 0-6 inches saturated.

VEGETATION -- Use scientific names of plants.

Sampling Point: SP-17

Tree Stratum (Plot size: 5' x 40')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5' x 40')			
1. *Salix interior*	40	Yes	FACW
2. *Rhamnus cathartica*	5	No	FAC
3.			
4.			
5.			
6.			
7.			
	45	= Total Cover	
Herb Stratum (Plot size: 5' x 40')			
1. *Phalaris arundinacea*	45	Yes	FACW
2. *Arctium minus*	5	No	FACU
3. *Dipsacus fullonum*	3	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	53	= Total Cover	
Woody Vine Stratum (Plot size: 5' x 40')			
1.			
2.			
3.			
4.			
	0	= 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	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply By:	
OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	5	x 3 =	15
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals	98	(A)	217 (B)
Prevalence Index = B/A =	2.2		

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 ____

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

The criterion for hydrophytic vegetation is met. Shrub-Carr plant community.

SOIL

Sampling Point: SP-17

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 3/2	95	10YR 5/8	5	C	M	Loam	

[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) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
✓ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[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)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None
Depth (inches): NA

Hydric Soil Present? Yes ✓ No ____

Remarks:

The criterion for hydric soil is met. Refusal on rocks at 6 inches.

Photo of Sample Plot

Southwest

Northeast

Appendix E:
Site Photographs

Site Photographs

Project Name	Site Location	Project No.
Yahara Hills Golf Course	Madison, WI	257981

Photo No.	Date
1	11/9/2021

Description

Pond P-1, facing north-west

Photo No.	Date
2	11/9/2021

Description

Pond P-1 facing southeast

Site Photographs

Project Name	Site Location	Project No.
Yahara Hills Golf Course	Madison, WI	257981

Photo No.	Date
3	11/9/2021

Description

Pond P-1, facing west

Photo No.	Date
4	11/9/2021

Description

Proof of growing season, *Arctium minus* (lesser burdock) and *Phalaris arundinacea* (reed canary grass)

Site Photographs

Project Name	Site Location	Project No.
Yahara Hills Golf Course	Madison, WI	257981

Photo No.	Date
5	11/9/2021

Description

Proof of growing season, *Solanum dulcamara* (nightshade) and *Phalaris arundinacea*

Photo No.	Date
6	11/9/2021

Description

Proof of growing season, *Securigera varia* (purple crown vetch) and *Phalaris arundinacea* (reed canary grass)

Site Photographs

Project Name	Site Location	Project No.
Yahara Hills Golf Course	Madison, WI	257981

Photo No.	Date
7	11/9/2021

Description

Proof of growing season, *Poa spp.* (bluegrass species) and *Cirsium discolor* (field thistle)

Appendix F:
Professional Opinion on Wetland Susceptibility

Table 5: Opinion of Susceptibility for NR 151 Setback Purposes

Note: Final authority on NR 151 protective areas rests with WDNR, but the following is TRC's opinion of each wetland's NR 151 protective area category.

Wetland #	Least Susceptible	Moderately Susceptible	Highly Susceptible
W-1 (FWM)	X		
W-1 (SC/FF)		X	
W-2	X		
W-3	X		
W-4	X		
W-5	X		

Definitions of Susceptibility Per WDNR Administrative Code:

Least Susceptible: Degraded wetlands dominated by invasive species (≥ 90%) such as reed canary grass. Protective area = 10% of avg wetland width, but no less than 10' or more than 30'.

Moderately Susceptible: Fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins. Protective area = 50'.

Highly Susceptible: Outstanding/exceptional resource waters, wetlands in areas of special natural resource interest as specificed in s. NR 103.04. Protective area = 75'.

Heartland
ECOLOGICAL GROUP INC
506 Springdale Street, Mount Horeb, WI 53572

May 23, 2022

Ms. Teri Daigle
Tetra Tech
8413 Excelsior Drive, Suite 160
Madison, WI 53717

RE: Wetland Determination Summary – Dane County Landfill Site No. 3 at Yahara Golf Course, City of Madison, Dane County, Wisconsin

Dear Ms. Daigle:

Heartland Ecological Group, Inc. ("Heartland") completed an assured wetland determination within a portion of the proposed Dane County Landfill Site No. 3 at the Yahara Hills Golf Course on April 25, 2022 at the request of Tetra Tech. Fieldwork was completed by Jeff Kraemer, an assured delineator qualified via the Wisconsin Department of Natural Resources (WDNR) Wetland Delineation Assurance Program (Attachment 5, Delineator Qualifications). The 72.70-acre site (the "Study Area") lies southeast of the intersection of I39/I90 and US 12/18 in the southeast portion of the Yahara Hills Golf Course. The Study Area is in Sections 25 and 36, Township 7N, Range 10E, City of Madison, 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 6).

Methods

Wetland determinations were based upon 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* (Attachment 1, Figure 2), the Natural Resource Conservation Service's (NRCS) Soil Survey Geographic Database (SSURGO), U.S. Department of Agriculture's (USDA) *Web Soil Survey* (Attachment 1, Figure 3), the Wisconsin Department of Natural Resources' *Surface Water Data Viewer's* wetland indicator data layer (Attachment 1, Figure 4), the WDNR's *Wisconsin Wetland Inventory* data layer (Attachment 1, Figure 5), 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 Attachment 1, Figures 2 and 5.

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.

The growing season was determined to be underway due to the presence of emerging reed canary grass (*Phalaris arundinacea*), brome grass (*Bromus inermis*), and burdock (*Arctium minus*). Leaves were present on honey suckle shrubs *(Lonicera x bella*). Sample point placement(s) for the wetland determination(s) were based on topography and the presence of potentially hydric soils as indicated by NRCS-mapped soil units and the WDNR's SWDV.

Recent weather conditions influence the visibility or presence of certain wetland hydrology indicators and an assessment of recent precipitation patterns can assist in determining if climatic/hydrologic conditions were typical when the field investigation was completed. Therefore, a review of the 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, the amount of precipitation over the preceding 90 days was 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 days prior to the investigation were also considered while interpreting wetland hydrology indicators. In addition, 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 Positioning System (GPS) capable of sub-meter accuracy. Flagging was not used. The GPS data was used to map the sample points using ESRI ArcGIS Pro™ 2.9.2 Geographical Information System (GIS) 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 (Attachment 2, APT Analysis). Site conditions observed during the field investigation were confirmed to be normal to wetter than normal given the time of year.

The topography within the Study Area was rolling, with various hills, depressions, and slopes and a topographic high of approximately 935 feet mean sea level (msl) in the east-central portion of the site, and a topographic low of approximately 901 feet msl near the northcentral portion of the site (Attachment 1, Figures 2 and 6). Land uses within the Study Area consist of active golf course and surrounding areas are primarily agricultural row cropping with residential, pasture, and woodland areas 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 areas 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) or the WDNR Wetland Indicator mapping does not identify wetlands or potential 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
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
KdD2: Kidder loam, 12 to 20 percent slopes, eroded	Kidder-Eroded	90-100	Moraines	No
	Casco-Eroded	0-5	Moraines	No
	McHenry	0-5	Moraines	No
MdC2: McHenry silt loam, 6 to 12 percent slopes, eroded	McHenry-Eroded	85-95	Moraines	No
	Kendall	2-7	Drainageways	No
	Kidder-Eroded	3-8	Moraines	No
Os: Orion silt loam, wet	Orion variant-Wet	85-95	Flood plains	Yes
	Otter	2-6	Flood plains	Yes
	Wacousta	2-5	Flood plains	Yes
	Sable	1-4	Flood plains	Yes
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
VwA: Virgil silt loam, gravelly substratum, 0 to 3 percent slopes	Virgil-Gravelly substratum	85-95	Drainageways on outwash plains	No
	Drummer-Drained	2-6	Depressions on outwash plains	Yes
	Sebewa	2-5	Depressions on outwash plains	Yes

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
	Sable	1-4	Depressions on outwash plains	Yes
WxB: Whalan silt loam, 2 to 6 percent slopes	Whalan	100	Hills	No

Wetland determination data sheets (Attachment 3) were completed at one (1) sample where potential wetlands may be present based on the desktop review and field reconnaissance. Attachment 4 provides photographs, typically at the sample point locations and other representative locations of the Study Area. The sample point locations are shown on Figure 6.

Vegetation at the sample point location was comprised of shrub-scrub community at the edge of maintained fairway turf. Dominate species included smooth brome grass Kentucky blue grass (*Poa pratensis*, FACU), honey locust (*Gleditsia triacanthos*, FAC) and red pine (*Pinus resinosa*, FACU). Therefore, the hydrophytic vegetation criteria was not satisfied. No field indicators of hydric soils or indicators of wetland hydrology were observed.

Based on the results of the wetland determination, no wetlands are 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 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.

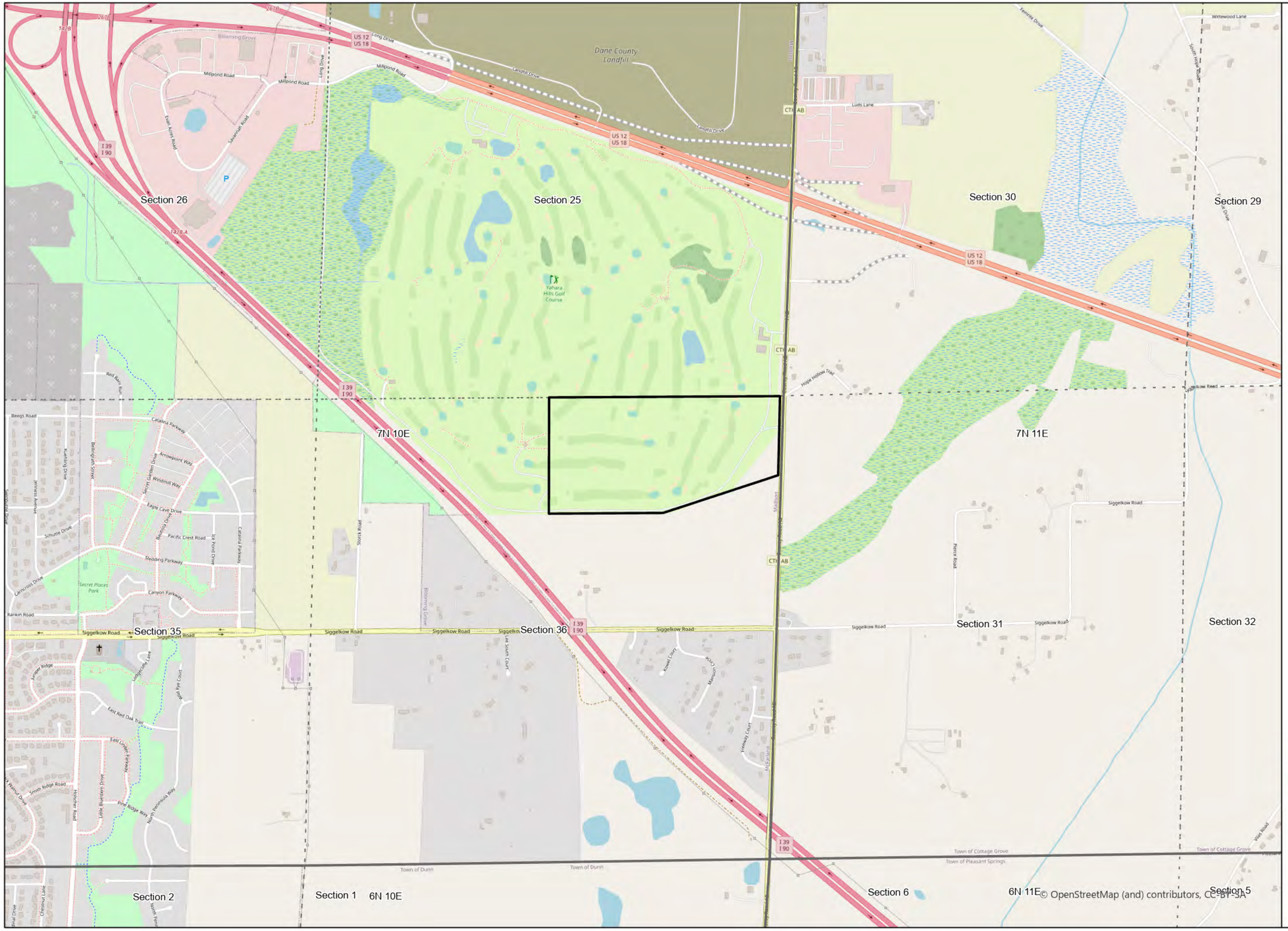
Please feel free to contact me if you have any questions regarding this wetland determination.

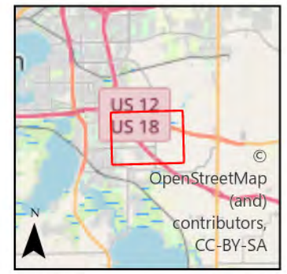
Regards,

Jeff Kraemer, Principal
Heartland Ecological Group, Inc.
jeff@heartlandecological.com
608.490.2450 Ext. 2

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

Attachment 1 | Figures





Study Area (72.70 ac)

Township

Section

0 510 1,020 Ft

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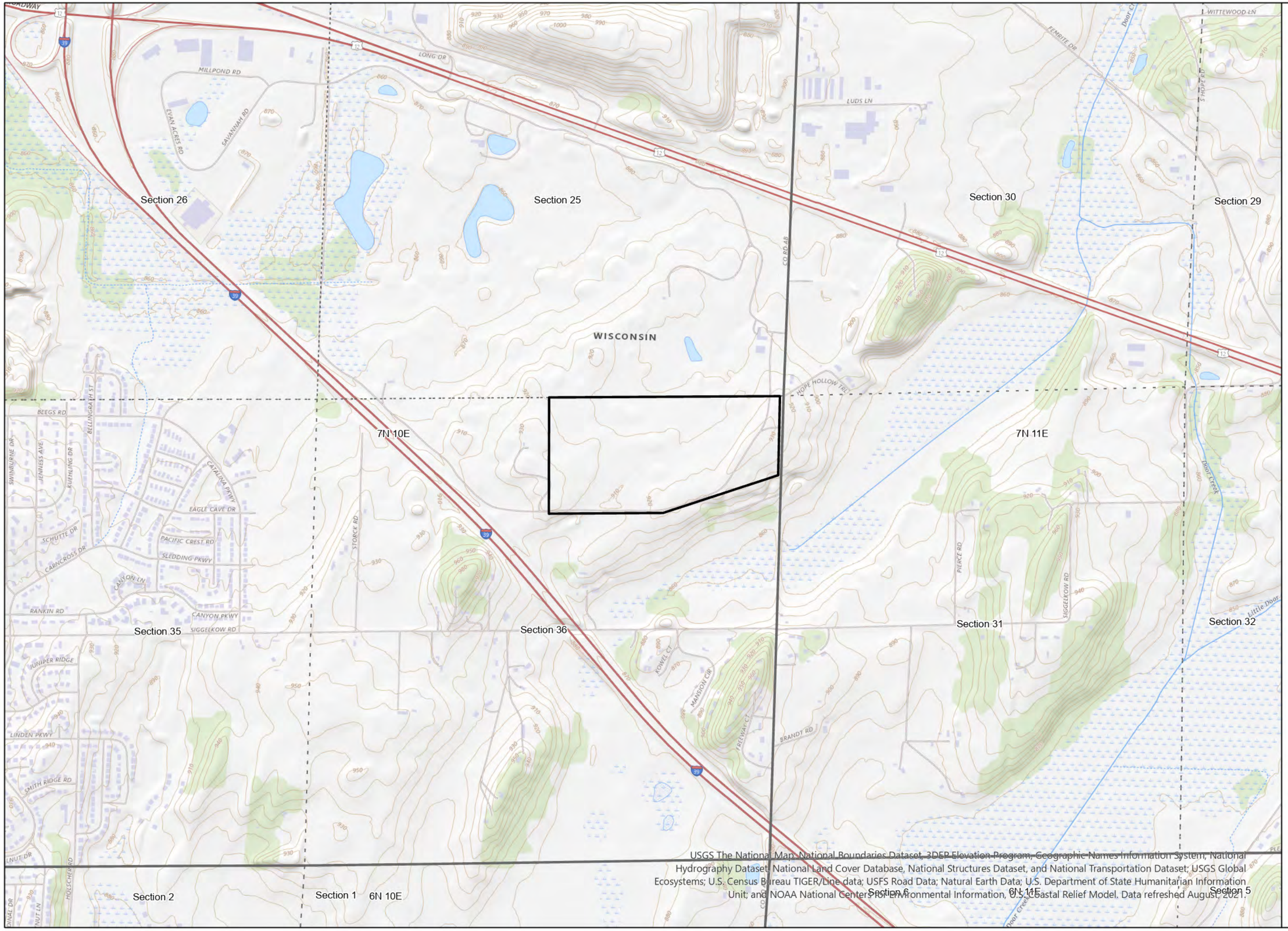
Figure 1. Project Location

Yahara Hills Golf Course
Project #20220702
T7N, R10E, S25 & 36
C Madison, Dane Co

OpenStreetMap
ESRI



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed August, 2021.

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Figure 2. USGS Topography
Yahara Hills Golf Course
Project #20220702
T7N, R10E, S25 & 36
C Madison, Dane Co

USGSTopo
USGS

Study Area (72.70 ac)

NRCS Soil Survey Data

- Hydric (100%)
- Predominantly Hydric (85-99%)
- Partially Hydric (16-84%)
- Predominantly Non-Hydric (1-15%)
- Non-Hydric (0%)

0 100 200 Ft

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Figure 3. NRCS Hydric Soils

Yahara Hills Golf Course
Project #20220702
T7N, R10E, S25 & 36
C Madison, Dane Co

2020 NAIP
NRCS

Study Area (72.70 ac)

SWDV Wetland Indicators

0 100 200 Ft

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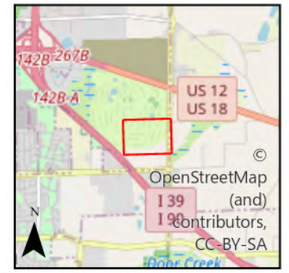
Figure 4. SWDV Wetland Indicators

Yahara Hills Golf Course
Project #20220702
T7N, R10E, S25 & 36
C Madison, Dane Co

2020 NAIP
WDNR



Study Area (72.70 ac)
WWI Wetland Polygons
WWI Wetland Points (No Features in Map Extent)
NHD Waterway (No Features in Map Extent)
NHD Waterbody

0 100 200 Ft

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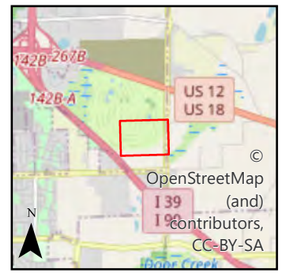
Figure 5. Wisconsin Wetland Inventory
Yahara Hills Golf Course
Project #20220702
T7N, R10E, S25 & 36
C Madison, Dane Co

2020 NAIP
WDNR, USGS



Study Area (72.70 ac)

Dane Co 1' Contours

Field Delineated Wetlands (No Wetlands Identified)

Sample Points

Upland

0 100 200 Ft

Heartland ECOLOGICAL GROUP INC

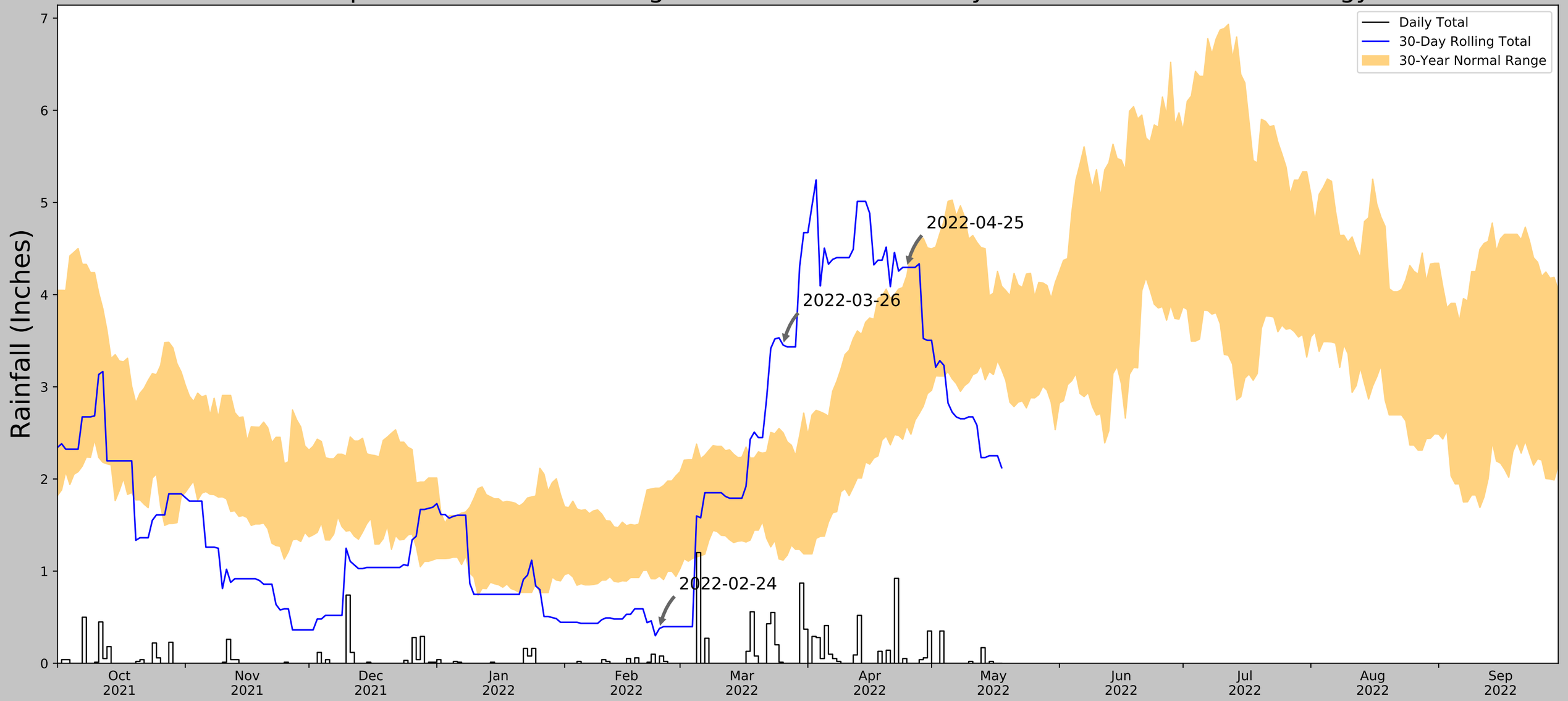
Figure 6. Field Delineated Wetlands

Yahara Hills Golf Course
Project #20220702
T7N, R10E, S25 & 36
C Madison, Dane Co

2020 NAIP
Dane Co, HEG

Attachment 2 | APT Analysis

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



Coordinates	43.041246, -89.260944
Observation Date	2022-04-25
Elevation (ft)	875.92
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-04-25	2.575984	4.206693	4.295276	Wet	3	3	9
2022-03-26	1.119291	2.501181	3.452756	Wet	3	2	6
2022-02-24	0.94685	1.9	0.377953	Dry	1	1	1
Result							Wetter than Normal - 16

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)
MADISON DANE RGNL AP	43.1406, -89.3453	866.142	8.077	9.778	3.714	11353	90

Attachment 3 | Wetland Determination Data Sheets

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dane County Landfill Site No. 3 City/County: Madison, Dane Sampling Date: 4/25/22

Applicant/Owner: Dane County State: WI Sampling Point: P1

Investigator(s): Jeff Kraemer, Heartland Section, Township, Range: S25/36, T7N, R10E

Landform (hillside, terrace, etc.): foothill Local relief (concave, convex, none): concave Slope %: 3

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

Soil Map Unit Name: Orion Silt Loam (Os) NWI classification: none

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 ____	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.)
Based on WETS analysis conditions at the time of the investigation were wetter than normal. Observed conditions were confirmed wet to normal fo the time of year. Sample point located on low portion of project area, within relatively unmanaged vegetation. No wetalnd indicators or mapped wetlands are present in the project area. No observed portions of the Study Area supported wetland indicators based on the field assessment.

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:
No hydrology indicators observed.

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

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus resinosa*	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3. *Gleditsia triacanthos*	20	Yes	FAC
4. *Prunus serotina*	5	No	FACU
5. *Lonicera X bella*	5	No	FACU
6.			
7.			
	30	=Total Cover	
Herb Stratum (Plot size:)			
1. *Poa pratensis*	60	Yes	FACU
2. *Pastinaca sativa*	15	No	UPL
3. *Cirsium arvense*	3	No	FACU
4. *Taraxacum officinale*	3	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	81	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	106	x 4 =	424
UPL species	15	x 5 =	75
Column Totals:	141 (A)		559 (B)

Prevalence Index = B/A = 3.96

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.)
Shrub-scrub, unmanaged rough

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
0-12	10YR 3/3	100					Loamy/Clayey	SiCL
12-16	10YR 3/1	85					Loamy/Clayey	SiCL
	10YR 3/3	15						
16-24	10YR 3/1	85					Loamy/Clayey	SiCL
	10YR 4/2	10						
	10YR 2/1	5						

[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: _____

Depth (inches): _____

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

Remarks:

Mixed matrix present below surface. Likely historic grading/filling assocated with golf course land use.

Attachment 4 | Site Photographs

Photo #1 RCG Emergence in off-site wetland

Photo #2 Honey suckle leaf out

Photo #3 Woodland opening in SE part of site

Photo #4 Woodland opening in SE part of site

Photo #5 Woodland opening in SE part of site

Photo #6 Old field in SE part of site

Photo #7 Typical pine/spruce area between fairways (east-central)

Photo #8 Typical pine/spruce area between fairways (east-central)

Photo #9 Service road on SE-S part of site

Photo #10 Typical pine/spruce planting b/n fairways (south-southeast)

Photo #11 Typical fairway (southcentral)

Photo #12 Typical fairway (southcentral)

Photo #13 Typical fairway (southcentral)

Photo #14 Pine/spruce/locust planting b/n fairways (central)

Photo #15 Pine/spruce/locust planting b/n fairways (central)

Photo #16 Fairway at edge of pine/spruce planting (central)

Photo #17 Pine/spruce planting b/n fairways (central)

Photo #18 Pine/spruce planting b/n fairways (northcentral)

Photo #19 Typical fairway (northcentral)

Photo #20 Honey locust thicket (northwest)

Photo #21 Honey locust thicket (northwest)

Photo #22 Honey locust thicket (northwest)

Photo #23 Honey locust thicket (northwest)

Photo #24 P1

Photo #25 P1

Photo #26 P1

Photo #27 P1

Photo #28 P1

Photo #29 Pine woodland (northcentral)

Photo #30 Pine woodland (northcentral)

Photo #31 Pine woodland (northcentral)

Photo #32 Pine woodland (northcentral)

Attachment 5 | Delineator Qualifications

Jeff Kraemer

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

Jeff is the founder of Heartland Ecological Group, Inc. With over 18 years of experience as an environmental consultant, ecological and regulatory policy practitioner, and managing business leader, Jeff provides proven value to clients with his vast experience guiding often complex projects through environmental regulatory and technical challenges applied throughout a diversity of industry sectors. Jeff is recognized by the Wisconsin Department of Natural Resources Wetland Delineation Assurance Program and is the longest standing assured wetland delineator in the state of Wisconsin.

Jeff is a recognized expert in the field of wetland ecology and delineation; wetland restoration and mitigation banking; and regulatory policy and permitting associated with wetlands and waterways. His experience includes: Wetland Determination, Delineation & Functional Assessment; Wetland Restoration, Mitigation, Banking & Monitoring; Botanical / Biological Surveys & Natural Resource Inventories; Rare Species Surveys, Conservation Plans & Monitoring; Habitat Restoration, Wildlife Surveys, SCAT surveys, Environmental Assessments; Local, state, federal permit applications; Expert Witness testimony; and Regulatory permit compliance.

Education

MS, Biological Sciences (Emphasis in Wetland Ecology), University of Wisconsin – Milwaukee, WI, 2003

BS, Biological Sciences (Emphasis in Aquatic Biology) University of Wisconsin – La Crosse, WI, 1999

Regional Supplement Field Practicum
Wetland Training Institute (WTI)
Portage, WI, 2017

Basic and Advanced Wetland Delineation Training, Continuing Education and Extension, UW-La Crosse, WI, 2001

Identification of Sedges Workshop,
UW-Milwaukee, Saukville, WI, 2001

Vegetation of Wisconsin Workshop,
UW-Milwaukee, Saukville, WI 2000

Environmental Corridor Delineation Workshop,
Southeastern Wisconsin Regional Planning Commission (SEWRPC), 2004

Wetland Soils and Hydrology Workshop,
Wetland Training Institute, Toledo, OH, 2003

Critical Methods in Wetland Delineation
University of Wisconsin - La Crosse Continuing Education and Extension
Madison, WI, 2006 - 2018

Federal Wetland Regulatory Policy Course
Wetlands Training Institute (WTI)
Cottage Grove, WI, 2010

Registrations

Professionally Assured Wetland Delineator,
Wisconsin Department of Natural Resources
(2005-Present)

Wetland Professional in Training (WPIT),
Society of Wetland Scientists Certification Programs

APPENDIX F

FAA CORRESPONDENCE

WDNR, Notification Email of Little Wheel Field Airport Closed (12/6/2021)

Tetra Tech, Airport Setbacks and Concurrence – Proposed Dane County Landfill Site No. 3 (6/22/2022)

Tetra Tech, Notice of a Proposed Landfill – Dane County Landfill Site No. 3 (6/22/2022)

UPS Delivery Receipt for FAA (6/23/2022)

UPS Delivery Receipt for Quale Airport (6/23/2022)

FAA, Acknowledgement Email of Receipt of the Airport Setbacks and Concurrence Letter (8/10/2022)

Richard Quale, Notification Email of Quale Airport Closed (8/29/2022)

From: Sullivan, Tyler J - DNR
To: Welch, John
Cc: Powers, Betsy; Rathsack, Allison; Cooper, Carolyn E - DNR; Bekta, Ann M - DNR
Subject: FW: Dane County Landfill
Date: Monday, December 6, 2021 1:26:50 PM
Attachments: image002.png

Good Afternoon John,

Just an FYI, I received this email from Jodi Coon (of the Little Wheel Field Airport). Per her email, I won't send her any more information that the department is required to send to local airstrip owners during the feasibility process.

Thanks,
Tyler

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Tyler Sullivan
Phone: (608) 516-3962
tyler.sullivan@wisconsin.gov

From: Jodi Coon <bjcoon1984@gmail.com>
Sent: Monday, December 6, 2021 11:06 AM
To: Sullivan, Tyler J - DNR <tyler.sullivan@wisconsin.gov>
Subject: Dane County Landfill

Tyler,
On November 22, 2021 I received a packet of information from you regarding the Dane County Landfill Site. I am writing to you to see if I received this information because my land is located on highway 12/18 in the Town of Cottage Grove or is it because my land is/was an airstrip? I inherited this land from my dad, who passed away back in 2017, so in 2018 or 2019, we had the airstrip

plowed up and removed from the books as an active airstrip. Wondering if I can be removed from your notification list regarding the landfill or do I still need to receive this information because I have land near the landfill.

My packet comes to Little Wheel Field Airport, Jodi Coon, 2024 Meadow Drive, Stoughton, WI 53589.

Thank you,
Jodi Coon

TETRA TECH

6/22/2022

Bobb Beauchamp
Federal Aviation Administration
Chicago Airports District Office
2300 East Devon Avenue
Des Plaines, IL 60018

Re: Airport Setbacks and Concurrence
Dane County Proposed Landfill Site No. 3
Madison, Wisconsin

Dear Mr. Beauchamp:

On behalf of Dane County Department of Waste and Renewables (Dane County), Tetra Tech is completing permitting documents for the proposed Dane County Landfill Site No. 3. This new municipal solid waste landfill will be located on land currently owned by the City of Madison in the SE ¼ of Section 25 and N ½ of NE ¼ of Section 36, T7N, R10E, City of Madison, Dane County, Wisconsin. The land is currently within a portion of the Yahara Hills Golf Course and pending purchase by Dane County. The proposed landfill boundary and surrounding areas are shown on the attached Site Location Map (Figure 1). This letter is being provided to notify and confirm the findings as they relate to Wisconsin Administration Code, the Code of Federal Regulations, and the Federal Aviation Administration (FAA) requirements.

Wisconsin Administrative Code, 500.03(4), and the Code of Federal Regulations, 40 CFR Part 258.10(d)(1), define an airport as a "public-use airport open to the public without prior permission and without restrictions within the physical capacities of available airport facilities." Based on our review, there are no airport runways designed and used by turbojet aircraft located within 10,000-feet or designed and used by piston-type aircraft within 5,000-feet of the proposed landfill site, per NR 504.04(3)(e) and 40 CFR Part 258.10(a).

Based on Wisconsin Airport Directory & Pilot's Guide prepared by the Wisconsin Department of Transportation (WisDOT), Bureau of Aeronautics, there are two airports within 6-miles of the proposed landfill. The Blackhawk Airfield (Airport Code: 87Y) in Cottage Grove, WI is a privately owned and publicly used airport located approximately 5.25-miles from the proposed landfill. The Quale Airport (Airport Code: 87WI) in Cottage Grove, WI is a privately owned and privately used airport located approximately 3-miles from the proposed landfill and has a turf runway. The Dane County Regional Airport (Airport Code: MSN) is also a public airport located in Madison, WI and is approximately 7-miles from the proposed landfill. One other private airport was found during an online search of nearby airports; however, the Little Wheel Field (Airport Code: 59WI) in Cottage Grove, WI is no longer an active airstrip. Email correspondence on December 6, 2021 from the current owner, Jodi Coon, documents this airport is no longer active (Attachment 1). An Airport Location Map indicating the proposed landfill boundary and the 5,000-foot, 10,000-foot, and 6-mile radius from the landfill boundary is attached (Figure 2).

In accordance with the NR 504.04(3)(e), owners or operators proposing to site a new or expand an existing municipal solid waste landfill within a 5-mile radius of any airport runway end used by turbojet or piston type

Cornerstone – A Tetra Tech Company
8413 Excelsior Drive, Suite 160, Madison, WI 53717
Tel 877.294.9070 Fax 877.845.1456 tetratech.com

aircraft must notify the owner or operator of the affected airport and the FAA. Based on our review, there is one airport (Quale Airport) within 5 miles of the proposed landfill. The owner and manager of Quale Airport, Richard Quale, will be notified of the proposed landfill in a separate letter. This letter acts as notification to the FAA under NR 504.04(3)(e).

A review of Advisory Circular 150/5200-34A found the 6-mile limit listed may apply in this case. The proposed Dane County Landfill Site No. 3 will be a new municipal solid waste landfill, built after April 5, 2000, located within 6-miles of the Blackhawk Airfield (approximately 5.25-miles). **Please indicate whether the Blackhawk Airfield meets the criteria listed in Section 9 of the Circular.** Note, the current municipal solid waste landfill (Dane County Rodefeld No. 2 Landfill) is located approximately 1,000-feet north of the proposed landfill. The Dane County Rodefeld No. 2 Landfill is located approximately 5-miles from the Blackhawk Airfield. It is believed that there will be no significant change in aviation safety conditions between what currently exists and what is being proposed.

We are requesting that you review the information provided, confirm our findings, and provide a response as soon as possible. If you have any questions or require additional information, please feel free to contact me at teri.daigle@tetratech.com or (630) 410-7231.

Sincerely,

CORNERSTONE ENVIRONMENTAL GROUP, LLC – A TETRA TECH COMPANY

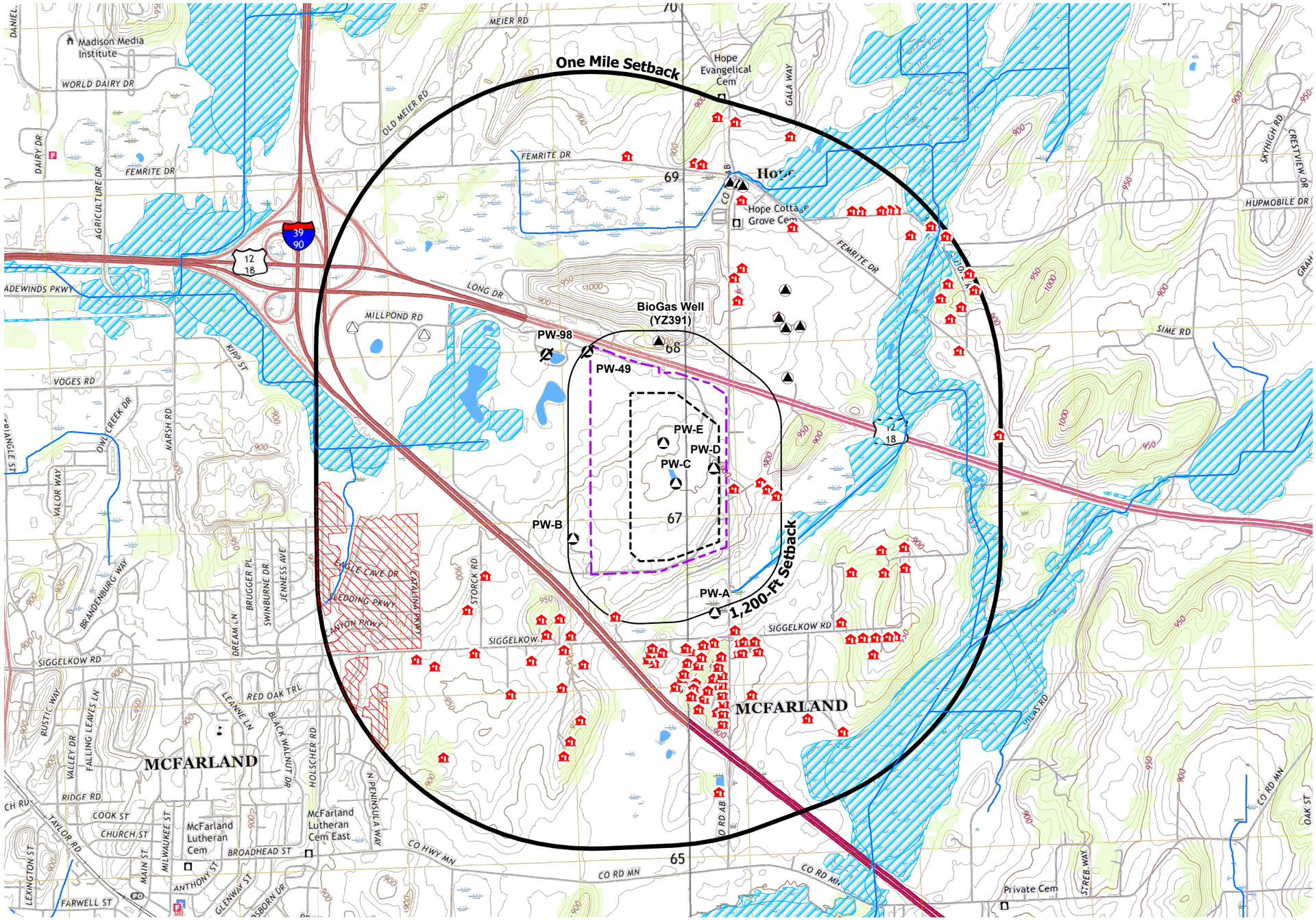
Teri Daigle
Project Manager

Enclosures: Figure 1 - Site Location Map
Figure 2 - Airport Location Map
Attachment 1 - Email Correspondence from Jodi Coon RE: Little Wheel Field Airport (12/6/2021)

Cc: John Welch, Dane County (electronic copy)
Allison Rathsack, Dane County (electronic copy)
Roxanne Wienkes, Dane County (electronic copy)
John Oswald, Tetra Tech (electronic copy)

X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING\FAA\FAA NOTIFICATION LETTER 6-22-2022.DOCX

Figures



Legend

- Proposed Landfill Limits of Disturbance
- Proposed Landfill Limits of Waste
- Setback 1-Mile from Limits of Disturbance
- Setback 1,200-ft from Limits of Waste
- Stream
- Waterbody
- FEMA 100-Year Floodplain
- Assumed Offsite Private Well, Approximate Location
- Known Offsite Private Well, Approximate Location
- Known Yahara Hills Private Well, Approximate Location
- Abandoned Private Well
- Residence and Assumed Offsite Private Well, Approximate
- Residential Developement on City Water Supply

NOTES:
1. Streams, Waterbodies and Floodplains are from WDNR Surface Water Data Viewer.

BASEMAP SOURCE:
USGS Topographic Quadrangles 7.5 Minute
Series: Madison East, WI (2022)
Series: Cottage Grove, WI (2022)

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 1000 2000 4000
FEET
1" = 2,000'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 3/17/2022
DESIGNED BY SSW
DRAWN BY SSW
CHECKED BY TD
APPROVED BY JO

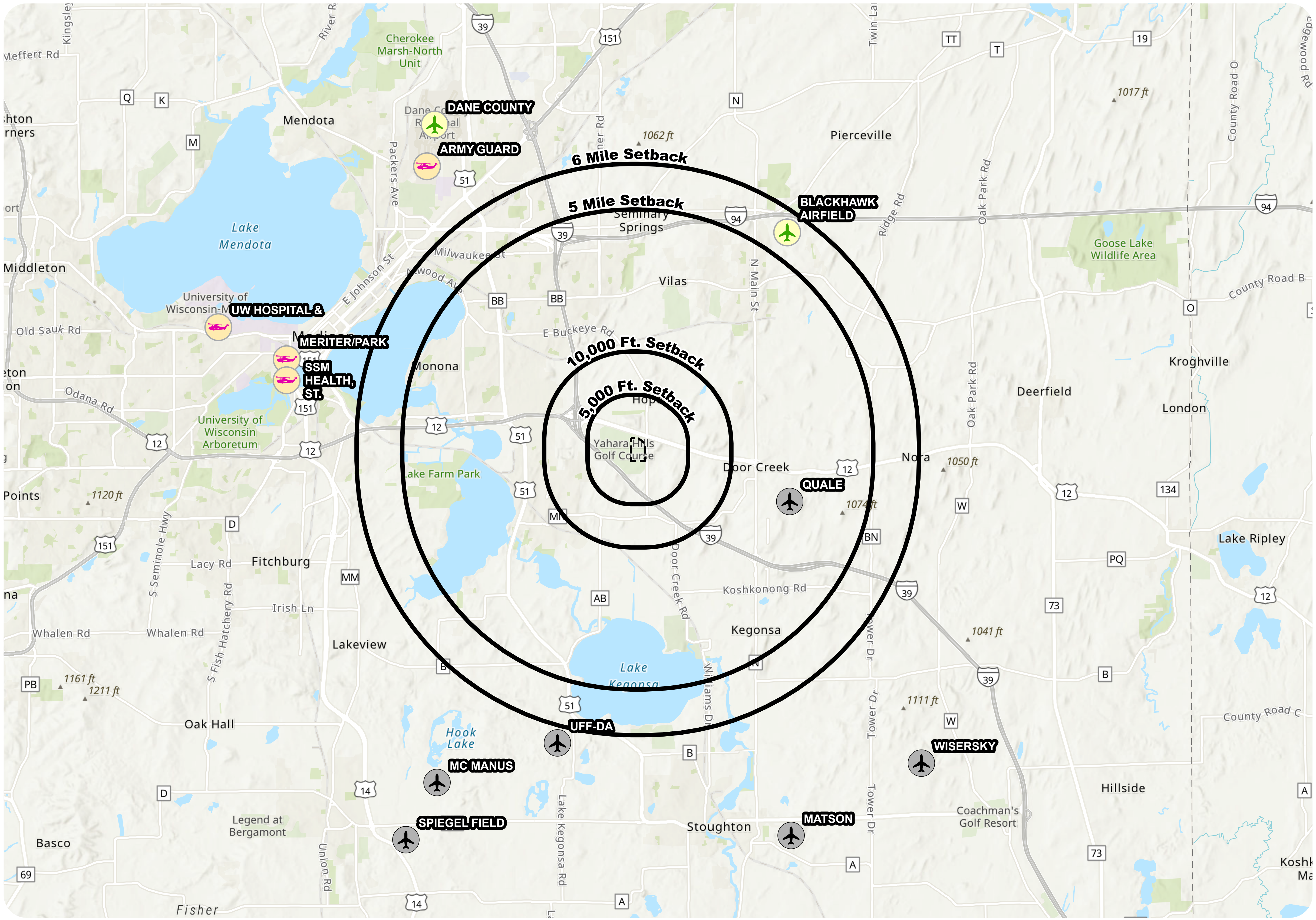
TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
INITIAL SITE INSPECTION
SITE LOCATION MAP

FIGURE NO. **1**
PROJECT NO. 4221302

X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING_GIS\DCI_01-IISI-Site Location.aprx



Legend

- Proposed Landfill Limits of Waste
- Setback
- Airport (Public)
- Airport (Private)
- Heliport

NOTES:

1. Airport locations obtained from the Wisconsin Airport Directory & Pilot's Guide prepared by the Wisconsin Department of Transportation (WisDOT), Bureau of Aeronautics and Google Earth.
2. Basemap provided by USGS & ESRI.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 1 3 5
Miles
1" = 12,000'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 6/22/2022 | DESIGNED BY SSW | DRAWN BY SSW | CHECKED BY TD | APPROVED BY TD

TETRA TECH
PREPARED BY: TETRATECH
This drawing represents intellectual property of Tetra Tech. Any modification to the original by other than Tetra Tech personnel violates its original purpose and as such is rendered void. Tetra Tech will not be held liable for any changes made to this document without express written consent of the originator.

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3
FAA NOTIFICATION
AIRPORT LOCATION MAP

FIGURE NO. **2**

PROJECT NO. 4221302

X:\PROJECTS\DANE COUNTY\4221302 - INITIAL GREENFIELD PERMITTING\ GIS \SRDCL-01-ISR-Figures.aprx

Attachment 1

TETRA TECH

6/22/2022

Richard Quale
Quale Airport
3114 North Star Road
Cottage Grove, WI 53527

Re: Notice of a Proposed Landfill
Dane County Landfill Site No. 3
Madison, Wisconsin

Dear Mr. Quale:

On behalf of Dane County Department of Waste and Renewables (Dane County), Tetra Tech is completing permitting documents for the proposed Dane County Landfill Site No. 3. This new municipal solid waste landfill will be located on land currently owned by the City of Madison in the SE ¼ of Section 25 and N ½ of NE ¼ of Section 36, T7N, R10E, City of Madison, Dane County, Wisconsin. The land is currently within a portion of the Yahara Hills Golf Course, located at 6701 US Highway 12&18, and pending purchase by Dane County. The proposed landfill boundary and surrounding areas are shown on the attached map (Figure 1).

The Wisconsin Department of Natural Resources, the approving state agency for the proposed landfill, requires Dane County to notify all airports with a runway end used by turbojet or piston type aircraft within 5-miles of the proposed landfill site. The Quale Airport is located approximately 3 miles east/southeast of the proposed landfill, as shown on the enclosed Airport Location Map (Figure 1). Please consider this letter your formal notification under NR 504.04(3)(e) and 40 CFR Part 258.10(b).

If you have any questions or require additional information, please feel free to contact me at teri.daigle@tetratech.com or (630) 410-7231.

Sincerely,

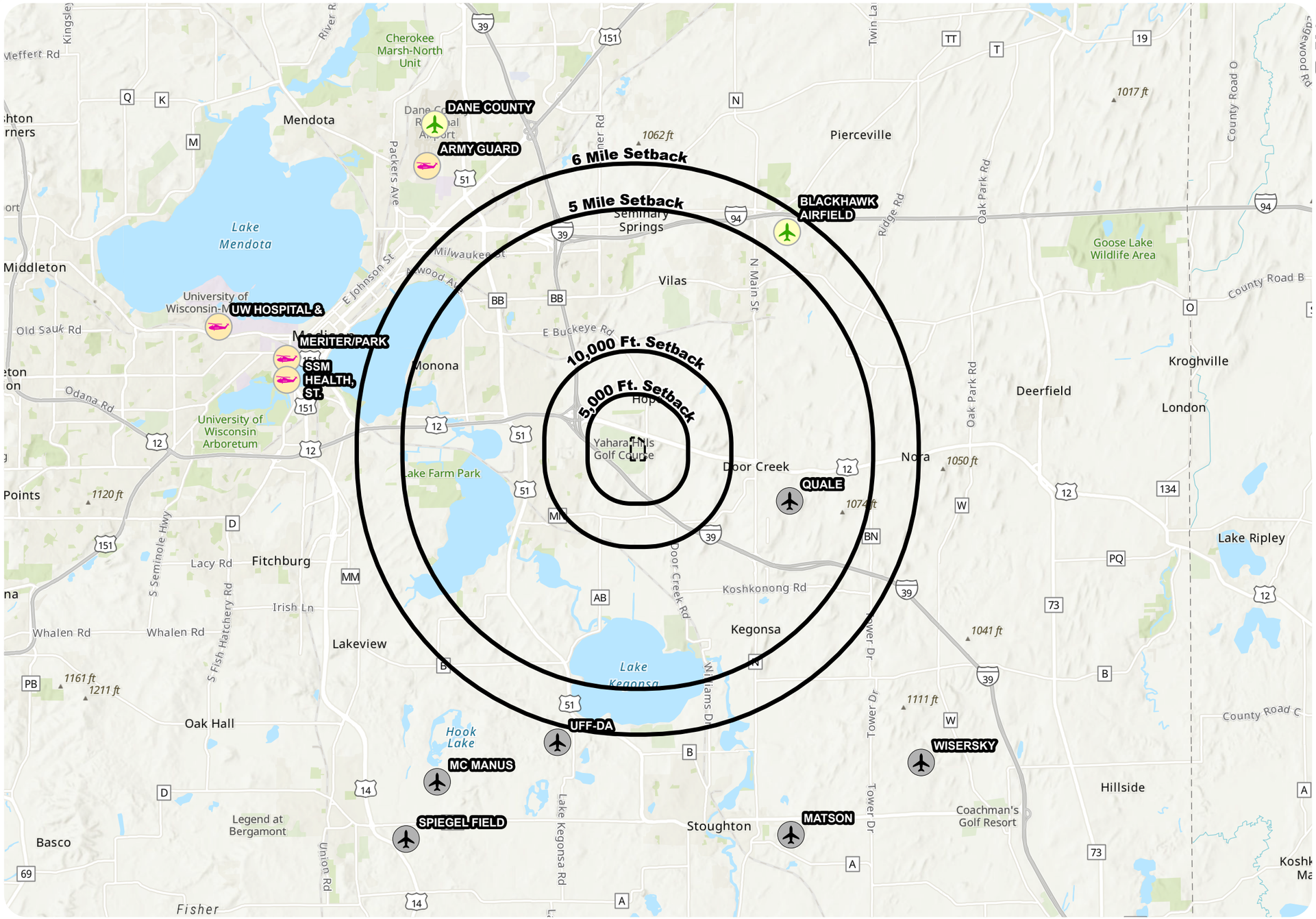
CORNERSTONE ENVIRONMENTAL GROUP, LLC – A TETRA TECH COMPANY

Teri Daigle
Project Manager

Enclosure: Figure 1 - Airport Location Map

Cc: John Welch, Dane County
Allison Rathsack, Dane County
John Oswald, Tetra Tech
Roxanne Wienkes, Dane County

Cornerstone – A Tetra Tech Company
8413 Excelsior Drive, Suite 160, Madison, WI 53717
Tel 877.294.9070 Fax 877.845.1456 tetratech.com



Legend

- Proposed Landfill Limits of Waste
- Setback
- Airport (Public)
- Airport (Private)
- Heliport

NOTES:

1. Airport locations obtained from the Wisconsin Airport Directory & Pilot's Guide prepared by the Wisconsin Department of Transportation (WisDOT), Bureau of Aeronautics and Google Earth.
2. Basemap provided by USGS & ESRI.

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
Datum: North American 1983

N

0 1 3 5

Miles

1" = 12,000'

REV	DATE	DESCRIPTION	DES BY	DWN BY	CHK BY	APP BY

DATE OF ISSUE 6/22/2022
DESIGNED BY SSW
DRAWN BY SSW
CHECKED BY TD
APPROVED BY TD

TETRA TECH

PREPARED BY: TETRATECH

Dane County Waste & Renewables Department
City of Madison, Dane County, Wisconsin
Proposed Dane County Landfill Site No. 3

FAA NOTIFICATION

AIRPORT LOCATION MAP

FIGURE NO. **1**

PROJECT NO. 4221302

X:\PROJECTS\DANE COUNTY\422130Z - INITIAL GREENFIELD PERMITTING_GIS\ISRO\CI_01-ISR-Figures.aprx

From: Turgeson, Kay
To: Daigle, Teri
Subject: FW: UPS Delivery Notification, Tracking Number 1ZX6773A0399035396
Date: Thursday, June 23, 2022 10:43:00 AM

FAA Notification Letter Delivered

Kay Turgeson
Cell **+1** (608) 279-2966 | Business **+1 (630) 410-7202** kay.turgeson@tetratech.com

While we are operating remotely in response to COVID-19, Tetra Tech teams remain fully connected and hard at work servicing our clients and ongoing projects. We also would like to wish health and wellness to you and your family.

From: UPS <pkginfo@ups.com>
Sent: Thursday, June 23, 2022 10:21 AM
To: Turgeson, Kay <Kay.Turgeson@tetratech.com>
Subject: UPS Delivery Notification, Tracking Number 1ZX6773A0399035396

Hello, your package has been delivered.
Delivery Date: Thursday, 06/23/2022
Delivery Time: 10:18 AM
Signed by: BRAD

CORNERSTONE ENVIROMENTAL GROUP

Tracking Number:	1ZX6773A0399035396
Ship To:	FEDERAL AVIATION ADMINISTRATION 2300 EAST DEVON AVENUE DES PLAINES, IL 60018 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	PN: 209-4221302 TASK 003
Reference Number:	FAA NOTIFICATION LETTER

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1ZX6773A0399035396

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

06/22/2022

Delivered On

06/23/2022 10:18 A.M.

Delivered To

2300 E DEVON AVE
DES PLAINES, IL, 60018, US

Received By

BRAD

Reference Number(s)

FAA NOTIFICATION LETTER, PN: 209-4221302 TASK 003

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/23/2022 12:02 P.M. EST

From: UPS
To: Turgeson, Kay
Subject: UPS Delivery Notification, Tracking Number 1ZX6773A0396324187
Date: Thursday, June 23, 2022 3:35:32 PM

Hello, your package has been delivered.

Delivery Date: Thursday, 06/23/2022

Delivery Time: 3:33 PM

Set Delivery Instructions | Manage Preferences | View My Packages

CORNERSTONE ENVIROMENTAL GROUP

Tracking Number:	1ZX6773A0396324187
Ship To:	QUALE AIRPORT 3114 NORTH STAR ROAD COTTAGE GROVE, WI 53527 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	PN: 209-4221302 TASK 003
Reference Number:	QUALE AIRPORT OWNER NOTIFY LTR

Download the UPS mobile app

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1ZX6773A0396324187

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

06/22/2022

Delivered On

06/23/2022 3:33 P.M.

Delivered To

3114 N STAR RD
COTTAGE GROVE, WI, 53527, US

Received By

DRIVER RELEASE

Left At

Rear Door

Reference Number(s)

QUALE AIRPORT OWNER NOTIFY LTR, PN: 209-4221302 TASK 003

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 06/24/2022 11:26 A.M. EST

Daigle, Teri

From: Beauchamp, Bobb (FAA) <Bobb.Beauchamp@faa.gov>
Sent: August 10, 2022 2:36 PM
To: Daigle, Teri
Subject: RE: Airport Locations, Setbacks and Concurrence Request for [redacted] proposed expansion

I have received this and the Dane Co Site No 3 submission. Our office has been a little backed-up while we work to fill our other EPS position, but I'll try to get you're a response in a few weeks to these.

From: Daigle, Teri <Teri.Daigle@tetratech.com>
Sent: Tuesday, August 09, 2022 1:13 PM
To: Beauchamp, Bobb (FAA) <Bobb.Beauchamp@faa.gov>
Subject: FW: Airport Locations, Setbacks and Concurrence Request for [redacted] proposed expansion

Mr. Beauchamp,

Please confirm receipt of my email on 5/25/2022 regarding the FAA notification of a proposed landfill expansion in [redacted], Wisconsin. Contact me with any questions.

Thanks,

Teri Daigle | Project Manager | Tetra Tech | Solid Waste East
Direct (630) 410-7231 | Mobile (904) 710-0230 | teri.daigle@tetratech.com

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From: Daigle, Teri
Sent: May 25, 2022 1:59 PM
To: Bobb.Beauchamp@faa.gov
Cc: Fletcher, George <GEORGE.FLETCHER@tetratech.com>
Subject: Airport Locations, Setbacks and Concurrence Request for [redacted] proposed expansion

Mr. Beauchamp,

Please find attached a letter requesting your review of airport locations and setback distances for the proposed expansion at the [redacted], Wisconsin. The proposed expansion will include additional cells adjacent to an existing landfill. We did not find any public or private airports within 6-miles of the proposed expansion and would like the FAA to confirm that is accurate. Please let us know if you require any additional information or if you'd like a hard copy mailed to you.

Kind regards,

Teri Daigle | Project Manager | Tetra Tech | Solid Waste East
Pronouns: she, her, hers
Office (877) 294-9070 | Direct (630) 410-7231 | Mobile (904) 710-0230 | Fax (877) 845-1456 | teri.daigle@tetratech.com

Tetra Tech | *Leading with Science®*
8413 Excelsior Drive, Suite 160 | Madison, WI 53717 | tetratech.com | tetratech.com/waste

Daigle, Teri

From: Richard Quale <rbquale@att.net>
Sent: August 29, 2022 4:15 PM
To: Daigle, Teri
Subject: airport

> You don't often get email from rbquale@att.net. Learn why this is important

Hi Teri,

This email is to state that the landing strip 87WI located on the farm owned by me at 3114 North Star Rd, Cottage Grove, WI, 53527, has been closed since 1 July, 2021. FYI, the landing strip known as Little Wheel, located one mile north of my farm is also out of service. I do not know if it has been officially closed. It is now a cornfield.

Please confirm receipt. Thank you.

Richard B. Quale

APPENDIX G

USDA SOIL DESCRIPTIONS

Dodge silt loam, DnB

Virgil silt loam, VwA

Orion silt load, Os

McHenry silt loam, MdC2

St. Charles silt loam, ScB

Kidder loam, KdD2

Dane County, Wisconsin

DnB—Dodge silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2szfp
Elevation: 830 to 1,090 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 127 to 181 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Dodge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dodge

Setting

Landform: Drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over calcareous loamy till

Typical profile

Ap - 0 to 6 inches: silt loam
BE - 6 to 9 inches: silt loam
Bt1 - 9 to 29 inches: silty clay loam
2Bt2 - 29 to 40 inches: clay loam
2C - 40 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Other vegetative classification: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

Minor Components

St. charles
Percent of map unit: 8 percent
Landform: Drumlins
Hydric soil rating: No

Mayville
Percent of map unit: 5 percent
Landform: Drumlins
Hydric soil rating: No

Lamartine
Percent of map unit: 2 percent
Landform: Drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 20, Sep 7, 2021

Dane County, Wisconsin

VwA—Virgil silt loam, gravelly substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wsqx
Elevation: 750 to 1,150 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 171 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Virgil, Gravelly Substratum

Setting

Landform: Drainageways on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess over calcareous, stratified sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 13 inches: silt loam
Bt - 13 to 44 inches: silty clay loam
2BC - 44 to 49 inches: sandy loam
2C - 49 to 79 inches: stratified gravel to sand

Properties and qualities

Slope: 0 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): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Forage suitability group: High AWC, high water table (G095BY007WI)
Other vegetative classification: High AWC, high water table (G095BY007WI)
Hydric soil rating: No

Minor Components

Drummer, drained
Percent of map unit: 4 percent
Landform: Depressions on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Sebewa
Percent of map unit: 4 percent
Landform: Depressions on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Sable
Percent of map unit: 2 percent
Landform: Depressions on outwash plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 20, Sep 7, 2021

Dane County, Wisconsin

Os—Orion silt loam, wet

Map Unit Setting

National map unit symbol: t942
Elevation: 680 to 1,500 feet
Mean annual precipitation: 28 to 33 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 160 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

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

Description of Orion Variant, Wet

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 44 inches: silt loam
H3 - 44 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

Forage suitability group: High AWC, high water table (G095BY007WI)
Other vegetative classification: High AWC, high water table (G095BY007WI)
Hydric soil rating: Yes

Minor Components

Otter
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Wacousta
Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Sable
Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 20, Sep 7, 2021

Dane County, Wisconsin

MdC2—McHenry silt loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tjyt
Elevation: 750 to 1,540 feet
Mean annual precipitation: 31 to 37 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 174 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Mchenry, Eroded

Setting

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

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 22 inches: silty clay loam
2Bt2 - 22 to 31 inches: loam
2Bt3 - 31 to 36 inches: fine sandy loam
2C - 36 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 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 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Forage suitability group: High AWC, adequately drained (G095BY008WI)
Other vegetative classification: High AWC, adequately drained (G095BY008WI)
Hydric soil rating: No

Minor Components

Kendall
Percent of map unit: 5 percent
Landform: Drainageways
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Kidder, eroded
Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 20, Sep 7, 2021

Dane County, Wisconsin

ScB—St. Charles silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2szdy
Elevation: 630 to 1,240 feet
Mean annual precipitation: 29 to 37 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 127 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

St. charles and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Charles

Setting

Landform: Till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over glacial loamy till

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 48 inches: silt loam
2Bt2 - 48 to 54 inches: sandy loam
2C - 54 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 40 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

St. charles, moderately well drained
Percent of map unit: 8 percent
Landform: Till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Virgil
Percent of map unit: 4 percent
Landform: Till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Pella
Percent of map unit: 3 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 20, Sep 7, 2021

Dane County, Wisconsin

KdD2—Kidder loam, 12 to 20 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tjyd
Elevation: 680 to 1,200 feet
Mean annual precipitation: 31 to 37 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 127 to 173 days
Farmland classification: Not prime farmland

Map Unit Composition

Kidder, eroded, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kidder, Eroded

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: loam
Bt - 8 to 31 inches: sandy clay loam
C - 31 to 79 inches: gravelly sandy loam

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 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: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Other vegetative classification: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Minor Components

Casco, eroded
Percent of map unit: 3 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Mchenry
Percent of map unit: 2 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 20, Sep 7, 2021