Wetland Delineation

UNBRIDLED SPIRTS LLC PROPOSED ROAD IMPROVEMENTS

OCTOBER 17, 2019 #190682

PRESENTED TO

UNBRIDLED SPIRITS LLC

2782 White Crossing Road Verona, WI 53593

SUBMITTED BY

Tetra Tech 8413 Excelsior Dr. Suite 160 Madison, WI 53717 P +1.877.294.9070 F +1.877.845.1456 tetratech.com

REPORT CERTIFICATION

The material and data in this report were prepared by the undersigned.

Luke Specketer Scientist Date

10-17-19

TABLE OF CONTENTS

1.0	INTE	RODUCTION	1-1
2.0	MET	HODS	2-2
	2.1	Field Methods	. 2-2
	2.2	Sources Reviewed	. 2-2
3.0	RES	ULTS AND DISCUSSION	3-1
	3.1	Antecedent Hydrologic Condition Analysis	. 3-1
	3.2	Previous Wetland Delineation	. 3-1
	3.3	FSA Slide Review	. 3-1
	3.4	Environmental mapping	. 3-2
	3.5	Wetlands located within the WETLAND project Area	. 3-2
		3.5.1 Wetland Area	. 3-2
	3.6	Disturbed and Problematic Areas	. 3-2
	3.7	Other Water Resources Located on the Proerty	. 3-3
		3.7.1 Streams	. 3-3
4.0	CON	ICLUSION	4-4
5.0	REF	ERENCES	5-5
6.0	LIM	TATIONS	6-1

FIGURES AND APPENDICES

FIGURES

Figure 1 – Topographic Map

Figure 2 – Wetland Inventory Map

Figure 3 – NRCS Soil Survey

Figure 4 – Wetland Delineation Map

APPENDICES

- Appendix A Wetland Determination Data Forms
- Appendix B Site Photographic Log
- Appendix C FSA Slides
- Appendix D Wetland Delineation Confirmation Request Checklist
- Appendix E Navigability Determination

1.0 INTRODUCTION

On behalf of Unbridled Spirits LLC, Tetra Tech performed a wetland delineation at the property located at 2782 White Crossing Road, Verona, WI 53593. The purpose of the delineation was to identify any wetland areas within the defined Wetland Project Area (see Figures 1 and 2) to improve a road accessing the southeast portion of the property.

Site Name/ID:	Unbridled Spirits LLC Proposed Road Improvements
Property Ownership:	Unbridled Spirits LLC
Site Address:	2782 White Crossing Road, Verona, WI 53593
Authorized Facility Contact:	Ms. Stacy Bean, Unbridled Spirits LLC Phone: (608) 577-6683
Assessed Area:	The assessed area consists of approximately 20 acres located in SE 1/4 of Section 7, Township 6 North, Range 8 East. The Wetland Project Area is located northeast of the Sugar River adjacent to the Ice Age Trail.
Current Property Use:	The property is currently utilized as an equine center and agricultural land; the area of the property where the proposed access road improvements are is currently utilized for agricultural purposes.
Proposed Site Redevelopment:	The proposed road improvements would connect an elevated upland area in back of the property to the White Crossing Road at the front of the property.
Surrounding Land Use Features:	Land uses adjacent to and near the property primarily consist of rural residential and agricultural land, with the Ice Age Trail directly adjacent to the southwest of the property. The proposed driveway is not located within 300 feet of any navigable stream or river. The Sugar River ordinary high-water mark is approximately 450 feet southwest of the property line. The WDNR's Surface Water Data Viewer shows no mapped wetlands on the property, but it does show an intermittent stream running across the property from NE to SW. The proposed road improvements would be constructed within the 100-year floodplain.
Field Date:	October 10, 2019
Field Staff:	Luke Specketer - Luke Specketer has a Bachelor of Science Degree (Geology) from Colorado State University and has completed 24 hr. Basic Wetland Delineation Training through the University of Wisconsin – LaCrosse and 16 hr. Advanced Wetland Delineation Training through the University of Wisconsin – LaCrosse.

2.0 METHODS

Wetland delineation activities were completed according to the criteria and methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (NC/NE Regional Supplement, 2012), *United States Corps of Engineers Wetlands Delineation Manual, Technical Report* Y-87-1 (USACE 1987), subsequent guidance documents (USACE 1991, 1992), and *Guidance for Submittal Delineation Reports to the St. Paul District Army Corps of Engineers and the Wisconsin Department of Natural Resources* (USACE 2015).

2.1 FIELD METHODS

On-site wetland areas were identified using the three criteria (vegetation, soil and hydrology) and technical guidelines defined in the NC/NE Regional Supplement. According to procedures described in the NC/NE Regional Supplement, areas that under normal circumstances reflect a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology (e.g., inundated or saturated soils) are considered wetlands.

2.2 SOURCES REVIEWED

Source materials reviewed for the wetland delineation included:

- United States Geological Survey (USGS) topographic maps;
- Natural Resources Conservation Service (NRCS) soil survey;
- WDNR Surface Water Data Viewer;
- United State Fish and Wildlife Service (USFWS) National Wetlands Inventory;
- Aerial photography;
- Farm Service Agency (FSA) slides;
- National Weather Service (NWS) data was analyzed for antecedent precipitation conditions to characterize field observations;
- Dane County GIS

A full list of references and citations is included in Section 5.

3.0 RESULTS AND DISCUSSION

3.1 ANTECEDENT HYDROLOGIC CONDITION ANALYSIS

		LONG	TERM PRECITATION	RECORDS					
	Month	3 in 10 years less than	Normal Precip	3 in 10 years more than	Actual Precip	Condition	Condition Value	Monthly Weight	product of previous two column
st month prior	September	2.65	3.13	4.68	6.8	w	3	3	9
nd month prior	August	2.85	4.27	4.1	2.85	N	2	2	4
rd month prior	July	4	4.18	5.24	5.77	W	3	1	3
								Sum:	16
								Conclusion:	Wetter than Normal
						Con	dition Value	I	Note: if sum is
						Dry=1		6-9 prior period h	as been drier than normal
						Normal=2		10-14 prior period	has been normal
		ther Service - Madison,				Wet=3			has been wetter than normal

ANTECEDENT PRECIPTATION DOCUMENTATION (NRCS Method)

Using precipitation data from the nearest NWS Station in Madison, Wisconsin and the NRCS Antecedent Precipitation Method (shown in image above), the antecedent precipitation for the site was determined to be "Wetter than Normal." The "Wetter than Normal" finding was taken in account when considering hydrology and hydrophytic vegetation within the Wetland Project Area.

3.2 PREVIOUS WETLAND DELINEATION

Tetra Tech and the property owner are not aware of any previous wetland delineations on the property.

3.3 FSA SLIDE REVIEW

The FSA slide review for the horse pasture area within the Wetland Project Area covered 7 of 13 years (2005 through 2018), and followed the methods described in the flow chart from *Guidance for Submittal Delineation Reports to the St. Paul District Army Corps of Engineers and the Wisconsin Department of Natural Resources Appendix E State Mapping Conventions for Wisconsin* (USACE 2015). FSA slides were examined by Luke Specketer of Tetra Tech for the presence of wetland signatures. A wetland signature is the indication of ponding, flooding, or impacts of saturation for sufficient duration as observed on aerial photographs that meets wetland hydrology and possibly wetland vegetation criteria. Wetland signatures in Wisconsin cropland include:

- a. Hydrophytic Vegetation (seen as a different shade of green);
- b. Surface water (usually black or white);
- c. Drowned-out crops (bare soil or mud flats);
- d. Difference in color due to different planting dates or isolated areas not farmed with the rest of the field;
- e. Inclusion of wet areas set-aside program;
- f. Patches of greener color in "dry" years;
- g. Crop stress (yellow) or sparse canopy (light green);
- h. Changes in vegetation (light to dark, density)
- i. Saturated soil visible on infrared (IR) slides or photos.

Areas within the horse pastures were identified as potential wetland if they contained hydric soils and 50% or more of the aerial photographs showed any of the wetland signatures described. Field observations were weighed more heavily than the FSA slide review.

The FSA slide review resulted in an area within the horse pasture that showed wetland signatures in 50% or more (4 out of 7) of the aerial photograph years reviewed and contained hydric soils. This was confirmed in the field with evidence of hydric soils in the area.

Copies of available FSA slides are included in Appendix D.

3.4 ENVIRONMENTAL MAPPING

The NRCS Soil Survey was used to identify mapped hydric soils and soils with possible hydric inclusions within the Wetland Project Area, see Figure 3.

The WDNR Surface Water Data Viewer wetland inventory and wetland indicator mapping layers were used to identify mapped wetlands and areas with wetland indicators within the Wetland Project Area.

3.5 WETLANDS LOCATED WITHIN THE WETLAND PROJECT AREA

The wetland/upland boundary was delineated by first establishing and confirming a data point in a wetland area. Data point observations were documented on wetland determination data forms, see Appendix A. Since landscape position and microtopography were the driving factors for wetlands at this site, a nearby upland point was then established by moving up in elevation or out of depressions. Then the wetland boundary was surveyed between the two points along a transect, excluding areas as upland where the one of the three wetland parameters (hydrology, hydric soil or hydrophytic vegetation) dropped out, and including areas within the wetland where all three parameters were met. This boundary line was then marked and surveyed along the edge of the wetland. At this site, the FSA slide review was also a factor in determining the wetland investigation areas within the horse pastures. Representative photos are shown in Appendix B.

3.5.1 Wetland Area

The Wetland Area shows the characteristics of a fresh wet meadow. It is located along the southwest portion of the Wetland Project Area and cuts across to the northeast along the mapped intermittent stream. The Wetland Area is approximately 5.28 acres (within the Wetland Project Area seen on Figure 4). Dominant vegetation in the Wetland Area is hydrophytic and includes *Phalaris arundinacea* along with non-dominant sedges and rushes. Hydric soil indicators observed were A11 – depleted below a dark surface, A12 – thick dark surface, F1 – loamy mucky mineral, F3 – depleted matrix and F6 – redox dark surface. Both primary and secondary wetland hydrology indicators were present. Wetland hydrology indicators, hydric soil indicators and hydrophytic vegetation were observed indicating wetland history. The wetland boundary, shown on Figure 4, was drawn based upon a vegetation and topographic change separating the wetland and upland areas.

3.6 DISTURBED AND PROBLEMATIC AREAS

There were no problematic areas encountered during the investigation. Data points DP-2, DP-3 and DP-4 and had been cut for hay this year DP-1 was not cut for hay this year because it has been too wet.

3.7 OTHER WATER RESOURCES LOCATED ON THE PROERTY

3.7.1 Streams

There is a mapped intermittent stream that runs from northeast to southwest across the property. The Dane County Assistant Zoning Administrator Hans Hilbert has determined that the stream on the property is NOT navigable. A copy of the letter can be found in Appendix E.

4.0 CONCLUSION

Tetra Tech completed a wetland delineation for the Unbridled Spirts LLC proposed driveway. One wetland area was identified within the Wetland Project Area; see Figure 4. Tetra Tech recommends that Unbridled Spirits LLC obtain all necessary permits, regulatory review and regulatory concurrence to comply with applicable regulations regarding the proposed driveway project; the WDNR Wetland Delineation Confirmation Checklist is included as Appendix D.

5.0 REFERENCES

Dane County GIS

https://dcimapapps.countyofdane.com/dcmapviewer/

Munsell Soil Color. 2009. Munsell® Soil Color Charts. Grand Rapids, MI.

National Oceanic and Atmospheric Administration, Climate Data <u>https://www.ncdc.noaa.gov/cdo-web/</u>

- USACE (U.S. Army Corps of Engineers). 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- USACE. 1990. "Clarification of the Phrase "Normal Circumstances" as it pertains to Cropped Wetlands," Regulatory Guidance Letter (RGL) 90-7 dated 26 September 1990.
- USACE. 1991. "Implementation of the 1987 Corps Wetland Delineation Manual," memorandum from John P. Elmore dated 27 August 1991.
- USACE. 1991. "Questions & Answers on the 1987 Manual," memorandum from John F. Studt dated 7 October 1991.
- USACE. 1992. "Clarification and Interpretation of the 1987 Manual," memorandum from Major General Arthur E. Williams dated 6 March 1992.
- USACE. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region.
- USACE. 2015. Guidance for Submittal Delineation Reports to the St. Paul District Army Corps of Engineers and the Wisconsin Department of Natural Resources.
- USDA, Soil Conservation Service, Web Soil Survey https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.
- United States Geological Survey (USGS), Wisconsin 7.5 Minute Series (Topographic) Maps
- USGS, Earth Explorer FSA Slides, https://earthexplorer.usgs.gov/
- WDNR (Wisconsin Department of Natural Resources), Wisconsin Surface Water Data Viewer Wisconsin Wetlands Inventory, <u>https://dnrmaps.wi.gov/H5/?Viewer=SWDV&runWorkflow=Wetland</u>.
- U.S. Fish and Wildlife Service, National Wetlands Inventory, https://www.fws.gov/wetlands/Data/Mapper.html.

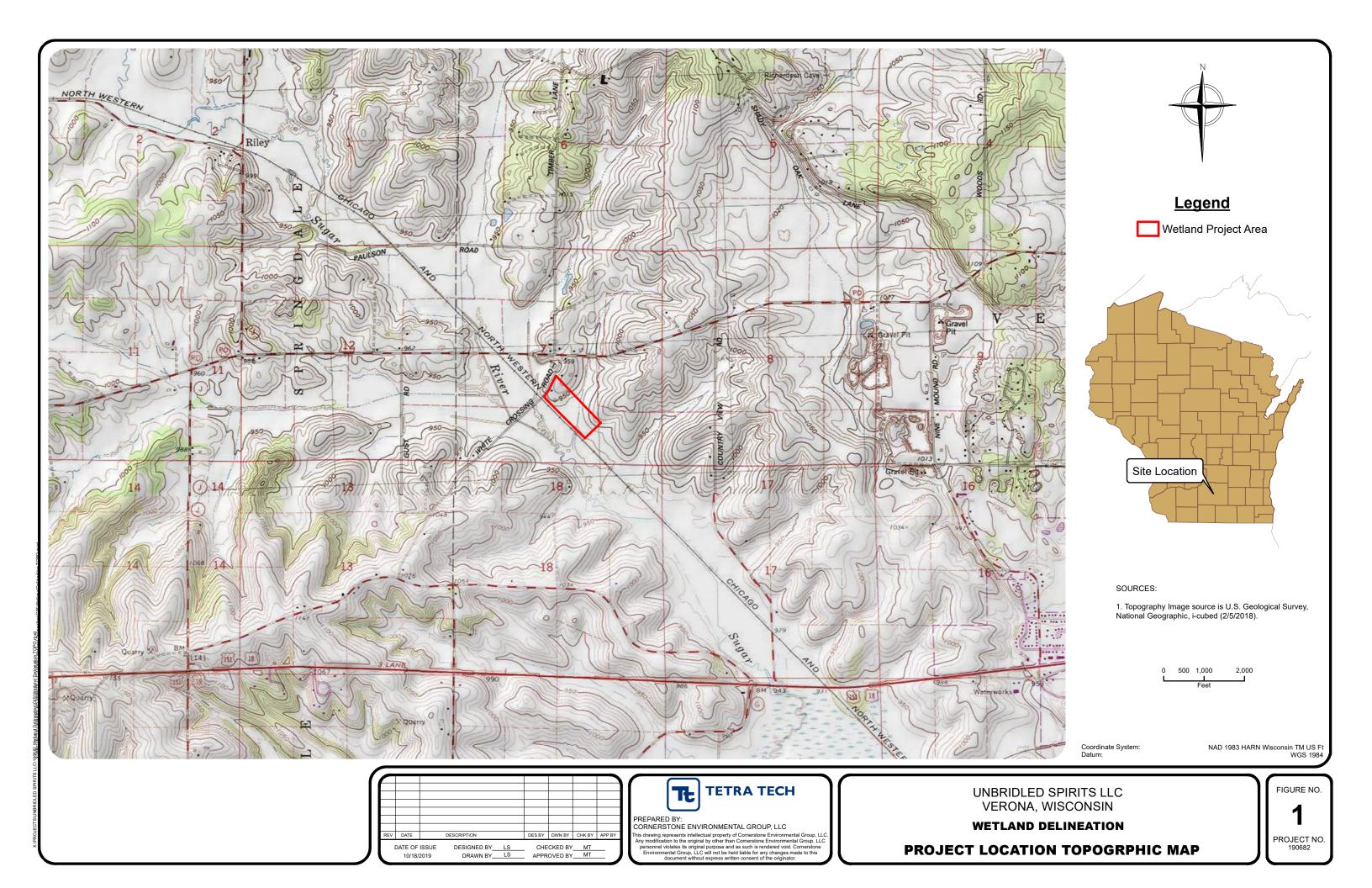
6.0 LIMITATIONS

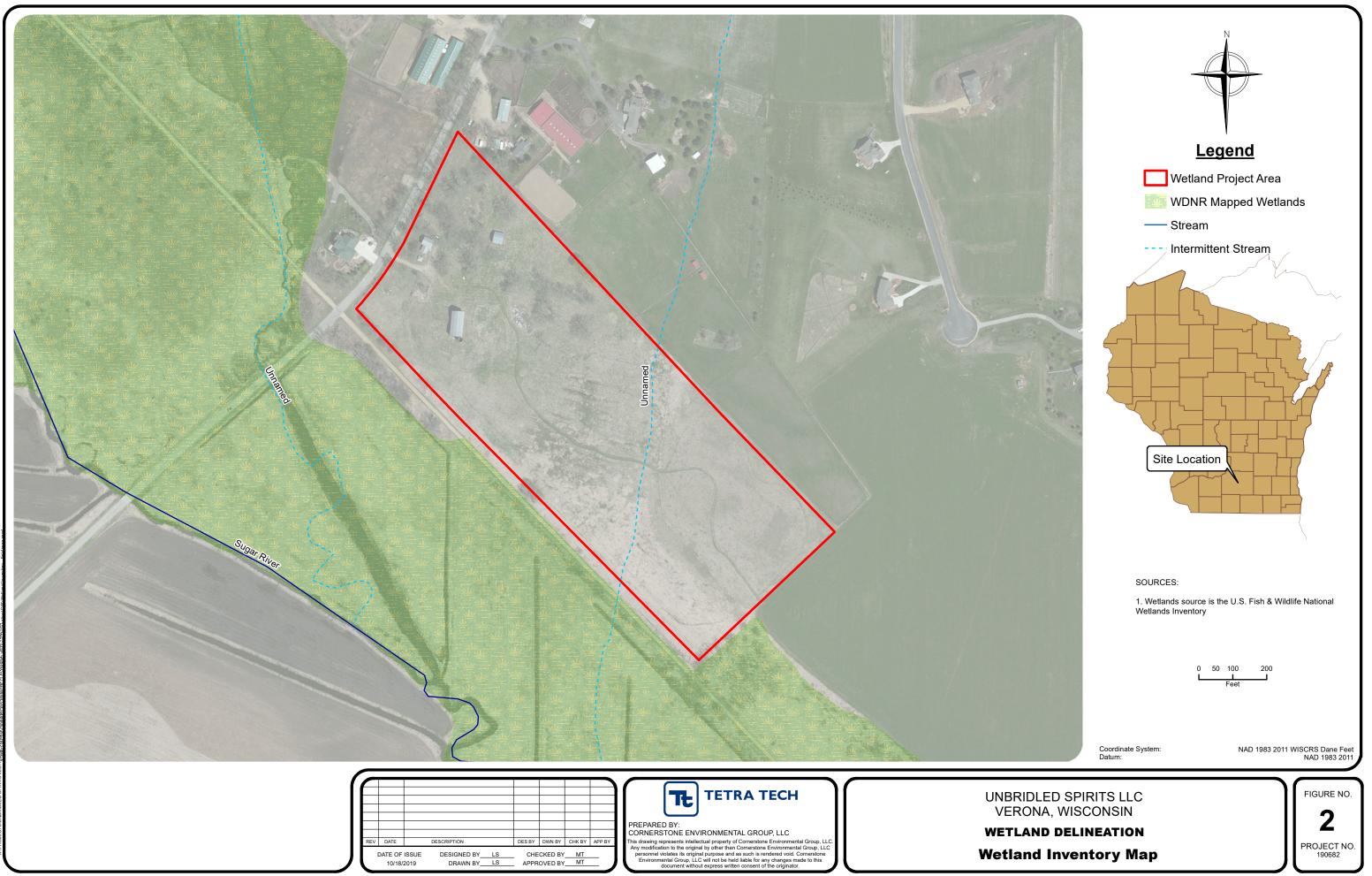
The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness 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.

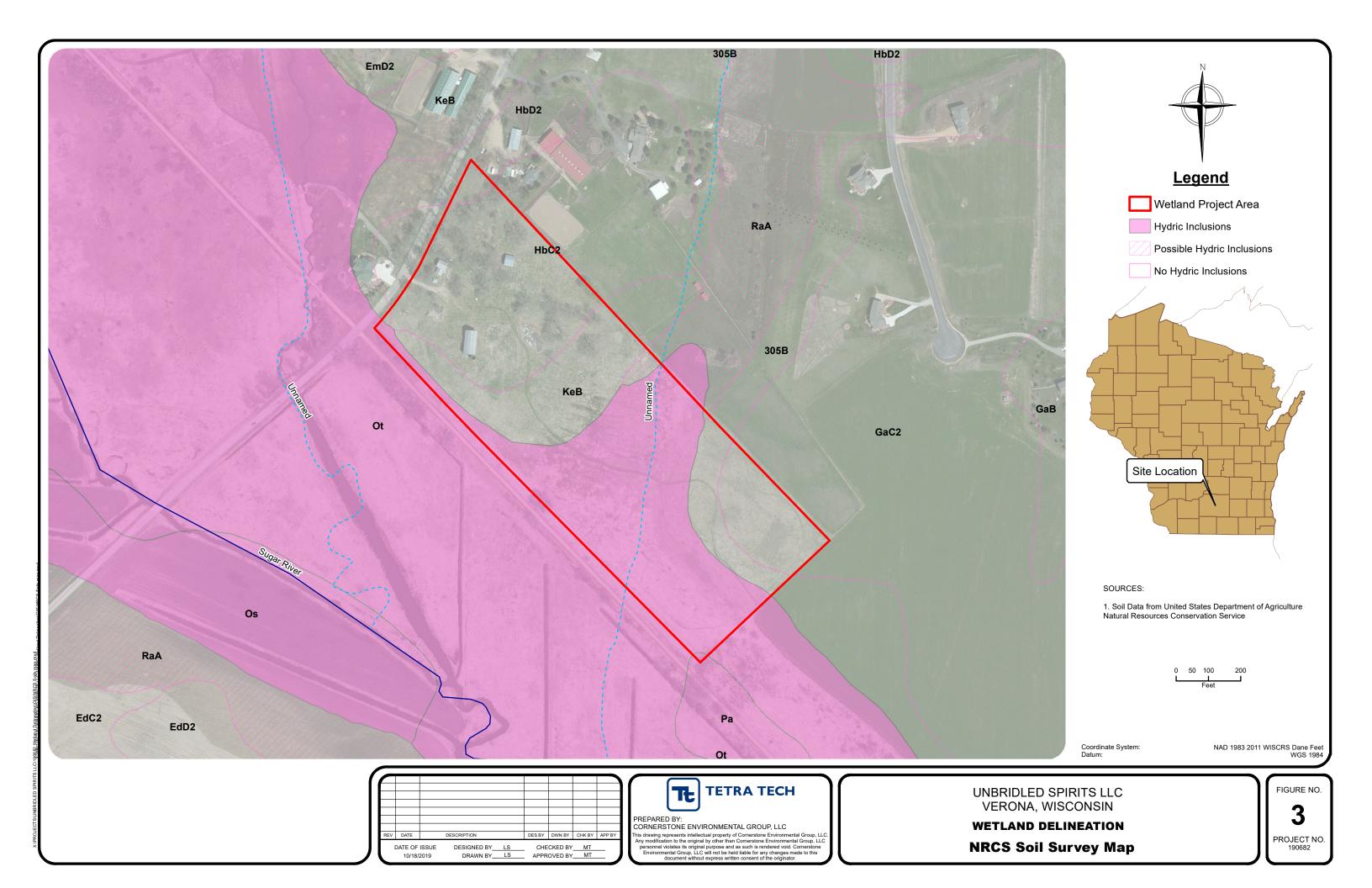
The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Tetra Tech 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.

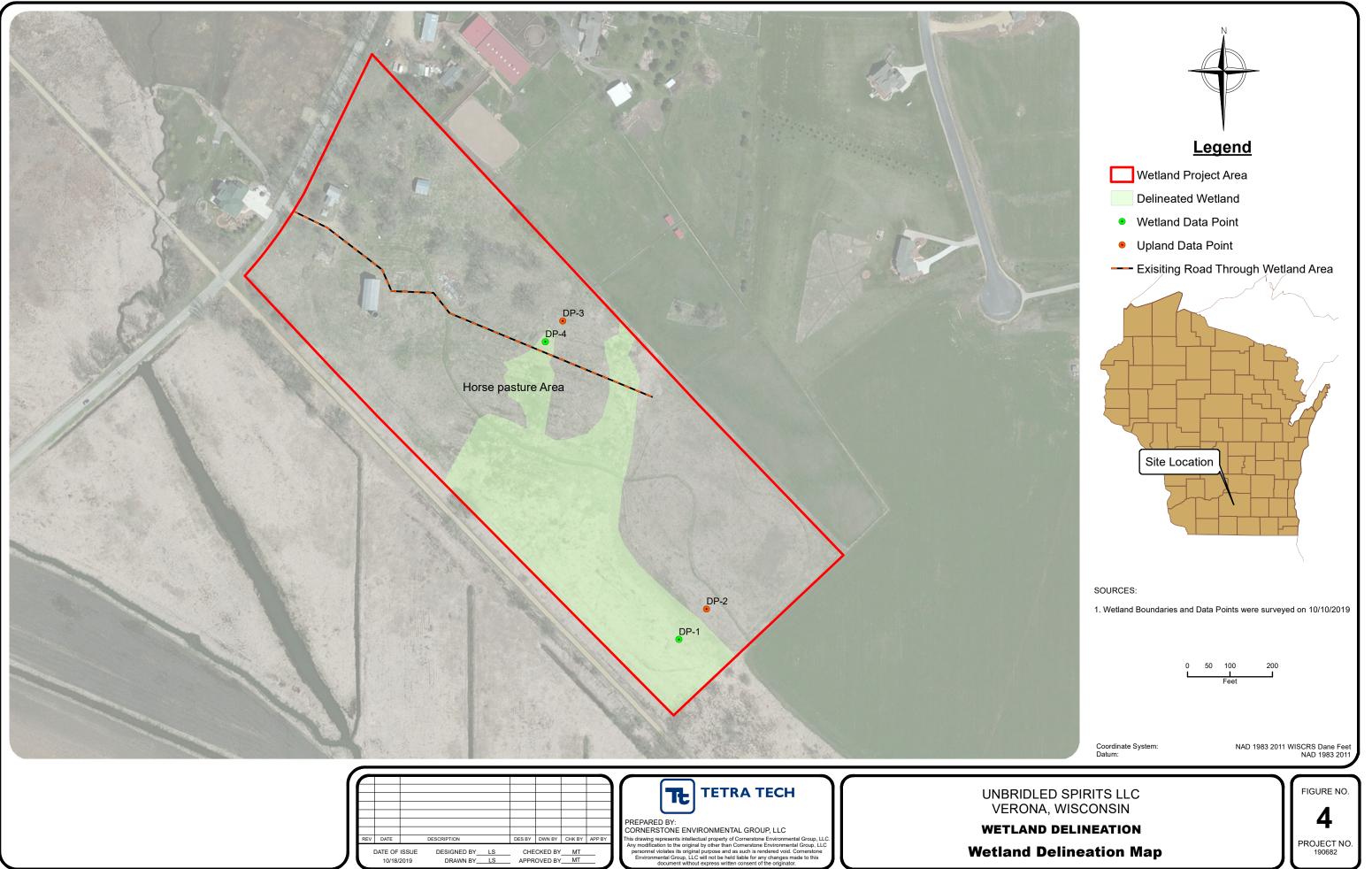
FIGURES

- Figure 1 Topographic Map
- Figure 2 Wetland Inventory Map
- Figure 3 NRCS Soil Survey
- Figure 4 Wetland Delineation Map









LC.			
C			
	1		

Project/Site: 2782 White Crossing Road	City/County:	Dane	Sampling Date: 10/10/20)19
Applicant/Owner: Unbridled Spririts LLC, Stacy Bean	-	State: WI	Sampling Point:	DP-4
Investigator(s): Luke Specketer Tetra Tech Inc.		Section, Townsh	p, Range: S7 T6N R8E	
Landform (hillslope, terrace, etc.): none	Loc	al relief (concave	, convex, none): none	
Slope (%): 0 - 1 Lat.: 43.00622 Long.:	-89.59129	Datum: NAD	1983 (20011)	
Soil Map Unit Name Kegonsa silt Ioam		NWI	Classification: None	
Are climatic/hydrologic conditions of the site typical for this	time of the year	? (If no	, explain in remarks)	
Are vegetation X , soil , or hydrology	significantly	/ disturbed?	Are "normal	
Are vegetation , soil , or hydrology	naturally pr	oblematic?	circumstances" present?	? Yes
(If needed, explain any answers in remarks)				

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y Y	Is the sampled area within a wetland?
· · ·	Y	If yes, optional wetland site ID:
Remarks: (Explain alternative procedures he	ere or in a se	eparate report.)
Wetter than normal antecedent pred	cipitation. I	Hayfield was cut two times this year.

HYDROLOGY

		Secondary Indicators (minimum of two
Primary Indicators (minimum of one is requ	iired; check all that apply)	required)
X Surface Water (A1)	Water-Stained Leaves (B9)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Fauna (B13)	Drainage Patterns (B10)
X Saturation (A3)	Marl Deposits (B15)	Moss Trim Lines (B16)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	X Dry-Season Water Table (C2)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living	Crayfish Burrows (C8)
Drift Deposits (B3)	Roots (C3)	X Saturation Visible on Aerial Imagery
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)	(C9)
Iron Deposits (B5)	Recent Iron Reduction in Tilled	Stunted or Stressed Plants (D1)
Inundation Visible on Aerial	Soils (C6)	Geomorphic Position (D2)
Imagery (B7)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
Sparsely Vegetated Concave	Other (Explain in Remarks)	X FAC-Neutral Test (D5)
Surface (B8)		Microtopographic Relief (D4)
Field Observations:		
Surface water present? Yes X	No Depth (inches): 2"	Indicators of
Water table present? Yes X	No Depth (inches): 14"	wetland
Saturation present? Yes X	No Depth (inches): 10"	hydrology
(includes capillary fringe)		present? Y
Describe recorded data (stream gauge, mo	nitoring well, aerial photos, previous inspec	ctions), if available:
Aerial phots show presistant wetthe	ess in this area	
Remarks:		
Wetter than normal antecedent pre	eciptaion.	
	-	

VEGETATION - Use scientific names of plants Sampling Point: DP-4 50/20 Thresholds Absolute Dominant Indicator 20% 50% Tree Stratum Plot Size () % Cover Species Status Tree Stratum 0 0 Sapling/Shrub Stratum 22 55 Herb Stratum 0 0 2 Woody Vine Stratum 0 0 3 4 Dominance Test Worksheet 5 6 Number of Dominant Species that are OBL, 7 FACW, or FAC: 8 (A) q Total Number of Dominant Species Across all Strata: 10 (B) 1 0 Total Cover Percent of Dominant Species that are OBL, 100.00% (A/B) Sapling/Shrub FACW, or FAC: Absolute Dominant Indicator Plot Size () Stratum % Cover Species Status Prevalence Index Worksheet FACW Phalaris arundinacea 90 Υ 1 Poa pratensis FACU 20 Ν Total % Cover of: 2 3 OBL species 0 0 x 1 = _x 2 = **FACW** species 90 180 4 5 FAC species 0 x 3 = 0 6 FACU species 20 x 4 = 80 UPL species 0 x 5 = 0 8 Column totals 110 (A) 260 (B) 2.36 Prevalence Index = B/A = g 10 110 Total Cover = Hydrophytic Vegetation Indicators: Indicator Rapid test for hydrophytic vegetation Absolute Dominant Herb Stratum Plot Size () X Dominance test is >50% % Cover Species Status X Prevalence index is ≤3.0* Morphogical adaptations* (provide 2 supporting data in Remarks or on a 3 separate sheet) Δ Problematic hydrophytic vegetation* 5 6 (explain) 7 *Indicators of hydric soil and wetland hydrology must be 8 present, unless disturbed or problematic g 10 **Definitions of Vegetation Strata:** 11 Tree - Woody plants 3 in. (7.6 cm) or more in diameter at 12 breast height (DBH), regardless of height. 13 14 Sapling/shrub - Woody plants less than 3 in. DBH and 15 greater than 3.28 ft (1 m) tall. = Total Cover 0 Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vine Absolute Dominant Indicator Plot Size () Stratum % Cover Species Status Woody vines - All woody vines greater than 3.28 ft in height. 2 3 4 Hydrophytic 5 vegetation 0 = Total Cover present? Remarks: (Include photo numbers here or on a separate sheet) Hayfield was cut two times this year. Wetter than normal antecedent preciptation.

SOIL								Sampling Point: DP-4
Profile Des	cription: (Descri	be to th	e depth needed t	to docui	ment the	indicato	or or confirm the abse	nce of indicators.)
Depth (Inches)	Matrix Color (moist)	%	· ·	ox Feat %		Loc**	Texture	Remarks
0-6	10YR 3/2	60	10YR 4/1	35	D	M	Silty Loam	Numerous Roots
			7.5YR 5/8	5	C	M	Silty Loam	rusty concentration
6-20	10YR 3/2	50	10YR 4/1	30	D	M	Silty Loam	
		00	7.5YR 5/8	5	D	M	Silty Loam	rusty concentration
			10YR 2/1	5	C	M	Silty Loam	Black Concentraion
			1011(2/1	0	Ŭ		City Loan	
*Type: C=C	oncentration. D=	-Depleti	on. RM=Reduce	d Matrix	k. CS=C	overed c	r Coated Sand Grains	 S
	PL=Pore Lining,			-	.,			
Hydric Soi	I Indicators:						Indicators for P	roblematic Hydric Soils:
Histisol (A1) Polyvalue Below Surface 2 cm Muck (A10) (LRR K, L, MLRA 149B Histic Epipedon (A2) (S8) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, R) Black Histic (A3) Thin Dark Surface (S9) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Hydrogen Sulfide (A4) (LRR R, MLRA 149B Dark Surface (S7) (LRR K, L Stratified Layers (A5) Loamy Mucky Mineral (F1) Polyvalue Below Surface (S9) (LRR K, L) Thick Dark Surface (A12) Loamy Gleyed Matrix (F2) Thin Dark Surface (F6) Sandy Mucky Mineral (S1) X Depleted Dark Surface (F6) Mesic Spodic (TA6) (MLRA 144A, 145, 149E Sandy Redox (S5) Depleted Dark Surface (F7) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149E Taripped Matrix (S6) Redox Depressions (F8) Very Shallow Dark Surface (TF12) Dark Surface (S7) (LRR R, MLRA Thin Dark Surface (TF12) Other (Explain in Remarks) *Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic Other (Explain in Remarks)							Redox (A16) (LRR K, L, R) Peat or Peat (S3) (LRR K, L, R) (S7) (LRR K, L How Surface (S8) (LRR K, L) Inface (S9) (LRR K, L) ese Masses (F12) (LRR K, L, R) oodplain Soils (F19) (MLRA 149B) (TA6) (MLRA 144A, 145, 149B) Material (F21) Dark Surface (TF12) in in Remarks)	
Туре:	Layer (if observe es):				-		Hydric soil pres	sent? Y
	than normarl a	inteced	dent preciptatio	on.				

Project/Site: 2782 White Crossing Road	City/County:	Dane	_Sampling Date: 10/10/2	2019
Applicant/Owner: Unbridled Spririts LLC, Stacy Bean		State: WI	Sampling Point:	DP-1
Investigator(s): Luke Specketer Tetra Tech Inc.		Section, Township	o, Range: S7 T6N R8E	
Landform (hillslope, terrace, etc.): Toe of Slope	Loc	al relief (concave,	convex, none): Concav	/e
Slope (%): 0 - 1 Lat.: 43.0043 Long.:	-89.5901	Datum: NAD	1983 (20011)	
Soil Map Unit NameOtter Silt Loam		NWI	Classification: None	
Are climatic/hydrologic conditions of the site typical for this	time of the year	? (If no,	explain in remarks)	
Are vegetation, soil, or hydrology	significantly	v disturbed?	Are "normal	
Are vegetation, soil, or hydrology	naturally pr	oblematic?	circumstances" present	t? Yes
(If needed, explain any answers in remarks)				

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Hydric soil present? Indicators of wetland hydrology present?	Y Y Y	Is the sampled area within a wetland? Y				
Remarks: (Explain alternative procedures here or in a separate report.)						
Wetter than normal antecedent preci	pitation.					

HYDROLOGY

Primary Indicators (minimum of one is requ X Surface Water (A1) X High Water Table (A2) X Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8)	ired; check all that apply) Water-Stained Leaves (B9) X Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks)	Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) X Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1) X Geomorphic Position (D2) Shallow Aquitard (D3) X FAC-Neutral Test (D5) Microtopographic Relief (D4)
Field Observations:Surface water present?YesWater table present?YesXXSaturation present?YesX(includes capillary fringe)	NoDepth (inches):0.5"NoDepth (inches):at surfaceNoDepth (inches):at surface	
Describe recorded data (stream gauge, mo Aerial phots show presistant wetthe		tions), if available:
Remarks: Wetter than normal antecedent pre	ciptaion. Spotted a deceased frog.	

VEGETATION - Use scientific names of plan	nts
--	-----

-GETATION - U	lse scientific name	s of plants				Sampling Point:	DP-1
Tree Otrotum			bsolute	Dominant	Indicator	50/20 Thresholds	50%
Tree Stratum	Plot Size ()	Cover	Species	Status	Tree Stratum 0	0
						Sapling/Shrub Stratum 24	60
						Herb Stratum 0	0
						Woody Vine Stratum 0	0
						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)
			0 =	Total Cover		Percent of Dominant	
line/Obrub				Deminort	la d'actor	Species that are OBL,	00/ (A/D
Sapling/Shrub Stratum	Plot Size ()	bsolute 6 Cover	Dominant Species	Indicator Status	FACW, or FAC: 100.00	<u>0%</u> (A/B
		70		•		Developed Index Werkeheet	
Phalaris arundi			70	<u> </u>	FACW	Prevalence Index Worksheet	
Carex vulpinoio Poa pratensis	lea		20	<u> </u>	OBL FACU	Total % Cover of: OBL species 30 x 1 = 3	30
Poa pratensis Scirpus cyperir	אוופ		10	<u> </u>	OBL	· · · · · · · · · · · · · · · · · · ·	40
Ochpus cypeni	103		10			· · · · · · · · · · · · · · · · · · ·	0
						· ·	80
							0
							250 (B)
)						Prevalence Index = B/A = 2.08	3
			120 =	Total Cover			
			120 -			Hydrophytic Vegetation Indicator	e.
		, Α	bsolute	Dominant	Indicator	Rapid test for hydrophytic veget	
Herb Stratum	Plot Size (Cover	Species	Status	X Dominance test is >50%	
		<u> </u>				X Prevalence index is ≤3.0*	
						Morphogical adaptations* (provi	
3 						supporting data in Remarks or o	on a
						separate sheet)	4: ~~*
						Problematic hydrophytic vegetat (explain)	lon
, 						*Indicators of hydric soil and wetland hydrole	oav must b
3						present, unless disturbed or problematic	Jyy maor 2.
						· · · · · · · · · · · · · · · · · · ·	
)						Definitions of Vegetation Strata:	
						Tree - Woody plants 3 in. (7.6 cm) or more	in diameter
						breast height (DBH), regardless of height.	
·						Sapling/shrub - Woody plants less than 3 in	in DBH and
						greater than 3.28 ft (1 m) tall.	
			0 =	= Total Cover			
						Herb - All herbaceous (non-woody) plants, i size, and woody plants less than 3.28 ft tall.	•
Woody Vine	Plot Size (bsolute	Dominant	Indicator	SIZE, and woody plants less than 5.20 h tan.	
Stratum		′ %	Cover	Species	Status	Woody vines - All woody vines greater than	n 3.28 ft in
						height.	
						Hydrophytic	
5			0 =	Total Cover		vegetation	
						present? Y	
marks: (Include ph	oto numbers here or o	on a separate sl	neet)			•	

SOIL							s	Sampling Point: DP-1
Profile Des	cription: (Descri	be to th	e depth needed	to docu	ment the	indicato	or or confirm the abser	nce of indicators.)
Depth (Inches)	pth Matrix Redox Feat				Loc**	Texture	Remarks	
0-3	10YR 3/2	100					Silty Loam	Numerous Roots
3-20	10YR 2/1	100					Muck	Organic odar
	Concentration, D PL=Pore Lining,			d Matri	x, CS=C	overed o	r Coated Sand Grains	
	I Indicators:	IVI=IVIAI					Indicators for Pr	oblematic Hydric Soils:
Hyu Str Z Thi Sau Sau Sau Sau Sau Sau Sau Sau Sau Sau		5) rk Sufac (A12) ral (S1) ax (S4) (X (S4) (X (S4) (X (S4))	(LR Loa Loa Loa Dep Rec MLRA	R R, M my Muc R K, L) my Gle bleted N dox Darl bleted D dox Dep	yed Matr Matrix (F3 k Surface Dark Surf pressions	B ral (F1) ix (F2) 3) e (F6) ace (F7) 5 (F8)	Dark Surface Polyvalue Bel Thin Dark Sur Iron-Mangane Piedmont Floo Mesic Spodic Red Parent M	Dark Surface (TF12) n in Remarks)
	Layer (if observe	,			-		Hydric soil pres	ent? <u>Y</u>
Remarks: Wetter	than normarl a	inteced	dent preciptatio	on. So	il was fi	ully satu	urated.	

Project/Site: 2782 White Crossing Road	City/County:	Dane		Sampling Date	: 10/10/20	19
Applicant/Owner: Unbridled Spririts LLC, Stacy Bean	-	State:		Sampling F		DP-2
Investigator(s): Luke Specketer Tetra Tech Inc.		Section,	Township,	Range: S7 T6N	NR8E	
Landform (hillslope, terrace, etc.): Hillslope	Lo	ocal relief (concave, c	onvex, none):	convex	
Slope (%): 3-Jan Lat.: 43.0045 Long.:	-89.58987	Datu	im: NAD 19	983 (20011)		
Soil Map Unit NameOtter Silt Loam			NWI CI	assification: No	ne	
Are climatic/hydrologic conditions of the site typical for this	time of the yea	r?	(lf no, e	explain in remark	ks)	
Are vegetation, soil, or hydrology	significant	ly disturbe	d?	Are "normal		
Are vegetation , soil , or hydrology	naturally p	oroblematio	?	circumstances'	' present?	Yes
(If needed, explain any answers in remarks)						

SUMMARY OF FINDINGS

Hydrophytic vegetation present? Hydric soil present? Indicators of wetland hydrology present?	N N N	Is the sampled area within a wetland? N				
Remarks: (Explain alternative procedures h	ere or in a s	eparate report.)				
Wetter than normal antecedent precipitation. Hayfield was cut 2 times this year.						

HYDROLOGY

	Cocondon (Indicators (minimum of two		
	Secondary Indicators (minimum of two		
	required)		
	Surface Soil Cracks (B6)		
	Drainage Patterns (B10)		
	Moss Trim Lines (B16)		
	Dry-Season Water Table (C2)		
Oxidized Rhizospheres on Living	Crayfish Burrows (C8)		
Roots (C3)	Saturation Visible on Aerial Imagery		
Presence of Reduced Iron (C4)	(C9)		
Recent Iron Reduction in Tilled	Stunted or Stressed Plants (D1)		
Soils (C6)	Geomorphic Position (D2)		
Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Other (Explain in Remarks)	FAC-Neutral Test (D5)		
	Microtopographic Relief (D4)		
No X Depth (inches):	Indicators of		
No X Depth (inches):	wetland		
No X Depth (inches):	hydrology		
· · · /	present? N		
	·		
nitoring well, aerial photos, previous inspec	ctions), if available:		
G 1 1 1			
ss in this area			
ciptaion. Sloped havfield			
	Roots (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) No X Depth (inches): No X Depth (inches):		

٦

VEGETATION - Use scientific names of pl	ants
---	------

	names of plants			Sampling Po	int: DP-2
				50/20 Thresholds	
Tree Stratum Plot Size (Absolut		Indicator		20% 50%
	/ % Cove	er Species	Status	Tree Stratum	0 0
				Sapling/Shrub Stratum	27 68
				Herb Stratum	0 0
				Woody Vine Stratum	0 0
				Dominance Test Workshe	et
<u> </u>				Number of Dominant	
-				Species that are OBL,	
3				FACW, or FAC:	(A
)				Total Number of Dominant	
)				Species Across all Strata:	<u> </u>
	0	= Total Cover		Percent of Dominant	
				Species that are OBL,	
Sapling/Shrub	、 Absolut	e Dominant	Indicator	FACW, or FAC:	0.00% (A
Stratum Plot Size () % Cove	er Species	Status		·
Poa pratensis	80	Y	FACU	Prevalence Index Worksh	oot
· · · ·					cel
2 Elymus repens	20	<u>N</u>	FACU FACU	Total % Cover of:	
3 Trifolium pratense	<u> </u>	— <u> </u>	FACU NI	OBL species 0 x 1 FACW species 0 x 2	
Daucus Carota				· · · · · · · · · · · · · · · · · · ·	
5 Sonchus oleraceus 6 Ambrosia trifida	5	<u>N</u>	FACU	· · · · · · · · · · · · · · · · · · ·	
	5	<u> </u>	FAC	FACU species 120 x 4	
7				UPL species 0 x 5	
3				Column totals 125 (A)	· · · ·
				Prevalence Index = B/A =	3.96
)	405	Total Causer			
	135	= Total Cover			
	A 1 I I	D · · ·		Hydrophytic Vegetation In	
Herb Stratum Plot Size () Absolut		Indicator	Rapid test for hydrophy	•
	/ % Cove	er Species	Status	Dominance test is >50%	
1				Prevalence index is ≤3.	
2				Morphogical adaptation	
3				supporting data in Rem	arks or on a
4				separate sheet)	
5				Problematic hydrophytic	c vegetation*
<u> </u>				(explain)	
				*Indicators of hydric soil and wetla	
3				present, unless disturbed or probl	ematic
9					
0				Definitions of Vegetation	Strata:
1				Tree - Woody plants 3 in. (7.6 cm	ı) or more in diame
2				breast height (DBH), regardless of	
3					
1				Sapling/shrub - Woody plants les	ss than 3 in. DBH a
5				greater than 3.28 ft (1 m) tall.	
	0	= Total Cover		Herb - All herbaceous (non-wood	(v) plants regardle
				size, and woody plants less than	
Woody Vine Plot Size () Absolut		Indicator		
Stratum	/ % Cove	er Species	Status	Woody vines - All woody vines g	reater than 3.28 ft
1				height.	
3					
1				Hydrophytic	
5				vegetation	
	0	= Total Cover		present? N	
	0				-

SOIL								Sampling Point: DP-2
Profile Des	cription: (Descri	be to th	e depth needed	to docu	ment the	indicato	or or confirm the abse	nce of indicators.)
Depth						1 + +	Texture	Remarks
(Inches) 0-20	Color (moist) 10YR 3/2	% 100	Color (moist)	%	Type*	Loc**	Silty Loam	moist
0-20	10110 3/2	100						moist
				d Matrix	x, CS=C	overed c	r Coated Sand Grain	s
	PL=Pore Lining,	M=Mat	rix					
Hydric Soi	I Indicators:						Indicators for P	roblematic Hydric Soils:
Bla Hyu De Thi San San San San San San San San San San		(4) 5) (A12) ral (S1) x (S4) LRR R,		n Dark S R R, Mi my Muc R K, L) my Gle bleted V lox Dari bleted D lox Dep	yed Matr latrix (F3 k Surface ark Surf ressions	(S9) BB rral (F1) rix (F2) 3) e (F6) ace (F7) 5 (F8)	5 cm Mucky Dark Surface Polyvalue Be Thin Dark Su Iron-Mangan Piedmont Flo Mesic Spodio Red Parent M	e Redox (A16) (LRR K, L, R) Peat or Peat (S3) (LRR K, L, R) e (S7) (LRR K, L elow Surface (S8) (LRR K, L) irface (S9) (LRR K, L) ese Masses (F12) (LRR K, L, R) podplain Soils (F19) (MLRA 149B) c (TA6) (MLRA 144A, 145, 149B) Material (F21) / Dark Surface (TF12) in in Remarks)
Restrictive Type: Depth (inch	Layer (if observe les):	ed):			-		Hydric soil pre	sent? N
Remarks: Wetter	than normarl a	inteced	dent preciptatio	on.				

Project/Site: 2782 White Crossing Road	City/County:	Dane	Sampling Date: 10	/10/2019
Applicant/Owner: Unbridled Spririts LLC, Stacy Bean	-	State: WI	Sampling Poin	it: DP-3
Investigator(s): Luke Specketer Tetra Tech Inc.		Section, Township	, Range: S7 T6N R8	BE
Landform (hillslope, terrace, etc.): none	Lo	cal relief (concave,	convex, none): co	ncave
Slope (%): 0-1 Lat.: 43.00636 Long.:	-89.59113	Datum: NAD 1	983 (20011)	
Soil Map Unit Name Kegonsa Silt Loam		NWIC	Classification: None	
Are climatic/hydrologic conditions of the site typical for this	time of the year	r? (If no,	explain in remarks)	
Are vegetation X , soil , or hydrology	significantl	y disturbed?	Are "normal	
Are vegetation , soil , or hydrology	naturally p	roblematic?	circumstances" pre	esent? Yes
(If needed, explain any answers in remarks)				

SUMMARY OF FINDINGS

Hydrophytic vegetation present?		Is the sampled area within a wetland? N			
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:			
Remarks: (Explain alternative procedures here or in a separate report.)					
Wetter than normal antecedent precipitation. Hayfield was cut 2 times this year.					

HYDROLOGY

Primary Indicators (minimum of one is requi 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)	red; check all that apply) 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) FAC-Neutral Test (D5) Microtopographic Relief (D4)
Field Observations: Surface water present? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) Image: Comparison of the second seco	NoXDepth (inches):NoXDepth (inches):NoXDepth (inches):	Indicators of wetland hydrology present? <u>N</u>
Describe recorded data (stream gauge, mor Aerial phots show presistant wettne		tions), if available:
Remarks: Wetter than normal antecedent pre-	ciptaion. Hayfield, cut two times this	year

VEGETATION - Use scientific names of pl	ants
---	------

EGETATION - Use scientific names of plants				Sampling Poir)P-3
	_	_	—	50/20 Thresholds	—	_
Tree Stratum Plot Size ()	Absolute	Dominant	Indicator			50%
	% Cover	Species	Status	Tree Stratum		0
				Sapling/Shrub Stratum		60
				Herb Stratum		0
				Woody Vine Stratum	0	0
l						
				Dominance Test Workshee	et	
<u> </u>				Number of Dominant		
				Species that are OBL,	0	())
				FACW, or FAC:	0	(A)
0				Total Number of Dominant		(D)
		Tatal Cover		Species Across all Strata:	1	(B)
		= Total Cover		Percent of Dominant		
				Species that are OBL,		
Sapling/Shrub Plot Size ()	Absolute	Dominant	Indicator	FACW, or FAC:	0.00%	(A/B
Stratum	% Cover	Species	Status			_
Poa pratensis	70	Y	FACU	Prevalence Index Workshe	et	
Trifolium pratense	20	N	FACU	Total % Cover of:		
Sonchus oleraceus	15	N	FACU	OBL species 0 x 1	= 0	
Polygonum pensylvanicum	5	N	NI	FACW species 5 x 2		-
5 Phalaris arundinacea	5	N	FACW	FAC species 5 x 3		-
6 Ambrosia trifida	5	N	FAC	FACU species 105 x 4		-
,				UPL species 0 x 5		
3				Column totals 115 (A)	445	(B)
				Prevalence Index = B/A =	3.87	_` `
)						-
	120 =	= Total Cover				
				Hydrophytic Vegetation In	dicators:	
	Absolute	Dominant	Indicator	Rapid test for hydrophyt		n
Herb Stratum Plot Size ()	% Cover	Species	Status	Dominance test is >50%	, b	
1		-		Prevalence index is ≤3.0)*	
2				Morphogical adaptations	s* (provide	
3				supporting data in Rema	arks or on a	ı
4				separate sheet)		
5				Problematic hydrophytic	vegetation*	*
6				(explain)		
7				*Indicators of hydric soil and wetla	nd hydrology r	must be
3				present, unless disturbed or proble	ematic	
9						
)				Definitions of Vegetation S	Strata:	
1				Tree - Woody plants 3 in. (7.6 cm)) or moro in di	amotor
2				breast height (DBH), regardless of		ameter
3				Siedet Height (SBH), regulatees et		
4				Sapling/shrub - Woody plants les	s than 3 in. DE	BH and
5				greater than 3.28 ft (1 m) tall.		
	=	= Total Cover) - l t	
				Herb - All herbaceous (non-woody size, and woody plants less than 3		raiess
Woody Vine Plot Size ()	Absolute	Dominant	Indicator	size, and woody plants less than 5	.20 11 1011.	
Stratum	% Cover	Species	Status	Woody vines - All woody vines gr	eater than 3.2	28 ft in
1				height.		
2						
3						
4				Hydrophytic		
5				vegetation		
	0 =	= Total Cover		present? N		
	- 0			present: N		

SOIL							S	Sampling Point: DP-3
Profile Des	cription: (Descri	be to th	e depth needed	to docu	ment the	indicato	r or confirm the absen	ce of indicators.)
Depth	Matrix			lox Feat			Texture	Remarks
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Ciltud agen	maiat
0-20	10YR 3/2	100					Silty Loam	moist
*Type: C=C	Concentration. D=	-Deplet	on. RM=Reduce	d Matri	x. CS=C	overed o	r Coated Sand Grains	
	PL=Pore Lining,			-	,			
Hydric Soi	I Indicators:						Indicators for Pro	oblematic Hydric Soils:
His Bla Hyo Stra De Thi Sau Sau Sau Sau Sau Sau Sau Sau Sau Sau		(4) 5) rk Sufac (A12) ral (S1) x (S4)) LRR R,	(SR Thir (LR Loa (LR Loa Dep Rec Dep Rec MLRA) (LRR n Dark S R R, M my Mua R K, L) my Gle bleted M dox Darl bleted D dox Dep	yed Matr Matrix (F3 k Surface Park Surf pressions	A 149B) (S9) 9B ral (F1) rix (F2) 8) e (F6) ace (F7) s (F8)	Coast Prairie 5 cm Mucky P Dark Surface Polyvalue Bele Thin Dark Sur Iron-Mangane Piedmont Floc Mesic Spodic Red Parent M	Dark Surface (TF12) n in Remarks)
Restrictive Type: Depth (inch	Layer (if observe nes):	ed):			-		Hydric soil pres	ent? <u>N</u>
Remarks: Wetter	than normarl a	inteced	dent preciptatio	on.				



DP-1 Looking northwest



DP-2 Looking northwest



DP-1 Soil and test hole



DP-2 Soil and test hole



DP-3 Looking northwest



DP-4 Looking northwest



DP-3 Soil and test hole



DP-4 Soil and test hole



Typical wetland area



Wet area in horse pasture



Typical wetland area



hydric soil within southeastern end of horse pasture



Wetland Boundary



Wetland boundary

WETLAND DOCUMENTATION RECORD Remotely Sensed Data Summary ppellant: <u>While Specketc</u> Date 10/9/2019 Ide Reviewer Let Specketc< Date 10/9/2019 Ide Identification No. $\frac{10}{10979(2050 M)} - \frac{16-1}{(Tract No. + Site No.)}$ Date April-June Rainfall (in) NorK:		WETLAND DOC Remotely S	TING RECORD	
ite Identification No. $\frac{4}{2089660} \frac{5}{5} \frac{16-1}{1}$ (Tract No. + Site No.) Farm Service Agency Aerial Color Slide Data Rainfall (in) Mo./Yr) + DR.WW $\frac{1}{2007} \frac{9}{200} \frac{16}{200} \frac{1}{200} 1$			ensed Data Summary	
ite Identification No. $\frac{4}{2089660} \frac{5}{5} \frac{16-1}{1}$ (Tract No. + Site No.) Farm Service Agency Aerial Color Slide Data Rainfall (in) Mo./Yr) + DR.WW $\frac{1}{2007} \frac{9}{200} \frac{16}{200} \frac{1}{200} 1$	ppellant: Uubrille Spini	ts ilc co	ounty <u>Dane</u> State <u>C</u>	<u>) (</u>
ite Identification No. $\frac{4}{2089660} \frac{5}{5} \frac{16-1}{1}$ (Tract No. + Site No.) Farm Service Agency Aerial Color Slide Data Rainfall (in) Mo./Yr) + DR.WW $\frac{1}{2007} \frac{9}{200} \frac{16}{200} \frac{1}{200} 1$	lide Reviewer_Luke	paheter	Date07772017	
Farm Service Agency Aerial Color Slide Data Date April-June Interpretation- (codes listed in box below) $hork$ 20×2 20×2 $hork$ 40×2 40×2 $hork$ 1172×2 10×4 $hork$ 1172×2 10×4 $hork$ 1172×2 10×4 $hork$ 102×4 102×4 h	ite Identification No. <u>430</u>	8960 SW_ 16-	(Tract No. + Site No.)	
Rainfall (in) Interpretation- (codes listed in box below) //2005 $(3, 3, 1 = 0)$ None //2005 $(3, 3, 1 = 0)$ None //2007 $(3, 3, 1 = 0)$ None //2008 $(7, 42 = 1)$ You You //2009 $(7, 42 = 1)$ You You You //2017 $(7, 42 = 1)$ You You You You //2017 $(7, 42 = 1)$ You <	·			
(ave.=1 $\lfloor \log / 4 \otimes / 2 \otimes \pi > 2$ /2 $\otimes \pi > 2$	Rainfall (in)	Interpretation- (co	odes listed in box below)	
Y = NC - 3 / 6A Ze0's Y = NC - 3 / 6A Ze0's Y = NC - 4 / 66 Ze0's Y = NC - 3 - 6d Ze0's N = NO wetness signature N = NO wetness signature Ne NC = not cropped (nay, pasture, idle, etc.) <tr< td=""><td>(ave.=1.03/)</td><td>60/20.2</td><td></td><td></td></tr<>	(ave.=1.03/)	60/20.2		
$Y = s_2 = t \omega$ $Y = s_1 C = 47.66$ P_{12013} $P_{122} = N$ P_{12013} P	7008. 19.92 = N	- <u>y - NC -</u>	3/64	
Image: Normalized base in the second sec	2 + 30 -14/		166	
Y = signal indicates wetness (+ = strong, - = weak) N = NO wetness signature Main Photos Y = signal indicates wetness (+ = strong, - = weak) N = NO wetness signature Michael Main Photos Main Photos Main Photos <td>2/2015 11-72=N</td> <td>none</td> <td>Λ.</td> <td></td>	2/2015 11-72=N	none	Λ.	
Y = signal indicates wetness (+ = strong, - = weak) N = NO wetness signature Air Photos	The second second	$-\frac{V-NC}{V-NC} = \frac{1}{2}$	3-6d	
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled	<u>FIL 618</u> <u>770 - 10</u>		د وار می برد. و بر می برد. و رو می از می برد. و این می از این می برد. و این می برد. و این می این می این می این مرابع	
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetness (+ = strong, - = weak)N = NO wetness signatureCR = cropped (row crop or tilled)NC = not cropped (hay, pasture, idle, etc.)FeatureColorManipulation1 = water6a = dark green7a = ditched2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled	Air Photos			
Y = signal indicates wetters (+ - strong, - words)NC = not cropped (hay, pasture, idle, etc.)CR = cropped (row crop or tilled)ManipulationOtherFeatureColorManipulationOther1 = water6a = dark green7a = ditchedwrite explanation2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled	• • • • • • • • • • • • • • • • • • •			
Y = signal indicates wetters (+ - strong, - words)NC = not cropped (hay, pasture, idle, etc.)CR = cropped (row crop or tilled)ManipulationOtherFeatureColorManipulationOther1 = water6a = dark green7a = ditchedwrite explanation2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled				
Y = signal indicates wetters (+ - strong, - words)NC = not cropped (hay, pasture, idle, etc.)CR = cropped (row crop or tilled)ManipulationOtherFeatureColorManipulationOther1 = water6a = dark green7a = ditchedwrite explanation2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled		-1>	N – NO wetness signature	
FeatureColorManipulationOutor1 = water6a = dark green7a = ditchedwrite explanation2 = mud flat6b = light green7b = tiled3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled	Y = signal indicates wetness (+	= strong, - = weak) ed)	NC = not cropped (hay, past	ure, idle, etc.)
I = water $6a = dark green$ $7a = ditched$ $2 = mud flat$ $6b = light green$ $7b = tiled$ $3 = bare spot$ $6c = yellow$ $7c = filled$ $4 = drowned crop$ $6d = brown$ $7d = tree/brush removal$ $5 = planted late$ $6e = black$ $8 = plowed/tilled$				
2 = mud flat $6b = light green3 = bare spot6c = yellow7c = filled4 = drowned crop6d = brown7d = tree/brush removal5 = planted late6e = black8 = plowed/tilled$		-		
3 = bare spot $6d = yenow$ $7d = tree/brush removal$ $4 = drowned crop$ $6d = brown$ $7d = tree/brush removal$ $5 = planted late$ $6e = black$ $8 = plowed/tilled$	1		7c = filled	
$6e = black \qquad 8 = plowed/tilled$			7d = tree/brush removal	
V V			8 = plowed/tilled	
			V	•

•

,













