WI County Code Administrators: Wisconsin Wetlands Workshop

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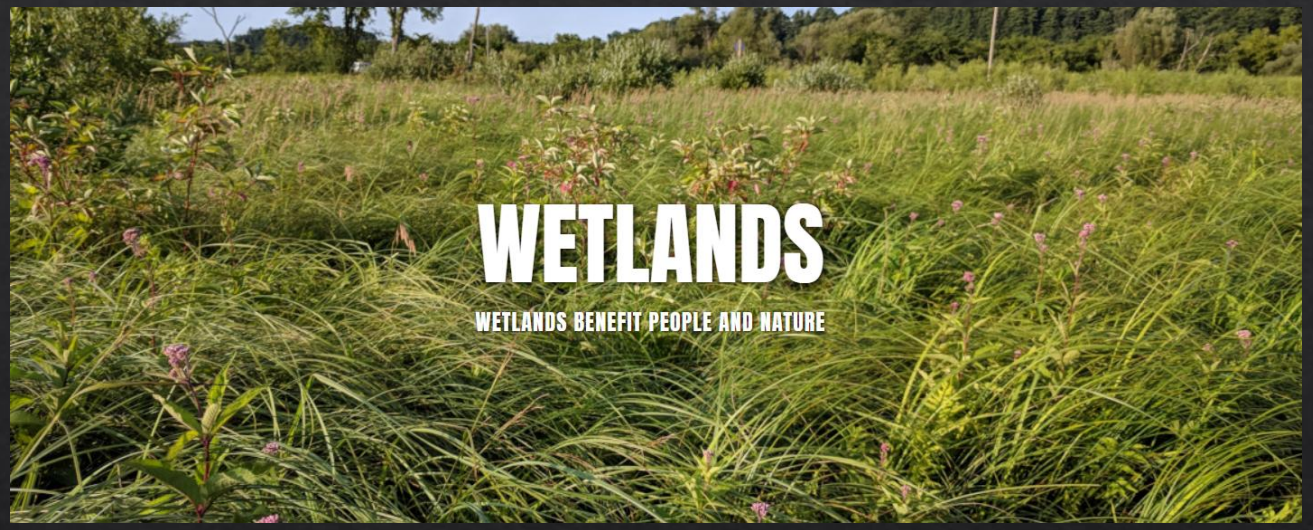
What is a Wetland?

- **Wisconsin: "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions"**
- **Federal: "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas"**

Wetland Functional Values

- Wetlands provide functions that are important to all of us:
  - Flood Water Control
  - Shoreline Protection
  - Water Quality Protection
  - Groundwater Recharge/Discharge
  - Fish and Wildlife Habitat, Migratory Birds
  - Floral Diversity
  - Recreation, Education, Natural Scenic Beauty
  - Cultural Importance



- Even small wetlands provide important fictional values which are often difficult to measure when assessing a wetland in isolation from its landscape context.

Different Wetland Types: Marshes

- Shallow or deep (up to 6ft) emergent vegetation communities

Bogs and Fens

Shrub Swamps

- Include willow or dogwood dominant or alder thickets

Image Source: https://apps.web.maine.gov/dacf/mnap/features/communities/aldershrub.htm

Forested Wetlands

- Include hardwood swamps & coniferous swamps

Meadows

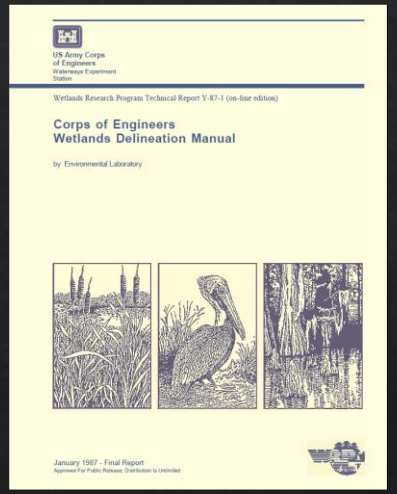
- Herbaceous communities dominated by grass-like and forb species
- Can include sedge meadows, fresh wet meadows, and wet prairies

Seasonally Flooded Basins

- Depressions, potholes, or kettles in the landscape that meet wetland characteristics
- Are often cultivated or managed for commercial agriculture/silviculture operations

How are Wetlands Located?

- Wetlands are located through conducting wetland determination methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual*
  - Regional supplements to the manual are present for varying regions across the US
  - A three-parameter approach is utilized, and guidance is present for unusual/difficult situations



- Why delineate wetlands?
  - S. 281.36(3b)(b), Wis. Stats.
  - Help to define the limits state jurisdiction, in accordance with current law, regulations and policy
  - Determine the affected environment as a basis for impact assessment, alternatives analysis, and mitigation

The Three Parameters of Wetlands

1. Hydrophytic Vegetation:

- Plants that are capable of growing in saturated or inundated conditions

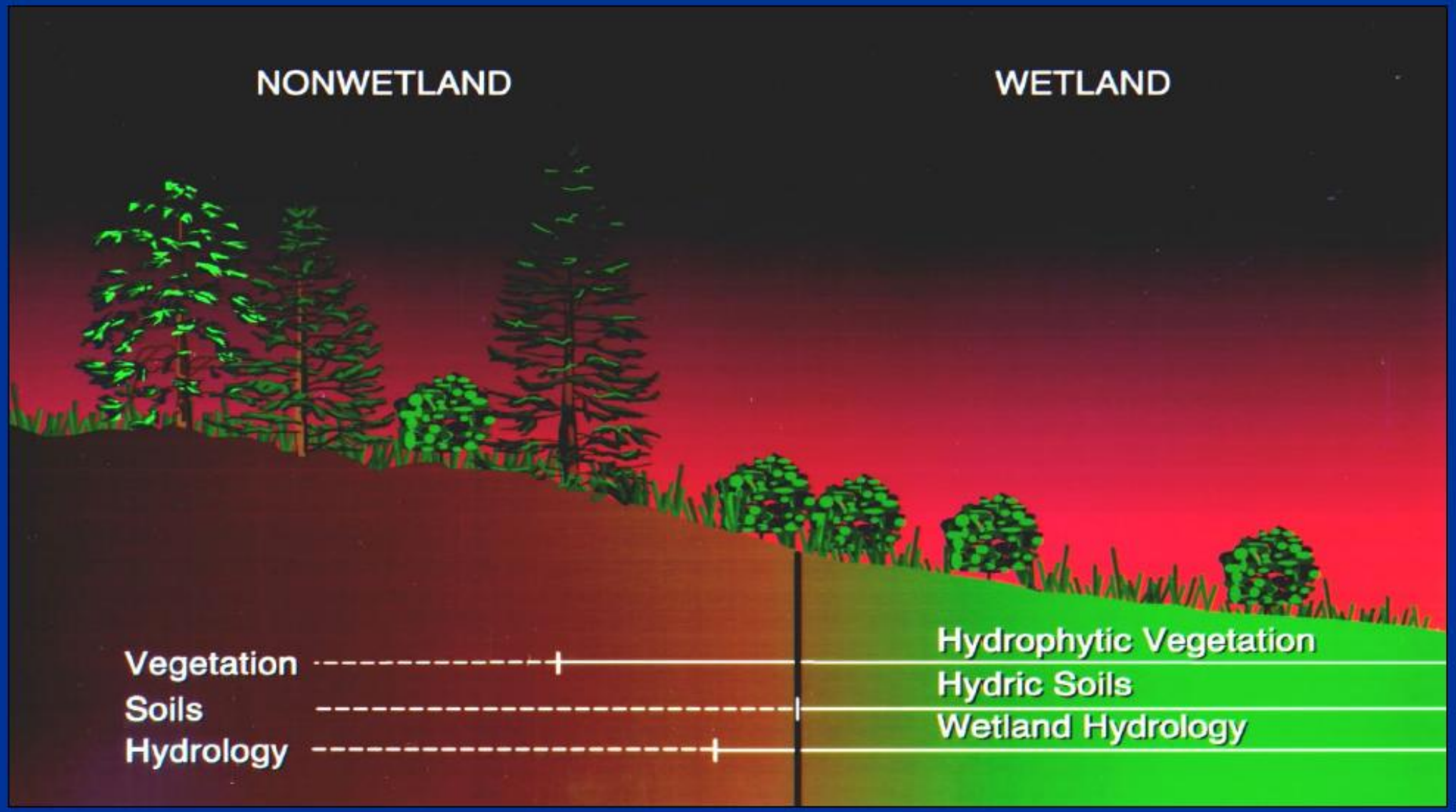
2. Hydric Soils

- Soils that experience ponding or saturation for periods of time during the growing season to support a hydrophytic plant community.
- Often show “traits” or distinct physical indicators of water influence

3. Wetland Hydrology

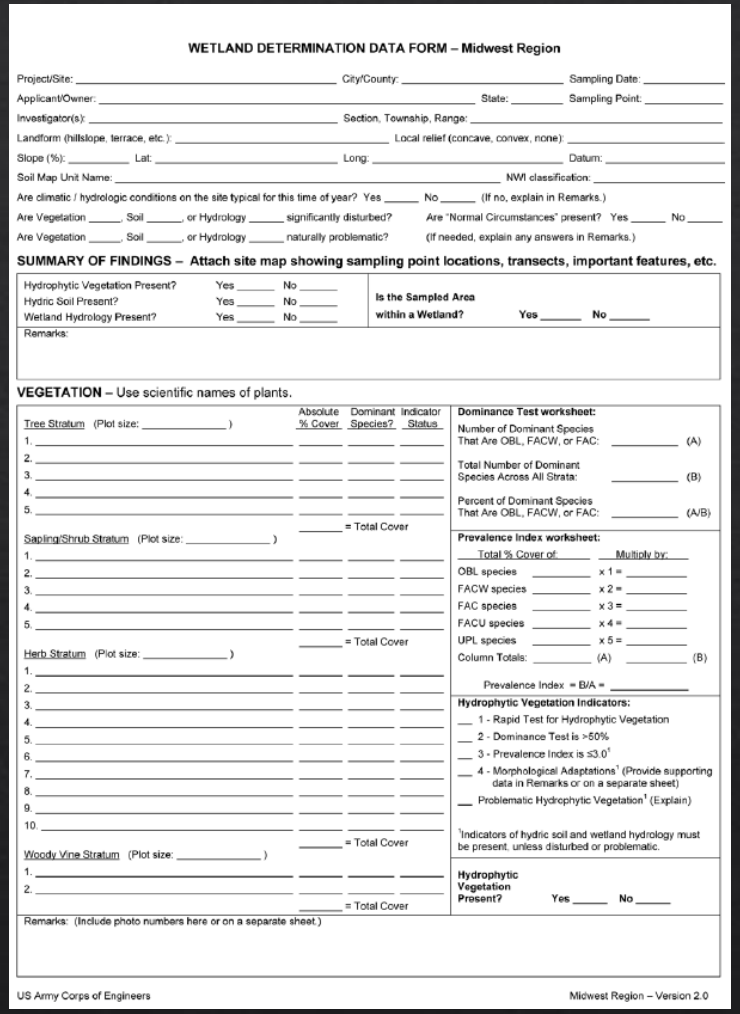
- Water above or within 12-inches of the soil surface for a minimum of 14 consecutive days during the growing season most years (50%)
- Includes ponding/flooding, high groundwater tables, and soil saturation

The 3-Parameter Approach



Wetland Determinations

- **If all three parameters are present, the area is a wetland.**
- **•If two parameters are present, the area may be a wetland (many times it is a wetland).** Lack of a parameter could be due to atypical or naturally problematic conditions
  - Refer to the appropriate Regional Supplement for guidance
- **•If only one parameter is present, the area is likely not a wetland.**
  - Could be wetland if atypical or naturally problematic conditions



WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: _____ City/County: _____ Sampling Date: _____

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No _____

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

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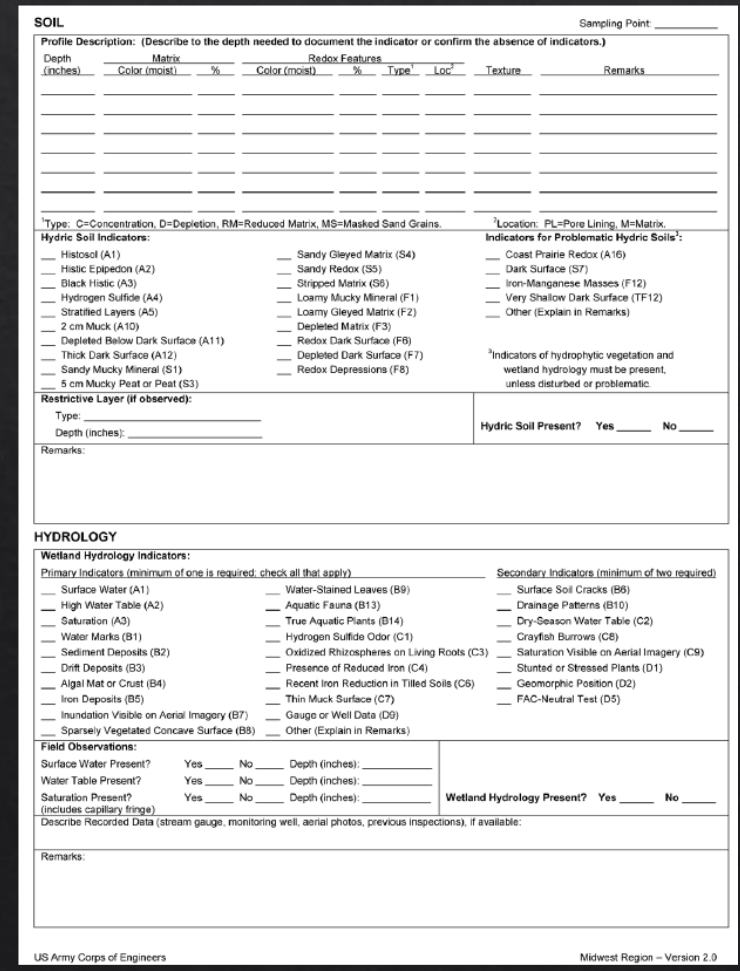

SOIL Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5)
__ 2 cm Muck (A10)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ 5 cm Mucky Peat or Peat (S3)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

__ Coast Prairie Redox (A16)
__ Dark Surface (S7)
__ Iron-Manganese Masses (F12)
__ 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: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1)
__ Sediment Deposits (B2)
__ Drift Deposits (B3)
__ Algal Mat or Crust (B4)
__ Iron Deposits (B5)
__ Inundation Visible on Aerial Imagery (B7)
__ Sparsely Vegetated Concave Surface (B8)
__ Water-Stained Leaves (B9)
__ Aquatic Fauna (B13)
__ True Aquatic Plants (B14)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres on Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Tilled Soils (C6)
__ Thin Muck Surface (C7)
__ Gauge or Well Data (D9)
__ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

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“Difficult” to Delineate or Make A Determination

- Significantly Disturbed Parmeter
- Naturally Problematic Parameter
- Normal Circumstances: Long-term Legally Established Condition.

- Key to Normal Circumstances

1. Soils, vegetation and hydrology are undisturbed ……..……**Normal Circumstances**
1. Physical alteration(s) to soils, vegetation and/or hydrology has occurred…..……..…..2

2. Physical alteration(s) to soils, vegetation and/or hydrology is minor, i.e., insufficient to remove or obscure field indicators……..…**Normal Circumstances**
2. Physical alteration(s) to soils, vegetation and/or hydrology is more than minor (“significantly disturbed” is checked on the data sheet)……..……..3

3. Physical alteration(s) is legally established, maintained and represents the long-term conditions of the site; OR is a newly-authorized physical alteration (e.g., permitted fill, new concrete dam)……..……..…**Normal Circumstances**
3. Physical alteration(s) is due to:
   a. an unauthorized or illegal activity;
   b. activities done with the intent of evading wetland regulations;
   c. total or partial clearing of vegetation, or selective removal of plant species;
   d. the presence of a crop, tree farm, improved pasture, other planted vegetation or cultivars;
   e. destruction of hydric soil field indicators by cultivation or mixing of soil layers;
   f. irrigation;
   g. active and discretionary manipulation of water tables, such as subirrigation and other active water management for crop production (e.g., cranberry beds);
   h. discretionary pumping of surface or groundwater, such as pumping for agricultural purposes; and/or
   i. a major natural event (e.g., a river changes course)……..…**Not Normal Circumstances**

Determining Wetland Location on the Landscape

Do have wetland concerns on my property?

- Prospective buyers or landowners are strongly encouraged to contact the DNR, Army Corps, local shoreland zoning authorities (counties or municipalities), or environmental consultants.
- Preliminary information about a property can be obtained by contacting DNR's Water Way program and/or reviewing online sources for potential wetlands.
  - Note: the WDNR WWI wetland layers are for planning purposes and are not actual surveyed wetland features. Many wetlands on the landscape are unmapped but still regulated wetlands.

Off-Site Wetland Review

Guidance for Offsite Hydrology Wetland Determinations

- **Goal:** To provide a standardized, repeatable methodology for making wetland determinations primarily in cropped fields.

US Army Corps of Engineers ®
St. Paul District

Minnesota Board of Water & Soil Resources

July 1, 2016

Guidance for Offsite Hydrology/Wetland Determinations

This document replaces all previous Minnesota Board of Water and Soil Resources (BWSR) and St Paul District Corps of Engineers (District)-endorsed versions of guidance concerning wetland mapping conventions for agricultural land including: *Wetland Mapping Conventions for Cropland* (BWSR, USACE, NRCS, 1994); *Atypical Procedure: Offsite Hydrology Determination by Using Rainfall Data with Farm Services Agency Imagery* (BWSR 2006) and *Using Aerial Imagery to Assess Wetland Hydrology* (BWSR July 1, 2010).

This guidance incorporates new data sources, clarifies procedures and provides additional direction on interpreting results in concert with the 1987 *Corps of Engineers Wetland Delineation Manual* (87 Manual), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual* (Regional Supplements), and the current version of *Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and Wetland Conservation Act Local Governmental Units in Minnesota*. As with previous versions, this guidance is intended to provide a standardized, repeatable methodology for making wetland determinations in crop fields.

Section 1. Background

The technical background for using remote sensing data to identify wetland hydrology is found in Hydrology Tools for Wetland Determination and analysis, Chapter 19, Section 650.1911 of the *USDA Engineering Field Handbook* (2015). This reference is cited in the Great Plains, Midwest and Northcentral & Northeast Regional Supplements to the 87 Manual under Hydrology Indicators B7 (Inundation Visible on Aerial Imagery) and C9 (Saturation Visible on Aerial Imagery). In 1994, BWSR, the District and the Natural Resource Conservation Service (NRCS) collaborated on the development of wetland mapping conventions (Minnesota Mapping Conventions) to aid in the implementation of the wetland conservation provisions of the Federal Farm Bill and promote consistency between wetland determinations made under the *National Food Security Act Manual* and

Mapping Data Sources

Imagery Source	Notes
WDNR Storm Water, Wetland and Waterway Permit Viewer SW4P - Wisconsin DNR	Recently updated 2025; note WWI vs. NWI naming convention depending on HUC. Includes state LiDAR layer.
Web Soil Survey	Used as the base map for soil overlays include a range of dates. The date(s) can be found under “Map Information” on page 2 of printed soil maps
EnviroAtlas	Interactive Map by the EPA/USDA
USGS WaterWatch	Useful for floodplain wetland areas

Aerial Imagery Sources

Imagery Source	Notes
Wisconsin Historic Aerial Imagery Finder	• 1930-Present
Google Earth Imagery Coverage	• Years variable throughout the state
ESRI ArcGIS Base Map Datasets	• ArcGIS comes pre-linked to many free datasets, including some high-resolution imagery.
Bing Maps	Includes "bird's-eye view" but dates of imagery not easily obtained
Annual Farm Service Agency (FSA) imagery	Available for most agricultural areas of the State from about 1980 to 2012. Many images only list the year taken, although more specific dates can sometimes be obtained by contacting the local FSA or Soil & Water Conservation District office
Local Mapping Resources	Counties, cities, watershed districts or other local government units may have imagery available through their websites or by request
Fee-Based Vendors	These are private vendors that provide aerial imagery for a fee

Precipitation Data

WETS Analysis Worksheet

Project Name: Woodland Dunes - Henry Property
Project Number: 193705494
Period of interest: May - July
Station: Two Rivers, Wisconsin (478672)
County: Manitowoc County, Wisconsin

Long-term rainfall records (from WETS table)

	Month	3 years in 10 less than	Normal	3 years in 10 greater than
1st month prior:	July	2.09	3	3.57
2nd month prior:	June	2.2	3.54	4.28
3rd month prior:	May	2.02	3.11	3.74
		Sum =	**9.65**	

Site determination

Site Rainfall (in)	Condition Dry/Normal*/Wet	Condition** Value	Month Weight	Product
3.53	Normal	2	3	6
7.88	Wet	3	2	6
3.61	Normal	2	1	2
Sum =	**15.02**		Sum*** =	**14**

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

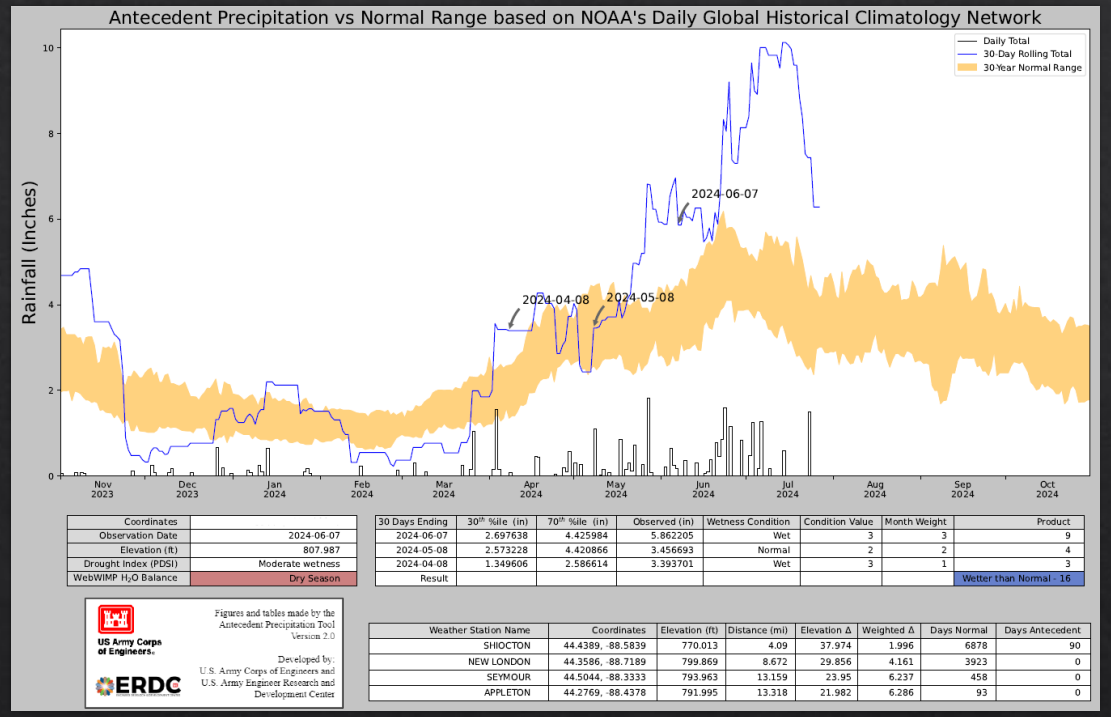
Determination: ____ Wet ____ Dry **X** Normal

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

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

Precipitation data source: NOAA/AACIS weather station

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.



Coordinates	
Observation Date	2024-06-07
Elevation (ft)	807.987
Drought Index (PDSI)	Moderate wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-06-07	2.697638	4.425984	5.862205	Wet	3	3	9
2024-05-08	2.573228	4.420866	3.456693	Normal	2	2	4
2024-04-08	1.349606	2.586614	3.393701	Wet	3	1	3
Result							Wetter than Normal : 16

US Army Corps of Engineers.
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

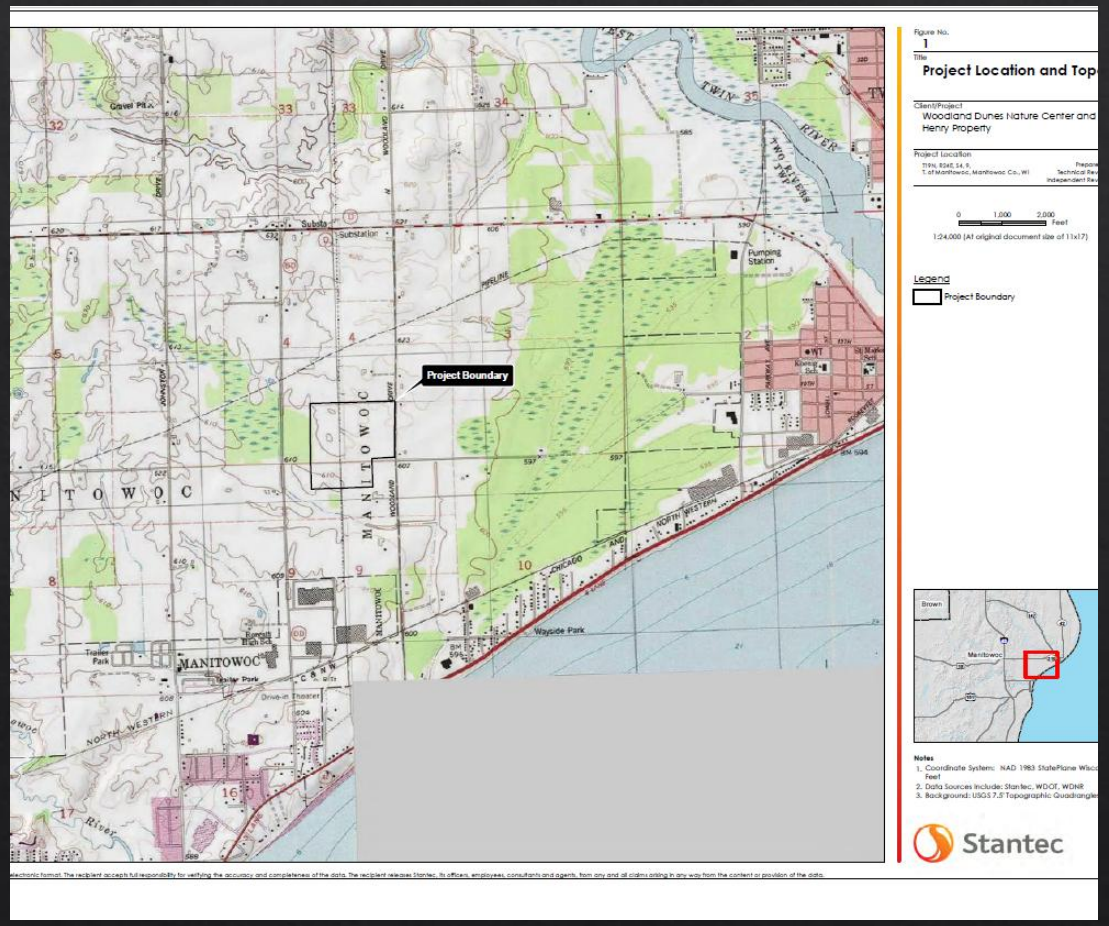
Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
SHIOCTON	44.4389, -88.5839	770.013	4.09	37.974	1.996	6878	90
NEW LONDON	44.3586, -88.7189	799.869	8.672	29.856	4.161	3923	0
SEYMOUR	44.5044, -88.3333	793.963	13.159	23.95	6.237	458	0
APPLETON	44.2769, -88.4378	791.995	13.318	21.982	6.286	93	0

[WETS Tables Information]

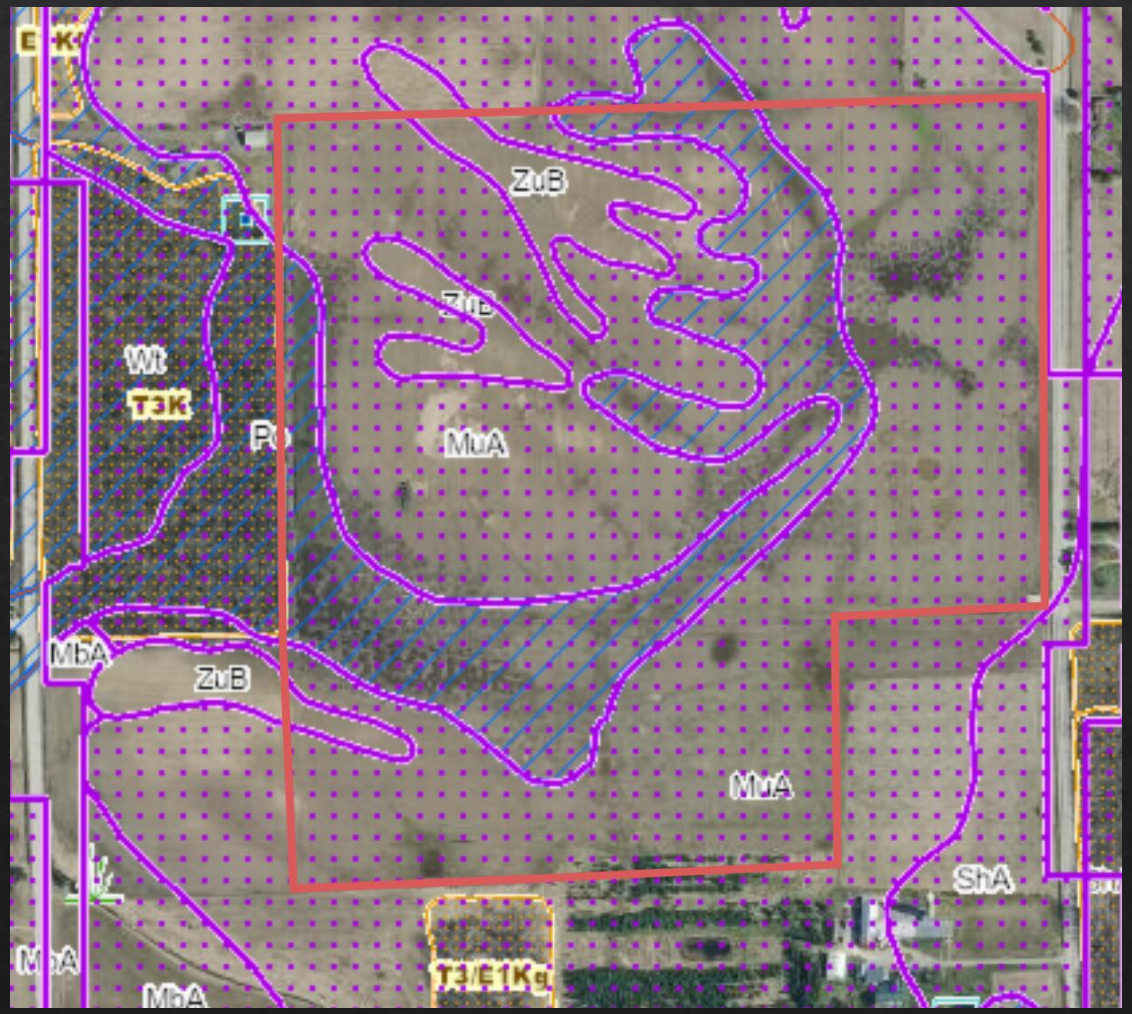
[Antecedent Precipitation Tool]

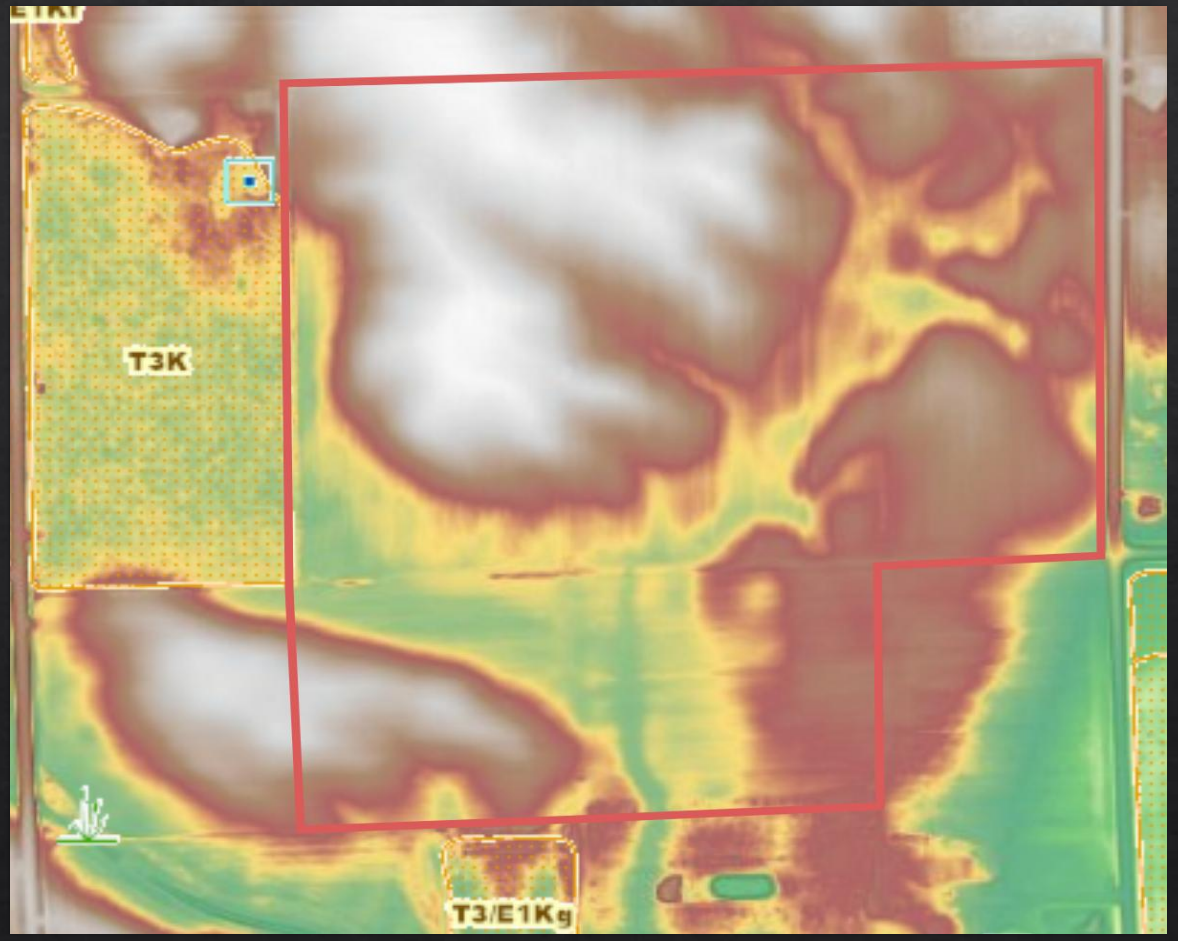
Case Study - Evaluation Process



- Woodland Dunes Nature Center and Preserve - ILF Site 2018 Study

Evaluation Process – Offsite Mapping





Evaluation Process

[Web Soil Survey]

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MuA	Mundelein silt loam, 0 to 3 percent slopes	15	42.9	68.8%
Po	Poygan silty clay loam, 0 to 2 percent slopes, occasionally ponded, drained	87	14.6	23.4%
ShA	Shiocton very fine sandy loam, 0 to 3 percent slopes	3	0.1	0.1%
ZuB	Zurich silt loam, Lake Michigan Lobe, 2 to 6 percent slopes	0	4.8	7.6%
Totals for Area of Interest			**62.3**	**100.0%**

Report—Hydric Soil List - All Components

Hydric Soil List - All Components–WI071-Manitowoc County, Wisconsin					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
MuA: Mundelein silt loam, 0 to 3 percent slopes	Mundelein	80-90	Lakebeds (relict)	No	—
	Pella	5-10	Lakebeds (relict)	Yes	2,3
	Poygan-Occasionally ponded	5-10	Lakebeds (relict)	Yes	2
Po: Poygan silty clay loam, 0 to 2 percent slopes, occasionally ponded, drained	Poygan-Occasionally ponded	80-90	Depressions	Yes	2
	Manawa-Occasionally ponded	7-13	Drainageways	No	—
	Kewaunee	2-4	Moraines	No	—
	Willette-Muck, ponded	1-3	Depressions	Yes	1,3
ShA: Shiocton very fine sandy loam, 0 to 3 percent slopes	Shiocton	85-95	Drainageways	No	—
	Mundelein	2-6	Drainageways	No	—
	Pella	2-5	Depressions	Yes	2,3
	Nichols	1-4	Rises	No	—
ZuB: Zurich silt loam, Lake Michigan Lobe, 2 to 6 percent slopes	Zurich-Lake michigan lobe	85-95	Lakebeds (relict)	No	—
	Saylesville	2-6	Lakebeds (relict)	No	—
	Kibbie	2-5	Lakebeds (relict)	No	—
	Mundelein	1-4	Lakebeds (relict)	No	—

Evaluation Process

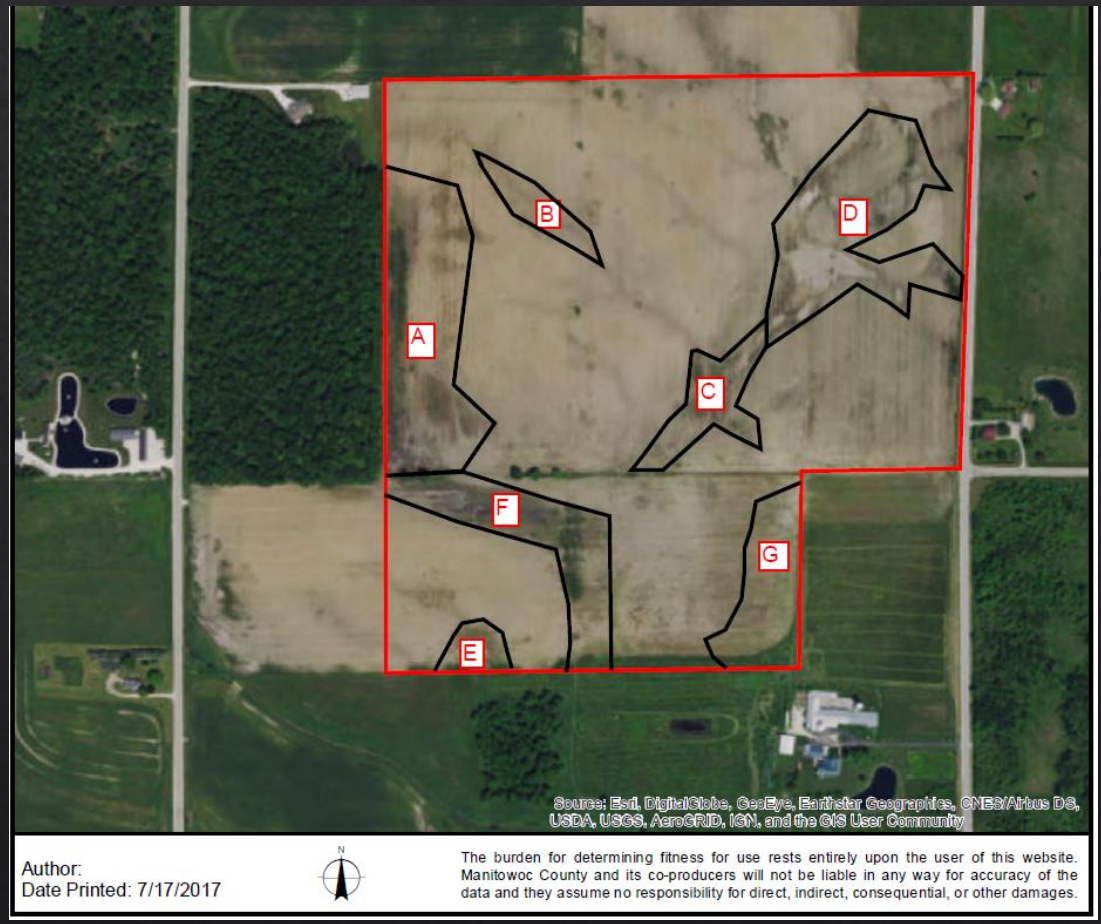


Exhibit 1 Field data sheet reference (if applicable): ___________

Wetland Hydrology from Aerial Imagery – Recording Form

Project Name: ______________________ Date: ______________ County: ______________

Investigator: ______________________ Legal Description (T, R, S): ________ ________ ________

Summary Table

Date Image Taken (M-D-Y)	Image Source	Climate Condition (wet, dry, normal)[i]	Image Interpretation(s)				
			Area:	Area:	Area:	Area:	Area:

Normal Climate Condition	Area:	Area:	Area:	Area:	Area:
Number					
Number with wet signatures					
Percent with wet signatures					

KEY		
WS - wetland signature	SS - soil wetness signature	CS - crop stress
NC - not cropped	AP - altered pattern	NV - normal vegetative cover
DO - drowned out	SW - standing water	NSS – no soil wetness signature
Other labels or comments:		

- Use above key to label image interpretations. It is imperative that the reviewer read and understand the guidance associated with the use of these labels. If alternate labels are used, indicate in box above.

Wetland Determination from Aerial Imagery – Recording Form

Project Name: ______________________ Date: ______________ County: ______________

Investigator: ______________________ Legal Description (T, R, S): ________ ________ ________

Use the Decision Matrix below to complete Table 1.

Hydric Soils present[1]	Identified on NWI or other wetland map[2]	Percent with wet signatures from Exhibit 1	Field verification required[3]	Wetland?
Yes	Yes	>50%	No	Yes
Yes	Yes	30-50%	No	Yes
Yes	Yes	<30%	Yes	Yes, if other hydrology indicators present
Yes	No	>50%	No	Yes
Yes	No	30-50%	Yes	Yes, if other hydrology indicators present
Yes	No	<30%	No	No
No	Yes	>50%	No	Yes
No	Yes	30-50%	No	Yes
No	Yes	<30%	No	No
No	No	>50%	Yes	Yes, if other hydrology indicators present
No	No	30-50%	Yes	Yes, if other hydrology indicators present
No	No	<30%	No	No

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

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

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

Table 1.

Area	Hydric Soils Present	Identified on NWI or other wetland map	Percent with wet signatures from Exhibit 1	Other hydrology indicators present[1]	Wetland?

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

Evaluating Aerial Imagery Wetness Signatures

Test Positives

- Wetness signatures (WS)
  - Not Cropped (NC)
  - Drowned Out (DO)
  - Crop Stress (CS)
  - Soil Saturation (SS)
  - Standing Water (SW)
  - Altered Pattern (AP)

Test Negatives

- Normal Vegetation (NV)
- No Soil Signature (NSS)

Evaluating Aerial Imagery Wetness Signatures

Example

Exhibit 1 Field data sheet reference (if applicable): ___________

Wetland Hydrology from Aerial Imagery – Recording Form

Project Name: ______________________ Date: ____________ County: ______________

Investigator: ____________________ Legal Description (T, R, S): ________ ________ ________

Summary Table

Date Image Taken (M-D-Y)	Image Source	Climate Condition (wet, dry, normal)[1]	Image Interpretation(s)				
			Area:	Area:	Area:	Area:	Area:

Normal Climate Condition	Area:	Area:	Area:	Area:	Area:
Number					
Number with wet signatures					
Percent with wet signatures					

KEY		
WS - wetland signature	SS - soil wetness signature	CS - crop stress
NC - not cropped	AP - altered pattern	NV - normal vegetative cover
DO - drowned out	SW - standing water	NSS – no soil wetness signature
Other labels or comments:		

- Use above key to label image interpretations. It is imperative that the reviewer read and understand the guidance associated with the use of these labels. If alternate labels are used, indicate in box above.

Date Image Taken (MDY)	Imagery Source	Climate Condition (Wet, Dry, Normal)	Image Interpretation(s): Area F
5/5/1992	Google Earth	DRY	NV
4/23/2000	Google Earth	NORMAL	SS
5/31/2005	Google Earth	DRY	NV
6/3/2006	Google Earth	NORMAL	NV
6/22/2008	Google Earth	NORMAL	CS/DO
6/27/2010	Google Earth	WET	DO/CS
7/24/2011	Google Earth	WET	CS
6/1/2015	Google Earth	NORMAL	CS
7/2/2015	WI Historical	NORMAL	CS/DO
9/10/2018	Google Earth	NORMAL	SS/DO/SW

Normal Climate Condition	Area: F
Number	6
Number with Wet Signatures	5
% with wet signatures	83

Wetland Determination from Aerial Imagery – Recording Form

Project Name: _____ Date: _____ County: _____

Investigator: _____ Legal Description (T, R, S): _____ _____ _____

Use the Decision Matrix below to complete Table 1.

Hydric Soils present[1]	Identified on NWI or other wetland map[2]	Percent with wet signatures from Exhibit 1	Field verification required[3]	Wetland?
Yes	Yes	>50%	No	Yes
Yes	Yes	30-50%	No	Yes
Yes	Yes	<30%	Yes	Yes, if other hydrology indicators present
Yes	No	>50%	No	Yes
Yes	No	30-50%	Yes	Yes, if other hydrology indicators present
Yes	No	<30%	No	No
No	Yes	>50%	No	Yes
No	Yes	30-50%	No	Yes
No	Yes	<30%	No	No
No	No	>50%	Yes	Yes, if other hydrology indicators present
No	No	30-50%	Yes	Yes, if other hydrology indicators present
No	No	<30%	No	No

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

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

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

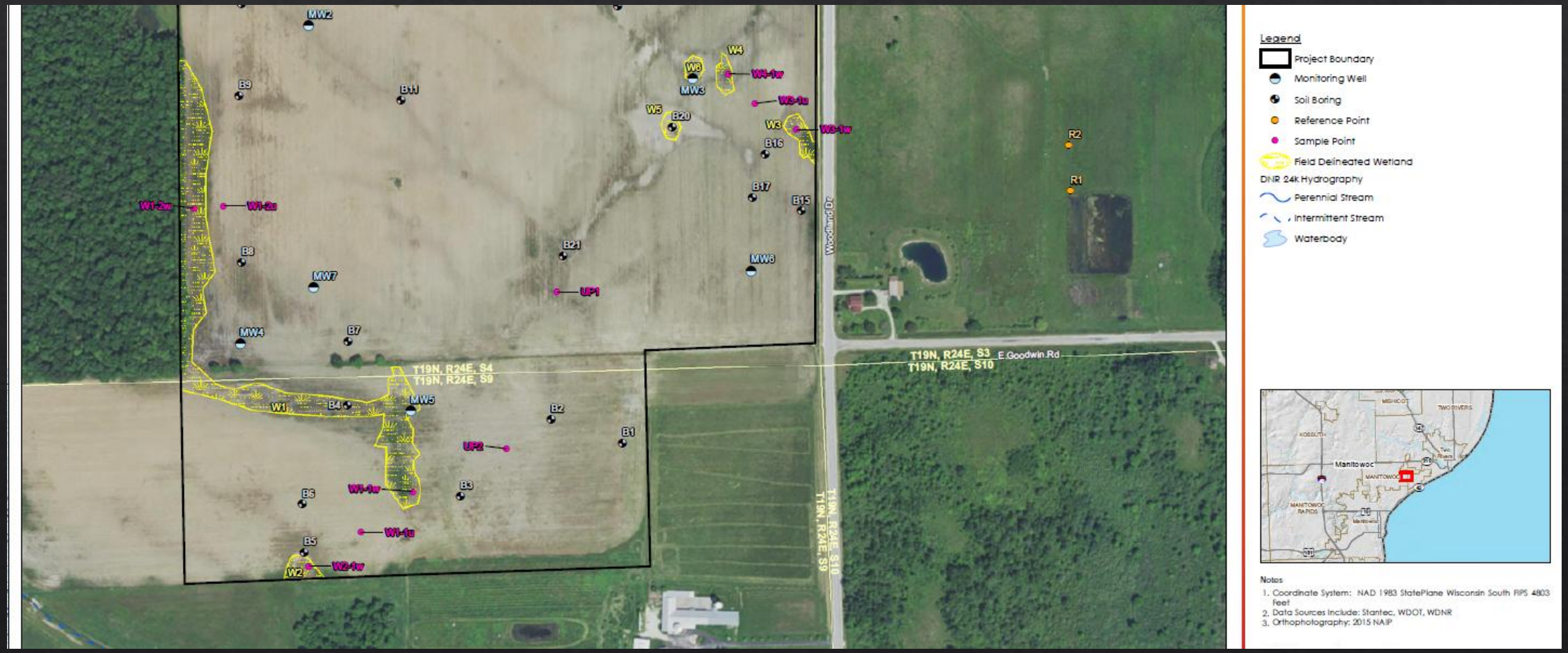
Table 1.

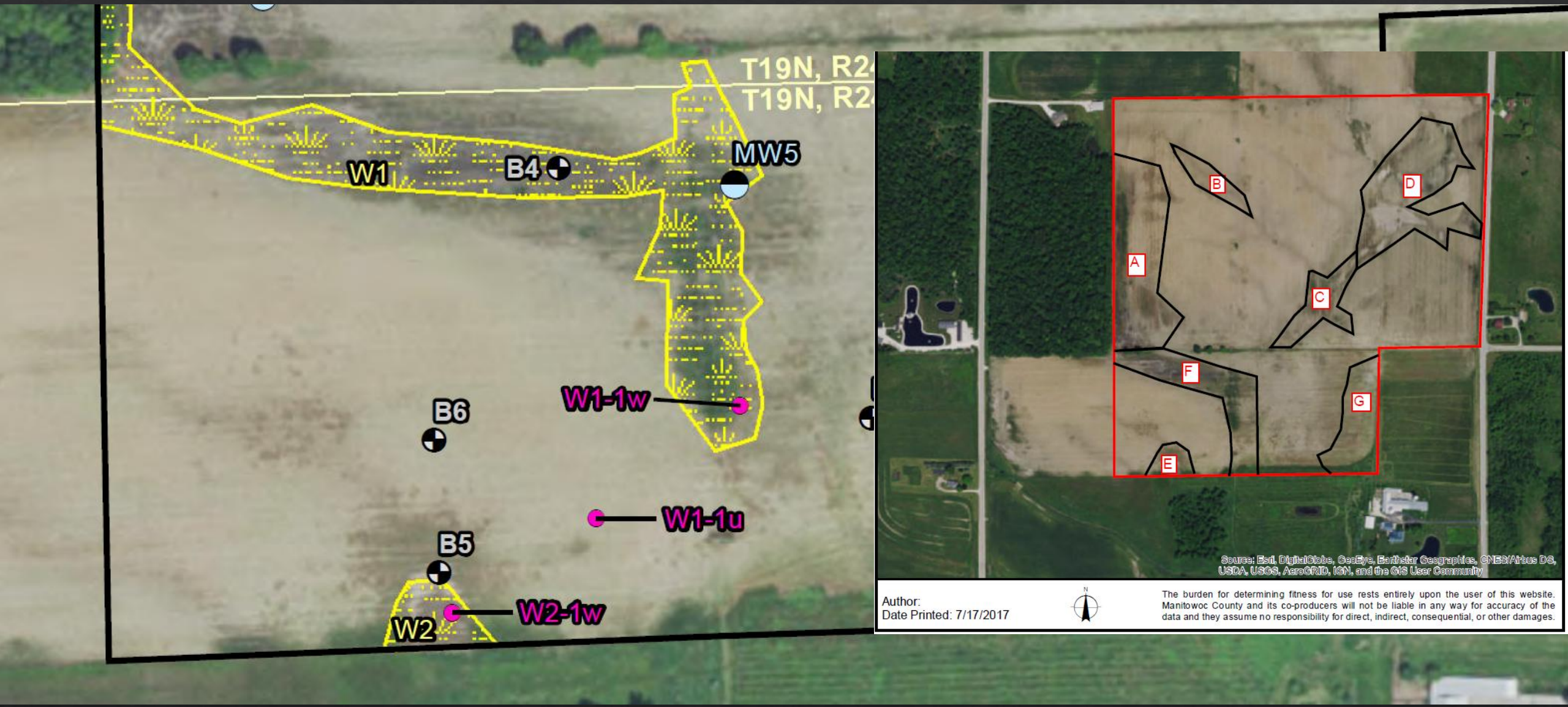
Area	Hydric Soils Present	Identified on NWI or other wetland map	Percent with wet signatures from Exhibit 1	Other hydrology indicators present[1]	Wetland?

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

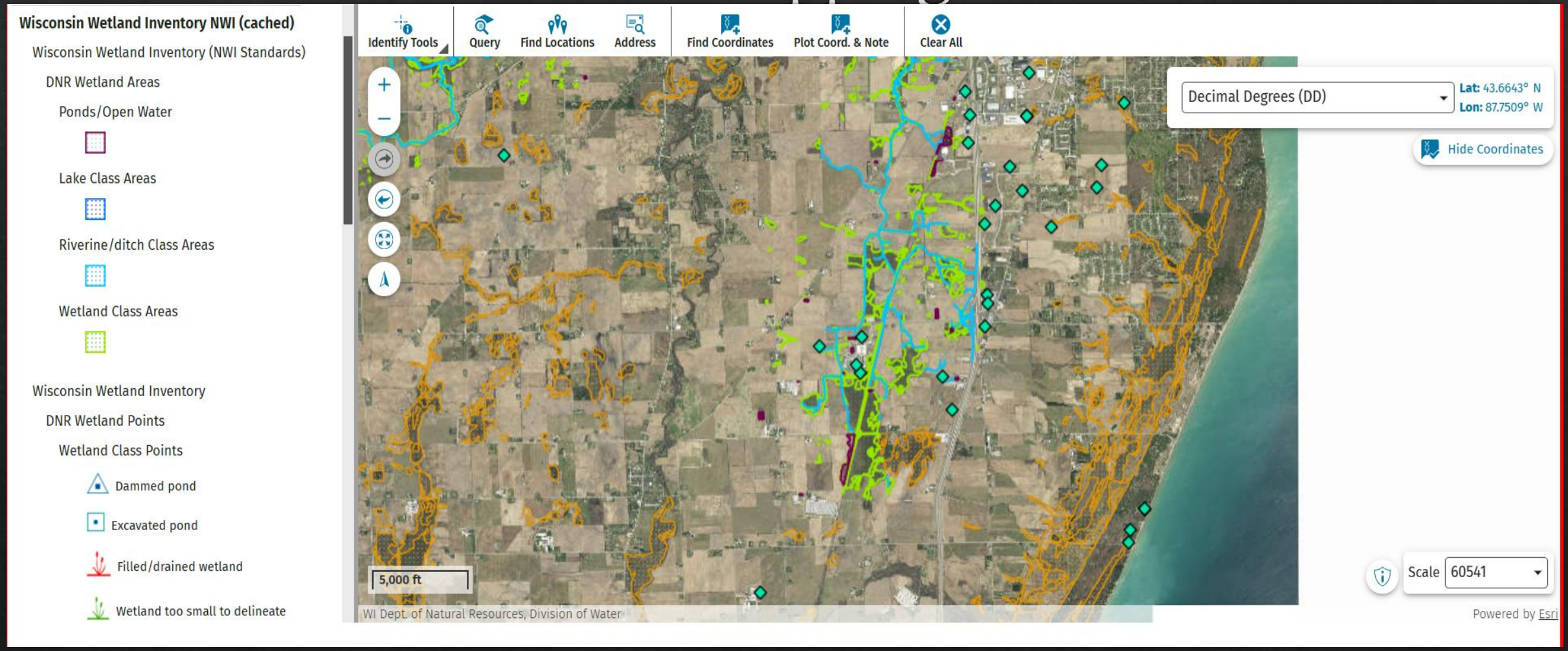
Area	Hydric Soils Present?	Identified on NWI or other Wetland Map	% with Wetland Signatures from Exhibit 1	Other Hydrology Indicators Present	WETLAND?
F	Yes	No	83	Yes	Yes

Final Delineation Figure




T19N, R2
T19N, R2
W1
B4
MW5
B6
W1-1w
W1-1u
B5
W2-1w
W2
A
B
C
D
E
F
G
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Author:
Date Printed: 7/17/2017
N
The burden for determining fitness for use rests entirely upon the user of this website. Manitowoc County and its co-producers will not be liable in any way for accuracy of the data and they assume no responsibility for direct, indirect, consequential, or other damages.

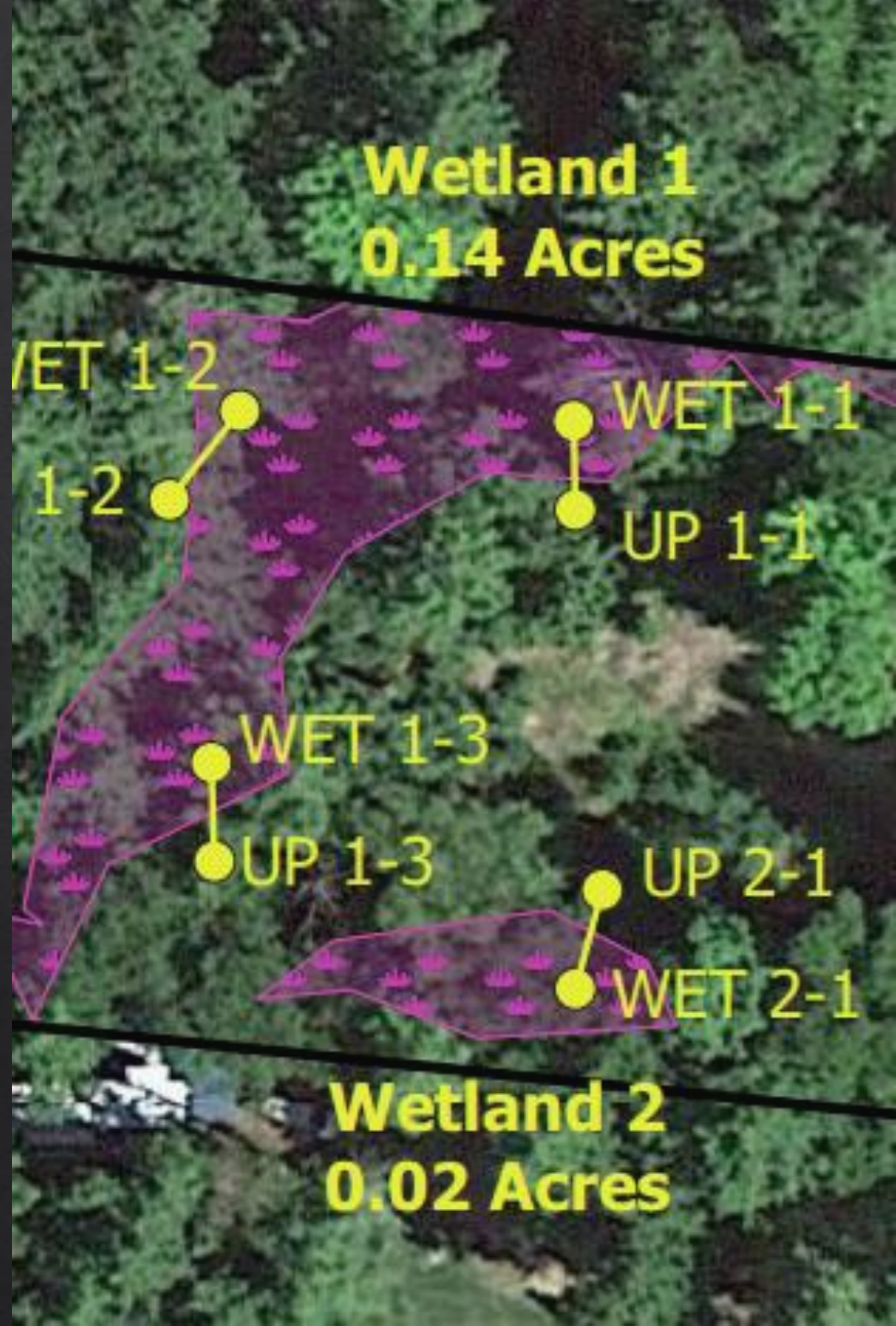
WDNR Online Mapping Review- Live



Storm Water, Waterway and Wetland Permit Viewer

On-Site Wetland Survey

- Surveys will be required should a project impact an area suspect of wetlands! DNR and Army Corps have ultimate authority to determine wetland boundaries.
- Private environmental consultants can complete thorough wetland delineation surveys
  - Wetland delineations need to be submitted to DNR's Wetland Confirmation Service for final confirmation.
    - $300/20 acre fee, no size limit
  - Delineations completed by consultants enrolled in the Assured Delineator Program are confirmed upon submittal.
    - Annual fees charged to delineator
- DNR can complete a presence/absence determination of wetlands on a property through the Wetland ID Service
    - $300/acre fee for up to 5 acres
- More information on these services can be located here



Why is it Important to Know Where Wetlands Are?

- Wetlands are regulated under the law by the State of Wisconsin (DNR), federal government (US-Army Corps of Engineers), and some local counties and municipalities
- Wetland impacts from proposed projects likely require permits or exemptions from one or more of the above agencies
  - General Permits
  - Individual Permits
- Agency jurisdiction is exercised for impacts such as discharges or dredging into wetlands
- If a property owner or potential buyer is proposing land disturbance in a wetland, they will need to move through the proper wetland fill permitting process

Impacting Wetlands

Wetland Jurisdiction and Permit Review

- Federal Wetland Jurisdiction
  - Section 404 of the Clean Water Act. "Waters of the US or WOTUS"
    - Changes to the definition and jurisdiction of wetland over time; has little impact over state regulations. Be sure to also check with USACE to determine if federal permits are needed.
- State of WI Wetland Jurisdiction
  - 281.36 ; "No person may discharge dredged material or fill material into a wetland unless the discharge is authorized by a wetland general permit or individual permit issued by the department under this section or the discharge is exempt…"
  - WDNR Jurisdictional Programs
    - Environmental Analysis Program
      - Energy Projects
      - DOT & Transportation
    - Waterways Program
      - Commercial, Industrial, Residential, Recreation Projects

- Local Municipalities
  - Includes shoreland/wetland zoning
  - May have more strict wetland rules including setbacks

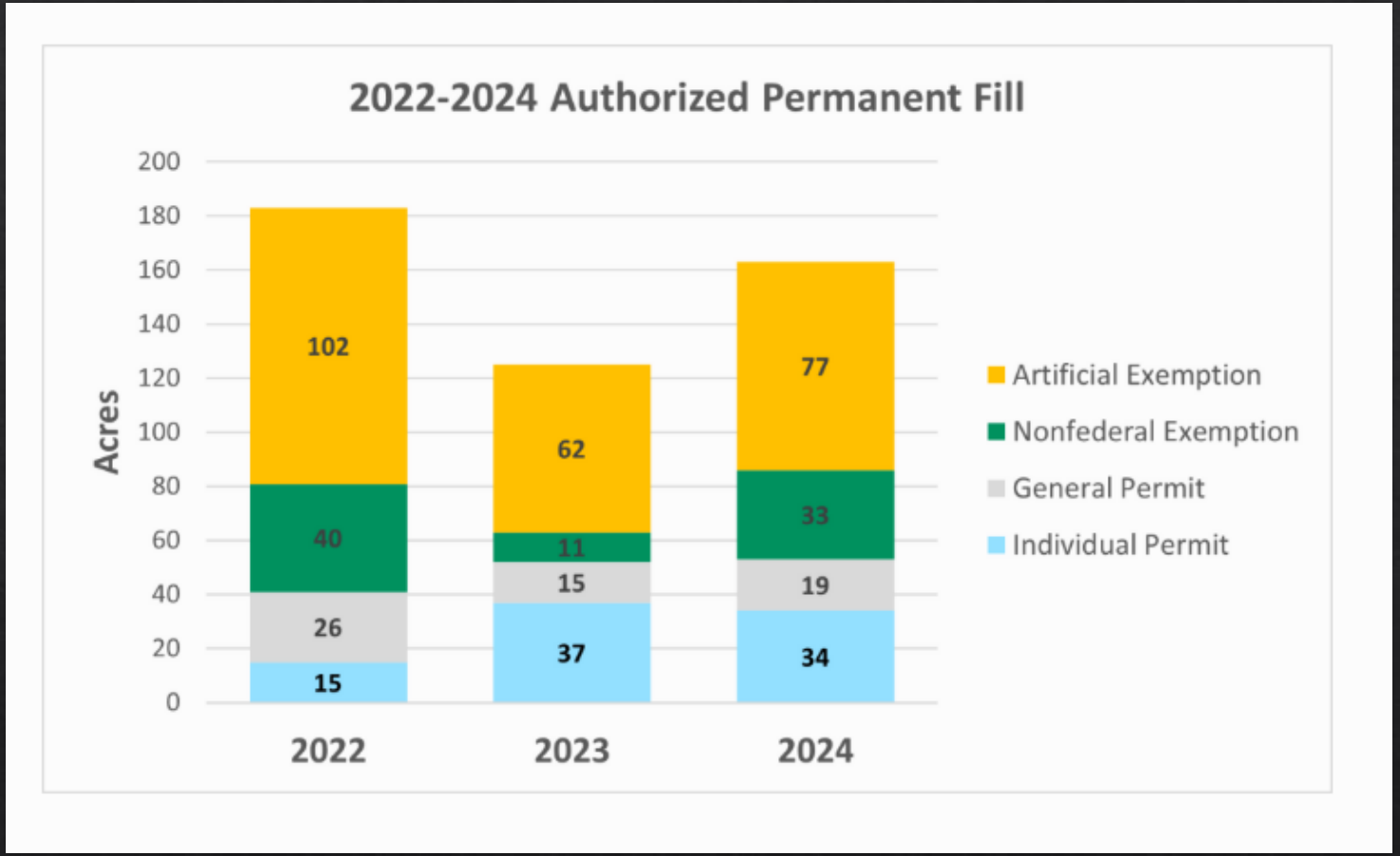
Wetland Permit Types

- **Wetland General Permit**
  - Less than 10,000 square feet of impacts. Subject to Practical Alternative Analysis (PAA)
- **Wetland Individual Permit**
  - More than 10,000 square feet of impacts. Subject to PAA, Public Notice, Requires Mitigation
- **Wetland Permit Exemptions**:
  - Activity Type Exemptions
  - **Artificial Wetland Exemption**: s. 281.36(4n)(a)1, Wis. Stat.
    - A landscape feature where hydrophytic vegetation may be present as a result of human modification to the landscape or hydrology and for which the department has no definitive evidence showing a prior wetland or stream history that existed before August 1, 1991, but does not include any of the following:
      - A wetland that serves as a fish spawning area or a passage to a fish spawning area
      - A wetland created as a result of a mitigation requirement
      - A wetland that protects adjacent or downstream property or infrastructure from flooding, or is providing significant water quality protection to downstream waters or wetlands.
  - **Nonfederal Wetland Exemption**: s. 281.36(1)(br), Wis. Stat.
    - Wetland that is not subject to federal jurisdiction under 33 USC 1344
      - Rural or Urban Exemption types
      - May require mitigation
      - Rural for agriculture structures only

Other Important Permit Considerations

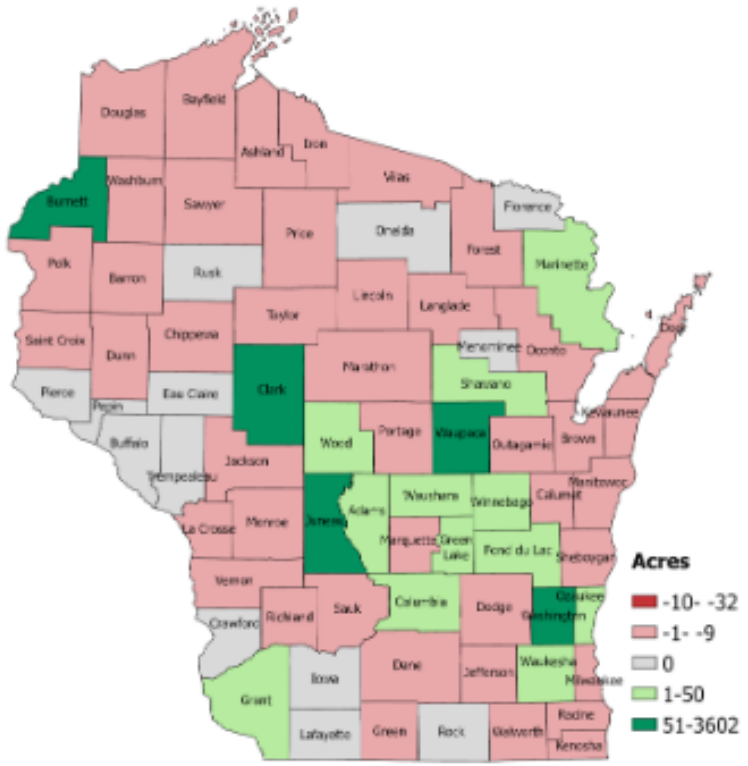
- Not all proposed wetland impacts meet the criteria for a permit to be issued; appropriate permit is based on activity type.
- The agencies (DNR and Army Corps) have specific standards to be met to grant wetland fill permits
  - The Practicable Alternatives Analysis (PAA) is a major element
    - PAA requires applicants to consider practicable alternatives taking into consideration cost, site availability, technology, logistics, and proximity to proposed project site, in light of overall scope of project
  - Permits may not be issued if PAA determines wetland impacts can be practicably avoided or minimized.
  - Permits for new buildings/driveways/roads are processed as single and complete projects
  - Wetland functional values and quality are taken into consideration for wetland impacts
    - Wetlands that serve significant function to the environment or community typically cannot meet legal standards for a permit to be granted.

Permitted Wetland Loss



Wetland Mitigation and Restoration

- Private wetland restoration projects are widespread and vary in scope and intent
- Restoration activities within wetlands that result in discharge to the wetland may require a permit – Wetland Conservation Permits available for these projects
  - https://dnr.wisconsin.gov/topic/Wetlands/restorationpermits.html
- Many resources available to help landowners with restoration project design and potential funding opportunities: https://dnr.wisconsin.gov/topic/Wetlands/restoration.html.



STATEWIDE SUMMARY 2022-24 (ACRES)

- Net Gain/Loss, **+4,779**
  - Restoration + Mitigation, **+5,256** Acres
    - Permitted Restoration, +4,149
    - Mitigation Projects, +1,107
  - Permanent Fill, **-476**
    - Artificial Exemption, -241
    - Nonfederal Exemption, -84
    - General Permit and Individual Permit, -146

The net gain/loss map for 2022-2024 shows the difference between DNR permitted permanent wetland impacts and DNR permitted restoration

By 1990, Wisconsin had lost an estimated 46% of ten million wetland acres (Dahl, 1990 [PDF exit DNR]). Today, statewide wetland acreage is estimated at 6 million acres according to the Wisconsin Wetland Inventory. This increase is the result of improved wetland mapping data and methods and wetland protection and restoration.

Wetland Compensatory Mitigation

- Wetland mitigation is required for Individual Permits and non-federal wetland exemptions generally exceeding 10,000 square feet of impact.
- Applicants for individual permits must first propose practical alternatives and minimization of wetland impacts prior to mitigating.
- Mitigation purchases are first directed to mitigation banks: https://dnr.wisconsin.gov/topic/Wetlands/mitigation/bankingRegistry.html.
- In-lieu fee purchases and permittee responsible mitigation follow.