Wetland and Waterbody Delineation Report Campbell County Wind Farm 2 Campbell County, South Dakota

Final Report



Prepared for: Campbell County Wind Farm 2, LLC

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TABLE OF CONTENTS

INTRODUCTION 1
STUDY AREA 1
REGULATORY BACKGROUND
Waters of the United States
Waters of the State
METHODS
Desktop Review
Site Visit5
Wetlands5
Waterbodies7
Non-waters of the United States
Jurisdictional Determination8
RESULTS
Site Conditions9
Wetlands9
Waterbodies12
Non-waters of the United States12
REFERENCES

LIST OF TABLES

Table 1.	1. Summary of all field delineated wetlands for the proposed Campbell County Win				
	Farm 2 Project, Campbell County, South Dakota	.10			
Table 2.	Summary of all field delineated waterbodies for the proposed Campbell County				
	Wind Farm 2 Project, Campbell County, South Dakota	.12			

LIST OF FIGURES

Figure 1.	Location for the proposed Campbell County Wind Farm 2 Project, Campbell	
	County, South Dakota	. 2
Figure 2.	Study Area for the proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota	3
	County, Court Bakota	. 0

Figure 3.	jure 3. Locations of National Wetlands Inventory wetlands and National Hydrog					
	Dataset waterbodies within the Campbell County Wind Farm 2 Project, Campbell					
	County, South Dakota	6				
Figure 4.	Delineated wetlands and waterbodies for the proposed Campbell County Wind					
	Farm 2 Project, Campbell County, South Dakota	.11				

LIST OF APPENDICES

- Appendix A. Field Delineated Wetland and Waterbody Maps for the Proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota
- Appendix B. US Army Corps of Engineers Great Plains Region Datasheets and Photographs for the Proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota
- Appendix C. Waterbody Datasheets and Photographs for the Proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota
- Appendix D. Antecedent Precipitation Tool Results for the Proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota
- Appendix E. NWI/NHD Waters No Point Photographs for the Proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota

ACRONYMS AND ABBREVIATIONS

ac	acre
AGOL	ArcGIS online map
CCWF2	Campbell County Wind Farm 2, LLC
CWA	Clean Water Act
ft	foot
GPS	Global Positioning System
ID	identification
mi	mile
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	ordinary high water mark
PEM	Palustrine emergent
Project	Campbell County Wind Farm 2 Project
Project Boundary	12,000-acre area
SD DANR	South Dakota Department of Agriculture and Natural Resources
Study Area	Area evaluated for wetland and waterbodies, 1,500 acres
UNT	unnamed tributaries
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USGS	US Geological Survey
WEST	Western EcoSystems Technology, Inc.
WOTUS	waters of the United States

INTRODUCTION

Campbell County Wind Farm 2, LLC (CCWF2), a subsidiary of RWE Clean Energy, is proposing the development of the Campbell County Wind Farm 2 Project (Project), located in Campbell County, South Dakota (Figure 1). The planned nameplate capacity of the proposed Project is 98.6 megawatts consisting of 29 wind turbine generators. The Project will include associated infrastructure such as an operations and maintenance facility, access roads, crane paths, underground collector lines, and a substation. The Project would be located within a roughly 12,000-acre (ac) area (Project Boundary) where CCWF2 has entered into lease agreements with local landowners interested in participating in Campbell County Wind Farm 2.

To support the development of the Project, the CCWF2 contracted Western EcoSystems Technology, Inc. (WEST) to conduct a wetland and waterbody survey. The objectives of the survey were to identify (desktop review) and delineate (field delineation surveys) locations of wetlands (land with presence of hydric soils, hydrology, and hydrophytic vegetation) and waterbodies (any type of perennial, intermittent, or ephemeral waterway or catch basin where water flows, or could flow, or is held), and to assess the likelihood of jurisdictional determination (determination) to all delineated features. Field delineation surveys were conducted from May 13–17, 2024 and from October 10–11, 2024.

STUDY AREA

The proposed Project is located in Campbell County, South Dakota, approximately 20 miles (mi) northeast of Mobridge, South Dakota and 10 mi southeast of Pollock, South Dakota (Figure 1). The Project is predominantly located in the Northwestern Glaciated Plains Ecoregion, which encompasses a section of north-central South Dakota. The landscape within the Northwestern Glaciated Plains Ecoregion consists of rolling hummocks and countless wetland depressions or potholes (US Environmental Protection Agency [USEPA] 2012). The Missouri River is a major water feature located approximately five mi west of the Project. Within the Project Boundary, various drainages that include streams and wetlands are present. Most of the drainage flows north, eventually connecting to the Missouri River. The dominant land cover types in the Project Boundary are herbaceous vegetation (52.4%) and cultivated crops (41.7%; National Land Cover Database [NLCD] 2021).

To evaluate the presence of wetlands and waterbodies that may be impacted during development of the proposed Project, WEST developed a Study Area based on the most up-to-date Project infrastructure locations provided by CCWF2 in May 2024 and updated in September 2024. WEST combined the following layout elements to develop the Study Area, which consisted of 1,329 ac (Figure 2).

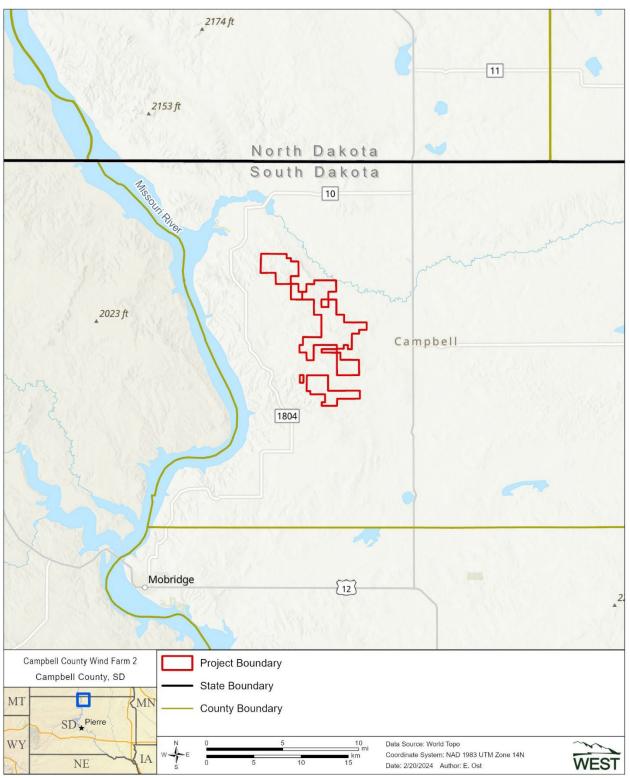


Figure 1. Location for the proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota.

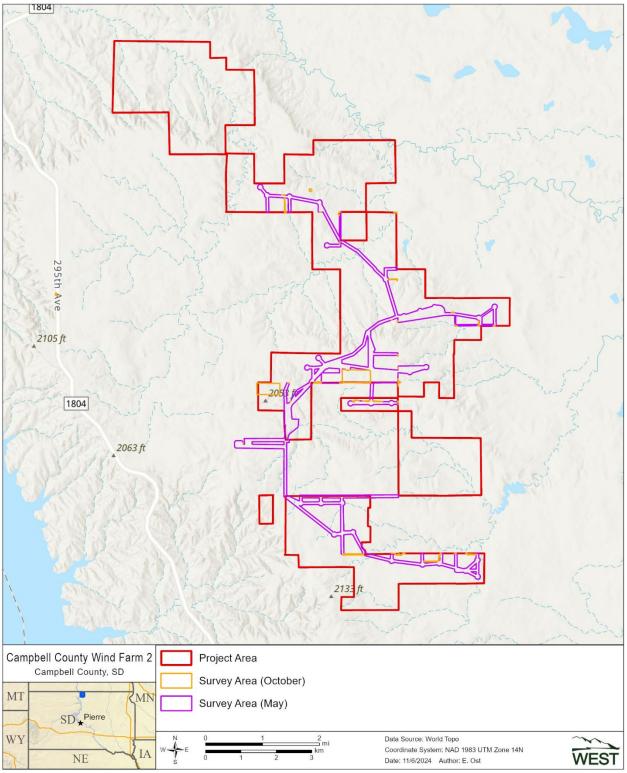


Figure 2. Study Area for the proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota.

WEST developed the Study Area by buffering the layout as described below:

- 300-foot (ft) radius surrounding turbines
- 100-ft buffer on access roads (50 ft on either side of center line)
- 50-ft buffer on collection lines (25 ft on either side of centerline)
- 200-ft buffer around the project substation footprint, operations and maintenance footprint, batch plants, laydown areas
- Additional survey areas provided by CCWF2 based on potential future changes to infrastructure

REGULATORY BACKGROUND

Waters of the United States

Section 404 of the Clean Water Act (CWA) is the primary federal statute regulating impacts (dredge and fill) to wetlands and waterbodies. Wetlands and waterbodies that are subject to federal jurisdiction under the CWA are referred to as waters of the United States (WOTUS; USEPA 2023a).

Waters that have consistently been considered jurisdictional WOTUS by the US Army Corps of Engineers (USACE) include traditional navigable waters (Section 10 waters), interstate waters, territorial seas, and impoundments of these WOTUS. Jurisdictional status of tributaries to these categories of WOTUS and adjacent wetlands continue to be both challenged in courts and clarified by agencies, especially if they are far removed and do not have an evident surface water connection to one of these WOTUS. A Supreme Court decision in May 2023 resulted in the USEPA and USACE publications of the Amendment to the WOTUS definition in August 2023 (USEPA 2023b). This Amendment is the current guiding document to define WOTUS, but implementation is still being evaluated by the USEPA and USACE at the regional scale. Coordination with the USACE regarding jurisdictional status of wetlands and waterbodies documented in this report is recommended to evaluate Section 404 permit requirements for the Project.

Waters of the State

The State of South Dakota defines Waters of the State as "all waters within the jurisdiction of this state, including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the state" (South Dakota Code § 34A-2-2 [2021]). Under this definition, all wetland and waterbody features surveyed are considered Waters of the State. South Dakota does not have a state dredge and fill permitting process.

METHODS

Desktop Review

WEST conducted a desktop assessment to identify potential wetlands and waterbodies that could be present in the Project Boundary (Figure 3; Moulaert and Sullivan 2024) in support of identifying WOTUS and Waters of the State. The following datasets were used to identify potential wetlands and waterbodies:

- US Department of Agriculture (USDA) Natural Resource Conservation Service Web Soil Survey (2024)
- US Fish and Wildlife Service National Wetlands Inventory (NWI; 2023)
- US Geological Survey (USGS) National Hydrography Dataset (NHD; 2023)
- Current and historic imagery accessed via Google Earth. Google Earth combines available imagery in the Project Boundary from a variety of sources, including USGS, USDA Farm Service Agency, Landsat, and other unlisted sources; available years include 1998, 2003, 2005–2008, 2010, 2011, 2013, 2015, 2016, 2017, 2018, 2020, 2021 and 2022
- Esri World Imagery and Aerial Photos (2024)
- Esri World Topographical Map (2024)
- NLCD (2021)

Site Visit

WEST wetland biologists Grace Ray and Roy Cook completed field-based surveys from May 13– 17, 2024. Roy Cook completed a second round of field-based surveys from October 10–11, 2024. Shapefiles were used to create an ArcGIS online map (AGOL), which was accessible in the field via tablet and used to accurately locate the Study Area limits during the site visit. NWI desktopderived polygons and NHD flowlines were also loaded onto the AGOL map for reference. In addition, biologists ran the USEPA's Antecedent Precipitation Tool to determine if recent precipitation conditions were normal, wet, or dry at the time of the site visit (USEPA 2023c).

Wetlands

Wetlands were delineated in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0; USACE 2010). The 1987 manual outlines a 3-parameter approach, which requires presence of hydrophytic plants (dominant vegetative cover), hydric soils, and wetland hydrology. All three parameters must be present and meet the wetland criteria of each parameter in order for an area to be considered a wetland.

The delineated wetlands were classified according to the classification system outlined in *Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Wetland plant indicator status was determined using the version of the National Wetland Plant List

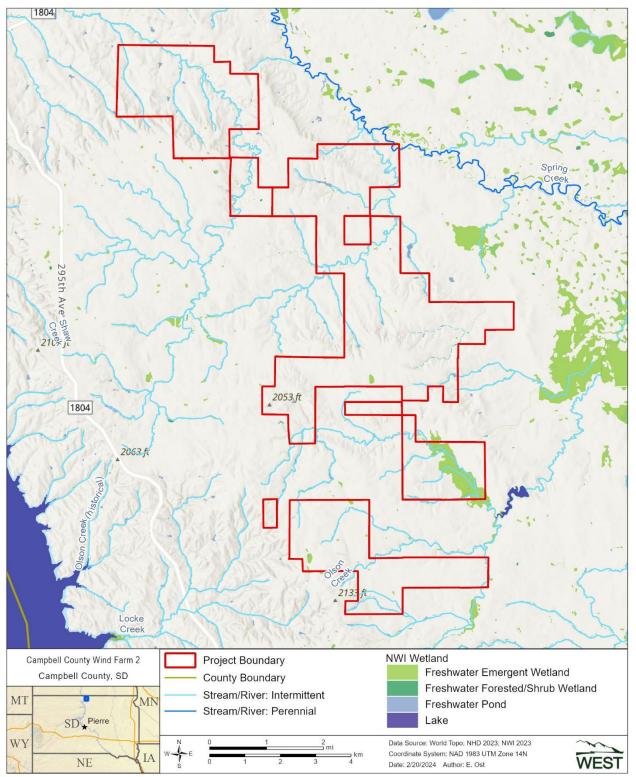


Figure 3. Locations of National Wetlands Inventory wetlands and National Hydrography Dataset waterbodies within the proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota.

(USACE 2022). Paired sample plots (wetland and upland) were established, and USACE regional datasheets were completed for each potential wetland within the Study Area. Wetland sample plots were located in areas that represented the wetland community that was present, utilizing an upland sample plot to characterize the adjoining upland community. A wetland boundary was then established between these points and the boundary was recorded based on the observations made at the paired sample points. Additional sample plots were established in locations where NWI or aerial signatures suggested wetland conditions may be present. Wetlands are typically categorized as one of three common types of wetlands including:

- Palustrine emergent (PEM) wetlands are defined as inland freshwater areas dominated by hydrophytic vascular plants such as rushes, sedges, forbs, and other herbaceous or grass-like plants.
- Palustrine scrub-shrub (PSS) wetlands are defined as inland freshwater areas dominated by woody vegetation less than 20 ft tall, such as buttonbush (*Cephalanthus* spp.), alders (*Alnus* spp.), and many kinds of saplings.
- Palustrine forested (PFO) wetlands are defined as inland freshwater areas dominated by woody vegetation equal to or over 20 ft tall.

WEST identified each mapped wetland by a unique identification (ID). The unique ID starts with "w", followed by the delineator's initials, and then the feature number (e.g., w-rc-01). In situations where a larger wetland is separated by the presence of a waterbody, the wetland is divided, and an alphabetic identifier is added onto the end of the wetland ID (e.g., w-rc-01a and w-rc-01b).

The wetland boundary and sample wetland and upland plots were surveyed using a Trimble R1 Global Positioning System (GPS) with sub-meter accuracy. The collected data points were assigned a unique ID as described above but were followed by "w" for wetland points or "u" for upland points, and then a data point number (e.g., w-rc-01_w or w-rc-01_u). All potential wetlands were photo documented within the Study Area.

Waterbodies

All waterbodies within the Study Area, including those identified in the NWI and NHD datasets, were examined and documented if determined to be a waterbody. The key field characteristic to identify a waterbody is the presence of an ordinary high water mark (OHWM). The federal regulatory definition of the OHWM, 33 Code of Federal Regulations 328.3(c)(7) (2012), states the OHWM is "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

If present, the OHWM of each feature was delineated with a GPS. Linear drainages less than 10 ft wide were delineated with a single line along the centerline of the drainage, and the approximate width was recorded. Linear drainages equal or wider than 10 ft were delineated along each bank.

A geographic information systems technician then buffered these lines using the feature's recorded OHWM width.

Each delineated waterbody was assigned its own unique ID:

- linear drainages were assigned an "s", followed by delineator's initials and then a feature number (e.g., s-rc-01)
- open water/stock ponds were assigned an "o", followed by delineator's initials and then a feature number (e.g., o-rc-01)
- linear drainages identified in the field as belonging to one continuous feature were assigned the same ID with an additional alphabetic identifier at the end of their ID (e.g., s-rc-01a and s-rc-01b)

Non-waters of the United States

All NHD flowlines and NWI polygons that intersected the Study Area, but clearly did not meet the definition of a wetland or waterbody, were photo documented and a non-water point was collected. Such points were identified with a "no" followed by the delineator's initials and then a feature number (e.g., no-rc-01).

Jurisdictional Determination

In addition to evaluating the Study Area for features that met wetland and waterbody definitions, the likelihood of jurisdictional determination (determination) by the USACE was also assessed. This assessment was based on the professional opinion of the WEST delineator and review by senior wetland staff. Certain features are obviously jurisdictional and do not require further assessments (e.g., territorial seas, traditional navigable waters, interstate waters, and impoundments of these features). As previously noted in the Regulatory Background section, there have recently been both regulatory guidance changes as well as court decisions that are influencing how the USACE determines jurisdiction of wetlands and waterbodies. WEST utilized the best available information from the agencies to evaluate the jurisdictional determinations. Only the USACE can provide final jurisdictional determinations for wetlands and waterbodies.

The WOTUS definition further identifies features that are exempt from jurisdiction, including prior converted croplands, waste treatment systems, ditches (including roadside ditches), artificially irrigated areas, artificial lakes/ponds, artificial reflecting pools, waterfilled depressions, and swales and erosional features.

The delineator assigned a likely, potential, or unlikely jurisdictional status to the delineated wetlands and waterbodies based on professional judgment using these criteria. Only the USACE can make a formal jurisdictional determination.

As noted in the regulatory background section above, all wetland and waterbody features delineated should be considered likely Waters of the State of South Dakota.

RESULTS

Site Conditions

WEST biologists Grace Ray and Roy Cook visited the Study Area on May 13–17, 2024, and Roy Cook conducted a follow up visit on October 10–11, 2024. The Antecedent Precipitation Tool results indicated that rainfall was in the normal range at the time of fieldwork in May and was drier than normal in October; results are included in Appendix D.

Wetlands

Eight PEM wetlands were delineated within the Study Area (Figure 4, Table 1; Appendix A). Wetland vegetation was dominated by cattail (Typha angustifolia), prairie cordgrass (Spartina pectinata), and sedge (Carex spp.) species. Soils were primarily clay-loams with hydric indicators including redox dark surface, depleted below dark surface, and hydrogen sulfide. Six of these wetlands (w-gr-01, w-rc-02, w-rc-03, w-rc-04, w-rc-05, and w-rc-06) are in drainages at the low point between hillslopes near stream headwaters and are surrounded by both agricultural fields (corn [Zea mays] and wheat [Triticum spp.]) and rangelands. Four of these (w-gr-01, w-rc-02, wrc-04, and w-rc-05) are part of the same complex that eventually drains southeast into Olson Creek and Campbell Lake. Stock ponds are located just upstream of w-rc-02 and w-rc-05, and downstream of w-rc-03. The wetland at w-rc-03 also has a culvert at its upstream end, likely receiving tile drainage from the agricultural field to its south. One wetland (w-rc-01) is in an isolated depression impounded to the west and east by hillslopes, and to the north by a road berm. The wetland at w-rc-07 is located in a large depression surrounded by mature cottonwoods (Populus sp.) between agricultural fields and is itself used as a small corn plot. While hydric soils and wetland hydrology are present, the plant community of this wetland does not currently meet any of the hydrophytic vegetation indicators for the Great Plains Region. Further investigation was required, and the problematic hydrophytic vegetation procedure in Chapter 5 of the USACE Great Plains Regional Supplement (USACE 2010) was used to evaluate the altered plant community. Due to the stunted growth of corn stalks that were present and the occurrence of an obligate wetland species (red goosefoot; Chenopodium rubrum), hydrophytic vegetation was determined to be present.

Each wetland was evaluated to determine if there was a continuous surface connection to a traditional navigable water. Of the eight wetlands delineated, seven wetlands have a likely or potential continuous surface connection to Spring Creek, a relatively permanent water, and eventually connect to the Missouri River. One wetland (w-rc-01) is isolated and does not have a continuous surface connection to a relatively permanent water.

Table 1 provides a summary of wetland classifications of all wetlands and acreages of wetlands within the current Study Area. Detailed maps of wetland locations are provided in Appendix A. Wetland determination data forms and photographs of wetlands are provided in Appendix B.

	-	· · · ·		-	Water	-
Feature	Cowardian	Acres	Acres within	Jurisdictional	of the	
ID	Classification	Delineated	Survey Area	Determination ¹	State	Latitude/Longitude
w-gr-01	PEM	2.33	1.95	Likely	Likely	45.752003/-100.213477
w-rc-01	PEM	0.07	0.07	Unlikely	Likely	45.739076/-100.191512
w-rc-02	PEM	0.11	0.10	Likely	Likely	45.756364/-100.213213
w-rc-03	PEM	0.38	0.35	Potential	Likely	45.776106/-100.187260
w-rc-04	PEM	0.21	0.18	Likely	Likely	45.746235/-100.213561
w-rc-05	PEM	0.27	0.19	Likely	Likely	45.763522/-100.211539
w-rc-06	PEM	0.04	<0.01	Likely	Likely	45.767682/-100.172490
w-rc-07	PEM	4.62	4.62	Potential	Likely	45.769201/-100.183752

Table 1.Summary of all field delineated wetlands for the proposed Campbell County Wind Farm
2 Project, Campbell County, South Dakota.

^{1.} Determination based on WEST's professional judgment; formal jurisdictional determinations can only be made by the US Army Corps of Engineers.

ID = identification.

PEM = palustrine emergent.

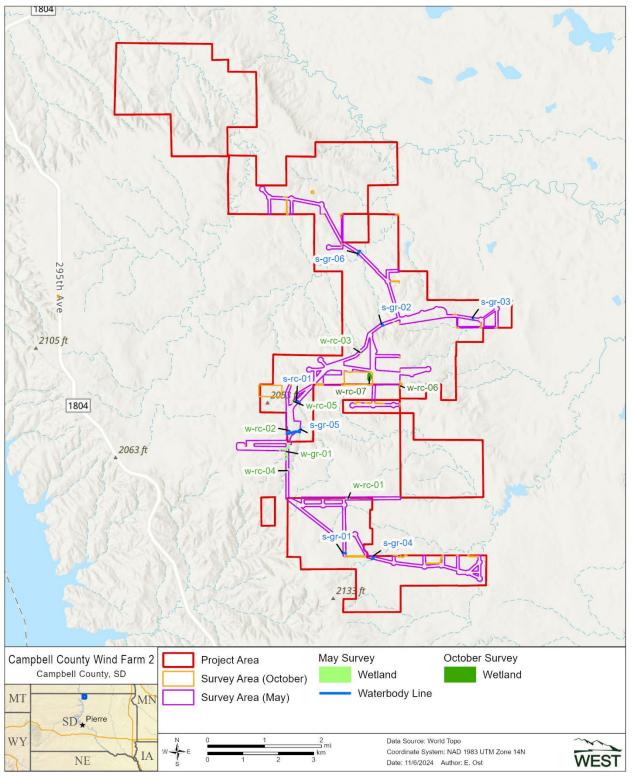


Figure 4. Delineated wetlands and waterbodies for the proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota.

Waterbodies

Seven streams were delineated within the Study Area (Figure 4, Table 2; Appendix A). No other waterbodies were identified. All streams were classified as intermittent. Two stream segments are parts of unnamed tributaries (UNT) to Spring Creek (s-gr-03 and s-gr-06) and five streams are segments of UNT to Olson Creek and Campbell Lake (s-gr-01, s-gr-02, s-gr-04, s-gr-05, and s-rc-01). Five stream segments (s-gr-01, s-gr-03, s-gr-04, s-gr-05, and s-gr-06) likely have a continuous surface connection to a traditional navigable water. Two stream segments (s-gr-02 and s-rc-01) potentially have a continuous surface connection to a traditional navigable water. It should be noted that s-gr-02 (Page 5 of Appendix A) does not extend the full width of the Survey Area due to a lack of an OHWM at both ends of the feature. Detailed maps of waterbody locations are provided in Appendix A; waterbody photographs are provided in Appendix C.

Table 2.Summary of all field delineated waterbodies for the proposed Campbell County Wind
Farm 2 Project, Campbell County, South Dakota.

			-	-	-	Water of	-
Feature Waterbody Linear		Jurisdictional the			the		
ID	Name ¹	Feet	Туре	Regime	Determination ²	State	Latitude/Longitude
s-gr-01	UNT ³	265.9	Stream	Intermittent	Likely	Likely	45.725182/-100.192996
s-gr-02	UNT ³	79.5	Stream	Intermittent	Potential	Likely	45.725182/-100.192996
s-gr-03	UNT ⁴	321.5	Stream	Intermittent	Likely	Likely	45.784661/-100.146074
s-gr-04	UNT ³	51.5	Stream	Intermittent	Likely	Likely	45.723879/-100.182516
s-gr-05	UNT ³	634.6	Stream	Intermittent	Likely	Likely	45.756009/-100.211462
s-gr-06	UNT ³	49.8	Stream	Intermittent	Likely	Likely	45.801534/-100.187620
s-rc-01	UNT ⁴	125.5	Stream	Intermittent	Potential	Likely	45.763954/-100.210279

^{1.} UNT=unnamed tributary.

^{2.} Determination based on WEST's professional judgment; formal jurisdictional determinations can only be made by the US Army Corps of Engineers.

 $^{\rm 3.}$ UNT to Olson Creek.

⁴ UNT to Spring Creek.

Non-waters of the United States

Thirty-two non-water points were recorded within the Study Area at locations evaluated and determined to be lacking wetland and waterbody characteristics. Most commonly, these drainages did not exhibit wetland characteristics or possess an OHWM as they were dominated by upland vegetation. Detailed maps of non-water point locations are provided in Appendix A; non-water point photographs are provided in Appendix E.

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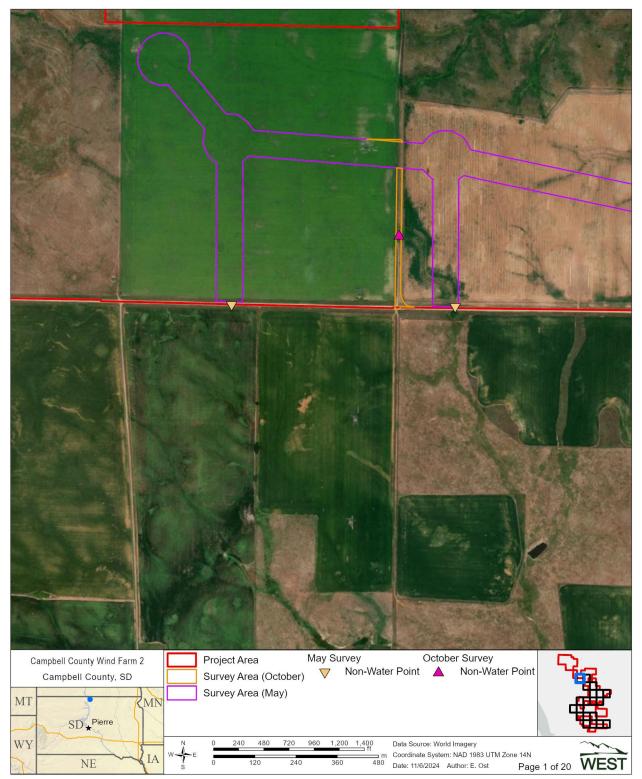
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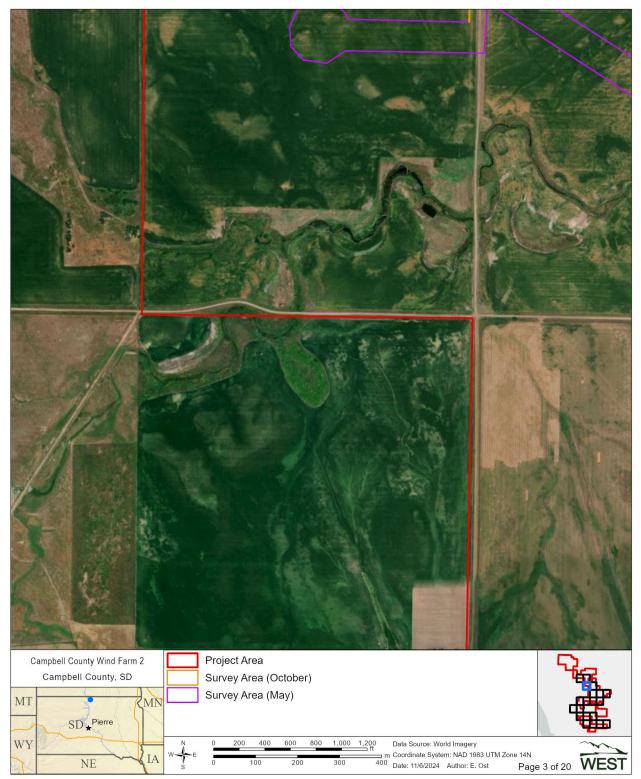
Appendix A. Field Delineated Wetland and Waterbody Maps for the Proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota



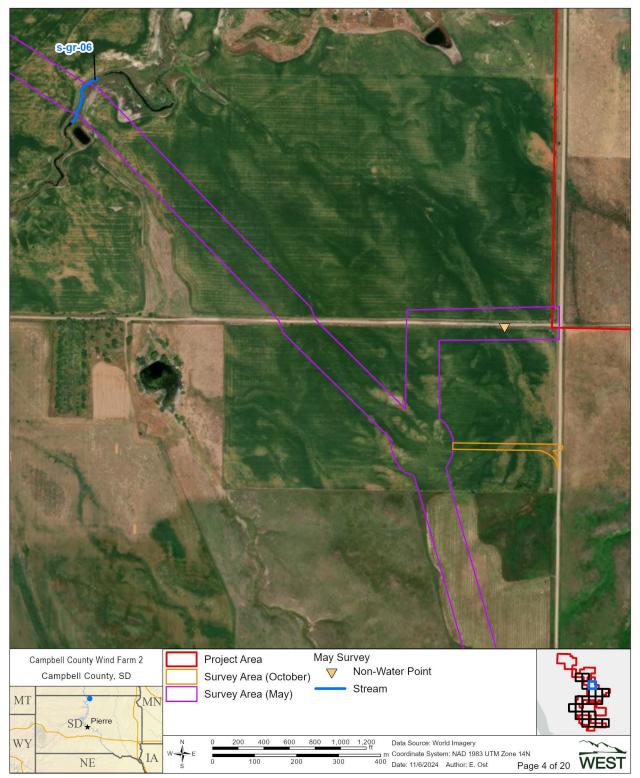
Appendix A. Location of wetland and waterbody features and non-water/non-wetland points within the proposed Campbell County Wind Farm 2 Project, Campbell County, South Dakota.



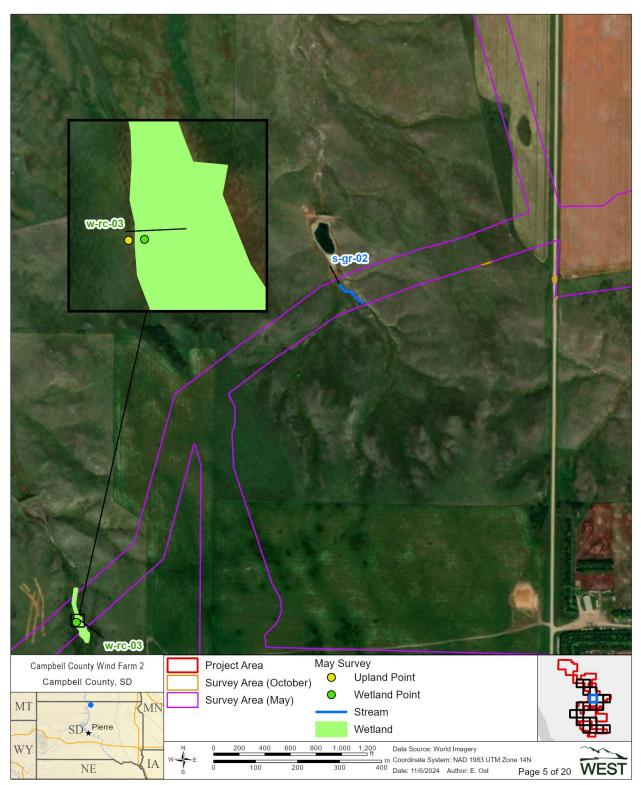
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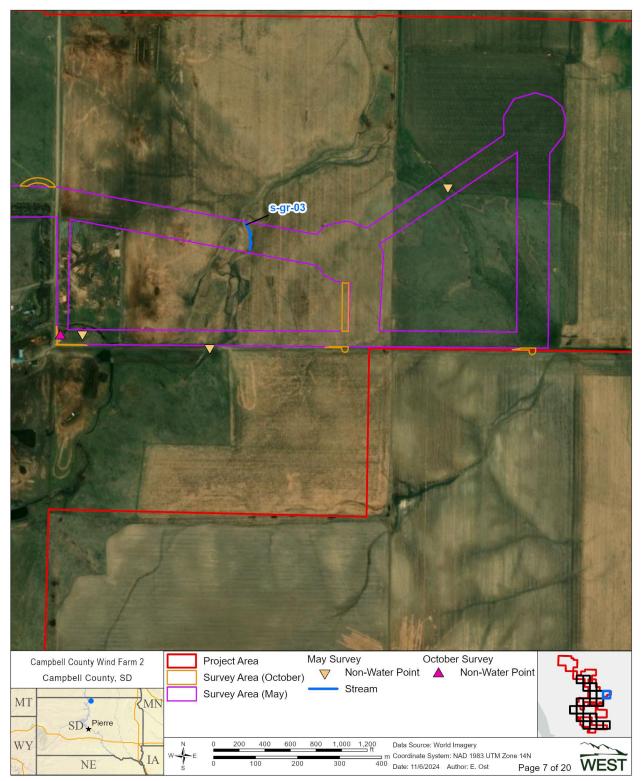
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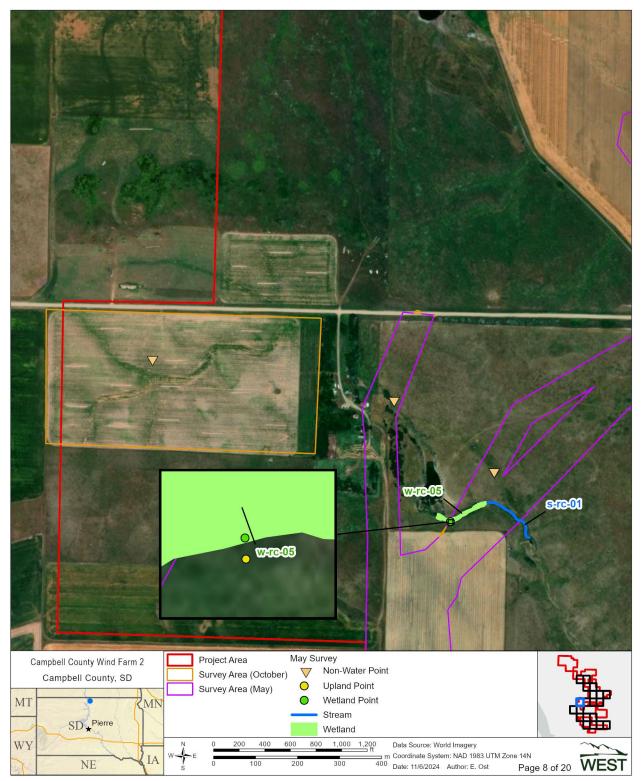
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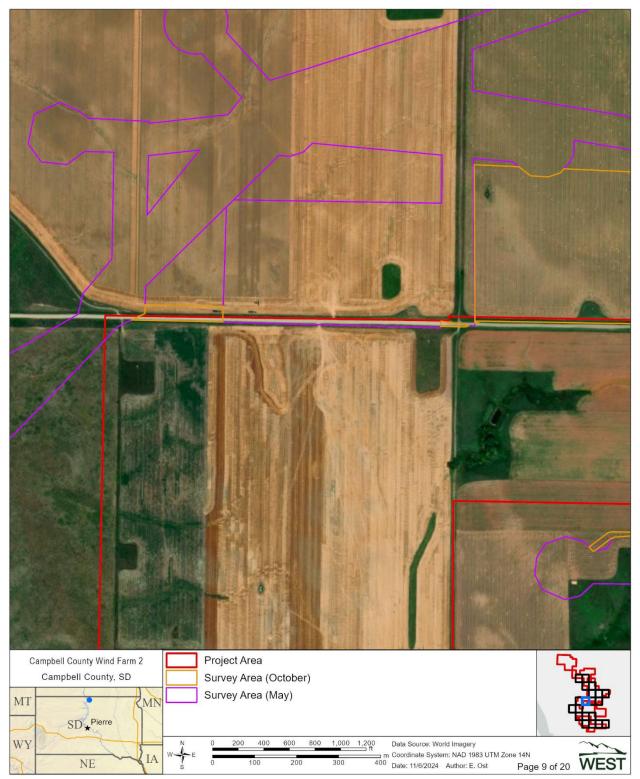
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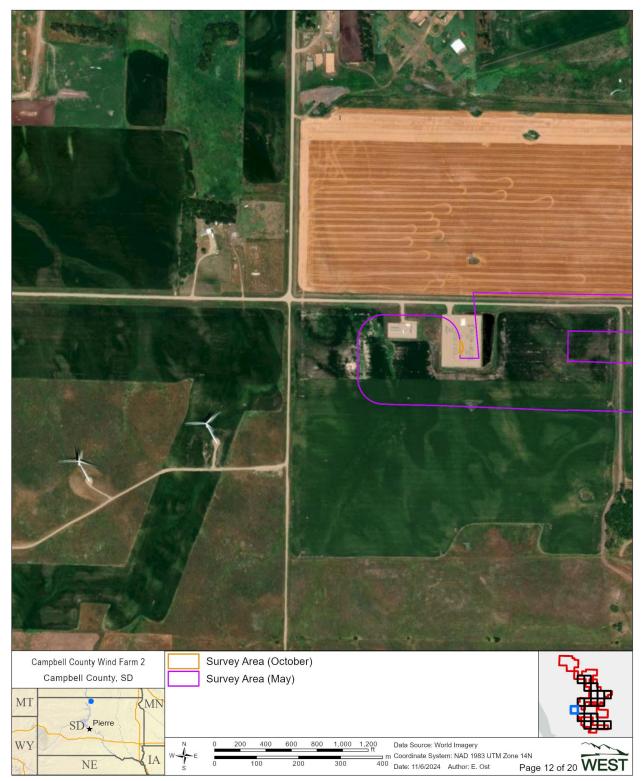
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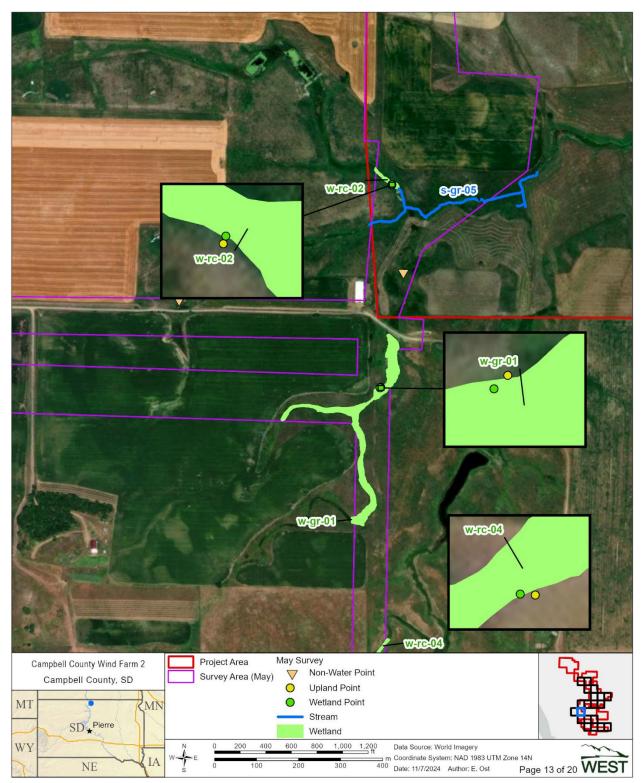
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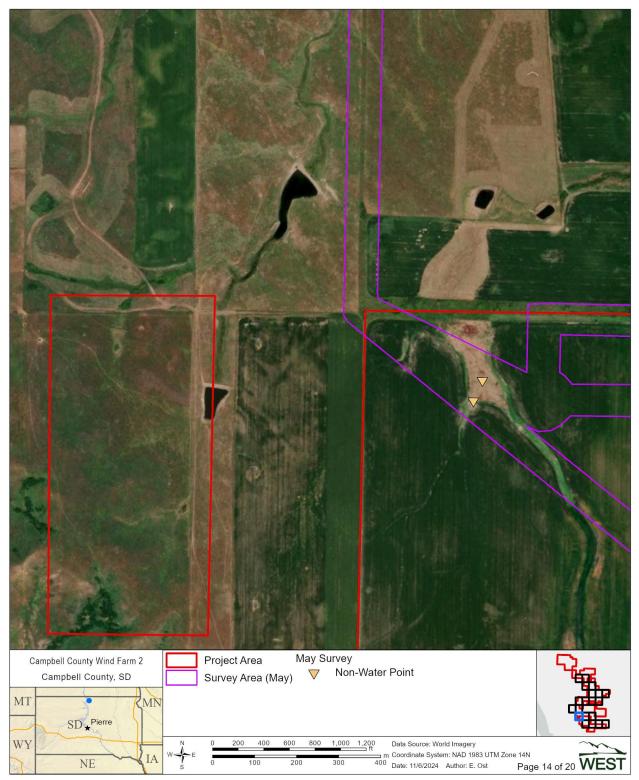
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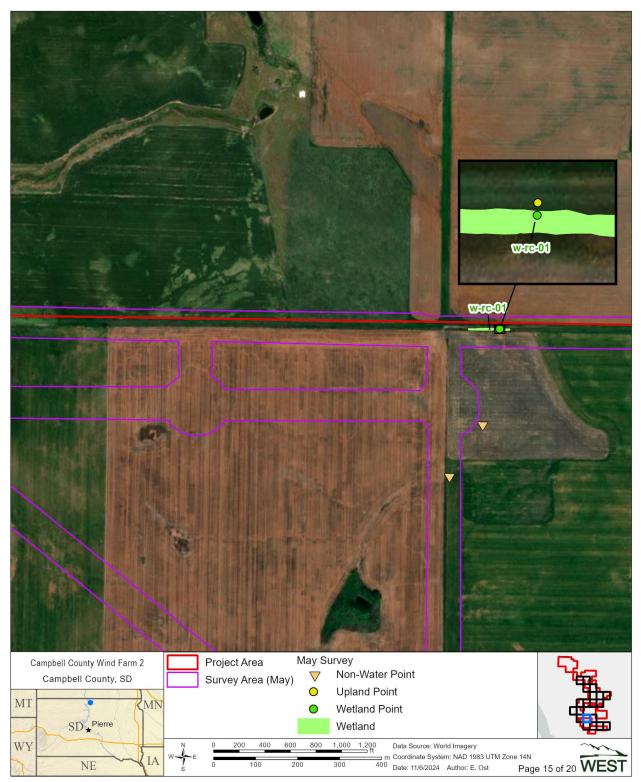
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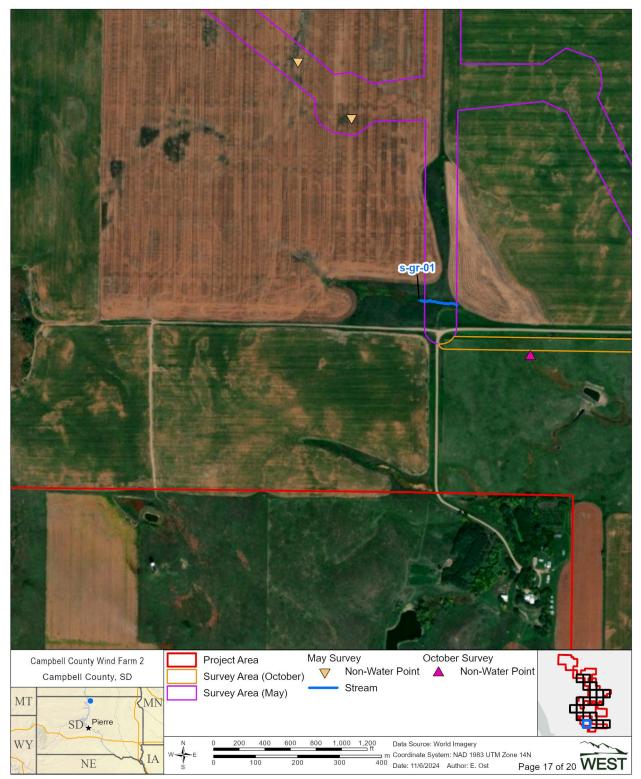
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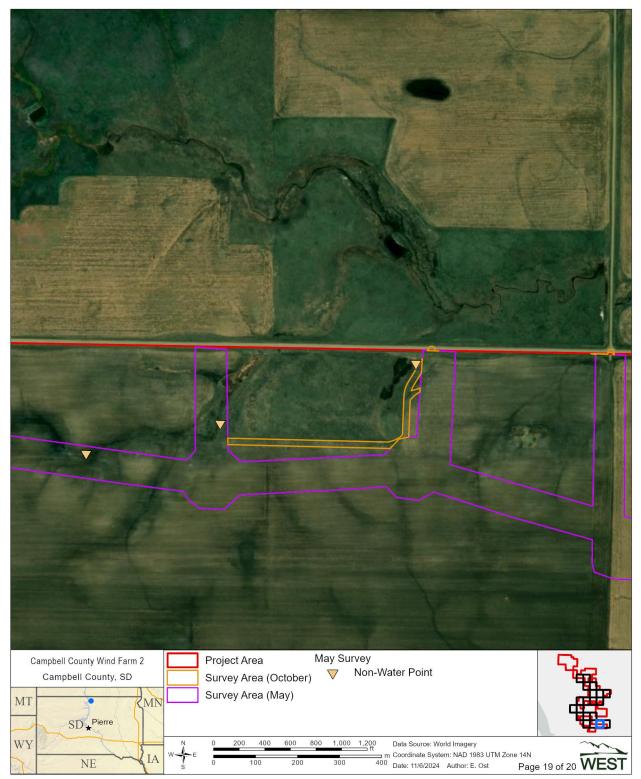
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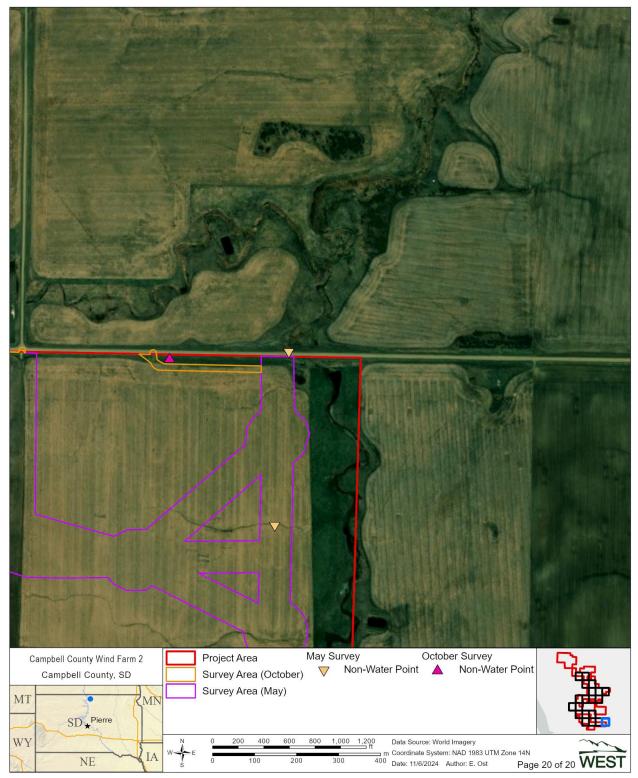
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Appendix B through Appendix E of the Wetland and Waterbody Report can be available upon request to WAPA