APPENDIX G

Water Resource Analysis Report

Water Resource Analysis

Philip Wind Project

Haakon County, South Dakota

Final Report

October 2022

Prepared for:

Philip Wind Partners, LLC

One South Wacker Drive, Suite 1800
Chicago, Illinois 60606

Prepared by:

Julia Fields, Todd Mabee, and Martin Piorkowski
Western EcoSystems Technology, Inc.
415 West 17th Street, Suite 200
Cheyenne, Wyoming 82001

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STUDY PARTICIPANTS

Todd Mabee	Senior Reviewer
Martin Piorkowski	Project Manager, Report Writer
Julia Fields	Report Writer
Ann Dahl	GIS Specialist
David Klein	Technical Editor
Alex Brazeal	Field Staff

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1 INTRODUCTION

Philip Wind Partners, LLC (Philip Wind) is considering development of the Philip Wind Project (Project) in central South Dakota (Figure 1.1). Philip Wind contracted Western EcoSystems Technology, Inc. (WEST) to conduct a water resource analysis. The objective of the analysis was to obtain spatial data on the location and extent of potentially jurisdictional water resource features within the August 2022 Project Area and the Study Area, a separate 2.0-mile buffer from the Project Area, and preliminarily characterize the types of wetlands and waterbodies. This desktop analysis is a detailed precursor to a more formal, complete field delineation.

2 PROJECT AREA

The Project is located approximately 14 miles north of the city of Philip in Haakon County, South Dakota (Figure 1.1). The Project Area encompasses approximately 68,318 acres (ac) within two level IV ecoregions: the Sub-humid Pierre Shale Plains and the Rivers Breaks (U.S. Environmental Protection Agency [USEPA] 2012). These ecoregions, historically dominated by grasslands, have been extensively converted for agricultural use (e.g., row crops and livestock grazing; USEPA 2012), and contain semi-permanent and seasonal wetlands, often referred to as prairie potholes.

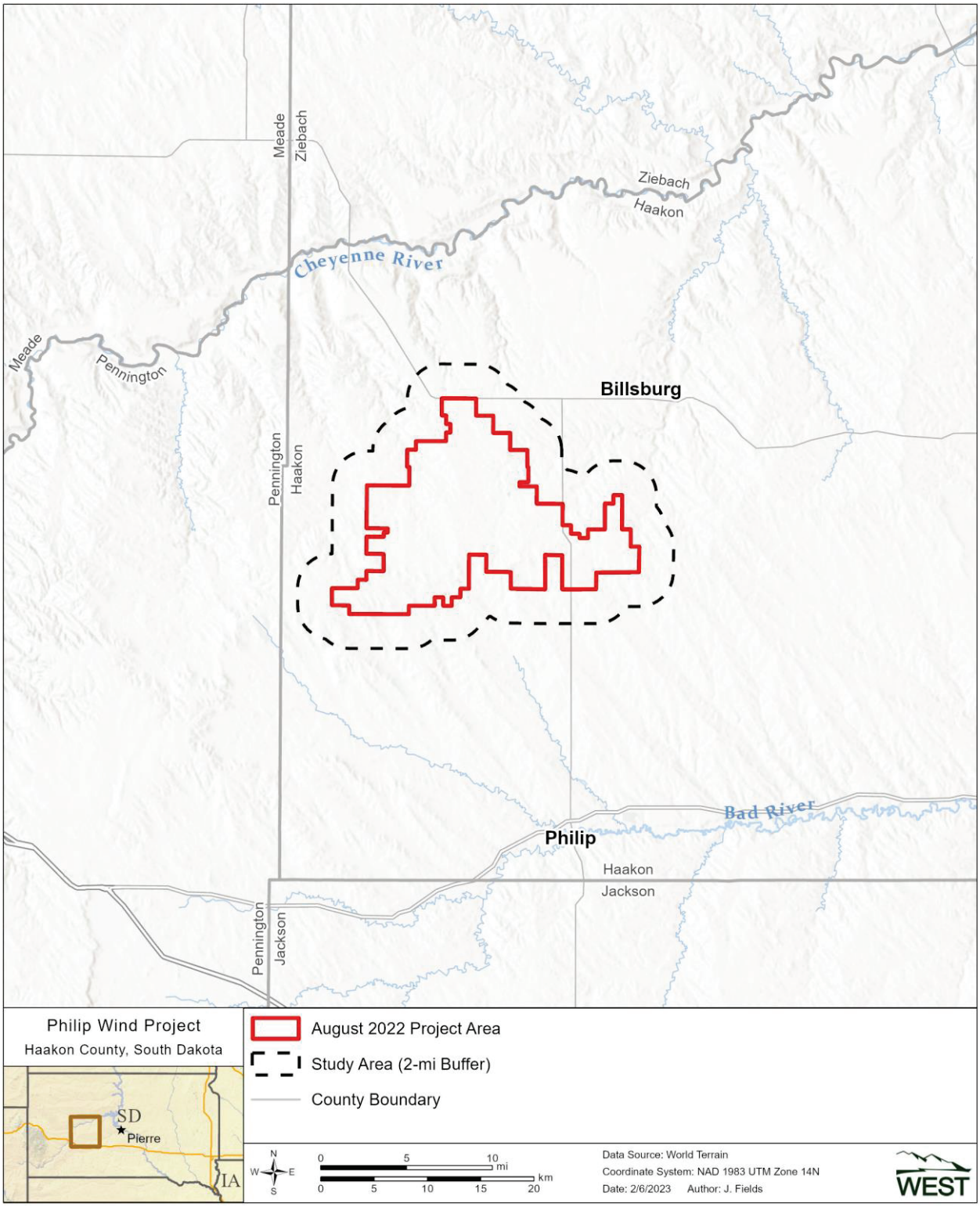

Figure 1.1. Location of the Philip Wind Project, Haakon County, South Dakota, 2022.

3 METHODS

WEST conducted a desktop review using U.S. Geological Survey (USGS) topographic maps, soil survey information from the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS 2019), U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (USFWS 2023), and National Hydrography Dataset (NHD) data (USGS 2023) for the Study Area.

These data were used to identify wetlands and waterbodies that may be regulated by the U.S. Army Corps of Engineers (USACE). The jurisdictional status of "Waters of the U.S." (WOTUS) are defined by the USACE and Environmental Protection Agency 1986 and *Rapanos* decision (USEPA 2008). WOTUS are defined as any type of waterbody or adjacent wetland that is or could flow into navigable waters within the U.S. The *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) emphasize a three-parameter approach to identify wetlands that may be federally regulated, including the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Additionally, the following guidelines have been published (Lichvar and McColley 2008) to evaluate whether drainage features have an ordinary high water mark (OHWM) and may therefore be potential WOTUS:

- presence of a defined bed and bank
- flowing water
- aerial imagery evidence
- change in vegetative communities
- evidence of periodic flow (e.g., litter, debris, natural scour line, shifted gravel, eroded banks)

In addition to the desktop analysis, a site reconnaissance was completed October 13–14, 2022, from publicly accessible roads. The purpose of the site reconnaissance was to field verify the NWI and NHD features from the desktop analysis at a high level. Features inconsistent with desktop analysis results were documented if observed while traveling publicly accessible roads.

4 RESULTS

4.1 National Wetlands Inventory

The results of the desktop NWI review are provided in Table 4.1 and Figure 4.1. NWI depicts 1,798.7 acres of potential wetlands within the Project Area and 2,535.9 acres within the Study Area. Freshwater emergent wetlands were the most common NWI category. Locations where NWI features were not present during the site reconnaissance were noted as "no feature" (Figure 4.1).

Table 4.1. National Wetland Inventory Data at the Philip Wind Project, Haakon County, South Dakota.

NWI Type	Project Area (acres)	Study Area (acres)
Freshwater Emergent Wetland	750.5	1,050.5
Riverine	681.6	990.8
Freshwater Pond	333.1	433.0
Freshwater Forested/Shrub Wetland	33.5	31.6
Lake	--	30.0
Total[1]	**1,798.7**	**2,535.9**

[1] Sums of values may not add to total value shown, due to rounding

4.2 National Hydrography Dataset

The results of the desktop NHD review are provided in Table 4.2 and Figure 4.2. NHD indicated 377.6 miles of waterways in the Project Area and 508.5 miles in the Study Area. NHD waterbodies and NWI riverine features were nearly identical, except that NHD data differentiated agricultural infrastructure (artificial path and connector) from intermittent and perennial streams/rivers. Several named drainages are present within the Project Area and Study Area. All drainages are tributaries to the Cheyenne River and the Bad River. Locations where NHD features were not present during the site reconnaissance were noted as “no feature” (Figure 4.2).

Table 4.2. National Hydrography Data at the Philip Wind Project, Haakon County, South Dakota.

NHD Type	Project Area (miles)	Study Area (miles)
Intermittent	331.2	444.7
Artificial Path	39.0	45.0
Perennial	7.4	18.7
Connector	--	0.1
Total	**377.6**	**508.5**

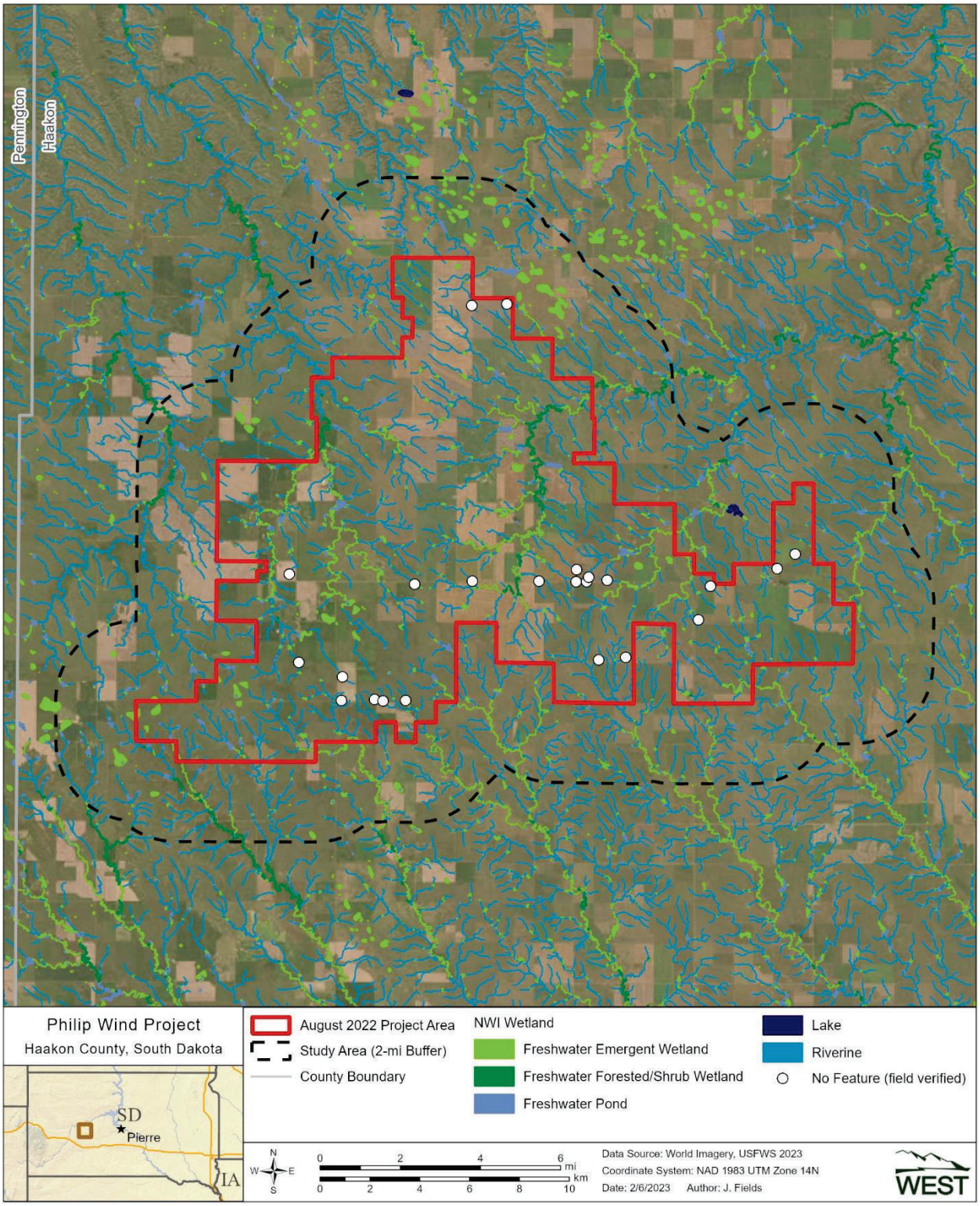

Figure 4.1. National Wetland Inventory Data at the Philip Wind Project, Haakon County, South Dakota, 2022.

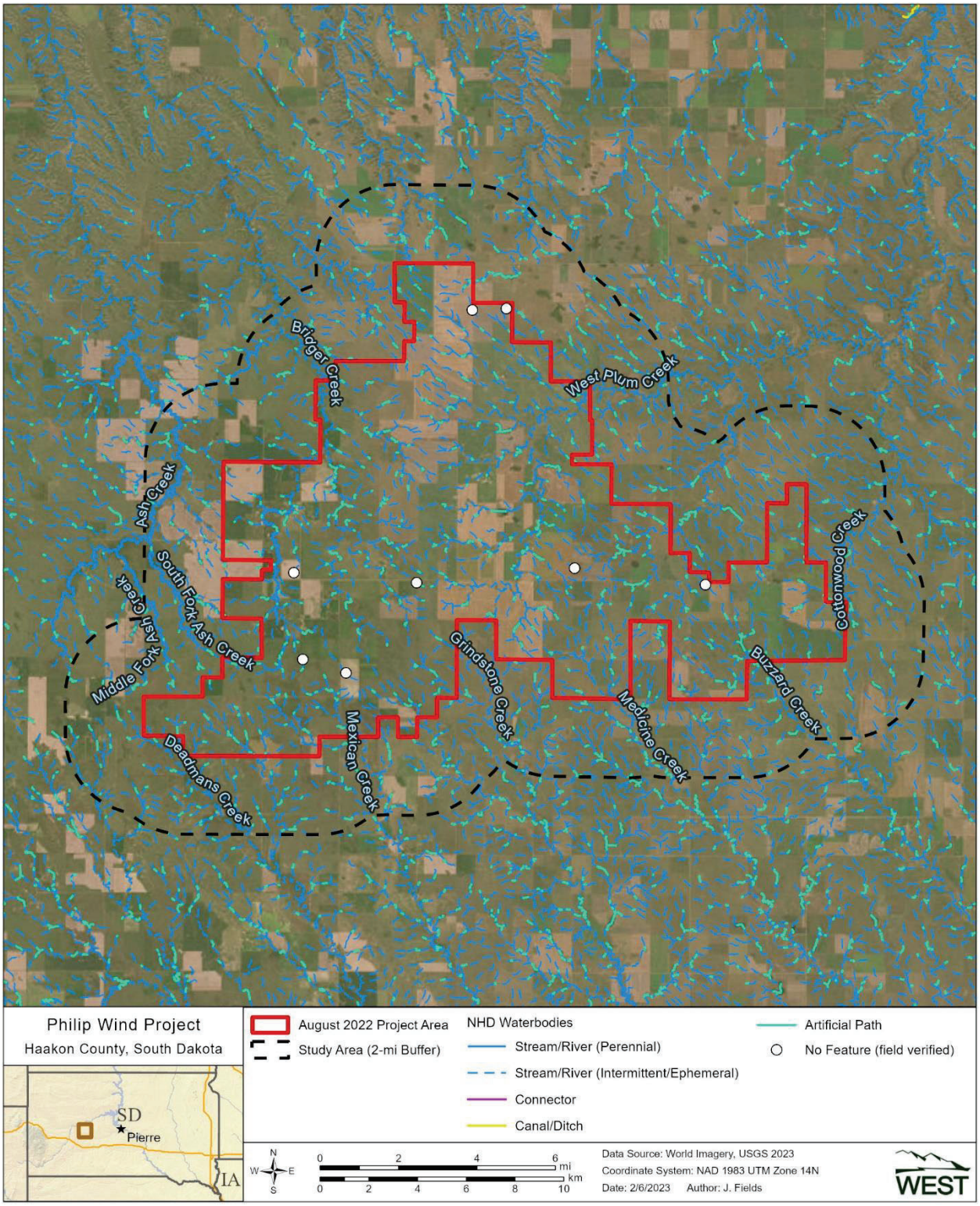

Figure 4.2. National Hydrography Data at the Philip Wind Project, Haakon County, South Dakota, 2022.

4.3 Soils

The Project Area is underlain by at least 50 soil-mapping units (USDA NRCS 2019), three of which (Egas silty clay loam, Hoven silt loam, and Kolls clay) are identified as hydric soils based on the hydric rating and comprise 0.8% (562.9 ac) of the Project Area. The Study Area is underlain by 62 soil-mapping units (USDA NRCS 2019), three of which are identified as hydric soils based on the hydric rating and comprise 1.1% (943.9 ac) of the Study Area (Figure 4.3).

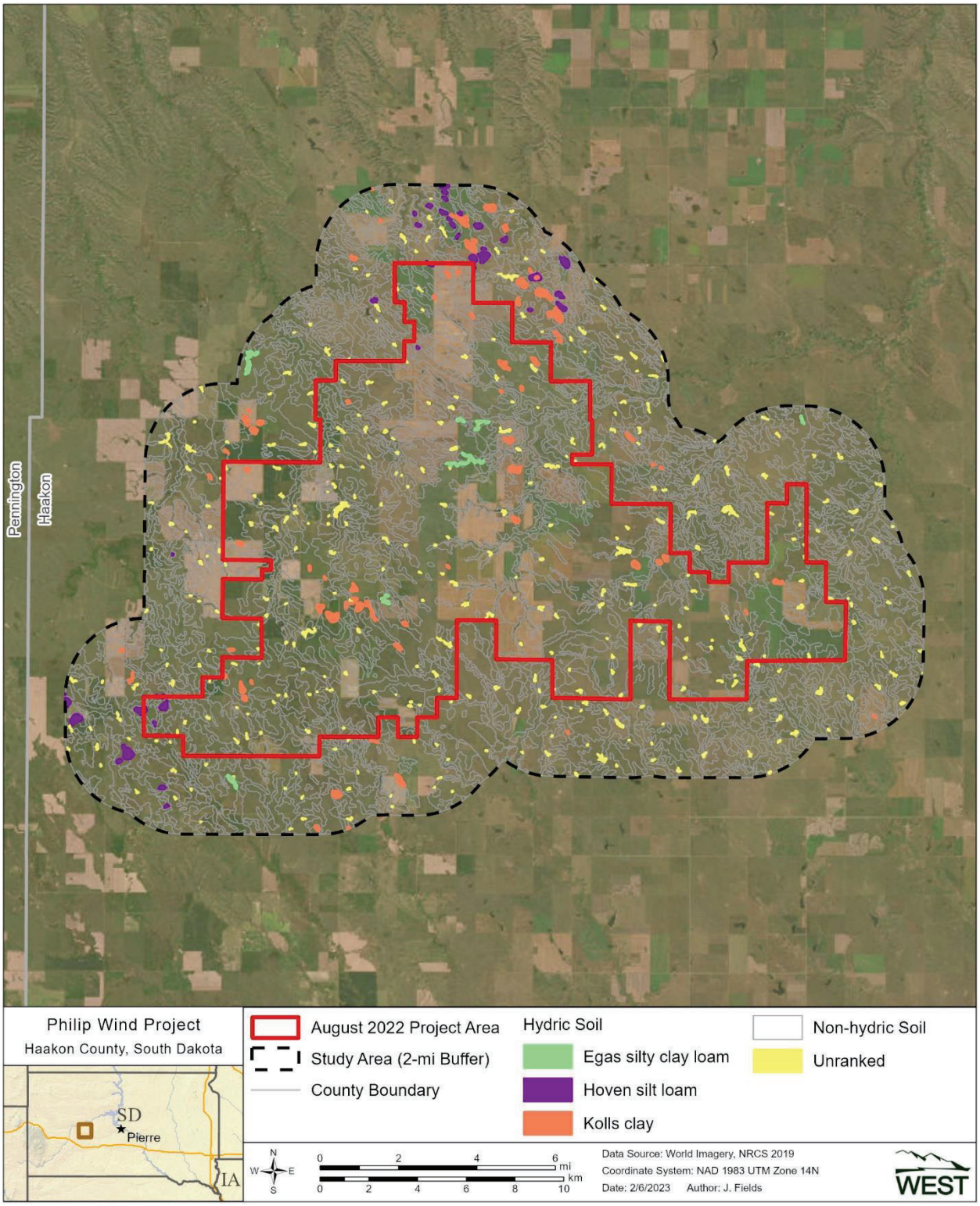

Figure 4.3. National Soil Data at the Philip Wind Project, Haakon County, South Dakota, 2022.

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