

APPENDIX H

Grassland Habitat Assessment Report

**Grassland Assessment
Philip Wind Project
Haakon County, South Dakota**

**Final Report
July 2018 and September 2022**

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TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	PROJECT AREA.....	1
3	METHODS	3
3.1	Desktop Analysis	3
3.2	Field Surveys.....	3
3.3	Post-Field Survey Processing.....	4
4	RESULTS.....	4
5	REFERENCES.....	6

LIST OF TABLES

Table 4.1. Summary of sod type by acres and corresponding percent of total grasslands and Project assessed during field surveys completed in 2018 and 2022 at the Philip Wind Project in Haakon County, South Dakota.	4
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LIST OF FIGURES

Figure 1.1 Location of the Philip Wind Project in Haakon County, South Dakota.	2
Figure 4.1. Grassland sod types for grassland parcels assessed during field surveys completed in 2018 and 2022 at the Philip Wind Project in Haakon County, South Dakota.	5

1 INTRODUCTION

Philip Wind Partners, LLC (Philip Wind) is considering development of the Philip Wind Project (Project) in central South Dakota. Philip Wind contracted Western EcoSystems Technology, Inc. (WEST) to conduct an updated grassland assessment within the August 2022 Project Area (Figure 1.1). Bauman et al. (2018) defined undisturbed land as soil that has not been mechanically manipulated or has not experienced “iron in the ground” practices and the authors refer to undisturbed grasslands as native prairie. Bauman (2021) later described undisturbed grasslands as ‘unbroken’ grasslands. For this report we refer to native prairie as unbroken sod and other grasslands as broken sod.

The objective of this study was to identify grassland parcels and categorize the sod type of each parcel as either unbroken or broken sod. This report presents the combined results of a previous grassland assessment conducted for the Project during July 2018 (Chodachek and Moratz 2018). This assessment, completed in September 2022 within the August 2022 Project Area only, includes unsurveyed areas from shifts in the Project area since the Chodachek and Moratz (2018) assessment.

2 PROJECT AREA

The Project is located approximately 14 mi 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.

Topography within the Project Area is gently rolling to flat. The primary land cover within the Project Area is grassland/herbaceous and cultivated crops (NLCD 2019). Wetlands are relatively evenly dispersed throughout the Project Area and are mainly classified as freshwater emergent and freshwater pond (NWI 2023).

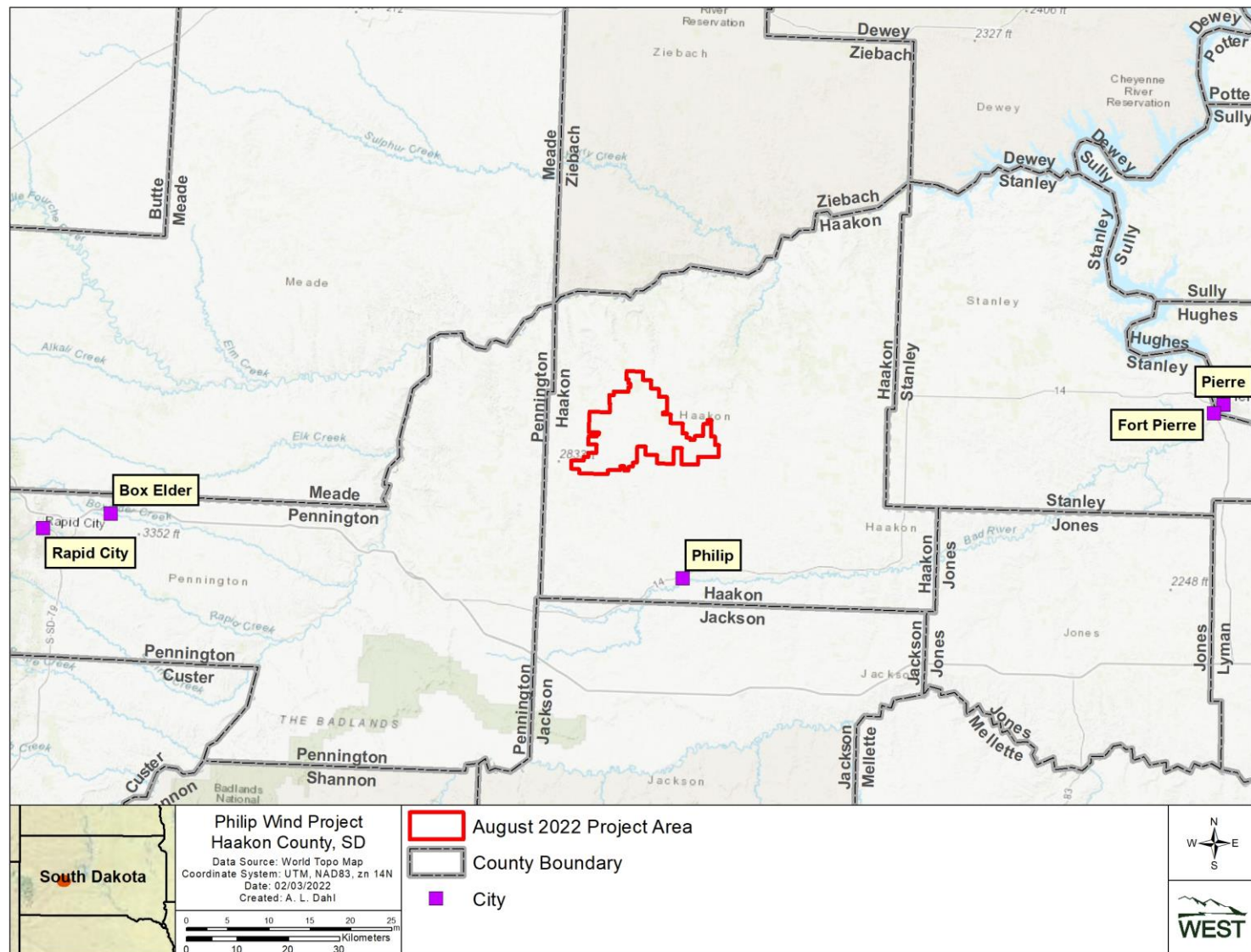


Figure 1.1 Location of the Philip Wind Project in Haakon County, South Dakota.

3 METHODS

The grassland habitat assessment was conducted using a two-stage process: a desktop analysis followed by field surveys in areas not surveyed in 2018 (Chodachek and Moratz 2018).

3.1 Desktop Analysis

The desktop analysis included a review of digital data within the Project Area to map and categorize potential grasslands by sod type (broken or unbroken grasslands; Bauman 2021). Broken sod type is defined as disturbed or mechanically manipulated ground (Bauman et al. 2018). Broken sod is characterized by the presence of features indicating mechanized cultivation, such as rock clearing, abrupt field edges, straight line features (indicating plowing, disking, harvesting, or planting), or presence of any other features indicating human disturbance to the sod. Unbroken sod is characterized by the absence of these features indicating no human-caused breaking of the sod (Bauman et al. 2018, Bauman 2021).

A desktop analysis of existing land use/land cover features within the Project Area was completed using an overlay of existing land cover data (National Land Cover Database 2019, USDA National Agricultural Statistics Service 2021) and the South Dakota native habitat digital layer “Quantifying Undisturbed (Native) Lands in Western SD: September 2020 Updated Data Files, GIS Layers, Geodatabase” (Bauman et al. 2020) to create initial grassland parcels. A land cover analysis was completed on the combined results of these data layers and manually reviewed using the current (U.S. Department of Agriculture [USDA] 2022).

The desktop analysis resulted in creation of a digital data layer of parcels classified as “grassland” or “other” (i.e., non-grass areas such as cultivated cropland, roads, barren areas, development, wetlands, forests, and shrub/scrub). Each grassland parcel was further categorized as broken or unbroken (using the previously mentioned definitions) and was given a unique identifier (Grassland ID) used on maps and datasheets. In the event that there were smaller areas within each original parcel of a different classification or category, these areas were manually digitized and reclassified as appropriate. The geographical information system specialist provided maps showing all grassland parcels, Grassland ID, roads, cities, and land access information for the field validation stage.

3.2 Field Surveys

The second stage included field validation of desktop analysis results including the identification of any new grassland areas or reclassification of sod types. A biologist conducted surveys by walking a large portion of the grassland parcel and visually assessing the grasslands. If access was not granted to a land parcel, the visual survey was conducted from public roads using binoculars and a high-powered spotting scope. For each grassland parcel the sod type (broken, unbroken), tree/shrub presence, field edge changes, rock piles, human disturbance such as buildings, and linear features such as disking, harvesting, plowing, or planting were recorded.

Representative photographs were taken to document the status and features of the grassland parcels.

3.3 Post-Field Survey Processing

The grassland digital data layer created during the desktop review was updated using results from the field survey data. The datasheets from the field survey were entered into a database and linked to the grassland features digital data layer based on the Grassland ID. Each grassland parcel categorized as unbroken was rechecked against historic 1955 aerial imagery from Historic Aerials (<https://www.historicaerials.com/>). If evidence of tillage was found in the aerial imagery, the status of the grassland feature was changed to broken.

4 RESULTS

Field validation surveys were completed September 11 – 14, 2022. The Project Area was composed of approximately 27,677.7 ac (40.5% of the Project Area) of grassland, of which approximately 12,191.9 ac (17.9% of the Project) were categorized as broken and 14,914.6 ac (21.9% of the Project) as unbroken (Table 4.1, Figure 4.1). Surveys were not completed at 2.1% of the grasslands due to lack of access.

Table 4.1. Summary of sod type by acres and corresponding percent of total grasslands and Project assessed during field surveys completed in 2018 and 2022 at the Philip Wind Project in Haakon County, South Dakota.

Sod Type	Acres	% of Total Grassland	% of Project
unbroken sod	14,914.6	53.9	21.9
broken sod	12,191.9	44.0	17.9
Not surveyed-no access	571.3	2.1	0.8
Total¹	27,677.7	100	40.5

¹. Totals may not equal values shown due to number rounding.

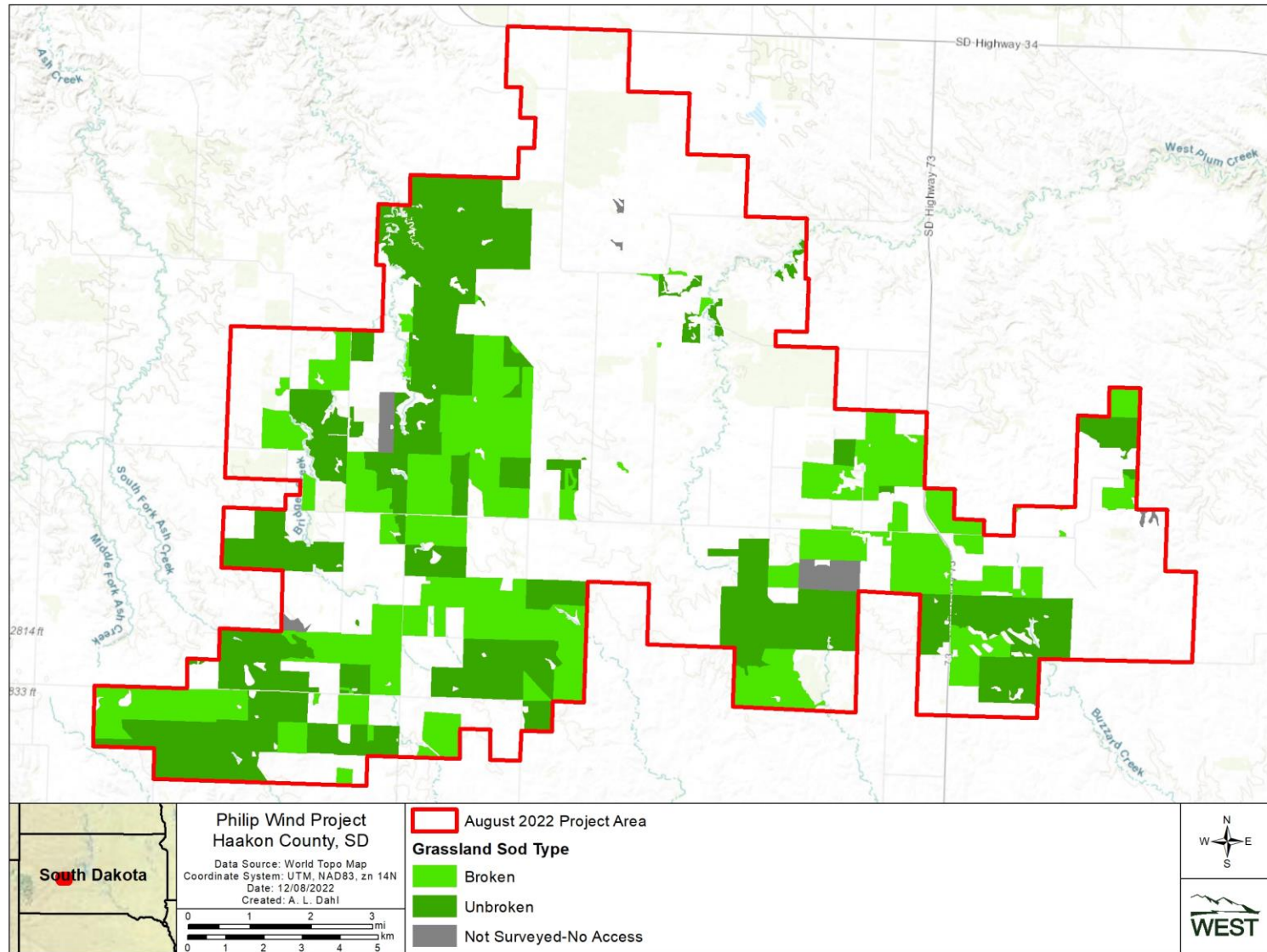


Figure 4.1. Grassland sod types for grassland parcels assessed during field surveys completed in 2018 and 2022 at the Philip Wind Project in Haakon County, South Dakota.

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