

**Dakota Skipper and Poweshiek Skipperling  
Butterfly Habitat Survey  
Dakota Range III Wind Project  
Grant and Roberts Counties, South Dakota**

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**Final Report**

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## **INTRODUCTION**

Western EcoSystems Technology, Inc. (WEST) completed a habitat and field assessment survey for the federally threatened Dakota skipper (DASK; *Hesperia dacotae*) and federally endangered Poweshiek skipperling (POSK; *Oarisma poweshiek*) for the proposed Dakota Range III Wind Project (Project) in Grant and Roberts counties, South Dakota (Figure 1). The purpose of the habitat and field assessment was to determine where the species are likely to occur to help inform siting of facilities to avoid risk, or identify areas that may warrant presence/absence surveys to ensure no impact.

The habitat and field assessment was completed in accordance with the guidance and habitat definitions provided in the U.S. Fish and Wildlife Service's (USFWS) *Guidance for Interagency Cooperation under Section 7(a)(2) of the Endangered Species Act for the Dakota Skipper, Dakota Skipper Critical Habitat, and Poweshiek Skipperling Critical Habitat Version 1.1* (Guidance; USFWS 2016a) and direction received during an October 2017 meeting with the South Dakota Game, Fish and Parks, and the USFWS.

### **DASK and POSK Ecology, Listing Status, and Critical Habitat**

DASK and POSK are federally listed butterfly species under the Endangered Species Act (ESA; 16 United States Code Section 1538 1973, USFWS 2014a). Both butterfly species require tracts of native prairie with an adequate number of forbs as nectar sources. Localized conservation efforts focus on management of grasslands for native prairie vegetation, including research on prescribed burn and livestock grazing practices, as well as protection of remaining tracts of undisturbed (unbroken) prairie habitats (USFWS 2014a, 2014b, 2015). DASK is known, or believed, to occur in both counties intersected by the Project (USFWS 2014a, 2016b). The POSK may have been extirpated from South Dakota within the last 10 years (USFWS 2014b); however, potential suitable habitat is still present in both counties (USFWS 2013).

USFWS-designated Critical Habitat for the DASK is located approximately 0.7 miles (mi; 1.0 kilometers [km]) to the northeast of the Project (80 Federal Register [FR] 190: 59248–59384 2015; Figure 2). In addition, designated Critical Habitat for the POSK is located about 9.0 mi (14.5 km) to the northwest of the Project (80 FR 190: 59248–59384 2015). There is no designated Critical Habitat or known occurrences of either species within the Project area (Figure 2). Additionally, there are no known current populations of POSK in South Dakota (USFWS 2014b).



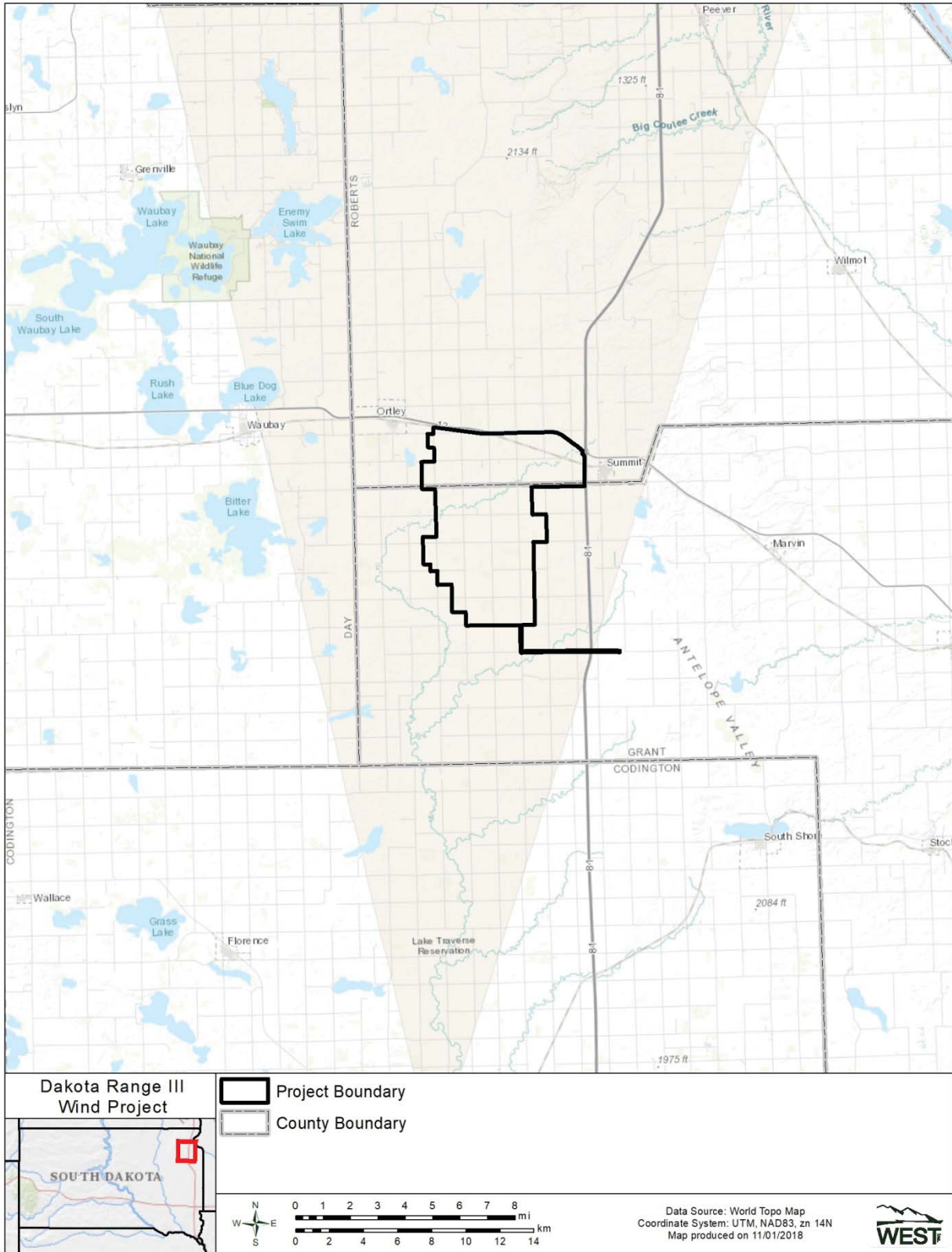


Figure 1. Location of the proposed Dakota Range III Wind Project in Grant and Roberts counties, South Dakota.

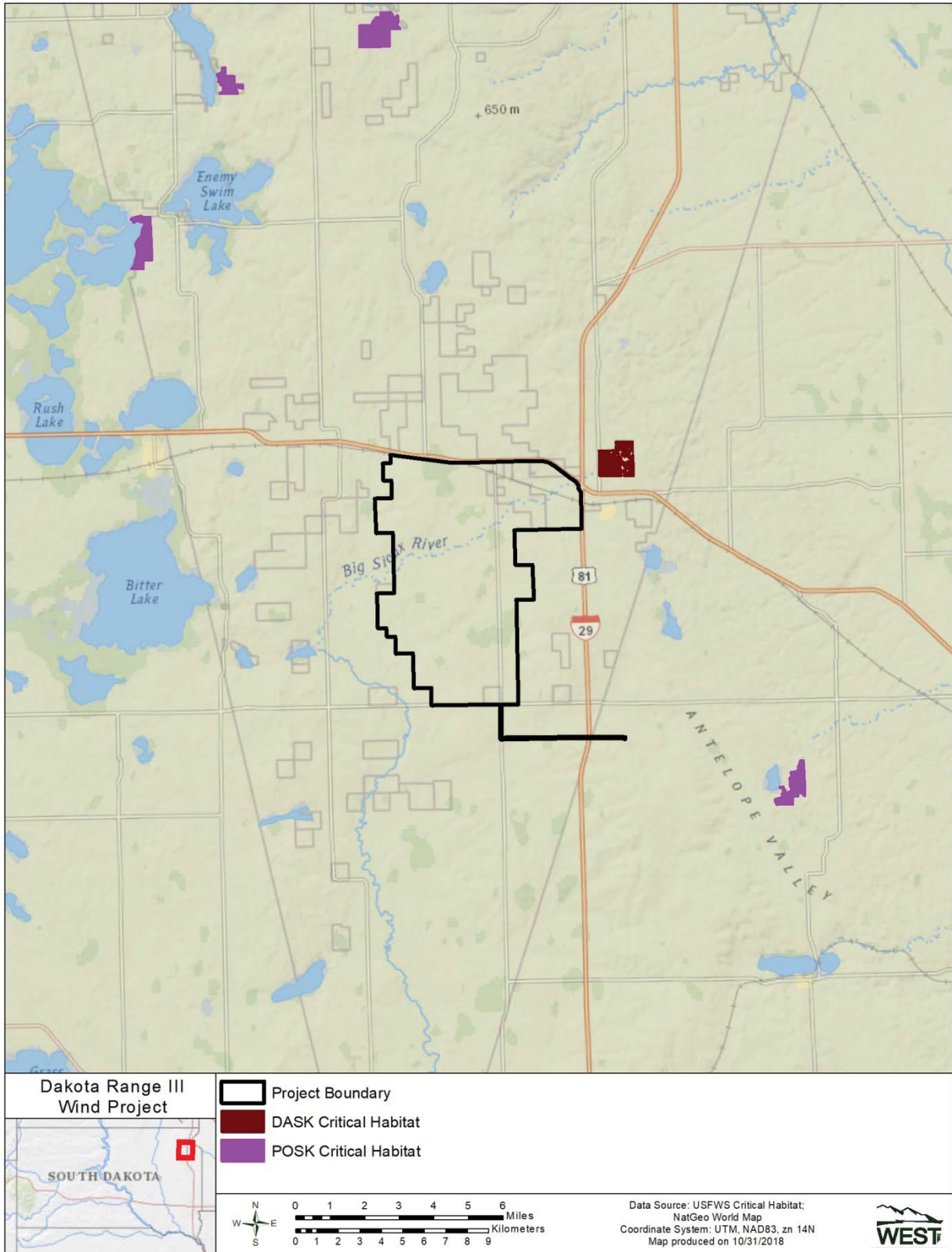


Figure 2. Dakota skipper and Poweshiek skipperling US Fish and Wildlife Service Critical Habitat in the vicinity of the proposed Dakota Range III Wind Project in Grant and Roberts counties, South Dakota.

## PROJECT AREA

The approximately 18,740-acres (ac) Project is located in the Big Sioux Basin Level IV Ecoregion within the Northern Glaciated Plains Level III Ecoregion (US Environmental Protection Agency 2016). The predominant land cover/use types within the Project area consist of approximately 55.6% cultivated crops and 34.7% herbaceous (grassland; US Geological Survey [USGS] National Land Cover Database [NLCD] 2011, Homer et al. 2015; Figure 3). The remaining land cover/use types individually account for less than 6.0% of the Project and include developed areas (5.4%), emergent herbaceous wetlands (1.4%), hay/pasture (1.2%), open water (0.8), deciduous forest (0.6), barren land (0.3%), and shrub scrub (less than 0.1%; USGS NLCD 2011, Homer et al. 2015). The most common cultivated croplands in 2017 were corn (*Zea mays*) and soybeans (*Glycine max*; US Department of Agriculture [USDA] National Agricultural Statistics Service [NASS] 2018). Using the “Quantifying Undisturbed (Native) Lands in Eastern South Dakota: 2013” digital data layer (Bauman et al. 2016) there is an estimated 3,058 ac of potentially undisturbed (unbroken) grassland features within the Project; however, some of these grasslands have been converted to other land types since the data layer was created and this was updated as part of the desktop and field review.

## METHODS

### USFWS Guidance Habitat Definitions

#### *Dakota Skipper*

According to the USFWS Guidance (USFWS 2016a) DASK habitat can be categorized into the two general types described below.

Type A: Typically occurs in wet-mesic portions of grasslands in North Dakota, but may occur in South Dakota. The indicator nectar plant species within this habitat type are prairie lily (*Lilium philadelphicum*), bluebell bellflower (*Campanula rotundifolia*), and mountain death camas/smooth camas (*Zigadenus elegans*), along with the host plants of native warm season grasses such as little bluestem (*Schizachyrium scoparium*).

Type B: More prevalent in South Dakota, includes native warm season grass host plant species such as prairie dropseed (*Sporobolus heterolepis*), little bluestem, and sideoats grama (*Bouteloua curtipendula*), along with a high diversity and abundance of native flowering plants for nectar. The native forbs typical of this habitat type include purple coneflower (*Echinacea purpurea*), purple prairie clover (*Dalea purpurea*), white prairie clover (*D. candida*), yellow sundrops (*Calylophus serrulatus*), prairie groundsel (*Packera plattensis*), groundplum milkvetch (*Astragalus crassicaarpus*), eastern pasqueflower (*Pulsatilla patens*), old man’s whiskers (prairie smoke; *Geum triflorum*), western silver aster (*Symphotrichum sericeum*), dotted blazing star (*Liatris punctata*), tall blazing star (*L. aspera*), meadow zizia/heartleaf golden alexanders (*Zizia aptera*), blanket flower (*Gaillardia sp.*), prairie sagewort (*Artemisia frigida*), and leadplant (*Amorpha canescens*). Of these, purple coneflower is often one of the main forb species.



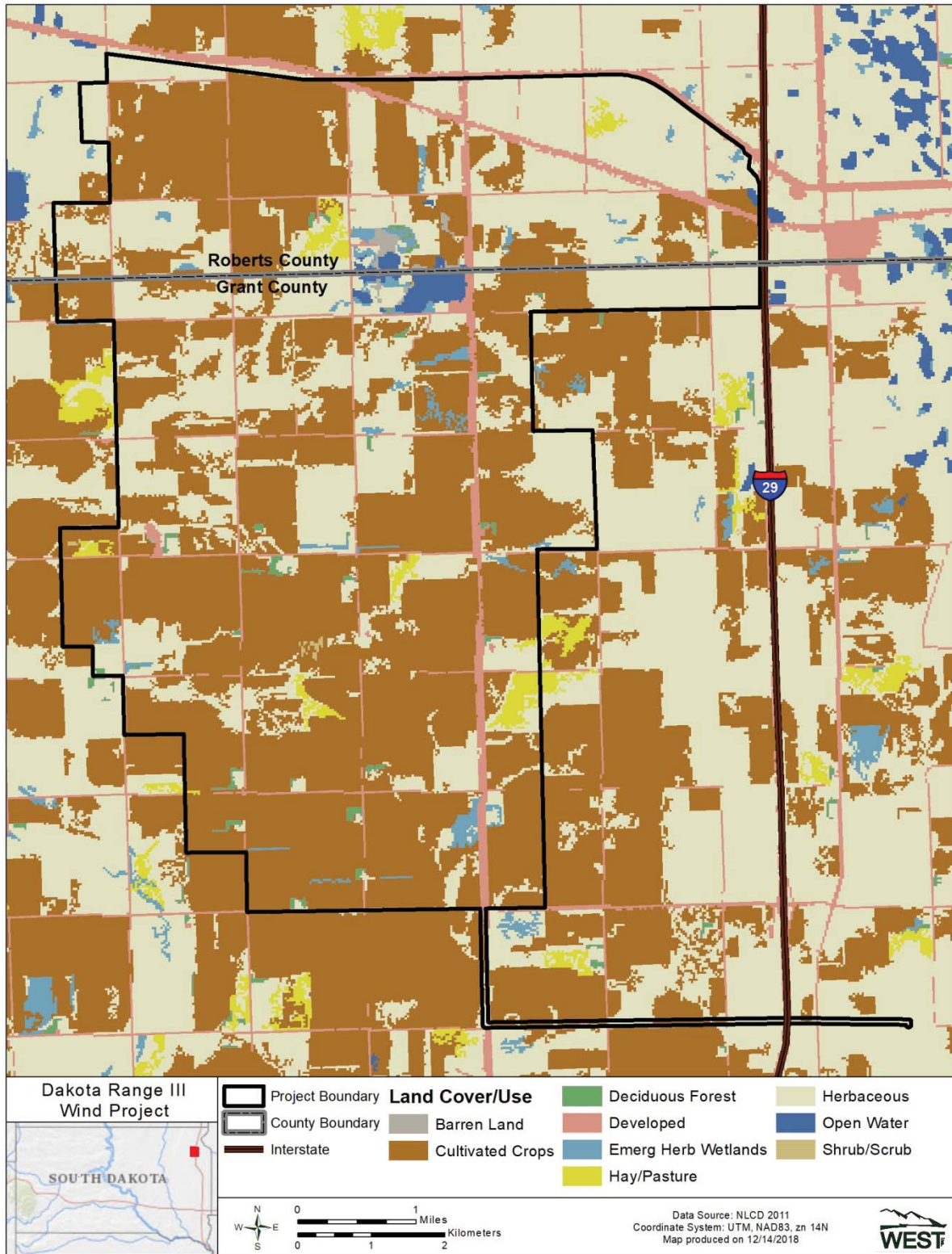


Figure 3. Land cover/use types within the proposed Dakota Range III Wind Project in Grant and Roberts counties, South Dakota (Sources: US Geological Survey National Land Cover Database 2011, Homer et al. 2015).

### *Poweshiek Skipperling*

POSK habitat types are similar to the Type A DASK habitat in that they are characterized by a high diversity of native grasses and forbs in a more wet-mesic setting. Typical flowering plants include purple coneflower, black-eyed susan (*Rudbeckia hirta*), and palespike lobelia (*Lobelia spicata*). Native grass species that are indicators of potential POSK habitat include little bluestem, prairie dropseed, and slender spike rush (*Eleocharis elliptica*).

### **Desktop Analysis**

WEST completed a desktop review of existing land cover/use types within the Project area and three potential O&M locations near Summit, SD using 2014 and 2016 aerial photography (USDA National Agriculture Imagery Program 2016), and crop data (USDA NASS 2018). The desktop analysis resulted in a digital data layer depicting potentially unbroken suitable grassland features. Grassland features were further evaluated by comparison with the “Quantifying Undisturbed (Native) Lands in Eastern South Dakota: 2013” digital data layer (Bauman et al. 2016) to identify potentially undisturbed (unbroken) grassland features that could provide suitable DASK and POSK habitat.

### **Field Survey**

The potentially suitable grassland features identified during the desktop review were visually inspected by a qualified WEST biologist during field surveys that occurred in June 2017, June 2018, and September 2018. Pedestrian field surveys were conducted by walking/meandering within each of the potentially unbroken grassland features evaluating areas for presence of indicator plant species in Type A or Type B habitats, as described above. Previous grassland disturbance was determined during the surveys based on several factors, including topography, presence of wetlands and drainages, and presence of large rocks or rock piles within the grassland features. For example, flatter grasslands with rock piles and limited native species were likely previously tilled and did not constitute a native grassland. Conversely, steeper terrain with extensive scattered, large rocks, and higher degree of native species would have been considered an unbroken grassland. All grassland features containing characteristics of preferred habitat for each species (see below) were delineated by drawing on aerial photographs. Low densities of scattered individuals of characteristic plants were not deemed to be potential habitat for the habitat surveys.

## **RESULTS**

### **Desktop Analysis**

Overall, 94 grassland features totaling 2,917 ac were identified as potentially being unbroken grasslands and thus potentially suitable habitat for DASK or POSK (Figure 4). This includes three small areas totaling approximately 15 ac with potentially unbroken grassland features near Summit, SD; these areas were identified and reviewed for tillage as well as potential DASK or POSK habitat. Other land cover/use types within the Project, including 10,422 ac of cultivated crops (Figure 3), were classified as potentially unsuitable habitat (USGS NLCD 2011).

## **Field Surveys**

Field survey assessments were completed in June 2017 along grassland features within a portion of the transmission line corridor and in June and September 2018 within the Project and potential O&M locations near Summit, SD. Table 1 details the corresponding survey date with grassland features surveyed.

**Table 1. Survey dates and potentially undisturbed grassland areas surveyed during butterfly habitat assessments within, and in the vicinity of, the proposed Dakota Range III Wind Project in Grant and Roberts counties, South Dakota.**

<b>Date of Survey</b>	<b>Area of Project Surveyed</b>	<b>Grassland Feature Surveyed by Grassland Polygon IDs</b>
June 2017	Portion of the transmission line corridor	1 - 8
June 2018	Project Area and two potentially suitable habitat area were revisited	9 – 86, revisit 55 and 75
September 2018	Expanded Project Area, 3 potential O&M locations,	87 - 94

The 2017 and 2018 surveys evaluated 94 grassland features totaling 2,917 ac identified during the desktop analysis (see representative photographs in Appendix A from the June 2018 visit and Figure 4). Specifically, the 94 grassland features were evaluated in the field to determine if they had been previously disturbed along with reviewing vegetation composition to determine if either Type A or Type B DASK or POSK habitat criteria existed.

#### *Disturbance*

Of the 94 grassland features, 27 appeared to have possibly been disturbed (broken) in the past and were thus classified as unsuitable habitat for potential DASK or POSK and were not evaluated further. A total of 67 grassland features were found to not show any signs of previous disturbance; therefore, the vegetation composition was further evaluated in the field for Type A or Type B DASK or POSK habitat criteria.

#### *Vegetation Composition and Potential DASK or POSK Habitat*

The general vegetation composition review of the 94 features showed that 87 grassland features were found to be dominated by cool-season invasive grass species such as bluegrass (*Poa pratensis*) and smooth brome (*Bromus inermis*), and did not contain any native grass species typically associated with Type A or Type B DASK or POSK habitat criteria. This includes both broken and unbroken grasslands.

Seven grassland features had some portion of native grasses; but were cool-season needlegrasses including needle-and-thread (*Heterostipa comata*) and green needlegrass (*Nasella viridula*). None of these seven grassland features were found to contain significant native warm-season grass species associated with Type A or Type B DASK or POSK habitat criteria such as little bluestem, prairie dropseed, or sideoats grama. Two of the seven grasslands with native grass species had relatively high densities of needlegrasses and some portion of warm-season grasses in combination with numerous forbs, including several species of forbs preferred by DASK or POSK. Both of these grassland features are isolated from other native grassland features that may have the necessary host and nectar species, but were considered low potential quality Type A or Type B DASK or POSK habitat given that most grasses were cool-season species (Figure 5).

Based on the potential to meet Type A or Type B habitat criteria, these two grassland features totaling approximately 114 ac were further evaluated by Dr. Jerry Selby, a permitted butterfly expert. Specifically, the two parcels were further reviewed as part of a detailed potential butterfly habitat survey (see report in Appendix B). These grasslands included Grassland Polygons 55 and 75 (Figures 4 and 5).

#### *Grassland Polygon 55*

The habitat survey for Grassland Polygon 55 determined that the parcel had fair potential habitat for POSK based on presence of forbs and prairie dropseed in the mesic portion of the grassland.

### *Grassland Polygon 75*

The habitat survey for Grassland Polygon 75 had poor habitat and that the potential for either species to occur there would be unlikely.

## **SUMMARY**

The majority (87 of 94 features) of the grassland features surveyed were dominated by cool-season invasive species and are not considered suitable butterfly habitat based on the USFWS Type A or Type B habitat criteria definitions. Seven grassland features had some portion of native grasses, but all were cool-season needlegrasses. Five of those seven grassland features contained very low densities of native cool-season grass species within cool-season introduced species, no preferred forbs, and/or very low densities of forbs, and were not considered to provide suitable habitat for DASK or POSK.

The two remaining grassland features of the seven with some portion of native grasses had relatively high densities of needlegrasses, a cool-season native species, in combination with several forbs preferred by DASK or POSK. These two features were further reviewed by Dr. Jerry Selby. Grassland Polygon 75 was determined to be unlikely to have either butterfly species given overall poor habitat quality. Grassland Polygon 55 was determined to have fair-good habitat for POSK. Therefore, impacts to Grassland Polygon 55 should be avoided if possible or further presence-absence surveys may be required to evaluate potential presence of the butterfly species and ensure compliance with the ESA. None of the other grassland features assessed in 2017 or during the June and September 2018 surveys were considered to provide suitable habitat for DASK or POSK.



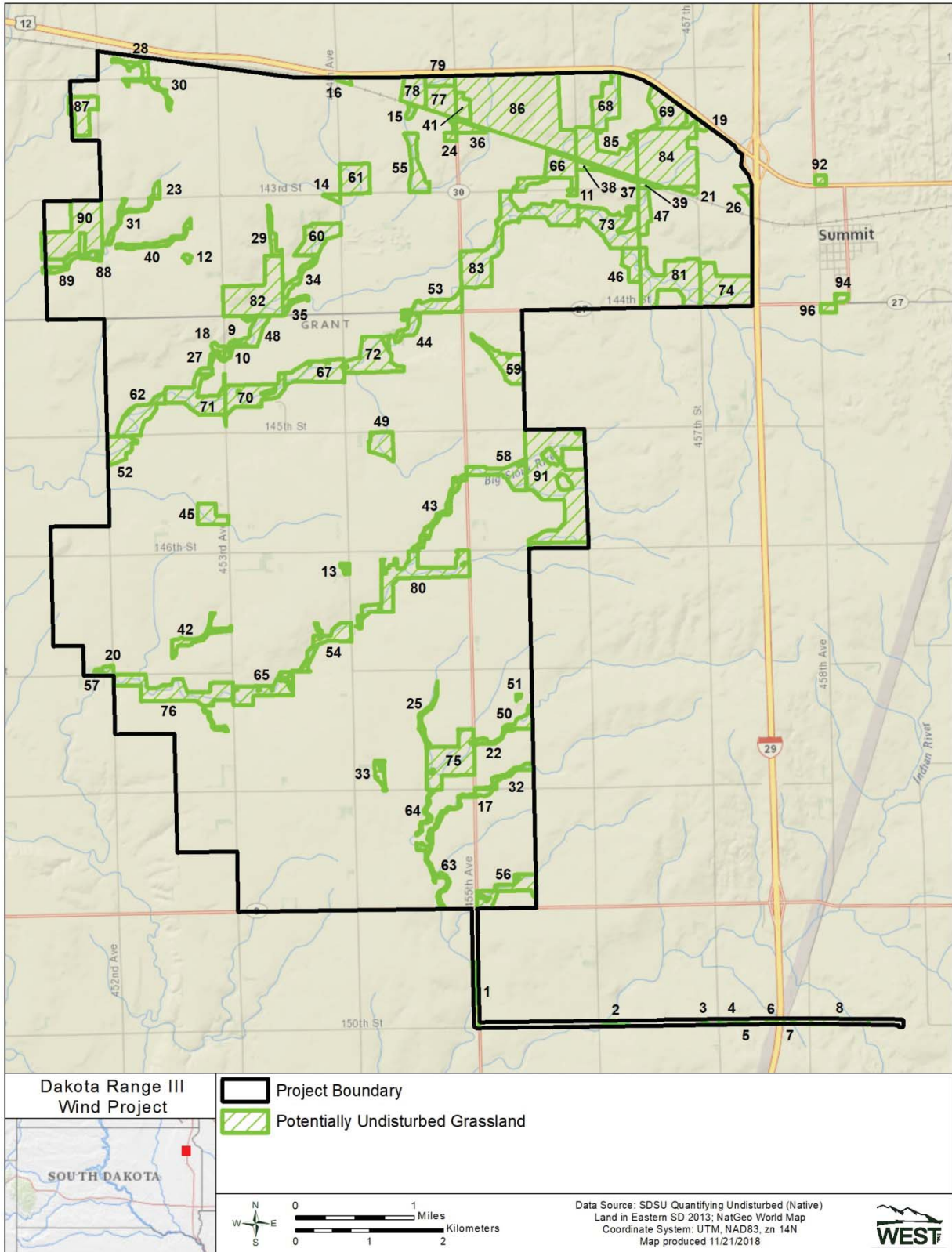


Figure 4. Areas of potentially undisturbed grassland within and in the vicinity of the proposed Dakota Range III Wind Project in Grant and Roberts counties, South Dakota.

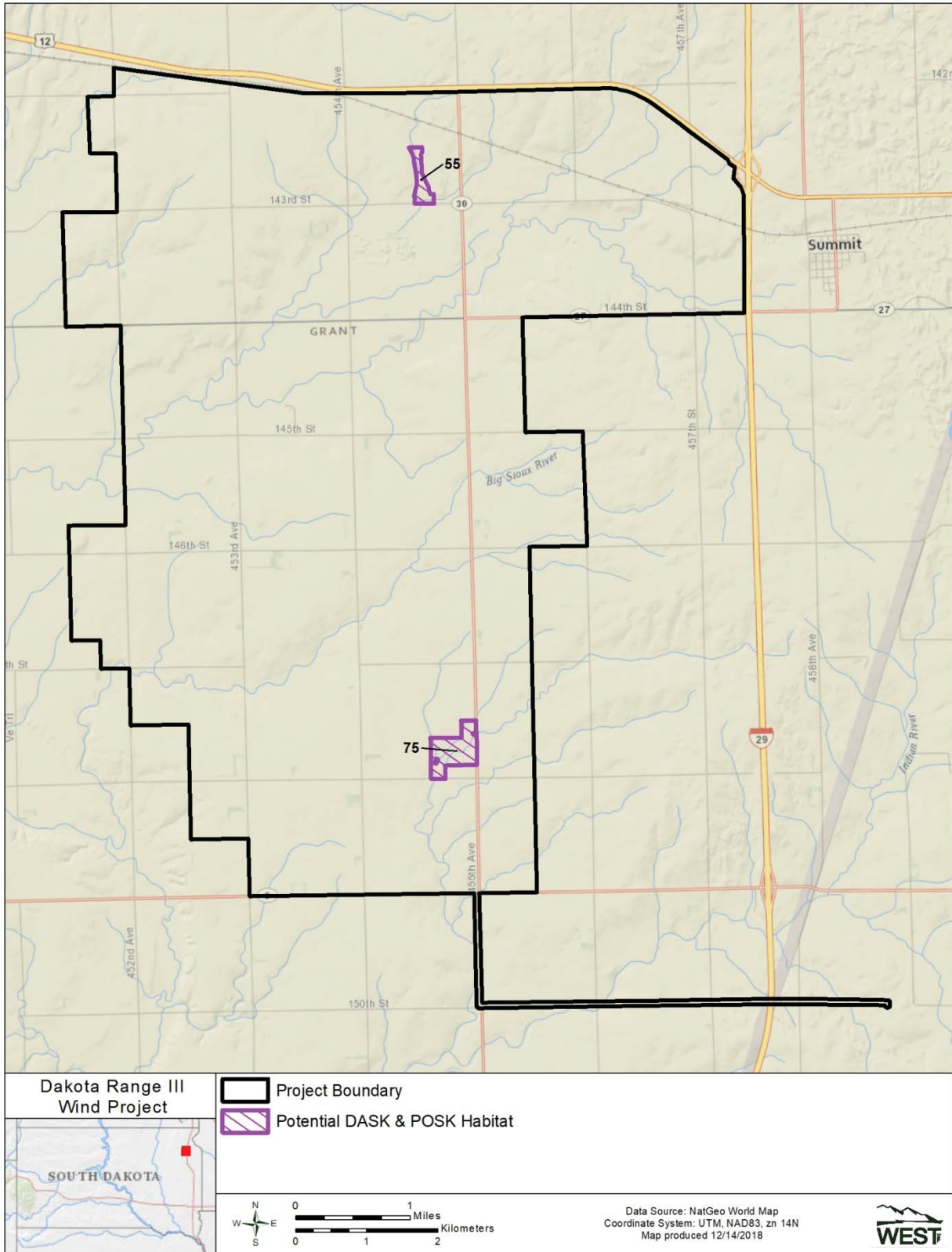


Figure 5. Areas of potential Dakota skipper and Powesheik skipperling habitat within the proposed Dakota Range III Wind Project in Grant and Roberts counties, South Dakota.

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**Appendix A. Representative Photographs Taken During the Grassland Assessment  
from June 25 – 28, 2018 conducted within the Proposed Dakota  
Range III Wind Project in Grant and Roberts Counties, South Dakota**





**Grassland Polygon ID 9**



**Grassland Polygon ID 10.**





**Grassland Polygon ID 11.**



**Grassland Polygon ID 12.**





**Grassland Polygon ID 13.**



**Grassland Polygon ID 14.**





**Grassland Polygon ID 15.**



**Grassland Polygon ID 16.**





**Grassland Polygon ID 17.**



**Grassland Polygon ID 18.**





**Grassland Polygon ID 19.**



**Grassland Polygon ID 20.**





**Grassland Polygon ID 21.**



**Grassland Polygon ID 22.**





**Grassland Polygon ID 23.**



**Grassland Polygon ID 24.**





**Grassland Polygon ID 25.**



**Grassland Polygon ID 26.**





**Grassland Polygon ID 27.**



**Grassland Polygon ID 28.**





**Grassland Polygon ID 29.**



**Grassland Polygon ID 30.**





**Grassland Polygon ID 31.**



**Grassland Polygon ID 32.**





**Grassland Polygon ID 33.**



**Grassland Polygon ID 34.**





**Grassland Polygon ID 35.**



**Grassland Polygon ID 36.**





**Grassland Polygon ID 37.**



**Grassland Polygon ID 38.**





**Grassland Polygon ID 39.**



**Grassland Polygon ID 40.**





**Grassland Polygon ID 41.**



**Grassland Polygon ID 42.**





**Grassland Polygon ID 43.**



**Grassland Polygon ID 44.**





**Grassland Polygon ID 45.**



**Grassland Polygon ID 46.**





**Grassland Polygon ID 47.**



**Grassland Polygon ID 48.**





**Grassland Polygon ID 49.**



**Grassland Polygon ID 50.**





**Grassland Polygon ID 51.**



**Grassland Polygon ID 52.**





**Grassland Polygon ID 53.**



**Grassland Polygon ID 54.**





**Grassland Polygon ID 55.**



**Grassland Polygon ID 56.**





**Grassland Polygon ID 57.**



**Grassland Polygon ID 58.**





**Grassland Polygon ID 59.**



**Grassland Polygon ID 60.**





**Grassland Polygon ID 61.**



**Grassland Polygon ID 62.**





**Grassland Polygon ID 63.**



**Grassland Polygon ID 64.**





**Grassland Polygon ID 65.**



**Grassland Polygon ID 66.**





**Grassland Polygon ID 67.**



**Grassland Polygon ID 68.**





**Grassland Polygon ID 69.**



**Grassland Polygon ID 70.**





**Grassland Polygon ID 71.**



**Grassland Polygon ID 72.**





**Grassland Polygon ID 73.**



**Grassland Polygon ID 74.**





**Grassland Polygon ID 75.**



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**Grassland Polygon ID 78.**





**Grassland Polygon ID 79.**



**Grassland Polygon ID 80.**





**Grassland Polygon ID 81.**



**Grassland Polygon ID 82.**





**Grassland Polygon ID 83.**



**Grassland Polygon ID 84.**





**Grassland Polygon ID 85.**



**Grassland Polygon ID 86.**



**Appendix B. 2018 Potential Dakota Skipper and Poweshiek Skipperling  
Habitat Review of Grassland Polygon 55 and 75**

**Dakota Range III Wind Farm Project  
Grant & Roberts Counties, South Dakota**

**2018 Field Verification and Habitat Review of Potentially  
Suitable Habitat for Dakota Skipper and Powshiek Skipperling**

September 24, 2018

**Report**

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## Overview

This report summarizes the results for a field review of two grassland parcels 50 and 72 to determine if they have habitat for Dakota skipper (*Hesperia dacotae*) or Poweshiek skipperling (*Oarisma poweshiek*). The grassland parcel 50 (south parcel) was in Grant County, SD and the grassland parcel 72 (north parcel) was in Roberts County, SD. In earlier surveys by WEST they were determined to have many forbs but no mid-grass warm season grasses that would be required as larval food sources. The primary purpose of these surveys was to determine if the requisite larval host plants were present and make a general assessment of their potential for supporting populations of target skippers.

### Field Review

#### June 20, 2018 Assessment

On 20 June 2018, light drizzle to occasions of heavy rain precluded a full field assessment. However, efforts were conducted to gain a general understanding of the vegetation composition of the south and north parcels where access was permitted.

#### South Parcel

The south parcel vegetation composition included some side-oats gramma (*Bouteloua curtipendula*) near the south end of the parcel and there was little bluestem (*Schizachyrium scoparium*) in an unmowed strip along the east fence in the ditch. However, the parcel is currently heavily grazed and didn't appear to be good habitat at this time.

#### North Parcel

A review was conducted on the southeast portion of the north parcel. There was a higher knob in the southeast corner with coneflowers, some side-oats gramma and little bluestem, and possibly prairie dropseed (*Sporobolus heterolepis*). Due to the rain, field mapping was not completed. .

#### June 21, 2018 Assessment

On 21 June 2018 complete surveys were conducted in each of the parcels. Observations were recorded in a shape file and the routes surveyed were documented in a track log. Selected forbs and grasses were recorded for each parcel and for selected areas within and adjacent to the parcels. Those data are summarized in tables for each parcel below (**Table 1** & **Table 2**) and mapped locations for selected species are illustrated in **Figure 1** and **Figure 2**.

#### South Parcel

Based on the survey of the south parcel, the assessment revealed that, while the larval hostplant grasses may be present, they are generally scarce and/or patchy in their distribution. Based on the limited amount of larval resources, what appeared to be fairly limited nectar resources, and the overall fair to poor condition of this parcel as a result of the current/past grazing regime, it is unlikely to support either Dakota skippers or Poweshiek skipperlings.

#### North Parcel

Based on the survey of the north parcel, it appears to have a fair amount of fair-good quality habitat for Poweshiek skipperlings. There were patches of prairie dropseed scattered through the wet-mesic areas and there was also a healthy forb component in those areas. There was only one small area in the southeast corner of the parcel where little bluestem, side-oats gramma, prairie

dropseed, and purple coneflower were present, along with a good diversity of other species. Based on the composition of this area it could be defined as Dakota skipper and Poweshiek skipperling habitat but, based on its very small size it is unlikely to support a Dakota skipper population.



Table 1. South Parcel: plant species documented in the parcel, in the 50-ft buffer for the proposed infrastructure, and in a narrow unmowed strip in the ditch east of the parcel.

<b>Plants</b> <b>Binomial</b>	<b>South</b> <b>Parcel</b>	<b>50-ft</b> <b>Buffer</b>	<b>Ditch</b>
<i>Allium stellatum</i>			X
<i>Andropogon gerardii</i>			X
<i>Anemone cylindrica</i>			X
<b><i>Bouteloua curtipendula</i></b>	<b>X</b>	<b>X</b>	<b>X</b>
<i>Cirsium arvense</i>	X	X	
<i>Cirsium flodmanii</i>	X		
<i>Cirsium undulatum</i>			X
<i>Dalea candida</i>	X		
<i>Dalea purpurea</i>			X
<i>Glycyrrhiza lepidota</i>	X		X
<i>Grindelia squarrosa</i>			X
<i>Helianthus maximiliani</i>			X
<i>Heliopsis helianthoides</i>	X		
<i>Liatris punctata</i>			X
<i>Linaria vulgaris</i>	X	X	
<i>Pediomelum argophyllum</i>	X	X	X
<i>Ratibida columnifera</i>	X	X	X
<i>Rosa arkansana</i>			X
<i>Rudbeckia hirta</i>	X		
<b><i>Schizachyrium scoparium</i></b>	<b>X</b>	<b>X</b>	<b>X</b>
<i>Solidago canadensis</i>	X	X	X
<i>Solidago nemoralis</i>			X
<i>Solidago rigida</i>			X
<i>Sorghastrum nutans</i>	X		X
<b><i>Sporobolus heterolepis?</i></b>	<b>X</b>		
<i>Symphyotrichum ericoides</i>	X	X	X
<i>Vernonia fasciculata</i>	X	X	
<i>Viola palmata</i> var. <i>pedatifida</i>	X		

Table 2. North Parcel: plant species documented in the parcel, in areas identified as Poweshiek skipperling (POSK) habitat, and in the small area in the southeast corner that could also be identified as Dakota skipper (DASK) habitat.

**North Parcel – plant species documented:**

<b>Plants Binomial</b>	<b>North Parcel</b>	<b>POSK Habitat</b>	<b>DASK Habitat</b>
<i>Andropogon gerardii</i>	X	X	X
<i>Anemone cylindrica</i>	X		X
<b><i>Bouteloua curtipendula</i></b>	<b>X</b>		<b>X</b>
<i>Bromus inermis</i>	X		X
<i>Cirsium flodmanii</i>	X		X
<i>Dalea candida</i>	X	X	X
<i>Dalea purpurea</i>	X		X
<b><i>Echinacea angustifolia</i></b>	<b>X</b>		<b>X</b>
<i>Gentiana andrewsii</i>	X	X	
<i>Glycyrrhiza lepidota</i>	X		X
<i>Helianthus maximiliani</i>	X	X	
<i>Helianthus pauciflorus</i>	X		X
<i>Heliopsis helianthoides</i>	X		X
<i>Liatris aspera</i>	X	X	X
<i>Liatris punctata</i>	X		X
<i>Pedimelum argophyllum</i>	X		X
<i>Rosa arkansana</i>	X	X	
<i>Rudbeckia hirta</i>	X	X	
<b><i>Schizachyrium scoparium</i></b>	<b>X</b>		<b>X</b>
<i>Solidago canadensis</i>	X	X	
<i>Sorghastrum nutans</i>	X	X	X
<b><i>Sporobolus heterolepis</i></b>	<b>X</b>	<b>X</b>	<b>X</b>
<i>Symphyotrichum ericoides</i>	X		X



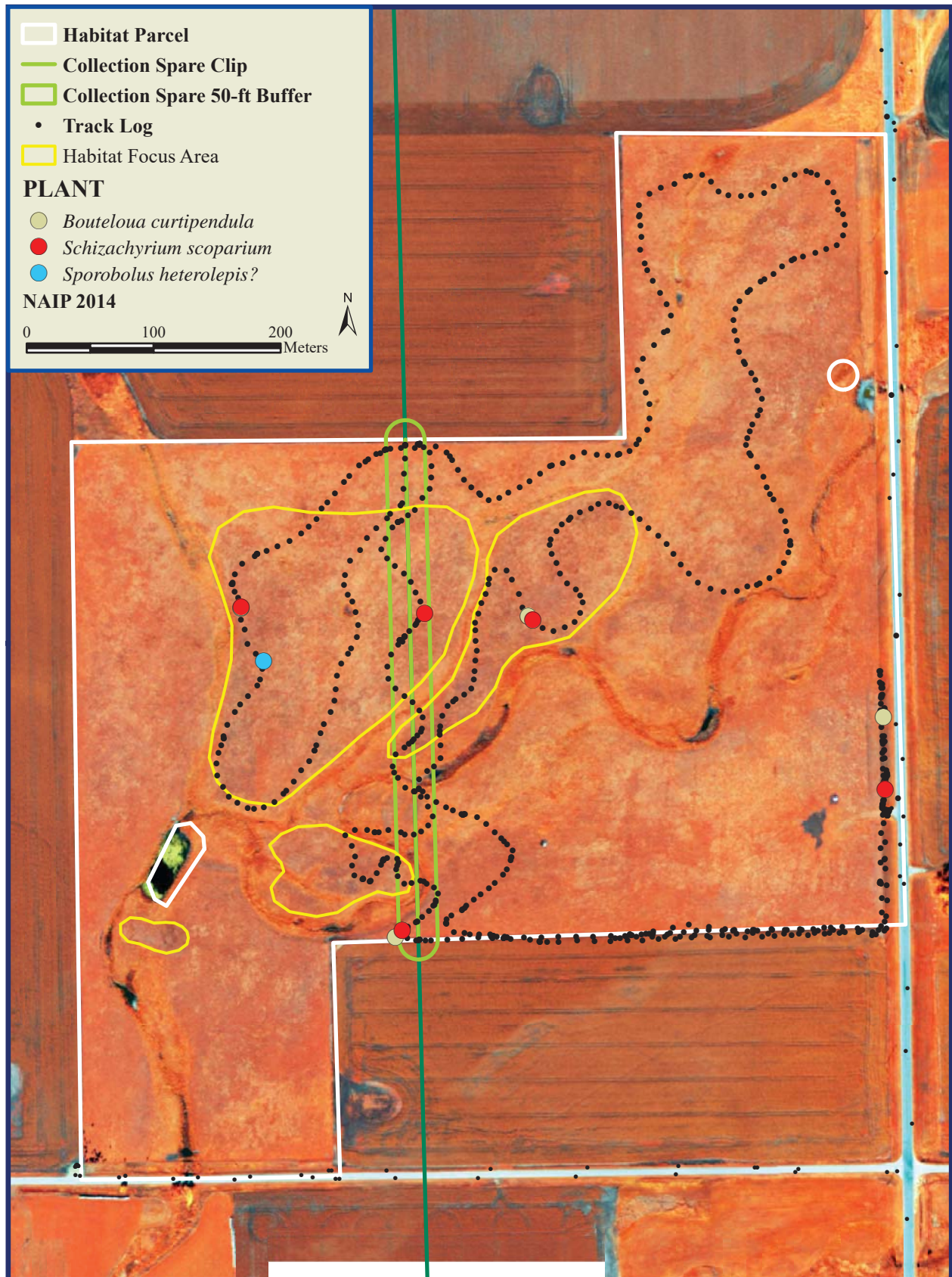


Figure 01. DAT North Parcel tentative habitat areas and plant records.



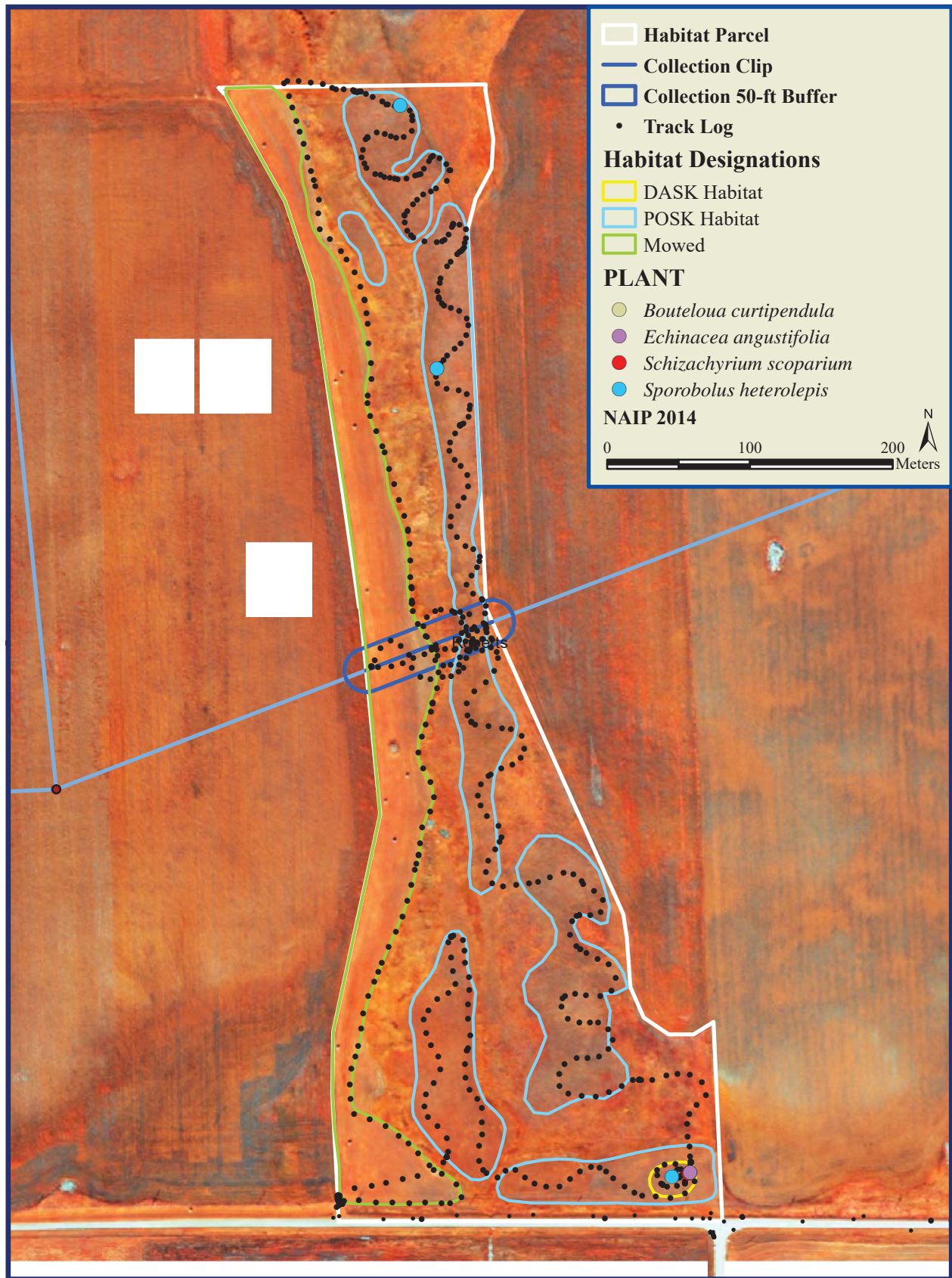


Figure 02. DAT North Parcel tentative habitat areas and plant records.