ENVIRONMENTAL & STATISTICAL CONSULTANTS
1710 Douglas Drive, Suite 283, Golden Valley, MN 55422
Phone: 612-655-1726 ◆ www.west-inc.com ◆ Fax: 307-637-6981

Dakota Skipper and Poweshiek Skipperling Habitat Assessment Report Crocker Wind Farm Clark County, South Dakota

Submitted by:
Western **E**co**S**ystems **T**echnology, Inc.
1710 Douglas Drive, Suite 283
Golden Valley, Minnesota 55422

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Introduction

Crocker Wind Farm, LLC (Crocker), a wholly owned subsidiary of Geronimo Energy, LLC (Geronimo), has proposed development of the Crocker Wind Farm (Project) in Clark County, South Dakota (Figure 1). Crocker requested that Western EcoSystems Technology, Inc. (WEST) conduct a habitat assessment for leased parcels within the Project, with a focus on identifying grassland areas that may provide suitable habitats for the Dakota skipper (*Hesperia dacotae;* federally listed as threatened) and Poweshiek skipperling (*Oarisma poweshiek;* federally listed as endangered). The Project is located in the Northern Glaciated Plains ecoregion and can be described by a flat to gently undulating hills landscape composed of glacial drift (sediment and large rocks). The climatic conditions of the region provide for a grassland transitional between tall and shortgrass prairie (mixed-grass prairie) where vegetative structure is largely short due to grazing of livestock. High concentrations of temporary and seasonal wetlands characteristic of the prairie coteau create favorable conditions for a variety of species, including nesting and migrating birds. Although these glacial till soils are very productive, crop success is subject to annual climatic fluctuations, these fluctuations can also account for vegetative structural variations across the landscape annually (USEPA 2013).

High quality tall and mixed-grass prairie provide important habitats for the Dakota skipper and Poweshiek skipperling; the species are typically not found in previously tilled, overgrazed or otherwise degraded (i.e. dominated by non-native grasses) tall and mixed-grass prairie (USFWS 2015; MNDNR 2016).

Methodology

WEST biologists and Geographic Information System (GIS) specialists conducted an initial GIS-based (desktop) review of the proposed Project layout provided by Crocker in August 2016 to evaluate grassland parcels potentially affected by turbine, access road, collection line and related facilities construction. This desktop assessment identified those land parcels requiring follow up ground-based assessments to further determine potentially suitable Dakota skipper

and Poweshiek skipperling habitats. The desktop assessment used several sources of geo-referenced information to identify potential areas of good quality prairies, preferably on unplowed (unbroken) lands which have not been heavily grazed, including:

1. National Land Cover Database (NLCD cover types);
2. USFWS Easement parcels 3. Potentially Undisturbed Land (Virgin Sod); and
4. True-color satellite imagery (2015).

On September 21–22 and 26-28, 2016, WEST biologist Derek Klostermeier visited the Project area to conduct ground-based field assessments to determine the presence of suitable listed butterfly habitats within those areas containing grasslands as identified in the desktop analysis. The focus of the field evaluation was on parcels that had the potential to be impacted by construction of the wind facility infrastructure.

. To the greatest extent feasible, all potential grassland parcels were evaluated within leased lands via walking, and grasslands in parcels without a signed lease and permissions to survey were evaluated from adjacent roads, if possible.

Suitable habitat was identified based on guidelines identified by the U.S. Fish and Wildlife service. In particular, two habitat types are considered suitable: moist bluestem prairie and relatively dry upland prairie. These prairie types are dominated by bluestem grasses, needlegrasses and native forb species.

While on-site, the WEST biologist attempted to examine all grasslands in the identified parcels (i.e. not just proposed turbine and associated infrastructure locations) to account for potential alternative routing/siting of turbine and other infrastructure; however, not all grasslands in leased lands were walked and areas farther than 500 to 1,000 ft from proposed layout facilities may not have been visible due to topography and therefore were not evaluated. Grassland features WEST observed for included:

Presence of areas of diverse native grasses and forbs:

- Plants typical of native bluestem prairie: Wood lily (*Lilium philadelphicum*), Harebell (*Campanula rotundifolia*) and Mountain deathcamas (*Zygadenus elegans*);
- Plants typical of upland prairie: Big bluestem (*Andropogon gerardi*), Little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum nutans*), needlegrasses (*Nassella viridula; Hesperostipa comata; H. spartea*), Coneflowers (*Echinacea pallida; E. angustifolia*) and Blanket flowers *(Gaillardia sp.*);
- One or both native grasses: Little bluestem, Prairie dropseed (*Sporobolus heterolepis*);
- Preferred nectar plants within patch or nearby: Prairie coneflowers (*Ratibida columnifera; R. pinnata*), Harebell, White prairie clover (*Dalea candida*), Fleabanes (*Erigeron sp.*), Blanket flowers, Black-eyed susan (*Rudbeckia hirta*), Coneflowers*,* Yellow sundrops (*Calylophus serrulatus*, Groundplum milkvetch (*Astragalus crassicarpus*).

and absence of:

- Invasive thistles: Canada thistle (*Cirsium arvense*), Bull thistle (*C. vulgare*);
- Introduced/invasive grasses: Kentucky bluegrass (*Poa pratensis*), Timothy (*Phleum pratense*), Reed canary grass (*Phalaris arundinacea*), Smooth bromegrass (*Bromus inermis*), Crested wheatgrass (*Agropyron cristatum*).
- Planted Red clover (*Trifolium pratense*), or invasive yellow sweet clover (*Melilotus officinalis*);
- Extensive Bird's-foot trefoil (*Lotus corniculatus*), or Mullein (*Verbascum thapsus*);
- Evidence of grazing, particularly overgrazing.

Results

The results of the field visit determined that the majority of the grassland habitats within the Project area are not suitable for the Dakota skipper or Poweshiek skipperling, and generally consist of highly impacted (overgrazed) pastures dominated by species such as smooth brome and Kentucky bluegrass. The WEST biologist documented 62 areas, equaling 162.5 acres, containing potentially suitable habitats (Figure 2). These habitat areas were characteristic of the Northern Glaciated Plains region, which is described by a gently rolling hills topography composed of glacial drift deposits where relatively little impact from cultivation or grazing has occurred in areas due to steep slopes and large rock deposits characteristic of the region .

In total, 54.2 miles (84.4 kilometers) of proposed access road and collection lines, and 82 proposed turbine pad locations had no signed lease agreements, and therefore, were not accessible for ground-based assessments. These land tracts were observed from the nearest roads, using binoculars, making observations for potential suitable habitat areas and overall plant community species composition. From available observation locations much of these grasslands appeared to be dominated by non-native grass species; however, large portions of grasslands in the unleased lands were not visible from most observation locations due to the rolling topography of the landscape. It is therefore possible that pockets of suitable butterfly habitat are located within these areas that were inaccessible during the September 2016 ground based survey.

As Project development continues, lease agreements are made, and/or turbine layout and associated infrastructure rerouted, WEST recommends that additional assessments (desktop and/or field visit) and agency coordination occur if any turbines or project-related impacts are proposed either in areas that were identified as potentially suitable skipper habitat or in grassland habitats that were not examined as part of this assessment, in order to determine if additional pre-construction surveys (potentially grassland habitat surveys in the May/June timeframe or skipper surveys during the June/July flight period) may be warranted.

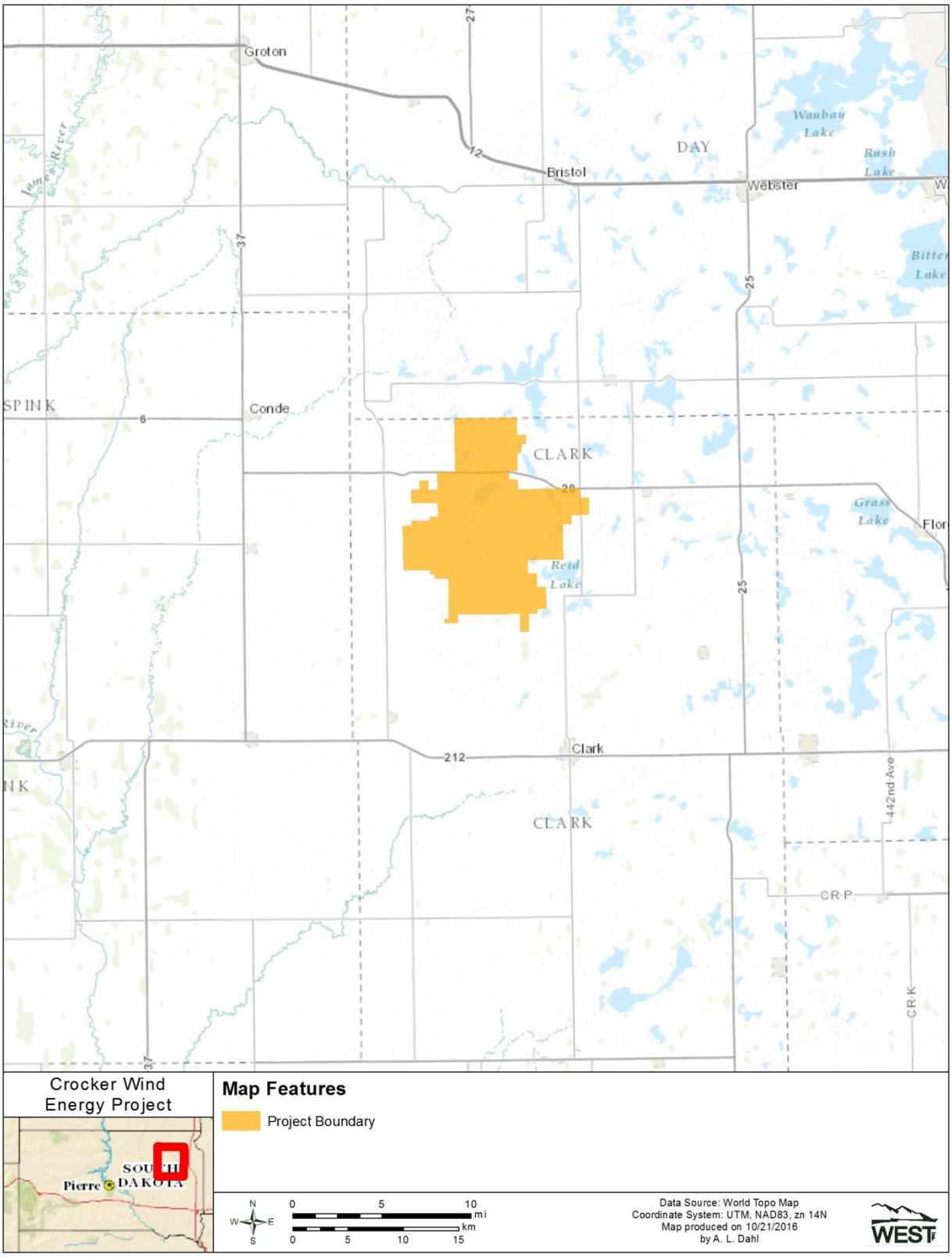

Figure 1. Crocker Wind Farm Location.

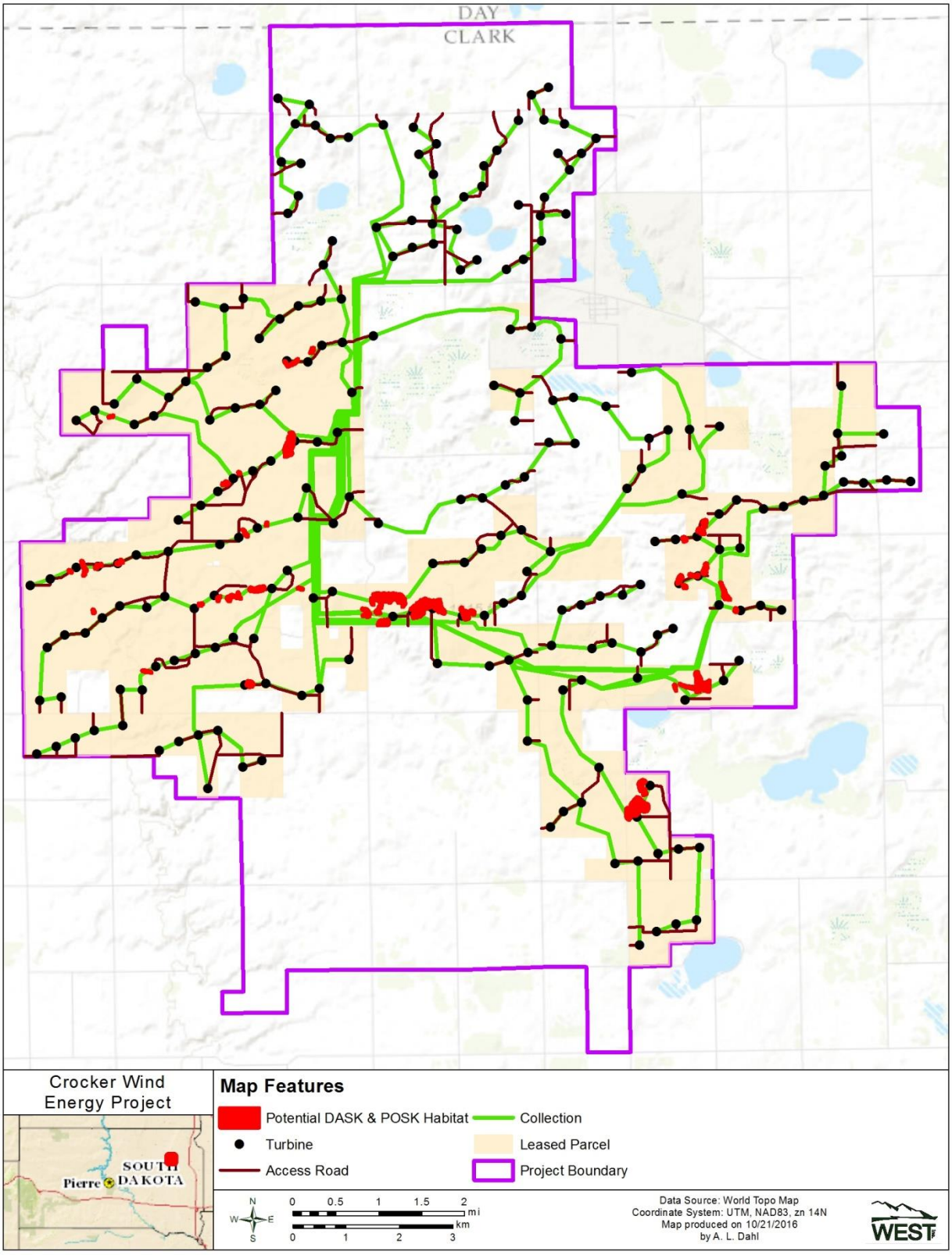

Figure 2. Potential Dakota skipper (DASK) and Poweshiek Skipperling (POSK) Habitats within Signed Lease Agreement Parcels at Crocker Wind Farm.

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