



ENVIRONMENTAL & STATISTICAL CONSULTANTS

4007 State Street, Suite 109, Bismarck, ND 58503
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

TECHNICAL MEMORANDUM

Date: August 29, 2017

To: Jennie Geiger, Apex Clean Energy Management, LLC

From: Western EcoSystems Technology, Inc.

Subject: Dakota Range I Wind Project – Dakota Skipper/Poweshiek Skipperling Habitat Survey Memo

INTRODUCTION

Dakota Range I, LLC, an affiliate of Apex Clean Energy Management, LLC (Apex), is developing the Dakota Range I Wind Project (Project), in Codington and Grant Counties, South Dakota (Figure 1). At Apex's request, Western EcoSystems Technology, Inc. (WEST) conducted a Dakota skipper (DASK; federally threatened) and Poweshiek skipperling (POSK; federally endangered) habitat survey to identify areas warranting avoidance during development and construction of the Project. This report includes results of surveys completed in 2016 and 2017 in the area currently proposed for development.

PROJECT AREA

The Project is approximately 47,483 acres (19,216 hectares) and is located in the Northern Glaciated Plains Level III Ecoregion (U.S. Environmental Protection Agency [USEPA] 2016) with about 92% of the Project in the Big Sioux Basin Level IV Ecoregion and the remainder in the Prairie Coteau. The predominant land cover/use types within the Project include approximately 54% cultivated crops and 38% herbaceous (grassland; Figure 2). The remaining land cover/use types account for less than 5% (U.S. Geological Survey [USGS] National Land Cover Database [NLCD] 2011, Homer et al. 2015). The most common cultivated cropland in 2016 was corn (*Zea mays*) and soybeans (*Glycine max*; U.S. Department of Agriculture [USDA] National Agricultural Statistics Service [NASS] 2016). Ownership within the Project area is largely private (USGS Protected Areas Database of the United States [PADUS] 2012); however, there are five US Fish and Wildlife Service (USFWS) Dakota Tallgrass Prairie Wildlife Management Areas totaling about 798 acres (323 hectares) within the Project area.

According to the National Wetlands Inventory (NWI; USFWS NWI 2007), about 600 acres (243 hectares) of the Project area is comprised of wetlands, of which about 79% are classified as freshwater emergent wetlands. The next most common wetland type is freshwater pond (10% of wetlands; Figure 2).

Several rivers and streams are within the Project area: the Big Sioux River flows southwest through the northwestern portion of the Project, Soo Creek flows southwest through the central area of the Project, Mahoney Creek flows southwest through the south-central portion of the Project, and Mud Creek flows southwest through the southern portion of the Project (Figure 2).

METHODS

Desktop Review: The Project area was evaluated by a WEST GIS Specialist using desktop analysis of available aerial photography and the *Quantifying Undisturbed (Native) Lands in Eastern South Dakota: 2013* (2013 Undisturbed Lands, Bauman et al. 2013) digital data layer to identify grasslands with potentially suitable DASK and POSK habitat (i.e., areas of untilled grassland). Potentially suitable habitat was defined as areas of grassland, based on a review of the 2016 USDA National Agriculture Imagery Program imagery, verified by review of the 2016 USDA Cropland Data Layer, and then reviewed with the 2013 Undisturbed Lands (Bauman et al. 2013) layer to further evaluate potential for past disturbances.

Field Review: Pedestrian field surveys were then conducted by a qualified WEST biologist to evaluate areas identified during the desktop review as potentially suitable habitat and to confirm areas of unsuitability. To ensure a thorough habitat evaluation of each potentially suitable area, the WEST biologist conducted a walking/meandering survey throughout each grassland area. All grasslands containing characteristics of suitable habitat for each species (see below), if found, were delineated using a sub-meter Trimble GPS unit.

Suitable Habitat Definitions

Dakota Skipper

According to the 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* (USFWS 2016), DASK habitat can be categorized into two general types, Type A and Type B.

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

Type B habitat, which is more prevalent in South Dakota, includes native 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 Type B habitats 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 crassicaupus*), 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.

Poweshiek Skipperling

POSK habitat types are similar to the Type A DASK habitat in that they constitute a high diversity of native grasses and forbs in a more wet-mesic setting (USFWS 2016). 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*). There are no known current populations of POSK in South Dakota.

For field investigations of each habitat type, low densities of scattered individuals of characteristic plants were not deemed to be potential habitat

RESULTS

A total of 8,042.7 acres (4,760.6 acres in 2016 and 3,282.1 acres in 2017) of potentially untilled grassland were identified as warranting field evaluation (Figure 3). Field evaluations of these areas were completed between June 12-June 14, 2016 and June 16-June 19, 2017.

Most grasslands were found to be dominated by cool-season invasive grasses such as bluegrass (*Poa pratensis*) and smooth brome (*Bromus inermis*). Some grasslands (e.g., far northeastern half-section of Project area, south half of T120N R51W Sec. 5) were found to have more healthy populations of native grass species, but completely or nearly completely lacked the necessary native forbs for either DASK or POSK.

One 4.6 acre (1.9 hectares) area of potential Type B DASK habitat was identified within the northeast corner of the current Project boundary (Figure 3). Dakota Range I, LLC has determined that the 4.6 acres of potential DASK habitat will be completely avoided through Project design and no further assessment is needed. No other suitable habitat for DASK or POSK was identified within the Project.

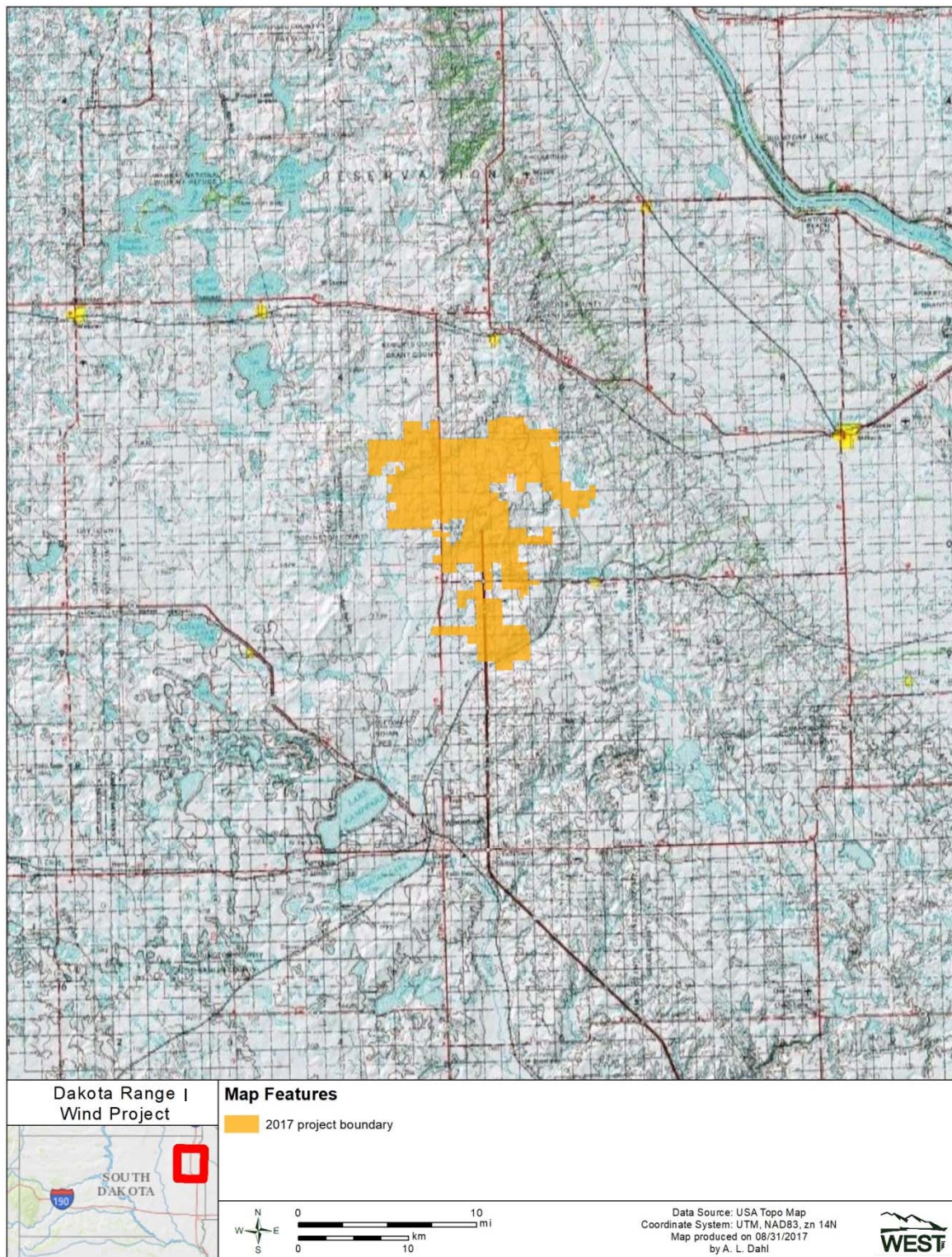


Figure 1. Location of the Dakota Range I Wind Project area in Grant and Codington Counties, South Dakota.

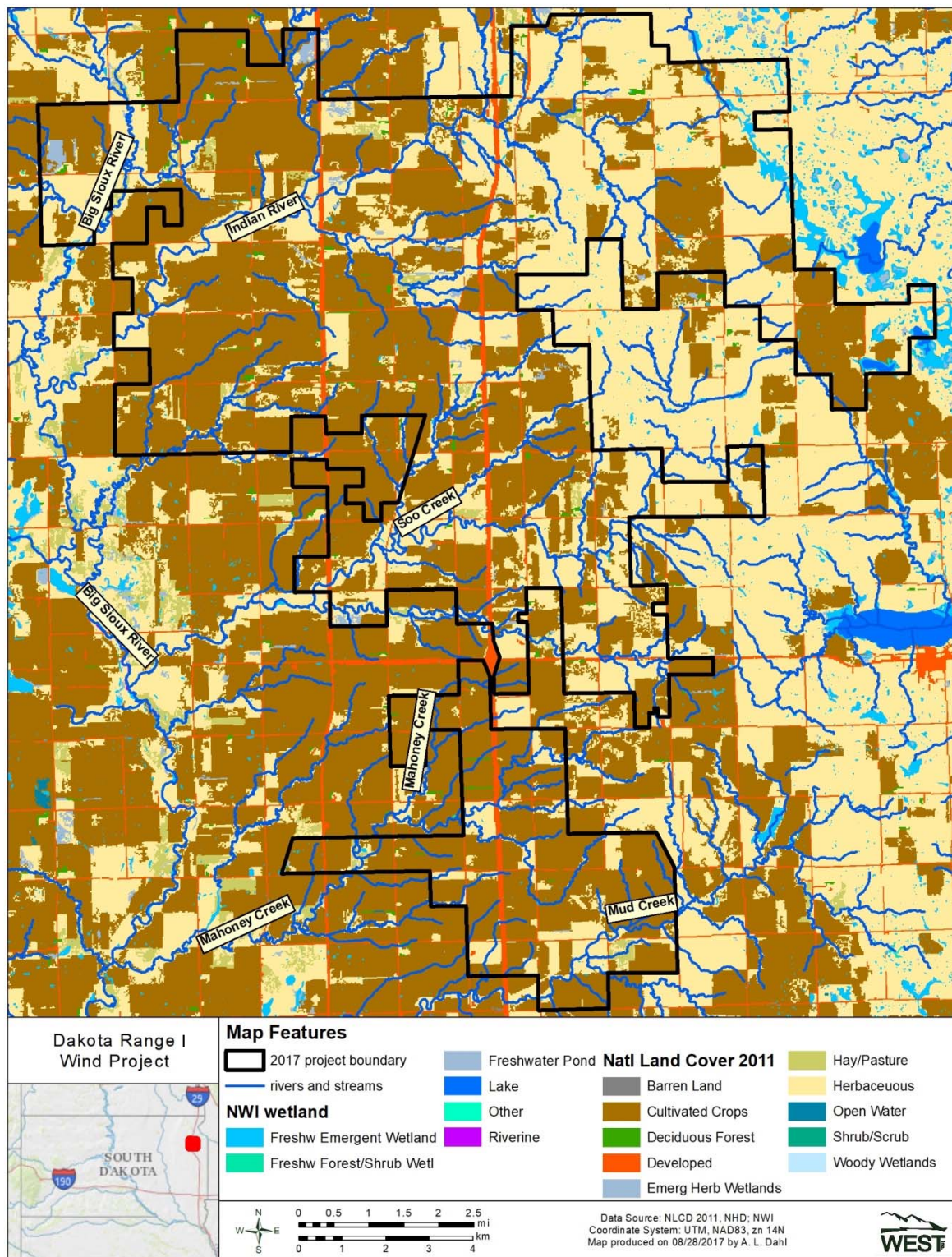


Figure 2. Land cover/use, wetlands, rivers, and streams in the Dakota Range I Wind Project area.

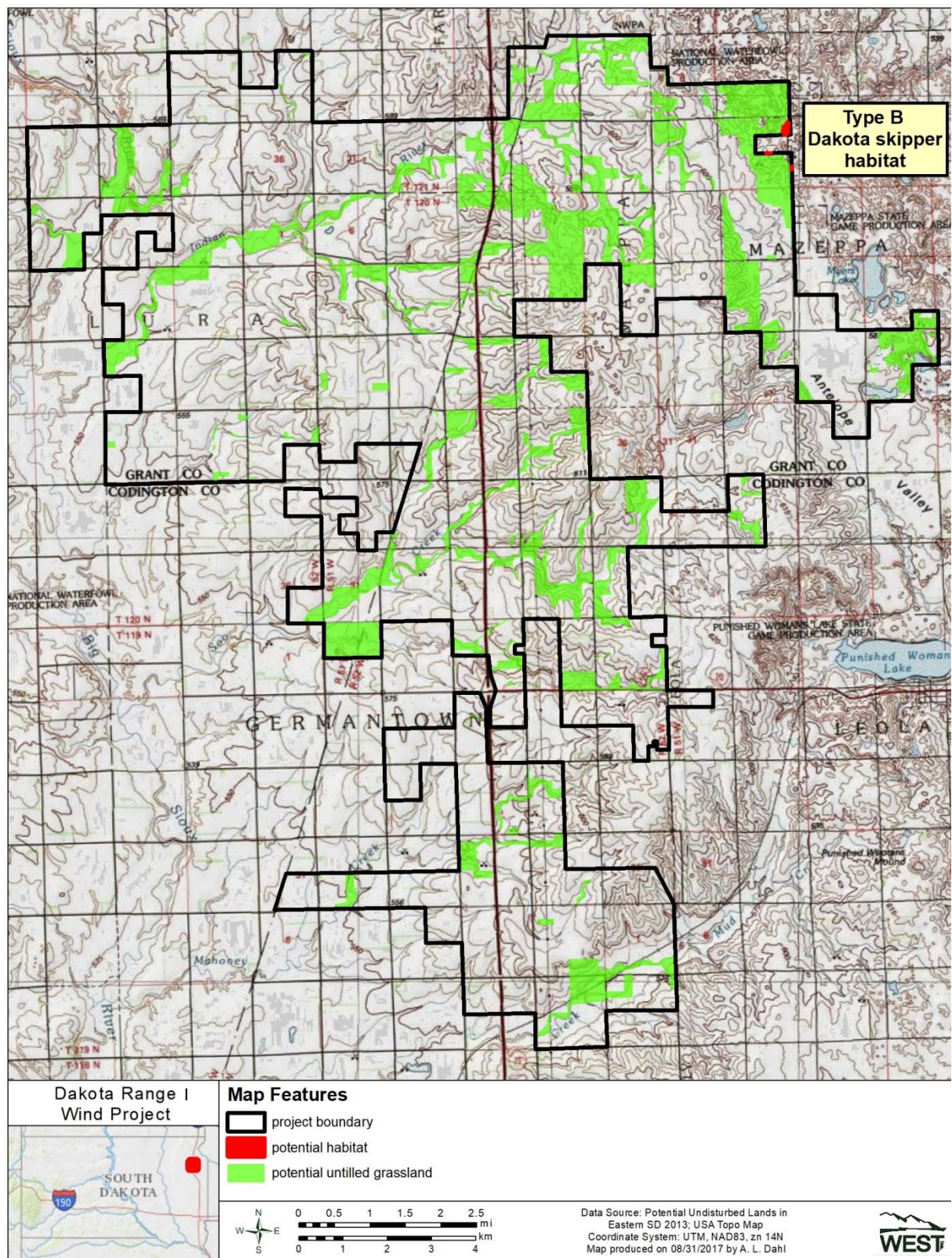


Figure 3. Potential untilled grassland areas evaluated for Dakota skipper and Poweshiek skipperling habitat and identified potential habitat within the Dakota Range I Wind Project area (2016-17).

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