

Appendix M

Wildlife Survey Reports

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Appendix M.2
Sharp-tailed Grouse Lek Survey Reports

**Sharp-tailed Grouse Lek Surveys
for the Proposed Homestead Wind Project
Williams County, North Dakota**

**Final Report
March – May 2023**



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Homestead Wind, LLC**

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REPORT REFERENCE

Shelley, K. J. and C. LeBeau. 2024. Sharp-tailed Grouse Lek Survey for the Proposed Homestead Wind Project, Williams County, North Dakota: Final Report. March – May 2023. Prepared for Homestead Wind, LLC. Prepared by Western EcoSystems Technology, Inc. (WEST), Albuquerque, New Mexico. January 17, 2024.

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INTRODUCTION

Homestead Wind, LLC (Homestead) is developing the proposed Homestead Wind Project (Project) located in Williams County, North Dakota. Western EcoSystems Technology, Inc. (WEST) completed surveys for sharp-tailed grouse (*Tympanuchus phasianellus*; STGR) leks for the Project in 2023 (Figure 1). The overall purpose of the STGR lek surveys was to inform early-stage Project design and planning by locating STGR leks within a 2.0-mile (mi; 3.2-kilometer [km]) buffer encompassing the Project area (collectively, Survey Area). The lek survey design was informed by the survey protocol described in the North Dakota Game and Fish Department (NDGFD) *Management Plan and Conservation Strategies for Greater Sage -Grouse in North Dakota* (Robinson 2014) and recommendations provided by the NDGFD during a virtual in-person meeting on March 21, 2023, and the recommendations described in *Key Wind Energy Development in North Dakota Best Management Practices* (NDGFD 2021).

The survey objectives were to search for new lek locations, determine the status of previously known leks, and determine the number of individual STGR present at each lek within the Survey Area. Survey results will provide baseline information on the location and status of STGR leks within the Survey Area.

PROJECT AREA

The Project area is defined as the 61,454 acres (ac; 24,870 hectares [ha]) encompassed by the Project Boundary (Figure 1). The Project area is located within the Northwestern Glaciated Plains Level III Ecoregion (US Environmental Protection Agency [USEPA] 2012, 2013). The ecoregion is juxtaposed between the Northern Glaciated Plains Level III Ecoregion (generally more level, moister, and more intensively dedicated to agriculture) to the east and the Northwestern Great Plains Level III Ecoregion (typically more irregular, drier, and less intensively cultivated) on the west and southwest periphery. The western and southwestern boundaries roughly coincide with the local limits of continental glaciation. The Northwestern Glaciated Plains ecoregion features a moderately high concentration of semi-permanent and seasonal wetlands (USEPA 2012, 2013).

The main land cover within the Project area is cultivated crops (80.1%), followed by herbaceous (15.0%; National Land Cover Database [NLCD] 2019; Table 1, Figure 1). Grasslands (herbaceous; native, unbroken prairie and replanted, broken grasslands) are common habitat types where STGR leks are located and an estimated 9,203 ac (3,724 ha; 15.0%) are present in the Project area (NLCD 2019; Table 1).

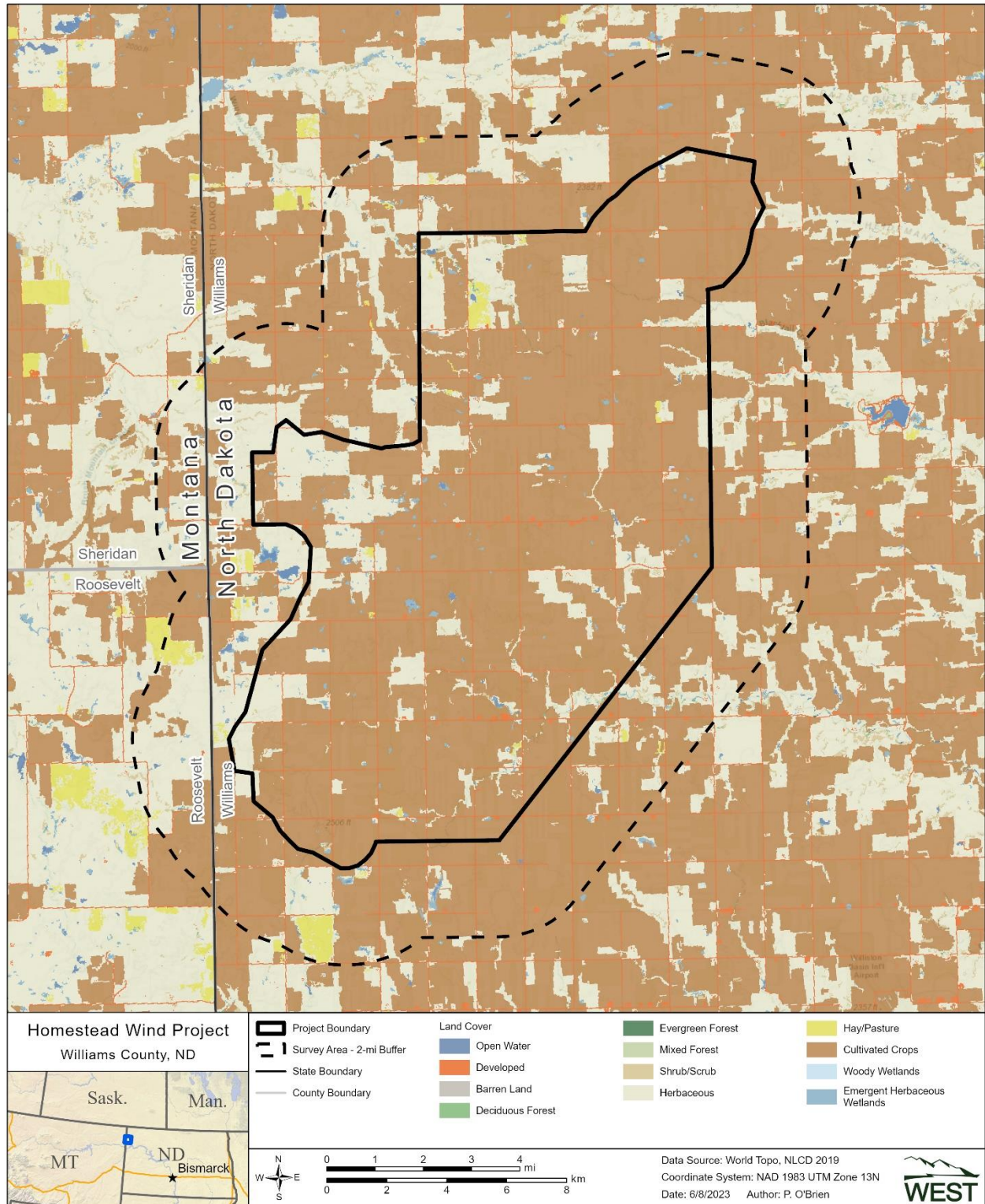


Figure 1. Land cover types within and adjacent to the proposed Homestead Wind Project, Williams County, North Dakota.

Table 1. Land cover types, coverage, and percent composition within the proposed Homestead Wind Project, Williams County, North Dakota.

Land Cover Type	Coverage (Acres)	Percent Composition
Cultivated Crops	49,242	80.1
Herbaceous	9,203	15.0
Developed ¹	1,971	3.2
Emergent Herbaceous Wetlands	433	0.7
Hay/Pasture	304	0.5
Shrub/Scrub	169	0.3
Open Water	95	0.2
Woody Wetlands	20	<0.1
Deciduous Forest	11	<0.1
Barren Land	3	<0.1
Mixed Forest	2	<0.1
Evergreen Forest	<1	<0.1
Total²	61,454	100

¹. Includes developed, open space; developed, low intensity; developed, medium intensity; and developed, high intensity.

². Sums of values may not add to the total value shown due to rounding.

Source: National Land Cover Database 2019.

METHODS

Searches for new leks consisted of driving publicly accessible roads, stopping to listen and visually scan, in search of previously unknown leks within the Survey Area, as recommended by NDGFD (E. Mueller & J. Kolar, NDGFD, pers. Comm., March 21, 2023). Three rounds of visual and auditory surveys were conducted during the 2023 lekking period from late March through early-May. Surveys began 30 minutes (min) prior to sunrise until approximately two hours (hr) after sunrise, during relatively calm mornings (winds less than 20 mi [32 km] per hr) with little or no rain. Surveys were conducted by trained field biologists, driving at slow speeds (25 mi [40 km] per hr) looking and listening for STGR within the Survey Area (Figure 2). Field biologists selected good vantage points along publicly accessible roads and navigable section line roads to stop and conduct surveys for a minimum of five min, listening and looking for displaying STGR.

Previously unknown (i.e., new) leks were recorded (date/location) when two or more male displaying STGR were observed (Runia et al. 2021, SDGFP 2022). New and previously known leks were classified as “active” if any STGR were observed attending the lekking period or as “inactive” when no STGR were observed attending the lek. Each active lek was assigned a unique identification number and location with geographic coordinates. Previously known lek locations within the Survey Area were requested from NDFG prior to initiation of the surveys and surveys followed the methods above if found.

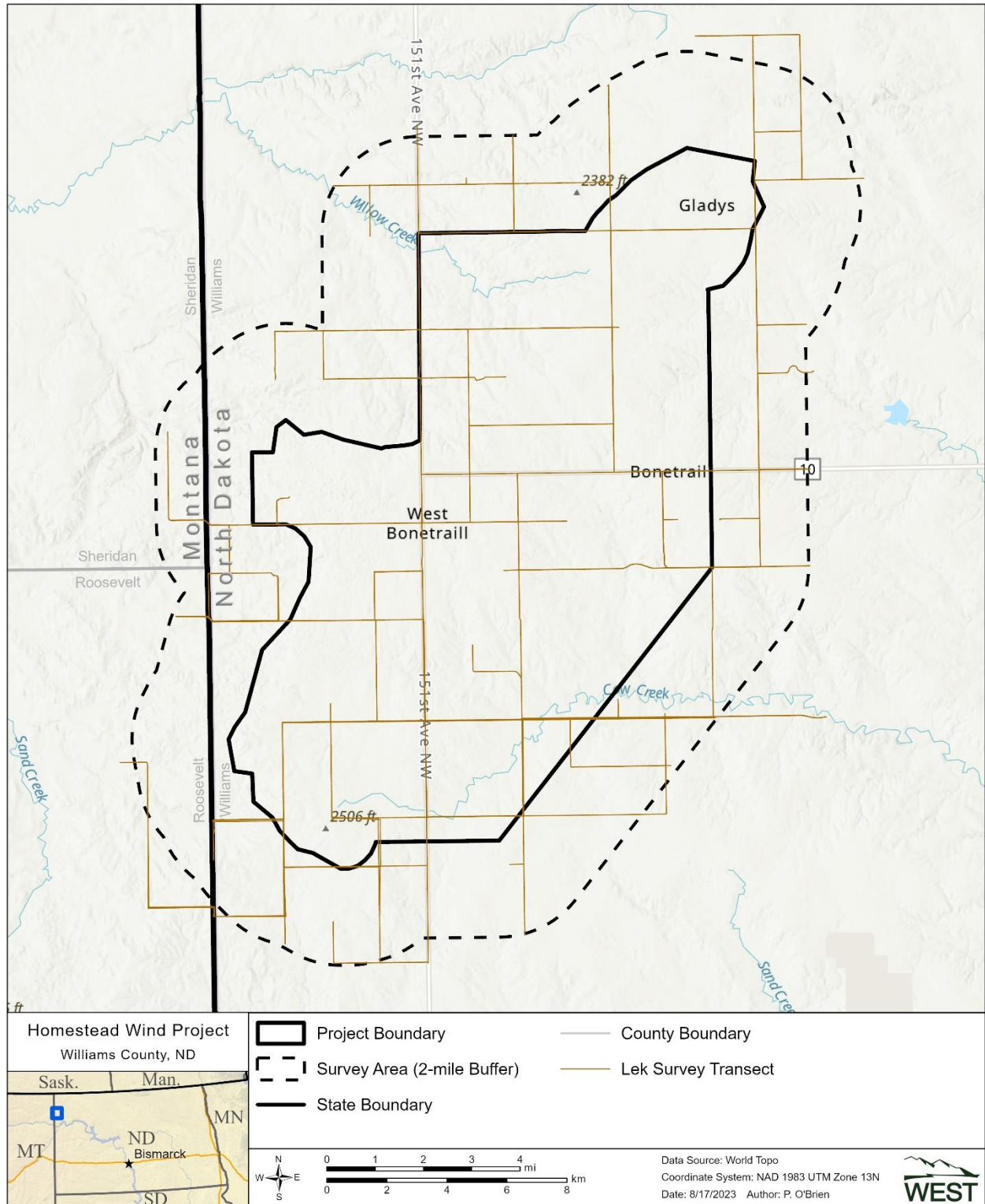


Figure 2. Survey transect routes established within the lek Survey Area of the proposed Homestead Wind Project, Williams County, North Dakota

RESULTS

Three rounds of surveys were completed from March 27 to April 25, 2023, with the timing for each round as follows: Round 1, March 27 – April 4, 2023; Round 2, April 6 – 12, 2023; and Round 3, April 18 – 25, 2023. Historic lek location data were requested from the NDGFD prior to the start of surveys, however no historic lek locations were known to occur in the Survey Area (NDGFD, pers. comm., March 21, 2023).

Nine active STGR leks were detected during surveys (Table 2; Figure 3). Five of the nine leks were classified as active during Round 1 (ID#s 1, 2, 3, 4, 5); one lek in Round 2 (8); and three leks in Round 3 (6, 7, 9). Six active leks were detected within the Project area (2, 4, 5, 6, 7, 9) and three active leks (1, 3, and 8) were detected outside the Project area but within the 2.0-mi survey buffer (Table 2, Figure 3).

Table 2. Counts of sharp-tailed grouse attending active leks detected during each round of lek surveys from March 27 – April 25, at the proposed Homestead Wind Project, Williams County, North Dakota.

ID	Round Number	Date Observed	Total # of Males	Total # of Females	Total # of Unknown	Total # of Birds
1*	1	3/27	3	2	3	8
	2	4/06	0	0	0	0
	3	4/18	0	0	0	0
2	1	3/30	13	0	2	15
	2	4/09	14	1	0	15
	3	4/24	17	0	0	17
3*	1	3/30	4	0	0	4
	2	4/10	4	U	3	7
	3	4/22	12	2	9	23
4†	1	3/31	2	0	0	2
	2	4/10	0	0	0	0
	3	4/23	U	U	1	1
5	1	4/01	9	24	15	48
	2	4/11	0	0	0	0
	3	4/24	0	0	0	0
6	3	4/22	2	3	0	5
7	3	4/22	2	3	0	5
8*	2	4/11	2	U	U	U
	3	4/25	0	0	0	0
9	3	4/22	2	2	2	6

* Active leks located outside the Project area but within the 2.0-mile survey buffer.

† Auditory detection only (no visual observation obtained).

U = unknown.

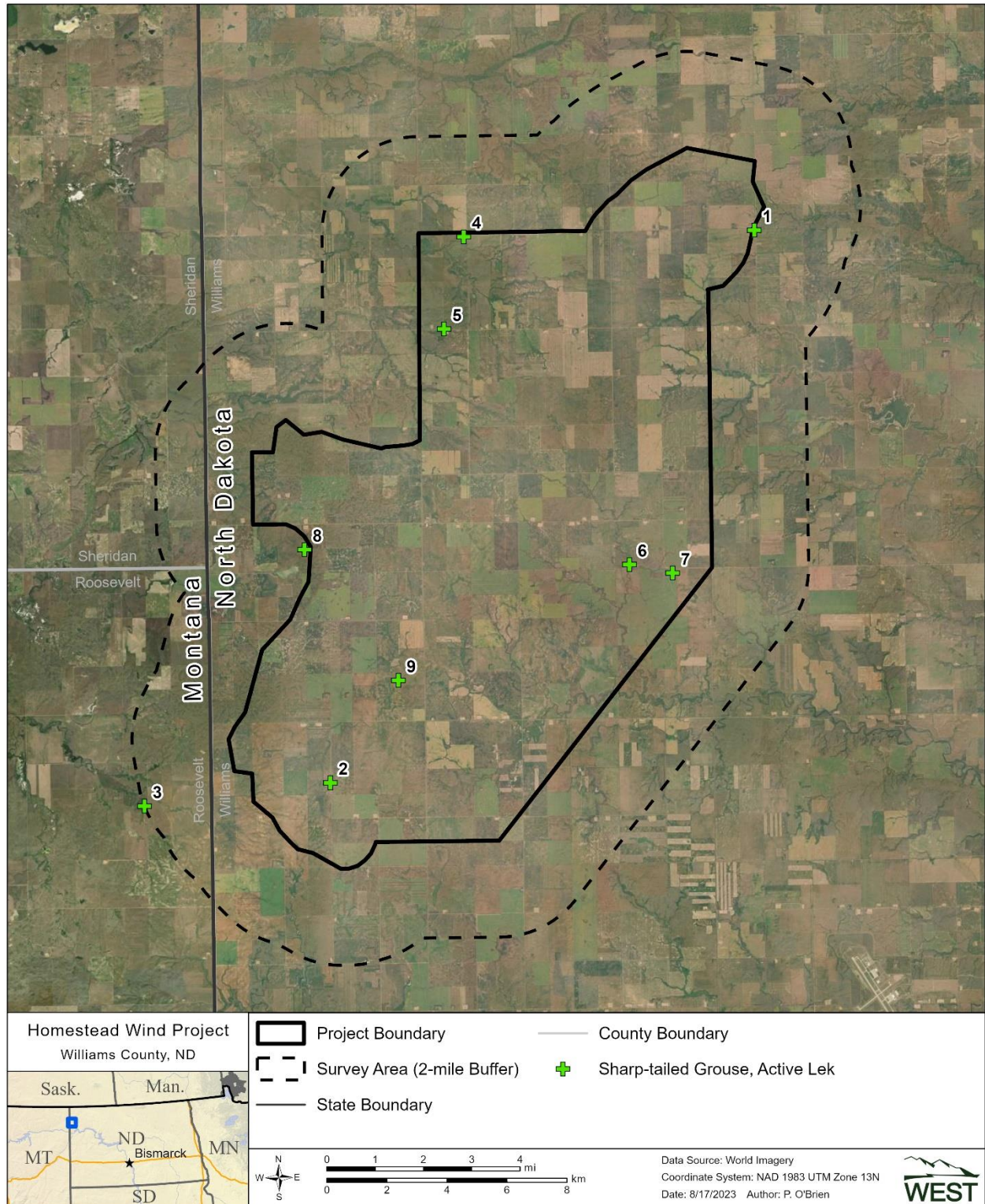


Figure 3. Locations of active sharp-tailed grouse leks detected during lek surveys conducted from March 27 – April 25, 2023, at the proposed Homestead Wind Project, Williams County, North Dakota.

DISCUSSION

Results of the lek surveys suggest that STGR use the Survey Area during the breeding season. The data collected provide a better understanding of STGR lek locations and abundance in the Survey Area.

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**Sharp-tailed Grouse Lek Surveys
for the Homestead Wind Project
Williams County, North Dakota**

**Final
March – April 2025**



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November 21, 2025



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INTRODUCTION

Homestead Wind, LLC (Homestead) is developing the Homestead Wind Project (Project) located in Williams County, North Dakota (Figure 1). Western EcoSystems Technology, Inc. (WEST), completed a second year (Year 2) of sharp-tailed grouse (*Tympanuchus phasianellus*; STGR) lek surveys for the Project. The first year of STGR surveys were completed in 2023 (Shelley and LeBeau 2024) and since then, the size of the Project area has been reduced from 61,554 acres (ac; 24,870 hectares [ha]) to 24,994 ac (10,115 ha).

The overall purpose of the Year 2 STGR lek surveys was to inform early-stage Project design and planning with updated STGR lek locations and status within a 2.0-mile (mi; 3.2-kilometer [km]) buffer encompassing the new Project area (collectively, Survey Area, Figure 1). The lek survey design was informed by the survey protocol described in the North Dakota Game and Fish Department (NDGFD) *Management Plan and Conservation Strategies for Greater Sage-Grouse in North Dakota* (Robinson 2014), recommendations provided by the NDGFD during a virtual in-person meeting on March 21, 2023, and recommendations described in *Key Wind Energy Development in North Dakota Best Management Practices* (NDGFD 2021).

The objectives of STGR lek surveys included searching for and mapping new lek locations, status determinations of previously known leks, and counts of individual (male and female) STGR present at active leks within the Survey Area. Updating the location and status of STGR leks recorded during the first year (2023) of surveys (Shelley and LeBeau 2024) provides important baseline information to aid in Project development.

SURVEY AREA

The Survey Area encompasses approximately 88,462 acres (35,800 ha) and is located within the Northwestern Glaciated Plains Level III Ecoregion (US Environmental Protection Agency [USEPA] 2012, 2013). The ecoregion is juxtaposed between the Northern Glaciated Plains Level III Ecoregion (generally more level, moist, and intensively dedicated to agriculture) to the east and the Northwestern Great Plains Level III Ecoregion (typically more irregular, drier, and less intensively cultivated) on the west and southwest periphery. The Northwestern Glaciated Plains ecoregion features a moderately high concentration of semi-permanent and seasonal wetlands (USEPA 2012, 2013).

The main land cover type within the Survey Area is cultivated crops (75.8% of the total Project area), followed by herbaceous (19.4%; National Land Cover Database [NLCD] 2021; Table 1, Figure 1). Grasslands (herbaceous; native, unbroken prairie, and replanted, broken grasslands) provide the most suitable habitat conditions for STGR to satisfy their life history needs with an estimated 17,169 ac (6,948 ha; 19.4%) present in the Project area (NLCD 2021; Table 1)

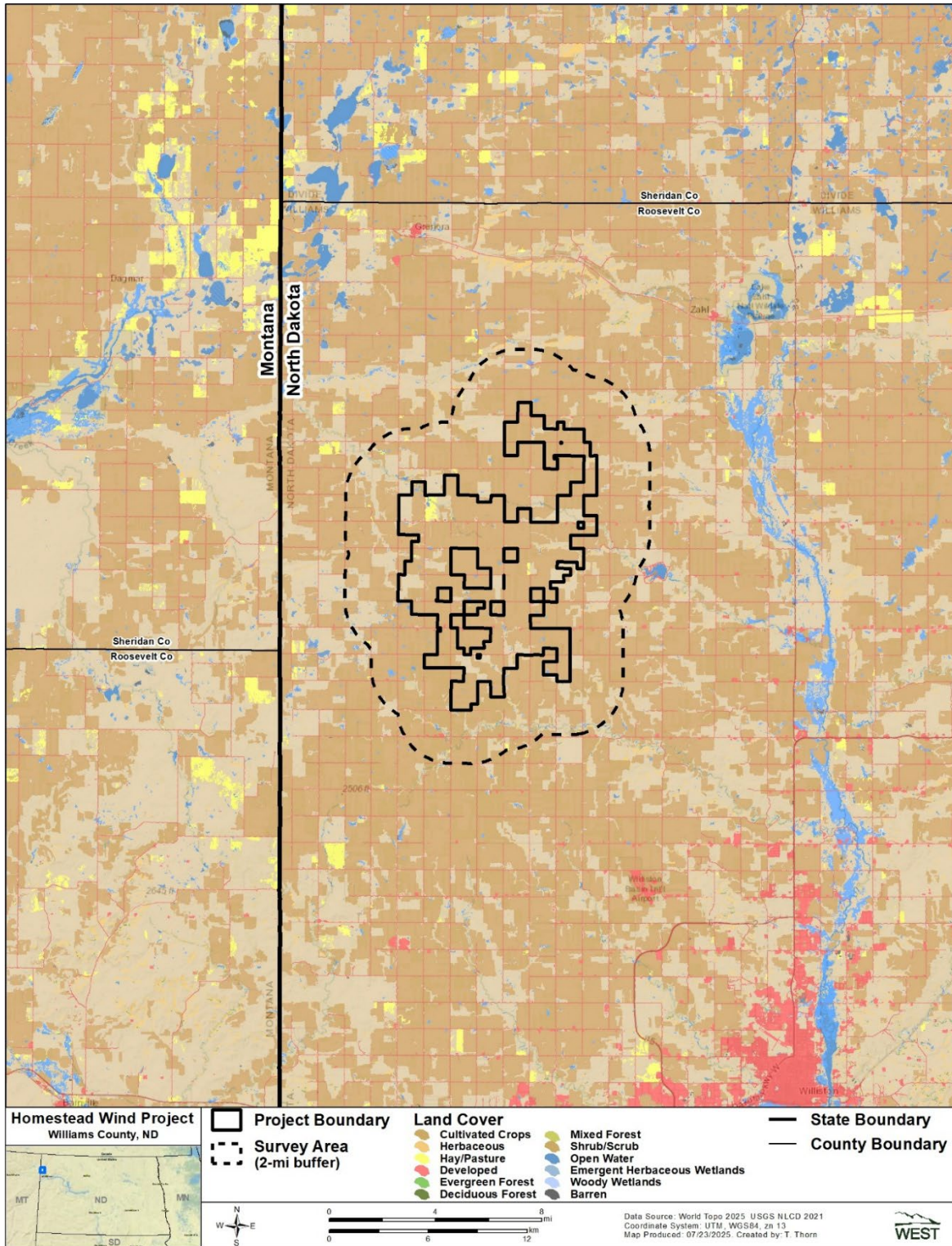


Figure 1. Land cover types within and adjacent to the Homestead Wind Project, Williams County, North Dakota.

Table 1. Land cover types, coverage, and percent composition within the Survey Area at the Homestead Wind Project, Williams County, North Dakota.

Land Cover Types	Coverage (Acres)	Percent Composition
Cultivated Crops	67,071	75.8
Herbaceous	17,169	19.4
Developed ¹	2,714	3.1
Emergent Herbaceous Wetlands	522	0.6
Shrub/Scrub	496	0.6
Hay/Pasture	339	0.4
Open Water	92	0.1
Woody Wetlands	32	<0.1
Deciduous Forest	18	<0.1
Mixed Forest	6	<0.1
Barren Land	3	<0.1
Total	88,462	100²

¹ Developed land cover types may include open space, low intensity, medium intensity, and high intensity.

² Sums of values may not equal total shown due to rounding.

Source: National Land Cover Database 2021.

METHODS

Location data of previously known leks were requested from the NDGFD prior to the onset of the 2023 (Year 1) surveys. The NDGFD responded that no leks were known to occur within the Survey Area (J. Kolar, NDGFD, pers. comm., March 21, 2023).

Searches for new leks consisted of driving publicly accessible roads within the Survey Area, stopping every mile (two km) to listen and visually scan for previously unknown leks as recommended by NDGFD (E. Mueller and J. Kolar, NDGFD, pers. comm., March 21, 2023). Three rounds of visual and auditory surveys were conducted during the 2025 lekking period from late March through early May. Surveys began 30 minutes (min) prior to sunrise and continued until approximately two and a half hours (hr) after sunrise, during relatively calm mornings (winds less than 20 mi [32 km] per hr) with little or no rain. WEST field biologists (biologists), trained to conduct STGR surveys, drove at slow speeds (25 mi [40 km] per hr) along pre-established roadways, looking and listening for STGR (Figure 2). The biologists systematically selected suitable vantage points (survey points) at 1-mi intervals to stop and conduct a minimum of five min surveys listening and looking for displaying STGR.

Previously unknown leks were recorded as new leks (date/location) when two or more male displaying STGR were observed (Runia et al. 2021). Previously known leks were classified as “active” if any STGR were observed or as “inactive” when no STGR were observed attending the lek. Each active lek was assigned a unique identification number (ID) and location with geographic coordinates. Leks observed during the 2023 lek survey (Shelley and LeBeau 2024) were revisited and surveyed following the methods above if located within the Survey Area.

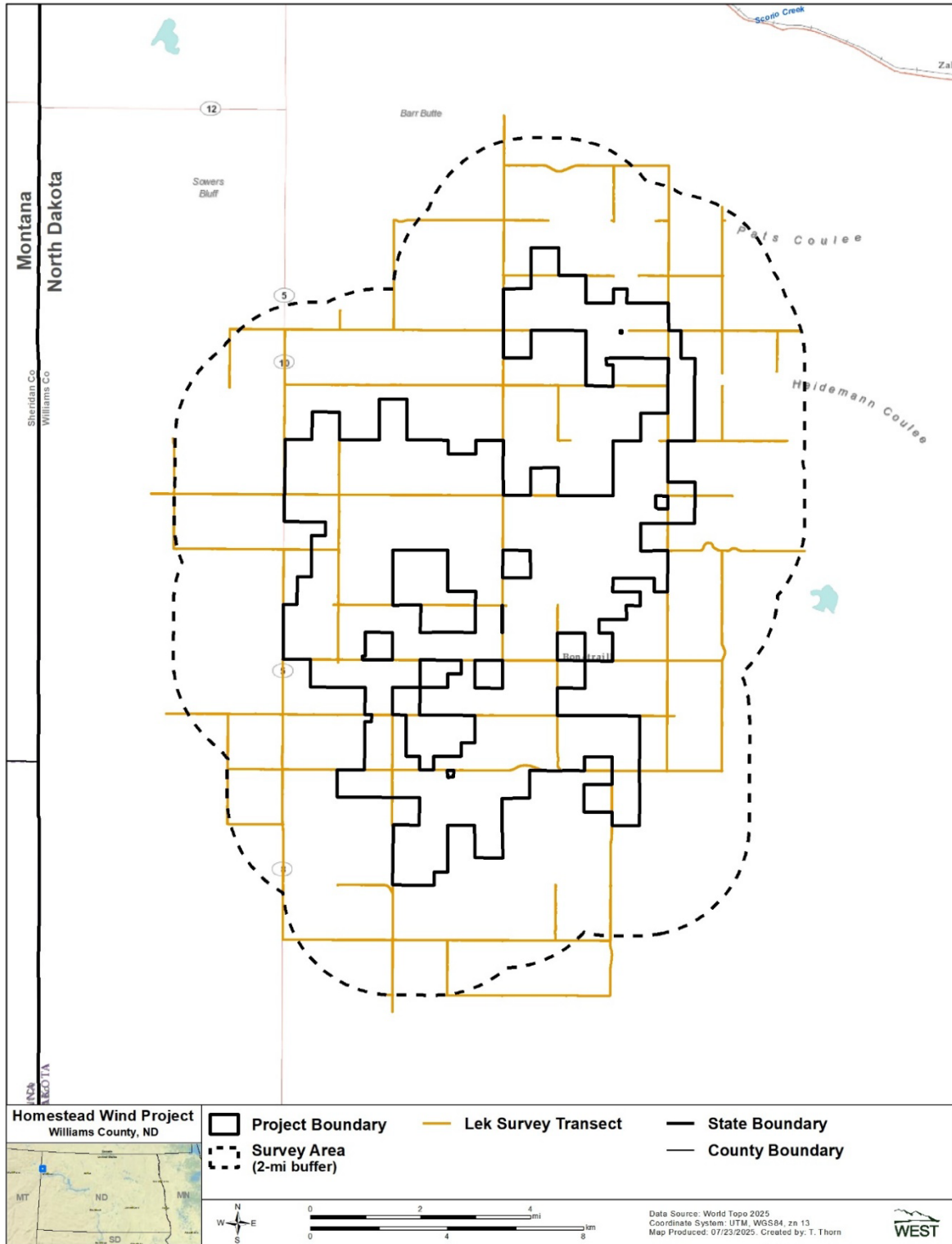


Figure 2. Survey transect routes established within the lek Survey Area at the Homestead Wind Project, Williams County, North Dakota

RESULTS

Three rounds of Year 2 surveys were completed from March 16 – April 29, 2025, and four active STGR leks were recorded (Table 2, Figure 3). Round 1 of the surveys was conducted March 16 – 21, 2025, and no active leks were recorded. Round 2 was conducted from March 27 – April 5, 2025, and one active lek was recorded (Lek ID 12). Round 3 was conducted from April 22 – 29, 2025, and four active leks were recorded (4, 12, 13, and 14).

Lek 4 was a previously known lek location (Shelley and LeBeau 2024) and lek IDs 12, 13, and 14 were newly discovered lek locations (Table 2, Figure 3). Auditory detections of displaying males served as the sole means of classifying leks as ‘active’ at leks 4 and 13 (Table 2). The four active STGR leks (IDs 4, 12, 13, and 14) were all detected within the 2.0-mi survey buffer outside the Project area (Table 2, Figure 3).

Table 2. Counts of sharp-tailed grouse (STGR) attending active leks detected during each round of lek surveys conducted from March 16 – April 29, 2025, within the Survey Area at the Homestead Wind Project, Williams County, North Dakota.

Lek ID	Round Number	Date Observed	Total # of Males	Total # of Females	Total # of Unknown	Total # of STGR [‡]
6	1	3/20	0	0	0	0
	2	4/03	0	0	0	0
	3	4/27	0	0	0	0
7	1	3/20	0	0	0	0
	2	4/03	0	0	0	0
	3	4/22	0	0	0	0
1	1	3/16	0	0	0	0
	2	3/30	0	0	0	0
	3	4/23	0	0	0	0
4*	1	3/16	0	0	0	0
	2	3/29	0	0	0	0
	3 [†]	4/25	5	0	0	5
5	1	3/16	0	0	0	0
	2	3/27	0	0	0	0
	3	4/29	0	0	0	0
12*	2	3/31	2	0	7	9
	3	4/23	4	0	2	6
13*	3 [†]	4/24	3	0	0	3
14*	3	4/24	2	0	3	5

* Active leks (bold font) located within the 2.0-mile (3.2-kilometer) survey buffer but outside the Project area.

† Survey rounds at active leks with auditory detection only (no visual observation obtained).

‡ In some cases, observations may represent repeated sightings of the same individuals.

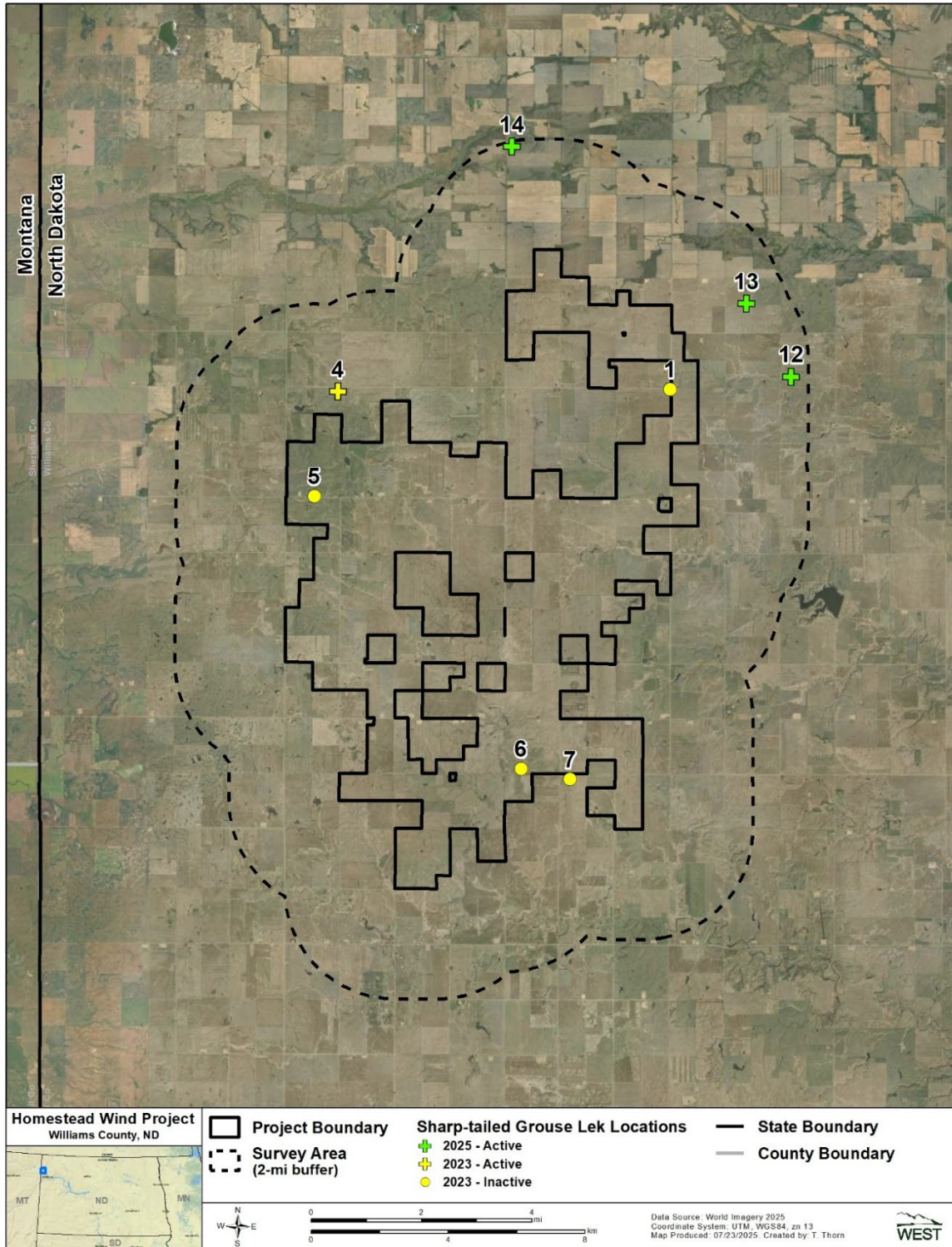


Figure 3. Locations of active sharp-tailed grouse leks detected during lek surveys conducted from March 16 – April 29, 2025, within the Survey Area at the Homestead Wind Project, Williams County, North Dakota.

DISCUSSION

The results of the 2025 lek surveys show that STGR use the Survey Area during the breeding season, which is consistent with the findings of the 2023 lek surveys. This report provides an update to the 2023 STGR lek locations, number of leks, and STGR abundance at each lek within the Survey Area and can be used to inform Project development.

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