BIRTLE TRANSMISSION PROJECT

Sharp-tailed Grouse Lek Survey Report 2021

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Prepared for

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***with redactions to protect sensitive sites**

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1.0 INTRODUCTION

The Birtle Transmission Project (the Project) is a 230 kV AC transmission line that spans 46.2 km from the Birtle South Station, through the Spy Hill-Ellice Community Pasture, to the Saskatchewan border. Project construction began in July 2020 and was completed by March 2021.

The *Birtle Transmission Project Environmental Assessment Report* (MB Hydro 2018) completed in 2018 details the predicted effects and planned mitigation for the Project. As outlined in the report, sharp-tailed grouse (*Tympanuchus phasianellus*) were identified as a Species of Conservation Concern as they are susceptible to disturbance and predation, especially at lek sites during the mating season. The potential effects described in the report are predicted to be adverse, small to moderate in magnitude, local, and long-term.

The Project crosses the Spy-Hill Ellice Community Pasture (SHECP), one of the few remaining intact grasslands in Manitoba. In this area, the Project may increase the availability of perching, nesting, or roosting sites for avian predators in a landscape where these habitat attributes are relatively scarce, potentially resulting in increased predation and avoidance of the transmission line by sharp-tailed grouse (Dinkins *et al.* 2014; Hovick *et al.* 2014). The Project also poses a collision risk to sharp-tailed grouse that may result in increased fatalities or injuries. Sharp-tailed grouse are vulnerable to wire collisions due to their high wing-loading (small wings relative to body size) (Bevanger 1994; Rioux *et al.* 2013).

To mitigate for the potential increase of avian predators and the increased risk of wire collisions, the Project was routed through existing forested areas and the number of tower spans was minimized in the portions that crossed the SHECP. Additionally, measures to increase the visibility of the line to birds and reduce the appeal of the towers to perching avian predators were installed on the Project where it crosses the SHECP. These measures included bird diverters that were installed on the ground conductor wires, to increase the visibility of the line to birds and have been proven to reduce bird collisions (Barrientos *et al.* 2012; Brown and Drewien 1995; Morkill and Anderson 1991). The bird diverters were installed in alternating sequence of Swan-FlightTM Bird Diverters and Bird Flight Diverters (Photo 1). Additional measures, including perch deterrents were installed along the upper arms of the support towers to dissuade avian raptors from perching or nesting in these areas (Photo 2).

Photo 1: Alternating Sequence of Swan-Flight Bird Diverters (bottom left) and Bird Flight Diverters (bottom right) on the Birtle Transmission Project (Linestar Utility Supply 2021; Preformed Line Products 2021)

Photo 2: Perch Deterrents Installed on the Upper Arms of the Support Towers, April 2021

As part of continued environmental monitoring, a sharp-tailed grouse lek survey was conducted in 2021, the first year of operation-phase monitoring. Previous sharp-tailed grouse lek surveys were also conducted as part of baseline Project monitoring in 2017 and 2020 (MB Hydro 2018; WRCS 2020). As indicated in the Environmental Monitoring Plan (MB Hydro 2020), the specific objectives for sharp-tailed grouse monitoring were to:

- Identify the location of sharp-tailed grouse within or in close proximity to the Project footprint with the purpose of establishing a Before-After-Control-Impact monitoring program for known individuals and/or groups;
- Determine the effectiveness of mitigation measures and, if appropriate, propose revisions to the existing plans or develop new mitigation options should unexpected impacts to birds occur as a result of construction or operation activities.

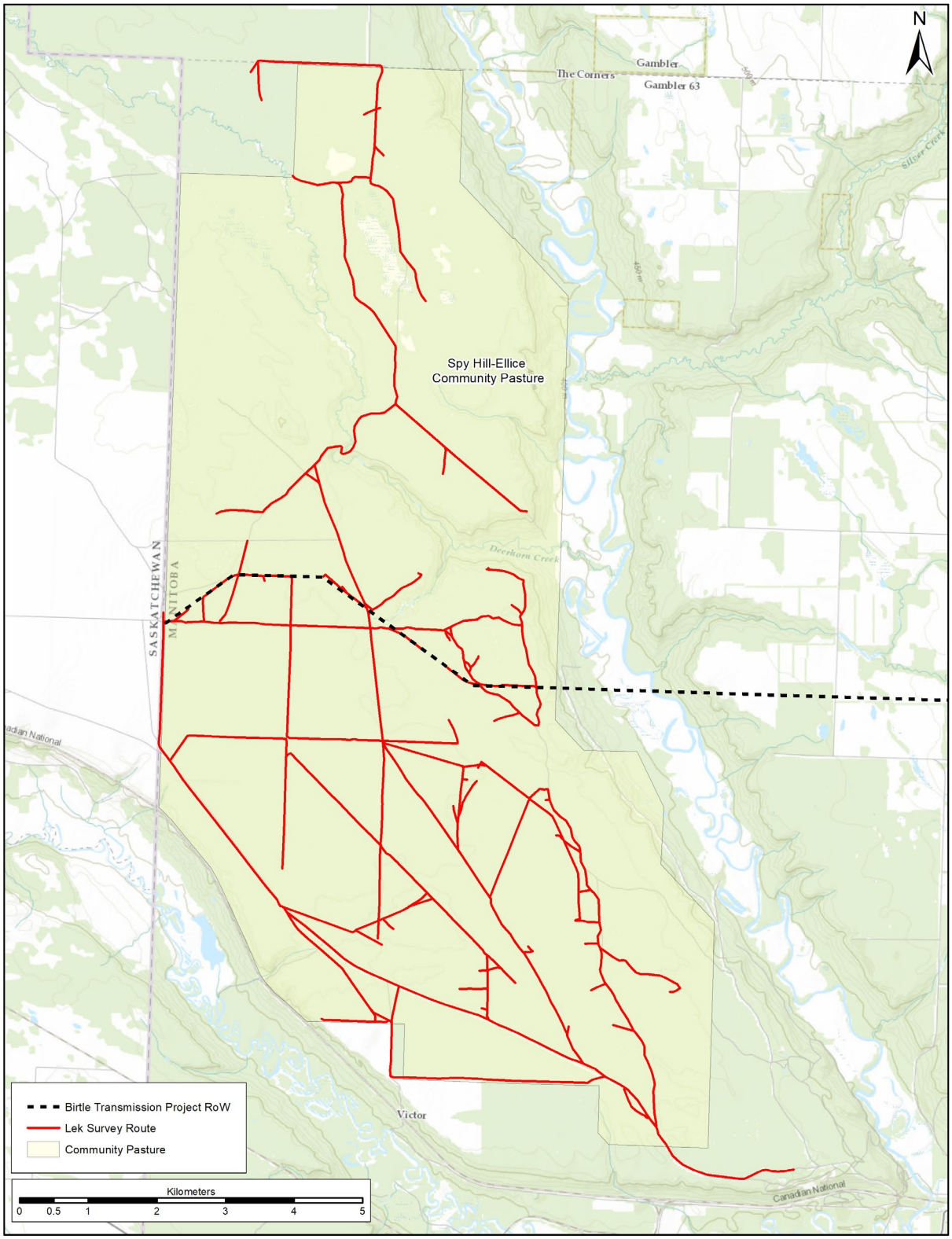
This report compares the findings of the 2017 and 2020 pre-construction-phase sharp-tailed grouse lek surveys to the 2021 operation-phase survey to evaluate the objectives listed above. An additional report examining the efficacy of the installed perch deterrents will also be produced.

2.0 METHODS

Sharp-tailed Grouse Lek Survey

Sharp-tailed grouse lek surveys were conducted by two observers from April 20 to 23, 2021. Surveys were conducted by vehicle and on foot and occurred a half an hour before sunrise to 0830 hours, when grouse are most likely to be actively attending leks. Observers visited locations that were active leks in 2017 or 2020 and travelled along roads and trails in the SHECP looking and listening for sharp-tailed grouse activity (Map 1). When a potential lek was seen or heard, the observer georeferenced the location using handheld global positioning system (GPS) and used binoculars to count the number of birds visible (*i.e.*, passive count). Following the initial count, the observer approached the lek and flushed the birds (*i.e.,* flush count) to obtain a more accurate estimation of birds attending the lek (Drummer *et al.* 2011). Potential female sharp-tailed grouse that may have been on the lek at the time of the count were not differentiated from males.

Prior to conducting the survey, a permit was obtained from the Spy Hill-Ellice Community Pasture Association and observers worked in close conjunction with the pasture manager to ensure approved access and travel in the pasture. Biosecurity protocols were followed during the survey, including decontaminating vehicles and boots prior to and after the survey. Additional pandemic protocols were also followed by the observers, including driving separate vehicles, physical distancing, and proper personal hygiene.



Map 1: Roads and trails travelled while searching for sharp-tailed grouse leks in April 2021

3.0 RESULTS

Sharp-tailed Grouse Lek Survey

A total of nine active sharp-tailed grouse leks with 121 grouse were observed in the study area in 2021, which was lower than the number of leks and grouse observed in 2017 (28) and 2020 (16) (Table 1; Map 2). The number of birds observed at each lek in the study area ranged from six to 31 (Table 1), with an average of 13 grouse per lek and a standard deviation of 7.7. The average number of grouse per lek was greater in 2021 compared to 2017 and 2020, which had an average of six grouse per lek (standard deviation of 6.5) and nine grouse per lek (standard deviation of 5.5), respectively.

Two of the leks observed in 2021 were within 1,000 m (1 km) of the Project centreline and the remaining leks ranged in distance from 1,327 to 6,699 m away (Table 1; Map 2). This was fewer than the number of leks observed within 1,000 m of the proposed centreline in 2017 and 2020, which had 12 and five, respectively. The number of sharp-tailed grouse observed at the leks 1 km away from the centreline in 2021 (42) was the same number observed at the leks within 1 km of the centreline in 2020 (42), but less than the number observed in 2017 (72).

Three of the leks observed in 2021 were in the same locations as they were in both 2017 and 2020 and an additional three leks were in the same locations as they were in either 2017 or 2020 (Table 1; Map 2).

Two potential bird collisions were also observed incidentally along the ROW. One sharp-tailed grouse and one Canada goose were found within the SHECP.

Table 1: Locations, maximum number of sharp-tailed grouse observed from initial or flush counts, and distance to the Birtle Transmission Project RoW (BTP) of leks from the pre-construction periods (2017 and 2020) and operation period (2021) - with redactions

ID	UTM (Redacted)	Pre-construction		Operation	Year(s) Used	Distance from BTP (m)
		Max Birds 2017	Max Birds 2020	Max Birds 2021		
1		15	19	31	2017, 2020, 2021	606
2		28	12	19	2017, 2020, 2021	1,327
3		9	18	10	2017, 2020, 2021	6,699
4		0	12	11	2020, 2021	617
5		24	0	8	2017, 2021	4,837
6		4	16	0	2017, 2020	5,411
7		0	0	9	2021	2,245
8		0	0	11	2021	3,734
9		0	0	6	2021	3,843
10		0	0	16	2021	5,808
11		0	4	0	2020	377
12		0	4	0	2020	666
13		0	3	0	2020	714
14		0	9	0	2020	1,361
15		0	5	0	2020	1,383
16		0	2	0	2020	1,842
17		0	7	0	2020	1,939
18		0	5	0	2020	4,270
19		0	11	0	2020	6,214
20		0	6	0	2020	7,312
*** 21		0	34	0	2020	2,289
22		11	0	0	2017	13
23		10	0	0	2017	22
24		2	0	0	2017	110
25		4	0	0	2017	148
26		3	0	0	2017	340
27		3	0	0	2017	481
28		2	0	0	2017	483
29		6	0	0	2017	495
30		8	0	0	2017	567
31		2	0	0	2017	753
32		6	0	0	2017	858
33		8	0	0	2017	1,264
34		3	0	0	2017	1,380
35		2	0	0	2017	1,597

ID	UTM	Pre-construction		Operation	Year(s) Used	Distance from BTP (m)
		Max Birds 2017	Max Birds 2020	Max Birds 2021		
36		2	0	0	2017	1,629
37		10	0	0	2017	1,760
38		1	0	0	2017	3,577
39		5	0	0	2017	3,616
40		2	0	0	2017	3,731
41		6	0	0	2017	4,483
42		3	0	0	2017	5,286
43		4	0	0	2017	5,602
44		2	0	0	2017	6,371
Total		185	133	121		

*** Incidental observation made by the pasture manager in Saskatchewan and is not included in the total

Redacted

Map 2: Locations of sharp-tailed grouse leks observed during the pre-construction period (2017 and 2020), operation period (2021), and multiple years

4.0 DISCUSSION

Fewer sharp-tailed grouse leks were observed in 2021 (9), compared to the number observed in 2017 (28) or 2020 (16). However, the average number of grouse attending the leks was greater in 2021 (13), compared to 2017 (6) or 2020 (9), which may account for some of the difference in the number of leks observed. The total number of grouse observed in 2021 was lower than the number observed in 2017 and slightly lower than the number observed in 2020. The apparent decrease in the total number of grouse may be due to variability in the observability of grouse during the survey or natural population fluctuations. Sharp-tailed grouse populations may fluctuate due to factors, including habitat availability and changes, grazing practices, predator abundance, food abundance, and weather (Geaumont and Graham 2020; Goddard and Dawson 2009).Some of the decrease may be attributed to the transmission line due to direct impacts, including collision mortality, which was observed in one instance in 2021, or decreased reproduction due to increased predation by raptors or other avian predators perching on the infrastructure. However, these impacts are likely minimal as mitigation measures, including bird flight diverters and avian perch deterrents were installed on infrastructure to minimize direct effects. Additionally, the direct effects on sharp-tailed grouse may exhibit a time lag as survival of grouse decreases over time (Harju *et al.* 2010) and highlights the need for additional surveys during operation.

Lek fidelity did not appear to be affected by the transmission line in 2021. Several of the largest leks observed in 2021, including two less than 1 km away from the ROW, have been observed during both the pre-construction and operation-phase surveys. Even though there were fewer leks observed within 1 km of the Project, the same number of grouse were observed at these leks as during the 2020 pre-construction survey. Additional surveys will help determine if lek fidelity is affected over time. No additional mitigation measures are recommended at this time.

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Appendix 1 – Photos

Photo 1:. Sharp-tailed grouse lek, April 2021

Photo 2: Sharp-tailed grouse lek, April 2021

Photo 3: Potential collision mortality of a sharp-tailed grouse, April 2021

Available in accessible formats upon request