Grand Bend Wind Farm
2020 Post-construction Mortality Monitoring Report

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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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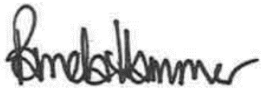

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Executive Summary

Natural Resource Solutions Inc. was retained to conduct the fourth year of post-construction monitoring at the operational Grand Bend Wind Farm, located within the Municipalities of Bluewater and South Huron in Huron County, Ontario. This wind energy project has a nameplate capacity of 100MW and consists of 40 operational turbines situated in an agricultural landscape dominated by row crops. Occasional wooded habitats, wetlands, and aquatic features are also present in the areas surrounding the project infrastructure. This report provides the detailed methods and results from the fourth year of post-construction monitoring for bat mortality conducted at the Grand Bend Wind Farm in 2020.

This fourth year of monitoring for bat mortality was conducted as a result of exceeding the provincial threshold of 10 bats/turbine/year during the first year of monitoring (2017). As the threshold was exceeded after operational mitigation was implemented in both 2018 and 2019, a bat mortality contingency plan was prepared and bat deterrents were installed prior to the 2020 monitoring year. As such, 2020 represents the first year of effectiveness monitoring after implementation of the bat mortality contingency plan. Bird mortality data are not presented herein, as three years of required baseline monitoring for bird mortality have been completed (2017-2019) without exceeding any thresholds in any of the years. Raptor mortality and behaviour monitoring conducted in 2020 will be presented in a *Raptor Scoped Mortality and Cause and Effects Monitoring Report*, which will be prepared under separate cover.

During twice-weekly searches from May 1 to October 31, 2020, 41 bat mortalities were documented within the search areas around the subset of 12 turbines. Bat mortalities of both long-distance migratory and resident species were documented, including Hoary Bat (*Lasiurus cinereus*), Silver-haired Bat (*Lasionycteris noctivagans*), Eastern Red Bat (*Lasiurus borealis*), Big Brown Bat (*Eptesicus fuscus*), and Little Brown Myotis (*Myotis lucifugus*). The first three species above are considered long-distance migratory species which over-winter outside of Ontario, and represent approximately 80% of the total bat mortality observations at the Grand Bend Wind Farm in 2020. Using appropriate correction factors, an estimated bat mortality rate of 4.95 bats/turbine/year (1.99 bats/MW/year) was determined for the Grand Bend Wind Farm. This is below the provincial threshold of 10 bats/turbine/year.

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained to conduct the fourth year of post-construction monitoring at the operational Grand Bend Wind Farm (Grand Bend WF), located within the Municipalities of Bluewater and South Huron in Huron County, Ontario. The Grand Bend WF consists of 40 wind energy generating turbines with a total nameplate capacity of 100MW. The locations of turbines and access roads are provided on Map 1.

Post-construction mortality monitoring at the Grand Bend WF in 2020 consisted of bat mortality monitoring and the associated searcher efficiency trials, scavenger removal trials, and turbine visibility class mapping that are required in order to calculate estimated mortality rates. These surveys were conducted in accordance with provincial guidelines and approval conditions of the Grand Bend WF to assess the potential impacts of this wind energy generating facility on local and migratory bats.

The purpose of this report is to provide the detailed methods and results from the fourth year of post-construction bat mortality monitoring conducted at the Grand Bend WF and to provide a general comparison of the results to the first three years of monitoring (R.J. Burnside & Associates 2018, R.J. Burnside & Associates 2019, R.J. Burnside & Associates 2020). This fourth year of monitoring for bat mortality was conducted as a result of exceeding the provincial threshold of 10 bats/turbine/year during the first year of monitoring (2017). As the threshold was exceeded after operational mitigation was implemented in both 2018 and 2019, the *Grand Bend Wind Farm: Bat Mortality Contingency Plan Rev. 1* (NRSI 2020) was prepared and bat deterrents were installed at the Grand Bend WF prior to the 2020 monitoring year. As such, 2020 represents the first year of effectiveness monitoring after implementation of the bat mortality contingency plan.

Bird mortality data are not presented herein, as three years of required baseline monitoring for bird mortality have been completed (2017-2019) without exceeding any thresholds in any of the years. Raptor mortality and behaviour monitoring conducted in 2020 will be presented in a *Raptor Scoped Mortality and Cause and Effects Monitoring Report*, which will be prepared under separate cover.

For the purposes of this report, NRSI will frequently use the terms ‘mortality’ and ‘carcass’. The term ‘mortality’ will refer to dead bats that were found in the vicinity of turbines at the Grand Bend WF. The term ‘carcass’ will refer to dead birds and bats that have been placed beneath wind turbines by NRSI staff for the purposes of searcher efficiency and/or scavenger removal trials.

Any mortality that was incidentally observed beyond the formal search parameters of the monitoring program was still documented, photographed, and collected, but has not been included in formal calculations of estimated mortality rates and is not discussed further in this report.

2.0 Mortality Monitoring Methodology

2.1 Mortality Monitoring

All monitoring undertaken at the Grand Bend WF was conducted in accordance with Ministry of Natural Resources and Forestry (MNRF) guidelines (OMNR 2011) and any other associated project approval conditions. The summarized methods are provided in the following sections.

2.1.1 Sample Locations

Since the Grand Bend WF is a facility consisting of more than 10 turbines, a subset of at least 30% of turbines is required to be monitored (OMNR 2011, MOE 2014 [L4]). In accordance with these requirements, NRSI biologists conducted mortality monitoring at a subset of 12 turbines (30%) in 2020, which was consistent with the subset monitored in previous years (2017-2019) and is shown on Map 1.

2.1.2 Monitoring Period and Search Frequency

NRSI biologists conducted twice-weekly (three and four day intervals) mortality monitoring at the subset of 12 turbines during the monitoring period of May 1 to October 31, 2020, which is consistent with the monitoring period for bat mortalities, as identified in the MNRF guidelines (OMNR 2011).

As a result of inclement weather and other safety concerns, some turbines could not be searched on their regularly scheduled dates. These relatively minor adjustments to the monitoring protocol are not expected to impact the results or conclusions presented in this report. The dates when turbines were not able to be searched on their regularly-scheduled search date are listed in Table 1.

Table 1. Summary of Regular Search Days When Turbines Could Not be Searched (2020)

Regular Search Date (2020)	Date Turbine Next Searched (2020)[1]	Turbine(s)	Rationale
May 28	May 29	T16	Turbine Maintenance
June 1	June 2	T20	Turbine Maintenance
June 5	June 9	T31	Turbine Maintenance
June 11	June 15	T18	Turbine Maintenance
June 15	June 16	T20	Turbine Maintenance

Regular Search Date (2020)	Date Turbine Next Searched (2020)[1]	Turbine(s)	Rationale
June 23	June 24	T27, T31, T33, T38, T42, T48	Inclement Weather (Thunderstorm)
June 25	June 26	T17	Turbine Maintenance
June 29	June 30	T17	Turbine Maintenance
July 10	July 14	T42, T48	Inclement Weather (Thunderstorm)
July 28	July 31	T33	Turbine Maintenance
August 3	August 4	T07, T16, T17, T18, T20	Inclement Weather (Thunderstorm)
August 11	August 14	T38	Turbine Maintenance
August 14	August 19	T42	Turbine Maintenance
August 18	August 19	T42	Turbine Maintenance
September 18	September 25	T48	Turbine Maintenance
September 22	September 25	T48	Turbine Maintenance
September 28	September 29	T17, T20	Turbine Maintenance
October 1	October 2	T20	Turbine Maintenance

[1] *Due to a variety of factors which may include the duration of turbine maintenance, weather conditions, the location of the project, and/or staff commitments, certain turbines could not be searched again until the next regularly scheduled search day.*

2.1.3 Sample Area and Survey Duration

NRSI biologists conducted mortality searches within a 50m radius of each turbine base. Mortality searches were conducted using linear transects, spaced approximately 3m apart. In order to maintain a consistent search effort, mortality searches followed a consistent search time of 30 minutes per turbine throughout each month of monitoring. As teams consisting of two searchers conducted each of the surveys from May 1 to October 31, this search effort is equivalent to 60 minutes per turbine of total person-effort during each search event in the monitoring period. This search effort is considerably greater than the suggested baseline effort of 20 minutes noted in the MNRF guidelines (OMNR 2011), and was implemented proactively in an effort to improve the accuracy of the monitoring results.

2.1.4 Data Collection

During each visit to conduct mortality searches, all appropriate information was documented, including weather conditions, date, time, and observer. The mortality monitoring data collection sheet has been provided in Appendix I.

In addition to general information collected on each visit, a variety of specific information was recorded upon encountering any mortality. This detailed information, as shown on the data sheet provided in Appendix I, included species (if identifiable), sex of the individual (if identifiable), condition, estimated time since death, any apparent injuries, distance and direction from turbine base, substrate type and visibility class, and a unique mortality identification number for future reference. UTM coordinates and photographs were also taken for each specimen to allow for further analysis, if necessary.

2.2 Scavenger Removal Trials

Scavenger removal trials were conducted in each of the spring, summer, and fall seasons of mortality monitoring. For the purposes of this monitoring program, the spring monitoring season is defined as the months of May and June, the summer monitoring season is July and August, and the fall monitoring season is September and October. A minimum of 10 carcasses were placed during each monitoring season at the subset of 12 turbines. No more than five carcasses were placed at one time and no more than two carcasses were placed at any single turbine during each trial. These measures were taken to avoid potential bias in the trial resulting from saturation of carcasses available to scavengers. Carcasses were placed throughout the range of habitats and substrate types being searched during each season. Species, UTM coordinates, distance and direction from turbine base, and visibility class were recorded on a data sheet during the placement of each specimen. The scavenger removal data sheet is provided in Appendix I.

Carcasses placed included both bird and bat specimens, with each trial consisting of at least one-third representation of each of bird and bat carcasses. Bird carcasses included species commonly encountered in this region of the province and ranged in size from very small to moderately-sized carcasses. Long-distance migratory bat carcasses were used in each seasonal scavenger removal trial, and included Hoary Bat (*Lasiurus cinereus*), Eastern Red Bat (*Lasiurus borealis*), and Silver-haired Bat (*Lasionycteris noctivagans*). Carcasses used in scavenger removal trials were obtained from the Royal Ontario Museum and/or were collected from operational wind energy facilities within Ontario. A list of the bird and bat species used during scavenger removal trials is provided in Appendix II.

During each scavenger removal trial, the bird and bat carcasses were left for up to 14 days and were checked at the same frequency as mortality searches (i.e., twice per week) to note any scavenging or signs of scavenger presence. Following completion of the scavenger removal trials after 14 days, all remaining test carcasses were retrieved and disposed of appropriately.

2.3 Searcher Efficiency Trials

In conjunction with mortality searches, NRSI conducted searcher efficiency trials on teams that conducted mortality searches at the Grand Bend WF. Searcher efficiency trials were conducted on each unique search team (consisting of two searchers) at a minimum of once during each season (spring, summer, and fall). In order to account for seasonal changes in groundcover, weather, or other potential variations in search conditions, NRSI conducted monthly searcher efficiency trials from May to October. During each trial, search teams were tested without their knowledge through the placement of a minimum of 10 test carcasses per visibility class searched (classes 1 and 2) at the subset of 12 turbines. During all monthly trials, no more than three carcasses were placed on any single search event, as per the *Grand Bend Wind Farm: Natural Heritage Environmental Effects Monitoring Plan* (EEMP; Neegan Burnside Ltd. 2013).

Carcasses were placed randomly within each visibility class searched, and within the 50m search radii at the subset of 12 turbines at the Grand Bend WF. Distance and direction from turbine base, visibility class, substrate type, and UTM coordinates were recorded for each test carcass placed. Each specimen found was later compared to the total number of carcasses placed at each turbine, the locations of their placement, and species placed. The data sheet used for searcher efficiency trials is provided in Appendix I.

In order to meet the understood intent of the MNRF guidelines to limit searcher bias (OMNR 2011), NRSI has not physically marked trial carcasses at this project, as marking the carcasses could influence the results of the trial by alerting the search team to the ongoing searcher efficiency trial. Instead, NRSI biologists collect detailed information on the location of trial carcasses, including UTM coordinates, distance and direction from the turbine, and mapping the location of each carcass. All collected carcasses are compared to this detailed location and species information to distinguish

between trial carcasses and turbine-related mortalities. These steps have been taken to ensure that the location of the carcasses, along with species information, is well documented for future reference should there be any uncertainty about whether an observed carcass is a turbine-related mortality or a trial carcass.

Searcher efficiency carcasses included both bird and bat specimens, with each trial consisting of at least one-third representation of each of bird and bat carcasses. Bird carcasses included species commonly encountered in this region of the province and varied in size from very small to moderately-sized carcasses. Bat carcasses used during searcher efficiency trials included the three long-distance migratory species known to occur in Ontario, including Hoary Bat, Eastern Red Bat, and Silver-haired Bat. Carcasses used in searcher efficiency trials were obtained from the Royal Ontario Museum and/or were collected from operational wind energy facilities within Ontario. A list of the bird and bat species used during searcher efficiency trials is provided in Appendix III.

2.4 Proportion of Area Searched

Following MNRF guidelines, visibility class maps were completed by search teams at a minimum frequency of once per season (OMNR 2011). Due to the potential for changing conditions between monitoring months, NRSI completed visibility class maps once per month from May to October to provide additional information on the conditions of the search plots to support whether more frequent searcher efficiency trials were warranted, and ultimately to increase the accuracy of the estimated mortality rate.

Visibility class mapping was completed for the 50m search radius at each of the 12 subset turbines. This mapping categorized portions of the search area according to visibility classes recommended by the MNRF (OMNR 2011). These include visibility classes 1 through 4, in addition to any areas which may be deemed “unsearchable”, such as aquatic features, areas deemed safety hazards, or other areas where searching was not possible. Mapping of these visibility classes within the 50m search radius of each turbine was conducted and calculated as per a repeatable methodology using a combination of the visibility class field maps, review of aerial photographs, and Geographic Information System (GIS) software. The data sheet used to record visibility

class mapping includes the definitions of the visibility classes used and is provided in Appendix I.

In an effort to increase the accuracy of searcher efficiency rates and minimize the influence of the proportion of area searched on the bat mortality estimate, the search radii at the subset of 12 turbines were maintained at visibility classes 1 or 2 by occasional plowing or mowing during the monitoring year (May through October), as needed. Small areas of other visibility classes were occasionally present, particularly near the outer limit of the 50m radii. When small and/or temporary areas of other visibility classes were present, they were searched thoroughly until scheduled vegetation maintenance could occur. As a result, the majority of the 50m radius at each turbine was searched for the duration of the 2020 monitoring period. At two turbines, some larger areas were mapped as visibility classes that were not searched as part of this monitoring program (i.e., visibility class 3 or 4) during a particular month. In these cases, the appropriate proportion of area searched was calculated and used for the final mortality estimate. Visibility class maps for each turbine in each month are provided in Appendix IV.

Maintenance of the 50m search radii was only completed when necessary to maintain appropriate mortality visibility and followed a strict schedule that ensured the maintenance activities were completed in a manner to minimize or eliminate any potential negative influence on the mortality monitoring, searcher efficiency trials, and scavenger removal trials. The maintenance of the search areas is expected to increase the accuracy of the final estimated mortality rate at the Grand Bend WF.

3.0 Scavenger Removal Trial Results

Scavenging activity at the Grand Bend WF was generally low to moderate throughout the monitoring period, with the lowest scavenging activity noted during the summer trial.

Table 2 shows the results of the seasonal scavenger removal trials conducted at the Grand Bend WF. Details on the date placed, species, distance and direction from turbine, visibility class, dates checked and by whom, UTM coordinates, and whether the carcass was scavenged are provided in Appendix II.

Table 2. Number of Carcasses Remaining During Scavenger Removal Trials at the Grand Bend Wind Farm (2020)

Number of Carcasses Remaining					
Spring Trial (May/June)					
Turbine	**Visit 0**	**Visit 1**	**Visit 2**	**Visit 3**	**Visit 4**
T02	1	1	1	1	0
T16	1	0	0	0	0
T17	1	0	0	0	0
T18	1	1	0	0	0
T20	1	0	0	0	0
T27	1	1	0	0	0
T31	1	1	1	1	0
T33	1	0	0	0	0
T38	1	1	0	0	0
T42	1	0	0	0	0
Total	**10**	**5**	**2**	**2**	**0**
Summer Trial (July/August)					
Turbine	**Visit 0**	**Visit 1**	**Visit 2**	**Visit 3**	**Visit 4**
T02	1	1	1	1	1
T07	1	1	0	0	0
T16	1	1	1	1	1
T17	1	0	0	0	0
T20	1	1	1	1	1
T27	1	1	1	1	1
T31	1	1	1	1	1
T38	1	0	0	0	0
T42	1	0	0	0	0
T48	1	0	0	0	0
Total	**10**	**6**	**5**	**5**	**5**
Fall Trial (September/October)					
Turbine	**Visit 0**	**Visit 1**	**Visit 2**	**Visit 3**	**Visit 4**
T02	1	1	0	0	0

Number of Carcasses Remaining					
T07	1	0	0	0	0
T16	1	0	0	0	0
T17	1	1	0	0	0
T18	1	0	0	0	0
T27	1	1	1	1	0
T31	1	0	0	0	0
T33	1	1	1	1	1
T38	1	0	0	0	0
T48	1	0	0	0	0
Total	**10**	**4**	**2**	**2**	**1**

To calculate the scavenger removal rate for each of the specific monitoring periods, NRSI has used the following equation recommended by the MNRF:

$$Sc = \frac{n_{visit1} + n_{visit2} + n_{visit3} + n_{visit4}}{n_{visit0} + n_{visit1} + n_{visit2} + n_{visit3}}$$

Sc: proportion of carcasses not removed by scavengers
n_{visit0}: total number of carcasses placed
$n_{visit1} – n_{visit4}$: number of carcasses remaining on visits 1 through 4

Using the scavenger removal results presented in Table 2 and the equation provided by the MNRF, the seasonal scavenger removal rates have been determined as follows:

Sc_{Spring} = (5 + 2 + 2 + 0) / (10 + 5 + 2 + 2)
= 9 / 19
= **0.47**

Sc_{Summer} = (6 + 5 + 5 + 5) / (10 + 6 + 5 + 5)
= 21 / 26
= **0.81**

Sc_{Fall} = (4 + 2 + 2 + 1) / (10 + 4 + 2 + 2)
= 9 / 18
= **0.50**

The above scavenger removal rates represent the proportion of carcasses still remaining from one visit to the next. These values generally represent a low level of scavenging activity in the summer and a moderate level of scavenging activity in the spring and fall. These values are used to calculate the estimated bat mortality rate in Section 6.0.

4.0 Searcher Efficiency Trial Results

Searcher efficiency rates at the Grand Bend WF were consistently high throughout the 2020 monitoring period. Results of the monthly searcher efficiency trials are summarized in Table 3 below. Details on the search team, species, distance and direction from turbine, UTM coordinates, visibility class, habitat/substrate, and whether the carcass was found or scavenged are provided in Appendix III.

Table 3. Results of Searcher Efficiency Trials at the Grand Bend Wind Farm (2020)

Searcher(s)	Carcasses Found	Carcasses Placed	Carcasses Scavenged	Searcher Efficiency (Se)	Proportion of Turbines Searched
May 2020					
Search Team A	17	26	6	0.85	1.00
June 2020					
Search Team A	19	22	2	0.95	1.00
July 2020					
Search Team A	17	21	1	0.85	1.00
August 2020					
Search Team A	20	21	1	1.00	1.00
September 2020					
Search Team A	18	22	2	0.90	0.92
Search Team B[1]	N/A	N/A	N/A	0.90	0.08
October 2020					
Search Team A	18	22	2	0.90	0.78
Search Team B[1]	N/A	N/A	N/A	0.90	0.22

[1] This search team searched on up to four dates during the month and therefore could not be sufficiently tested for searcher efficiency following MNRF guidelines (i.e., seven search days are required for proper testing in two visibility classes, since no more than three carcasses can be placed at one time). In this circumstance, the average result obtained by the primary search team in this month was used for this search team.

Based on the information collected during searcher efficiency trials and the equations recommended by the MNRF, overall searcher efficiency (SeO) was calculated for each of the monitoring months as follows:

$$Se = \frac{\text{number of test carcasses found}}{\text{number of test carcasses placed} - \text{number of test carcasses scavenged}}$$

$SeO = Se_A(\text{proportion of turbines searched}) + Se_B(\text{proportion of turbines searched})\ldots$

SeO_{May} = 0.85 (1.00) = **0.85**

SeO_{June} = 0.95 (1.00) = **0.95**

SeO_{July} = 0.85 (1.00) = **0.85**

SeO_{August} = 1.00 (1.00) = **1.00**

$SeO_{September}$ = 0.90 (0.92) + 0.90 (0.08) = **0.90**

$SeO_{October}$ = 0.90 (0.78) + 0.90 (0.22) = **0.90**

These searcher efficiency values represent relatively high searcher efficiency rates, likely due to the additional search effort and steps taken to maintain clear search areas and keep the search areas in low visibility classes (i.e., clear and more easily searched) to increase the accuracy of the estimated mortality rate. These values are used to calculate the estimated bat mortality rate in Section 6.0.

5.0 Proportion of Area Searched Results

Visibility class mapping was completed each month from May to October within the 50m search radius at each of the 12 subset turbines in order to reflect changes in groundcover, land use, or other seasonal factors that may influence the resulting visibility classes.

NRSI biologists searched all areas of visibility classes 1 and 2 at each subset turbine, which have been combined to represent the proportion of area searched (Ps). In May, some larger areas of visibility class 3 were also present at two turbines for an extended period within the month. These large, and persistent, areas of visibility class 3 were not searched, and are reflected as such in the Total Searched Area values below. The calculations in Table 4 below show the Ps value during each month of the monitoring program for all 12 subset turbines. The Ps values are used to calculate the estimated bat mortality rate in Section 6.0. Visibility class mapping is provided in Appendix IV.

Table 4. Proportion of Area Searched at the Grand Bend Wind Farm (2020)

Month	Total Searched Area (m^2)	Total Search Radius (m^2)	Proportion of Area Searched (Ps)[1]
May	93,756	94,200	1.00
June	94,200	94,200	1.00
July	94,200	94,200	1.00
August	94,200	94,200	1.00
September	94,200	94,200	1.00
October	94,200	94,200	1.00

[1] *Rounded to two decimal places.*

6.0 Bat Mortality Results

6.1 Bat Mortalities

During post-construction mortality monitoring at the Grand Bend WF in 2020, NRSI biologists documented 41 bat mortalities within the 50m search radii at the subset of 12 turbines. Bat mortalities represented five different species, including three long-distance migratory species (Eastern Red Bat, Hoary Bat, and Silver-haired Bat), as well as the resident species Big Brown Bat (*Eptesicus fuscus*) and Little Brown Myotis (*Myotis lucifugus*). The most abundant species observed was Hoary Bat (n=15), followed by Silver-haired Bat (n=12), Eastern Red Bat (n=6), Big Brown Bat (n=6), and Little Brown Myotis (n=2). Observed mortalities of the three long-distance migratory bat species combined to represent approximately 80% of all bat mortalities documented at the subset of turbines.

A detailed discussion of bat mortalities observed during 2020 post-construction mortality monitoring at the Grand Bend WF is included in the following sections. A list of each bat mortality, including date and time of observation, location, and species, is provided in Appendix V.

6.2 Temporal Distribution of Bat Mortalities

Bat mortalities were generally observed throughout the monitoring period, but were most commonly observed during the month of August (n=26) (see Figure 1 below). The monitoring date with the highest number of documented mortalities was August 31, 2020, when seven bat mortalities were documented across the monitoring subset. Bat mortalities by date are shown on Figure 1 below.

Patterns of bat mortalities appear to be consistent with the expected migratory time periods for these species, with increases in long-distance migratory bat mortalities expected during the mid- to late-summer. Overall, bat mortality was highest from late July to early September, corresponding to the anticipated peak periods of summer swarming and early fall migration of bats.

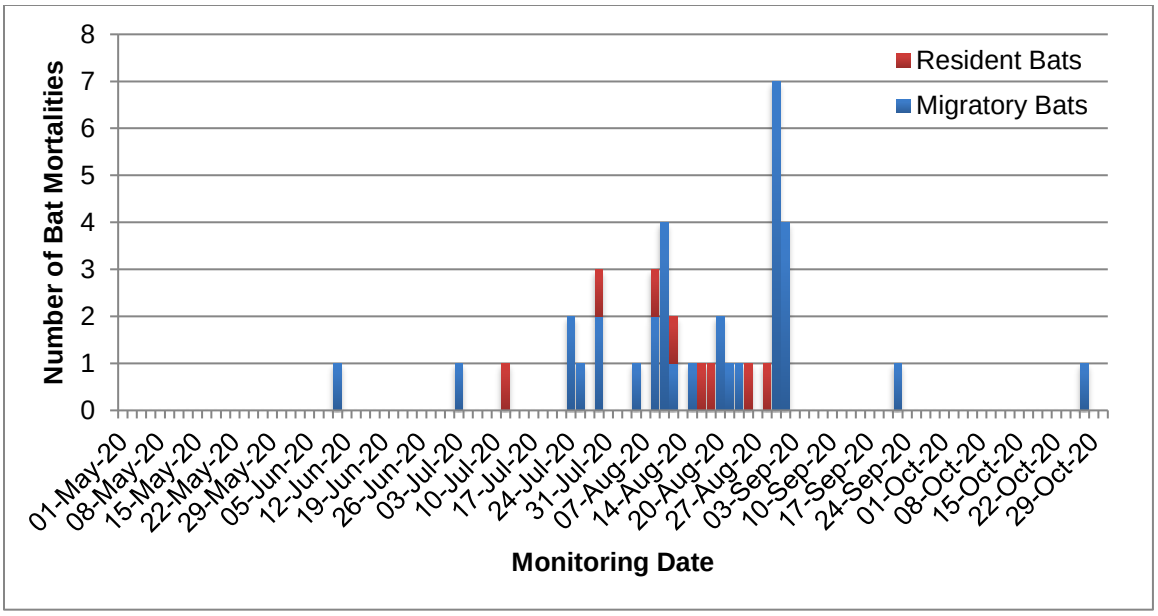


Figure 1. Bat Mortalities Observed by Date at the Grand Bend Wind Farm (2020)

6.3 Spatial Distribution of Bat Mortalities

Bat mortalities were observed at each of the 12 subset turbines at the Grand Bend WF in 2020, ranging from one bat mortality at each of Turbines T33 and T48 to seven bat mortalities at Turbine T20 (see Figure 2 below). The four turbines with the highest bat mortality (T16, T20, T31, and T42) are geographically diverse within the project area, and no clear geographic patterns of bat mortality are immediately apparent. Maps identifying the location of each observed mortality by turbine are provided in Appendix VI.

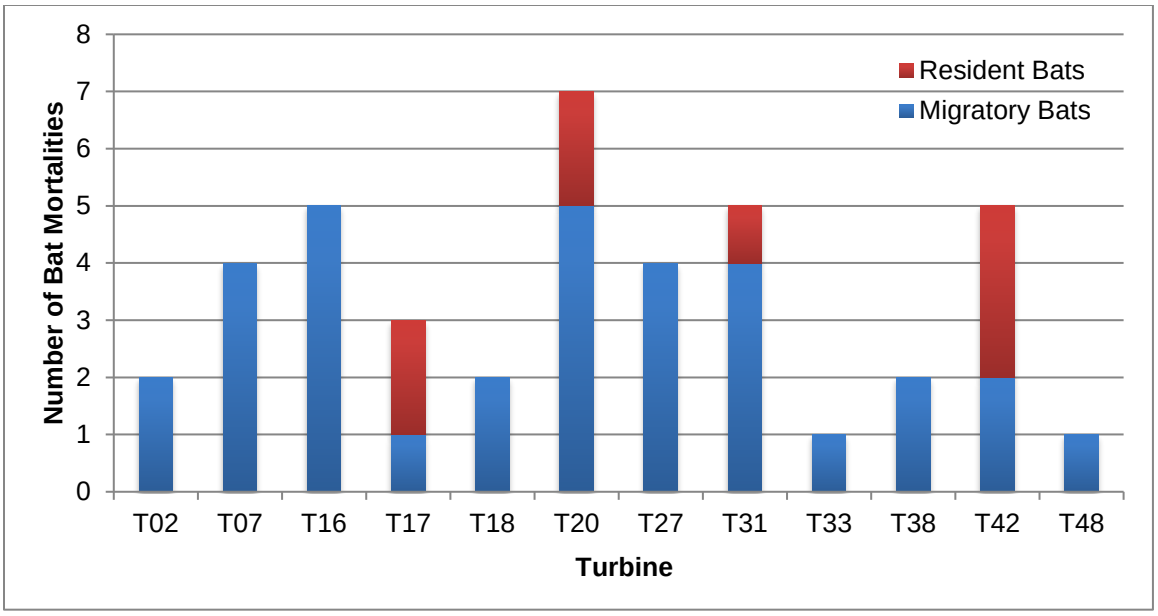


Figure 2. Bat Mortalities Observed by Turbine at the Grand Bend Wind Farm (2020)

Distance and direction of bat mortalities from each of the turbine bases were also documented for each observed mortality. Bat mortalities were generally found throughout the area searched by NRSI biologists, ranging in distance from 0m to 50m from the turbine base, with an average distance of approximately 30m from the turbine base. The overall distribution of mortalities by distance class is shown on Figure 3 below.

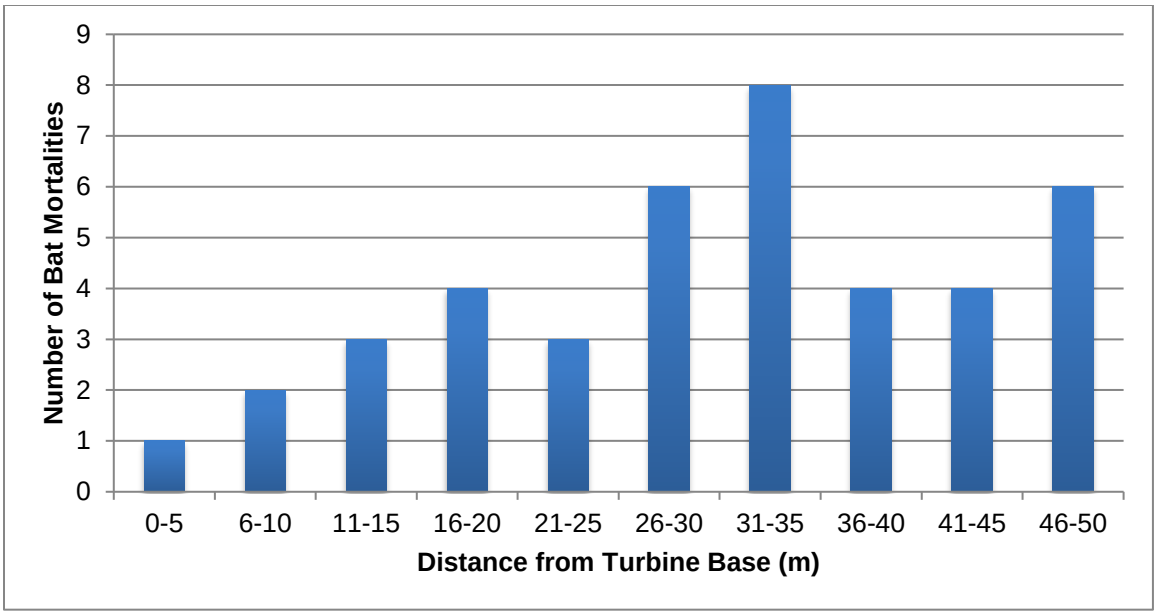


Figure 3. Bat Mortalities Observed by Distance from Turbine at the Grand Bend Wind Farm (2020)

6.4 Corrected (Estimated) Bat Mortality

Based on field observations at the Grand Bend WF, NRSI biologists have compiled the searcher efficiency trials, scavenger removal trials, proportion of area searched, and direct mortality observations into an equation that will be used to estimate the total bat mortality at the Grand Bend WF in 2020. The equation recommended by the MNRF is found below:

C = c / (Se*Sc*Ps)

C: Corrected (Estimated) Mortality Rate
c: observed mortalities
Se: overall searcher efficiency
Sc: proportion of remaining carcasses
Ps: proportion of area searched

Using the equation and variables described above, the estimated bat mortality rates by month have been presented below:

C_{May} = 0 / (0.85*0.47*1.00) = 0 / 0.3995 = 0.00 bats
= **0.00 bats/turbine** (0.00 bats/MW)

C_{June} = 1 / (0.95*0.47*1.00) = 1 / 0.4465 = 2.24 bats
= **0.19 bats/turbine** (0.08 bats/MW)

C_{July} = 8 / (0.85*0.81*1.00) = 8 / 0.6885 = 11.62 bats
= **0.97 bats/turbine** (0.39 bats/MW)

C_{August} = 26 / (1.00*0.81*1.00) = 26 / 0.8100 = 32.10 bats
= **2.67 bats/turbine** (1.08 bats/MW)

$C_{September}$ = 5 / (0.90*0.50*1.00) = 5 / 0.4500 = 11.11 bats
= **0.93 bats/turbine** (0.37 bats/MW)

$C_{October}$ = 1 / (0.90*0.50*1.00) = 1 / 0.4500 = 2.22 bats
= **0.19 bats/turbine** (0.07 bats/MW)

Total **= 4.95 bats/turbine** (1.99 bats/MW)

Using the appropriate variables and recommended equations provided by the MNRF, NRSI has determined the corrected (estimated) bat mortality at the Grand Bend WF in 2020 to be 4.95 bats/turbine/year (1.99 bats/MW/year). The monthly estimated mortality rates, and resulting annual estimated bat mortality rate, for the Grand Bend WF are provided in Table 5 below.

Table 5. Corrected Bat Mortality Rates Based on Mortality Monitoring at the Grand Bend Wind Farm (2020)

Month (2020)	Observed Bat Mortalities	Corrected Mortality (bats/turbine)	Corrected Mortality (bats/MW)
May	0	0.00	0.00
June	1	0.19	0.08
July	8	0.97	0.39
August	26	2.67	1.08
September	5	0.93	0.37
October	1	0.19	0.07
TOTAL	**41**	**4.95**	**1.99**

Based on the information collected during the 2020 post-construction monitoring period, the anticipated impact of this facility on bats is characterized by a corrected mortality rate of **4.95 bats/turbine/year** (1.99 bats/MW/year).

7.0 Assessment of Bat Contingency Measures

As outlined in the accepted *Grand Bend Wind Farm: Bat Mortality Contingency Plan Rev. 1* (Contingency Plan; NRSI 2020), acoustic bat deterrents were installed as a contingency measure on six of the 12 subset turbines prior to May 1, 2020 (Map 1) and were activated between sunset and sunrise throughout the bat active season (May 1 – October 31). The following section provides an analysis of the effectiveness of the bat deterrent units in reducing estimated bat mortality rates at the Grand Bend WF.

The acoustic bat deterrents were selectively installed on six turbines that have previously demonstrated high bat mortality, relative to other turbines within the monitoring subset. Although this approach will make direct comparisons between treatment and control turbines more difficult, this strategy was chosen in an effort to minimize overall bat mortality and to also maximize the benefit of the acoustic deterrents at the onset of implementation.

7.1 Contingency Plan Monitoring Results

During the 2020 post-construction mortality monitoring period, 17 bat mortalities were documented at the six control turbines (i.e., no deterrent) and 24 bat mortalities were documented at the six treatment turbines (i.e., with deterrent) (see Figure 4 below).

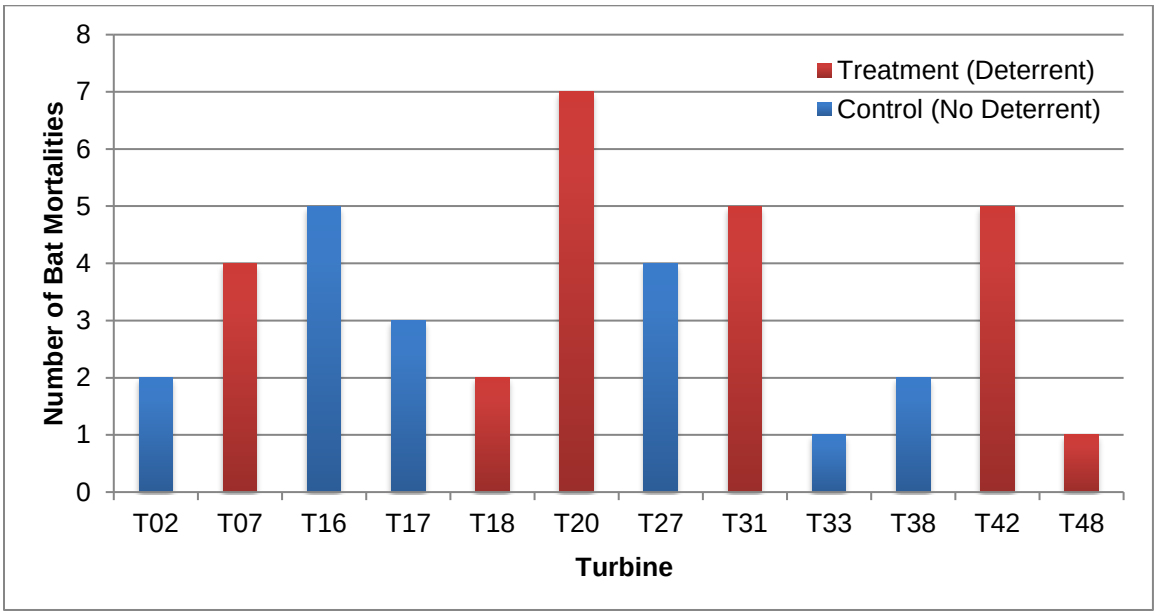


Figure 4. Bat Mortalities Observed at Treatment and Control Turbines at the Grand Bend Wind Farm (2020)

The corrected (estimated) bat mortality rates at the six control turbines (i.e., no deterrent) are compared with the corrected (estimated) bat mortality rates at the six treatment turbines (i.e., with deterrent) in Table 6 below. For comparison, the corrected (estimated) bat mortality rates at all 12 subset turbines as a whole are also presented below.

Table 6. Corrected Bat Mortality Rates at Treatment and Control Turbines at the Grand Bend Wind Farm (2020)

Month (2020)	Corrected Mortality (bats/turbine)		
	Control Turbines (No Deterrent)	Treatment Turbines (with Deterrent)	All Subset Turbines Combined
May	0.00	0.00	0.00
June	0.00	0.37	0.19
July	0.97	0.97	0.97
August	1.65	3.70	2.67
September	1.48	0.37	0.93
October	0.37	0.00	0.19
TOTAL	**4.47**	**5.41**	**4.95**

Results of the 2020 bat mortality monitoring program indicate that slightly higher bat mortality was observed at the six treatment turbines (i.e., with deterrent), when compared with the six control turbines (i.e., no deterrent). However, since the six treatment turbines were selected based on higher levels of bat mortality observed in previous monitoring years, relative to the other subset turbines, it is still possible that a notable reduction may occur while still having higher mortality estimates than the six control turbines.

In consideration of the corrected (estimated) bat mortality rates, NRSI has calculated rates for the entire 12 subset turbines, as well as the separate rates for each of the control turbines and treatment turbines. In all cases, the corrected (estimated) bat mortality rates were below the provincial threshold of 10 bats/turbine/year, indicating that the Contingency Plan (i.e., installation of bat deterrents at 50% of the subset turbines) was effective in reducing estimated bat mortality rates at the Grand Bend WF during the 2020 monitoring year.

As this first year of effectiveness monitoring indicates that the bat deterrent systems have been successful in sufficiently reducing bat mortality at the Grand Bend WF at their current implementation on 50% of the subset turbines, no adjustments to the Contingency Plan approach are proposed at this time. If additional monitoring of these contingency measures in years 2 (2021) and 3 (2022) of effectiveness monitoring continue to demonstrate that this approach is effective in reducing bat mortality rates, the Contingency Plan will require the Grand Bend WF to install deterrents on a minimum of 50% of the non-subset turbines to ensure the facility, as a whole, is operated in a similar manner to the subset turbines during this assessment of effectiveness.

8.0 Mortality Thresholds and Notifications

In accordance with the appropriate MNRF guidelines, project approval conditions, and other commitments made as part of the monitoring program, specific mortality thresholds and notification requirements have been established for the Grand Bend WF. The status of each threshold and confirmation of notifications, where applicable, are described in the following sections.

8.1 Annual Bat Mortality

The annual bat mortality threshold for the Grand Bend WF is 10 bats/turbine/year. Based on an estimated rate of 4.95 bats/turbine/year, the annual mortality estimate for the Grand Bend WF in 2020 remains below this provincial threshold. Since the results are below the established threshold, no notification is required.

8.2 Species at Risk Mortality Event

Any provincially listed Threatened or Endangered Species at Risk (MECP 2020) mortality documented during post-construction mortality monitoring at the Grand Bend WF requires formal notification to the Ministry of the Environment, Conservation and Parks (MECP) and MNRF within 24 hours (or next business day) of a confirmed species identification (Neegan Burnside Ltd. 2013).

Where applicable, and in accordance with the *Grand Bend Wind Farm: Natural Heritage Environmental Effects Monitoring Plan* (Neegan Burnside Ltd. 2013), notifications were sent to the MECP and MNRF within 24 hours (or next business day), following confirmed identifications of any Species at Risk mortalities at the Grand Bend WF.

9.0 Comparative Annual Results

Mortality monitoring conducted by NRSI in 2020 represents the fourth year of post-construction mortality monitoring at the Grand Bend WF, and the first year of effectiveness monitoring after the implementation of the Contingency Plan (NRSI 2020). The following section provides a summarized comparison of the 2017, 2018, 2019, and 2020 post-construction mortality monitoring results for bats.

Table 7 below provides an abbreviated summary of the total bat mortalities, monitoring periods, and corrected (estimated) mortality rates for each of the four years of mortality monitoring conducted at the Grand Bend WF. Further details of the 2020 bat mortality results are provided in Section 6.0 of this report.

Table 7. Comparative Results of Bat Mortality Monitoring Seasons (2017-2020)

Year	Total Mortalities	Monitoring Period	Corrected Mortality Rates	
			Bats/Turbine/Year	Bats/MW/Year
2017[1]	91	May 1 – October 31	27.85	11.23
2018[2]	36	May 1 – October 31	10.19	4.11
2019[3]	47	May 1 – October 31	14.86	5.99
2020	41	May 1 – October 31	4.95	1.99

[1] *R.J. Burnside & Associates 2018*
[2] *R.J. Burnside & Associates 2019*
[3] *R.J. Burnside & Associates 2020*

Although a general comparison between the four years of post-construction monitoring data has been made above, the differences in searcher efficiency rates, scavenger removal rates, and proportion of area searched over the four monitoring years do not necessarily allow for a direct comparative analysis of observed mortalities between each year. Local bat abundance and behaviour will also change annually based on other variables, such as weather conditions, adjacent land uses, food availability, or general variations in population numbers, further adding to the challenges of making direct comparisons between monitoring years.

In addition, the approach to turbine operation has also changed throughout the 2017-2020 monitoring period. Beginning in the 2018 monitoring year, operational mitigation below wind speeds of 5.5m/s was applied at all turbines at the Grand Bend WF from sunset to sunrise, from July 15 to September 30, in accordance with the MNRF

guidelines (OMNR 2011). Prior to the 2020 monitoring year, additional measures were taken and acoustic bat deterrents were installed at six of the 12 subset turbines, which were used as an additive measure to the previously implemented operational mitigation. These considerations further add to the challenges of making direct comparisons between monitoring years.

Despite these comparative challenges, general comparisons between the monitoring years have been made. Overall, the uncorrected number of bat mortalities documented in 2018, 2019, and 2020 were similar, and were notably lower than the number of bat mortalities documented in 2017, which is likely a result of the implementation of operational mitigation after the 2017 monitoring year. The corrected bat mortality rate was similar in each of 2018 and 2019, while the 2020 monitoring year has resulted in the lowest corrected bat mortality rate observed in any of the four monitoring years to-date.

10.0 Summary and Conclusions

NRSI was retained to conduct the fourth year of post-construction monitoring at the operational Grand Bend WF. The Grand Bend WF consists of 40 wind energy generating turbines with a total nameplate capacity of 100MW.

As a result of exceeding the provincial threshold of 10 bats/turbine/year during the first year of monitoring in 2017, and exceeding the provincial threshold after operational mitigation was implemented in both 2018 and 2019, monitoring in 2020 represents the first year of effectiveness monitoring after implementation of the bat mortality contingency plan (NRSI 2020).

Post-construction monitoring at the Grand Bend WF in 2020 included bat mortality monitoring and the associated searcher efficiency trials, scavenger removal trials, and visibility class mapping that are used in the calculation of estimated mortality rates. These surveys were conducted to assess the potential impacts of this wind energy generating facility on local and migratory bats.

During the monitoring program, 41 bat mortalities were documented at the Grand Bend WF. Long-distance migratory bat species were the most commonly observed mortalities, representing approximately 80% of the documented mortalities. Based on the number of observed bat mortalities, searcher efficiency rates, scavenger removal rates, proportions of area searched, and equations recommended by the MNRF, a total corrected (estimated) bat mortality rate of **4.95 bats/turbine/year** (1.99 bats/MW/year) has been determined for the Grand Bend WF. This estimated bat mortality rate is below the provincial threshold of 10 bats/turbine/year established by the MNRF guidelines.

Based on the completion of this first year of effectiveness monitoring without exceeding the provincial threshold for bats, no adjustments to the bat mortality contingency plan approach are proposed at this time. The second year of effectiveness monitoring of the bat mortality contingency plan will occur in 2021.

11.0 References

Ministry of the Environment, Conservation and Parks (MECP). 2020. Species at Risk in Ontario. Queen's Printer for Ontario. Available at: https://www.ontario.ca/page/species-risk-ontario

Natural Resource Solutions Inc. (NRSI). 2020. Grand Bend Wind Farm: Bat Mortality Contingency Plan Rev. 1. August 2020.

Neegan Burnside Ltd. 2013. Grand Bend Wind Farm: Natural Heritage Environmental Effects Monitoring Plan. February 2013.

Ontario Ministry of Natural Resources (OMNR). 2011. Bats and Bat Habitats: Guidelines for Wind Power Projects. First edition. July 2011.

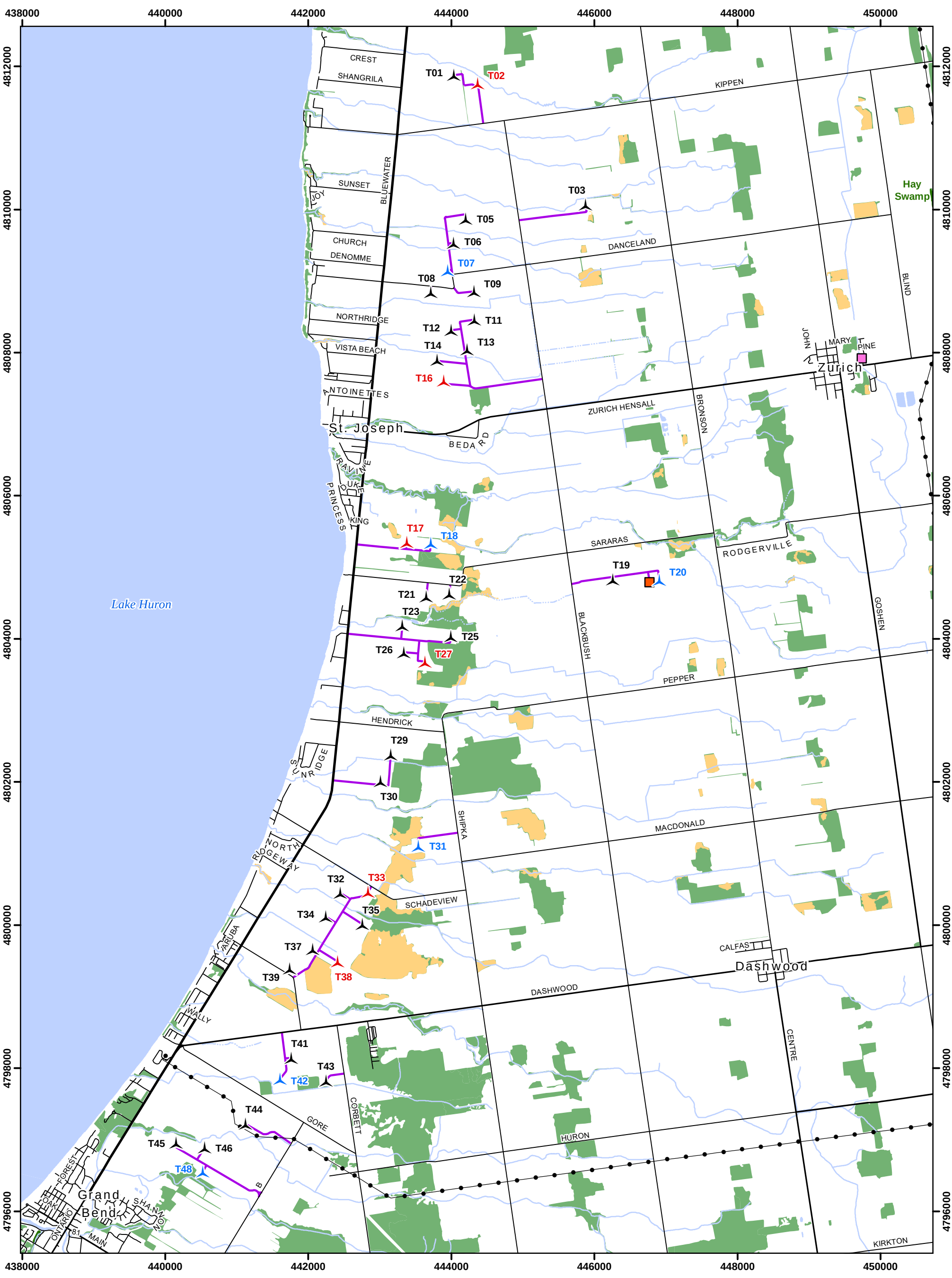
Ontario Ministry of the Environment (MOE). 2014. Renewable Energy Approval No. 5186-9HBJXR; Grand Bend Wind Farm. Issued June 26, 2014; amended March 24, 2015.

R.J. Burnside & Associates Limited (R.J. Burnside & Associates). 2020. Grand Bend Wind Farm Post-Construction Monitoring Report – Year 3. March 2020.

R.J. Burnside & Associates Limited (R.J. Burnside & Associates). 2019. Grand Bend Wind Farm Post-Construction Monitoring Report – Year 2. January 2019 (Finalized December 2019).

R.J. Burnside & Associates Limited (R.J. Burnside & Associates). 2018. Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1. February 2018 (Revised May 2018).

Maps



Legend

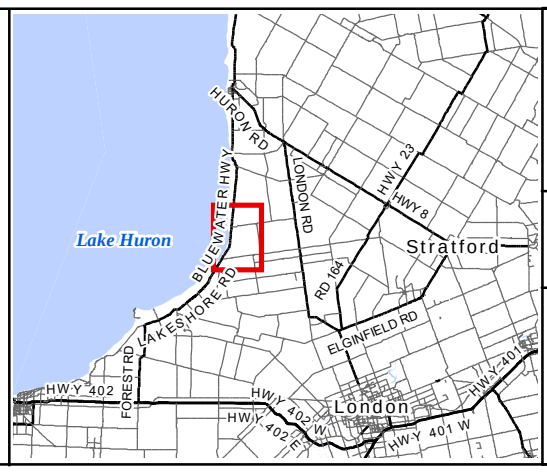
- Utility Line
- Highway
- Primary Road
- Secondary Road
- Access Road

Project Components

- Turbine (Non-subset)
- Subset Turbine (Control; No Deterrent)
- Subset Turbine (Treatment; Acoustic Bat Deterrent)
- Operations & Maintenance Building
- Substation

Natural Features

- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Provincially Significant Wetland (PSW)
- Unevaluated Wetland
- Wooded Area



Map 1

Grand Bend Wind Farm
Post-construction Monitoring Locations

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

0 500 1,000 1,500 2,000 Meters

Project: 2408A
Date: January 19, 2021
NAD83 - UTM Zone 17
Scale 1:50,000 (11x17")

N

Path: X:\2408_GrandBendWF\NRSI_2408_Map1_PCM_Locations_50K_2021_01_19_GCS.mxd

Appendix I
Post-construction Monitoring Data Sheets

Bird and Bat Mortality Search Summary

Date (dd/mm/yy): ____/____/____ Observer(s): _____ Project Name: _____ Project No: _____

Start Time (24hrs): _____hrs Dog Used? Y N Days Since Last Search (*i.e. Mon to Thurs = 3 days*): _____days

WEATHER

Temp: _____°C Cloud Cover: _____ % Wind Speed: _____ Wind Direction (from): _____ (use N,SW, etc.)

Visibility: High Medium Low Precip: None Rain Fog Weather Comments: _____

Significant Weather before visit?_____

COMMENTS (ex. wildlife notes, landowner interactions, turbine maintenance, unsearchable areas, etc.)

_____

_____

_____

_____

SEARCH RESULTS

Scheduled Search			Mortality Results. Enter "None" if no mortalities found.													
Turbine #	Start Time (24hr)	End Time (24hr)	Sample ID (PROJ#-DDMMYY-TXX-Mortality No.)	Species Found	Bat FA (mm)	Sex (M/F)	UTM		Dist. from Turbine (m)	Dir. from Turbine (°)	CC	Est. Time Since Death (hrs)	Injuries	Substrate/Habitat	VC	Photo No.(s)
							Easting	Northing								

CC = Condition Codes: I: Injured or Dying, F: Fresh, E: Early Decomposition, M: Moderate Decomposition, A: Advanced Decomposition, C: Complete Decomposition, S: Scavenged

Injuries: Describe any injuries to the bird carcass (e.g. none observed, broken neck, broken left wing, decapitated, laceration etc.)

Substrate/Habitat Types: The material upon which the carcass was found (ex. gravel, soy, corn, open soil, mud, standing water, concrete etc.)

VC = Visibility Class Codes: Class 1: >90% bare ground, <15cm tall Class 2: >25% bare ground, <15cm tall Class 3: < 25% bare ground, <25% >30cm tall Class 4: little or no bare ground, >25% >30cm tall

FA (mm) = Forearm Length (mm): Measure the length of the leading edge of the wing between the wrist and the elbow (mm)

Scavenger Removal Data Form

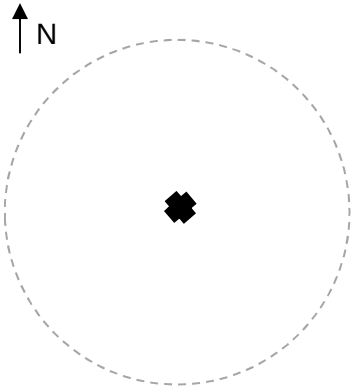
Project Name:_____ **Project #:** _____

Visit #	Day	Date	Obs.	Temp (°C)	Wind Speed	Wind Direction	Precip.	Visibility	Cloud Cover (%)	Cloud Height
0	0									
1										
2										
3										
4										

Turbine No. _____

Specimen 1: Species _____ Dist: _____ Dir: _____ UTM: _____
Visibility Class: _____ Notes:_____

Specimen 2: Species _____ Dist: _____ Dir: _____ UTM: _____
Visibility Class: _____ Notes:_____

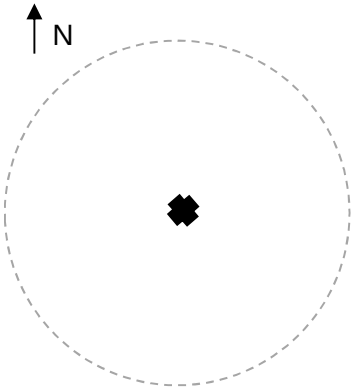


Day	Time	Specimen 1			Specimen 2		
		Present	Signs of Scavenging	Photo No.(s)	Present	Signs of Scavenging	Photo No.(s)

Turbine No. _____

Specimen 1: Species _____ Dist: _____ Dir: _____ UTM: _____
Visibility Class: _____ Notes:_____

Specimen 2: Species _____ Dist: _____ Dir: _____ UTM: _____
Visibility Class: _____ Notes:_____



Day	Time	Specimen 1			Specimen 2		
		Present	Signs of Scavenging	Photo No.(s)	Present	Signs of Scavenging	Photo No.(s)

Searcher Efficiency Data Form

Project Name:___________________________ **Project #:** ______

Date: ______________ Time: ________hrs Searcher: ____________ Placed By: ___________

Condition of Carcasses: Fresh Thawed Carcasses marked (and how)?____

WEATHER

Temp: _______ °C *Wind Speed: ______ Wind Direction (*from*): ______ Visibility: High Medium Low

Cloud Cover (%): ______ Cloud Height: High Medium Low Precipitation: Rain Fog Snow None _______________

Additional Weather or Other Comments: ____

	Time Placed (24hr)	Turbine #	Species	Distance From Turbine	Direction from Turbine	Habitat/ Substrate	Visibility Class	UTM	Found By Searcher (Y/N)	Found After Search (Y/N)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

*Beaufort Wind Scale: 0 calm; 1 smoke drifts; 2 wind felt on face; 3 leaves in motion; 4 small branches move; 5 small trees sway; 6 large branches move; 7 whole trees in motion; 8 twigs break off and hard to walk; 9 light structural damage; 10 tree uprooted

Placement Location Sketches (Draw access road for each sketch)

N ↑

1	2	3	4	5	6	7	8	9	10
X	X	X	X	X	X	X	X	X	X
T#___	T#___	T#___	T#___	T#___	T#___	T#___	T#___	T#___	T#___

Visibility Class Map

Project Name:_____ **Project #:** _____ **Turbine #:** _____ **Degree of Slope** _____ **degrees** **Slope Orientation** _____ (e.g. SSW)

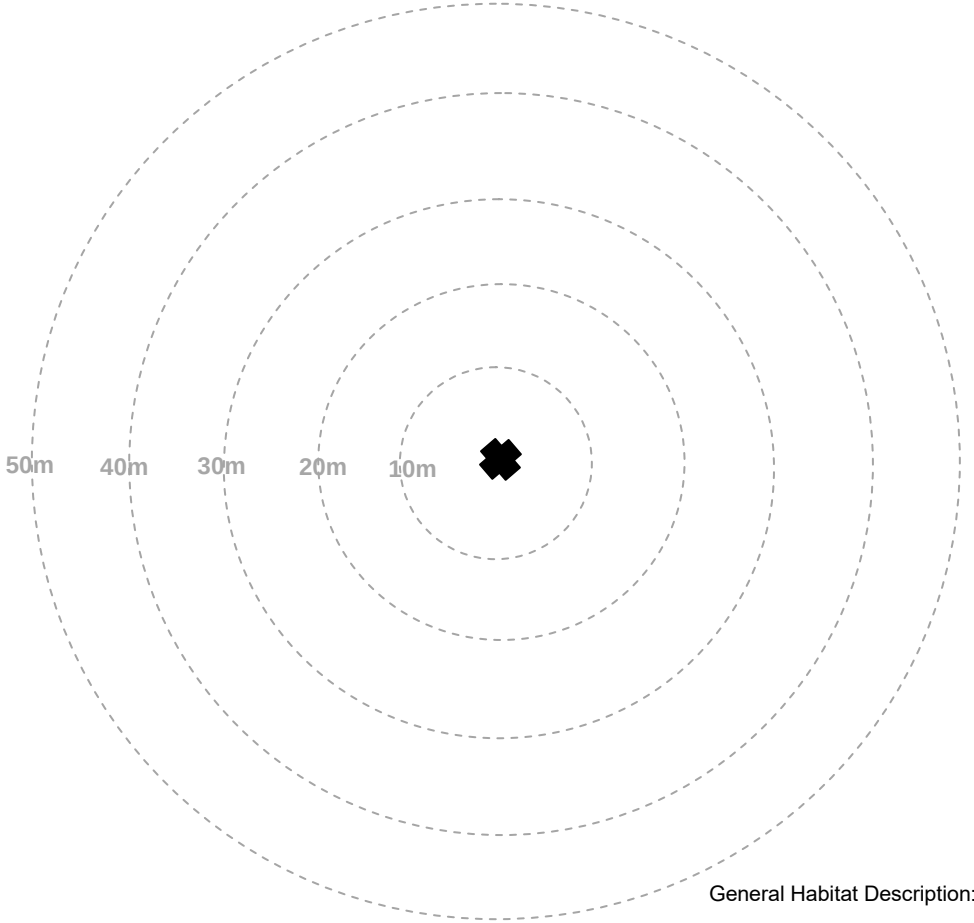
Photo Numbers (from turbine base)
Facing North: _____
Facing East: _____
Facing South: _____
Facing West: _____
(sketch habitat and visibility classes)

Date (DD/MM/YY): ___/____/____

Observer: _____

Monthly/Seasonal
Linear Transect Width: _____m

N



General Habitat Description:
_____

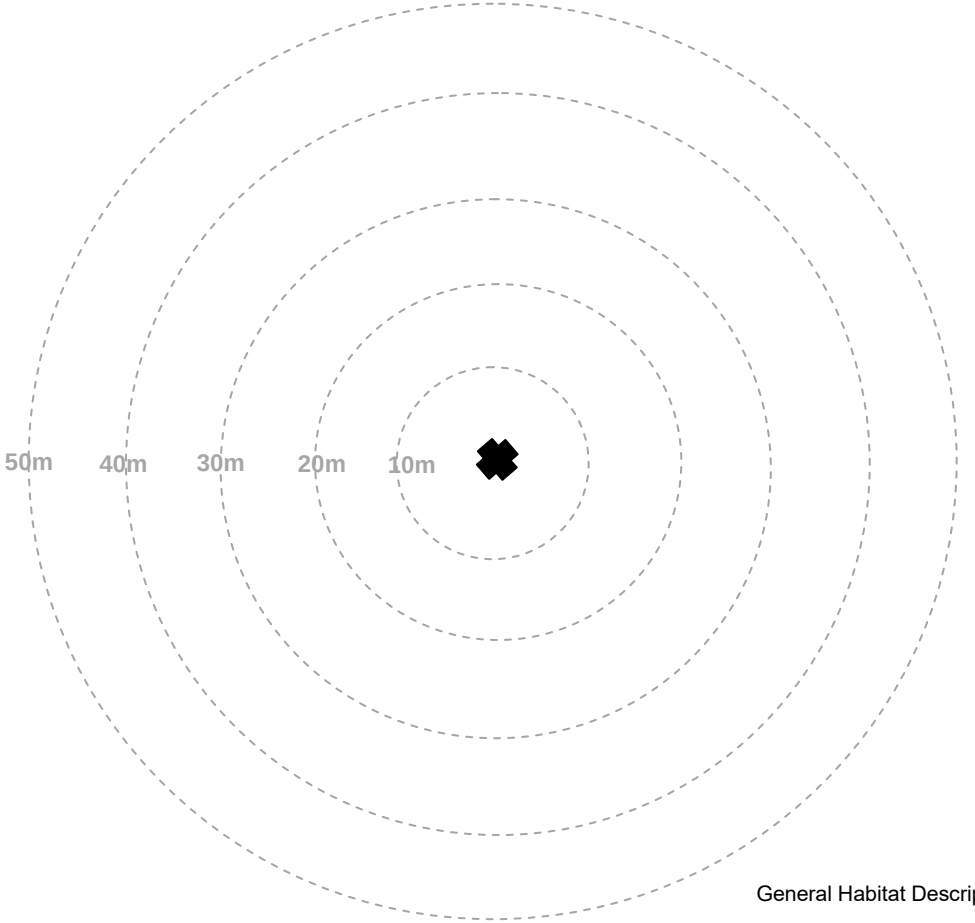
Photo Numbers (from turbine base)
Facing North: _____
Facing East: _____
Facing South: _____
Facing West: _____
(sketch habitat and visibility classes)

Date (DD/MM/YY): ___/____/____

Observer: _____

Monthly/Seasonal
Linear Transect Width: _____m

N



General Habitat Description:
_____

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Appendix II
Scavenger Removal Trial Results

Appendix II
2408A Grand Bend Wind Farm
2020 Scavenger Removal Trial Results

Spring (May/June) 2020 Scavenger Removal Trial

No.	Turbine	Species	Distance (m)	Direction (°)	UTM (17T)		Visibility Class	Trial Day	Date	Carcass Present (Y/N)	Signs of Scavenging	Observer
					Easting	Northing						
1	T31	Hoary Bat	41	300	443504	4801135	1	Day 0	01-May-20	Y	Carcass placed	Search Team A
								Day 4	05-May-20	Y	None	Search Team A
								Day 7	08-May-20	Y	None	Search Team A
								Day 11	12-May-20	Y	None	Search Team A
								Day 14	15-May-20	N	Carcass removed	Search Team A
2	T38	Hoary Bat	14	250	442400	4799483	1	Day 0	01-May-20	Y	Carcass placed	Search Team A
								Day 4	05-May-20	Y	None	Search Team A
								Day 7	08-May-20	N	Carcass removed	Search Team A
								Day 11	12-May-20	N	N/A	Search Team A
								Day 14	15-May-20	N	N/A	Search Team A
3	T42	Traill's Flycatcher	32	230	441584	4797821	1	Day 0	01-May-20	Y	Carcass placed	Search Team A
								Day 4	05-May-20	N	Carcass removed	Search Team A
								Day 7	08-May-20	N	N/A	Search Team A
								Day 11	12-May-20	N	N/A	Search Team A
								Day 14	15-May-20	N	N/A	Search Team A
4	T27	Golden-crowned Kinglet	43	315	443610	4803715	1	Day 0	12-May-20	Y	Carcass placed	Search Team A
								Day 3	15-May-20	Y	Scavenging activity noted	Search Team A
								Day 7	19-May-20	N	Carcass removed	Search Team A
								Day 10	22-May-20	N	N/A	Search Team A
								Day 14	26-May-20	N	N/A	Search Team A
5	T33	Silver-haired Bat	27	350	442836	4800498	1	Day 0	12-May-20	Y	Carcass placed	Search Team A
								Day 3	15-May-20	N	Carcass removed	Search Team A
								Day 7	19-May-20	N	N/A	Search Team A
								Day 10	22-May-20	N	N/A	Search Team A
								Day 14	26-May-20	N	N/A	Search Team A
6	T02	Hoary Bat	21	230	444359	4811744	1	Day 0	01-Jun-20	Y	Carcass placed	Search Team A
								Day 3	04-Jun-20	Y	None	Search Team A
								Day 7	08-Jun-20	Y	None	Search Team A
								Day 10	11-Jun-20	Y	None	Search Team A
								Day 14	15-Jun-20	N	Carcass removed	Search Team A
7	T16	Blue-gray Gnatcatcher	49	150	443924	4807568	2	Day 0	01-Jun-20	Y	Carcass placed	Search Team A
								Day 3	04-Jun-20	N	Carcass removed	Search Team A
								Day 7	08-Jun-20	N	N/A	Search Team A
								Day 10	11-Jun-20	N	N/A	Search Team A
								Day 14	15-Jun-20	N	N/A	Search Team A
8	T17	Blue Jay	28	245	443349	4805338	1	Day 0	01-Jun-20	Y	Carcass placed	Search Team A
								Day 3	04-Jun-20	N	Carcass removed	Search Team A
								Day 7	08-Jun-20	N	N/A	Search Team A
								Day 10	11-Jun-20	N	N/A	Search Team A
								Day 14	15-Jun-20	N	N/A	Search Team A
9	T18	Hoary Bat	24	10	443723	4805362	1	Day 0	01-Jun-20	Y	Carcass placed	Search Team A
								Day 3	04-Jun-20	Y	None	Search Team A
								Day 7	08-Jun-20	N	Carcass removed	Search Team A
								Day 10	11-Jun-20	N	N/A	Search Team A
								Day 14	15-Jun-20	N	N/A	Search Team A
10	T20	Hoary Bat	41	310	446875	4804843	1	Day 0	04-Jun-20	Y	Carcass placed	Search Team A
								Day 4	08-Jun-20	N	Carcass removed	Search Team A
								Day 7	11-Jun-20	N	N/A	Search Team A
								Day 11	15-Jun-20	N	N/A	Search Team A
								Day 14	18-Jun-20	N	N/A	Search Team A

Summer (July/August) 2020 Scavenger Removal Trial

No.	Turbine	Species	Distance (m)	Direction (°)	UTM (17T)		Visibility Class	Trial Day	Date	Carcass Present (Y/N)	Signs of Scavenging	Observer
					Easting	Northing						
1	T27	Purple Martin	46	250	443593	4803663	1	Day 0	03-Jul-20	Y	Carcass placed	Search Team A
								Day 4	07-Jul-20	Y	None	Search Team A
								Day 7	10-Jul-20	Y	None	Search Team A
								Day 11	14-Jul-20	Y	None	Search Team A
								Day 14	17-Jul-20	Y	None	Search Team A
2	T31	Blue Jay	15	300	443525	4801112	1	Day 0	03-Jul-20	Y	Carcass placed	Search Team A
								Day 4	07-Jul-20	Y	None	Search Team A
								Day 7	10-Jul-20	Y	None	Search Team A
								Day 11	14-Jul-20	Y	Scavenging activity noted	Search Team A
								Day 14	17-Jul-20	Y	No further signs	Search Team A
3	T38	Eastern Red Bat	10	20	442412	4799499	2	Day 0	03-Jul-20	Y	Carcass placed	Search Team A
								Day 4	07-Jul-20	N	Carcass removed	Search Team A
								Day 7	10-Jul-20	N	N/A	Search Team A
								Day 11	14-Jul-20	N	N/A	Search Team A
								Day 14	17-Jul-20	N	N/A	Search Team A
4	T42	Hoary Bat	21	210	441595	4797834	2	Day 0	03-Jul-20	Y	Carcass placed	Search Team A
								Day 4	07-Jul-20	N	Carcass removed	Search Team A
								Day 7	10-Jul-20	N	N/A	Search Team A
								Day 11	14-Jul-20	N	N/A	Search Team A
								Day 14	17-Jul-20	N	N/A	Search Team A
5	T48	Silver-haired Bat	35	50	440555	4796586	2	Day 0	03-Jul-20	Y	Carcass placed	Search Team A
								Day 4	07-Jul-20	N	Carcass removed	Search Team A
								Day 7	10-Jul-20	N	N/A	Search Team A
								Day 11	14-Jul-20	N	N/A	Search Team A
								Day 14	17-Jul-20	N	N/A	Search Team A
6	T02	Yellow-bellied Sapsucker	18	210	444380	4811769	1	Day 0	03-Aug-20	Y	Carcass placed	Search Team A
								Day 3	06-Aug-20	Y	Only wing remains; moved to 27m, 255°	Search Team A
								Day 7	10-Aug-20	Y	No further signs	Search Team A
								Day 10	13-Aug-20	Y	No further signs	Search Team A
								Day 14	17-Aug-20	Y	No further signs	Search Team A
7	T07	Eastern Red Bat	19	300	443936	4809153	1	Day 0	06-Aug-20	Y	Carcass placed	Search Team A
								Day 4	10-Aug-20	Y	None	Search Team A
								Day 7	13-Aug-20	N	Carcass removed	Search Team A
								Day 11	17-Aug-20	N	N/A	Search Team A
								Day 14	20-Aug-20	N	N/A	Search Team A
8	T16	Silver-haired Bat	45	180	443908	4807565	2	Day 0	06-Aug-20	Y	Carcass placed	Search Team A
								Day 4	10-Aug-20	Y	None	Search Team A
								Day 7	13-Aug-20	Y	None	Search Team A
								Day 11	17-Aug-20	Y	None	Search Team A
								Day 14	20-Aug-20	Y	None	Search Team A
9	T17	Golden-crowned Kinglet	25	140	443395	4805338	1	Day 0	06-Aug-20	Y	Carcass placed	Search Team A
								Day 4	10-Aug-20	N	Carcass removed	Search Team A
								Day 7	13-Aug-20	N	N/A	Search Team A
								Day 11	17-Aug-20	N	N/A	Search Team A
								Day 14	20-Aug-20	N	N/A	Search Team A
10	T20	Hoary Bat	24	140	446934	4894812	1	Day 0	06-Aug-20	Y	Carcass placed	Search Team A
								Day 4	10-Aug-20	Y	None	Search Team A
								Day 7	13-Aug-20	Y	Only wings remain	Search Team A
								Day 11	17-Aug-20	Y	No further signs	Search Team A
								Day 14	20-Aug-20	Y	No further signs	Search Team A

Fall (September/October) 2020 Scavenger Removal Trial

No.	Turbine	Species	Distance (m)	Direction (°)	UTM (17T)		Visibility Class	Trial Day	Date	Carcass Present (Y/N)	Signs of Scavenging	Observer
					Easting	Northing						
1	T27	Hoary Bat	32	270	443600	4803672	1	Day 0	01-Sep-20	Y	Carcass placed	Search Team A
								Day 3	04-Sep-20	Y	None	Search Team A
								Day 7	08-Sep-20	Y	None	Search Team A
								Day 10	11-Sep-20	Y	None	Search Team A
								Day 14	15-Sep-20	N	Carcass removed	Search Team A
2	T31	Purple Martin	46	80	443579	4801140	1	Day 0	01-Sep-20	Y	Carcass placed	Search Team A
								Day 3	04-Sep-20	N	Carcass removed	Search Team A
								Day 7	08-Sep-20	N	N/A	Search Team A
								Day 10	11-Sep-20	N	N/A	Search Team A
								Day 14	15-Sep-20	N	N/A	Search Team A
3	T33	Hoary Bat	16	30	442836	4800480	2	Day 0	01-Sep-20	Y	Carcass placed	Search Team A
								Day 3	04-Sep-20	Y	None	Search Team A
								Day 7	08-Sep-20	Y	None	Search Team A
								Day 10	11-Sep-20	Y	None	Search Team A
								Day 14	15-Sep-20	Y	None	Search Team A
4	T38	Fox Sparrow	21	140	442422	4799484	2	Day 0	01-Sep-20	Y	Carcass placed	Search Team A
								Day 3	04-Sep-20	N	Carcass removed	Search Team A
								Day 7	08-Sep-20	N	N/A	Search Team A
								Day 10	11-Sep-20	N	N/A	Search Team A
								Day 14	15-Sep-20	N	N/A	Search Team A
5	T48	Silver-haired Bat	13	10	440524	4796557	2	Day 0	01-Sep-20	Y	Carcass placed	Search Team A
								Day 3	04-Sep-20	N	Carcass removed	Search Team A
								Day 7	08-Sep-20	N	N/A	Search Team A
								Day 10	11-Sep-20	N	N/A	Search Team A
								Day 14	15-Sep-20	N	N/A	Search Team A
6	T02	Eastern Red Bat	40	140	444397	4811725	1	Day 0	01-Oct-20	Y	Carcass placed	Search Team A
								Day 4	05-Oct-20	Y	Only wing remains	Search Team A
								Day 7	08-Oct-20	N	Carcass removed	Search Team A
								Day 11	12-Oct-20	N	N/A	Search Team A
								Day 14	15-Oct-20	N	N/A	Search Team A
7	T07	Northern Parula	29	120	443979	4809125	1	Day 0	01-Oct-20	Y	Carcass placed	Search Team A
								Day 4	05-Oct-20	N	Carcass removed	Search Team A
								Day 7	08-Oct-20	N	N/A	Search Team A
								Day 11	12-Oct-20	N	N/A	Search Team A
								Day 14	15-Oct-20	N	N/A	Search Team A
8	T16	Silver-haired Bat	10	80	443906	4807609	2	Day 0	01-Oct-20	Y	Carcass placed	Search Team A
								Day 4	05-Oct-20	N	Carcass removed	Search Team A
								Day 7	08-Oct-20	N	N/A	Search Team A
								Day 11	12-Oct-20	N	N/A	Search Team A
								Day 14	15-Oct-20	N	N/A	Search Team A
9	T17	Horned Lark	21	20	443382	4805379	1	Day 0	01-Oct-20	Y	Carcass placed	Search Team A
								Day 4	05-Oct-20	Y	Scavenging activity noted; carcass moved to 30m, 280°	Search Team A
								Day 7	08-Oct-20	N	Carcass removed	Search Team A
								Day 11	12-Oct-20	N	N/A	Search Team A
								Day 14	15-Oct-20	N	N/A	Search Team A
10	T18	Hoary Bat	8	300	443706	4805340	1	Day 0	01-Oct-20	Y	Carcass placed	Search Team A
								Day 4	05-Oct-20	N	Carcass removed	Search Team A
								Day 7	08-Oct-20	N	N/A	Search Team A
								Day 11	12-Oct-20	N	N/A	Search Team A
								Day 14	15-Oct-20	N	N/A	Search Team A

Appendix III
Searcher Efficiency Trial Results

Appendix III
2408A Grand Bend Wind Farm
2020 Searcher Efficiency Trial Results

May 2020 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
07-May-20	Search Team A	1	T17	Cliff Swallow	33	50	Bare soil	1	443405	4805384	N	Y
		2	T18	Hoary Bat	21	250	Bare soil	1	443697	4805329	N	Y
		3	T20	Horned Lark	41	350	Gravel	1	446899	4804866	N	N
11-May-20	Search Team A	4	T07	Golden-crowned Kinglet	25	180	Bare soil	1	443955	4809120	Y	-
		5	T16	Cliff Swallow	15	250	Mowed grass	2	443878	4807605	Y	-
		6	T20	Silver-haired Bat	45	30	Bare soil	1	446949	4804863	Y	-
12-May-20	Search Team A	7	T27	Blackpoll Warbler	32	270	Bare soil	1	443608	4803697	Y	-
		8	T31	House Sparrow	17	110	Bare soil	1	443552	4801097	N	Y
		9	T38	Hoary Bat	46	235	Mowed grass	2	442369	4799467	Y	-
14-May-20	Search Team A	10	T16	Golden-crowned Kinglet	30	300	Mowed grass	2	443868	4807629	N	N
		11	T17	Cedar Waxwing	11	90	Bare soil	1	443391	4805355	N	Y
		12	T18	Hoary Bat	45	10	Bare soil	1	443724	4805384	Y	-
15-May-20	Search Team A	13	T33	Philadelphia Vireo	20	250	Bare soil	1	442817	4800446	Y	-
		14	T38	Hoary Bat	46	350	Mowed grass	2	442386	4799538	Y	-
		15	T38	Horned Lark	15	130	Mowed grass	2	442422	4799482	Y	-
18-May-20	Search Team A	16	T02	Silver-haired Bat	8	270	Gravel	1	444364	4811760	Y	-
		17	T16	Common Grackle	20	90	Mowed grass	2	443913	4807611	Y	-
		18	T16	Hoary Bat	33	45	Mowed grass	2	443921	4807638	Y	-
20-May-20	Search Team A	19	T38	Cliff Swallow	45	290	Mowed grass	2	442387	4799525	N	Y
		20	T42	Fox Sparrow	15	140	Bare soil	1	441617	4797857	N	N
		21	T48	Silver-haired Bat	35	310	Bare soil	1	440529	4796595	Y	-
21-May-20	Search Team A	22	T07	Upland Sandpiper	27	120	Bare soil	1	443978	4809139	Y	-
		23	T16	Golden-crowned Kinglet	36	250	Mowed grass	2	443857	4807609	N	Y
		24	T16	Silver-haired Bat	16	0	Mowed grass	2	443898	4807629	Y	-
25-May-20	Search Team A	25	T16	Northern Parula	47	210	Mowed grass	2	443863	4807573	Y	-
		26	T16	Tree Swallow	31	140	Mowed grass	2	443911	4807581	Y	-

June 2020 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
01-Jun-20	Search Team A	1	T17	Golden-crowned Kinglet	22	270	Bare soil	1	443364	4805378	Y	-
		2	T18	Gray Catbird	6	70	Gravel	1	443717	4805335	Y	-
05-Jun-20	Search Team A	3	T38	Cliff Swallow	31	20	Mowed grass	2	442414	4799528	N	Y
		4	T38	Silver-haired Bat	22	180	Mowed grass	2	442423	4799454	Y	-
		5	T42	Fox Sparrow	16	90	Bare soil	1	441619	4797842	N	Y
09-Jun-20	Search Team A	6	T38	Blackpoll Warbler	28	280	Mowed grass	2	442379	4799487	Y	-
		7	T38	Hoary Bat	11	20	Mowed grass	2	442415	4799503	Y	-
		8	T48	Golden-crowned Kinglet	6	210	Gravel	1	440522	4796557	N	N

June 2020 Searcher Efficiency Trial (continued)

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
11-Jun-20	Search Team A	9	T16	Horned Lark	16	120	Mowed grass	2	443903	4807613	Y	-
		10	T16	Golden-crowned Kinglet	25	230	Mowed grass	2	443876	4807601	Y	-
		11	T20	Silver-haired Bat	43	100	Bare soil	1	446956	4804819	Y	-
15-Jun-20	Search Team A	12	T16	Blackpoll Warbler	48	220	Mowed grass	2	443865	4807576	Y	-
		13	T16	Tree Swallow	10	300	Mowed grass	2	443882	4807608	Y	-
		14	T17	Silver-haired Bat	21	90	Bare soil	1	443401	4805351	Y	-
18-Jun-20	Search Team A	15	T16	Tennessee Warbler	39	300	Mowed grass	2	443857	4807632	Y	-
		16	T16	Hoary Bat	47	40	Mowed grass	2	443927	4807648	Y	-
		17	T18	Hoary Bat	48	130	Bare soil	1	443751	4805302	Y	-
19-Jun-20	Search Team A	18	T27	Red-eyed Vireo	23	190	Bare soil	1	443634	4803657	Y	-
		19	T31	Magnolia Warbler	41	290	Bare soil	1	443503	4801111	Y	-
		20	T33	Eastern Red Bat	14	250	Mowed grass	2	442830	4800456	Y	-
22-Jun-20	Search Team A	21	T02	Eastern Red Bat	47	160	Bare soil	1	444381	4811715	Y	-
		22	T07	Hoary Bat	41	140	Bare soil	1	443985	4809123	Y	-

July 2020 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
02-Jul-20	Search Team A	1	T07	Hoary Bat	14	100	Gravel	1	443966	4809143	N	N
		2	T16	Silver-haired Bat	23	345	Mowed grass	2	443886	4807634	Y	-
		3	T20	Magnolia Warbler	5	325	Gravel	1	446905	4804826	N	N
06-Jul-20	Search Team A	4	T16	Hoary Bat	37	100	Mowed grass	2	443935	4807606	Y	-
		5	T16	Hoary Bat	45	235	Mowed grass	2	443860	4807589	Y	-
		6	T17	Silver-haired Bat	45	220	Bare soil	1	443353	4805316	Y	-
09-Jul-20	Search Team A	7	T02	Fox Sparrow	8	20	Bare soil	1	444382	4811762	Y	-
		8	T07	Red-eyed Vireo	14	0	Bare soil	1	443947	4809164	Y	-
		9	T16	Hoary Bat	22	280	Mowed grass	2	443874	4807607	Y	-
10-Jul-20	Search Team A	10	T38	Golden-crowned Kinglet	35	260	Mowed grass	2	442371	4799483	Y	-
16-Jul-20	Search Team A	11	T17	European Starling	33	270	Bare soil	1	443340	4805353	Y	-
		12	T18	Hoary Bat	42	150	Bare soil	1	443738	4805301	Y	-
		13	T20	Silver-haired Bat	33	310	Bare soil	1	446890	4804848	Y	-
17-Jul-20	Search Team A	14	T27	Golden-crowned Kinglet	29	300	Bare soil	1	443618	4803703	N	Y
		15	T31	Blackpoll Warbler	46	180	Bare soil	1	443552	4801067	Y	-
		16	T33	Yellow-bellied Sapsucker	33	250	Mowed grass	2	442820	4800461	Y	-
21-Jul-20	Search Team A	17	T31	Golden-crowned Kinglet	19	300	Bare soil	1	443525	4801121	N	N
		18	T42	Golden-crowned Kinglet	8	180	Mowed grass	2	441615	4797842	Y	-
		19	T48	Golden-crowned Kinglet	27	120	Mowed grass	2	440555	4796553	Y	-
27-Jul-20	Search Team A	20	T16	Yellow-rumped Warbler	16	280	Mowed grass	2	443878	4807609	Y	-
		21	T16	Ovenbird	26	130	Mowed grass	2	443914	4807592	Y	-

August 2020 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
06-Aug-20	Search Team A	1	T17	Hoary Bat	5	150	Gravel	1	443380	4805350	Y	-
		2	T18	Hoary Bat	11	140	Bare soil	1	443725	4805329	Y	-
		3	T20	Cedar Waxwing	21	90	Bare soil	1	446934	4804831	Y	-
10-Aug-20	Search Team A	4	T16	Hoary Bat	32	255	Mowed grass	2	443862	4807607	Y	-
		5	T16	Hoary Bat	42	75	Mowed grass	2	443935	4807628	Y	-
		6	T20	Hoary Bat	7	25	Gravel	1	446917	4804833	Y	-
11-Aug-20	Search Team A	7	T33	Magnolia Warbler	46	230	Mowed grass	2	442792	4800465	Y	-
		8	T42	Baltimore Oriole	27	135	Mowed grass	2	441635	4797863	Y	-
18-Aug-20	Search Team A	9	T27	Veery	29	210	Bare soil	1	443625	4803654	Y	-
		10	T31	Black-and-white Warbler	45	150	Bare soil	1	443565	4801076	Y	-
		11	T38	Eastern Red Bat	16	110	Mowed grass	2	442424	4799488	Y	-
20-Aug-20	Search Team A	12	T02	Northern Cardinal	27	200	Bare soil	1	444367	4811737	Y	-
		13	T07	Golden-crowned Kinglet	35	300	Bare soil	1	443917	4809153	Y	-
		14	T16	Horned Lark	11	80	Mowed grass	2	443905	4807610	Y	-
24-Aug-20	Search Team A	15	T07	Silver-haired Bat	38	90	Bare soil	1	443988	4809166	Y	-
		16	T16	Silver-haired Bat	47	250	Mowed grass	2	443856	4807588	Y	-
		17	T20	Winter Wren	24	230	Bare soil	1	446896	4804808	Y	-
28-Aug-20	Search Team A	18	T38	Northern Cardinal	30	320	Mowed grass	2	442391	4799514	Y	-
		19	T42	Ovenbird	13	320	Mowed grass	2	441598	4797859	Y	-
		20	T48	Horned Lark	47	15	Mowed grass	2	440534	4796603	N	Y
31-Aug-20	Search Team A	21	T16	American Robin	20	240	Mowed grass	2	443879	4807602	Y	-

September 2020 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
03-Sep-20	Search Team A	1	T16	Yellow-bellied Sapsucker	8	310	Mowed grass	2	443882	4807614	Y	-
		2	T17	Hoary Bat	17	280	Bare soil	1	443365	4805374	Y	-
		3	T20	Horned Lark	23	180	Bare soil	1	446917	4804803	Y	-
10-Sep-20	Search Team A	4	T16	Hoary Bat	32	295	Mowed grass	2	443862	4807620	Y	-
		5	T16	Silver-haired Bat	43	345	Mowed grass	2	443882	4807655	Y	-
		6	T18	Silver-haired Bat	5	250	Gravel	1	443713	4805336	Y	-
11-Sep-20	Search Team A	7	T33	Hoary Bat	43	230	Mowed grass	2	442780	4800463	N	Y
		8	T38	Eastern Red Bat	10	220	Mowed grass	2	442397	4799488	Y	-
		9	T42	White-throated Sparrow	20	90	Mowed grass	2	441627	4797860	N	Y
17-Sep-20	Search Team A	10	T16	American Robin	30	190	Mowed grass	2	443884	4807586	Y	-
		11	T17	Golden-crowned Kinglet	13	320	Bare soil	1	443362	4805359	Y	-
		12	T18	Hoary Bat	27	55	Bare soil	1	443739	4805357	Y	-
21-Sep-20	Search Team A	13	T07	Tennessee Warbler	5	5	Gravel	1	443958	4809156	N	N
		14	T16	European Starling	11	105	Mowed grass	2	443905	4807611	Y	-
		15	T20	Swainson's Thrush	43	290	Bare soil	1	446870	4804839	N	N
22-Sep-20	Search Team A	16	T27	Common Yellowthroat	34	20	Bare soil	1	443657	4803716	Y	-
		17	T31	Silver-haired Bat	43	310	Bare soil	1	443501	4801137	Y	-

September 2020 Searcher Efficiency Trial (continued)

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
24-Sep-20	Search Team A	18	T07	Yellow-rumped Warbler	20	160	Bare soil	1	443963	4809131	Y	-
		19	T16	American Robin	31	70	Mowed grass	2	443926	4807623	Y	-
		20	T16	Hoary Bat	41	5	Mowed grass	2	443892	4807654	Y	-
23-Sep-20	Search Team A	21	T42	Yellow-bellied Sapsucker	20	130	Mowed grass	2	441618	4797855	Y	-
		22	T48	Yellow-bellied Sapsucker	36	10	Mowed grass	2	440541	4796590	Y	-

October 2020 Searcher Efficiency Trial

Date	Searcher	No.	Turbine	Species	Distance (m)	Direction (°)	General Habitat	Visibility Class	UTM (17T)		Found (Y/N)	Scavenged (Y/N)
									Easting	Northing		
05-Oct-20	Search Team A	1	T07	Blue Jay	5	15	Gravel	1	443954	4809149	Y	-
		2	T18	Silver-haired Bat	14	300	Bare soil	1	443703	4805339	Y	-
		3	T20	Yellow Warbler	20	75	Bare soil	1	446930	4804832	Y	-
08-Oct-20	Search Team A	4	T17	Red-eyed Vireo	11	135	Bare soil	1	443390	4805377	Y	-
		5	T18	Red-eyed Vireo	20	220	Bare soil	1	443703	4805321	Y	-
		6	T20	Silver-haired Bat	30	60	Bare soil	1	446934	4804851	Y	-
09-Oct-20	Search Team A	7	T33	Nashville Warbler	49	340	Mowed grass	2	442818	4800517	N	N
		8	T38	Black-and-white Warbler	25	360	Mowed grass	2	442392	4799520	N	Y
		9	T42	Eastern Red Bat	35	70	Mowed grass	2	441636	4797877	Y	-
15-Oct-20	Search Team A	10	T07	Black-capped Chickadee	35	235	Bare soil	1	443927	4809128	Y	-
		11	T16	Rock Pigeon	22	285	Mowed grass	2	443873	4807609	Y	-
		12	T16	American Robin	42	130	Mowed grass	2	443931	4807592	Y	-
16-Oct-20	Search Team A	13	T31	Silver-haired Bat	27	45	Bare soil	1	443564	4801133	Y	-
		14	T33	Blackburnian Warbler	44	220	Mowed grass	2	442786	4800456	Y	-
		15	T48	Hoary Bat	36	45	Mowed grass	2	440557	4796581	Y	-
19-Oct-20	Search Team A	16	T02	Northern Flicker	5	120	Gravel	1	444378	4811759	Y	-
		17	T16	Yellow Warbler	20	270	Mowed grass	2	443877	4807614	Y	-
		18	T20	Hoary Bat	12	275	Bare soil	1	446905	4804823	Y	-
23-Oct-20	Search Team A	19	T33	Silver-haired Bat	47	330	Mowed grass	2	442820	4800512	N	Y
		20	T42	Cape May Warbler	21	10	Mowed grass	2	441610	4797878	N	N
26-Oct-20	Search Team A	21	T16	Eastern Red Bat	15	275	Mowed grass	2	443890	4807607	Y	-
		22	T16	Eastern Red Bat	20	160	Mowed grass	2	443906	4807593	Y	-

Appendix IV
Visibility Class Mapping

Visibility Class Map

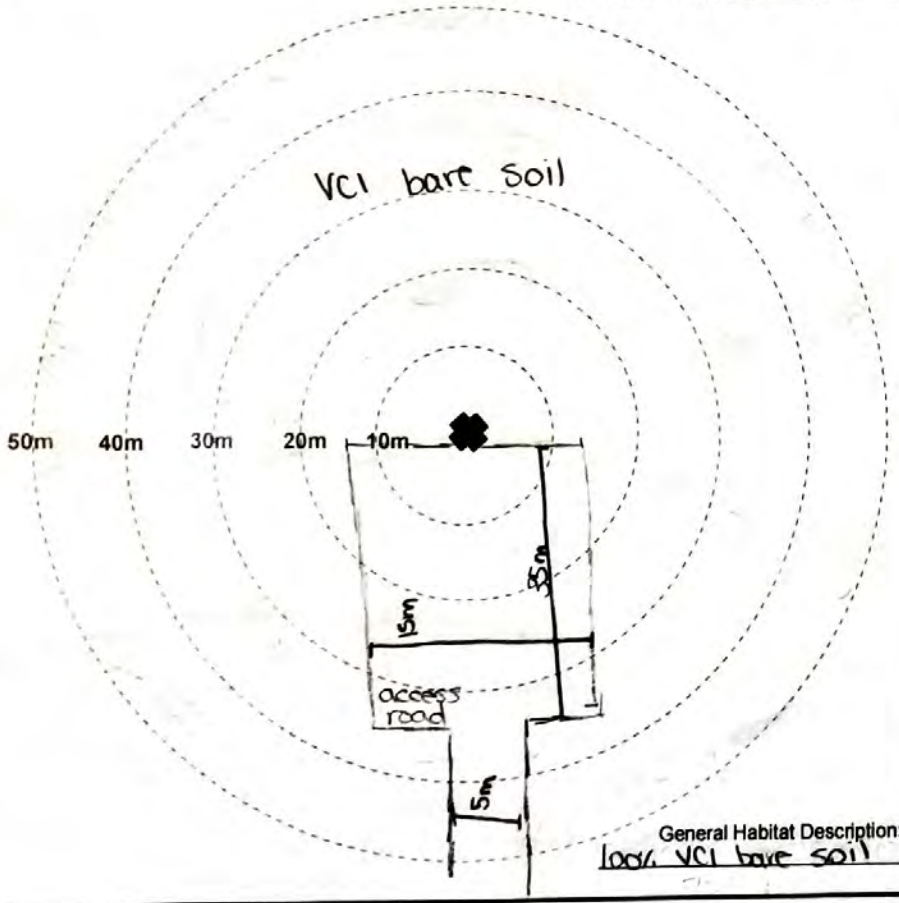
Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 02 **Degree of Slope** Ø **degrees** **Slope Orientation** — (e.g. SSW)

Photo Numbers (from turbine base)
Facing North: 0001
Facing East: 0002
Facing South: 0003
Facing West: 0004
(sketch habitat and visibility classes)

Date (DD/MM/YY): 14/05/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



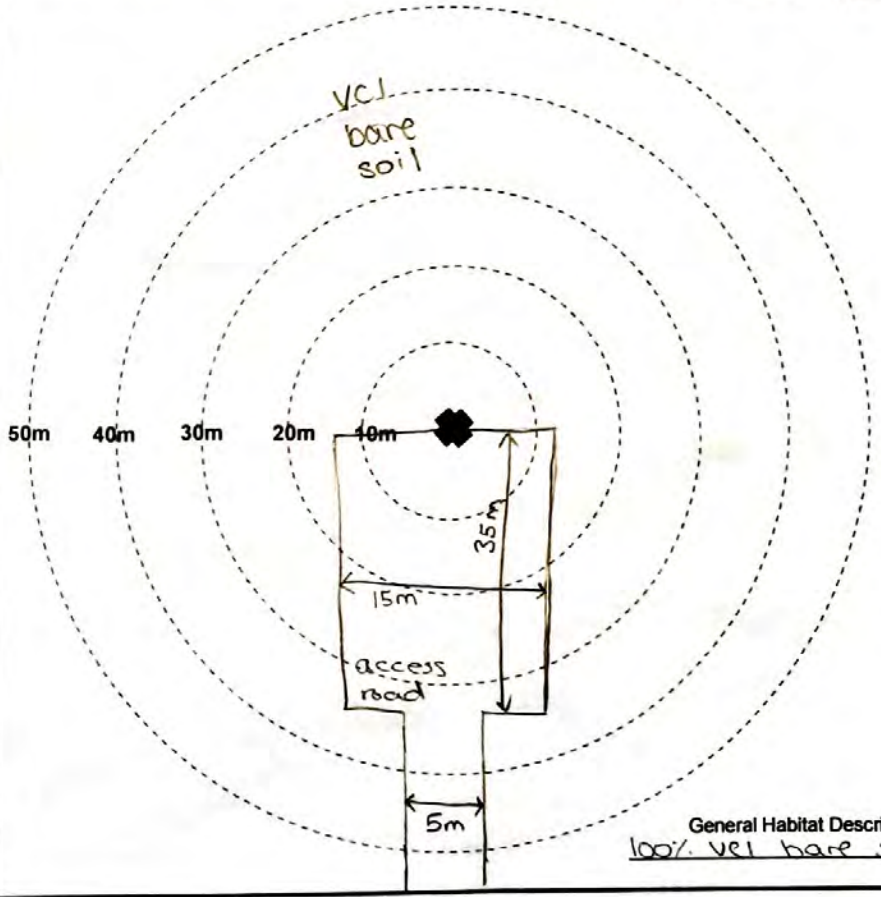
General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 0001
Facing East: 0002
Facing South: 0003
Facing West: 0004
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/06/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

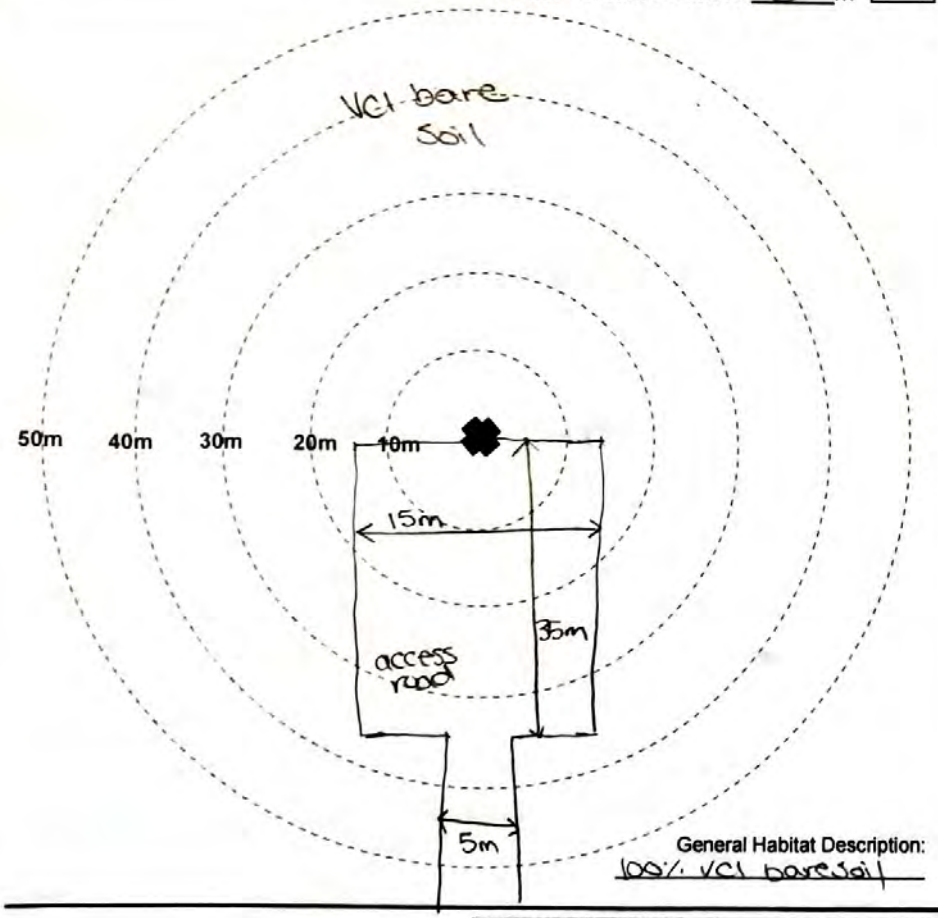
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T02

Photo Numbers (from turbine base)
Facing North: 0001
Facing East: 0002
Facing South: 0003
Facing West: 0004
(sketch habitat and visibility classes)

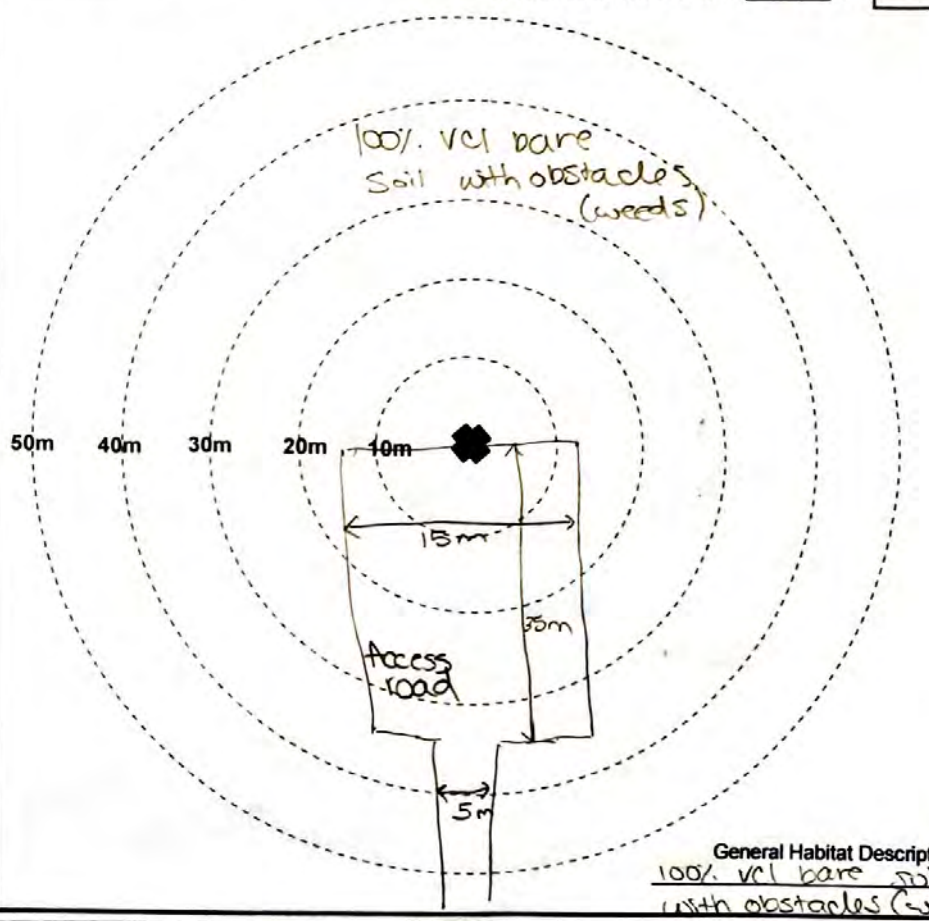
Date (DD/MM/YY): 06/07/20
Observer: RA, HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 0001
Facing East: 0002
Facing South: 0003
Facing West: 0004
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/08/20
Observer: RA, HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil with obstacles (weeds)

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

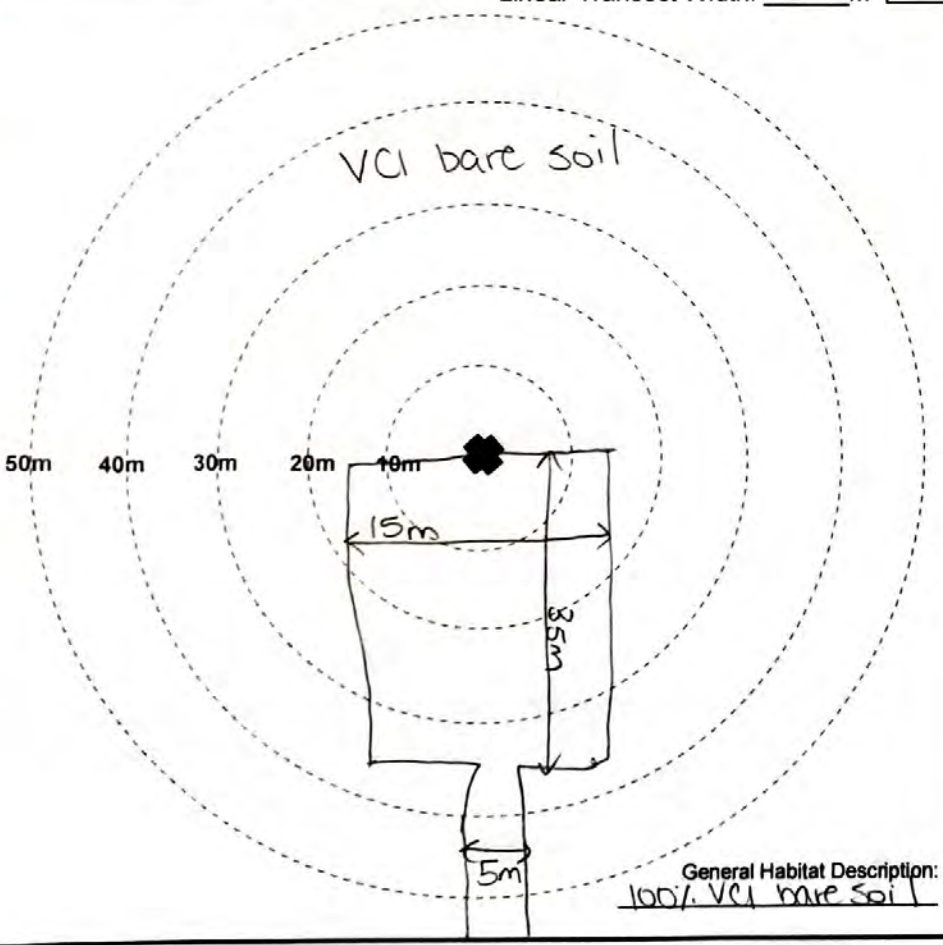
Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T02

Photo Numbers (from turbine base)
Facing North: 0001
Facing East: 0002
Facing South: 0003
Facing West: 0004
(sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m



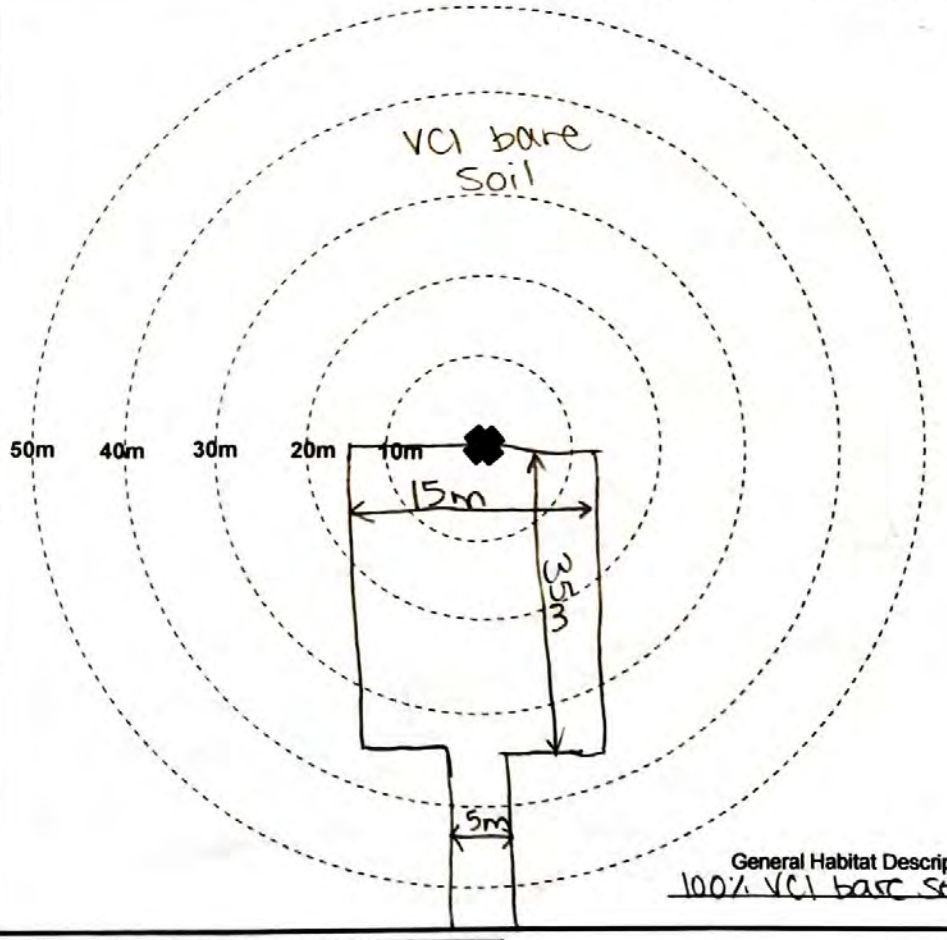
General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 0001
Facing East: 0002
Facing South: 0003
Facing West: 0004
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/10/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 07 **Degree of Slope** Ø **degrees** **Slope Orientation** — (e.g. SSW)

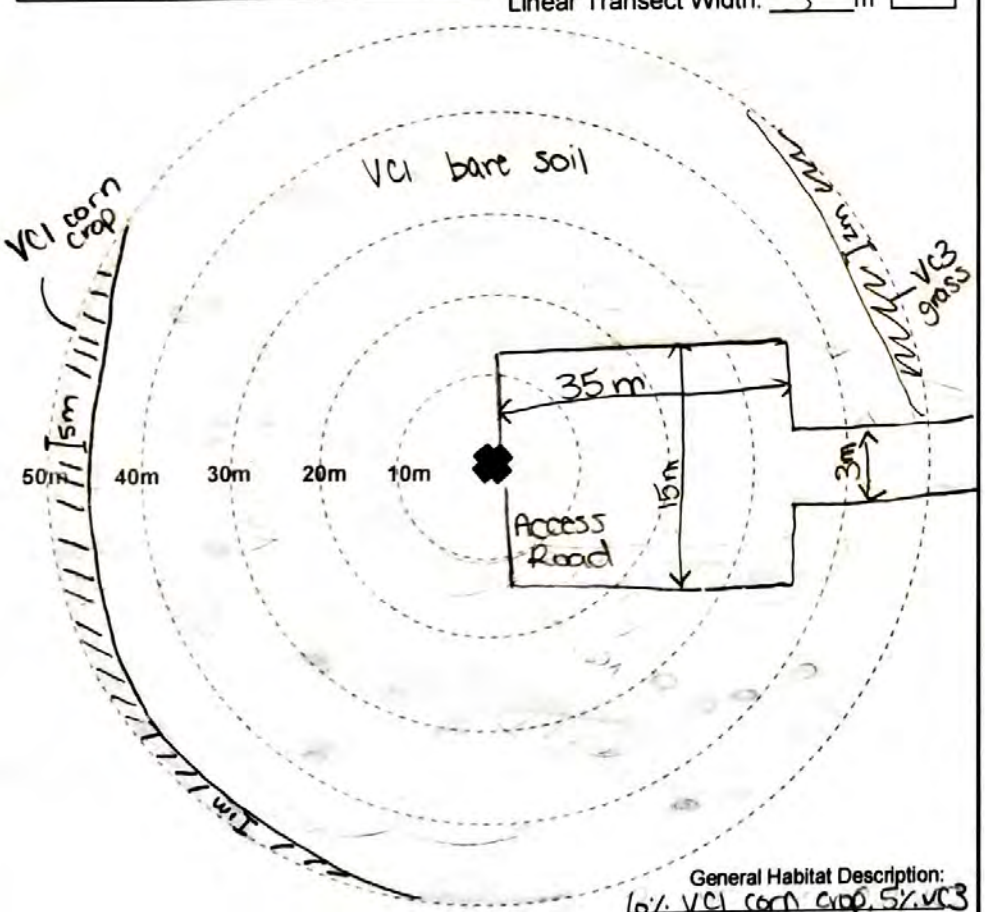
Photo Numbers (from turbine base)
Facing North: 0005
Facing East: 0006
Facing South: 0007
Facing West: 0008
(sketch habitat and visibility classes)

Date (DD/MM/YY): 14/05/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 6% VC1 corn crop, 5% VC3 grass, 85% VC1 soil

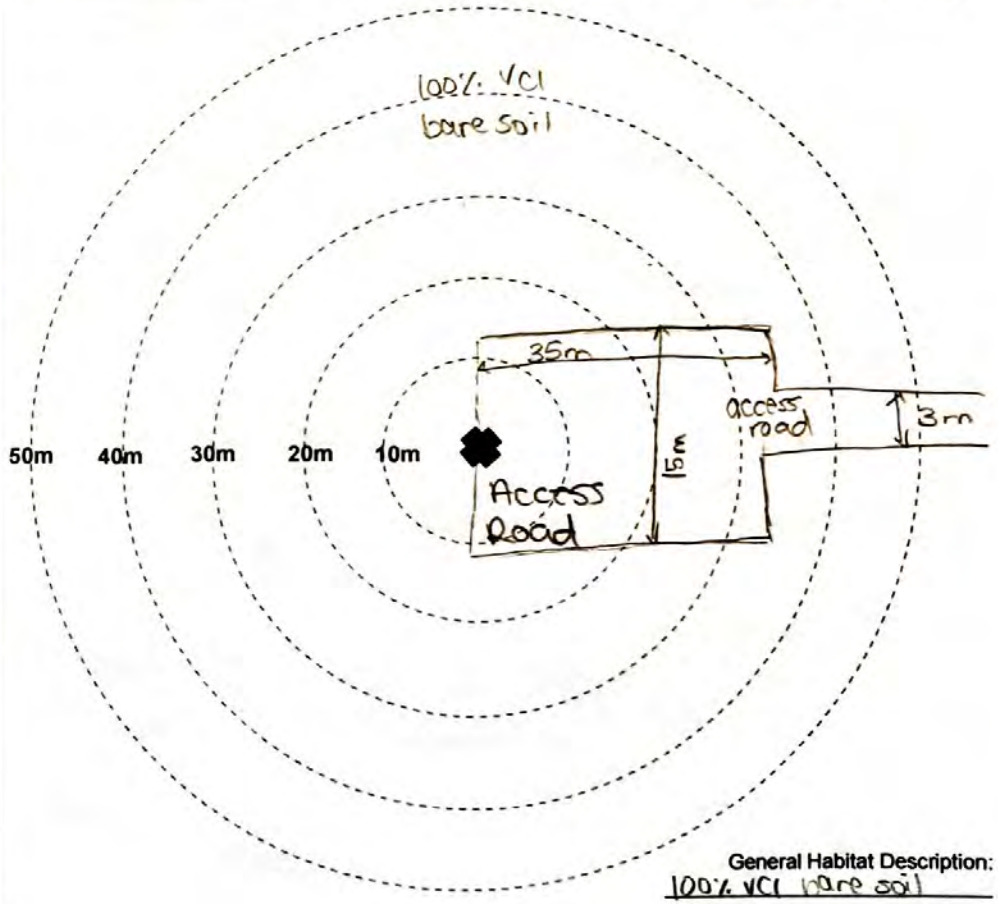
Photo Numbers (from turbine base)
Facing North: 0005
Facing East: 0006
Facing South: 0007
Facing West: 0008
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/06/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VC1 bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

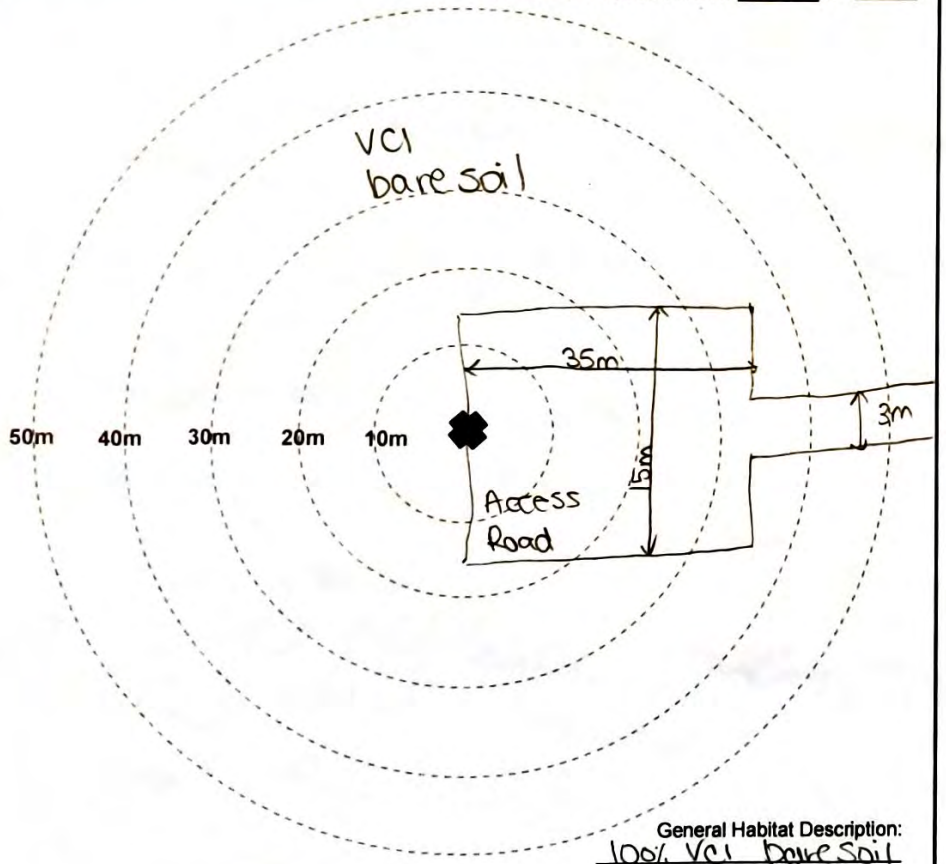
Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T07

Photo Numbers (from turbine base)	
Facing North:	0005
Facing East:	0006
Facing South:	0007
Facing West:	0008
(sketch habitat and visibility classes)	

Date (DD/MM/YY): 06/07/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



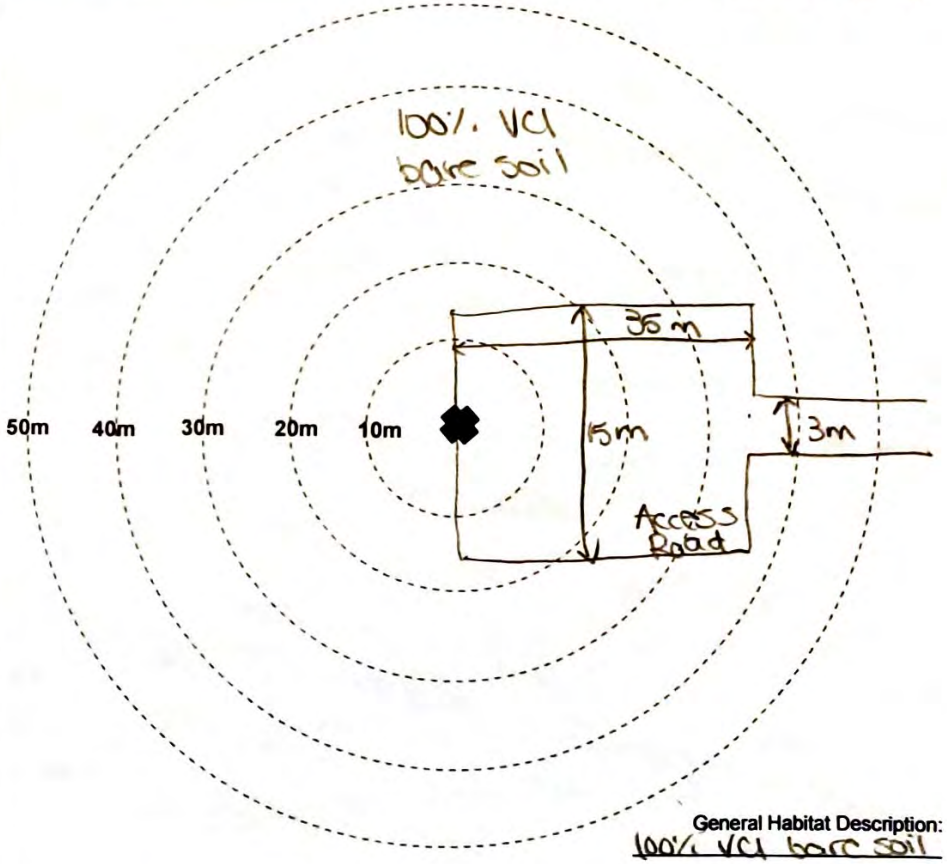
General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)	
Facing North:	0005
Facing East:	0006
Facing South:	0007
Facing West:	0008
(sketch habitat and visibility classes)	

Date (DD/MM/YY): 06/08/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

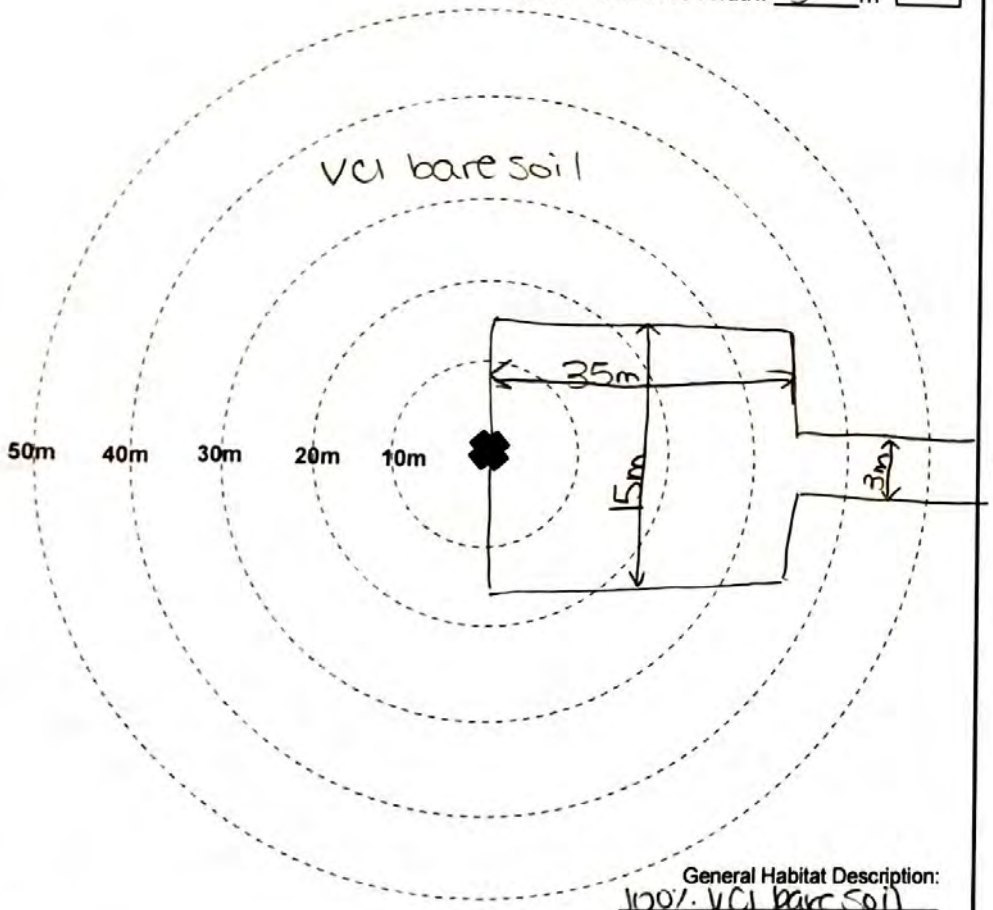
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T07

Photo Numbers (from turbine base)
Facing North: 0004
Facing East: 0005
Facing South: 0006
Facing West: 0007
(sketch habitat and visibility classes)

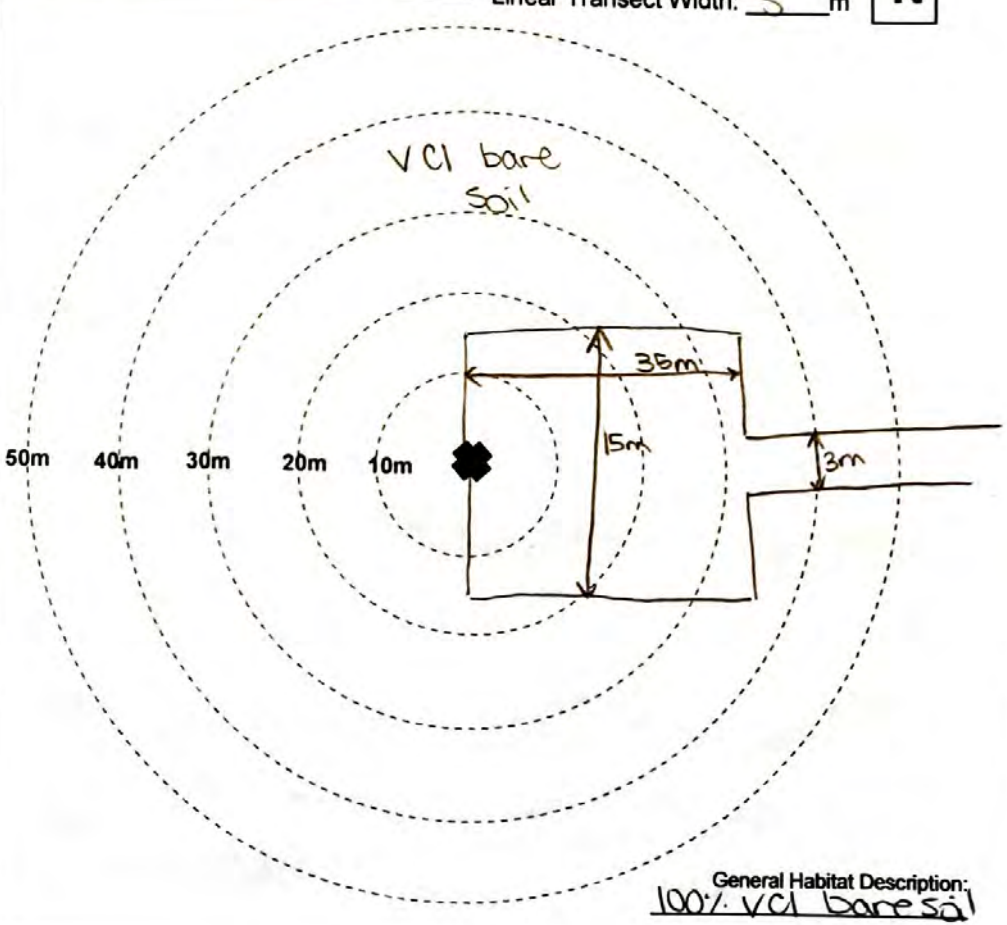
Date (DD/MM/YY): 03/09/20
Observer: RA, HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 0005
Facing East: 0006
Facing South: 0007
Facing West: 0008
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/10/20
Observer: RA, HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

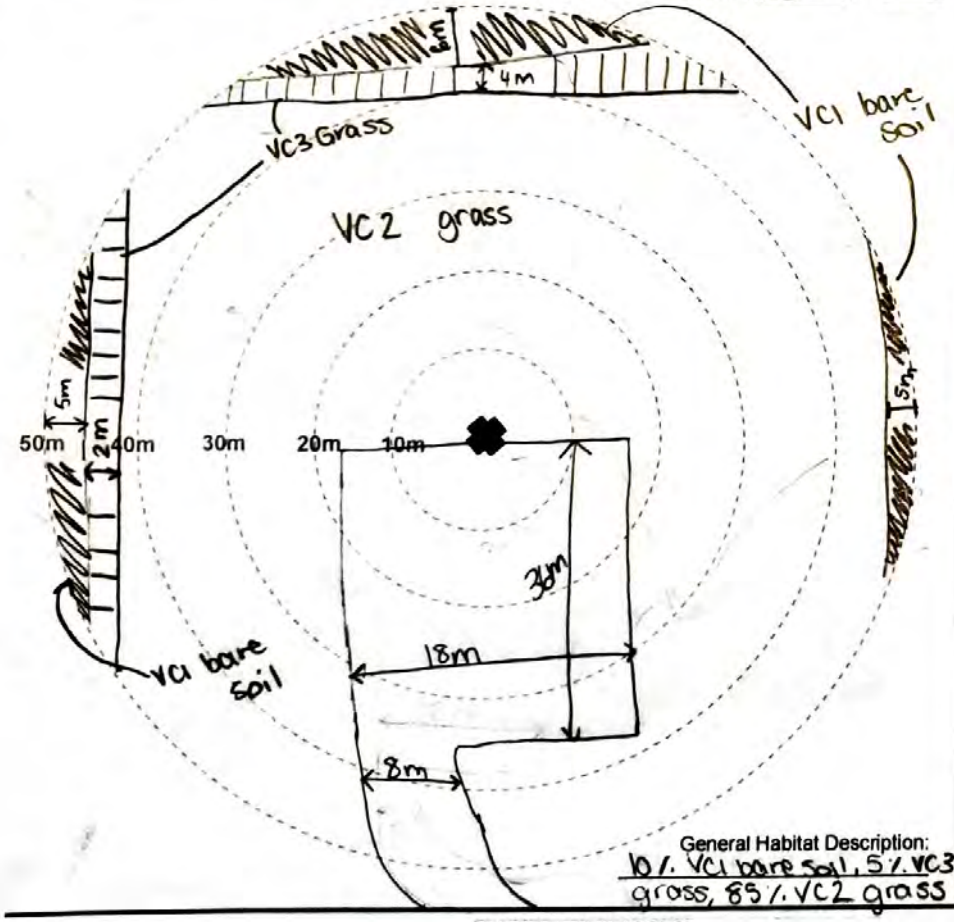
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 016 **Degree of Slope** 0 **degrees** **Slope Orientation** — (e.g. SSW)

Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

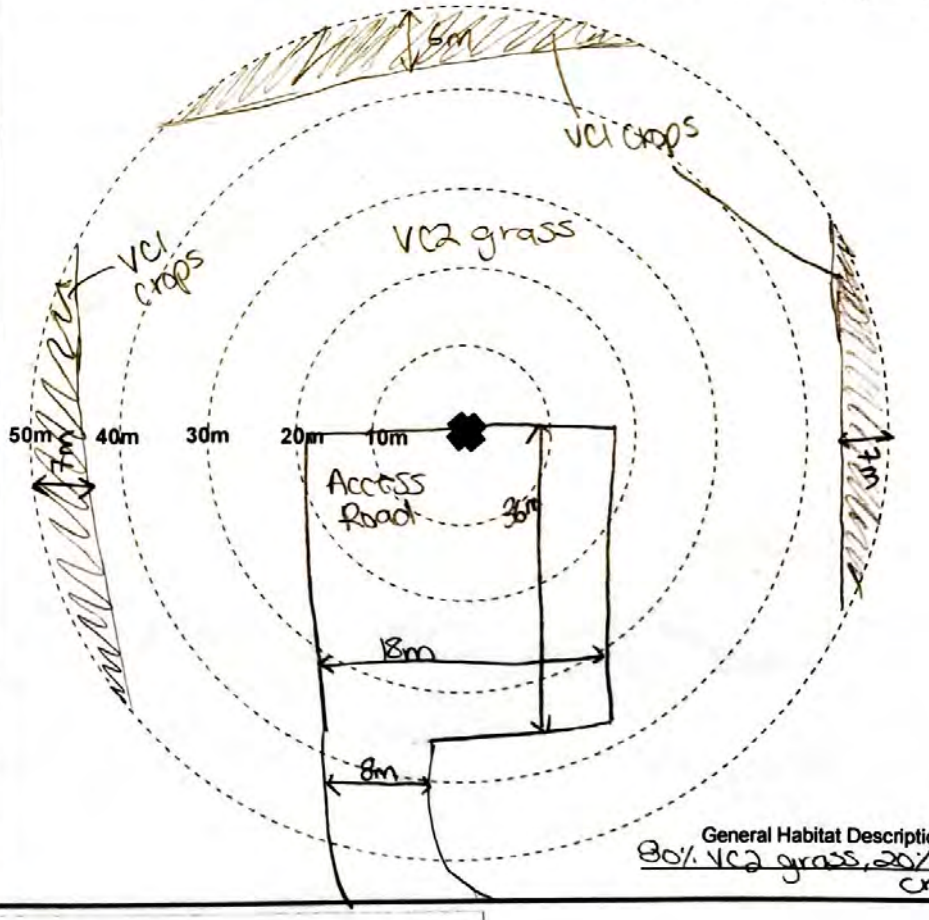
Date (DD/MM/YY): 14/05/20
Observer: RA, HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description:
10% VC1 bare soil, 5% VC3 grass, 85% VC2 grass

Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/06/20
Observer: RA, HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description:
80% VC2 grass, 20% VC1 crops

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

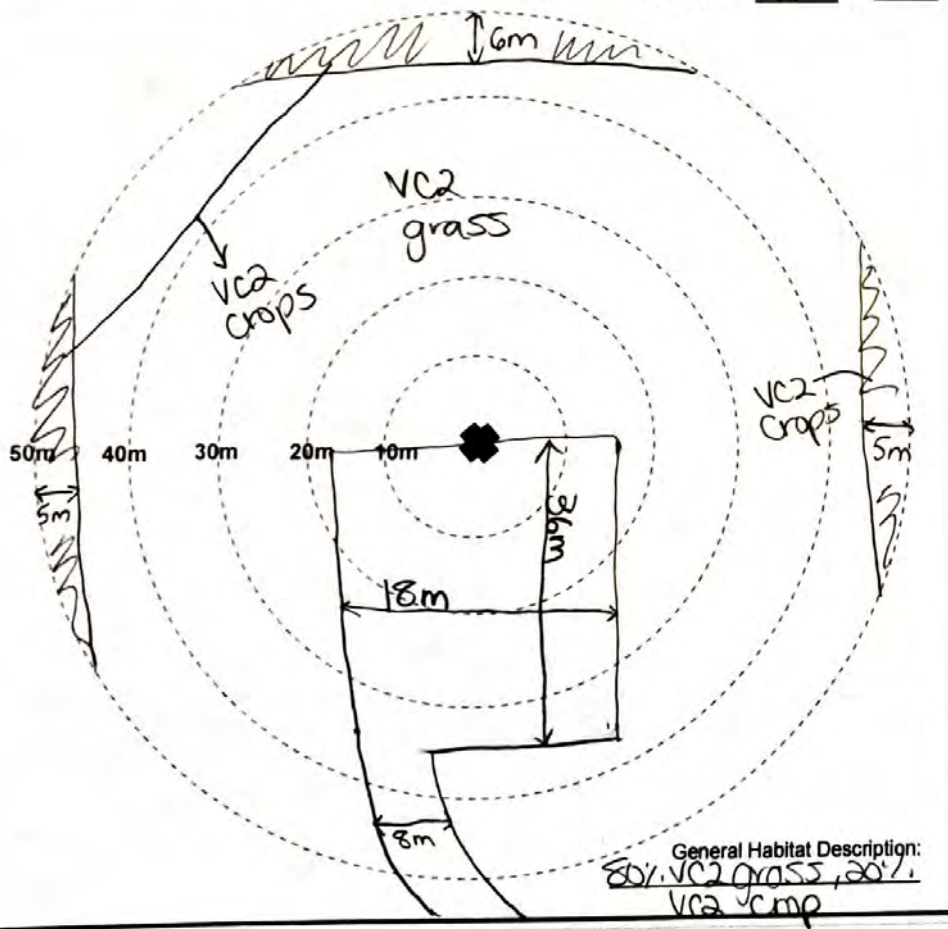
Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T16

Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/07/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



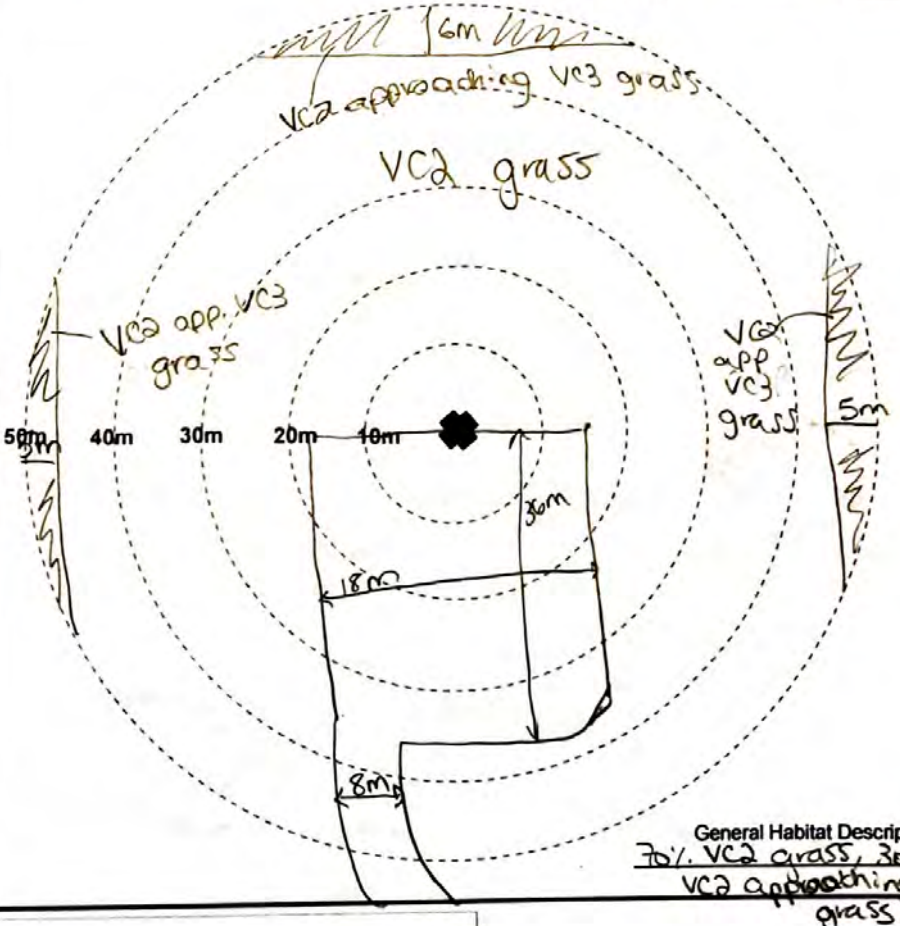
General Habitat Description: 80% VC2 grass, 20% VC2 crop

Photo Numbers (from turbine base)
Facing North: 0021
Facing East: 0022
Facing South: 0023
Facing West: 0024
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/08/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 70% VC2 grass, 30% VC2 approaching VC3 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

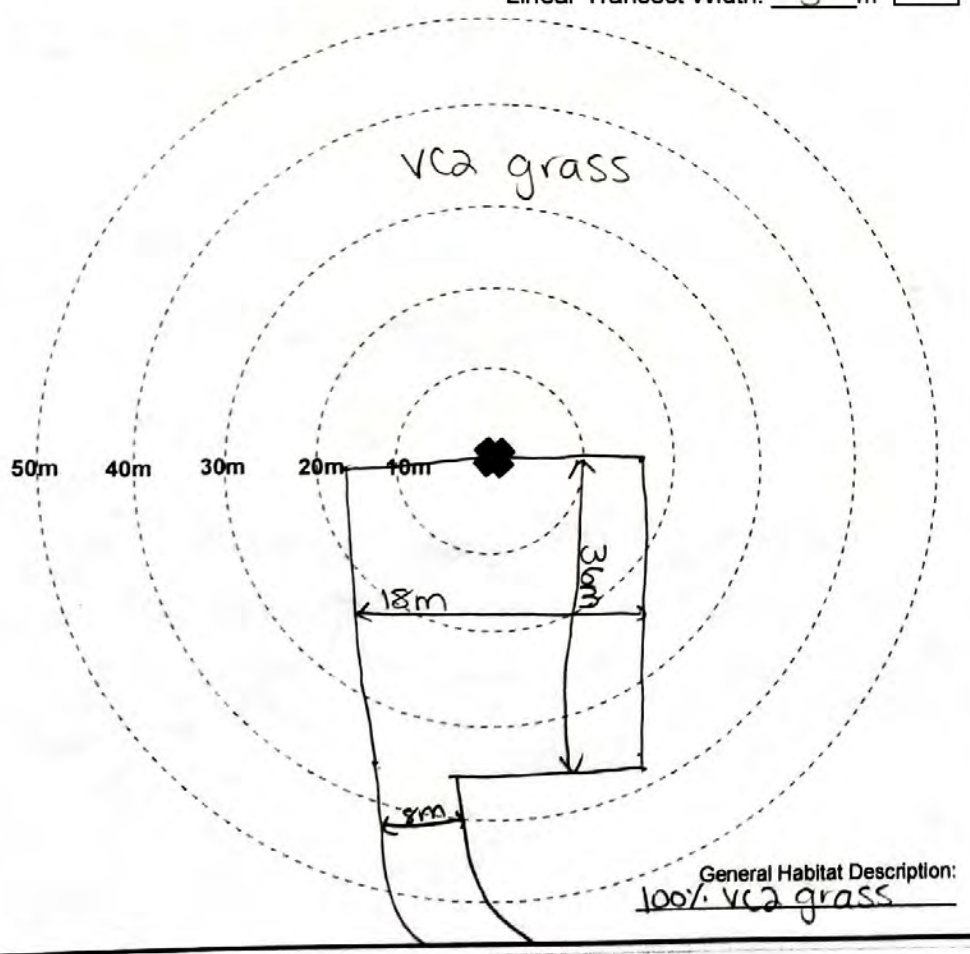
Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T16

Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/20

Observer: RA, HC

Monthly/Seasonal
Linear Transect Width: 3 m



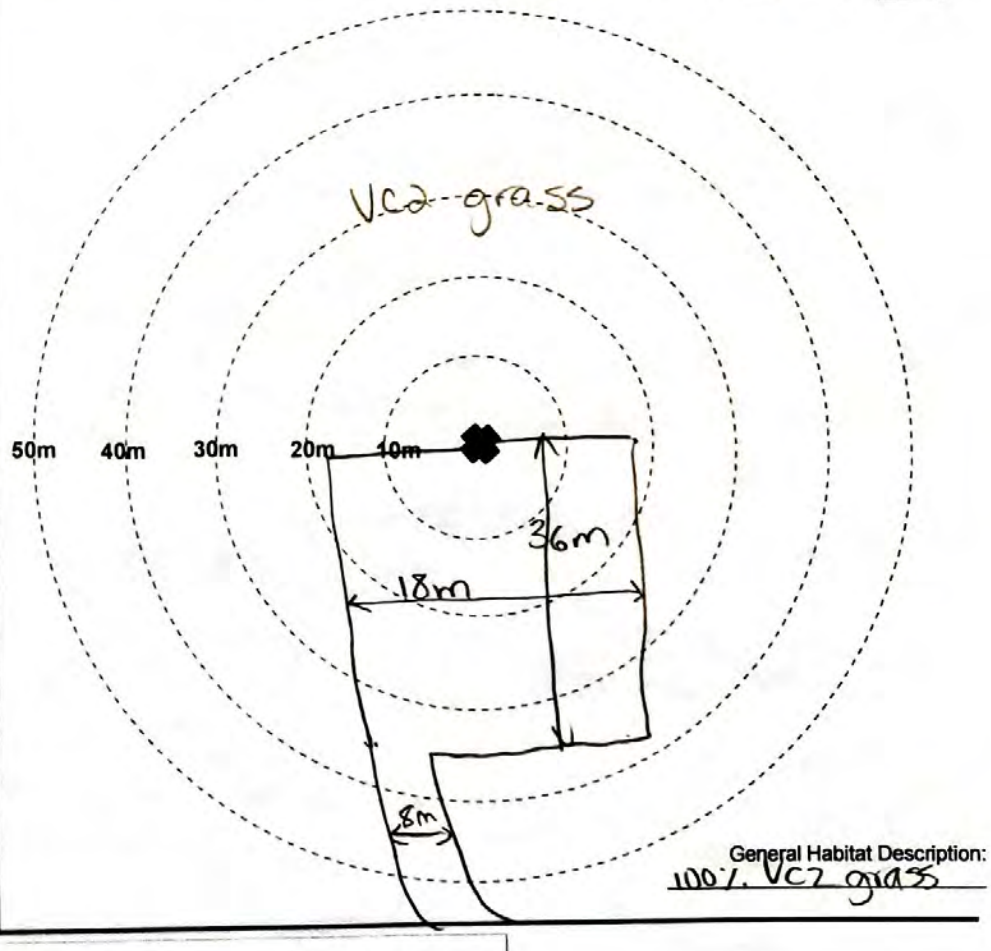
General Habitat Description:
100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/10/20

Observer: RA, HC

Monthly/Seasonal
Linear Transect Width: 3 m



General Habitat Description:
100% VC2 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 17 **Degree of Slope** Ø **degrees** **Slope Orientation** — **(e.g. SSW)**

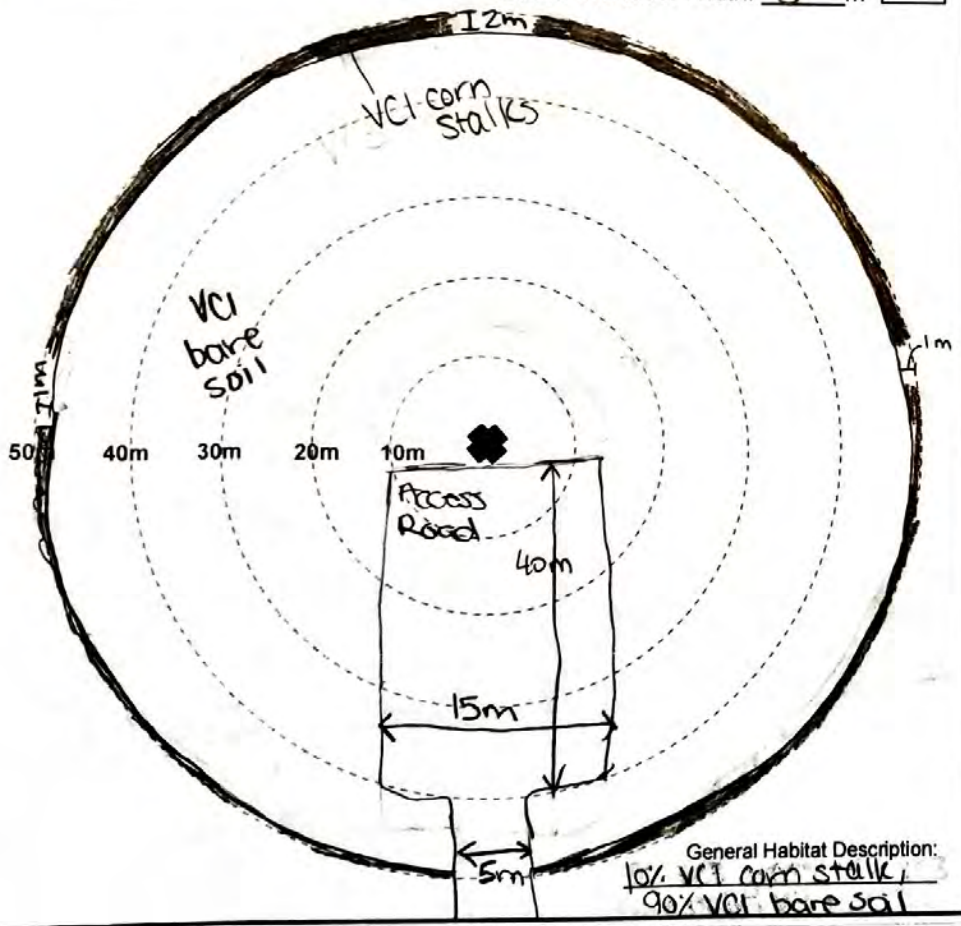
Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description:
10% VCI corn stalk, 90% VCI bare soil

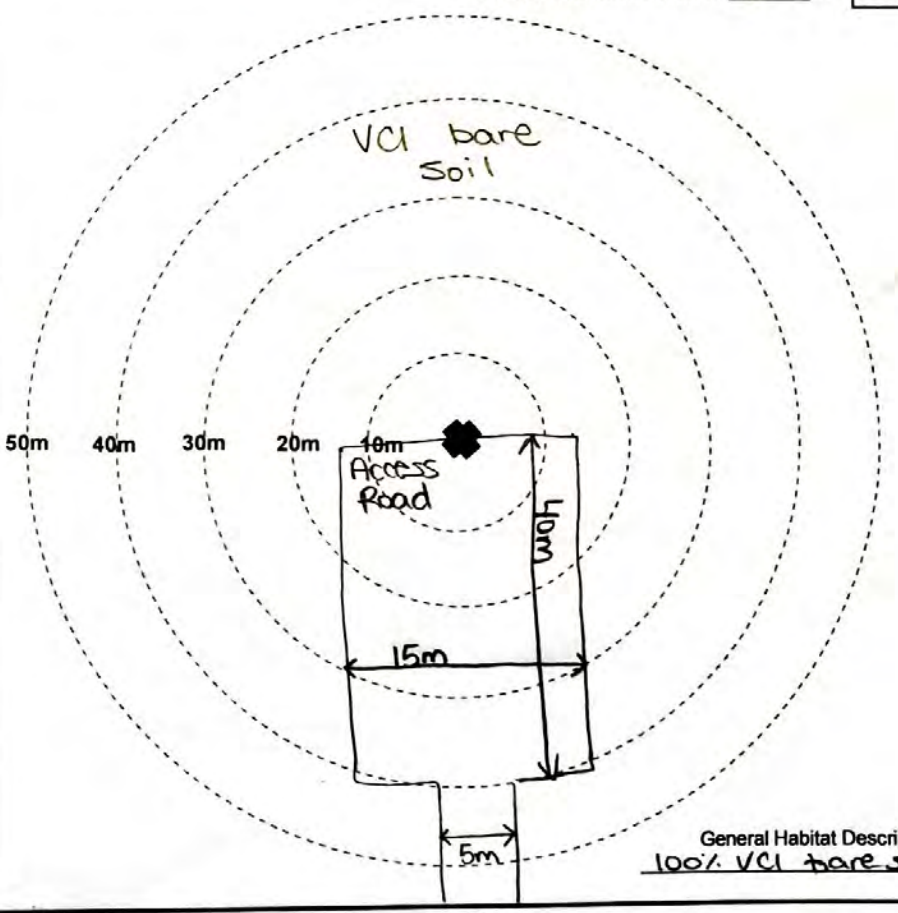
Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/06/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description:
100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T17

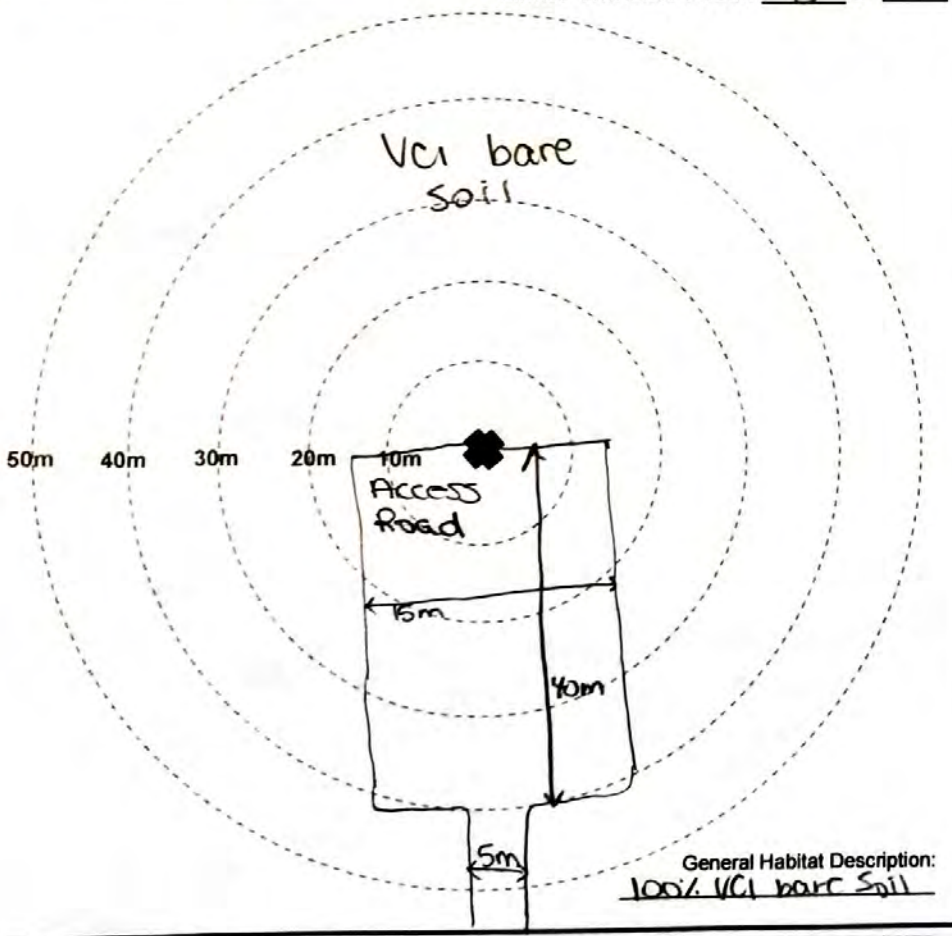
Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/07/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VC1 bare soil

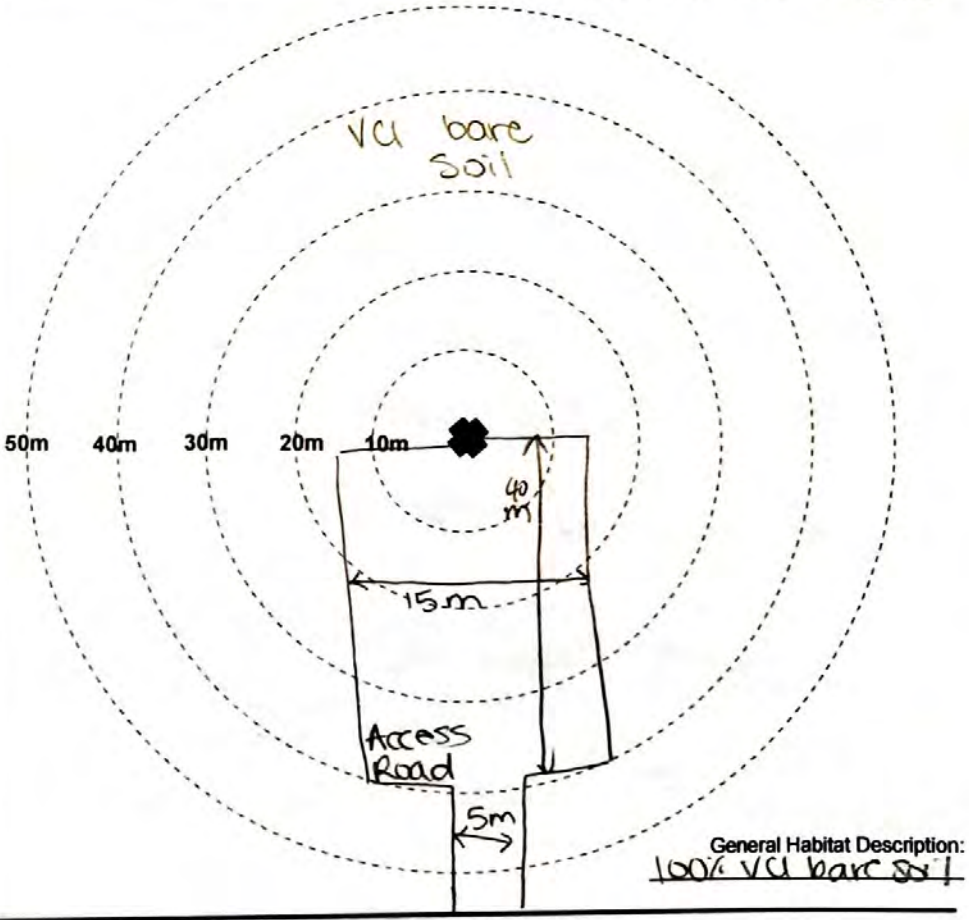
Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/08/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VC1 bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T17

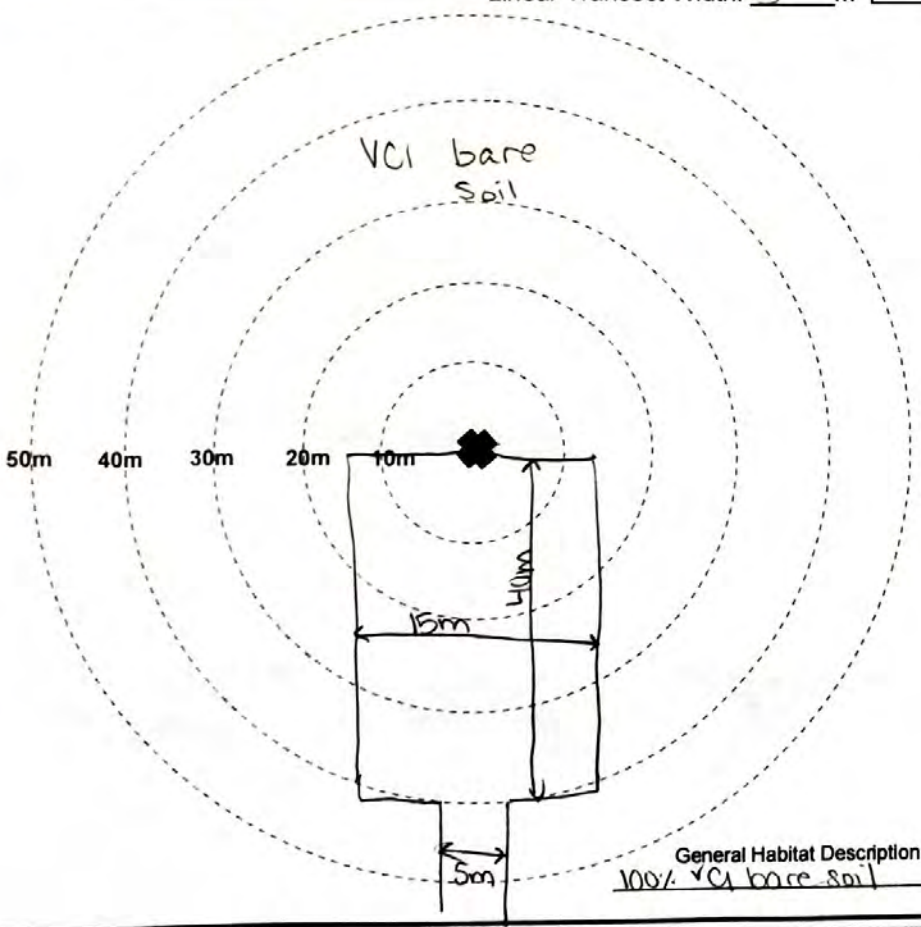
Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VCI bare soil

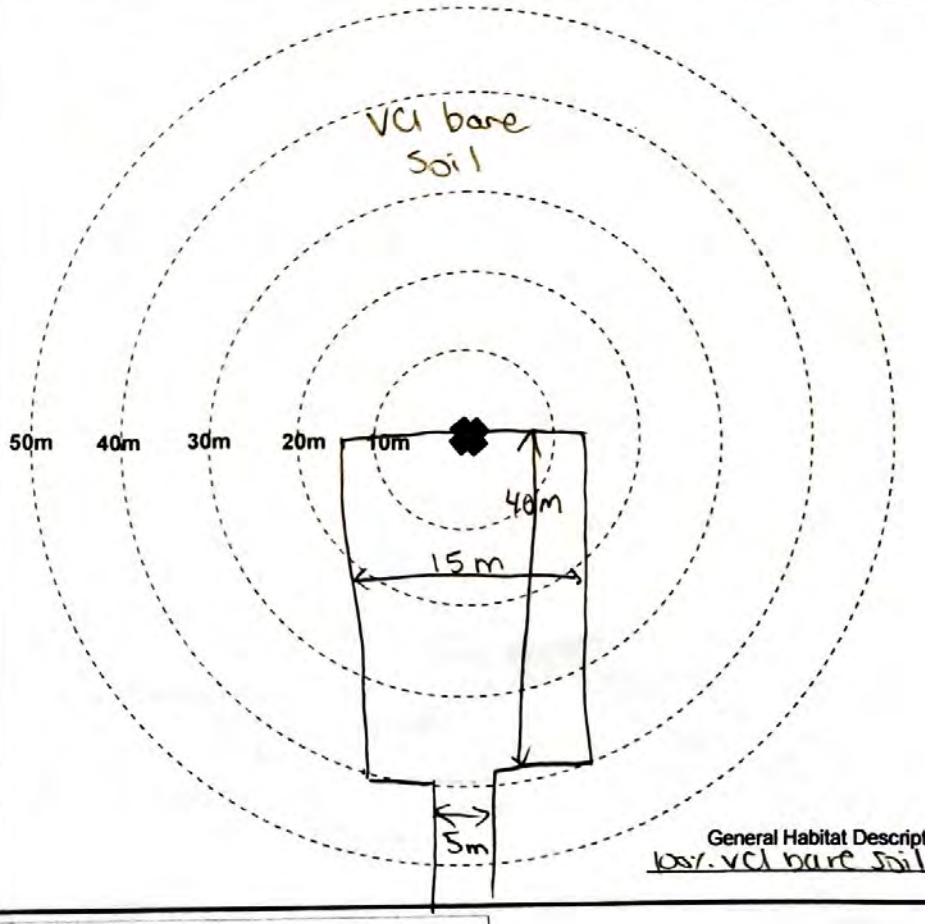
Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/10/26

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 18 **Degree of Slope** Ø **degrees** **Slope Orientation** — **(e.g. SSW)**

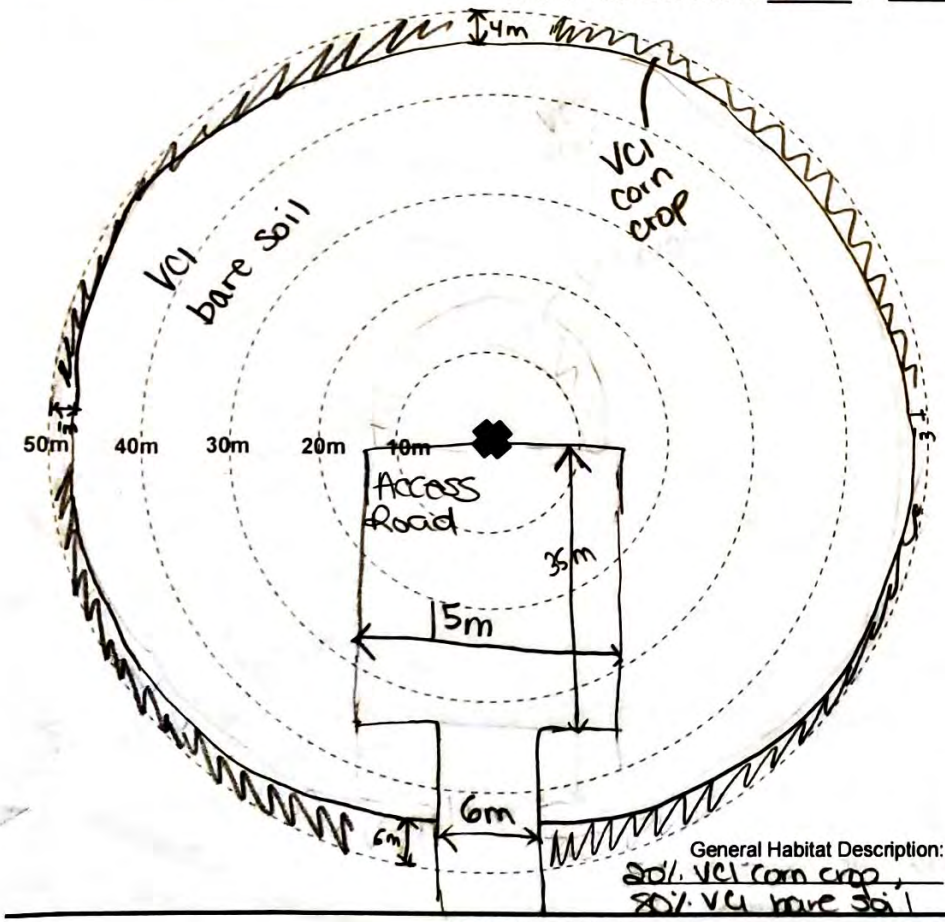
Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

Date (DD/MM/YY): 14/05/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description:
20% VCI corn crop,
80% VCI bare soil

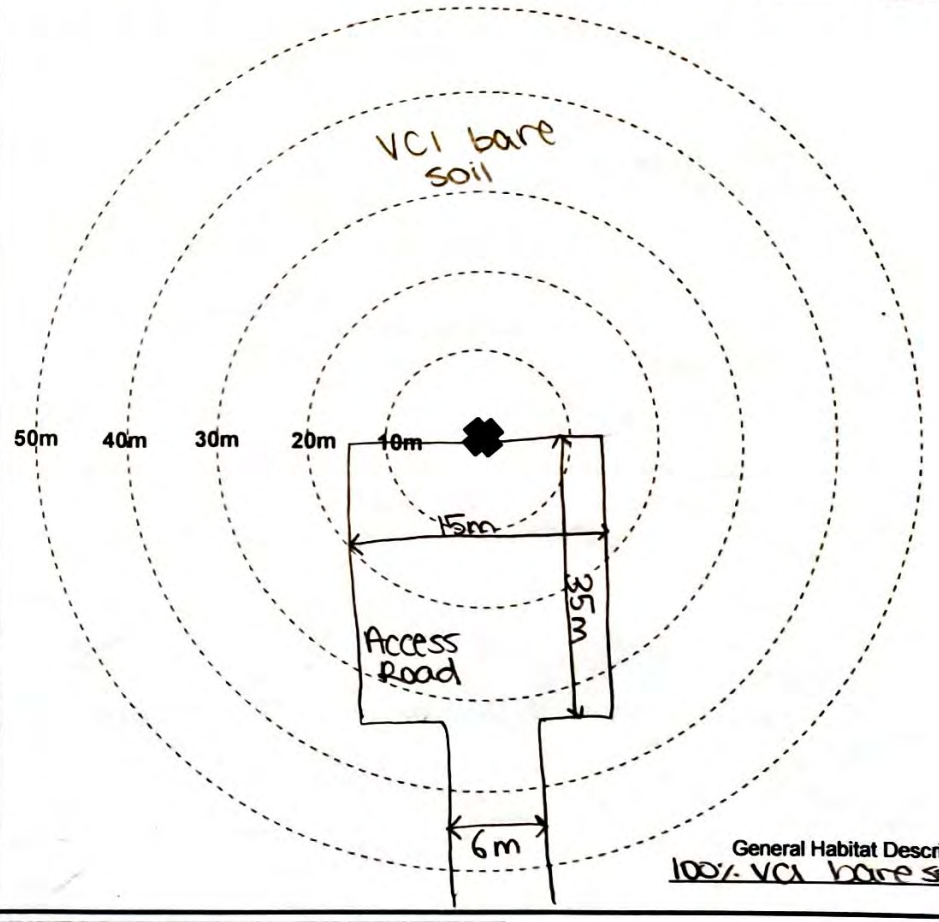
Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/06/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description:
100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T18

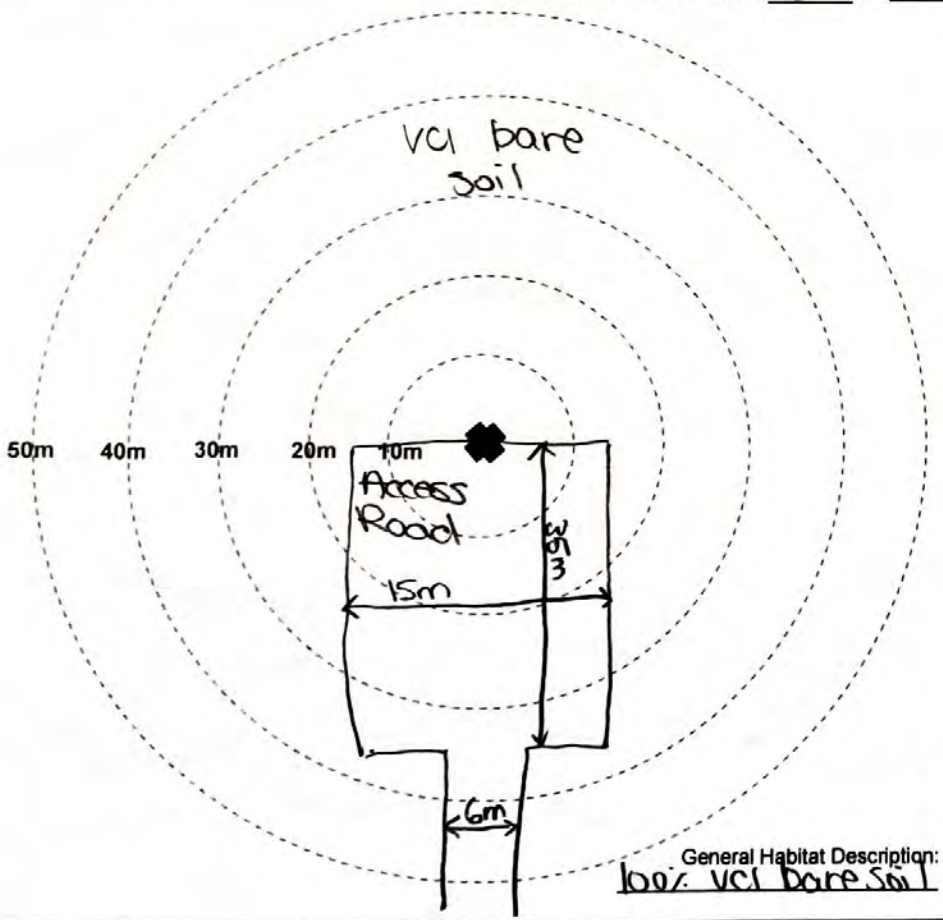
Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/07/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VCI Bare Soil

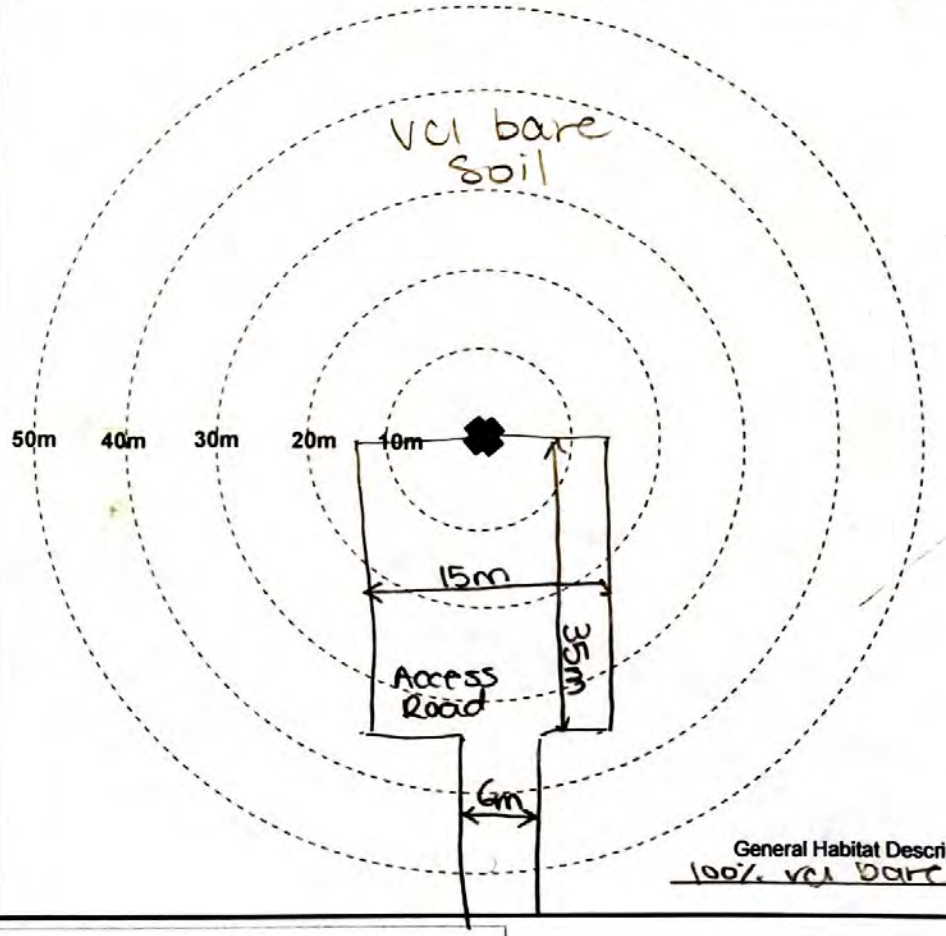
Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/08/20

Observer: HC, RA

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 18

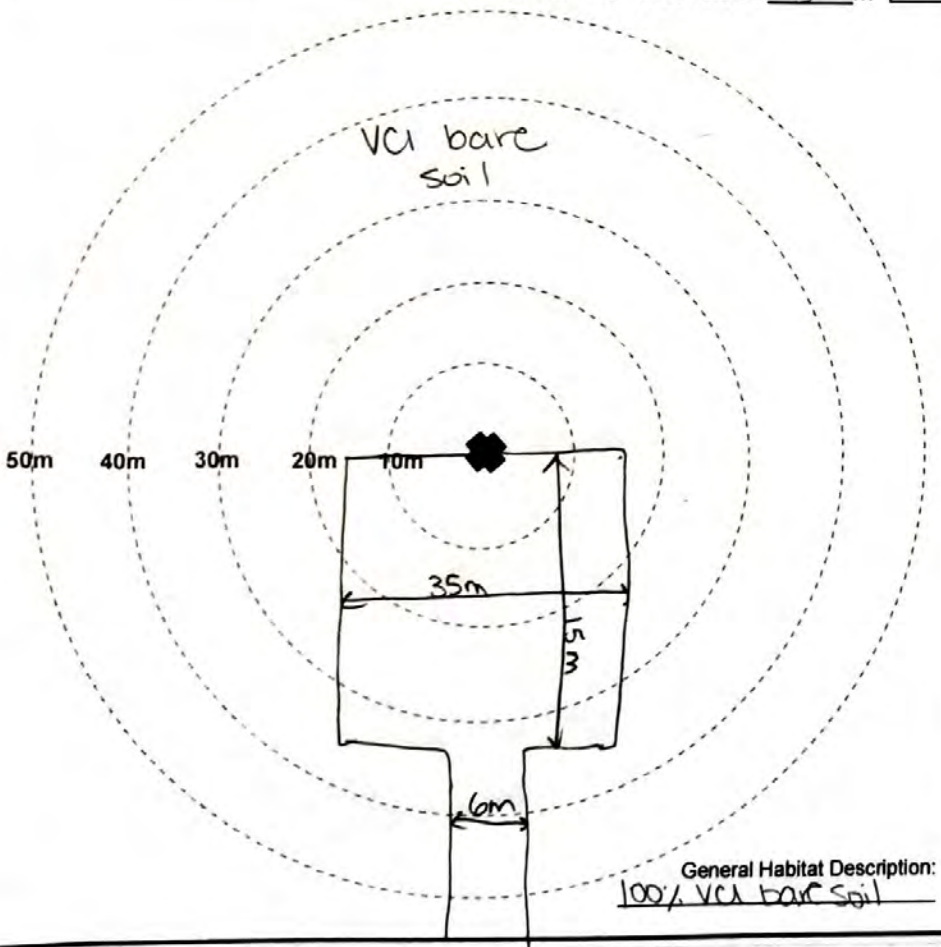
Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/20

Observer: RA, HC

Monthly/Seasonal
Linear Transect Width: 3 m

N



General Habitat Description:
100% VCI bare soil

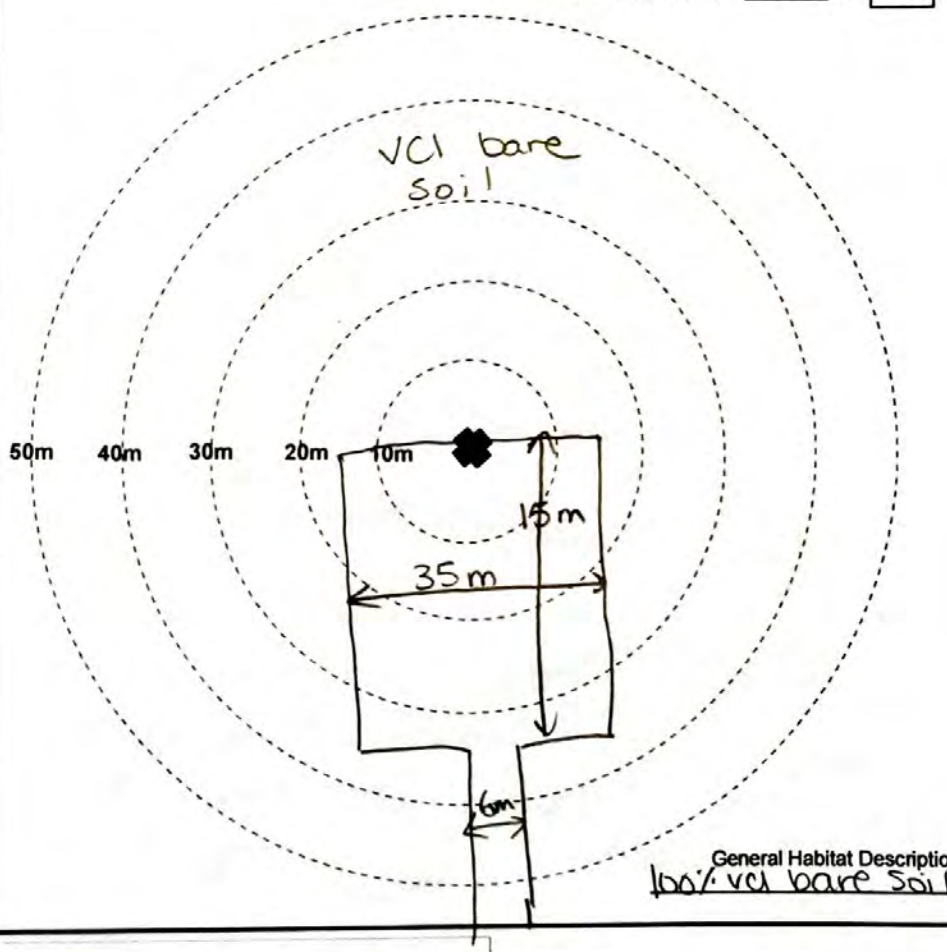
Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/10/20

Observer: RA, HC

Monthly/Seasonal
Linear Transect Width: 3 m

N



General Habitat Description:
100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

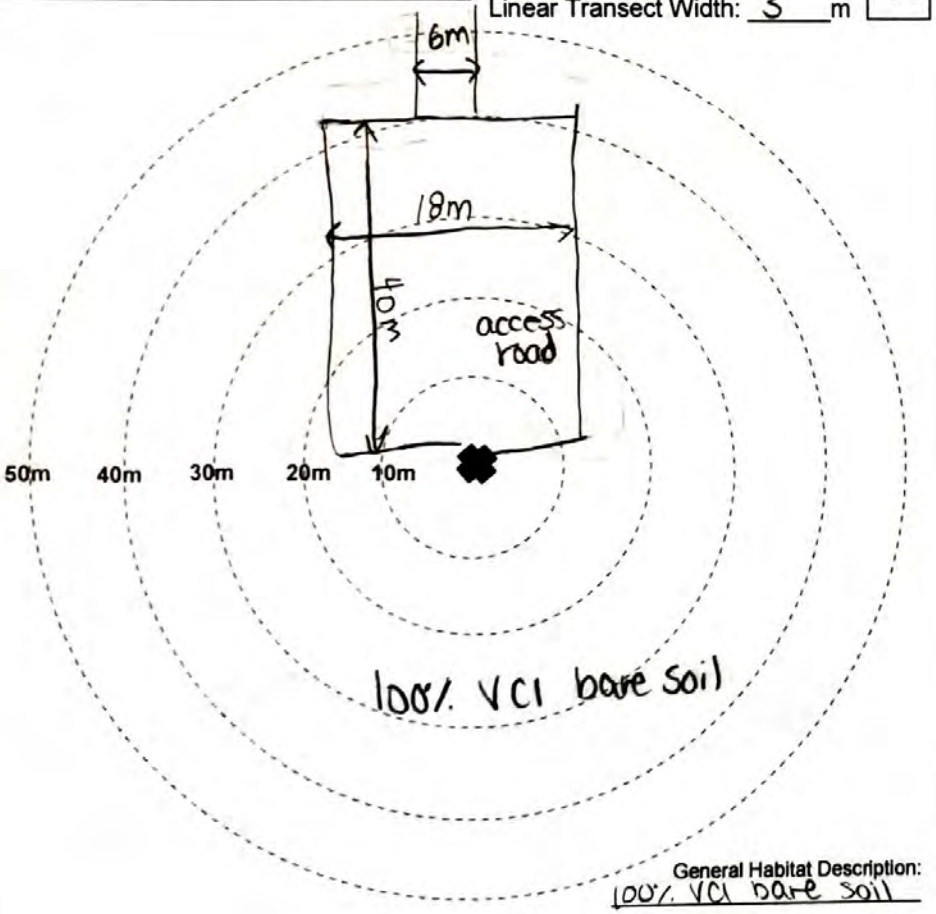
Project Name: Grand Bend WF **Project #:** 2408B **Turbine #:** 20 **Degree of Slope** 3 **degrees** **Slope Orientation** NW **(e.g. SSW)**

Photo Numbers (from turbine base)
Facing North: 0021
Facing East: 0022
Facing South: 0023
Facing West: 0024
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/05/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



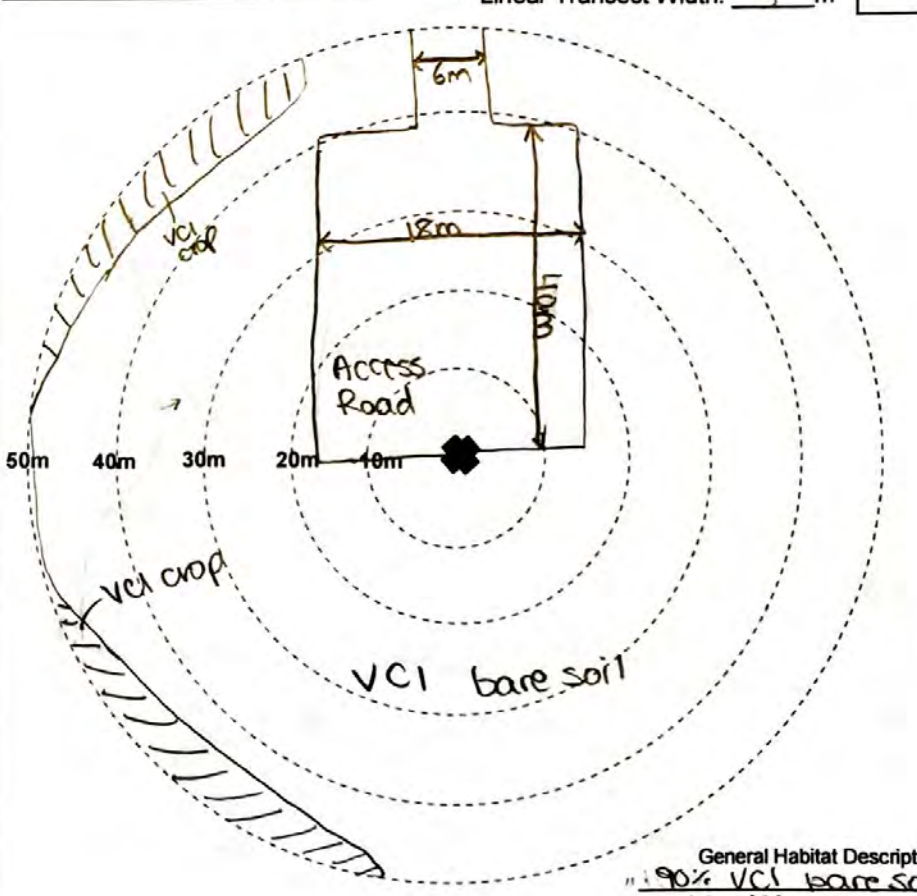
General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 0021
Facing East: 0022
Facing South: 0023
Facing West: 0024
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/06/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 90% VCI bare soil, 10% VCI crop

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

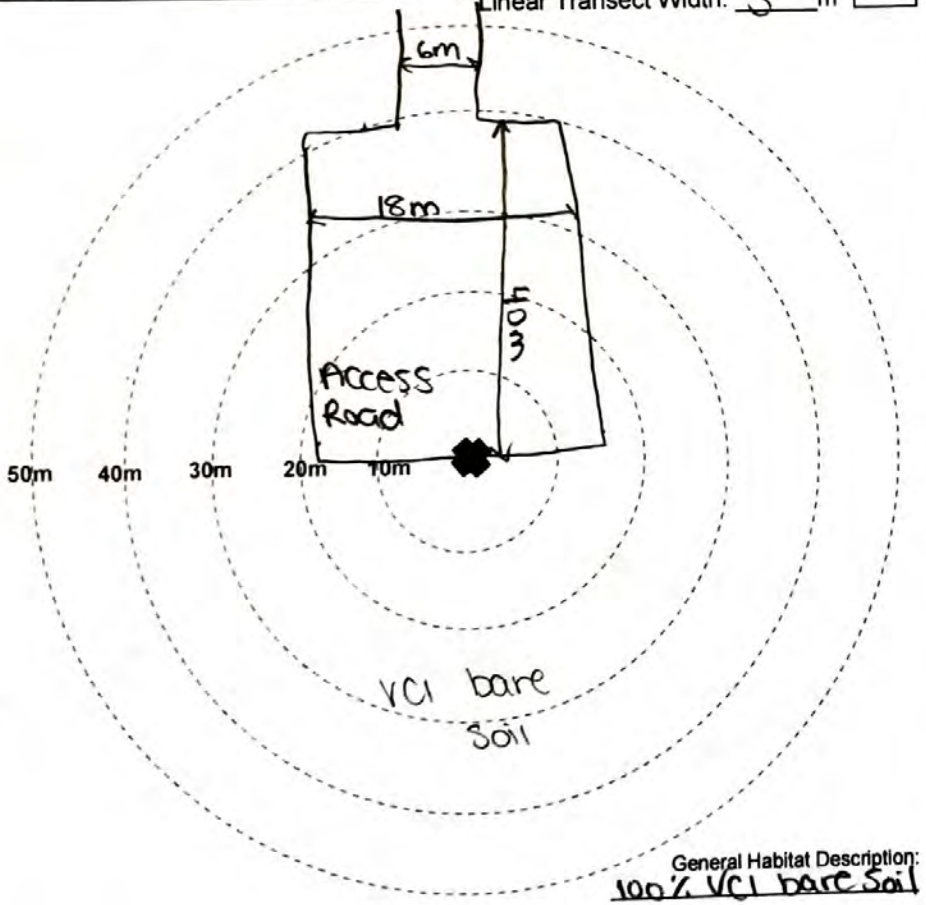
Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** T20

Photo Numbers (from turbine base)
Facing North: 0021
Facing East: 0022
Facing South: 0023
Facing West: 0024
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/07/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



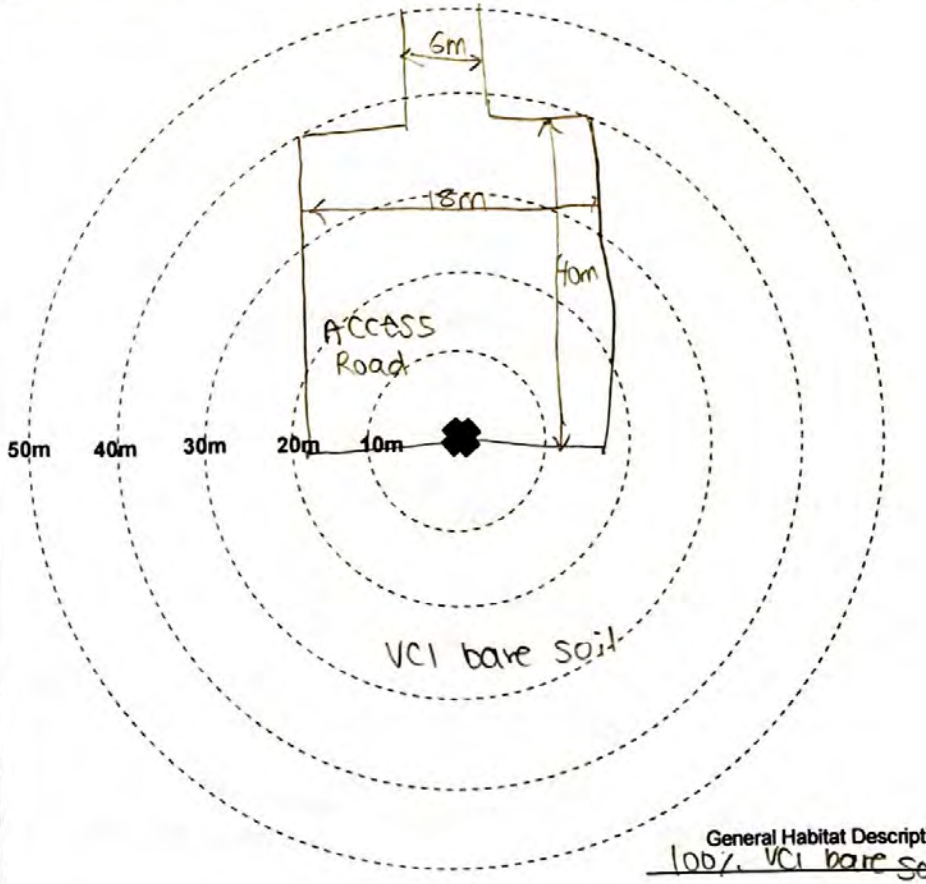
General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

Date (DD/MM/YY): 06/08/20

Observer: RA, HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend WF **Project #:** 2408A **Turbine #:** 20

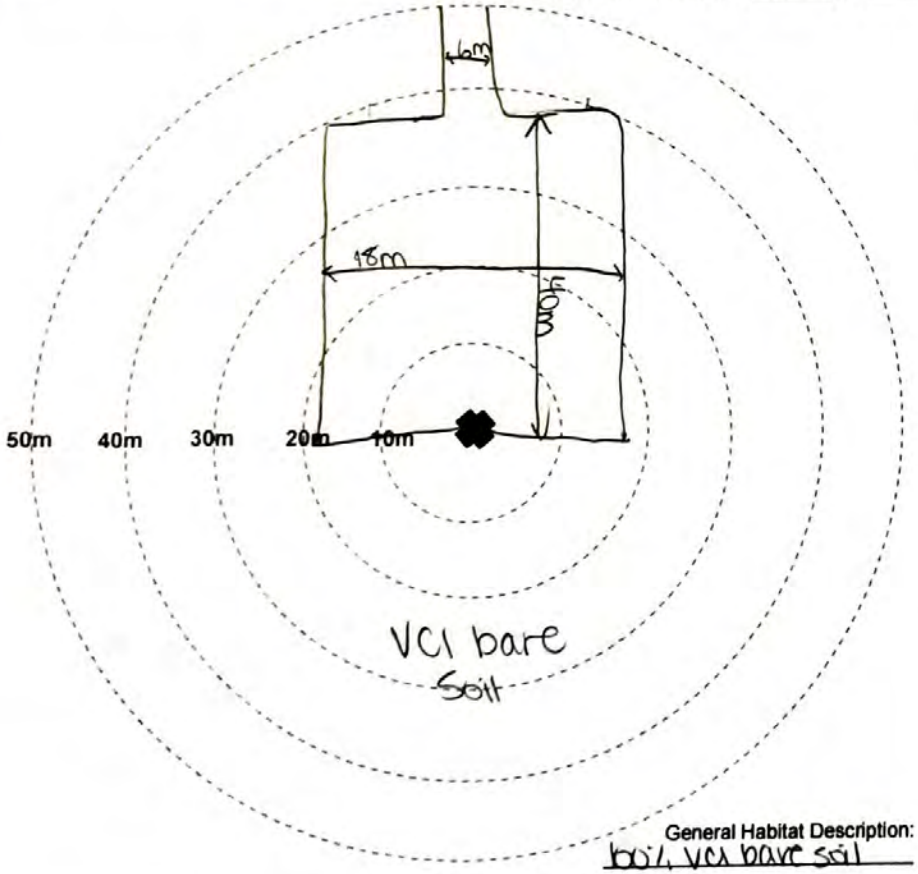
Photo Numbers (from turbine base)
Facing North: 0021
Facing East: 0022
Facing South: 0023
Facing West: 0024
(sketch habitat and visibility classes)

Date (DD/MM/YY): 03/09/20

Observer: HC, RA

Monthly/Seasonal
Linear Transect Width: 3 m

N



General Habitat Description: 100% VCI bare soil

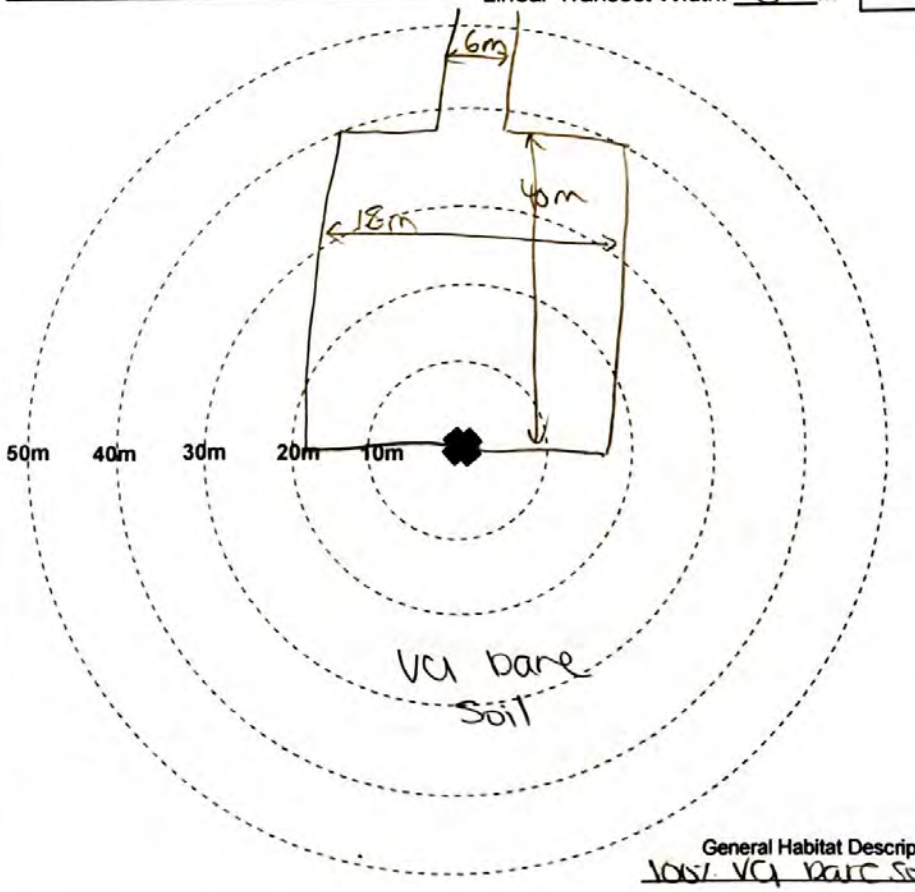
Photo Numbers (from turbine base)
Facing North: 0021
Facing East: 0022
Facing South: 0023
Facing West: 0024
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/10/20

Observer: HC, RA

Monthly/Seasonal
Linear Transect Width: 3 m

N



General Habitat Description: 100% VCI bare soil

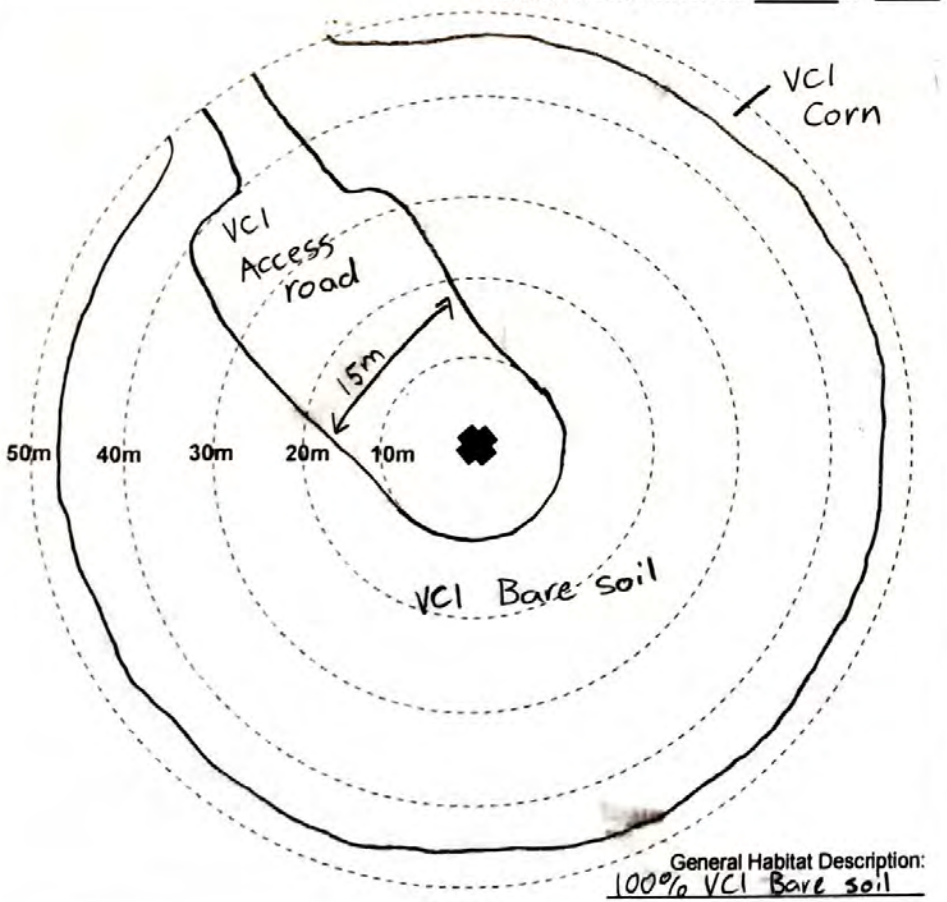
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 27 Degree of Slope Ø° Slope Orientation —

Photo Numbers (from turbine base)
Facing North: 0033
Facing East: 0034
Facing South: 0035
Facing West: 0036
(sketch habitat and visibility classes)

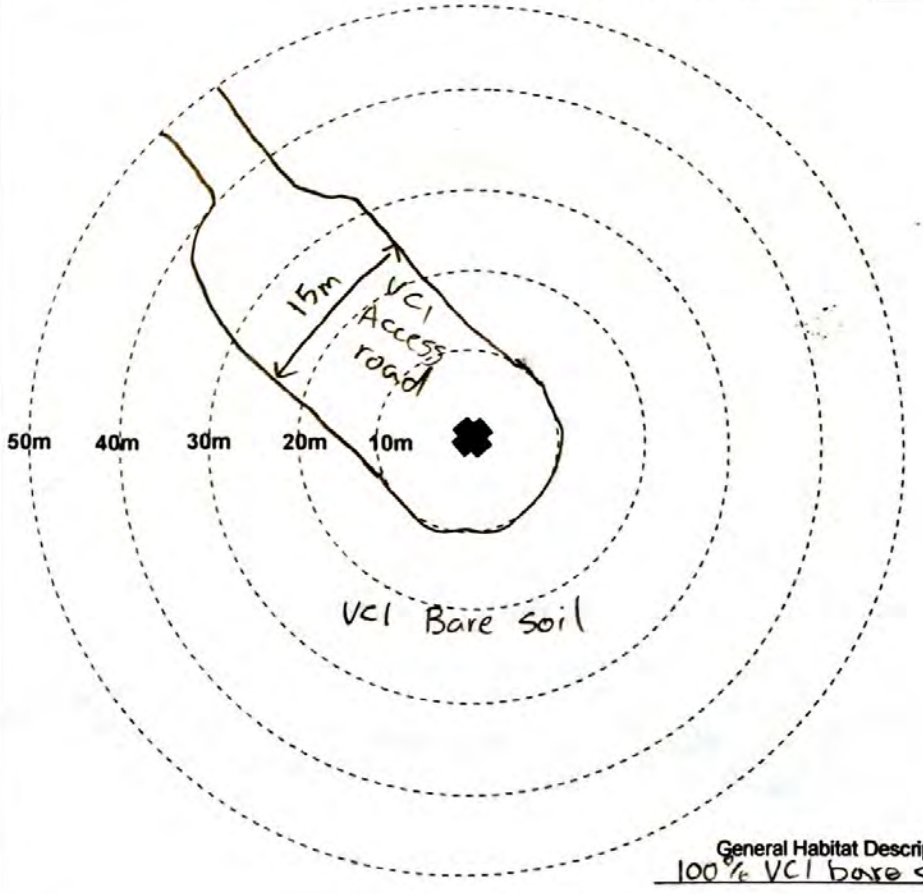
Date (DD/MM/YY): 05/05/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCl Bare soil

Photo Numbers (from turbine base)
Facing North: 01
Facing East: 02
Facing South: 03
Facing West: 04
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/06/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCl bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

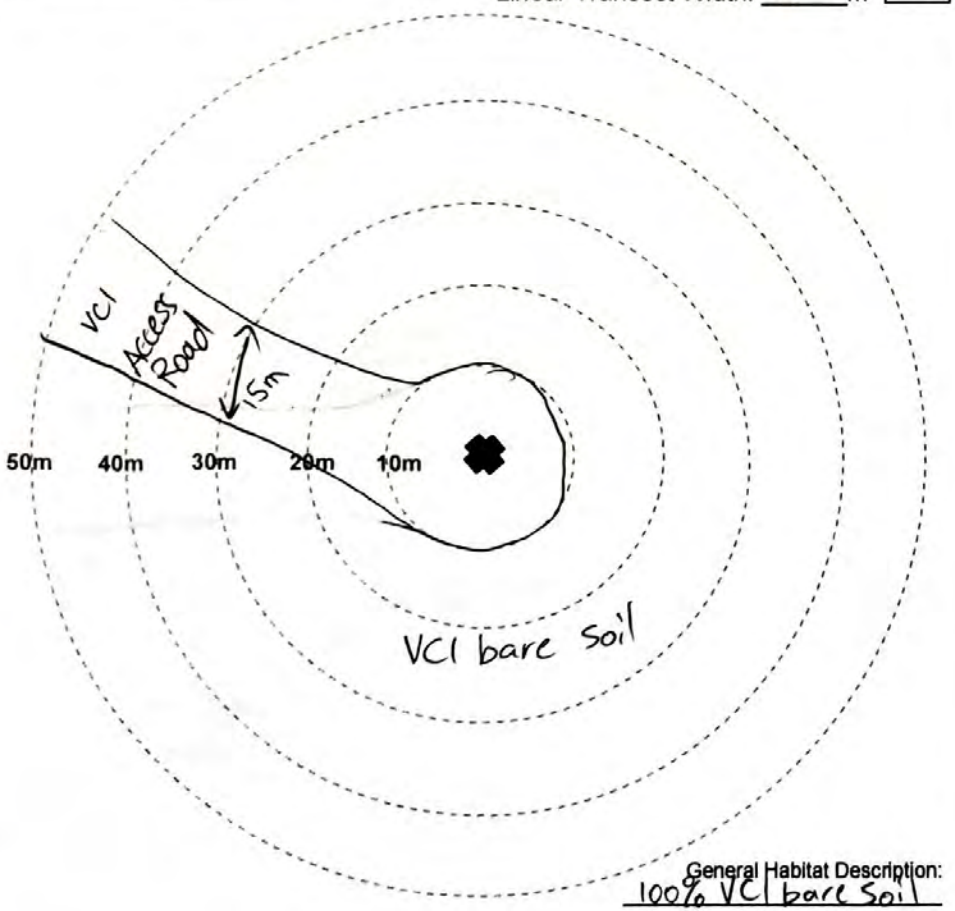
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 27

Photo Numbers (from turbine base)
Facing North: 01
Facing East: 02
Facing South: 03
Facing West: 04
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/07/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



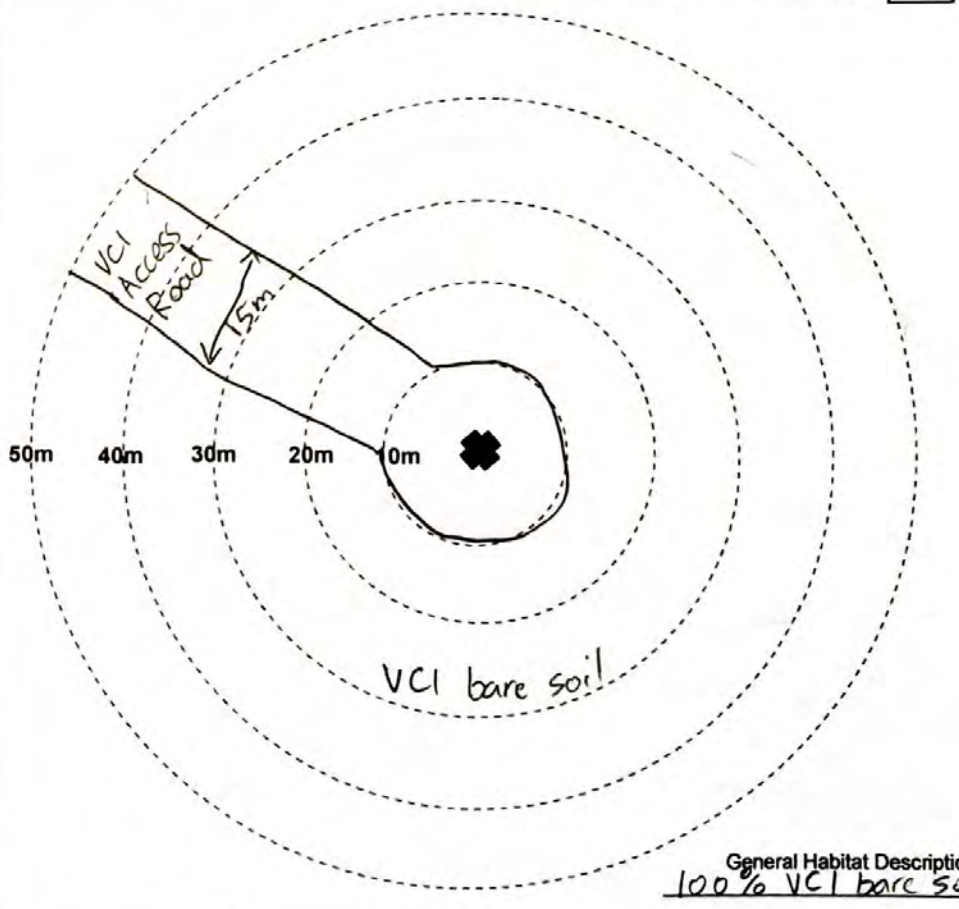
General Habitat Description: 100% VCI bare soil

Photo Numbers (from turbine base)
Facing North: 01
Facing East: 02
Facing South: 03
Facing West: 04
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/08/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 27

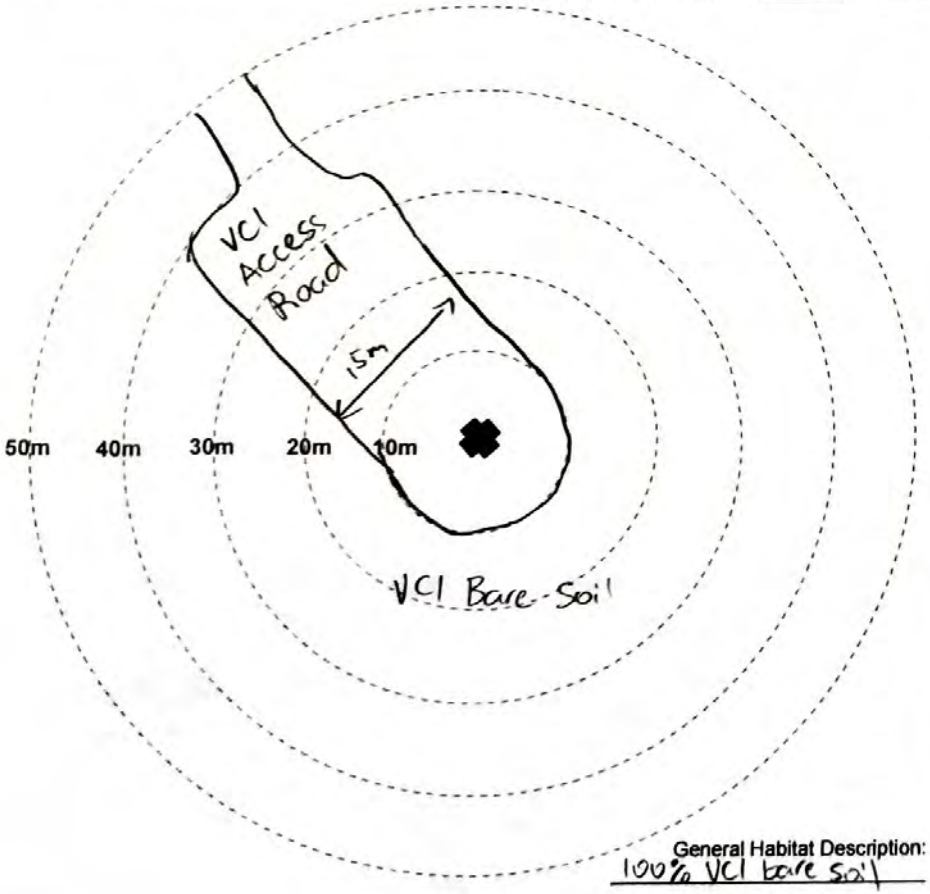
Photo Numbers (from turbine base)
Facing North: 01
Facing East: 02
Facing South: 03
Facing West: 04
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/09/20

Observer: HC

Monthly/Seasonal
Linear Transect Width: 3 m

N



General Habitat Description:
100% VC1 bare soil

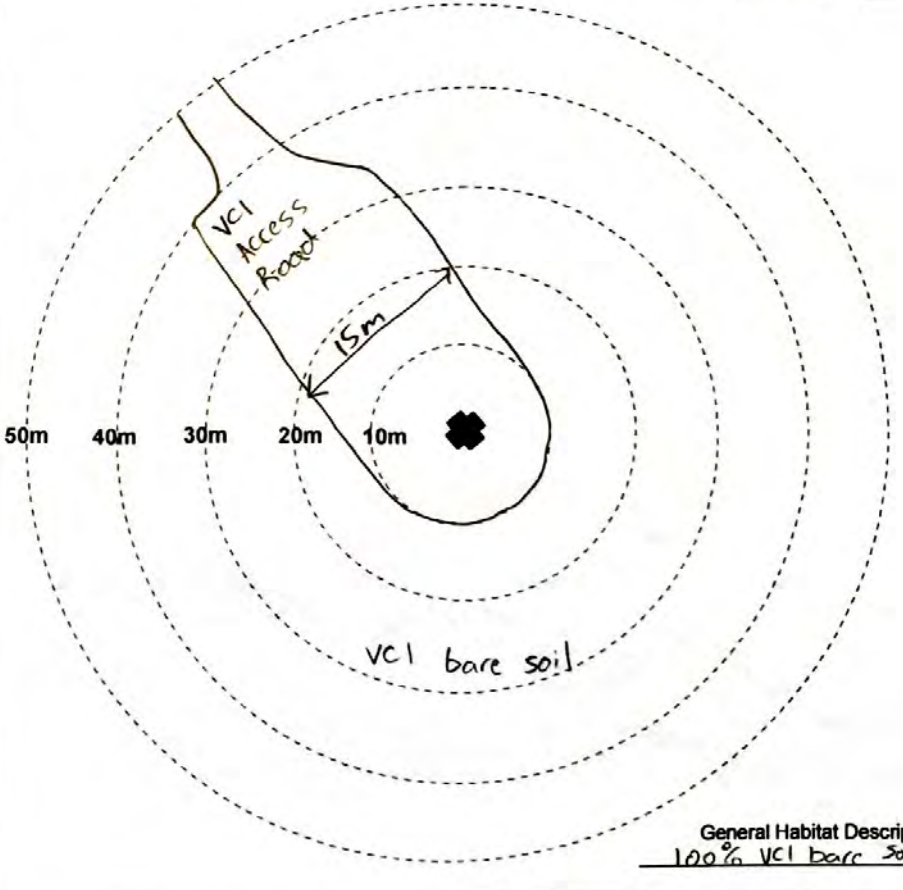
Photo Numbers (from turbine base)
Facing North: 01
Facing East: 02
Facing South: 03
Facing West: 04
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/10/20

Observer: HC + RA

Monthly/Seasonal
Linear Transect Width: 3 m

N



General Habitat Description:
100% VC1 bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 31 **Degree of Slope** Ø degrees **Slope Orientation** — (e.g. SSW)

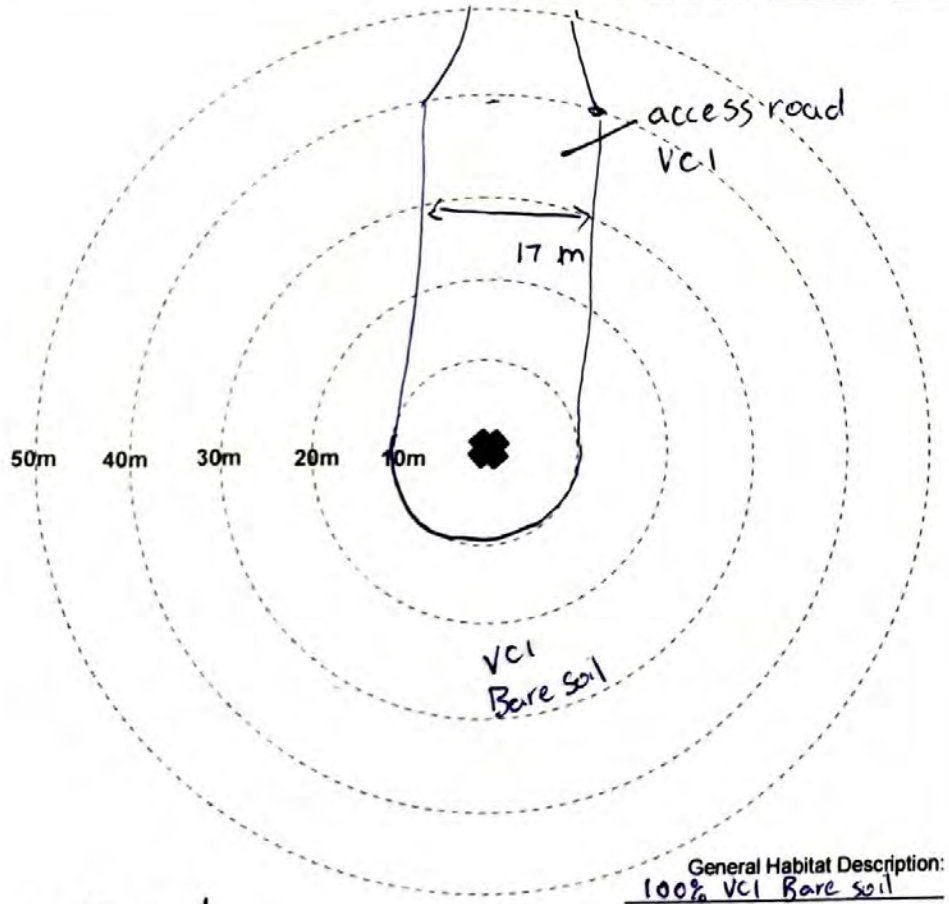
Photo Numbers (from turbine base)
Facing North: 25
Facing East: 26
Facing South: 27
Facing West: 28
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/05/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 100% VC1 Bare soil

Unchanged

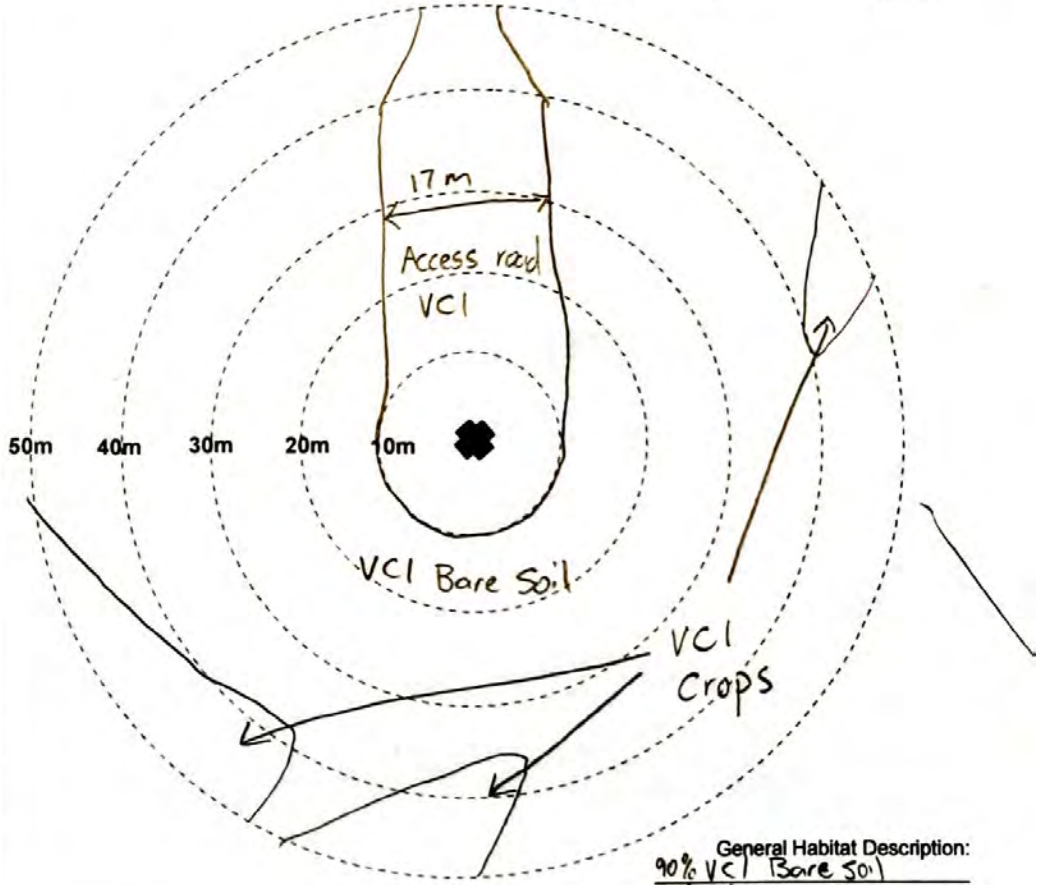
Photo Numbers (from turbine base)
Facing North: 05
Facing East: 06
Facing South: 07
Facing West: 08
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/06/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m

N



General Habitat Description: 90% VC1 Bare Soil, 10% VC1 Crops

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

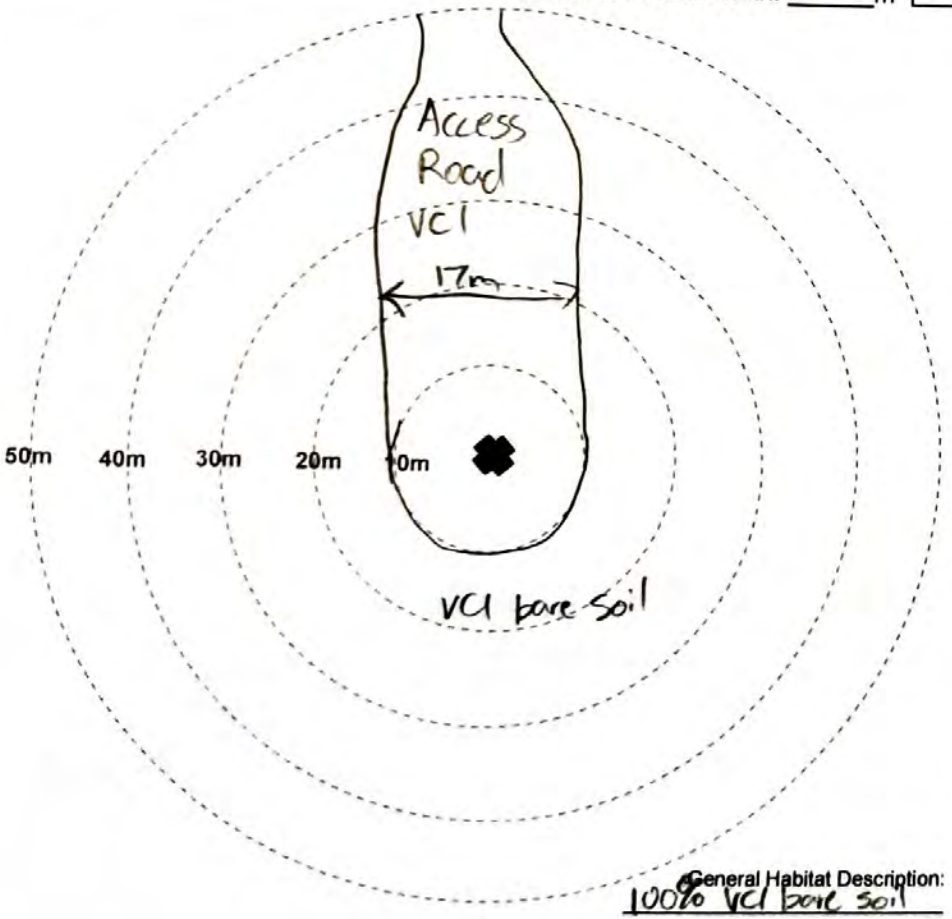
Project Name: Grand Bend Wind Farm **Project #:** 2403A **Turbine #:** 31

Photo Numbers (from turbine base)
Facing North: 05
Facing East: 06
Facing South: 07
Facing West: 08
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/07/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



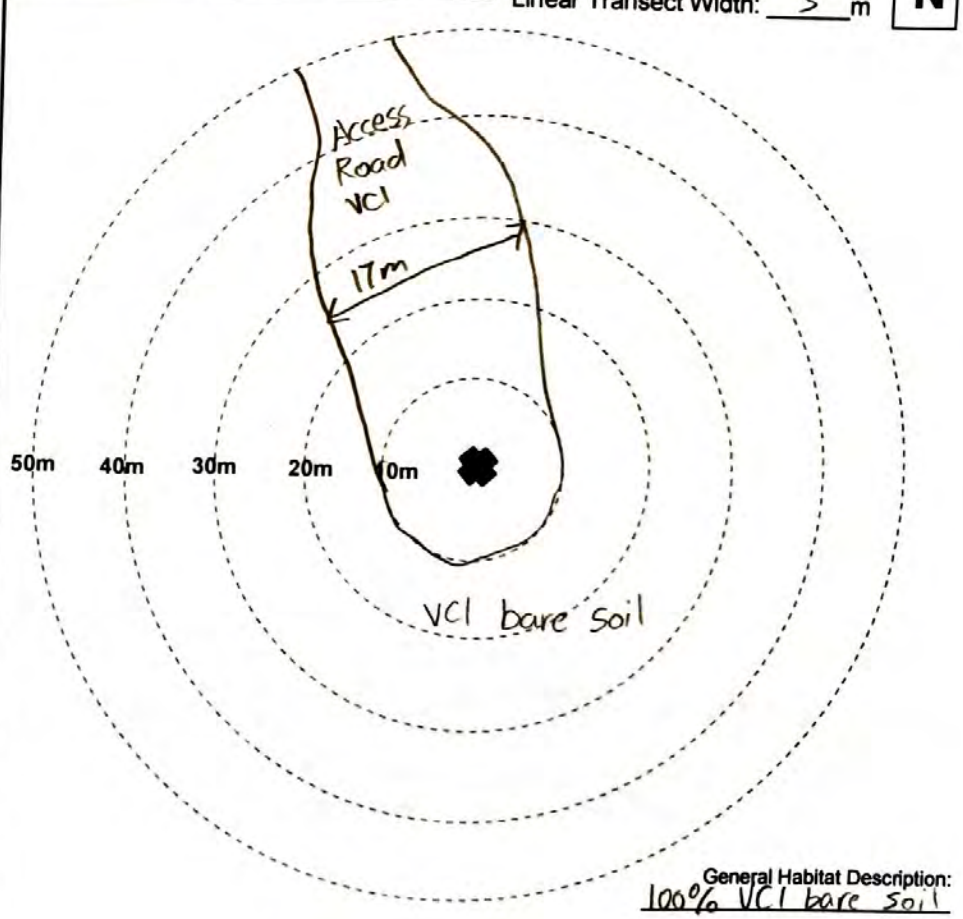
General Habitat Description: 100% VC1 bare soil

Photo Numbers (from turbine base)
Facing North: 05
Facing East: 06
Facing South: 07
Facing West: 08
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/08/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC1 bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

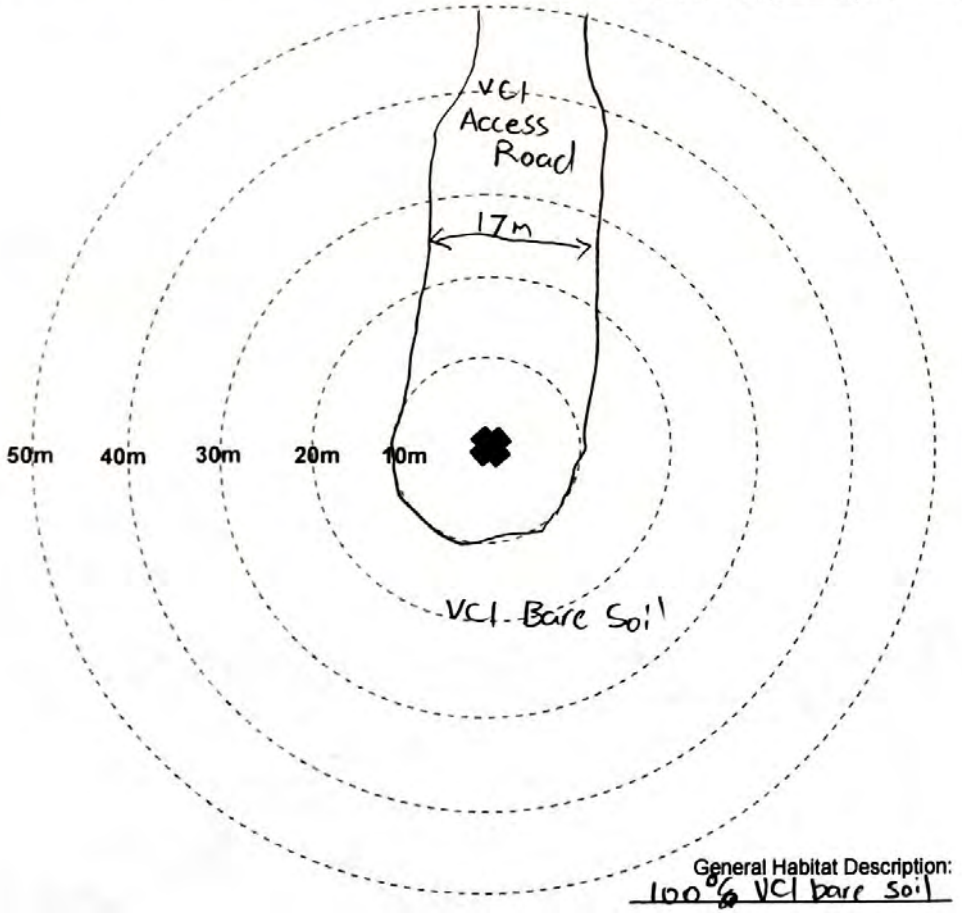
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 31

Photo Numbers (from turbine base)
Facing North: 05
Facing East: 06
Facing South: 07
Facing West: 08
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/09/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



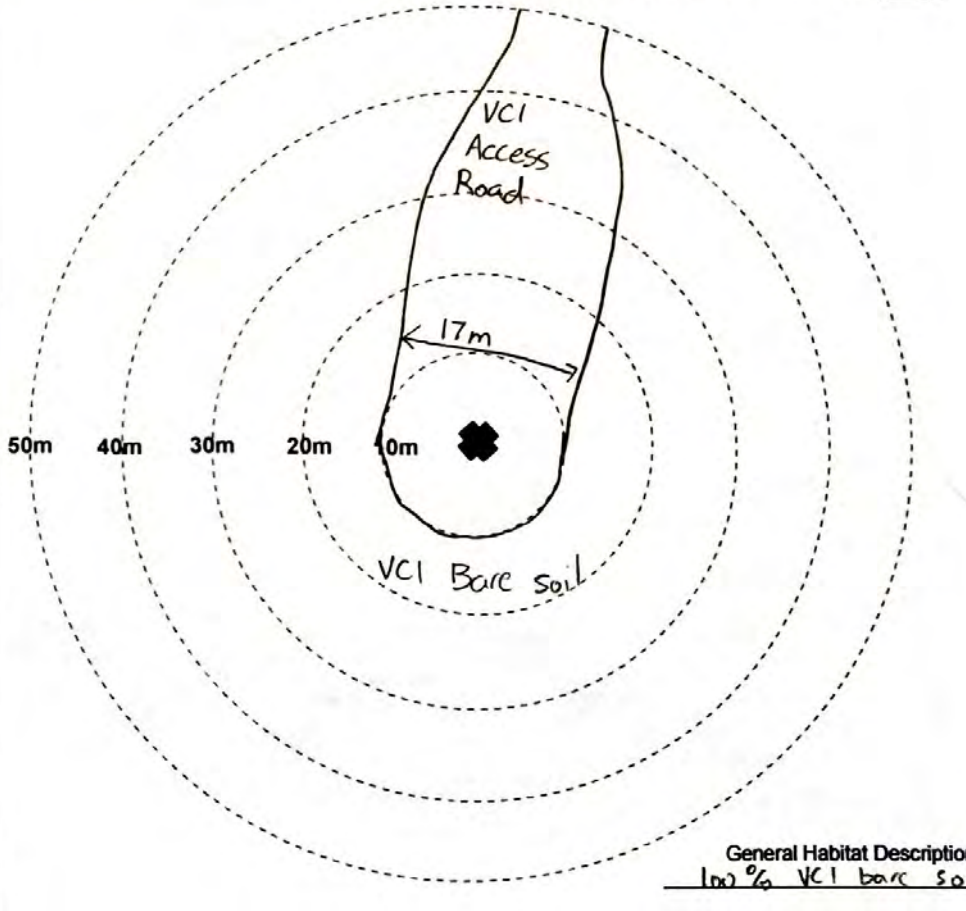
General Habitat Description: 100% VC1 bare soil

Photo Numbers (from turbine base)
Facing North: 05
Facing East: 06
Facing South: 07
Facing West: 08
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/10/20

Observer: HC -

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC1 bare soil

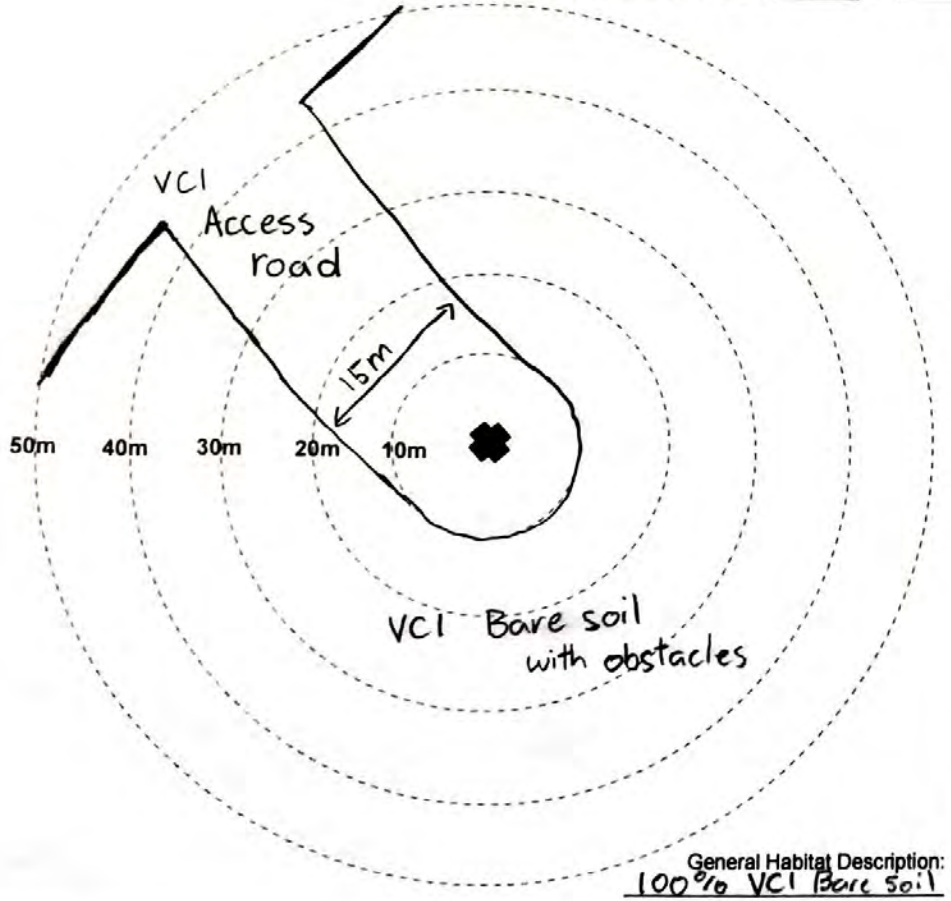
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 24098A **Turbine #:** 33 Degree of Slope 0° Slope Orientation —

Photo Numbers (from turbine base)
Facing North: 0009
Facing East: 0010
Facing South: 0011
Facing West: 0012
(sketch habitat and visibility classes)

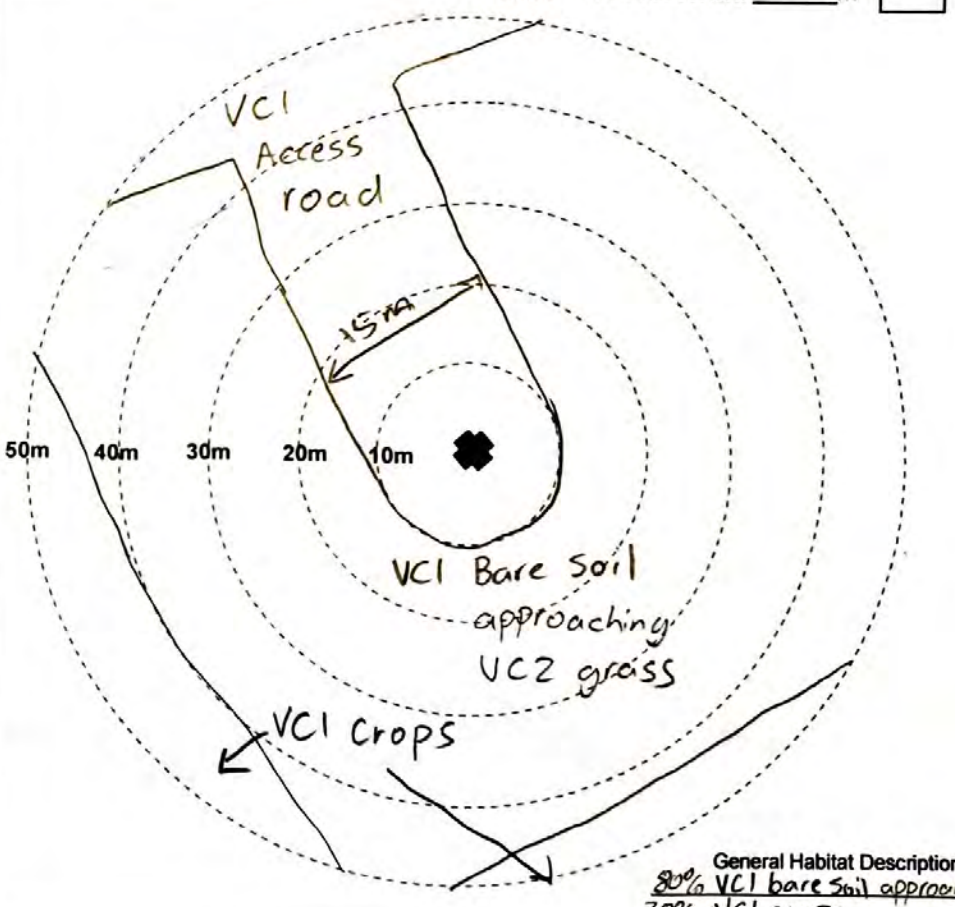
Date (DD/MM/YY): 05/05/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC1 Bare Soil

Photo Numbers (from turbine base)
Facing North: 9
Facing East: 10
Facing South: 11
Facing West: 12
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/05/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 80% VC1 bare soil approach. VC2 grass
20% VC1 crops

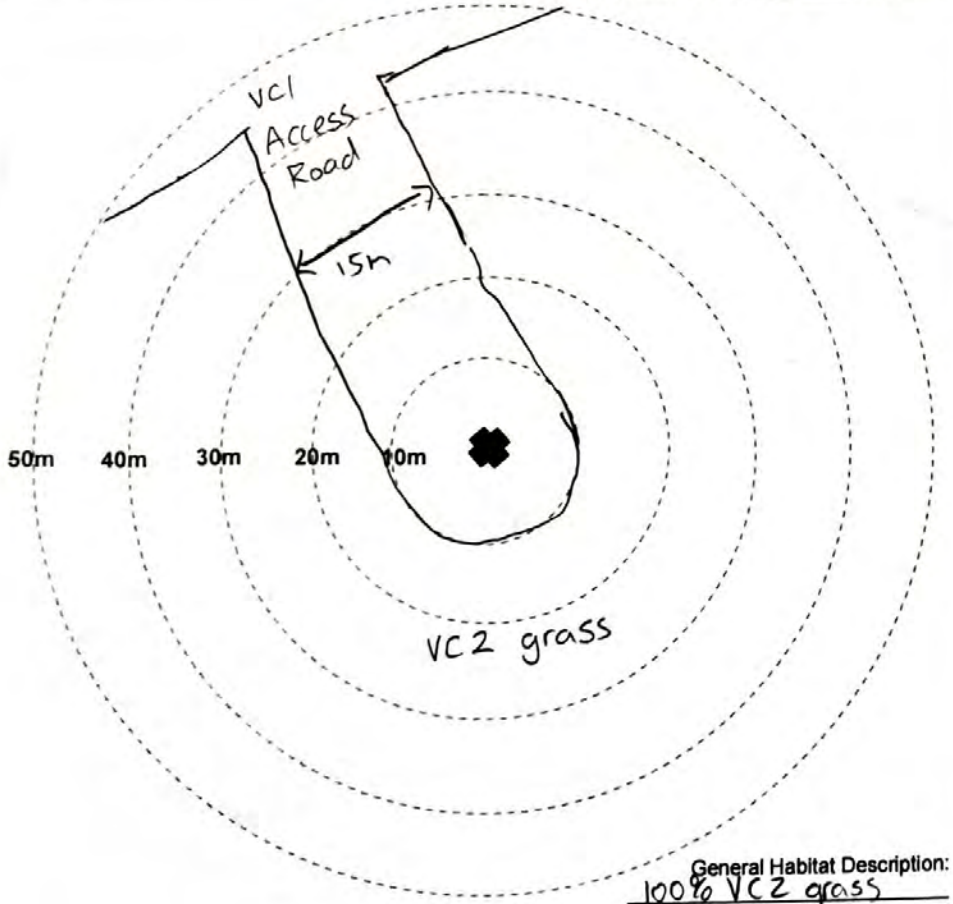
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 33

Photo Numbers (from turbine base)
Facing North: 09
Facing East: 10
Facing South: 11
Facing West: 12
(sketch habitat and visibility classes)

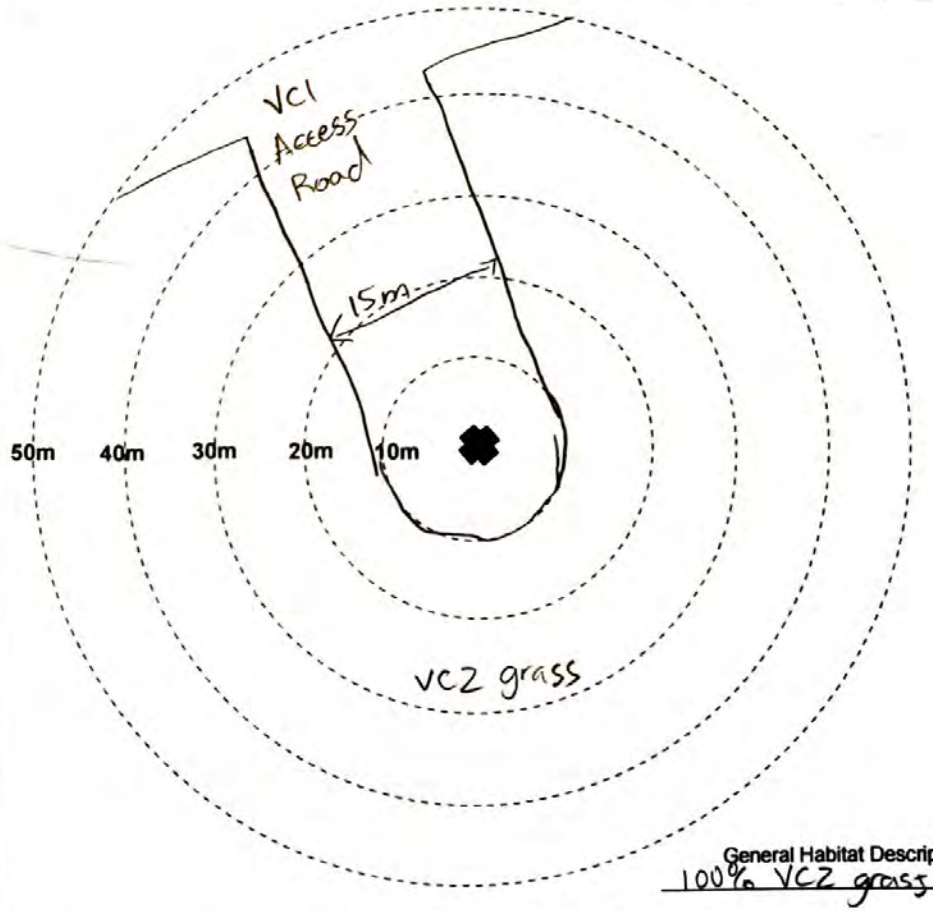
Date (DD/MM/YY): 07/07/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 09
Facing East: 10
Facing South: 11
Facing West: 12
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/08/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

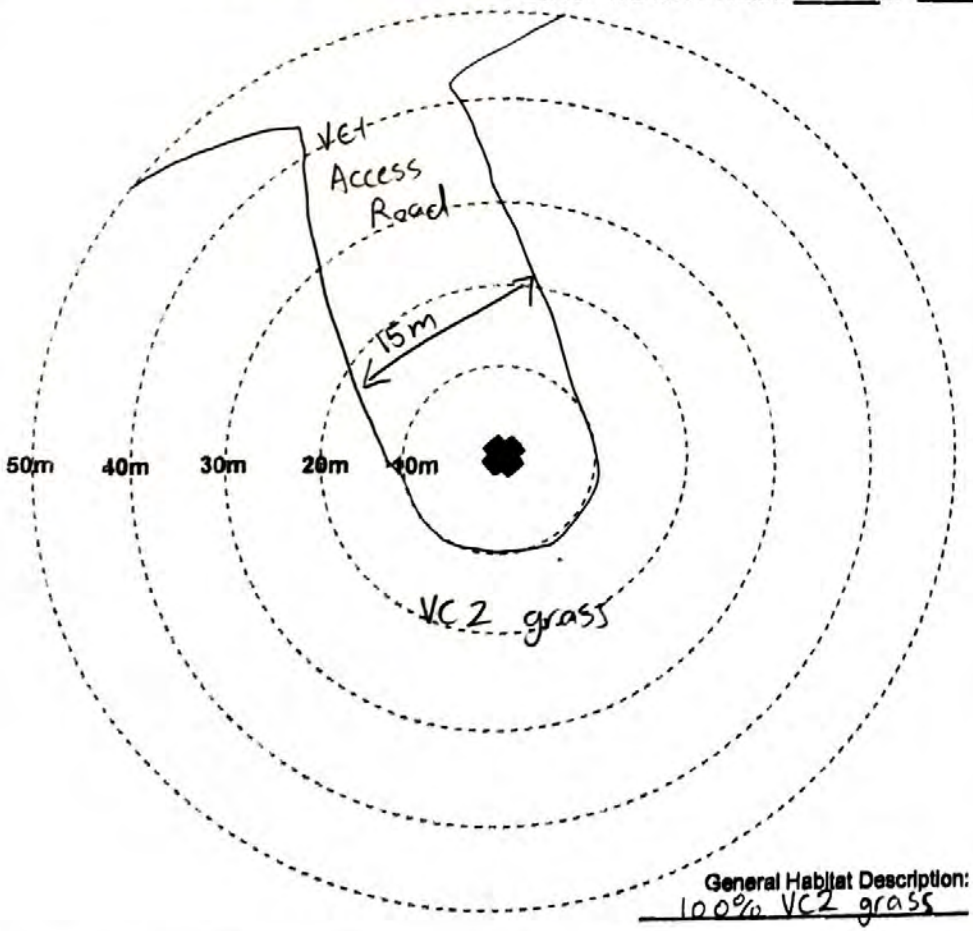
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 33

Photo Numbers (from turbine base)
Facing North: 09
Facing East: 10
Facing South: 11
Facing West: 12
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/09/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



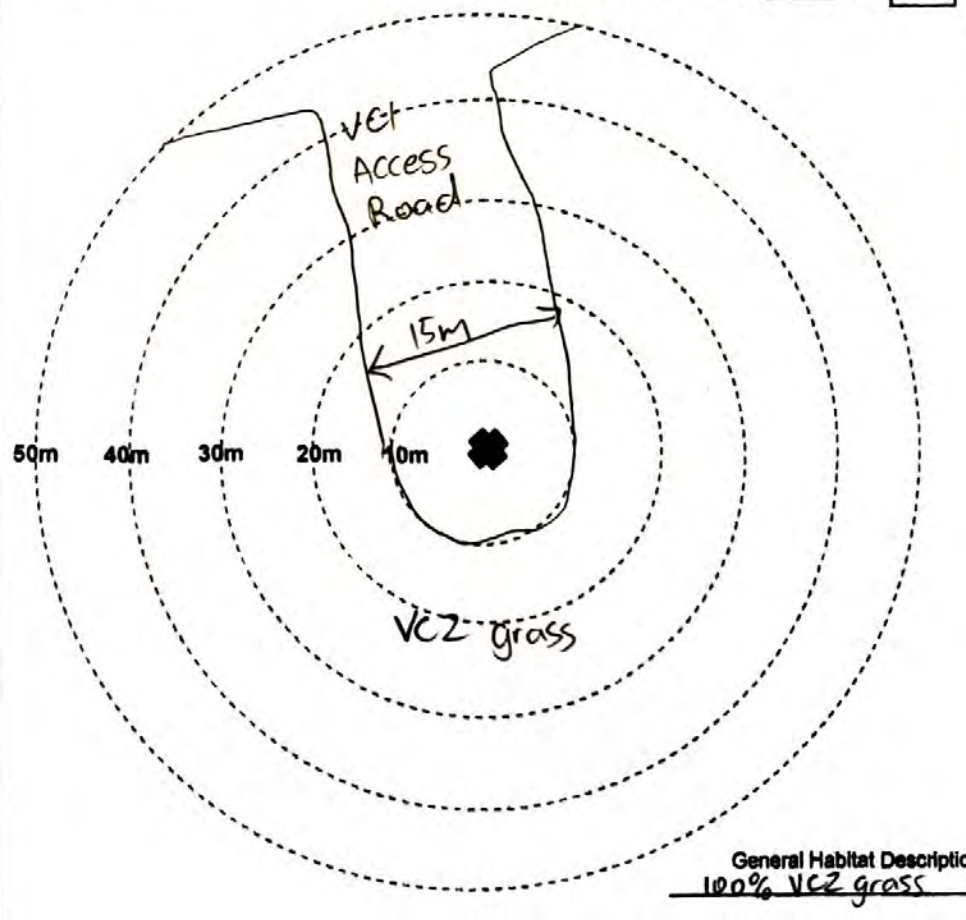
General Habitat Description: 100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 09
Facing East: 10
Facing South: 11
Facing West: 12
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/10/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

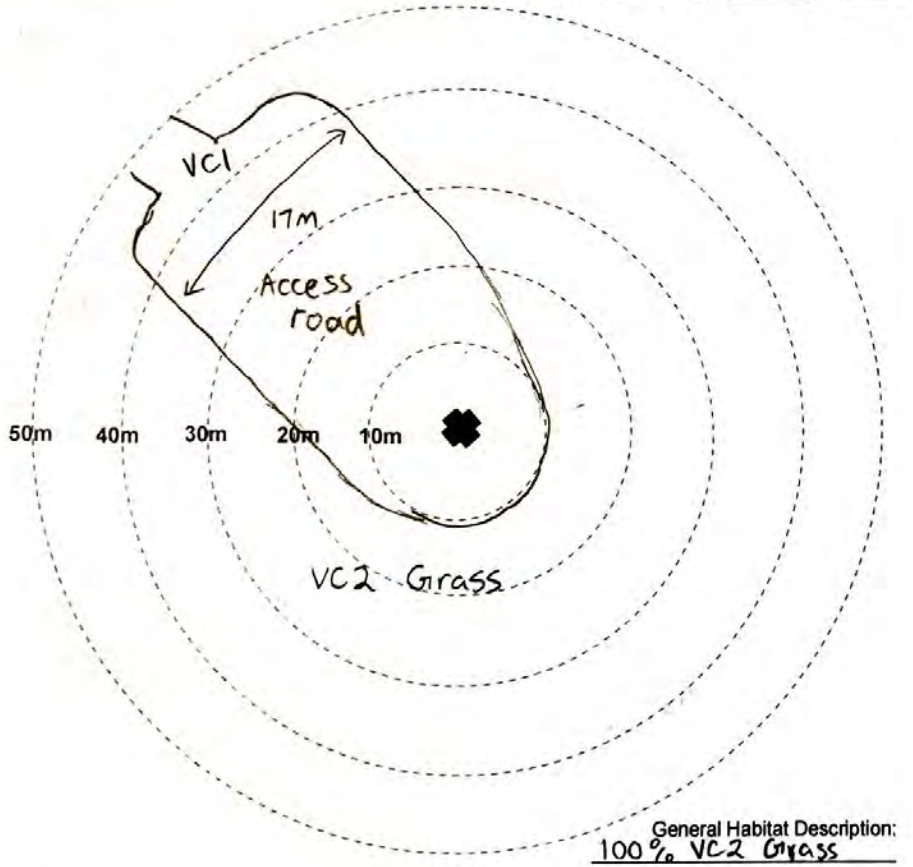
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 38 **Degree of Slope** Ø **degrees** **Slope Orientation** — (e.g. SSW)

Photo Numbers (from turbine base)
Facing North: 0013
Facing East: 0014
Facing South: 0015
Facing West: 0016
(sketch habitat and visibility classes)

Date (DD/MM/YY): 05/05/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



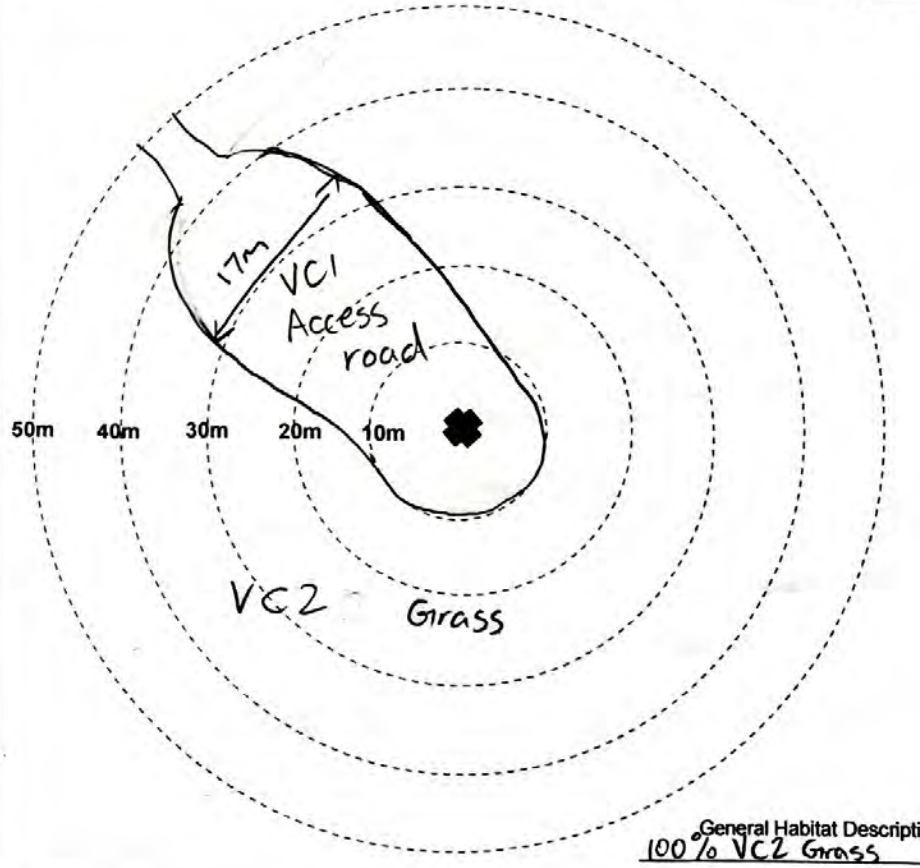
General Habitat Description: 100% VC2 Grass

Photo Numbers (from turbine base)
Facing North: 13
Facing East: 14
Facing South: 15
Facing West: 16
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/06/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 Grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

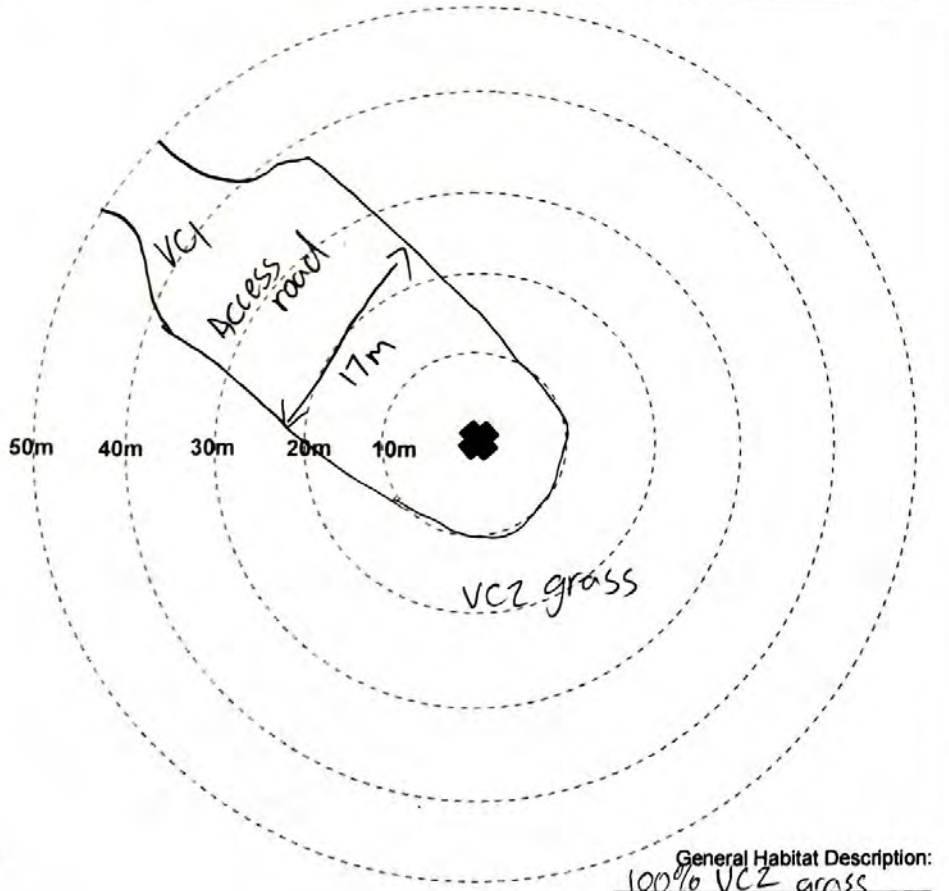
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 38

Photo Numbers (from turbine base)
Facing North: 13
Facing East: 14
Facing South: 15
Facing West: 16
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/07/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



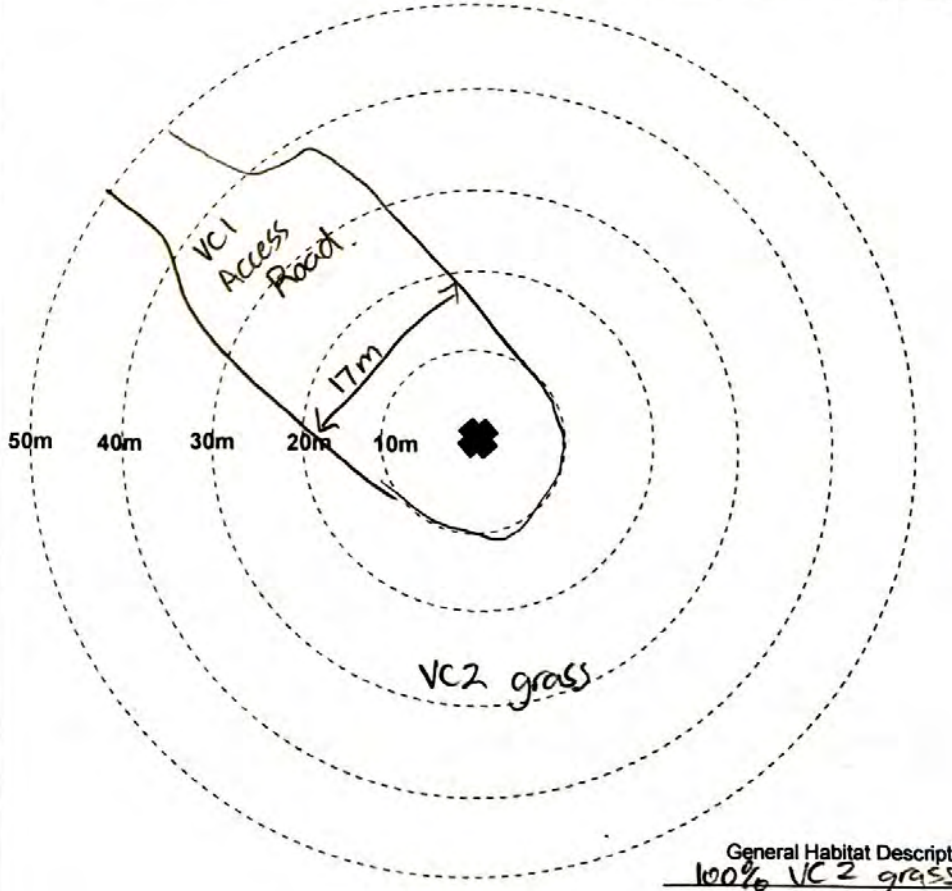
General Habitat Description: 100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 13
Facing East: 14
Facing South: 15
Facing West: 16
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/08/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

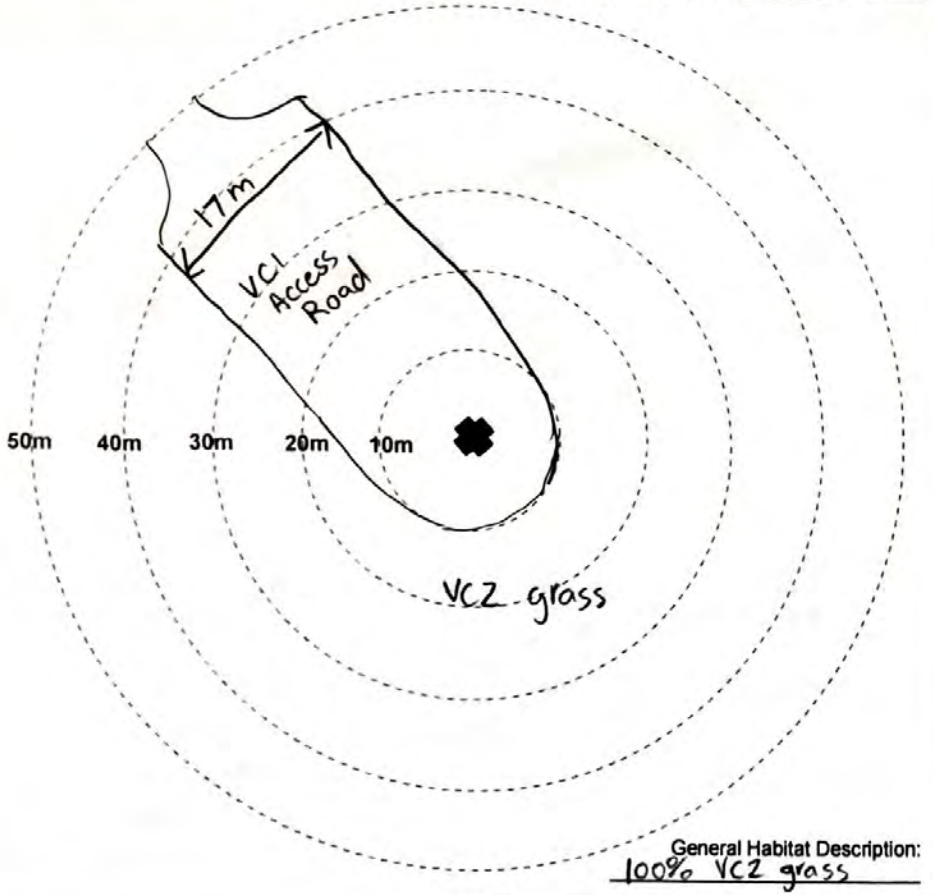
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 38

Photo Numbers (from turbine base)
Facing North: 13
Facing East: 14
Facing South: 15
Facing West: 16
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/09/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



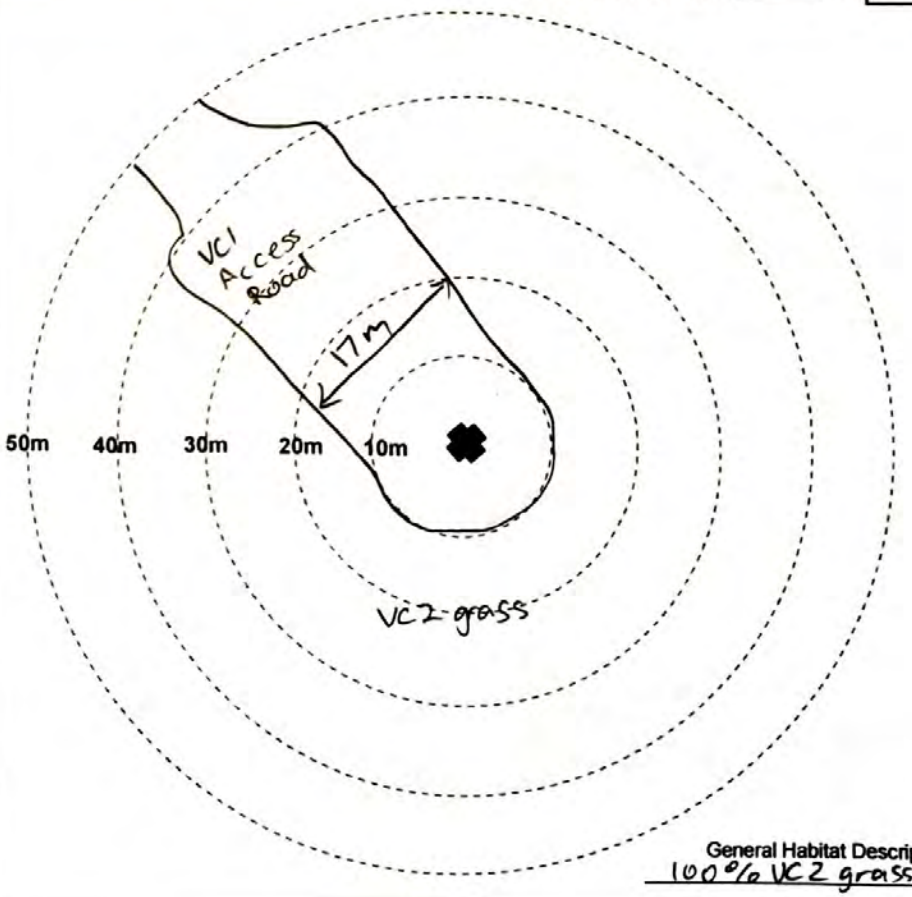
General Habitat Description: 100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 13
Facing East: 14
Facing South: 15
Facing West: 16
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/10/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

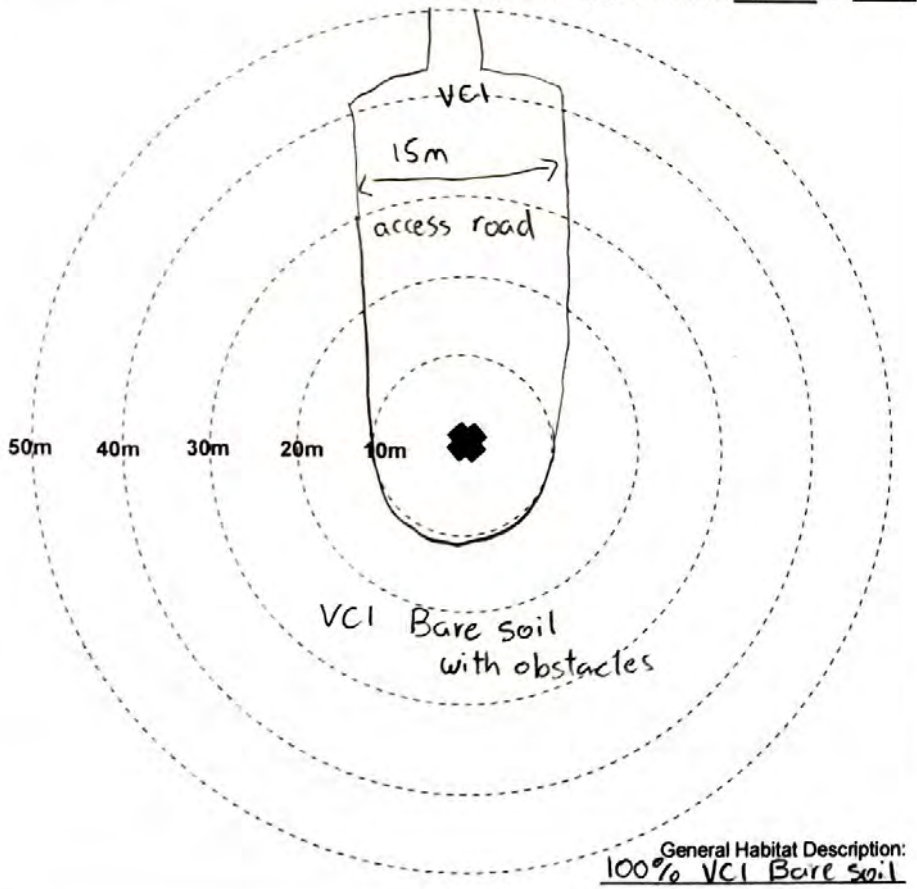
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 42 **Degree of Slope** Ø **degrees** **Slope Orientation** — (e.g. SSW)

Photo Numbers (from turbine base)
Facing North: 0017
Facing East: 0018
Facing South: 0019
Facing West: 0020
(sketch habitat and visibility classes)

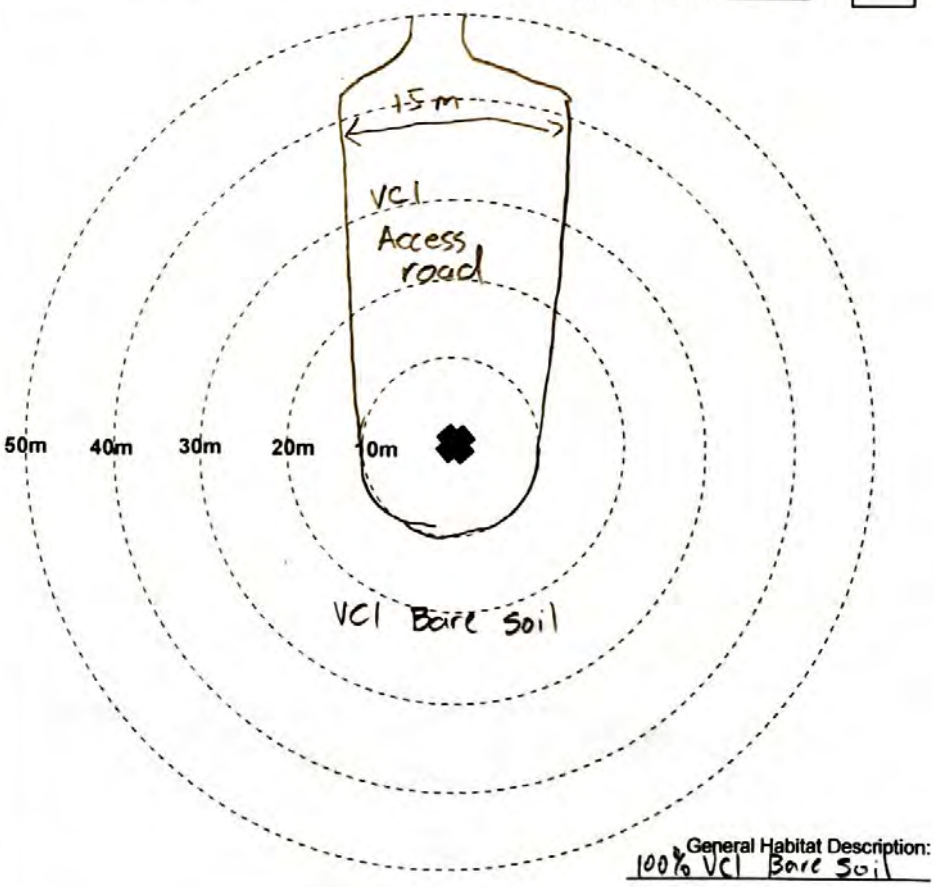
Date (DD/MM/YY): 05/05/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI Bare soil

Photo Numbers (from turbine base)
Facing North: 17
Facing East: 18
Facing South: 19
Facing West: 20
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/06/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VCI Bare Soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

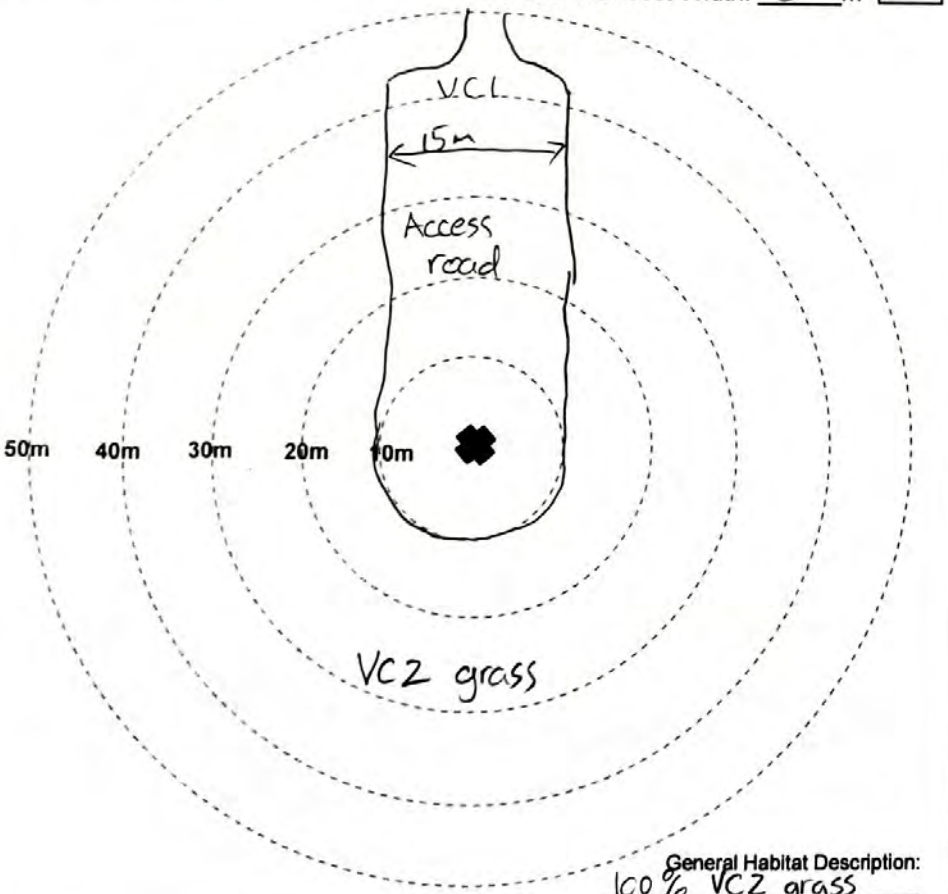
Project Name: Grand Bend Wind Farm **Project #:** 2408 **Turbine #:** 42

Photo Numbers (from turbine base)
Facing North: 17
Facing East: 18
Facing South: 19
Facing West: 20
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/07/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



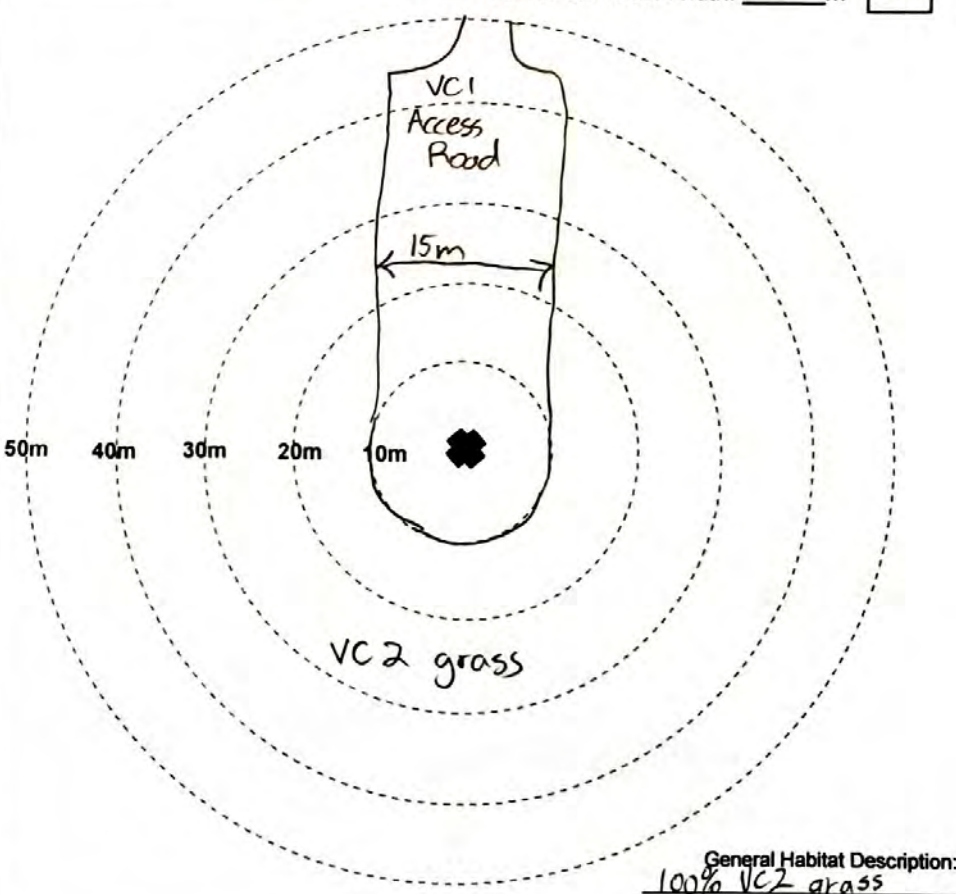
General Habitat Description: 100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 17
Facing East: 18
Facing South: 19
Facing West: 20
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/08/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

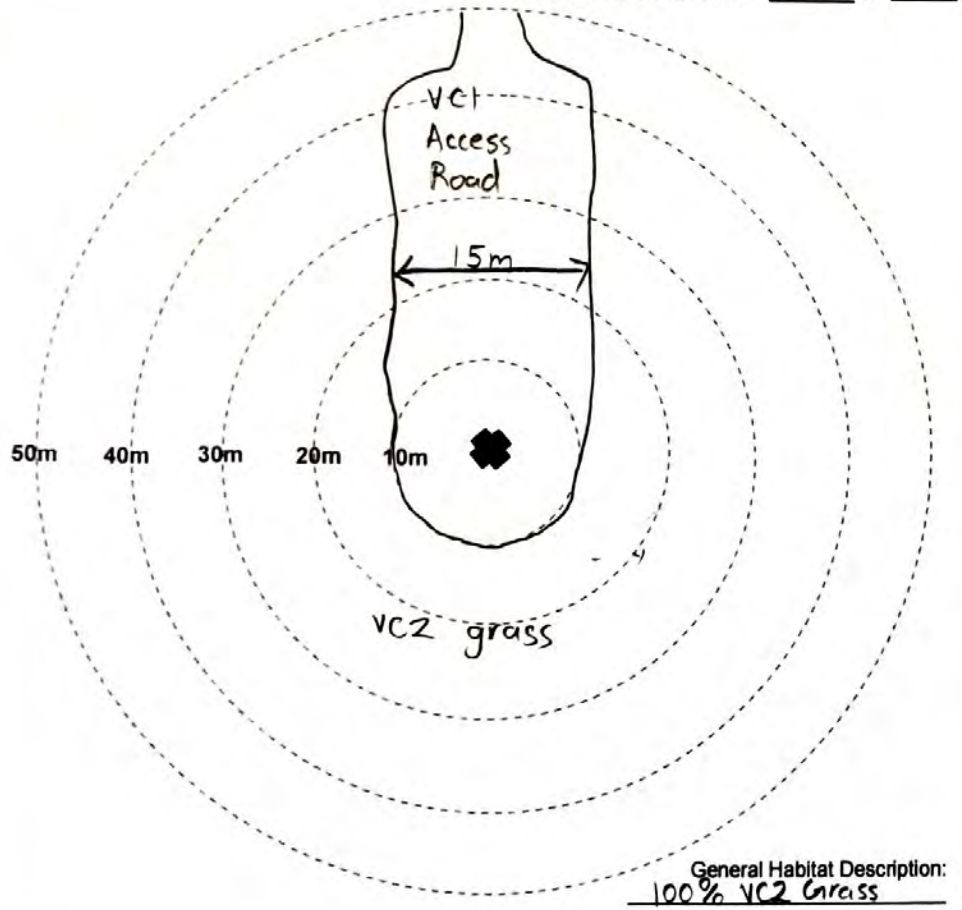
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 42

Photo Numbers (from turbine base)
Facing North: 17
Facing East: 18
Facing South: 19
Facing West: 20
(sketch habitat and visibility classes)

Date (DD/MM/YY): 04/09/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



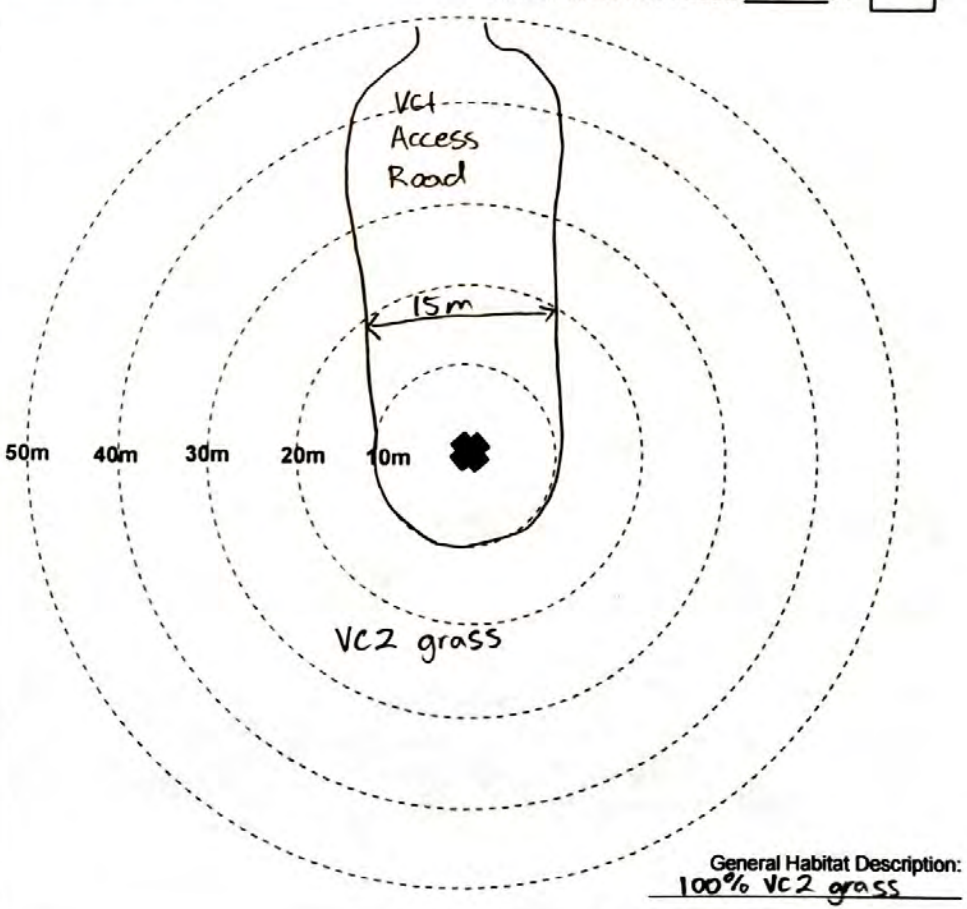
General Habitat Description: 100% VC2 Grass

Photo Numbers (from turbine base)
Facing North: 17
Facing East: 18
Facing South: 19
Facing West: 20
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/10/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

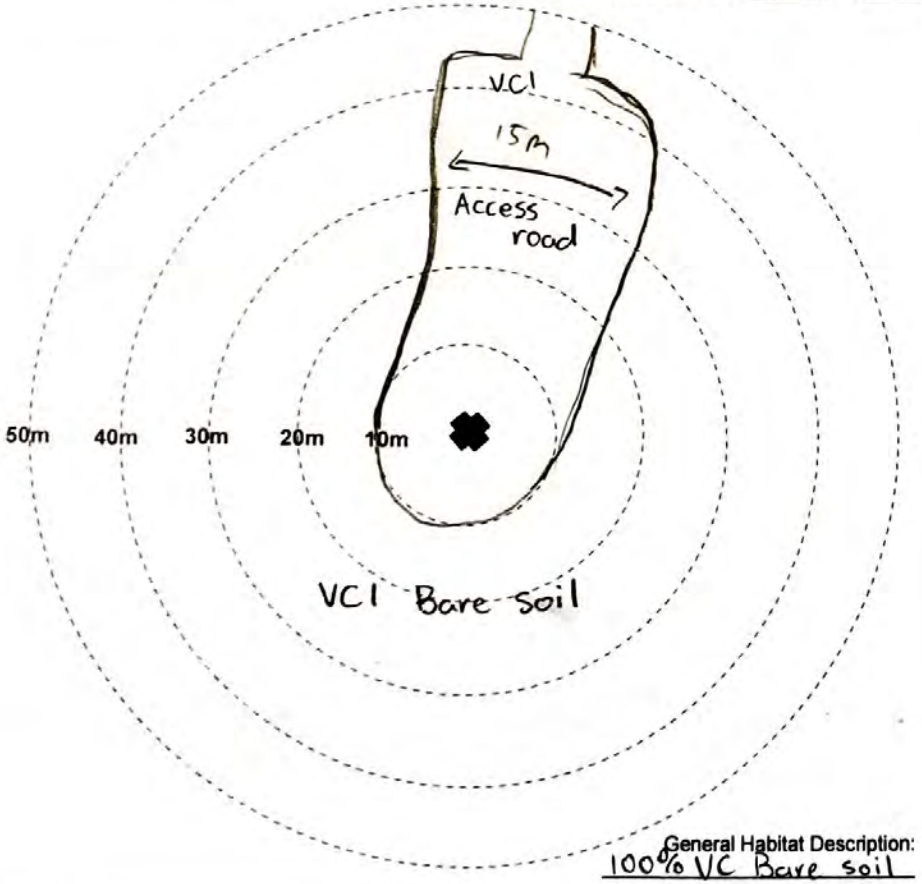
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 48 **Degree of Slope** 3 **degrees** **Slope Orientation** S **(e.g. SSW)**

Photo Numbers (from turbine base)
Facing North: 0029
Facing East: 0030
Facing South: 0031
Facing West: 0032
(sketch habitat and visibility classes)

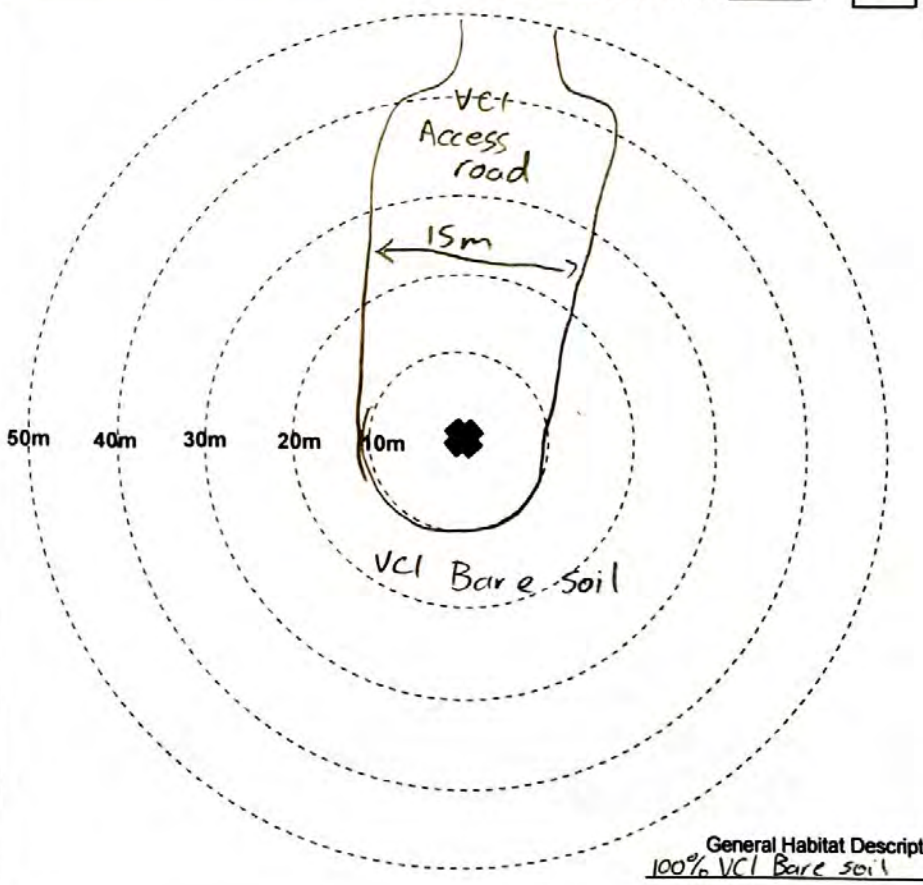
Date (DD/MM/YY): 05/05/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC Bare soil

Photo Numbers (from turbine base)
Facing North: 21
Facing East: 22
Facing South: 23
Facing West: 24
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/06/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC1 Bare soil

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

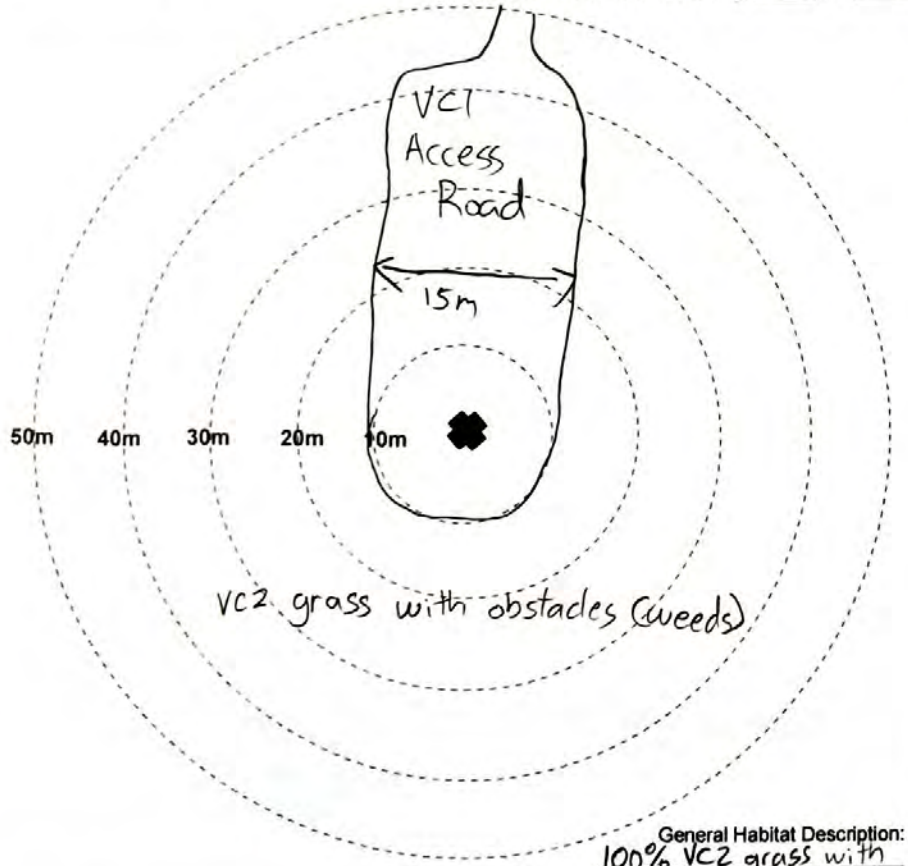
Project Name: Grand Bend Wind Farm **Project #:** 2408A **Turbine #:** 48

Photo Numbers (from turbine base)
Facing North: 21
Facing East: 22
Facing South: 23
Facing West: 24
(sketch habitat and visibility classes)

Date (DD/MM/YY): 07/07/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



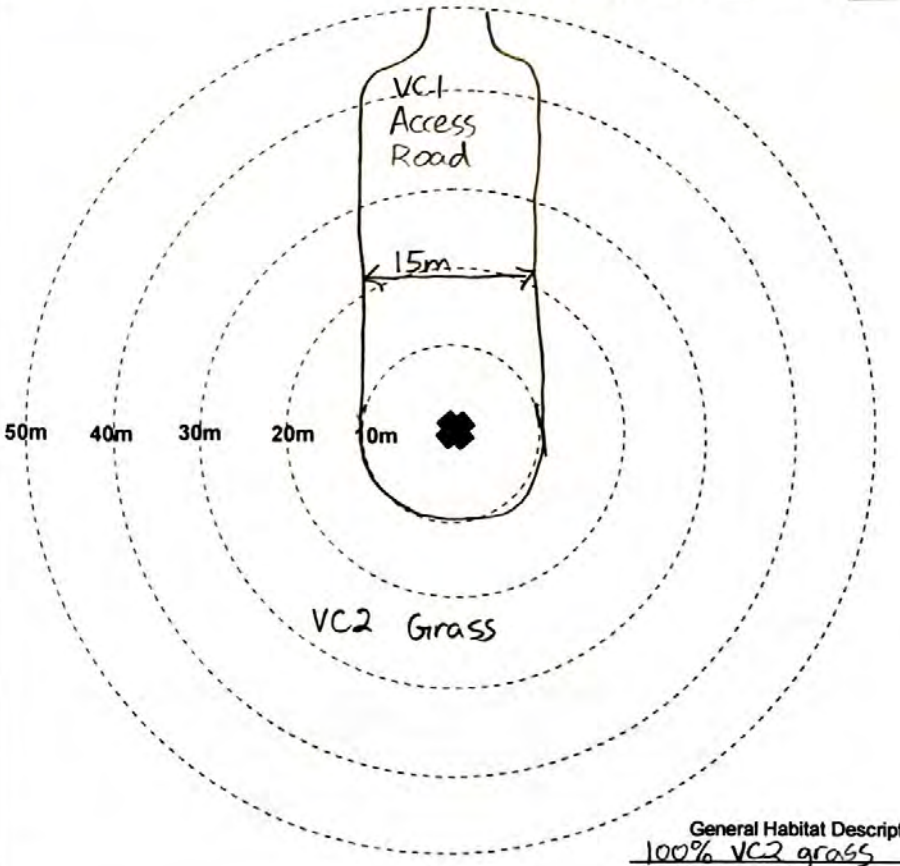
General Habitat Description: 100% VC2 grass with obstacles (weeds)

Photo Numbers (from turbine base)
Facing North: 21
Facing East: 22
Facing South: 23
Facing West: 24
(sketch habitat and visibility classes)

Date (DD/MM/YY): 08/07/20

Observer: HC

Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

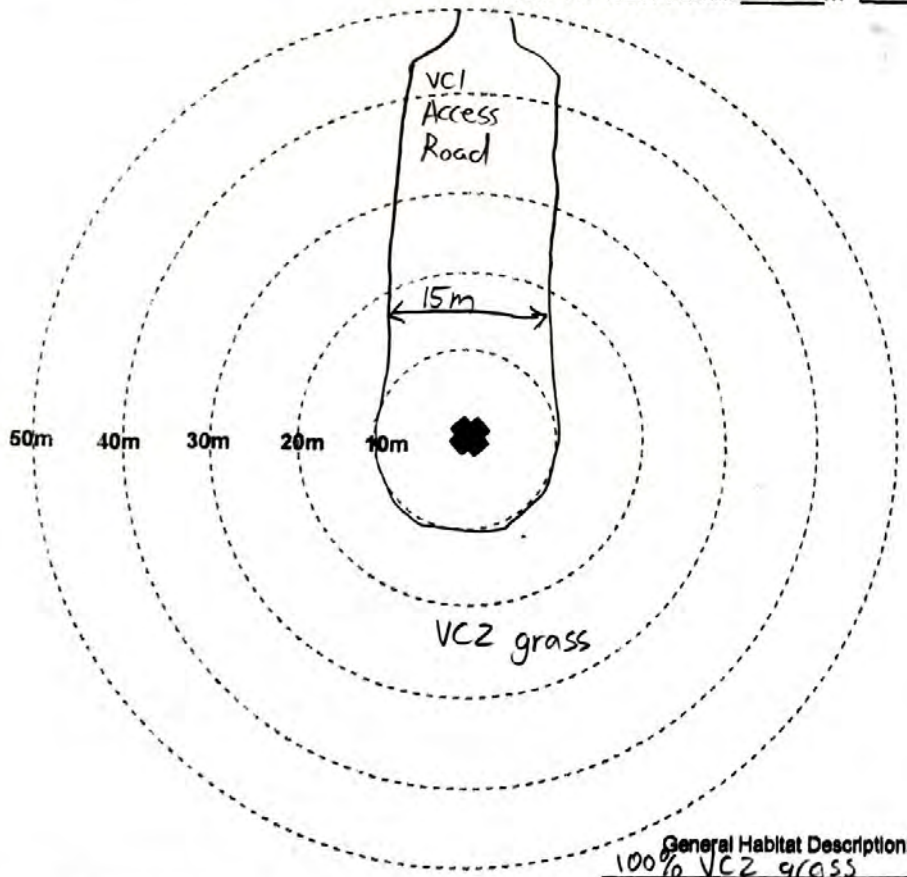
VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Visibility Class Map

Project Name: Grand Bend Wind Farm **Project #:** 24084 **Turbine #:** 48

Photo Numbers (from turbine base)
Facing North: 21
Facing East: 22
Facing South: 23
Facing West: 24
(sketch habitat and visibility classes)

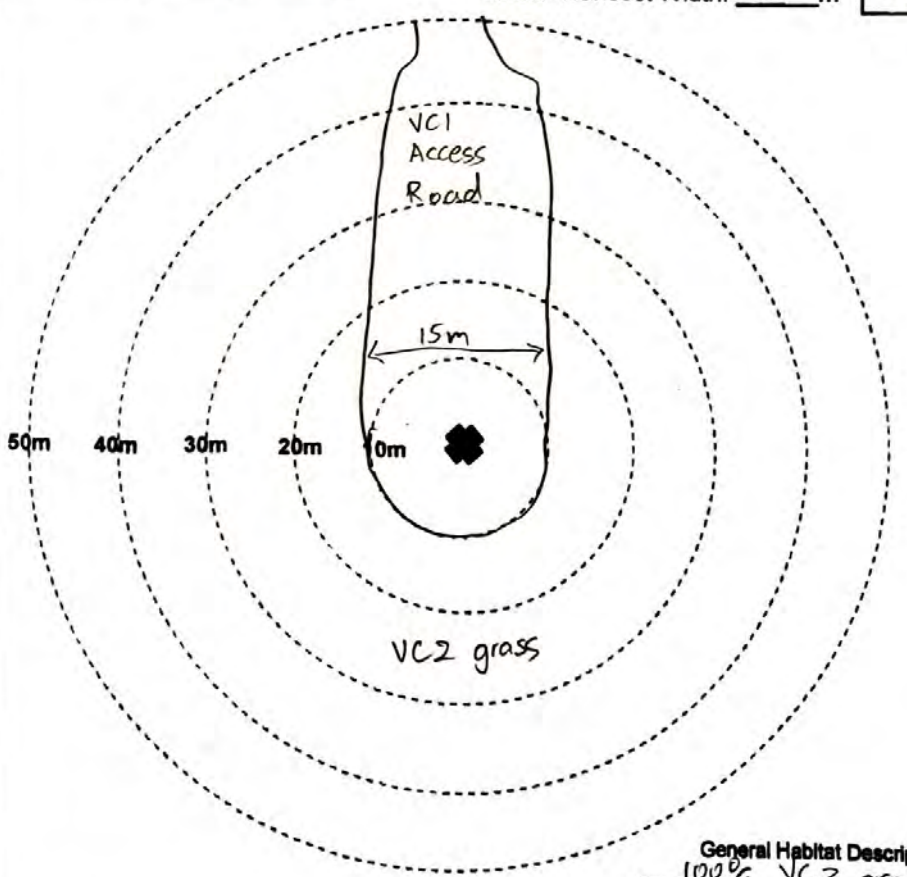
Date (DD/MM/YY): 04/09/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

Photo Numbers (from turbine base)
Facing North: 21
Facing East: 22
Facing South: 23
Facing West: 24
(sketch habitat and visibility classes)

Date (DD/MM/YY): 02/10/20
Observer: HC
Monthly/Seasonal Linear Transect Width: 3 m



General Habitat Description: 100% VC2 grass

VISIBILITY CLASSES	
Class 1	≥ 90% bare ground; vegetation ≤ 15cm tall
Class 2	≥ 25% bare ground; vegetation ≤ 15cm tall
Class 3	≤ 25% bare ground; less than 25% of veg. > 30cm tall
Class 4	Little or no bare ground; more than 25% of veg. > 30cm tall
Not Searchable	Dense shrubs, woods, or other unsearchable habitats

Appendix V
Bat Mortalities

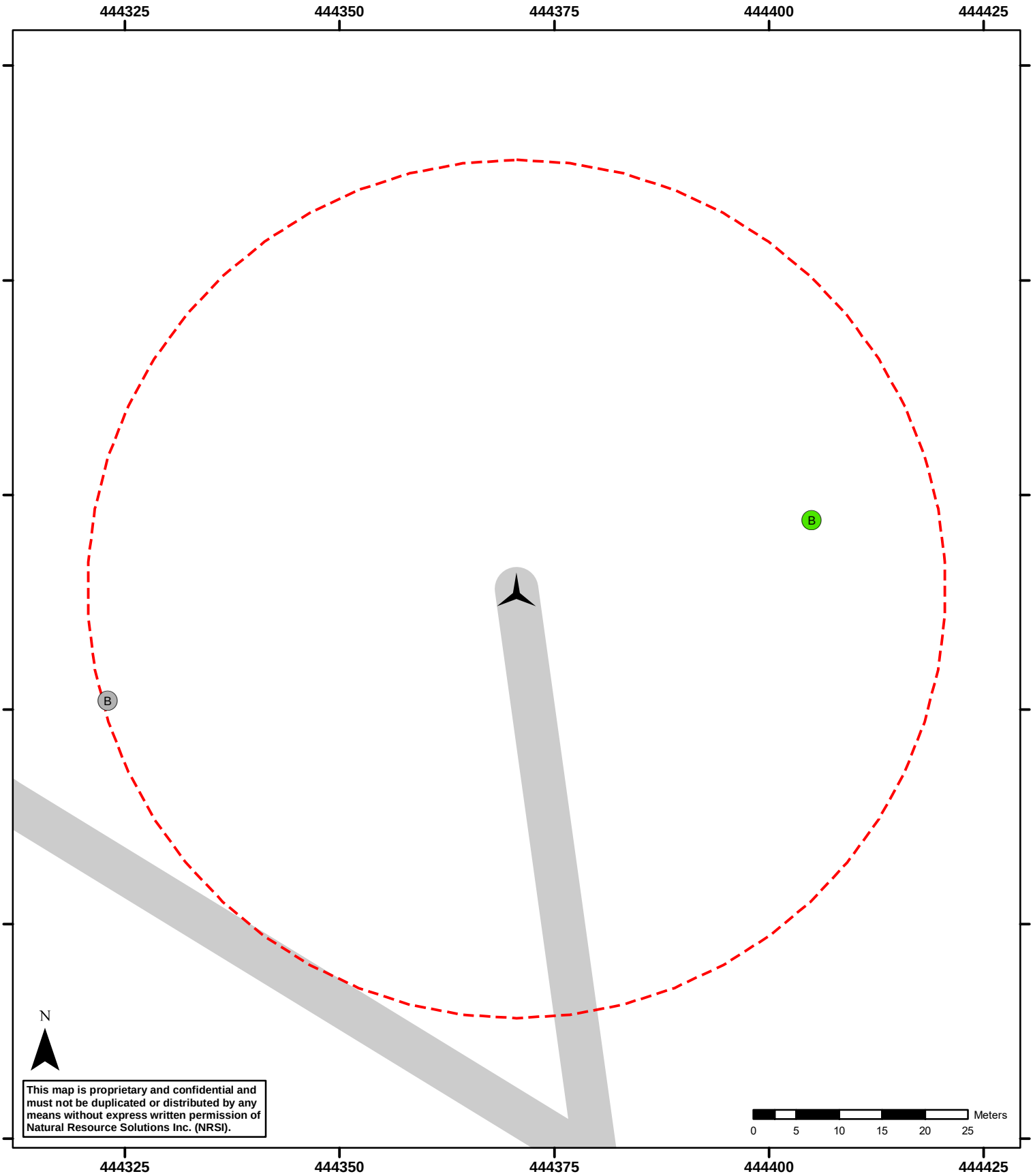
Appendix V
2408A Grand Bend Wind Farm
2020 Bat Mortalities

Date	Turbine	Start Time	End Time	Dog Used (Y/N)	Days Since Last Search	Temp.	Cloud Cover (%)	Precipitation	Wind Speed (Beaufort Scale)	Wind Direction	Species	Sample ID	Bat FA (mm)	Sex (M/F/U)	Easting	Northing	Distance from Turbine (m)	Direction from Turbine (°)	Condition Code	Estimated Time Since Death (hrs)	Observed Injuries	Substrate/ Habitat	Visibility Class
11-Jun-20	T07	8:50	9:20	N	3	15	20	None	5	S	Hoary Bat	2408A-110620-T07-01	55	U	443956	4809149	0	80	E	36	None observed	Gravel	1
03-Jul-20	T38	10:55	11:25	N	3	21	10	None	2	NW	Hoary Bat	2408A-030720-T38-01	54	F	442439	4799488	28	90	F	6	None observed	Mowed grass	2
13-Jul-20	T17	11:20	11:50	N	4	21	100	None	4	NW	Big Brown Bat	2408A-130720-T17-01	43	M	443388	4805388	31	20	M	60	Left wing removed	Bare soil	1
24-Jul-20	T31	9:30	10:00	N	3	25	10	None	3	E	Hoary Bat	2408A-240720-T31-01	52	M	443539	4801082	26	180	F	6	Laceration to back	Bare soil	1
24-Jul-20	T42	12:00	12:30	N	3	25	10	None	3	E	Eastern Red Bat	2408A-240720-T42-01	39	U	441612	4797840	11	170	F	12	Laceration to abdomen	Mowed grass	2
27-Jul-20	T20	12:40	13:10	N	4	28	100	None	4	W	Hoary Bat	2408A-270720-T20-01	53	F	446878	4804819	33	285	F	12	None observed	Bare soil	1
30-Jul-20	T16	10:05	10:35	N	3	21	40	None	2	NW	Silver-haired Bat	2408A-300720-T16-01	39	M	443912	4807565	49	170	F	12	None observed	Mowed grass	2
30-Jul-20	T16	10:05	10:35	N	3	21	40	None	2	NW	Hoary Bat	2408A-300720-T16-02	52	U	443915	4807615	20	80	M	60	Both forearms broken	Mowed grass	2
30-Jul-20	T20	12:45	13:15	N	3	21	40	None	2	NW	Big Brown Bat	2408A-300720-T20-01	44	M	446926	4804818	16	160	F	12	Bloody left ear	Bare soil	1
06-Aug-20	T07	9:35	10:05	N	2	17	10	None	1	SE	Hoary Bat	2408A-060820-T07-01	51	U	443938	4809143	17	280	M	60	None observed	Bare soil	1
10-Aug-20	T17	11:25	11:55	N	4	24	20	None	4	SW	Little Brown Myotis	2408A-100820-T17-01	39	F	443415	4805380	41	60	F	6	Laceration to face	Bare soil	1
10-Aug-20	T17	11:25	11:55	N	4	24	20	None	4	SW	Hoary Bat	2408A-100820-T17-02	53	M	443375	4805368	12	0	E	36	Both forearms broken	Bare soil	1
10-Aug-20	T20	13:20	13:50	N	4	24	20	None	4	SW	Eastern Red Bat	2408A-100820-T20-01	41	F	446958	4804837	46	80	F	12	None observed	Bare soil	1
11-Aug-20	T27	8:45	9:15	N	4	22	100	None	5	SW	Hoary Bat	2408A-110820-T27-01	52	M	443623	4803690	14	320	F	6	None observed	Gravel	1
11-Aug-20	T31	10:25	10:55	N	4	22	100	None	5	SW	Eastern Red Bat	2408A-110820-T31-02	38	U	443577	4801141	46	70	F	12	Laceration to back	Bare soil	1
11-Aug-20	T31	10:25	10:55	N	4	22	100	None	5	SW	Hoary Bat	2408A-110820-T31-03	60	F	443568	4801111	28	105	F	6	Broken left forearm	Bare soil	1
11-Aug-20	T48	13:30	14:00	N	4	22	100	None	5	SW	Hoary Bat	2408A-110820-T48-01	52	U	440547	4796584	32	50	S	180	Head and ribs removed	Gravel	1
13-Aug-20	T02	8:40	9:10	N	3	23	10	None	2	E	Hoary Bat	2408A-130820-T02-01	51	U	444405	4811772	30	80	M	60	Both forearms broken	Bare soil	1
13-Aug-20	T20	12:50	13:20	N	3	23	10	None	2	E	Big Brown Bat	2408A-130820-T20-01	43	F	446910	4804858	27	10	E	36	None observed	Gravel	1
17-Aug-20	T16	10:30	11:00	N	4	20	80	None	3	SW	Eastern Red Bat	2408A-170820-T16-01	35	U	443910	4807625	18	50	E	36	Both forearms broken	Mowed grass	2
18-Aug-20	T31	9:45	10:15	N	4	19	50	None	4	NW	Big Brown Bat	2408A-180820-T31-01	45	M	443505	4801087	41	245	F	6	None observed	Bare soil	1
19-Aug-20	T42	13:00	13:30	N	8	20	40	None	3	NW	Big Brown Bat	2408A-190820-T42-01	45	U	441618	4797884	36	20	A	108	None observed	Mowed grass	2
20-Aug-20	T18	12:05	12:35	N	3	18	20	None	3	S	Eastern Red Bat	2408A-200820-T18-01	37	U	443670	4805319	49	260	F	12	Laceration to back	Bare soil	1
20-Aug-20	T20	13:05	13:35	N	3	18	20	None	3	S	Hoary Bat	2408A-200820-T20-01	55	F	446904	4804798	24	200	F	12	None observed	Bare soil	1
21-Aug-20	T31	8:50	9:20	N	3	19	80	None	3	SW	Hoary Bat	2408A-210820-T31-01	54	M	443541	4801103	7	180	F	6	None observed	Gravel	1
24-Aug-20	T16	10:05	10:35	N	4	24	0	None	2	SW	Hoary Bat	2408A-240820-T16-01	53	M	443883	4807651	38	0	F	12	None observed	Mowed grass	2
25-Aug-20	T42	12:20	12:50	N	4	22	40	None	5	NW	Little Brown Myotis	2408A-250820-T42-01	37	U	441623	4797865	21	50	E	36	None observed	Gravel	1
28-Aug-20	T42	11:50	12:20	N	3	18	90	None	4	SE	Big Brown Bat	2408A-280820-T42-01	44	U	441595	4797882	32	340	A	108	None observed	Mowed grass	2
31-Aug-20	T02	8:40	9:10	N	4	18	10	None	4	SE	Silver-haired Bat	2408A-310820-T02-01	41	F	444323	4811751	50	260	F	12	None observed	Bare soil	1
31-Aug-20	T07	9:50	10:20	N	4	18	10	None	4	SE	Silver-haired Bat	2408A-310820-T07-01	40	M	443939	4809185	35	340	F	12	None observed	Bare soil	1
31-Aug-20	T07	9:50	10:20	N	4	18	10	None	4	SE	Silver-haired Bat	2408A-310820-T07-02	42	F	443941	4809192	45	350	F	6	Laceration to shoulder	Bare soil	1
31-Aug-20	T16	11:00	11:30	N	4	18	10	None	4	SE	Silver-haired Bat	2408A-310820-T16-01	41	M	443876	4807646	35	330	F	6	None observed	Mowed grass	2
31-Aug-20	T18	12:55	13:25	N	4	18	10	None	4	SE	Silver-haired Bat	2408A-310820-T18-01	42	M	443712	4805370	29	350	F	12	None observed	Bare soil	1
31-Aug-20	T20	13:50	14:20	N	4	18	10	None	4	SE	Eastern Red Bat	2408A-310820-T20-01	40	F	446901	4804850	25	340	F	12	Both eyes removed	Mowed grass	2
31-Aug-20	T20	13:50	14:20	N	4	18	10	None	4	SE	Silver-haired Bat	2408A-310820-T20-02	41	U	446890	4804845	36	320	E	36	Laceration to head	Bare soil	1
01-Sep-20	T27	9:00	9:30	N	4	21	100	Fog	4	SE	Silver-haired Bat	2408A-010920-T27-01	43	M	443673	4803694	32	120	F	6	None observed	Bare soil	1
01-Sep-20	T27	9:00	9:30	N	4	21	100	Fog	4	SE	Silver-haired Bat	2408A-010920-T27-02	41	U	443681	4803694	40	90	M	60	None observed	Bare soil	1
01-Sep-20	T27	9:00	9:30	N	4	21	100	Fog	4	SE	Silver-haired Bat	2408A-010920-T27-03	41	M	443600	4803705	45	300	F	6	None observed	Bare soil	1
01-Sep-20	T42	13:00	13:30	N	4	21	100	Fog	4	SE	Silver-haired Bat	2408A-010920-T42-01	44	F	441614	4797858	9	40	F	12	None observed	Mowed grass	2
22-Sep-20	T38	11:05	11:35	N	4	21	50	None	2	SE	Hoary Bat	2408A-220920-T38-01	59	F	442377	4799509	33	310	F	6	None observed	Gravel	1
27-Oct-20	T33	10:15	10:45	N	4	4	100	Rain	2	SW	Silver-haired Bat	2408A-271020-T33-01	41	M	442820	4800516	48	345	M	60	Laceration to left side	Mowed grass	2

Visibility Class:
1 ≥90% bare ground, vegetation ≤15cm tall
2 ≥25% bare ground, vegetation ≤15cm tall
3 ≤25% bare ground, ≤25% of vegetation is >30cm tall
4 little or no bare ground, ≥ 25% of vegetation is >30cm tall

Condition Code:
I Injured or dying
F Fresh
E Early decomposition
M Moderate decomposition
A Advanced decomposition
C Complete decomposition
S Scavenged

Appendix VI
Locations of Bat Mortalities



Legend

- Turbine
- Search Radius (50m)
- Access Road
- B Hoary Bat
- B Silver-haired Bat

Appendix VI

Grand Bend Wind Farm

Turbine T02 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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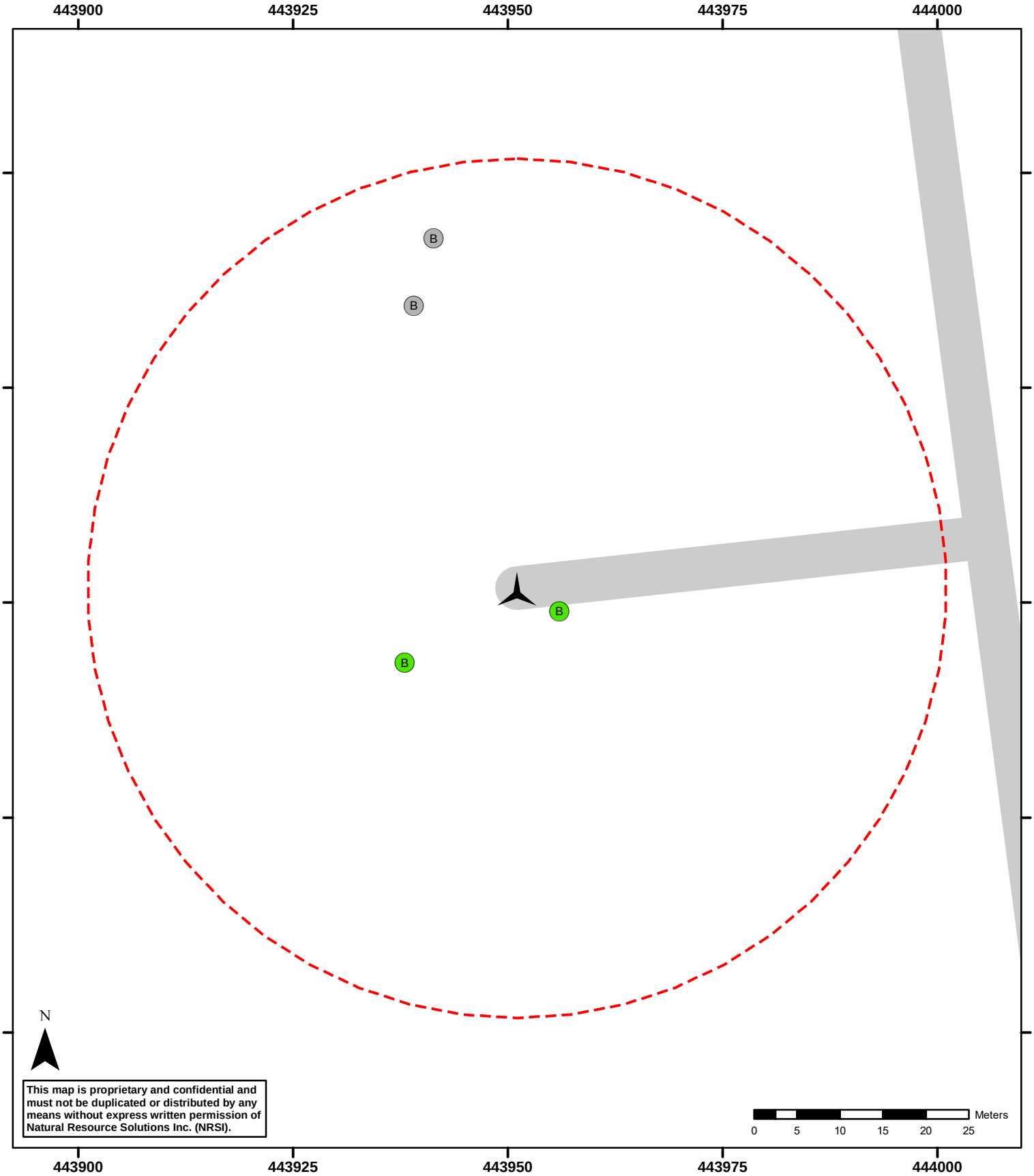

Legend

- Turbine
- Search Radius (50m)
- Access Road
- B Hoary Bat
- B Silver-haired Bat

Appendix VI

Grand Bend Wind Farm

Turbine T07 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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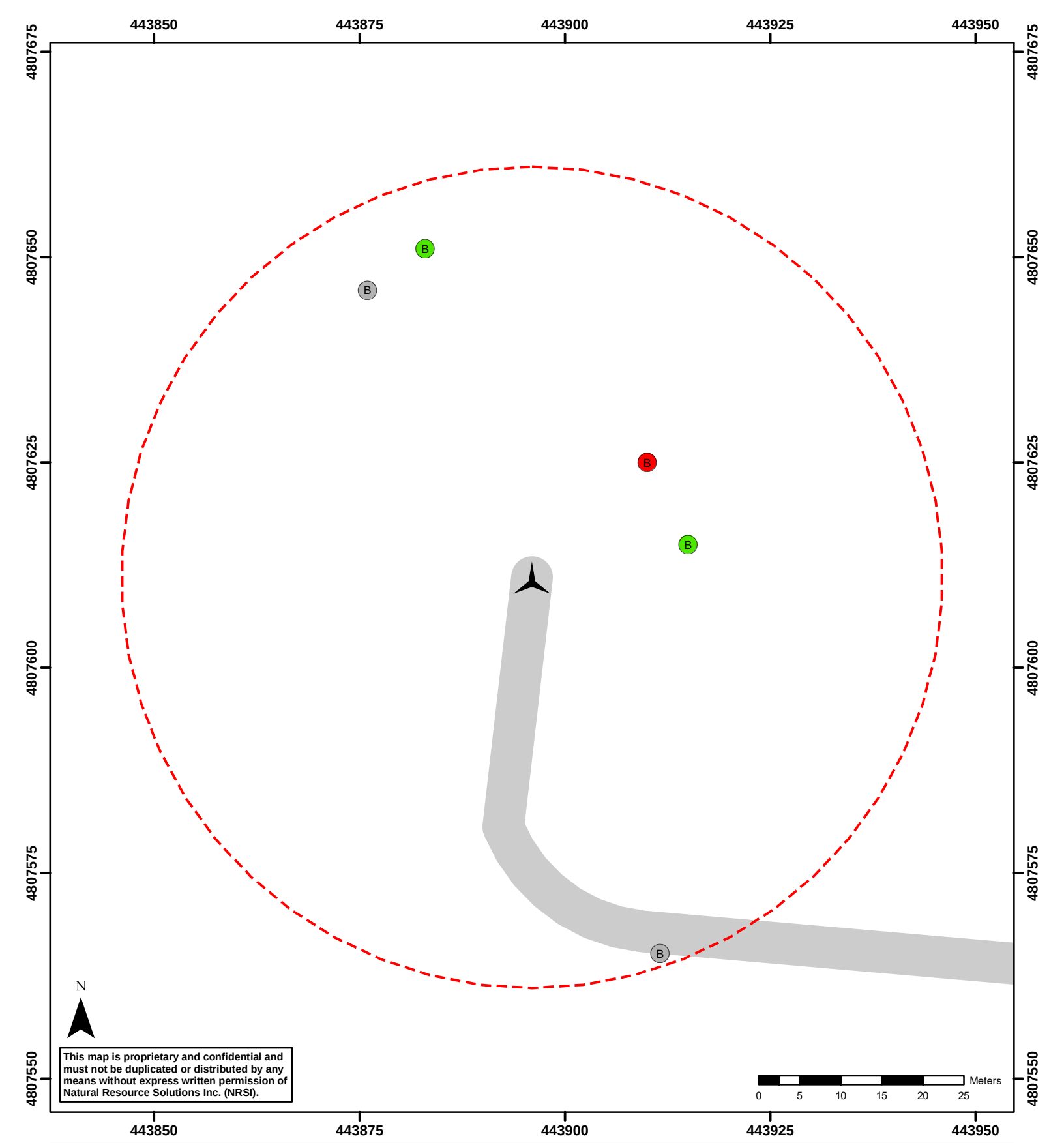

Legend

- Turbine
- Search Radius (50m)
- Access Road
- Eastern Red Bat
- Hoary Bat
- Silver-haired Bat

Appendix VI

Grand Bend Wind Farm

Turbine T16 Mortalities 2020

NAD83 - UTM Zone 17
Scale: 1:600 (8.5x11")

Date: January 5, 2021
Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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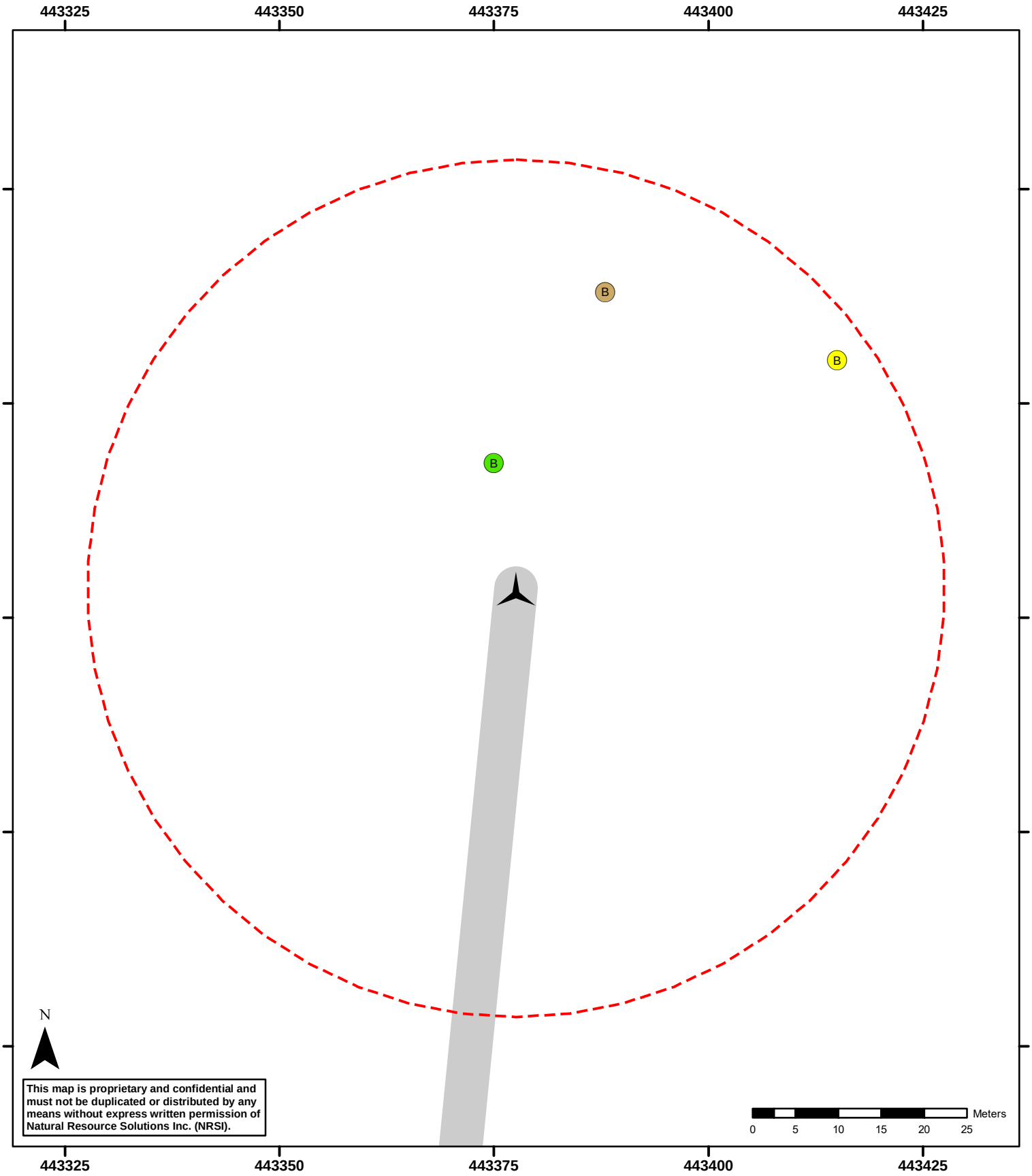

Legend

- Turbine
- Search Radius (50m)
- Access Road
- B Big Brown Bat
- B Hoary Bat
- B Little Brown Myotis

Appendix VI

Grand Bend Wind Farm

Turbine T17 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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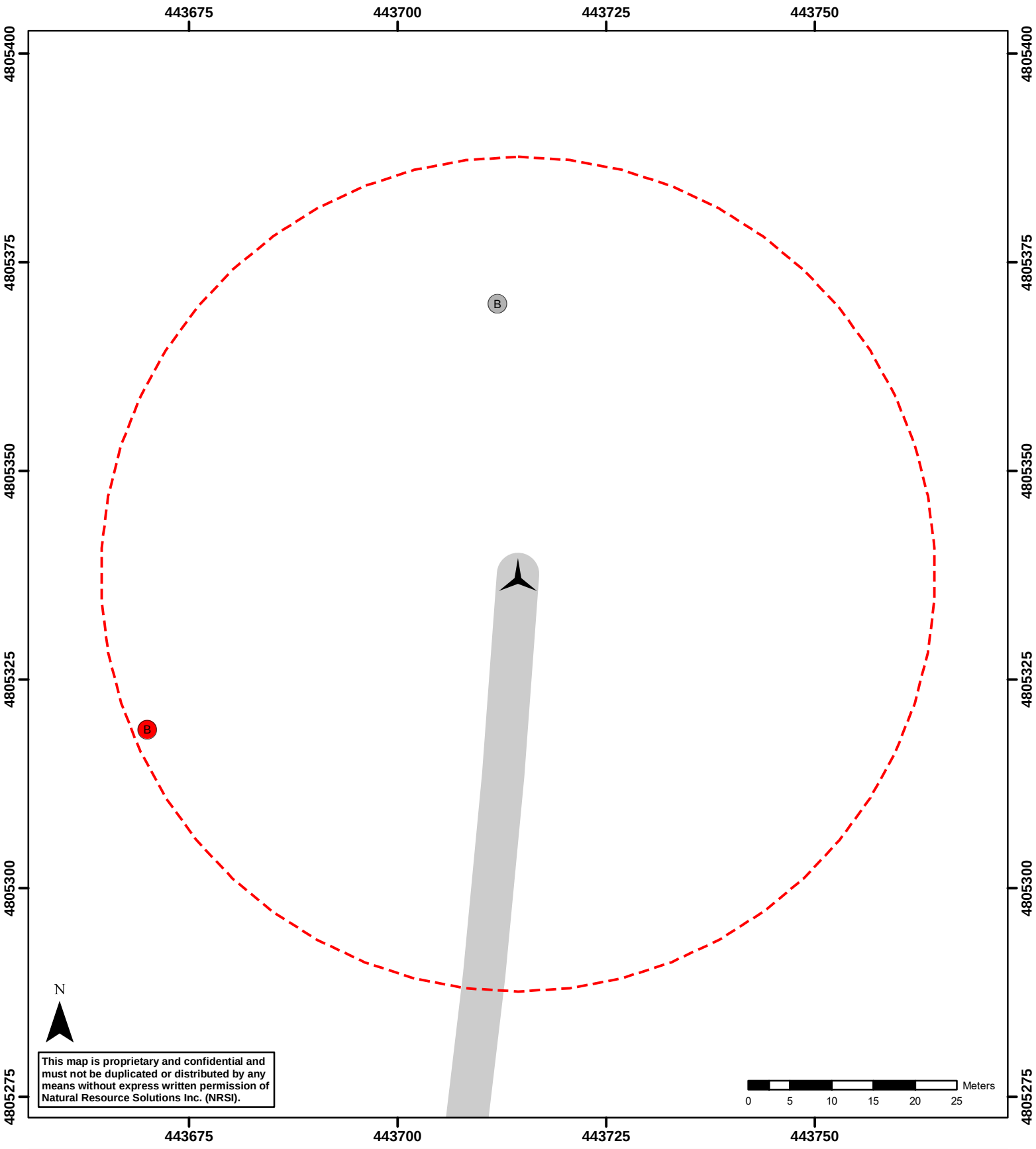

Legend

- Turbine
- Search Radius (50m)
- Access Road
- B Eastern Red Bat
- B Silver-haired Bat

Appendix VI

Grand Bend Wind Farm

Turbine T18 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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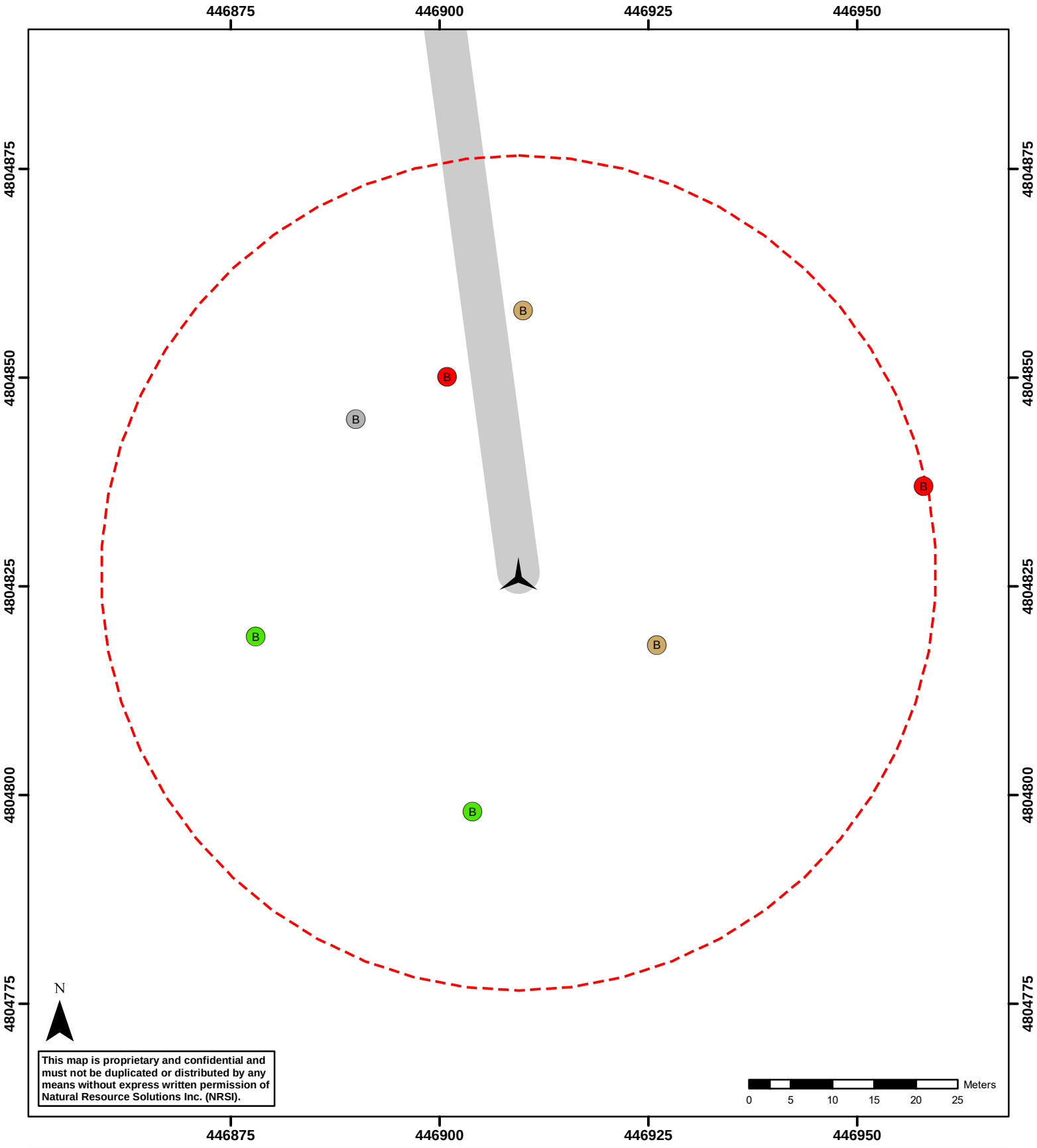

Legend

- Turbine
- Search Radius (50m)
- Access Road
- Big Brown Bat
- Silver-haired Bat
- Eastern Red Bat
- Hoary Bat

Appendix VI

Grand Bend Wind Farm

Turbine T20 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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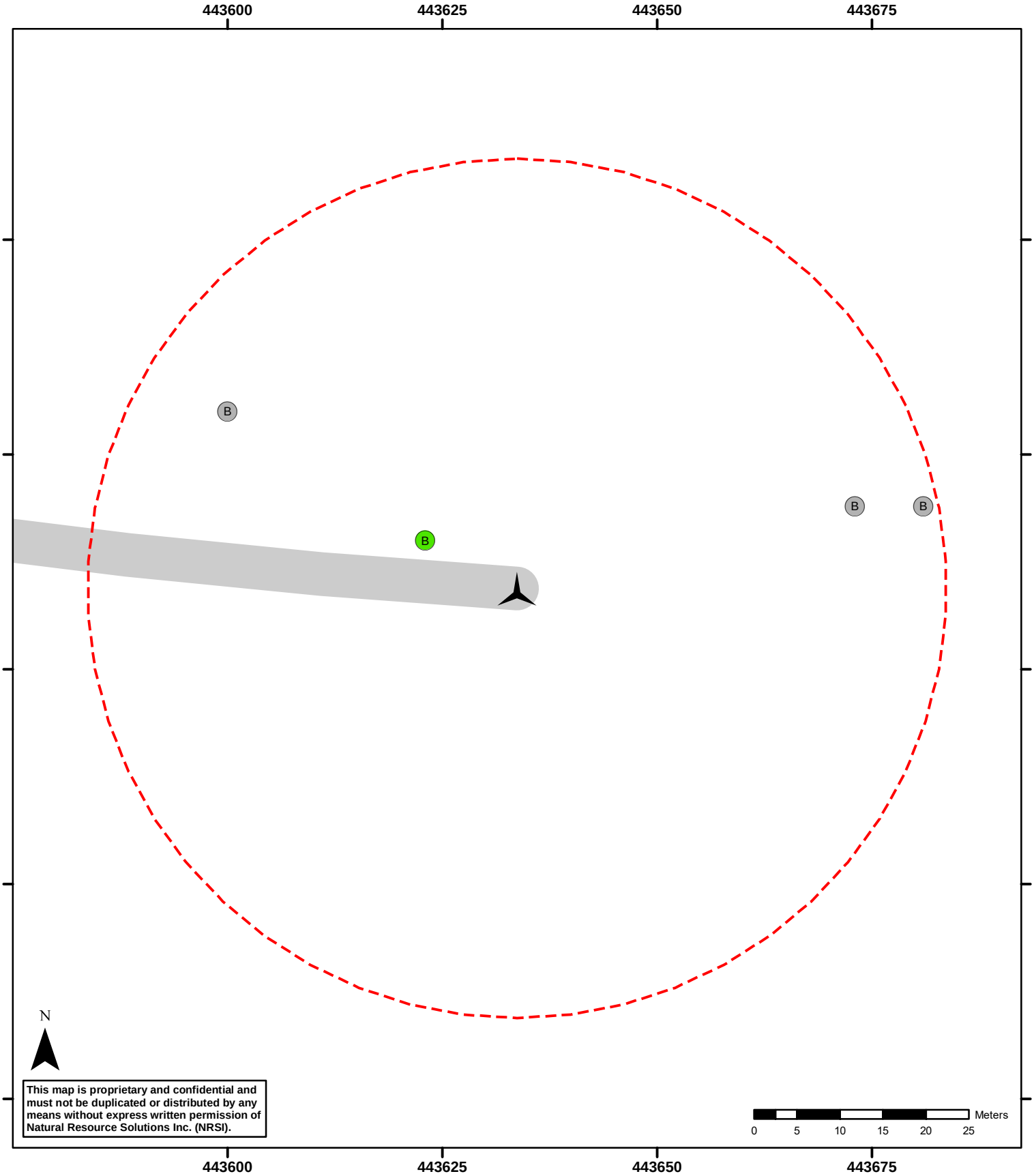

Legend

- Turbine
- Search Radius (50m)
- Access Road
- B Hoary Bat
- B Silver-haired Bat

Appendix VI

Grand Bend Wind Farm

Turbine T27 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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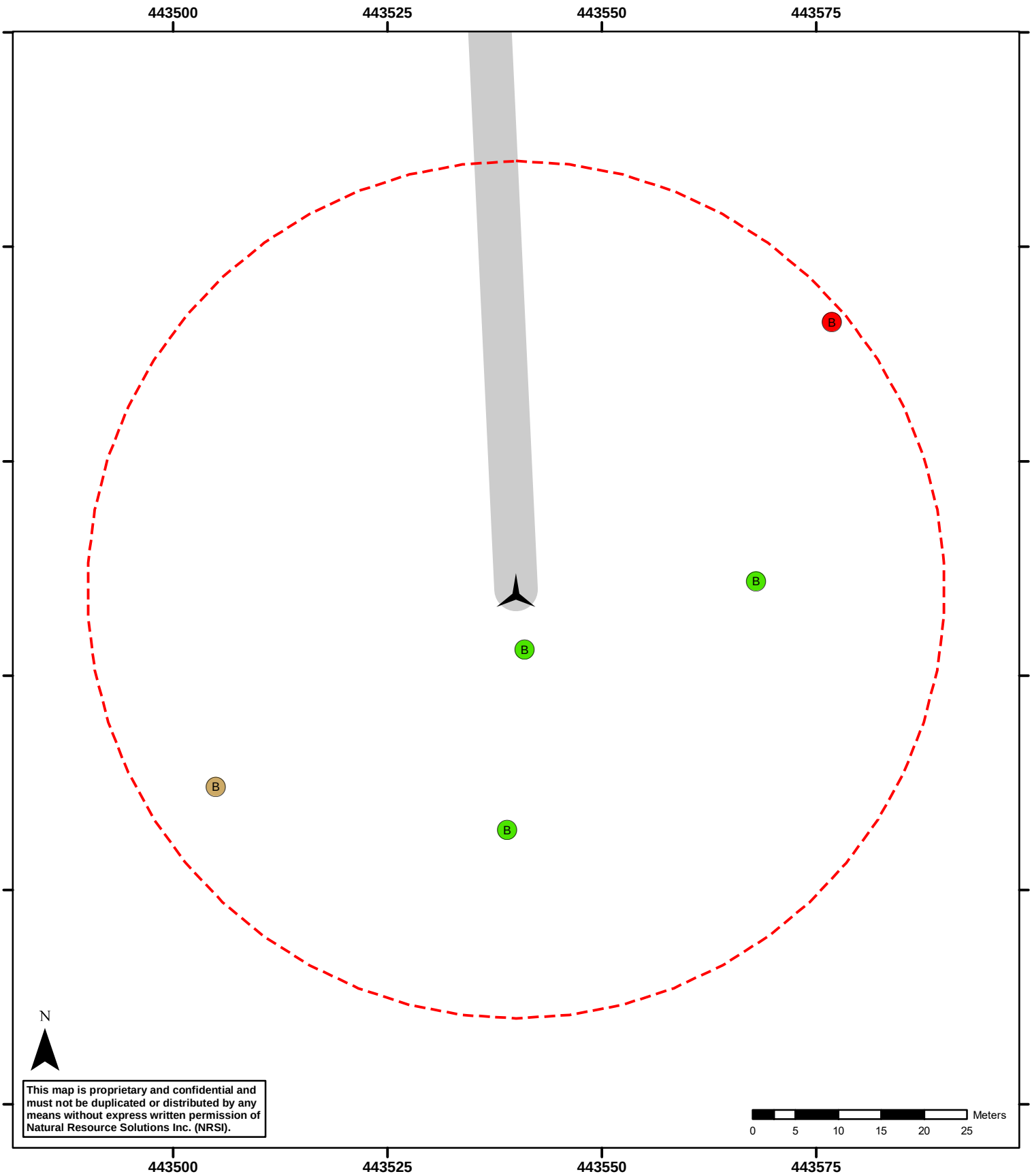


Legend

- Turbine
- Search Radius (50m)
- Access Road
- Big Brown Bat
- Eastern Red Bat
- Hoary Bat

Appendix VI

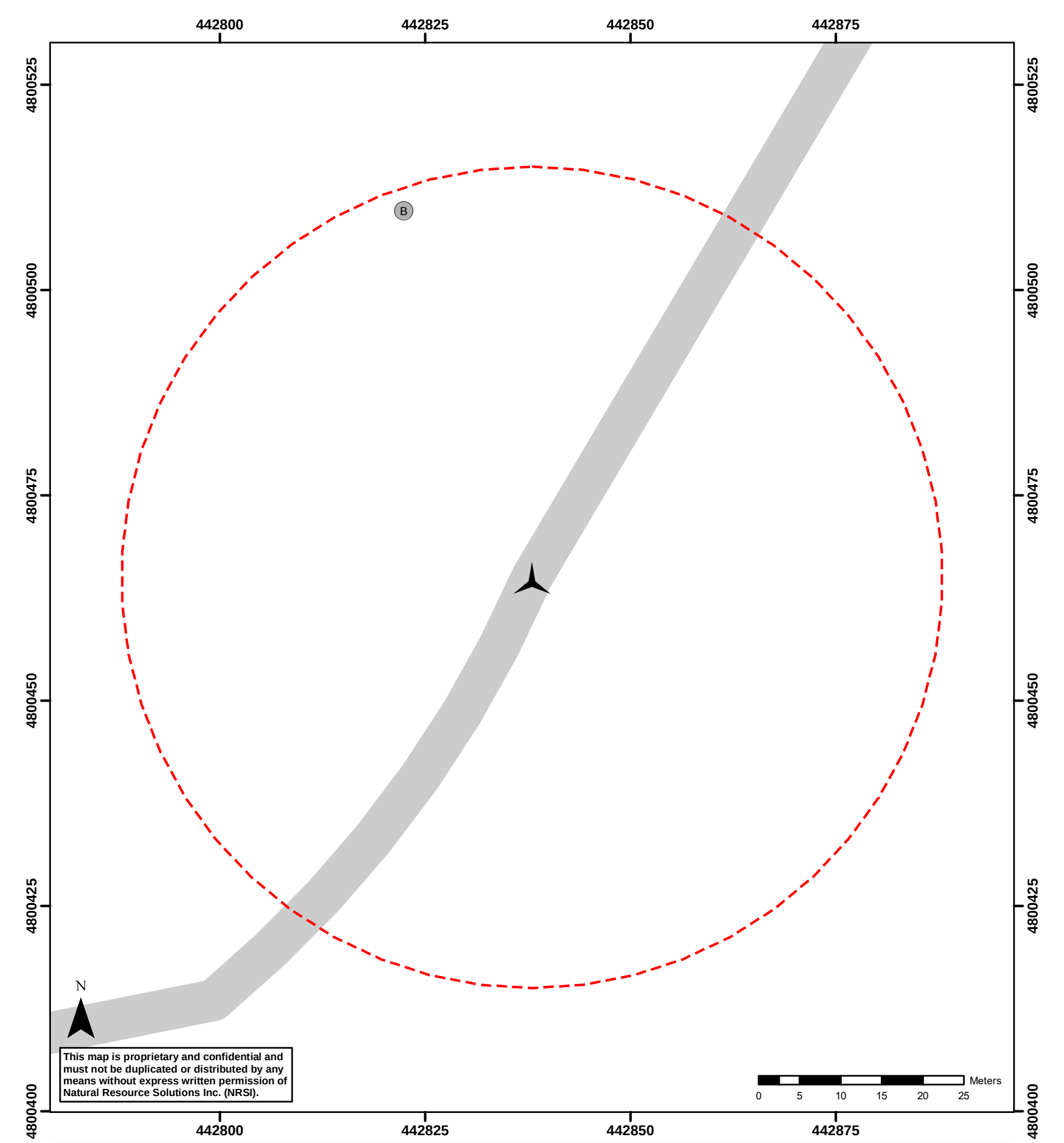
Grand Bend Wind Farm

Turbine T31 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Path: X:\2408_GrandBendWF\NRSI_2408A_AppendixVI_TurbineMortalities_2021_01_05_MV.mxd



Legend

- Turbine
- B Silver-haired Bat
- Search Radius (50m)
- Access Road

Appendix VI

Grand Bend Wind Farm

Turbine T33 Mortalities 2020

NAD83 - UTM Zone 17
Scale: 1:600 (8.5x11")

Date: January 5, 2021
Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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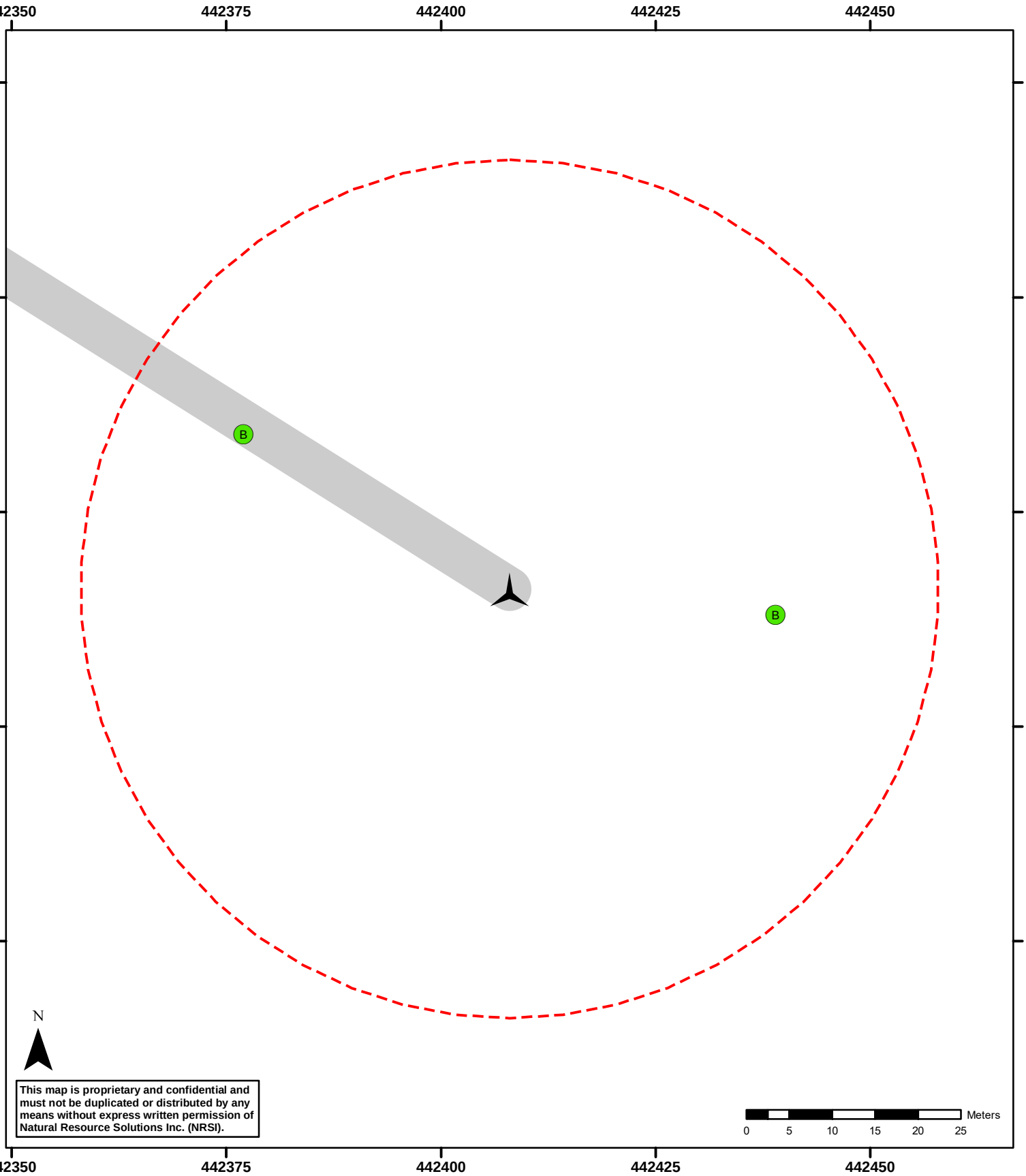

Legend

- Turbine
- B Hoary Bat
- Search Radius (50m)
- Access Road

Appendix VI

Grand Bend Wind Farm

Turbine T38 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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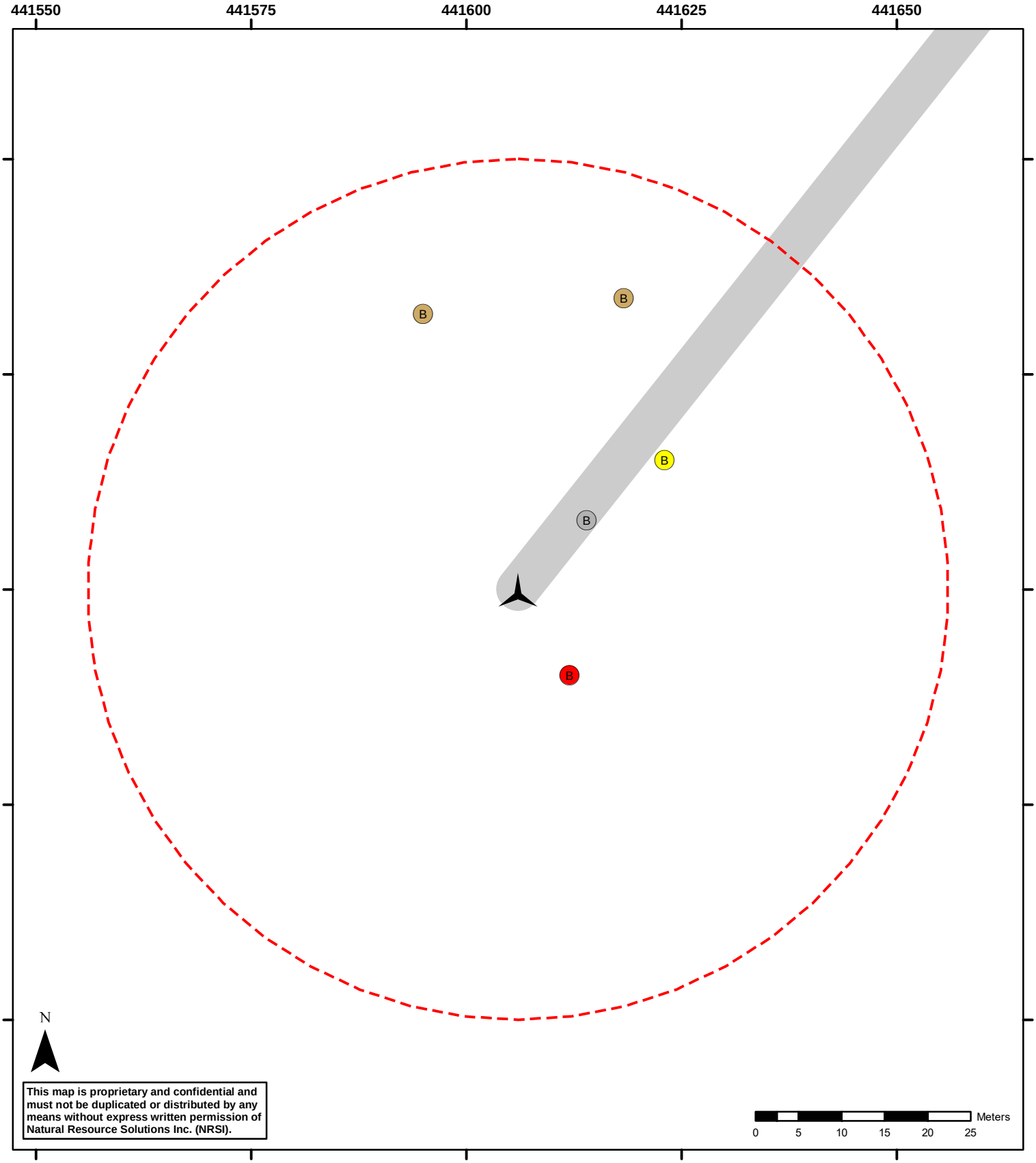

Legend

- Turbine
- Search Radius (50m)
- Access Road
- Big Brown Bat
- Eastern Red Bat
- Little Brown Myotis
- Silver-haired Bat

Appendix VI

Grand Bend Wind Farm

Turbine T42 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

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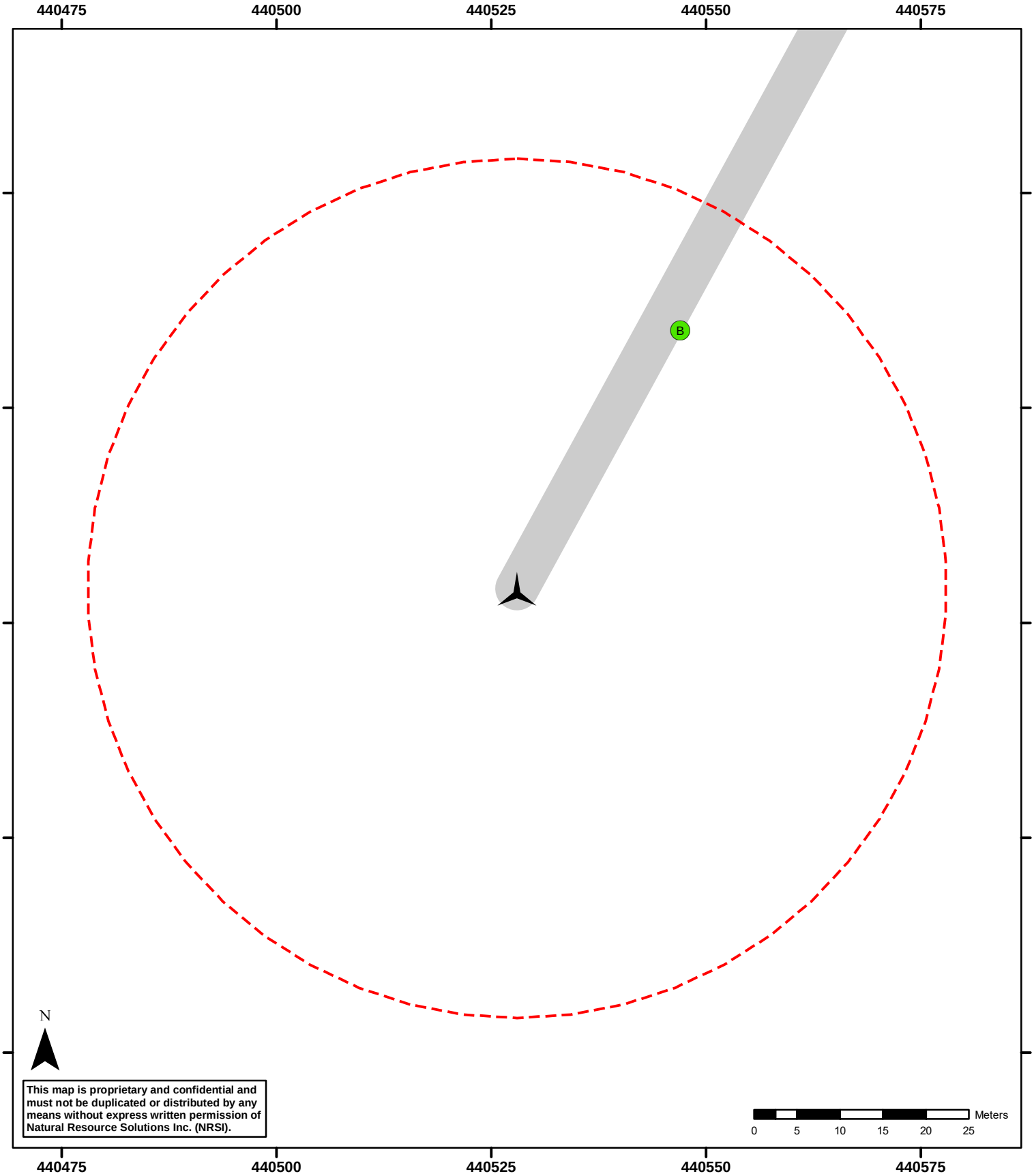

Legend

- Turbine
- Hoary Bat
- Search Radius (50m)
- Access Road

Appendix VI

Grand Bend Wind Farm

Turbine T48 Mortalities 2020

NAD83 - UTM Zone 17 Scale: 1:600 (8.5x11")	Date: January 5, 2021 Project: 2408A

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Path: X:\2408_GrandBendWF\NRSI_2408A_AppendixVI_TurbineMortalities_2021_01_05_MV.mxd