



**BURNSIDE**

**Grand Bend Wind Farm Post-  
Construction Monitoring Report –  
Year 1**

**Grand Bend Wind GP Inc.  
as a general partner for and on behalf  
of Grand Bend Wind Limited  
Partnership**

**R.J. Burnside & Associates Limited  
292 Speedvale Avenue West Unit 20  
Guelph ON N1H 1C4 CANADA**

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**R.J. Burnside & Associates Limited**

Report Prepared By:



Hannah Maciver  
Terrestrial Ecologist  
HM:sr

Report Reviewed By:



Lyle Parsons  
VP Environment  
LP:sr

## Executive Summary

Grand Bend Wind GP Inc. as general partner for and on behalf of Grand Bend Limited Partnership, operates a 100 MW wind facility located north of Grand Bend, Ontario. Renewable Energy Approval (REA) (Number 5186-9HBJXR) was issued by the Ministry of the Environment (now the Ministry of the Environment and Climate Change or “MOECC”) on June 26, 2014 prepared under Ontario Regulation 359/09 of the *Environmental Protection Act*. The REA was amended on March 24, 2015 and again on July 17, 2017. None of these amendments concerned or affected the monitoring study which follows. The project is classified as a Class 4 Wind facility under the Regulation. The Grand Bend Wind Farm (“the Project”) is located in Huron County, spanning the lower-tier municipalities of Bluewater and Huron South. Portions of the transmission line also traverse the municipality of Huron East and municipality of West Perth in Perth County.

The basic project components includes 40 turbines (Siemens SWT-3.0-113 direct drive wind turbine generators limited to produce 2.48 MW turbines each, with a total name plate capacity of 100 MW), turbine access roads, a 36 kV electrical collection system, substation, a parts and storage (office / maintenance) building, a new buried transmission line within municipal road right-of-ways along Sarasas Road, Rodgerville Road, and Road 183 with connection to the provincial power grid at the 230 kV transmission line south of the Seaforth Transformer Station.

The following is a summary of the results from the Year 1 Monitoring Program:

- The corrected total estimate for birds at the Project site in 2017 (from May 1 to October 31) is 10.08 birds per turbine per year. This estimate is *below* the provincial threshold of annual bird mortality of 14 birds per turbine per year.
- The corrected total estimate for all raptors at the Project site in 2017 (from May 1 to November 30) is 0.89 raptors per turbine per year. This estimate is *above* the provincial threshold of annual raptor mortality of 0.2 raptors per turbine per year (all raptors). Given that there were no provincially tracked raptors found during the monitoring program, raptor mortalities did not exceed the threshold of 0.1 raptors per turbine per year for provincially tracked raptors.
- There were no single mortality events recorded during the monitoring period for birds or raptors. The highest number of birds recorded at any one turbine during a single mortality monitoring survey was 2, and the highest number of birds (including raptors) recorded at multiple turbines was 3.
- Bat mortalities were recorded in every month of the monitoring program except May and November. Based on the calculations outlined below, the corrected total estimated mortality rate for bats at the Project site in 2017 (from May 1 to

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

October 31) is 27.85 bats per turbine per year. This estimate is *above* the annual bat mortality threshold of 10 bats per turbine per year, averaged across the Project site.

- A total of 5 different species of bats were recorded at the Project site. Hoary Bat represented the most common bat species recorded and represented 40% of all bat carcasses; Silver-haired Bat was the second-most common bat species and represented 19% of all bat carcasses recorded. Big Brown Bat and Eastern Red Bat represented 15% and 14% of all bat carcasses recorded, respectively. Little Brown Myotis represented the least common bat species and represented 2% of all bat carcasses recorded. An additional 10% of bat species recorded were not identified to species due to advanced stage of decomposition of carcass or missing body parts required for identifying to bat species (i.e., tragus, forearm).

## Table of Contents

<b>1.0</b>	<b>Introduction .....</b>	<b>7</b>
1.1	Project Location .....	8
<b>2.0</b>	<b>Approvals and Permits .....</b>	<b>10</b>
<b>3.0</b>	<b>Post-Construction Monitoring Methodology .....</b>	<b>10</b>
3.1	Mortality Thresholds.....	11
3.1.1	Bats .....	11
3.1.2	Birds .....	11
3.2	Effort and Timing for Bat and Bird Mortality Monitoring .....	12
3.3	Avian and Bat Mortality Searches .....	15
3.4	Raptor Mortality Searches .....	16
3.5	Carcass (Scavenger) Removal Trials .....	17
3.6	Searcher Efficiency Trials .....	18
3.7	Proportion Area Searched .....	20
3.8	Calculations .....	20
<b>4.0</b>	<b><math>P_s</math> is the proportion of the total area searchedPost-Construction Monitoring Results .....</b>	<b>21</b>
4.1	Carcass (Scavenger) Removal Trials .....	21
4.1.1	Spring.....	23
4.1.2	= 0.56Summer .....	23
4.1.3	Fall .....	23
4.2	Searcher Efficiency Trials .....	24
4.2.1	Searcher Efficiency Calculations.....	27
4.3	Avian and Raptor Mortality Results.....	27
4.3.1	Corrected (Estimated) Bird Mortality Calculations.....	30
4.4	Bat Mortality Results .....	34
4.4.1	Species Composition.....	34
4.4.2	Mortalities by Date.....	35
4.4.3	Spatial Distribution .....	38
4.4.4	Corrected (Estimated) Bat Mortality Calculations.....	40
4.5	Identification of Provincially Significant Species .....	42
<b>5.0</b>	<b>Summary and Conclusions .....</b>	<b>43</b>
<b>6.0</b>	<b>References .....</b>	<b>49</b>

## Tables

Table 1: Visibility Classes .....	15
Table 2: Scavenger Removal Trial Results at the Project Site.....	22
Table 3: Best-Case and Worst-Case Scenario Estimates for the Effects Of Dog Usage on Corrected Average Mortality Values .....	26
Table 4: Searcher Efficiency Trial Results by Season .....	27
Table 5: Proportion of Total Area Searched at the Sub-Sample Turbines.....	31

Table 6: Actual Observed Mortalities of All Avian Species (Total) at the Sub-Sample Turbines .....	31
Table 7: Actual Observed Mortalities (Raptors Only) at the Sub-Sample Turbines .....	31
Table 8: Corrected (Estimated) Bird Mortality Rate for All Samples in a Given Month (Total) .....	32
Table 9: Corrected (Estimated) Bird Mortality Rate for All Samples in a Given Month (Raptor) .....	32
Table 10: Proportion of Total Area Searched at the Sub-Sample Turbines .....	41
Table 11: Actual Observed Bat Mortalities .....	41
Table 12: Corrected (Estimated) Bat Mortality Rate for All Samples in a Given Month ..	41

## Figures

Figure 1: The Project Study Area .....	9
Figure 2: Location of Sub-Sample Mortality Monitoring Sites .....	14
Figure 3: Number of Bird Mortalities by Species and Season at the Project Site .....	28
Figure 4: Species Composition of Bat Mortalities by Percent at the Project Site .....	34
Figure 5: Number of Bat Mortalities by Species and Season at the Project Site .....	36
Figure 6: Number of Bat Mortalities by Species and Month at the Project Site .....	37
Figure 7: Spatial Distribution of Bat Mortalities by Species and Turbine at the Project Site .....	39
Figure 8: Total Recorded Number of Avian and Bat Mortalities at the Project Site .....	45
Figure 9: Total Number of Mortalities by Species at the Project Site .....	46
Figure 10: Proximity of Turbines to Surrounding Natural Heritage Features at the Project Site .....	47

## Appendices

Appendix A Approvals and Permits
Appendix B Mortalities Per Turbine (Map Book)
Appendix C Turbine Habitat Maps
Appendix D Post-Construction Monitoring Raw Data

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Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

## 1.0 Introduction

Grand Bend Wind GP Inc. as general partner for and on behalf of Grand Bend Limited Partnership, operates a 100 MW wind facility located north of Grand Bend, Ontario. Renewable Energy Approval (REA) (Number 5186-9HBJXR) was issued by the Ministry of the Environment (now the Ministry of the Environment and Climate Change or “MOECC”) on June 26, 2014 prepared under Ontario Regulation 359/09 of the *Environmental Protection Act*. The REA was amended on March 24, 2015 and again on July 17, 2017. None of these amendments concerned or affected the monitoring study which follows. The project is classified as a Class 4 Wind facility under the Regulation. The Grand Bend Wind Farm (“the Project”) is located in Huron County, spanning the lower-tier municipalities of Bluewater and Huron South. Portions of the transmission line also traverse the municipality of Huron East and municipality of West Perth in Perth County. The project location and study area is provided in Figure 1.

The basic project components include 40 turbines (Siemens SWT-3.0-113 direct drive wind turbine generators limited to produce 2.48 MW turbines each, with a total name plate capacity of 100 MW), turbine access roads, a 36 kV electrical collection system, substation, a parts and storage (office / maintenance) building, a new buried transmission line within municipal road right-of-ways along Sararas Road, Rodgerville Road, and Road 183 with connection to the provincial power grid at the 230 kV transmission line south of the Seaforth Transformer Station.

An Environmental Effects Monitoring Plan (EEMP) (January 2013) was submitted as part of the REA Application in February 2013. This document addressed the potential negative environmental effects that may result from engaging in the renewable energy project. Post-construction monitoring of potential effects on birds and bats is conducted in accordance with the following guidance documents (herein referred to as “the Guidelines”):

- *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR, December, 2011); and,
- *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR, July 2011).

The EEMP set out a post-construction monitoring plan that included:

- A summary of all potential negative environmental effects which might be caused by the project;
- Performance objectives associated with mitigation measures designed to reduce negative effects;
- A description of all mitigation strategies;
- A description of monitoring to be undertaken during project operation; and,



Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

- Contingency measures that will be undertaken should monitoring reveal that mitigation measures do not meet performance objectives.

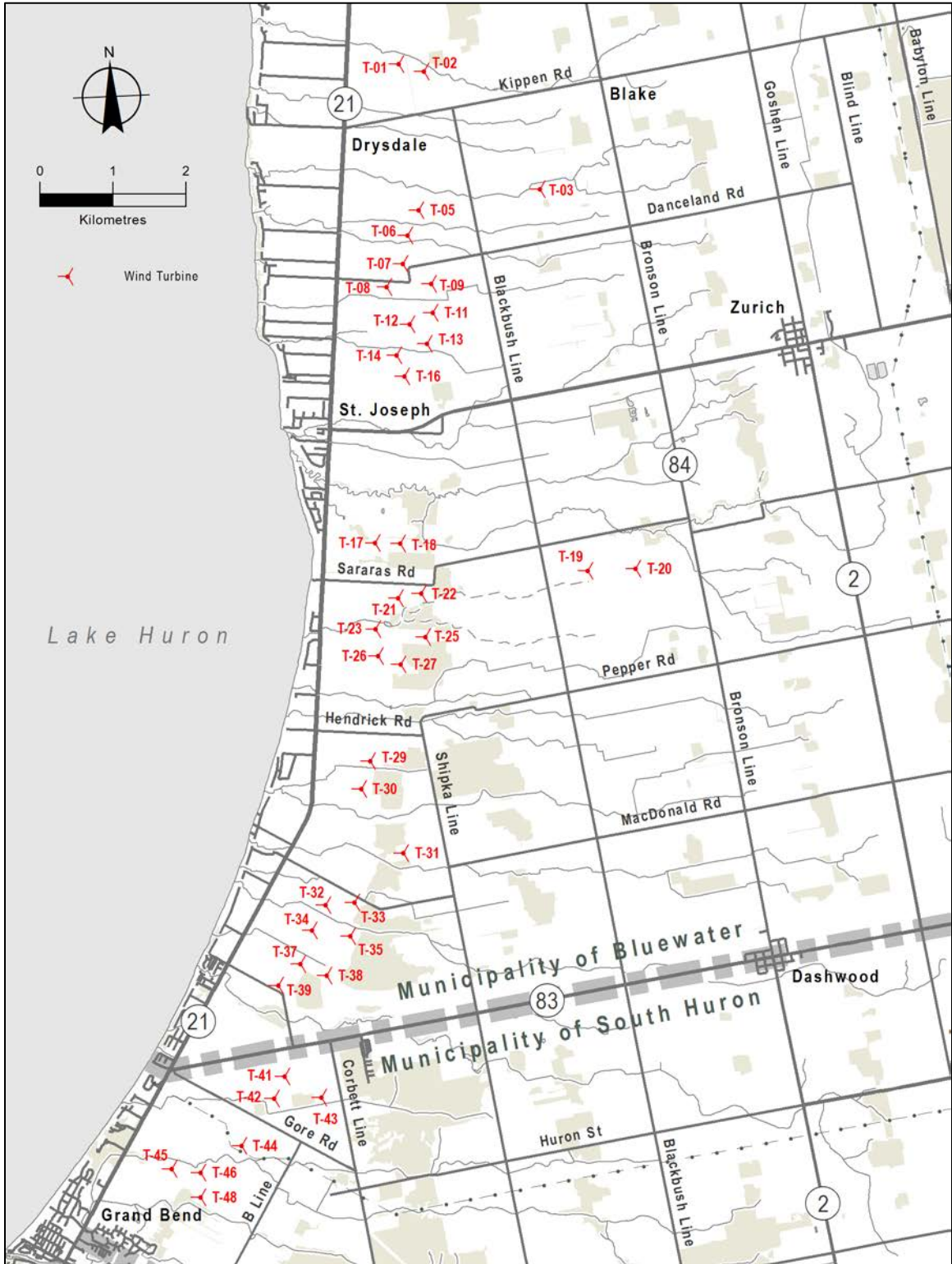
The Grand Bend Wind Farm became fully operational in July 2016. Post-construction environmental monitoring activities commenced on May 1, 2017.

## 1.1 Project Location

The Project is located in Huron County, spanning the lower-tier municipalities of Bluewater and South Huron as well as a portion of Huron East and the municipality of West Perth in Perth County. The Project Study Area, shown in Figure 1, is bounded by:

- The Bluewater Highway (Highway 21) to the west;
- Main Street East / Grand Bend Line to the south;
- Blackbush and Shipka Lines with a small section of the study area in the central section of the project extending to Bronson Line and to the east;
- Staffa Road to the north; and,
- A transmission line route.

Figure 1: The Project Study Area



Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

## 2.0 Approvals and Permits

A variety of approvals, permits and authorizations were required to conduct post-construction monitoring:

- MOECC Renewable Energy Approval (REA) (June 26, 2014);
- Canadian Wildlife Service – Scientific Permit – Migratory Bird Regulations Permit #SC004 (this permit applies to any migratory non-SAR birds);
- MNR Wildlife Scientific Collection (WSC) Permit #1086557;
- MNR Wildlife Animal Care Committee (WACC) Protocol #17-399; and,
- Endangered Species Act (ESA) Registry Confirmation #M-102-8126759043.

These approvals and permits allow for the handling, collection and storage of birds, bats and any Species at Risk (SAR) found during surveys.

In addition, a Notice of Activity for monitoring at the Grand Bend Wind Farm was submitted to MNR as required under the Endangered Species Act (2007), Ontario Regulation 242/08.

A copy of these approvals and permits are found in Appendix A.

## 3.0 Post-Construction Monitoring Methodology

Post-construction mortality surveys are required for all Class 3 and 4 wind power projects. This Post-Construction Monitoring Report is one component of the EEMP, and has been prepared in accordance with MNR's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (July 2011) and MNR's *Birds and Bird Habitats: Guidelines for Wind Power Projects* (December 2011).

Post-construction bat and bird mortality surveys estimate bird and bat mortality from wind turbines and may identify species and specific periods of high mortality. This knowledge can be used to evaluate the success of mitigation measures, establish protocols for operational mitigation, and inform adaptive management.

Bat and bird mortality surveys identify the number of bats or birds killed per turbine over a known period (expressed as bats per turbine per year **or** birds per turbine per year). This value represents an estimate of bat and bird mortality adjusted for carcass removal rates, searcher efficiency, and percent area searched (see Section 3.1 below).

For bats and birds, a monitoring year is considered to be from May 1 to October 31, and continues until November 30 specifically for raptor monitoring. In this case, the year is all reporting periods in one calendar year (i.e., from January 1 to December 31).

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

Post-construction monitoring in Year 1 consisted of:

- Regular bat / bird mortality surveys around specific wind turbines;
- Monitoring of bat / bird carcass removal rate by scavengers (or other means); and,
- Monitoring of bird / bat searcher efficiency (i.e., number of bat / bird fatalities present that are detected by searchers).

### **3.1 Mortality Thresholds**

A threshold approach is used by the MNRF to identify and mitigate significant bat and bird mortality resulting from the operation of wind turbines.

#### **3.1.1 Bats**

Bat mortality is significant when a threshold of annual bat mortality (averaged across the site) exceeds 10 bats per turbine per year.

This threshold has been determined based on bat mortality reported at wind power projects in Ontario and compared with jurisdictions across North America.

#### **3.1.2 Birds**

Bird mortality is significant when annual avian mortality exceeds one or more of the following thresholds:

- 14 birds per year at individual turbines or turbine groups;
- 0.2 raptors per turbine per year (all raptors) across a wind power project; or,
- 0.1 raptors per turbine per year (provincially tracked raptors) across a wind power project.

Provincially tracked raptors are defined as raptors of provincial conservation concern by the MNRF Natural Heritage Information Centre (NHIC).

In addition, single significant mortality events have been reported at existing wind farms. Such an event has been defined by the MNRF as the results of any single monitoring survey in excess of:

- 10 or more birds at any one turbine; or,
- 33 or more birds (including raptors) at multiple turbines.

For birds, an additional 2 years of scoped mortality and cause and effect monitoring may be required at individual turbines (and unmonitored turbines in near proximity), following any given year where an annual post-construction mortality report identifies significant bird or raptor mortality.

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

For bird / bats, an additional 3 years of effectiveness monitoring may be required where mitigation is applied.

### 3.2 Effort and Timing for Bat and Bird Mortality Monitoring

The Project consists of 40 operating turbines. As per the Guidelines, for wind power projects >10 turbines, bat and bird mortality surveys should occur at a sub-sample of at least 30% of turbines (minimum 10 turbines) and should be selected to cover representative areas throughout the project location. A total of 12 turbines were selected to cover representative areas throughout the Project site (the “sub-sample”). The draft sub-sample identified in the EEMP was selected such that:

- It covered a representative sample of all habitats present;
- It included a range of turbines across the full spatial distribution of the project; and,
- The sub-sample turbines did not include ones where the majority of the search area would not be searchable due to vegetation cover or other impediments (i.e., Visibility Class 4 in accordance with MNR, 2011). See Table 1.

The final 12 sub-sample turbines were modified slightly from the EEMP because none of the originally defined 12 Bat Maternity Colony habitats were found to be significant; therefore, the sub-sample was adjusted to ensure a representative sample of the Project site. The sub-sample consisted of the following 12 turbines (Figure 2 shows the location of the turbines):

- T-02;
- T-07;
- T-16;
- T-17;
- T-18;
- T-20;
- T-27;
- T-31;
- T-33;
- T-38;
- T-42; and,
- T-48.

The Project became fully operational in July 2016; therefore, post-construction environmental monitoring activities for Year 1 commenced on May 1, 2017 and ended on November 30, 2017.

Data was collected following the Guidelines as well as the data standards and requirements of the Wind Energy Bird and Bat Monitoring Database. Survey data was

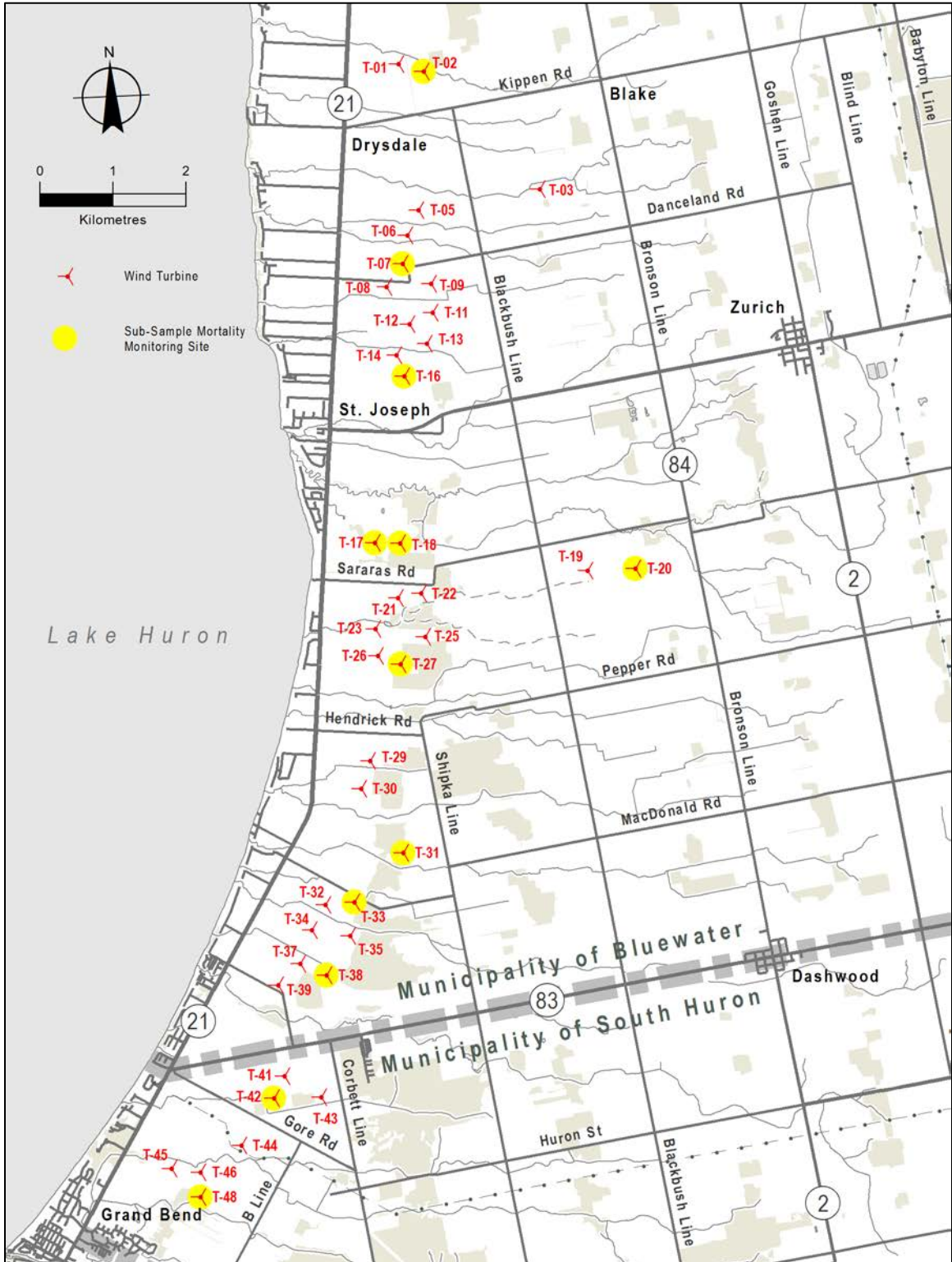
Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

collected using Fulcrum, a data collection platform for mobile devices. Data collected through Fulcrum automatically populates a database where it can be analyzed, reported and used to address knowledge gaps and create public data summaries. The data forms created in Fulcrum were based on the standardized templates available online through the Wind Energy Bird and Bat Monitoring Database found at [http://www.bsc-eoc.org/birdmon/wind/wind\\_templates.jsp](http://www.bsc-eoc.org/birdmon/wind/wind_templates.jsp).

Between May 1 and July 28, post-construction monitoring was conducted by two searchers (herein referred to as searcher “TS” and searcher “SH”). From July 28 to August 16, searches at the sub-sample turbines were conducted by one searcher and searches at the remaining turbines for raptors were conducted by two searchers (see Section 3.4). This was because one searcher had reduced their work hours to part-time to accept another employment opportunity. From August 16 to November 30, one searcher completed the remainder of the Monitoring Program for 2017.

Modifications from the Guidelines and/or EEMP due to the reduction from two searchers to one searcher in mid-August is described in detail in each of the monitoring efforts outlined below.

Figure 2: Location of Sub-Sample Mortality Monitoring Sites



### 3.3 Avian and Bat Mortality Searches

Regular carcass searches for birds (excluding raptors) and bats were conducted twice weekly (3- and 4-day intervals) at the sub-sample of wind turbines between May 1 and October 31 with three exceptions:

- T-31 and T-33 were surveyed on August 8. On August 11, weather warnings prevented monitoring at T-31 and T-33. The turbines were not surveyed again until the next scheduled date on August 15, resulting in a 7-day period where they were not surveyed;
- T-20 was surveyed on September 4. On September 7, this turbine could not be surveyed due to storm and funnel cloud warnings. The turbine was not surveyed again until the next scheduled date on September 11, resulting in a 7-day period where they were not surveyed; and,
- T-27 was surveyed on October 5. On October 9, this turbine could not be surveyed due to trucks blocking the access road to the turbine. All trucks were unattended at the time, and it was a statutory holiday. The turbine was not surveyed again until the next scheduled date on October 12, resulting in a 7-day period where they were not surveyed.

Carcass searches consisted of the following:

- The sub-sample of wind turbines that were monitored included all habitat types and covered the spatial distribution of the wind turbines. Wind turbines were selected through a scientifically defensible system (e.g., stratification);
- The time required searching each turbine varied slightly depending on the surrounding habitat (e.g., open field vs. forest, etc.) and individual searchers, but searchers typically spent 30 minutes searching at each turbine;
- Each surveyed turbine consisted of a 50 m search radius from the base of the turbine;
- Within this 50 m radius, the search area was examined using transects 5.0 to 6.0 m apart allowing for a visual search of 2.5 to 3.0 m on each side. The search area was circular (see Appendix B);
- The search area of each turbine was mapped into Visibility Classes according to Table 1.

**Table 1: Visibility Classes**

<b>%Vegetation Cover</b>	<b>Vegetation Height</b>	<b>Visibility Class</b>
≥90% bare ground	≤15cm tall	Class 1 (Easy)
≥25% bare ground	≤15cm tall	Class 2 (Moderate)
≤25% bare ground	≤25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥25% > 30cm tall	Class 4 (Very Difficult)



Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

- Where possible, ground cover around the sub-sample turbines was maintained at a low level to facilitate more accurate bat and bird mortality surveys. The sub-sample turbines were maintained at either Visibility Class 1 or 2 for the duration of the Monitoring Program with the exception of T-38 – on the first day of monitoring on May 1 part of the search area was Class 3 but the vegetation was subsequently cut by May 11 and it remained as either Class 1 and 2 for the remainder of the monitoring period;
- All carcasses found were photographed and recorded / labeled with species (if known), sex (if known), date, time, location (UTM coordinate), carcass condition, searcher name, injuries, ground cover, and distance and direction to nearest turbine;
- Weather conditions including wind speed and precipitation were included as part of the data collection;
- The estimated number of days since death, and condition of each carcass collected were recorded in one of the following categories:
  - Fresh;
  - Early decomposition;
  - Moderate decomposition;
  - Advanced decomposition;
  - Complete decomposition; and,
  - Scavenged;
- Avian carcasses found during mortality monitoring were collected and stored in a freezer and used in carcass removal or searcher efficiency trials, if they were in reasonable condition;
- Carcasses of the following species found during bat mortality searches were stored in a freezer and used in carcass removal or searcher efficiency trials, if they were in reasonable condition:
  - *Lasionycteris noctivagans* (Silver-haired Bat);
  - *Lasiurus cinereus* (Hoary Bat); and,
  - *Lasiurus borealis* (Eastern Red Bat);
- Because of white-nose syndrome contamination risks, the following species were not used in carcass removal or searcher efficiency trials:
  - *Myotis septentrionalis* (Northern Long-eared Bat);
  - *Myotis lucifugus* (Little Brown Bat);
  - *Myotis leibii* (Eastern Small-footed Bat);
  - *Perimyotis subflavus* (Tricolored Bat); and,
  - *Eptesicus fuscus* (Big Brown Bat).

### 3.4 Raptor Mortality Searches

In addition to carcass searches for birds and bats, raptor mortality surveys were conducted twice weekly in combination with the carcass searches at the sub-sample of

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

turbines, and once per month at the remaining 28 turbines within the Project during the survey period from May 1 to October 31. For the month of November, weekly raptor mortality surveys were conducted at the sub-sample of turbines in addition to the monthly surveys of the remaining 28 turbines.

The results of these targeted raptor mortality surveys were not added to the sub-sample survey mortality estimate calculations. The purpose of the raptor mortality surveys is to identify any individual or groups of turbines that may exceed the significant mortality threshold for raptors.

As per the Guidelines, searcher efficiency and carcass removal trials were not carried out during targeted raptor mortality surveys at the remaining 28 turbines.

### **3.5 Carcass (Scavenger) Removal Trials**

Carcass removal by scavengers is highly variable among sites (influenced by vegetation cover, terrain and season) and must be considered when estimating total bat and bird mortality. The rate of carcass scavenging was determined through carcass removal trials. In these trials carcasses were placed around the wind turbines and monitored until they were removed by scavengers. The average carcass removal time is a factor in determining the estimated bat or bird mortality rate.

Carcass removal trials consisted of the following:

- Carcass removal trials were conducted once per season (spring, summer, fall) during the same period as the mortality surveys (May 1 to October 31);
- According to the Guidelines, a minimum of 10 carcasses were to be used for each trial with no more than 5 trial carcasses placed at any one time. However, the following is a summary of where trials were modified from the Guidelines and/or EEMP as staff learned to navigate the first year of monitoring:
  - Spring:
    - Carcasses were only placed in Visibility Class 1; and
    - As per the EEMP, only 5 should have been placed out at any given time, but staff placed out 11 all on the same date;
  - Summer:
    - Carcasses were placed in Visibility Class 2 and 3 but not Class 1; and,
    - As per the EEMP, only 5 can be placed out at any given time; but staff placed out 11 all at the same time on the same date. Burnside notified MNRF about this and was informed that it did not need to be re-done for the summer season, but to be sure to correct this in the Fall season (Emma Valliant, Acting Regional Planner, via telephone on August 2, 2017);

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

- Fall:
  - 10 carcasses were placed out on October 2. As per the EEMP, only 5 can be placed out at any given time.
- Carcasses were monitored every 3 to 4 days in conjunction with carcass searches;
- Carcass removal trials were conducted in a variety of weather conditions. Weather conditions were recorded;
- Carcasses were distributed across a range of different substrates/habitats and visibility classes of turbines being searched;
- Carcass removal trials were conducted at turbines that were not part of the carcass search sub-sample;
- Carcasses were placed before dusk using gloves and boots to avoid imparting human smell that might bias trial results (e.g., attract scavengers, etc.);
- Trials continued until all carcasses were removed or were completely decomposed (generally two weeks);
- To avoid confusion with turbine related fatalities, trial carcasses were discretely marked with a unique identification so they could be identified as trial carcasses;
- Frozen carcasses were used and were thawed prior to beginning carcass removal trials;
- To the extent possible, bat and bird carcasses were used for the trials. Trials using small brown mice were also used, particularly during the spring and summer periods of the Monitoring Program when bird and bat carcasses were not yet available from mortalities at the Project site. More bat carcasses were available for the removal trials than bird carcasses because more bats were collected during the mortality searches compared to birds.

### 3.6 Searcher Efficiency Trials

Searcher efficiency is another important factor in creating an estimate of total bat and bird mortality. Searcher efficiency trials require a known number of discretely marked carcasses to be placed around a wind turbine. Searchers examined the wind turbine area, and the number of carcasses that they found was compared to the number of carcasses placed.

It is important to note that circumstances were such that the trials were modified at times from the Guidelines and/or EEMP. Searcher efficiency trials were to consist of the following activities outlined below:

- Searcher efficiency trials were to be conducted once a season (spring, summer and fall) during the same period as the bat mortality surveys (May 1 to October 31);
- A ‘tester’ controlled the trials and returned to collect marked trial carcasses at the completion of the trials to determine the number of carcasses remaining and if any carcasses were scavenged or removed during the trial;

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

- Searcher efficiency trials were to be conducted for each individual searcher;
- The Guidelines and/or EEMP state that a total of 10 carcasses per searcher per season per all applicable Visibility Classes found in the search area of the sub-sample turbines (see table above) were to be used. The average efficiency per searcher across all visibility classes was used for calculations;
- Trial carcasses were to be spread out over the trial period (each season) and conducted with the mortality surveys. A maximum of 3 trial carcasses were to be placed at any one time to avoid bias and flooding the area with carcasses. Please see description below where this did not occur;
- Trial carcasses were placed for one search period only and then removed and recorded by the ‘tester’;
- Trial carcasses were randomly placed within the search area and location recorded so that they could be retrieved if they were not found during the trial;
- Trial carcasses were discreetly marked with a unique identification so that they could be identified as a trial carcass by the tester;
- Frozen carcasses were used and thawed prior to beginning searcher efficiency trials;
- To the extent possible, bat and bird carcasses were used for the trials; and,
- Trials using small brown mice were also used, particularly during the spring and summer periods of the Monitoring Program when bird and bat carcasses were not yet available from mortalities at the Project site. More bat carcasses were available for the removal trials than bird carcasses because more bats were collected during the mortality searches compared to birds.

As noted above, the following is a summary of where trials were modified from the Guidelines and/or EEMP as staff learned to navigate the first year of monitoring:

- Spring:
  - On June 19 and 20, searchers exceeded the limit of carcasses (maximum 3) that can be laid out at any given time; and,
  - Searchers laid out up to 10 carcasses for each searcher in Visibility Class 1 and 2 combined instead of 10 in each individual Visibility Class (see also Section 4.2);
- Summer:
  - A total of 20 carcasses were laid out for one of the searchers but 9 were in Class 1 and 11 were in Class 2 (instead of 10 in each); and,
  - One of the searchers discontinued searches at the sub-sample turbines on July 28 and her final day with Burnside was on August 16 – therefore, her trials were not completed for the summer season. A total of 9 carcasses were laid out for her in Class 2 (none in Class 1). In addition, the trials conducted for her in Class 2 were done at the raptor mortality turbines – Burnside notified MNRF and they approved this modified approach since she was no longer conducting

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

searches at the sub-sample turbines (Emma Valliant, Acting Regional Planner, via telephone on August 2, 2017).

- Fall:
  - Burnside had a staff member visit the Project for the fall season and test the one remaining searcher.

### 3.7 Proportion Area Searched

Based on current Ontario post-construction data, most bat and bird mortalities appear to fall within 50 m of a wind turbine base (7,853.97 m<sup>2</sup>). This area therefore represents the maximum recommended search area. Since it was not always possible to search the entire 50 m radius (presence of thick or tall vegetation, active cultivation, etc.) the actual area searched during the mortality surveys was calculated at each turbine, using a GPS. A map of the actual search area for each turbine searched, and a description of areas deemed to be unsearchable (e.g., vegetation height, type, slope, etc.) is provided in Appendix C of this report.

### 3.8 Calculations

#### Scavenger Correction Factor

The following formula was used to calculate the overall scavenger correction ( $S_c$ ) factors based on the proportion of carcasses remaining after each search interval was pooled:

$$S_c = \frac{n_{\text{visit1}} + n_{\text{visit2}} + n_{\text{visit3}}}{n_{\text{visit0}} + n_{\text{visit1}} + n_{\text{visit2}}}$$

Where,

$S_c$  is the proportion of carcasses not removed by scavengers over the search period

$n_{\text{visit0}}$  is the total number of carcasses placed

$n_{\text{visit1}} - n_{\text{visit3}}$  ... are the numbers of carcasses on visits 1 through 3

#### Searcher Efficiency

Searcher efficiency ( $S_e$ ) was calculated for each searcher as follows:

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

The number of turbines that each individual searched varied so it was necessary to calculate a weighted average that reflected the proportion of turbines each searcher searched. The weighted average or overall searcher efficiency was calculated as follows:

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

$$S_{e0} = S_{e1}(n_1/T) + S_{e2}(n_2/T) + S_{e3}(n_3/T) \dots$$

Where,

$S_{e0}$  is the overall searcher efficiency  
 $S_{e1}$  and  $S_{e2}$  and  $S_{e3} \dots$  are individual searcher efficiency ratings  
 $N_1$  and  $N_2$  and  $N_3 \dots$  are number of turbines searched by each searcher  
 $T$  is the total number of turbines searched by all searchers

### Proportion Area Searched

Proportion area searched ( $P_s$ ) was calculated as a total proportion for all turbines in a given season (Spring – May/June; Summer – July/August; Fall – September/October).  $P_s$  was determined as follows:

$$P_s = \frac{\sum \text{actual area searched}}{n\pi r^2}$$

Where,

$r$  equals 50 m  
 $n$  equals the number of turbines searched (12)

### Corrected Mortality Estimates

The minimum estimated bat mortality ( $C$ ) was calculated as follows:

$$C = c / (S_{e0} \times S_c \times P_s)$$

Where,

$C$  is the corrected number of bat fatalities  
 $c$  is the number of carcasses found  
 $S_{e0}$  is the weighted proportion of carcasses expected to be found by searchers (overall searcher efficiency)  
 $S_c$  is the proportion of carcasses not removed by scavengers over the search period

## 4.0 $P_s$ is the proportion of the total area searched Post-Construction Monitoring Results

### 4.1 Carcass (Scavenger) Removal Trials

The proportion of carcasses not removed by scavengers over the search period varied slightly for each season, as indicated below. Table 2 shows the number of carcasses remaining during carcass removal trials at the Project site. Details on the tester, date placed, species, distance and direction from turbine, dates checked, UTM, and whether the carcass was scavenged can be found in Appendix D.

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

### Scavenger Correction Factor

The following formula was used to calculate the overall scavenger correction ( $S_c$ ) factors based on the proportion of carcasses remaining after each search interval was pooled:

$$SC_{Season} = \frac{n_{visit1} + n_{visit2} + n_{visit3}}{n_{visit0} + n_{visit1} + n_{visit2} + n_{visit3}}$$

Where,

$SC_{Season}$  is the proportion of carcasses not removed by scavengers over the search period

$n_{visit0}$  is the total number of carcasses placed

$n_{visit1} + n_{visit2} + \dots$  are the numbers of carcasses on visits 1 through 3, etc.

**Table 2: Scavenger Removal Trial Results at the Project Site**

	# carcasses placed	# remaining	# remaining	# remaining	# remaining
<b>Spring Trial (May/June)</b>					
Turbine #	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
T3	4	4	3	0	-
T19	4	3	1	0	-
T32	3	3	0	-	-
<b>Total</b>	<b>11</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>-</b>
<b>Summer Trial (July/August)</b>					
Turbine	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
9	1	1	1	1	1
14	3	3	1	0	-
22	3	3	1	1	1
30	3	3	0	-	-
<b>Total</b>	<b>10</b>	<b>10</b>	<b>3</b>	<b>2</b>	<b>2</b>
<b>Fall Trial (September/October)</b>					
Turbine	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
34	2	2	2	2	2
37	3	3	2	1	1
44	3	3	1	0	-
46	2	1	0	-	-
<b>Total</b>	<b>10</b>	<b>9</b>	<b>5</b>	<b>3</b>	<b>3</b>

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

#### 4.1.1 Spring

$$SC_{Spring} = \frac{n_{visit1} + n_{visit2} + n_{visit3}}{n_{visit0} + n_{visit1} + n_{visit2} + n_{visit3}}$$

$$= \frac{(10 + 4 + 0)}{(11 + 10 + 4 + 0)}$$

$$= \frac{14}{25}$$

#### 4.1.2 = 0.56 Summer

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

$$= \frac{(10 + 3 + 2 + 2)}{(10 + 10 + 3 + 2 + 2)}$$

$$= \frac{17}{27}$$

$$= 0.63$$

#### 4.1.3 Fall

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

$$= \frac{(9 + 5 + 3 + 3)}{(10 + 9 + 5 + 3 + 3)}$$

$$= \frac{20}{30}$$

$$= 0.67$$



Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

## 4.2 Searcher Efficiency Trials

Searcher efficiency ( $S_e$ ) was calculated for each searcher as follows:

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

The number of turbines that each individual searches will vary so it was necessary to calculate a weighted average that reflected the proportion of turbines each searcher searched. The weighted average or overall searcher efficiency was calculated as follows:

$$S_{e0} = S_{e1}(n_1/T) + S_{e2}(n_2/T) + S_{e3}(n_3/T) \dots$$

Where,

$S_{e0}$	is the overall searcher efficiency
$S_{e1}$ and $S_{e2}$ and $S_{e3} \dots$	are individual searcher efficiency ratings
$N_1$ and $N_2$ and $N_3 \dots$	are number of turbines searched by each searcher
$T$	is the total number of turbines searched by all searchers

Searcher efficiency (SE) trials were divided as follows:

- Spring season – May and June
- Summer season – July and August
- Fall season – September and October

The following important factors should be noted for the SE trials:

### Seasonal Searches

Vegetation at the sub-sample turbines remained at either Class 1 or Class 2 throughout the monitoring period; therefore, SE trials occurred seasonally. These periods have been denoted  $SE_{\text{spring}}$  (May-June),  $SE_{\text{summer}}$  (July-August) and  $SE_{\text{fall}}$  (September-October). Calculated values were then applied to the mortality calculations for each of the value's respective months (e.g., mortality rates for May and June each use the value  $SE_{\text{spring}}$ ).

The spring / summer / fall division served a second function as well. Midway through the sampling season (after July 28), searcher TS was only searching at turbines not part of the sub-sample; searcher SH was then required to carry out the remaining sampling at the sub-sample turbines on her own. By August 16, searcher TS was no longer conducting any monitoring at the Project site. This resulted in searcher SH accounting for approximately twice the number of searches compared to searcher TS. The  $SE_{\text{summer}}$  data pool accounts for 8 test carcasses left for searcher TS, and 14 test carcasses left for searcher SH. This breakdown gives a higher confidence to the efficiency of SH,

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

which is important as she carried out a higher proportion of the searches between July-August.

As this was the first year of monitoring and the first time the searchers had conducted post-construction monitoring, there was a learning curve required to understand the requirements outlined in the Guidelines. In the spring period, the searcher efficiency for searcher SH was lower than in the summer and fall periods.

### **Visibility Classes**

The Guidelines state: “A minimum of 10 carcasses per searcher per season in all applicable visibility classes will be used for calculations”. Burnside interpreted this to mean that only a total of 10 carcasses were to be placed for each searcher each season in Class 1 and 2 visibility classes combined. However, Burnside was provided with clarification on this matter from MNRF via email on June 22, 2017 (Emma Valliant, Acting Regional Planner) where it was stated that “a minimum of 10 carcasses per searcher per season per visibility classes are to be used (a max of 3 trial carcasses will be placed at any one time)”. For the summer and fall seasons, this was corrected for searcher SH.

Searcher TS was tested in Class 2 for the summer season at turbines not part of the sub-sample because of her reduced working schedule (i.e., no longer searching at the sub-sample turbines). This was communicated to MNRF, and it was agreed that she be tested in Class 2 at turbines not part of the sub-sample.

### **Dog-assisted Searches**

When processing the 2017 survey data, a challenge presented itself with regards to dog-assisted searches. The Guidelines state that mortality surveys that incorporate the use of trained dogs (i.e., dog-handler teams to locate mortalities) improve searcher efficiency, and should be considered. Both searchers owned dogs that Burnside felt could assist the searchers in finding carcasses. While they were not formally trained in searching for carcasses, both dogs were adept at providing cues to the searcher as to when they had found a carcass, or part of a carcass. This proved at times to be effective at finding carcasses that otherwise would not have been detected by a human searcher alone.

During the calculation of the SE trials, it was discovered that the searchers used their own discretion as to when they would bring their dog to assist with searching. For example, if the weather was too hot or too cold / rainy, they would choose not to use their dog in the interest of the dog's well-being. As such, some SE trials were conducted when a dog was present, while other SE trials were not. This initially raised a concern

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

that dog-assisted SE trials would artificially inflate the efficiency ratings of each searcher, which would then serve to underestimate the corrected per-turbine mortality rates.

It was determined that there was not enough searcher efficiency data to create SE values for every permutation of spring, summer, and fall for each scenario of dog present or dog absent. To test the impact that the use of dogs may have had on overall mortality, searcher efficiency data was pooled together into two subsets; one subset contained trial data for SH and TS where no dog was present, and the other subset contained trial data for the searchers where a dog was present. This produced a  $SE_{dog}$  of 57.76% and a  $SE_{nodog}$  of 46.64%.

We assume that the true SE lies somewhere in the middle of these values, as dogs were used intermittently throughout the entire sampling season. As such,  $SE_{dog}$  was considered the “worst case scenario”, where the use of dogs in trial situations had the highest impact on SE, while  $SE_{nodog}$  was the “best case scenario” where the use of dogs in trials had the lowest impact on SE.

Overall mortality rates calculated varied from high (using  $SE_{dog}$ ) to low (using  $SE_{nodog}$ ). These values are summarized below in Table 3.

**Table 3: Best-Case and Worst-Case Scenario Estimates for the Effects Of Dog Usage on Corrected Average Mortality Values**

Searcher Efficiency	Corrected Average $C_{Avian}$ (mortalities/turbine/year)	Corrected Average $C_{Raptor}$ (mortalities/turbine/year)	Corrected Average $C_{Bat}$ (mortalities/turbine/year)
$SE_{dog}$	7.84	0.69	22.34
$SE_{nodog}$	9.71	0.85	27.67

By comparing the corrected mortality rates between  $SE_{dog}$  and  $SE_{nodog}$ , the former results in a lower estimated mortality rate than the latter; it assumes that the searchers are finding proportionately more carcasses than in the lower efficiency scenario. An important observation to note is that in both the best and worst-case scenarios, the overall results are the same from the perspective of mortality thresholds. Both values of corrected average  $C_{Avian}$  from  $SE_{dog}$  and  $SE_{nodog}$  are below the threshold of 10 avian mortalities per turbine per year, while  $C_{Raptor}$  and  $C_{Bat}$  are both above their respective mortality thresholds of 0.2 and 10 mortalities per turbine per year, respectively.

The above observation is used to justify that our original values remain valid in demonstrating whether the Project is resulting in mortality rates above or below the threshold for avian, raptor, and bat species. However, it also illustrates the influence that searcher efficiency has on overall calculated mortality estimates. In subsequent monitoring years, the protocol and searcher direction will be modified to reduce error and increase confidence in SE values to the highest possible extent.

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

#### 4.2.1 Searcher Efficiency Calculations

**Table 4: Searcher Efficiency Trial Results by Season**

Season (2017)	Searcher	# of Carcasses Placed	# of Carcasses Scavenged	# of Carcasses Found	Searcher Efficiency ( $SE_{individual}$ )	Proportion of Turbines Searched ( $P_e$ )
Spring	SH	10	0	2	0.200	0.481
	TS	9	1	5	0.625	0.519
Summer	SH	14	0	7	0.500	0.772
	TS	8	0	5	0.625	0.228
Fall	SH	27	2	13	0.520	1.000

$$SE_{Season} = \sum SE_{individual} * P_e$$

$$SE_{Spring} = (0.200 * 0.481) + (0.625 * 0.519) = 0.421$$

$$SE_{Summer} = (0.500 * 0.772) + (0.625 * 0.228) = 0.529$$

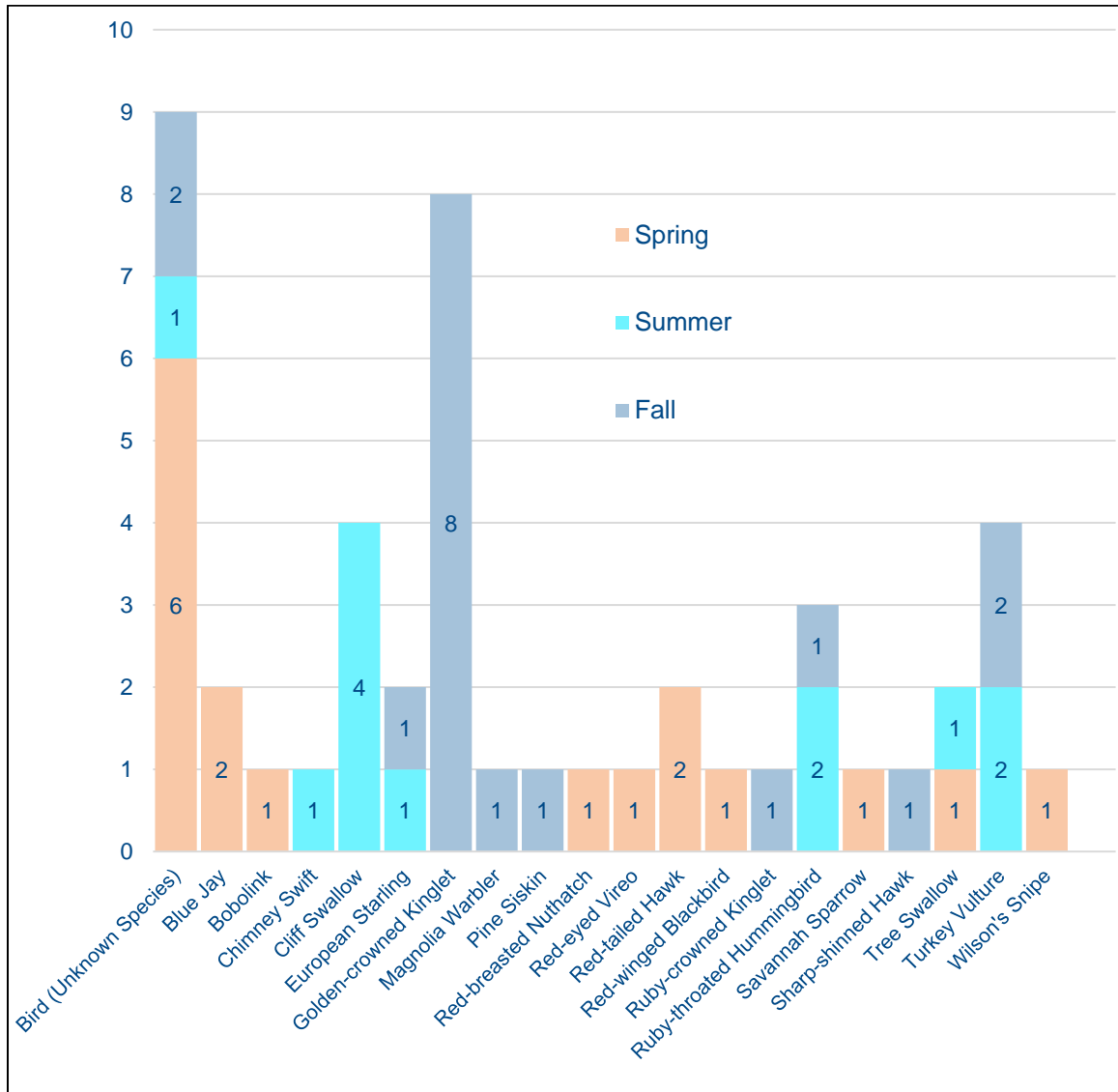
$$SE_{Fall} = (0.520 * 1.000) = 0.520$$

#### 4.3 Avian and Raptor Mortality Results

The following section discusses avian mortality findings by season and month, as well as by species' groups, and provides the corrected mortality estimates.

A total of 47 avian carcasses of 19 different species were recorded during the Monitoring Period across the entire Project site (from May 1 to November 30). Nine (9) of the 47 birds were not identifiable to species (e.g., due to advanced level of decomposition, missing body parts, etc.). Thirty-two (32) of the 47 birds were recorded at the sub-sample turbines. Golden-crowned Kinglet was the most common recorded bird species that was identifiable to species, with a total of 8 carcasses found across the entire Project site. Cliff Swallow (*Petrochelidon pyrrhonota*) was the second-most common recorded bird species that was identifiable to species, with a total of 4 carcasses found across the entire Project site. Bird mortalities by season are depicted in Figure 3.

**Figure 3: Number of Bird Mortalities by Species and Season at the Project Site**



Spring monitoring was undertaken in the months of May and June. A total of 9 bird carcasses were located by searchers at the sub-sample turbines, with a corrected total estimate of 2.522 birds per turbine in May and 0.720 birds per turbine in June for the entire Project site. None of these mortalities were raptors. However, at the remaining turbines, two raptors were recorded in May at T-22 and T-43 during the monthly raptor mortality surveys. Both mortalities were identified as Red-tailed Hawk (*Buteo jamaicensis*). Across the entire Project site, a total of 17 avian mortalities were recorded in the spring period (11 in May and 6 in June).

Summer monitoring was undertaken in the months of July and August. A total of 10 bird carcasses were located by searchers at the sub-sample turbines, with a corrected total

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

estimate of 0.913 birds per turbine in July and 2.129 per turbine in August for the entire Project site. Of these mortalities, one was a raptor. This mortality was recorded in August at T-27 and was identified as a Turkey Vulture (*Cathartes aura*). An additional raptor was recorded during the monthly raptor mortality surveys in July at T-9, also identified as a Turkey Vulture. Across the entire Project site, a total of 12 avian mortalities were recorded in the summer period (4 in July and 8 in August).

Fall monitoring was undertaken in the months of September and October. A total of 13 bird carcasses were located by searchers at the sub-sample turbines, with a corrected total estimate of 1.459 birds per turbine in September and 2.335 birds per turbine in October for the entire Project site. Of these mortalities, 2 were raptors. These mortalities were recorded in September at T-16 and T-48 and were both identified as Turkey Vulture. No raptor mortalities were recorded during the monthly raptor mortality surveys. Across the entire Project site, a total of 15 avian mortalities were recorded in the fall period (6 in September and 9 in October). In late September and October, approximately half of all bird species found was Golden-crowned Kinglet (*Regulus satrapa*). These individuals are considered post-breeding migrants. In Ontario, this species is most widely-distributed during the breeding season in the Northern and Southern Shield regions and typically overwinters in the southern United States (Cadman, M.D. et al. 2007).

In November, during targeted raptor mortality surveys, 3 additional avian / raptor mortalities were recorded: European Starling (*Sturnus vulgaris*) at T-17, Golden-crowned Kinglet at T-20, and Sharp-shinned Hawk (*Accipiter striatus*) at T-22. Both the European Starling and the Golden-crowned Kinglet were recorded at the sub-sample turbines, while the Sharp-shinned Hawk was recorded at a turbine that was not part of the sub-sample.

Avian mortalities were recorded in every month of the monitoring program. Based on the calculations outlined in Section 4.3.1 below, the corrected total estimate for birds at the Project site in 2017 (from May 1 to October 31) is **10.08 birds per turbine per year**. This estimate is **below** the provincial threshold of annual bird mortality of 14 birds per turbine per year. Bird mortality thresholds have been established based on the range of bird mortality at wind power projects in Ontario and in comparison with jurisdictions across North America. The annual bird mortality threshold of 14 birds per turbine per year is below the 95<sup>th</sup> percentile of bird mortality rates in Ontario.

A total of 7 raptor carcasses (hawks / vultures) of 3 different species were recorded across the Project site between May and November: 2 Red-tailed Hawk, 1 Sharp-shinned Hawk and 4 Turkey Vulture. Raptor mortalities were only recorded at the sub-sample turbines in August and September. A total of 1 raptor carcass was located by searchers at the sub-sample turbines in August and 2 raptor carcasses were located by

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

searchers at the sub-sample turbines in September, with a corrected total estimate of 0.30 raptors per turbine in August and 0.58 raptors per turbine in September for the entire Project site. Therefore, the corrected total estimate for all raptors at the Project site in 2017 (from May 1 to November 30) is **0.89 raptors per turbine per year**. This estimate is **above** the provincial threshold of annual raptor mortality of 0.2 raptors per turbine per year (all raptors). Given that there were no provincially tracked raptors<sup>1</sup> found during the monitoring program, raptor mortalities did not exceed the threshold of 0.1 raptors per turbine per year for provincially tracked raptors.

Raptor mortalities at the remaining turbines are not to be added to the sample survey mortality estimate calculations. According to the Guidelines, the purpose of the raptor mortality surveys is to identify any individual or groups of turbines that may exceed the significant mortality threshold. A significant bird mortality event is defined to have occurred when bird mortality during a single mortality monitoring survey exceeds:

- 10 or more birds at any one turbine; or,
- 33 or more birds (including raptors) at multiple turbines.

There were no single mortality events recorded during the monitoring period for birds or raptors. The highest number of birds recorded at any one turbine during a single mortality monitoring survey was 2, and the highest number of birds (including raptors) recorded at multiple turbines was 3.

#### 4.3.1 Corrected (Estimated) Bird Mortality Calculations

$$C_{turbine} = \frac{C_{turbine}}{(SE_{season} * SC_{season} * P_{s-season})}$$

$$C_{month} = \frac{\sum C_{turbine}}{n_{turbine}}$$

$$C_{total} = \sum C_{month}$$

Where,

$C_{turbine}$	Corrected (estimated) monthly mortality rate for a specific turbine (# mortalities/month)
$C_{month}$	Corrected (estimated) monthly mortality rate for all turbines (# mortalities/month/turbine)
$C_{total}$	Corrected (Estimated) mortality rate per year (# mortalities/year/turbine)
$SE_{season}$	Calculated seasonal searcher efficiency
$SC_{season}$	Calculated seasonal scavenger rate
$P_s$	Proportion of total area searched at a turbine for a given season

<sup>1</sup> Provincially tracked raptors include Bald Eagle, Golden Eagle, Rough-legged Hawk, and Peregrine Falcon.

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

**Table 5: Proportion of Total Area Searched at the Sub-Sample Turbines**

Month	Total Searched Area (m <sup>2</sup> )	Total Search Radius (m <sup>2</sup> )	Proportion of Area Searched (P <sub>s</sub> )
Spring (May/June)	92,534.14	94,247.64	0.982
Summer (July/August)	77,537.64	94,247.64	0.823
Fall (September/October)	77,237.64	94,247.64	0.820

**Table 6: Actual Observed Mortalities of All Avian Species (Total) at the Sub-Sample Turbines**

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48	Total
May	0	0	1	1	0	1	1	0	0	1	2	0	7
Jun	0	0	1	0	0	0	0	0	0	0	1	0	2
Jul	1	0	0	0	0	0	0	0	0	2	0	0	3
Aug	0	0	0	1	0	1	1	1	0	2	0	1	7
Sep	2	0	1	0	1	0	0	0	0	0	0	1	5
Oct	1	1	0	0	1	0	0	1	1	2	0	1	8
Total	32												

**Table 7: Actual Observed Mortalities (Raptors Only) at the Sub-Sample Turbines**

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48	Total
May	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	1	0	0	0	0	0	1
Sep	0	0	1	0	0	0	0	0	0	0	0	1	2
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0



Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48	Total
Total	3												

**Table 8: Corrected (Estimated) Bird Mortality Rate for All Samples in a Given Month (Total)**

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48
May	0.000	0.000	4.323	4.323	0.000	4.323	4.323	0.000	0.000	4.323	8.645	0.000
Jun	0.000	0.000	4.323	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.323	0.000
Jul	3.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.301	0.000	0.000
Aug	0.000	0.000	0.000	3.650	0.000	3.650	3.650	3.650	0.000	7.301	0.000	3.650
Sep	7.005	0.000	3.502	0.000	3.502	0.000	0.000	0.000	0.000	0.000	0.000	3.502
Oct	3.502	3.502	0.000	0.000	3.502	0.000	0.000	3.502	3.502	7.005	0.000	3.502

**Table 9: Corrected (Estimated) Bird Mortality Rate for All Samples in a Given Month (Raptor)**

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	3.650	0.000	0.000	0.000	0.000	0.000
Sep	0.000	0.000	3.502	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.502
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

May (Spring) – 7 observed mortalities:

$$C_{May (total)} = \frac{(4.323 + 4.323 + 4.323 + 4.323 + 4.323 + 8.645)}{12} = 2.522 \frac{\text{mortalities}}{\text{turbine * month}}$$

June (Spring) – 2 observed mortalities:

$$C_{June (total)} = \frac{(4.323 + 4.323)}{12} = 0.720 \frac{\text{mortalities}}{\text{turbine * month}}$$

July (Summer) – 3 observed mortalities:

$$C_{July (total)} = \frac{(3.650 + 7.301)}{12} = 0.913 \frac{\text{mortalities}}{\text{turbine * month}}$$

August (Summer) – 7 observed mortalities, 1 observed raptor mortality:

$$C_{August (total)} = \frac{(3.650 + 3.650 + 3.650 + 3.650 + 7.301 + 3.650)}{12} \\ = 2.129 \frac{\text{mortalities}}{\text{turbine * month}}$$

$$C_{August (raptor)} = \frac{(3.650)}{12} = 0.304 \frac{\text{raptor mortalities}}{\text{turbine * month}}$$

September (Fall) – 5 observed mortalities, 2 observed raptor mortalities:

$$C_{September (total)} = \frac{(7.005 + 3.502 + 3.502 + 3.502)}{12} = 1.459 \frac{\text{mortalities}}{\text{turbine * month}}$$

$$C_{September (raptor)} = \frac{(3.502 + 3.502)}{12} = 0.584 \frac{\text{raptor mortalities}}{\text{turbine * month}}$$

October (Fall) – 8 observed mortalities:

$$C_{October (total)} = \frac{(3.502 + 3.502 + 3.502 + 3.502 + 3.502 + 7.005 + 3.502)}{12} \\ = 2.335 \frac{\text{mortalities}}{\text{turbine * month}}$$

**Total Avian Mortality Rates:**

$$C_{avian} = (2.522 + 0.720 + 0.913 + 2.129 + 1.459 + 2.335) = 10.08 \frac{\text{avian mortalities}}{\text{turbine * year}}$$

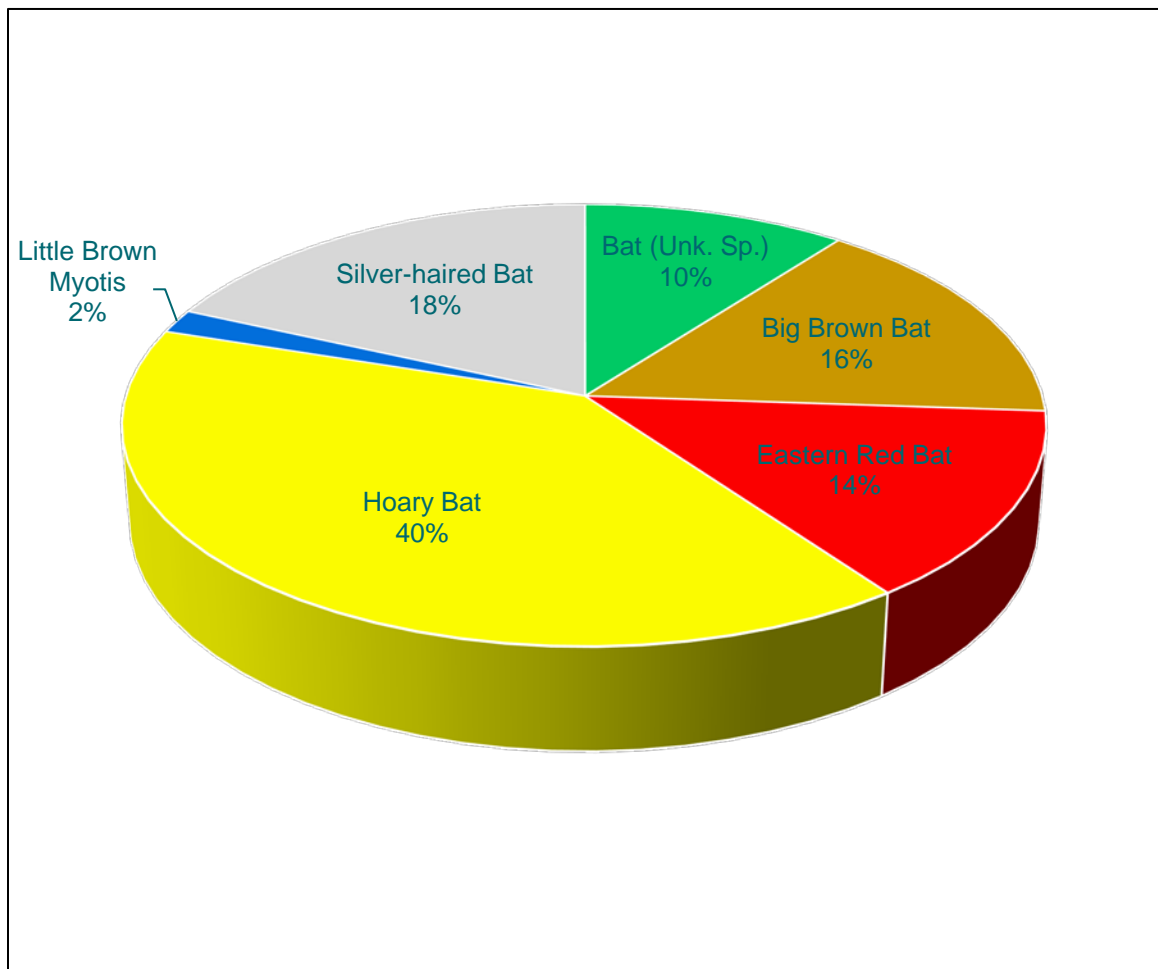
$$C_{raptor} = (0.304 + 0.584) = 0.89 \frac{\text{raptor mortalities}}{\text{turbine * year}}$$

#### 4.4 Bat Mortality Results

##### 4.4.1 Species Composition

A total of 5 different species of bats were recorded at the Project site. Hoary Bat represented the most common bat species recorded and represented 40% of all bat carcasses; Silver-haired Bat was the second-most common bat species and represented 19% of all bat carcasses recorded. Big Brown Bat and Eastern Red Bat represented 15% and 14% of all bat carcasses recorded, respectively. Little Brown Myotis represented the least common bat species and represented 2% of all bat carcasses recorded. An additional 10% of bat species recorded were not identified to species due to advanced stage of decomposition of carcass or missing body parts required for identifying to bat species (i.e., tragus, forearm). See Figure 4 below.

**Figure 4: Species Composition of Bat Mortalities by Percent at the Project Site**



Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

It is important to note that it can be challenging to distinguish between some of the *Myotis* species and Big Brown Bat based on physical characteristics alone. Burnside consulted with Dr. Brock Fenton on several occasions during the monitoring program to assist with bat identification. Dr. Fenton is a well-known bat expert from the Department of Biology at Western University in Windsor, Ontario. According to Dr. Fenton, if the forearm is over 39 mm then the bat is likely not Little Brown Bat and most likely Big Brown Bat. Additionally, the faces of these two species are distinctly different. Therefore, when the identification of a “brown” bat was in question, the forearm was measured and the tragus (if visible) was examined and photographed. The length of the forearm and features of the tragus were used to distinguish between the two species.

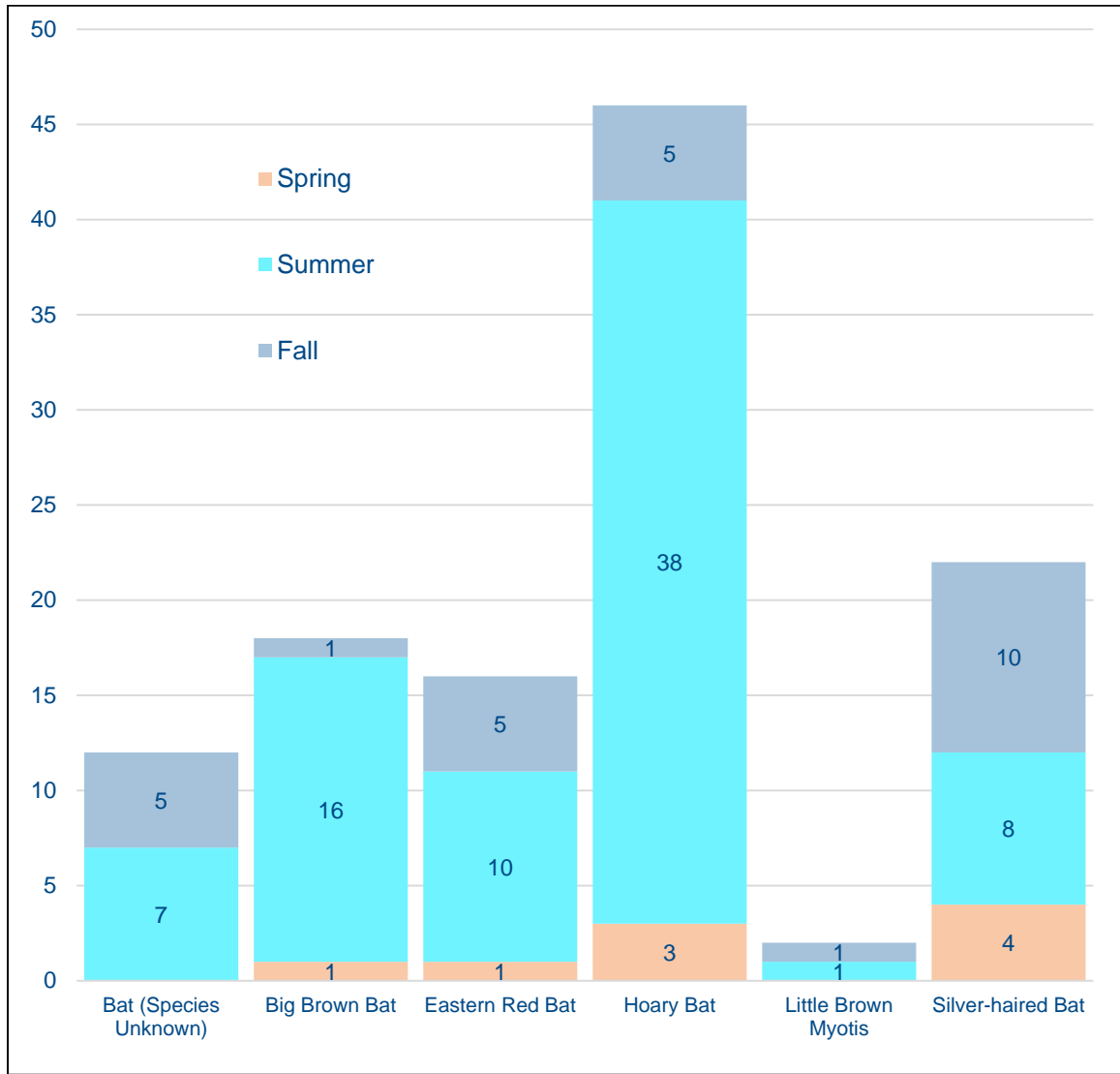
According to Dr. Christina Davy (Wildlife Research Scientist, Species at Risk, MNRF Peterborough) it is also difficult to distinguish between Little Brown Myotis and Northern Myotis from degraded carcasses. While none of the carcasses were identified as Northern Myotis, Dr. Davy and her research team collected the bat samples we had remaining in the freezer at the end of the monitoring program (which they subsequently returned for use in future trials at the Project site). Species identification is being confirmed genetically by MNRF and Trent University geneticists. The results of these tests will be shared as soon as they become available. Should the results differ from the bat species identification provided in this report, this report will be updated and MNRF will be notified of the changes.

#### **4.4.2 Mortalities by Date**

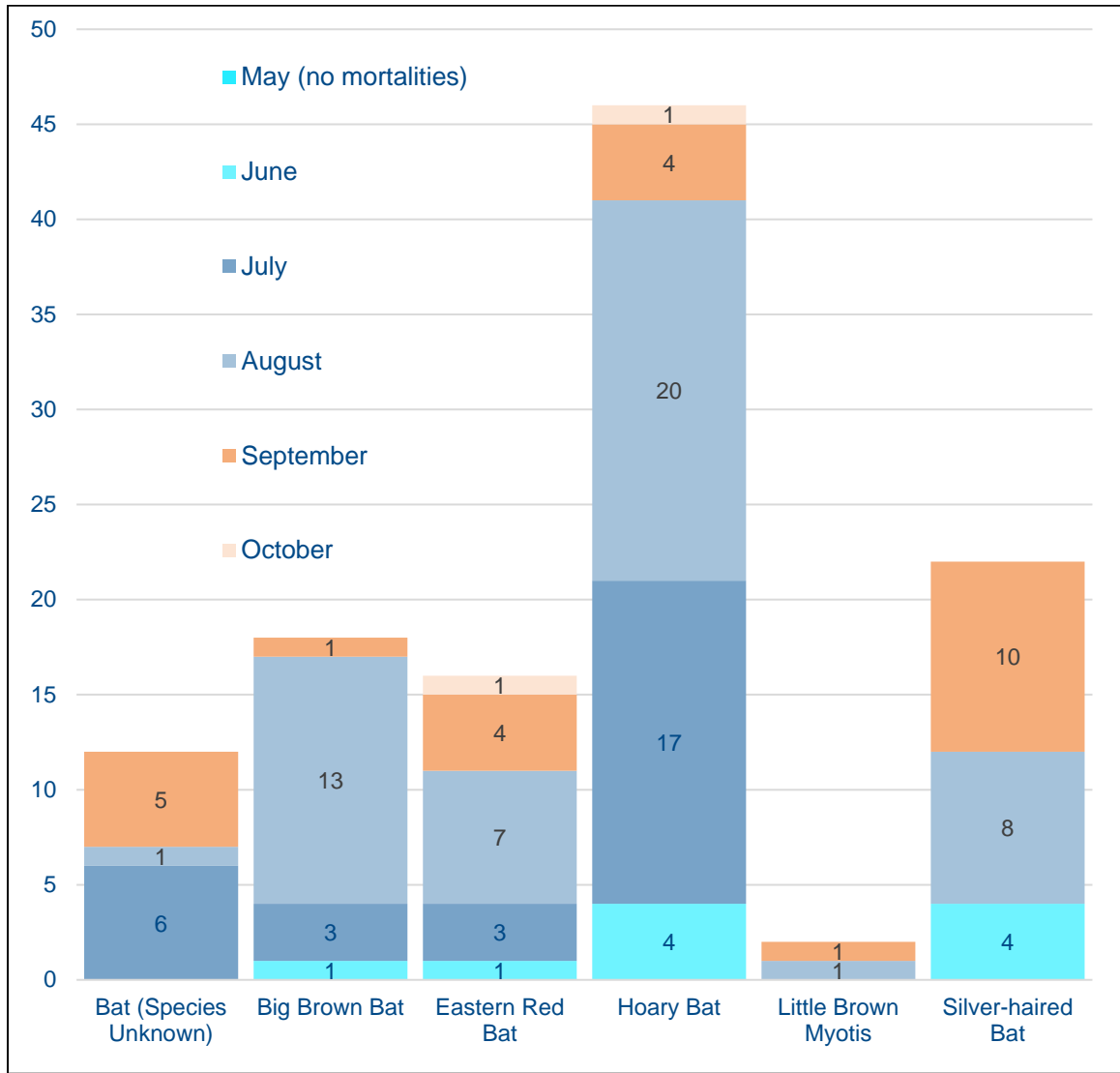
As shown in Figure 5 and Figure 6, the majority of bat mortalities occurred in the summer period, which corresponds to the active period for Ontario bats when they are rearing and feeding young (Environment Canada 2015). Out of a total of 116 bat mortalities recorded across the entire Project site, 80 were recorded in the summer period. The spring and fall period had significantly lower mortality rates, with 9 and 27 bat mortalities recorded, respectively.

According to the Guidelines, the majority of bat mortalities from wind turbine operations occur during fall migration. Across North America, it is estimated that 90% of bat fatalities occur from mid-July through September (July 2011). In 2017, the highest number of bat mortalities recorded across the Project site at all turbines occurred in July (30 mortalities), August (50 mortalities) and September (25 mortalities).

**Figure 5: Number of Bat Mortalities by Species and Season at the Project Site**



**Figure 6: Number of Bat Mortalities by Species and Month at the Project Site**



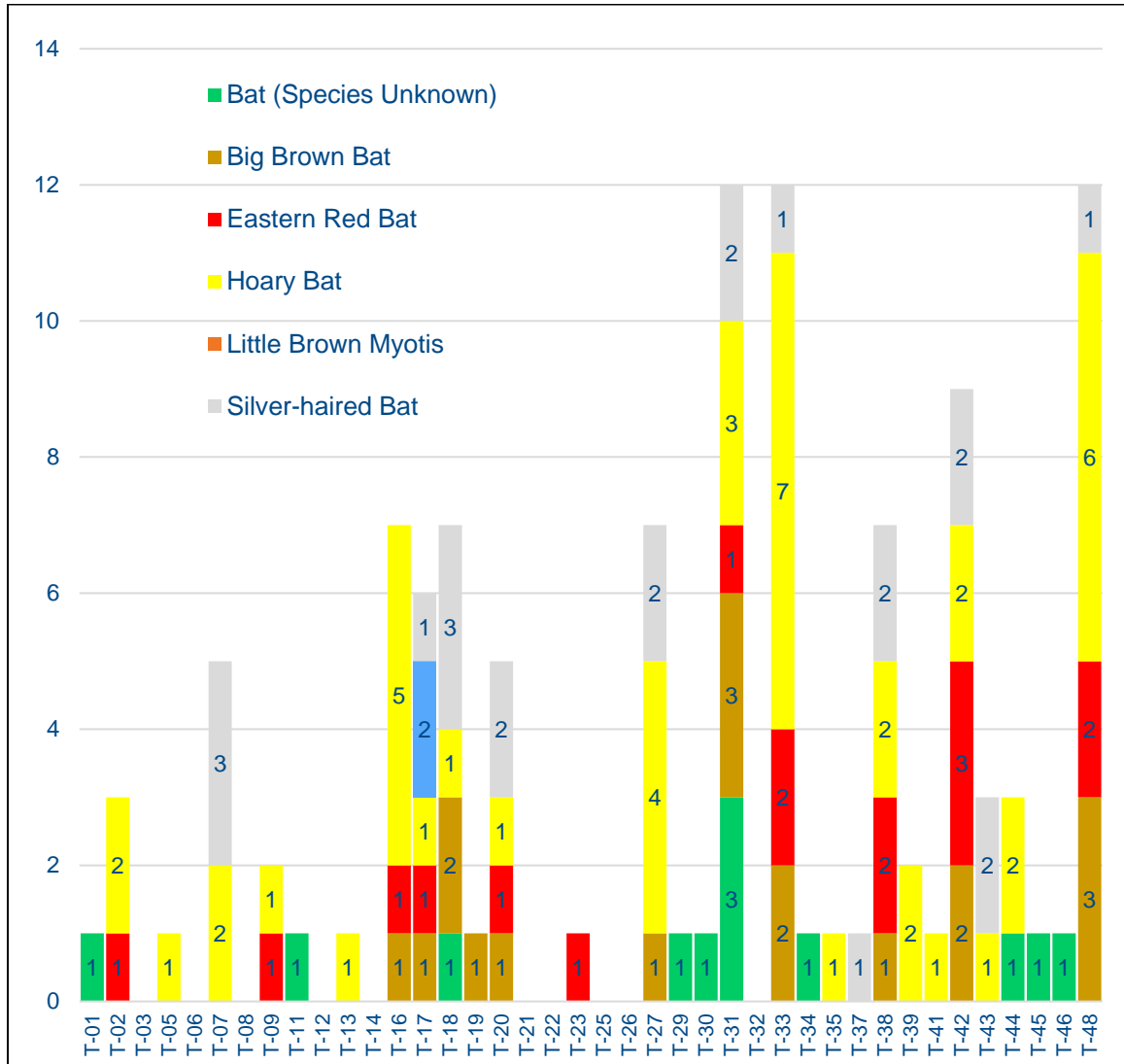
#### 4.4.3 Spatial Distribution

Bat mortalities were recorded at 30 of the 40 turbines monitored during bi-weekly and monthly raptor monitoring. The turbines where bat mortalities were not recorded were: T-3, T-6, T-8, T-12, T-14, T-21, T-22, T-25, T-26, and T-32. These 10 turbines were not part of the sub-sample, and therefore were only monitored monthly for raptors. It is expected that carcasses would be found in lower numbers at turbines not regularly monitored (e.g., scavengers, decomposition). Of the other 18 turbines where bat mortalities were recorded during the monthly raptor mortality surveys, the highest number of bats recorded was 3. Turbines monitored as part of the sub-sample naturally had higher numbers of bat mortalities recorded due to the survey frequency at these sites, with a range between 3 and 12 bats recorded. Figure 7 shows the spatial distribution of bat mortalities by species and turbine.

T-31, T-33 and T-48 each had 12 recorded bat mortalities, ranking them as having the highest occurrence of bat mortalities during the sub-sample monitoring program. T-42 had the second-highest recorded number of bat mortalities with 9 bats. T-16, T-18, T-27, T-38 each had 7 recorded bat mortalities, ranking them as equally having the third highest number of bat mortalities during the sub-sample monitoring program.

Hoary Bat was found at 20 of the 31 turbines where bat mortalities were recorded. This indicates a fairly even distribution of this species across the Project site. Silver-haired Bat and Big Brown Bat were found at 12 of the 31 turbines. Eastern Red Bat was found at 11 of the 31 turbines. Records of these 4 species of bats, including “bat species unknown,” revealed an even distribution of these species across the Project site. The exception was for Little Brown Myotis, where only 2 records for this species occurred at T-17. Many of the turbines where more than 4 bats were recorded had more than 3 different bat species found.

**Figure 7: Spatial Distribution of Bat Mortalities by Species and Turbine at the Project Site**





Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

#### 4.4.4 Corrected (Estimated) Bat Mortality Calculations

Spring monitoring was undertaken in the months of May and June. A total of 7 bat carcasses were located by searchers at the sub-sample turbines, with a corrected total estimate of 0.00 bats per turbine in May and 2.52 bats per turbine in June for the entire Project site (no bat mortalities were recorded in May across the entire Project site). An additional 2 bats were recorded in the spring during the monthly raptor mortality surveys..

Summer monitoring was undertaken in the months of July and August. A total of 66 bat carcasses were located by searchers at the sub-sample turbines, with a corrected total estimate of 7.00 bats per turbine in July and 13.08 bats per turbine in August for the entire Project site. An additional 14 bats were recorded in the summer during the monthly raptor mortality surveys.

Fall monitoring was undertaken in the months of September and October. A total of 18 bat carcasses were located by searchers at the sub-sample turbines, with a corrected total estimate of 4.96 bats per turbine in September and 0.292 bats per turbine in October for the entire Project site. An additional 9 bats were recorded in the fall during the monthly raptor mortality surveys.

Bat mortalities were recorded in every month of the monitoring program except May and November. Based on the calculations outlined below, the corrected total estimated mortality rate for bats at the Project site in 2017 (from May 1 to October 31) is **27.85 bats per turbine per year**. This estimate is **above** the annual bat mortality threshold of 10 bats per turbine per year, averaged across the Project site. This threshold has been determined based on bat mortality reported at wind power projects in Ontario and comparison with jurisdictions across North America.

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

**Table 10: Proportion of Total Area Searched at the Sub-Sample Turbines**

Month	Total Searched Area (m <sup>2</sup> )	Total Search Radius (m <sup>2</sup> )	Proportion of Area Searched (P <sub>s</sub> )
Spring (May/June)	92,534.14	94,247.64	0.982
Summer (July/August)	77,537.64	94,247.64	0.823
Fall (September/October)	77,237.64	94,247.64	0.820

**Table 11: Actual Observed Bat Mortalities**

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48	Total
May	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	2	0	0	0	0	1	0	0	1	2	1	7
Jul	0	0	0	0	1	0	4	7	4	2	1	4	23
Aug	1	2	6	3	3	4	2	2	6	3	5	6	43
Sep	2	1	0	3	3	1	0	3	1	1	1	1	17
Oct	0	0	0	0	0	0	0	0	1	0	0	0	1

**Table 12: Corrected (Estimated) Bat Mortality Rate for All Samples in a Given Month**

Turbine	T2	T7	T16	T17	T18	T20	T27	T31	T33	T38	T42	T48
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun	0.000	8.645	0.000	0.000	0.000	0.000	4.323	0.000	0.000	4.323	8.645	4.323
Jul	0.000	0.000	0.000	0.000	3.650	0.000	14.602	25.553	14.602	7.301	3.650	14.602
Aug	3.650	7.301	21.902	10.951	10.951	14.602	7.301	7.301	21.902	10.951	18.252	21.902
Sep	7.005	3.502	0.000	10.507	10.507	3.502	0.000	10.507	3.502	3.502	3.502	3.502
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.502	0.000	0.000	0.000

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

May (Spring) 0 observed mortalities

$$C_{May} = \frac{(0)}{12} = 0 \frac{\text{mortalities}}{\text{turbine} * \text{month}}$$

June (Spring) 7 observed mortalities

$$C_{June} = \frac{(8.645 + 4.323 + 4.323 + 8.645 + 4.323)}{12} = 2.522 \frac{\text{mortalities}}{\text{turbine} * \text{month}}$$

July (Summer) 23 observed mortalities

$$\begin{aligned} C_{July} &= \frac{(3.650 + 14.602 + 25.553 + 14.602 + 7.301 + 3.650 + 14.602)}{12} \\ &= 7.000 \frac{\text{mortalities}}{\text{turbine} * \text{month}} \end{aligned}$$

August (Summer) 43 observed mortalities

$$\begin{aligned} C_{August} &= \frac{(3.650 + 7.301 + 21.902 + 10.951 + 10.951 + 14.602 + 7.301 + 7.301 + \\ &\quad 21.902 + 10.951 + 18.252 + 21.902)}{12} \\ &= 13.081 \frac{\text{mortalities}}{\text{turbine} * \text{month}} \end{aligned}$$

September (Fall) 17 observed mortalities

$$\begin{aligned} C_{September} &= \frac{(7.005 + 3.502 + 10.507 + 10.507 + 3.502 + 10.507 + 3.502 + 3.502 + 3.502 + 3.502)}{12} \\ &= 4.962 \frac{\text{mortalities}}{\text{turbine} * \text{month}} \end{aligned}$$

October (Fall) 1 observed mortality

$$C_{October} = \frac{(3.502)}{12} = 0.292 \frac{\text{mortalities}}{\text{turbine} * \text{month}}$$

#### Total Bat Mortality Rates

$$C_{bat} = (2.834 + 6.119 + 11.512 + 4.341 + 0.261) = 27.85 \frac{\text{bat mortalities}}{\text{turbine} * \text{year}}$$

#### 4.5 Identification of Provincially Significant Species

The following avian species listed as Threatened under the *Endangered Species Act* (ESA, 2007) were recorded as mortalities during the 2017 monitoring program:

- One Bobolink (*Dolichonyx oryzivorus*) (Threatened) at T-22 on June 21; and,

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

- One Chimney Swift (*Chaetura pelagica*) (Threatened) at T-38 on August 27.

Male Bobolink have a distinctive courtship aerial display during the breeding season to attract potential mates (McCracken, J.D. et al. 2013). The mortality occurred during the peak breeding season, and surrounding agricultural fields may be suitable nesting habitat for this species. Given that only one Bobolink was ever recorded, the mortality does not seem to indicate that a significant nesting site for Bobolink is present in proximity to the turbine.

Chimney Swift are aerial insectivores and spend most of their time foraging for insects in the air (Cadman, M.D. et al. 2007). There are no known Chimney Swift nesting or roosting sites in proximity to T-38. Given the time of year (late summer), the single mortality was likely an incidental strike of a post-breeding fall migrant.

The following bat species listed as Endangered under the ESA were recorded as mortalities during the 2017 monitoring program:

- Two Little Brown Myotis (Endangered) at T-17.

Little Brown Myotis are known to roost in treed habitats and forage for insects in open areas in close proximity to these roosting sites (Environment Canada. 2015). T-17 is within 200 m of treed woodlots where it is likely this species is roosting. These two individuals were likely foraging in the open fields where T-17 is located, adjacent to roosting sites.

As per the requirements listed in Item 11 of the MNR Wildlife Scientific Collector's Authorization #1086557, any observations of a SAR species must be reported to the MNR Guelph District Office. These mortalities were reported to MNR on the following dates via email ([esa.guelph@ontario.ca](mailto:esa.guelph@ontario.ca)): June 26, August 15, August 30, and September 6, 2017.

As noted in Section 4.4, bat species identification is being confirmed genetically by MNR and Trent University geneticists. The results of these tests will be shared as soon as they become available. Should the results differ from the bat species identification provided in this report, this report will be updated and MNR will be notified of the changes, including changes to the number of SAR bat mortalities.

## 5.0 Summary and Conclusions

Of the 40 turbines at the Project site, 34 turbines had recorded mortalities (see Figure 8 below). The 6 turbines with no recorded mortalities were: T-3, T-12, T-14, T-25, T-26, and T-32. These 6 turbines were not part of the sub-sample, and therefore were only monitored once per month for raptors. It is expected that carcasses would be found in

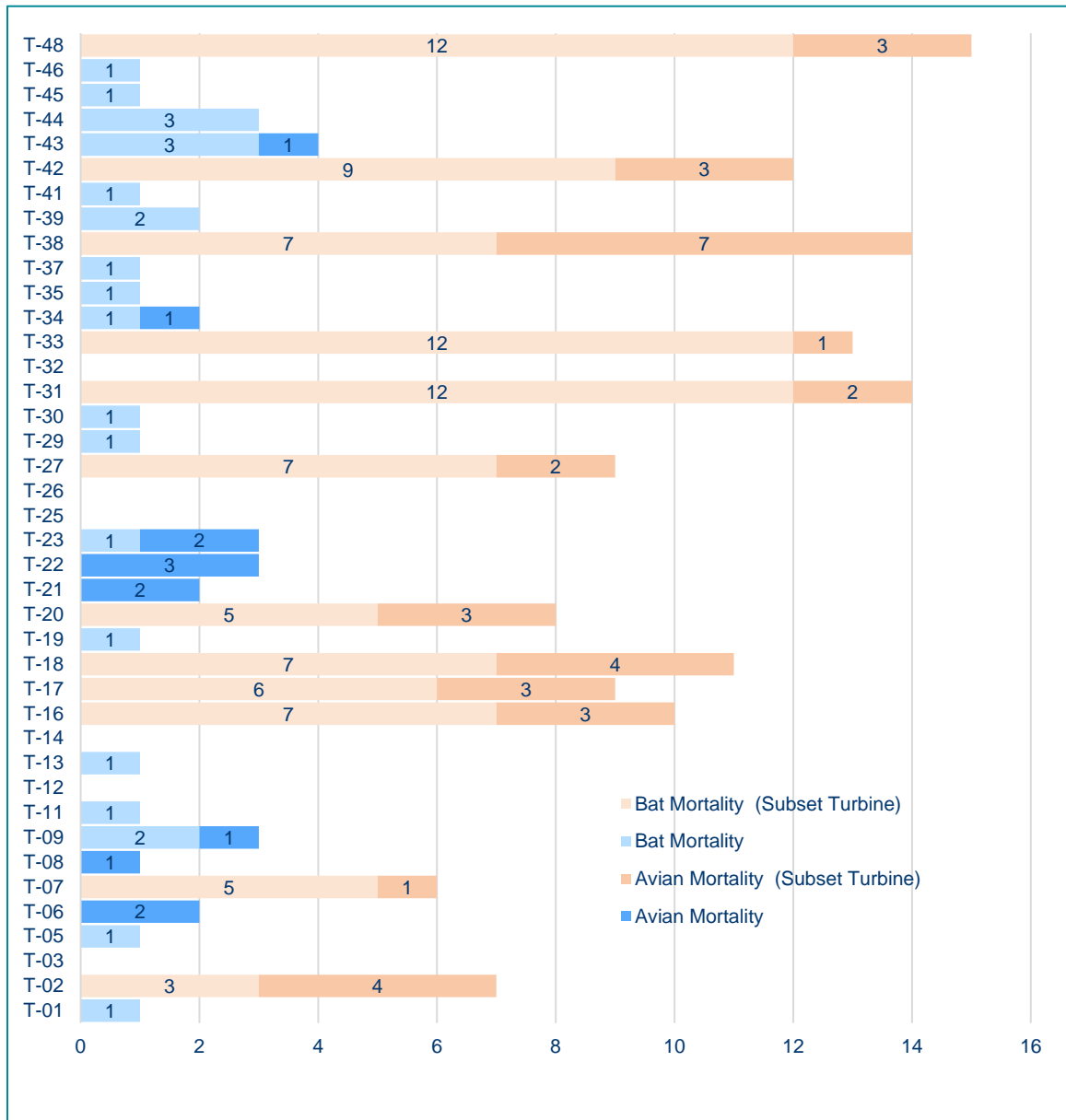
Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

lower numbers at turbines not regularly monitored (e.g., scavengers, decomposition). Of the other 34 turbines where avian and bat mortalities were recorded, the following turbines had 10 or more mortalities recorded:

- T-48: 15 mortalities;
- T-31 and T-38: both 14 mortalities;
- T-33: 13 mortalities;
- T-42: 12 mortalities; and,
- T-16: 10 mortalities.

These turbines were all part of the sub-sample monitoring. Turbines monitored as part of the sub-sample naturally had higher numbers of bird and bat mortalities recorded due to the frequency of the surveys at these sites. However, the fact that certain turbines in the sub-sample had higher mortality rates than others in the sub-sample may indicate that certain geographic locations where turbines are situated may contribute to higher or lower mortality rates, as discussed below.

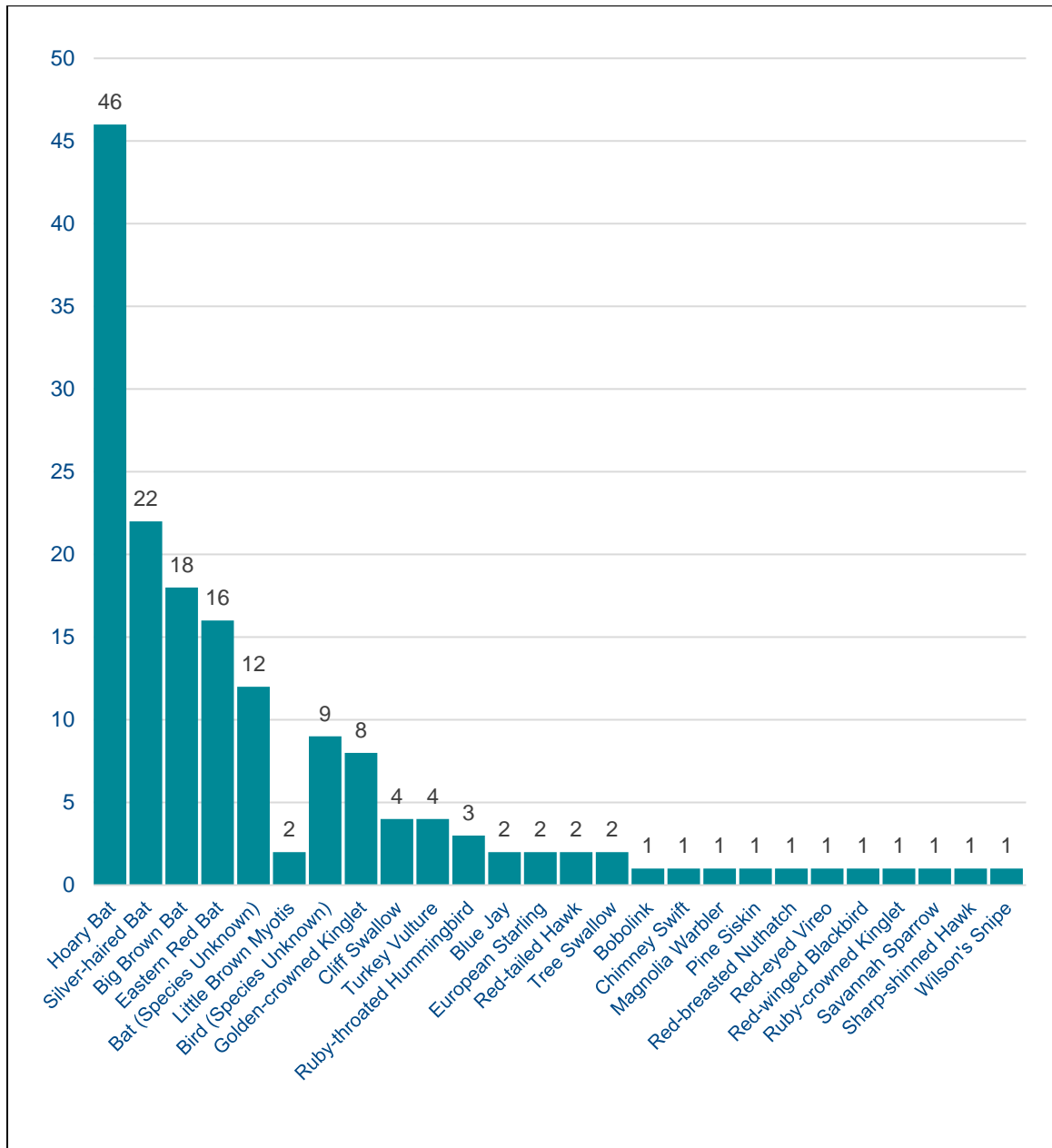
**Figure 8: Total Recorded Number of Avian and Bat Mortalities at the Project Site**



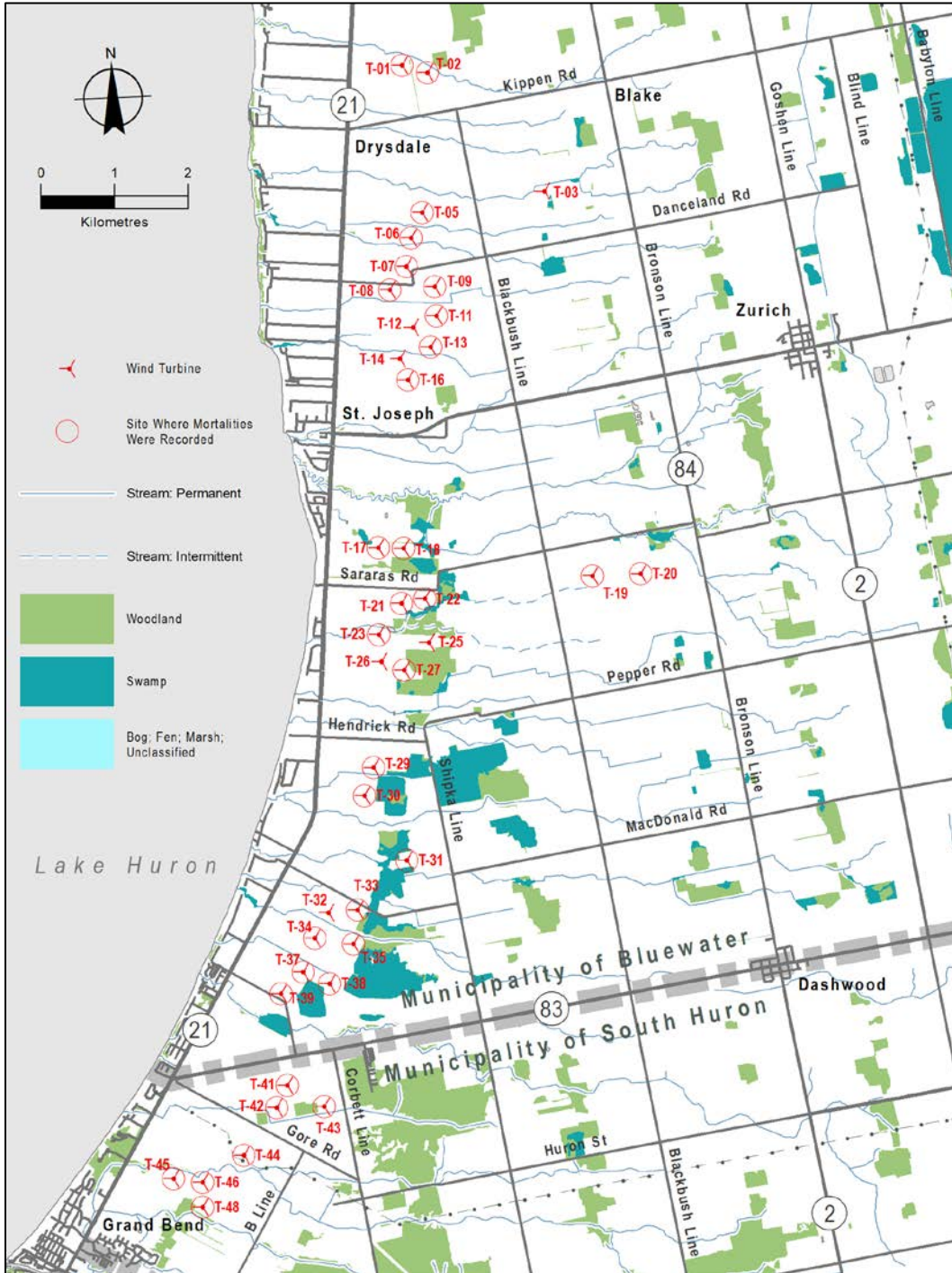
Turbines with the highest bird and bat mortalities (combined) correspond with turbines that also had high bat mortalities. The exception is T-38 that had an equal number of both bird and bat mortalities. The overall trend appears to be that higher rates of mortalities occurred in the central and southern portion of the Project site (i.e., T-17 to T-39). See Figure 9 below. This appears to correspond with proximity to woodland and treed (swamp) wetland habitats that, while still fragmented, are more contiguous and are larger in size when compared with the north end of the Project site. Wooded / wetland habitats in proximity to turbines located north of County Road 84 (i.e., T-1 to T-16) are

much sparser, fragmented without any linkages and smaller in size. Higher rates of mortalities occurred at the very southern end of the project (T-41 to T-48) where wooded / wetland habitats are sparser. See Figure 10 below.

**Figure 9: Total Number of Mortalities by Species at the Project Site**



**Figure 10: Proximity of Turbines to Surrounding Natural Heritage Features at the Project Site**





Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

- A total of 47 avian species were recorded during the monitoring period across the entire Project site (from May 1 to November 30). Out of these, 43 (91%) were recorded at the sub-sample turbines.
- The corrected total estimate for birds at the Project site in 2017 (from May 1 to October 31) is 10.08 birds per turbine per year. This estimate is *below* the provincial threshold of annual bird mortality of 14 birds per turbine per year.
- The corrected total estimate for all raptors at the Project site in 2017 (from May 1 to November 30) is 0.89 raptors per turbine per year. This estimate is *above* the provincial threshold of annual raptor mortality of 0.2 raptors per turbine per year (all raptors). Given that there were no provincially tracked raptors found during the monitoring program (i.e., Bald Eagle, Golden Eagle, Rough-legged Hawk, Peregrine Falcon), raptor mortalities did not exceed the threshold of 0.1 raptors per turbine per year for provincially tracked raptors.
- There were no single mortality events recorded during the monitoring period for birds or raptors. The highest number of birds recorded at any one turbine during a single mortality monitoring survey was 2, and the highest number of birds (including raptors) recorded at multiple turbines was 3.
- Bat mortalities were recorded in every month of the monitoring program except May and November. Based on the calculations outlined below, the corrected total estimated mortality rate for bats at the Project site in 2017 (from May 1 to October 31) is 27.85 bats per turbine per year. This estimate is *above* the annual bat mortality threshold of 10 bats per turbine per year, averaged across the Project site.
- A total of 5 different species of bats were recorded at the Project site. Hoary Bat represented the most common bat species recorded and represented 40% of all bat carcasses; Silver-haired Bat was the second-most common bat species and represented 19% of all bat carcasses recorded. Big Brown Bat and Eastern Red Bat represented 15% and 14% of all bat carcasses recorded, respectively. Little Brown Myotis represented the least common bat species and represented 2% of all bat carcasses recorded. An additional 10% of bat species recorded were not identified to species due to advanced stage of decomposition of carcass or missing body parts required for identifying to bat species (i.e., tragus, forearm).
- Portions of the sampling methodology for Year 1 were modified from the Guidelines for various reasons, including the use of dogs during carcass searches and variability in searcher trial frequency. We have fully explored the extent of error that these modifications may have had on mortality analyses, and have established confidence in the validity of our 2017 results from a mortality threshold perspective. In subsequent monitoring years, the protocol and searcher direction will be modified to reduce error and increase confidence in SE values to the highest possible extent.

Grand Bend Wind Farm Post-Construction Monitoring Report – Year 1  
February 2018 (Revised May 2018)

## 6.0 References

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- Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.
- McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 88 pp.
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- Ministry of Municipal Affairs and Housing (MMAH). 2014. Provincial Policy Statement, 2014. Provincial Planning Policy Branch. Toronto: Queen's Printer for Ontario.
- Ministry of Natural Resources and Forestry (MNR). 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151p. + appendices.
- Neegan Burnside Limited. February 2013. Natural Heritage Environmental Effects Monitoring Plan. 24p.



BURNSIDE

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## Appendix A

### Approvals and Permits

**RENEWABLE ENERGY APPROVAL**NUMBER 5186-9HBJXR  
Issue Date: June 26, 2014

Grand Bend Wind GP Inc. as general partner for and on  
behalf of Grand Bend Wind Limited Partnership  
30 St. Clair Avenue West, Unit 1700  
Toronto, Ontario  
M4V 3A1

Project: Grand Bend Wind Farm  
Location: Generally bound by Lake Huron to west, Main Street/Grand  
Bend Line to the south, Bronson Line to east, Staffa Road  
to north, and a transmission line along Sararas Road,  
Rodgerville Road, and Road 183.  
Municipality of Bluewater, Municipality of South Huron,  
Municipality of Huron East, Municipality of West Perth,  
Huron County, and Perth County

*You have applied in accordance with Section 47.4 of the Environmental Protection Act for approval to engage in a renewable energy project in respect of a Class 4 wind facility consisting of the following:*

- the construction, installation, operation, use and retiring of a Class 4 wind facility with a total name plate capacity of 100 megawatts.

*For the purpose of this renewable energy approval, the following definitions apply:*

1. "Acoustic Assessment Report" means the report included in the Application and entitled "Grand Bend Wind Farm - Environmental Noise Impact Assessment Report", dated April 15, 2014 and signed by Michael Medal and Payam Ashtiani, Aercoustics Engineering Limited;
2. "Acoustic Audit - Emission" means an investigative procedure that is compliant with the CAN/CSA Standard C61400-11-07 and consisting of measurements and/or acoustic modelling of noise emissions produced by wind turbine generators, assessed to determine compliance with the manufacturer's noise (acoustic) equipment specifications and emission data of the wind turbine generators, included in the Acoustic Assessment Report;

3. "Acoustic Audit - Immission" means an investigative procedure consisting of measurements and/or acoustic modelling of all sources of noise emissions due to the operation of the Equipment, assessed to determine compliance with the Noise Performance Limits set out in this Approval;
4. "Acoustic Audit Report-Emission" means a report presenting the results of the Acoustic Audit - Emission;
5. "Acoustic Audit Report-Immission" means a report presenting the results of the Acoustic Audit - Immission;
6. "Acoustic Audit - Transformer Substation/Transformer and Reactor" means an investigative procedure that is compliant with the IEEE Standard C57.12.90 consisting of measurements and/or acoustic modelling of all noise sources comprising the transformer substation/transformer and reactor, assessed to determine compliance with the Sound Power Level specification of the transformer substation described in the Acoustic Assessment Report.
7. "Acoustic Audit Report - Transformer Substation/Transformer and Reactor" means a report presenting the results of the Acoustic Audit - Transformer Substation/Transformer and Reactor.
8. "Acoustical Consultant" means a person currently active in the field of environmental acoustics and noise/vibration control, who is knowledgeable about Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from wind facilities;
9. "Act" means the *Environmental Protection Act*, R.S.O 1990, c.E.19, as amended;
10. "Adverse Effect" has the same meaning as in the Act;
11. "Application" means the application for a Renewable Energy Approval dated February 5, 2013, and signed by John Brace, President and CEO, Grand Bend Wind GP Inc., and all supporting documentation submitted with the application, including amended documentation submitted up to the date this Approval is issued;
12. "Approval" means this Renewable Energy Approval issued in accordance with Section 47.4 of the Act, including any schedules to it;
13. "A-weighting" means the frequency weighting characteristic as specified in the International Electrotechnical Commission (IEC) Standard 61672, and intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches) of sound. It is denoted as "A";
14. "A-weighted Sound Pressure Level" means the Sound Pressure Level modified by application of an A-weighting network. It is measured in decibels, A-weighted, and denoted "dBA";
15. CAN/CSA Standard C61400-11-07, "Wind Turbine Generator Systems – Part 11: Acoustic Noise Measurement Techniques", dated October 2007;

16. "Class 1 Area" means an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum";
17. "Class 2 Area" means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas:
  1. sound levels characteristic of Class 1 during daytime (07:00 to 19:00 or to 23:00 hours);
  2. low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours);
  3. no clearly audible sound from stationary sources other than from those under impact assessment.
18. "Class 3 Area" means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:
  1. a small community with less than 1000 population;
  2. agricultural area;
  3. a rural recreational area such as a cottage or a resort area; or
  4. a wilderness area.
19. "Company" means Grand Bend Wind GP Inc., as general partner for and on behalf of Grand Bend Wind Limited Partnership, the partnership under the laws of Ontario, and includes its successors and assignees;
20. "Compliance Protocol for Wind Turbine Noise" means the Ministry document entitled, Compliance Protocol for Wind Turbine Noise, Guideline for Acoustic Assessment and Measurement, PIBS# 8540e;
21. "Decibel" means a dimensionless measure of Sound Level or Sound Pressure Level, denoted as dB;
22. "Director" means a person appointed in writing by the Minister of the Environment pursuant to section 5 of the Act as a Director for the purposes of section 47.5 of the Act;
23. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Facility is geographically located;
24. "Equipment" means the wind turbine generators and the substation with transformer and reactor, identified in this Approval and as further described in the Application, to the extent approved by this Approval;

25. "Equivalent Sound Level" is the value of the constant sound level which would result in exposure to the same total A-weighted energy as would the specified time-varying sound, if the constant sound level persisted over an equal time interval. It is denoted  $L_{eq}$  and is measured in dB A-weighting (dBA);
26. "Facility" means the renewable energy generation facility, including the Equipment, as described in this Approval and as further described in the Application, to the extent approved by this Approval;
27. "IEEE Standard C57.12.90" means the IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers, 2010.
28. "Independent Acoustical Consultant" means an Acoustical Consultant who is not representing the Company and was not involved in preparing the Acoustic Assessment Report. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment;
29. "Ministry" means the ministry of the government of Ontario responsible for the Act and includes all officials, employees or other persons acting on its behalf;
30. "Noise Guidelines for Wind Farms" means the Ministry document entitled, "Noise Guidelines for Wind Farms - Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities", dated October 2008;
31. "Noise Receptor" has the same meaning as in O. Reg. 359/09;
32. "Publication NPC-233" means Ministry Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October 1995;
33. "O. Reg. 359/09" means Ontario Regulation 359/09 "Renewable Energy Approvals under Part V.0.1 of the Act" made under the Act;
34. "Point of Reception" has the same meaning as in the Noise Guidelines for Wind Farms and is subject to the same qualifications described in that document;
35. "Sound Level" means the A-weighted Sound Pressure Level;
36. "Sound Level Limit" is the limiting value described in terms of the one hour A-weighted Equivalent Sound Level  $L_{eq}$  ;
37. "Sound Power Level" means ten times the logarithm to the base of 10 of the ratio of the sound power (Watts) of a noise source to standard reference power of  $10^{-12}$  Watts;
38. "Sound Pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given location. The unit of measurement is the micro pascal ( $\mu$ Pa);

39. "Sound Pressure Level" means twenty times the logarithm to the base 10 of the ratio of the effective pressure ( $\mu\text{Pa}$ ) of a sound to the reference pressure of  $20 \mu\text{Pa}$ ;
40. "UTM" means Universal Transverse Mercator coordinate system.

*You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:*

## **TERMS AND CONDITIONS**

### **A – GENERAL**

- A1. The Company shall construct, install, use, operate, maintain and retire the Facility in accordance with the terms and conditions of this Approval and the Application and in accordance with the following schedules attached hereto:

Schedule A - Facility Description

Schedule B - Coordinates of the Equipment and Noise Specifications

- A2. Where there is a conflict between a provision of this Approval and any document submitted by the Company, the conditions in this Approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Company, the document bearing the most recent date shall take precedence.
- A3. The Company shall ensure a copy of this Approval is:
- (1) accessible, at all times, by Company staff operating the Facility and;
  - (2) submitted to the clerk of each local municipality and upper-tier municipality in which the Facility is situated.
- A4. If the Company has a publicly accessible website, the Company shall ensure that the Approval and the Application are posted on the Company's publicly accessible website within five (5) business days of receiving this Approval.
- A5. The Company shall, at least six (6) months prior to the anticipated retirement date of the entire Facility, or part of the Facility, review its Decommissioning Plan Report to ensure that it is still accurate. If the Company determines that the Facility cannot be decommissioned in accordance with the Decommissioning Plan Report, the Company shall provide the Director and District Manager a written description of plans for the decommissioning of the Facility.
- A6. The Facility shall be retired in accordance with the Decommissioning Plan Report and any directions provided by the Director or District Manager.



- A7. The Company shall provide the District Manager and the Director at least ten (10) days written notice of the following:
- (1) the commencement of any construction or installation activities at the project location; and
  - (2) the commencement of the operation of the Facility.
- A8. As described in Schedule A of the Approval the Company shall not construct or operate more than forty (40) out of the forty eight (48) wind turbine generators, one transformer substation (with transformer and reactor), one switchyard, and one parts and storage building, as specified in Schedules A and B of the Approval;

**B – EXPIRY OF APPROVAL**

- B1. Construction and installation of the Facility must be completed within three (3) years of the later of:
- (1) the date this Approval is issued; or
  - (2) if there is a hearing or other litigation in respect of the issuance of this Approval, the date that this hearing or litigation is disposed of, including all appeals.
- B2. This Approval ceases to apply in respect of any portion of the Facility not constructed or installed before the later of the dates identified in Condition B1.

**C – NOISE PERFORMANCE LIMITS**

- C1. The Company shall ensure that:
- (1) the Sound Levels from the Equipment, at the Points of Reception identified in the Acoustic Assessment Report, comply with the Sound Level Limits set in the Noise Guidelines for Wind Farms, as applicable, and specifically as stated in the table below:

<b>Wind Speed (m/s) at 10 m height</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
Sound Level Limits, dBA	40.0	40.0	40.0	43.0	45.0	49.0	51.0

- (2) the Equipment is constructed and installed at either of the following locations:
  - a) at the locations identified in Schedule B of this Approval; or
  - b) at a location that does not vary by more than 10 metres from the locations identified in Schedule B of this Approval and provided that,
    - i) the Equipment will comply with Condition C1 (1); and
    - ii) all setback prohibitions established under O. Reg. 359/09 are complied with.

- (3) the Equipment complies with the noise specifications set out in Schedule B of this Approval.
- C2. Prior to construction and installation of the transformer substation the Company shall submit to the Director a written confirmation signed by an individual who has the authority to bind the Company that the subject transformer and the reactor sound power levels, determined fully in accordance with the IEEE Standard C57.12.90-2010, do not exceed the maximum sound power levels specified in the Schedule B of the Approval. The written confirmation also must include detailed electrical ratings (including MVA and kV) for the transformer and the reactor.
- C3. If the Company determines that some or all of the Equipment cannot be constructed in accordance with Condition C1 (2), prior to the construction and installation of the Equipment in question, the Company shall apply to the Director for an amendment to the terms and conditions of the Approval.
- C4. Within three (3) months of the completion of the construction of the Facility, the Company shall submit to the Director a written confirmation signed by an individual who has the authority to bind the Company that the UTM coordinates of the "as constructed" Equipment comply with the requirements of Condition C1 (2).

#### **D – CONFIRMATION OF VACANT LOT NOISE RECEPTORS**

- D1. The four hundred and fifty eight (458) vacant lots location identified in the Table entitled "Grand Bend Wind Farm - Noise Impact Summary Table - Vacant Lots" from the final revised "Grand Bend Wind Farm - Environmental Noise Impact Assessment Report for the ", as the Non-Participating Vacant Lots with ID numbers VL1-VL458 are specified as Noise Receptors for the purposes of subsection 54 (1.1) of O. Reg. 359/09 and subsection 35 (1.01) of O. Reg. 359/09.

#### **E – ACOUSTIC AUDIT - IMMISSION**

- E1. The Company shall carry out an Acoustic Audit - Immission of the Sound Levels produced by the operation of the Equipment in accordance with the following:
- (1) the acoustic audit measurements shall be undertaken in accordance with Part D of the Compliance Protocol for Wind Turbine Noise;
  - (2) the acoustic audit measurements shall be performed by an Independent Acoustical Consultant on two (2) separate occasions at five (5) different Points of Reception;
  - (3) the Points of Reception shall be selected using the following criteria, subject to the constraints imposed by the location of the Points of Reception with respect to the location of the Equipment:
    - a) the selected Point(s) of Reception should represent the location of the greatest predicted noise impacts, i.e., the highest predicted Sound Levels; and
    - b) the selected Point(s) of Reception should be located in the direction of prevailing winds from the Facility.

- E2. The Company shall submit to the District Manager and the Director an Acoustic Audit Report-Immission, prepared by an Independent Acoustical Consultant, at the following points in time:
- (1) no later than twelve (12) months after the commencement of the operation of the Facility for the first of the two (2) acoustic audit measurements at the five (5) Points of Reception; and
  - (2) no later than eighteen (18) months after the commencement of the operation of the Facility for the second of the two (2) acoustic audit measurements at the five (5) Points of Reception.
- E3. The Company shall carry out an Acoustic Audit - Transformer Substation/Transformer and Reactor and shall submit to the District Manager and the Director an Acoustic Audit Report – Transformer Substation/Transformer and Reactor prepared by an Independent Acoustical Consultant, in accordance with the IEEE Standard C57.12.90 and Ministry Publication NPC-233 and no later than six (6) months after the commencement of the operation of the Facility.
- E.4. In addition to the requirements described in Condition E.3, the Acoustic Audit - Transformer Substation/Transformer and Reactor must include a compliance summary of the measurement results and the transformer and reactor sound data contained in Attachment D of the Acoustic Assessment Report. The following items must be included in the compliance summary:
- (1) transformer sound power levels (overall level and frequency spectra in octave bands);
  - (2) reactor sound power levels (overall level and frequency spectra in octave bands); and
  - (3) statements that the transformer and the reactor sound power levels do not exceed the maximum sound power levels specified in the Schedule B of the Approval.

## **F – ACOUSTIC AUDIT- EMISSION**

- F1. The Company shall carry out an Acoustic Audit - Emission of the acoustic emissions produced by the operation of the wind turbine generators in accordance with the following:
- (1) the acoustic emission measurements of the wind turbine generators shall be undertaken in accordance with the CAN/CSA Standard C61400-11-07;
  - (2) the acoustic emission measurements shall be performed by an Independent Acoustical Consultant; and
  - (3) the acoustic emission measurements shall be performed on two (2) wind turbine generators used in the Facility.
- F2. The Company shall submit to the District Manager and the Director an Acoustic Audit Report-Emission, prepared in accordance with Section 9 of the CAN/CSA Standard C61400-11-07 by an Independent Acoustical Consultant, no later than six (6) months after the commencement of the operation of the Facility.

- F3. In addition to the requirements described in Condition F2, the Acoustic Audit Report-Emission must include a summary of the measurement results corresponding to guarantee letter dated April 7, 2014 from the wind turbine generators manufacturer's (contained in the Attachment A of the Acoustic Assessment Report). The purpose of the summary is to show compliance with the guarantee letter. The following items must be included in the compliance summary:
- (1) sound power levels (overall levels and frequency spectra in octave bands for each wind speed) of the wind turbine generators;
  - (2) tonal audibility values (for each wind speed) of the wind turbine generators;
  - (3) statement that the wind turbine generators sound power levels, as per Condition F3(1), do not exceed the maximum sound power level specified in the Schedule B of the Approval; and
  - (4) statement that the wind turbine generators tonal audibility values, as per Condition F3(2), comply with the maximum tonal audibility value of 3.0 dB.

## **G – STORMWATER MANAGEMENT**

- G1. The Company shall employ best management practices for stormwater management and sediment and erosion control during construction, installation, use, operation, maintenance and retiring of the Facility, as described in the Application.
- G2. Sedimentation and erosion control measures, including, but not limited to, straw bales, silt fence barriers, sand bags, turbidity curtains and/or rock check dams, shall be installed at the site of all construction activities during the construction phase, and remain until the site has been stabilized. The sedimentation and erosion control measures shall be sufficient to control the volumes of surface runoff. Continuous care shall be taken to properly maintain the sedimentation and erosion control devices.
- G3. During the construction and decommissioning phases, monitoring and recording of on-site conditions (including erosion and sediment control measures) shall occur, at minimum:
- (1) weekly during active construction periods;
  - (2) daily during extended rain or snowmelt periods.

## **H – WATER TAKING ACTIVITIES**

- H1. The Company shall not take more than 50,000 litres of water on any day by any means during the construction, installation, use, operation, maintenance and retiring of the Facility.
- H2. Notwithstanding Condition H1, the Company is authorized to take, via diversion of flow, from the sources, for the duration, and at the rates and amounts of taking specified in the following table. Water taken upstream of each source at the culvert work site shall be returned directly downstream of the site with no impoundment of water.

Source	Crossing ID	Maximum Rate of Taking (m3/s)	Maximum number of days of taking	Maximum Volume of Taking (m3/day)
Hay B (North Crossing)	CR-031	0.025	10	21,600
Hay B (South Crossing)	CR-032	0.017	13	19,094
Saint Joseph Drain South	CR-041	0.036	12	37,325
Hay E	CR-023	0.003	10	2,592
Kading Drain	CR-018	0.083	20	143,424

- H3. For water taking for the purpose of watercourse diversion during the installation of the six new culverts, on each day water is taken, the Company shall record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter, or estimated based on the rate and duration of pumping. The Company shall keep all records required by this condition current and available at or near the site of the taking, and shall make these records available for review by the Ministry upon request.
- H4. The Company shall ensure that any water discharged to the natural environment does not result in scouring, erosion or physical alteration of stream channels or banks and that there is no flooding in the receiving area or water body, downstream water bodies, ditches or properties caused or worsened by this discharge.
- H5. The Company shall not discharge turbid water to any watercourse. Turbid water shall be defined as any discharge water or diverted water with a maximum increase of 5 NTUs above the receiving watercourse background levels.

## I – ACCIDENTAL SPILLS

- I1. The Company shall ensure that all equipment used at the site is well maintained, clean and free of leaks. Maintenance on construction equipment such as refuelling, oil changes or lubrication shall only be permitted in designated areas located at a minimum 30 metres from any water feature, and all precautions shall be made to prevent oil, grease, antifreeze or other materials from entering the ground or surface water flow.
- I2. The Company shall ensure that adequate spill clean-up equipment and/or supplies are available at the site for fuel, oil and lubricant spills, and that all on-site operators are familiar with the use of such equipment and/or supplies.

## **J – SURFACE WATER**

- J1. Directional drilling entry points and receiving pits shall be located at a minimum distance of 15 metres from the top of bank of any watercourses, unless the 15 metre setback would require construction activities to take place outside the Project Location, or outside the shoulder of public roads. In the event that the 15 metre setback can not be achieved within the Project Location or in the shoulder of public roads, the Company shall implement additional site-specific erosion and sediment control measures including contingency measures to avoid impacts to watercourses.
- J2. The Company shall undertake, as necessary, any other proposed mitigation measures for the water bodies described in the Water Assessment and Water Body Report, dated February 2013, prepared by Neegan Burnside Ltd.

## **K – SEWAGE WORKS OF THE TRANSFORMER SUBSTATION SPILL CONTAINMENT FACILITY**

- K1. The Company shall design and construct a transformer substation oil spill containment facility which meets the following requirements:
- (1) the spill containment facility serving the transformer substation shall have a minimum volume equal to the volume of transformer oil and lubricants plus the volume equivalent to providing a minimum 24-hour duration, 50-year return storm capacity for the stormwater drainage area around the transformer under normal operating conditions. This containment area shall have:
    - (a) an impervious floor with walls usually of reinforced concrete or impervious plastic liners, sloped toward an outlet / oil control device, allowing for a freeboard of 0.25 metres terminating approximately 0.30 metres above grade to prevent external stormwater flows from entering the facility. The facility shall have a minimum of 300mm layer of crushed stoned (19mm to 38mm in diameter) within, all as needed in accordance to site specific conditions and final design parameters; or
    - (b) a permeable floor with impervious plastic walls and around the transformer pad; equipped with subsurface drainage with a minimum 50mm diameter drain installed on a sand layer sloped toward an outlet for sample collection purposes; designed with an oil absorbent material on floor and walls, and allowing for a freeboard of 0.25 metres terminating approximately 0.30 metres above grade to prevent external stormwater flows from entering the facility. The facility's berm shall be designed as needed in accordance to site specific conditions and the facility shall have a minimum 300mm layer of crushed stoned (19mm to 38mm in diameter) on top of the system, as needed in accordance to site specific conditions and final design parameters.
  - (2) the spill containment facility shall be equipped with an oil detection system; it also shall have a minimum of two (2) PVC pipes (or equivalent material) 50mm diameter to allow for visual inspection of water accumulation. One pipe has to be installed half way from the transformer pad to the vehicle access route;

- (3) the spill containment facility shall have appropriate sewage appurtenances as necessary, such as but not limited to: sump, oil/grit separator, pumpout manhole, level controllers, floating oil sensors, etc., that allows for batch discharges or direct discharges and for proper implementation of the monitoring program described under Condition K4; and
- (4) the Company shall have a qualified person on-site during construction to ensure that the system is installed in accordance with the approved design and specifications.

K2. The Company shall:

- (1) within six (6) months after the completion of the construction of the transformer substation spill containment facility, provide to the District Manager an engineering report and as-built design drawings of the sewage works for the spill containment facility and any stormwater management works required for it, signed and stamped by an independent Professional Engineer licensed in Ontario and competent in electrical and environmental engineering. The engineering report shall include the following:
  - (a) as-built drawings of the sewage works for the spill containment facility and any stormwater management works required for it;
  - (b) a written report signed by a qualified person confirming the following:
    - (i) on-site supervision during construction
    - (ii) in case of a permeable floor systems: type of oil absorbent material used (for mineral-based transformer oil or vegetable-based transformer oil, make and material's specifications)
    - (ii) use of stormwater best management practices applied to prevent external surface water runoff from entering the spill containment facility, and
    - (iv) confirm adequacy of the installation in accordance with specifications.
  - (c) confirmation of the adequacy of the operating procedures and the emergency procedures manuals as it pertains to the installed sewage works.
  - (d) procedures to provide emergency response to the site in the form of pumping and clean-up equipment within 24 hours after an emergency has been identified. Such response shall be provided even under adverse weather conditions to prevent further danger of material loss to the environment.
- (2) as a minimum, the Company shall check the oil detection systems on a monthly basis and create a written record of the inspections;
- (3) ensure that the effluent is essentially free of floating and settle-able solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters;

- (4) immediately identify and clean-up all losses of oil from the transformer;
- (5) upon identification of oil in the spill containment facility, take immediate action to prevent the further occurrence of such loss;
- (6) ensure that equipment and material for the containment, clean-up and disposal of oil and materials contaminated with oil are kept within easy access and in good repair for immediate use in the event of:
  - (a) loss of oil from the transformer,
  - (b) a spill within the meaning of Part X of the Act, or
  - (c) the identification of an abnormal amount of oil in the effluent.
- (7) in the event of finding water accumulation in the PVC pipes at the time of inspection, as per Condition K4, the Company shall: (a) for impervious floors, inspect the sewage appurtenances that allow drainage of the concrete pit; or (b) for permeable systems, replace the oil absorbent material to ensure integrity of the system performance and design objectives.
- (8) for permeable floor systems, the Company shall only use the type of oil specified in the design, i.e. mineral-based transformer oil or vegetable-based transformer oil. If a change is planned to modify the type of oil, the Company shall also change the type of the oil absorbent material and obtain approval from the Director to amend this Approval before any modification is implemented.

K3. The Company shall design, construct and operate the sewage works such that the concentration of the effluent parameter named in the table below does not exceed the maximum Concentration Objective shown for that parameter in the effluent, and shall comply with the following requirements:

<b>Effluent Parameters</b>	<b>Maximum Concentration Objective</b>
Oil and Grease	15mg/L

- (1) notify the District Manager as soon as reasonably possible of any exceedance of the maximum concentration objective set out in the table above;
- (2) take immediate action to identify the cause of the exceedance; and
- (3) take immediate action to prevent further exceedances.

K4. Upon commencement of the operation of the Facility, the Company shall establish and carry out the following monitoring program for the sewage works:

- (1) the Company shall collect and analyze the required set of samples at the sampling points listed in the table below in accordance with the measurement frequency and sample type specified for the effluent parameter, oil and grease, and create a written record of the monitoring:



<b>Effluent Parameters</b>	<b>Measurement Frequency and Sample Points</b>	<b>Sample Type</b>
Oil and Grease	Quarterly, i.e. four times over a year, relatively evenly spaced having a minimum two (2) of these samples taken within 48 hours after a 10mm rainfall event.	Grab

- (2) in the event of an exceedance of the maximum concentration objective set out in the table in Condition K3, the Company shall:
  - (a) increase the frequency of sampling to once per month, for each month that effluent discharge occurs, and
  - (b) provide the District Manager, on a monthly basis, with copies of the written record created for the monitoring until the District Manager provides written direction that monthly sampling and reporting is no longer required; and
- (3) if over a period of twenty-four (24) months of effluent monitoring under Condition K4, there are no exceedances of the maximum concentration set out in the table for Concentration Objective, the Company may reduce the measurement frequency of effluent monitoring to a frequency as the District Manager may specify in writing, provided that the new specified frequency is never less than annual.

K5. The Company shall comply with the following methods and protocols for any sampling, analysis and recording undertaken in accordance with Condition K4:

- (1) Ministry of the Environment publication "Protocol for the Sampling and Analysis of Industrial/ Municipal Wastewater", January 1999, as amended from time to time by more recently published editions, and
- (2) the publication "Standard Methods for the Examination of Water and Wastewater", 21st edition, 2005, as amended from time to time by more recently published editions.

## **L – NATURAL HERITAGE**

### **General**

- L1. The Company shall implement the Environmental Effects Monitoring Plan for the Grand Bend Wind Farm, titled Grand Bend Wind Farm Natural Heritage Environmental Effects Monitoring Plan, dated January 2013, and the commitments made in the Grand Bend Wind Farm Natural Heritage Assessment, dated January 2013 prepared by Neegan Burnside Ltd., and included in the application, and which the Company submitted to the Ministry of Natural Resources in order to comply with O. Reg. 359/09.

- L2. If the Company determines that it must deviate from the Environmental Effects Monitoring Plan or the Natural Heritage Assessment, described in Condition L1, the Company shall contact the Director and the Ministry of Natural Resources, prior to making any changes to the Environmental Effects Monitoring Plan or the Natural Heritage Assessment, and follow any directions provided.

### **Post Construction Monitoring - Significant Wildlife Habitat**

- L3. The Company shall implement the post-construction monitoring described in the Environmental Effects Monitoring Plan described in Condition L1, including the following:
- (1) Disturbance Monitoring for Amphibian Breeding Habitat (ABH-001)
  - (2) Disturbance Monitoring for Turtle Nesting Area (TNA-002)

### **Post Construction Monitoring - Birds and Bats**

- L4. The Company shall implement the post-construction bird and bat mortality monitoring described in the Environmental Effects Monitoring Plan, described in Condition L1, at a minimum of 12 of the 40 constructed turbines, selected in consultation with the Ministry of Natural Resources. Turbines 17, 18 and 42 must be included on the list of monitored turbines.

### **Thresholds and Mitigation**

- L5. The Company shall contact the Director and the Ministry of Natural Resources if any of the following bird and bat mortality thresholds, as stated in the Environmental Effects Monitoring Plan for the Grand Bend Wind Farm described in Condition L1, exceeds:
- (1) 10 bats per turbine per year averaged across the Facility;
  - (2) 14 birds per turbine per year at individual turbines or turbine groups;
  - (3) 0.2 raptors per turbine per year (all raptors) across the Facility;
  - (4) 0.1 raptors per turbine per year (provincially tracked raptors) across the Facility;
  - (5) 10 or more birds at any one turbine during a single monitoring survey; or
  - (6) 33 or more birds (including raptors) at multiple turbines during a single monitoring survey.
- L6. If the bat mortality threshold described in Condition L5(1) is exceeded, the Company shall:
- (1) implement operational mitigation measures consistent with those described in the Ministry of Natural Resources publication entitled "*Bats and Bat Habitats: Guidelines for Wind Power Projects* " dated July 2011, or in an amended version of the publication. Such measures shall include some or all of the following:

- i. increase cut-in speed to 5.5 m/s and/or feather wind turbine blades when wind speeds are below 5.5 m/s between sunset and sunrise, from July 15 to September 30 at all turbines;
  - (2) implement an additional three (3) years of effectiveness monitoring.
- L7. If the bat mortality threshold described in Condition L5(1) is exceeded after operational mitigation is implemented in accordance with Condition L6, the Company shall prepare and implement a contingency plan, in consultation with the Director and the Ministry of Natural Resources, to address mitigation actions which shall include additional mitigation and scoped monitoring requirements.
- L8. If any of the bird mortality thresholds described in Conditions L5(2), L5(3), or L5(4) are exceeded for turbines located outside 120m of bird significant wildlife habitat, the Company shall conduct two (2) years of subsequent scoped mortality monitoring and cause and effects monitoring. Following the completion of scoped monitoring, the Company shall implement operational mitigation and effectiveness monitoring at individual turbines as agreed to between the Company, the Director and the Ministry of Natural Resources, for the first three (3) years following the implementation of mitigation.
- L9. If either of the bird mortality thresholds described in Conditions L5(5) or L5(6) are exceeded, the Company shall prepare and implement a contingency plan to address immediate mitigation actions which shall include:
- (1) periodic shut-down of select turbines; or
  - (2) blade feathering at specific times of year; or
  - (3) an alternate plan agreed to between the Company, the Director, and the Ministry of Natural Resources.
- L10. If any of the bird mortality thresholds described in Conditions L5(2), L5(3), or L5(4) are exceeded while monitoring is being implemented in accordance with Conditions L8, or if either of the bird mortality thresholds described in Conditions L5(5) or L5(6) are exceeded after mitigation is implemented in accordance with Condition L9, the Company shall contact the Director and the Ministry of Natural Resources and prepare and implement an appropriate response plan that shall include some or all of the following mitigation measures:
- (1) increased reporting frequency to identify potential threshold exceedance;
  - (2) additional behavioural studies to determine factors affecting mortality rates;
  - (3) periodic shut-down of select turbines;
  - (4) blade feathering at specific times of year; or

- (5) an alternate plan agreed to between the Company, the Director and the Ministry of Natural Resources.

### **Reporting and Review of Results**

- L11. The Company shall report, in writing, the results of the post-construction disturbance monitoring described in Conditions L3, to the Director and the Ministry of Natural Resources for two (2) years on an annual basis and within three (3) months of the end of each calendar year in which the monitoring took place.
- L12. The Company shall report, in writing, bird and bat mortality levels to the Director and the Ministry of Natural Resources for three (3) years on an annual basis and within three (3) months of the conclusion of the November mortality monitoring, with the exception of the following:
- (1) if either of the bird mortality thresholds described in Conditions L5(5) or L5(6) are exceeded, the Company shall report the mortality event to the Director and the Ministry of Natural Resources within 48 hours of observation;
  - (2) for any and all mortality of species at risk (including a species listed on the Species at Risk in Ontario list as Extirpated, Endangered or Threatened under the provincial *Endangered Species Act*, 2007) that occurs, the Company shall report the mortality to the Ministry of Natural Resources within 24 hours of observation or the next business day;
  - (3) if the bat mortality threshold described in Condition L5(1) is exceeded, the Company shall report mortality levels to the Director and the Ministry of Natural Resources for the additional three (3) years of monitoring described in Condition L6, on an annual basis and within three (3) months of the conclusion of the October mortality monitoring for each year;
  - (4) if any of the bird mortality thresholds described in Conditions L5(2), L5(3), or L5(4) are exceeded for turbines located outside 120 m of bird significant wildlife habitat, the Company shall report mortality levels to the Director and the Ministry of Natural Resources for the additional two (2) years of cause and effects monitoring described in Condition L8, on an annual basis and within three (3) months of the conclusion of the November mortality monitoring for each year; and
  - (5) if the Company implements operational mitigation following cause and effects monitoring in accordance with Condition L8, the Company shall report mortality levels to the Director and the Ministry of Natural Resources for the three (3) years of subsequent effectiveness monitoring described in Condition L8, on an annual basis and within three (3) months of the conclusion of the November mortality monitoring for each year.

- L13. The Company shall publish the following documents on the Company's website;
- (1) any modifications to the Environmental Effects Monitoring Plan as described in Condition L2 within ten (10) days of submitting the final plan to the Director and the Ministry of Natural Resources;
  - (2) the results of the post-construction disturbance monitoring as described in Condition L11 within ten (10) days of submitting the final report(s) to the Director and the Ministry of Natural Resources; and
  - (3) annual bird and bat mortality monitoring as described in Condition L12 with the exception of subsection L12(2), within ten (10) days of submitting the final report(s) to the Director and the Ministry of Natural Resources.

## **M – ENVIRONMENT CANADA**

- M1. Prior to operating (turbine blade movement that is feathered in accordance with the manufacturer's specifications is allowed) any of the wind turbines at the Facility, the Company shall, in collaboration with Environment Canada, develop and, enter into the following:
- (1) an Exceptional Weather Event Protocol that ensures that the Exeter Radar Station (Weather Radar) continues to provide accurate and reliable forecasts and weather warnings for high risk weather events;
  - (2) a Follow-up Plan; and
  - (3) an Adaptive Management Strategy.
- M2. Prior to operating (turbine blade movement that is feathered in accordance with the manufacturer's specifications is allowed) any of the wind turbines at the Facility, the Company shall enter into an Agreement Regarding the Implementation of the Follow-up Plan, the Adaptive Management Strategy and the Exceptional Weather Event Protocol (Agreement) with Environment Canada that will set out the details of the commitments and timelines required for the Exceptional Weather Event Protocol, Follow-up Plan, and Adaptive Management Strategy. The Agreement shall include specifics of the financial assurance to be provided by the Company to ensure the implementation of the agreement.
- M3. The day the first wind turbine is operating (turbine blade movement that is feathered in accordance with the manufacturer's specifications is allowed) at the Facility, the Company shall begin implementing its obligations under the Exceptional Weather Event Protocol and Follow-up Plan described in Condition M1.
- M4. As part of the Follow-Up Plan, the Company shall, in collaboration with Environment Canada:
- (1) develop the measureable objectives and decision making criteria for defining the success of the plan;

- (2) provide for the development, and subsequently the implementation, of the data interpolation mitigation measure agreed to by the Company and Environment Canada;
  - (3) verify the accuracy of the predicted adverse impacts to the Weather Radar resulting from the commercial operation of the Facility;
  - (4) assess the effectiveness of the data interpolation measure(s) to mitigate the predicted adverse impacts during the commercial operation of the Facility; and
  - (5) monitor the effectiveness of the Weather Radar in order to determine whether any additional mitigation measures are necessary.
- M5. During the implementation of the Follow-Up Plan, should it be determined based on the Follow-Up Plan that the data interpolation mitigation measure(s) do not adequately mitigate the adverse impacts of the Facility so that the Weather Radar can continue to provide accurate and reliable forecasts and weather warnings in accordance with Environment Canada's mandate, the Company shall, in collaboration with Environment Canada, implement the Adaptive Management Strategy, which shall include the following:
- (1) the design and implementation of additional mitigation measures that are reasonably necessary to mitigate any identified adverse impacts to the Weather Radar; and
  - (2) the monitoring and assessment of the effectiveness of these additional mitigation measures.

## **N – ABORIGINAL CONSULTATION**

- N1. During the construction, installation, operation, use and retiring of the Facility, the Company shall:
- (1) create and maintain written records of any communications with Aboriginal communities; and
  - (2) make the written records available for review by the Ministry upon request.
- N2. The Company shall provide the following to interested Aboriginal communities:
- (1) updated project information, including the results of monitoring activities undertaken and copies of additional archaeological assessment reports that may be prepared; and
  - (2) updates on key steps in the construction, installation, operation, use and retirement phases of the Facility, including notice of the commencement of construction activities at the project location.
- N3. If an Aboriginal community requests a meeting to obtain information relating to the construction, installation, operation, use and retiring of the Facility, the Company shall make reasonable efforts to arrange and participate in such a meeting.

N4. If any archaeological resources of Aboriginal origin are found during the construction of the Facility, the Company shall:

- (1) notify any Aboriginal community considered likely to be interested or which has expressed an interest in such finds; and,
- (2) if a meeting is requested by an Aboriginal community to discuss the archaeological find(s), make reasonable efforts to arrange and participate in such a meeting.

## **O – ARCHAEOLOGICAL RESOURCES**

O1. The Company shall implement all of the recommendations, if any, for further archaeological fieldwork and for the protection of archaeological sites found in the consultant archaeologist's report included in the Application, and which the Company submitted to the Ministry of Tourism, Culture and Sport in order to comply with O. Reg. 359/09.

O2. Should any previously undocumented archaeological resources be discovered, the Company shall:

- (1) cease all alteration of the area in which the resources were discovered immediately;
- (2) engage a consultant archaeologist to carry out the archaeological fieldwork necessary to further assess the area and to either protect and avoid or excavate any sites in the area in accordance with the *Ontario Heritage Act*, the regulations under that act and the Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists*; and
- (3) notify the Director as soon as reasonably possible.

## **P – COMMUNITY LIAISON COMMITTEE**

P1. Within three (3) months of receiving this Approval, the Company shall make reasonable efforts to establish a Community Liaison Committee. The Community Liaison Committee shall be a forum to exchange ideas and share concerns with interested residents and members of the public. The Community Liaison Committee shall be established by:

- (1) publishing a notice in a newspaper with general circulation in each local municipality in which the project location is situated; and
- (2) posting a notice on the Company's publicly accessible website, if the Company has a website;

to notify members of the public about the proposal for a Community Liaison Committee and invite residents living within a one (1) kilometre radius of the Facility that may have an interest in the Facility to participate on the Community Liaison Committee.

- P2. The Company may invite other members of stakeholders to participate in the Community Liaison Committee, including, but not limited to, local municipalities, local conservation authorities, Aboriginal communities, federal or provincial agencies, and local community groups.
- P3. The Community Liaison Committee shall consist of at least one Company representative who shall attend all meetings.
- P4. The purpose of the Community Liaison Committee shall be to:
- (1) act as a liaison facilitating two way communications between the Company and members of the public with respect to issues relating to the construction, installation, use, operation, maintenance and retirement of the Facility;
  - (2) provide a forum for the Company to provide regular updates on, and to discuss issues or concerns relating to, the construction, installation, use, operation, maintenance and retirement of the Facility with members of the public; and
  - (3) ensure that any issues or concerns resulting from the construction, installation, use, operation, maintenance and retirement of the Facility are discussed and communicated to the Company.
- P5. The Community Liaison Committee shall be deemed to be established on the day the Director is provided with written notice from the Company that representative Community Liaison Committee members have been chosen and a date for a first Community Liaison Committee meeting has been set.
- P6. If a Community Liaison Committee has not been established within three (3) months of receiving this Approval, the Company shall provide a written explanation to the Director as to why this has not occurred.
- P7. The Company shall ensure that the Community Liaison Committee operates for a minimum period of two (2) years from the day it is established. During this two (2) year period, the Company shall ensure that the Community Liaison Committee meets a minimum of two (2) times per year. At the end of this two (2) year period, the Company shall contact the Director to discuss the continued operation of the Community Liaison Committee.
- P8. The Company shall ensure that all Community Liaison Committee meetings are open to the general public.
- P9. The Company shall provide administrative support for the Community Liaison Committee including, at a minimum:
- (1) providing a meeting space for Community Liaison Committee meetings;
  - (2) providing access to resources, such as a photocopier, stationery, and office supplies, so that the Community Liaison Committee can:



- a) prepare and distribute meeting notices;
- b) record and distribute minutes of each meeting; and
- c) prepare reports about the Community Liaison Committee's activities.

P10. The Company shall submit any reports of the Community Liaison Committee to the Director and post it on the Company's publicly accessible website, if the Company has a website.

## **Q – OPERATION AND MAINTENANCE**

Q1. Prior to the commencement of the operation of the Facility, the Company shall prepare a written manual for use by Company staff outlining the operating procedures and a maintenance program for the Equipment that includes as a minimum the following:

- (1) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;
- (2) emergency procedures;
- (3) procedures for any record keeping activities relating to operation and maintenance of the Equipment; and
- (4) all appropriate measures to minimize noise emissions from the Equipment.

Q2. The Company shall;

- (1) update, as required, the manual described in Condition Q1; and
- (2) make the manual described in Condition Q1 available for review by the Ministry upon request.

Q3. The Company shall ensure that the Facility is operated and maintained in accordance with the Approval and the manual described in Condition Q1.

## **R – RECORD CREATION AND RETENTION**

R1. The Company shall create written records consisting of the following:

- (1) an operations log summarizing the operation and maintenance activities of the Facility;
- (2) within the operations log, a summary of routine and Ministry inspections of the Facility; and
- (3) a record of any complaint alleging an Adverse Effect caused by the construction, installation, use, operation, maintenance or retirement of the Facility.

- R2. A record described under Condition R1 (3) shall include:
- (1) a description of the complaint that includes as a minimum the following:
    - a) the date and time the complaint was made;
    - b) the name, address and contact information of the person who submitted the complaint;
  - (2) a description of each incident to which the complaint relates that includes as a minimum the following:
    - a) the date and time of each incident;
    - b) the duration of each incident;
    - c) the wind speed and wind direction at the time of each incident;
    - d) the ID of the Equipment involved in each incident and its output at the time of each incident;
    - e) the location of the person who submitted the complaint at the time of each incident; and
  - (3) a description of the measures taken to address the cause of each incident to which the complaint relates and to prevent a similar occurrence in the future.

R3. The Company shall retain, for a minimum of five (5) years from the date of their creation, all records described in Condition R1, and make these records available for review by the Ministry upon request.

## **S – NOTIFICATION OF COMPLAINTS**

- S1. The Company shall notify the District Manager of each complaint within two (2) business days of the receipt of the complaint.
- S2. The Company shall provide the District Manager with the written records created under Condition R2 within eight (8) business days of the receipt of the complaint.

## **T – CHANGE OF OWNERSHIP**

- T1. The Company shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any of the following changes:
- (1) the ownership of the Facility;
  - (2) the operator of the Facility;

- (3) the address of the Company;
- (4) the partners, where the Company is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act*, R.S.O. 1990, c.B.17, as amended, shall be included in the notification; and
- (5) the name of the corporation where the Company is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act*, R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

## **U – TRAFFIC MANAGEMENT PLANNING**

- U1. Within three (3) months of receiving this Approval, the Company shall prepare a Traffic Management Plan and provide it to the Municipality of Bluewater, Municipality of South Huron, Municipality of Huron East, Municipality of West Perth, Huron County, and Perth County.
- U2. Within three (3) months of having provided the Traffic Management Plan to the Municipality of Bluewater, Municipality of South Huron, Municipality of Huron East, Municipality of West Perth, Huron County, and Perth County, the Company shall make reasonable efforts to enter into a Road Users Agreement with the Municipality of Bluewater, Municipality of South Huron, Municipality of Huron East, Municipality of West Perth, Huron County, and Perth County.
- U3. If a Road Users Agreement has not been signed with the Municipality of Bluewater, Municipality of South Huron, Municipality of Huron East, Municipality of West Perth, Huron County, and Perth County within three (3) months of having provided the Traffic Management Plan to the Municipality of Bluewater, Municipality of South Huron, Municipality of Huron East, Municipality of West Perth, Huron County, and Perth County, the Company shall provide a written explanation to the Director as to why this has not occurred.

## **SCHEDULE A**

### **Facility Description**

The Facility shall consist of the construction, installation, operation, use and retiring of the following equipment:

- (a) a total of forty (40) out of forty eight (48) Siemens SWT-3.0-113 wind turbine generators each rated at 2.483 megawatts generating output capacity, as specified in the Acoustic Assessment Report;

with a total name plate capacity of up to approximately 100 megawatts, designated as source ID Nos. T-01 to T-48, each with a hub height of 99.5 metres above grade, and sited at the locations shown in Schedule B;

- (b) one (1) transformer substation including one (1) transformer and one (1) reactor and sited at the location shown in Schedule B;
- (c) one (1) switchyard as shown in Figure 2s of the Project Description Report, dated February 2013, prepared by Neegan Burnside Ltd.
- (d) one (1) parts and storage building as shown in Figure 2e of the Project Description Report, dated February 2013, prepared by Neegan Burnside Ltd.
- (e) associated ancillary equipment, systems and technologies including on-site access roads, underground cabling and underground transmission line,

all in accordance with the Application.

## SCHEDULE B

### Coordinates of the Equipment and Noise Specifications

Coordinates of the Equipment are listed below in UTM, Z17-NAD83 projection:

Table B1: Coordinates and Maximum Sound Power Levels of Wind Turbine Generators and Transformer Substation/Transformer and Reactor

Source ID	Sound Power Level (dBA)	Easting (m)	Northing (m)	Source description
T-01	101.5*	444036	4811878	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-02	101.5*	444376	4811760	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-03	101.5*	445882	4810067	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-04	101.5*	443802	4810148	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-05	101.5*	444206	4809869	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-06	101.5*	444035	4809533	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-07	101.5*	443954	4809148	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-08	101.5*	443718	4808841	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-09	101.5*	444323	4808855	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-10	101.5*	444002	4808745	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-11	101.5*	444330	4808461	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-12	101.5*	444001	4808315	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-13	101.5*	444228	4808041	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-14	101.5*	443802	4807902	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-15	101.5*	444500	4807773	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-16	101.5*	443896	4807611	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-17	101.5*	443377	4805355	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-18	101.5*	443717	4805337	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-19	101.5*	446261	4804829	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-20	101.5*	446913	4804825	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-21	101.5*	443654	4804592	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-22	101.5*	443974	4804635	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-23	101.5*	443320	4804184	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-24	101.5*	443623	4804057	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-25	101.5*	443997	4804036	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-26	101.5*	443339	4803814	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-27	101.5*	443638	4803681	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-28	101.5*	443409	4803439	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-29	101.5*	443154	4802383	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m

Table B1: Coordinates and Maximum Sound Power Levels of Wind Turbine Generators and Transformer Substation/Transformer and Reactor (continued)

Source ID	Sound Power Level (dBA)	Easting (m)	Northing (m)	Source description
T-30	101.5*	443011	4802014	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-31	101.5*	443540	4801110	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-32	101.5*	442448	4800448	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-33	101.5*	442838	4800465	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-34	101.5*	442243	4800119	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-35	101.5*	442757	4800013	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-36	101.5*	442447	4799830	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-37	101.5*	442062	4799669	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-38	101.5*	442409	4799492	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-39	101.5*	441744	4799389	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-40	101.5*	441527	4798742	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-41	101.5*	441764	4798145	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-42	101.5*	441607	4797851	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-43	101.5*	442249	4797830	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-44	101.5*	441123	4797225	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-45	101.5*	440154	4796958	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-46	101.5*	440550	4796892	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-47	101.5*	440850	4796687	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
T-48	101.5*	440529	4796554	Siemens model SWT-3.0-113 Rev. 0, 2.483 MW, hub height 99.5 m
R	100.2**	446784	4804831	Reactor
TS	96.1**	446772	4804794	Transformer

NOTE: \* Wind turbine generators Sound Power Levels reported above are identified in the guarantee letter prepared by Siemens, dated April 7, 2014.  
 \*\* The Sound Power Levels reported above for the Transformer and Reactor include the 5 Decibels (dB) adjustment for tonality as prescribed in Publication NPC-104.

Table B2: Maximum Sound Power Spectrums (dBA and dB Lin) for the transformer and the reactor

Transformer Substation	Octave Band Centre Frequency (Hz)								Overall
	63	125	250	500	1000	2000	4000	8000	
Lw (dBA) for the transformer	72.5	84.6	87.1	92.5	89.7	85.9	80.7	71.6	96.1
Lw (dB) for the transformer	98.7	100.7	95.7	95.7	89.7	84.7	79.7	72.7	105.5
Lw (dBA) for the reactor	70.0	81.0	96.0	98.0	65.0	60.0	55.0	50.0	100.2
Lw (dB) for the reactor	96.2	97.1	104.6	101.2	65.0	58.8	54.0	51.1	107.1

Note: The Transformer and Reactor Sound Power Level values above include the 5 decibel (dB) adjustment for tonality as prescribed in Publication NPC-104.

*The reasons for the imposition of these terms and conditions are as follows:*

1. Conditions A1, A2 and A8 are included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in the manner in which it was described for review and upon which Approval was granted. These conditions are also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.
2. Conditions A3 and A4 are included to require the Company to provide information to the public and the local municipality.
3. Conditions A5 and A6 are included to ensure that final retirement of the Facility is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure long-term protection of the health and safety of the public and the environment.
4. Condition A7 is included to require the Company to inform the Ministry of the commencement of activities related to the construction, installation and operation of the Facility.
5. Condition B is intended to limit the time period of the Approval.
6. Conditions C1 and C2 are included to provide the minimum performance requirement considered necessary to prevent an Adverse Effect resulting from the operation of the Equipment and to ensure that the noise emissions from the Equipment will be in compliance with applicable limits set in the Noise Guidelines for Wind Farms.
7. Conditions C3, C4 and D are included to ensure that the Equipment is constructed, installed, used, operated, maintained and retired in a way that meets the regulatory setback prohibitions set out in O. Reg. 359/09.
8. Conditions E and F are included to require the Company to gather accurate information so that the environmental noise impact and subsequent compliance with the Act, O. Reg. 359/09, the Noise Guidelines for Wind Farms and this Approval can be verified.
9. Conditions G, H, I, J, K, L and U are included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in a way that does not result in an Adverse Effect or hazard to the natural environment or any persons.
10. Condition M is included to ensure that Environment Canada's Exeter Radar Station can continue to be used to provide accurate and reliable forecasts and weather warnings consistent with Environment Canada's mandate.
11. Condition O is included to protect archaeological resources that may be found at the project location.
12. Condition N is included to ensure continued communication between the Company and interested Aboriginal communities.

13. Condition P is included to ensure continued communication between the Company and the local residents.
14. Condition Q is included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the Act, O. Reg. 359/09 and this Approval.
15. Condition R is included to require the Company to keep records and provide information to the Ministry so that compliance with the Act, O. Reg. 359/09 and this Approval can be verified.
16. Condition S is included to ensure that any complaints regarding the construction, installation, use, operation, maintenance or retirement of the Facility are responded to in a timely and efficient manner.
17. Condition T is included to ensure that the Facility is operated under the corporate name which appears on the application form submitted for this Approval and to ensure that the Director is informed of any changes.

## **NOTICE REGARDING HEARINGS**

*In accordance with Section 139 of the Environmental Protection Act, within 15 days after the service of this notice, you may by further written notice served upon the Director, the Environmental Review Tribunal and the Environmental Commissioner, require a hearing by the Tribunal.*

*In accordance with Section 47 of the Environmental Bill of Rights, 1993, the Environmental Commissioner will place notice of your request for a hearing on the Environmental Registry.*

*Section 142 of the Environmental Protection Act provides that the notice requiring the hearing shall state:*

1. The portions of the renewable energy approval or each term or condition in the renewable energy approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*The signed and dated notice requiring the hearing should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The renewable energy approval number;
6. The date of the renewable energy approval;
7. The name of the Director;
8. The municipality or municipalities within which the project is to be engaged in;



*This notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, 15th Floor  
Toronto, Ontario  
M5G 1E5

AND

The Environmental Commissioner  
1075 Bay Street, 6th Floor  
Suite 605  
Toronto, Ontario  
M5S 2B1

AND

The Director  
Section 47.5, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

**\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)**

*Under Section 142.1 of the Environmental Protection Act, residents of Ontario may require a hearing by the Environmental Review Tribunal within 15 days after the day on which notice of this decision is published in the Environmental Registry. By accessing the Environmental Registry at [www.ebr.gov.on.ca](http://www.ebr.gov.on.ca), you can determine when this period ends.*

*Approval for the above noted renewable energy project is issued to you under Section 47.5 of the Environmental Protection Act subject to the terms and conditions outlined above.*

DATED AT TORONTO this 26th day of June, 2014



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Vic Schroter, P.Eng.  
Director  
Section 47.5, *Environmental Protection Act*

NC/  
c: District Manager, MOE Owen Sound  
Gordon Potts, Northland Power Inc.



## **CONFIRMATION OF REGISTRATION**

Form Name: Notice of Activity and Other Notices under the Endangered Species Act, 2007

Date Registration Filed: 04/19/2016

Confirmation ID: M-102-8126759043

Version Number: 001

Update Date:

GRAND BEND WIND GP

30 St Clair AVE W12th Fl  
Toronto, ON M4V3A1

Dear Sir/Madam,

You have registered under Ontario Regulation Reg. 242/08 of the *Endangered Species Act, 2007* and your Notice form has been received by the Ministry of Natural Resources for activities eligible under the following regulatory provision:

Wind Facilities - Operations

located at:

2 Parkside AVE  
Zurich, ON N0M2T0

for the following species:

Barn Owl[Tyto alba]; Barn Swallow[Hirundo rustica]; Bobolink[Dolichonyx oryzivorus]; Eastern Meadowlark[Sturnella magna]; Eastern Whip-poor-will[Antrostomus vociferus]; Least Bittern[Ixobrychus exilis]; Yellow-breasted Chat[Icteria virens]; Little Brown Myotis (Little Brown Bat)[Myotis lucifugus]; Northern Myotis (Northern Long-eared Bat)[Myotis septentrionalis];

You are required to show this Confirmation of Registration upon the request of the Ministry. Please refer to Ontario Regulation 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre  
Ministry of Natural Resources  
300 Water Street  
Peterborough, ON, K9J8M5  
Toll-free: 1-855-613-4256  
E-mail: [mnr.rasc@ontario.ca](mailto:mnr.rasc@ontario.ca)

## Shae Richter

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**From:** Fraser, Sarah (MNRF) <Sarah.Fraser@ontario.ca>  
**Sent:** Thursday, April 13, 2017 1:30 PM  
**To:** Hannah Maciver  
**Cc:** Richardson, Kathy (MNRF); Bonaldo, Michelle (MNRF); Scientific Collection Permits Guelph (MNRF)  
**Subject:** Approval of protocol #399  
**Attachments:** #399A-Wind Farm Mortality.xls

April 13, 2017

Hannah, (R. J. Burnside & Associates Limited)

The OMNRF Wildlife Animal Care Committee has reviewed and approved your protocol: "Grand Bend Wind Farm Post-Construction Monitoring."

Your protocol number for 2017 is #17-399

**The Wildlife Animal Care Committee has implemented a Post Approval Monitoring system. This will require each researcher to submit photographs and/or video of their field procedures in order to obtain a renewal for 2018. Therefore, this must be done in your 2017 field season.**

Protocol approvals are valid for one calendar year only and must be kept current. Should amendments to projects or procedures be deemed necessary, the researcher must contact the Wildlife Animal Care Committee and provide updated information for review.

A summary report will be required annually or upon completion of this project, stating number of animals handled, injuries, fatalities and any problems that may have occurred. This report is necessary for our files plus it will expedite the process if this protocol is to be renewed in the future.

Please note that if there are multiple unanticipated injuries or mortalities the project must be stopped. A report is to be submitted to the Wildlife Animal Care Committee with amendments to rectify the issue(s) prior to resumption.

Researchers who are not collaborating with an expert in animal pathology/physiology or who have limited expertise in this area should seek appropriate assistance in the event of an unexpected and unexplained mortality. Specimens should be submitted for necropsy to the nearest Canadian Wildlife Health Cooperative facility in the event of an unexpected mortality or mortality of a SAR. Make arrangements prior to commencing field work. Contact information for CWHC facilities can be found at <http://www.cwhc-rscf.ca/>

Please ensure that you have also contacted the appropriate Ministry of Natural Resources and Forestry District Office(s) in your study area for the required permit(s) before this research begins. It is also your responsibility to provide them with a copy of this approval.

Good luck with your project,

*Sarah*

*Sarah Fraser, Chair  
Wildlife Animal Care Committee  
Ontario Ministry of Natural Resources and Forestry  
c/o Trent University, DNA Building  
2140 East Bank Dr.  
Peterborough, ON K9L 0G2*

Cell: 705-313-0090  
[sarah.fraser@ontario.ca](mailto:sarah.fraser@ontario.ca)

Submit TWO MONTHS before start date

WILDLIFE ANIMAL CARE COMMITTEE RESEARCH PROTOCOL APPLICATION

Protocol Number 399 [ ] New [ ] Renewal [ ] Amendment

- This project has been submitted to: [x] MNRF District Office [ ] Ontario Parks [ ] Species at Risk

Table with 2 columns: Category (C), and descriptions A through E regarding experimental procedures and animal care.

Project Title Grand Bend Wind Farm Post-Construction Monitoring

Objective Post-construction monitoring of bird and bat fatalities. Only dead birds and bats will be handled. Should an injured, live species be encountered during surveys, the nearest wildlife rehabilitation centre or humane society will be contacted to properly handle and transport the species. Max Char 420 Count 288

Principal Investigator Hannah Maciver

Company Affiliation R.J.Burnside & Associates Limited

Branch Section Address 292 Speedvale Avenue West Guelph, ON N1H 1C4 Telephone 519-820-2562 Email hannah.maciver@rjburnsi

Secondary Investigator(s) Tara Sieg

Company Affiliation R.J.Burnside & Associates Limited

Branch Section Address 292 Speedvale Avenue West Guelph, ON N1H 1C4 Telephone TBD Email tara.sieg@rjburnside.com

Target Species

Table with 3 columns: Target Species (Bird spp., Bat spp.), Number(s) to be handled, and status (Unknown).

Location(s) of Projects (Municipality/MNRF District)

MNRF Guelph District Municipalities of Bluewater and South Huron

[x] Research [ ] Management [ ] Teaching

Type of Research: [x] Non-Invasive [ ] Invasive [ ] Surgery

Stress Level: [x] Nil [ ] Low [ ] Moderate [ ] High

Pain Level: [x] Nil [ ] Low [ ] Moderate [ ] High

Drugs: [ ] Anaesthetic [ ] Analgesic [ ] Other

Samples: [ ] Blood [ ] Tooth [ ] Hair / Feather [ ] Tissue [ ] Other

Capture and Handling

**Chase Method:**  Aircraft/Helicopter  Snowmobile  Powerboat  Other

**Animals to Be:**  Released at capture site  Transported & Released  Long Term Captive  Terminated

**Traps:**  Lethal  Leg Snare  Mist Net  Live Trap  (Type)  Net Gun  Other

**Marking Method:**  PIT Tag  Fur/Feather Clip  Dye  Tattoo  Other

**Device fixed to Animal:**  Radio Collar  Leg Band  Implanted Tag  Other

**Lay Summary:** Only dead birds and bats will be handled. Should an injured, live species be encountered during surveys, the nearest wildlife rehabilitation centre or humane society will be contacted to properly handle and transport the species.

Max Char 840

Count **587**

- Carcasses will be safely handled using disposable latex free gloves;
- Carcasses will be placed into clear plastic bags and labeled; and
- Carcasses will then be stored in a freezer for future reference, if needed (i.e., for search efficiency or scavenger trials, or if MNRF wish to conduct DNA analysis) for the duration of the 3 year monitoring period.

**Declaration:**  
 All animals used in this research will be cared for in accordance with the recommendations of the Canadian Council on Animal Care and the requirements under the Animals for Research Act, (Ont. 1990).

By submitting this form I hereby indicate my agreement not to make major changes to the research procedures without obtaining approval of a new Animal Use Protocol from the MNRF WACC. I also affirm that I understand that no work may be performed prior to approval of this protocol by the MNRF WACC.

NOTE: I understand that portions of this protocol may be used to develop a "Standard Species Protocol" to be used by other researchers.

For electronic submissions please sign below and scan, or check box:

I, as principal investigator, am responsible for the information submitted.

April 10, 2017  
 Signature (Principal Investigator) Date Submitted

The project described in this protocol is approved under the terms of the Animals for Research Act, (Ont. 1980)

Sarah Fraser April 13, 2017  
 Approved by Date Approved

Ministry of Natural  
Resources and Forestry

Ministère des ressources  
naturelles et des forêts



Guelph District  
1 Stone Road West  
Guelph, Ontario  
N1G 4Y2

Telephone: (519) 826-4955  
Facsimile: (519) 826-4929

May 1, 2017

Hannah Maciver  
R.J. Burnside & Associates Ltd.  
292 Speedvale Ave. West  
Unit #20  
Guelph ON N1H 1C4

**Re: Wildlife Scientific Collectors Authorization #1086557**

Dear Hannah,

Attached is the above Wildlife Scientific Collectors Authorization and Schedule A.

This WSC authorization is valid until December 1st, 2017 and is issued in conjunction with approved Animal Care Protocol #17-399, CWS permit SC004 and MNRF, ESA registration confirmation #M-102-8126759043. If you haven't already done so, you will need to add Tri-colored Bat to your registered list of potential SAR to be impacted. Please ensure you and your assistants read and adhere to all conditions and have all documentation with you when you are on site at all times.

Please return the signed WSC Authorization and Schedule A to me by fax, mail or email to me prior to commencement of any work.

If you have any questions or need to amend your authorization at any time please contact Kathy Richardson at 905 562-1177 or by email at [Kathy.richardson@ontario.ca](mailto:Kathy.richardson@ontario.ca).

Sincerely,

A handwritten signature in black ink that reads "Michelle Bonaldo".

Michelle Bonaldo  
Ministry of Natural Resources  
Resources Clerk  
519 826-4909  
Email [michelle.bonaldo@ontario.ca](mailto:michelle.bonaldo@ontario.ca)



Ministry of  
Natural Resources  
Ministère des  
Richesses naturelles

# Wildlife Scientific Collector's Authorization Autorisation pour faire la collecte scientifique d'animaux sauvages

Authorization No. N° d'autorisation	1086557
Local Reference No. N° de référence local	7200
Issuer Account No. N° de compte du délivreur de permis.	10001664

This authorization is issued under Section 39 of the Fish and Wildlife Conservation Act, 1997 to:  
Cette autorisation est délivrée en vertu de l'article 39 de la Loi sur la protection du poisson et de la faune de 1997 à:

<b>Name of Authorization holder</b> Nom du titulaire de l'autorisation	Last Name / Nom de famille Mrs. Maciver	First Name / Prénom Hanna	Middle Name / Second Prénom
<b>Mailing address of Authorization holder</b> Adresse postale du titulaire de l'autorisation	Name of Business/Organization/Affiliation (if applicable) Nom de l'entreprise/de l'organisme/de l'affiliation (le cas échéant) R.J. Burnside and Associates Limited		
	Street Name & No./PO Box/RR#/Gen. Del./N° rue/C.P./R.R./poste restante 292 Speedvale Ave	Province/State Province/État ON	Postal Code/Zip Code Code Postal/Zip N1H 1C4
	City/Town/Municipality / Ville/village/municipalité Guelph		

This authorization permits the above-named person to:  
Cette autorisation permet à la personne nommée ci-haut de:

- Capture wildlife of the species and sex, in the numbers, and in the area set out below.  
Capturer les espèces d'animaux sauvages selon le nombre et le sexe indiqués ci-dessous dans les lieux indiqués ci-dessous and/or / et/ou
- Keep game wildlife or specially protected wildlife in captivity for the purposes of education or science.  
Garder des animaux sauvages spécialement protégés et du gibier sauvage en captivité à des fins éducatives et scientifiques
- Release the captured wildlife in the area of capture, if the captured wildlife is not to be removed from that area  
Remettre en liberté les animaux sauvages capturés dans la zone de capture si les animaux captures ne doivent pas être enlevés de cette zone

OR / OU

- Capture and kill wildlife of the species and sex, in the numbers, and in the area set out below.  
Capturer et tuer les espèces d'animaux sauvages selon le nombre et le sexe indiqués ci-dessous dans les lieux indiqués ci-dessous

Species / Espèces	Sex Sexe	Numbers Nombre	Location / Endroit
All scheduled bird species			Grand Bend Wind Farm
All scheduled bat species			Grand Bend Wind Farm

Yes/Oui  Additional list attached / Liste additionnelle ci-jointe

<b>Authorization Dates</b> Dates d'autorisation	Effective Date / Date d'entrée en vigueur (YYYY-MM-DD) 2017-05-01	Expiry Date / Date d'expiration (YYYY-MM-DD) 2017-12-01
--	---	---

**Authorization conditions**  
Conditions de l'autorisation

This authorization is subject to the conditions contained in Schedule A if included./Cette autorisation doit respecter les conditions de l'annexe A si celle-ci est jointe.

Yes/Oui  No/Non  Schedule A included. / Annexe A ci-jointe

Authorized by (please print) Autorisé par (veuillez écrire en caractères d'imprimerie) Ian Thornton, Resources Operations Supervisor	Signature of Authorizer / Signature de la personne chargée d'autoriser 	Date of Issue/Date de délivrance (YYYY-MM-DD) 2017-05-01
Signature of Authorization holder / Signature du titulaire de l'autorisation 		Date (YYYY-MM-DD) 2017-05-01

Personal information contained on this form is collected under the authority of the Fish and Wildlife Conservation Act, 1997 and will be used for the purpose of licensing, identification, enforcement, resource management and customer service surveys. Please direct further inquiries to the District Manager of the MNR issuing district.  
Les renseignements personnels dans ce formulaire sont recueillis conformément à la Loi sur la protection du poisson et de la faune, 1997 et ils seront utilisés aux fins de délivrance de permis, d'identification, d'application des règlements, de gestion des ressources et de sondage sur les services à la clientèle. Veuillez communiquer avec le chef du district du MRN qui délivrera le permis si vous avez des questions.



**Wildlife Scientific Collector's Authorization**  
**Autorisation pour faire la collecte scientifique d'animaux sauvages**  
**Schedule A – Authorization conditions**  
**Annexe A - Conditions de l'autorisation**

#1086557

This authorization is subject to the conditions listed below.

1. This authorization is valid only for the persons, species, numbers, areas and calendar year indicated. A written report covering the operation of the preceding year must be submitted to Management Biologist, Anne Marie Laurence within 30 days of the termination date, but in no case later than January 31 next following the year of issue. The report shall contain a statement outlining the objectives of the operations, the methods used, the number and species of wildlife caught and their fate as well as a map indicating where the collections took place. An analysis is not required. The submission of a satisfactory report is a prerequisite to any subsequent renewals.

2. Before carrying out any operation under the authorization in any area the authorized person shall inform the reporting Biologist, Anne Marie Laurence of his or her intentions at least a week before commencing work and include information as to the type of operation, location, duration, and the name or names of personnel involved. The foregoing does not apply to the collection of road killed specimens of a type indicated on the authorization. Anne Marie can be reached at 519 826-4132 or by email at Annemarie.laurence@ontario.ca

3. When possible, all wildlife captured under this authorization shall be released alive in the area of capture. When further examination of the animal is necessary in the laboratory permission must be obtained as part of this authorization under section 40(2)(c) of the Fish and Wildlife Conservation Act. Where furbearing mammals are collected the authorized person must contact the issuing office and make arrangements to pay the royalty. Dead animals which are no longer required must be cremated or buried. The authorized person will inform the issuer of any burial site. Any animal suspected of being infected with a communicable disease shall be incinerated in a facility approved under the Environmental Protection Act for that purpose.

4. A copy of the original authorization must be carried by the authorized person when working at the designated sites. An assistant of the authorized person who is carrying out activities under this authorization during the absence of the authorized person shall carry a copy of the authorization on his or her person.

5. All collection gear shall be clearly marked with the authorized person's and the organization's name.

6. This authorization is not valid in Provincial Parks, park reserves, National Parks, Conservation Areas, Crown game preserves or sanctuaries established under the Migratory Birds Convention Act without written permission from the authorized person in charge of the area concerned.

7. **Capture gear to be used:** Monitoring staff will wear gloves to collect carcasses or injured animals. Collected carcasses will be kept in plastic bags and frozen if required for searcher efficiency or carcass removal trials. Injured birds and bats will be transported to the closest rehabilitation facility in a plastic terrarium or small animal (dog) carrier.

\* Capture gear shall be inspected regularly and live holding traps must be inspected at least once daily.

8. This authorization does not allow access to any property without permission of the landowner.

9. Sections 5 and 6 of the Fish and Wildlife Conservation Act 1997, and the provisions of the regulations relating to open seasons and bag limits do not apply to a person capturing or killing wildlife under this authorization.

Cette autorisation doit se conformer aux conditions ci-dessous.

1. Cette autorisation n'est valide que pour les personnes, espèces, nombres, zones et année civile indiqués. Un rapport écrit portant sur les activités de l'année précédente doit être soumis au délivreur de l'autorisation dans les 30 jours suivant la date d'expiration et jamais plus tard que le 31 janvier qui suit la date de délivrance. Le rapport devra comprendre une déclaration décrivant les objectifs des activités, les méthodes utilisées, le nombre et les espèces d'animaux sauvages capturés et leur destination finale ainsi qu'une carte montrant l'emplacement des collectes. Une analyse n'est pas requise. La présentation d'un rapport satisfaisant est une condition préalable pour obtenir un renouvellement de l'autorisation.

2. Avant de réaliser toute activité visée par l'autorisation dans toute zone, la personne autorisée doit aviser le superviseur de la zone de ses intentions au moins une semaine avant de commencer ses activités et il doit fournir des renseignements sur le type d'activité, l'emplacement, la durée et le nom de toutes les personnes impliquées. Cette condition ne s'applique pas à la collecte de spécimens tués sur la route s'il s'agit d'une espèce mentionnée dans l'autorisation.

3. Lorsque cela est possible, tous les animaux sauvages capturés en vertu de cette autorisation doivent être remis en liberté dans la zone de capture. Lorsqu'un examen ultérieur d'un animal dans un laboratoire est nécessaire, il faut obtenir une permission à cet effet dans le cadre de cette autorisation, conformément à l'alinéa 40(2)(c) de la Loi sur la protection du poisson et de la faune. Lorsque des mammifères à fourrure sont récoltés, la personne autorisée doit communiquer avec le bureau qui délivre l'autorisation et prendre des dispositions pour payer les redevances afférentes. Les animaux morts qui ne sont plus utiles doivent être incinérés ou enterrés. La personne autorisée avisera le délivreur de l'autorisation de tout lieu d'enterrement. Tout animal qui pourrait avoir été infecté d'une maladie transmissible devra être incinéré dans une installation approuvée à cette fin, conformément à la Loi sur la protection de l'environnement.

4. Le titulaire de l'autorisation doit avoir en sa possession un exemplaire de l'autorisation originale lorsqu'il travaille dans les endroits désignés. Si un adjoint du titulaire de l'autorisation réalise des activités visées par l'autorisation en l'absence du titulaire de l'autorisation, il devra avoir un exemplaire de l'autorisation en sa possession.

5. Tout le matériel de collecte doit indiquer bien clairement le nom du titulaire de l'autorisation et de son organisme.

6. Cette autorisation n'est pas valide dans les parcs provinciaux, les réserves de parcs, les parcs nationaux, les zones de protection de la nature, les réserves de chasse de la Couronne et les réserves naturelles établies en vertu de la Loi sur la Convention concernant les oiseaux migrateurs sans la permission écrite de la personne autorisée qui est responsable de la zone en question.

7. Tout le matériel de collecte doit être inspecté régulièrement et les viviers doivent être inspectés au moins une fois par jour.

8. Cette autorisation ne permet pas au titulaire d'avoir accès à une propriété privée sans la permission du propriétaire foncier.

9. Les articles 5 et 6 de la Loi sur la protection du poisson et de la faune de 1997 et les dispositions des règlements se rapportant aux saisons de chasse et aux limites de prise ne s'appliquent pas à la personne qui capture ou tue des animaux sauvages en vertu de cette autorisation.

Signature of authorization holder / Signature du titulaire de l'autorisation

*Hannah LaCree*

Date

*May 19, 2017*

**Wildlife Scientific Collector's Authorization**  
**Autorisation pour faire la collecte scientifique d'animaux sauvages**  
**Schedule A – Authorization conditions**  
**annexe A - Conditions de l'autorisation**

#1086557

10. Native and non-native reptiles and amphibians that are collected must be immediately released at the location of capture.

11. Any observation or capture of any threatened or endangered species must be reported immediately to the MNR Guelph District Office ([esa.guelph@ontario.ca](mailto:esa.guelph@ontario.ca)) within two (2) business days.

12. When SAR are involved, the SAR Handling Manual is to be used as a reference and all staff must be properly trained prior to any handling of the animals.

13. Names of Assistants covered under this authorization are;

TBD  
Tara Seig  
Adam Henry

14. The authorization holder and assistants must adhere to all conditions as approved with Animal Care Protocol #17-399, CWS permit SC004 and ESA Registry Conf. # M-102-8126759043.



# CANADIAN WILDLIFE SERVICE – PERMIT PERMIS – SERVICE CANADIEN DE LA FAUNE

Organization Organization <b>R.J. Burnside &amp; Associates Limited</b>		Issued under section Délivré en vertu de l'article <b>4(1)</b>	Permit to/for Permis de/pour <b>SCIENTIFIC</b>	Permit no. No de permis <b>SC 00004 Amendment 1</b>
Surname of holder Nom de famille du détenteur <b>Maciver</b>		Name of holder Prénom du détenteur <b>Hannah</b>		
		Of De <b>MIGRATORY BIRD REGULATIONS</b>		

Address Adresse <b>292 Speedvale Ave West Guelph, ON N1H 1C4</b>	In accordance with section 19(1) of the Migratory Bird Regulations, this permit authorizes the permit holder to:  <input type="checkbox"/> Kill a migratory bird <input checked="" type="checkbox"/> Take a migratory bird, its nest or eggs <input type="checkbox"/> Capture and band a migratory bird
--	---

Date of issue Date d'émission <b>March 16, 2017</b>	Date of expiry Date d'expiration <b>November 30, 2019</b>
---	---

Signature of holder Signature du détenteur <i>Hannah Maciver</i>	For the minister Pour le ministre <i>Caitie M. Auld</i>
--	---

## Conditions – Conditions

**The permittee is authorized to:**

- Collect dead migratory birds found at the Grand Bend Wind Farm, located in Grand Bend, ON for scientific purposes;
- Possess migratory bird carcasses for predation and searcher efficiency trials; and
- Donate migratory bird carcasses to an educational or governmental institution holding a valid permit to possess migratory birds.

1. This permit is only valid if it is signed by the permit holder.
2. All authorized activities must be conducted by permit holder and nominee(s).
3. This permit is non-transferable and is not valid if altered in any way.
4. This permit is only valid from the issue date to the expiry date (or if cancelled by the Minister, to date of cancellation) and for the activities indicated.
5. The permit holder and any nominees must comply with all other applicable Federal, Provincial/Territorial, and Municipal laws and regulations.
6. The permit holder is responsible for ensuring that all nominees comply with the permit terms and conditions and requirements.
7. Any changes to nominees must be reported to Environment Canada's regional Canadian Wildlife Service (CWS) office.
8. A copy of the signed permit must be carried at all times by the permit holder and/or nominee(s) while conducting the activity(ies).
9. The permit holder must keep a record during the currency of the permit and enter in the record the number of birds of each species or the number of nests or eggs of those birds taken or destroyed, as well as the information required to be submitted on the report.
10. The permit holder must, within 30 days of the expiry of the permit (unless otherwise specified on the permit) submit a report in the proper form.
11. Unless otherwise stated, this permit does not authorize the killing, taking, capturing and banding, or disturbing of species listed on Schedule 1 of the Species at Risk Act as threatened, endangered or extirpated.
12. Any bird bands, markers or devices attached to a bird must be reported to the Bird Banding Office ([www.ec.gc.ca/bbo/](http://www.ec.gc.ca/bbo/)).
13. Prior to any use of this permit the OMNRF is to be notified relative to procedures, times and localities of field research.
14. In instances where Species At Risk (SAR) are found, permittee must immediately report findings to Canadian Wildlife Service, 867 Lakeshore Road, Burlington, ON., L7S 1A1 or [ec.faune.ontario-wildlife.ontario.ec@canada.ca](mailto:ec.faune.ontario-wildlife.ontario.ec@canada.ca).
15. Nominees authorized to act under the direction of the permittee are: Employees and/or contractors to R.J. Burnside & Associates Limited



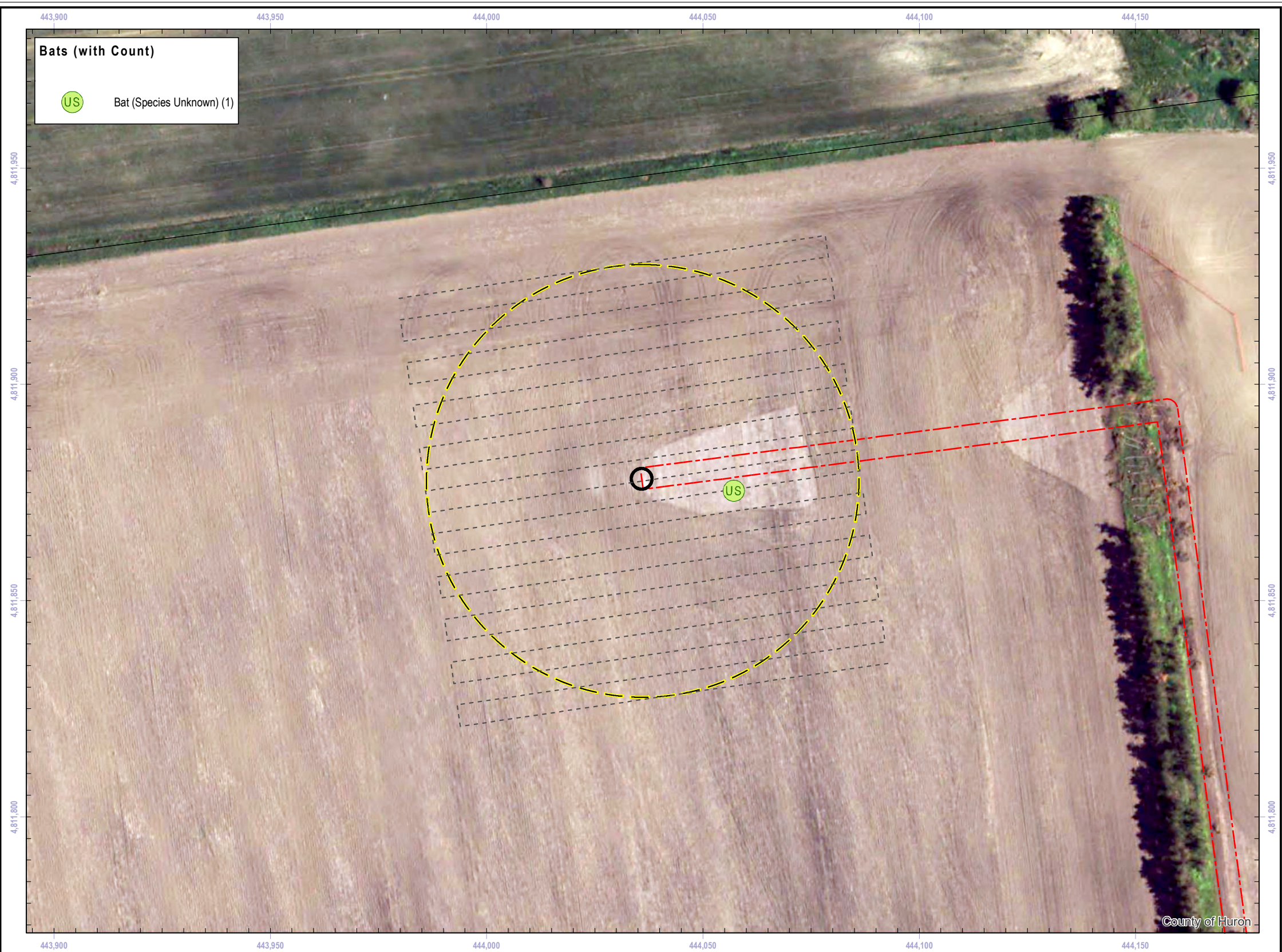
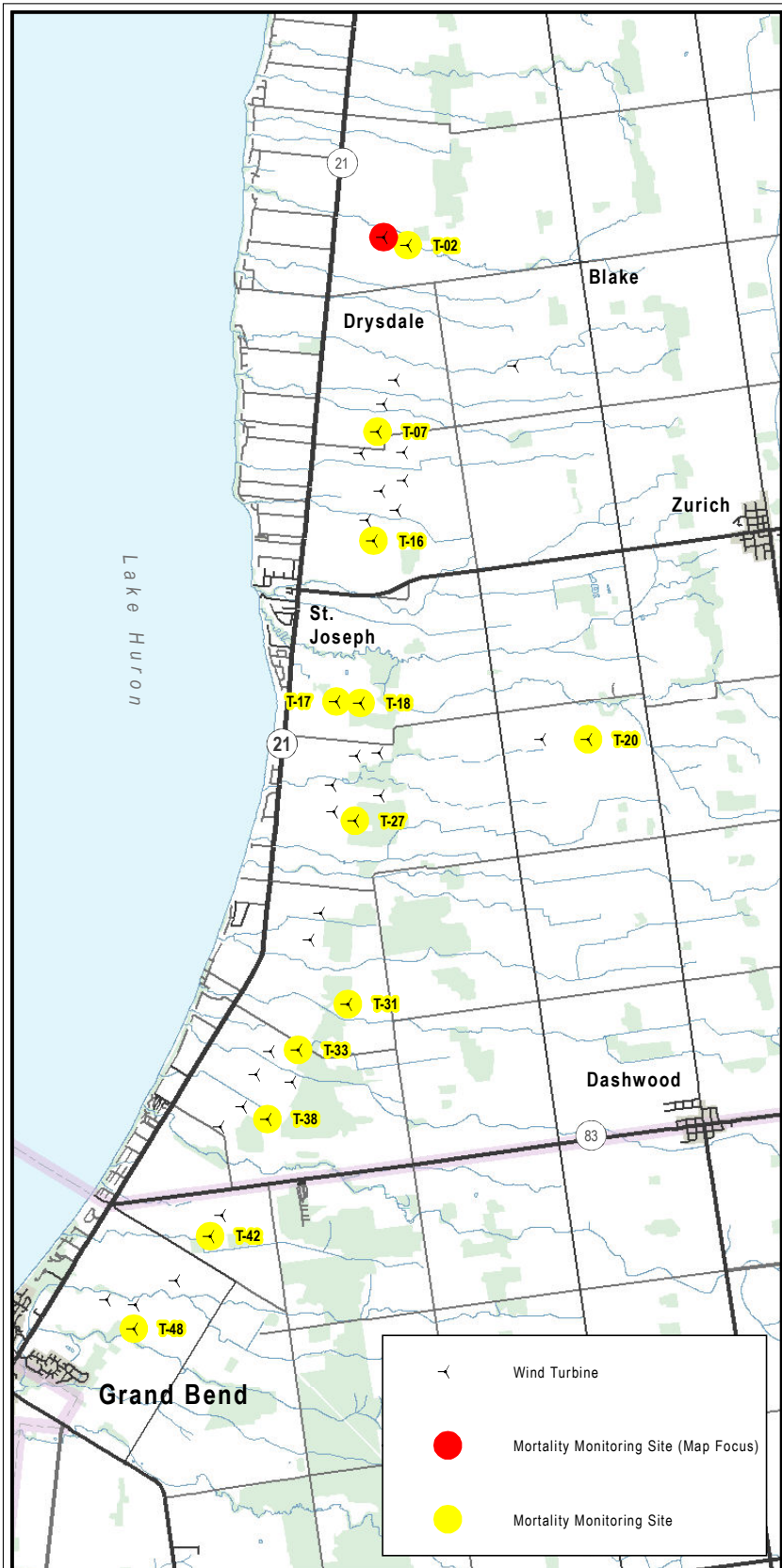
**BURNSIDE**

[ THE DIFFERENCE IS OUR PEOPLE ]

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## Appendix B

### Mortalities Per Turbine (Map Book)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Client

Figure Title

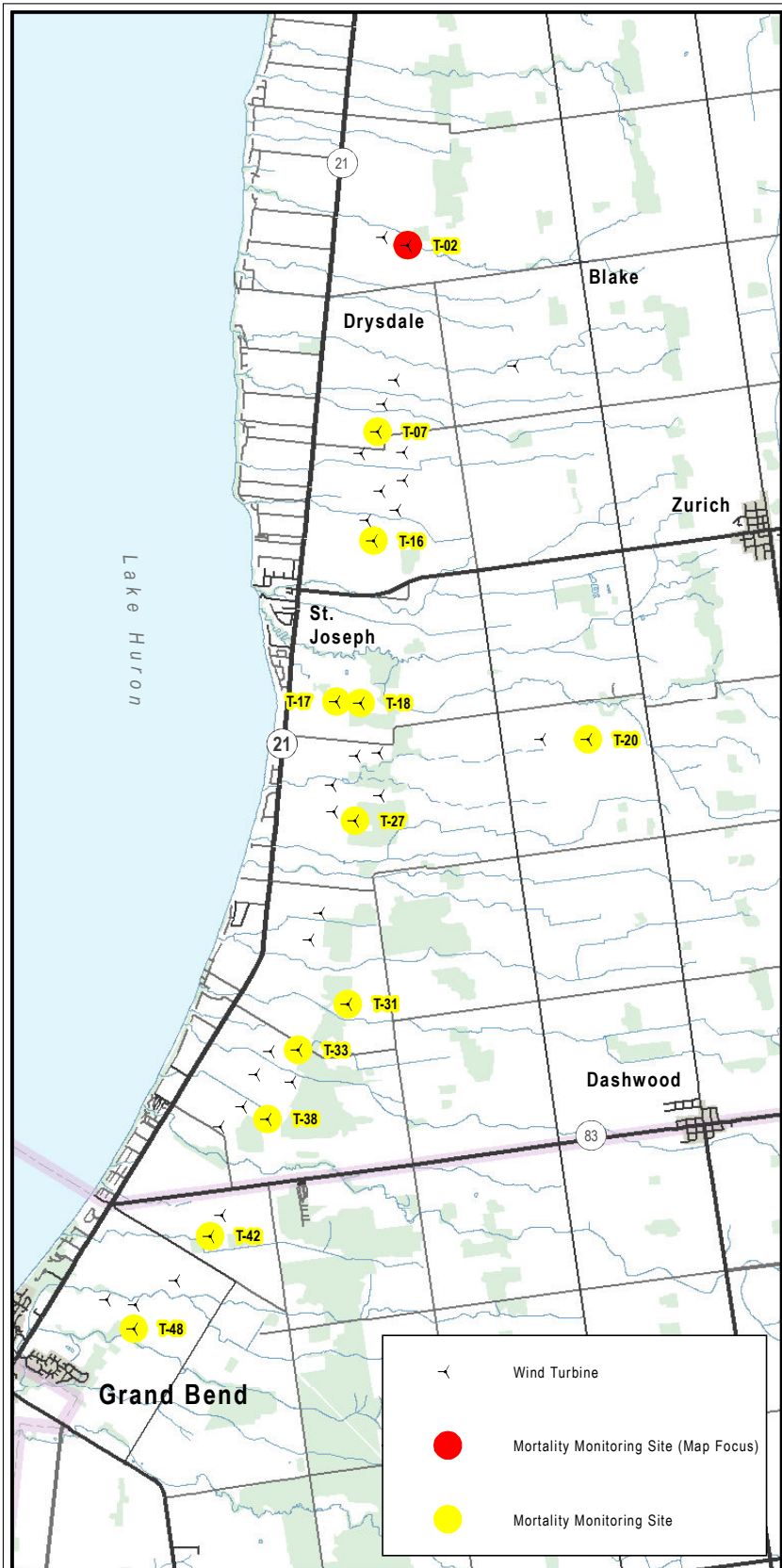
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-01**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		
H 1:1,000			<b>A-1</b>

PIA019991



- Wind Turbine
- Mortality Monitoring Site (Map Focus)
- Mortality Monitoring Site

- Bats (with Count)**
- Eastern Red Bat (1)
  - Hoary Bat (2)
- Birds (with Count)**
- Cliff Swallow (1)
  - Golden-crowned Kinglet (2)
  - Ruby-throated Hummingbird (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

--- Search Grid Transect (5m Separation)    - - - - Approach to Turbine

Search Radius (50m)    Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

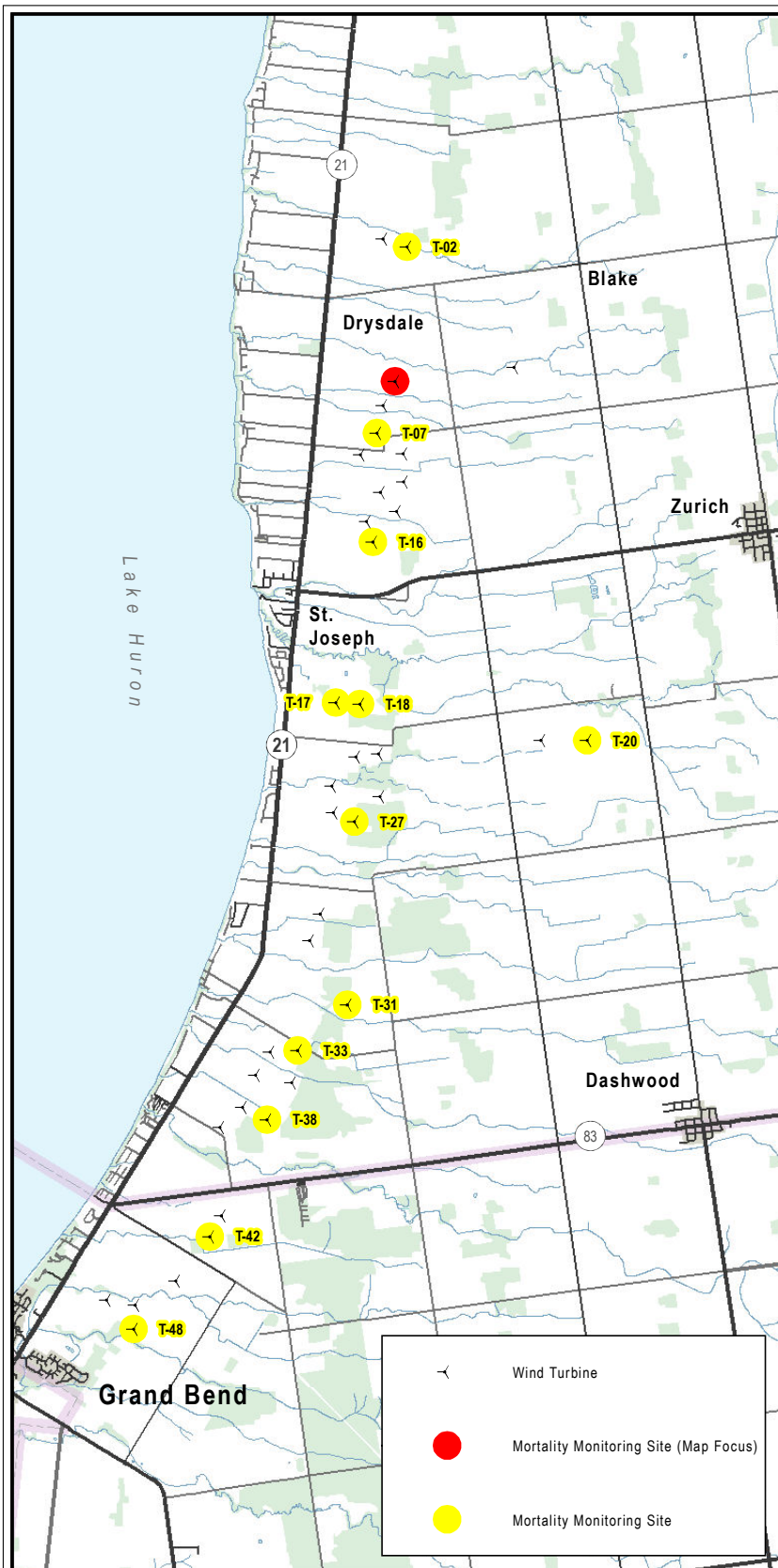
**Grand Bend Wind GP Inc.**

Client

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-02  
 Carcass Search Results

Drawn	Checked	Date	Figure No. <b>A-2</b>
PS	HM	2018/02/01	
Scale	Project No. PIA019991		

H 1:1,000



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

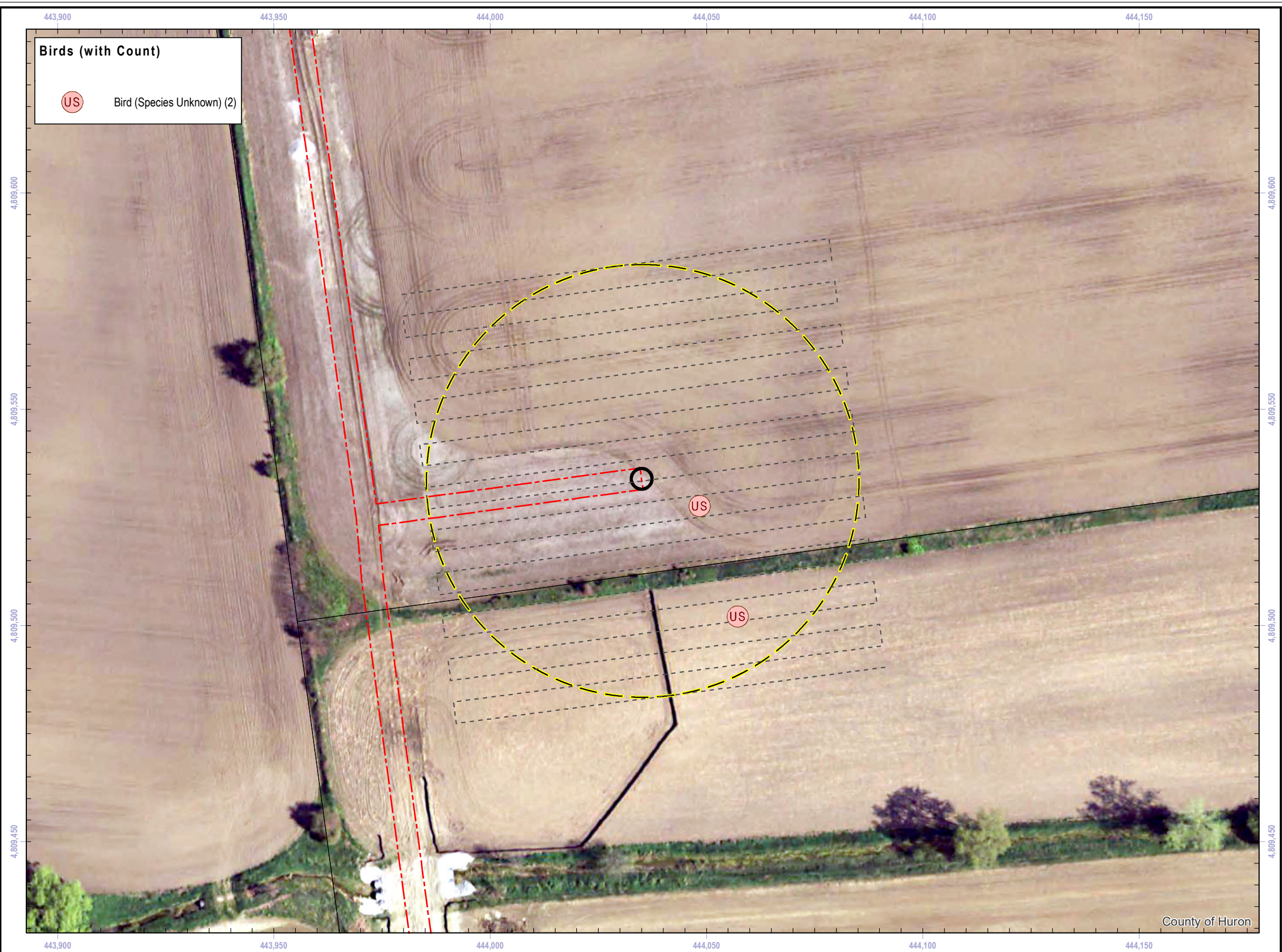
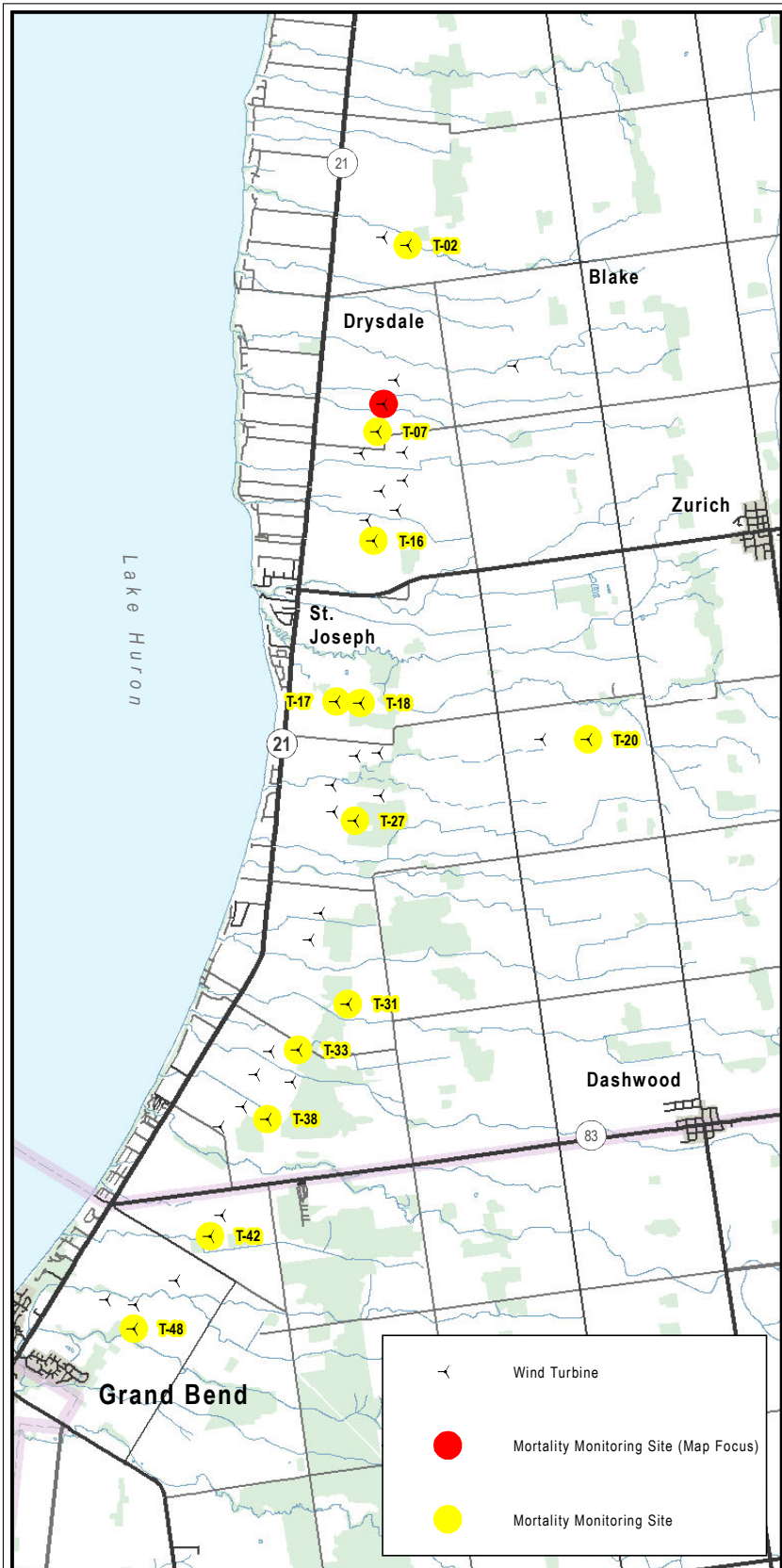
1. Imagery reflects ground in 2015.

**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-05  
 Carcass Search Results

Drawn PS	Checked HM	Date 2018/02/01	Figure No. <b>A-3</b>
Scale H 1:1,000	Project No. PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

Sources:  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

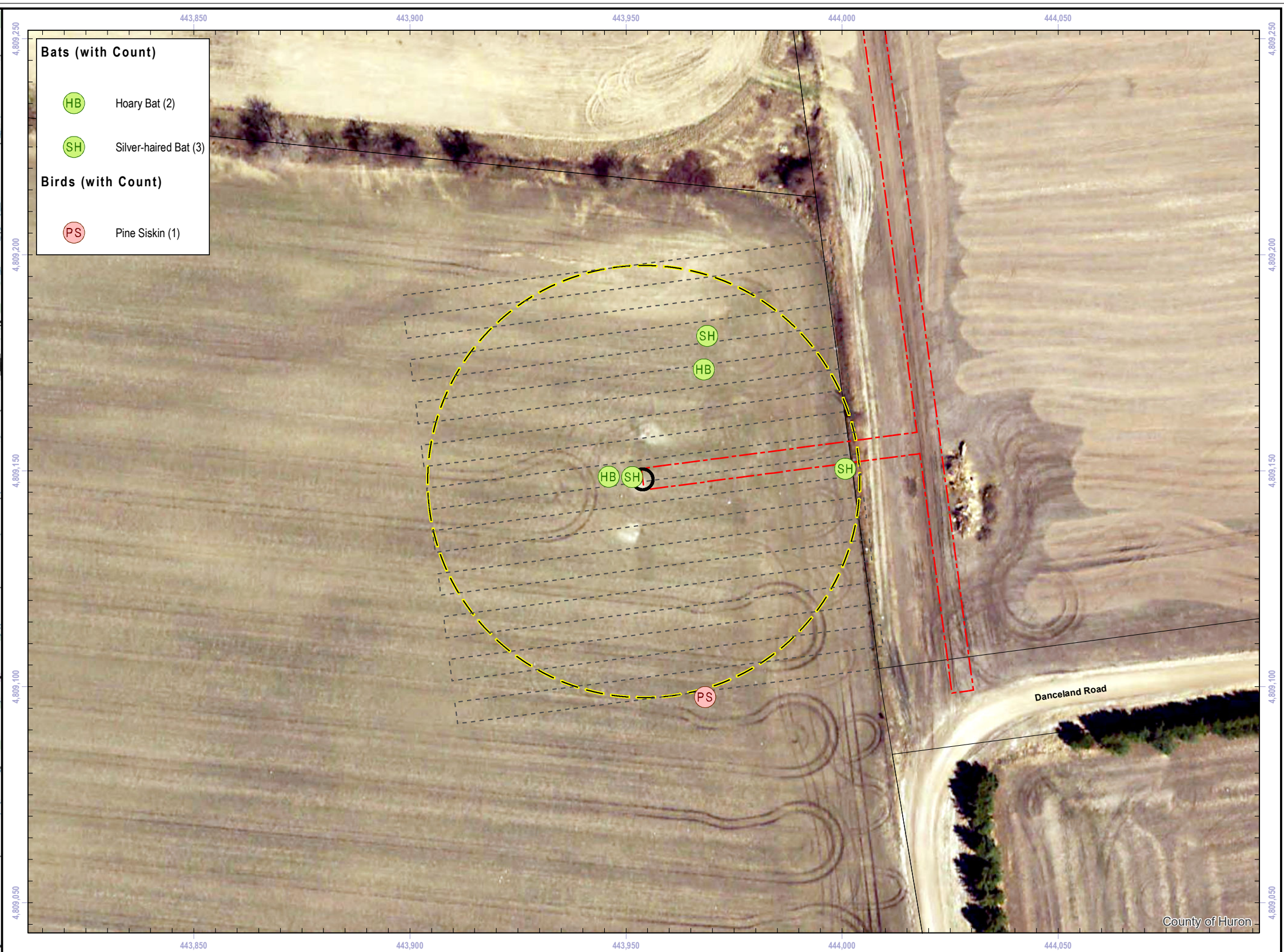
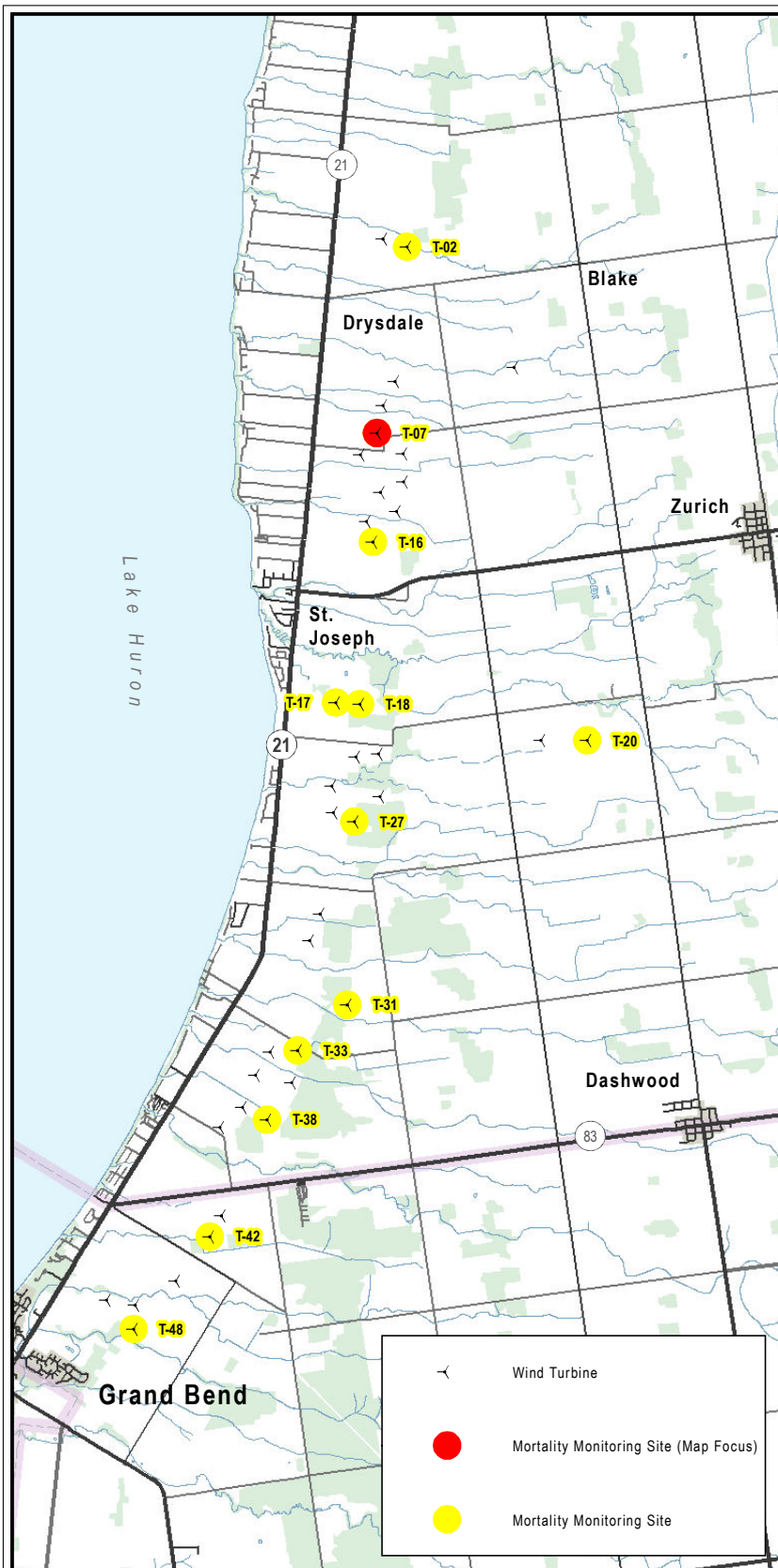
Notes:  
 1. Imagery reflects ground in 2015.

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-06  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-4</b>
H 1:1,000	PIA019991		





- Bats (with Count)**
- HB Hoary Bat (2)
  - SH Silver-haired Bat (3)
- Birds (with Count)**
- PS Pine Siskin (1)

- Wind Turbine
- Mortality Monitoring Site (Map Focus)
- Mortality Monitoring Site

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80 Metres

Search Grid Transect (5m Separation) Approach to Turbine

Search Radius (50m) Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

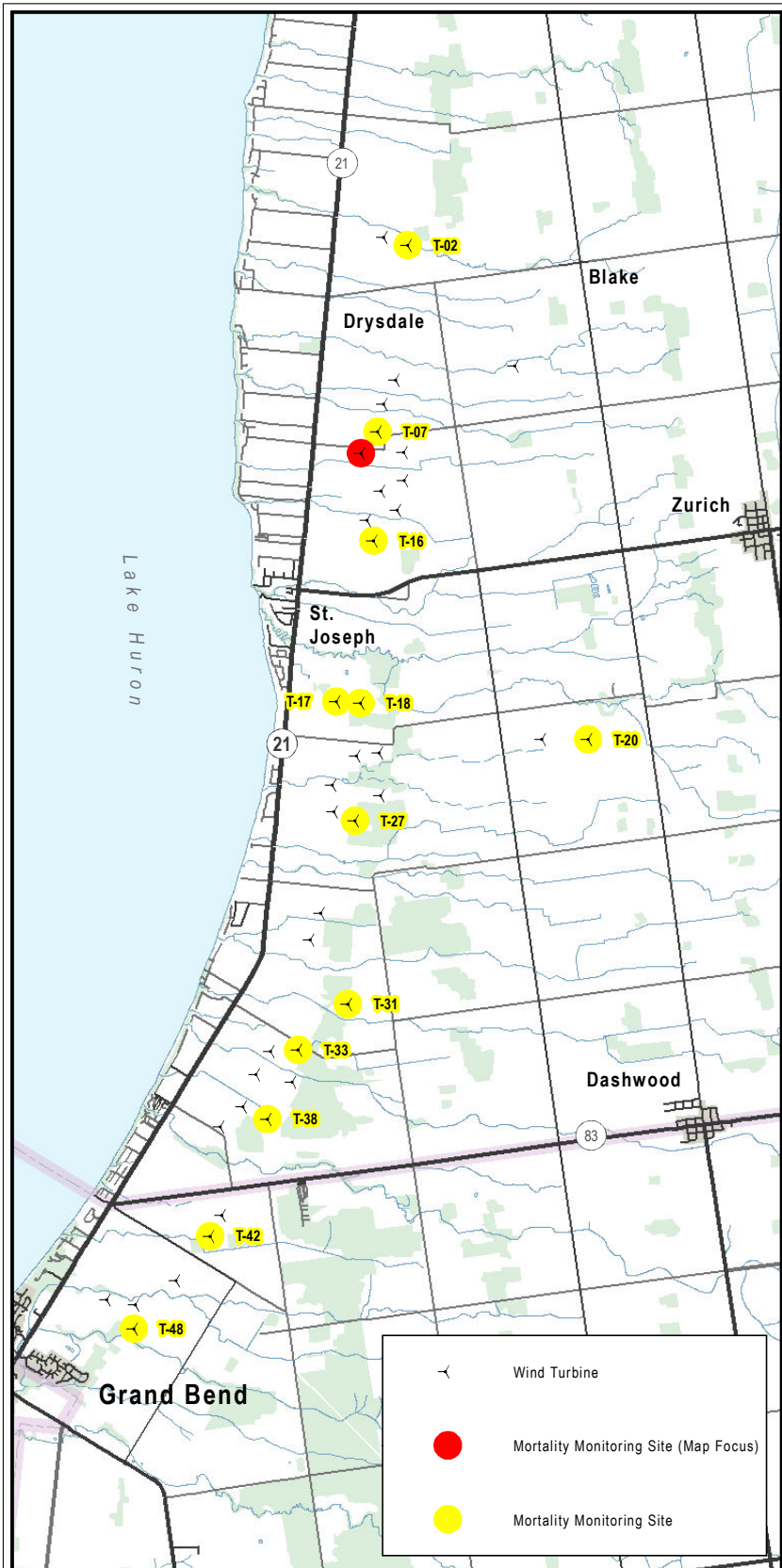
1. Imagery reflects ground in 2015.

**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-07  
 Carcass Search Results

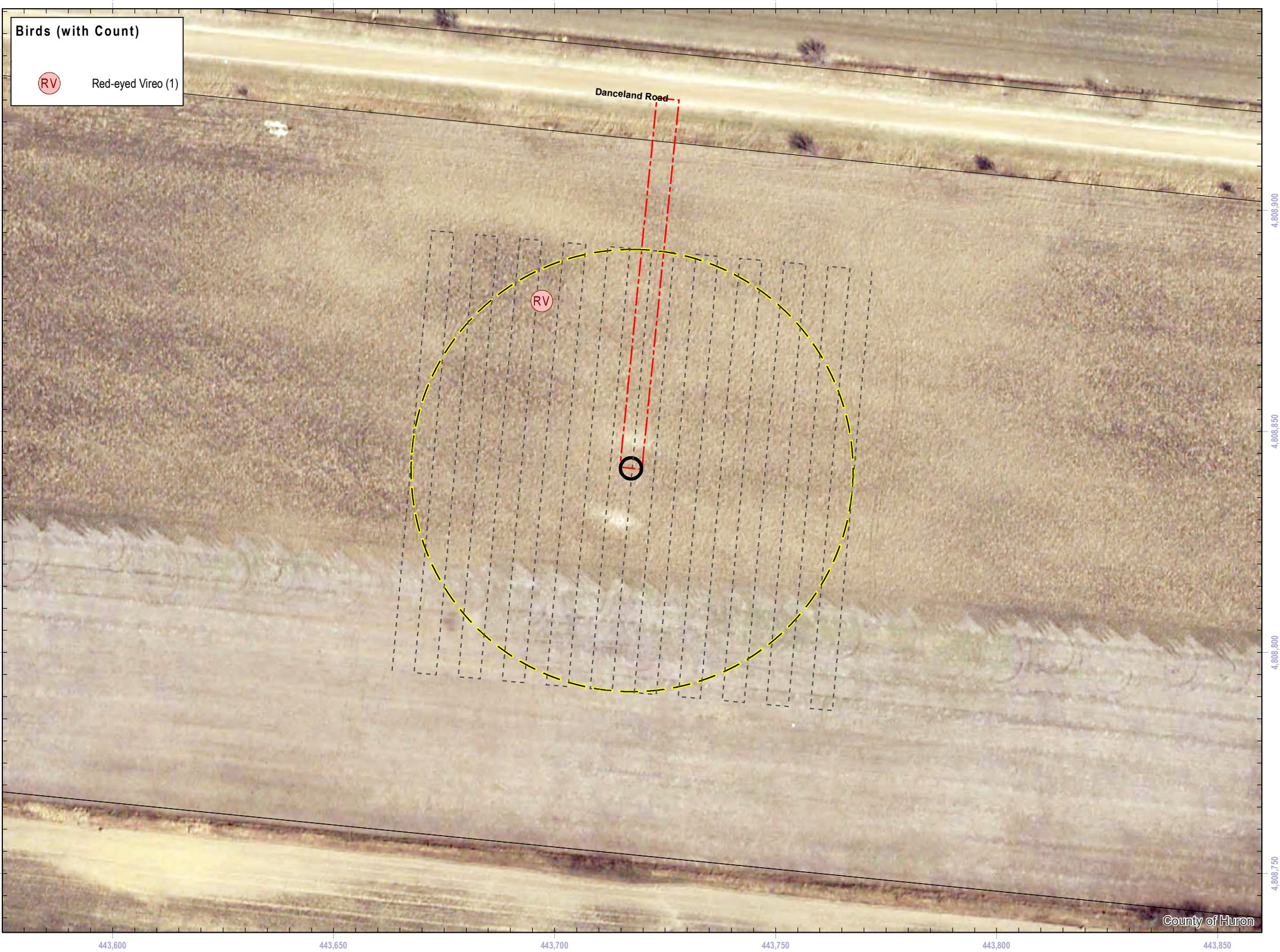
Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-5</b>
H 1:1,000	PIA019991		



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

**Birds (with Count)**

Red-eyed Vireo (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m  
 False Northing: 0m  
 Rotation: 0  
 Scale Factor: 0.99960



Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.



Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
Turbine T-08  
Carcass Search Results

Drawn	Checked	Date	Figure No. <b>A-6</b>
PS	HM	2018/02/01	
Scale	Project No. PIA019991		
H 1:1,000			



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

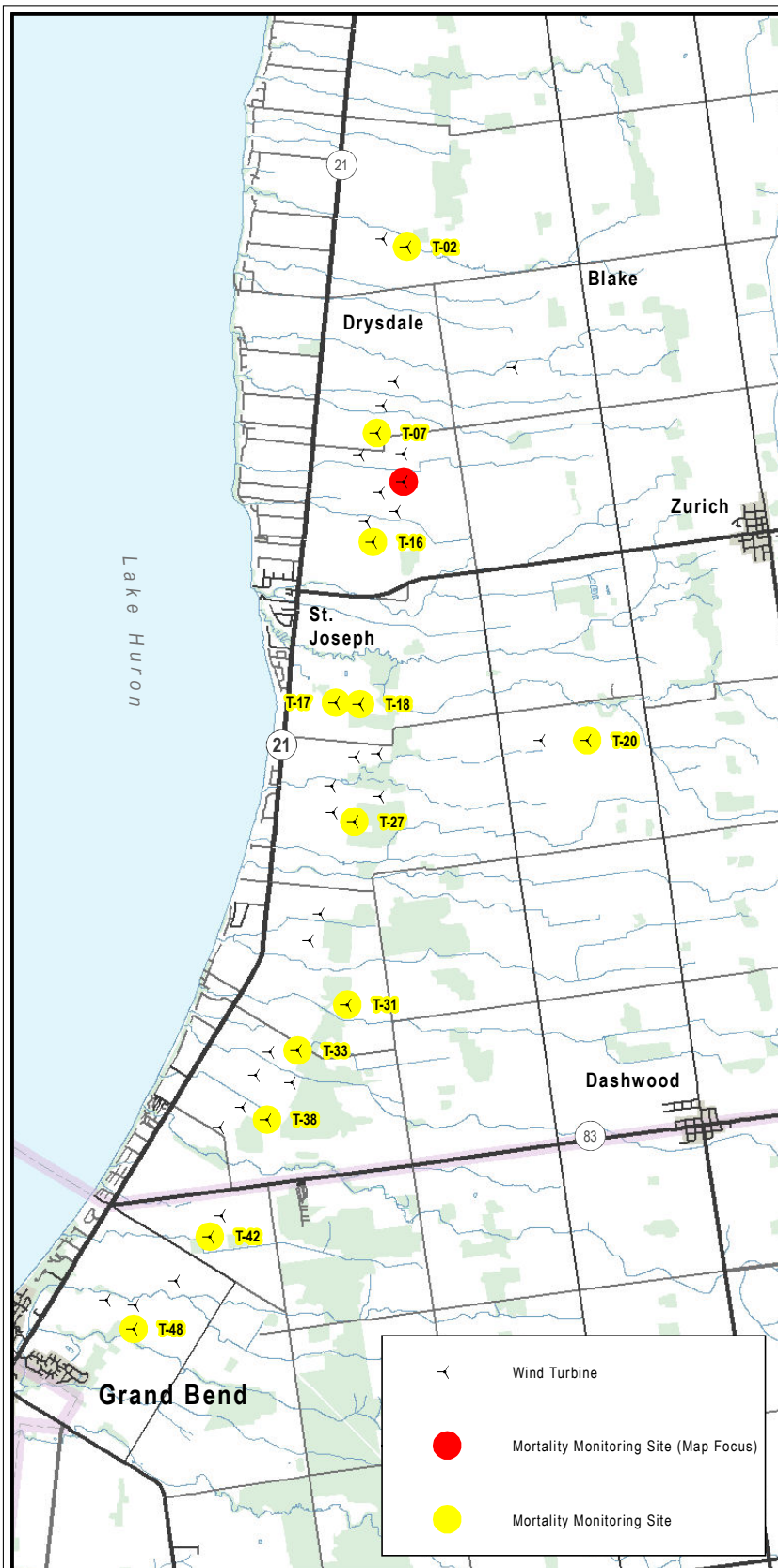
**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

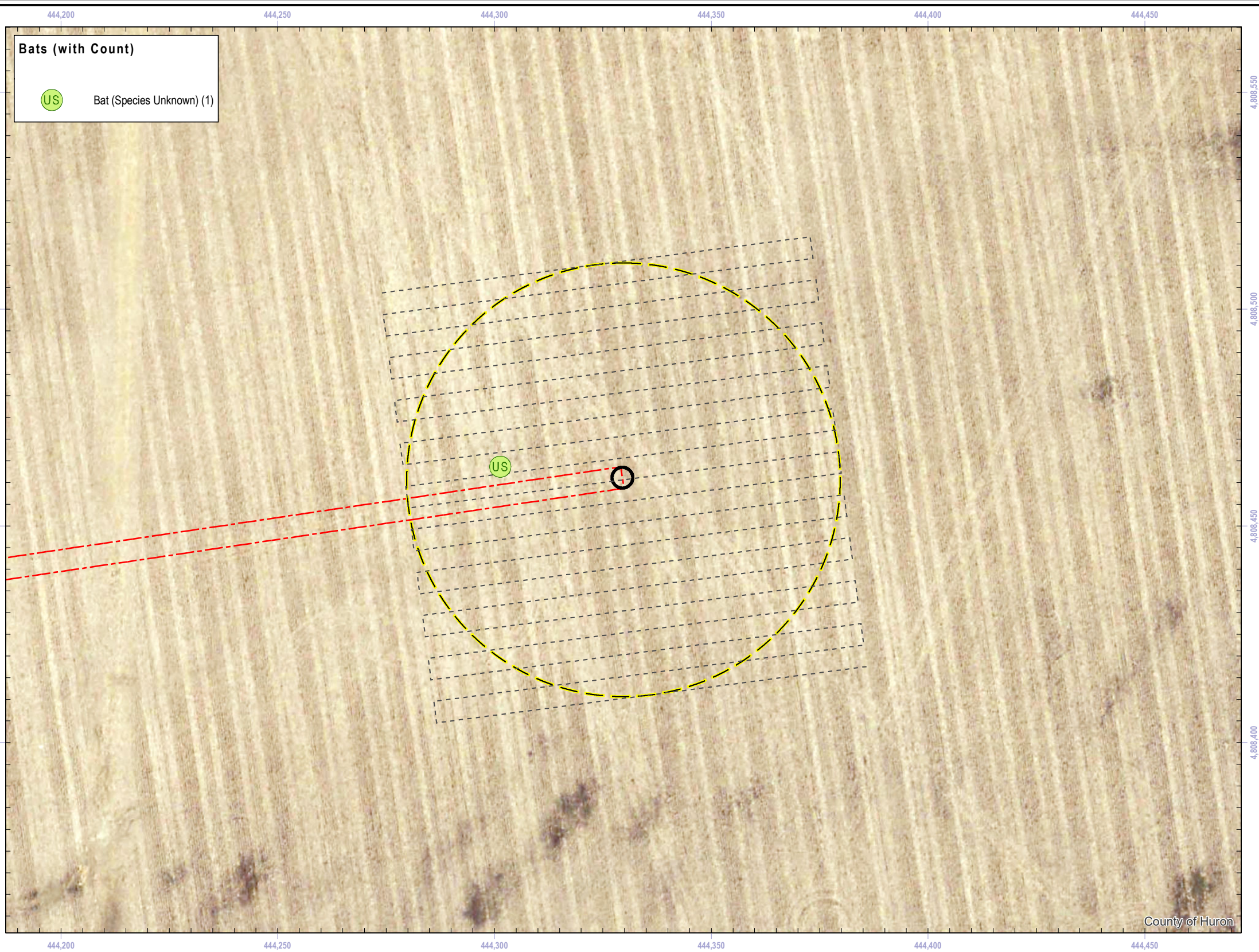
Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-09  
 Carcass Search Results

Drawn	Checked	Date	Figure No. <b>A-7</b>
PS	HM	2018/02/01	
Scale	Project No. PIA019991		

H 1:1,000



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site



**Bats (with Count)**

Bat (Species Unknown) (1)

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960



Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

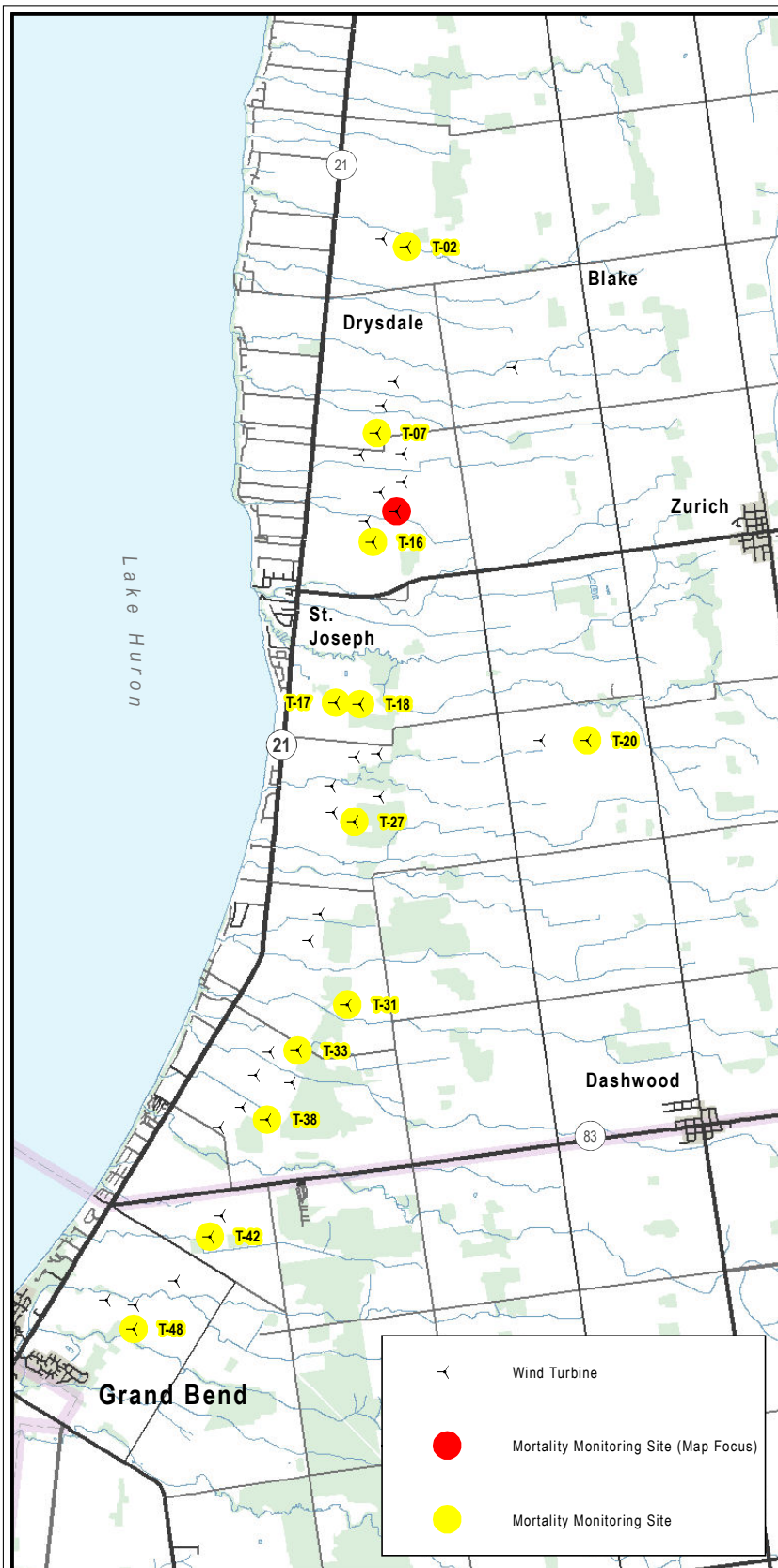
1. Imagery reflects ground in 2015.



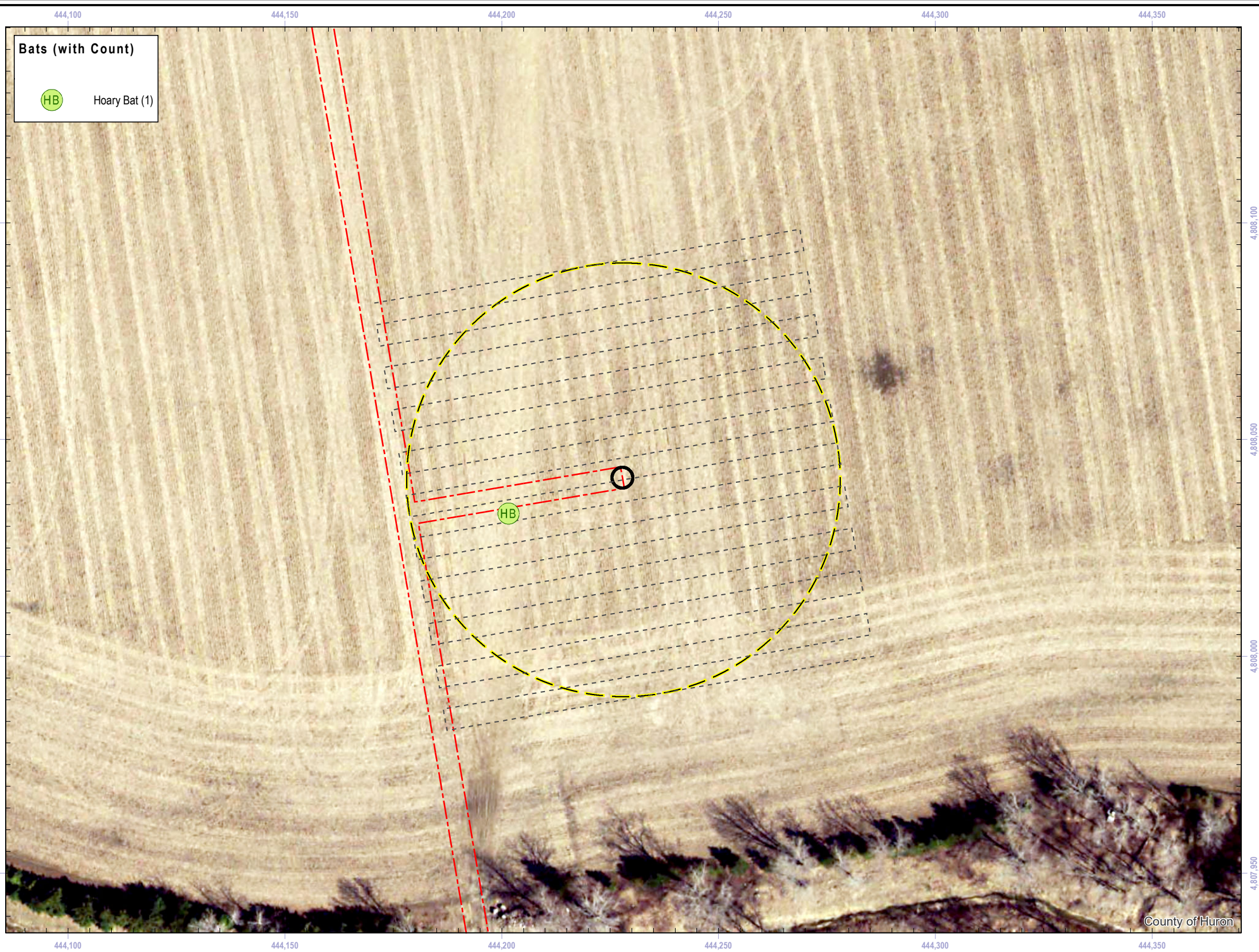
Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
Turbine T-11  
Carcass Search Results

Drawn	Checked	Date	Figure No. <b>A-8</b>
PS	HM	2018/02/01	
Scale	Project No. PIA019991		
H 1:1,000			



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site



**Bats (with Count)**

Hoary Bat (1)

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80 Metres

Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Client

Figure Title

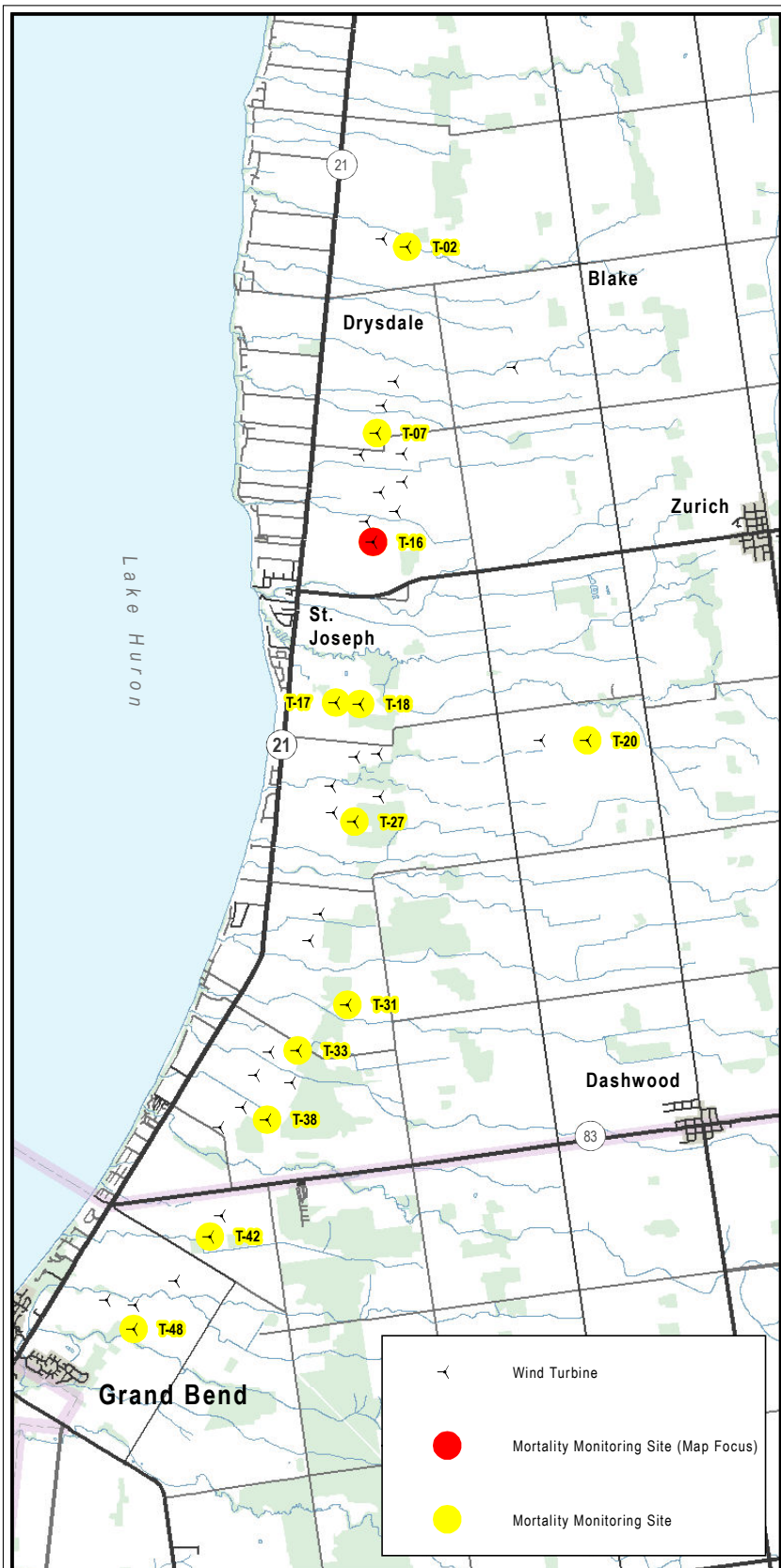
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-13**

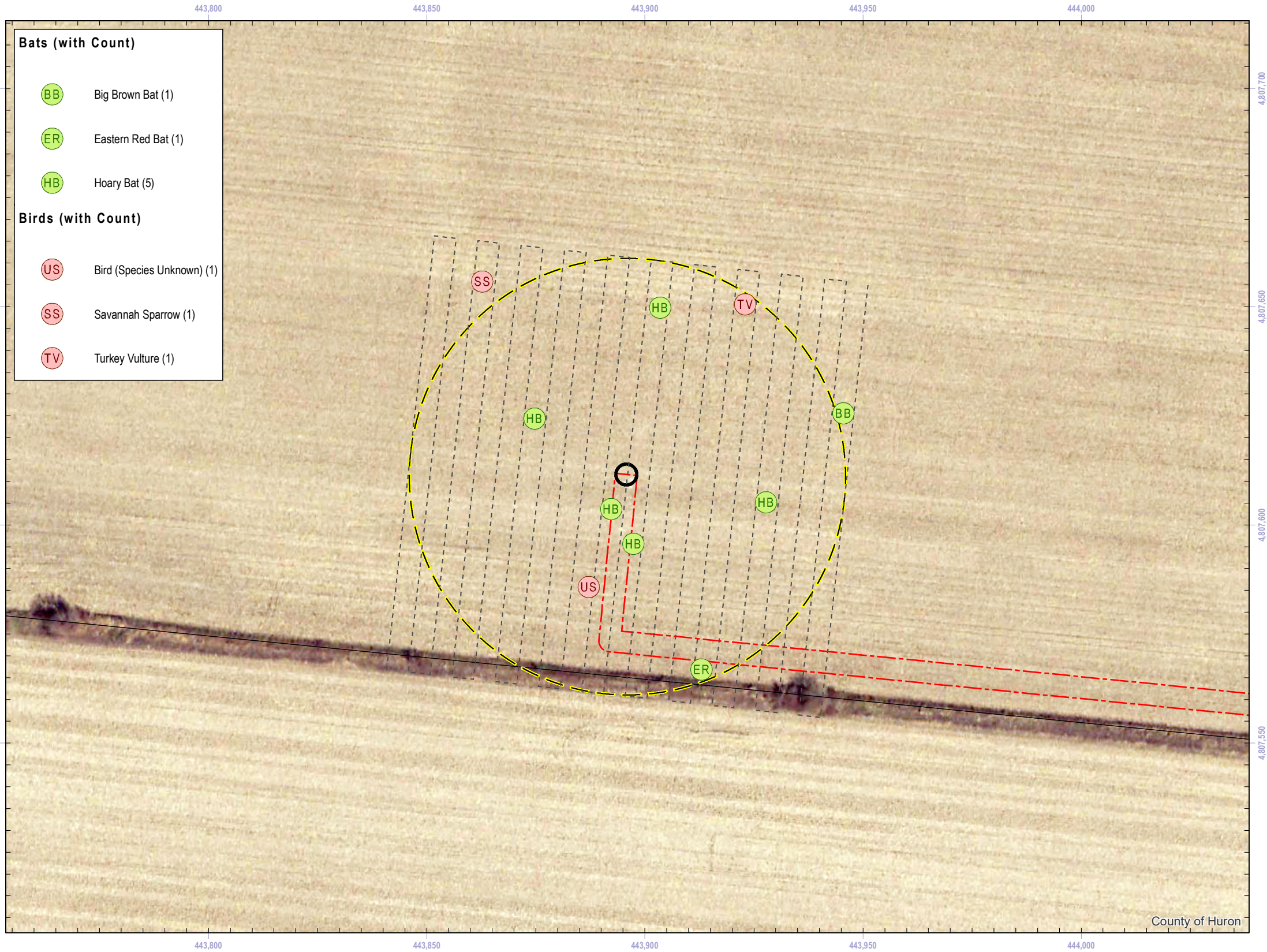
**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		
H 1:1,000			<b>A-9</b>

PIA019991



- Bats (with Count)**
- BB Big Brown Bat (1)
  - ER Eastern Red Bat (1)
  - HB Hoary Bat (5)
- Birds (with Count)**
- US Bird (Species Unknown) (1)
  - SS Savannah Sparrow (1)
  - TV Turkey Vulture (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

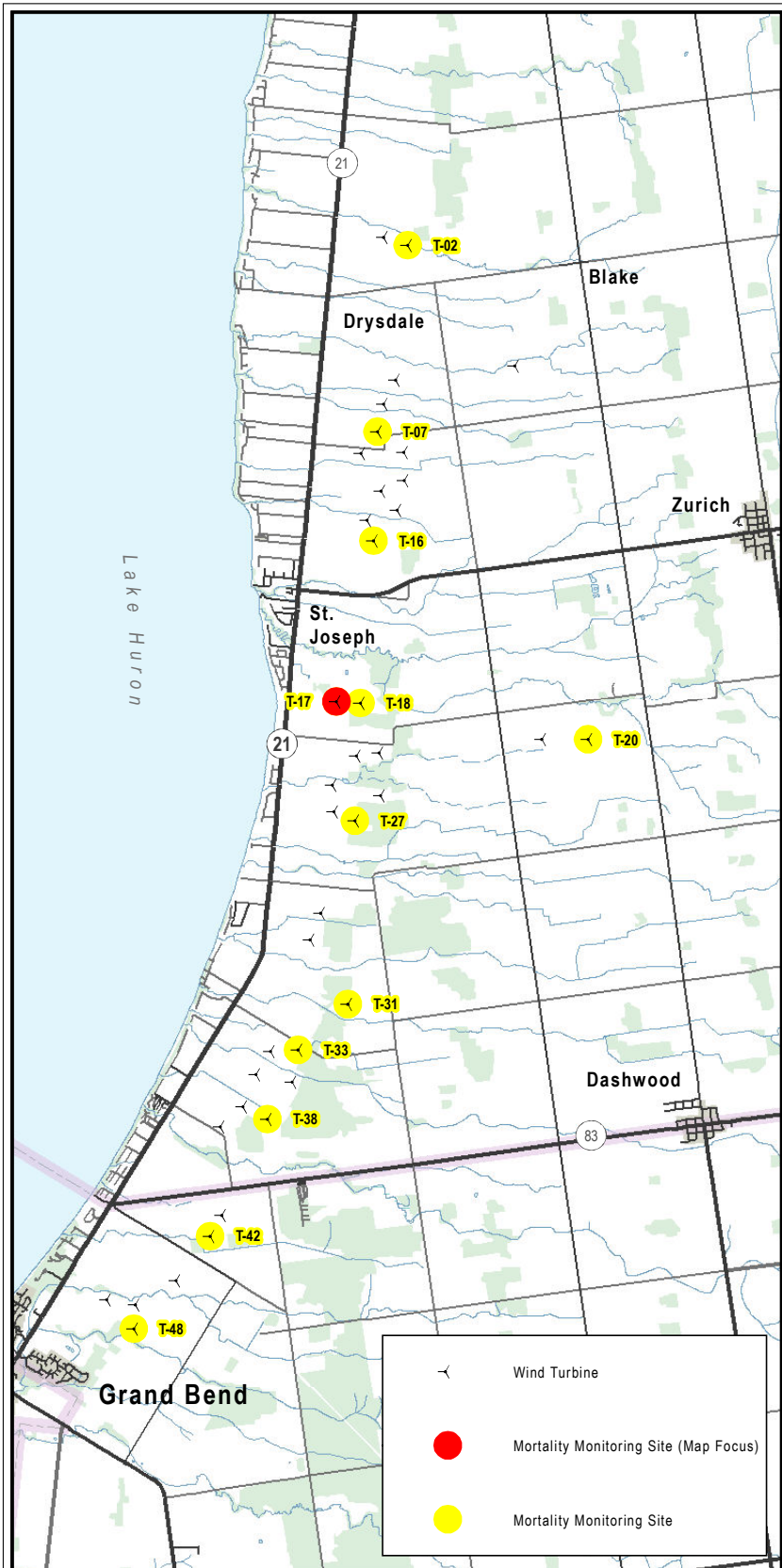
1. Imagery reflects ground in 2015.

**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-16  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-10</b>
H 1:1,000	PIA019991		



- Bats (with Count)**
- BB Big Brown Bat (1)
  - ER Eastern Red Bat (1)
  - HB Hoary Bat (1)
  - LM Little Brown Myotis (2)
  - SH Silver-haired Bat (1)
- Birds (with Count)**
- ES European Starling (1)
  - RT Ruby-throated Hummingbird (1)
  - TS Tree Swallow (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Client

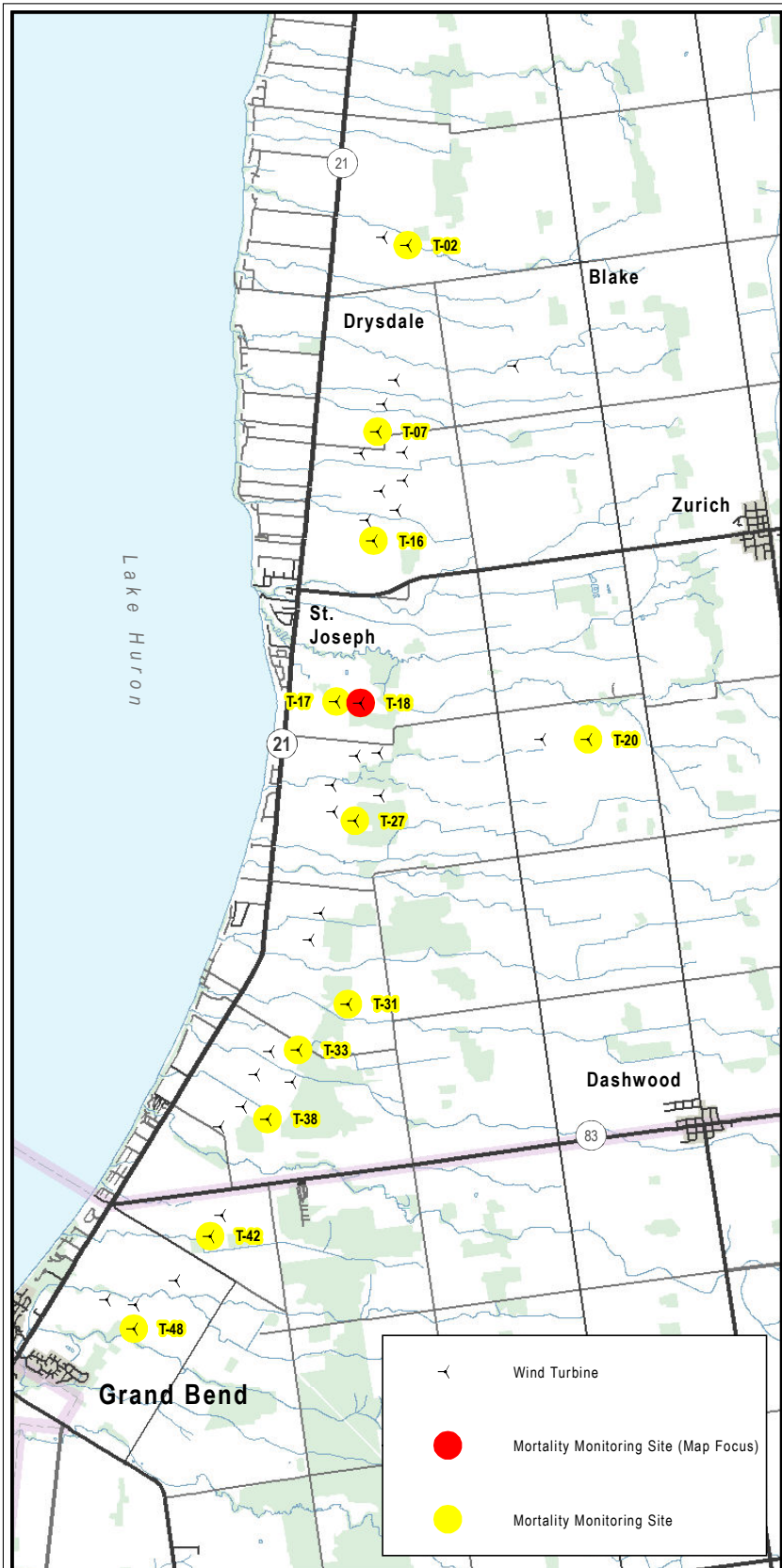
Figure Title

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-17**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-11</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

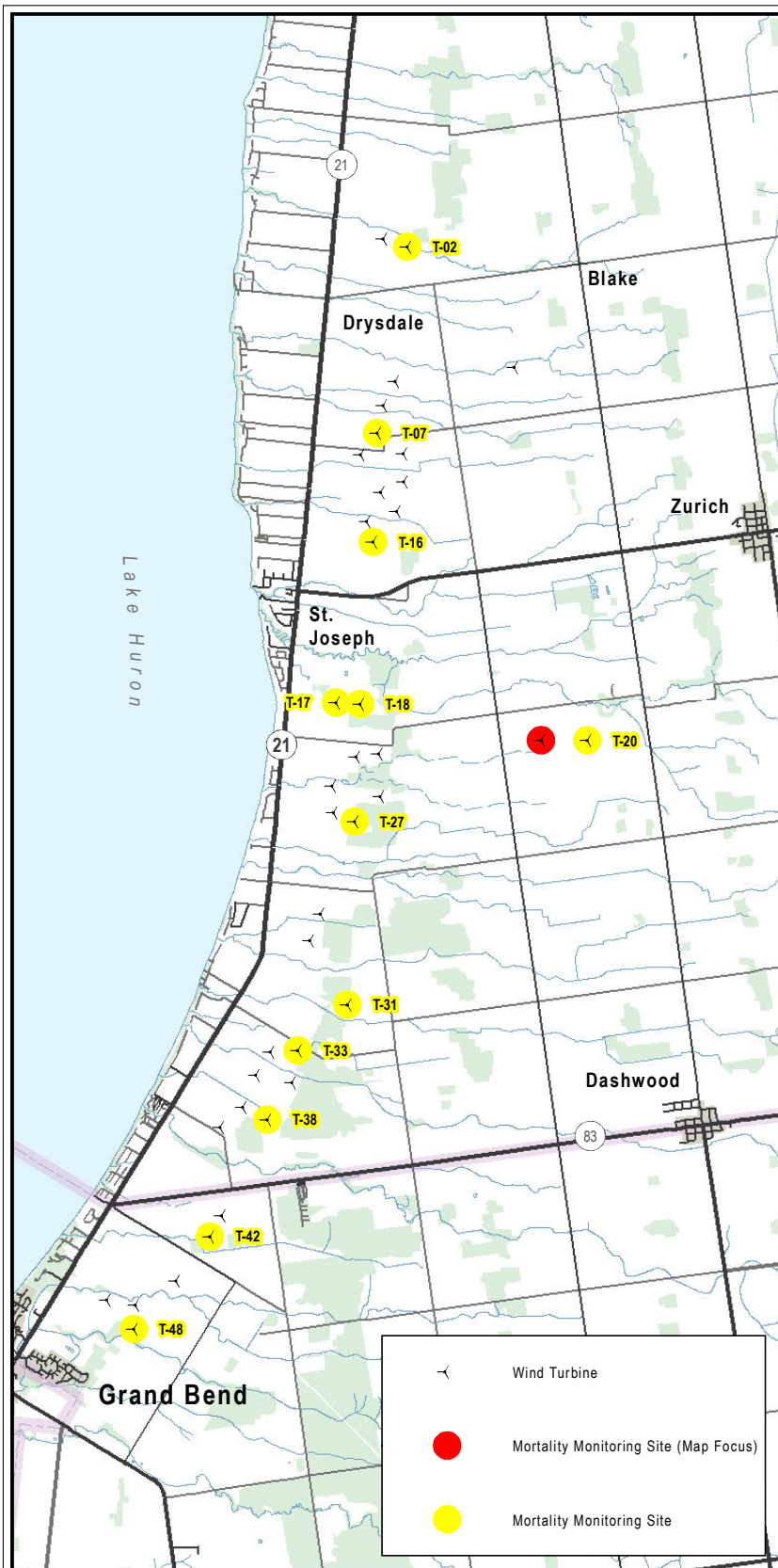
1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

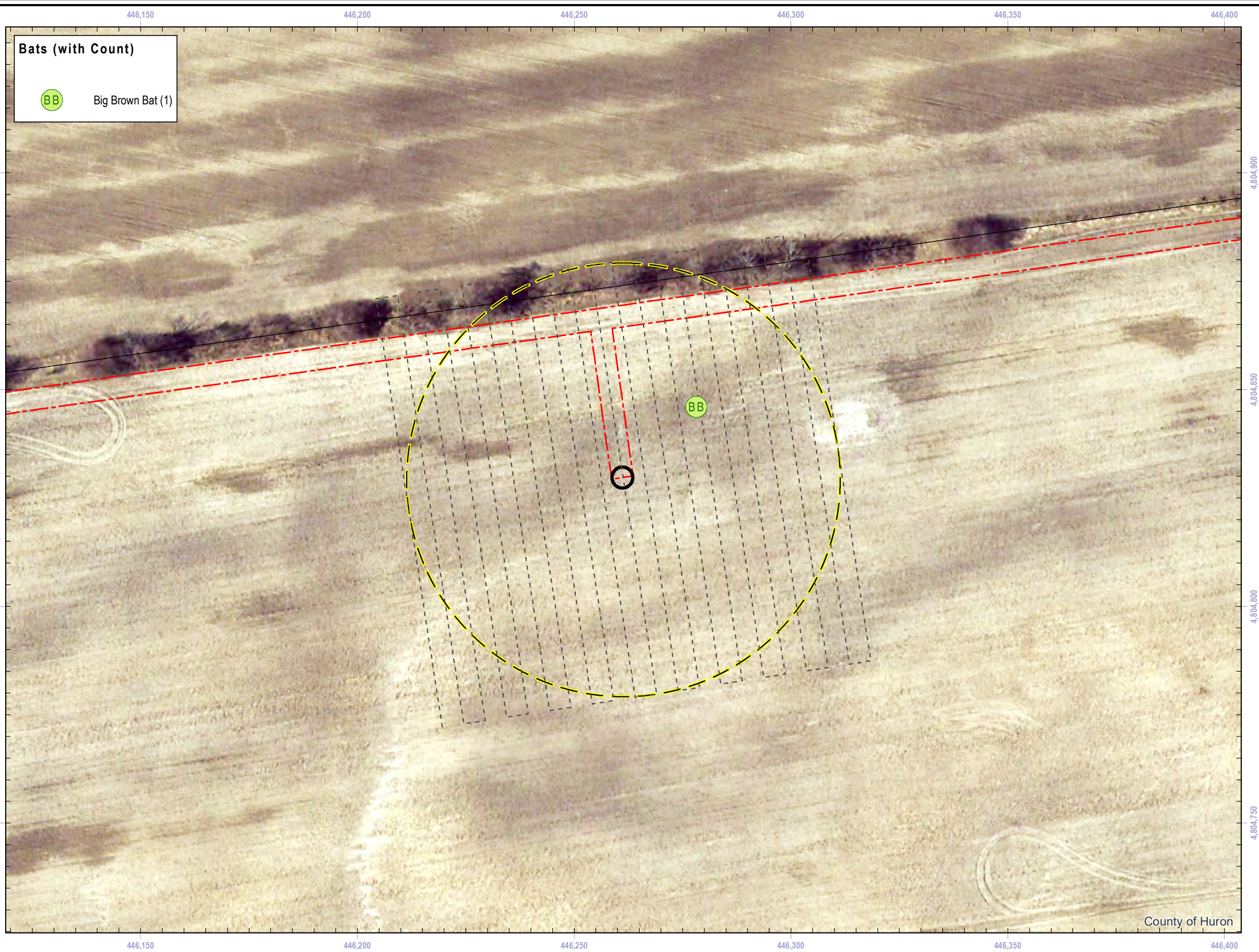
Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-18  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-12</b>
H 1:1,000	PIA019991		





Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site



**Bats (with Count)**

Big Brown Bat (1)

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m    False Northing: 0m  
 Rotation: 0    Scale Factor: 0.99960

Search Grid Transect (5m Separation)    Approach to Turbine  
 Search Radius (50m)    Turbine Base Footprint

**Sources:**  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

**Notes:**  
 1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

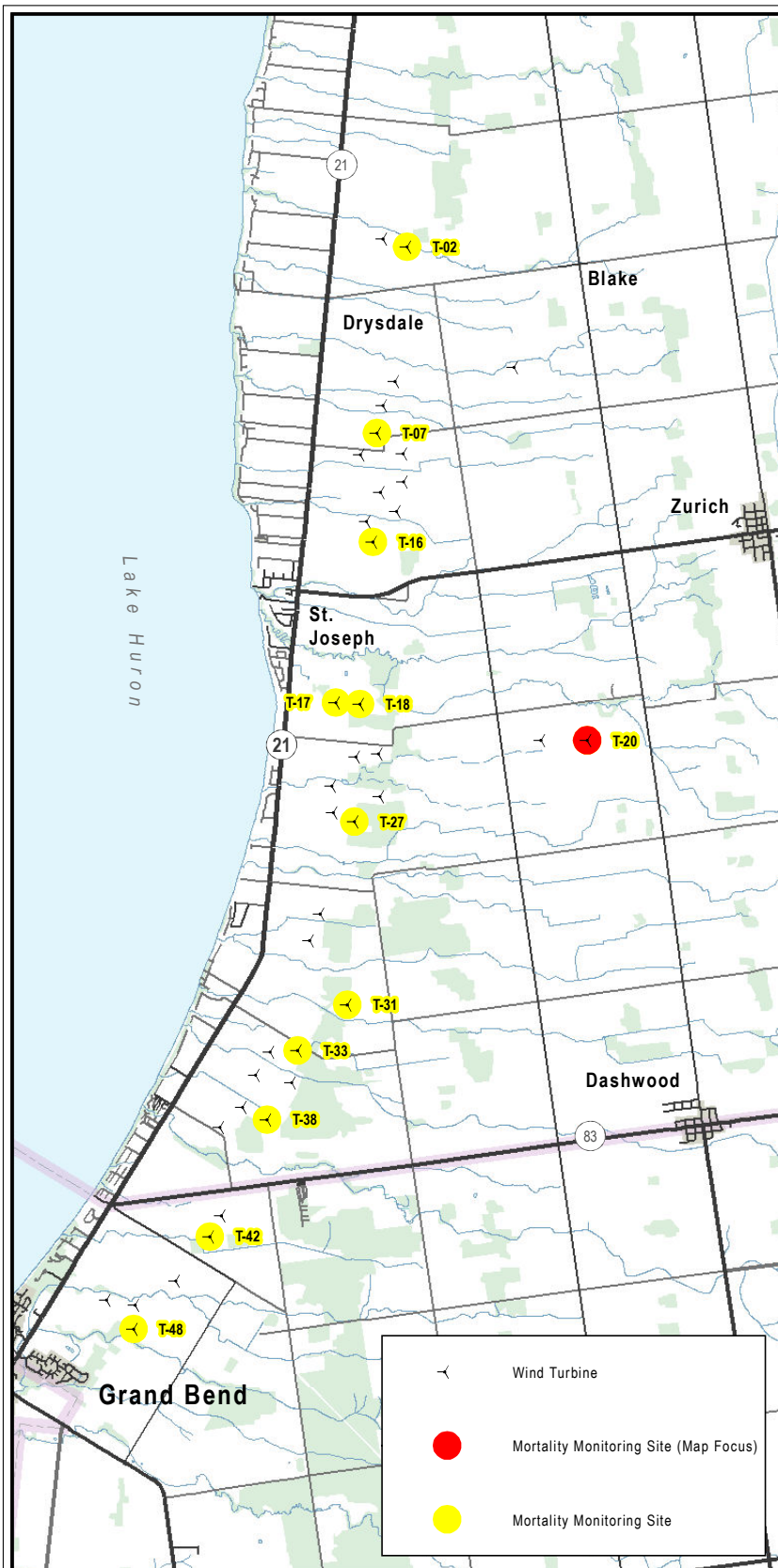
Figure Title

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-19**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale		Project No.	<b>A-13</b>
H 1:1,000		PIA019991	



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

**Bats (with Count)**

- Big Brown Bat (1)
- Eastern Red Bat (1)
- Hoary Bat (1)
- Silver-haired Bat (2)

**Birds (with Count)**

- Blue Jay (1)
- Cliff Swallow (1)
- Golden-crowned Kinglet (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North  
 0 10 20 30 40 50 60 70 80 Metres

Search Grid Transect (5m Separation)    Approach to Turbine  
 Search Radius (50m)    Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

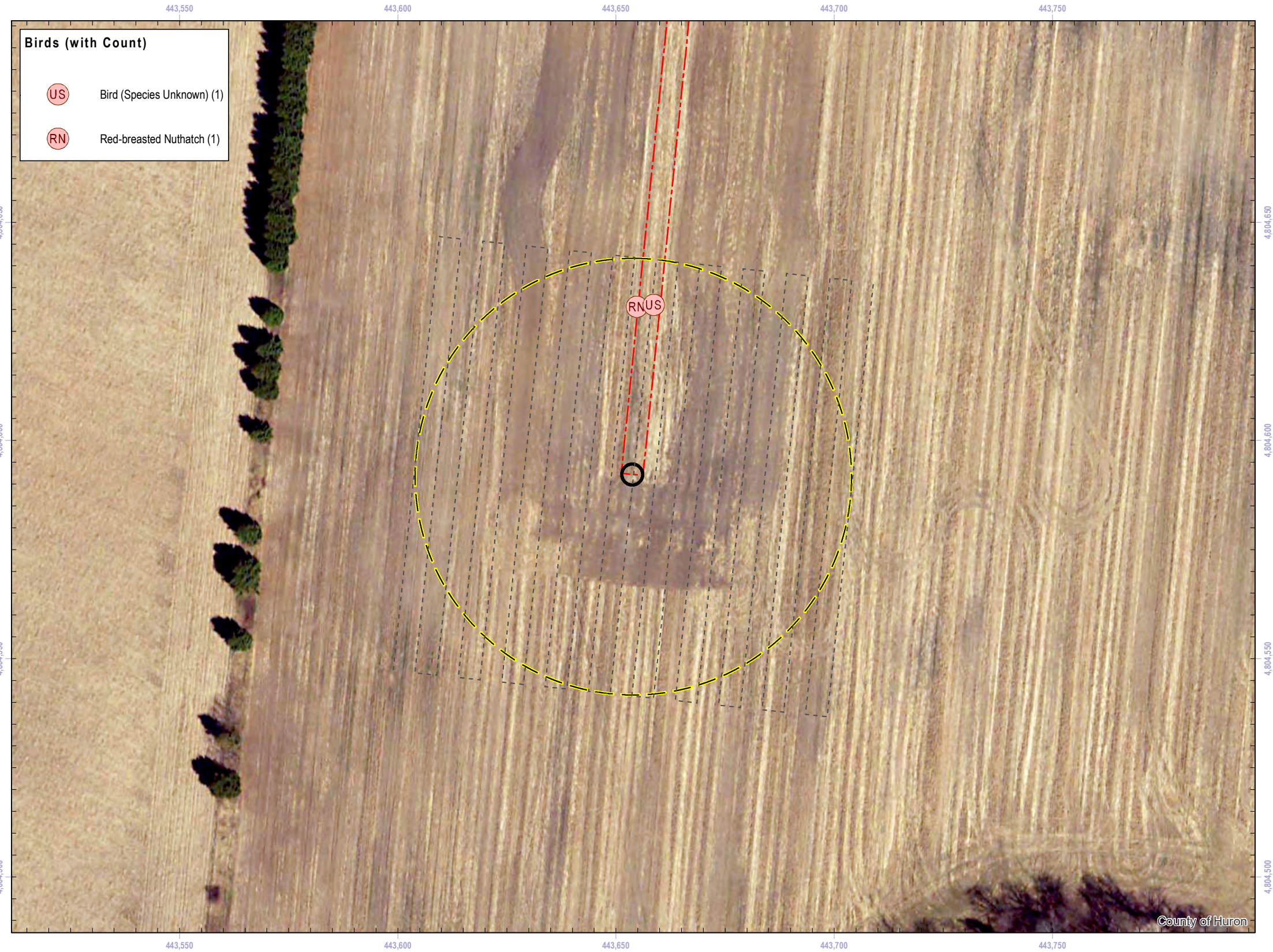
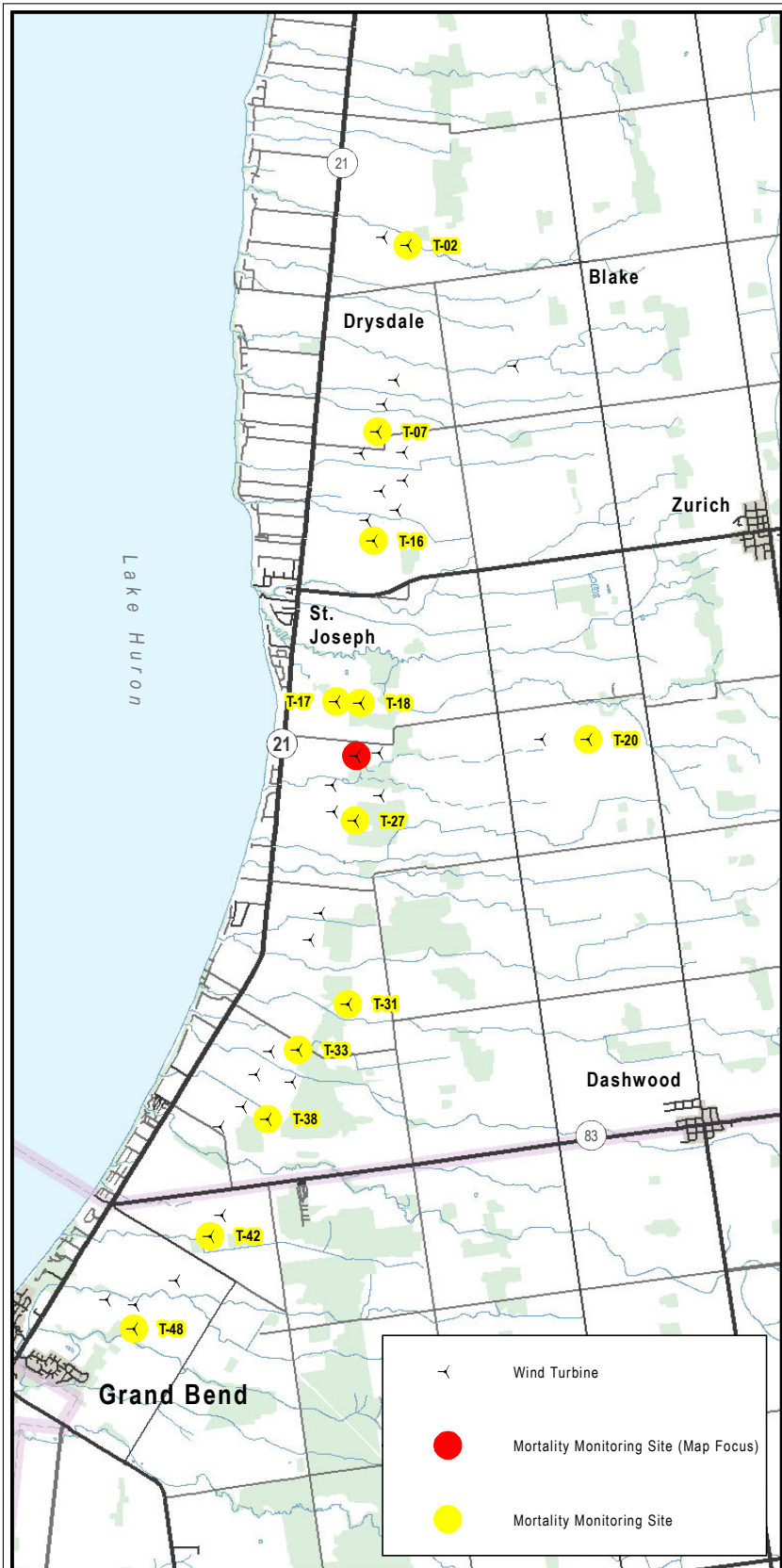
**Notes:**

1. Imagery reflects ground in 2015.

**BURNSIDE**  
 Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-20  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-14</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation)    - - - - Approach to Turbine

○ Search Radius (50m)    ○ Turbine Base Footprint

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

Notes:

1. Imagery reflects ground in 2015.

Client

**Grand Bend Wind GP Inc.**

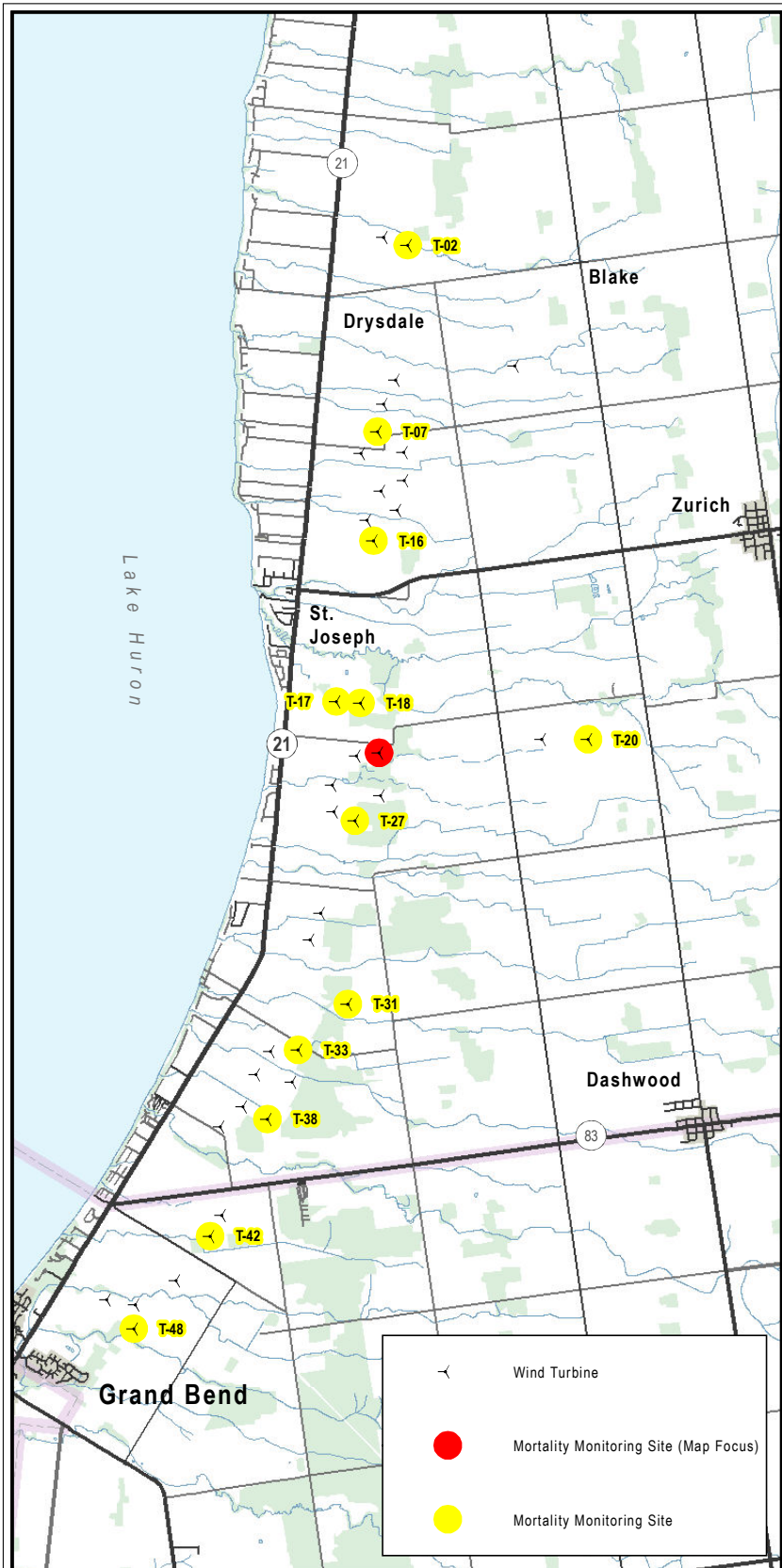
Figure Title

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-21**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-15</b>
H 1:1,000	PIA019991		



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

**Birds (with Count)**

Bobolink (1)  
 Red-tailed Hawk (1)  
 Sharp-shinned Hawk (1)



Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

**Notes:**  
 1. Imagery reflects ground in 2015.

**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

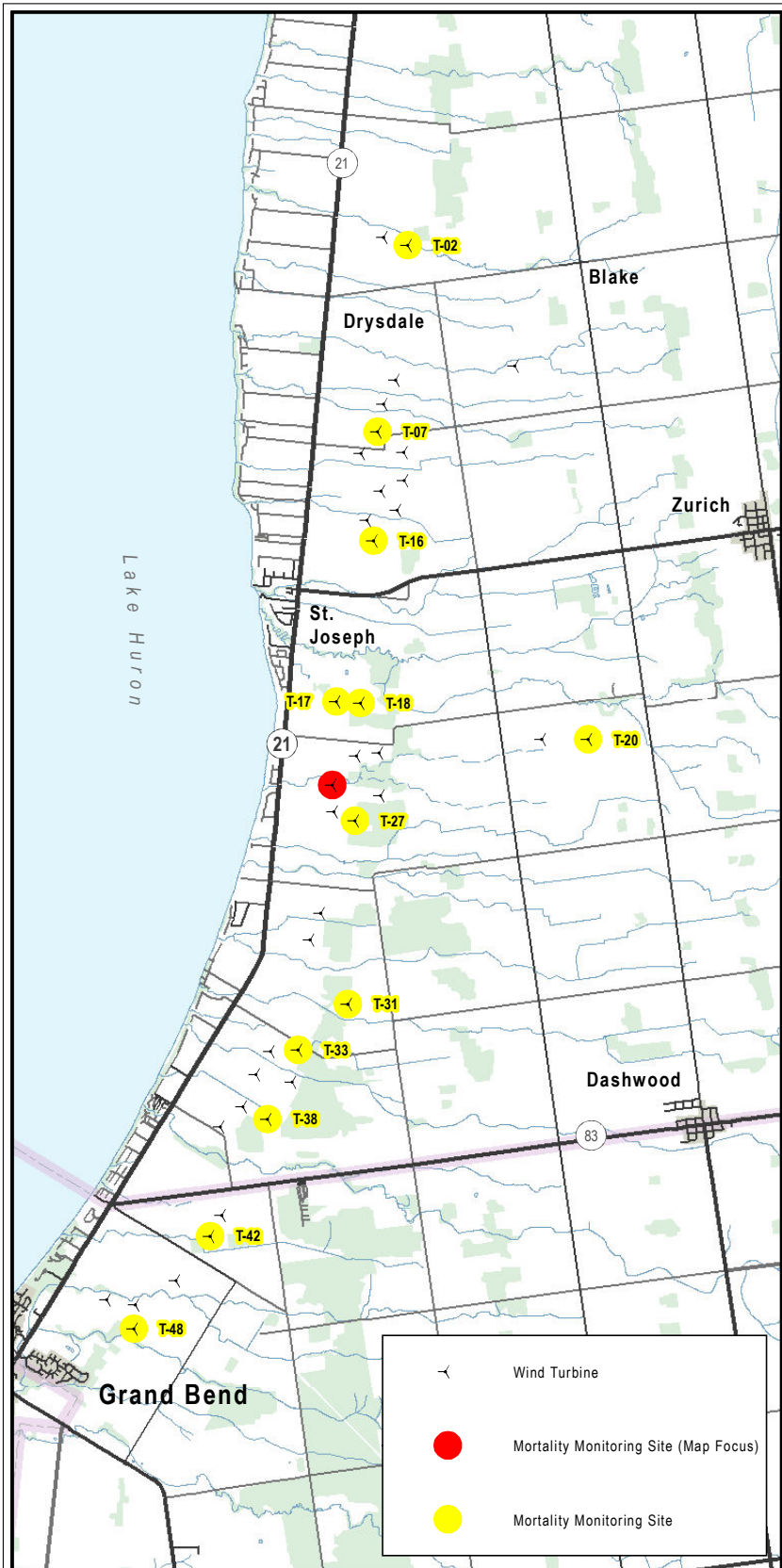
Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-22  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-16</b>
H 1:1,000	PIA019991		

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m    False Northing: 0m  
 Rotation: 0    Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80 Metres



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

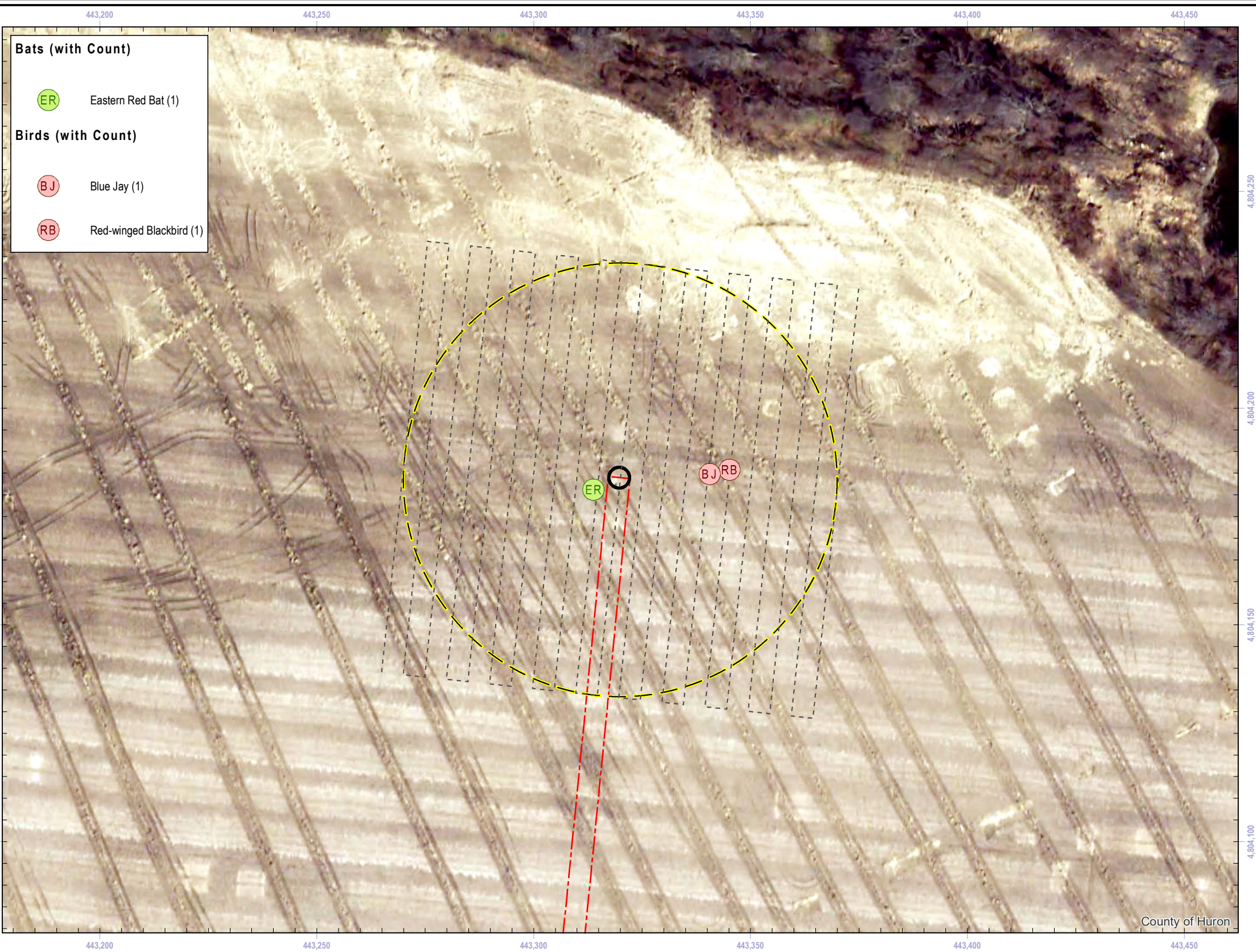
**Bats (with Count)**

Eastern Red Bat (1)

**Birds (with Count)**

Blue Jay (1)

Red-winged Blackbird (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80 Metres

Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

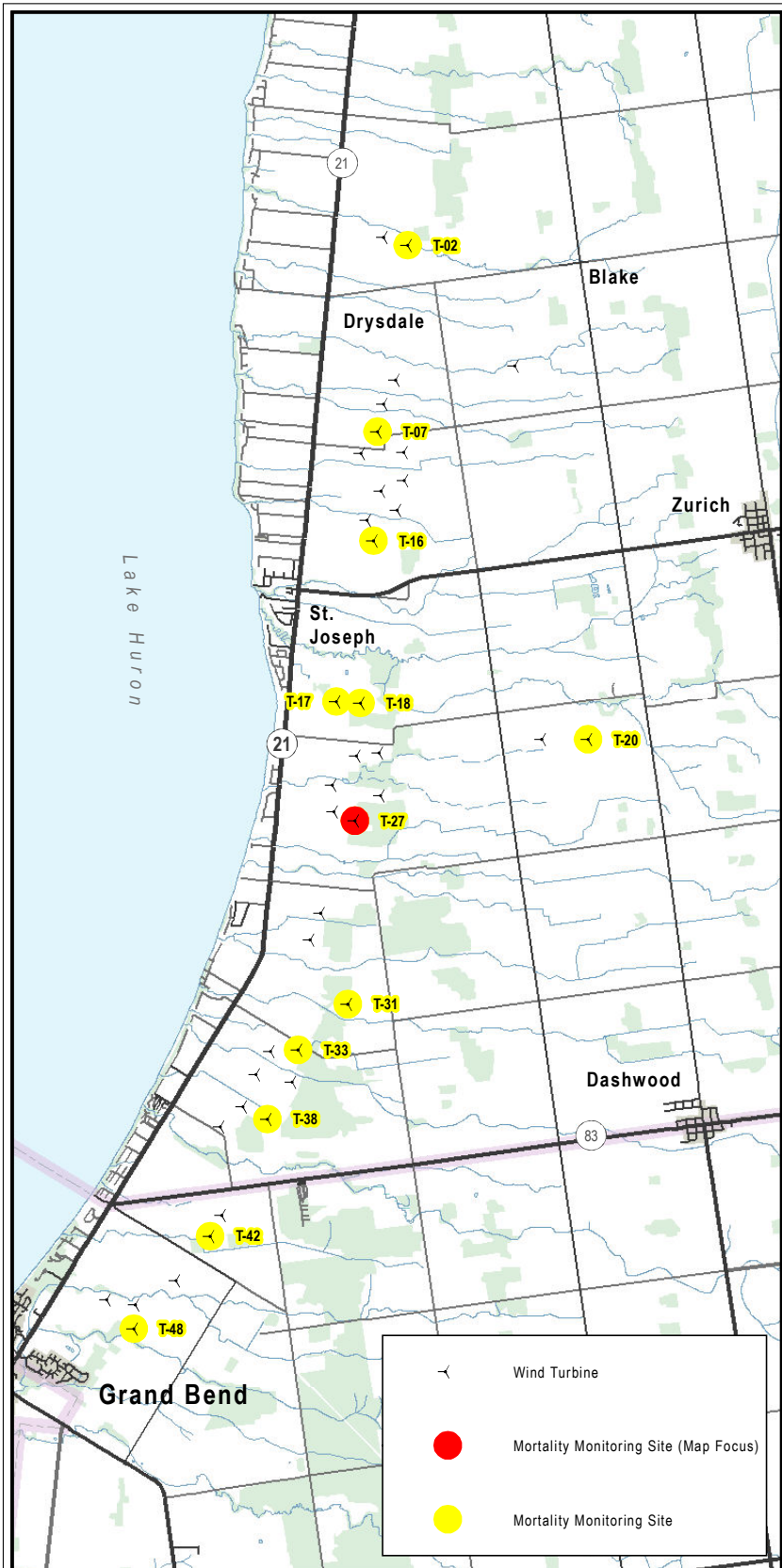
**BURNSIDE**

Client: **Grand Bend Wind GP Inc.**

Figure Title: **Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

Turbine T-23  
Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-17</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

--- Search Grid Transect (5m Separation) --- Approach to Turbine  
 (Dotted Circle) Search Radius (50m) (Black Circle) Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

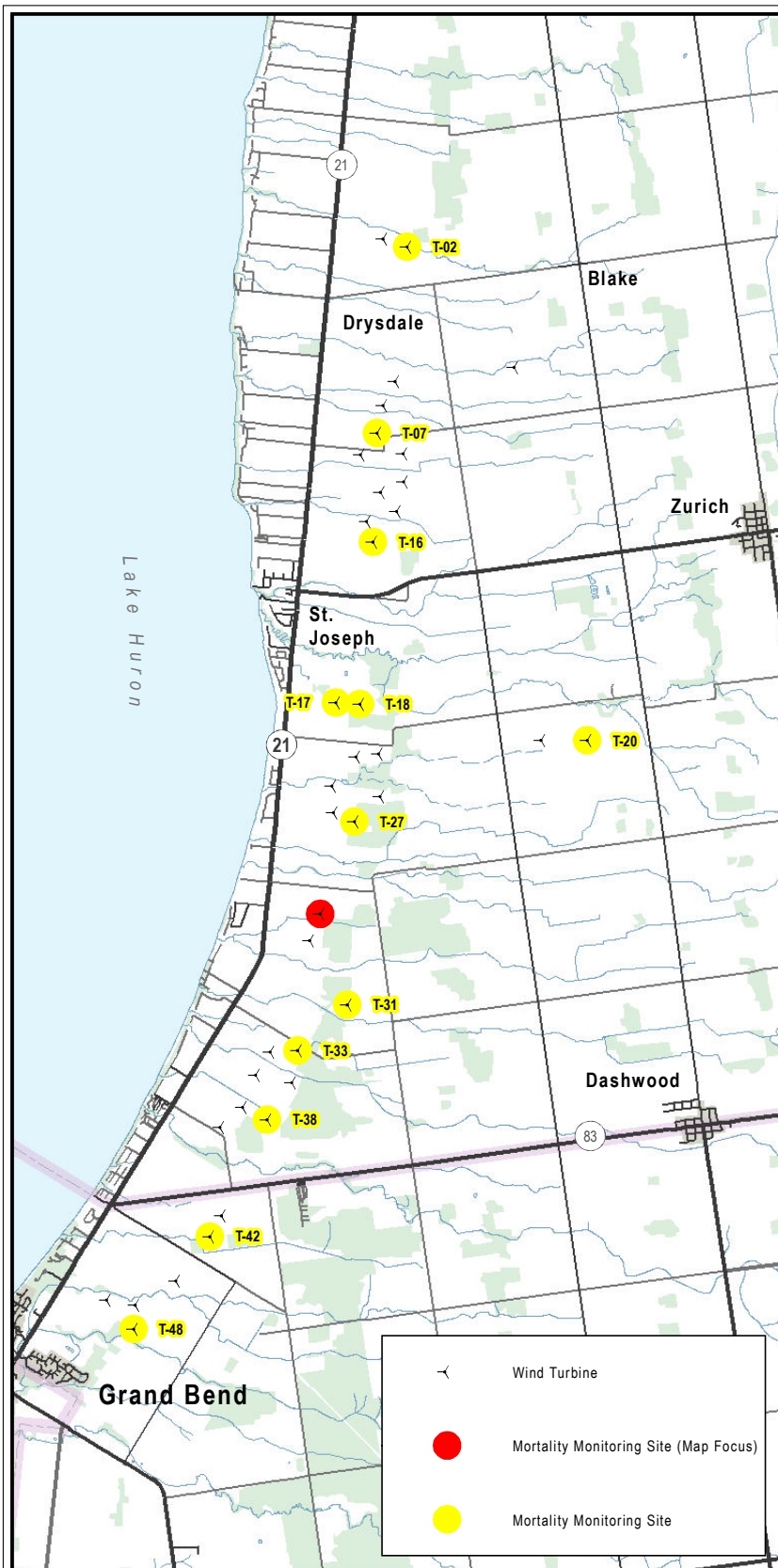
**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-27  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-18</b>
H 1:1,000	PIA019991		



- Wind Turbine
- Mortality Monitoring Site (Map Focus)
- Mortality Monitoring Site

- Bats (with Count)**
- Bat (Species Unknown) (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

--- Search Grid Transect (5m Separation)    - - - Approach to Turbine

Search Radius (50m)    Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

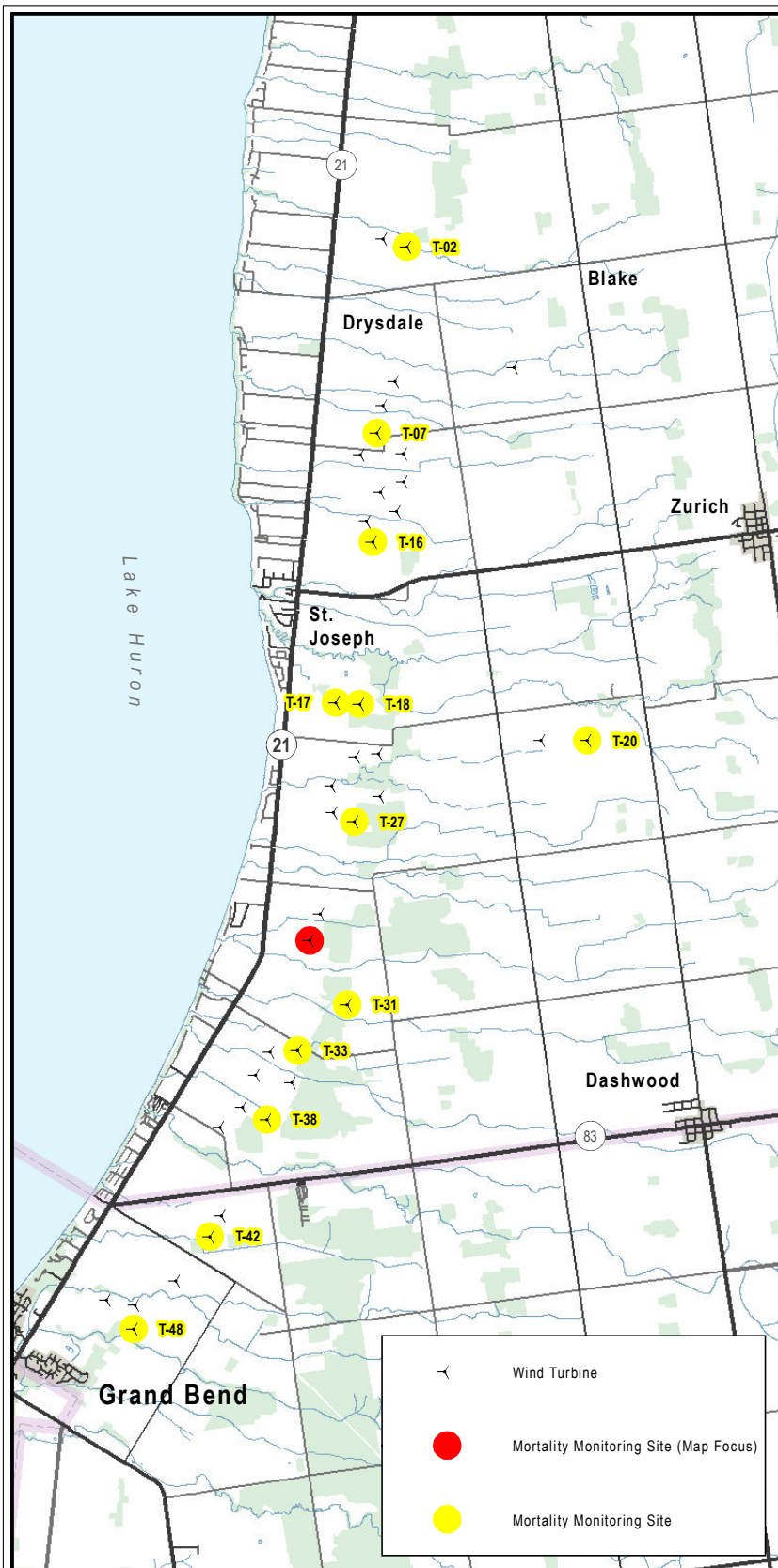
**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-29  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-19</b>
H 1:1,000	PIA019991		



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

**Bats (with Count)**

Bat (Species Unknown) (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

**Notes:**  
 1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Figure Title

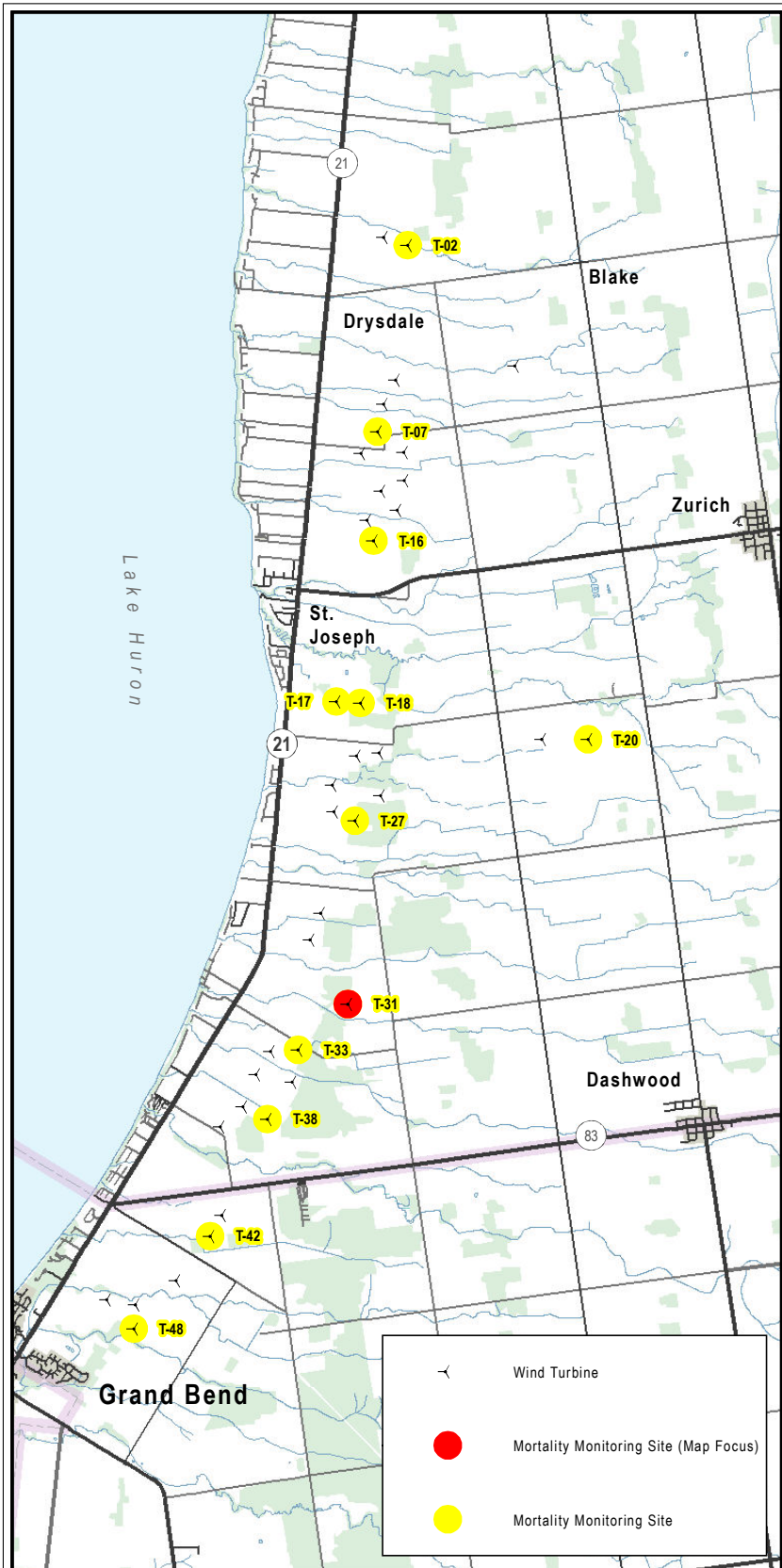
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-30**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-20</b>
H 1:1,000	PIA019991		





- Bats (with Count)**
- US Bat (Species Unknown) (3)
  - BB Big Brown Bat (3)
  - ER Eastern Red Bat (1)
  - HB Hoary Bat (3)
  - SH Silver-haired Bat (2)
- Birds (with Count)**
- US Bird (Species Unknown) (1)
  - GK Golden-crowned Kinglet (1)

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

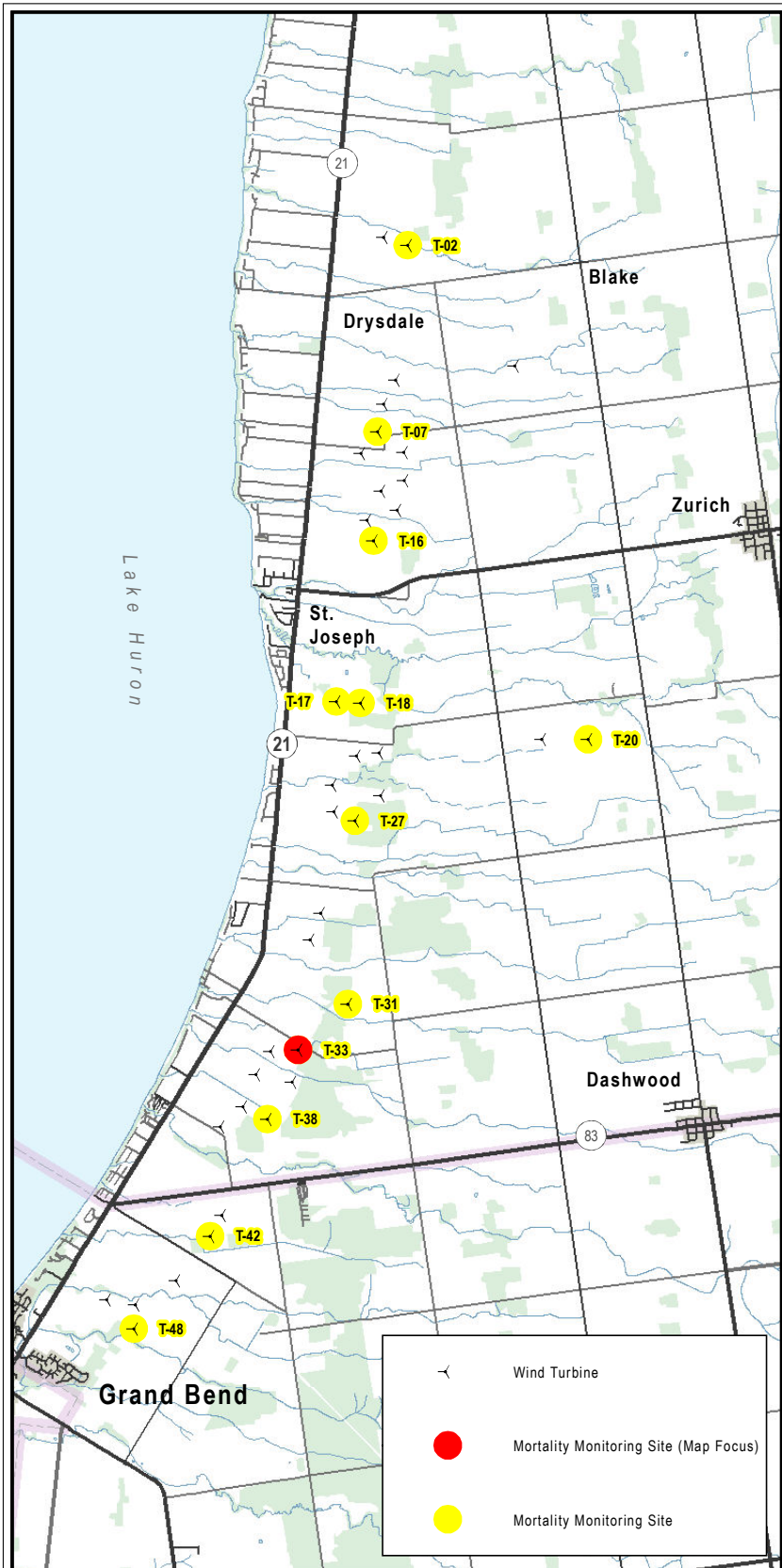
1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Client

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-31  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	<b>A-21</b>
Scale	Project No.		
H 1:1,000		PIA019991	



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

**Bats (with Count)**

- Big Brown Bat (2)
- Eastern Red Bat (2)
- Hoary Bat (7)
- Silver-haired Bat (1)

**Birds (with Count)**

- Golden-crowned Kinglet (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North  
 0 10 20 30 40 50 60 70 80 Metres

Search Grid Transect (5m Separation)    Approach to Turbine  
 Search Radius (50m)    Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

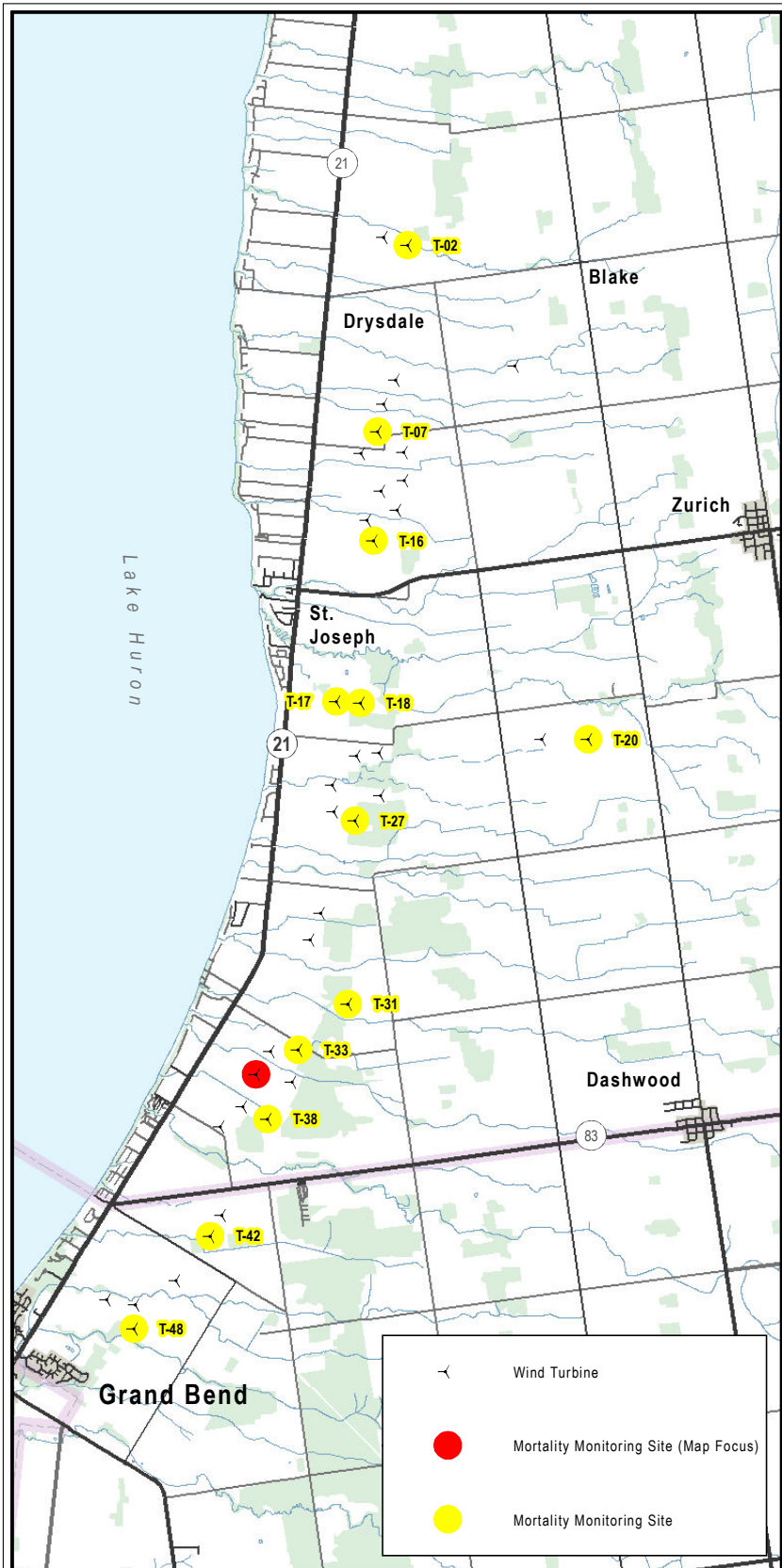
**Notes:**

1. Imagery reflects ground in 2015.

**BURNSIDE**  
 Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-33  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-22</b>
H 1:1,000	PIA019991		

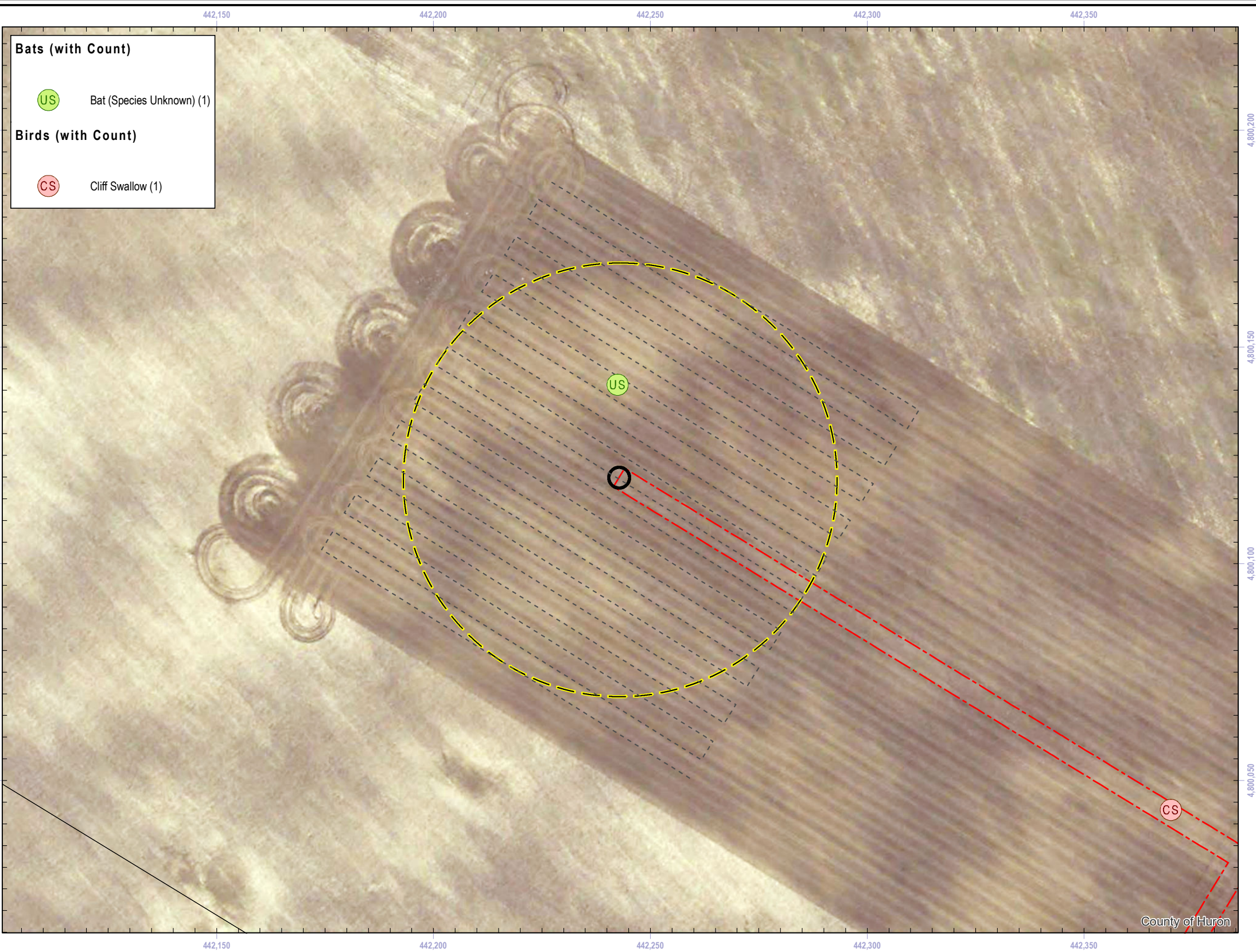


**Bats (with Count)**

(US) Bat (Species Unknown) (1)

**Birds (with Count)**

(CS) Cliff Swallow (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

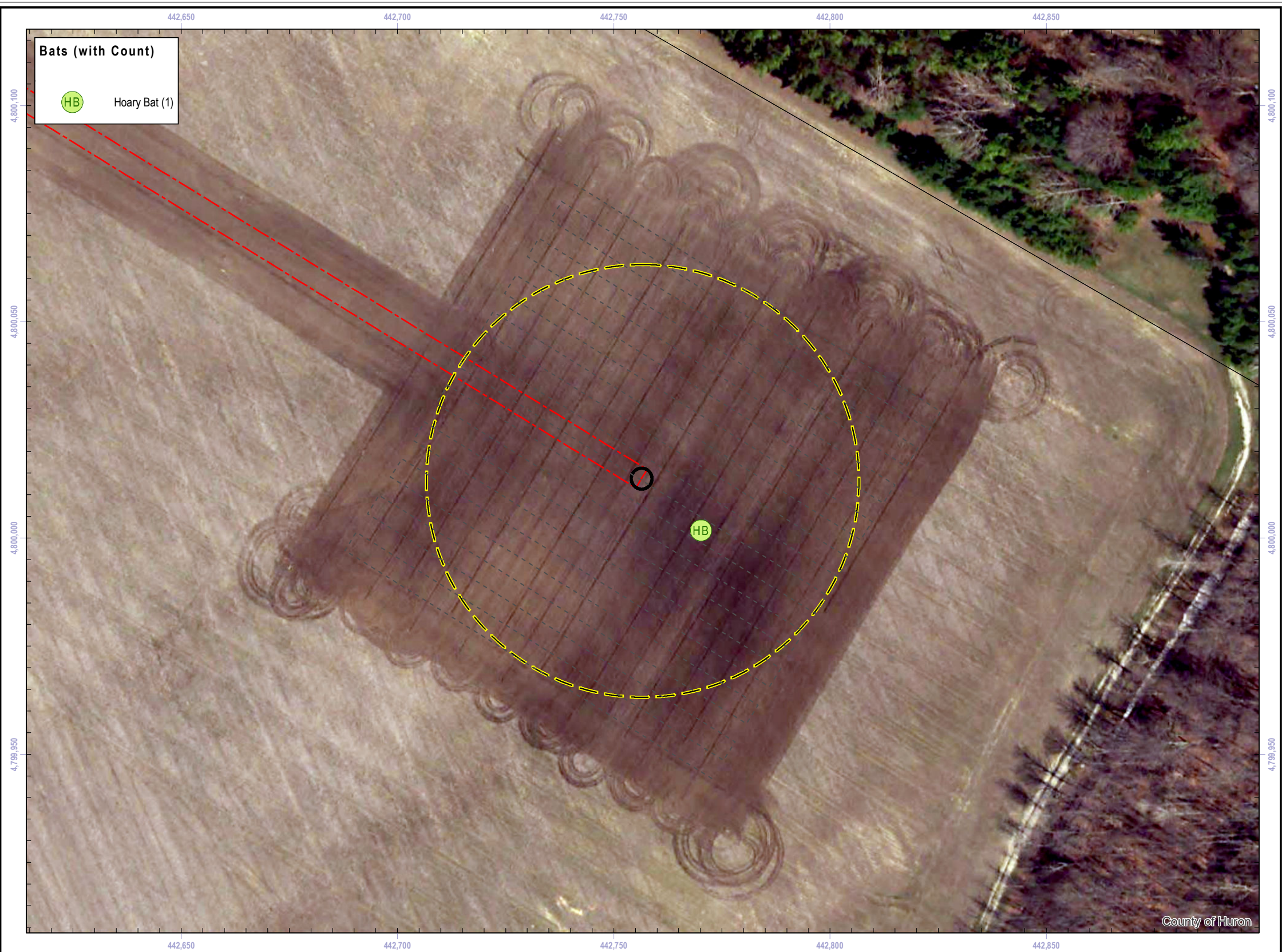
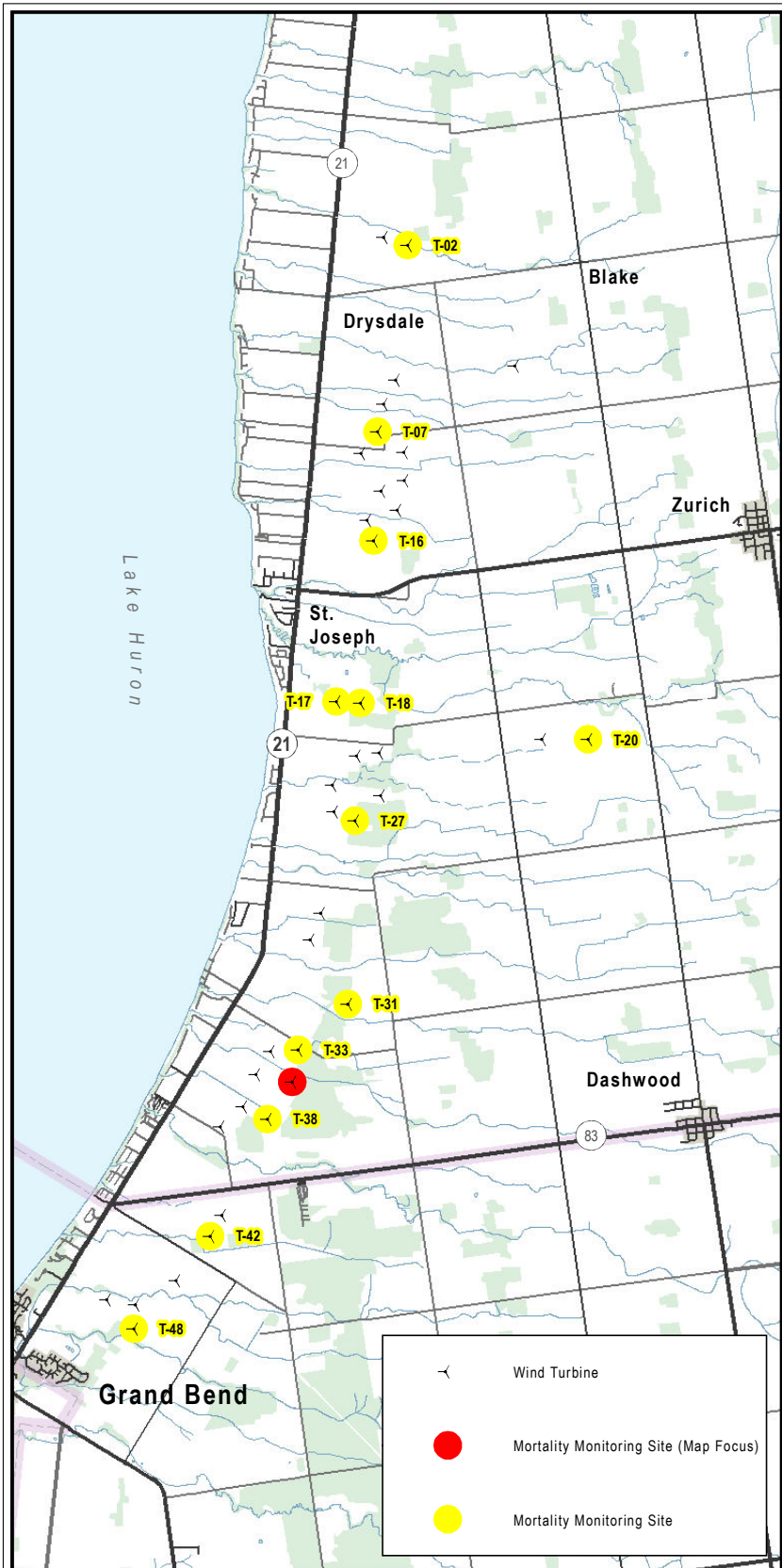
1. Imagery reflects ground in 2015.

**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-34  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-23</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m | False Northing: 0m  
 Rotation: 0 | Scale Factor: 0.99960

**Grid North**

0 10 20 30 40 50 60 70 80  
Metres

**Sources:**

- Ministry of Natural Resources, © Queen's Printer for Ontario
- Natural Resources Canada © Her Majesty the Queen in Right of Canada.
- Huron County
- R.J. Burnside & Associates Limited

**Notes:**

- Imagery reflects ground in 2015.

**Client**

**Grand Bend Wind GP Inc.**

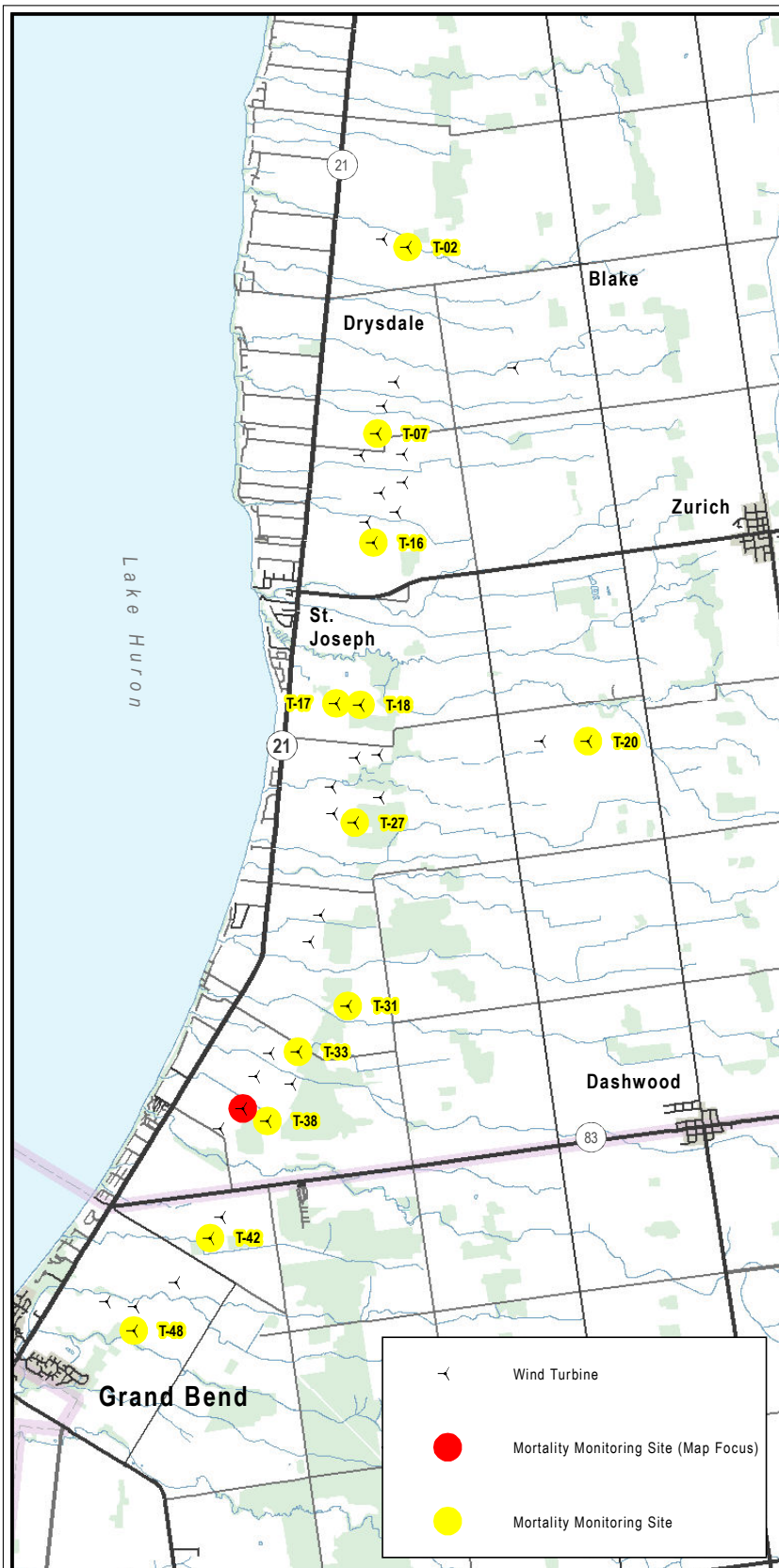
**Figure Title**

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-35**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-24</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

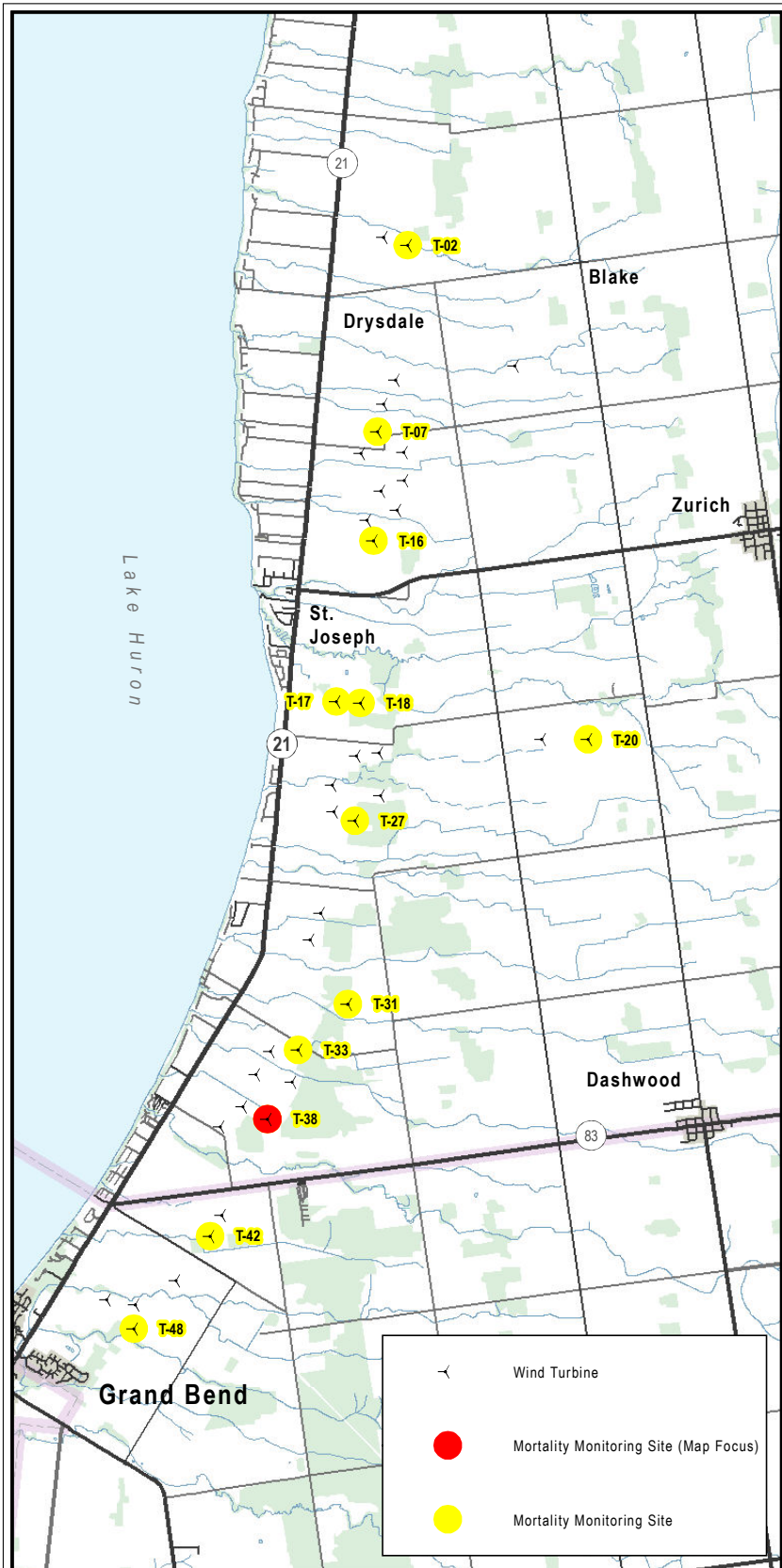
Sources:  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

Notes:  
 1. Imagery reflects ground in 2015.

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-37  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-25</b>
H 1:1,000	PIA019991		



- Bats (with Count)**
- BB Big Brown Bat (1)
  - ER Eastern Red Bat (2)
  - HB Hoary Bat (2)
  - SH Silver-haired Bat (2)
- Birds (with Count)**
- US Bird (Species Unknown) (1)
  - CS Chimney Swift (1)
  - ES European Starling (1)
  - GK Golden-crowned Kinglet (1)
  - RK Ruby-crowned Kinglet (1)
  - RT Ruby-throated Hummingbird (1)
  - TS Tree Swallow (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

--- Search Grid Transect (5m Separation)    - - - - Approach to Turbine

○ Search Radius (50m)    ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

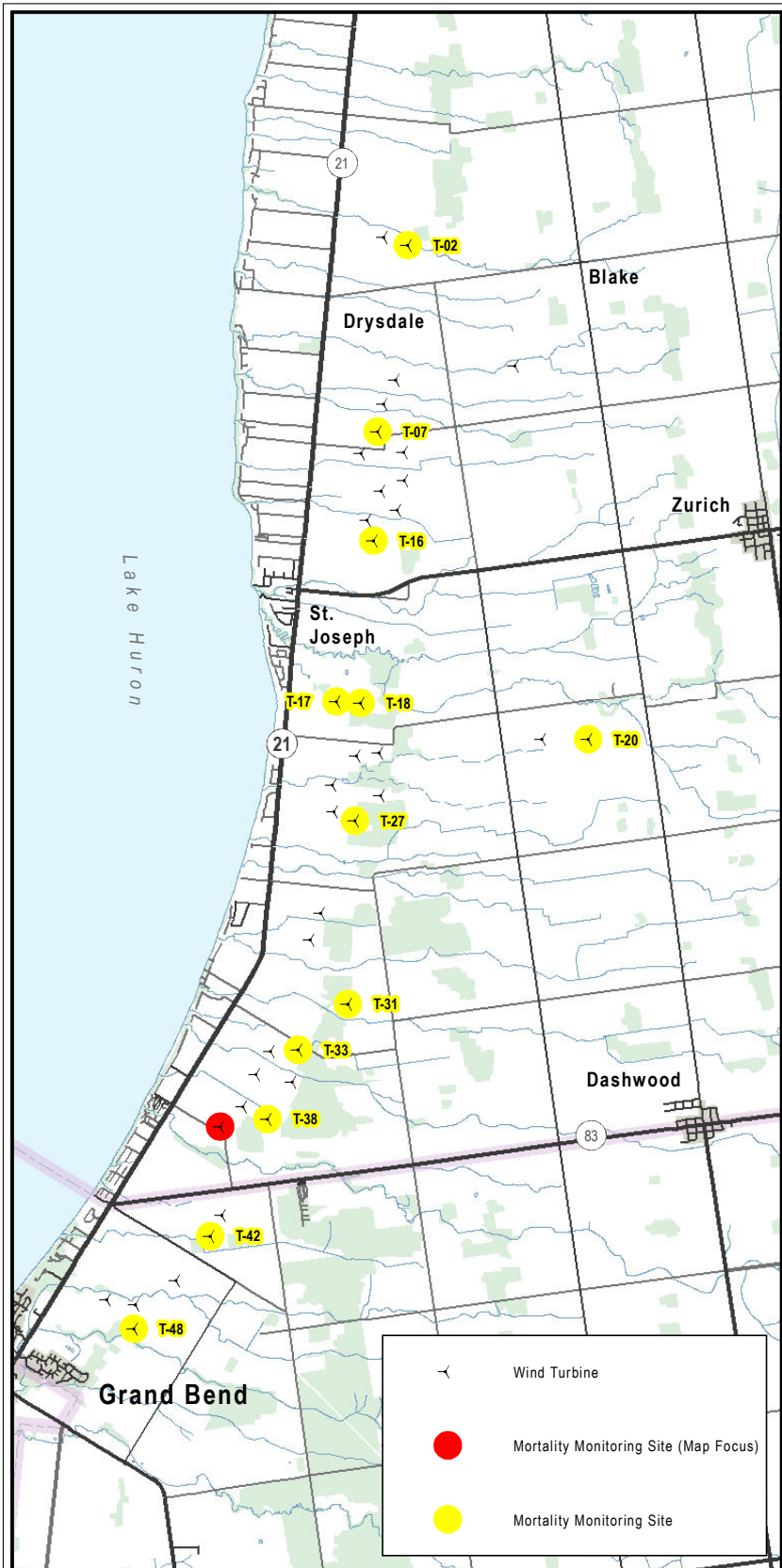
**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-38  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-26</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation)      - - - - Approach to Turbine

○ Search Radius (50m)      ○ Turbine Base Footprint

Sources:

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

Notes:

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Client

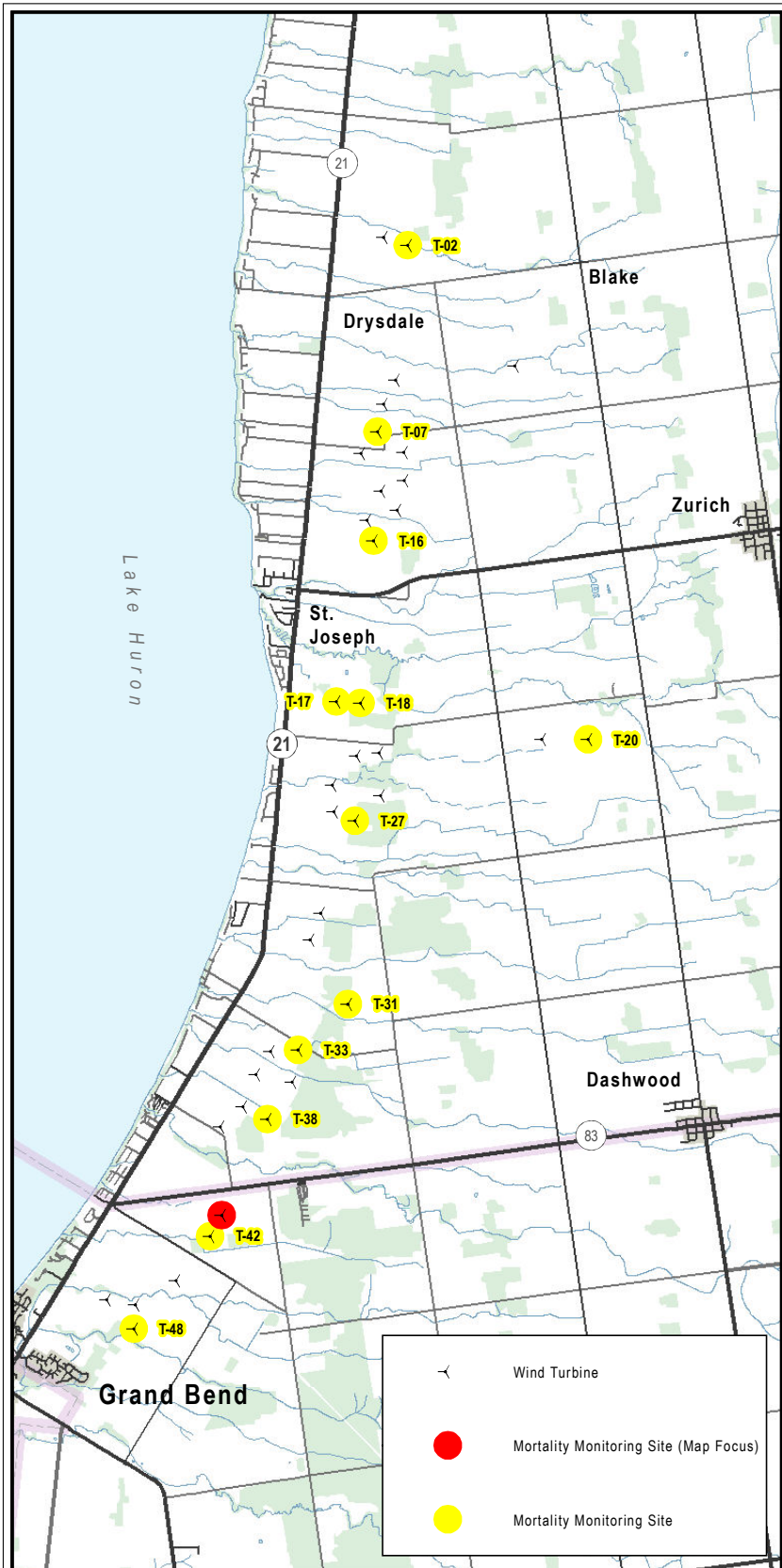
Figure Title

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-39**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-27</b>
H 1:1,000	PIA019991		



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

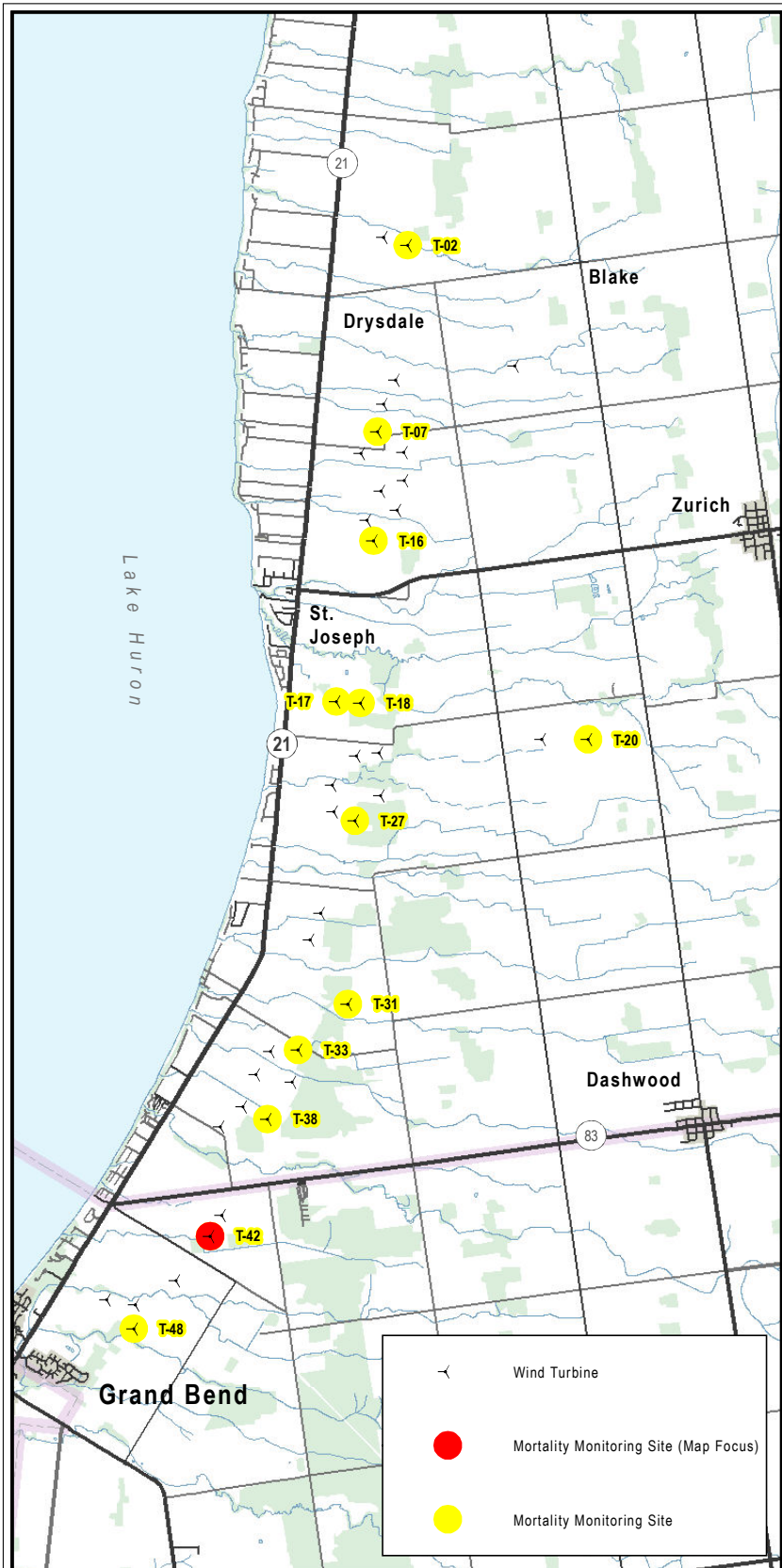
**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-41  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-28</b>
H 1:1,000	PIA019991		





Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site

**Bats (with Count)**

- Big Brown Bat (2)
- Eastern Red Bat (3)
- Hoary Bat (2)
- Silver-haired Bat (2)

**Birds (with Count)**

- Bird (Species Unknown) (3)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m    False Northing: 0m  
 Rotation: 0    Scale Factor: 0.99960

Grid North

0 10 20 30 40 50 60 70 80  
 Metres

Search Grid Transect (5m Separation)    Approach to Turbine  
 Search Radius (50m)    Turbine Base Footprint

**Sources:**  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

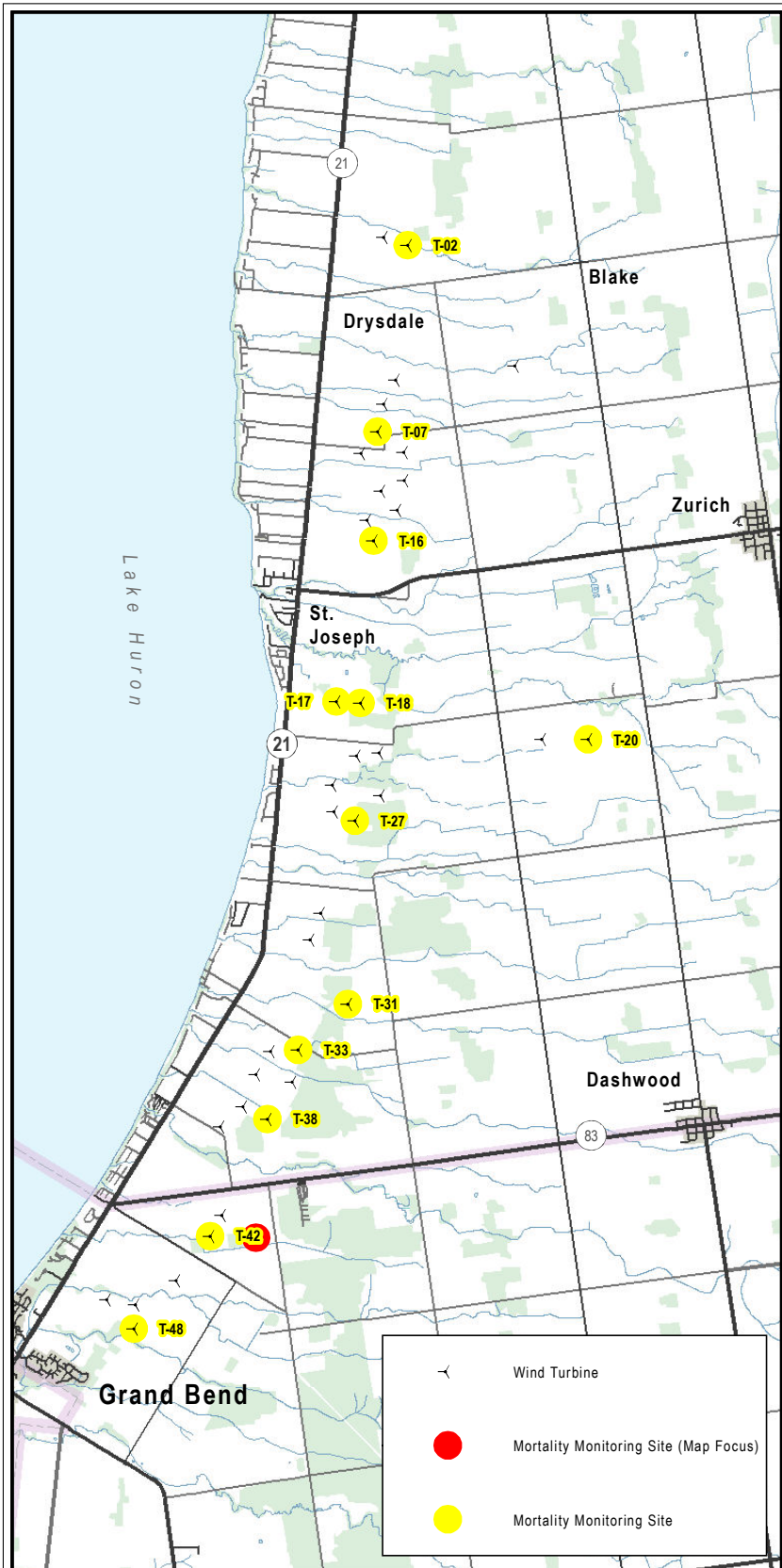
**Notes:**  
 1. Imagery reflects ground in 2015.

**BURNSIDE**

Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-42  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-29</b>
H 1:1,000	PIA019991		



- Bats (with Count)**
- HB Hoary Bat (2)
  - SH Silver-haired Bat (2)
- Birds (with Count)**
- RH Red-tailed Hawk (1)

- Wind Turbine
- Mortality Monitoring Site (Map Focus)
- Mortality Monitoring Site

- Search Grid Transect (5m Separation)
- Approach to Turbine
- Search Radius (50m)
- Turbine Base Footprint

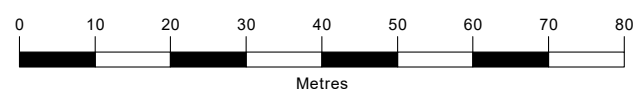
**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

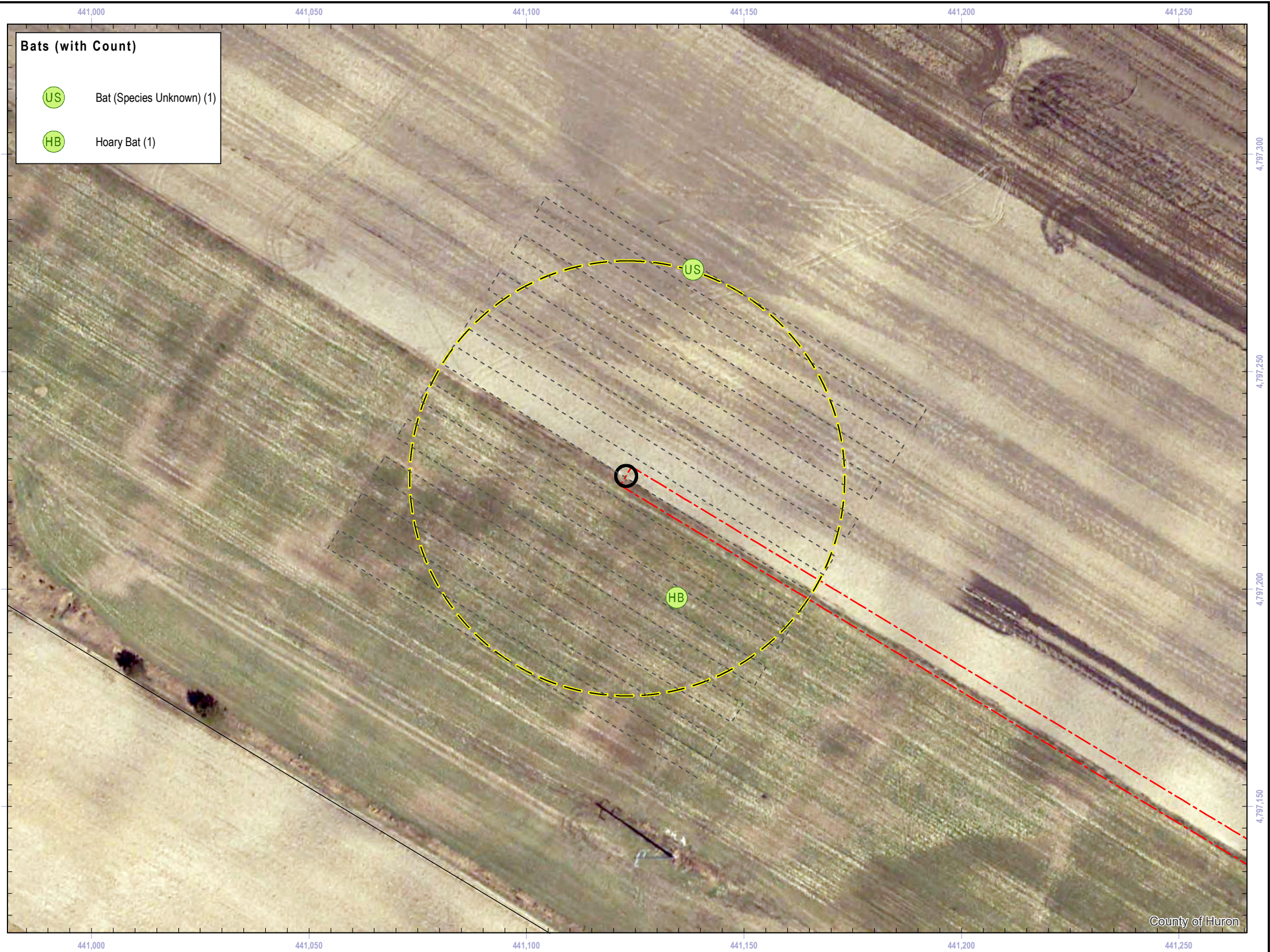
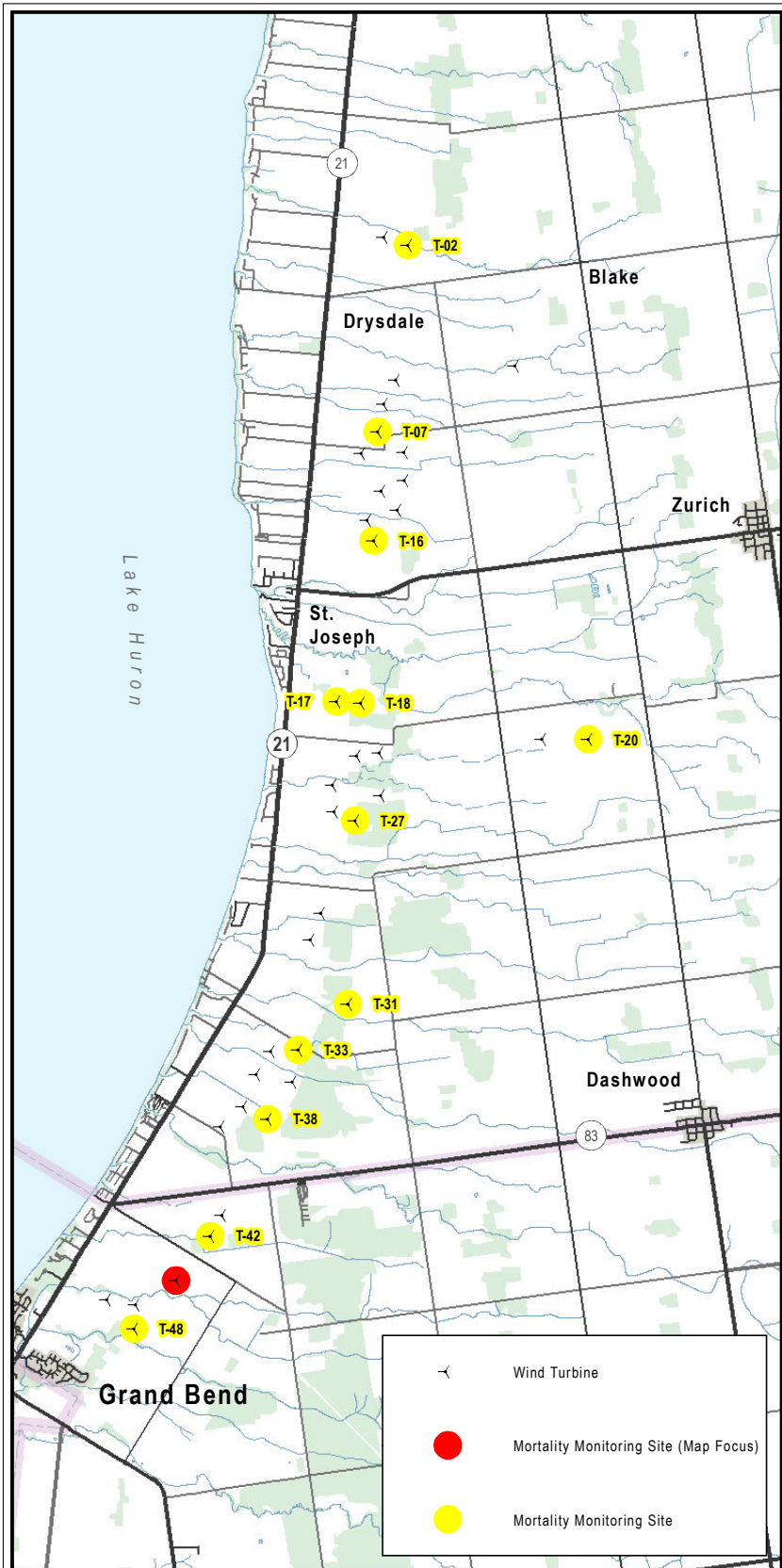
Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960



Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-43  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-30</b>
H 1:1,000	PIA019991		



**Bats (with Count)**

- US Bat (Species Unknown) (1)
- HB Hoary Bat (1)

- Wind Turbine
- Mortality Monitoring Site (Map Focus)
- Mortality Monitoring Site

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

- Search Grid Transect (5m Separation)
- Approach to Turbine
- Search Radius (50m)
- Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

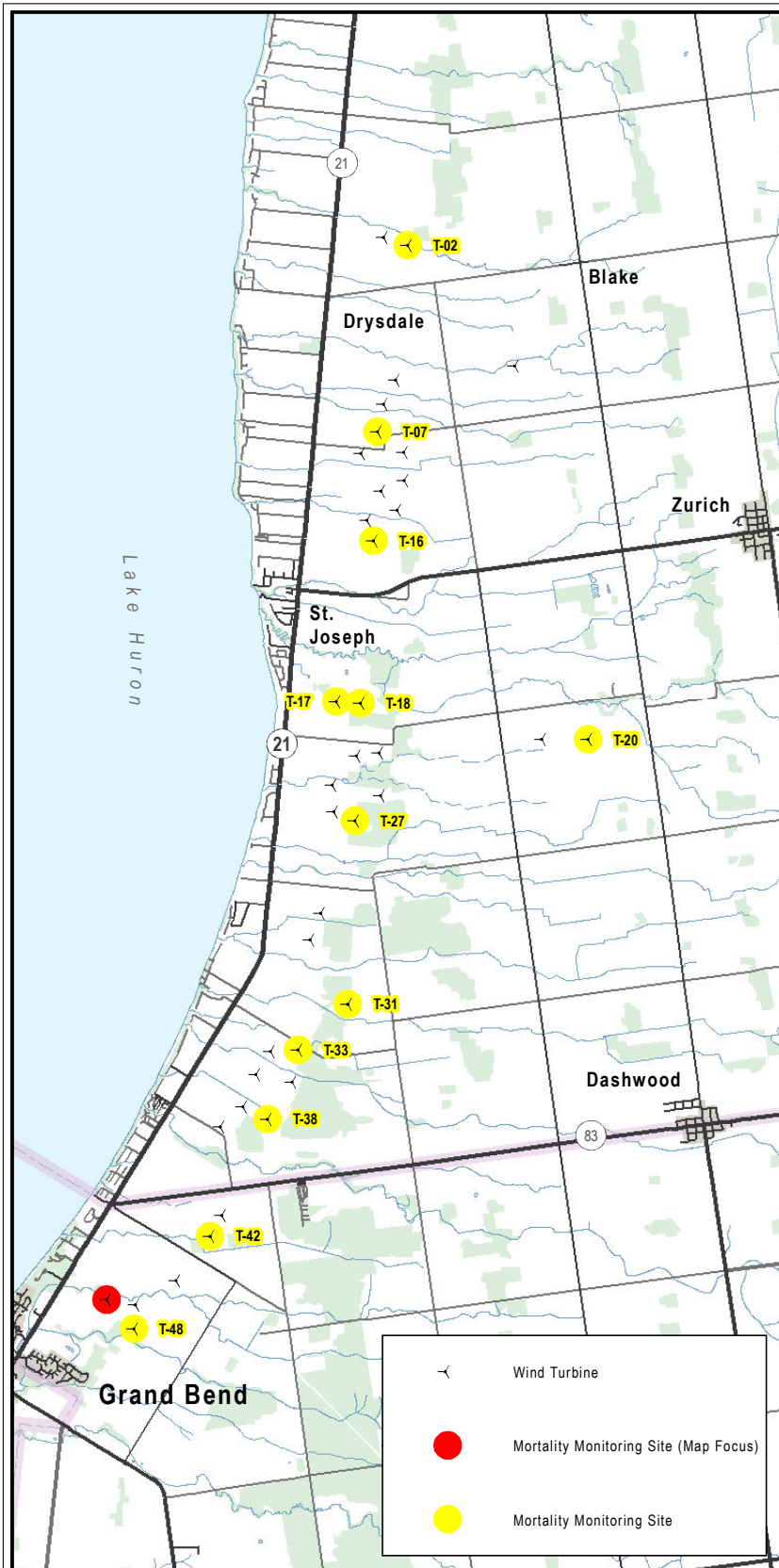
**Notes:**

1. Imagery reflects ground in 2015.

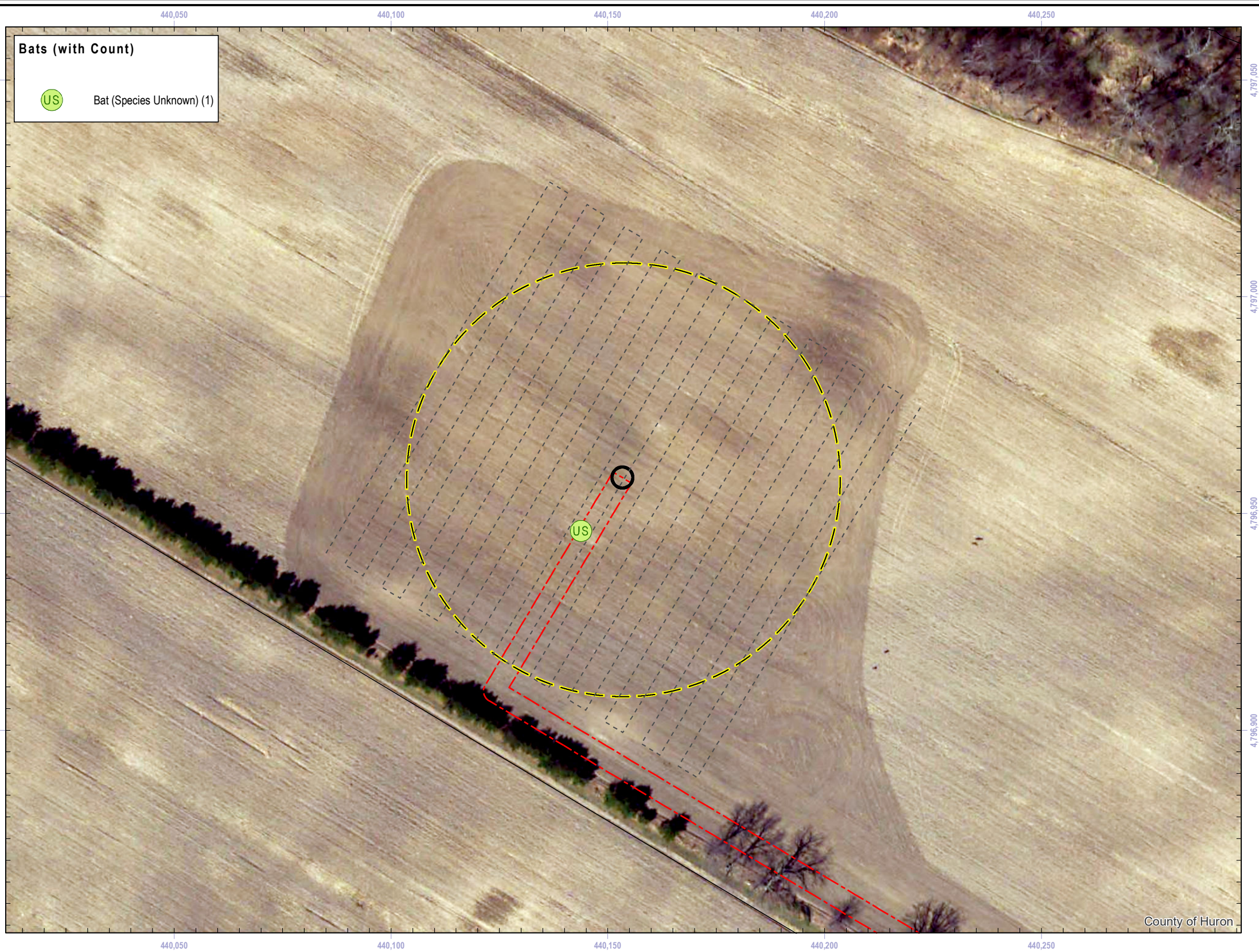
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-44  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-31</b>
H 1:1,000	PIA019991		



Wind Turbine  
 Mortality Monitoring Site (Map Focus)  
 Mortality Monitoring Site



**Bats (with Count)**

Bat (Species Unknown) (1)

Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m    False Northing: 0m  
 Rotation: 0    Scale Factor: 0.99960

Grid North

Metres

Search Grid Transect (5m Separation)     Approach to Turbine  
 Search Radius (50m)     Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

**BURNSIDE**

Client

**Grand Bend Wind GP Inc.**

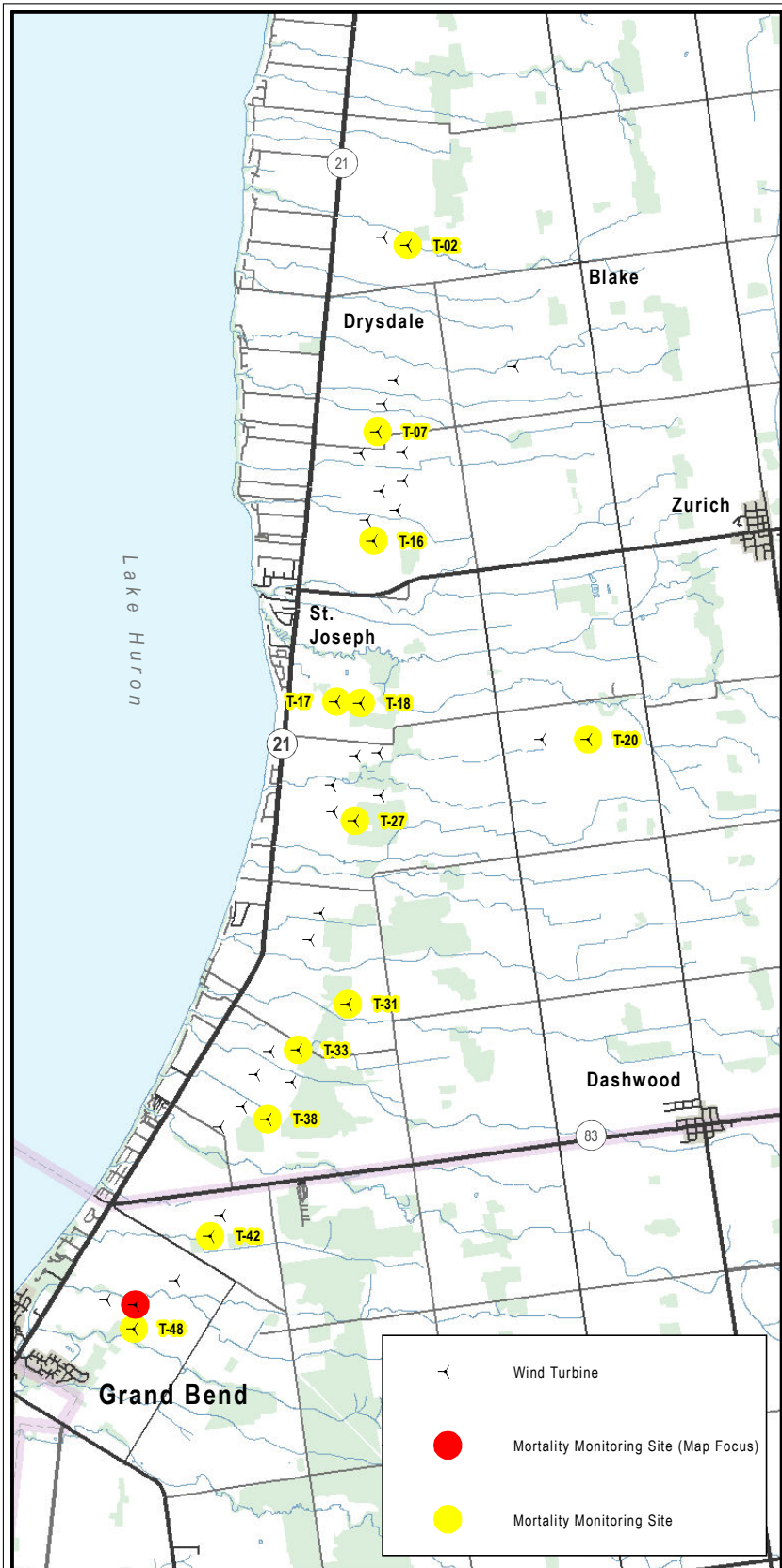
Figure Title

**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**

**Turbine T-45**

**Carcass Search Results**

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	<b>A-32</b>
Scale	Project No.		
H 1:1,000			PIA019991



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation)    - - - - Approach to Turbine

○ Search Radius (50m)    ○ Turbine Base Footprint

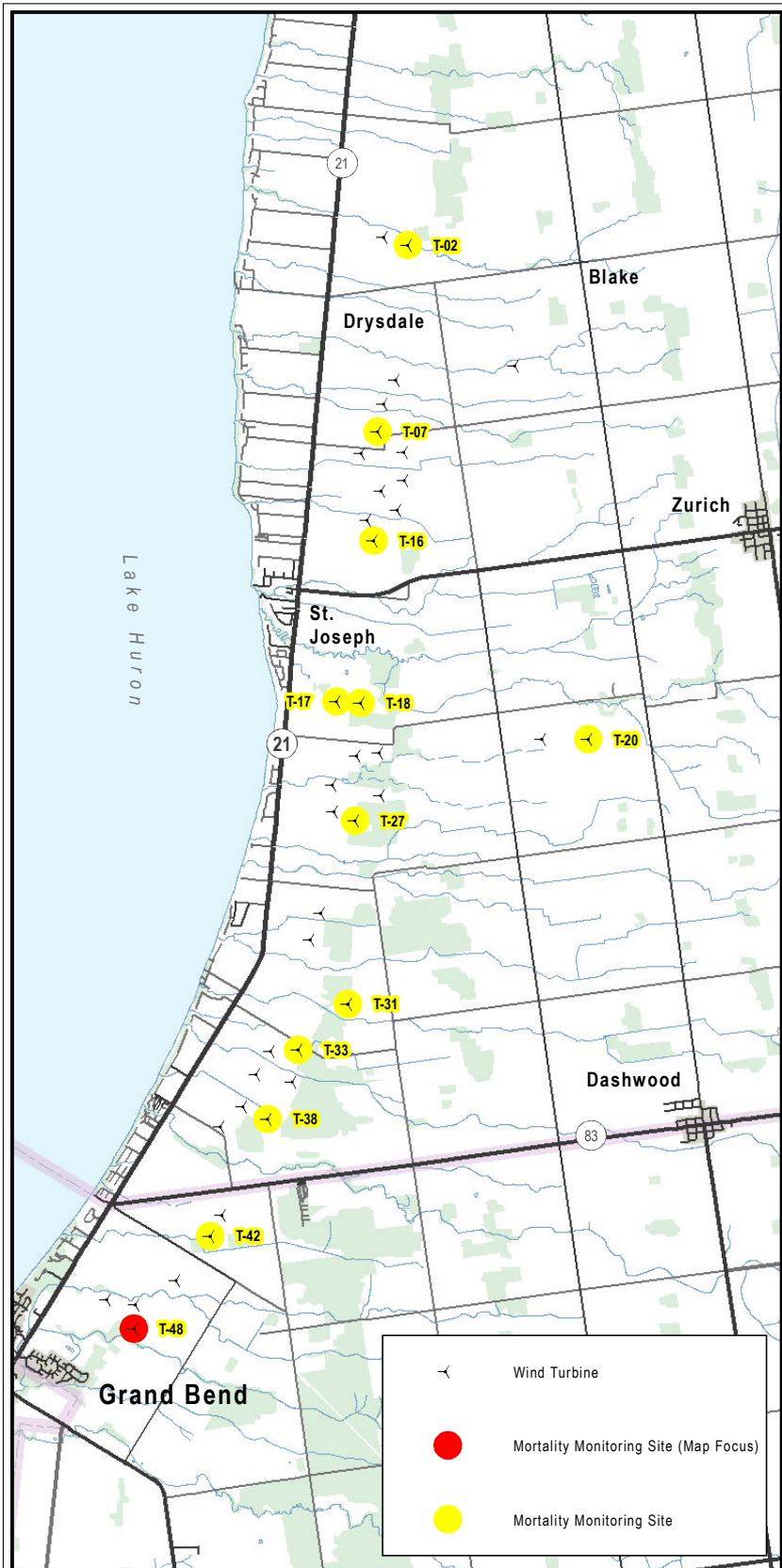
Sources:  
 1. Ministry of Natural Resources, © Queen's Printer for Ontario  
 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.  
 3. Huron County  
 4. R.J. Burnside & Associates Limited

Notes:  
 1. Imagery reflects ground in 2015.

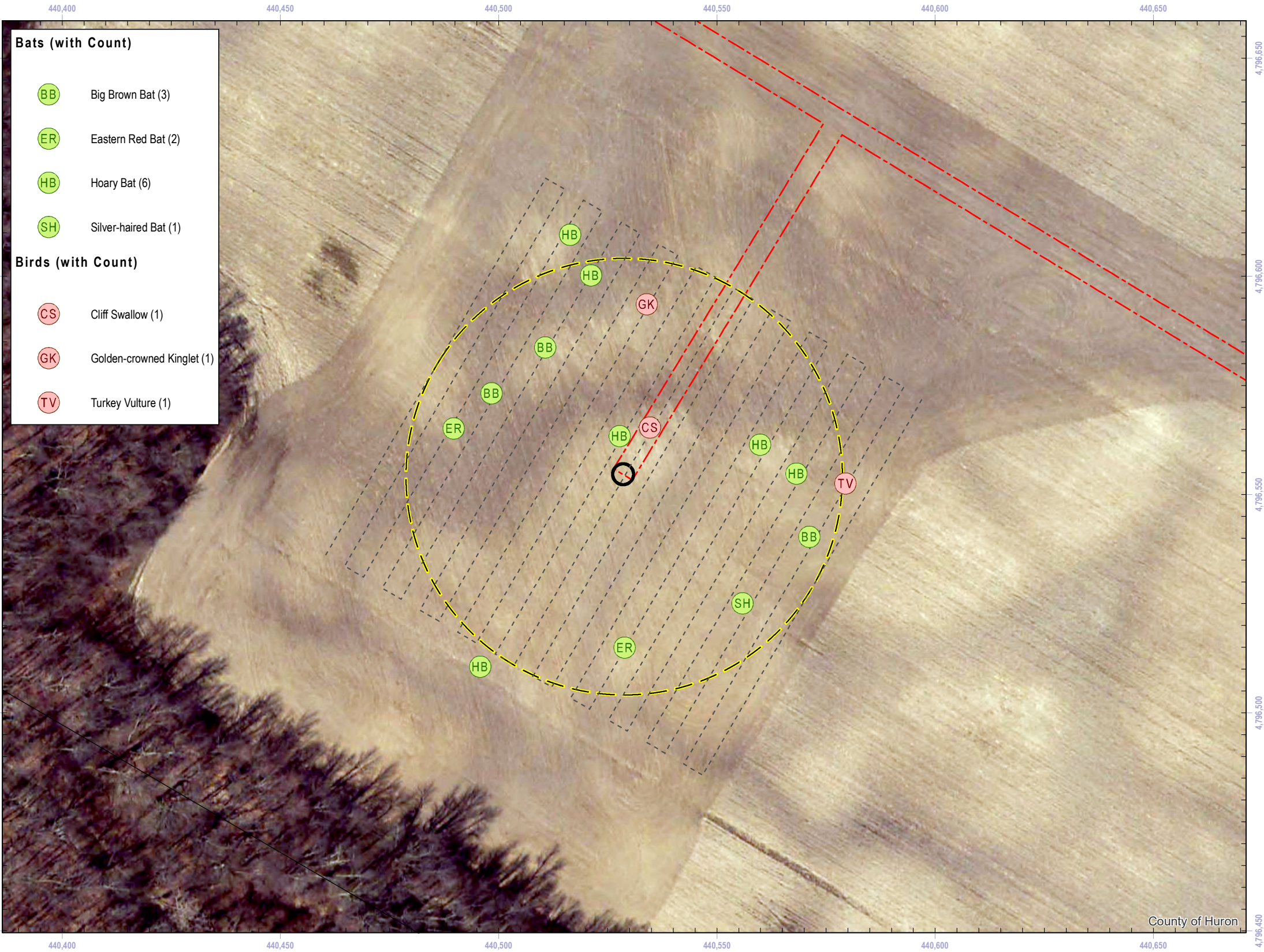
Client  
**Grand Bend Wind GP Inc.**

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-46  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-33</b>
H 1:1,000	PIA019991		



- Bats (with Count)**
- BB Big Brown Bat (3)
  - ER Eastern Red Bat (2)
  - HB Hoary Bat (6)
  - SH Silver-haired Bat (1)
- Birds (with Count)**
- CS Cliff Swallow (1)
  - GK Golden-crowned Kinglet (1)
  - TV Turkey Vulture (1)



Datum: North American 1983  
 Coord. System: NAD 1983 UTM Zone 17N  
 Projection: Transverse Mercator  
 Central Meridian: 81°00.00"W  
 False Easting: 500,000m False Northing: 0m  
 Rotation: 0 Scale Factor: 0.99960

Grid North

--- Search Grid Transect (5m Separation) --- Approach to Turbine

○ Search Radius (50m) ○ Turbine Base Footprint

**Sources:**

1. Ministry of Natural Resources, © Queen's Printer for Ontario
2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.
3. Huron County
4. R.J. Burnside & Associates Limited

**Notes:**

1. Imagery reflects ground in 2015.

**Grand Bend Wind GP Inc.**

Client

Figure Title  
**Post-Construction Environmental Monitoring for The Grand Bend Windfarm**  
 Turbine T-48  
 Carcass Search Results

Drawn	Checked	Date	Figure No.
PS	HM	2018/02/01	
Scale	Project No.		<b>A-34</b>
H 1:1,000	PIA019991		



**BURNSIDE**

[ THE DIFFERENCE IS OUR PEOPLE ]

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## Appendix C

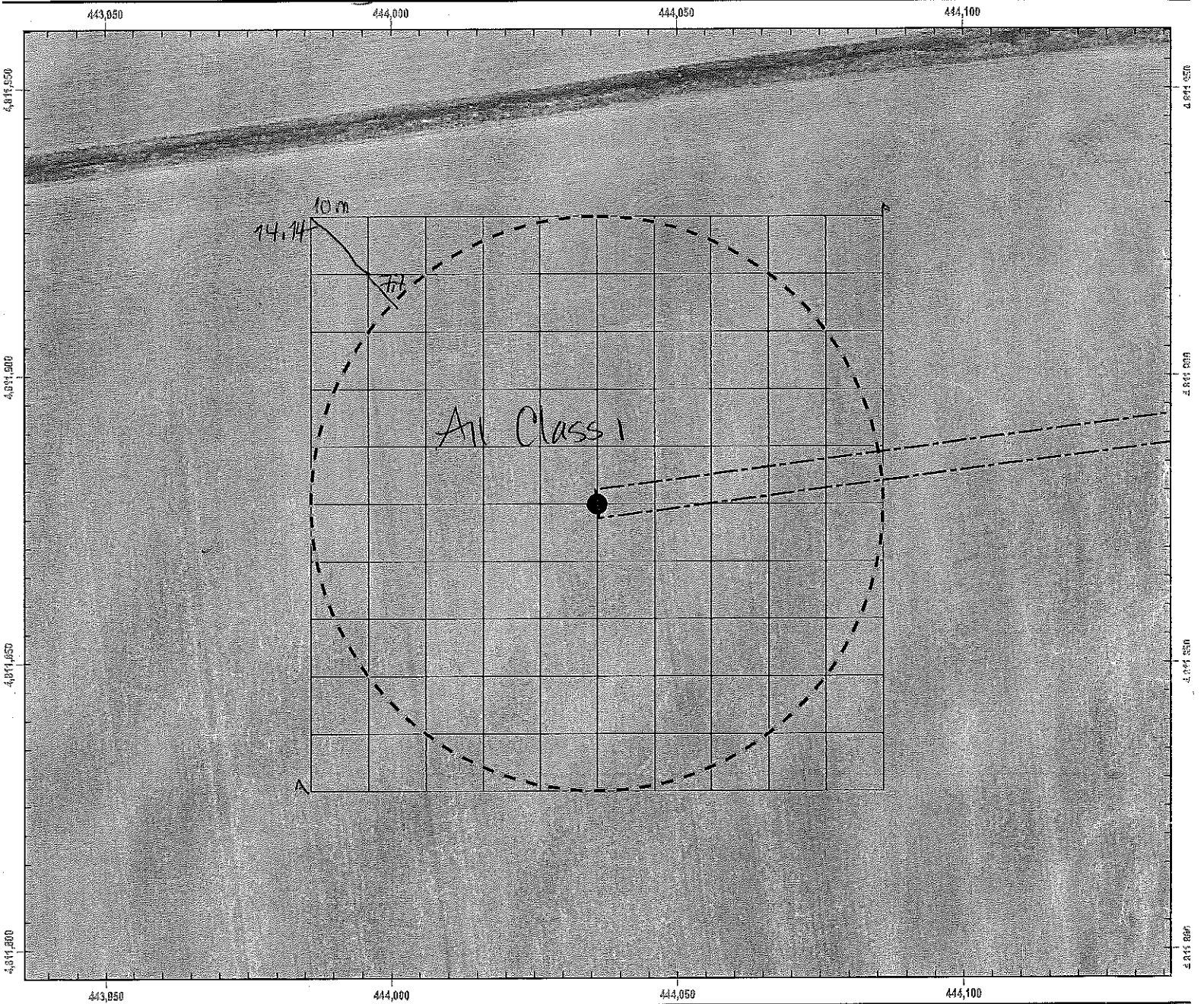
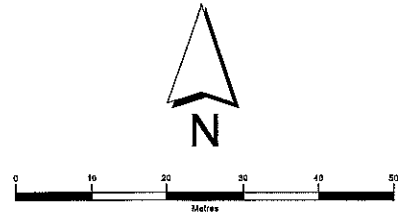
### Turbine Habitat Maps

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-01  
 Survey Date: 10 May 2017  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Bean Stubble

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

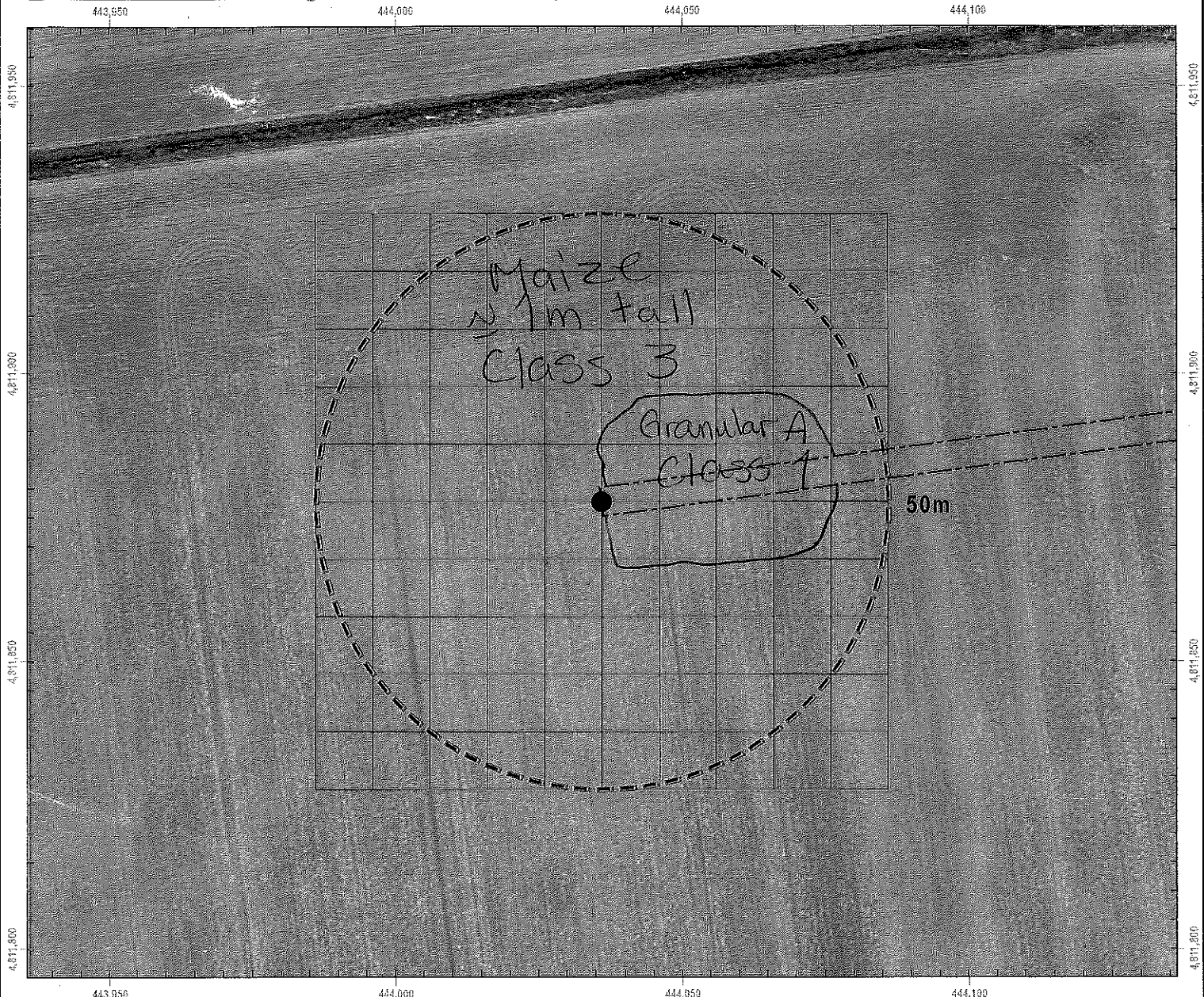
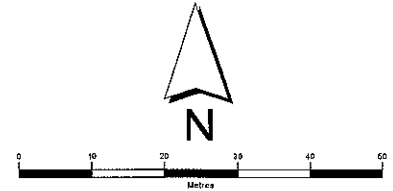
**Site Number:** T-01

**Survey Date:** 5 July 2017

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>

(subtract from total search area 7853.97m<sup>2</sup>)

**Observers:** Tara Steg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

~ 6854m<sup>2</sup> Maize in sand ~1m Class 3  
 ~ 1000m<sup>2</sup> gravel - class 1

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

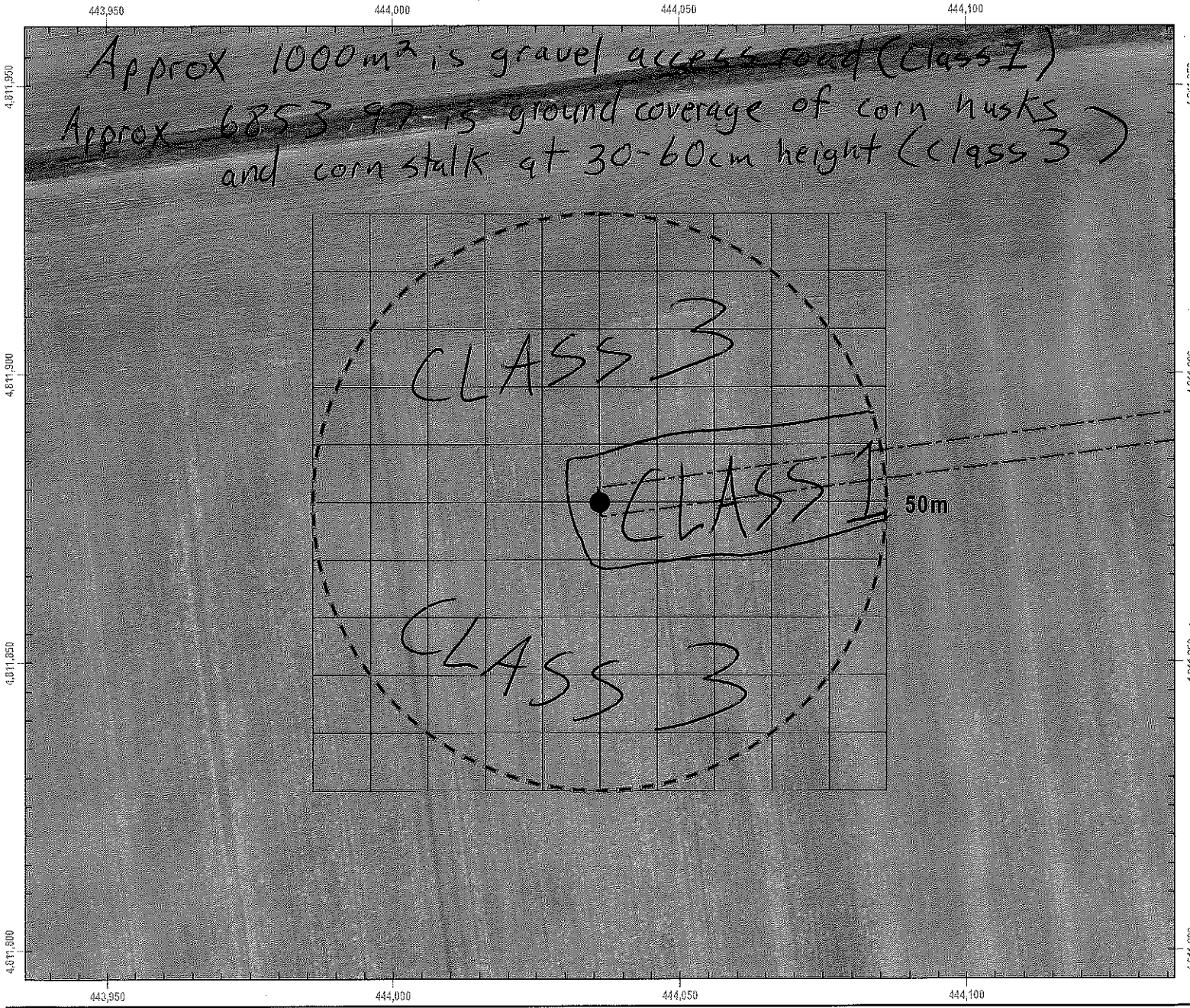
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-01

**Survey Date:** Nov 3 / 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

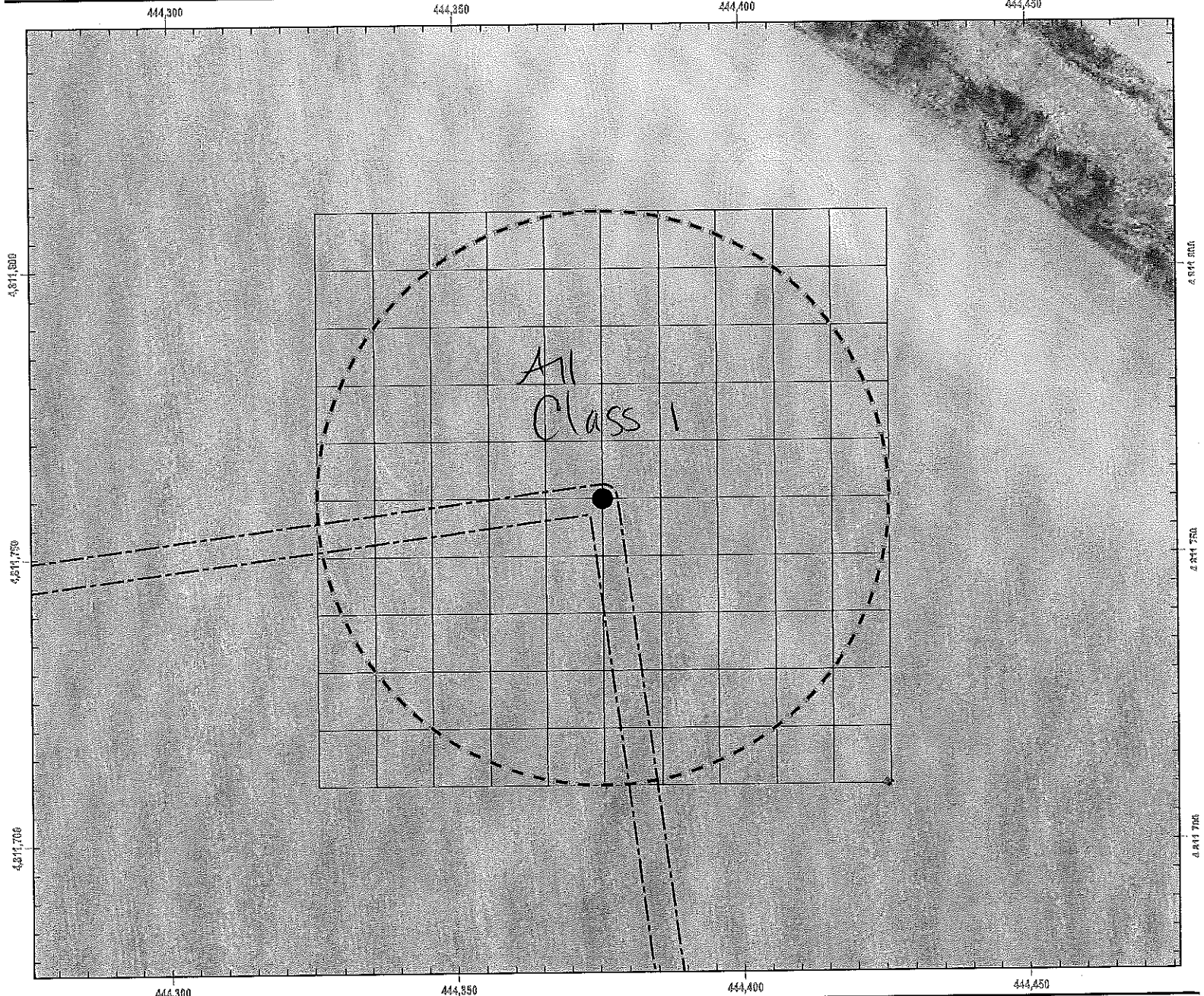


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-02  
 Survey Date: May 1 / 17  
 Actual Searched Area: 50 metre radius 7853.97 m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRID



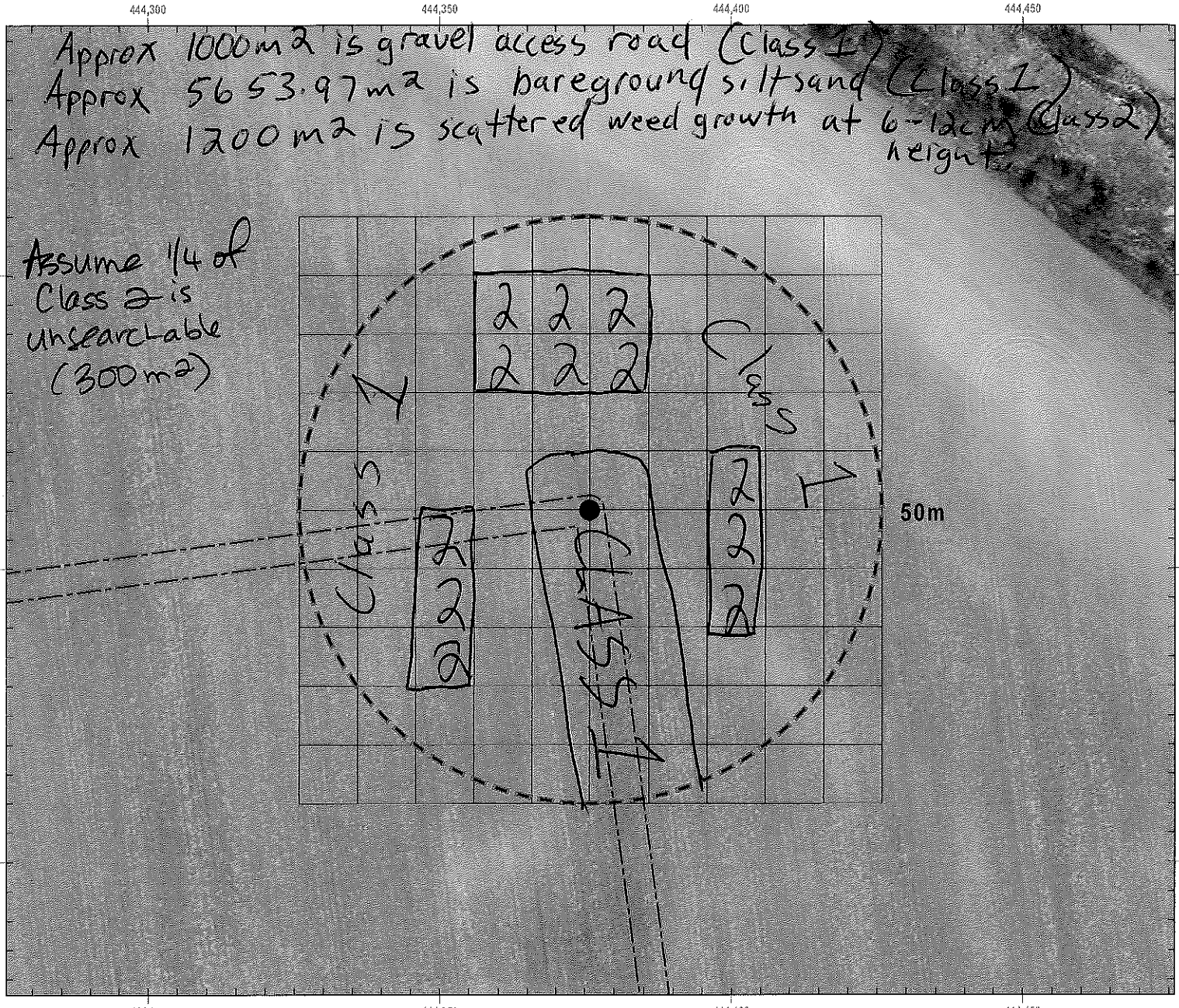
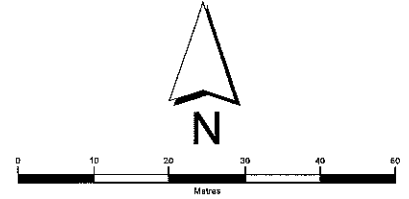


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-02  
 Survey Date: Oct 26 / 17  
 Actual Searched Area (m<sup>2</sup>): 7553.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

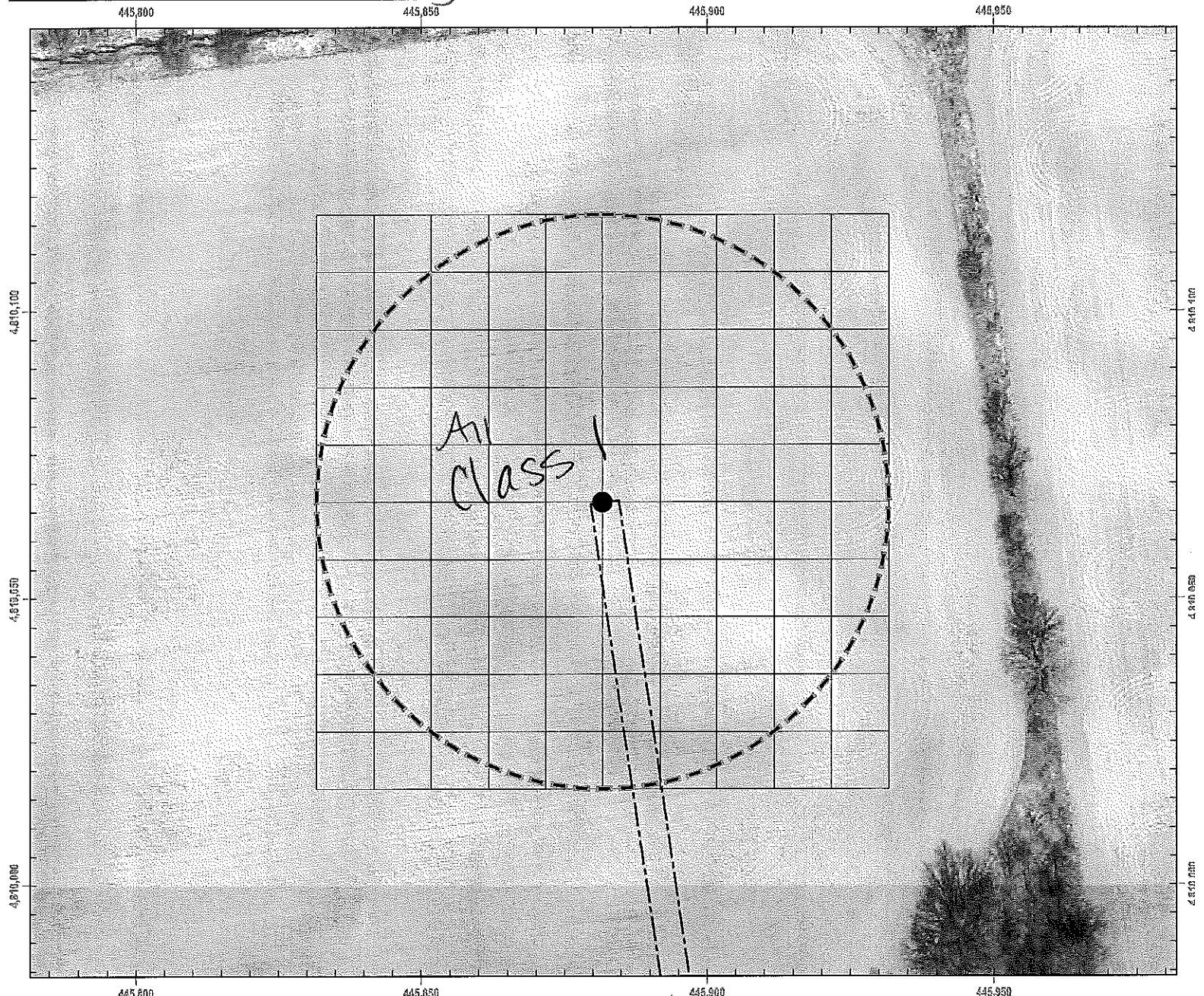
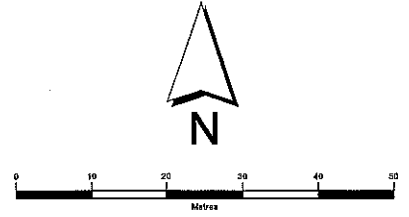
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-03  
 Survey Date: 10 May 2007  
 Actual Searched Area: 7853m<sup>2</sup>  
 Observers: Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

sand (silty)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

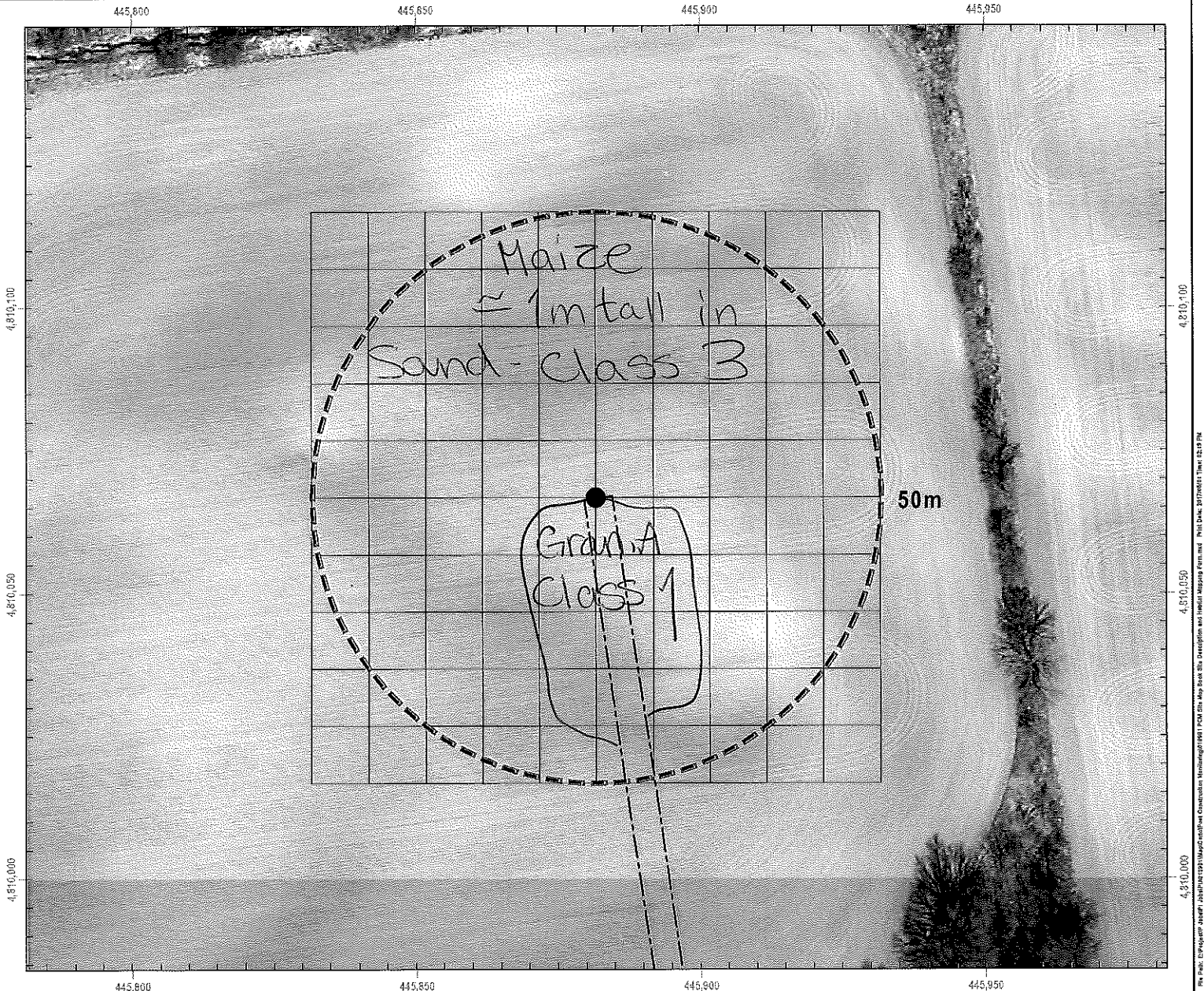
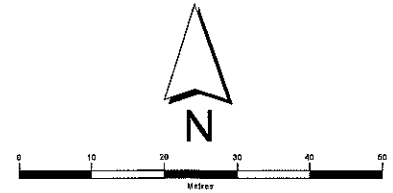
Site Number: T-03

Survey Date: 5 July 2017

Actual Searched Area (m<sup>2</sup>): 7853.97 m<sup>2</sup>

(subtract from total search area 7853.97 m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 6854 m<sup>2</sup> Class 3 - maize ~ 1m tall  
 ≈ 1000 m<sup>2</sup> Class 1 - Gravel

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.







# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

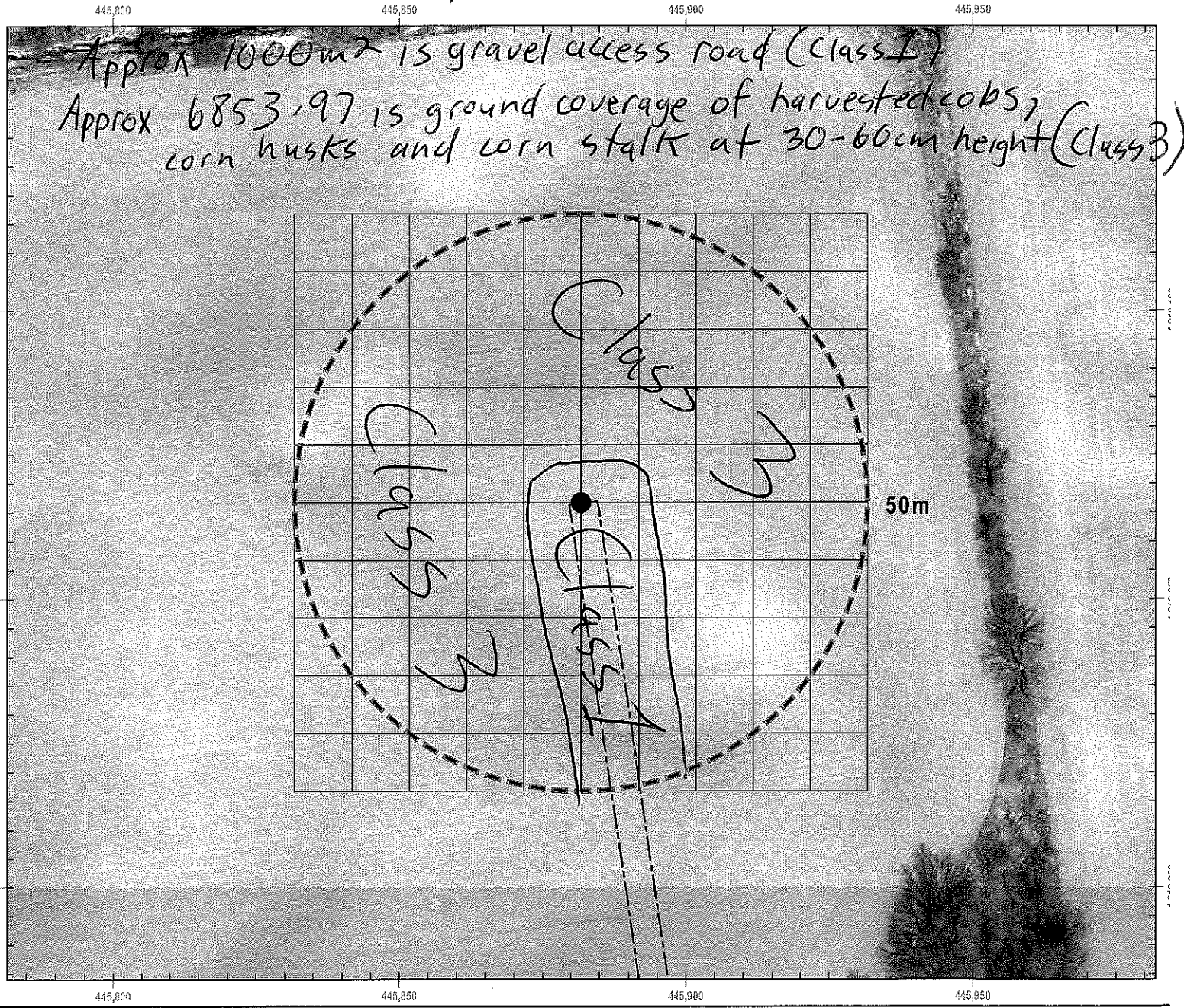
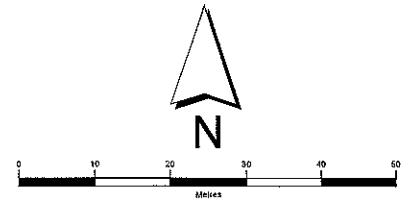
**Site Number:** T-03

**Survey Date:** NOV 3 / 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

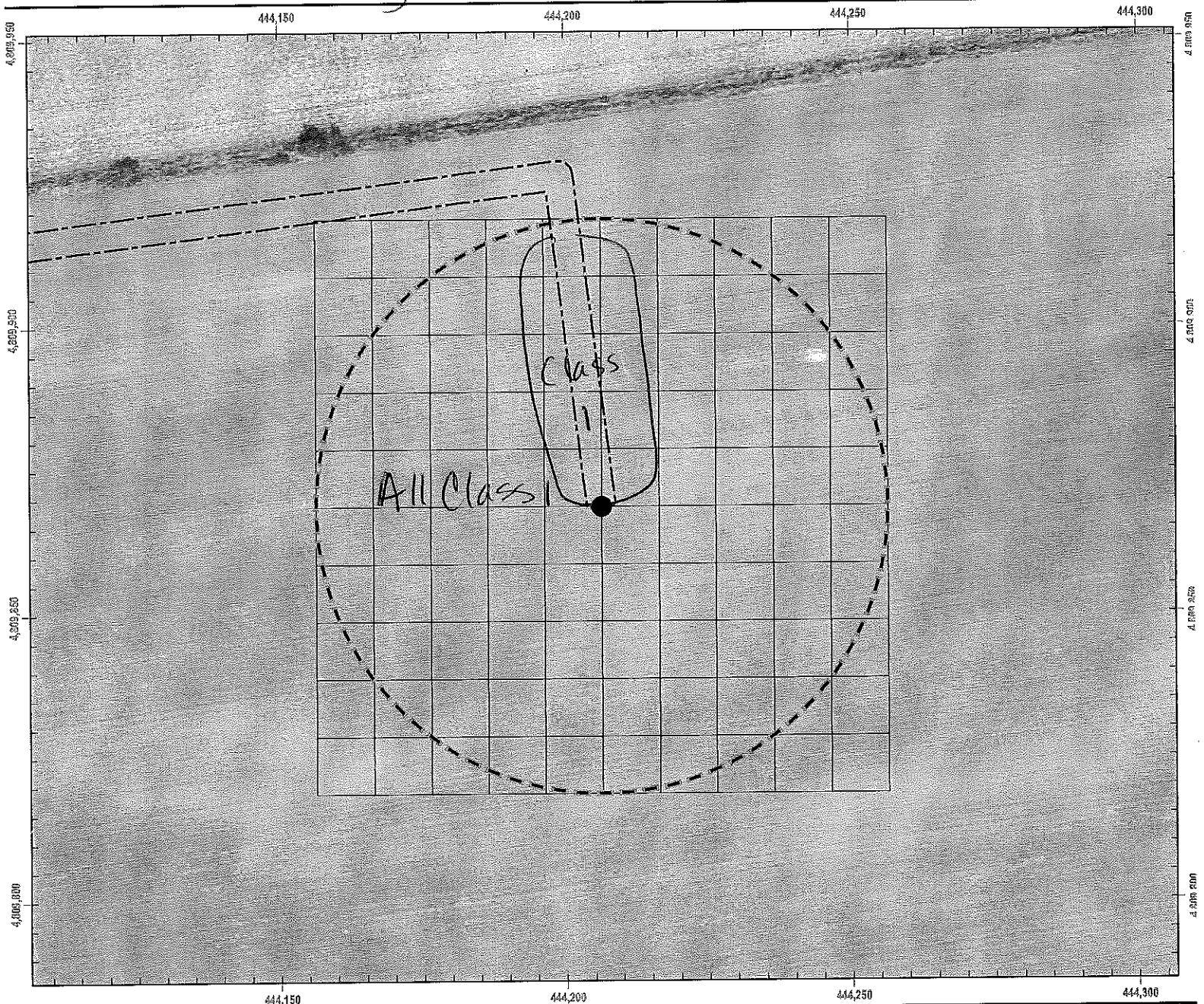
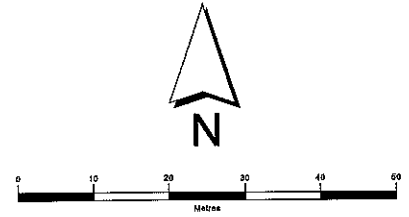
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-05  
 Survey Date: 10 May 2017  
 Actual Searched Area: 7853.97m<sup>2</sup>  
 Observers: Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Bean stubble, flat sand

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

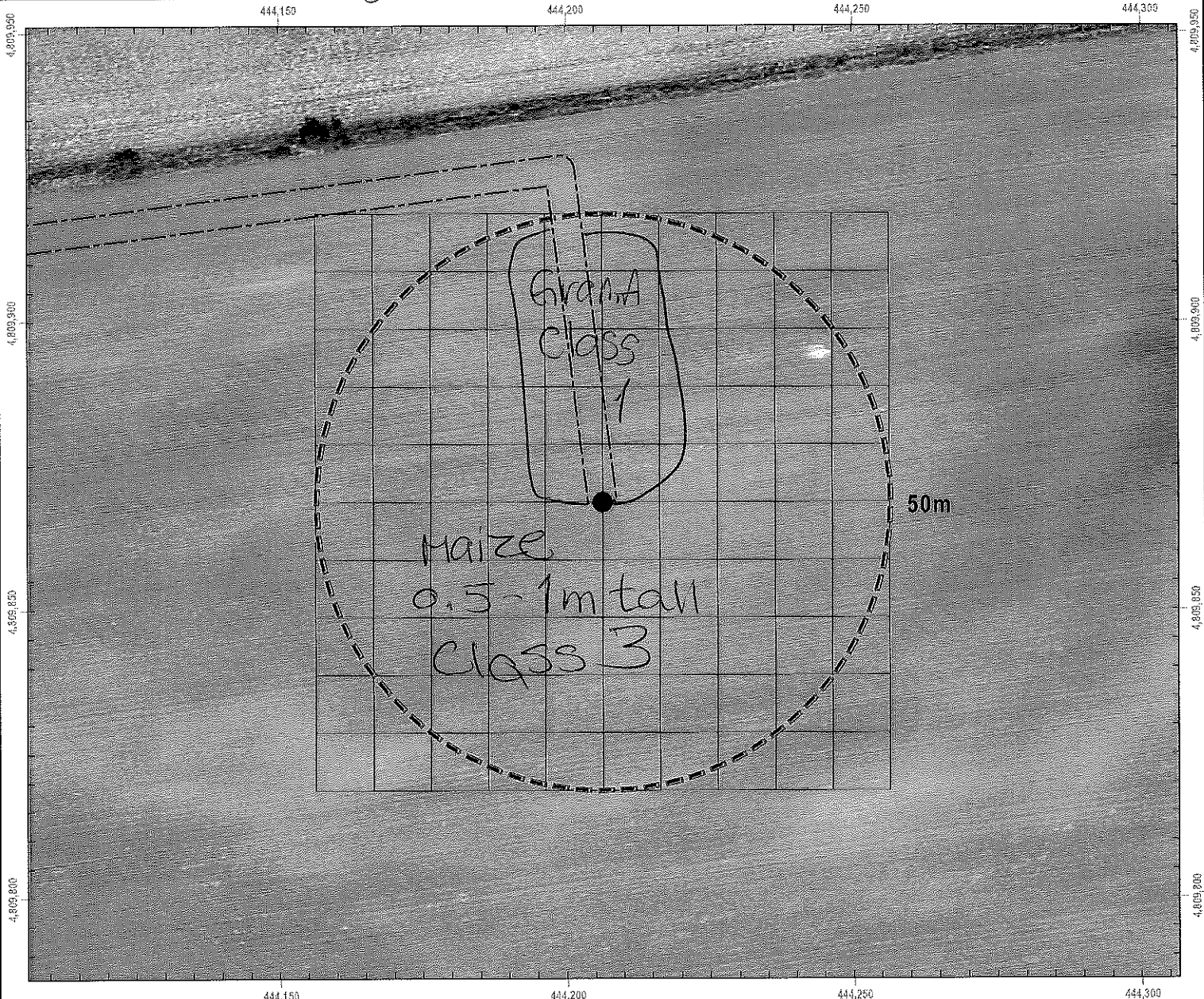
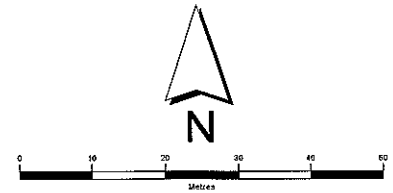
Site Number: T-05

Survey Date: 5 July 2017

Actual Searched Area (m<sup>2</sup>): 7853.97 m<sup>2</sup>

(subtract from total search area - 7853.97 m<sup>2</sup>)

Observers: Lara Steg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000m<sup>2</sup> - Class 1  
 ≈ 6854 m<sup>2</sup> - Class 3

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

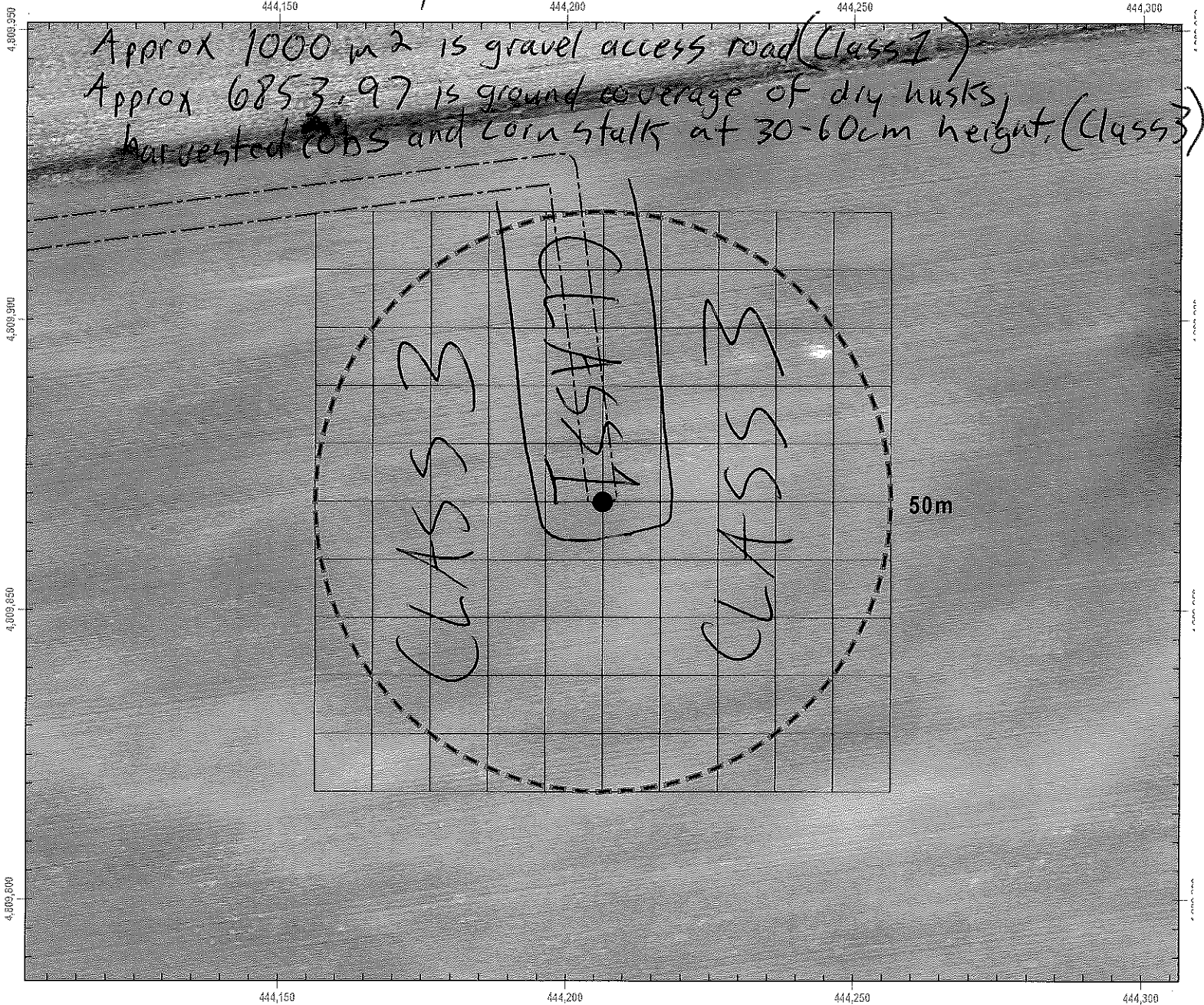
Site Number: T-05

Survey Date: Nov 3 / 17

Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

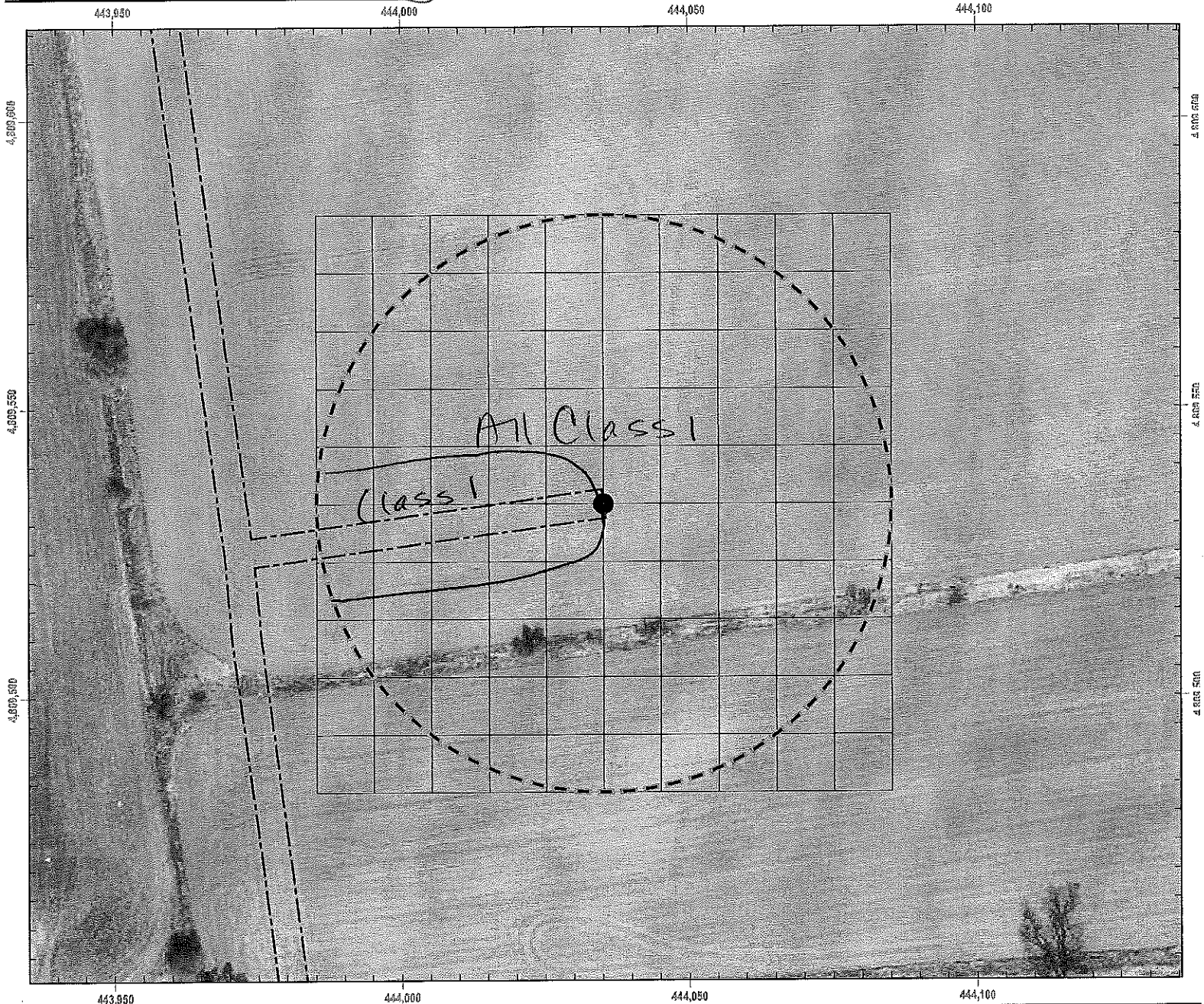
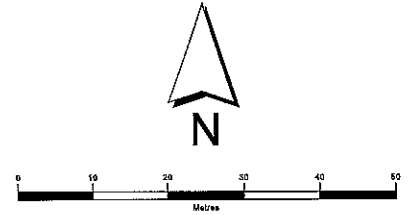
SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-06  
 Survey Date: 9 May 2017  
 Actual Searched Area: 7853.97m<sup>2</sup>  
 Observers: Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Soy Bean stubble - sand

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID









# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

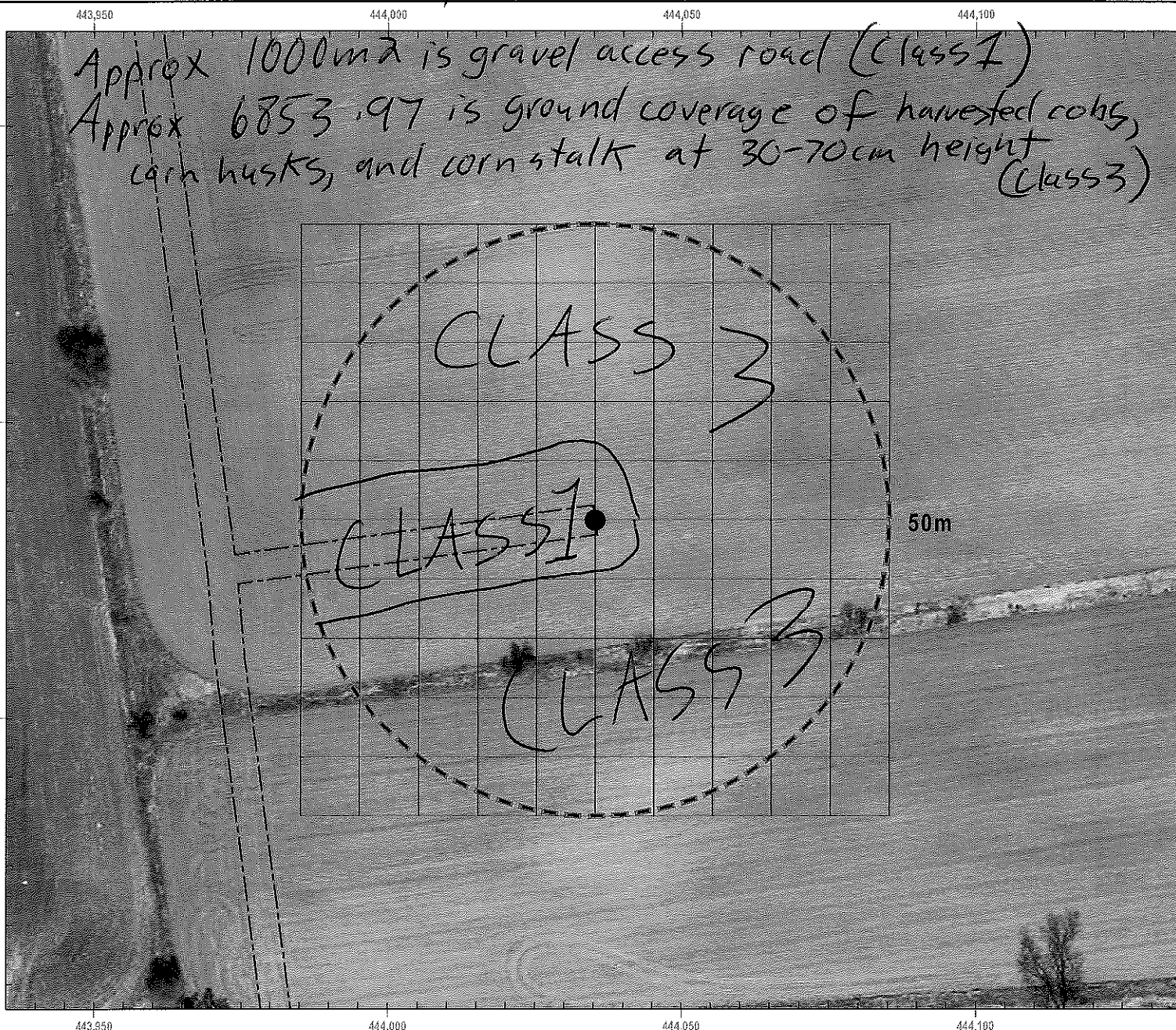
Site Number: T-06

Survey Date: Nov 3 / 17

Actual Searched Area (m<sup>2</sup>): 7853,97 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Healy



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

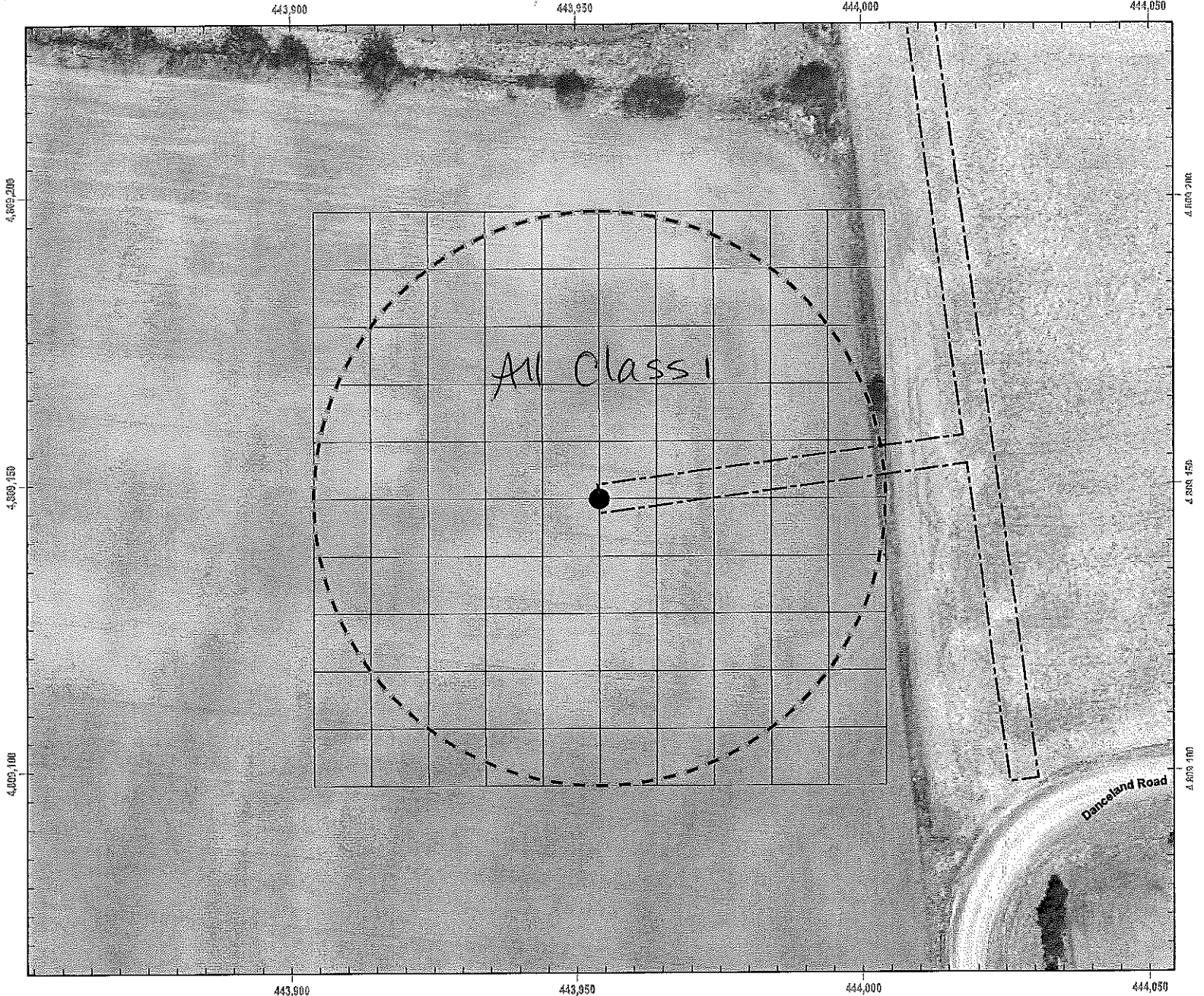
Project Name: Grand Bend Wind Farm

Site Number: T-07

Survey Date: May 2/17

Actual Searched Area: 50 m radius 7853.97m<sup>2</sup>

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

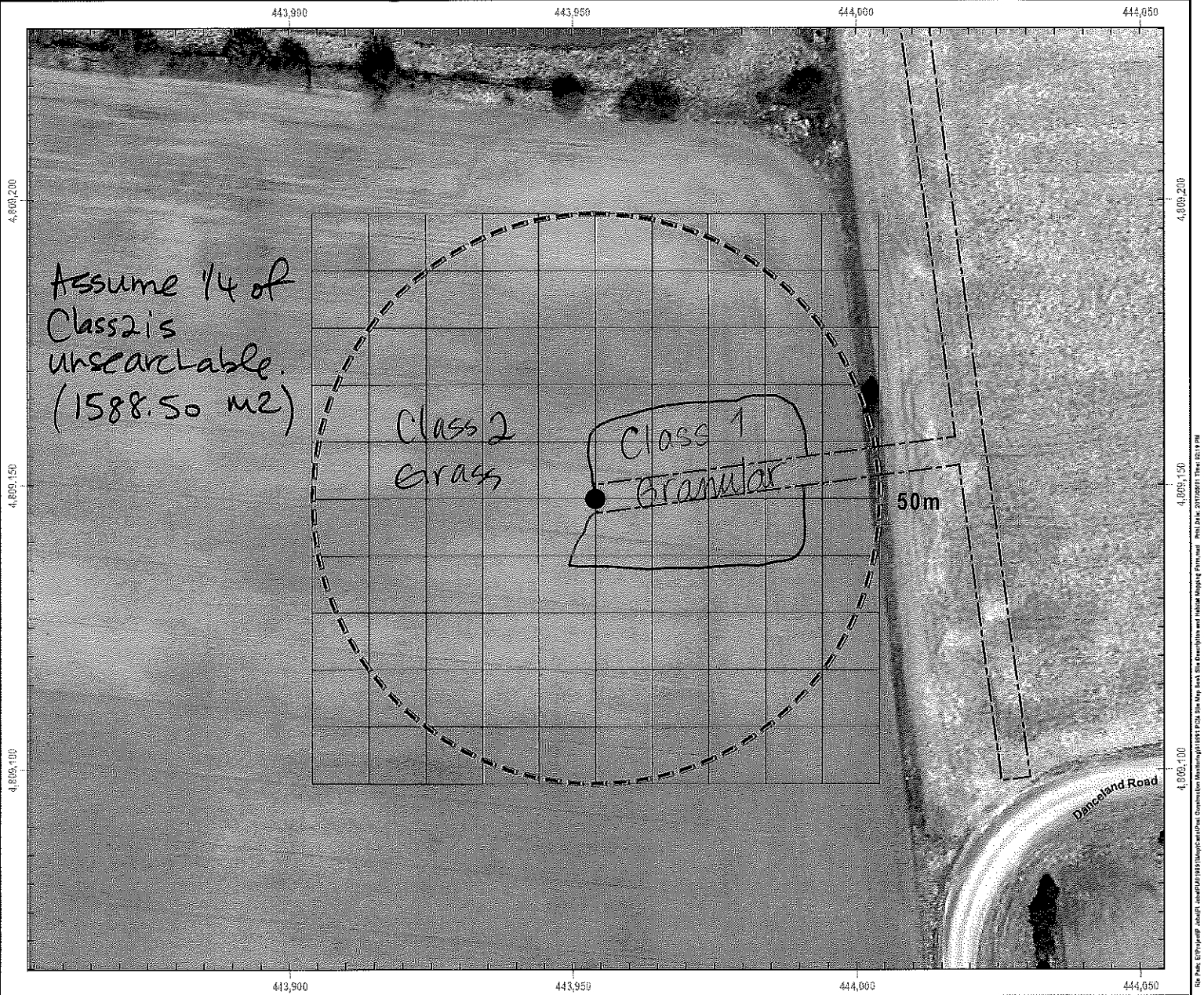
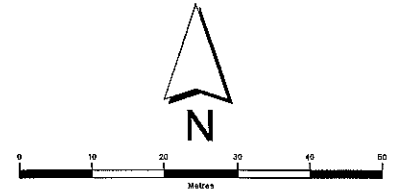
Site Number: T-07

Survey Date: 20 June 2017

Actual Searched Area (m<sup>2</sup>): 6265.47 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

~ 1500 m<sup>2</sup> Class 1 - Granular

~ 6354 m<sup>2</sup> Class 2 - grass

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

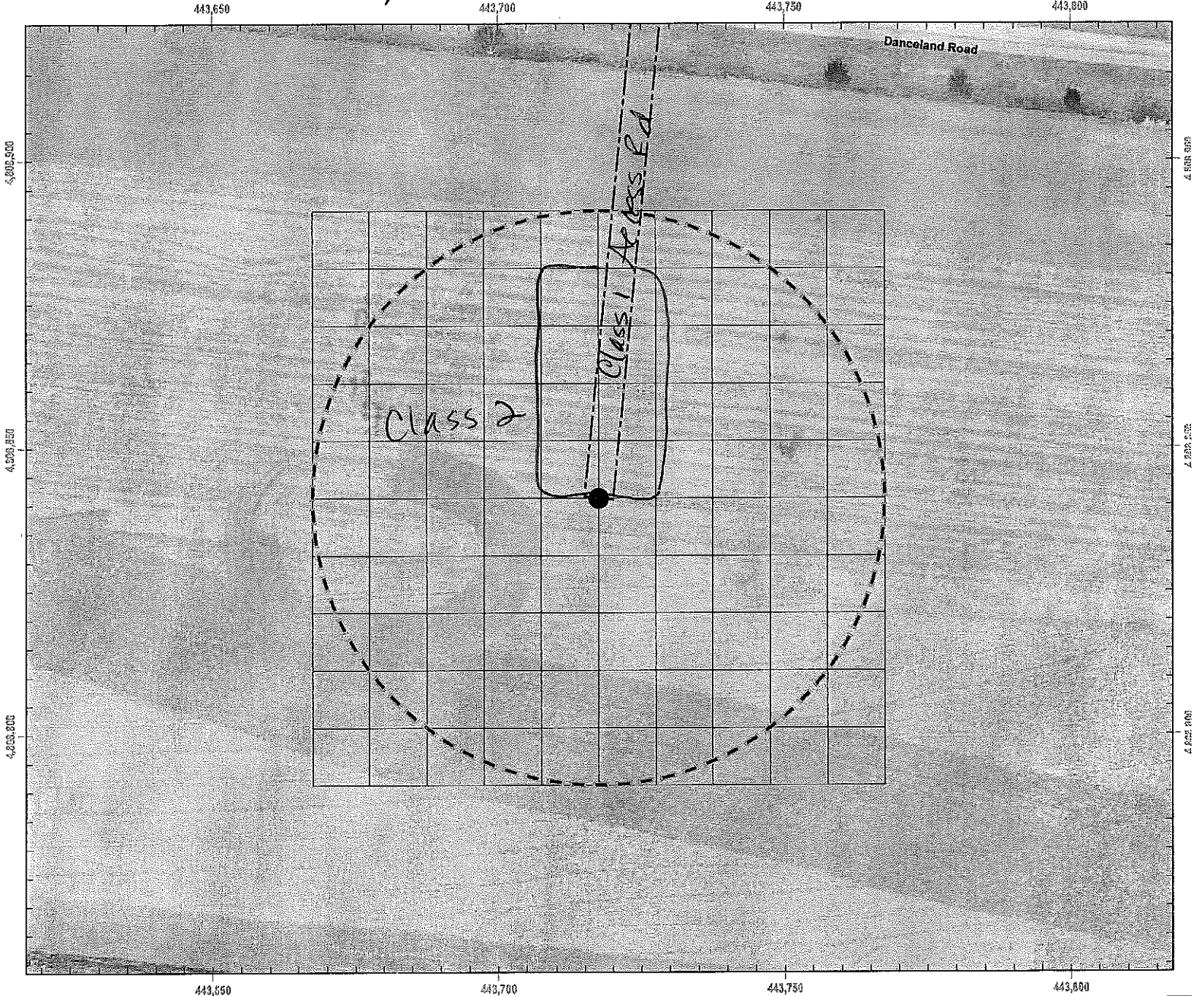


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-08  
 Survey Date: May 10/17  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

entire area cut corn  
stalk

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

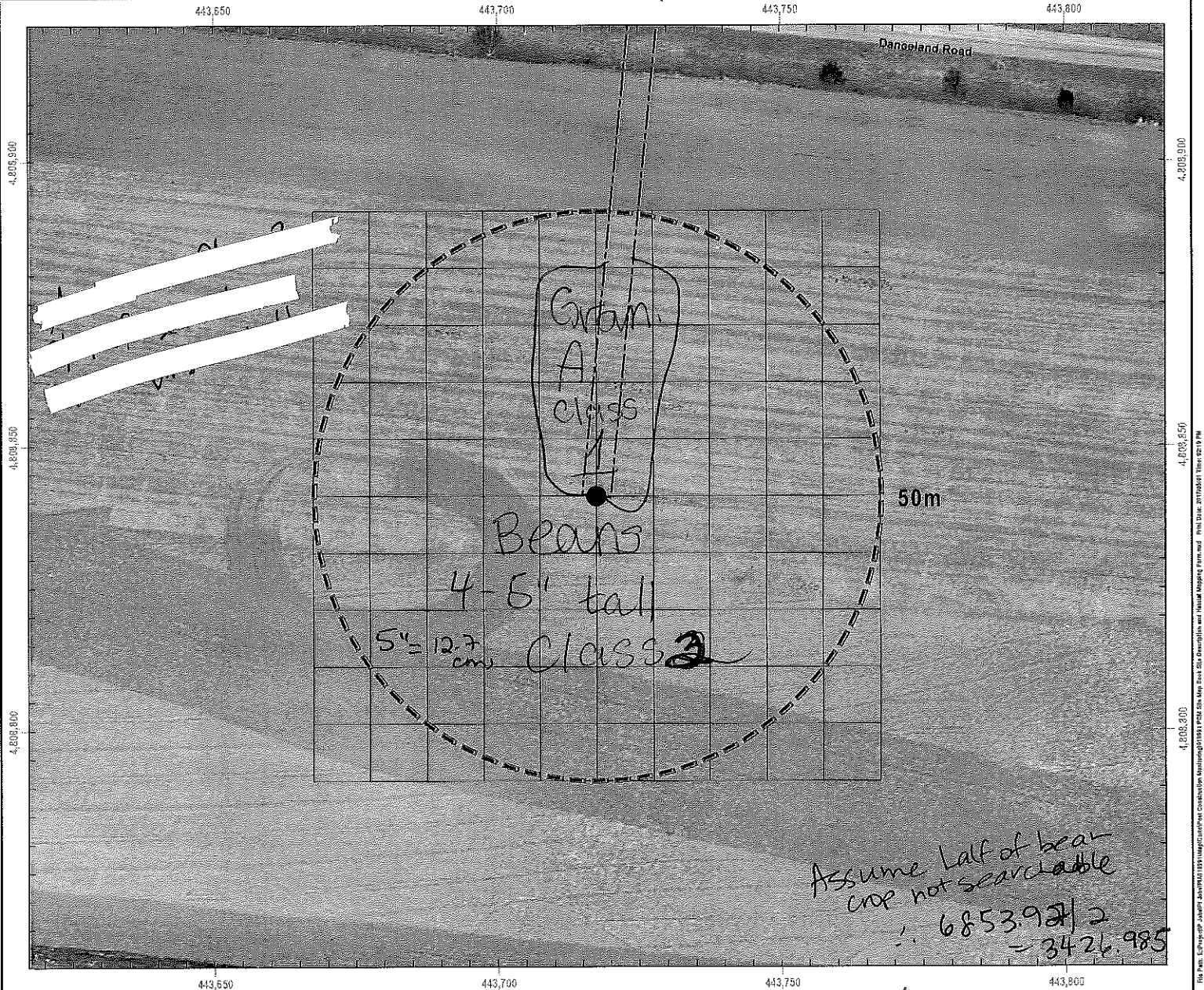
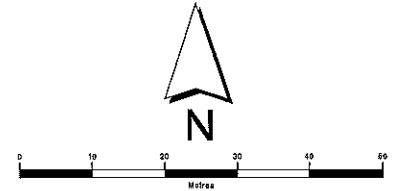
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-08

**Survey Date:** 5 July 2017

**Actual Searched Area (m<sup>2</sup>):** 4427 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Greg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000m<sup>2</sup> - Class 1  
 ≈ 6853.97m<sup>2</sup> - Class 2

Assume half of bean crop not searchable  
 ∴ 6853.97 / 2 = 3426.985

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

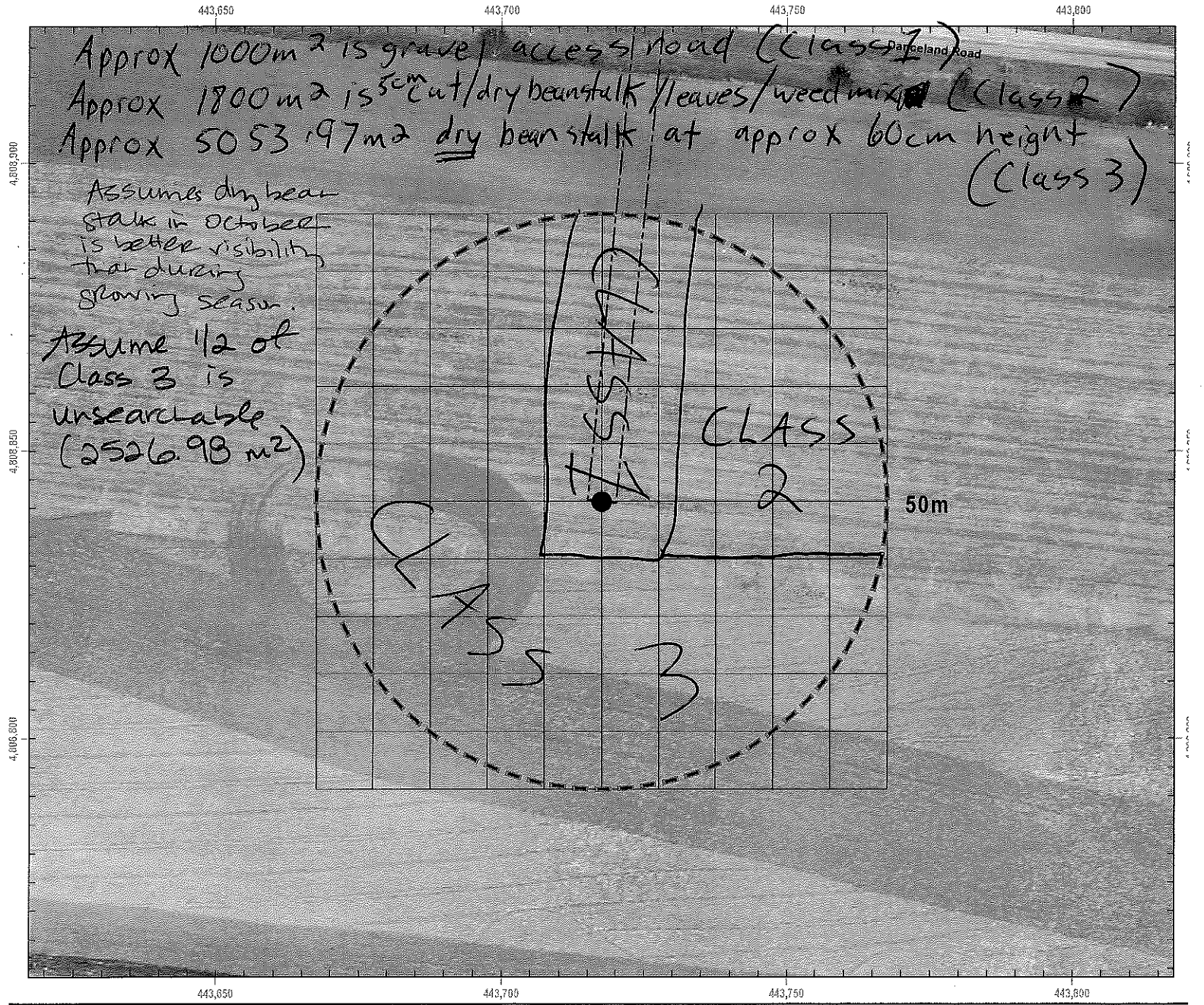
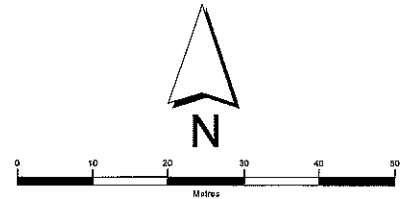


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-08  
 Survey Date: Oct 4/17  
 Actual Searched Area (m<sup>2</sup>): 5327 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



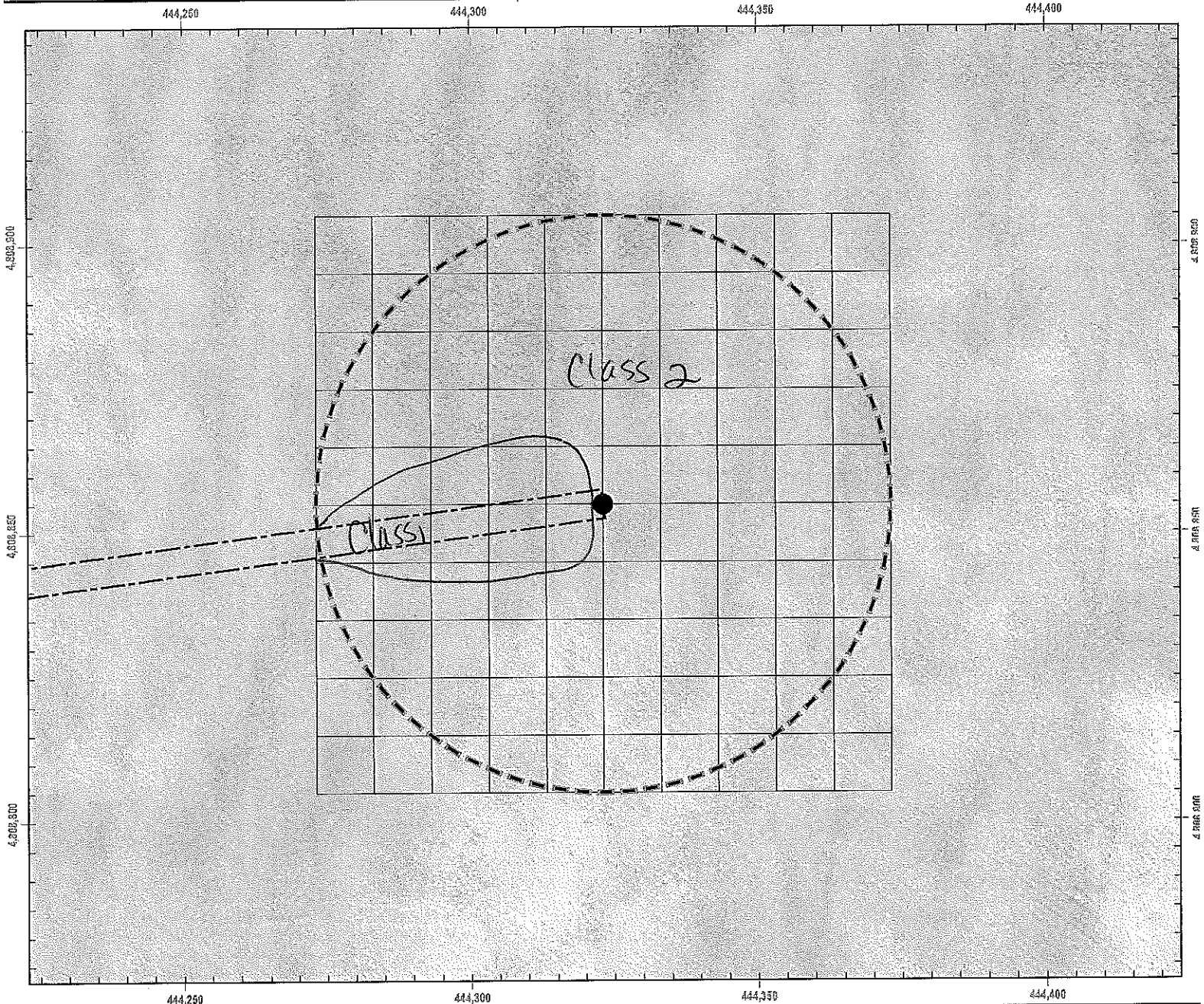
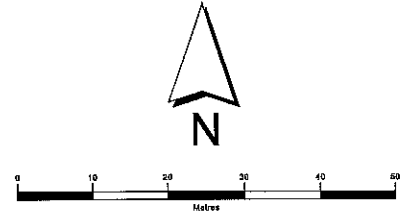


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches) ✓

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-09  
 Survey Date: May 10/17  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

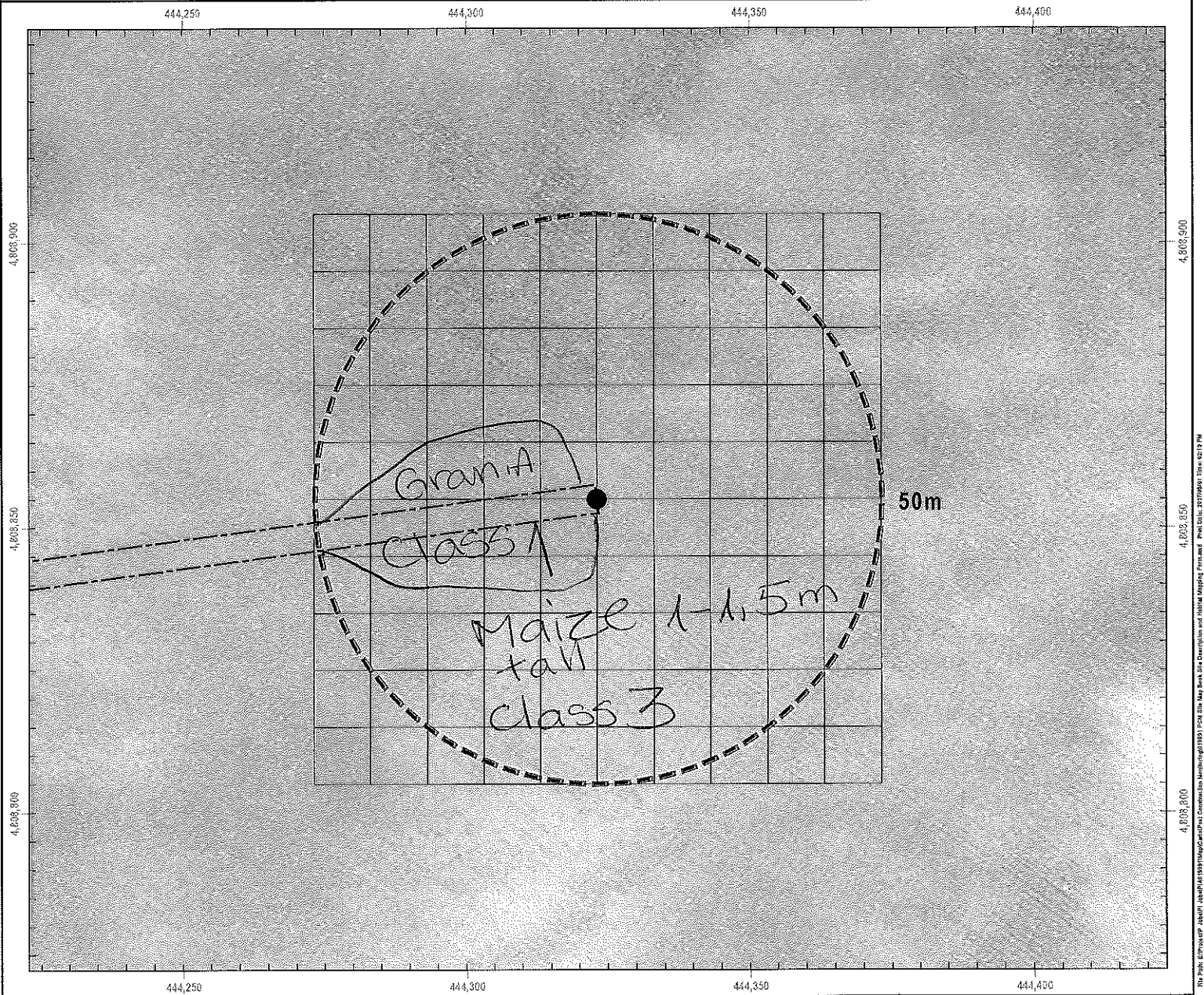
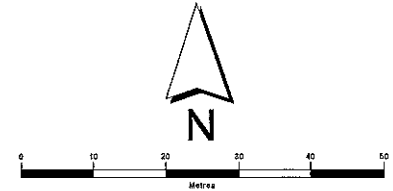
**Site Number:** T-09

**Survey Date:** 5 July 2017

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>

(subtract from total search area - 7853.97 m<sup>2</sup>)

**Observers:** Tara Sieg, Sara Henny



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> - Class 1  
 ≈ 6854 m<sup>2</sup> - Class 3

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



File Path: E:\PIA019991\Map\Cartoon\Compassion\Cartoon\PIA019991\T-09 Map Back Site Description and Habitat Mapping Form.mxd File Size: 29710461 File: 6/21/17 PM



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

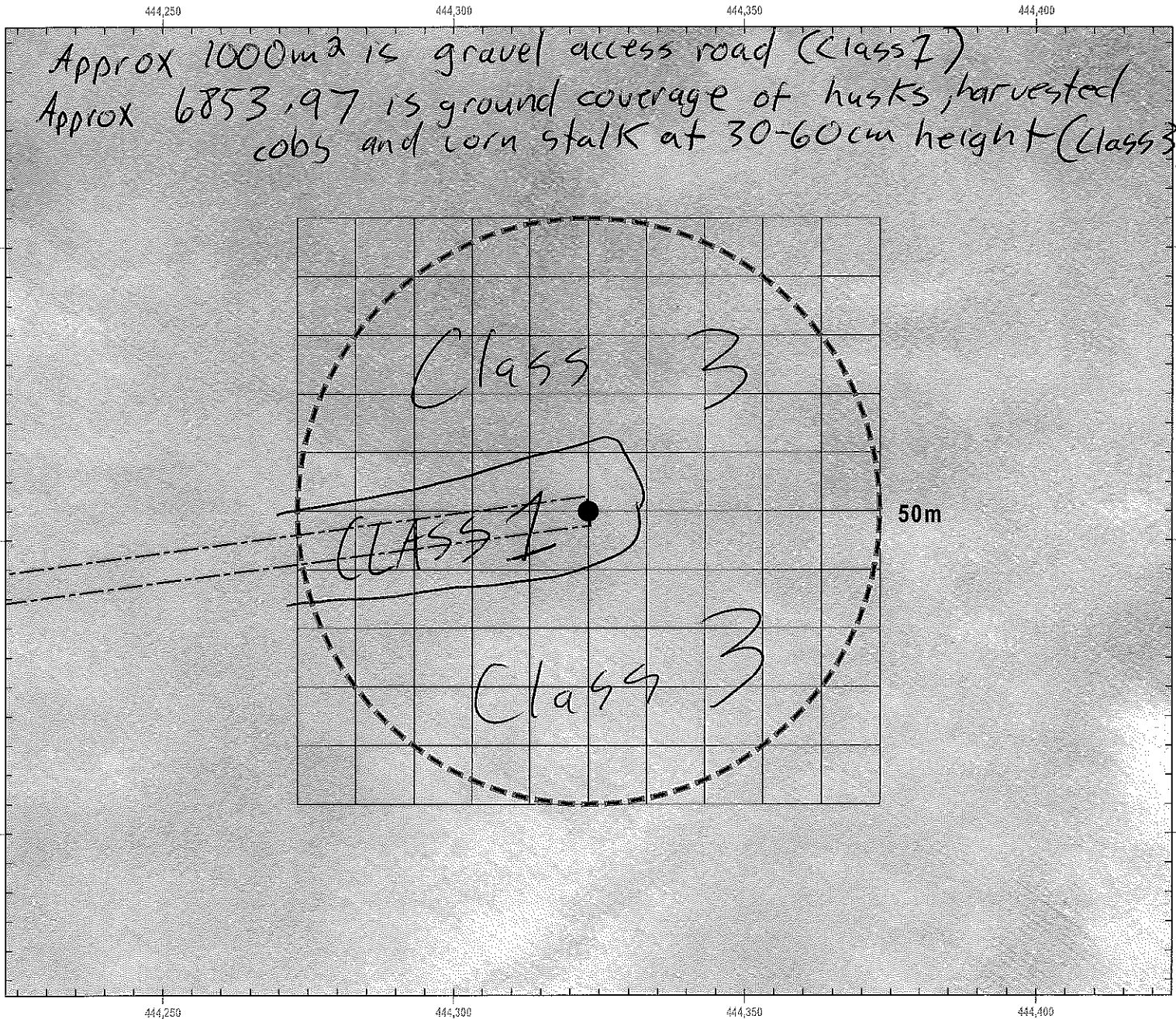
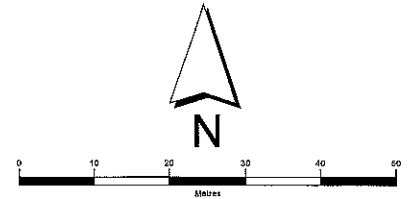
**Site Number:** T-09

**Survey Date:** Nov 3 / 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

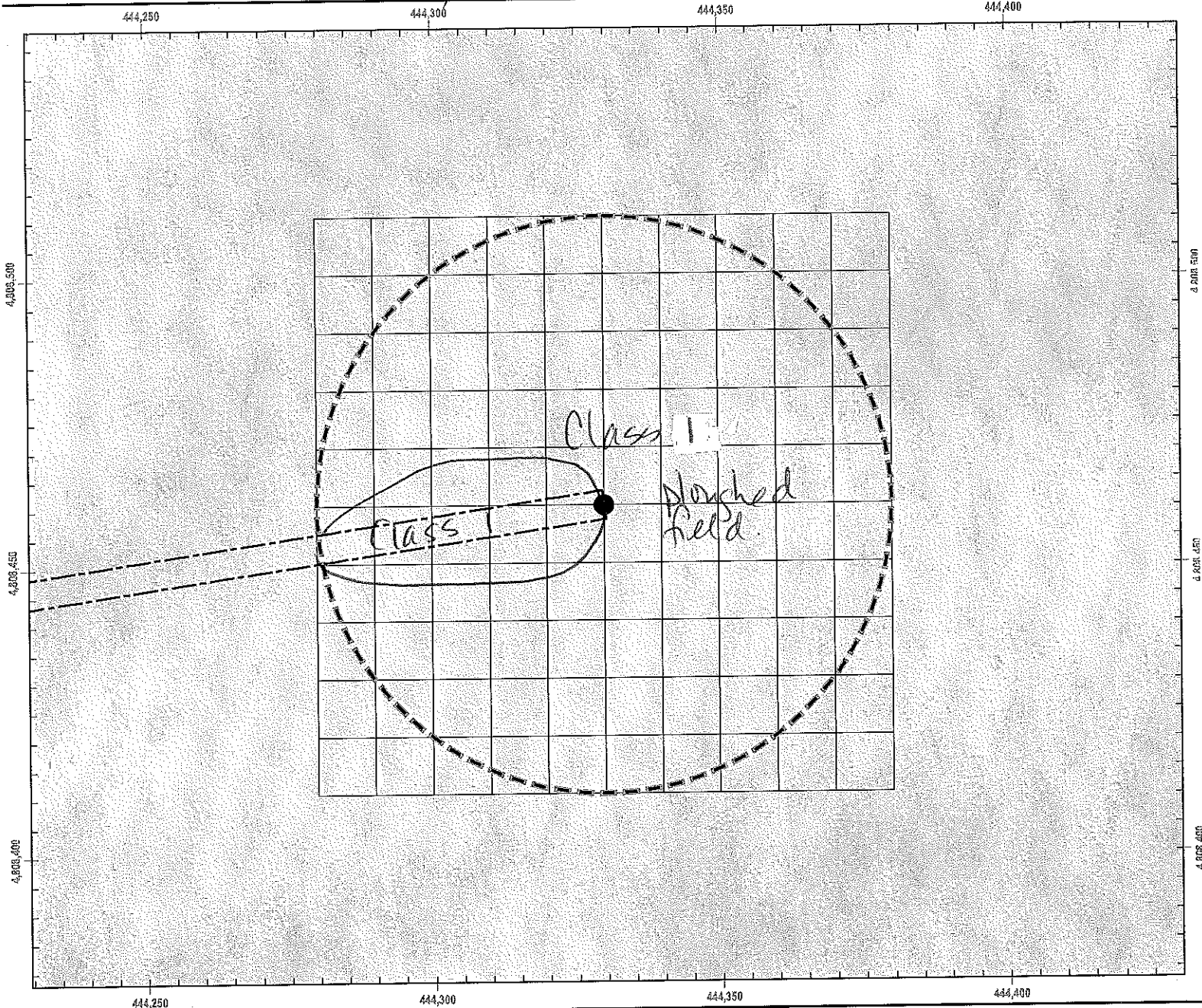
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-11  
 Survey Date: May 10 / 17  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

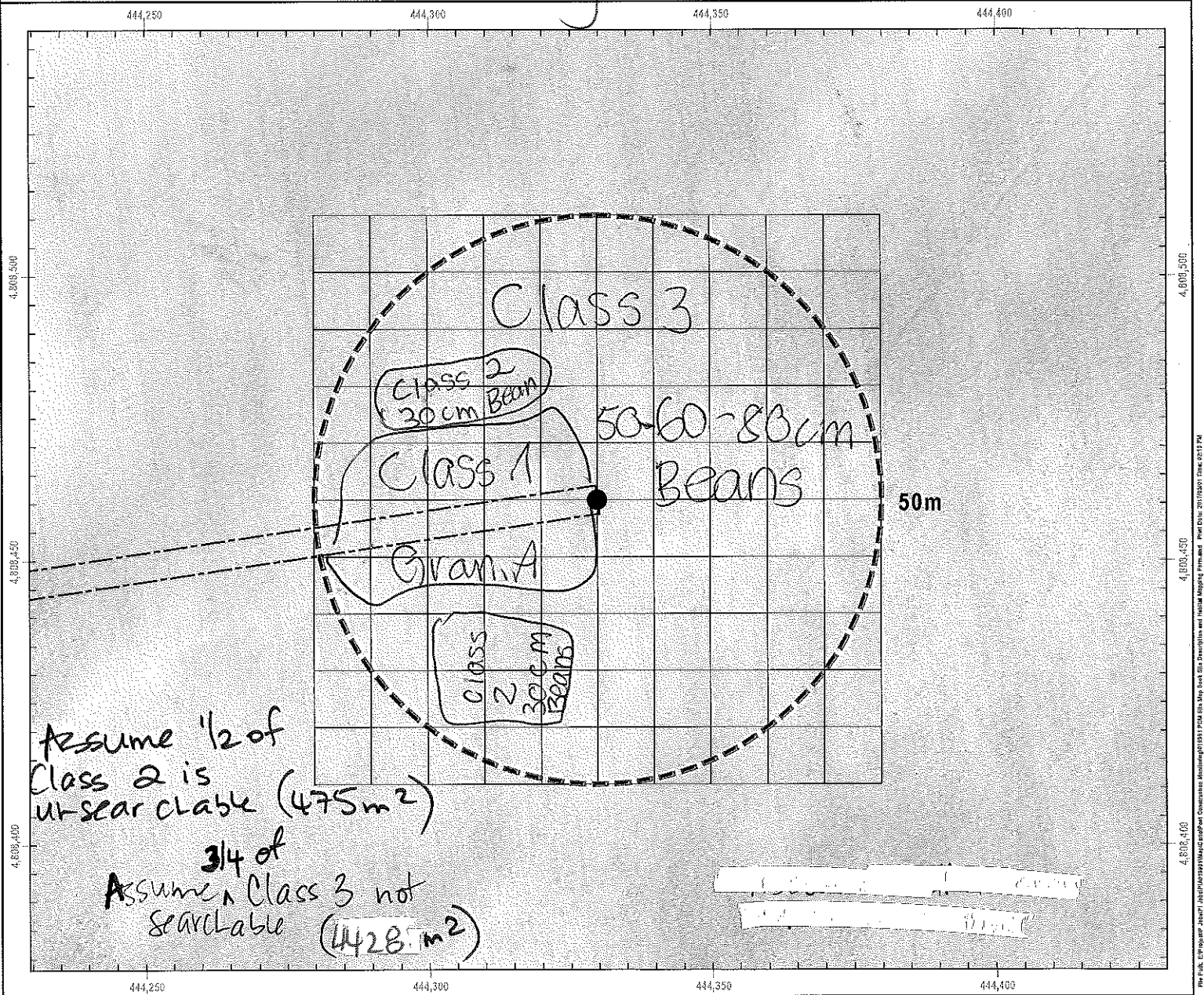
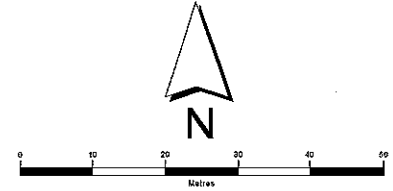
**Site Number:** T-11

**Survey Date:** 2 Aug 2017

**Actual Searched Area (m<sup>2</sup>):** 2950 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> Class 1  
 ≈ 5903.97 m<sup>2</sup> Class 3  
 ≈ 950 m<sup>2</sup> Class 2

SEARCHED AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

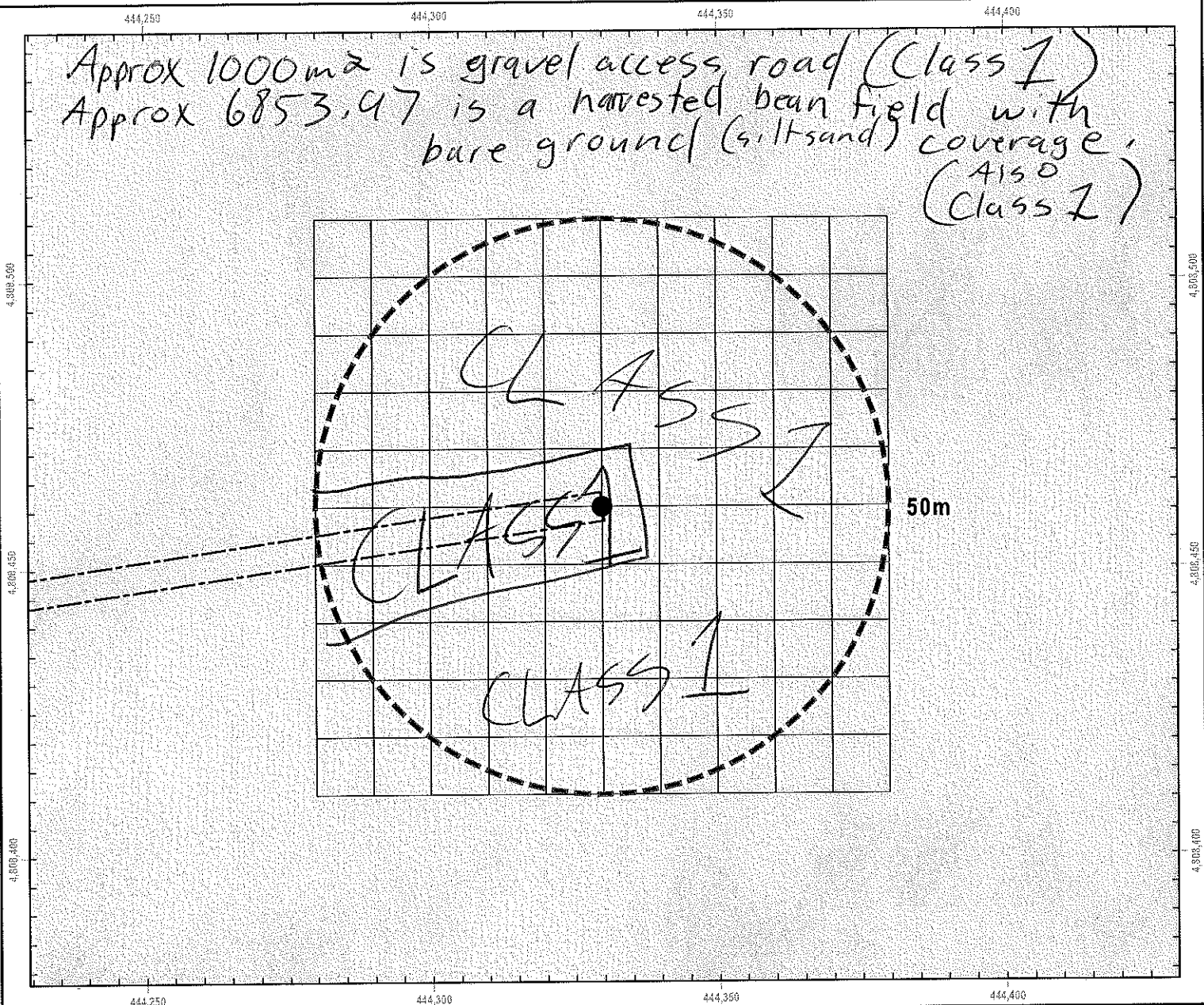
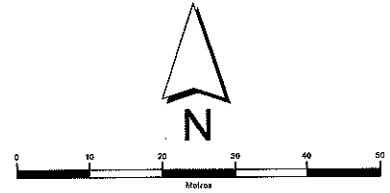
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-11

**Survey Date:** Oct 10 / 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>  
(subtract from total search area - 7853.97 m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



File Path: E:\Projects\2017\PIA019991\GIS\Map\_Site\_010\_Download\_and\_Print\_Habitat\_Mapping\_Form.mxd File Date: 2017/10/17 Time: 08:21 PM



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

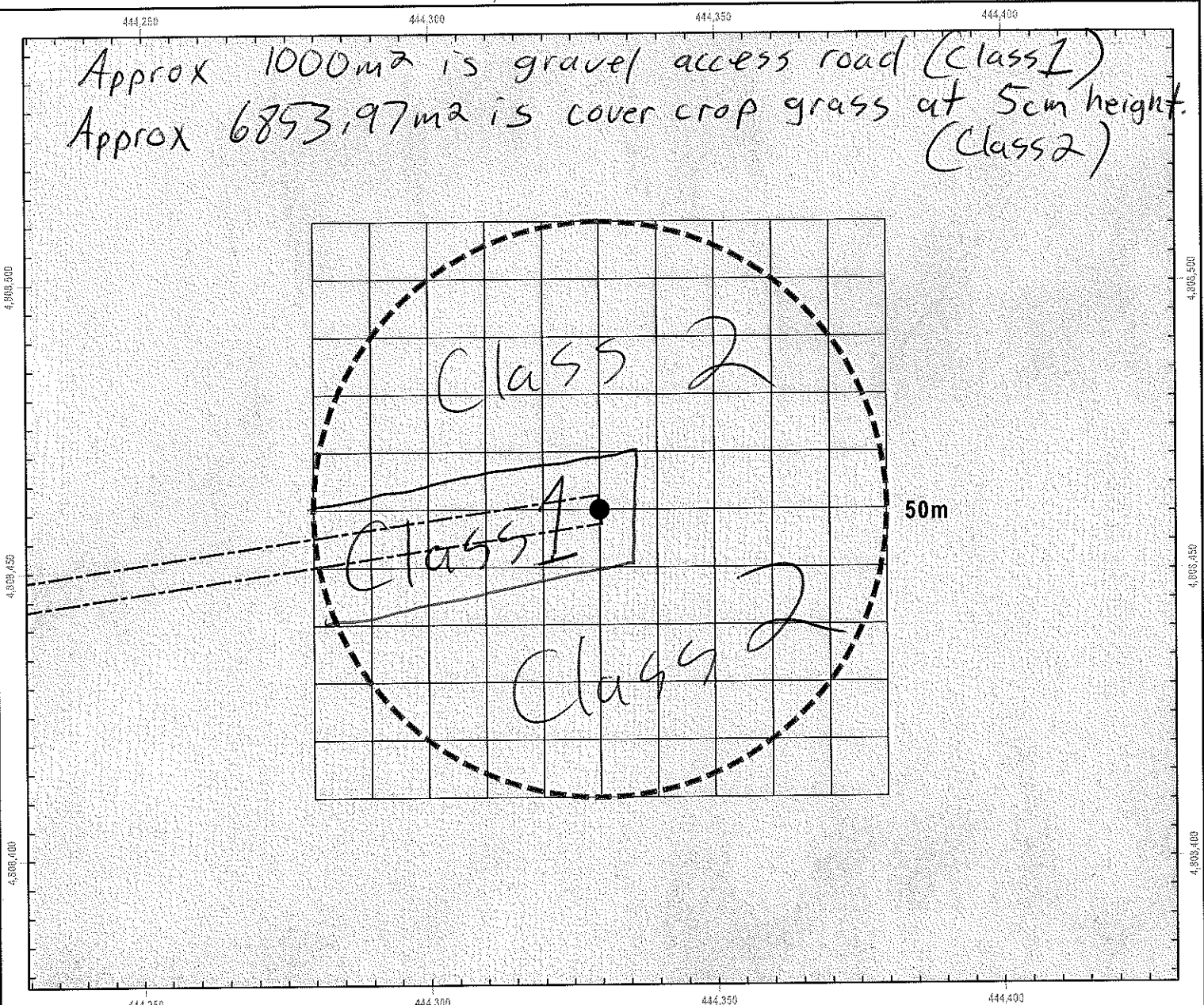
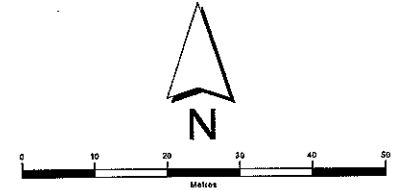
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-11

**Survey Date:** Nov 8/17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

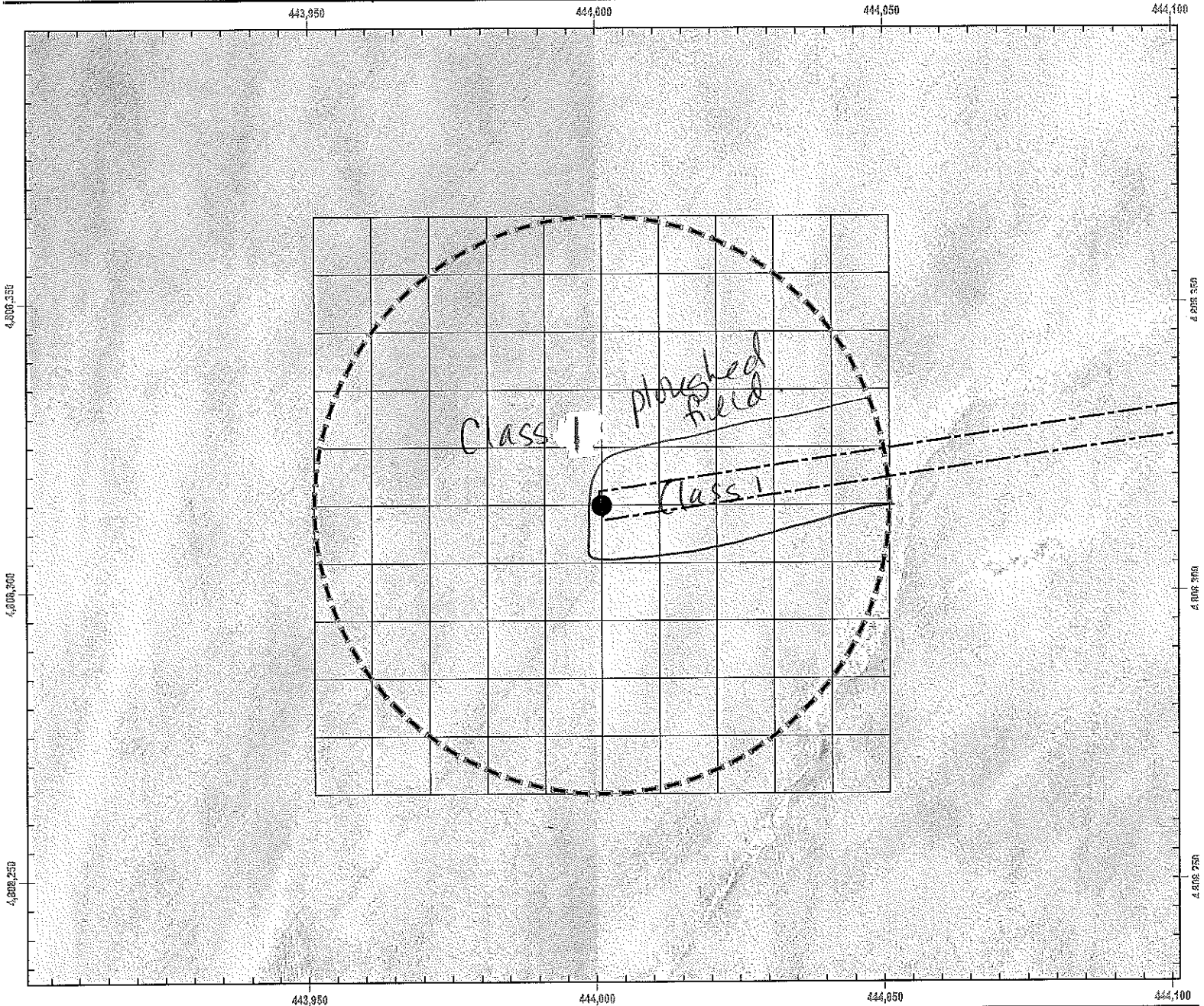
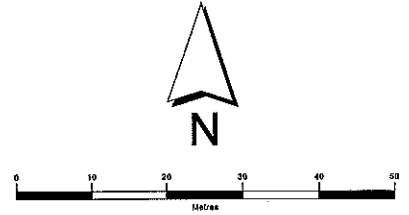


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches) ✓

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-12  
 Survey Date: May 10/17  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

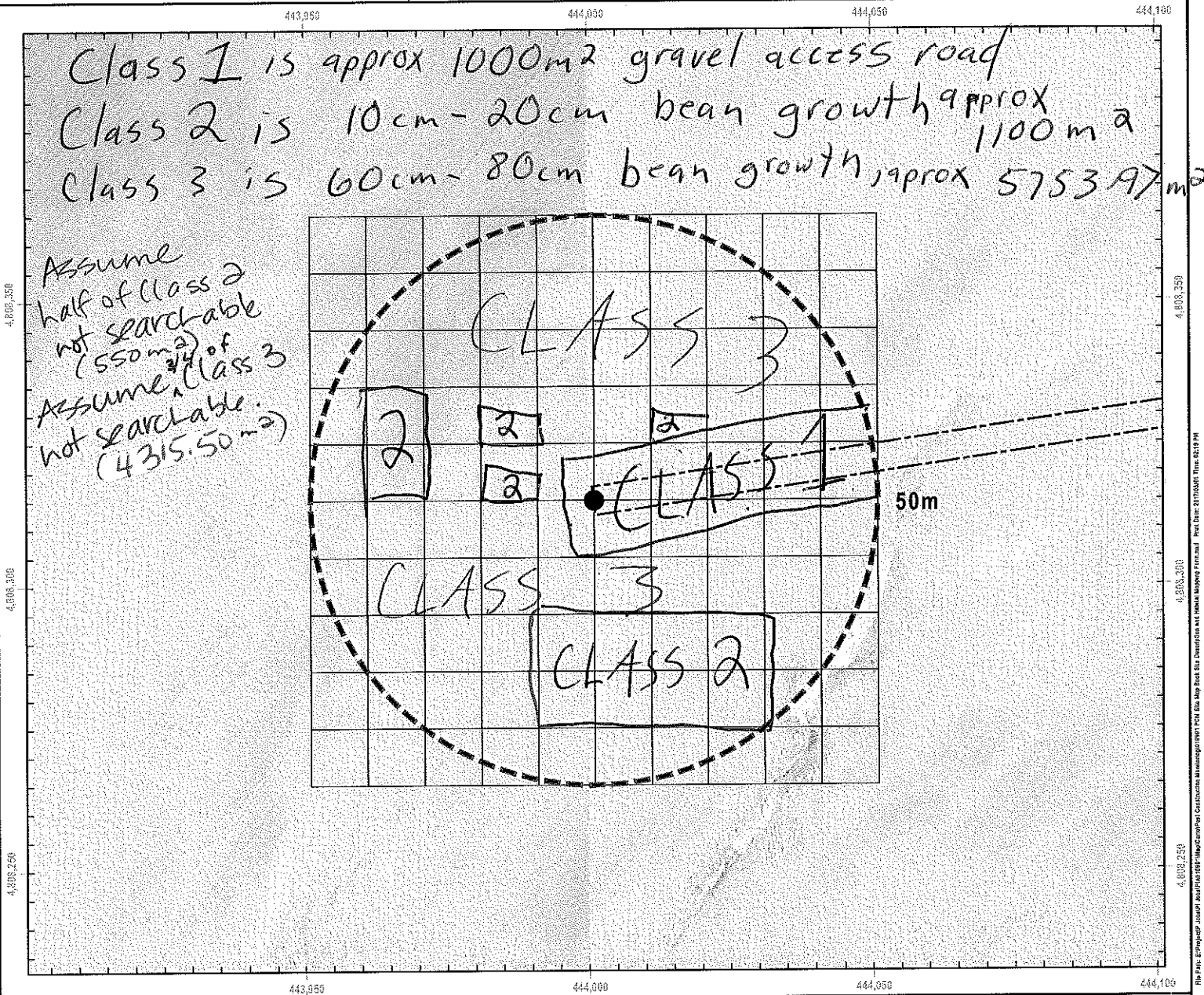
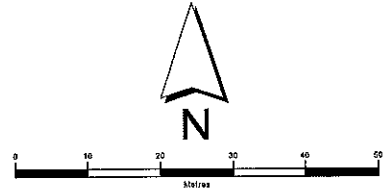
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-12

Survey Date: Aug 9/17

Actual Searched Area (m<sup>2</sup>): 2,188.4 m<sup>2</sup>  
(subtract from total search area - 7853.97 m<sup>2</sup>)

Observers: Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

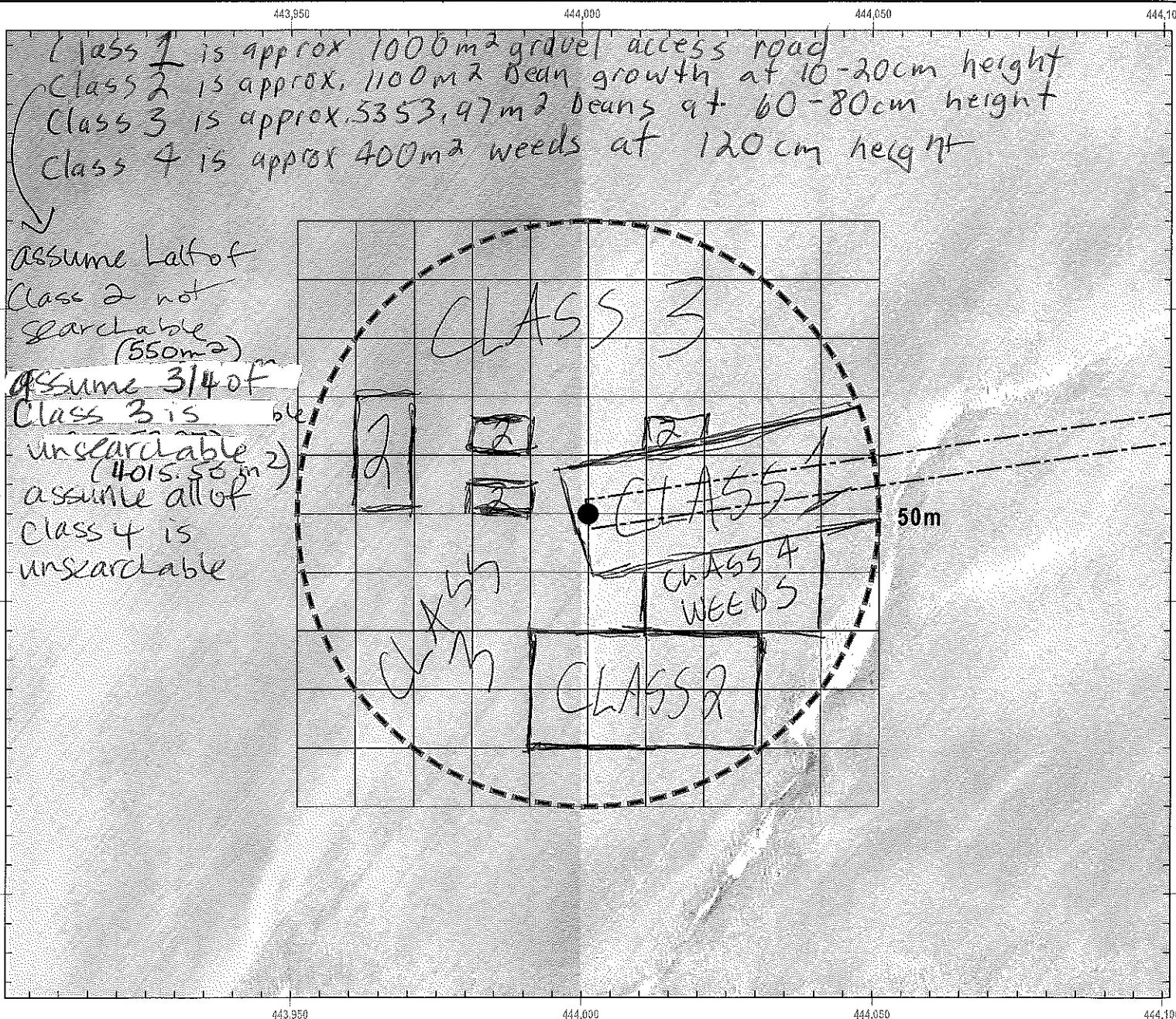
**Site Number:** T-12

**Survey Date:** Sept 13/17

**Actual Searched Area (m<sup>2</sup>):** 2888.47m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

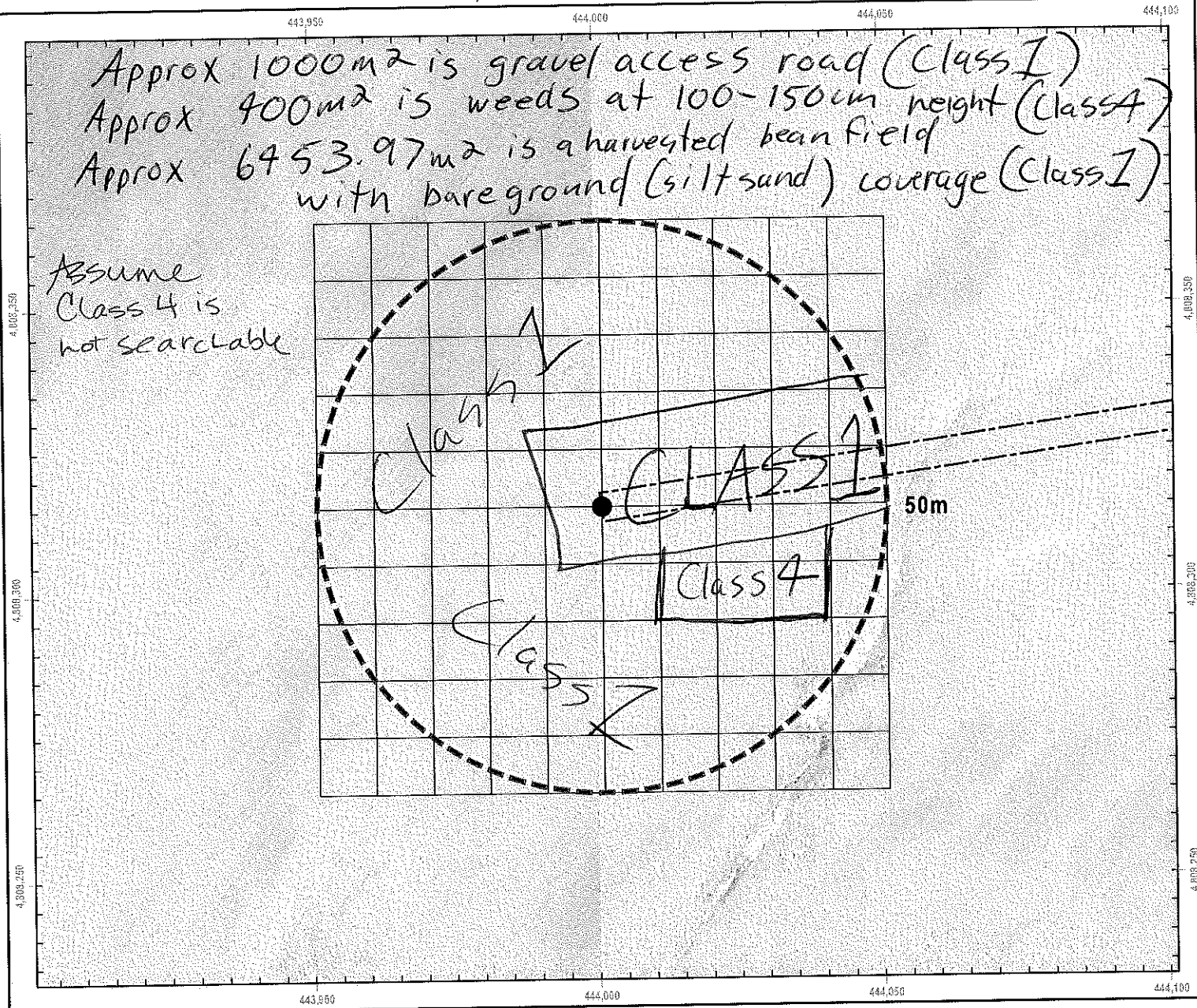
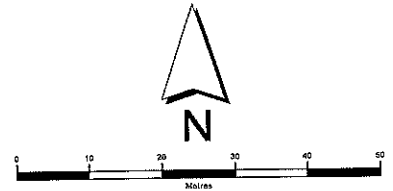
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-12

Survey Date: Oct 16/17

Actual Searched Area (m<sup>2</sup>): 7453.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



File Name: E:\Projects\Jobs\120316\120316\Map\Map.mxd  
 Project: 120316  
 Date: 10/16/17  
 User: Sara Henry





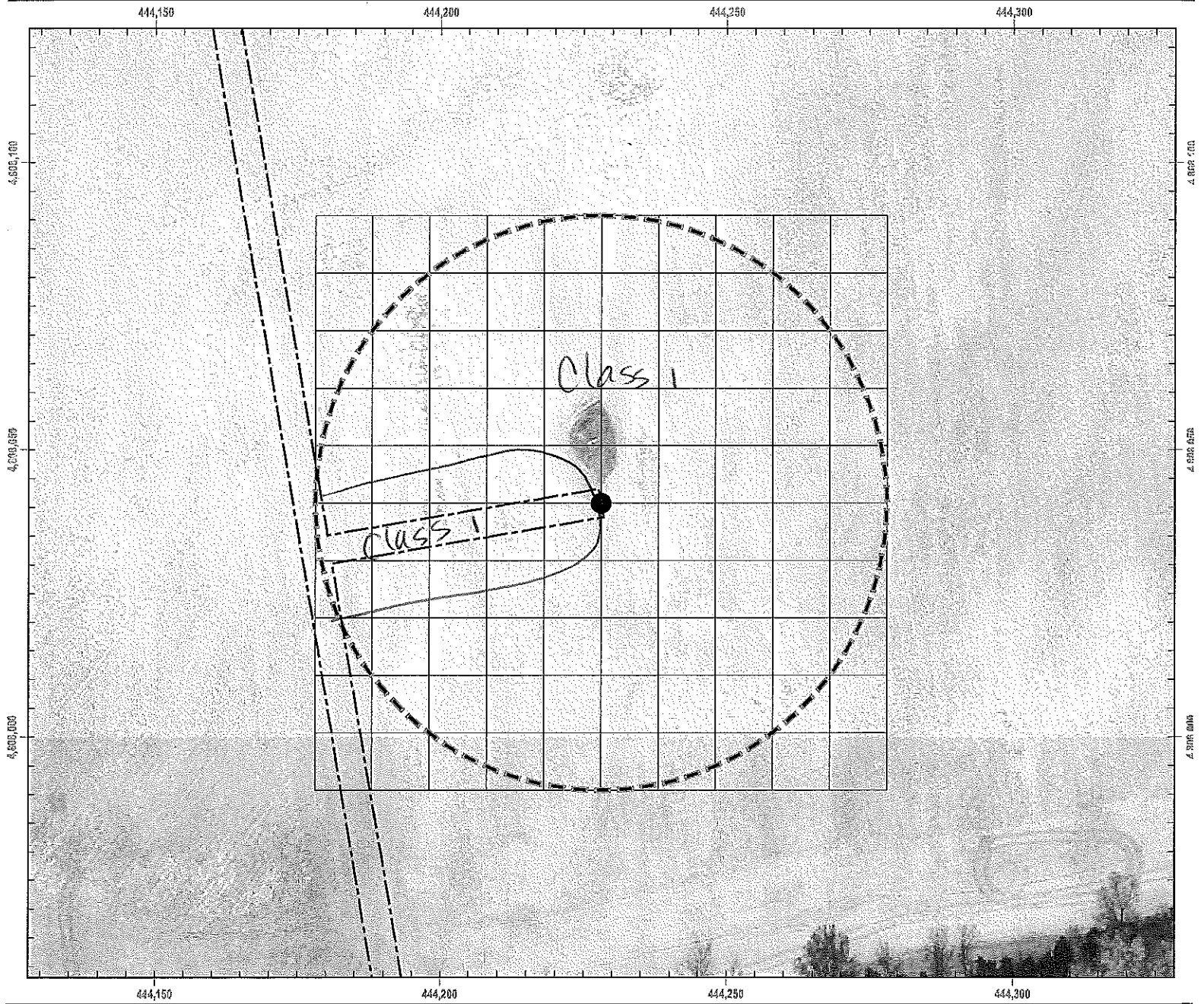
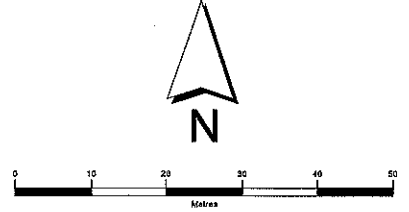
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** Grand Bend Wind Farm  
**Site Number:** T-13  
**Survey Date:** May 12 / 17  
**Actual Searched Area:** 7853.97 m<sup>2</sup>  
**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

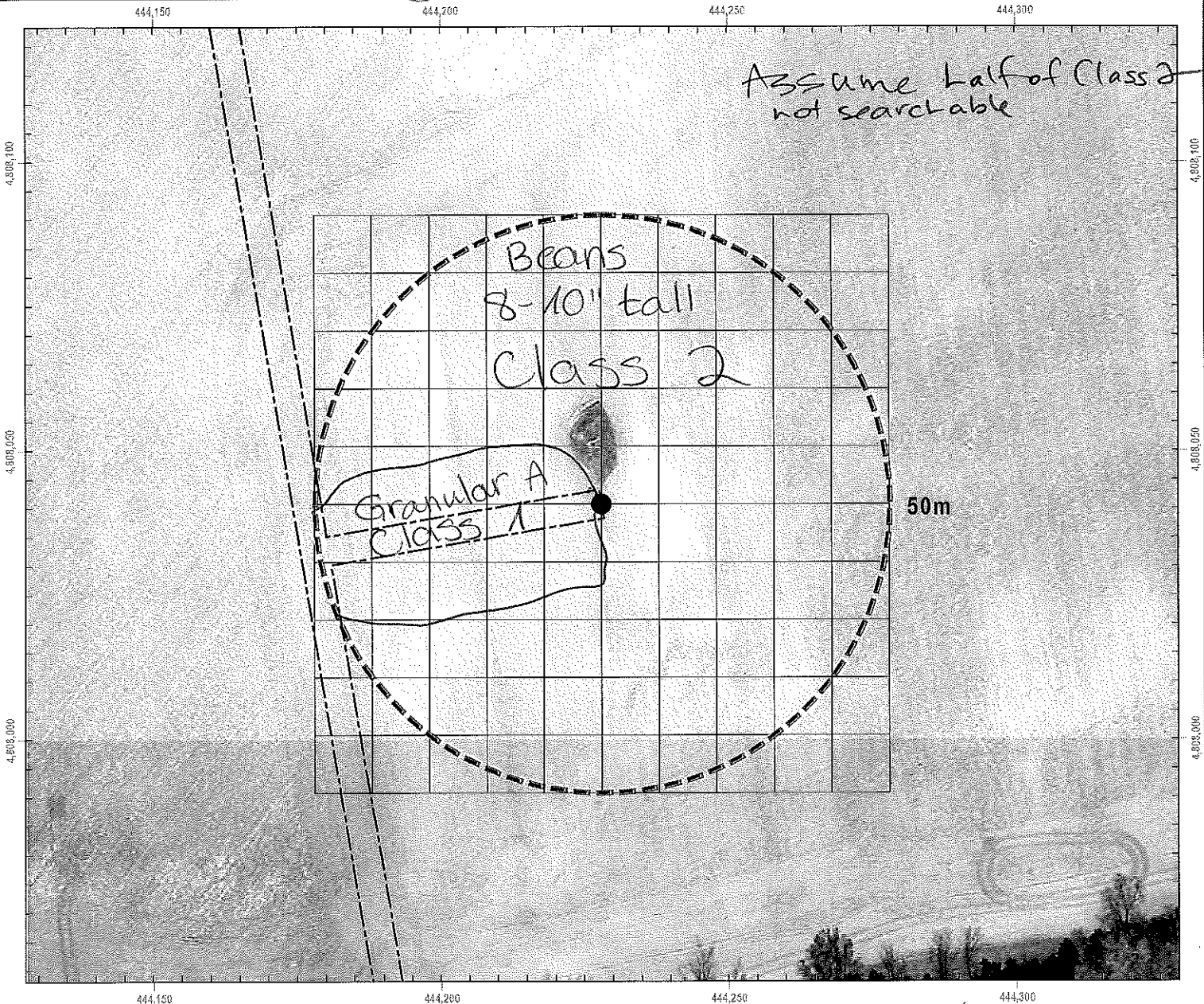
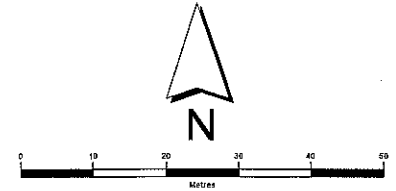
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-13

**Survey Date:** 12 July 2017

**Actual Searched Area (m<sup>2</sup>):** 442.7 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> Class 1 - gravel  
 ≈ 6853.97 m<sup>2</sup> Class 2 - Beans in silty sand

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

6853.97 / 2 = 3426.98 m<sup>2</sup>







# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

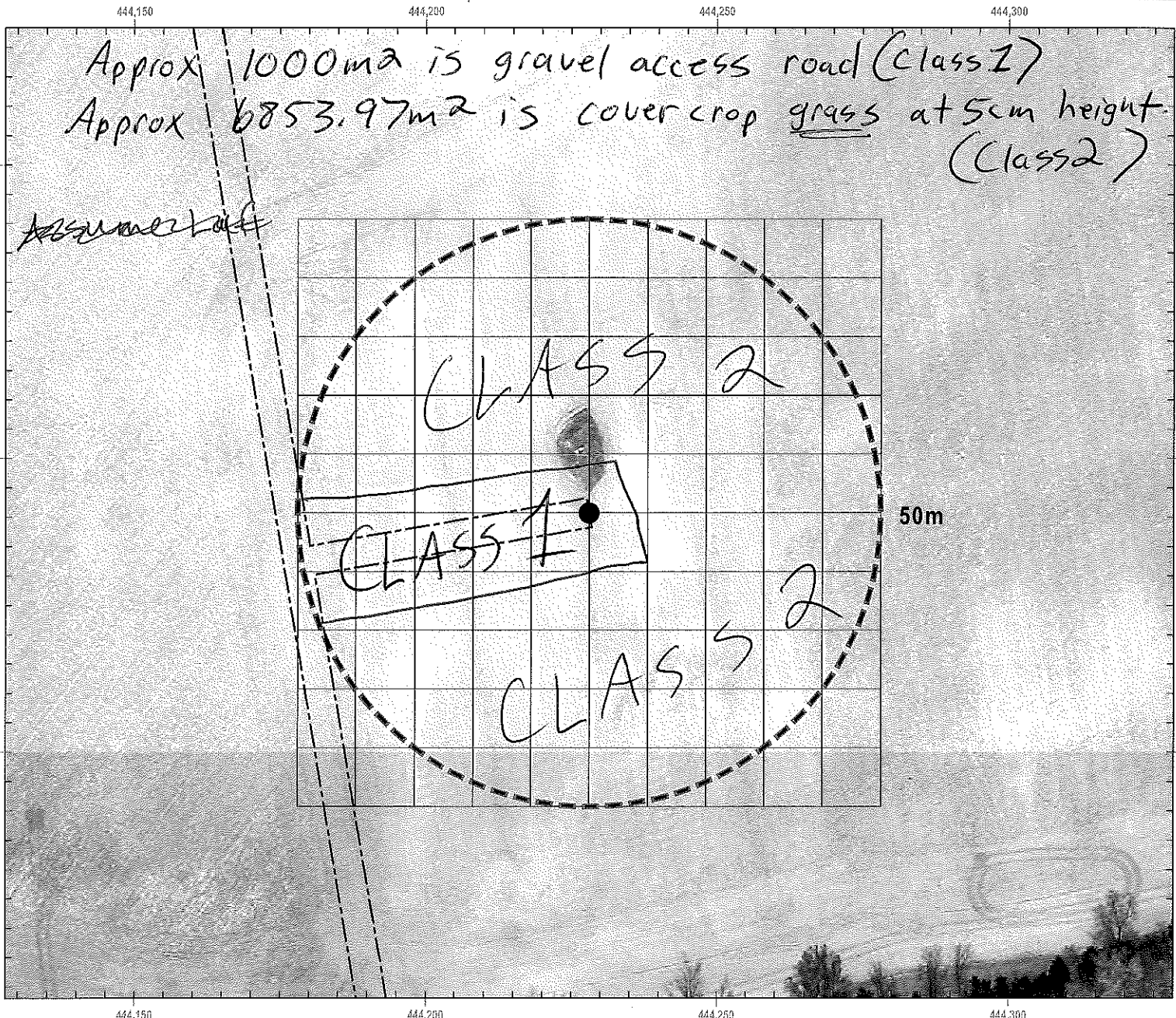
**Site Number:** T-13

**Survey Date:** Nov 8/17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

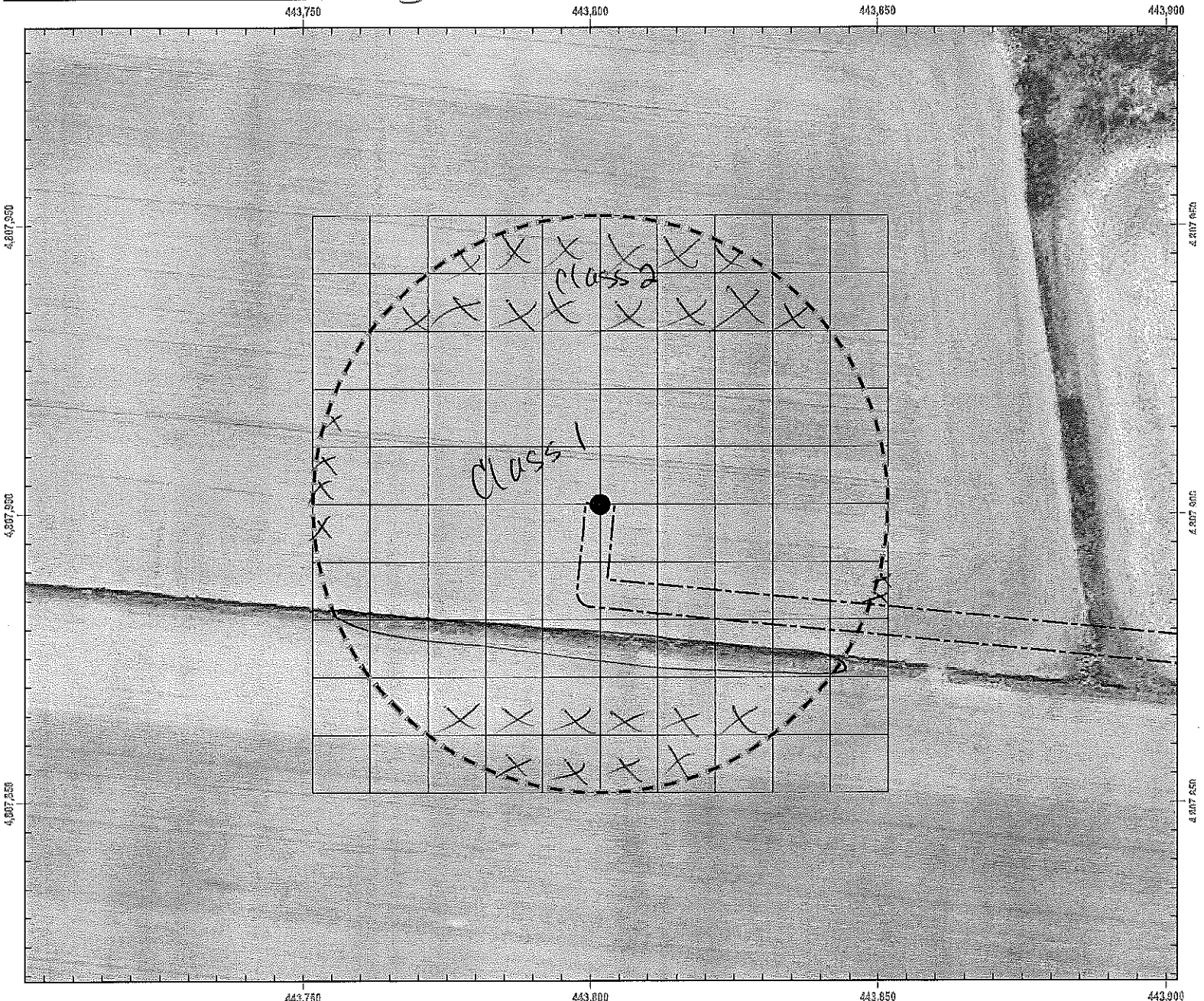
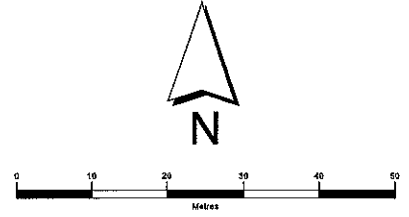


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-14  
 Survey Date: 10 May 2017  
 Actual Searched Area: 1853.97m<sup>2</sup>  
 Observers: Jara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

class 2  
 X = corn stubble  $\approx 150\text{m} \times 16\text{m} = 2400\text{m}^2$   
 5454m<sup>2</sup> class 1 = sand or gravel  
 BURNSIDE

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

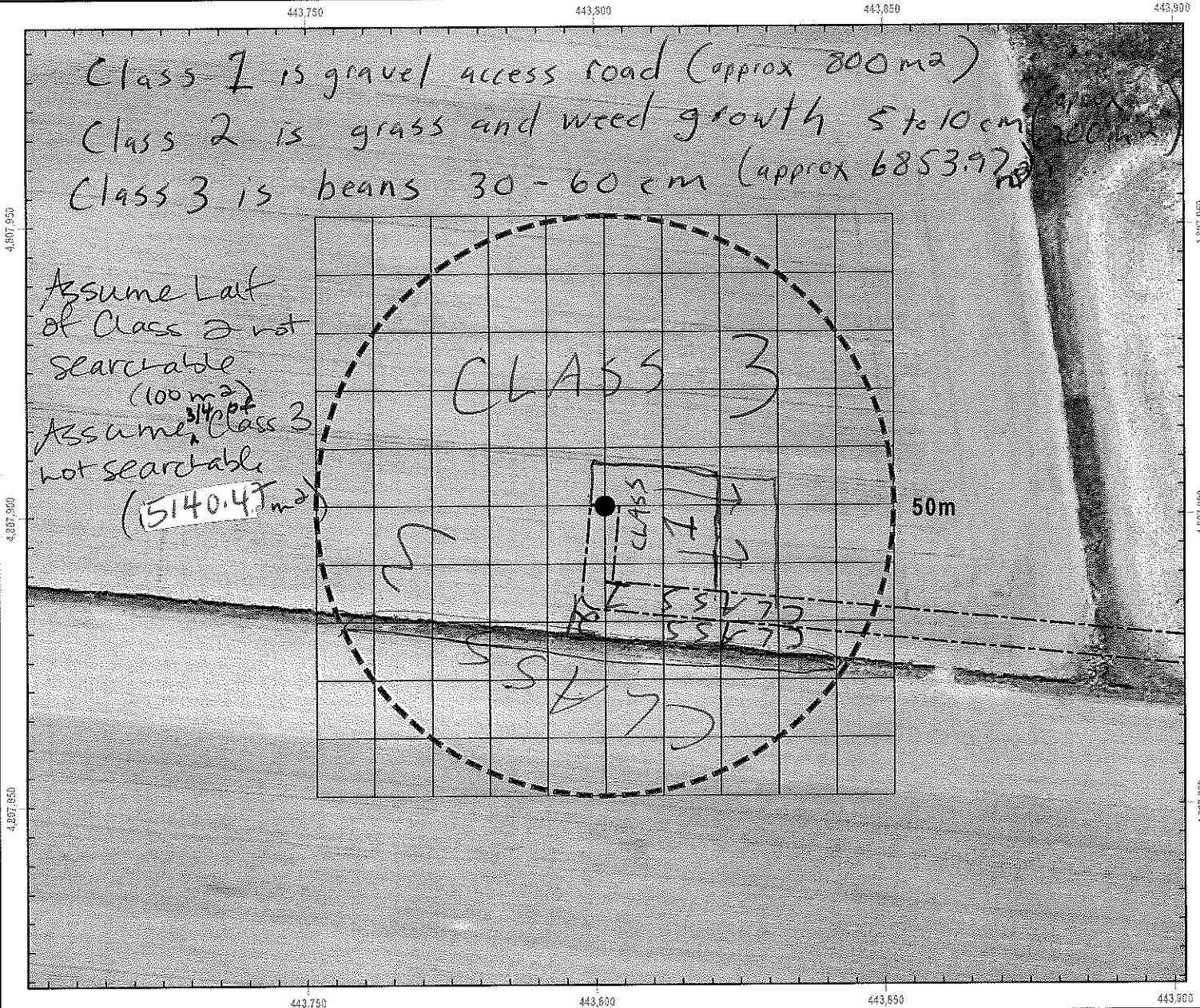
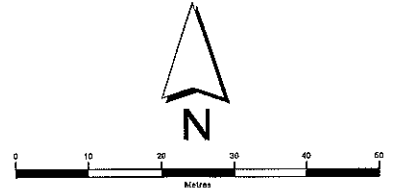
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-14

Survey Date: Aug 16 / 17

Actual Searched Area (m<sup>2</sup>): 2613.50 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

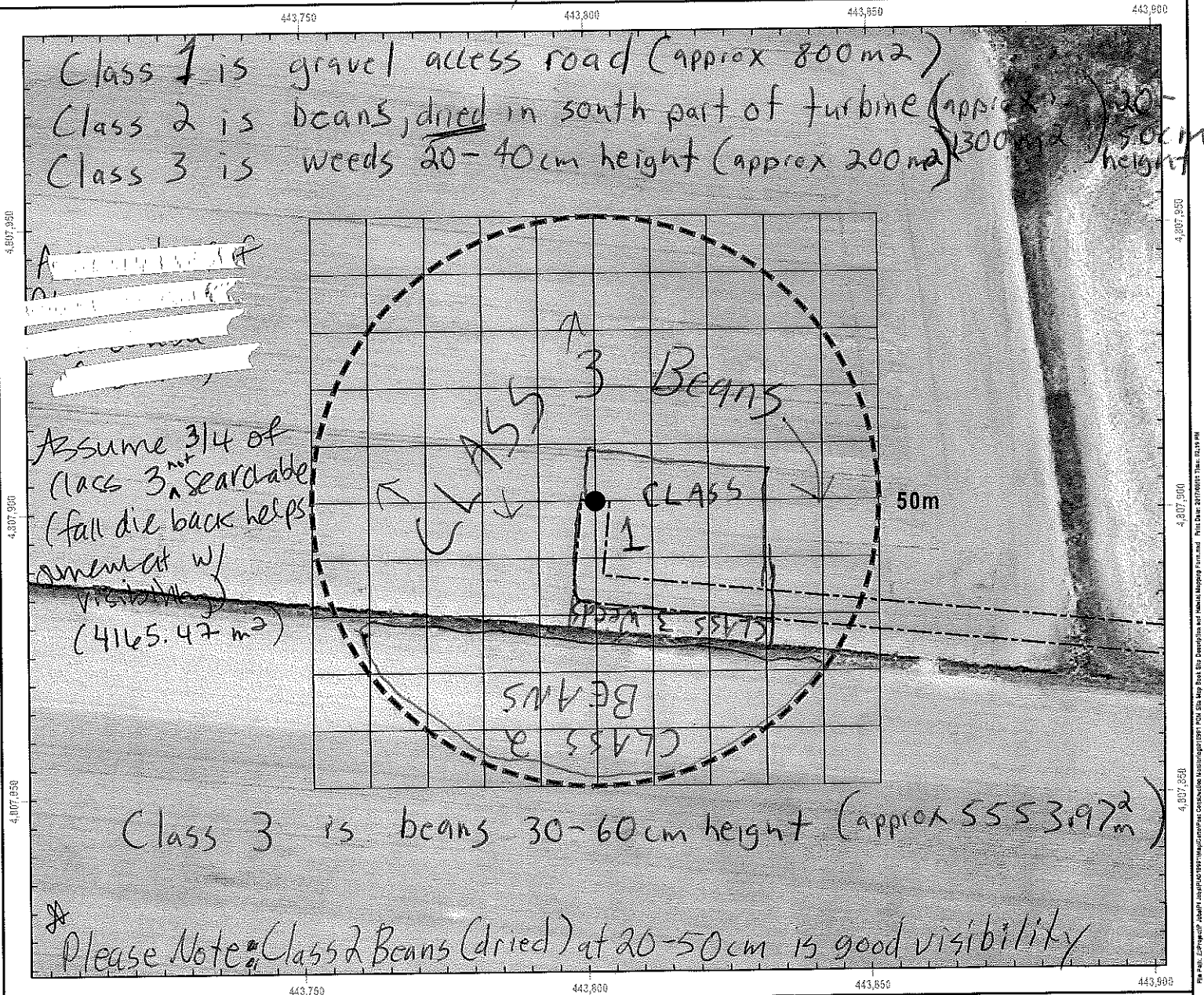
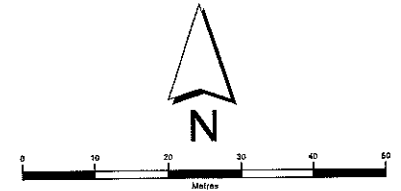
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-14

**Survey Date:** Sept 20, 2012

**Actual Searched Area (m<sup>2</sup>):** 3688.50 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



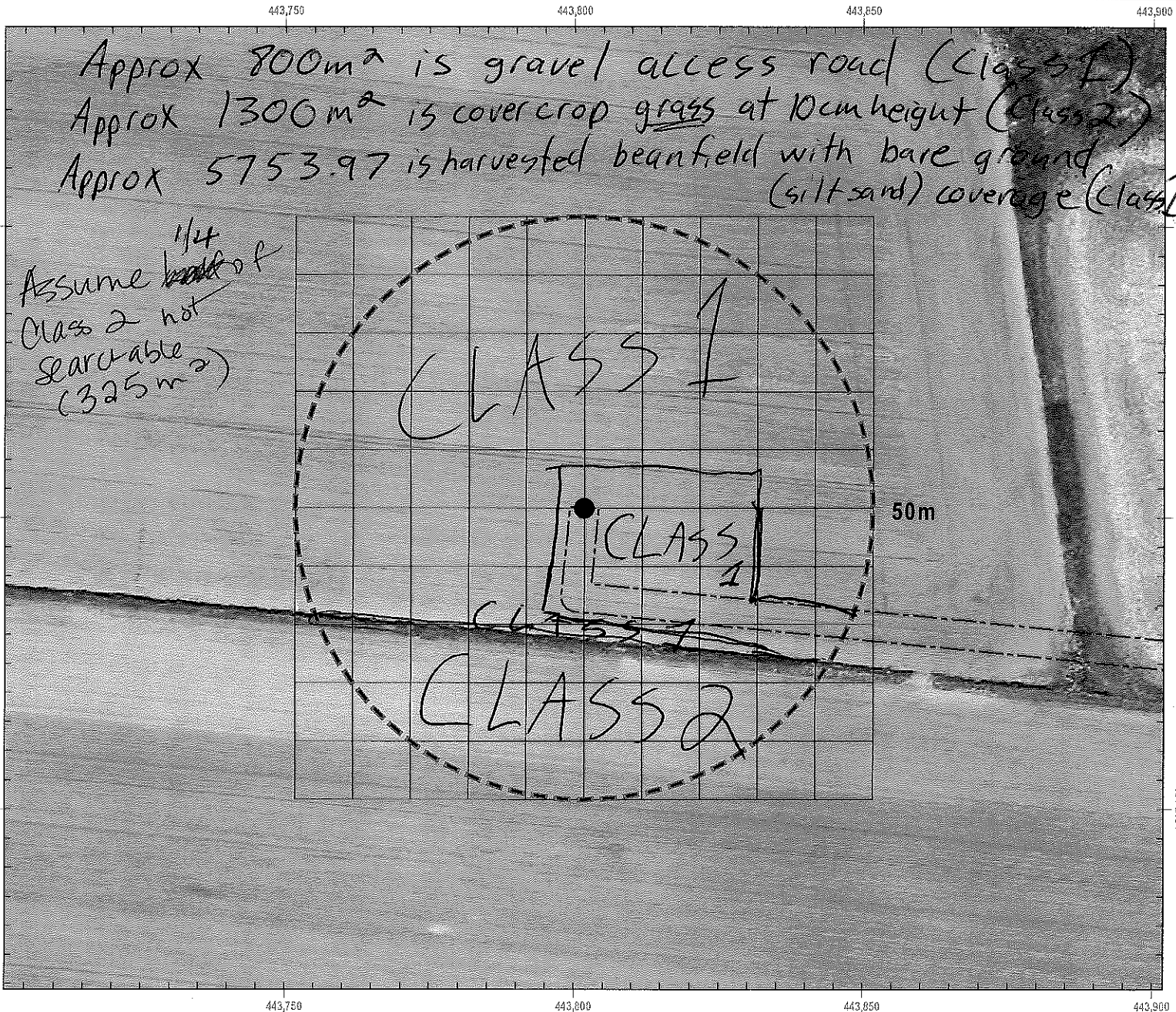
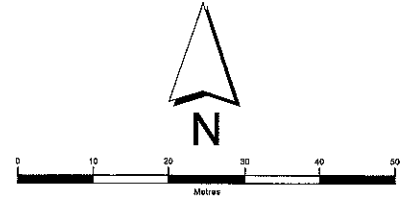
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# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-14  
 Survey Date: Oct 17/17  
 Actual Searched Area (m<sup>2</sup>): 7528.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

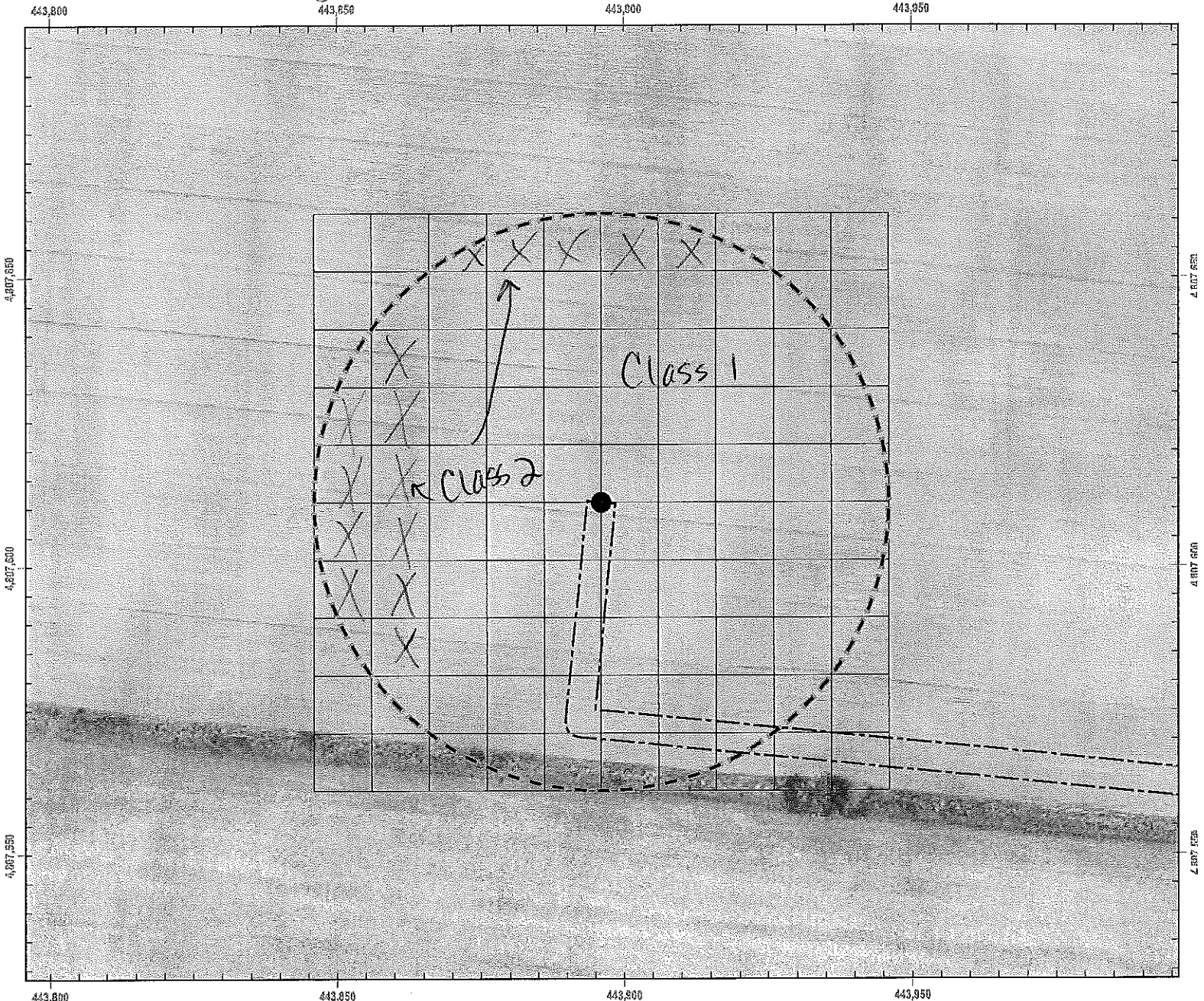
**Project Name:** Grand Bend Wind Farm

**Site Number:** T-16

**Survey Date:** May 2/17

**Actual Searched Area:** 50 m radius - 7853.97m<sup>2</sup>

**Observers:** Tara Sieg, Sara Henri



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate) <b>X</b>
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

X = 1 ft corn stalk  
- harrowed by 12 May  
all class 1



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm

Site Number: T-17

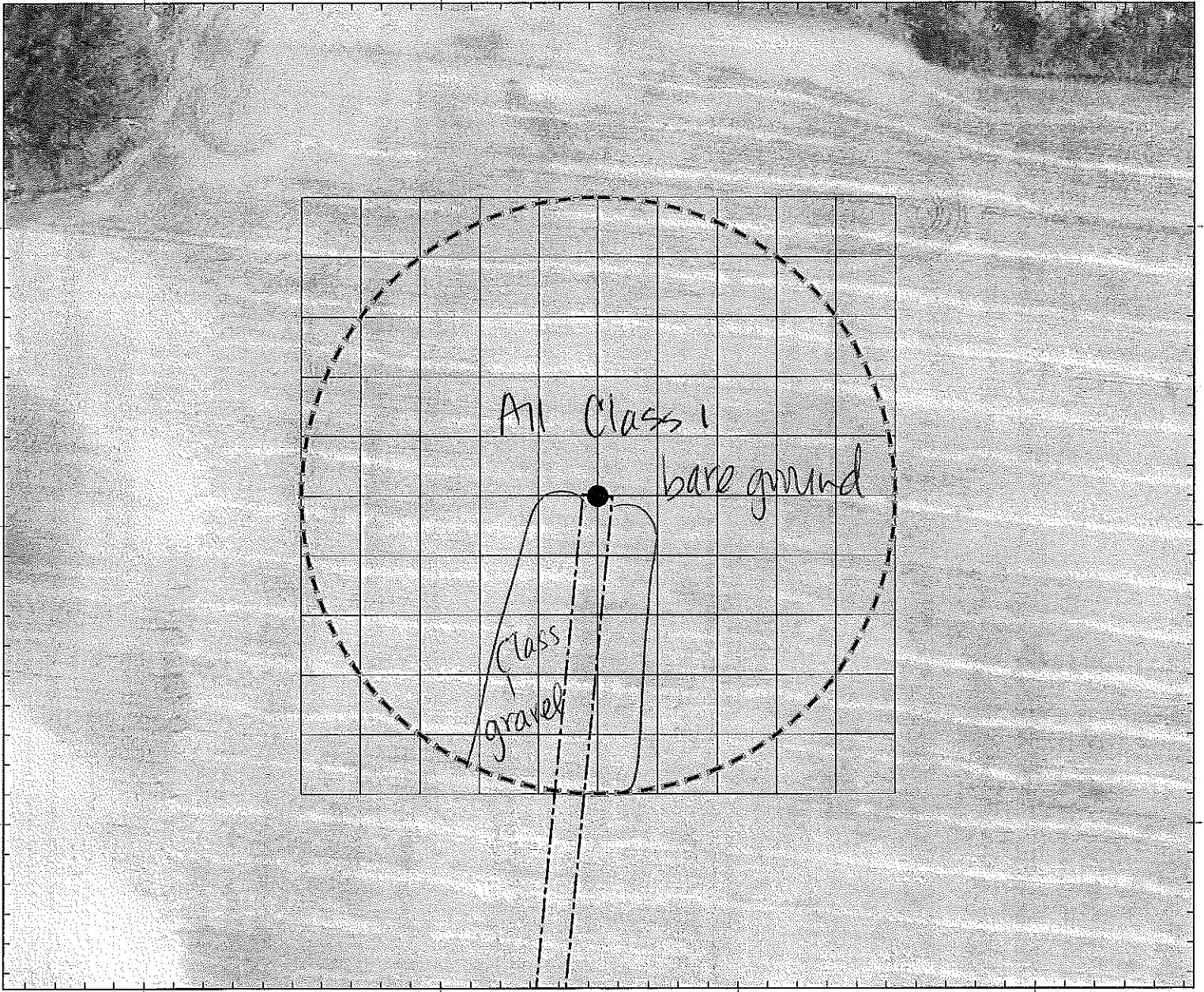
Survey Date: May 2 / 17

Actual Searched Area: 50m radius (7853.97 m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



443,300                      443,350                      443,400                      443,450



443,300                      443,350                      443,400                      443,450

% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

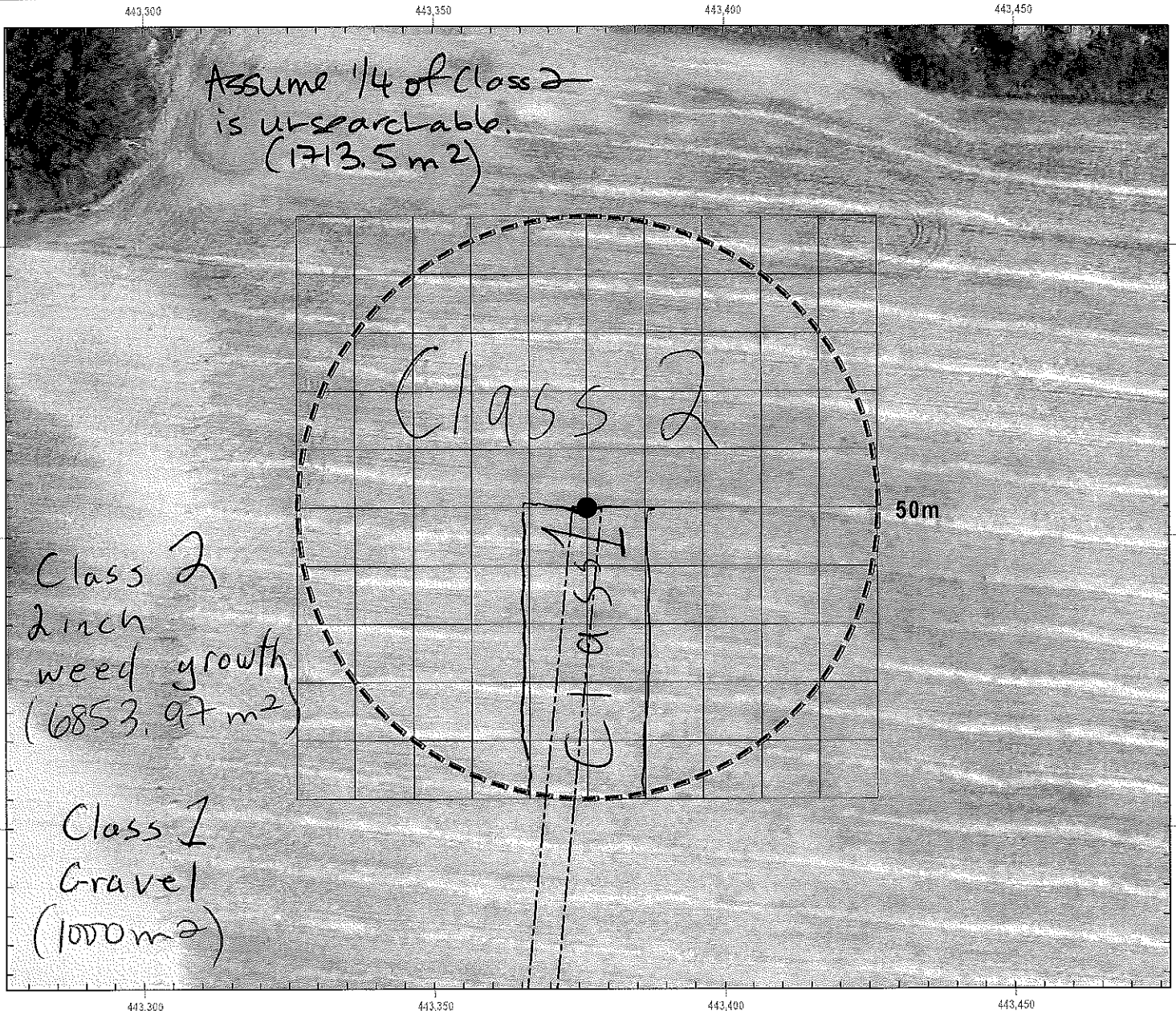
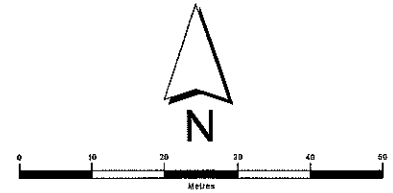
Site Number: T-17

Survey Date: June 20 17

Actual Searched Area (m<sup>2</sup>): 6140.47 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



4,805,350  
4,805,400  
4,805,350  
4,805,300  
PIA019991.0005 Grand Bend Wind Farm - Site Description and Habitat Mapping Form - Final Date: 20170620 Time: 02:11 PM

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

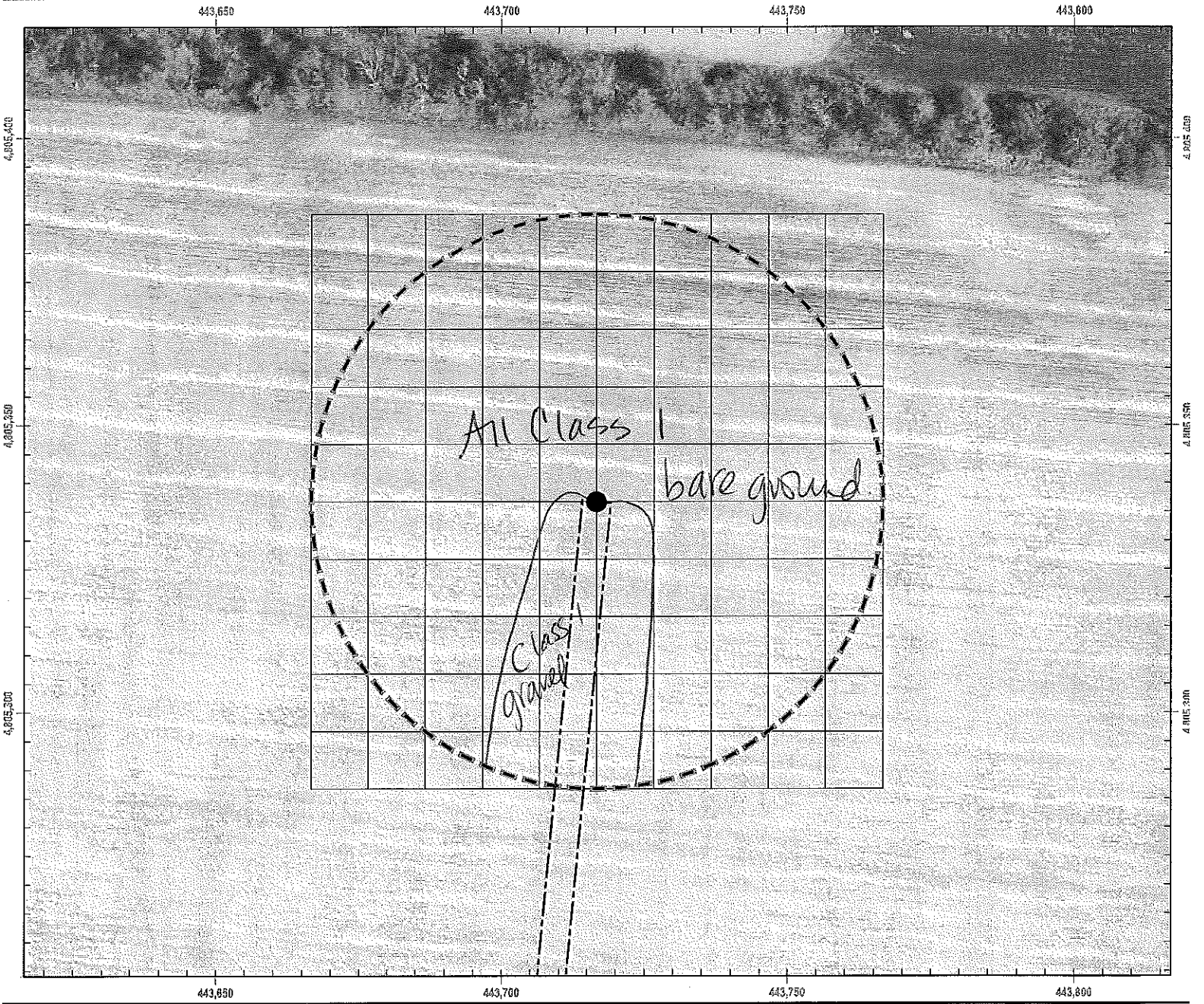
**Project Name:** Grand Bend Wind Farm

**Site Number:** T-18

**Survey Date:** May 2/17

**Actual Searched Area:** 50 m radius (7853.97 m<sup>2</sup>)

**Observers:** Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRIDS



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

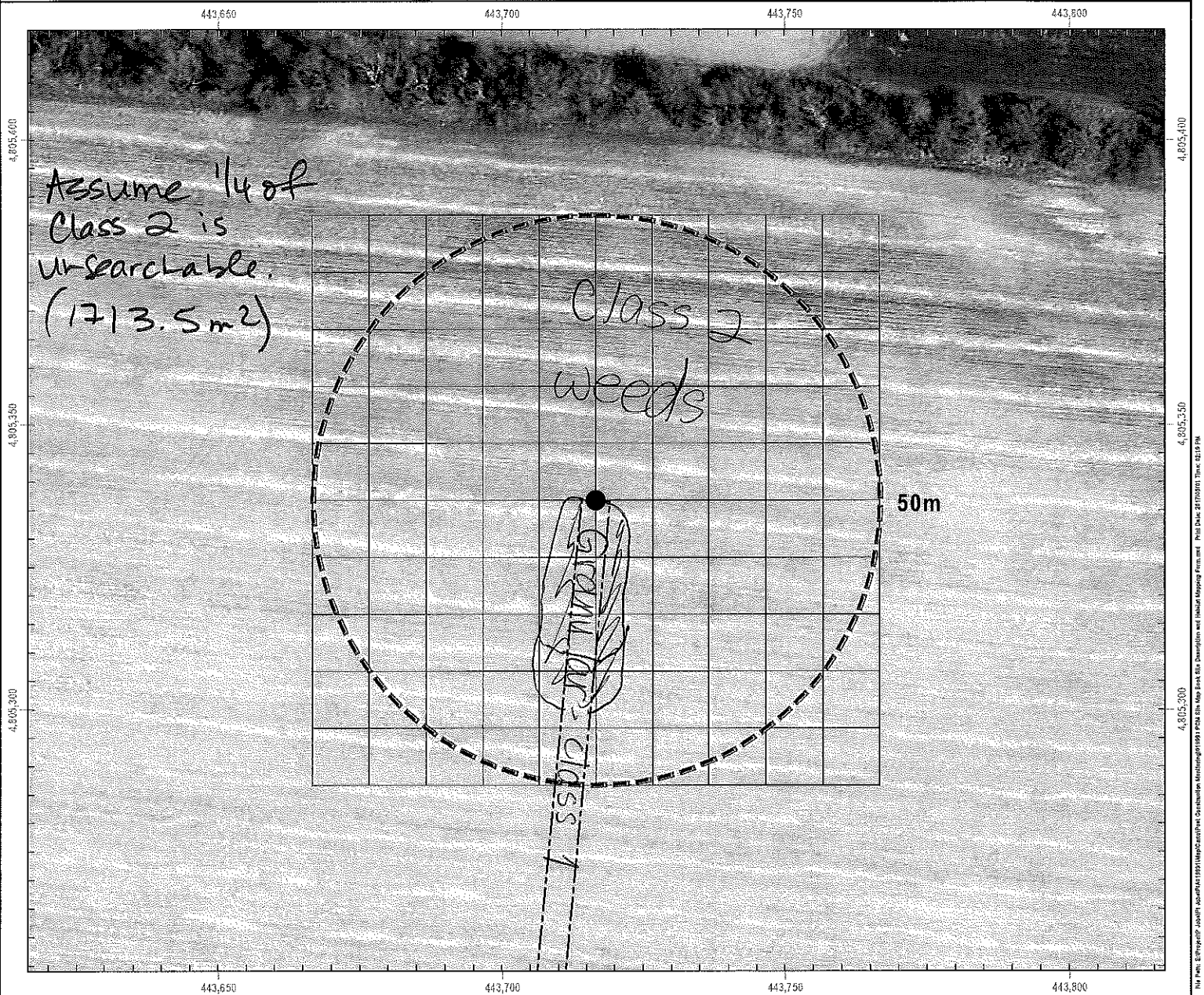
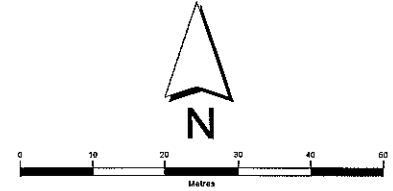
**Site Number:** T-18

**Survey Date:** 20 June 2017

**Actual Searched Area (m<sup>2</sup>):** 6140.47 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

~ 1000m<sup>2</sup> Class 1 Granular  
 ~ 6853.97m<sup>2</sup> Class 2 - weeds

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





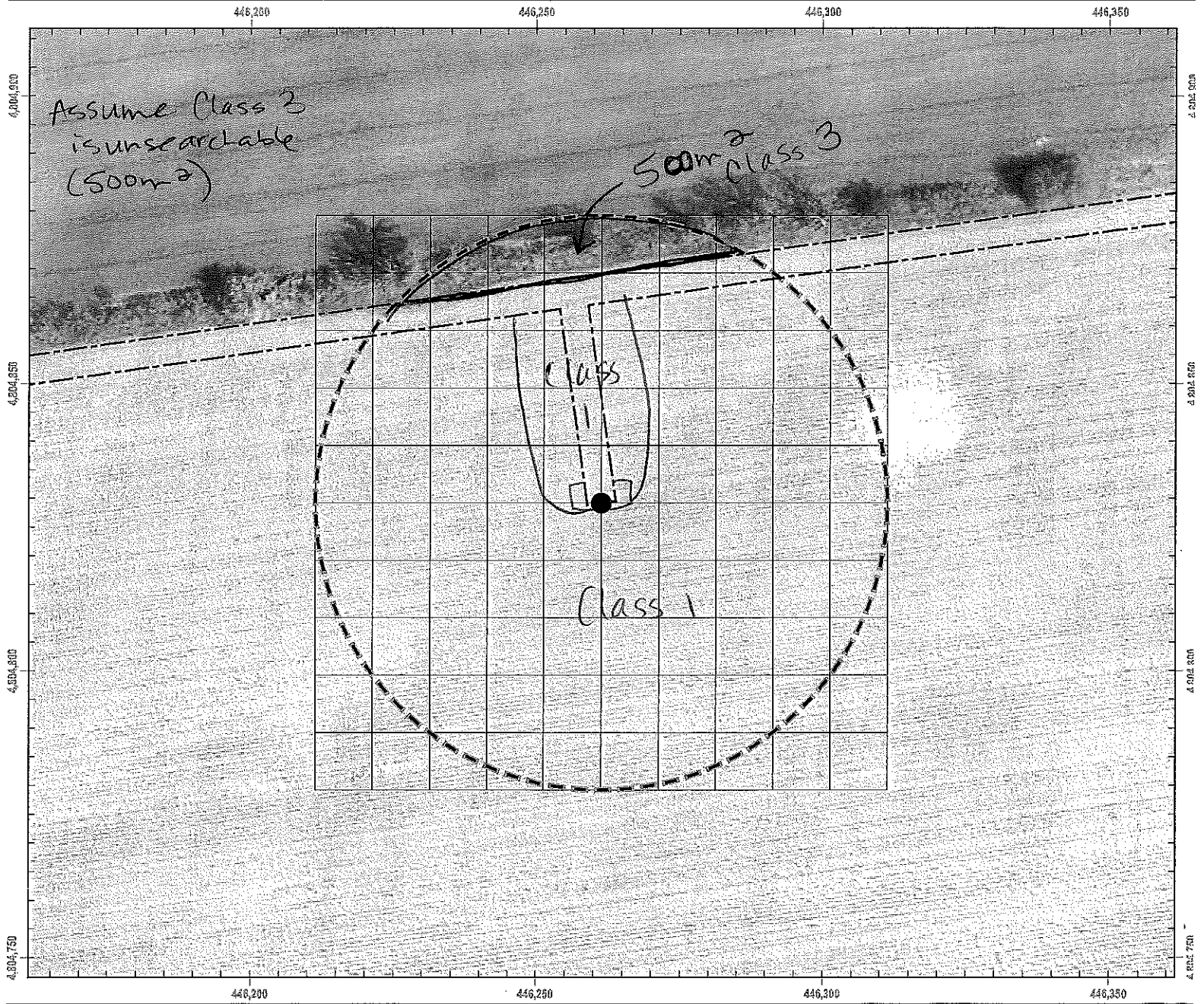
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-19  
 Survey Date: 15 May  
 Actual Searched Area: 7353.97 m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Ploughed & planted

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION) ✓

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

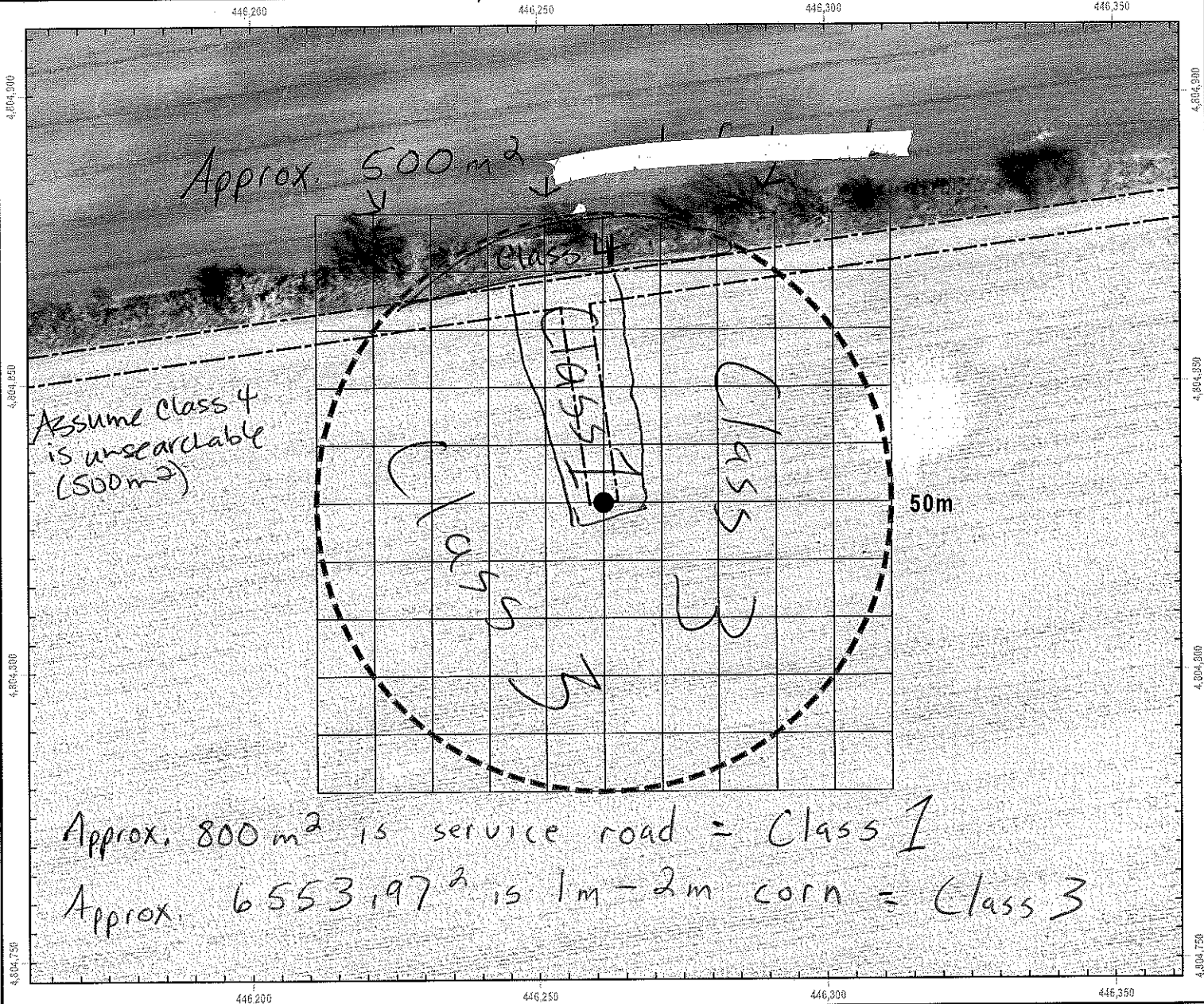
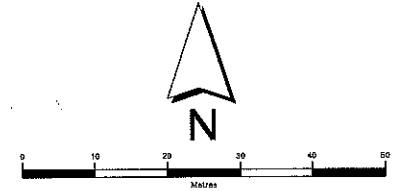
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-19

**Survey Date:** July 12 / 17

**Actual Searched Area (m<sup>2</sup>):** 7353.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



4,804,300  
4,804,350  
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4,804,450  
4,804,500  
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 Date: 2017/07/17 10:00:00 AM



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

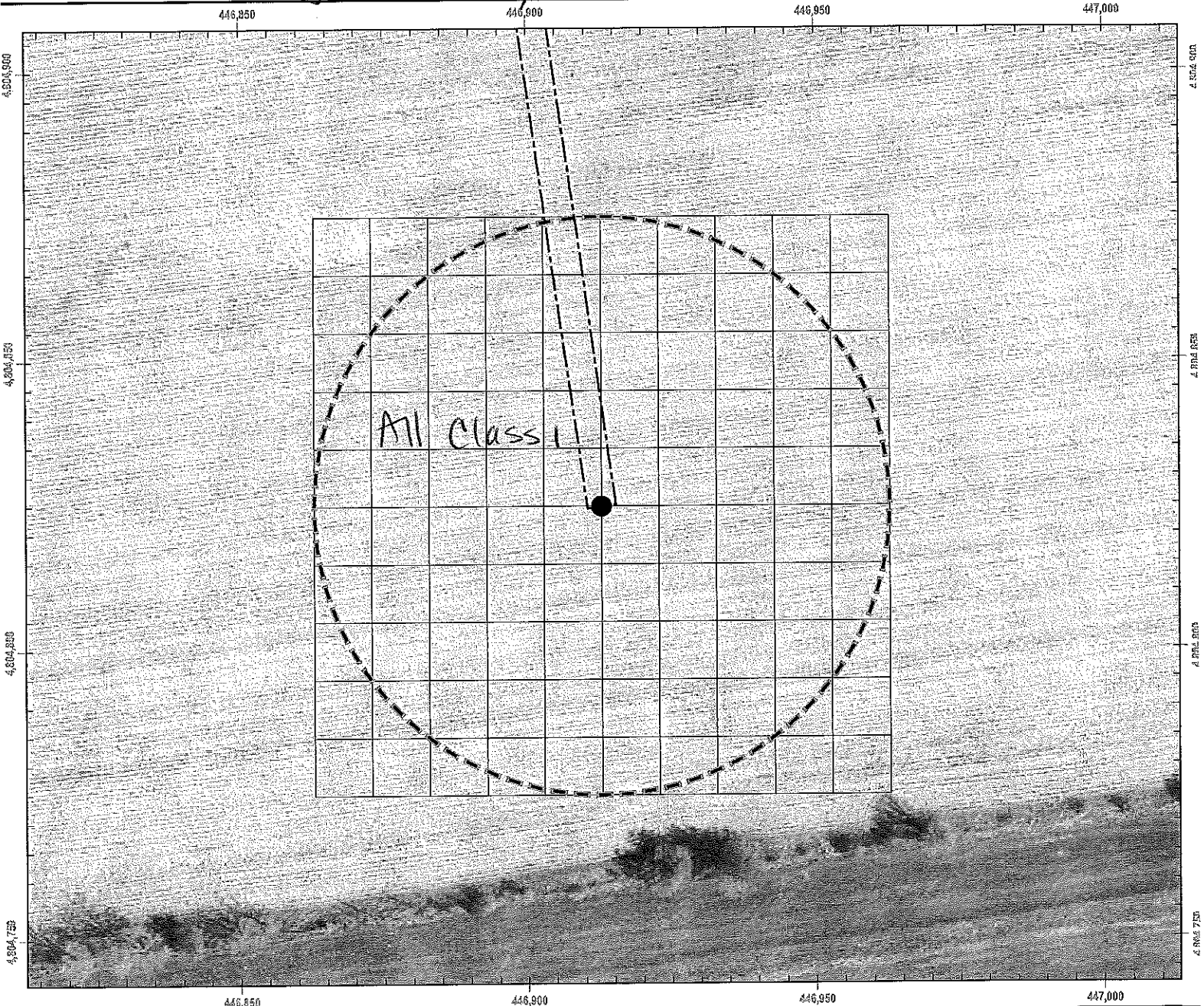
Project Name: Grand Bend Wind Farm

Site Number: T-20

Survey Date: May 1 / 17

Actual Searched Area: 7853.97 m<sup>2</sup>

Observers: Tara Sieg Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	<u>Class 1 (Easy)</u>
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



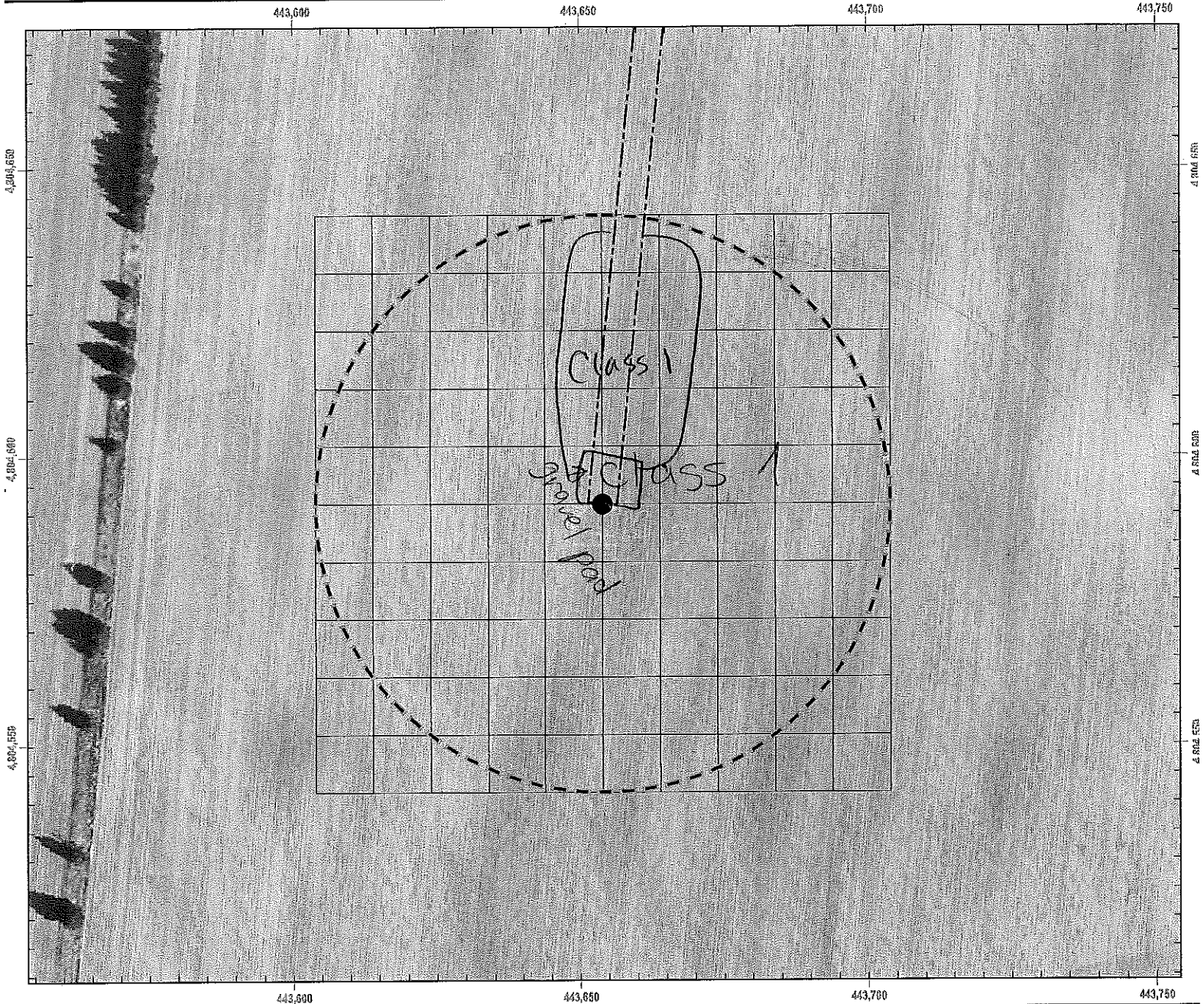


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-21  
 Survey Date: 17 May 2017  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

- Sand

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches) ✓

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

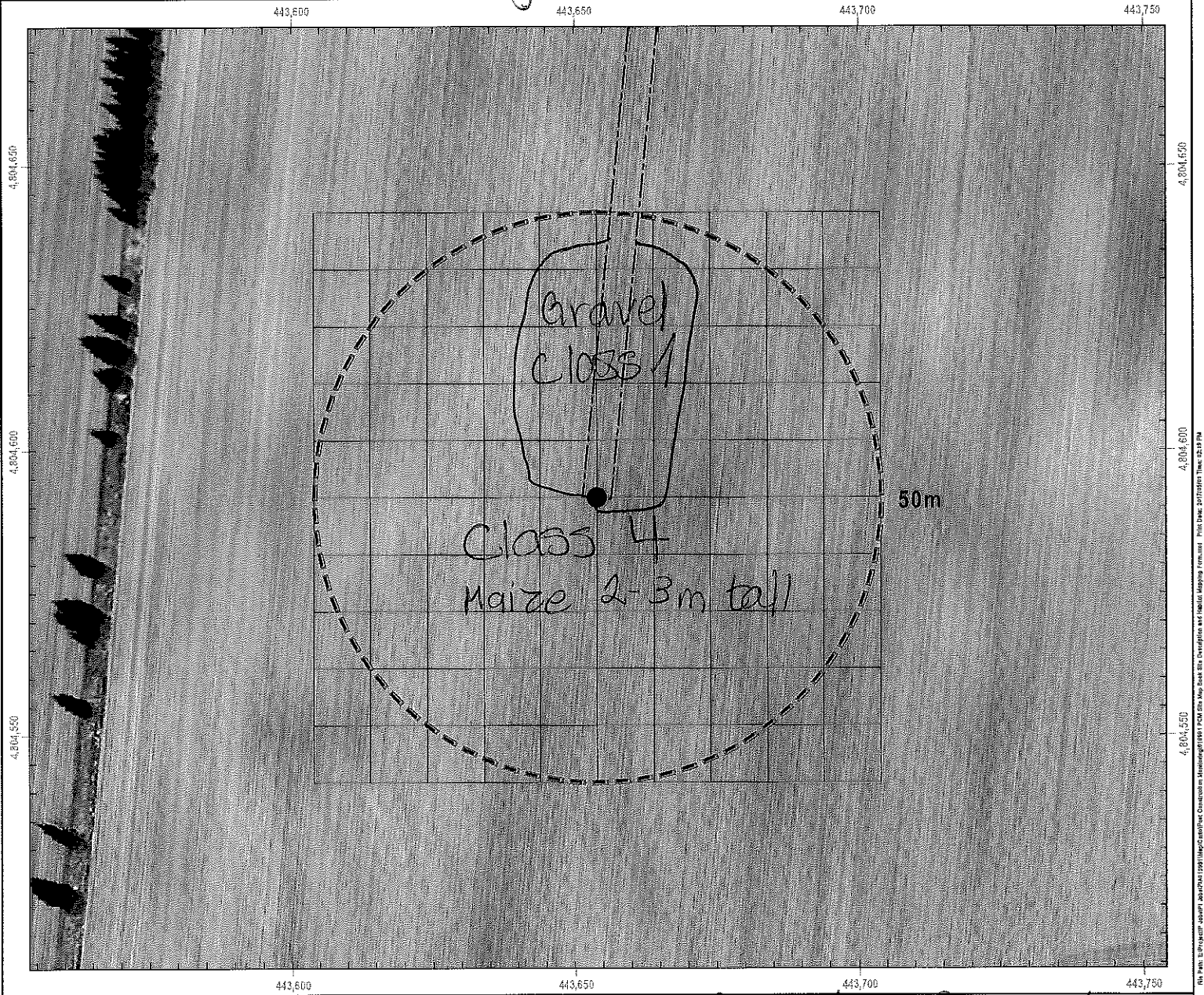
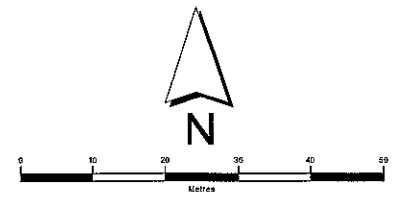
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-21

**Survey Date:** 19 July 2017

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Lara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000m<sup>2</sup> Granular - Class 1  
 ≈ 6854m<sup>2</sup> Class 4

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

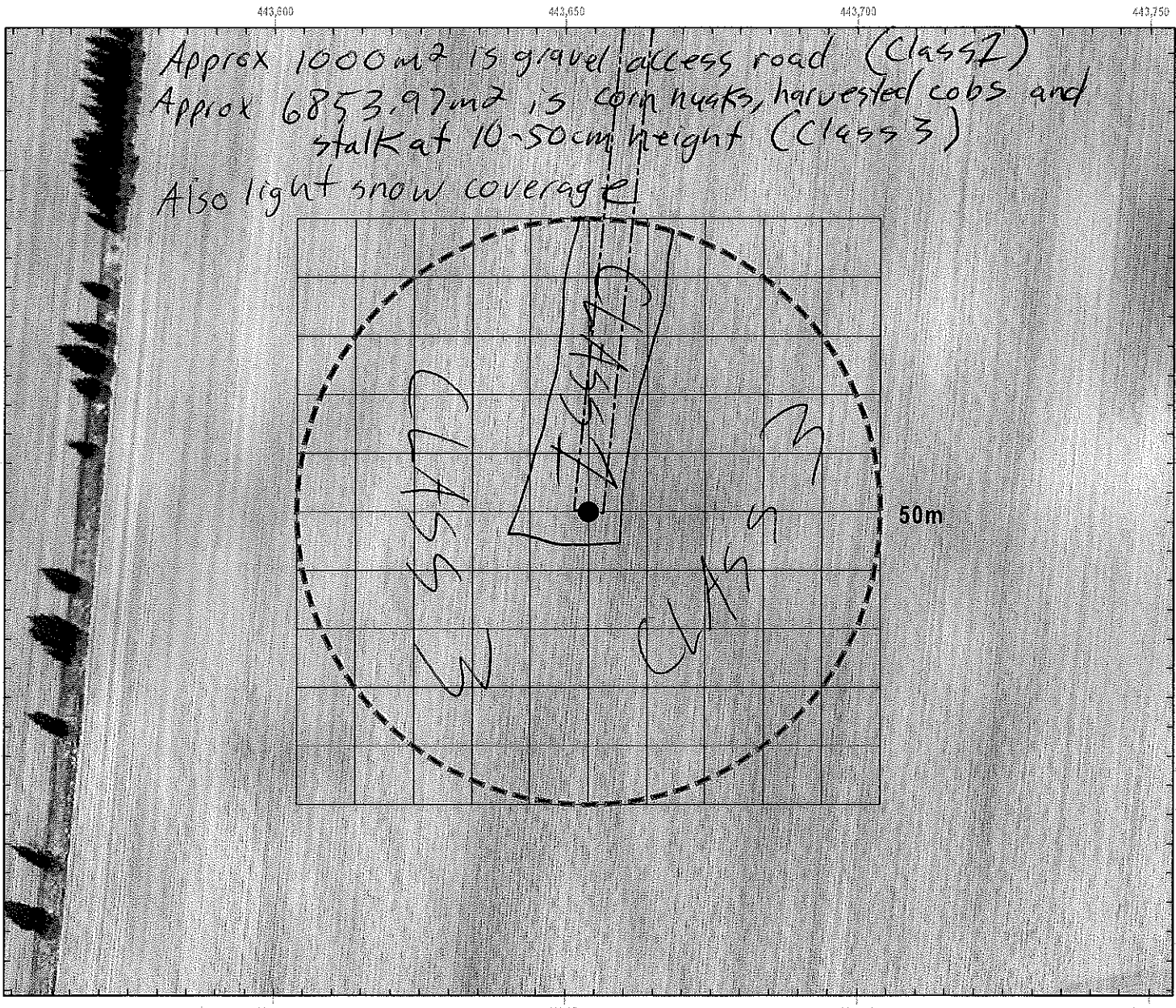
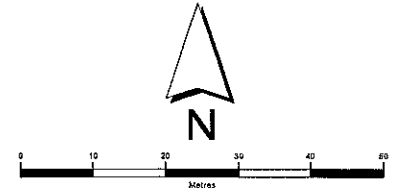
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-21

Survey Date: Nov 23/17

Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



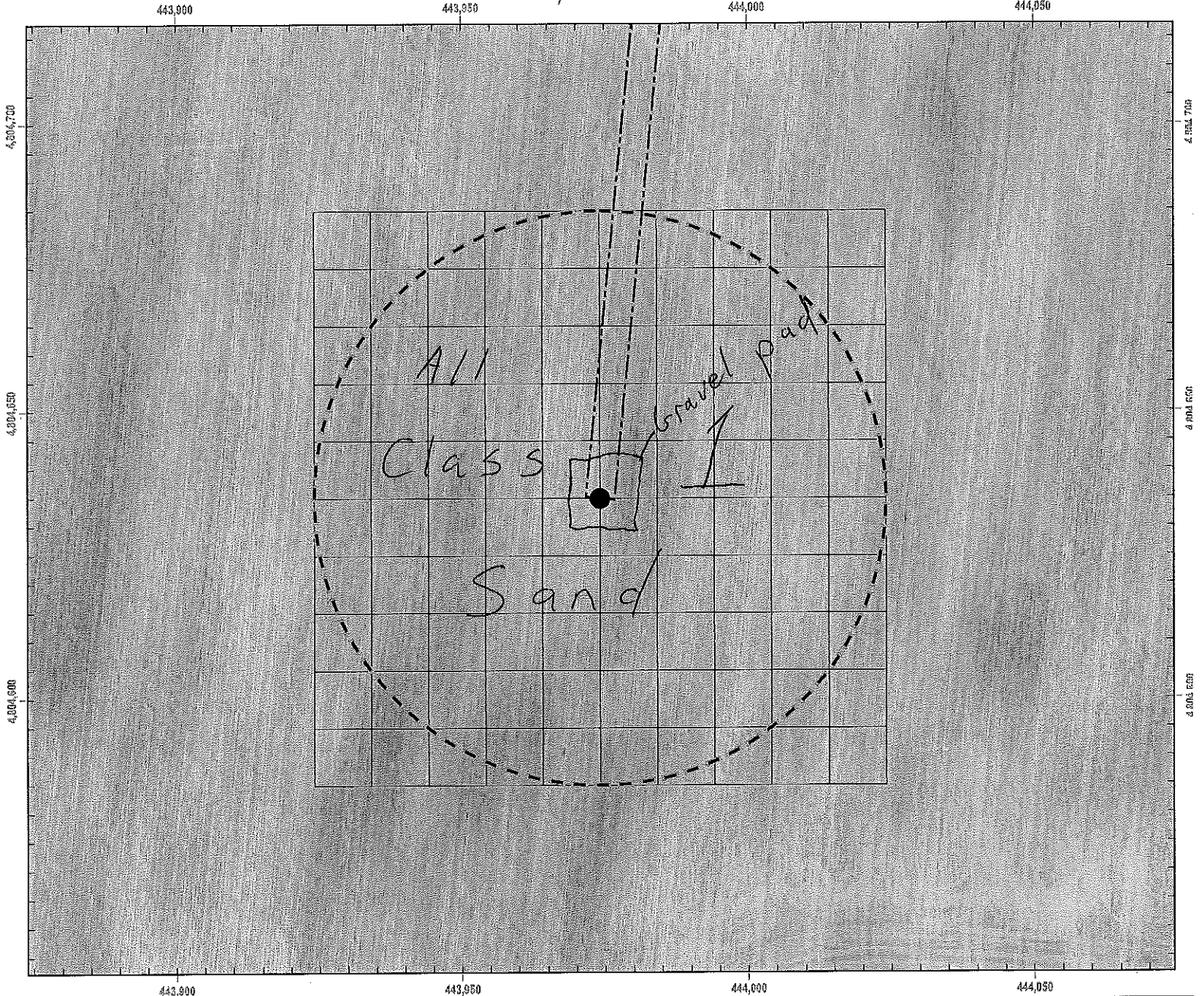
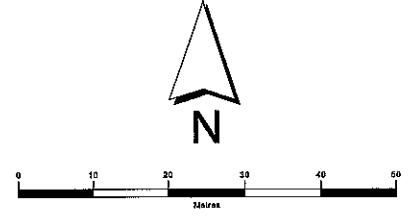
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-22  
 Survey Date: May 17/17  
 Actual Searched Area: 7853.97 m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

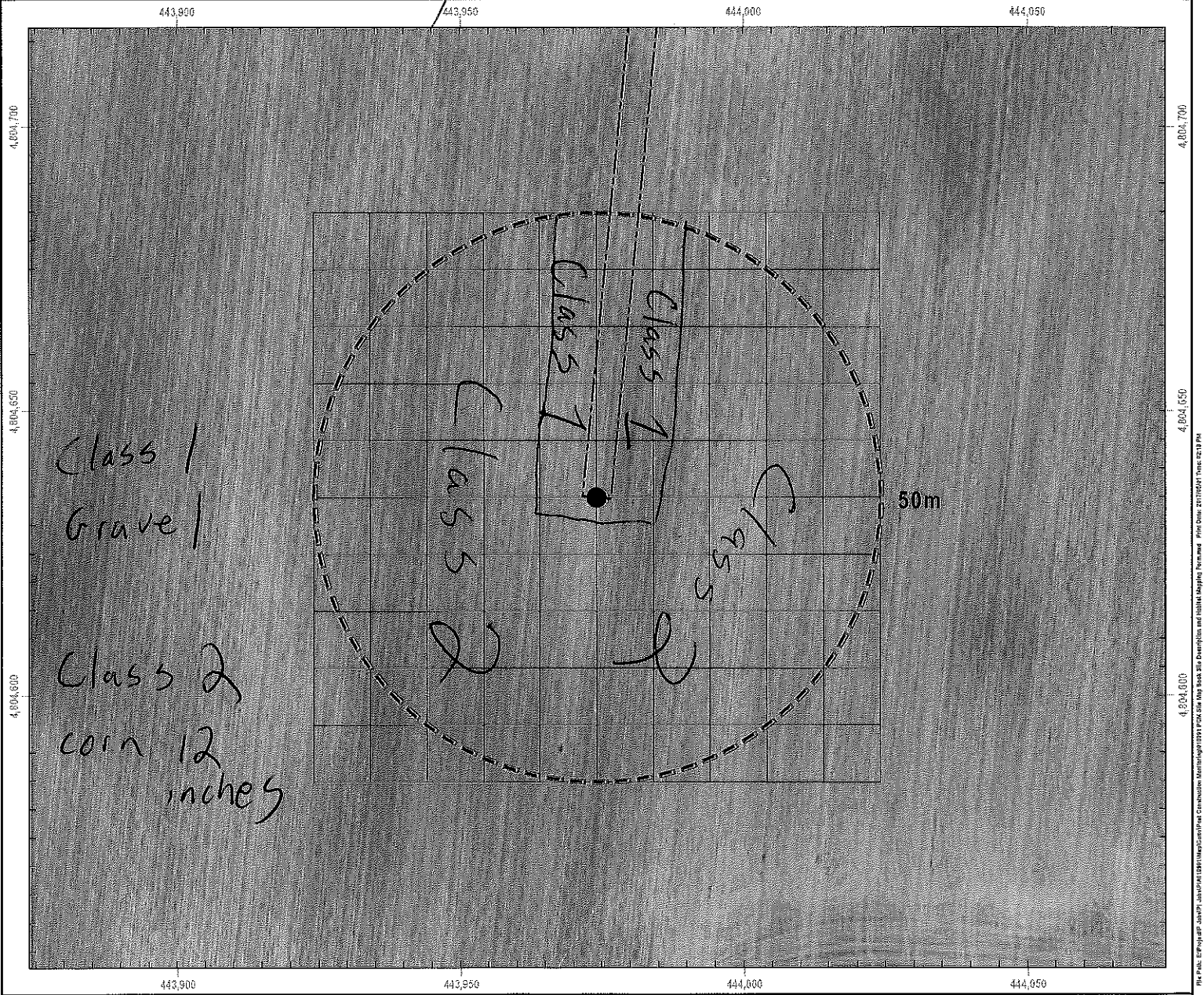
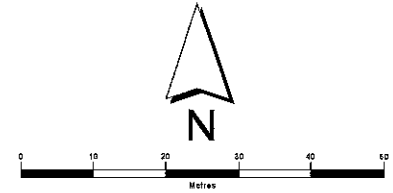
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-22

**Survey Date:** June 21, 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



The Public Employment Agency (PEA) is a non-profit organization that provides employment services to the public. It is a member of the International Labour Organization (ILO) and the International Federation of Public Employees (IFPE).

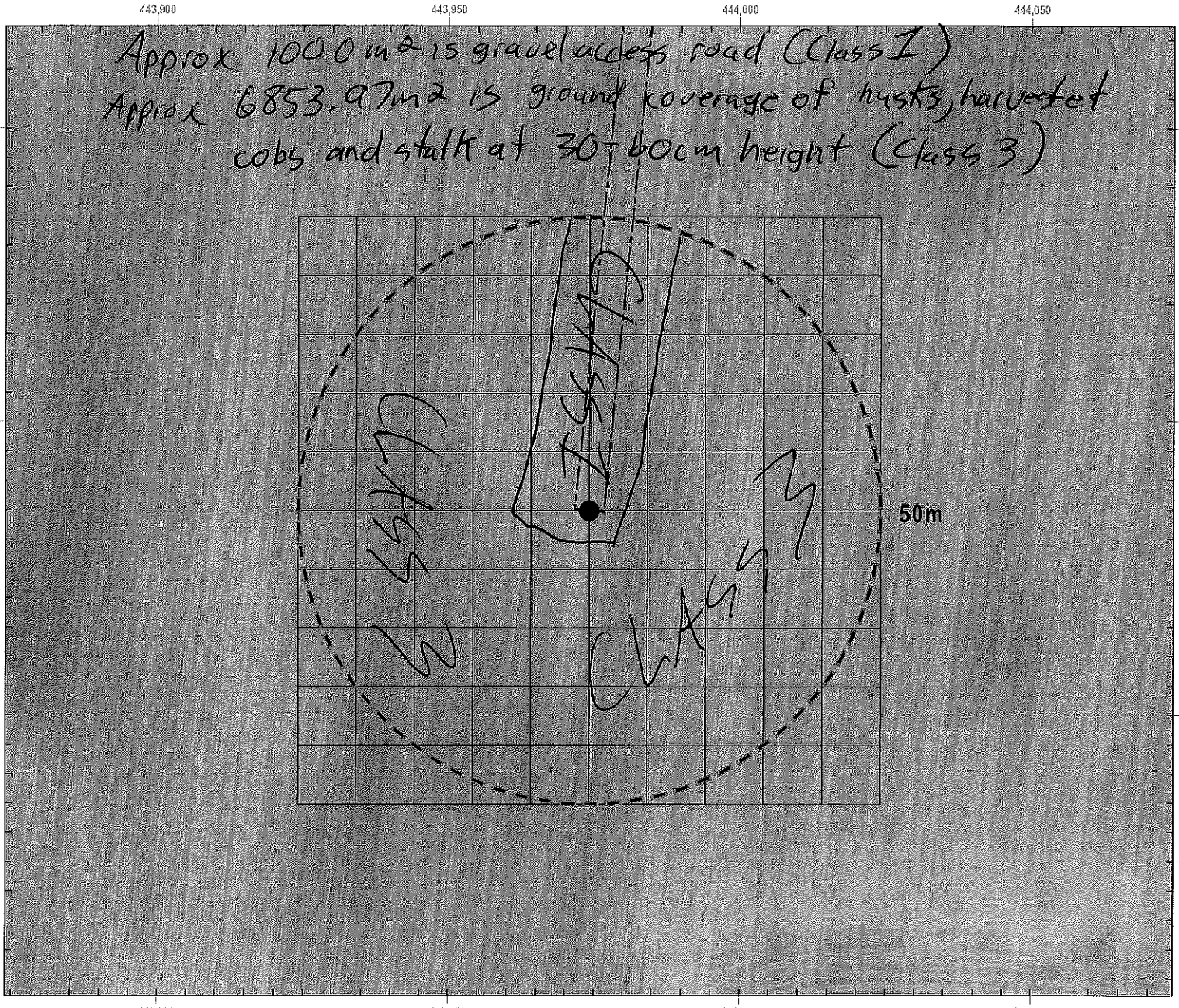
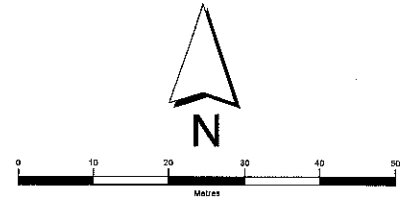


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-22  
 Survey Date: Nov 15/17  
 Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

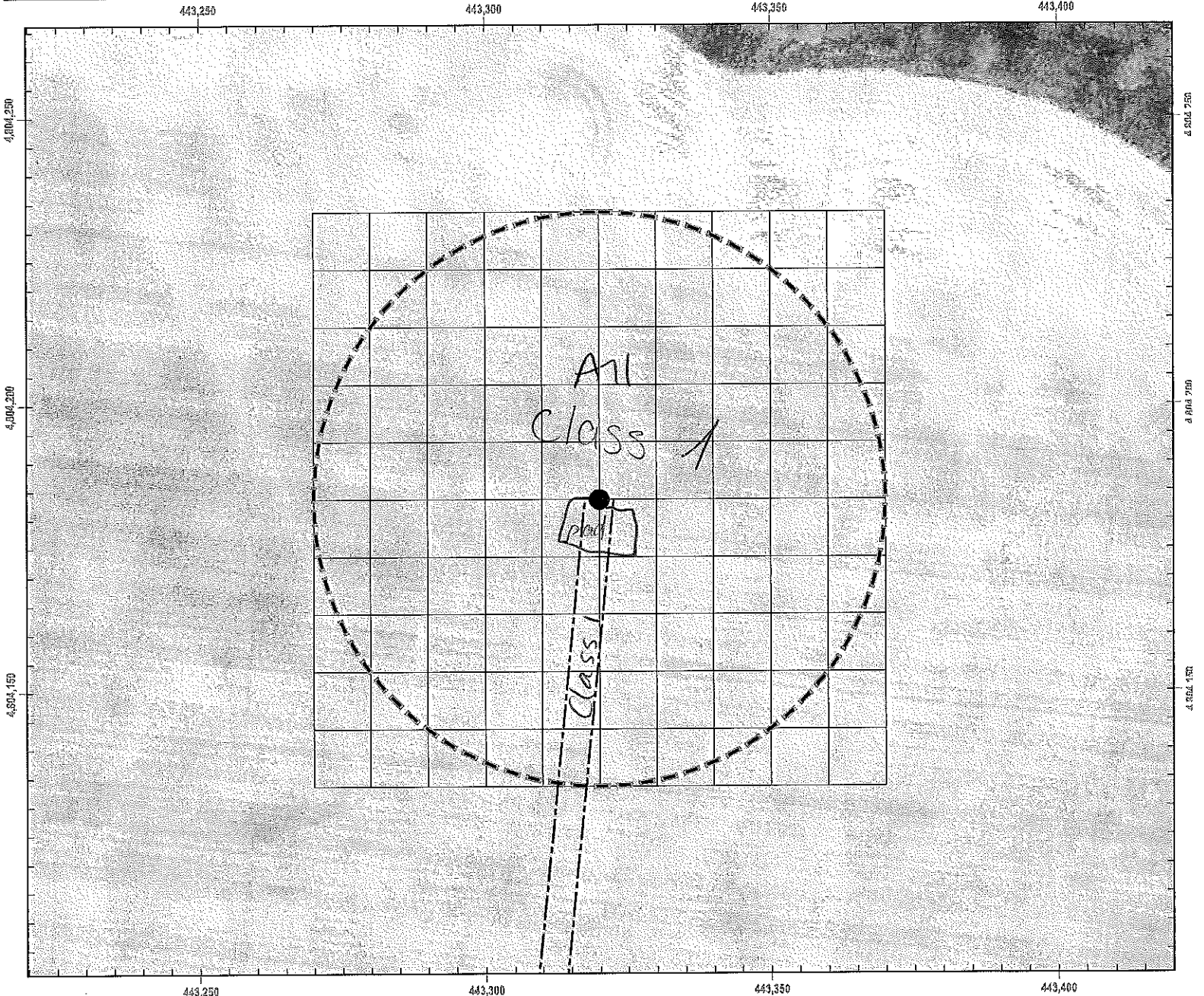
SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-23  
 Survey Date: 17 May 2017  
 Actual Searched Area: 7853.92 m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

- sand

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

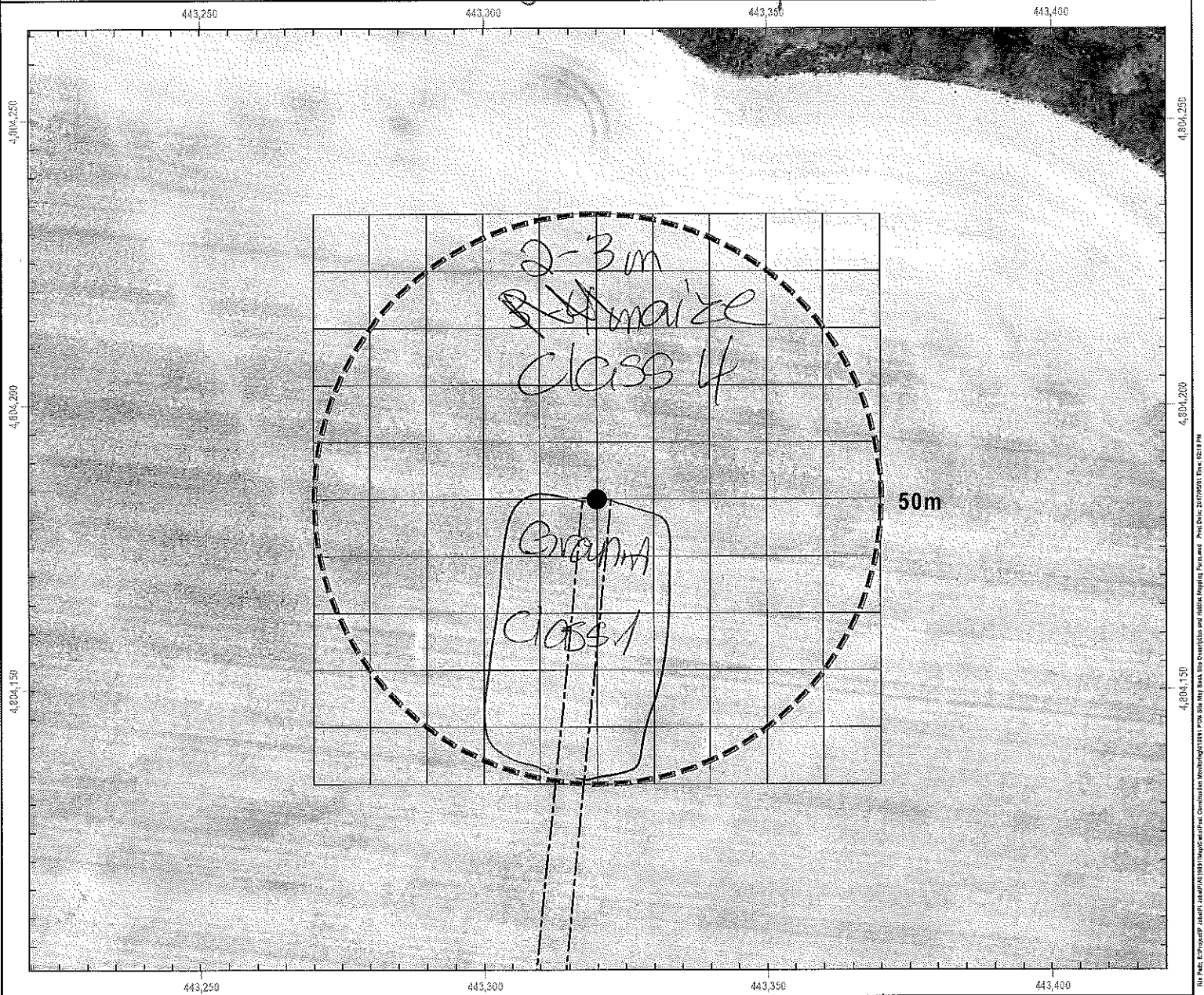
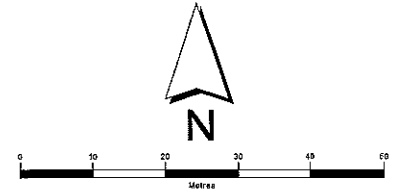
**Site Number:** T-23

**Survey Date:** 19 July 2017

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sleg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000m<sup>2</sup> CLASS 1  
 ≈ 6854m<sup>2</sup> CLASS 4  
 SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



4,804,250  
 4,804,200  
 4,804,150  
 443,250  
 443,300  
 443,350  
 443,400  
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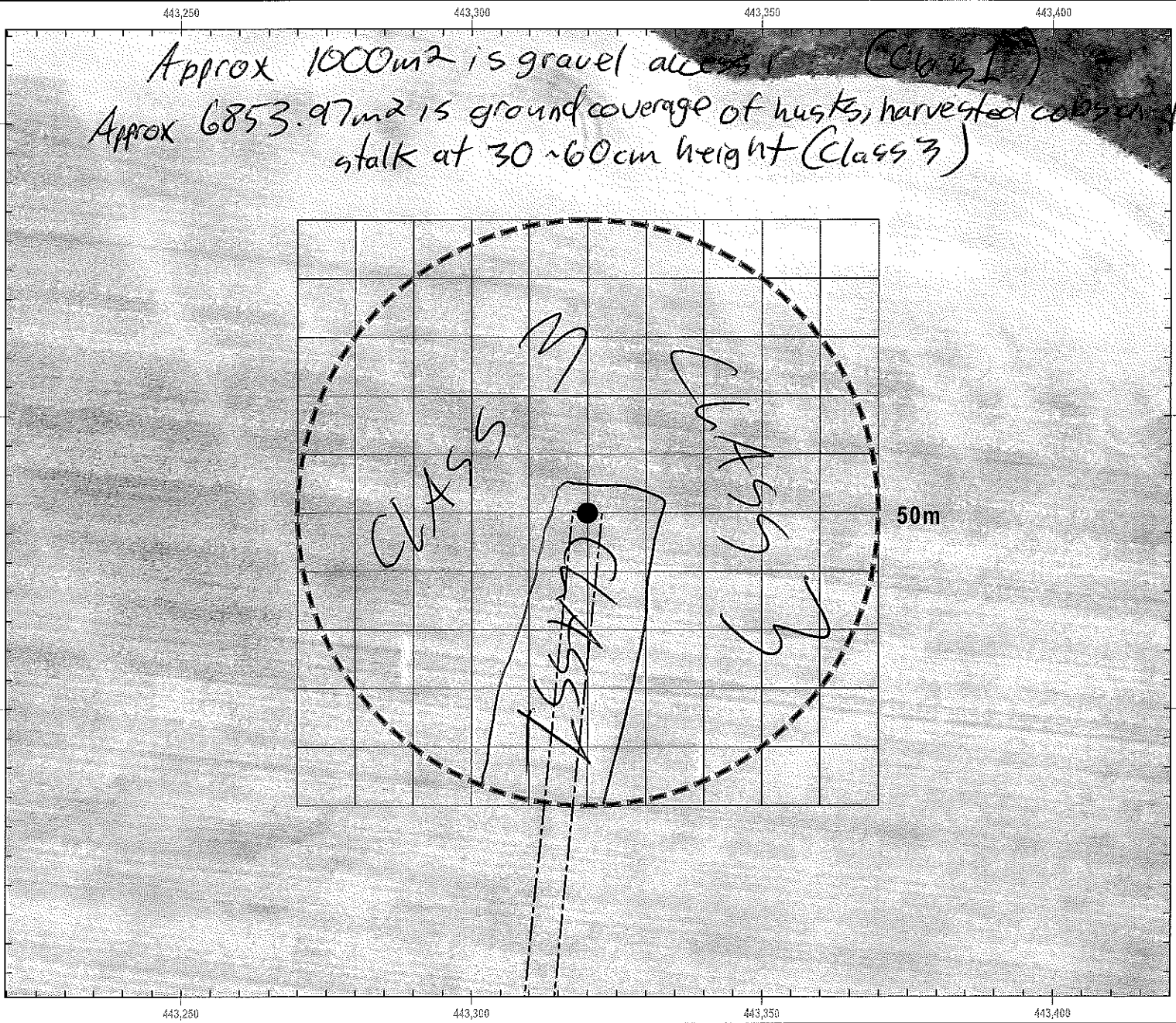
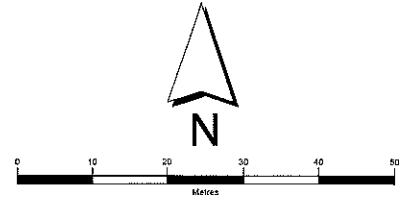


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-23  
 Survey Date: Nov 15 / 17  
 Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

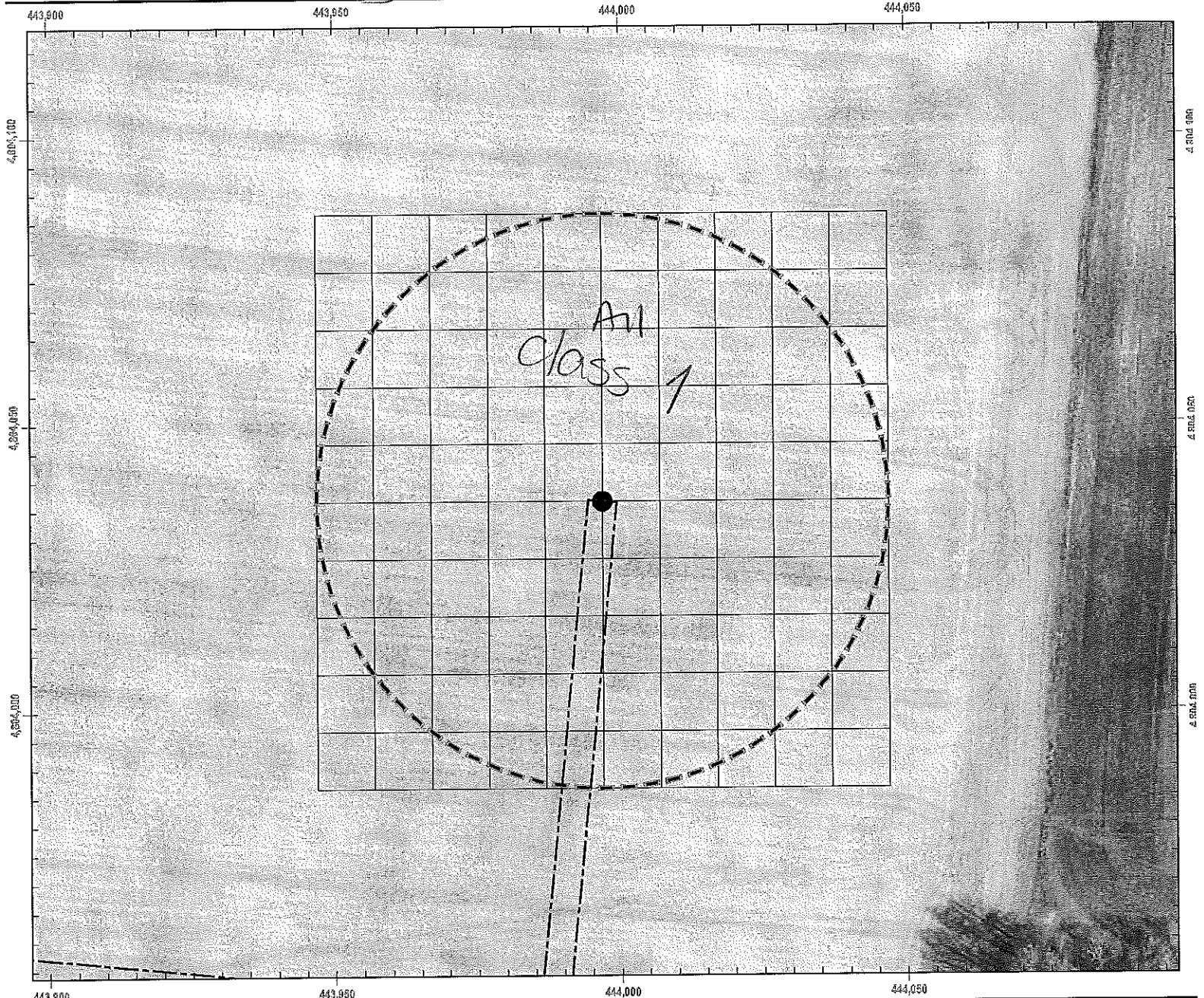


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-25  
 Survey Date: 17 May 2017  
 Actual Searched Area: 7853.9 m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

- Sand

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

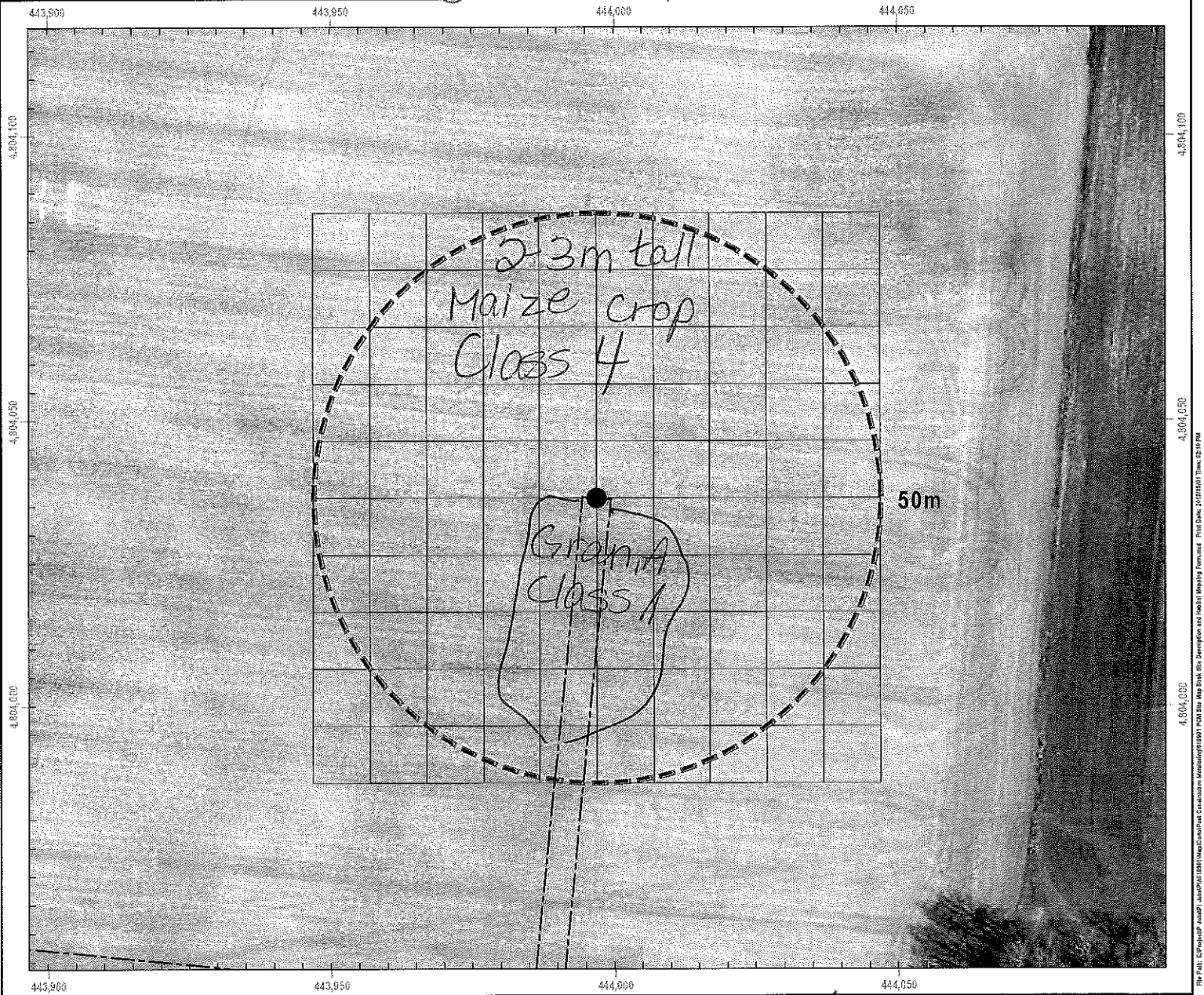
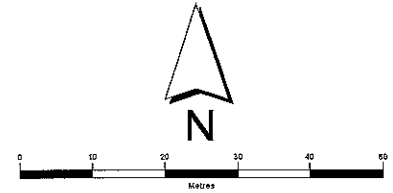
**Site Number:** T-25

**Survey Date:** 19 July 2017

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000m<sup>2</sup> Class 1  
 ≈ 6854m<sup>2</sup> Class 4

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



4,804,100  
4,804,050  
4,804,000  
4,803,950  
4,803,900  
PIA019991.0005 Grand Bend Wind Farm - Site Description and Habitat Mapping Form - 08/18/17

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

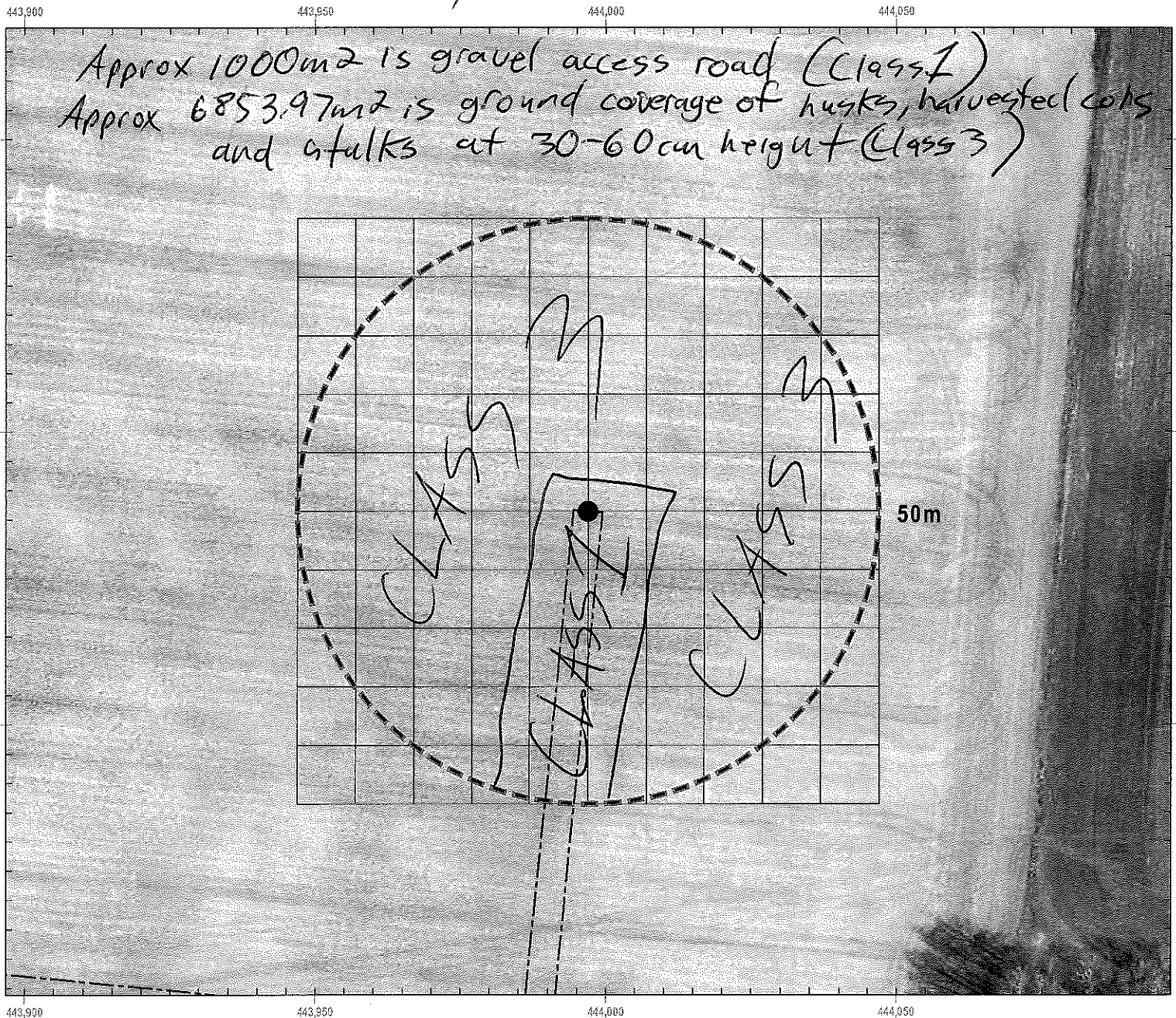
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-25

Survey Date: Nov 15/17

Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

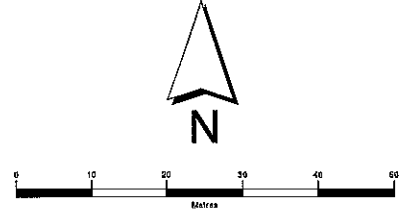
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** Grand Bend Wind Farm  
**Site Number:** T-26  
**Survey Date:** 17 May 2017  
**Actual Searched Area:** 3853.97m<sup>2</sup>  
**Observers:** Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

- corn stubble

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

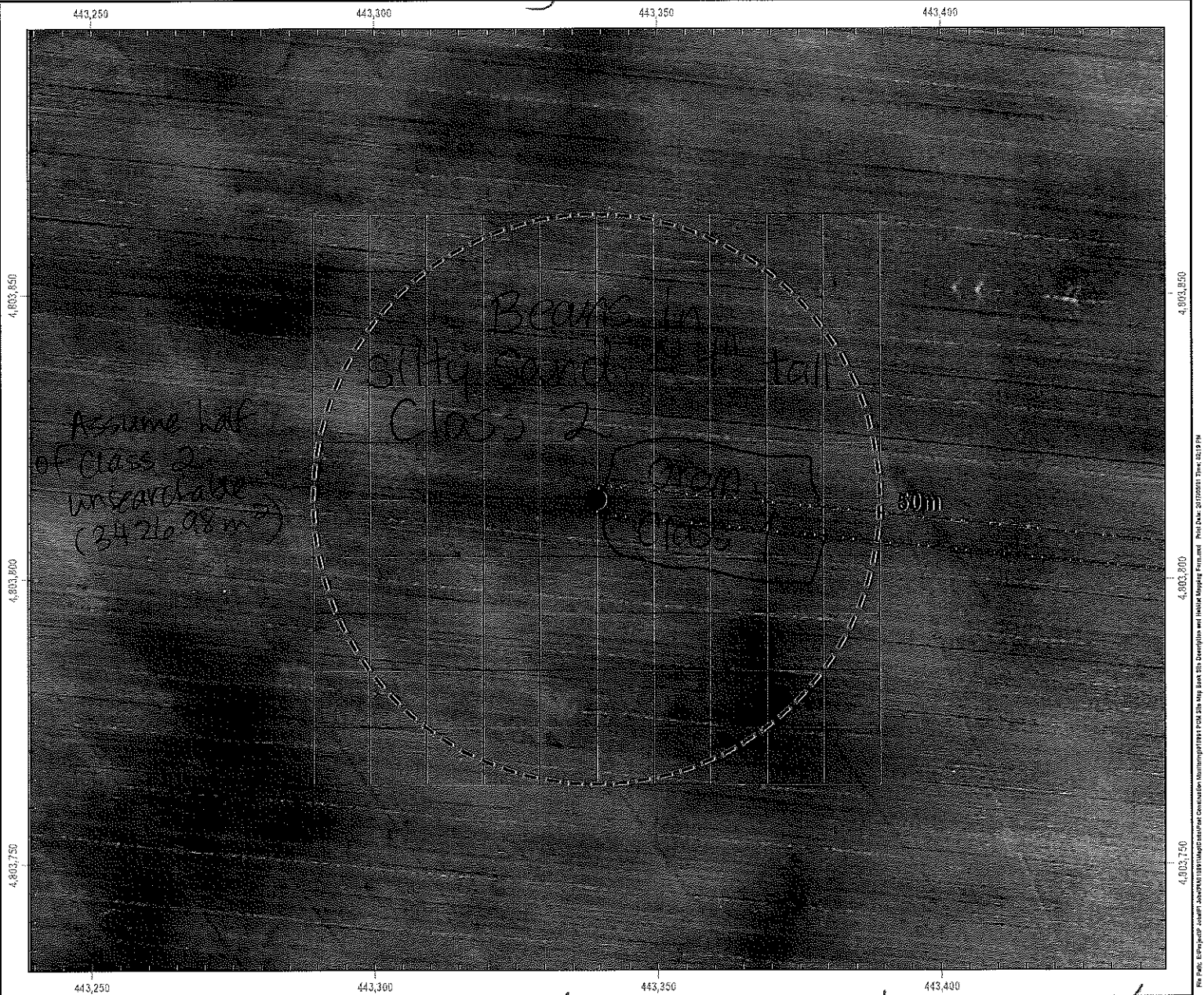
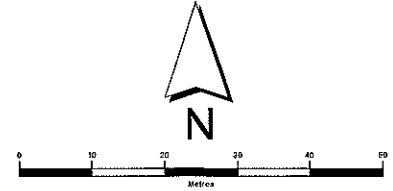
**Site Number:** T-26

**Survey Date:** 21 June 2017

**Actual Searched Area (m<sup>2</sup>):** 4427 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sleg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

N 1000 m<sup>2</sup> Branular - Class 1  
N 6853.97 m<sup>2</sup> Beans - Class 2

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



4,803,750  
4,803,800  
4,803,850

4,803,800  
4,803,850  
4,803,900

The Photo, E-Report, Journal, Dashboard, and Data are the property of Burnside Environmental Services. All rights reserved. Printed on 100% Recycled Paper. PIA019991.0005 Grand Bend Wind Farm. 20170621 13:02:19 PM





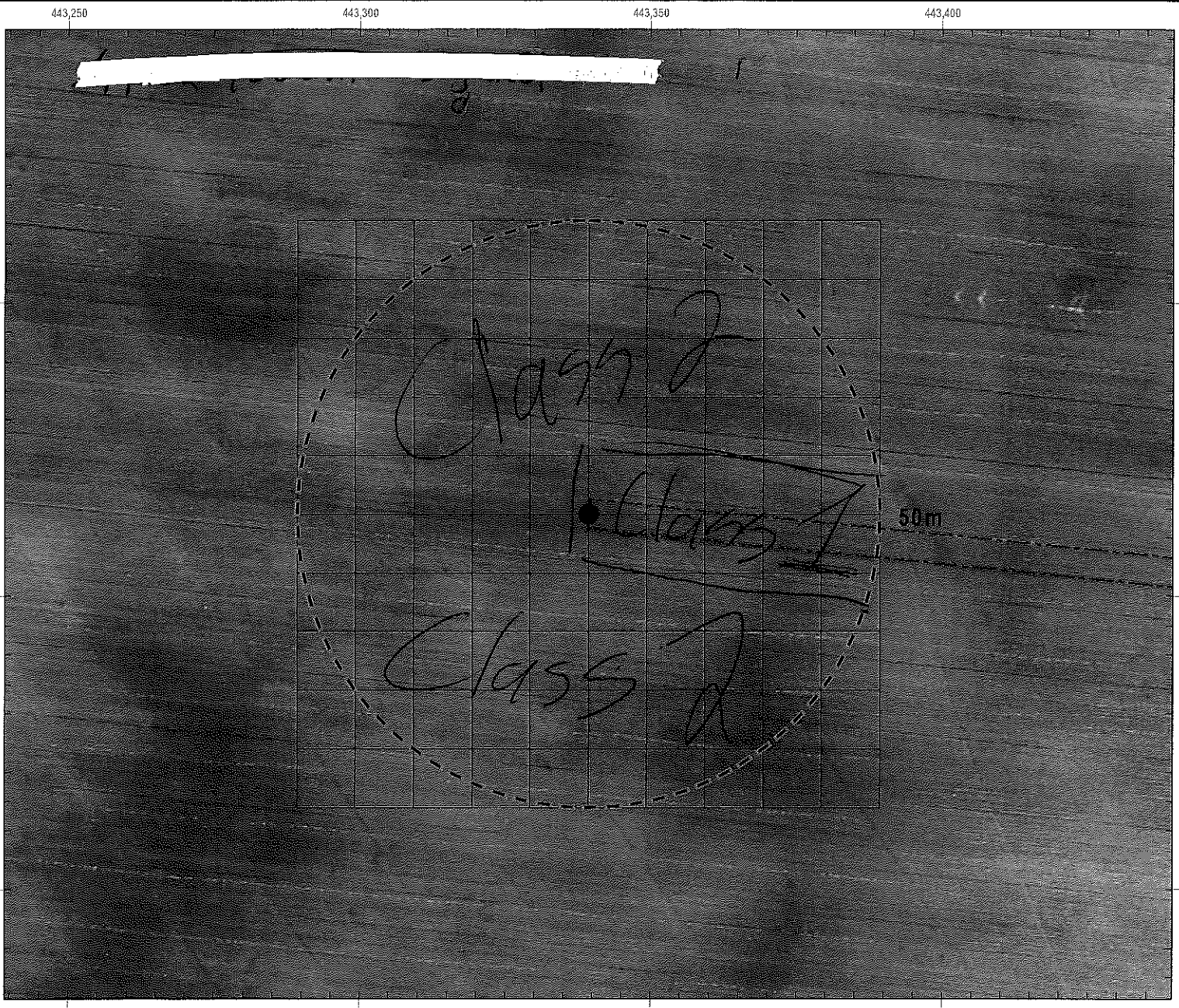
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-26  
 Survey Date: Oct 20/17  
 Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry

Approx 1000m<sup>2</sup> is gravel access road  
 Approx 6853.97m<sup>2</sup> is harvested (Class 1)  
 bean field with pieces corn and bean stalk  
 from previous crops along with  
 dry bean stalk at 5cm (Class 2)



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

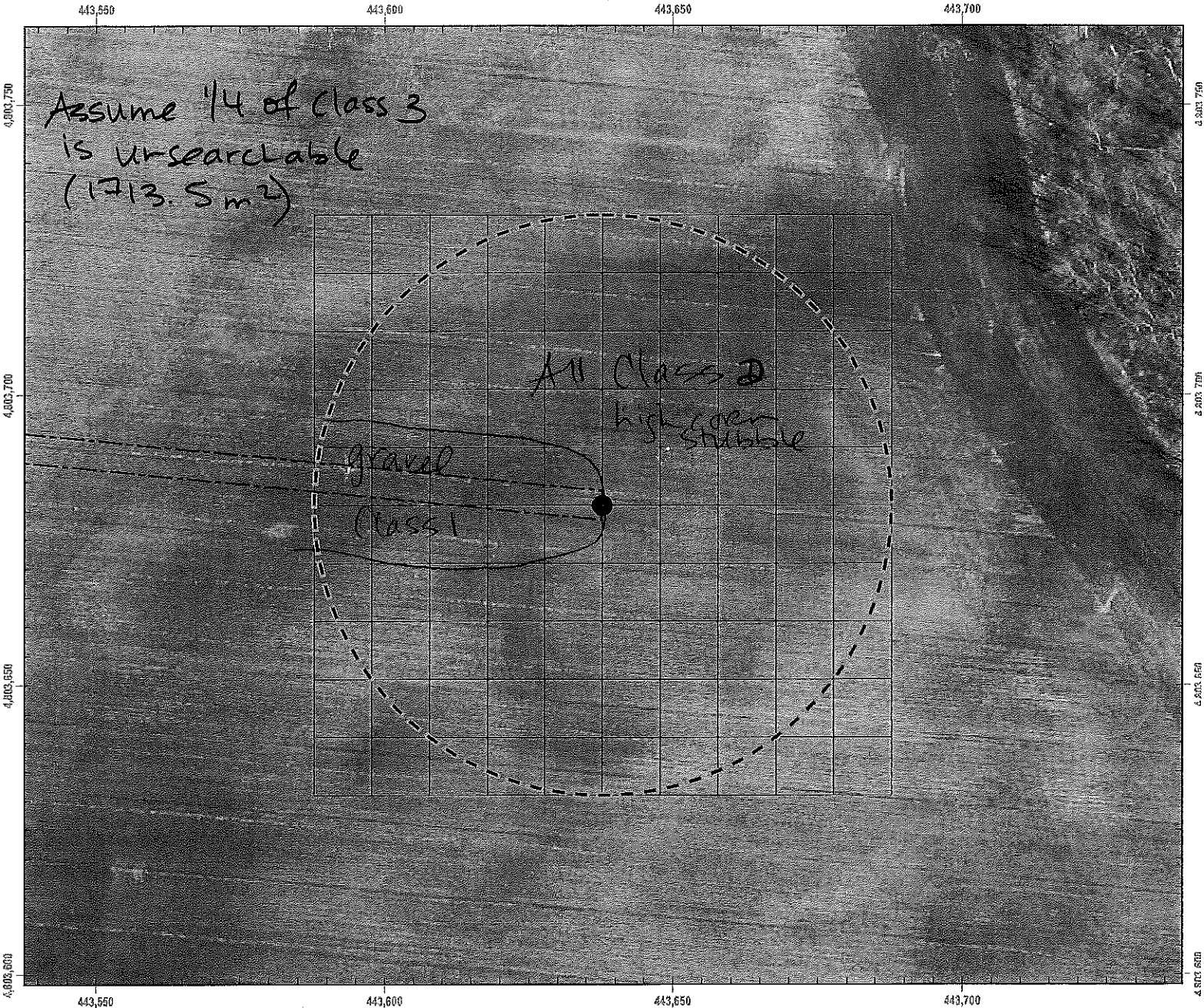
Project Name: Grand Bend Wind Farm

Site Number: T-27

Survey Date: May 1 / 17

Actual Searched Area: 50 m radius (6140.47 m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



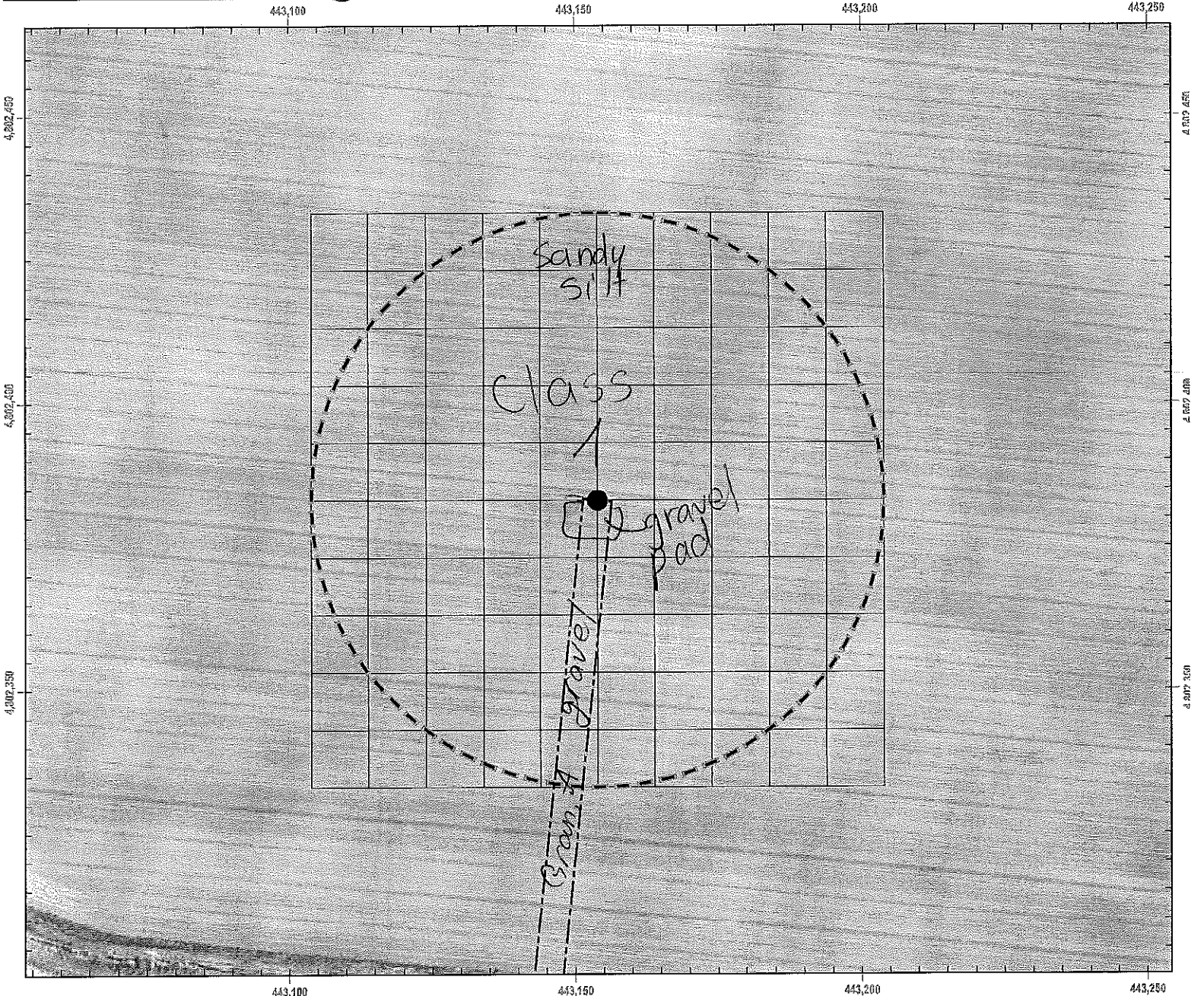


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-29  
 Survey Date: 24 May 2017  
 Actual Searched Area: 7853.92 m<sup>2</sup>  
 Observers: Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy) ✓
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Sandy Silt

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRID

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches) ✓

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

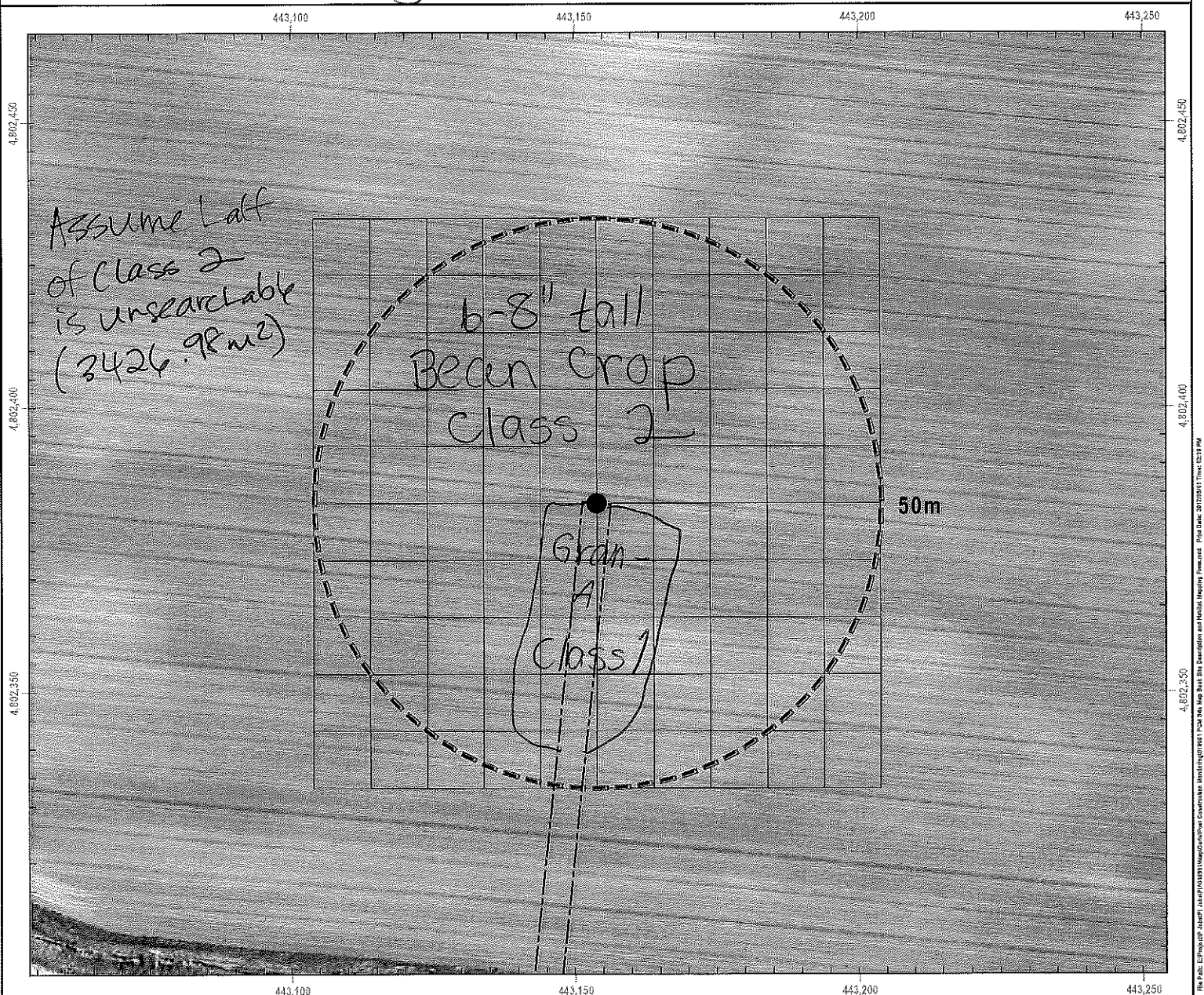
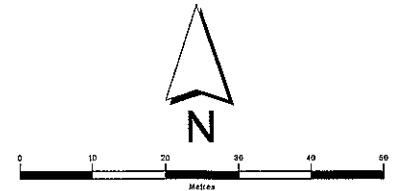
**Site Number:** T-29

**Survey Date:** 27 June 2017

**Actual Searched Area (m<sup>2</sup>):** 4427 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> Granular - Class 1  
 ≈ 6854 m<sup>2</sup> Bean crop - Class 2  
**BURNSIDE**

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

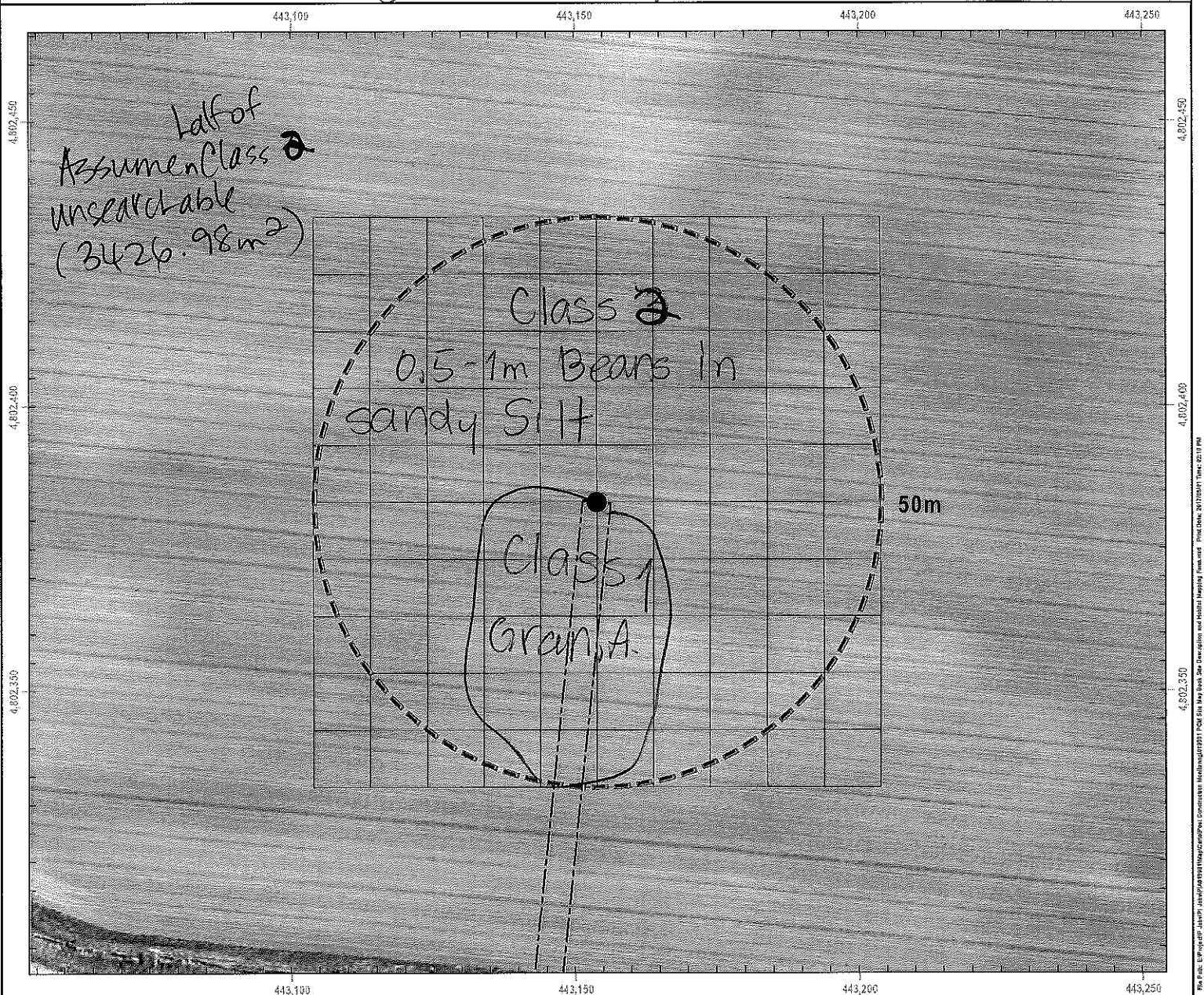
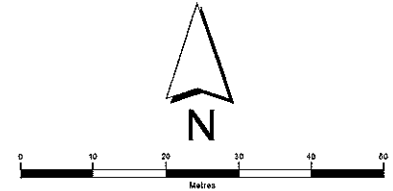
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-29

**Survey Date:** 19 July 2017

**Actual Searched Area (m<sup>2</sup>):** 4427 m<sup>2</sup>  
(subtract from total search area 7853.97 m<sup>2</sup>)

**Observers:** Tara Sleg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> class 1  
≈ 6854 m<sup>2</sup> class 2

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



4,802,450  
4,802,400  
4,802,350  
 File Path: E:\Programs\Jahnp\IA019991\Map\CA\Map\CA.mxd  
 Print Date: 2017/07/19 Time: 02:11 PM

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

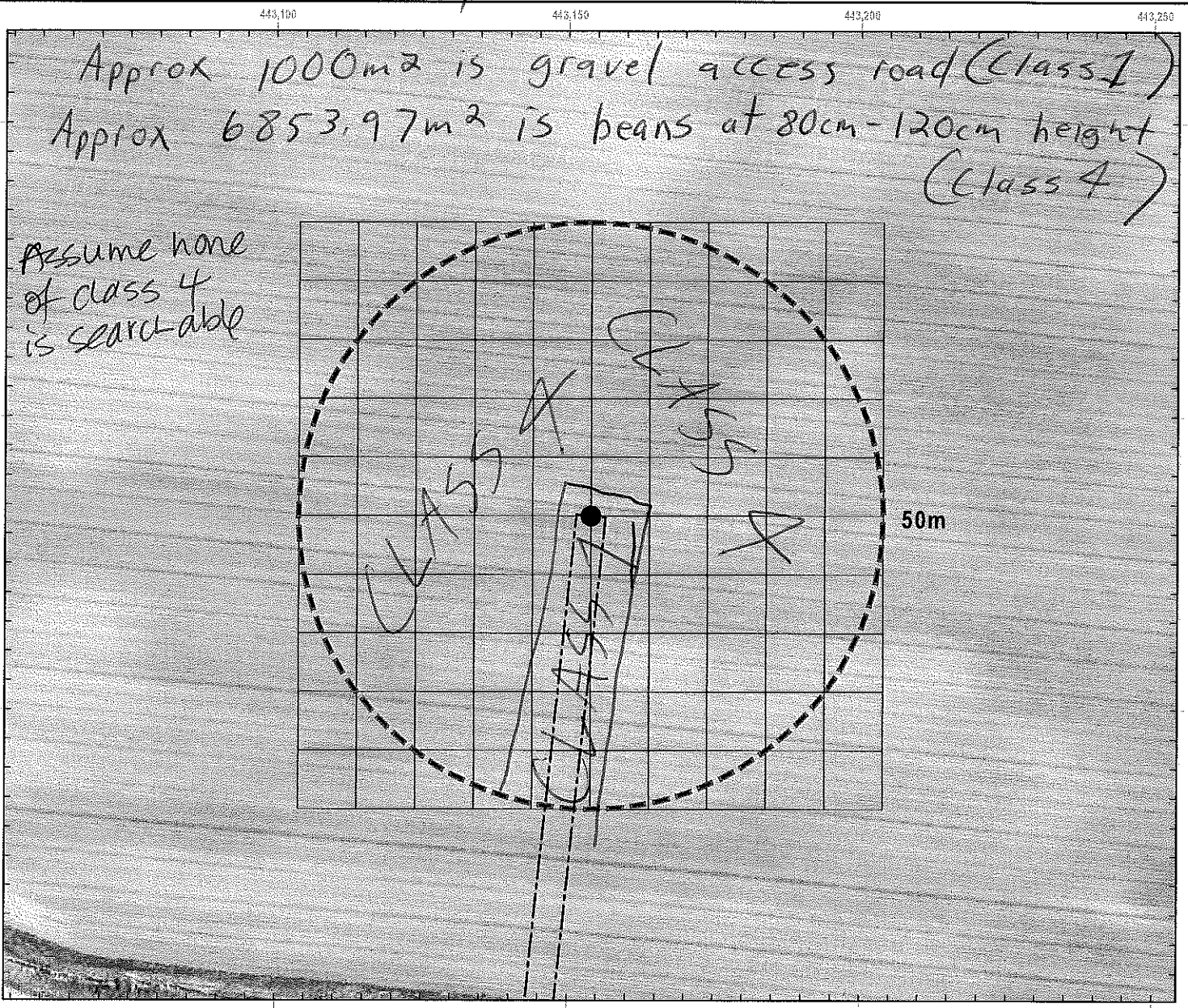
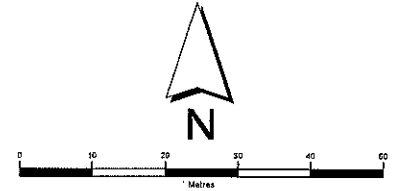
**Site Number:** T-29

**Survey Date:** Aug 23/17

**Actual Searched Area (m<sup>2</sup>):** 1000 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



File Path: E:\Programs\Jabot\Jabot\PIA019991\MapGrid\PIA\_Consultation\_HabitatMapping\PIA\_Consultation\_HabitatMapping\PIA\_Consultation\_HabitatMapping\_Form.mxd    Print Date: 2017/08/23    Time: 02:11 PM



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

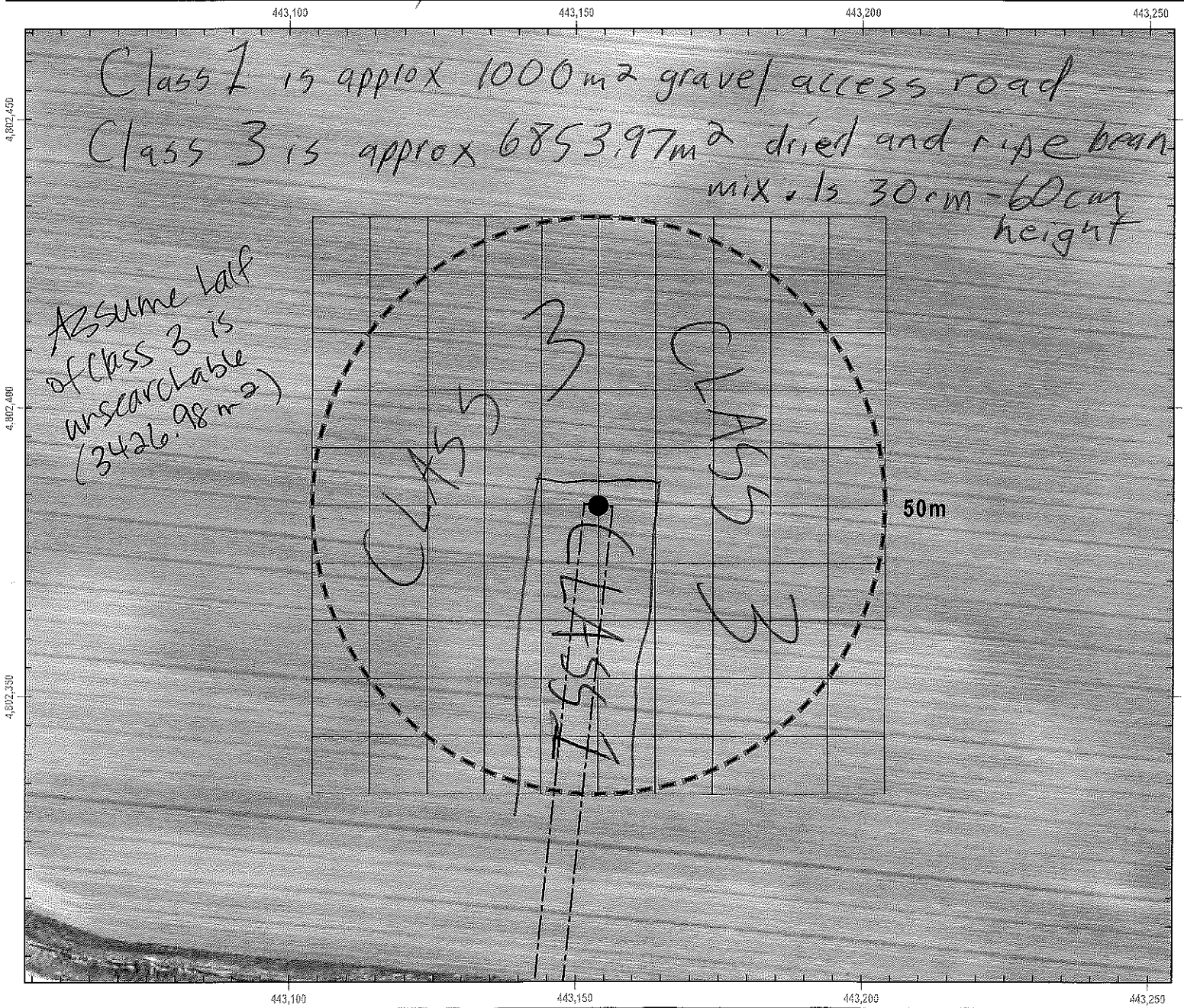
**Site Number:** T-29

**Survey Date:** Sept 21/17

**Actual Searched Area (m<sup>2</sup>):** 4427 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



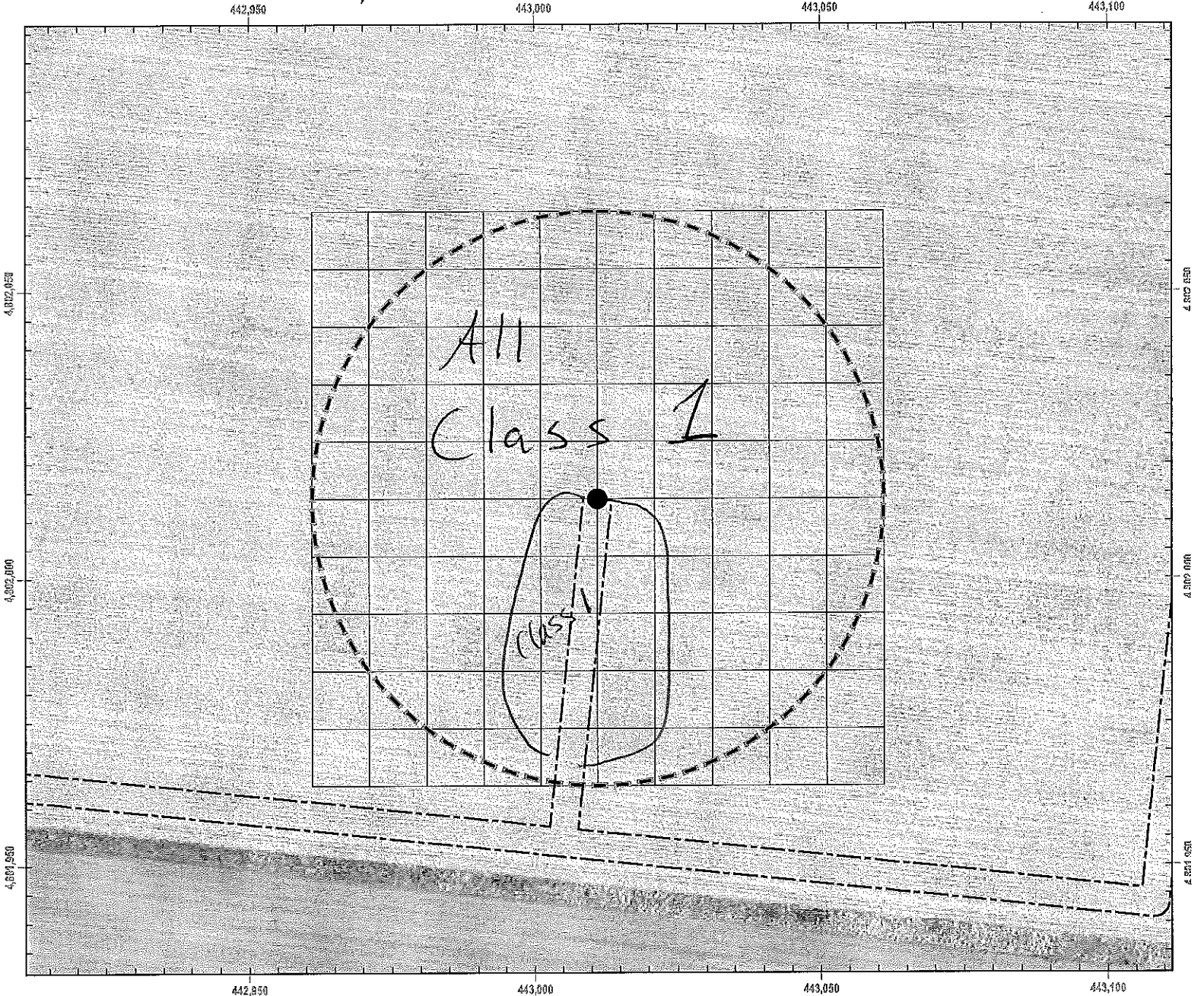
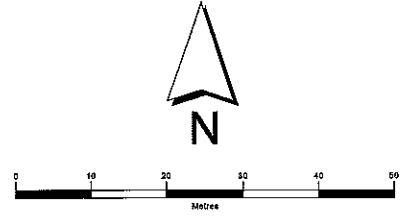


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-30  
 Survey Date: May 24/17  
 Actual Searched Area: 2853.97 m<sup>2</sup>  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Sandy silt

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRID





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

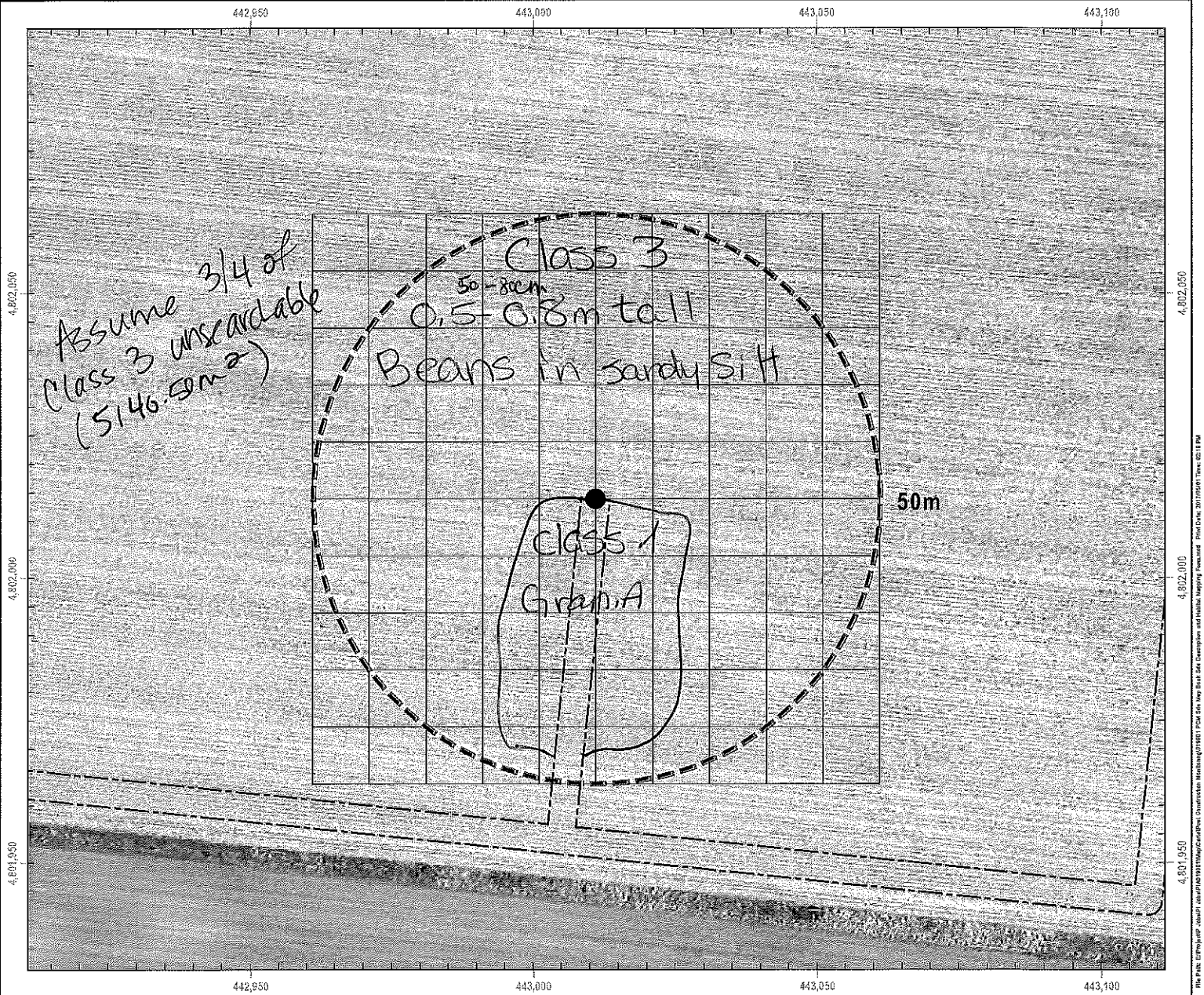
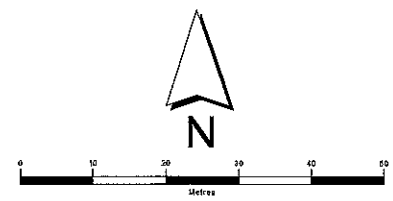
**Site Number:** T-30

**Survey Date:** 19 July 2017

**Actual Searched Area (m<sup>2</sup>):** 2713.50 m<sup>2</sup>

*(subtract from total search area - 7853.97m<sup>2</sup>)*

**Observers:** Lara Steg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000m<sup>2</sup> Class 1  
≈ 6854m<sup>2</sup> Class 3

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



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4,801,950

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4,802,000  
4,801,950

The PIA019991.0005 Grand Bend Wind Farm Site Map Block 544, Description and Habitat Mapping Form 02-18-17

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

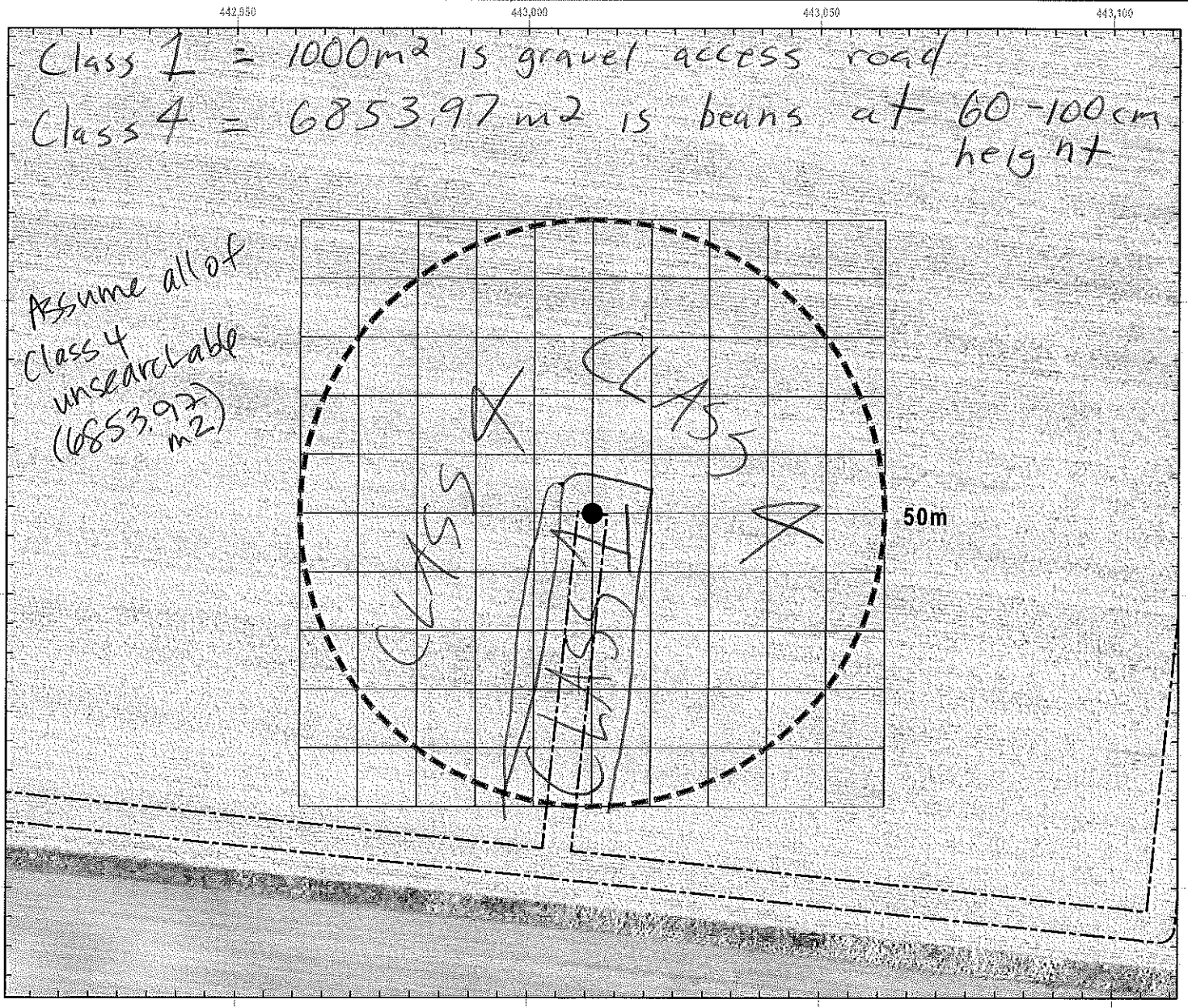
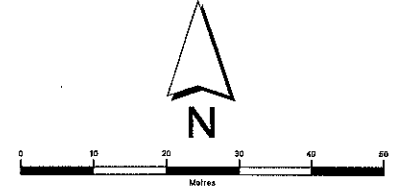
**Site Number:** T-30

**Survey Date:** Aug 23 / 17

**Actual Searched Area (m<sup>2</sup>):** 1000 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

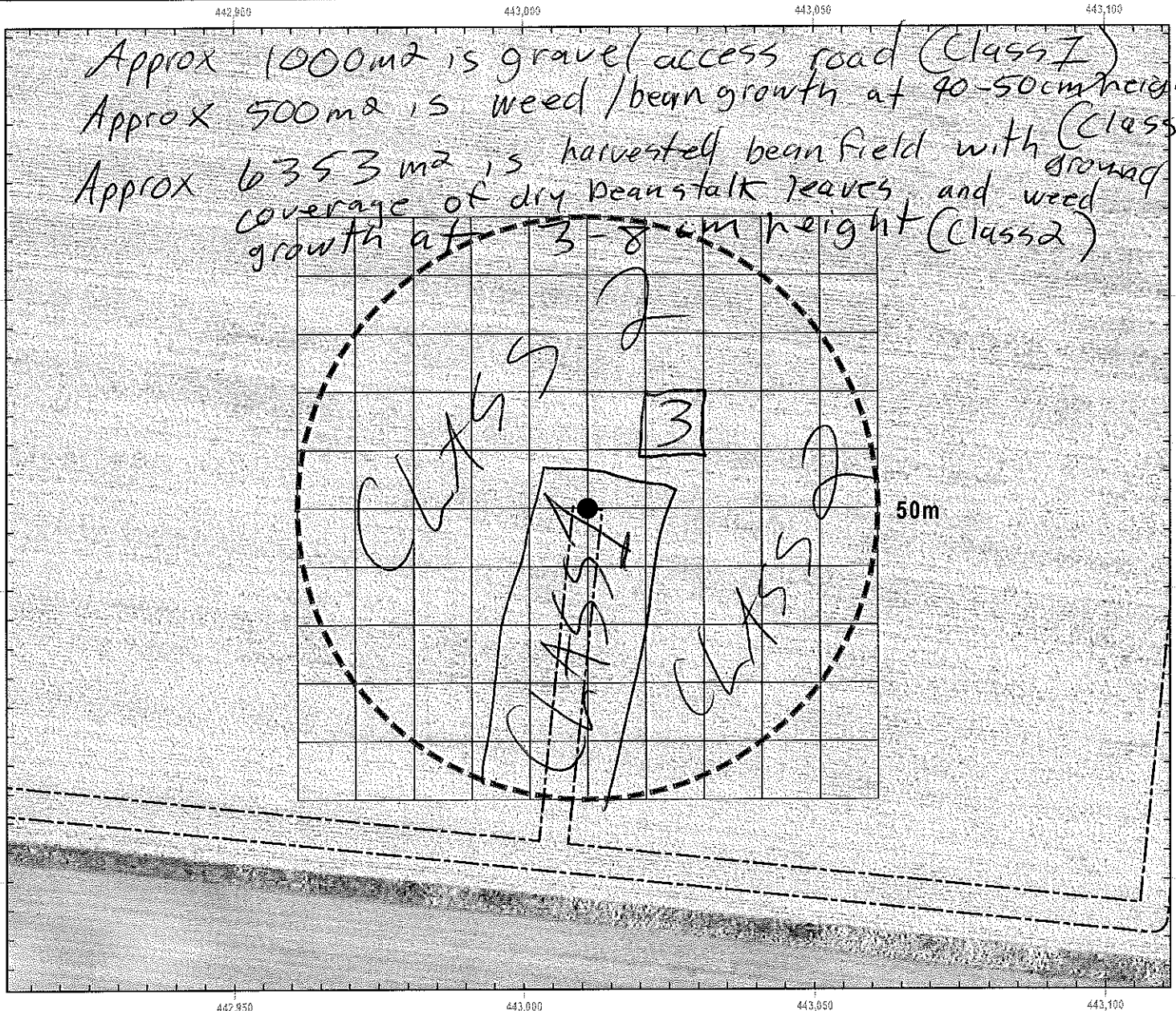
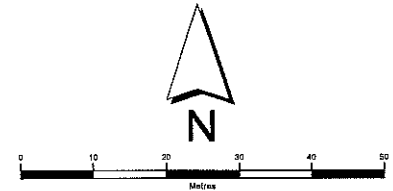
Site Number: T-30

Survey Date: Sept 26 / 17

Actual Searched Area (m<sup>2</sup>): 7353.97 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



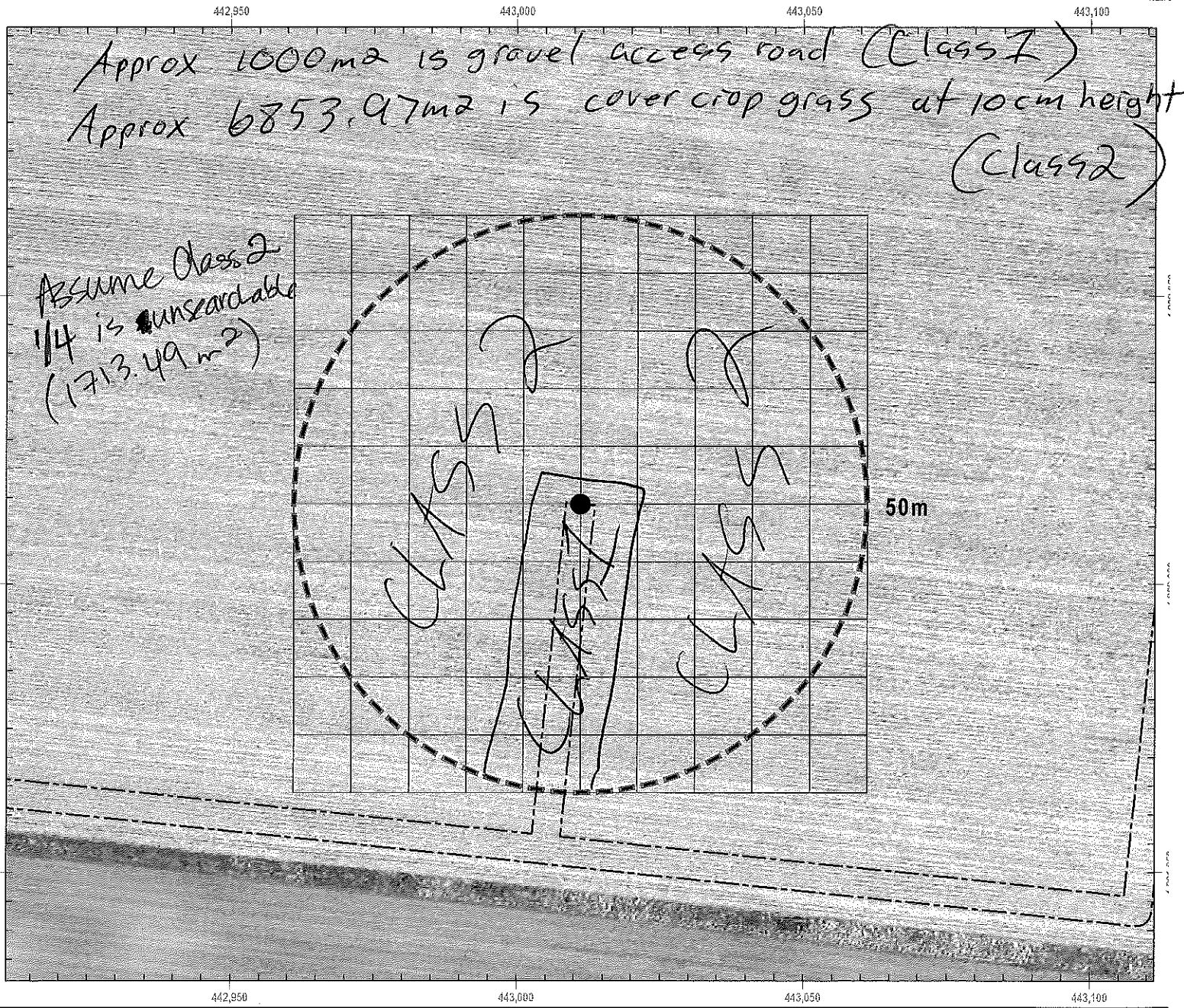
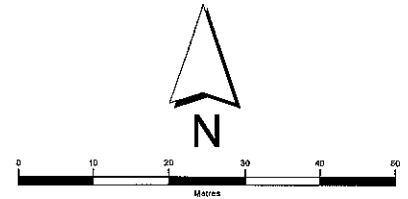
4,801,950  
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# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-30  
 Survey Date: Oct 25 / 17  
 Actual Searched Area (m<sup>2</sup>): 6,140.48 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sava Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

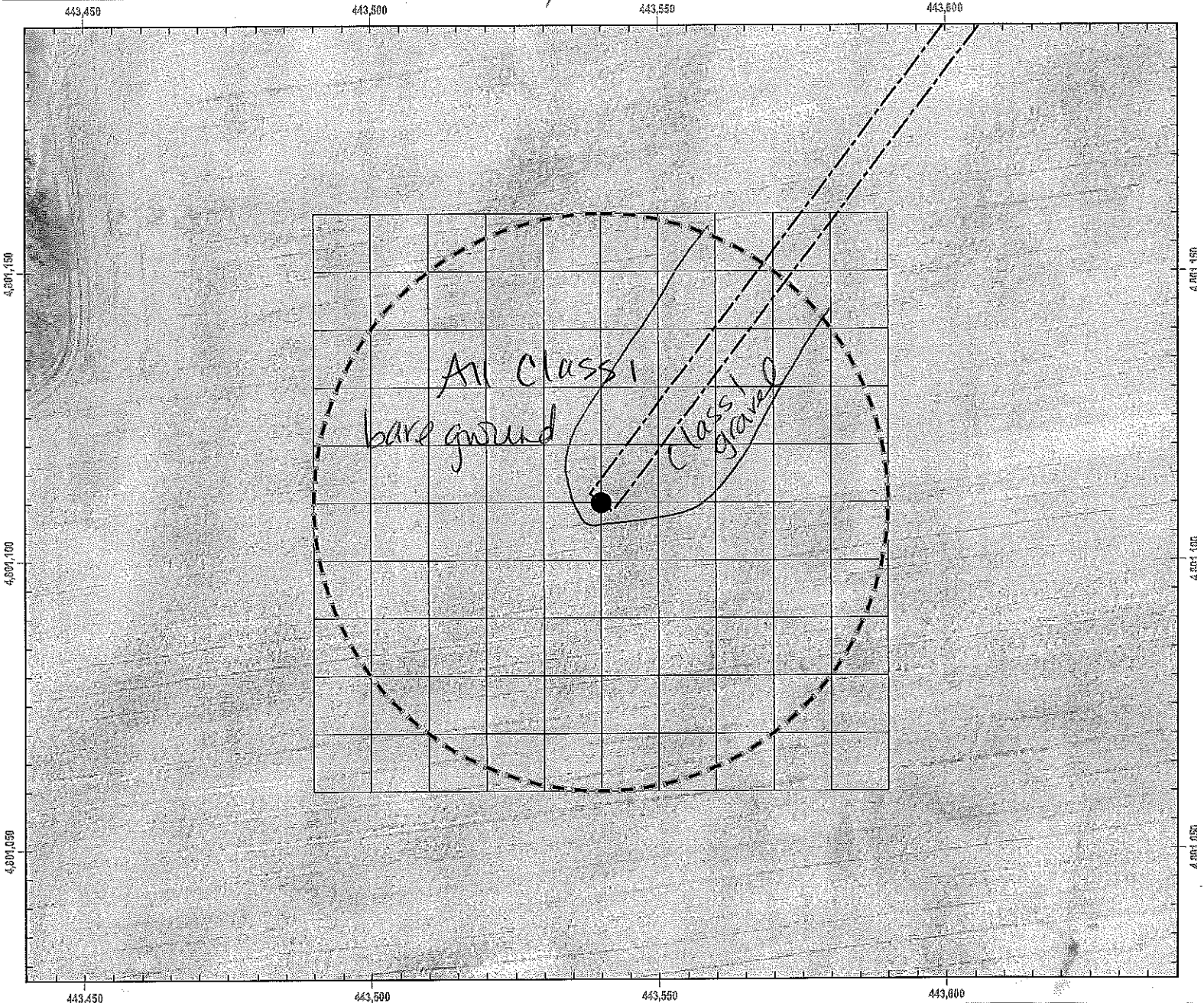
**Project Name:** Grand Bend Wind Farm

**Site Number:** T-31

**Survey Date:** May 2/17

**Actual Searched Area:** 50 m radius (7853.97 m<sup>2</sup>)

**Observers:** Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPERSED AS 40M BY 40M SQUARE GRID

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

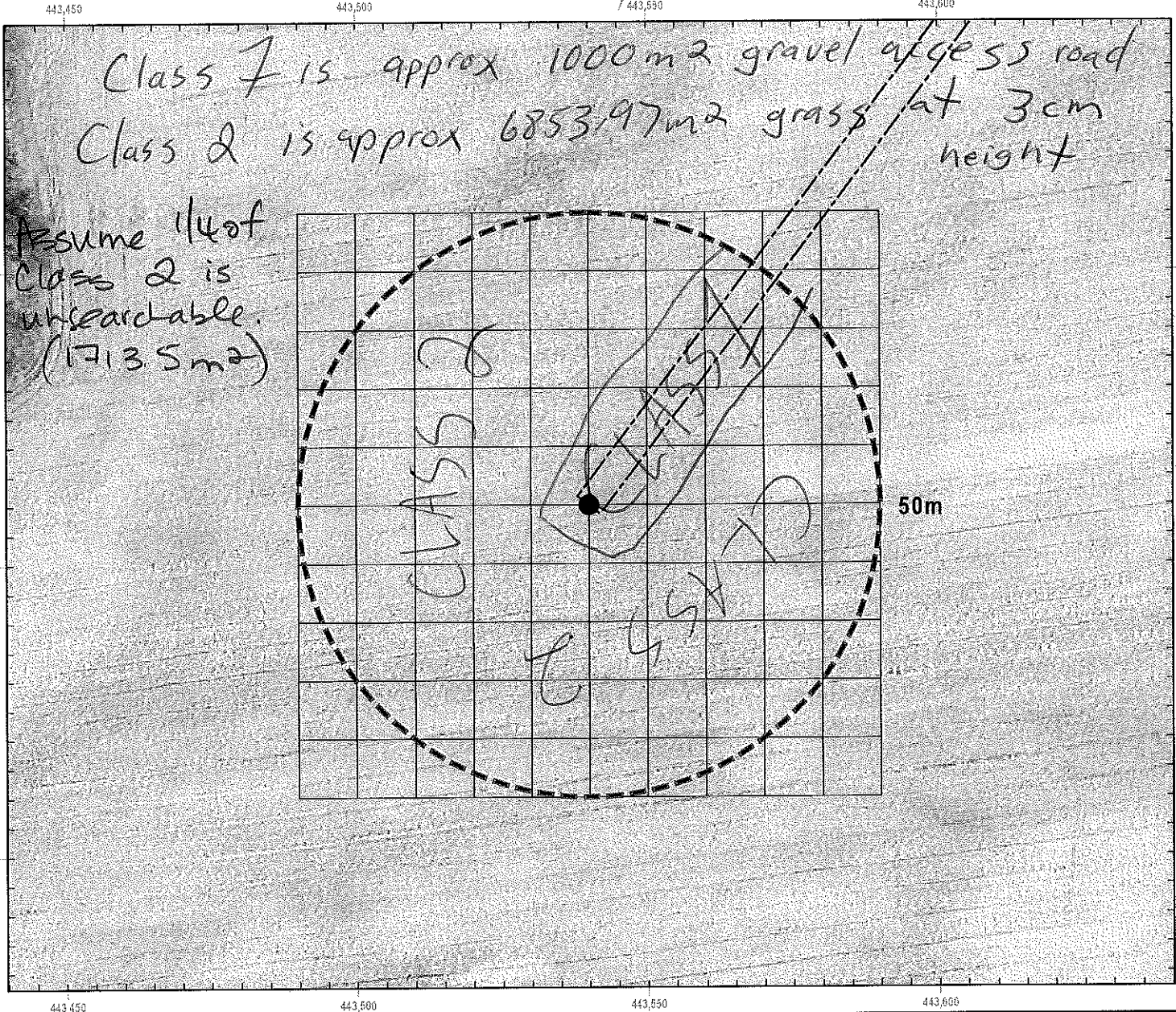
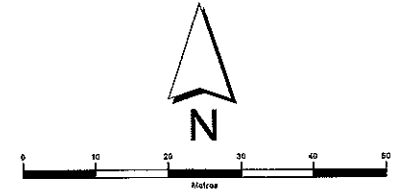
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-31

**Survey Date:** June 23 / 17

**Actual Searched Area (m<sup>2</sup>):** 6140.47 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



PIA019991.0005 Grand Bend Wind Farm - Site Map Data - Site Description and Habitat Mapping Form - Date: 01/20/2017 11:42:13 AM

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

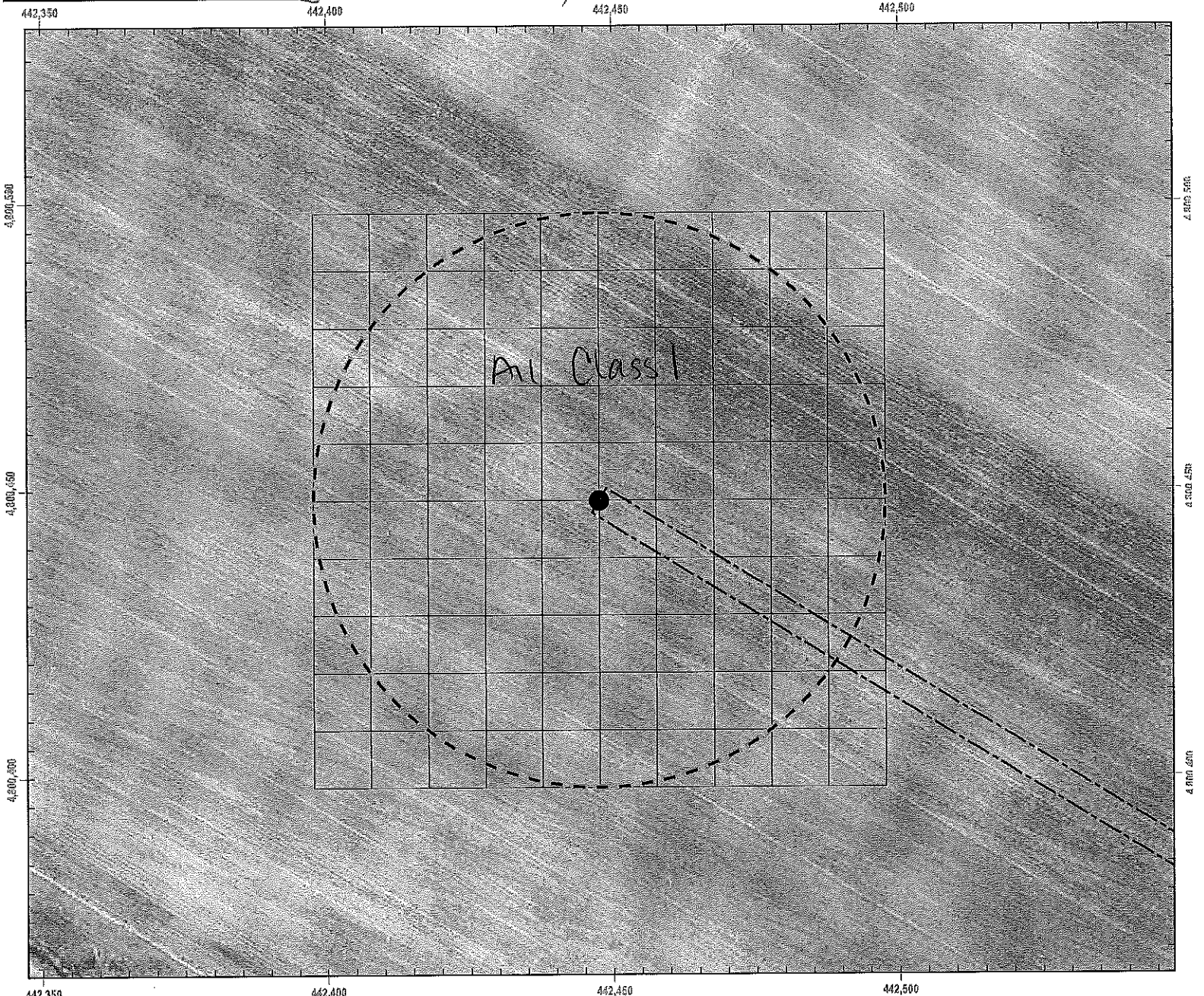
Project Name: Grand Bend Wind Farm

Site Number: T-32

Survey Date: May 2/17

Actual Searched Area: 50m radius (7853.97 m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

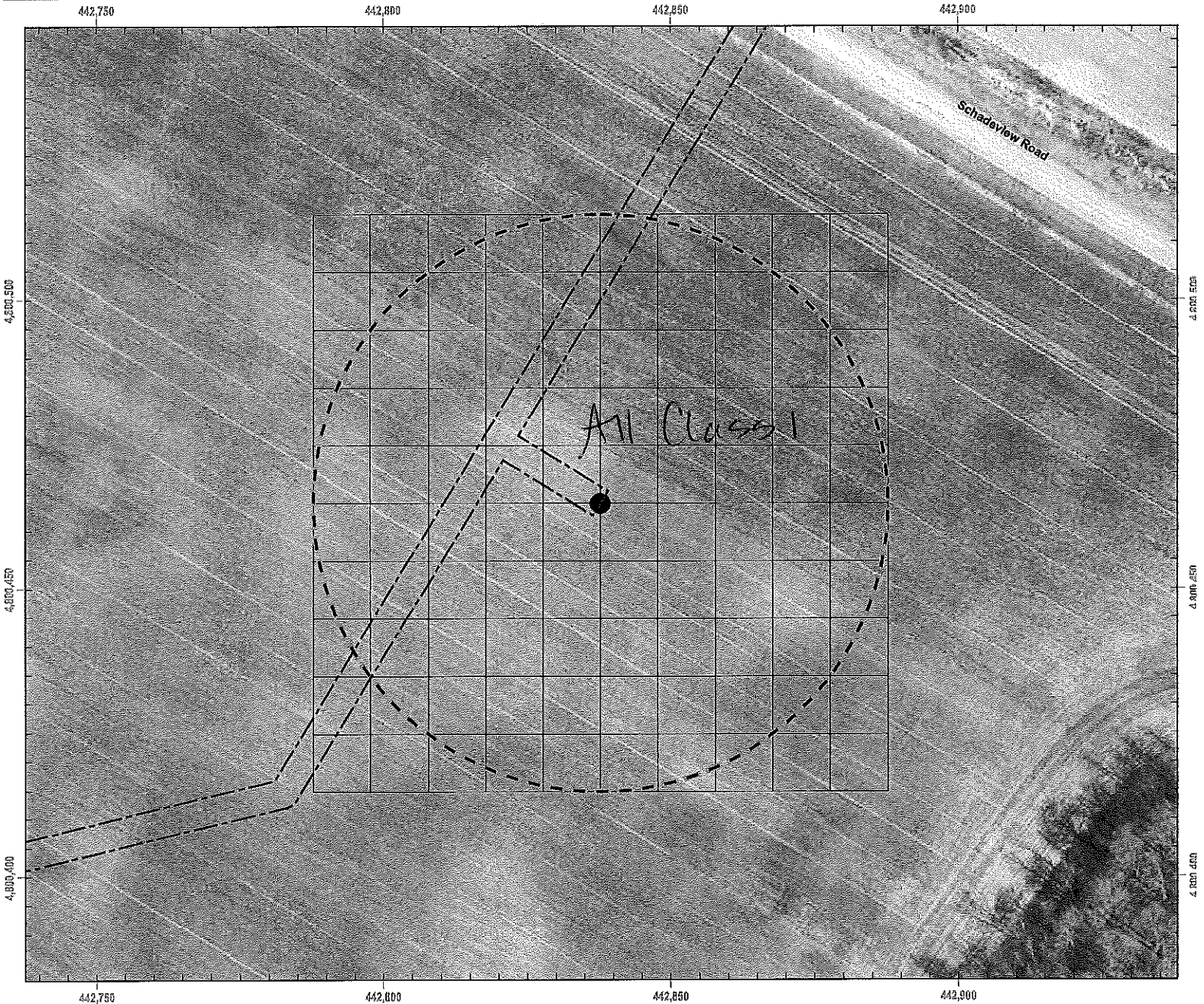
Project Name: Grand Bend Wind Farm

Site Number: T-33

Survey Date: 16 May

Actual Searched Area: ≈ 7853.97 m<sup>2</sup>

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

harrowed

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID

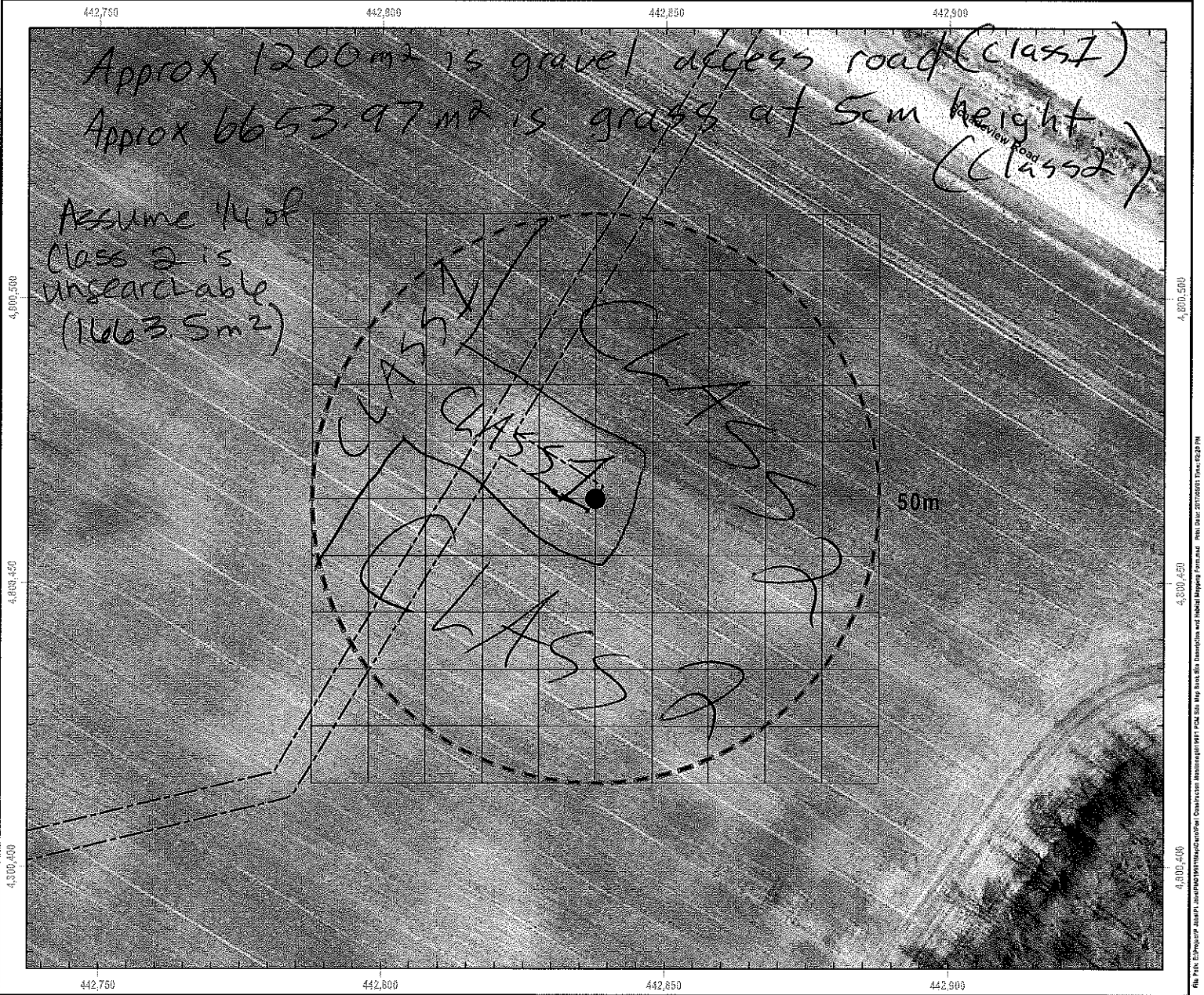
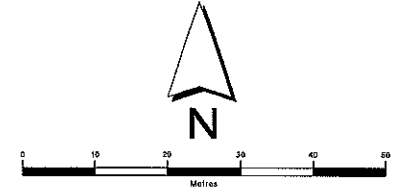


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-33  
 Survey Date: June 23 17  
 Actual Searched Area (m<sup>2</sup>): 6190.47 m<sup>2</sup>  
(subtract from total search area - 7653.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

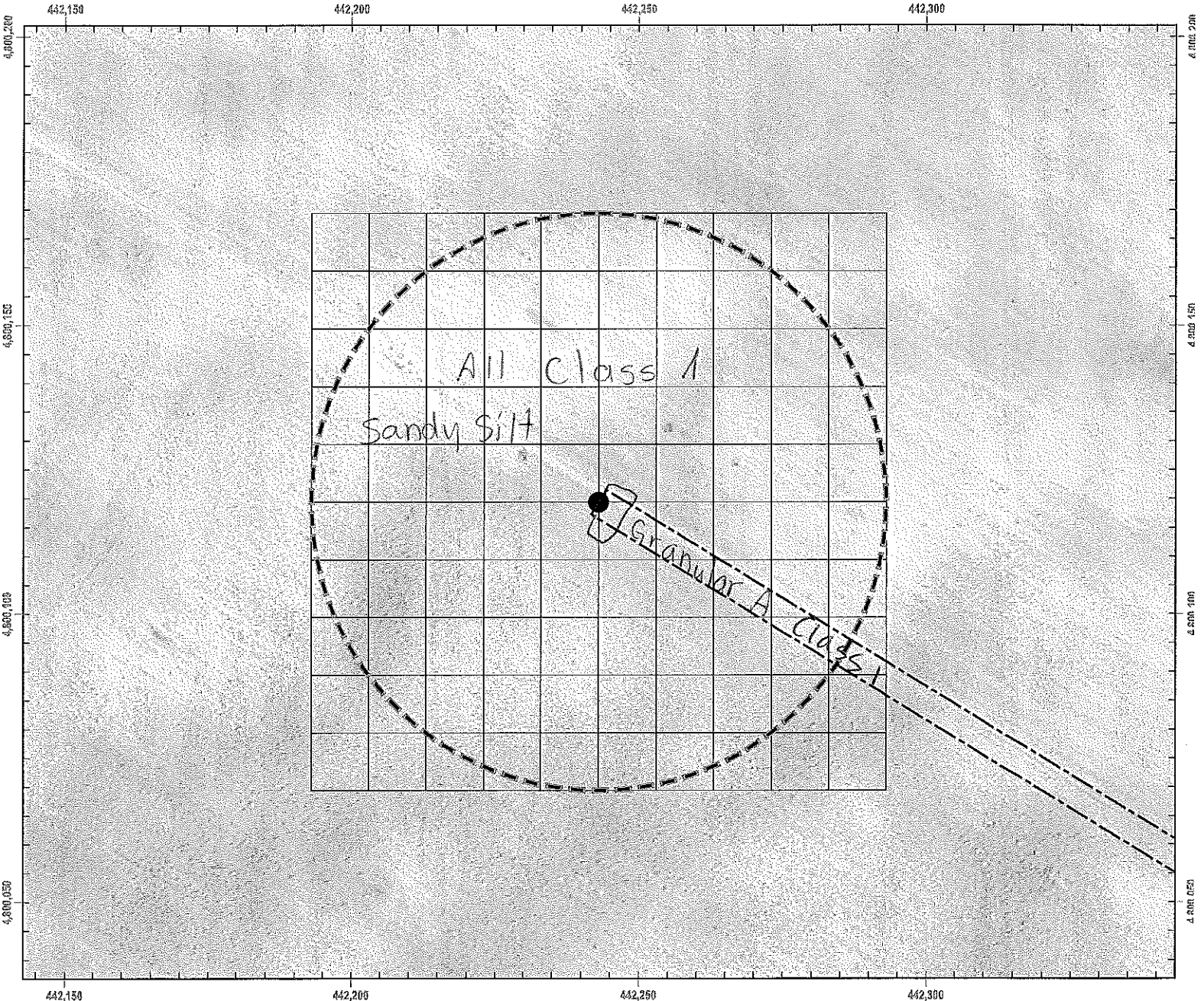


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-34  
 Survey Date: 24 May 2017  
 Actual Searched Area: ~ 7853 m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy) ✓
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

Sandy Silt

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



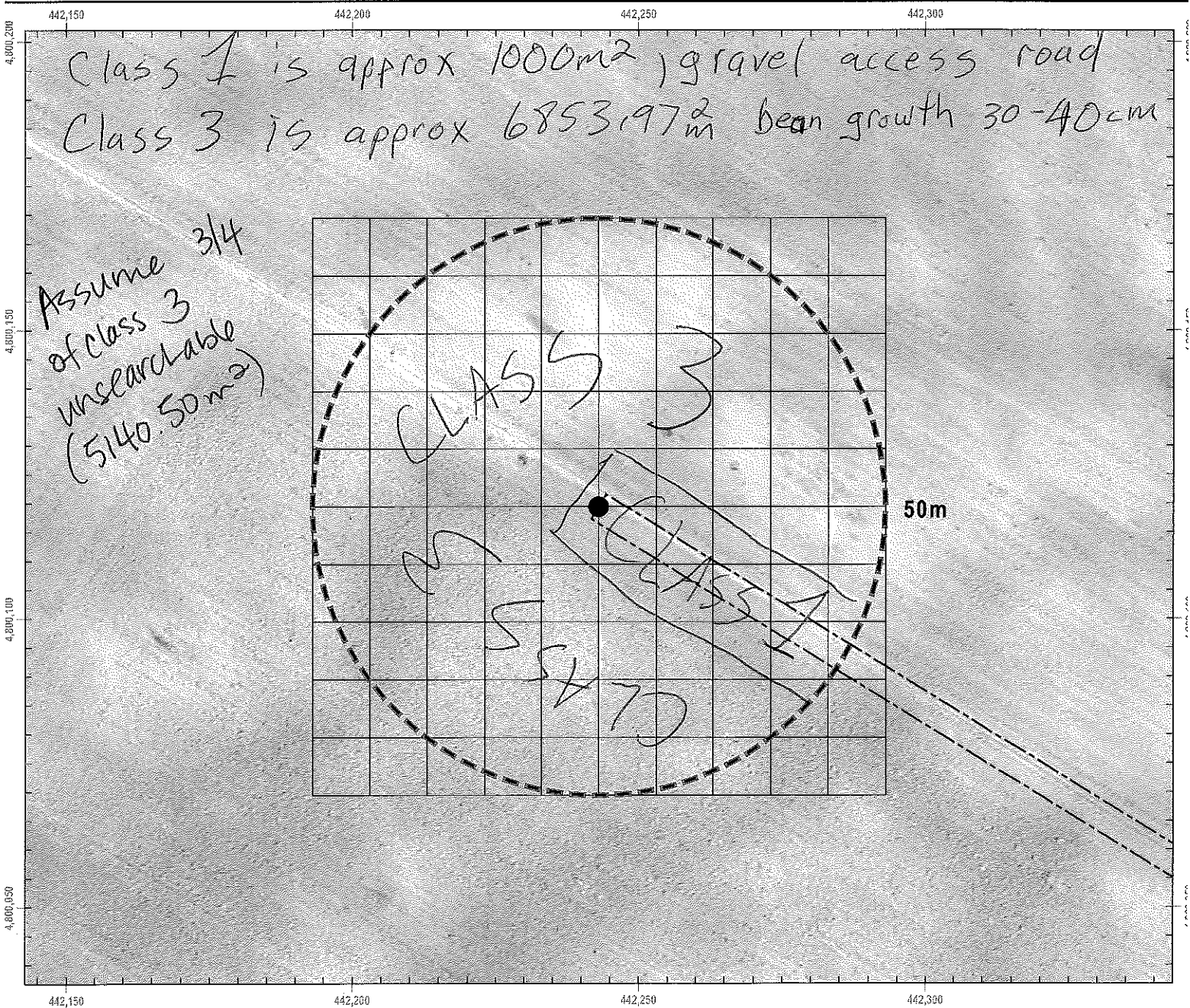
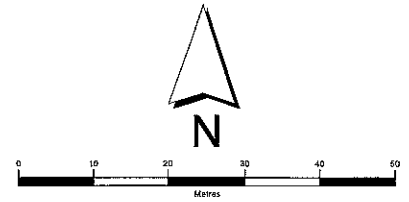


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm  
**Site Number:** T-34  
**Survey Date:** July 26/17  
**Actual Searched Area (m<sup>2</sup>):** 2213.50 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
**Observers:** Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

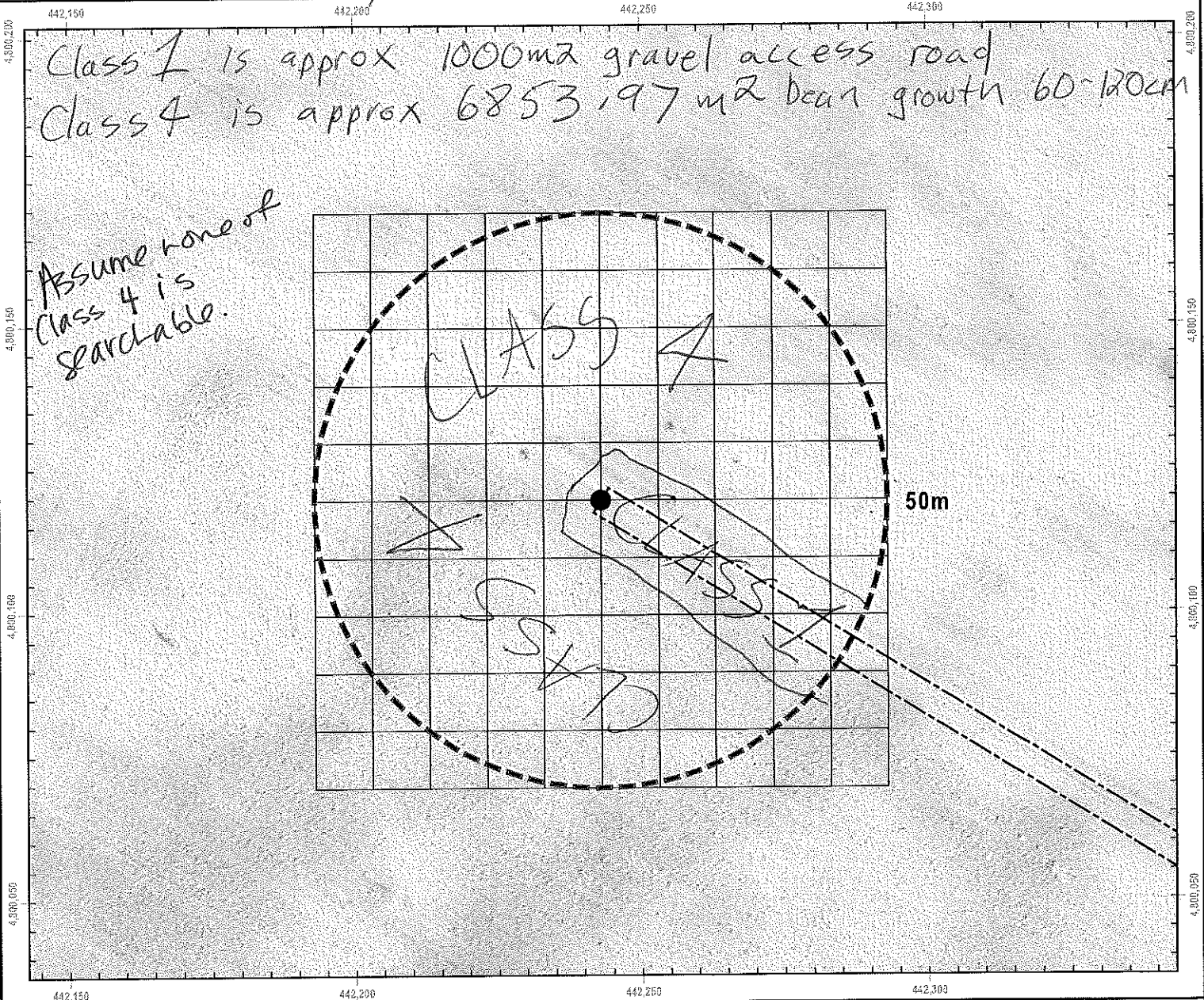
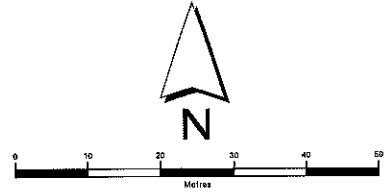
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-34

**Survey Date:** Aug 30/17

**Actual Searched Area (m<sup>2</sup>):** 1000 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION) - CARCASS SEARCHES - HABITAT MAPPING FORM - FIELD USE - 10/18/16 (REV. 10/18/16)

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

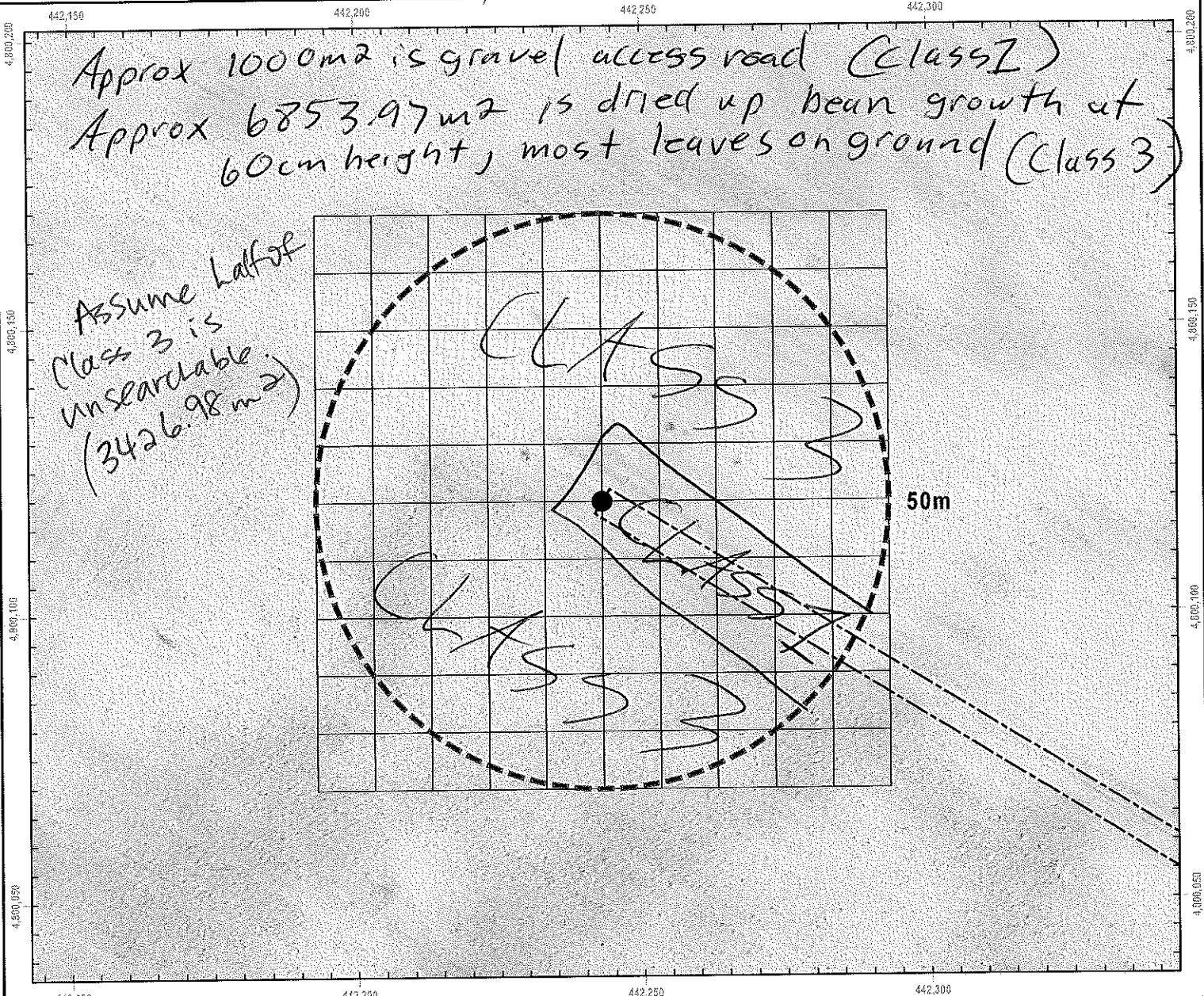
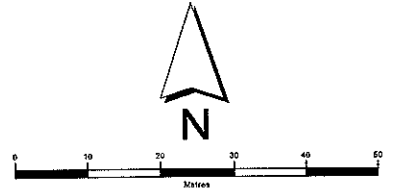
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-34

**Survey Date:** Sept 27, 17

**Actual Searched Area (m<sup>2</sup>):** 4427 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



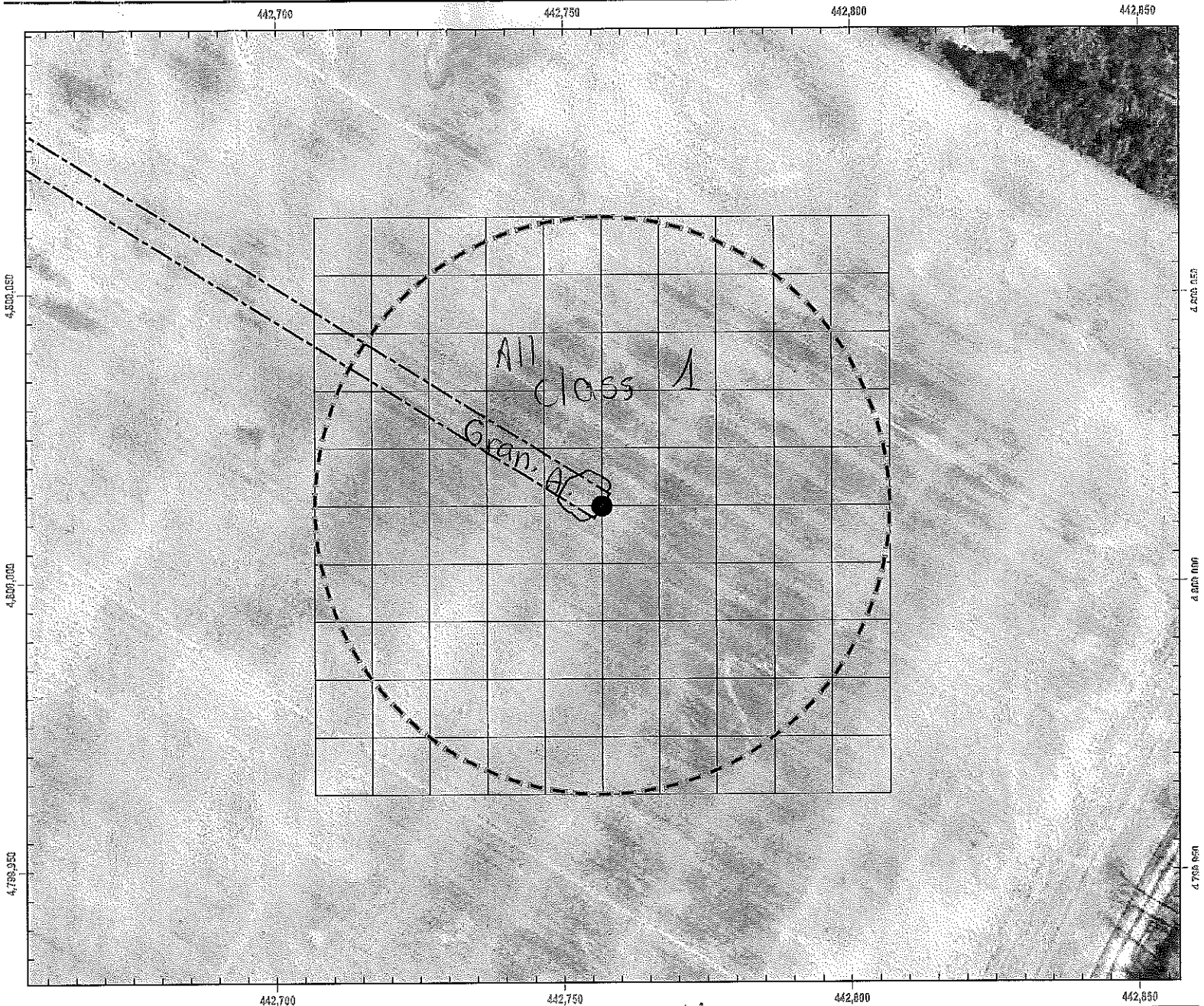


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-35  
 Survey Date: 24 May 2017  
 Actual Searched Area: 7853.97m<sup>2</sup>  
 Observers: Lara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

sandy silt

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID



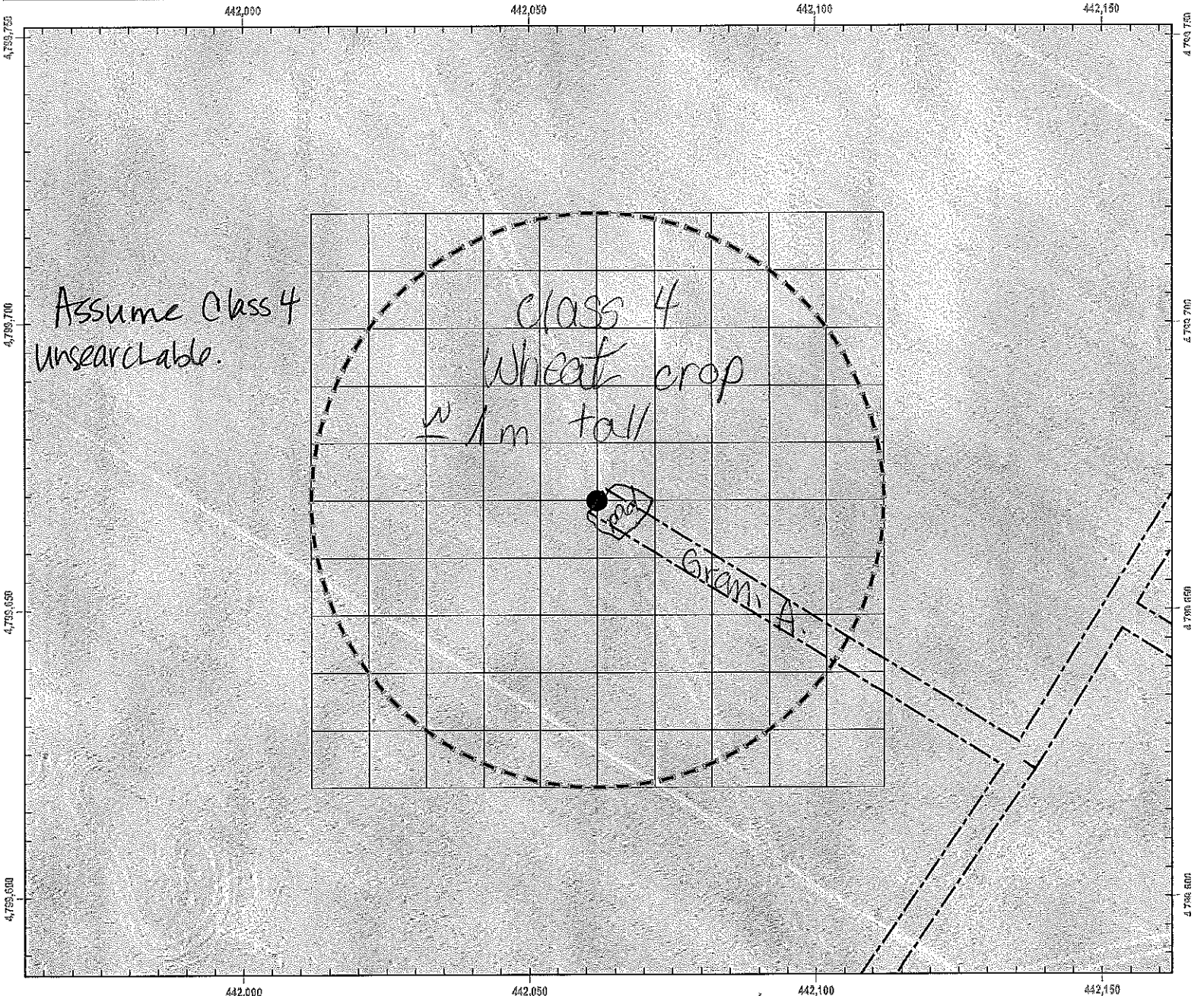
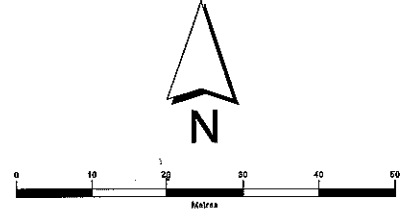


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-37  
 Survey Date: 31 May 2017  
 Actual Searched Area: 1000m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

~ 1000 m<sup>2</sup> (Gran.) Class 1  
~ 6853.97 m<sup>2</sup> (wheat) Class 4

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRIDS









# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

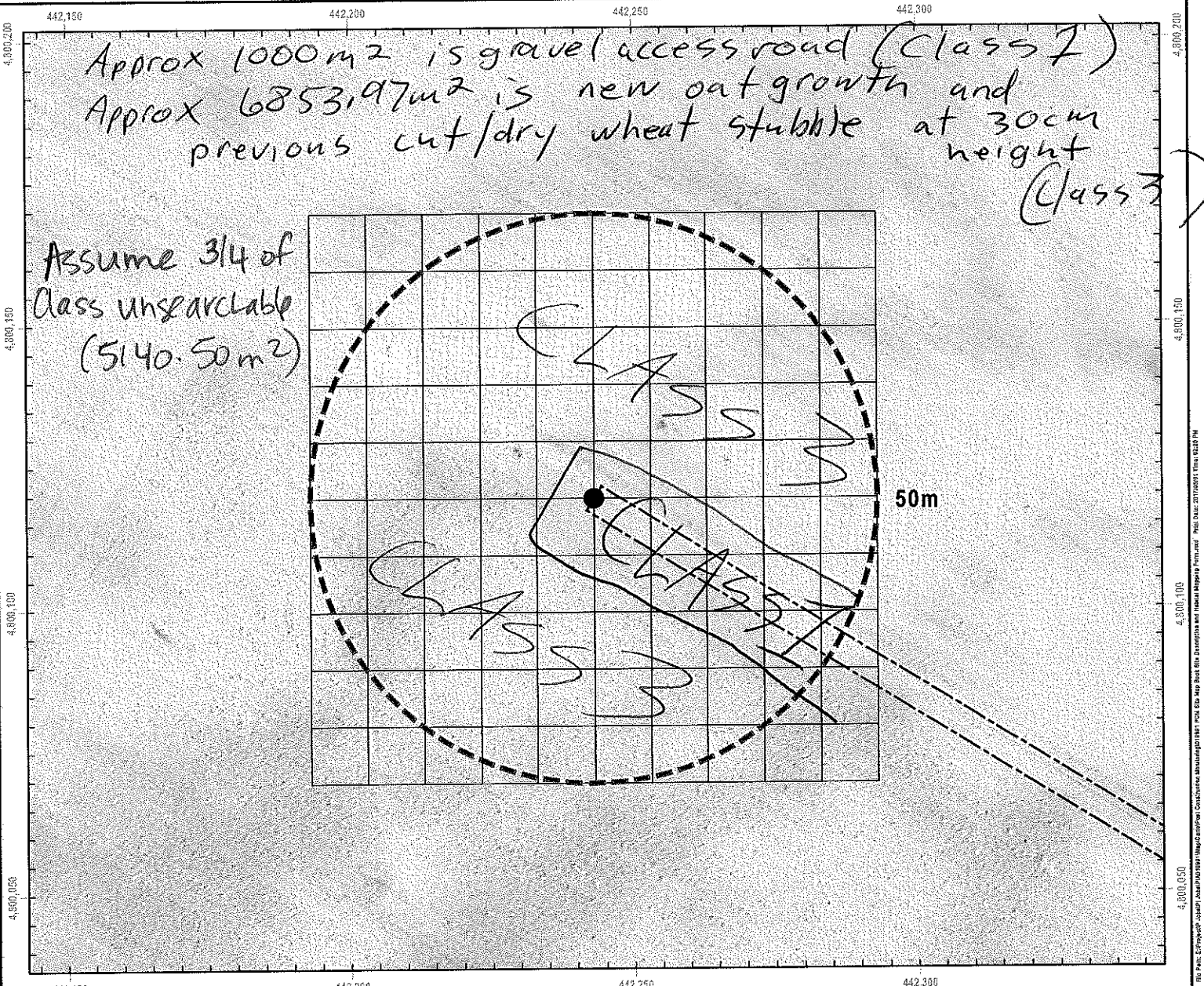
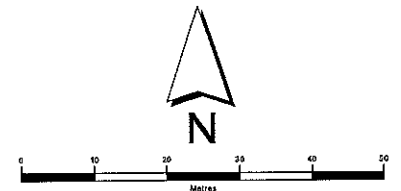
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** ~~F04~~ T 37

**Survey Date:** Aug 30/17

**Actual Searched Area (m<sup>2</sup>):** 2713.50m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



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# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

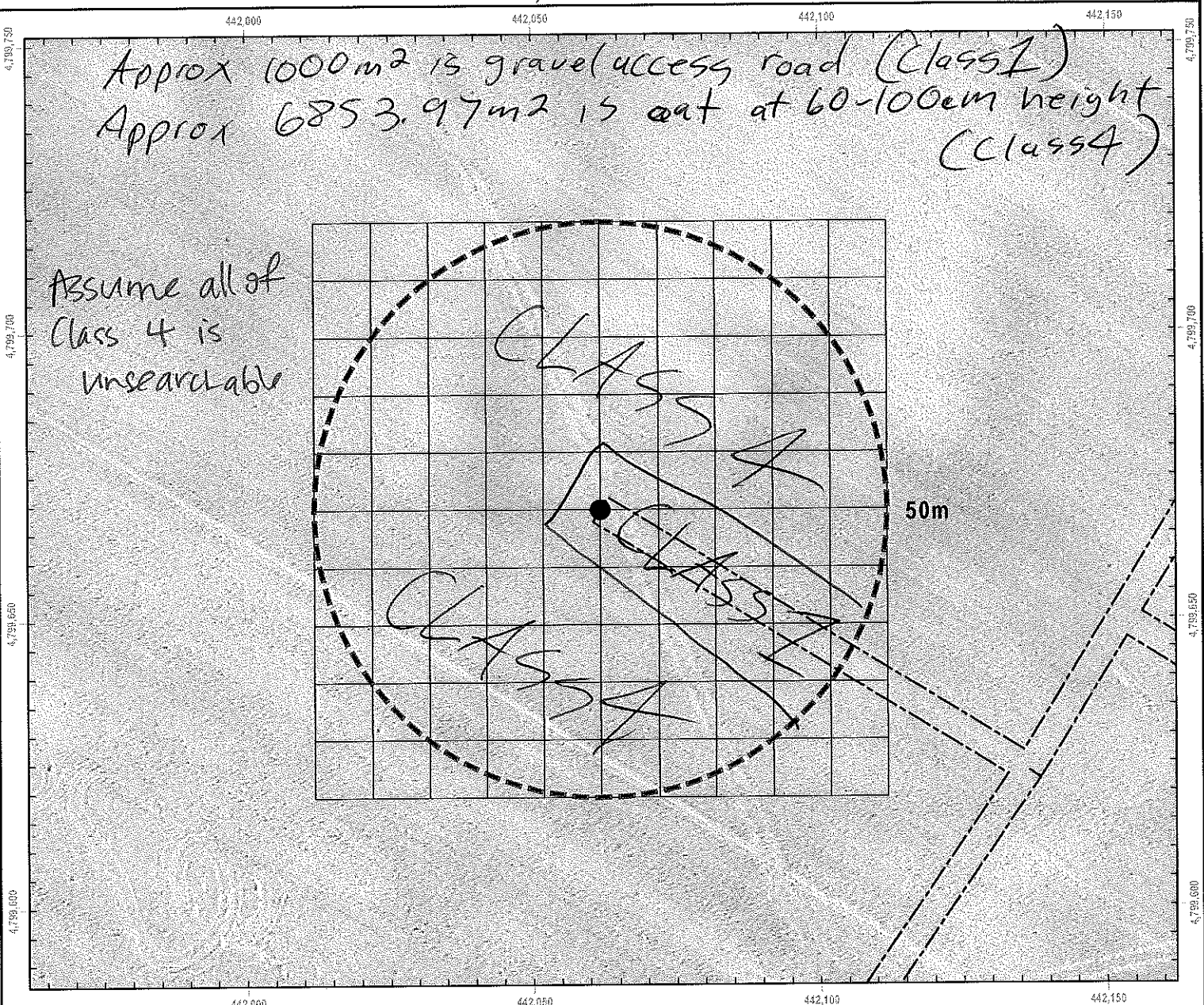
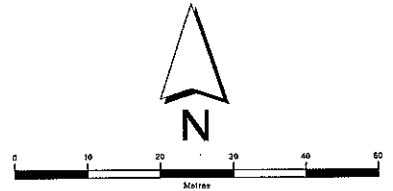
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-37

**Survey Date:** Sept 27/17

**Actual Searched Area (m<sup>2</sup>):** 1000 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

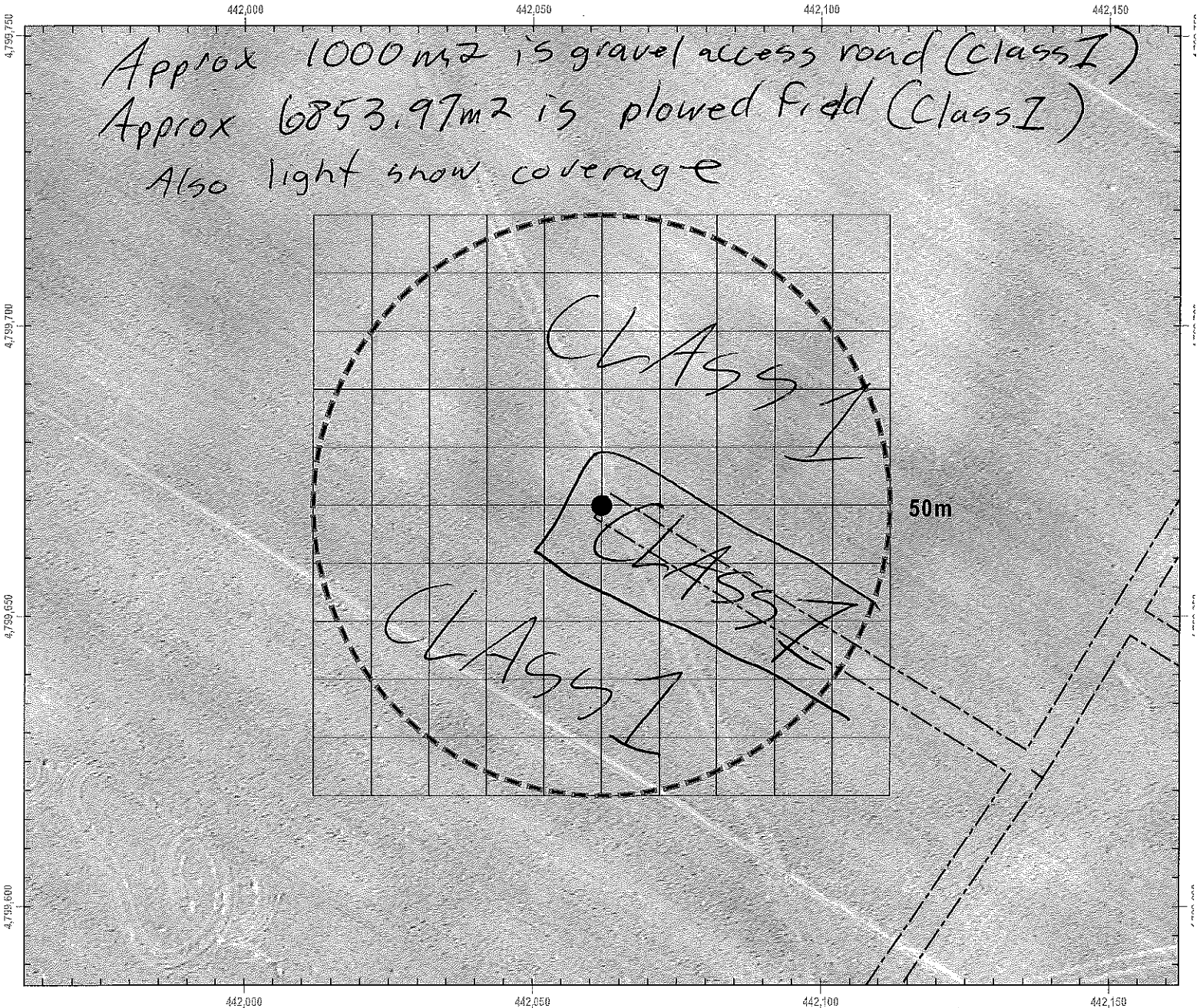
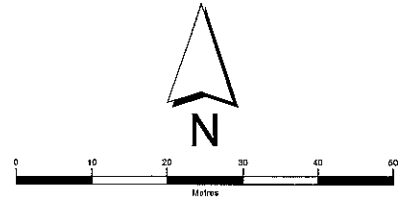
**Site Number:** T-37

**Survey Date:** Nov 23/17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

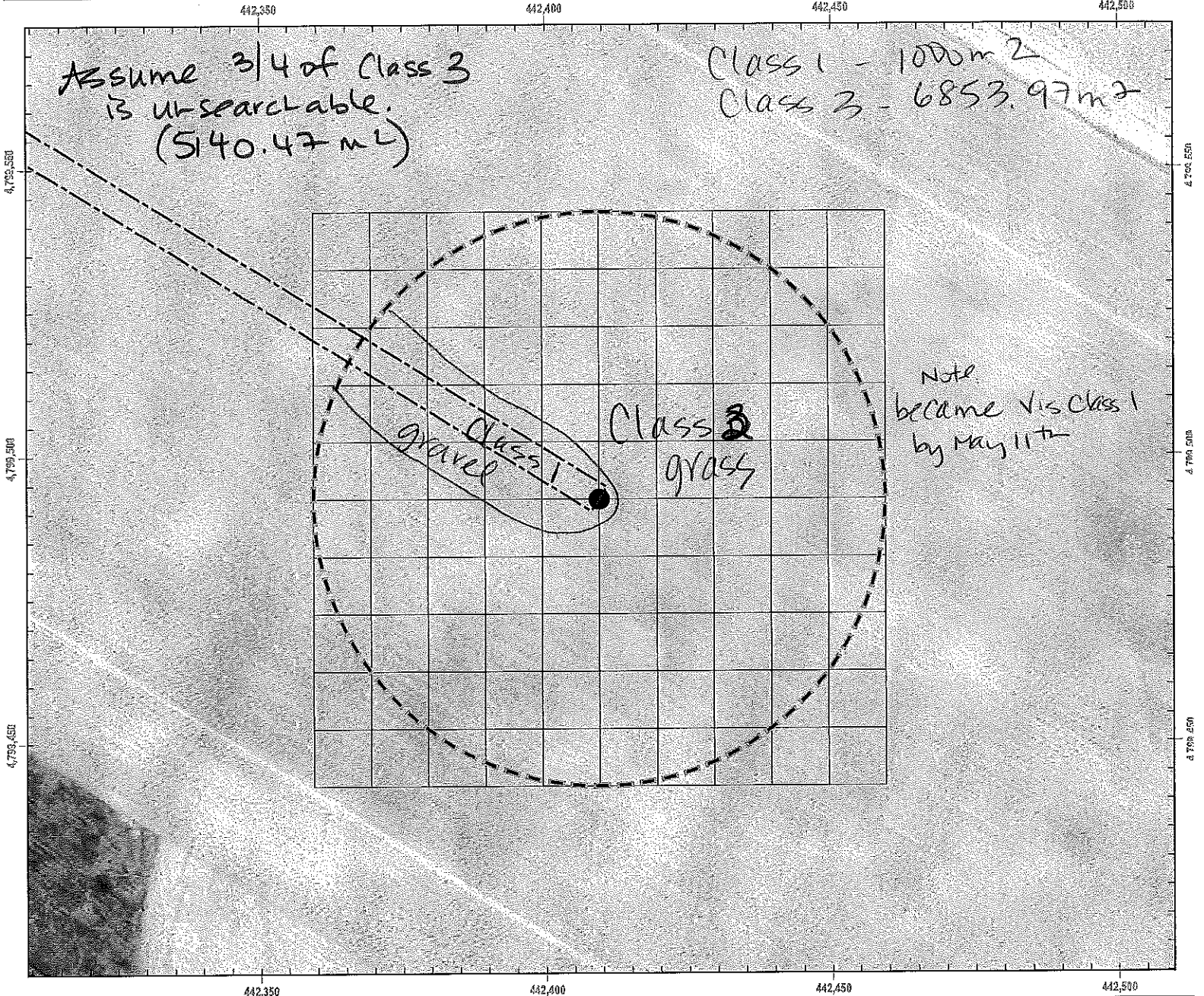
Project Name: Grand Bend Wind Farm

Site Number: T-38

Survey Date: May 1, 17

Actual Searched Area: 50 m radius (2713.50m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	
≤ 25% bare ground	≤ 25% > 30cm tall	
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRID



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

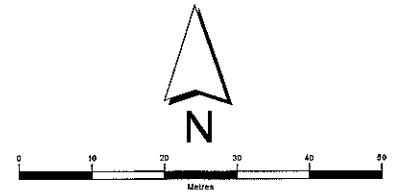
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-38

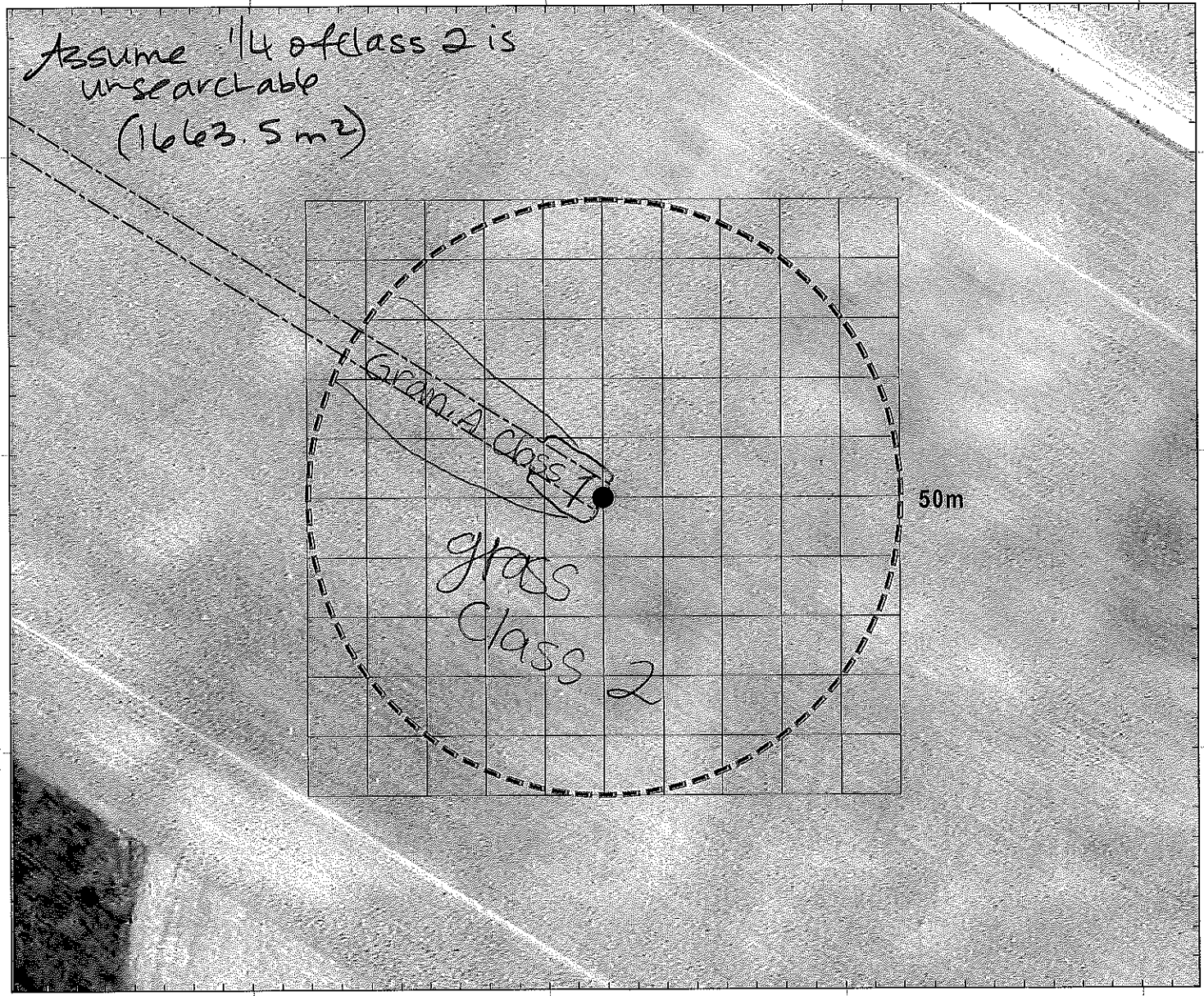
**Survey Date:** 19 June 2017

**Actual Searched Area (m<sup>2</sup>):** 6190.47 m<sup>2</sup>  
(subtract from total search area - 7853.97 m<sup>2</sup>)

**Observers:** Tara Slog, Sara Henny



442,350                      442,400                      442,450                      442,500



4,739,550

4,739,500

4,739,450

4,739,550

4,739,500

4,739,450

442,350                      442,400                      442,450                      442,500

% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

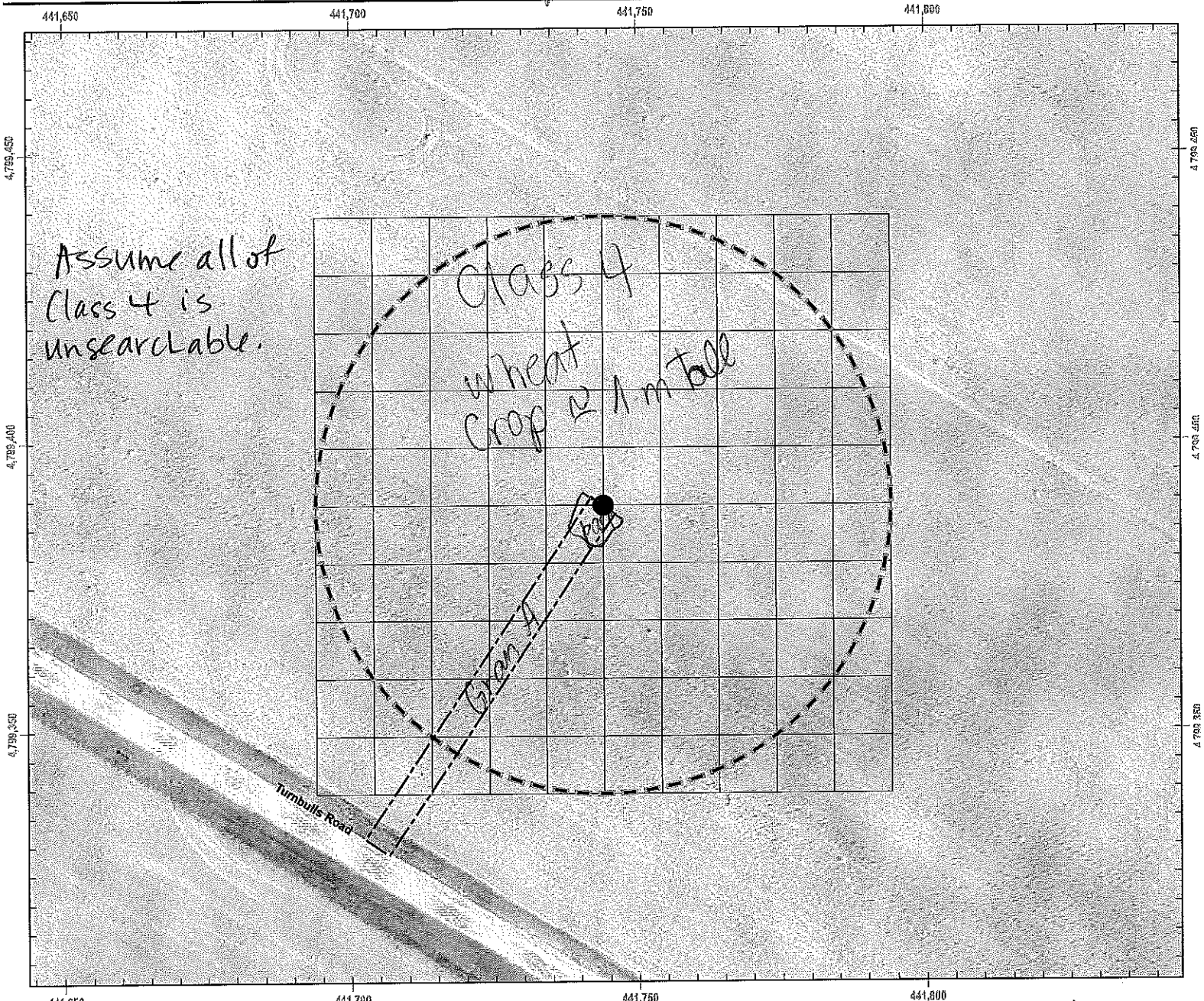
$\approx 1000 \text{ m}^2$  Class 1 - granular  
 $\approx 6853.97 \text{ m}^2$  Class 2 - thick grass  
 BURNSIDE  
 SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-39  
 Survey Date: 31 May 2017  
 Actual Searched Area: 1000 m<sup>2</sup>  
 Observers: Tara Steg, Sara Henry



Assume all of Class 4 is unsearchable.

% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> class 1 (Granular)  
 ≈ 685397 m<sup>2</sup> class 4 (wheat) BURNSIDE  
SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

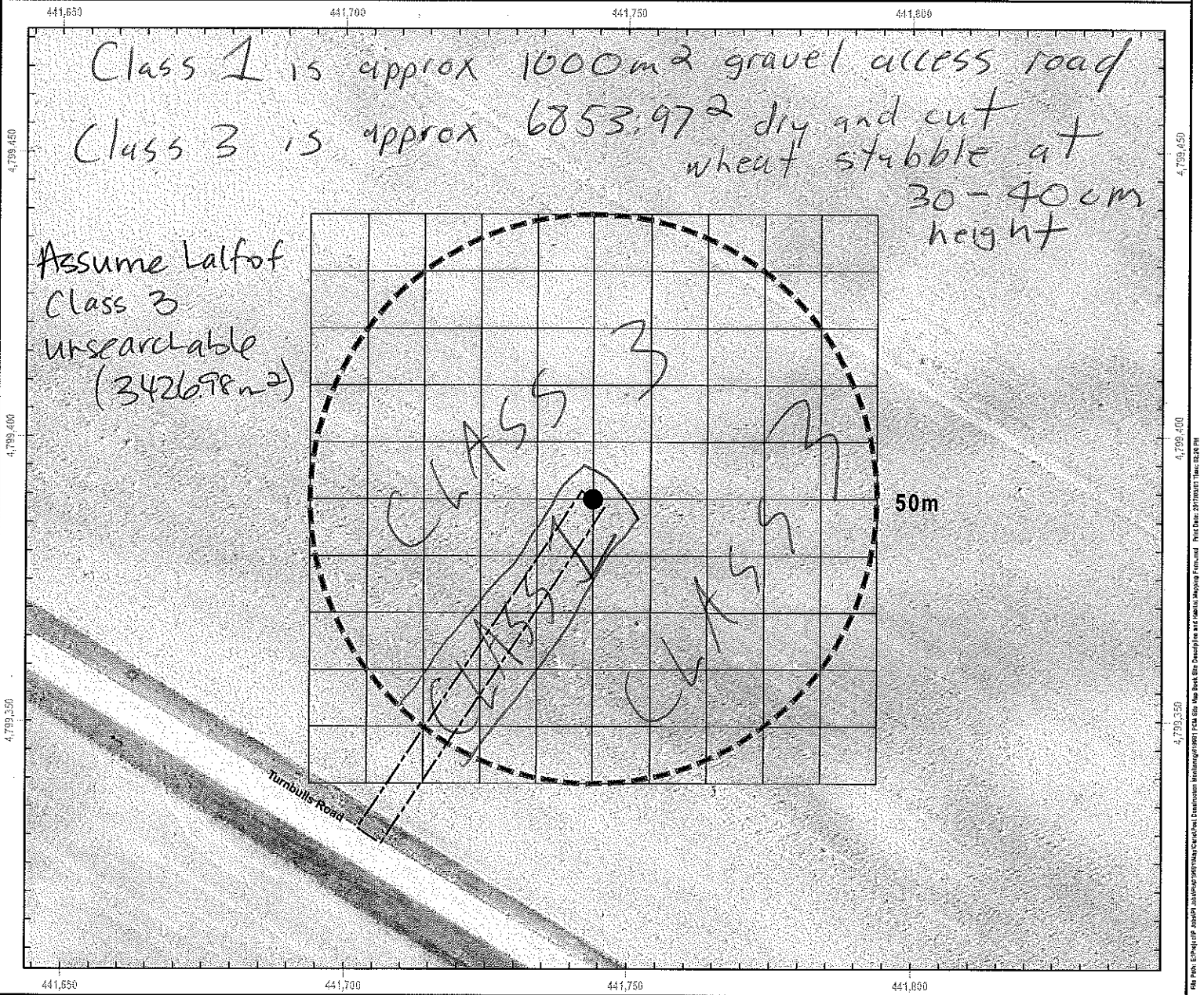
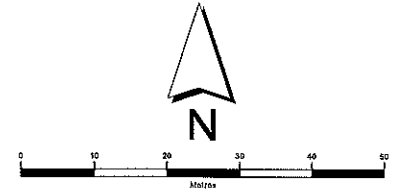
**Site Number:** T-39

**Survey Date:** Aug 16/17

**Actual Searched Area (m<sup>2</sup>):** 14427m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.





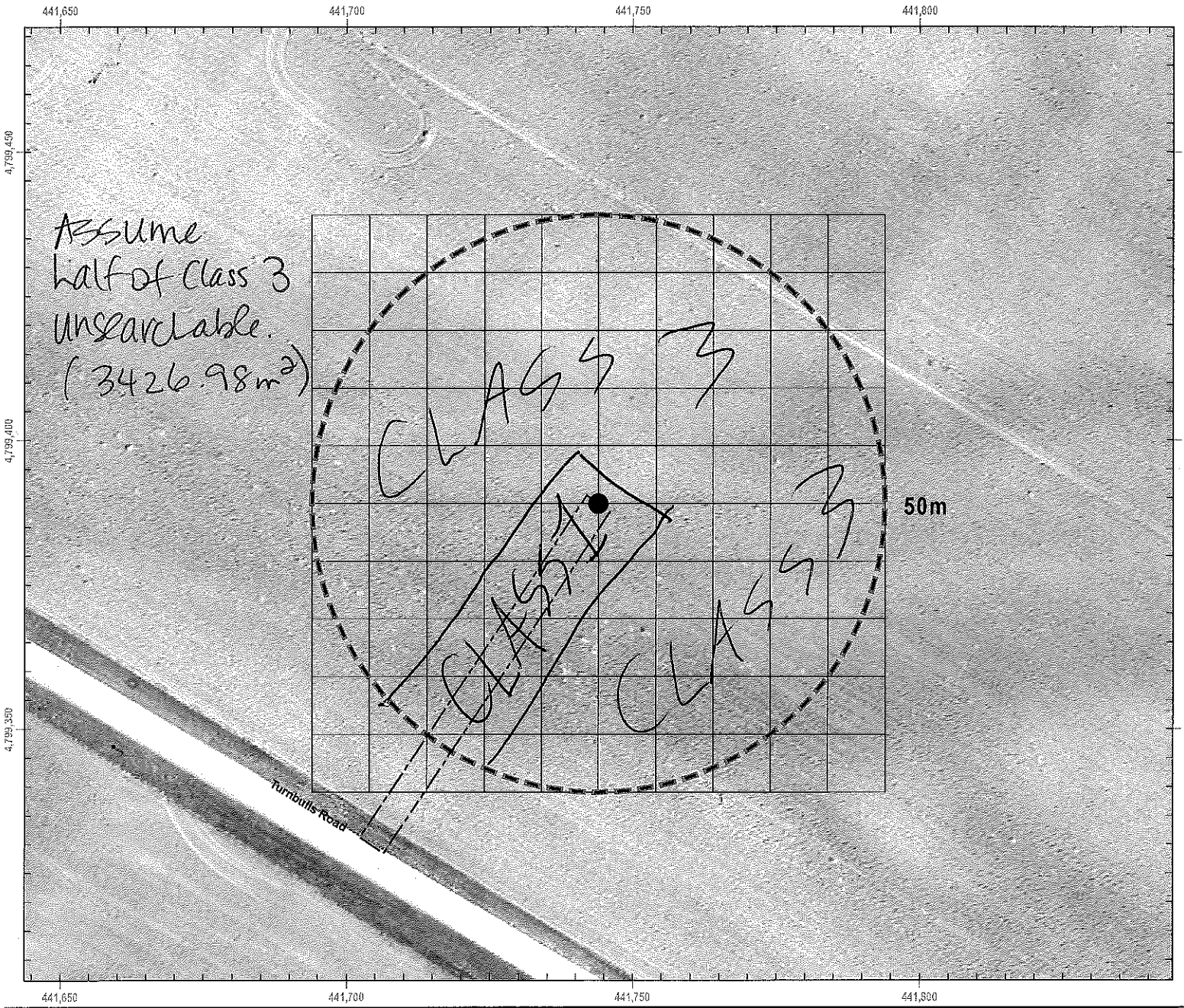
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-39  
 Survey Date: Sept 14/17  
 Actual Searched Area (m<sup>2</sup>): 4427 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry

Approx 1000m<sup>2</sup> is gravel access road (Class 1)  
 Approx 6853.97m<sup>2</sup> is dry wheat stubble at 20-60cm height, with new oat crop starting (Class 3)



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

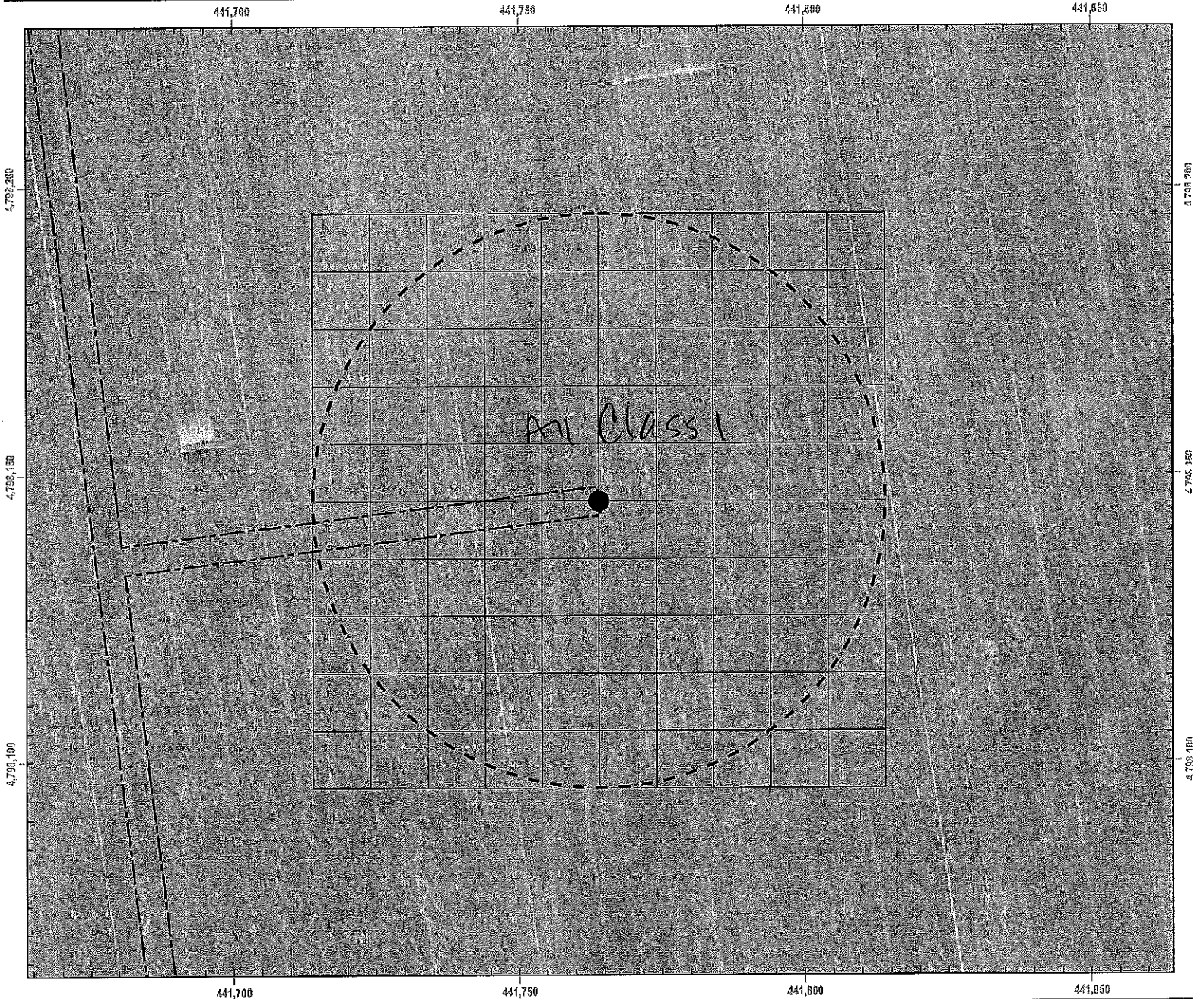
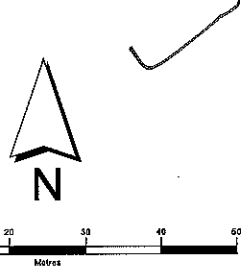
Project Name: Grand Bend Wind Farm

Site Number: T-41

Survey Date: May 1 / 17

Actual Searched Area: 50 m radius (7853.97 m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

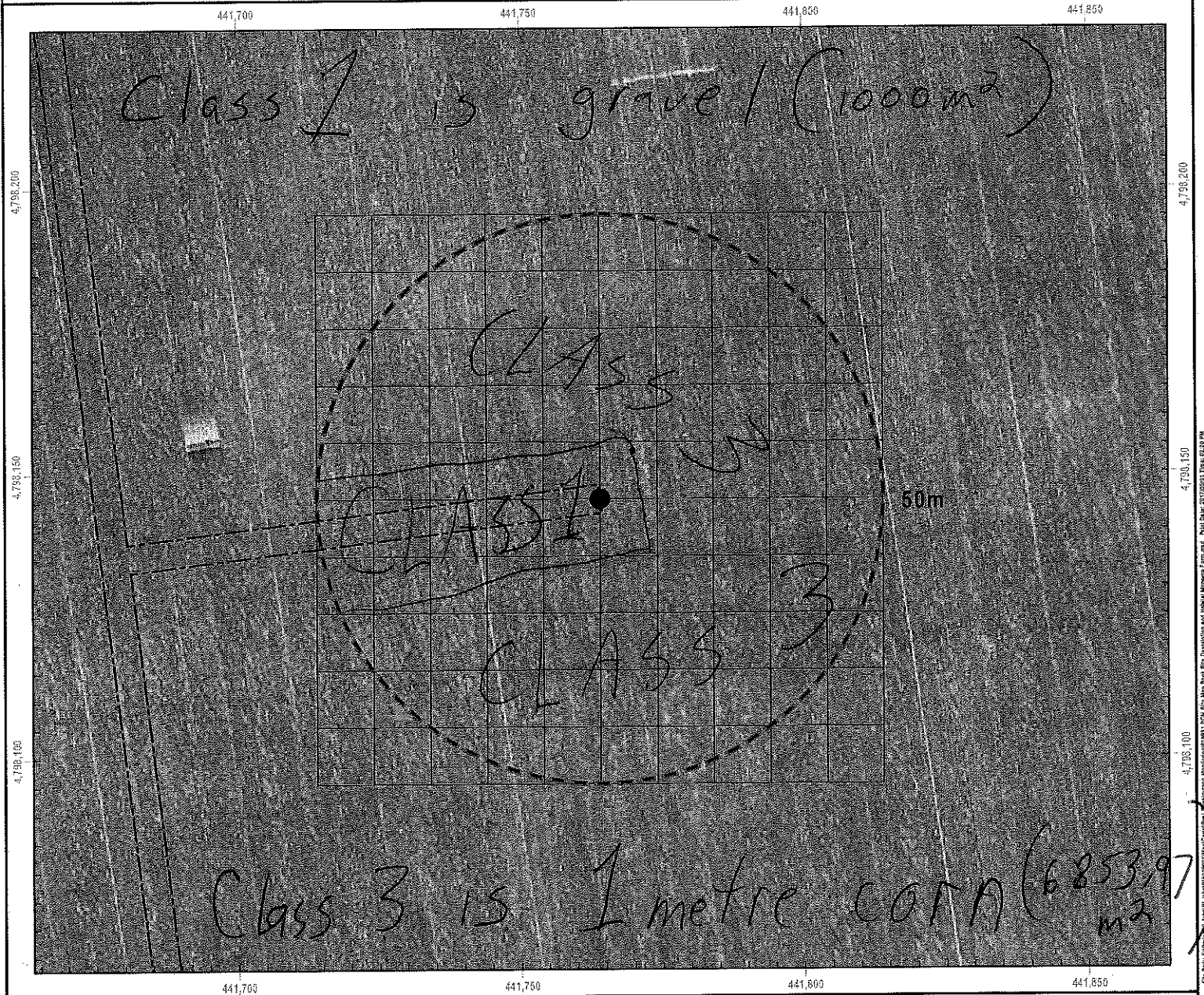
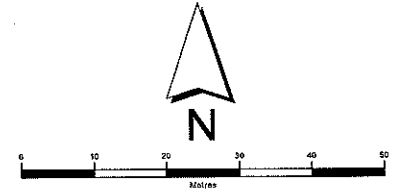
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-41

**Survey Date:** July 12 / 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



Burnside Environmental Services Inc. 1000 Lakeshore Blvd. West, Suite 200, Oakville, ON L6L 1A5  
 Tel: 905.836.8888 Fax: 905.836.8889 Email: info@burnsideenv.com

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

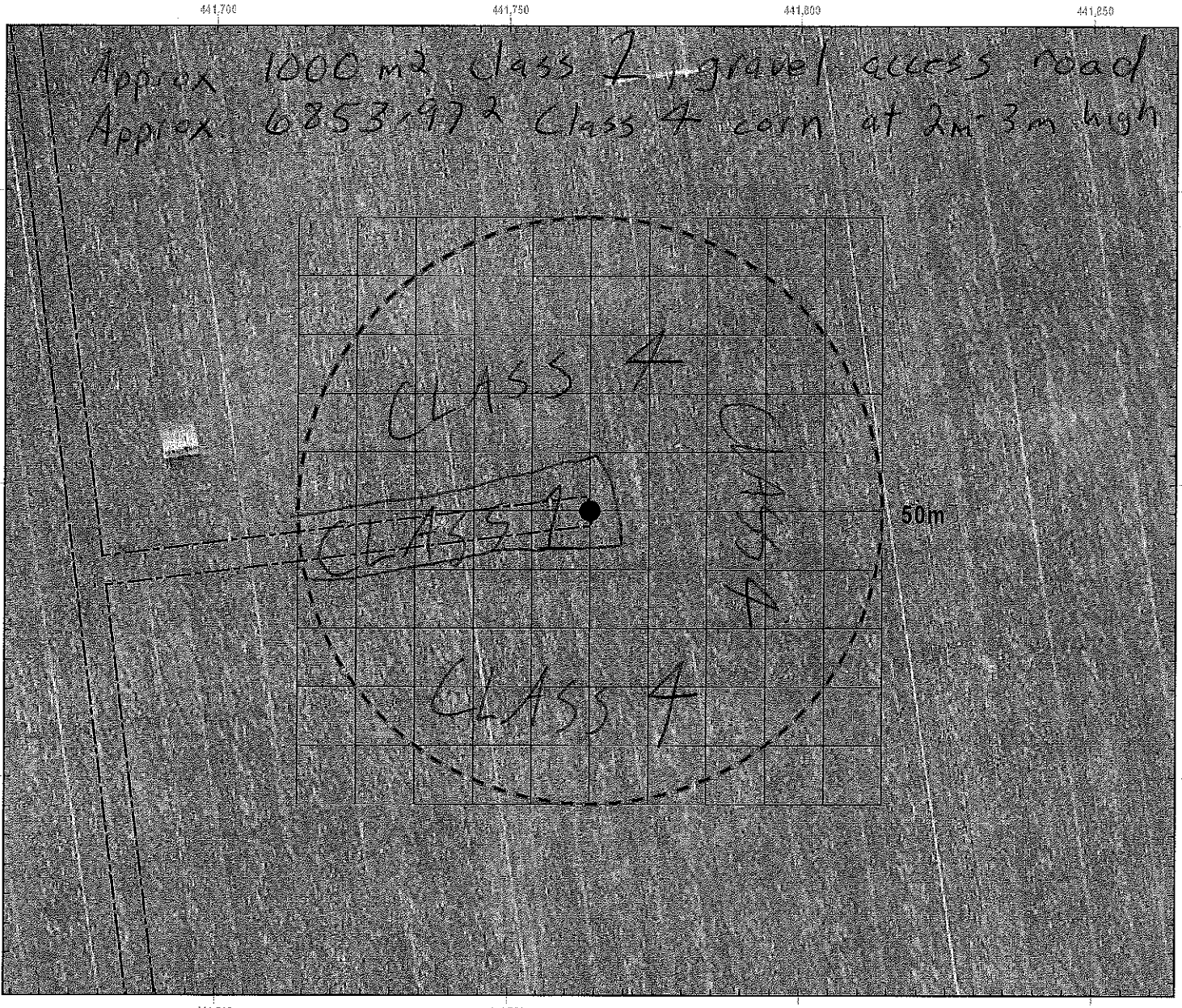
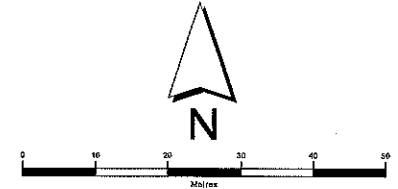
**Site Number:** T-41

**Survey Date:** Aug 16 / 17

**Actual Searched Area (m<sup>2</sup>):** 7853.97 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

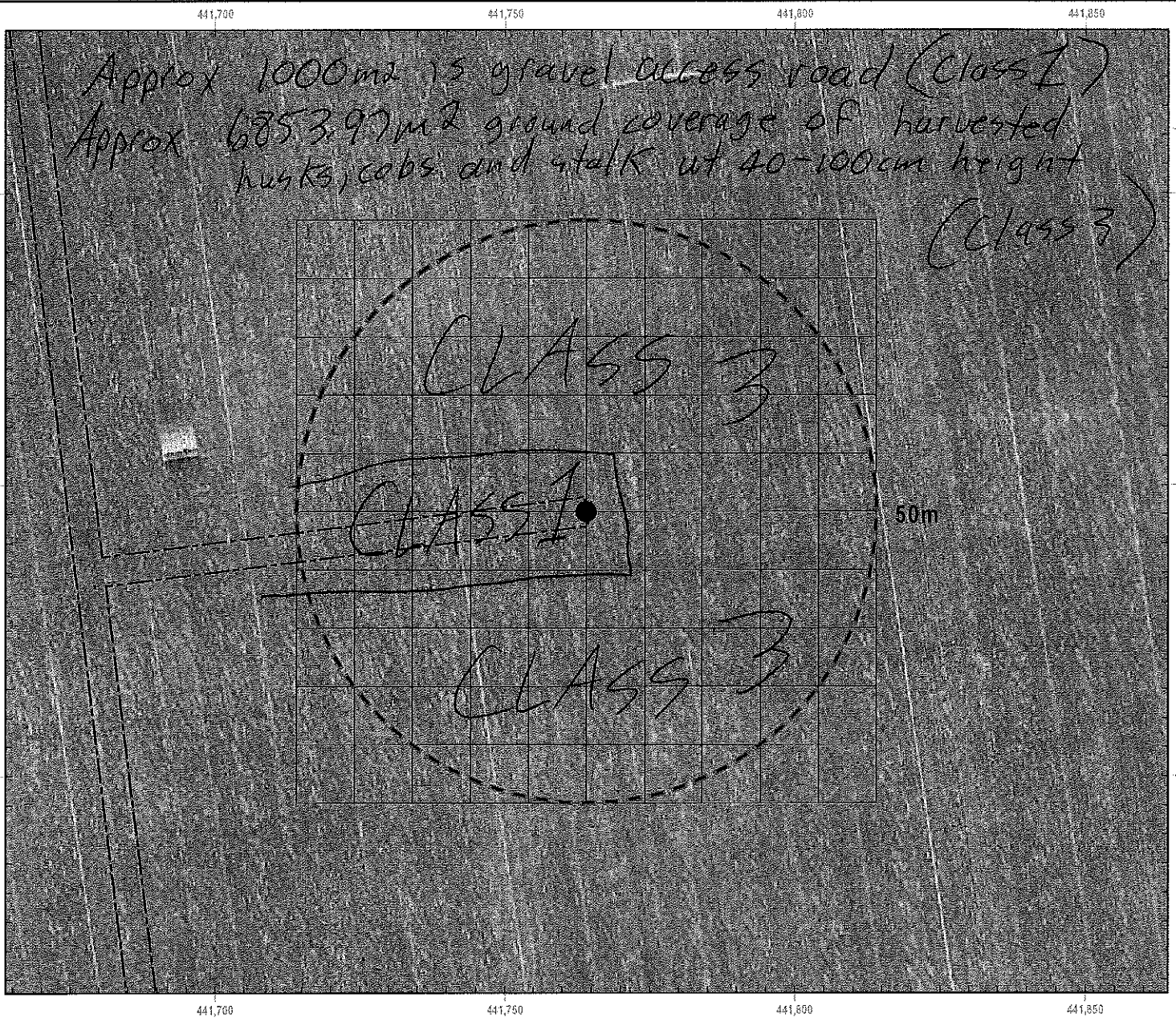
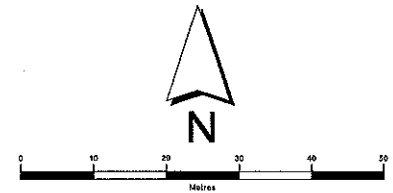
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-41

**Survey Date:** Nov 28/17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

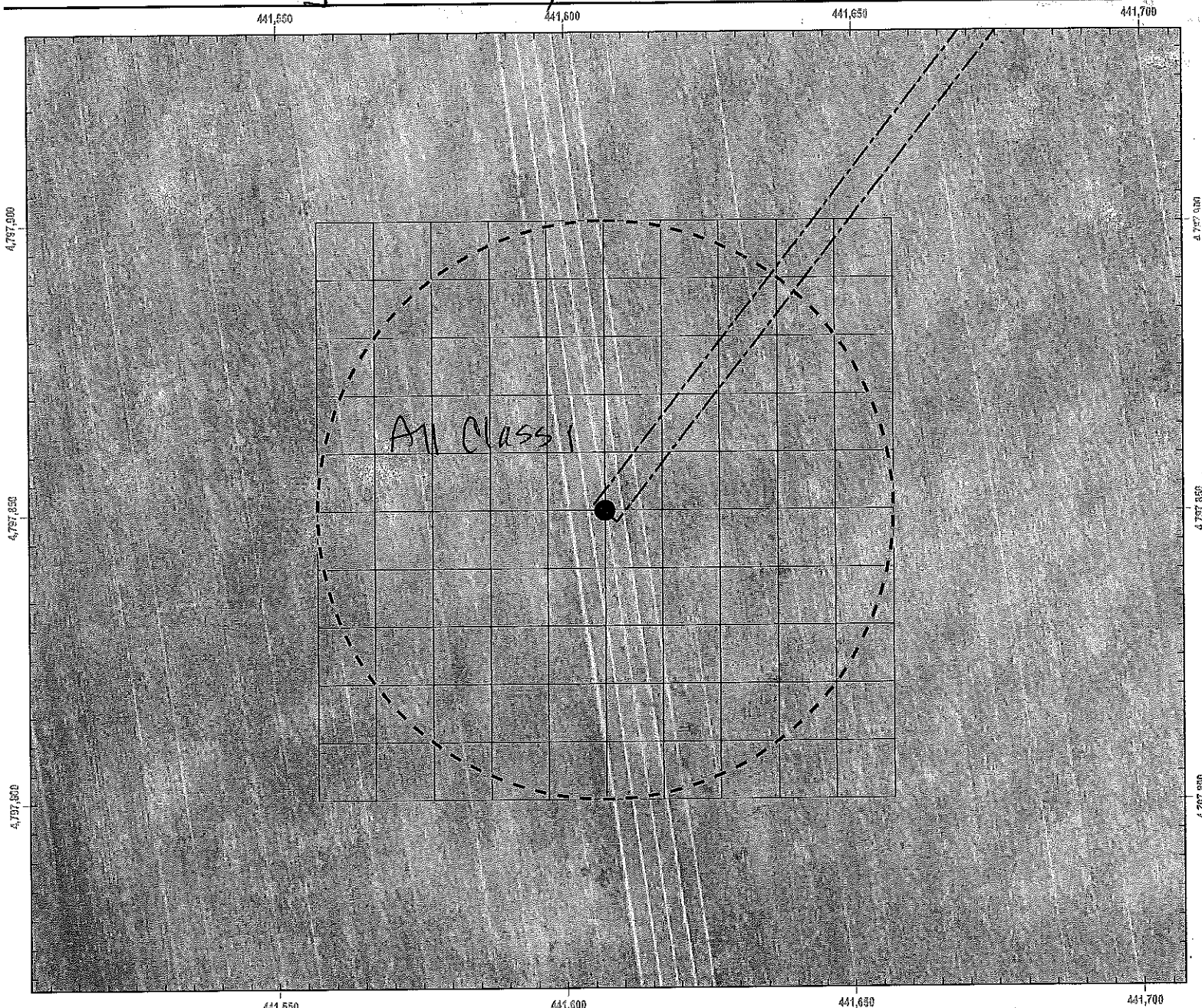
Project Name: Grand Bend Wind Farm

Site Number: T-42

Survey Date: May 1/17

Actual Searched Area: 50 m radius (7853.97 m<sup>2</sup>)

Observers: Jara Siey, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

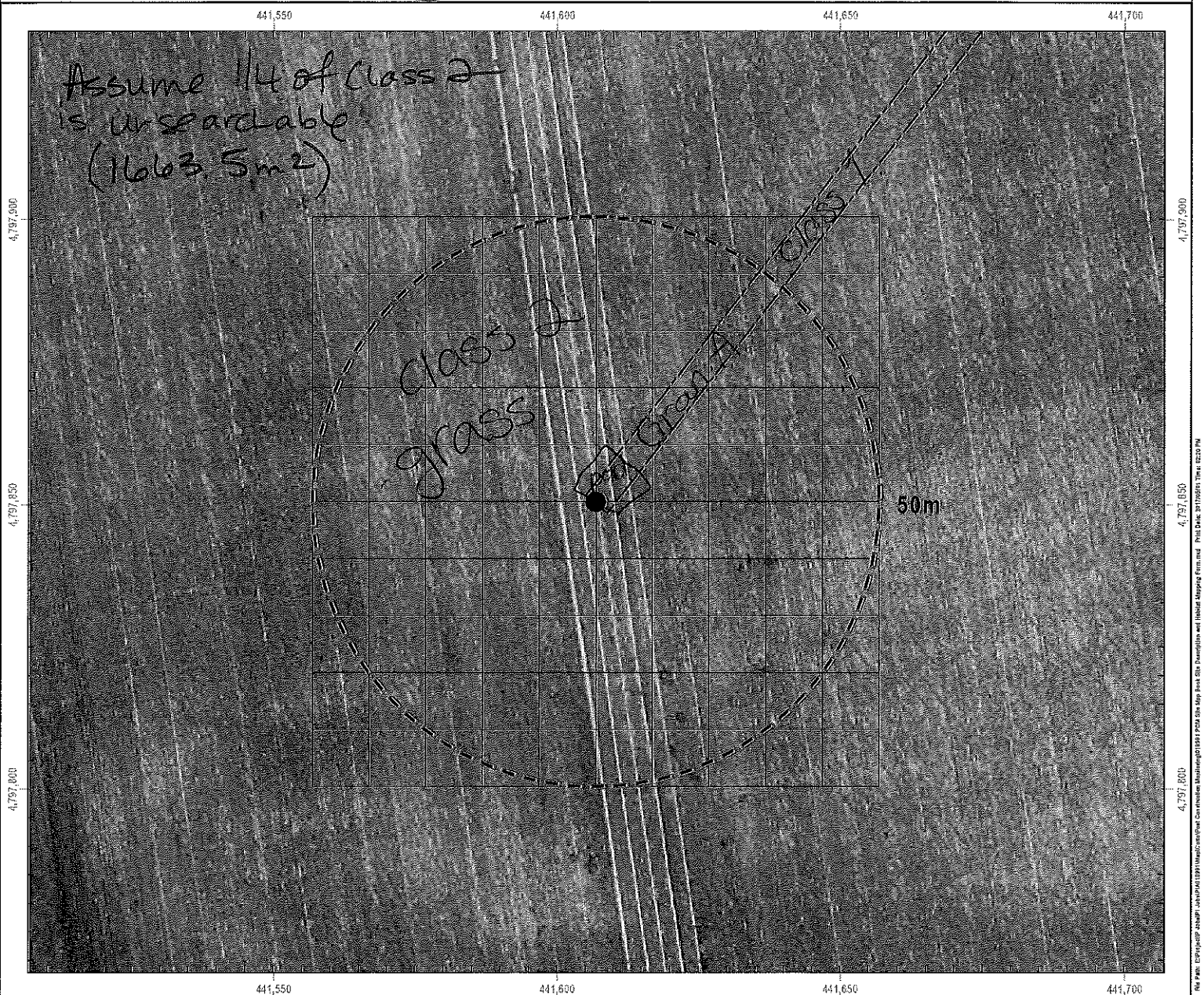
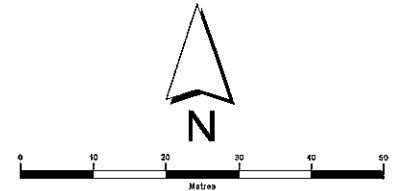
**Site Number:** T-42

**Survey Date:** 3 June 2017

**Actual Searched Area (m<sup>2</sup>):** 6190.47 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

~ 1000m<sup>2</sup> Granular - Class 1  
 ~ 6853.97m<sup>2</sup> Grass - Class 2

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



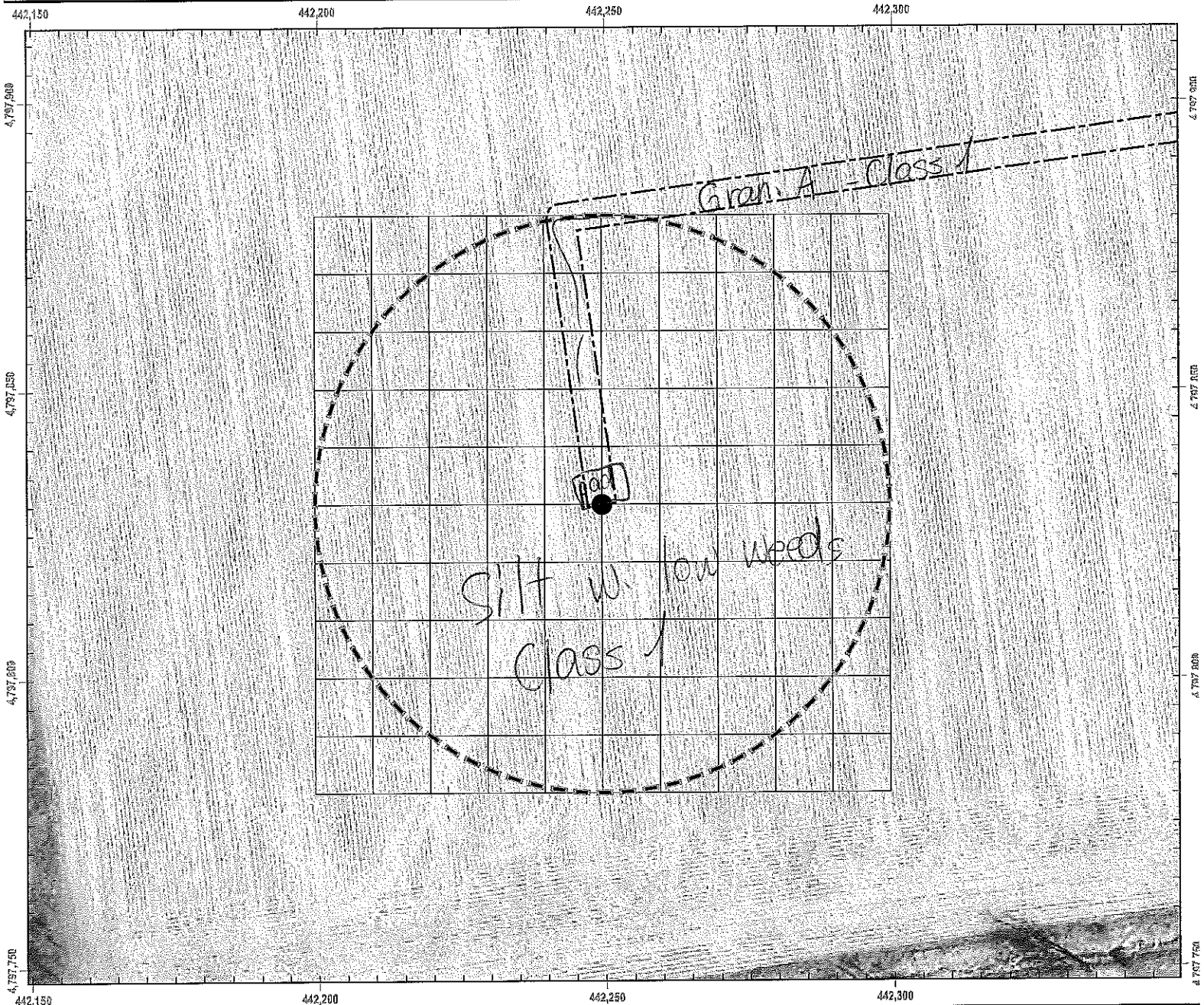


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-43  
 Survey Date: 31 May 2017  
 Actual Searched Area: 7853.97m<sup>2</sup>  
 Observers: Lara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy) ✓
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

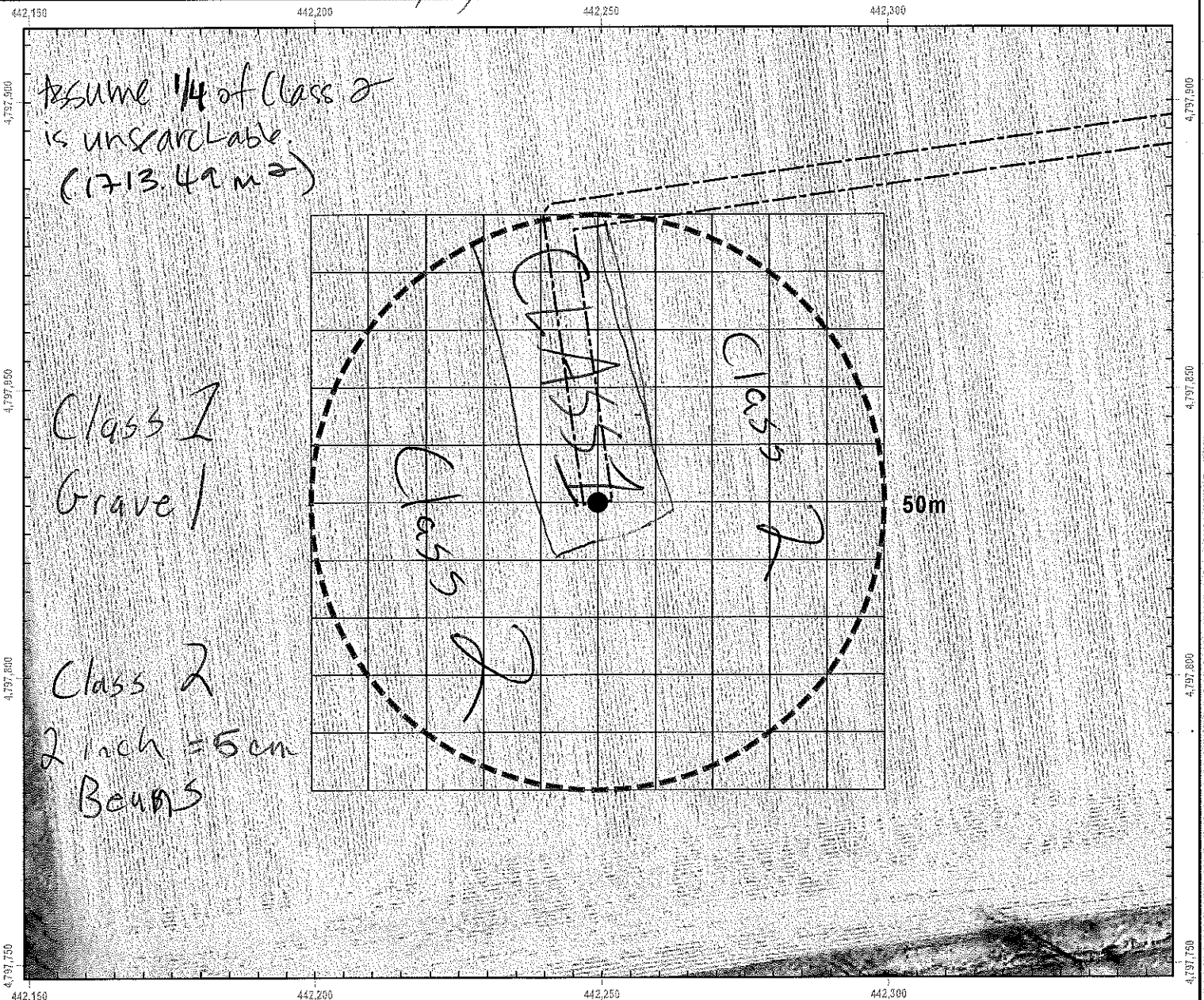
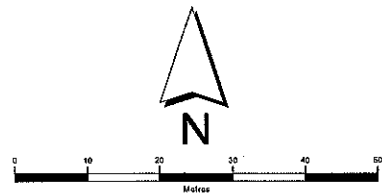
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-43

**Survey Date:** June 28

**Actual Searched Area (m<sup>2</sup>):** 6140.48 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

**Project Name:** PIA019991.0005 Grand Bend Wind Farm

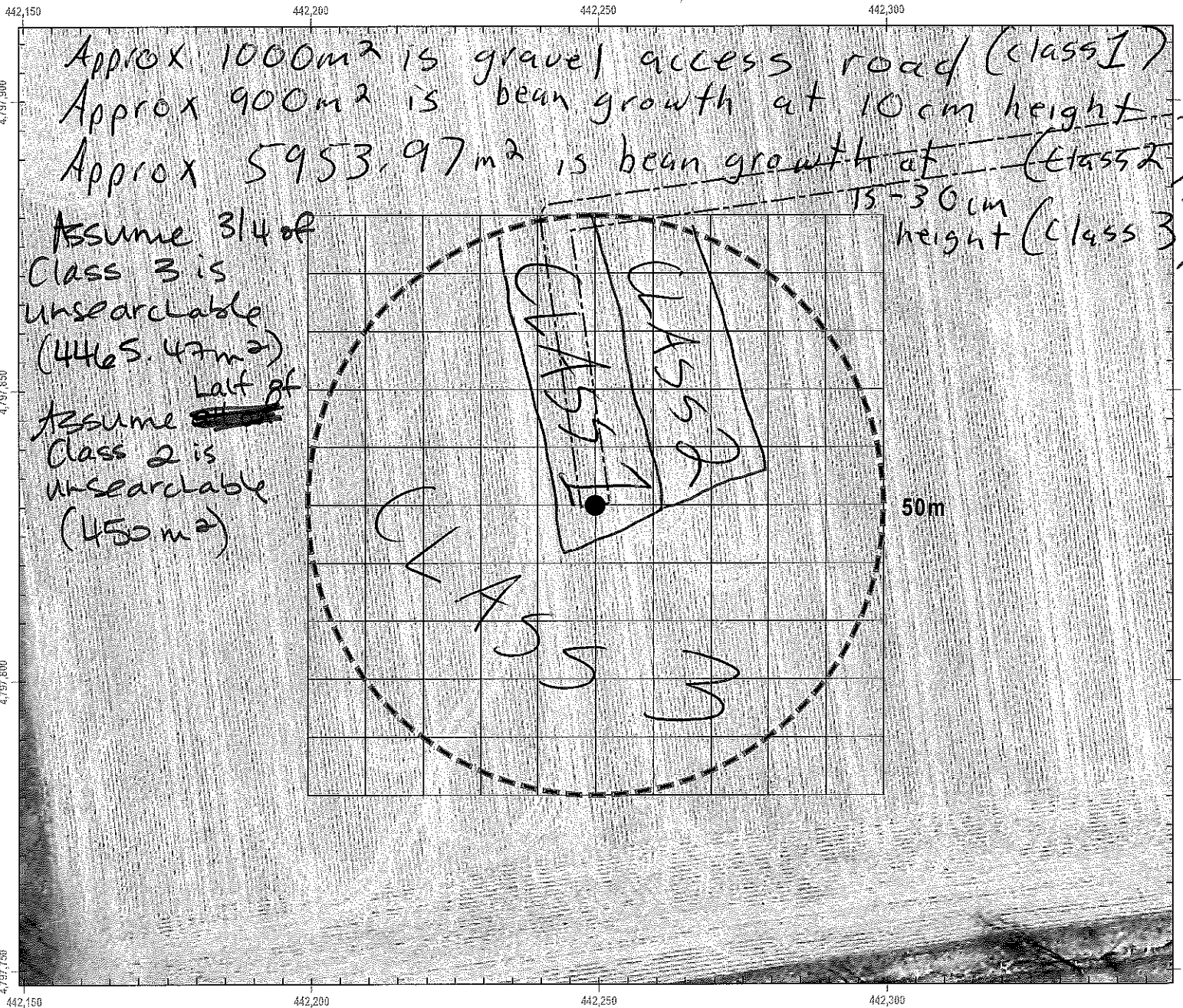
**Site Number:** T-43

**Survey Date:** July 26 / 17

**Actual Searched Area (m<sup>2</sup>):** 2938.50 m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

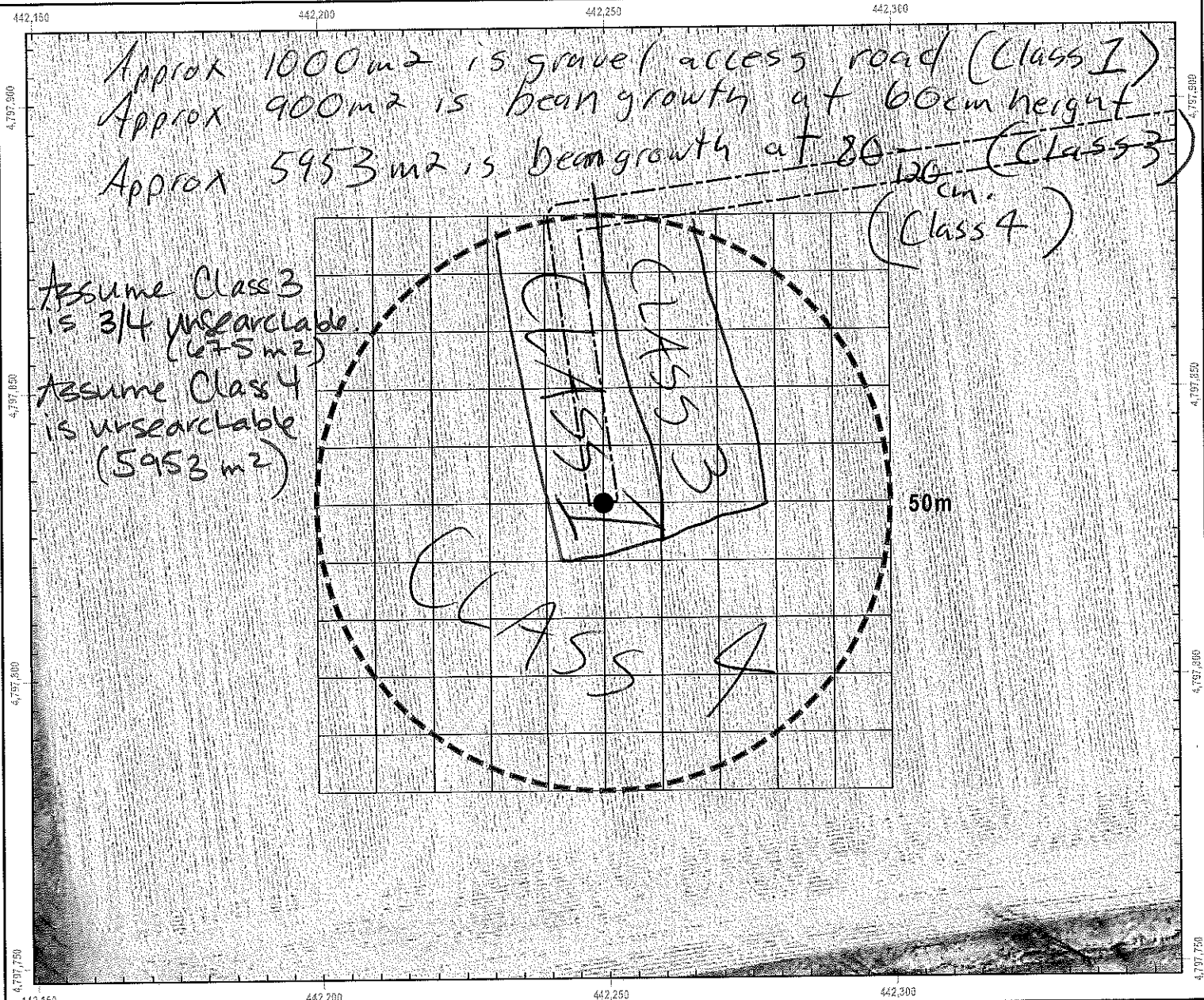
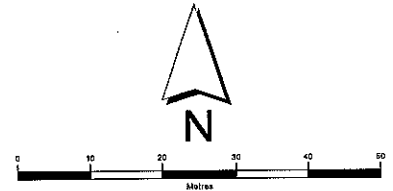
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-43

**Survey Date:** Aug 30 / 17

**Actual Searched Area (m<sup>2</sup>):** 1225.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



Assume Class 3 is 3/4 unsearchable (675m<sup>2</sup>)  
Assume Class 4 is unsearchable (5953m<sup>2</sup>)

% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

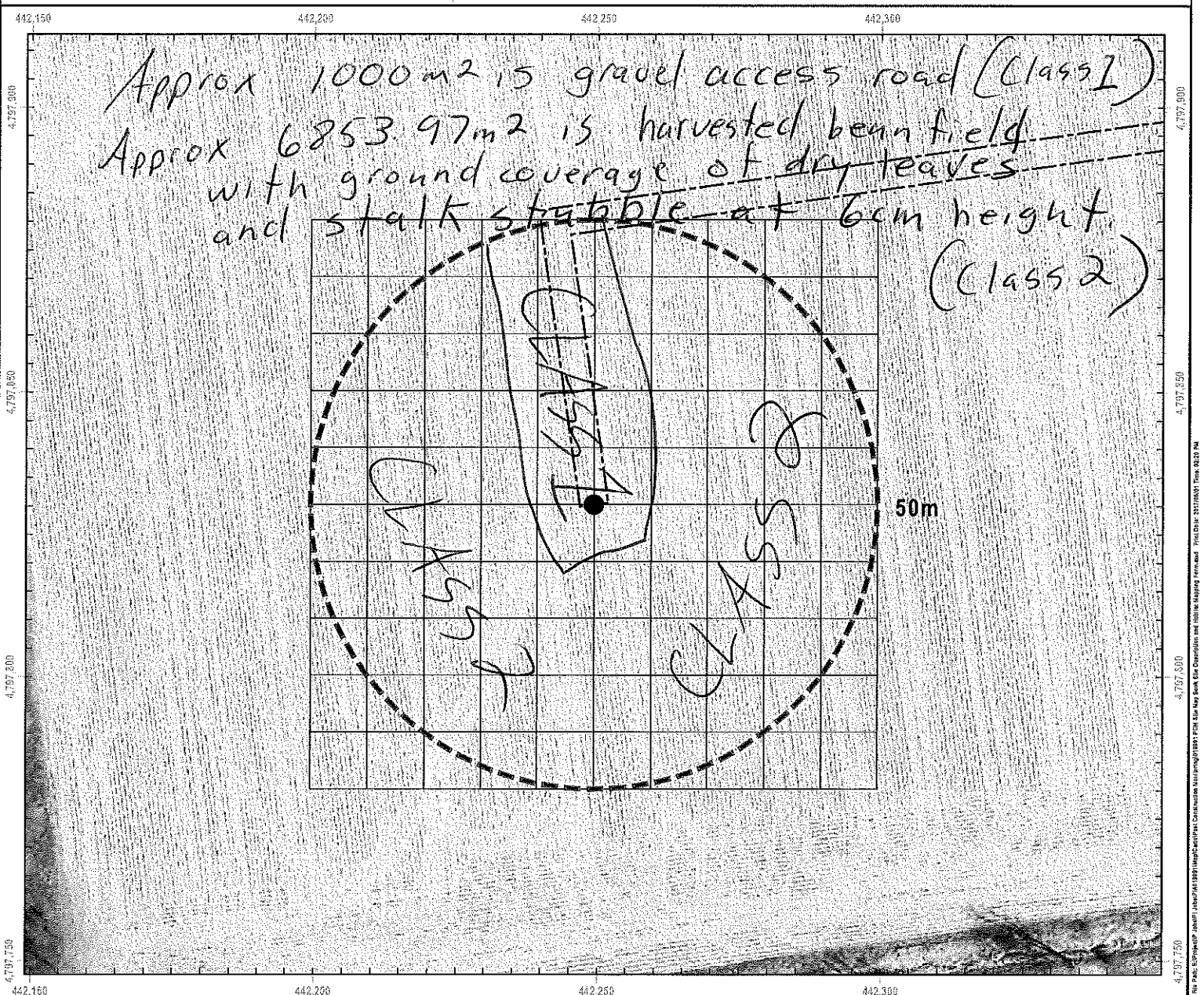
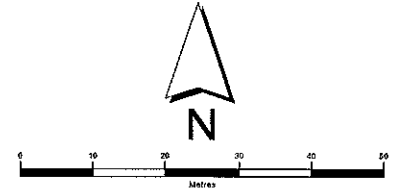


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-43  
 Survey Date: Oct 25 / 17  
 Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



No. PIA019991.0005 Grand Bend Wind Farm Construction Mapping/01884 PIA019991.0005 Grand Bend Wind Farm Construction Mapping Form  
 File Path: \\burnside\p01\01884\PIA019991.0005 Grand Bend Wind Farm Construction Mapping\01884 PIA019991.0005 Grand Bend Wind Farm Construction Mapping Form (02/17)

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

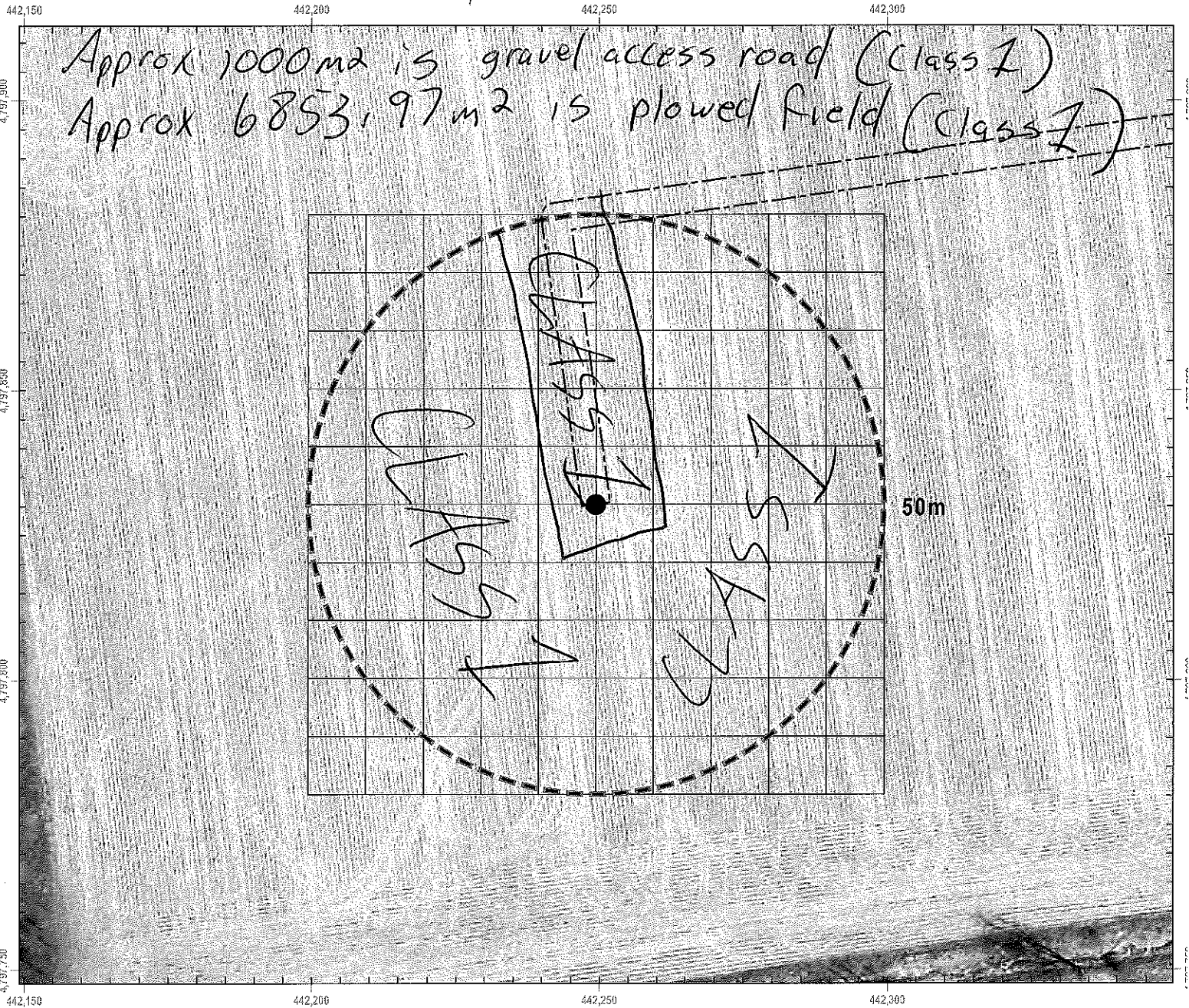
**Project Name:** PIA019991.0005 Grand Bend Wind Farm

**Site Number:** T-43

**Survey Date:** Nov 23/17

**Actual Searched Area (m<sup>2</sup>):** 7853.97m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

**Observers:** Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

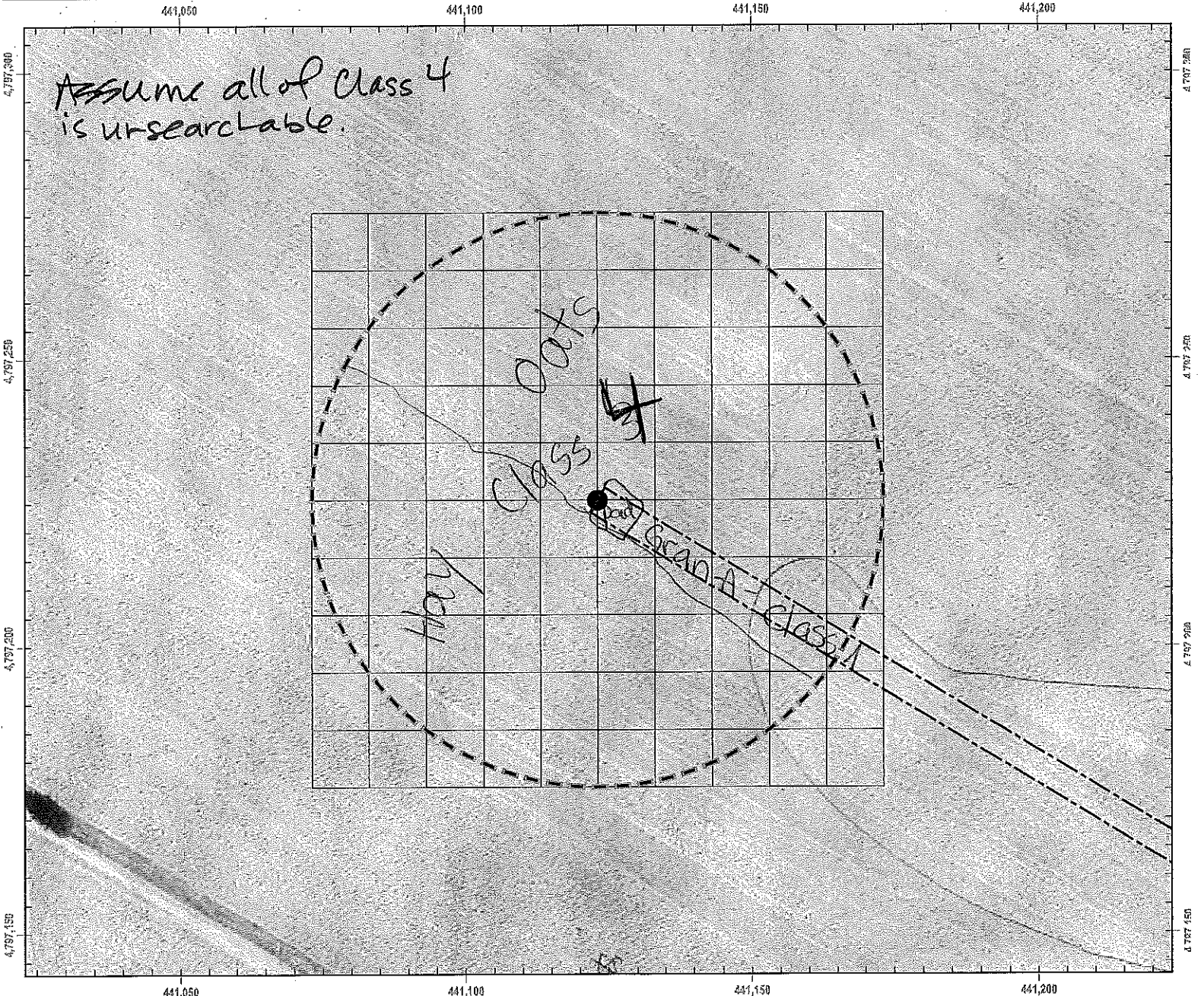
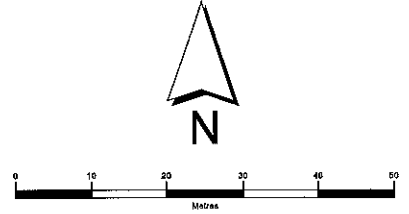
SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches) ✓

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-44  
 Survey Date: 31 May  
 Actual Searched Area: 1000m<sup>2</sup>  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

≈ 1000 m<sup>2</sup> Class 1  
 ≈ 6853.97 m<sup>2</sup> class 4

SEARCH AREA IS DISPLAYED AS 40M BY 40M SQUARE GRIDS

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

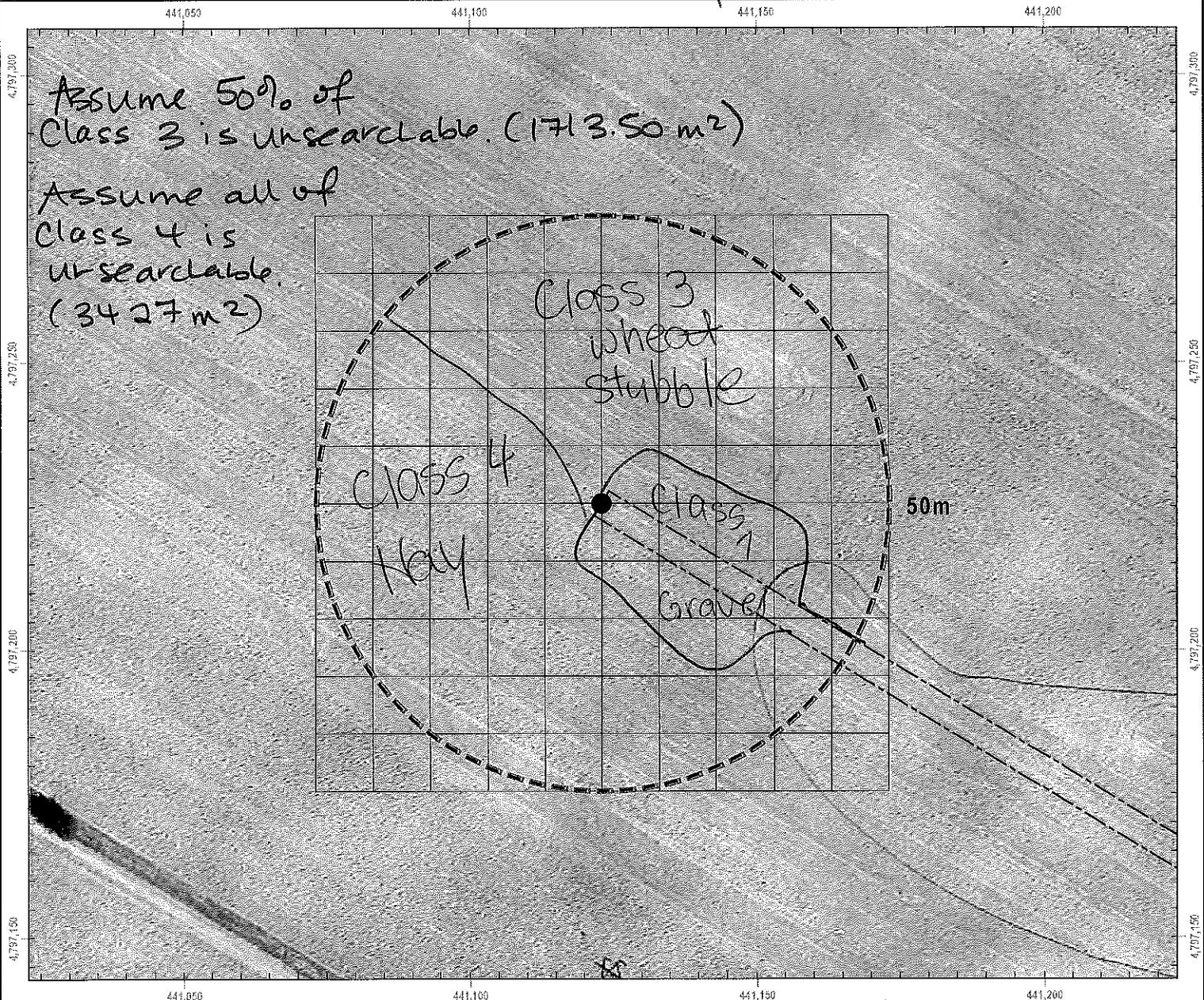
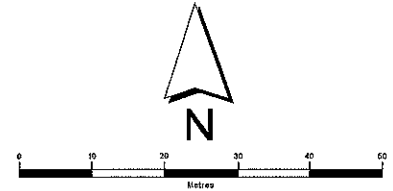
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-44

Survey Date: 26 July 2017

Actual Searched Area (m<sup>2</sup>): 2713.50 m<sup>2</sup>  
(subtract from total search area - 7853.97 m<sup>2</sup>)

Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

$\frac{1}{2}$  1000 m<sup>2</sup> Class 1  
 $\frac{1}{2}$  3427 m<sup>2</sup> Class 3  
 $\frac{1}{2}$  3427 m<sup>2</sup> Class 4

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



File Path: E:\P\04-EP-104\PIA019991\0005\Construction\_Monitoring\019991\_P04\_Site\_Map\_Post\_Construction\_Habitat\_Mapping\_Formand\_FinalData\_20170701\_T04\_0320.PM  
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 4,797,150



# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

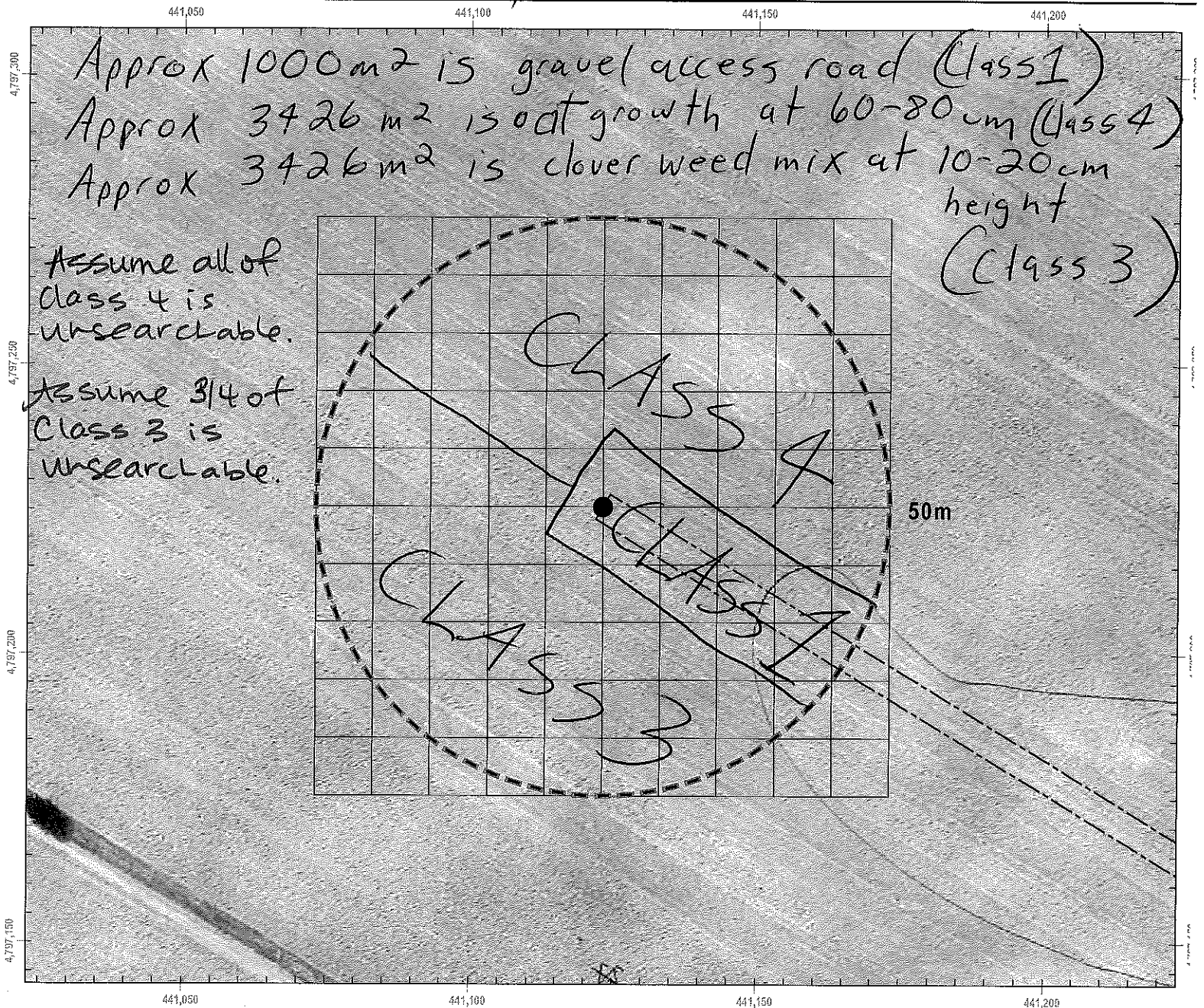
Project Name: PIA019991.0005 Grand Bend Wind Farm

Site Number: T-44

Survey Date: Sept 28/17

Actual Searched Area (m<sup>2</sup>): 1856.50 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

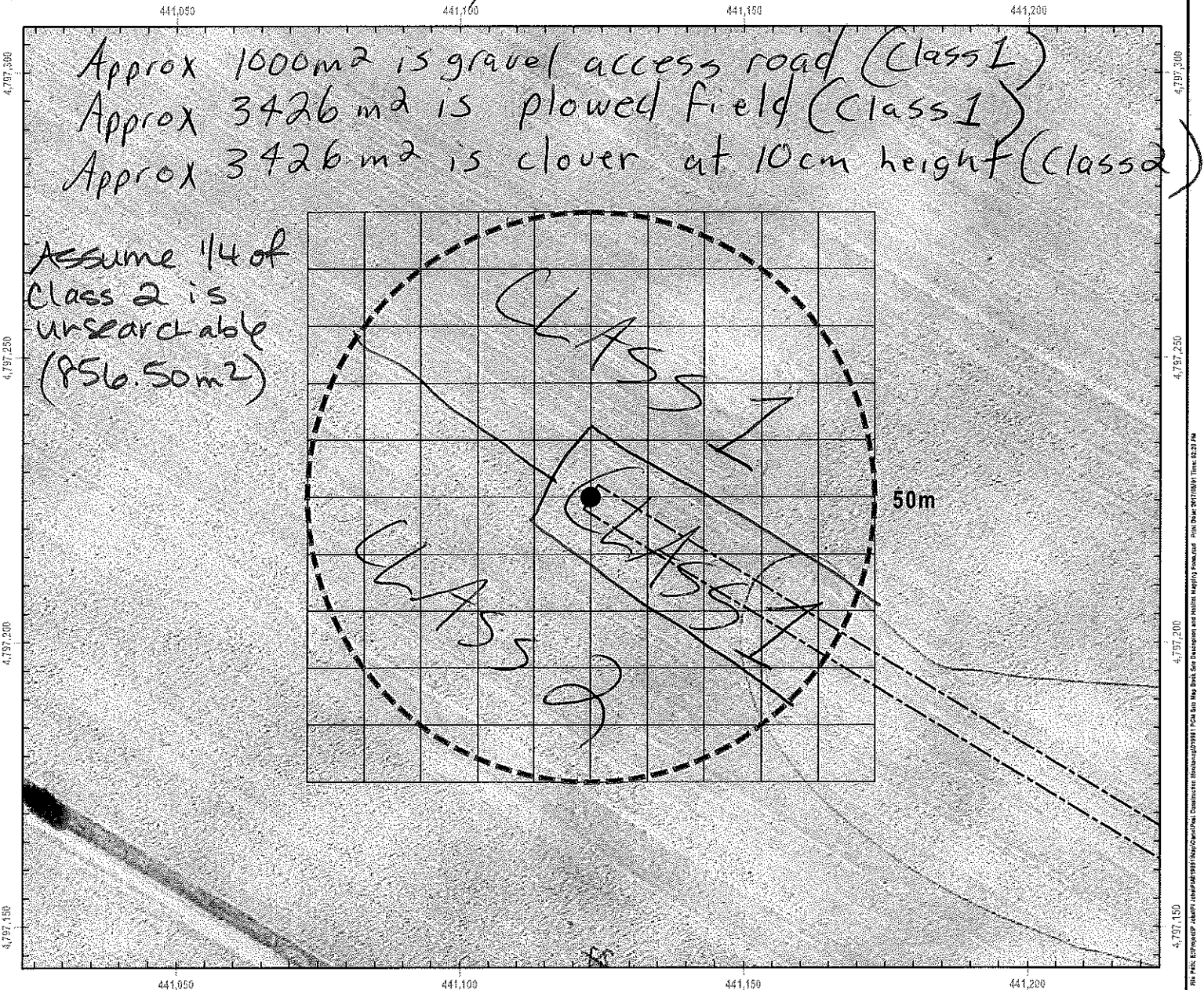
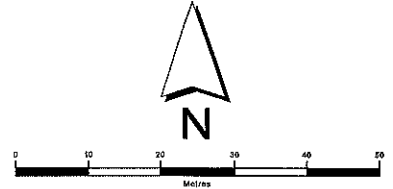
SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-44  
 Survey Date: Nov 24/17  
 Actual Searched Area (m<sup>2</sup>): 6997.47 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

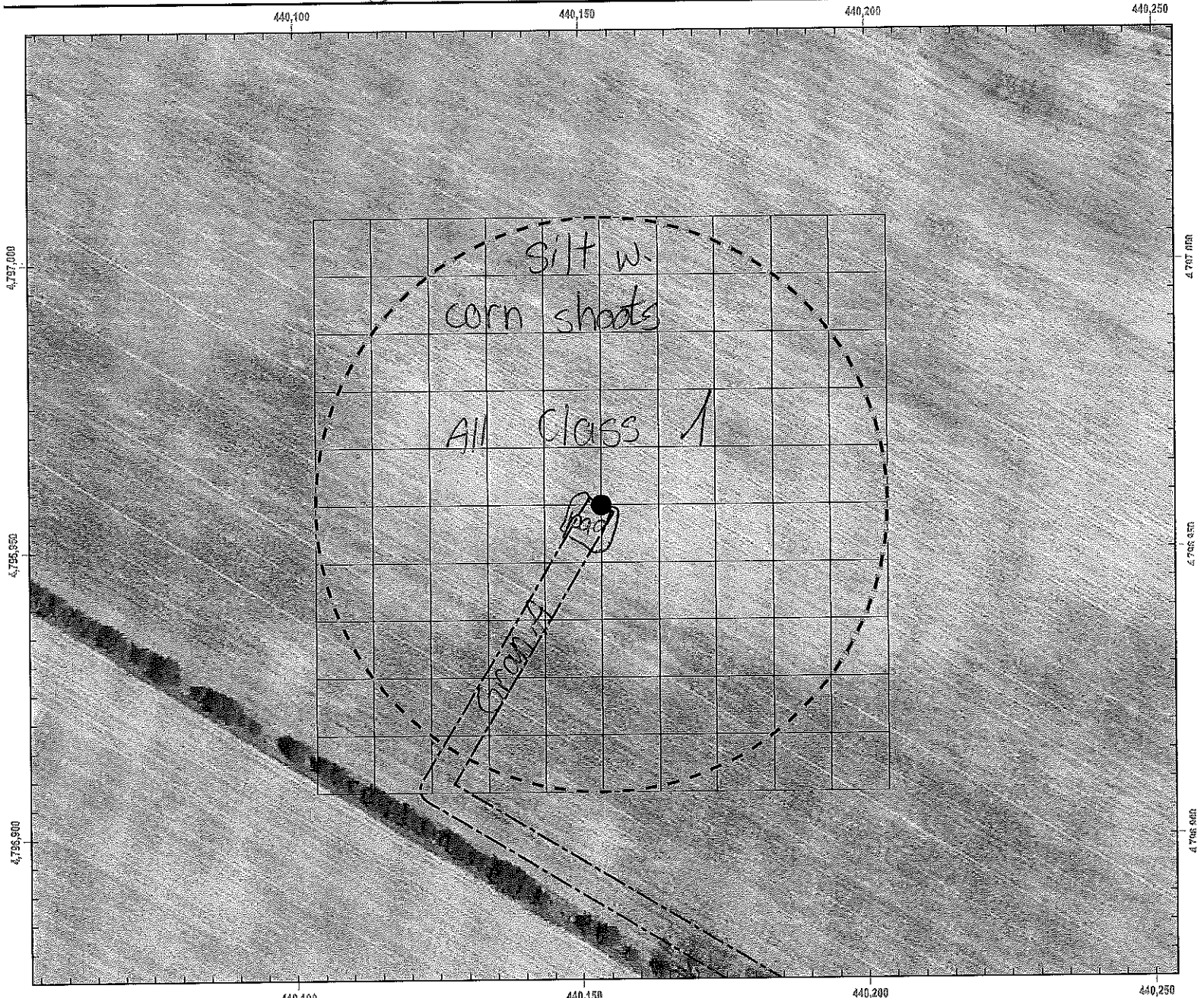
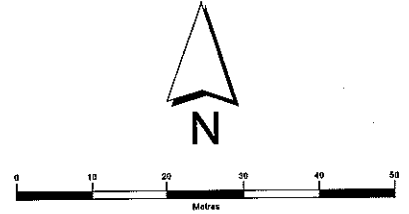


# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches) ✓

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-45  
 Survey Date: 31 May 2017  
 Actual Searched Area: 7853.97m<sup>2</sup>  
 Observers: Tara Sieg Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy) ✓
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS





# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

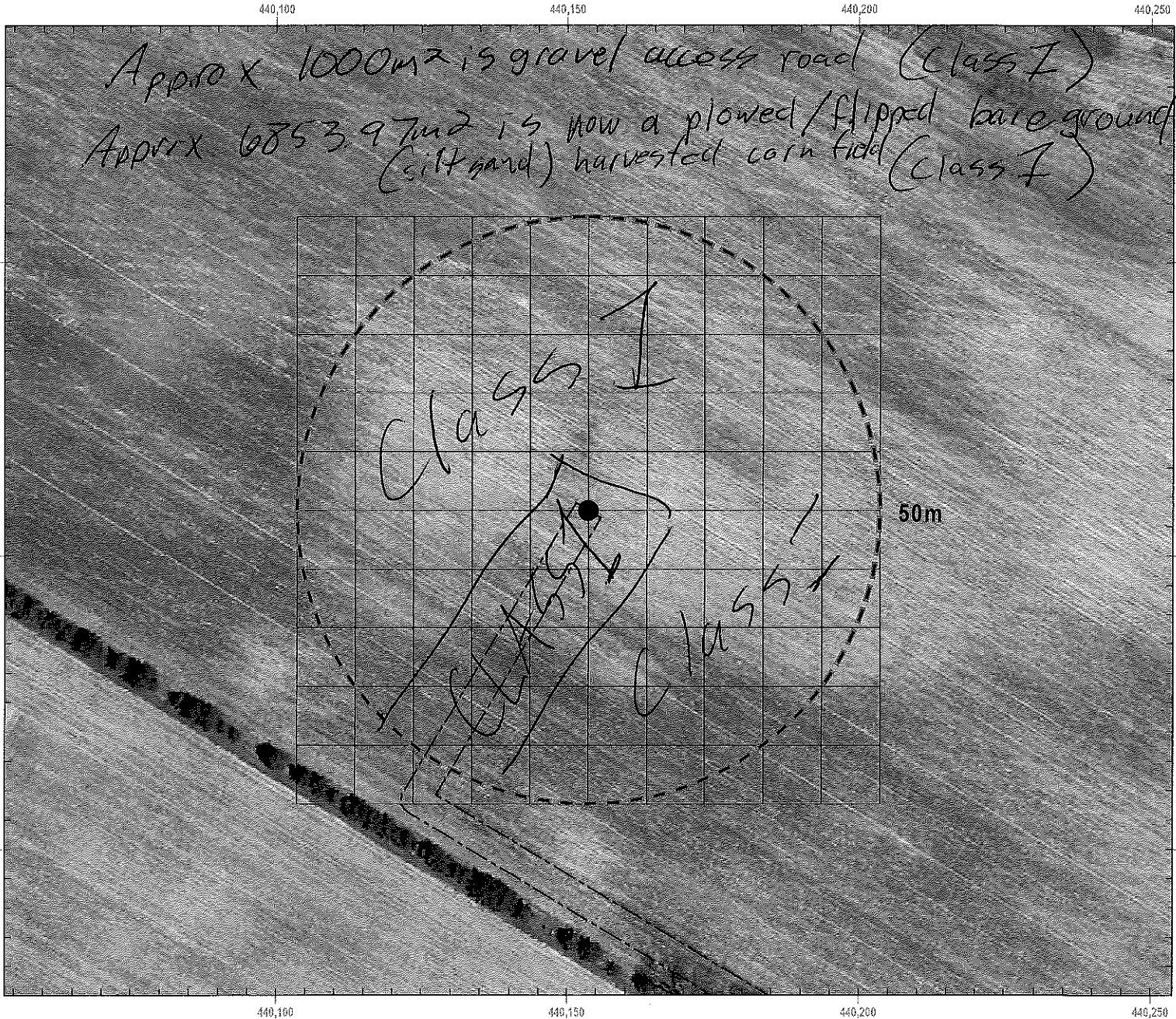
Site Number: T-45

Survey Date: Nov 27/17

Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

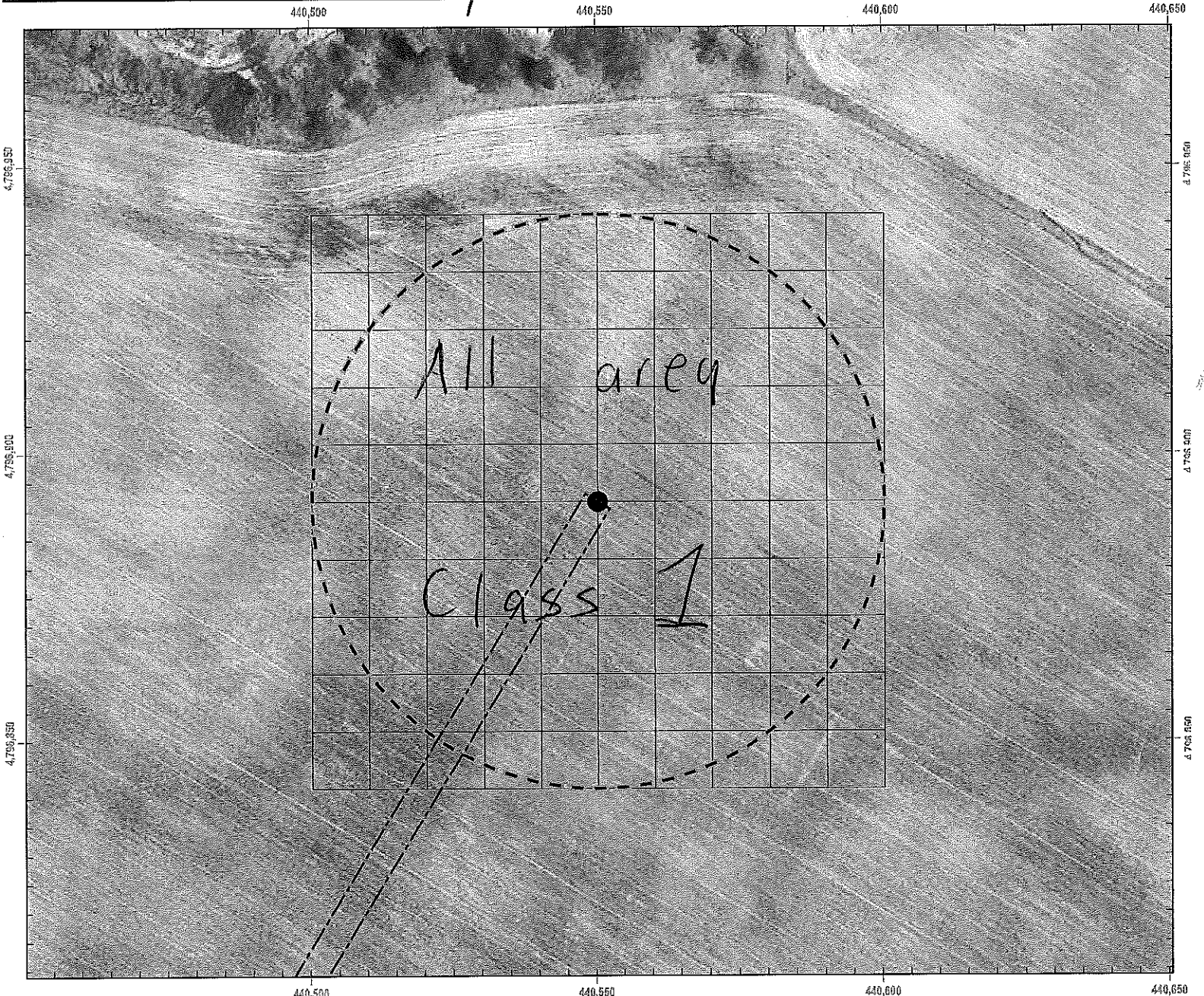
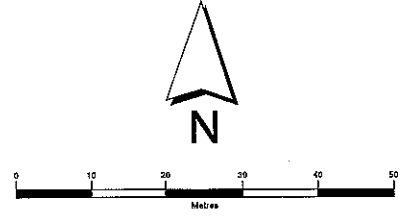
SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-46  
 Survey Date: May 31 / 17  
 Actual Searched Area: 17853.97m<sup>2</sup>  
 Observers: Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS

# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm

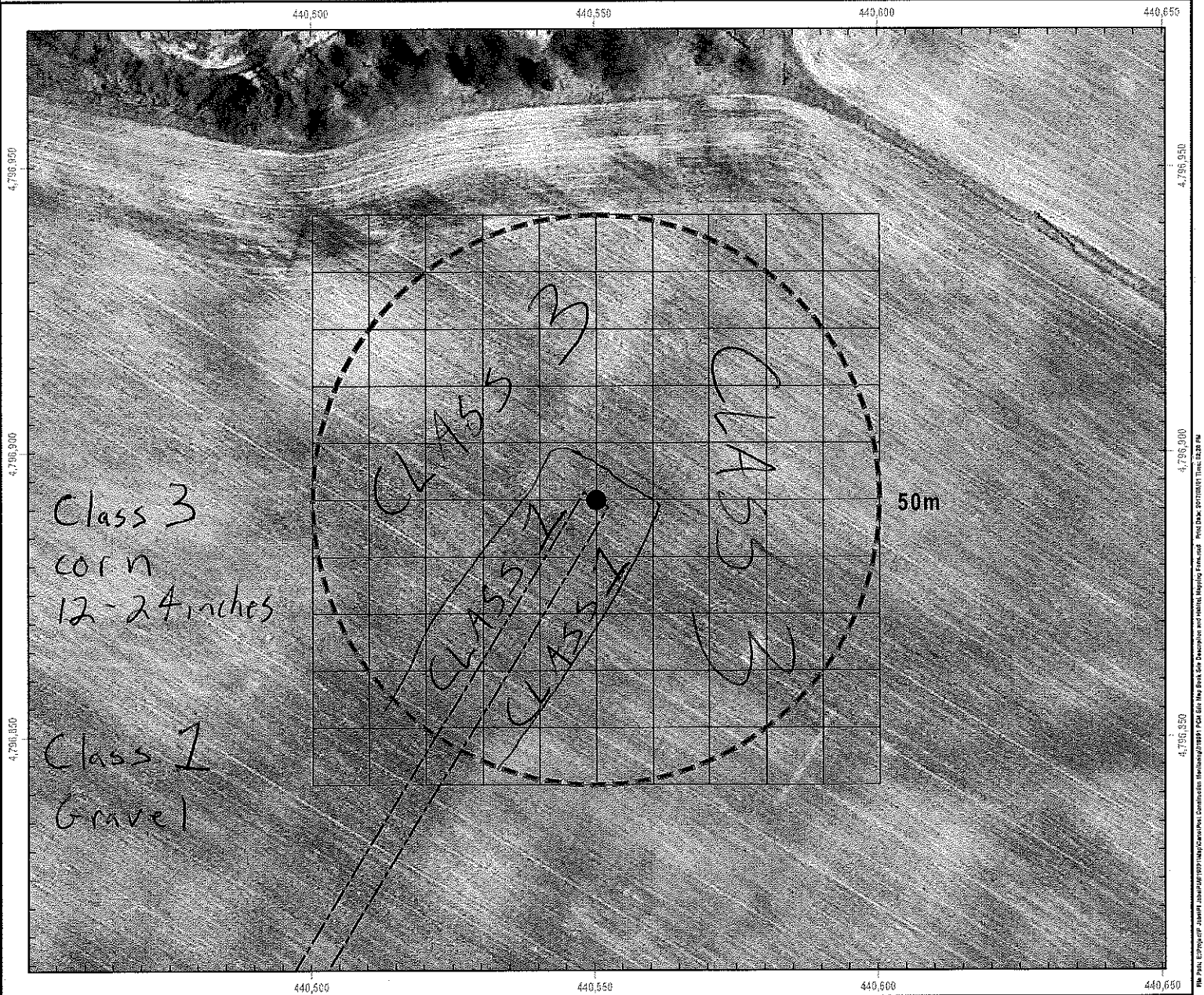
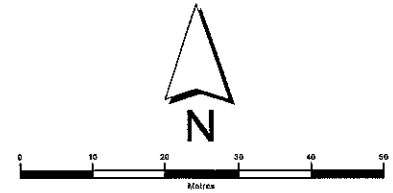
Site Number: T-46

Survey Date: June 28 17

Actual Searched Area (m<sup>2</sup>): 7853.97m<sup>2</sup>

(subtract from total search area - 7853.97m<sup>2</sup>)

Observers: Sara Henry, Tara Sieg



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



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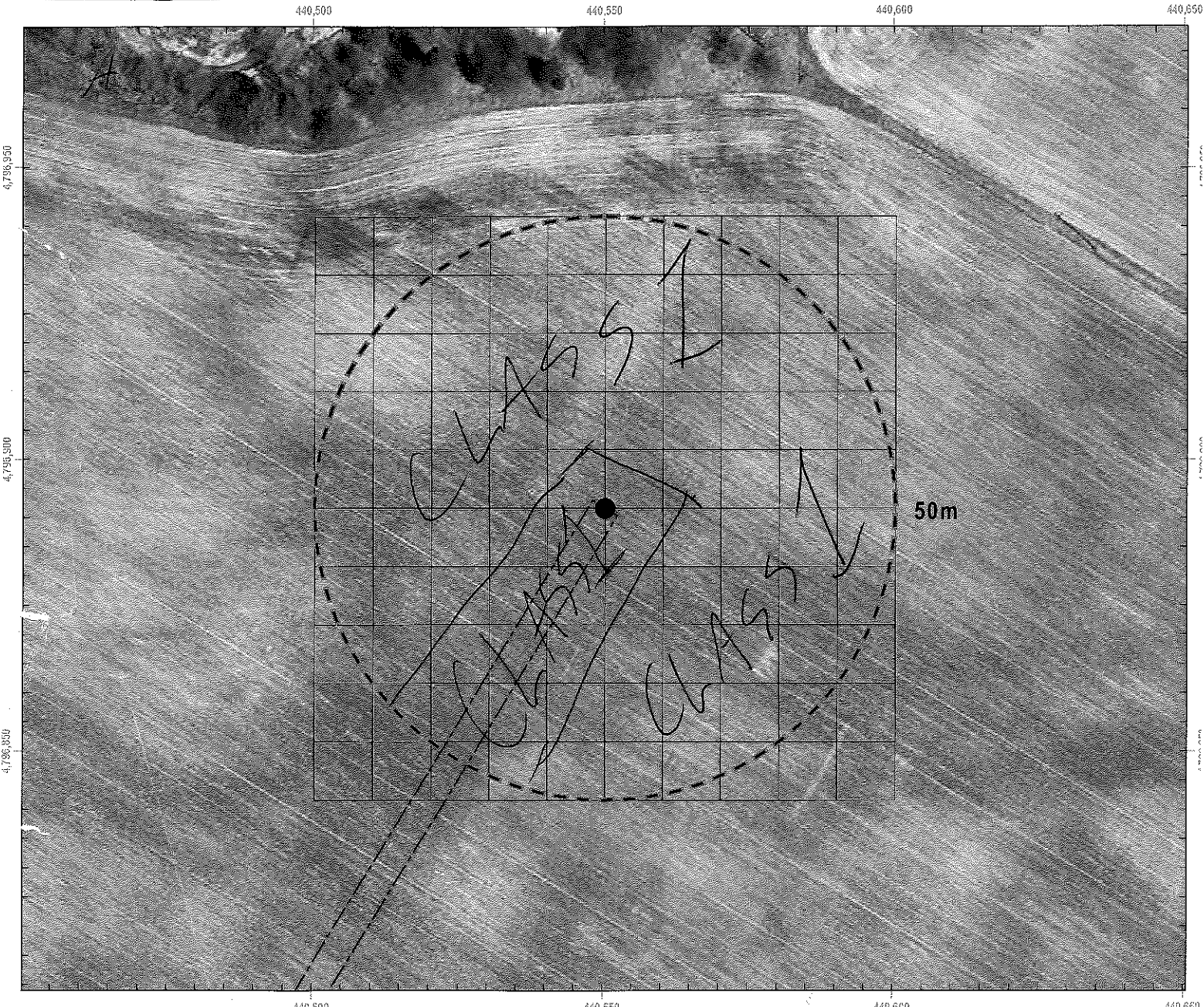
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)

## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: PIA019991.0005 Grand Bend Wind Farm  
 Site Number: T-46  
 Survey Date: Nov 24/17  
 Actual Searched Area (m<sup>2</sup>): 7853.97 m<sup>2</sup>  
(subtract from total search area - 7853.97m<sup>2</sup>)  
 Observers: Sara Henry

*Approx 1000m<sup>2</sup> is gravel access road (Class 1)*  
*Approx 6853.97m<sup>2</sup> is plowed/flipped field with minimal leftover corn harvest remnants (Class 1)*



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRIDS.



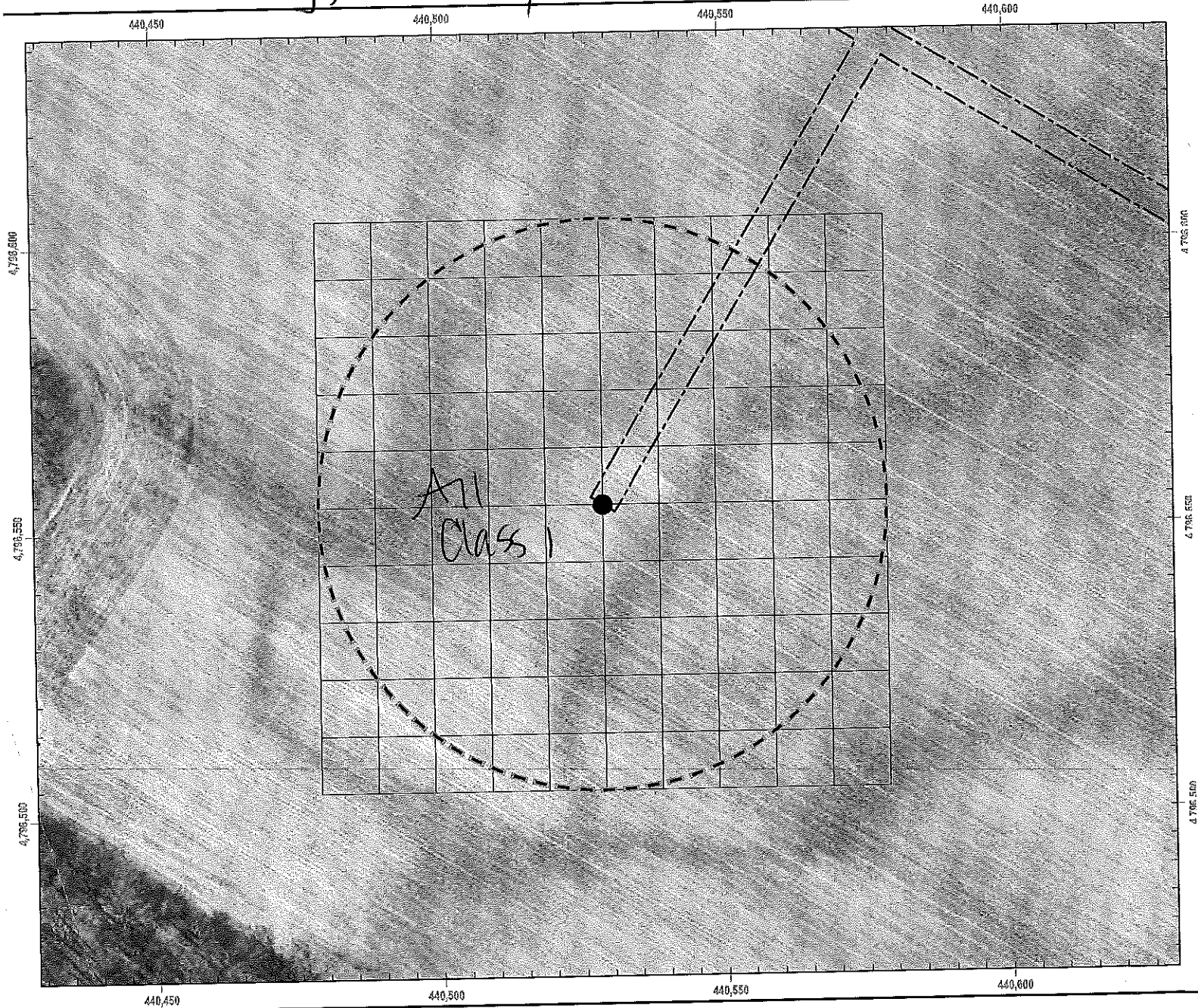
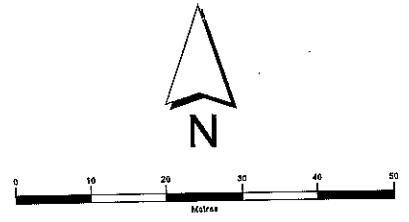
# WIND ENERGY BIRD AND BAT MONITORING (POST-CONSTRUCTION)



## Site Description and Habitat Mapping Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, and area searched. Include vegetation height and type (i.e. soy, corn). Include photographs that face North, South, East, and West that document current vegetation conditions of the search area.

Project Name: Grand Bend Wind Farm  
 Site Number: T-48  
 Survey Date: May 1 / 17  
 Actual Searched Area: 50 m radius (7853.97 m<sup>2</sup>)  
 Observers: Tara Sieg, Sara Henry



% Vegetation Cover	Vegetation Height	Visibility Class
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very Difficult)

SEARCH AREA IS DISPLAYED AS 10M BY 10M SQUARE GRID







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## Appendix D

### Post-Construction Monitoring Raw Data

**Table 1**  
**Grand Bend Wind Farm Year 1 Mortality Monitoring Header Data - 2017**

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
	2017	05	16	11:30	12:09	"Tara, Sarah"	yes	4	5	10	10	None	65	Heavy rain
T-01	2017	05	10	10:34	12:03	Tara	yes	365	5	8	11	None	99	None
T-01	2017	06	07	09:35	10:03	"Tara, Sarah"	yes	19	5	14	18	None	2	No
T-01	2017	07	05	09:15	10:12	"Tara, Sara"	no	28	5	22	10	None	0	No
T-01	2017	08	02	09:21	10:04	"Tara, Sara"	no	28	5	23	12	None	5	No
T-01	2017	09	06	09:33	11:11	Sara	no	33	5	16	10	None	10	Rain overnight
T-01	2017	10	04	10:01	11:03	Sara	no	28	5	22	19	None	100	No
T-01	2017	11	03	10:19	10:55	Sara	no	30	5	8	26	None	100	Wet and periods of rain throughout week prior to visit.
T-02	2017	05	02	09:30	10:30	"Tara, Sarah"	yes	365	5	15	20	Light Rain	100	Heavy rain
T-02	2017	05	04	09:35		"Tara, Sarah"	yes	3	5	9	15	None	100	Rain
T-02	2017	05	08	13:43	14:15	"Tara, Sarah"	yes	4	10	6	24	None	0	None
T-02	2017	05	11	09:19	10:14	"Tara, Sarah"	yes	3	5	8	22	None	100	Light rain
T-02	2017	05	15	12:57	13:39	"Tara, Sarah"	yes	4	5	9	12	None	0	None
T-02	2017	05	18	10:07	10:33	"Tara, Sarah"	yes	3	5	22	27	None	0	None
T-02	2017	05	22	10:09	10:53	Sara	no	4	5	13	24	None	100	Rainfall and thunderstorm day before
T-02	2017	05	25	09:15	09:47	"Tara, Sarah"	no	3	5	13	18	Light Rain	100	Persistent rain.
T-02	2017	05	29	09:24	09:54	"Tara, Sarah"	yes	4	5	14	14	None	50	No
T-02	2017	06	01	13:21	14:06	Sara	no	3	5	14	13	None	0	None
T-02	2017	06	05	09:24	10:00	"Tara, Sarah"	yes	4	5	13	18	None	90	No
T-02	2017	06	08	14:06	14:52	Tara	yes	3	5	20	11	None	5	No
T-02	2017	06	12	13:14	13:40	"Tara, Sarah"	yes	4	5	28	30	None	80	No
T-02	2017	06	15	09:10	09:34	"Tara, Sara"	yes	3	5	20	15	Drizzle	85	Lightning in area
T-02	2017	06	19	14:14	14:42	"Tara, Sara"	yes	4	5	22	10	None	50	No, but lightning in area 40-50km away,
T-02	2017	06	22	11:21	11:53	"Tara, Sara"	yes	3	5	16	16	Light Rain	75	No
T-02	2017	06	26	13:05	13:59	Tara	yes	4	5	16	22	None	30	No
T-02	2017	06	29	13:43	14:33	Tara	yes	3	5	21	25	None	40	Rain
T-02	2017	07	03	14:10	14:53	Sara	no	4	5	20	14	None	0	None
T-02	2017	07	06	10:33	10:58	"Tara, Sara"	yes	3	5	25	10	None	90	No
T-02	2017	07	10	10:27	11:04	Tara	yes	4	5	24	10	None	75	No
T-02	2017	07	13	14:15	15:03	Tara	no	3	5	25	16	None	60	Heavy rain
T-02	2017	07	17	14:33	15:05	Tara	yes	4	5	21	18	None	90	No
T-02	2017	07	20	10:22	10:55	Tara	yes	3	5	24	20	None	50	Rain
T-02	2017	07	24	15:00	15:40	Tara	yes	4	5	18	25	Drizzle	100	Rain
T-02	2017	07	27	10:23	11:11	Tara	yes	3	5	25	1	None	95	Rain
T-02	2017	07	31	13:07	13:52	Sara	yes	4	5	24	11	None	0	No
T-02	2017	08	03	10:10	11:00	Sara	yes	3	5	24	8	None	0	No
T-02	2017	08	07	10:40	11:31	Sara	yes	4	5	18	6	None	100	Rainfall evening before. Drizzle this morning.
T-02	2017	08	10	14:31	15:16	Sara	no	3	5	25	5	None	75	No
T-02	2017	08	14	14:47	15:33	Sara	no	4	5	24	11	None	5	No
T-02	2017	08	17	09:39	10:24	Sara	no	3	5	22	21	Drizzle	100	No
T-02	2017	08	21	13:53	14:35	Sara	no	4	5	28	10	None	0	No
T-02	2017	08	24	09:49	10:45	Sara	yes	3	5	17	14	Drizzle	100	No
T-02	2017	08	27	15:55	16:36	Sara	no	3	5	22	14	None	75	No
T-02	2017	08	31	14:29	15:10	Sara	yes	4	5	18	26	None	20	No
T-02	2017	09	04	14:44	15:23	Sara	no	4	5	23	27	None	60	No
T-02	2017	09	07	13:45	14:10	Sara	yes	3	5	17	26	None	90	Rain night before
T-02	2017	09	11	13:56	14:45	Sara	yes	4	5	21	8	None	0	No
T-02	2017	09	14	09:50	10:52	Sara	yes	3	5	18	10	None	2	No
T-02	2017	09	18	14:27	15:20	Sara	yes	4	5	19	14	None	100	Rain early am and before search
T-02	2017	09	21	10:56	11:38	Sara	no	3	5	24	14	None	0	No
T-02	2017	09	25	14:36	15:16	Sara	no	4	5	31	10	None	5	Hot temperatures for past 4 days average of 30 degrees
T-02	2017	09	28	14:26	15:12	Sara	yes	3	5	16	19	None	100	No
T-02	2017	10	02	14:22	15:03	Sara	yes	4	5	23	16	None	5	No
T-02	2017	10	05	14:43	15:24	Sara	yes	3	5	19	16	None	0	No
T-02	2017	10	09	13:12	13:45	Sara	no	4	5	19	11	None	5	Heavy and light rain overnight
T-02	2017	10	12	10:16	11:12	Sara	no	3	5	11	19	None	100	Heavy and light rain for most of day yesterday
T-02	2017	10	16	14:43	15:33	Sara	yes	4	5	10	16	None	0	Windy and rain throughout weekend that just passed.
T-02	2017	10	19	10:15	11:03	Sara	yes	3	5	15	24	None	0	No
T-02	2017	10	23	13:32	14:09	Sara	yes	4	5	19	26	None	100	No

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-02	2017	10	26	14:30	15:12	Sara	no	3	5	9	13	None	15	No
T-02	2017	10	30	13:18	14:16	Sara	no	4	5	5	27	Drizzle	100	Rain today before visit and possible rain during weekend because wet grounds today when arrived on site.
T-02	2017	11	01	13:17	13:47	Sara	no	2	5	6	13	None	100	Cold drizzle throughout yesterday
T-02	2017	11	06	14:02	14:35	Sara	no	5	5	6	23	None	90	Rain periods throughout week prior to visit.
T-02	2017	11	13	13:23	14:01	Sara	no	7	5	4	11	None	100	Rain yesterday evening, approx 5cm snow and squalls Friday prior to visit.
T-02	2017	11	20	14:22	15:00	Sara	no	7	5	6	26	None	30	Much colder temps, heavy rainfall Saturday prior to visit
T-02	2017	11	27	14:25	15:00	Sara	no	7	5	3	5	None	100	No
T-03	2017	05	10	12:18	13:15	Tara	yes	365	5	11	11	None	75	None
T-03	2017	06	07	10:17	10:45	"Tara, Sarah"	yes	19	5	13	18	None	2	No
T-03	2017	07	05	10:30		"Tara, Sara"	no	28	5	24	12	None	0	No
T-03	2017	08	02	10:15	10:50	"Tara, Sara"	no	28	5	24	10	None	5	No
T-03	2017	09	06	11:25	12:11	Sara	no	35	5	17	10	None	25	Rain overnight
T-03	2017	10	04	11:37	12:27	Sara	no	28	5	22	23	None	100	No
T-03	2017	11	03	11:04	11:50	Sara	no	30	5	8	27	None	100	Periods of rain throughout week prior to visit
T-05	2017	05	10	14:10	14:52	Tara	yes	365	5	13	6	None	50	None
T-05	2017	06	07	11:00	11:26	"Tara, Sarah"	yes	19	5	15	18	None	0	No
T-05	2017	07	05	12:01	12:41	"Tara, Sara"	no	28	5	25	11	None	0	No
T-05	2017	08	02	11:06	11:37	"Tara, Sara"	no	28	5	25	7	None	2	No
T-05	2017	09	06	12:57	13:59	Sara	no	35	5	17	11	None	5	Rain night before
T-05	2017	10	04	12:42	13:32	Sara	no	28	5	22	23	None	100	No
T-05	2017	11	03	12:03	12:46	Sara	no	30	5	8	26	None	100	Rain periods throughout week prior to visit
T-06	2017	05	09	14:45	16:10	Tara	yes	365	5	8	7	None	60	None
T-06	2017	06	07	11:30	12:00	"Tara, Sarah"	yes	19	5	15	18	None	0	No
T-06	2017	07	05	11:22	11:55	"Tara, Sara"	no	28	5	25	5	None	0	No
T-06	2017	08	02	11:50	12:30	"Tara, Sara"	no	28	5	25	10	None	2	No
T-06	2017	09	06	14:19	15:03	Sara	no	35	5	17	11	None	5	Rain overnight
T-06	2017	10	04	13:39	14:33	Sara	no	28	5	22	21	None	100	No
T-06	2017	11	03	12:50	13:35	Sara	no	30	5	8	26	None	100	Periods of rain throughout week prior to visit.
T-07	2017	05	02	14:40	15:15	"Tara, Sarah"	yes	365	5	6	30	Drizzle	100	Rain
T-07	2017	05	05	15:45	16:39	"Tara, Sarah"	no	3	5	8	24	Light Rain	100	Constant rainfall
T-07	2017	05	09	13:59	14:38	"Tara, Sarah"	yes	4	5	8	14	None	75	None
T-07	2017	05	12	15:22	16:39	"Tara, Sarah"	yes	3	5	11	20	None	40	None
T-07	2017	05	16	17:30	18:27	"Tara, Sarah"	yes	4	5	18	25	None	30	Rain
T-07	2017	05	19	15:09	15:52	Tara	yes	3	5	10	30	None	55	None
T-07	2017	05	23	12:54	13:35	"Tara, Sarah"	yes	4	5	17	6	None	60	None
T-07	2017	05	26	13:27	14:10	"Tara, Sarah"	yes	3	5	9	18	Drizzle	100	Persistent drizzle.
T-07	2017	05	30	15:34	16:10	Tara	yes	4	5	19	18	None	80	Lightning
T-07	2017	06	02	15:25	16:06	Tara	yes	3	5	15	16	None	5	No
T-07	2017	06	06	13:13	13:56	"Tara, Sarah"	yes	4	5	12	29	None	85	No
T-07	2017	06	09	09:43	10:18	"Tara, Sarah"	yes	3	5	18	11	None	30	No
T-07	2017	06	13	13:02	13:46	"Tara, Sara"	yes	4	5	25	16	None	95	No
T-07	2017	06	16	14:01	14:51	Sara	no	3	5	22	11	None	0	Scattered drizzle day before
T-07	2017	06	20	14:02	15:15	"Tara, Sara"	yes	4	5	20	20	None	45	No
T-07	2017	06	23	10:58	11:40	"Tara, Sara"	no	3	5	19	13	Light Rain	100	Heavy rain during night before
T-07	2017	06	27	12:56	13:55	Tara	yes	4	5	18	20	None	40	No
T-07	2017	06	30	13:45	14:40	Tara	yes	3	5	23	25	None	25	Heavy rain
T-07	2017	07	04	10:18	10:46	"Tara, Sara"	yes	4	5	23	11	None	0	No
T-07	2017	07	07	13:51	14:28	Sara	no	3	5	21	10	None	0	Rain overnight
T-07	2017	07	11	14:35	15:03	"Tara, Sara"	yes	4	5	25	7	None	25	Rain
T-07	2017	07	14	09:54	10:17	"Tara, Sara"	yes	3	5	20	10	Fog	100	Rain
T-07	2017	07	18	14:36	15:06	"Tara, Sara"	yes	4	5	24	15	None	5	No
T-07	2017	07	21	14:14	15:00	Tara	yes	3	5	27	10	None	2	No
T-07	2017	07	25	14:34	15:23	Sara	no	4	5	18	6	None	0	None
T-07	2017	07	28	10:05	10:44	"Tara, Sara"	yes	3	5	19	18	None	55	No
T-07	2017	08	01	09:10	10:07	Sara	yes	4	5	24	6	None	0	No
T-07	2017	08	04	14:19	15:05	Sara	no	3	5	23	20	None	80	Lightning thunder heavy rain day before
T-07	2017	08	08	17:26	18:08	Sara	yes	4	5	24	11	None	0	Light rain and drizzle in am and early pm day before
T-07	2017	08	11	09:21	10:09	Sara	yes	3	5	21	13	None	100	No
T-07	2017	08	15	15:56		Sara	yes	4	5	23	18	None	0	Rain overnight
T-07	2017	08	18	15:50	16:43	Sara	yes	3	5	22	19	None	100	Rain day before in am and early pm heavy at times

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-07	2017	08	22	15:50	16:42	Sara	yes	4	5	23	24	None	50	Rain overnight and scattered heavy/light rain throughout today
T-07	2017	08	25	09:38	10:31	Sara	yes	3	5	17	5	None	30	No
T-07	2017	08	29	09:24	10:08	Sara	no	4	5	17	11	None	100	Rain overnight
T-07	2017	09	01	15:17	16:09	Sara	yes	3	5	17	13	None	35	No
T-07	2017	09	05	12:46	13:44	Sara	yes	4	5	17	16	None	75	Rain overnight and again early am
T-07	2017	09	08	10:33	11:16	Sara	yes	3	5	14	10	Drizzle	100	Heavy and light rain night before
T-07	2017	09	12	15:14	15:59	Sara	yes	4	5	23	8	None	0	No
T-07	2017	09	16	12:38	13:20	Sara	no	4	5	26	10	None	0	No
T-07	2017	09	19	12:58	13:45	Sara	yes	3	5	22	11	None	100	Rain overnight and periods of rain through out this morning.
T-07	2017	09	22	09:38	10:25	Sara	yes	3	5	22	8	None	0	Hot temperatures yesterday 29 Celsius
T-07	2017	09	26	15:01	15:41	Sara	no	4	5	28	11	None	0	Hot temperatures for past 5 days with averages of 30 degrees
T-07	2017	09	29	10:44	11:24	Sara	yes	3	5	16	26	None	90	Heavy/light rain approx 6-8am today
T-07	2017	10	03	12:50	13:30	Sara	yes	4	5	23	19	None	0	No
T-07	2017	10	06	10:21	11:12	Sara	yes	3	5	17	5	None	50	No
T-07	2017	10	10	15:31	16:10	Sara	no	4	5	19	19	None	30	No
T-07	2017	10	13	13:08	13:56	Sara	yes	3	5	17	11	None	100	No
T-07	2017	10	17	16:22	17:03	Sara	yes	4	5	18	27	None	30	No
T-07	2017	10	20	09:53	10:35	Sara	yes	3	5	12	6	None	0	No
T-07	2017	10	24	15:45	16:24	Sara	no	4	5	13	31	None	40	Rain earlier today. Increase of wind started last night
T-07	2017	10	27	10:27	11:06	Sara	no	3	5	12	24	None	80	No
T-07	2017	10	31	10:24	11:18	Sara	no	4	5	4	31	None	100	Heavy/ light rain yesterday with small amounts of hail couple times also.
T-07	2017	11	02	13:48	14:20	Sara	no	2	5	12	13	Light Rain	100	Heavy/light rain through out week prior to and during search
T-07	2017	11	07	14:29	15:08	Sara	no	5	5	8	14	None	20	No
T-07	2017	11	14	14:45	15:22	Sara	no	7	5	8	8	None	0	Colder temperatures
T-07	2017	11	21	15:47	16:19	Sara	no	7	5	8	21	Light Rain	100	No
T-07	2017	11	28	13:39	14:11	Sara	no	7	5	13	29	None	5	No
T-08	2017	05	10	11:25	12:53	Sara	no	365	5	12	13	None	0	None
T-08	2017	06	07	13:04		"Tara, Sarah"	yes	19	5	15	20	None	5	No
T-08	2017	07	05	13:19	13:50	"Tara, Sara"	no	27	5	25	15	None	0	No
T-08	2017	08	02	15:24	16:16	Sara	no	28	5	29	13	None	0	No
T-08	2017	09	06	16:14	17:00	Sara	no	35	5	17	14	None	0	Rain night before
T-08	2017	10	04	15:49	16:44	Sara	no	28	5	21	19	None	100	No
T-08	2017	11	03	14:50	15:35	Sara	no	30	5	7	26	None	90	Rain periods throughout week prior to visit.
T-09	2017	05	10	13:07	14:11	Sara	no	365	5	15	10	None	0	None
T-09	2017	06	07	13:54	14:26	"Tara, Sarah"	yes	19	5	15	20	None	5	No
T-09	2017	07	05	14:00		"Tara, Sara"	no	28	5	24	10	None	0	No
T-09	2017	08	02	13:21	14:00	"Tara, Sara"	no	28	5	26	10	None	2	No
T-09	2017	09	06	15:11	16:09	Sara	no	35	5	17	14	None	5	Rain night before
T-09	2017	10	04	14:48	15:44	Sara	no	28	5	22	21	None	100	No
T-09	2017	11	03	14:04	14:42	Sara	no	30	5	7	26	None	100	Periods of rain throughout week prior to visit
T-11	2017	05	10	14:29	15:35	Sara	no	365	5	16	8	None	20	None
T-11	2017	06	07	14:41	15:17	"Tara, Sarah"	yes	19	5	18	20	None	10	No
T-11	2017	07	05	15:04	15:42	"Tara, Sara"	no	28	5	24	15	None	2	No
T-11	2017	08	02	14:26	15:31	Tara	no	28	5	26	10	None	2	No
T-11	2017	09	08	13:17	13:58	Sara	no	37	5	16	14	None	75	Rain night before
T-11	2017	10	10	16:23	17:00	Sara	no	32	5	19	19	None	50	No
T-11	2017	11	08	10:04	10:45	Sara	no	28	5	4	14	None	5	No
T-12	2017	05	10	16:16	17:27	Sara	no	365	5	14	8	None	25	None
T-12	2017	06	14	09:22	10:15	Sara	no	26	5	23	23	None	0	None
T-12	2017	07	12	09:30	10:25	Sara	no	28	5	24	10	Fog	100	Rain 2 days ago
T-12	2017	08	09	11:36	12:12	"Tara, Sara"	no	28	5	25	10	None	0	No
T-12	2017	09	13	13:55	14:55	Sara	no	35	5	24	8	None	0	No
T-12	2017	10	16	16:49	17:31	Sara	no	33	5	11	11	None	0	Windy and rain throughout weekend that just passed
T-12	2017	11	08	10:50	11:31	Sara	no	23	5	4	14	None	0	No
T-13	2017	05	12	09:19	10:40	Sara	no	365	5	14	14	None	0	None
T-13	2017	06	14	09:18	10:10	Tara	yes	26	5	22	20	None	10	No
T-13	2017	07	12	09:29	10:22	Tara	no	28	5	27	5	Fog	99	No
T-13	2017	08	09	12:20	12:50	"Tara, Sara"	no	28	5	26	11	None	2	No
T-13	2017	09	13	15:38	16:30	Sara	no	35	5	24	8	None	20	No
T-13	2017	10	17	15:26	16:08	Sara	no	34	5	18	27	None	20	No
T-13	2017	11	08	11:52	12:27	Sara	no	22	5	6	18	None	0	No

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-14	2017	05	10	15:09	16:30	Tara	yes	365	5	13	4	None	50	None
T-14	2017	06	14	10:19	10:50	"Tara, Sara"	yes	26	5	25	20	None	5	No
T-14	2017	07	12	10:31	11:11	"Tara, Sara"	no	28	5	25	10	None	95	Fog
T-14	2017	08	16	10:37	11:37	"Tara, Sara"	no	35	5	25	7	None	2	No
T-14	2017	09	20	12:14	13:10	Sara	no	35	5	23	11	None	10	Rain periods all day yesterday into evening
T-14	2017	10	17	17:16	17:58	Sara	no	27	5	19	24	None	30	No
T-14	2017	11	08	13:01	13:34	Sara	no	22	5	6	16	None	0	No
T-16	2017	05	02	13:42	14:10	"Tara, Sarah"	yes	365	5	6	30	Light Rain	100	Rain
T-16	2017	05	05	14:51	15:25	"Tara, Sarah"	no	3	5	7	25	Light Rain	100	Persistent rain
T-16	2017	05	09	09:11	09:37	"Tara, Sarah"	yes	4	5	6	3	None	2	None
T-16	2017	05	12	10:43	11:32	"Tara, Sarah"	yes	3	5	11	6	None	0	None
T-16	2017	05	16	16:29	17:15	"Tara, Sarah"	yes	4	5	18	25	None	25	Rain
T-16	2017	05	19	10:20	11:07	Tara	yes	3	5	7	25	Drizzle	95	None
T-16	2017	05	23	12:18	12:45	"Tara, Sarah"	yes	4	5	15	11	None	80	None
T-16	2017	05	26	09:16	10:05	"Tara, Sarah"	yes	3	5	9	14	Drizzle	100	All day rain day before
T-16	2017	05	30	12:13	14:50	"Tara, Sarah"	yes	4	5	17	15	None	50	No but Lightning during search so put on stand-down.
T-16	2017	06	02	09:19	10:03	"Tara, Sarah"	yes	3	5	13	12	None	10	No
T-16	2017	06	06	10:37	11:00	"Tara, Sarah"	yes	4	5	12	25	None	95	No
T-16	2017	06	09	10:30	11:02	"Tara, Sarah"	yes	3	5	18	8	None	30	No
T-16	2017	06	13	10:41		"Tara, Sara"	yes	4	5	24	16	None	80	No
T-16	2017	06	13	11:40	12:22	Tara	yes	4	5	24	18	None	90	No
T-16	2017	06	16	10:18	10:53	"Tara, Sara"	yes	3	5	23	12	None	50	No
T-16	2017	06	20	11:11	11:47	"Tara, Sara"	yes	4	5	17	22	None	80	No
T-16	2017	06	23	11:50	12:42	"Tara, Sara"	no	3	5	19	14	Light Rain	100	Heavy rain during night before
T-16	2017	06	27	13:06	13:48	Sara	no	4	5	17	23	None	10	Rain during night before
T-16	2017	06	30	09:26	09:56	"Tara, Sara"	yes	3	5	23	20	None	50	Heavy rain
T-16	2017	07	04	10:58	11:21	"Tara, Sara"	yes	4	5	23	11	None	0	No
T-16	2017	07	07	09:18		"Tara, Sara"	yes	3	5	20	10	None	90	Rain
T-16	2017	07	11	11:45	12:19	"Tara, Sara"	yes	4	5	25	3	None	25	Rain
T-16	2017	07	14	10:40	11:09	"Tara, Sara"	yes	3	5	21	18	None	80	Rain
T-16	2017	07	18	13:40	14:02	"Tara, Sara"	yes	4	5	24	15	None	5	No
T-16	2017	07	21	10:37	11:05	"Tara, Sara"	yes	3	5	26	10	None	5	No
T-16	2017	07	25	11:43	12:37	"Tara, Sara"	yes	4	5	21	11	None	5	No
T-16	2017	07	28	11:16	11:41	"Tara, Sara"	yes	3	5	19	18	None	65	No
T-16	2017	08	01	10:35	11:23	Sara	yes	4	5	25	8	None	0	No
T-16	2017	08	04	09:00	10:00	Sara	no	3	5	21	18	Light Rain	100	Lightning thunder heavy rain day before
T-16	2017	08	08	12:48	13:37	Sara	yes	4	5	20	13	None	0	Light rain and drizzle am and early pm day before
T-16	2017	08	11	10:32	11:24	Sara	yes	3	5	21	13	Light Rain	100	Light rain early am before on site
T-16	2017	08	15	12:08	13:09	Sara	yes	4	5	19	8	None	30	Rain overnight
T-16	2017	08	18	09:45	10:45	Sara	yes	3	5	22	24	None	85	Rain,heavy at times day before
T-16	2017	08	22	12:24	13:17	Sara	yes	4	5	22	24	Light Rain	100	Rain overnight
T-16	2017	08	25	10:43	11:27	Sara	yes	3	5	19	8	None	10	No
T-16	2017	08	29	10:17	10:55	Sara	no	4	5	18	14	None	80	Rain overnight
T-16	2017	09	01	14:21	15:03	Sara	yes	3	5	17	8	None	15	No
T-16	2017	09	05	11:46	12:27	Sara	yes	4	5	16	13	None	50	Rain overnight and early am
T-16	2017	09	08	09:43	10:24	Sara	yes	3	5	13	11	None	90	Heavy and light rain off and on overnight.
T-16	2017	09	12	14:15	14:59	Sara	yes	4	5	21	8	None	0	No
T-16	2017	09	16	11:39	12:20	Sara	no	4	5	24	10	None	0	No
T-16	2017	09	19	12:07	12:48	Sara	yes	3	5	21	10	None	100	Rain overnight and rain periods through out this morning
T-16	2017	09	22	10:50	11:45	Sara	yes	3	5	26	10	None	0	Hot temperatures yesterday. Average 29-30 degrees
T-16	2017	09	26	14:14	14:52	Sara	no	4	5	28	8	None	0	Hot temperatures for past 5 days average of 30 degrees
T-16	2017	09	29	12:11	12:51	Sara	yes	3	5	16	26	Drizzle	95	Heavy/light rain early am, lightning alert/stand down just before search.
T-16	2017	10	03	11:49	12:34	Sara	yes	4	5	23	19	None	0	No
T-16	2017	10	06	11:29	12:12	Sara	yes	3	5	18	3	None	75	No
T-16	2017	10	10	12:57	13:38	Sara	no	4	5	18	19	None	5	No
T-16	2017	10	13	11:58	12:44	Sara	yes	3	5	16	10	None	100	No
T-16	2017	10	17	14:33	15:12	Sara	yes	4	5	18	27	None	0	No
T-16	2017	10	20	10:44	11:30	Sara	yes	3	5	14	10	None	0	No
T-16	2017	10	24	14:55	15:37	Sara	no	4	5	12	34	None	40	Rain yesterday evening and earlier today. Wind has increased since last night
T-16	2017	10	27	11:53	12:31	Sara	no	3	5	14	24	None	60	No
T-16	2017	10	31	11:46	12:22	Sara	no	4	5	5	32	None	100	Heavy/light rain with small amount hail yesterday



Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-16	2017	11	02	12:43	13:15	Sara	no	2	5	12	11	Drizzle	100	Heavy/light rain scattered throughout week prior to and during search
T-16	2017	11	07	13:42	14:20	Sara	no	5	5	7	16	None	40	No
T-16	2017	11	13	15:09	15:45	Sara	no	6	5	5	13	None	100	Rain yesterday evening, approx 5 cm snow and squalls Friday prior to visit.
T-16	2017	11	21	14:49	15:25	Sara	no	8	5	8	24	None	100	No
T-16	2017	11	28	14:23	14:57	Sara	no	7	5	14	31	None	5	No
T-17	2017	05	02	11:39	12:30	"Tara, Sarah"	yes	365	5	8	30	Light Rain	99	Heavy rain and hail
T-17	2017	05	05	13:00	13:46	Sara	no	3	5	8	24	Heavy Rain	100	Significant rainfall day and night before
T-17	2017	05	09	09:54	10:33	Sara	no	4	5	8	3	None	0	None
T-17	2017	05	12	11:49	12:36	Sara	no	4	5	14	14	None	25	None
T-17	2017	05	16	15:00	16:15	Sara	no	4	5	23	27	None	0	Rainfall during morning hours
T-17	2017	05	19	12:11	12:46	Tara	yes	3	5	8	25	None	95	None
T-17	2017	05	23	10:44	11:35	Sara	no	4	5	15	13	None	100	Rainfall and thunderstorm 2 days ago
T-17	2017	05	26	10:23	11:17	Sara	no	3	5	9	14	Drizzle	100	All day rain day before
T-17	2017	05	30	15:04	15:41	Sara	no	4	5	8	21	None	0	None
T-17	2017	06	02	10:17	10:53	Sara	no	3	5	14	13	None	0	None
T-17	2017	06	06	11:40	12:24	Sara	no	4	5	14	23	None	100	None
T-17	2017	06	09	11:17	12:05	Sara	no	3	5	18	6	None	30	No
T-17	2017	06	13	11:25	12:19	Sara	no	4	5	23	16	None	70	None
T-17	2017	06	16	11:11	12:03	Sara	no	3	5	22	11	None	75	Scattered drizzle day before
T-17	2017	06	20	12:54	13:48	Sara	no	4	5	18	21	None	0	Rainfall night before
T-17	2017	06	23	13:52	14:40	Sara	no	3	5	22	13	None	5	Heavy rain during night before
T-17	2017	06	27	11:14	11:59	Sara	no	4	5	14	26	None	50	Rain during night before
T-17	2017	06	30	10:15	11:15	Sara	no	3	5	22	19	None	30	Rain through out night before
T-17	2017	07	04	11:36	12:26	Sara	no	4	5	24	8	None	0	None
T-17	2017	07	07	10:27	11:11	Sara	no	3	5	21	10	None	10	Rain overnight
T-17	2017	07	11	13:00	13:41	Sara	no	4	5	26	8	None	0	Rain yesterday
T-17	2017	07	14	11:26	00:11	Sara	no	3	5	20	19	None	30	Rain overnight
T-17	2017	07	18	11:55	00:40	Sara	no	4	5	24	10	None	0	None
T-17	2017	07	21	11:22	12:00	Sara	no	3	5	24	13	None	0	None
T-17	2017	07	25	13:39	14:20	Sara	no	4	5	20	6	None	0	None
T-17	2017	07	28	13:13	14:00	Sara	no	3	5	23	21	None	70	No
T-17	2017	08	01	15:37	16:21	Sara	yes	4	5	26	11	None	0	No
T-17	2017	08	04	10:15	11:00	Sara	no	3	5	21	18	Drizzle	100	Lightning thunder heavy rain day before
T-17	2017	08	08	15:10	15:57	Sara	yes	4	5	22	11	None	0	Light rain and drizzle am and early pm day before
T-17	2017	08	11	12:03	13:35	Sara	yes	3	5	21	18	None	60	Light rain early am
T-17	2017	08	15	13:30		Sara	yes	4	5	19	8	None	15	Rain overnight
T-17	2017	08	18	11:00	11:48	Sara	yes	3	5	22	24	None	95	Rain in am/ early pm day before and heavy at times
T-17	2017	08	22	13:51	14:43	Sara	yes	4	5	22	27	None	80	Rain overnight and light and heavy rain today before visit
T-17	2017	08	25	11:55	13:07	Sara	yes	3	5	20	10	None	15	No
T-17	2017	08	29	11:08	11:42	Sara	no	4	5	18	14	None	80	Rain overnight
T-17	2017	09	01	13:02	13:46	Sara	yes	3	5	16	11	None	40	No
T-17	2017	09	05	09:47	10:27	Sara	yes	4	5	16	19	Light Rain	100	Rain overnight
T-17	2017	09	08	11:27	12:09	Sara	yes	3	5	14	13	None	30	Heavy and light rain overnight. Drizzle this am
T-17	2017	09	12	12:04	12:45	Sara	yes	4	5	21	5	None	0	No
T-17	2017	09	16	09:53	10:33	Sara	no	4	5	18	6	None	0	No
T-17	2017	09	19	10:03	10:41	Sara	no	3	5	20	10	Light Rain	100	Rain overnight and light periods the morning
T-17	2017	09	22	12:01	12:56	Sara	yes	3	5	28	10	None	0	Hot temperatures yesterday average 29-30 degrees
T-17	2017	09	26	12:20	13:02	Sara	no	4	5	28	8	None	0	Hot temperatures for past 5 days with average of 30 degrees
T-17	2017	09	29	13:02	14:10	Sara	yes	3	5	16	30	None	75	Heavy/ light rain approx 6-8 am today.
T-17	2017	10	03	09:43	10:29	Sara	yes	4	5	14	11	None	0	No
T-17	2017	10	06	12:29	13:14	Sara	yes	3	5	18	3	None	100	No
T-17	2017	10	10	13:50	14:25	Sara	no	4	5	18	19	None	5	No
T-17	2017	10	13	09:49	10:35	Sara	yes	3	5	16	10	None	100	No
T-17	2017	10	17	12:14	12:54	Sara	yes	4	5	12	24	None	0	No
T-17	2017	10	20	11:45	12:35	Sara	yes	3	5	14	10	None	0	No
T-17	2017	10	24	12:01	12:41	Sara	no	4	5	11	29	None	100	Increase of wind overnight, rain yesterday evening, drizzle today starting late am
T-17	2017	10	27	13:54	14:45	Sara	no	3	5	16	23	None	90	No
T-17	2017	10	31	12:35	13:11	Sara	no	4	5	5	31	None	100	Heavy/light rain with small amount of hail yesterday, throughout day
T-17	2017	11	02	11:06	11:49	Sara	no	2	5	11	10	Drizzle	100	Heavy/light rain scattered throughout week prior to and during search
T-17	2017	11	07	12:06	12:43	Sara	no	5	5	5	3	None	30	No
T-17	2017	11	14	13:12	13:47	Sara	no	7	5	7	11	None	10	Cooler wet temperatures

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-17	2017	11	21	13:19	13:52	Sara	no	7	5	7	29	None	90	No
T-17	2017	11	28	12:10	12:42	Sara	no	7	5	13	29	None	100	No
T-18	2017	05	02	12:54	14:30	Tara	yes	365	5	7	25	Drizzle	0	None
T-18	2017	05	05	12:47	13:45	Tara	no	3	5	7	25	Heavy Rain	100	Persistent rain
T-18	2017	05	09	10:02	10:50	Tara	yes	4	5	6	4	None	2	None
T-18	2017	05	12	12:00	12:42	Tara	yes	3	5	12	6	None	50	None
T-18	2017	05	16	15:03	16:00	Tara	yes	4	5	19	25	None	25	Rain
T-18	2017	05	19	11:24	11:55	Tara	yes	3	5	8	25	Drizzle	0	None
T-18	2017	05	23	10:46	11:32	Tara	yes	4	5	15	12	None	80	None
T-18	2017	05	26	10:26	11:16	Tara	yes	3	5	8	18	Drizzle	100	Persistent rain.
T-18	2017	05	30	15:44	16:22	Sara	no	4	5	8	21	None	50	None
T-18	2017	06	02	10:16	10:55	Tara	yes	3	5	14	15	None	5	No
T-18	2017	06	06	11:41	12:25	Tara	yes	4	5	14	25	None	85	No
T-18	2017	06	09	11:27	12:04	Tara	yes	3	5	20	7	None	55	No
T-18	2017	06	16	11:14	11:55	Tara	yes	3	5	22	10	None	95	No
T-18	2017	06	20	11:28	12:25	Tara	yes	4	5	23	16	None	70	No
T-18	2017	06	20	12:51	13:46	Tara	yes	4	5	19	20	None	40	No
T-18	2017	06	23	13:56	14:37	Tara	no	3	5	22	18	None	50	Heavy rain
T-18	2017	06	27	11:01		Tara	yes	4	5	14	25	None	60	Rain
T-18	2017	06	30	10:13	11:15	Tara	yes	3	5	23	25	None	50	Heavy rain
T-18	2017	07	04	11:39	12:26	Tara	yes	4	5	24	12	None	0	No
T-18	2017	07	07	10:16	11:02	Tara	yes	3	5	21	10	None	50	Rain
T-18	2017	07	11	12:34	13:30	Tara	yes	4	5	25	5	None	25	Rain
T-18	2017	07	14	11:26	12:06	Tara	yes	3	5	21	15	None	80	Rain
T-18	2017	07	18	11:56	12:29	Tara	yes	4	5	24	12	None	5	No
T-18	2017	07	21	11:23	11:59	Tara	yes	3	5	26	10	None	5	No
T-18	2017	07	25	13:43	14:18	Tara	yes	4	5	21	11	None	5	No
T-18	2017	07	28	12:43	13:33	Tara	yes	3	5	20	19	None	65	No
T-18	2017	08	01	11:37	12:26	Sara	yes	4	5	25	8	None	0	No
T-18	2017	08	04	11:02	23:47	Sara	no	3	5	21	18	None	75	Lightning thunder heavy rain day before
T-18	2017	08	08	16:02	17:15	Sara	yes	4	5	22	11	None	0	Light rain and drizzle am and early pm day before
T-18	2017	08	11	13:42	14:24	Sara	yes	3	5	23	18	None	100	Light rain early am today
T-18	2017	08	15	14:30	15:30	Sara	yes	4	5	22	16	None	5	Rain overnight
T-18	2017	08	18	11:54	12:40	Sara	yes	3	5	22	25	None	80	Rain day before am an early pm, heavy at times
T-18	2017	08	22	14:55	15:41	Sara	yes	4	5	22	27	None	80	Rain overnight and light/heavy rain am today
T-18	2017	08	25	13:12	14:03	Sara	yes	3	5	20	10	None	10	No
T-18	2017	08	29	12:30	13:10	Sara	no	4	5	22	16	None	40	Rain overnight
T-18	2017	09	01	12:00	12:48	Sara	yes	3	5	13	11	None	30	No
T-18	2017	09	05	10:35	11:21	Sara	yes	4	5	16	13	Drizzle	100	Rain overnight and light rain before visit
T-18	2017	09	08	12:18	13:03	Sara	yes	3	5	16	14	None	40	Rain night before
T-18	2017	09	12	12:55	14:03	Sara	yes	4	5	21	6	None	0	No
T-18	2017	09	16	10:43	11:30	Sara	no	4	5	21	8	None	0	No
T-18	2017	09	19	10:50	11:29	Sara	yes	3	5	20	10	None	100	Rain overnight and light rain through out this morning.
T-18	2017	09	22	13:05	14:00	Sara	yes	3	5	28	10	None	0	Hot temperatures yesterday average of 29-30 degrees
T-18	2017	09	26	13:18	14:00	Sara	no	4	5	28	8	None	0	Hot temperatures for past 5 days with average temperature of 30 degrees
T-18	2017	09	29	14:20	15:04	Sara	yes	3	5	14	35	None	100	Heavy/light rain approx 6-8am today and heavy rain shortly before visit today
T-18	2017	10	03	10:39	11:23	Sara	yes	4	5	19	16	None	0	No
T-18	2017	10	06	13:22	14:10	Sara	yes	3	5	18	3	None	100	No
T-18	2017	10	10	14:35	15:19	Sara	no	4	5	18	19	None	30	No
T-18	2017	10	13	10:55	11:35	Sara	yes	3	5	16	10	None	100	No
T-18	2017	10	17	13:04	14:05	Sara	yes	4	5	12	24	None	0	No
T-18	2017	10	20	12:48	13:33	Sara	yes	3	5	19	16	None	0	No
T-18	2017	10	24	12:51	13:29	Sara	no	4	5	11	29	Drizzle	100	Increase of wind overnight and rain starting late am today
T-18	2017	10	27	12:54	13:45	Sara	no	3	5	16	24	None	25	No
T-18	2017	10	31	13:21	13:53	Sara	no	4	5	6	31	Drizzle	100	Heavy/light rain and small amount of hail yesterday throughout day.
T-18	2017	11	02	12:00	12:30	Sara	no	2	5	11	10	Drizzle	100	Heavy/ light rain throughout week prior to and during search
T-18	2017	11	07	12:55	13:30	Sara	no	5	5	8	13	None	15	No
T-18	2017	11	14	13:58	14:32	Sara	no	7	5	7	11	None	20	Cooler wet temperatures
T-18	2017	11	21	14:03	14:37	Sara	no	7	5	8	29	None	100	No
T-18	2017	11	28	12:52	13:24	Sara	no	7	5	13	29	None	25	No
T-19	2017	05	09	18:31	19:10	"Tara, Sarah"	yes	365	5	12	25	Light Rain	100	Rainy intervals

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-19	2017	06	08	16:05	16:06	Tara	no	3	5	20	10	None	2	No
T-19	2017	06	14	12:08	12:51	"Tara, Sara"	yes	27	5	25	28	None	5	No
T-19	2017	07	12	11:25	12:22	Sara	no	28	5	25	12	None	75	No
T-19	2017	08	16	11:35	12:05	"Tara, Sara"	no	35	5	25	10	None	2	No
T-19	2017	09	13	12:38	13:31	Sara	no	28	5	23	6	None	20	No
T-19	2017	10	18	11:33	12:21	Sara	no	35	5	13	14	None	0	No
T-19	2017	11	08	13:48	14:25	Sara	no	21	5	6	16	None	0	No
T-20	2017	05	01	18:31		"Tara, Sarah"	yes	365	5	12	25	Light Rain	0	Rainy intervals
T-20	2017	05	04	14:01		"Tara, Sarah"	yes	3	5	8	15	Heavy Rain	100	Rain
T-20	2017	05	08	14:28	15:00	"Tara, Sarah"	yes	4	5	5	25	None	0	None
T-20	2017	05	11	15:23	16:01	"Tara, Sarah"	yes	3	5	12	20	None	30	None
T-20	2017	05	15	13:57	14:50	"Tara, Sarah"	yes	4	5	10	15	None	2	None
T-20	2017	05	18	09:20	09:52	"Tara, Sarah"	yes	3	5	21	26	None	0	None
T-20	2017	05	22	16:34	17:32	Sara	no	4	5	16	23	None	0	Rain and thunderstorm day before
T-20	2017	05	25	13:58	14:45	"Tara, Sarah"	no	3	5	13	18	Light Rain	100	Persistent rain.
T-20	2017	05	29	14:00	14:45	"Tara, Sarah"	yes	4	5	20	18	None	5	No
T-20	2017	06	01	13:35	14:26	Tara	yes	3	5	16	15	None	5	No
T-20	2017	06	05	10:29	10:58	"Tara, Sarah"	yes	4	5	14	20	None	80	No
T-20	2017	06	08	15:28	16:05	Tara	yes	3	5	20	10	None	2	No
T-20	2017	06	12	13:56	14:27	"Tara, Sarah"	yes	4	5	28	30	None	80	No
T-20	2017	06	15	13:01	13:45	"Tara, Sara"	yes	3	5	19	5	Light Rain	100	Rain
T-20	2017	06	19	13:27	13:59	"Tara, Sara"	yes	4	5	22	15	None	30	No
T-20	2017	06	22	10:30	11:08	"Tara, Sara"	yes	3	5	17	18	Light Rain	100	Heavy rain
T-20	2017	06	26	13:10	14:01	Sara	no	4	5	18	24	None	20	Scattered showers throughout weekend before
T-20	2017	06	29	13:31	14:27	Sara	no	3	5	21	21	None	50	Heavy rain overnight, light rain during this morning
T-20	2017	07	03	15:40	16:45	Sara	no	4	5	20	16	None	0	None
T-20	2017	07	06	12:16	13:02	Sara	no	3	5	18	19	None	0	None
T-20	2017	07	10	13:59	14:50	Tara	no	4	5	20	12	Light Rain	100	Rain
T-20	2017	07	13	14:06	14:58	Sara	no	3	5	26	14	None	95	Rain overnight
T-20	2017	07	17	14:35	15:16	Sara	no	4	5	20	16	None	90	None
T-20	2017	07	20	10:14	11:03	Sara	no	3	5	22	16	None	10	None
T-20	2017	07	24	15:02	15:45	Sara	no	4	5	18	29	None	100	Rain day before and scattered drizzle today
T-20	2017	07	27	10:33	11:14	Sara	no	3	5	23	5	None	100	None
T-20	2017	07	31	14:35	15:35	Sara	yes	4	5	24	11	None	0	No
T-20	2017	08	04	18:32	19:15	Sara	no	4	5	21	26	None	5	Lightning thunder heavy rain day before . Rescheduled from yesterday. Northland advised to stop work yesterday because of lightning and no alerts coming through
T-20	2017	08	07	11:57	12:45	Sara	no	3	5	18	8	Light Rain	100	Rainfall evening before and drizzle off and on this morning
T-20	2017	08	10	16:20	17:11	Sara	yes	3	5	24	10	None	70	No
T-20	2017	08	14	16:11	17:15	Sara	yes	4	5	24	8	None	5	No
T-20	2017	08	17	15:20	16:17	Sara	yes	3	5	21	21	Light Rain	100	Heavy rain am today
T-20	2017	08	21	15:12	15:55	Sara	no	4	5	26	6	None	0	No
T-20	2017	08	24	11:25	12:10	Sara	yes	3	5	17	19	Drizzle	100	No
T-20	2017	08	27	16:57	17:53	Sara	yes	3	5	23	14	None	80	No
T-20	2017	08	31	15:28	16:09	Sara	yes	4	5	18	27	None	20	No
T-20	2017	09	04	15:39	16:16	Sara	no	4	5	24	29	None	100	No
T-20	2017	09	11	15:19	16:09	Sara	yes	7	5	21	10	None	0	No
T-20	2017	09	14	16:01	16:49	Sara	yes	3	5	23	8	None	0	No
T-20	2017	09	18	15:35	16:30	Sara	no	4	5	18	13	Heavy Rain	100	Rain periods today before search and during
T-20	2017	09	21	16:20	17:04	Sara	no	3	5	29	11	None	0	No
T-20	2017	09	25	15:39	16:20	Sara	no	4	5	29	8	None	5	Hot temperatures for past 4 days at average of 30 degrees
T-20	2017	09	28	16:02	16:46	Sara	yes	3	5	16	18	None	75	No
T-20	2017	10	02	15:48	16:33	Sara	yes	4	5	23	14	None	10	No
T-20	2017	10	05	15:41	16:22	Sara	yes	3	5	20	14	None	0	No
T-20	2017	10	09	14:13	14:43	Sara	no	4	5	21	13	None	10	Heavy and light rain overnight
T-20	2017	10	12	12:44	13:27	Sara	no	3	5	13	23	Drizzle	100	Heavy and light rain yesterday for most of day
T-20	2017	10	16	15:53	16:34	Sara	yes	4	5	11	11	None	0	Windy and rain throughout weekend that just passed
T-20	2017	10	19	11:25	12:16	Sara	yes	3	5	15	24	None	5	No
T-20	2017	10	23	14:37	15:14	Sara	yes	4	5	19	26	None	100	No
T-20	2017	10	26	15:32	16:21	Sara	no	3	5	10	11	None	50	No
T-20	2017	10	30	11:59	12:40	Sara	no	4	5	6	27	Light Rain	100	Unsure of what precipitation hit this area over weekend as turbine 27 was quite wet and muddy, which is the turbine I just came from.

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-20	2017	11	01	14:04	14:36	Sara	no	2	5	6	10	Drizzle	100	Cold drizzle throughout yesterday
T-20	2017	11	06	15:49	16:42	Sara	no	5	5	6	23	None	95	Rain periods throughout week prior to visit.
T-20	2017	11	13	14:20	14:55	Sara	no	7	5	4	14	None	100	Rain yesterday evening, approx 5 cm snow and squalls Friday prior to visit.
T-20	2017	11	14	12:06	12:41	Sara	no	8	5	7	11	None	25	Cooler wet temperatures
T-20	2017	11	20	15:17	15:55	Sara	no	6	5	7	26	None	20	Much colder temps, heavy rain Saturday prior to visit.
T-20	2017	11	27	15:14	15:51	Sara	no	7	5	3	5	None	100	No
T-21	2017	05	17	12:50	13:50	"Tara, Sarah"	yes	365	5	20	29	None	30	None
T-21	2017	06	21	16:39		Tara	no	34	5	19	13	None	5	No
T-21	2017	07	19	09:26	10:08	"Tara, Sara"	no	28	5	23	7	None	75	No
T-21	2017	08	09	10:31	11:08	"Tara, Sara"	no	21	5	25	10	None	0	No
T-21	2017	09	20	13:32	14:35	Sara	no	42	5	26	8	None	5	Rain through out yesterday
T-21	2017	10	18	12:40	13:32	Sara	no	28	5	13	14	None	0	No
T-21	2017	11	23	12:35	13:09	Sara	no	36	5	0	21	None	100	Light snowfall yesterday
T-22	2017	05	17	13:58	14:50	"Tara, Sarah"	yes	365	5	21	29	None	40	None
T-22	2017	06	21	08:10	09:33	Sara	no	35	5	17	30	None	0	None
T-22	2017	07	19	10:11	10:40	"Tara, Sara"	no	28	5	24	7	None	80	No
T-22	2017	08	23	10:35	11:31	Sara	no	35	5	20	20	None	25	Light/heavy rain yesterday am and early pm
T-22	2017	09	20	14:50	15:43	Sara	no	28	5	27	10	None	20	Rain through out yesterday
T-22	2017	10	18	13:38	14:26	Sara	no	28	5	19	23	None	0	No
T-22	2017	11	15	09:32	10:25	Sara	no	28	5	5	18	None	100	No
T-23	2017	05	17	11:43	12:13	"Tara, Sarah"	yes	365	5	21	29	None	20	None
T-23	2017	06	21	09:52	11:07	Sara	no	35	5	17	13	None	25	None
T-23	2017	07	19	10:53	11:35	"Tara, Sara"	no	28	5	23	7	None	95	No
T-23	2017	08	23	11:45	00:38	Sara	no	35	5	19	21	None	40	Heavy/light rain yesterday am and early pm
T-23	2017	09	20	15:58	16:54	Sara	no	28	5	27	10	None	0	Rain through out yesterday
T-23	2017	10	18	16:01	16:48	Sara	no	28	5	20	26	None	0	No
T-23	2017	11	15	12:26	13:08	Sara	no	28	5	6	21	None	100	No
T-25	2017	05	17	11:06	11:38	"Tara, Sarah"	yes	365	5	21	27	None	10	None
T-25	2017	06	21	15:25		Tara	no	34	5	18	12	None	10	No
T-25	2017	07	19	11:40	12:22	"Tara, Sara"	no	28	5	23	10	None	75	No
T-25	2017	08	23	13:00	14:06	Sara	no	35	5	19	23	None	30	Light/heavy rain day before am and early pm
T-25	2017	09	20	17:05	17:50	Sara	no	28	5	27	10	None	10	Rain through out yesterday
T-25	2017	10	18	14:38	15:21	Sara	no	28	5	19	23	None	0	No
T-25	2017	11	15	10:58	11:35	Sara	no	28	5	5	18	None	100	No
T-26	2017	05	17	10:26	11:00	"Tara, Sarah"	yes	365	5	20	26	None	10	None
T-26	2017	06	21	13:52	15:18	Tara	no	34	5	20	15	None	15	No
T-26	2017	07	19	13:15	13:50	"Tara, Sara"	no	28	5	24	12	None	10	No
T-26	2017	08	23	14:18	15:10	Sara	no	35	5	19	23	None	35	Light/heavy rain day before in am and early pm
T-26	2017	09	21	17:21	18:10	Sara	no	29	5	30	11	None	0	No
T-26	2017	10	20	13:44	14:26	Sara	no	29	5	21	19	None	0	No
T-26	2017	11	15	11:42	12:17	Sara	no	26	5	6	24	None	100	No
T-27	2017	05	01	16:20	17:01	"Tara, Sarah"	yes	365	5	17	20	None	40	Rain
T-27	2017	05	04	13:01	13:35	"Tara, Sarah"	yes	3	5	8	15	Heavy Rain	100	Rain
T-27	2017	05	08	10:58	11:35	"Tara, Sarah"	yes	4	10	3	24	None	0	None
T-27	2017	05	11	10:54	11:30	"Tara, Sarah"	yes	3	5	8	23	None	100	None
T-27	2017	05	15	11:22	12:00	"Tara, Sarah"	yes	4	5	9	11	None	0	None
T-27	2017	05	18	10:46	11:25	"Tara, Sarah"	yes	3	5	22	29	None	10	None
T-27	2017	05	22	11:11	11:54	Sara	no	4	5	13	24	None	100	Rain and thunderstorm day before
T-27	2017	05	25	10:05	10:40	"Tara, Sarah"	no	3	5	13	18	Light Rain	100	Persistent rain.
T-27	2017	05	29	10:15	10:57	"Tara, Sarah"	yes	4	5	14	15	None	50	No
T-27	2017	06	01	12:25	12:55	"Tara, Sarah"	yes	3	5	15	15	None	5	No
T-27	2017	06	05	11:14	11:40	"Tara, Sarah"	yes	4	5	13	25	None	90	No
T-27	2017	06	08	12:25	13:12	Tara	yes	3	5	20	7	None	5	No
T-27	2017	06	12	11:37	12:00	"Tara, Sarah"	yes	4	5	28	25	None	35	No
T-27	2017	06	15	09:47	10:12	"Tara, Sara"	yes	3	5	20	16	Drizzle	100	Lightning in area.
T-27	2017	06	19	12:27	13:08	"Tara, Sara"	yes	4	5	22	12	None	10	No
T-27	2017	06	22	12:06	12:34	"Tara, Sara"	yes	3	5	17	20	Drizzle	90	Heavy rain
T-27	2017	06	26	11:24	11:50	"Tara, Sara"	yes	4	5	16	25	None	50	No
T-27	2017	06	29	12:18	12:45	"Tara, Sara"	yes	3	5	21	18	Light Rain	108	Rain
T-27	2017	07	03	13:01	13:49	Sara	no	4	5	19	13	None	0	None
T-27	2017	07	06	12:20	13:07	Tara	yes	3	5	25	10	None	10	No

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-27	2017	07	10	11:24	12:03	Tara	yes	4	5	24	11	None	95	No
T-27	2017	07	13	12:35	13:01	"Tara, Sara"	no	3	5	25	10	None	95	Heavy rain
T-27	2017	07	17	12:43	13:17	"Tara, Sara"	yes	4	5	20	18	Drizzle	100	No
T-27	2017	07	20	11:23	11:53	"Tara, Sara"	yes	3	5	26	20	None	20	Rain
T-27	2017	07	24	13:10		"Tara, Sara"	yes	4	5	19	25	None	100	Rain
T-27	2017	07	27	11:52	12:35	"Tara, Sara"	yes	3	5	24	5	None	100	No
T-27	2017	07	31	12:01	12:49	Sara	yes	4	5	24	11	None	0	No
T-27	2017	08	03	12:17	13:03	Sara	yes	3	5	26	6	None	0	No
T-27	2017	08	07	13:10	14:01	Sara	yes	4	5	19	10	None	100	Rain evening before and light rain and drizzle during this morning
T-27	2017	08	10	13:28	14:13	Sara	no	3	5	24	10	None	60	No
T-27	2017	08	14	13:33	14:29	Sara	no	4	5	24	11	None	5	No
T-27	2017	08	17	10:44	11:37	Sara	no	3	5	22	21	None	100	No other than drizzle started within the last hour
T-27	2017	08	21	12:56	13:40	Sara	no	4	5	28	10	None	0	No
T-27	2017	08	24	13:01	14:15	Sara	yes	3	5	18	16	None	85	Light drizzle today prior to visit
T-27	2017	08	27	14:58	15:39	Sara	yes	3	5	22	14	None	40	No
T-27	2017	08	31	13:30	14:14	Sara	yes	4	5	18	23	None	25	No
T-27	2017	09	04	13:57	14:35	Sara	no	4	5	23	27	None	75	No
T-27	2017	09	07	12:45	13:28	Sara	yes	3	5	16	24	None	90	Rain night before
T-27	2017	09	11	12:52	13:39	Sara	yes	4	5	22	5	None	0	No
T-27	2017	09	14	11:08	12:01	Sara	yes	3	5	18	10	None	0	No
T-27	2017	09	18	13:17	14:02	Sara	yes	4	5	19	16	None	100	Light rain 8-9am. 15 mins of heavy rain right before search today
T-27	2017	09	21	12:14	12:55	Sara	no	3	5	24	16	None	0	No
T-27	2017	09	25	13:05	13:59	Sara	no	4	5	29	8	None	5	Hot temperatures for past 4 days average of 30 degrees
T-27	2017	09	28	13:06	13:55	Sara	yes	3	5	16	21	None	100	No
T-27	2017	10	02	13:10	13:59	Sara	yes	4	5	22	16	None	5	No
T-27	2017	10	05	13:47	14:27	Sara	yes	3	5	18	18	None	0	No
T-27	2017	10	09	12:55	13:00	Sara	no	4	5	19	11	None	5	Heavy and light rain overnight
T-27	2017	10	12	11:34	12:22	Sara	no	7	5	13	23	None	100	Heavy and light rain for most of day yesterday.
T-27	2017	10	16	13:41	14:25	Sara	yes	4	5	10	18	None	5	Windy and rain throughout weekend that just passed
T-27	2017	10	19	12:59	13:50	Sara	yes	3	5	16	24	None	5	No
T-27	2017	10	23	12:37	13:17	Sara	yes	4	5	19	24	None	100	No
T-27	2017	10	26	12:59	13:44	Sara	no	3	5	9	13	None	25	No
T-27	2017	10	30	10:33	11:14	Sara	no	4	5	7	26	Drizzle	100	I'm not aware of any significant weather yesterday but search area looks damp and muddy.
T-27	2017	11	01	12:20	12:49	Sara	no	2	5	6	14	None	100	Cold drizzle throughout day yesterday.
T-27	2017	11	06	13:16	13:51	Sara	no	5	5	6	24	None	90	Rain periods throughout week prior to visit.
T-27	2017	11	13	12:32	13:06	Sara	no	7	5	4	14	None	100	Rain yesterday evening, approx 5 cm snow and squalls Friday prior to visit.
T-27	2017	11	20	13:29	14:06	Sara	no	7	5	6	24	None	30	Much colder temps, heavy rain Saturday prior to visit
T-27	2017	11	27	13:05	13:39	Sara	no	7	5	4	10	None	90	No
T-29	2017	05	24	09:24	10:32	Tara	no	365	5	16	15	None	65	None
T-29	2017	06	21	11:29	12:05	Tara	no	28	5	17	15	None	50	No
T-29	2017	07	19	14:03	14:37	"Tara, Sara"	no	28	5	25	15	None	10	No
T-29	2017	08	23	15:35		Sara	no	35	5	20	18	None	5	Heavy/light rain yesterday am and early pm
T-29	2017	09	21	09:29	10:40	Sara	no	29	5	21	14	None	0	No
T-29	2017	10	19	17:00	17:39	Sara	no	28	5	17	14	None	35	No
T-29	2017	11	15	13:56	14:31	Sara	no	27	5	6	21	None	100	No
T-30	2017	05	24	09:28	10:28	Sara	no	365	5	18	19	None	40	Rainfall and thunderstorm 3 days ago. Field still wet in some areas.
T-30	2017	06	21	11:20	12:16	Sara	no	28	5	17	14	None	10	None
T-30	2017	07	19	14:43	15:20	"Tara, Sara"	no	28	5	25	15	None	10	No
T-30	2017	08	23	16:31	17:20	Sara	no	35	5	20	18	None	5	Heavy/light rain yesterday am and early pm
T-30	2017	09	26	11:15	12:10	Sara	no	34	5	28	8	None	0	Hot temperatures for 5 days with average of 30 degrees
T-30	2017	10	25	10:15	11:07	Sara	no	28	5	7	26	Drizzle	100	Light rain through out yesterday and this morning, wind advisory yesterday
T-30	2017	11	23	15:54	16:27	Sara	no	29	5	2	23	None	100	Light blowing snow yesterday
T-31	2017	05	02	10:37	11:33	"Tara, Sarah"	yes	365	5	8	29	Heavy Rain	100	Heavy rain and Hail
T-31	2017	05	05	11:56	12:21	"Tara, Sarah"	no	3	5	6	25	Light Rain	100	Persistent rain
T-31	2017	05	09	11:16	11:40	"Tara, Sarah"	yes	4	5	8	8	None	0	None
T-31	2017	05	12	13:28	14:15	"Tara, Sarah"	yes	3	5	11	11	None	50	None
T-31	2017	05	16	12:16	12:45	"Tara, Sarah"	yes	4	5	10	20	Drizzle	70	Heavy rain
T-31	2017	05	19	13:30	14:07	Tara	yes	3	5	7	25	None	85	None
T-31	2017	05	23	10:01	10:32	"Tara, Sarah"	yes	4	5	16	11	Drizzle	75	None
T-31	2017	05	26	12:30	13:10	"Tara, Sarah"	yes	3	5	8	17	Fog	100	Persistent drizzle.

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-31	2017	05	30	10:40	11:18	"Tara, Sarah"	yes	4	5	17	11	None	10	No
T-31	2017	06	02	13:30		"Tara, Sarah"	yes	3	5	15	17	None	10	No
T-31	2017	06	02	15:13	15:52	Sara	no	3	5	16	14	None	0	None
T-31	2017	06	06	09:57	10:24	"Tara, Sarah"	yes	4	5	12	25	None	95	No
T-31	2017	06	09	13:51	14:36	Sara	no	3	5	19	10	None	5	No
T-31	2017	06	13	09:22		"Tara, Sara"	yes	4	5	24	18	None	90	No
T-31	2017	06	16	14:02	14:55	Tara	yes	3	5	27	8	None	5	No
T-31	2017	06	20	10:20	10:52	"Tara, Sara"	yes	4	5	16	20	None	75	No
T-31	2017	06	23	15:00	15:37	"Tara, Sara"	no	3	5	20	19	Fog	100	Heavy rain
T-31	2017	06	27	09:18	10:05	"Tara, Sara"	yes	4	5	13	15	Drizzle	100	Heavy rain
T-31	2017	06	30	12:55	13:44	Sara	no	3	5	23	13	None	5	Rain through out night before
T-31	2017	07	04	13:22	13:55	"Tara, Sara"	yes	4	5	25	15	None	5	No
T-31	2017	07	07	13:25	14:05	Tara	yes	3	5	24	15	None	5	Rain
T-31	2017	07	11	11:03	11:29	"Tara, Sara"	yes	4	5	25	2	None	45	Rain
T-31	2017	07	14	13:04	13:57	Sara	no	3	5	22	16	None	75	Rain night before
T-31	2017	07	18	10:51	11:15	"Tara, Sara"	yes	4	5	23	10	None	10	No
T-31	2017	07	21	12:15	12:56	"Tara, Sara"	yes	3	5	26	11	None	5	Haze
T-31	2017	07	25	10:52	11:29	"Tara, Sara"	yes	4	5	21	10	None	5	No
T-31	2017	07	28	13:56	14:31	Tara	yes	3	5	20	18	None	95	No
T-31	2017	08	01	13:30	14:20	Sara	yes	4	5	25	11	None	0	No
T-31	2017	08	04	13:07	13:58	Sara	no	3	5	22	27	None	100	Lightning thunder heavy rain day before
T-31	2017	08	08	11:08	11:57	Sara	yes	4	5	20	13	None	0	Light rain and drizzle yesterday am and early pm.
T-31	2017	08	15	09:43	10:39	Sara	yes	7	5	19	11	None	100	Rain overnight
T-31	2017	08	18	14:25	15:22	Sara	yes	3	5	22	21	None	100	Rain yesterday am and early pm heavy at times
T-31	2017	08	22	10:50	11:32	Sara	yes	4	5	23	20	Light Rain	100	Rain overnight
T-31	2017	08	25	14:54	15:47	Sara	yes	3	5	28	16	None	0	No
T-31	2017	08	29	13:23	14:15	Sara	no	4	5	23	16	None	40	Rain overnight
T-31	2017	09	01	10:30	11:29	Sara	yes	3	5	13	11	None	30	No
T-31	2017	09	05	15:19	16:01	Sara	yes	4	5	18	14	None	25	Rain overnight and again early am today
T-31	2017	09	08	14:23	15:16	Sara	yes	3	5	16	14	None	40	Rain night before
T-31	2017	09	12	10:42	11:29	Sara	yes	4	5	19	3	None	0	No
T-31	2017	09	16	15:07	15:47	Sara	no	4	5	24	8	None	0	No
T-31	2017	09	19	09:08	09:45	Sara	yes	3	5	19	10	Drizzle	100	Rain overnight
T-31	2017	09	22	15:24	16:09	Sara	yes	3	5	27	8	None	0	Hot temperatures yesterday and today, average 29-30 degrees
T-31	2017	09	26	08:55	09:35	Sara	no	4	5	22	6	None	5	Hot temperatures for 5 days with average temperature at 30 degrees
T-31	2017	09	29	16:22	17:08	Sara	yes	3	5	14	34	None	90	Rain periods through out today
T-31	2017	10	03	14:53	15:35	Sara	yes	4	5	26	19	None	0	No
T-31	2017	10	06	14:24	15:05	Sara	yes	3	5	18	6	None	100	No
T-31	2017	10	10	10:51	11:37	Sara	no	4	5	17	16	None	20	No
T-31	2017	10	13	15:34	16:17	Sara	yes	3	5	19	10	None	75	No
T-31	2017	10	17	11:08	11:54	Sara	yes	4	5	12	24	None	0	No
T-31	2017	10	20	14:45	15:33	Sara	yes	3	5	21	21	None	0	No
T-31	2017	10	24	10:13	10:55	Sara	no	4	5	11	29	Drizzle	100	Increase of wind overnight, rain early evening yesterday
T-31	2017	10	27	16:01	16:56	Sara	no	3	5	16	19	None	100	No
T-31	2017	10	31	15:28	16:02	Sara	no	4	5	5	23	Drizzle	100	Cold temps. Heavy light rain throughout yesterday. Cold drizzle today
T-31	2017	11	02	15:40	16:10	Sara	no	2	5	12	5	Drizzle	100	Heavy/light rain throughout week prior to and during search
T-31	2017	11	07	11:03	11:41	Sara	no	5	5	5	3	None	50	No
T-31	2017	11	14	11:08	11:45	Sara	no	7	5	7	10	None	30	Cooler wet temperatures
T-31	2017	11	21	11:08	11:50	Sara	no	7	5	7	29	None	25	No
T-31	2017	11	28	10:01	10:35	Sara	no	7	5	11	32	None	0	No
T-32	2017	05	24	10:47	11:23	"Tara, Sarah"	no	365	5	17	15	None	50	None
T-32	2017	06	14	11:17	11:50	"Tara, Sara"	yes	21	5	25	28	None	5	No
T-32	2017	07	12	11:47	12:45	Tara	no	28	5	25	10	None	95	No
T-32	2017	08	16	12:26	13:05	"Tara, Sara"	no	35	5	25	10	None	5	No
T-32	2017	09	13	11:14	12:13	Sara	no	28	5	22	8	None	50	No
T-32	2017	10	18	10:23	11:14	Sara	no	35	5	13	14	None	0	No
T-32	2017	11	14	10:18	10:56	Sara	no	27	5	6	8	None	5	Cooler temperatures
T-33	2017	05	02	09:26	10:36	"Tara, Sarah"	yes	365	5	8	29	Light Rain	100	Heavy rain
T-33	2017	05	05	11:08	11:50	"Tara, Sarah"	no	3	5	6	25	Light Rain	100	Persistent rain
T-33	2017	05	09	12:02	12:37	"Tara, Sarah"	yes	4	5	8	6	None	5	None
T-33	2017	05	12	14:36	15:02	"Tara, Sarah"	yes	3	5	11	15	None	40	None

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-33	2017	05	19	14:16	14:55	Tara	yes	3	5	7	29	None	70	None
T-33	2017	05	23	09:21	09:52	"Tara, Sarah"	yes	4	5	15	11	Drizzle	65	None
T-33	2017	05	26	11:30	12:00	"Tara, Sarah"	yes	3	5	8	18	Drizzle	100	Persistent drizzle.
T-33	2017	05	30	09:28	10:13	Sara	no	4	5	18	14	None	0	None
T-33	2017	06	02	11:13	11:50	"Tara, Sarah"	yes	3	5	14	15	None	5	No
T-33	2017	06	06	09:26	09:50	"Tara, Sarah"	yes	4	5	12	25	None	95	No
T-33	2017	06	09	14:57	15:40	Sara	no	3	5	21	8	None	5	No
T-33	2017	06	13	09:53	10:24	"Tara, Sara"	yes	4	5	24	18	None	90	No
T-33	2017	06	16	13:10	13:46	"Tara, Sara"	yes	3	5	25	2	None	10	No
T-33	2017	06	20	09:37	10:10	"Tara, Sara"	yes	4	5	15	20	None	90	Rain
T-33	2017	06	23	15:53	16:34	Sara	no	3	5	21	18	None	100	Heavy rain during night before
T-33	2017	06	27	10:17	10:50	"Tara, Sara"	yes	4	5	14	15	None	90	Rain
T-33	2017	06	30	11:26	12:00	"Tara, Sara"	yes	3	5	21	25	None	99	Heavy rain
T-33	2017	07	04	14:02	14:45	"Tara, Sara"	yes	4	5	25	15	None	5	No
T-33	2017	07	07	11:49	12:24	"Tara, Sara"	yes	3	5	23	12	None	5	Rain
T-33	2017	07	11	10:27	10:54	"Tara, Sara"	yes	4	5	24	2	None	55	Rain
T-33	2017	07	14	14:16	15:03	Sara	no	3	5	22	18	None	80	Rain night before
T-33	2017	07	18	11:22	11:44	"Tara, Sara"	yes	4	5	23	11	None	10	No
T-33	2017	07	21	14:17	15:00	Sara	no	3	5	25	13	None	0	None
T-33	2017	07	25	10:03	10:42	"Tara, Sara"	yes	4	5	20	10	None	10	No
T-33	2017	07	28	14:23	15:05	Sara	no	3	5	24	18	None	70	No
T-33	2017	08	01	14:36	15:25	Sara	yes	4	5	26	11	None	0	No
T-33	2017	08	04	12:19	13:00	Sara	no	3	5	21	18	Drizzle	100	Lightning thunder heavy rain day before
T-33	2017	08	08	09:41	10:53	Sara	yes	4	5	19	11	None	0	Drizzle and light rain morning and afternoon before
T-33	2017	08	15	10:56	11:50	Sara	yes	7	5	19	8	None	60	Rain overnight
T-33	2017	08	18	13:20	14:11	Sara	yes	3	5	23	21	None	85	Rain yesterday am and early pm heavy at times
T-33	2017	08	22	09:55	10:39	Sara	yes	4	5	23	20	Drizzle	100	Rain overnight
T-33	2017	08	25	16:02	16:51	Sara	yes	3	5	20	16	None	0	No
T-33	2017	08	29	14:24	15:07	Sara	no	4	5	24	13	None	75	Rain overnight
T-33	2017	09	01	09:37	10:21	Sara	yes	3	5	12	21	None	20	No
T-33	2017	09	05	14:06	15:04	Sara	yes	4	5	17	16	None	25	Rain overnight and again early am today
T-33	2017	09	08	15:25	16:10	Sara	yes	3	5	16	23	None	10	Rain night before
T-33	2017	09	12	09:43	10:30	Sara	yes	4	5	16	3	None	0	No
T-33	2017	09	16	14:10	14:49	Sara	no	4	5	24	11	None	0	No
T-33	2017	09	19	08:25	08:59	Sara	no	3	5	19	8	Light Rain	100	Rain overnight
T-33	2017	09	22	14:19	15:05	Sara	yes	3	5	29	6	None	0	Hot temperatures yesterday average of 29-30, including today
T-33	2017	09	26	09:45	10:23	Sara	no	4	5	24	8	None	0	Hot temperatures for 5 days with average of 30 degrees
T-33	2017	09	29	15:29	16:13	Sara	yes	3	5	14	31	Drizzle	100	Heavy/light rain periods through out today.
T-33	2017	10	03	14:03	14:49	Sara	yes	4	5	26	19	None	0	No
T-33	2017	10	06	15:27	16:09	Sara	yes	3	5	18	5	None	100	No
T-33	2017	10	10	11:56	12:35	Sara	no	4	5	17	16	None	30	No
T-33	2017	10	13	14:08	15:23	Sara	yes	3	5	17	11	None	100	No
T-33	2017	10	17	10:10	10:50	Sara	yes	4	5	12	24	None	0	No
T-33	2017	10	20	15:43	16:23	Sara	yes	3	5	22	19	None	0	No
T-33	2017	10	24	11:10	11:49	Sara	no	4	5	11	27	Drizzle	100	Increase of wind overnight, rain early evening yesterday.
T-33	2017	10	27	14:58	15:47	Sara	no	3	5	17	23	None	100	No
T-33	2017	10	31	16:10	16:43	Sara	no	4	5	6	24	None	100	Heavy/light rain throughout yesterday along with colder temps.
T-33	2017	11	02	14:44	15:17	Sara	no	2	5	12	8	Drizzle	100	Heavy/light rain throughout week prior to and during search
T-33	2017	11	07	10:20	10:55	Sara	no	5	5	5	3	None	20	No
T-33	2017	11	14	09:39	10:14	Sara	no	7	5	3	8	None	0	Cooler wet temperatures
T-33	2017	11	21	10:27	11:00	Sara	no	7	5	6	29	None	25	No
T-33	2017	11	28	11:07	11:40	Sara	no	7	5	11	32	None	0	No
T-34	2017	05	24	11:30	12:10	"Tara, Sarah"	no	365	5	17	16	None	50	None
T-34	2017	06	28	16:03	17:03	Tara	no	28	5	23	25	None	80	No
T-34	2017	07	26	09:55	10:26	"Tara, Sara"	no	28	5	18	15	None	100	No
T-34	2017	08	30	12:58	13:42	Sara	no	35	5	21	14	None	0	No
T-34	2017	09	27	12:51	13:54	Sara	no	28	5	20	23	None	100	Hot temperatures for past 6 days with average of 30 degrees.
T-34	2017	10	25	11:40	12:18	Sara	no	28	5	8	24	None	80	Rain early am and throughout yesterday, also wind advisory yesterday.
T-34	2017	11	23	14:21	14:57	Sara	no	29	5	0	19	None	100	Light blowing snow yesterday.
T-35	2017	05	24	12:45	13:31	"Tara, Sarah"	no	365	5	15	20	None	90	None
T-35	2017	06	28	16:11	17:16	Sara	no	35	5	23	16	None	90	No

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-35	2017	07	26	10:31	11:10	"Tara, Sara"	no	28	5	19	15	None	100	No
T-35	2017	08	30	11:23	12:31	Sara	no	35	5	21	10	None	30	No
T-35	2017	09	27	14:10	15:03	Sara	no	28	5	20	19	None	75	Hot temperatures for past 6 days with average of 30 degrees
T-35	2017	10	27	17:18	05:50	Sara	no	30	5	14	18	None	100	No
T-35	2017	11	23	13:34	14:13	Sara	no	24	5	0	19	None	100	Light blowing snow yesterday
T-37	2017	05	31	14:24	15:40	"Tara, Sarah"	no	365	3	16	18	None	35	No
T-37	2017	06	28	14:39	15:59	"Tara, Sara"	no	28	3	22	13	None	80	No
T-37	2017	07	26	11:22	12:40	"Tara, Sara"	no	28	5	19	15	None	90	No
T-37	2017	08	30	10:28	11:16	Sara	no	35	5	21	8	None	30	No
T-37	2017	09	27	15:10	16:03	Sara	no	28	5	20	21	None	50	Hot temperatures for past 6 days with average of 30 degrees.
T-37	2017	10	25	12:44	13:29	Sara	no	28	5	8	23	None	80	Wind advisory yesterday, rain throughout yesterday and overnight.
T-37	2017	11	23	15:11	15:47	Sara	no	29	5	2	23	None	100	Light blowing snow yesterday.
T-38	2017	05	01	15:25	16:00	"Tara, Sarah"	yes	365	5	18	20	None	50	Heavy rain
T-38	2017	05	04	12:38	13:07	"Tara, Sarah"	yes	3	5	9	15	Light Rain	100	None
T-38	2017	05	08	12:51	13:20	"Tara, Sarah"	yes	4	10	3	24	None	0	None
T-38	2017	05	11	11:45	12:45	"Tara, Sarah"	yes	3	5	11	17	None	100	None
T-38	2017	05	15	10:39	11:08	"Tara, Sarah"	yes	4	5	8	11	None	0	None
T-38	2017	05	18	11:35	12:01	"Tara, Sarah"	yes	3	5	22	29	None	10	None
T-38	2017	05	22	12:10	13:09	Sara	no	4	3	13	24	None	20	Rain and thunderstorm day before
T-38	2017	05	25	10:55	11:42	"Tara, Sarah"	no	3	3	13	23	Heavy Rain	100	Persistent rain.
T-38	2017	05	29	11:12	11:43	"Tara, Sarah"	yes	4	5	17	17	None	2	No
T-38	2017	06	01	10:59	11:25	"Tara, Sarah"	yes	3	5	13	15	None	5	No
T-38	2017	06	05	13:24	13:46	"Tara, Sarah"	yes	4	5	13	25	None	80	No
T-38	2017	06	08	11:14	12:05	Tara	yes	3	5	18	6	None	5	No
T-38	2017	06	12	10:49		"Tara, Sarah"	yes	4	5	28	25	None	20	No
T-38	2017	06	15	10:28	10:48	"Tara, Sara"	yes	3	5	20	15	None	95	Rain, lightning in area
T-38	2017	06	19	11:36	12:12	"Tara, Sara"	yes	4	5	21	12	None	10	No
T-38	2017	06	22	13:40	14:12	"Tara, Sara"	yes	3	5	24	20	None	55	Heavy rain.
T-38	2017	06	26	10:44	11:10	"Tara, Sara"	yes	4	5	16	20	None	75	No
T-38	2017	06	29	11:36	12:04	"Tara, Sara"	yes	3	5	21	18	Drizzle	99	Rain
T-38	2017	07	03	12:01	12:40	Sara	no	4	5	19	13	None	0	None
T-38	2017	07	06	11:18	12:00	"Tara, Sara"	yes	3	5	25	10	None	50	No
T-38	2017	07	10	12:15		Tara	yes	4	5	23	15	Light Rain	100	No
T-38	2017	07	13	11:36	12:10	"Tara, Sara"	no	3	5	23	15	None	100	Heavy rain
T-38	2017	07	17	11:41	12:26	"Tara, Sara"	yes	4	5	19	17	None	100	No
T-38	2017	07	20	12:16	12:39	"Tara, Sara"	yes	3	5	26	20	None	65	Rain
T-38	2017	07	24	11:55	12:30	"Tara, Sara"	yes	4	5	18	25	Drizzle	100	Rain
T-38	2017	07	27	12:54	13:29	"Tara, Sara"	yes	3	5	25	10	None	95	No
T-38	2017	07	31	16:00	16:46	Sara	yes	4	5	26	13	None	0	No
T-38	2017	08	03	11:20	12:00	Sara	yes	3	5	24	8	None	0	No
T-38	2017	08	07	14:19	15:08	Sara	yes	4	5	18	8	Drizzle	100	Rain evening before and light rain and drizzle through out today
T-38	2017	08	10	11:54	13:05	Sara	yes	3	5	22	6	None	15	No
T-38	2017	08	14	12:18	13:01	Sara	yes	4	5	23	10	None	5	No
T-38	2017	08	17	11:53	12:23	Sara	yes	3	5	22	21	Heavy Rain	100	Drizzle this morning
T-38	2017	08	21	12:02	12:45	Sara	no	4	5	26	10	None	0	No
T-38	2017	08	24	14:35	15:16	Sara	yes	3	5	18	16	None	100	Drizzle and light rain for short periods of time, today before visit
T-38	2017	08	27	13:28	14:39	Sara	yes	3	5	22	14	None	50	No
T-38	2017	08	31	12:00	12:51	Sara	yes	4	5	16	18	None	30	No
T-38	2017	09	04	13:05	13:45	Sara	no	4	5	23	27	None	50	No
T-38	2017	09	07	11:39	12:22	Sara	yes	3	5	16	23	None	50	Rain night before
T-38	2017	09	11	11:43	12:37	Sara	yes	4	5	18	10	None	0	No
T-38	2017	09	14	12:28	13:12	Sara	yes	3	5	18	10	None	0	No
T-38	2017	09	18	12:06	12:58	Sara	yes	4	5	19	14	None	100	No
T-38	2017	09	21	13:08	13:46	Sara	no	3	5	24	16	None	0	No
T-38	2017	09	25	11:56	12:38	Sara	no	4	5	28	10	None	5	Hot temperatures for past 4 days with average temperature at 30 degrees
T-38	2017	09	28	12:05	12:47	Sara	yes	3	5	16	24	None	100	No
T-38	2017	10	02	12:08	12:51	Sara	yes	4	5	21	19	None	5	No
T-38	2017	10	05	12:45	13:25	Sara	yes	3	5	17	19	None	0	No
T-38	2017	10	09	12:18	12:49	Sara	no	4	5	18	10	None	15	Heavy and light rain overnight.
T-38	2017	10	12	13:54	14:34	Sara	no	3	5	13	23	None	100	Heavy and light rain yesterday for most of day.
T-38	2017	10	16	11:25	12:26	Sara	yes	4	5	9	19	None	30	Windy and rain throughout weekend that went by



Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-38	2017	10	19	14:15	14:59	Sara	yes	3	5	17	19	None	10	No
T-38	2017	10	23	11:40	12:20	Sara	yes	4	5	19	21	None	100	No
T-38	2017	10	26	12:05	12:45	Sara	no	3	5	9	8	None	25	No
T-38	2017	10	30	14:50	15:43	Sara	no	4	5	5	27	Drizzle	100	Rain, drizzle started am
T-38	2017	11	01	11:20	11:55	Sara	no	2	5	5	14	None	100	Cold drizzle throughout yesterday.
T-38	2017	11	06	12:16	12:47	Sara	no	5	5	6	29	None	80	Rain periods throughout week prior to visit.
T-38	2017	11	13	11:37	12:09	Sara	no	7	5	4	11	None	100	Rain yesterday evening, approx 5 cm snow and squalls Friday prior to visit.
T-38	2017	11	20	12:38	13:14	Sara	no	7	5	3	19	None	30	Much colder temps, heavy rain Saturday prior to visit
T-38	2017	11	27	12:15	12:49	Sara	no	7	5	3	10	None	75	No
T-39	2017	05	31	13:19	14:19	"Tara, Sarah"	no	365	3	17	15	None	15	No
T-39	2017	06	14	13:37	14:47	"Tara, Sara"	yes	14	3	29	20	None	20	No
T-39	2017	07	12	12:59	13:40	"Tara, Sara"	no	28	5	25	18	Drizzle	100	No
T-39	2017	08	16	13:24	14:30	"Tara, Sara"	no	35	5	26	11	None	5	No
T-39	2017	09	14	14:36	15:35	Sara	no	29	5	22	13	None	0	No
T-39	2017	10	13	17:11	17:56	Sara	no	29	5	19	11	None	75	No
T-39	2017	11	08	15:09	15:47	Sara	no	26	5	6	11	None	0	No
T-41	2017	05	02	23:14		"Tara, Sarah"	yes	365	5	18	20	Light Rain	75	Heavy rain
T-41	2017	06	14	15:00	15:35	"Tara, Sara"	yes	26	5	29	20	None	10	No
T-41	2017	07	12	14:30	15:10	"Tara, Sara"	no	28	5	24	15	Light Rain	100	Rain
T-41	2017	08	16	14:39	15:40	"Tara, Sara"	no	35	5	26	12	None	10	No
T-41	2017	09	13	10:04	11:02	Sara	no	28	5	19	10	None	20	No
T-41	2017	10	12	16:45	17:31	Sara	no	29	5	14	24	None	100	Heavy and light rain for most of day yesterday
T-41	2017	11	28	15:42	16:16	Sara	no	47	5	15	31	None	0	No
T-42	2017	05	01	14:00	15:00	"Tara, Sarah"	yes	365	5	15	20	None	95	Heavy rain
T-42	2017	05	04	11:14	12:00	"Tara, Sarah"	yes	3	5	9	15	Drizzle	100	None
T-42	2017	05	08	10:11	10:46	"Tara, Sarah"	yes	4	5	4	22	None	5	None
T-42	2017	05	11	13:27	14:11	"Tara, Sarah"	yes	3	5	12	17	None	50	None
T-42	2017	05	15	09:58	10:26	"Tara, Sarah"	yes	4	5	8	6	None	2	None
T-42	2017	05	18	13:33	14:00	"Tara, Sarah"	yes	3	5	22	35	None	25	None
T-42	2017	05	22	13:25	14:09	Sara	no	4	5	15	24	None	0	Rain and thunderstorm day before
T-42	2017	05	25	11:57	12:29	"Tara, Sarah"	no	3	5	14	22	Light Rain	100	Persistent rain.
T-42	2017	05	29	11:51	12:20	"Tara, Sarah"	yes	4	5	18	17	None	5	No
T-42	2017	06	01	10:20	10:52	"Tara, Sarah"	yes	3	5	13	12	None	10	No
T-42	2017	06	05	13:57	14:21	"Tara, Sarah"	yes	4	5	14	25	Fog	95	No
T-42	2017	06	08	08:51	09:52	Tara	yes	3	5	16	2	None	2	No
T-42	2017	06	12	10:17	10:39	"Tara, Sarah"	yes	4	5	27	25	None	25	No
T-42	2017	06	15	10:58	11:33	"Tara, Sara"	yes	3	5	20	5	Light Rain	100	Rain and lightning in area.
T-42	2017	06	19	15:59	16:30	"Tara, Sara"	yes	4	5	20	7	None	90	Cloudburst
T-42	2017	06	22	14:22	14:57	"Tara, Sara"	yes	3	5	24	21	None	80	Heavy rain
T-42	2017	06	26	10:03	10:30	"Tara, Sara"	yes	4	5	16	20	None	80	Rain
T-42	2017	06	29	11:04	11:26	"Tara, Sara"	yes	3	5	20	18	None	95	Rain
T-42	2017	07	03	10:56	11:43	Sara	no	4	5	21	11	None	0	None
T-42	2017	07	06	15:22	16:26	Tara	yes	3	5	25	10	None	10	No
T-42	2017	07	10	16:25	17:23	Tara	yes	4	5	23	15	None	90	Rain
T-42	2017	07	13	10:09	10:39	"Tara, Sara"	no	3	5	23	15	None	95	Heavy rain
T-42	2017	07	17	11:06	11:30	"Tara, Sara"	yes	4	5	18	18	None	100	No
T-42	2017	07	20	14:15	15:15	Tara	yes	3	5	26	18	None	75	No
T-42	2017	07	24	10:40	11:34	Sara	no	4	5	18	23	None	100	Rain during day before
T-42	2017	07	27	14:01	14:43	Tara	yes	3	5	25	17	None	95	No
T-42	2017	07	31	10:50	11:34	Sara	yes	4	5	24	11	None	0	No
T-42	2017	08	03	14:52	15:11	Sara	yes	3	5	24	16	Heavy Rain	100	No
T-42	2017	08	04	16:20	17:29	Sara	no	4	5	24	21	None	80	Lightning thunder heavy rain day before. Also work stoppage day before so search incomplete. Return visit now with 4 day interval instead of 3.
T-42	2017	08	07	15:20	16:07	Sara	yes	3	5	21	11	None	30	Rain eve before and drizzle, light rain through out today
T-42	2017	08	10	08:48	09:37	Sara	yes	3	5	21	8	None	25	No
T-42	2017	08	14	11:22	12:05	Sara	yes	4	5	19	10	None	10	No
T-42	2017	08	17	12:30	13:06	Sara	no	3	5	20	21	Heavy Rain	100	Drizzle and rain in an before visit.
T-42	2017	08	21	09:48	10:34	Sara	no	4	5	23	8	None	0	No
T-42	2017	08	24	16:10	16:50	Sara	yes	3	5	18	16	None	100	Scattered drizzle and light rain during am
T-42	2017	08	27	12:00	13:01	Sara	yes	3	5	22	16	None	5	No
T-42	2017	08	31	11:02	11:48	Sara	yes	4	5	16	18	None	0	No

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-42	2017	09	04	12:13	12:55	Sara	no	4	5	23	27	None	40	No
T-42	2017	09	07	09:39	10:16	Sara	yes	3	5	14	21	None	50	Rain overnight
T-42	2017	09	11	10:51	11:33	Sara	yes	4	5	15	10	None	0	No
T-42	2017	09	14	17:16	18:01	Sara	yes	3	5	24	10	None	2	No
T-42	2017	09	18	09:49		Sara	yes	4	5	20	6	None	100	Light rain before search started
T-42	2017	09	21	13:58	14:46	Sara	no	3	5	29	14	None	0	No
T-42	2017	09	25	10:53	11:36	Sara	no	4	5	27	11	None	5	Hot temperatures for last 4 days. Average of 30 degrees
T-42	2017	09	28	11:07	11:49	Sara	yes	3	5	15	18	None	100	No
T-42	2017	10	02	11:04	11:51	Sara	yes	4	5	15	16	None	5	No
T-42	2017	10	05	10:16	11:04	Sara	yes	3	5	16	13	None	0	No
T-42	2017	10	09	11:28	12:05	Sara	no	4	5	18	10	None	10	Heavy and light rain overnight
T-42	2017	10	12	14:55	15:32	Sara	no	3	5	14	21	None	100	Heavy and light rain for most of day yesterday
T-42	2017	10	16	10:22	11:07	Sara	yes	4	5	8	16	None	80	Windy and rain through out weekend
T-42	2017	10	19	15:10	15:46	Sara	yes	3	5	18	21	None	30	No
T-42	2017	10	23	10:14	11:00	Sara	yes	4	5	17	18	None	100	No
T-42	2017	10	26	11:10	11:50	Sara	no	3	5	8	3	None	5	No
T-42	2017	10	30	15:54		Sara	no	4	5	5	21	Drizzle	100	Rain and drizzle today starting in the am.
T-42	2017	11	01	10:35	11:10	Sara	no	2	5	3	10	None	100	Cold drizzle throughout yesterday
T-42	2017	11	06	11:35	12:07	Sara	no	5	5	6	29	None	90	Rain periods throughout week prior to visit.
T-42	2017	11	13	10:55	11:25	Sara	no	7	5	4	11	None	100	Rain yesterday evening, approx 5cm of snow and squalls Friday evening prior to visit
T-42	2017	11	20	11:26	11:58	Sara	no	7	5	3	19	None	40	Much colder temps, heavy rain on Saturday prior to visit.
T-42	2017	11	27	11:32	12:05	Sara	no	7	5	4	8	None	30	No
T-43	2017	05	31	11:36	12:30	"Tara, Sarah"	no	365	5	16	15	None	10	No
T-43	2017	06	28	12:51	13:53	"Tara, Sara"	no	28	5	23	15	None	15	No
T-43	2017	07	26	12:57	14:10	"Tara, Sara"	no	28	5	20	17	None	90	No
T-43	2017	08	30	14:05	15:10	Sara	no	35	5	21	14	None	0	No
T-43	2017	09	27	16:32	17:25	Sara	no	28	5	20	23	None	50	Hot temperatures for past 6 days with average of 30 degrees.
T-43	2017	10	25	14:04	14:47	Sara	no	28	5	8	16	None	90	Wind advisory yesterday. Rain overnight
T-43	2017	11	23	16:36	17:08	Sara	no	29	5	1	14	None	100	Light blowing snow yesterday
T-44	2017	05	31	10:10	11:26	"Tara, Sarah"	no	365	2	15	15	None	25	No
T-44	2017	06	28	10:00		"Tara, Sara"	no	28	3	20	10	None	5	No
T-44	2017	07	26	16:43	17:28	"Tara, Sara"	no	28	5	18	20	None	100	No
T-44	2017	08	30	15:22	16:05	Sara	no	35	5	23	14	None	0	No
T-44	2017	09	28	17:34	18:17	Sara	no	29	5	16	13	None	5	No
T-44	2017	10	25	15:01	15:44	Sara	no	27	5	8	16	None	100	Wind advisory yesterday, rain overnight
T-44	2017	11	24	10:45	11:21	Sara	no	30	5	4	23	None	0	Light blowing snow 2 days ago
T-45	2017	05	31	09:22		"Tara, Sarah"	no	365	5	14	15	None	50	No
T-45	2017	06	28	12:00	12:40	"Tara, Sara"	no	28	5	21	15	None	20	No
T-45	2017	07	26	14:46	15:48	Tara	no	28	5	25	18	None	85	No
T-45	2017	08	30	17:11	17:54	Sara	no	35	5	23	11	None	0	No
T-45	2017	09	27	10:27	11:30	Sara	no	28	5	22	18	None	100	Hot temperatures for past 6 days with average of 30 degrees.
T-45	2017	10	31	14:12	14:50	Sara	no	33	5	4	26	None	100	Heavy/light rain with small amounts of hail throughout yesterday. Cold temps
T-45	2017	11	27	10:34	11:11	Sara	no	27	5	3	11	None	40	No
T-46	2017	05	31	08:11	09:20	Sara	no	365	5	15	13	None	50	None
T-46	2017	06	28	11:00		"Tara, Sara"	no	28	5	20	12	None	5	No
T-46	2017	07	26	14:38	15:31	Sara	no	28	5	25	18	None	100	None
T-46	2017	08	30	16:15	17:00	Sara	no	35	5	23	13	None	0	No
T-46	2017	09	27	11:41	12:31	Sara	no	28	5	22	18	Drizzle	100	Hot temperatures for past 6 days with average of 30 degrees
T-46	2017	10	30	16:47	17:18	Sara	no	32	5	5	19	None	100	Rain and drizzle throughout today.
T-46	2017	11	24	11:33	12:11	Sara	no	25	5	6	24	None	5	Light blowing snow 2 days ago
T-48	2017	05	02	10:55	12:00	"Tara, Sarah"	yes	365	5	16	20	Heavy Rain	0	Rain
T-48	2017	05	04	10:04		"Tara, Sarah"	yes	3	5	9	14	None	100	None
T-48	2017	05	08	09:33		"Tara, Sarah"	yes	4	5	4	22	None	0	None
T-48	2017	05	11	14:24		"Tara, Sarah"	yes	3	5	12	17	None	40	None
T-48	2017	05	15	09:16	09:50	"Tara, Sarah"	yes	4	5	8	6	None	2	None
T-48	2017	05	18	14:12	14:55	"Tara, Sarah"	yes	3	5	23	37	None	30	None
T-48	2017	05	22	15:05	15:59	Sara	no	4	5	16	23	None	0	Rainfall and thunderstorm day before
T-48	2017	05	25	13:01	13:36	"Tara, Sarah"	no	3	5	13	18	Light Rain	100	Persistent rain.
T-48	2017	05	29	13:08	13:38	"Tara, Sarah"	yes	4	5	20	15	None	5	No
T-48	2017	06	01	09:32	10:03	"Tara, Sarah"	yes	3	5	12	11	None	10	No
T-48	2017	06	05	14:34	15:02	"Tara, Sarah"	yes	4	5	15	25	None	95	No

Turbine	Year	Month	Day	Start Time	End Time	Searchers	Dog Used	Days Since Last Search	Transect Separation	Temperature	Wind Speed (km/h)	Precipitation	Cloud Cover	Significant Weather Before
T-48	2017	06	08	10:08	10:55	Tara	yes	3	5	18	5	None	2	No
T-48	2017	06	12	09:40	10:07	"Tara, Sarah"	yes	4	5	27	25	None	25	No
T-48	2017	06	15	11:49	12:22	"Tara, Sara"	yes	3	5	20	5	Light Rain	100	Rain
T-48	2017	06	19	10:47	11:10	"Tara, Sara"	yes	4	5	21	12	None	5	No
T-48	2017	06	22	15:10	15:46	"Tara, Sara"	yes	3	5	24	20	None	90	Heavy rain
T-48	2017	06	26	09:27	09:51	"Tara, Sara"	yes	4	5	16	20	None	80	Rain
T-48	2017	06	29	10:07	10:51	"Tara, Sara"	yes	3	5	20	15	Drizzle	95	Rain
T-48	2017	07	03	09:48	10:43	Sara	no	4	5	20	11	None	0	No
T-48	2017	07	06	15:17	16:01	Sara	no	3	5	29	11	None	0	None
T-48	2017	07	10	15:30	16:13	Tara	yes	4	5	21	16	Light Rain	100	Rain
T-48	2017	07	13	10:52	11:16	"Tara, Sara"	no	3	5	23	15	None	100	Heavy rain
T-48	2017	07	17	10:12	10:55	"Tara, Sara"	yes	4	5	17	18	None	100	No
T-48	2017	07	20	13:42	14:43	Sara	no	3	5	26	11	None	5	None
T-48	2017	07	24	10:41	11:23	Tara	yes	4	5	18	25	Drizzle	100	Rain
T-48	2017	07	27	14:09	15:02	Sara	no	3	5	23	11	None	40	None
T-48	2017	07	31	09:22	10:35	Sara	yes	4	5	23	10	None	0	None
T-48	2017	08	04	17:42	18:22	Sara	no	4	5	22	21	None	30	Lightning thunder heavy rain day before. Is now 4 day interval instead of 3 due to work stoppage yesterday
T-48	2017	08	07	16:30	17:19	Sara	yes	3	5	22	10	None	30	Rain evening before and drizzle, light rain earlier today
T-48	2017	08	10	10:03	11:30	Sara	yes	3	5	22	6	None	30	No
T-48	2017	08	14	09:24	11:04	Sara	yes	4	5	19	8	None	75	No
T-48	2017	08	17	13:58	14:51	Sara	yes	3	5	20	21	None	100	Heavy rain prior to visit
T-48	2017	08	21	10:48	11:42	Sara	no	4	5	23	8	None	0	No
T-48	2017	08	24	17:00	17:45	Sara	yes	3	5	17	11	None	75	Scattered light drizzle today in am
T-48	2017	08	27	11:03	11:43	Sara	yes	3	5	18	14	None	5	No
T-48	2017	08	31	09:50	10:51	Sara	yes	4	5	15	16	None	0	No
T-48	2017	09	04	11:17	12:04	Sara	no	4	5	21	24	None	10	No
T-48	2017	09	07	10:32	11:19	Sara	yes	3	5	14	18	None	50	Rain overnight
T-48	2017	09	11	09:51	10:33	Sara	yes	4	5	15	10	None	0	No
T-48	2017	09	14	13:35	14:23	Sara	yes	3	5	23	11	None	0	No
T-48	2017	09	18	11:02	11:42	Sara	yes	4	5	21	8	None	100	Light rain early am today
T-48	2017	09	21	15:04	15:44	Sara	no	3	5	30	11	None	0	No
T-48	2017	09	25	09:42	10:23	Sara	no	4	5	23	8	None	0	Hot temperatures for 4 days, average of 30 degrees
T-48	2017	09	28	10:08	10:51	Sara	yes	3	5	14	16	None	100	No
T-48	2017	10	02	09:59	10:47	Sara	yes	4	5	15	16	None	5	No
T-48	2017	10	05	11:20	12:21	Sara	yes	3	5	17	18	None	0	No
T-48	2017	10	09	10:45	11:18	Sara	no	4	5	18	10	None	10	Heavy/light rain overnight
T-48	2017	10	12	15:48	16:28	Sara	no	3	5	14	25	None	100	Heavy and light rain for most of day yesterday
T-48	2017	10	16	12:41	13:20	Sara	yes	4	5	9	16	None	15	Windy and rain throughout weekend that just passed
T-48	2017	10	19	16:02	16:43	Sara	yes	3	5	17	18	None	75	No
T-48	2017	10	23	16:11	16:49	Sara	yes	4	5	18	24	Drizzle	100	No
T-48	2017	10	26	10:16	10:54	Sara	no	3	5	6	3	None	1	No
T-48	2017	10	30	17:21	17:56	Sara	no	4	5	6	19	Heavy Rain	100	Scattered rainfall today
T-48	2017	11	02	10:11	10:42	Sara	no	3	5	11	11	Drizzle	100	Rain off and on all week prior to visit and during
T-48	2017	11	06	10:34	11:11	Sara	no	4	5	6	29	None	80	Various bouts of rain fall through out the last week prior to visit.
T-48	2017	11	13	10:02	10:36	Sara	no	7	5	4	6	None	100	Rain yesterday evening, approx 5 cm snow and squalls Friday prior to visit.
T-48	2017	11	20	10:33	11:10	Sara	no	7	5	3	24	None	75	Much colder temperatures, heavy rain on Saturday prior to visit.
T-48	2017	11	27	16:13	16:44	Sara	no	7	5	3	5	None	100	No

**Table 2**  
**Grand Bend Wind Farm Year 1 Avian Mortality Monitoring Results - 2017**

Turbine	Date of Search	Common Name	Sex	Carcass Condition	Injuries	Time Since Death (Hours)	Visibility Class	Substrate	Easting	Northing	Distance from Turbine (m)	Direction from Turbine	Latitude	Longitude
T-02	2017-07-24	Cliff Swallow	Unknown	Early	Unknown	24	1	Gravel	444354.817053643	4811725.79328944	41.00	210.00	43.45637115	-81.68780442
T-02	2017-09-18	Ruby-throated Hummingbird	Unknown	Complete	Unknown	9999	1	Silt sand	444379.517118382	4811801.54454853	41.00	5.00	43.45705503	-81.68750687
T-02	2017-09-28	Golden-crowned Kinglet	Male	Early	Unknown	12	1	Silt sand	444400.876500219	4811729.71868352	40.00	140.00	43.45640992	-81.68723554
T-02	2017-10-30	Golden-crowned Kinglet	Unknown	Moderate	Unknown	36	1	Silt sand	444360.162738076	4811803.21713935	45.00	340.00	43.45706865	-81.68774625
T-06	2017-05-09	Bird spp. (unknown)	Unknown	Advanced	Unknown	9999	1	Sand	444056.827868616	4809503.0512834	38.00	145.00	43.43633597	-81.69125953
T-06	2017-10-04	Bird spp. (unknown)	Unknown	Scavanged	Unknown	9999	4	Silt sand corn	444048.003249594	4809528.54825012	14.00	113.00	43.43656488	-81.69137117
T-07	2017-10-31	Pine Siskin	Unknown	Early	Unknown	24	2	Silt sand grass	443967.901633188	4809098.51155425	52.00	164.00	43.43268695	-81.69231674
T-16	2017-06-16	Bird spp. (unknown)	Unknown	Complete	Unknown	9999	1	Sand and weeds	443886.752538953	4807586.71642049	27.00	199.00	43.41906904	-81.69316398
T-17	2017-05-16	Tree Swallow	Male	Fresh	Unknown	48	1	Sand	443375.967922226	4805372.981058	17.00	359.00	43.39909866	-81.69924388
T-17	2017-11-02	European Starling	Unknown	Early	Laceration	12	2	Silt sand grass	443340.43138278	4805378.5342675	42.00	302.00	43.39914597	-81.69968326
T-17	2017-08-11	Ruby-throated Hummingbird	Unknown	Complete	Unknown	9999	2	Silt sand grass	443390.492223325	4805367.86949071	19.00	50.00	43.39905373	-81.699064
T-18	2017-09-01	Magnolia Warbler	Unknown	Early	Unknown	24	1	Gravel from access road	443707.706306246	4805299.54053629	39.00	192.00	43.39846238	-81.69514001
T-18	2017-10-17	Golden-crowned Kinglet	Unknown	Scavanged	Unknown	24	2	Silt sand grass	443698.764691279	4805333.53821563	18.00	257.00	43.39876782	-81.69525392
T-20	2017-05-15	Blue Jay	Unknown	Fresh	Unknown	48	1	Silty Sand	446883.143942672	4804819.59589614	30.00	258.00	43.39437264	-81.65588329
T-20	2017-11-06	Golden-crowned Kinglet	Unknown	Moderate	Unknown	24	2	Silt sand grass	446869.95272722	4804814.28632064	44.00	255.00	43.3943239	-81.65604564
T-20	2017-08-17	Cliff Swallow	Unknown	Advanced	Unknown	96	2	Silt sand grass	446882.234654051	4804803.24209476	38.00	233.00	43.39422533	-81.65589293
T-21	2017-05-17	Red-breasted Nuthatch	Male	Fresh	Unknown	24	1	Gravel	443654.372141751	4804631.55940762	39.00	1.00	43.39244401	-81.69572976
T-21	2017-09-20	Bird spp. (unknown)	Unknown	Complete	Unknown	9999	1	Gravel access road	443658.231783827	4804631.9926799	40.00	6.00	43.3924482	-81.69568216
T-22	2017-06-21	Bobolink	Male	Advanced	Unknown	9999	2	Silt,sand ,corn 12 inches	443973.202501769	4804635.74944723	1.00	274.00	43.39250562	-81.69179371
T-23	2017-06-21	Red-winged Blackbird	Unknown	Complete	Unknown	9999	2	Silt sand and 6 inch corn	443344.771157967	4804186.73996197	25.00	84.00	43.38841563	-81.69950623
T-23	2017-06-21	Blue Jay	Unknown	Complete	Unknown	9999	2	Silt sand 6 inch corn where 2 carcasses found beside each other.	443340.186849696	4804185.74507144	21.00	86.00	43.38840632	-81.69956272
T-27	2017-05-18	Wilson's Snipe	Unknown	Early	Cracked Skull	48	2	Sand, corn stubble.	443673.161310916	4803690.04803705	37.00	77.00	43.38396823	-81.69540086
T-31	2017-10-27	Golden-crowned Kinglet	Male	Scavanged	Unknown	72	1	Gravel access road	443553.195430936	4801134.61508702	27.00	29.00	43.36095052	-81.69661841
T-33	2017-10-13	Golden-crowned Kinglet	Unknown	Moderate	Unknown	24	2	Silt sand grass	442844.020927366	4800454.68093978	13.00	148.00	43.35477486	-81.70529888
T-38	2017-05-11	Bird spp. (unknown)	Unknown	Moderate	Unknown	9999	1	Silt	442445.988314381	4799479.63111202	39.00	110.00	43.34596527	-81.71010783
T-38	2017-07-06	European Starling	Unknown	Early	Unknown	36	2	Silt with grass	442406.034681887	4799495.83412775	4.00	308.00	43.3461081	-81.71060245
T-38	2017-07-13	Tree Swallow	Unknown	Early	Broken Neck	24	2	Silt with grass	442436.823823387	4799485.29924887	29.00	106.00	43.3460156	-81.71022149
T-38	2017-08-27	Chimney Swift	Unknown	Early	Unknown	10	2	Silt sand grass	442444.106130981	4799509.15738696	38.00	65.00	43.34623097	-81.71013415
T-38	2017-08-31	Ruby-throated Hummingbird	Unknown	Early	Unknown	24	2	Silt sand grass	442394.461133069	4799514.58369095	26.00	325.00	43.34627603	-81.7107472
T-38	2017-10-16	Ruby-crowned Kinglet	Unknown	Moderate	Broken Wing	12	2	Silt sand grass	442384.647942757	4799486.34859407	25.00	254.00	43.34602105	-81.7108653
T-38	2017-10-30	Golden-crowned Kinglet	Unknown	Moderate	Unknown	24	2	Silt sand grass	442362.865021931	4799484.59775142	47.00	259.00	43.34600362	-81.71113386
T-42	2017-05-01	Bird spp. (unknown)	Unknown	Early	Unknown	48	1	Silt	441605.299129126	4797858.07037488	6.00	354.00	43.33130012	-81.72030693
T-42	2017-05-11	Bird spp. (unknown)	Unknown	Advanced	Unknown	9999	1	Silt	441628.515723875	4797849.70128203	23.00	94.00	43.33122657	-81.72001968
T-42	2017-06-01	Bird spp. (unknown)	Unknown	Advanced	Unknown	9999	1	Silt and grass	441626.095623137	4797839.36092465	24.00	121.00	43.33113328	-81.72004843
T-48	2017-08-14	Cliff Swallow	Unknown	Fresh	Unknown	12	1	Gravel,access road	440534.214460133	4796566.32007536	13.00	27.00	43.31958545	-81.73337792
T-48	2017-10-05	Golden-crowned Kinglet	Unknown	Moderate	Unknown	24	2	Silt sand grass	440533.572050983	4796594.55598506	40.00	7.00	43.31983963	-81.7333889

**Table 3**  
**Grand Bend Wind Farm Year 1 Raptor Mortality Monitoring Results - 2017**

Turbine	Date of Search	Common Name	Sex	Carcass Condition	Injuries	Time Since Death (Hours)	Visibility Class	Substrate	Easting	Northing	Distance from Turbine (m)	Direction from Turbine	Latitude	Longitude
T-16	2017-09-22	Turkey Vulture	Unknown	Early	Unknown	12	2	Silt sand grass	443922.624748206	4807651.49507332	48.00	34.00	43.41965498	-81.69272753
T-27	2017-08-14	Turkey Vulture	Unknown	Early	Unknown	24	1	Gravel from access road	443622.653845766	4803691.86572167	18.00	303.00	43.3839808	-81.69602456
T-48	2017-09-04	Turkey Vulture	Unknown	Moderate	Unknown	72	2	Silt sand grass	440579.077443691	4796553.47044961	51.00	91.00	43.3194733	-81.73282329

**Table 4**  
**Grand Bend Wind Farm Year 1 Bat Mortality Monitoring Results - 2017**

Turbine	Date of Search	Common Name	Sex	Carcass Condition	Injuries	Time Since Death (Hours)	Visibility Class	Substrate	Easting	Northing	Distance from Turbine (m)	Direction from Turbine	Latitude	Longitude
T-01	2017-09-06	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	1	Gravel access road	444056.771411974	4811876.31736785	21.00	96.00	43.45770421	-81.69150361
T-02	2017-08-17	Hoary Bat	Unknown	Moderate	Unknown	48	1	Silt sand	444351.95730905	4811753.97771012	25.00	253.00	43.4566247	-81.68784264
T-02	2017-09-14	Eastern Red Bat	Unknown	Complete	Unknown	9999	1	Gravel	444368.032696912	4811752.68601998	11.00	222.00	43.45661427	-81.68764383
T-02	2017-09-25	Hoary Bat	Unknown	Early	Unknown	12	1	Silt sand	444362.912066285	4811743.58651617	21.00	216.00	43.45653196	-81.68770619
T-05	2017-08-02	Hoary Bat	Unknown	Advanced	Unknown	96	4	Silt with maize	444217.97575586	4809857.6920237	17.00	134.00	43.43954109	-81.6893047
T-07	2017-06-20	Silver-haired Bat	Unknown	Advanced	Unknown	72	2	Silt sand	443968.392775429	4809182.13331676	37.00	23.00	43.4334399	-81.69231925
T-07	2017-06-30	Silver-haired Bat	Unknown	Moderate	Unknown	48	2	Silty sand with grass	444000.408134201	4809151.39966057	47.00	86.00	43.43316557	-81.69192055
T-07	2017-08-01	Hoary Bat	Unknown	Advanced	Unknown	9999	2	Silt sand grass	443967.616137605	4809174.39443826	29.00	28.00	43.43337016	-81.69232805
T-07	2017-08-22	Hoary Bat	Unknown	Moderate	Unknown	48	2	Silt sand grass	443945.58501795	4809149.57258302	8.00	277.00	43.43314502	-81.6925977
T-07	2017-09-05	Silver-haired Bat	Unknown	Early	Unknown	12	1	Cement foundation	443951.065795881	4809149.47116846	3.00	291.00	43.43314452	-81.69252997
T-09	2017-07-28	Hoary Bat	Unknown	Fresh	Unknown	12	1	Gravel from turbine foundation	444322.265356908	4808843.60572284	12.00	182.00	43.43041827	-81.68791263
T-09	2017-10-04	Eastern Red Bat	Unknown	Complete	Unknown	9999	1	Gravel access road	444266.76776902	4808847.71797074	57.00	261.00	43.43045116	-81.68859869
T-11	2017-09-08	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	1	Gravel edge of access road and bean field.	444300.953053866	4808464.56599264	29.00	276.00	43.4270039	-81.68813727
T-13	2017-09-13	Hoary Bat	Unknown	Early	Unknown	6	1	Gravel access road	444201.153682775	4808033.91262379	28.00	253.00	43.42311897	-81.68932616
T-16	2017-07-18	Hoary Bat	Unknown	Fresh	Unknown	12	1	Gravel	443896.959195266	4807596.60193332	15.00	175.00	43.41915881	-81.69303892
T-16	2017-08-04	Hoary Bat	Unknown	Moderate	Unknown	36	2	Silt sand grass	443927.384317351	4807606.09584761	32.00	100.00	43.41924657	-81.69266408
T-16	2017-08-11	Hoary Bat	Unknown	Moderate	Unknown	36	2	Silt sand grass	443874.302943637	4807625.34671928	25.00	302.00	43.41941593	-81.69332173
T-16	2017-08-15	Eastern Red Bat	Unknown	Moderate	Unknown	36	2	Silt sand grass	443912.571457836	4807567.79937725	47.00	159.00	43.41890065	-81.69284312
T-16	2017-08-15	Hoary Bat	Unknown	Early	Unknown	12	1	Gravel pad surrounding turbine perimeter	443891.868231307	4807604.56650122	8.00	207.00	43.41923014	-81.69310262
T-16	2017-08-18	Hoary Bat	Unknown	Early	Unknown	24	2	Silt sand grass	443903.142973861	4807650.70284993	39.00	10.00	43.41964639	-81.69296809
T-16	2017-08-22	Big Brown Bat	Unknown	Advanced	Unknown	72	2	Silt sand grass	443945.081755734	4807626.52708021	52.00	73.00	43.41943185	-81.69244758
T-17	2017-08-11	Little Brown Myotis	Unknown	Early	Laceration	12	2	Silt sand grass	443397.762071536	4805363.79157296	23.00	69.00	43.39901756	-81.69897381
T-17	2017-08-15	Hoary Bat	Unknown	Early	Unknown	24	1	Gravel pad area	443378.829317868	4805354.79926308	3.00	112.00	43.39893517	-81.69920666
T-17	2017-08-25	Big Brown Bat	Unknown	Advanced	Unknown	96	1	Cement pad beside turbine	443374.65212055	4805356.11430732	2.00	278.00	43.39894669	-81.69925838
T-17	2017-09-01	Little Brown Myotis	Unknown	Advanced	Unknown	72	2	Silt sand grass	443354.961945561	4805353.9288861	21.00	264.00	43.39892553	-81.69950129
T-17	2017-09-05	Silver-haired Bat	Unknown	Fresh	Unknown	6	1	Gravel access road	443367.15021706	4805316.32877249	41.00	192.00	43.3985879	-81.69934689
T-17	2017-09-29	Eastern Red Bat	Unknown	Moderate	Unknown	48	2	Silt sand grass	443385.888731712	4805317.52618451	40.00	165.00	43.3986001	-81.69911563
T-18	2017-07-11	Big Brown Bat	Unknown	Early	Unknown	24	1	Concrete	443698.774093776	4805324.8944501	22.00	234.00	43.39869	-81.69525292
T-18	2017-08-15	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	3	Silt sand bean..30cm beyond 50 metre radius	443681.373467059	4805327.82293424	36.00	254.00	43.39871506	-81.69546808
T-18	2017-08-15	Hoary Bat	Unknown	Moderate	Unknown	36	2	Silt sand grass	443717.476265922	4805354.32339653	17.00	3.00	43.39895637	-81.69502501
T-18	2017-09-08	Silver-haired Bat	Unknown	Early	Unknown	12	1	Gravel pad	443715.437066832	4805327.92531462	10.00	185.00	43.39871854	-81.69504748
T-18	2017-09-12	Silver-haired Bat	Unknown	Early	Unknown	12	2	Silt sand grass	443693.199128337	4805345.01635536	24.00	287.00	43.39887075	-81.69532383
T-18	2017-09-12	Silver-haired Bat	Unknown	Early	Unknown	12	2	Silt sand grass	443680.793865416	4805325.88214448	37.00	251.00	43.39869754	-81.69547504
T-18	8/8/2017	Big Brown Bat	Unknown	Advanced	Unknown	96	2	Silt sand grass	443754.629870256	4805319.56947084	42.00	115.00	43.39864624	-81.69456267
T-19	2017-06-14	Big Brown Bat	Unknown	Moderate	Unknown	48	1	Silt with maize shoots	446277.769071815	4804846.98695077	24.00	44.00	43.39457616	-81.66336061
T-20	2017-08-14	Big Brown Bat	Unknown	Moderate	Unknown	36	2	Silt sand grass	446931.629130601	4804826.69007683	19.00	86.00	43.39443995	-81.65528532
T-20	2017-08-14	Hoary Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	446929.449772507	4804826.66055531	17.00	86.00	43.39443953	-81.65531223
T-20	2017-08-27	Silver-haired Bat	Unknown	Advanced	Unknown	72	2	Silt sand grass	446895.896944379	4804800.26278158	30.00	213.00	43.39419947	-81.65572395
T-20	2017-09-11	Silver-haired Bat	Unknown	Early	Unknown	12	1	Gravel pad	446911.793805507	4804818.15115563	8.00	186.00	43.39436166	-81.6555294
T-20	2017-08-17	Eastern Red Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	446899.042519396	4804845.48078275	24.00	325.00	43.39460684	-81.6556895
T-23	2017-07-19	Eastern Red Bat	Unknown	Moderate	Decapitated	48	1	Gravel	443313.372975084	4804182.14398286	7.00	250.00	43.38837187	-81.69989339
T-27	2017-06-19	Silver-haired Bat	Unknown	Early	Unknown	24	1	Gravel	443644.122864042	4803684.51853524	7.00	68.00	43.38391626	-81.69575877
T-27	2017-07-24	Big Brown Bat	Unknown	Early	Unknown	24	2	Sand with weeds	443661.107331327	4803717.47594751	43.00	33.00	43.38421428	-81.69555249
T-27	2017-07-24	Hoary Bat	Unknown	Moderate	Decapitated	72	2	Sand with weeds	443628.685206647	4803690.48418191	12.00	314.00	43.38396882	-81.69594996
T-27	2017-07-27	Hoary Bat	Unknown	Advanced	Unknown	48	2	Sand with weeds	443668.535517259	4803696.33317589	34.00	65.00	43.38402447	-81.69545861
T-27	2017-07-27	Hoary Bat	Unknown	Advanced	Unknown	48	2	Sand with weeds.	443630.606879749	4803688.87160343	10.00	315.00	43.38395444	-81.69592607
T-27	2017-08-17	Hoary Bat	Unknown	Complete	Unknown	9999	1	Silt sand	443654.47546056	4803710.35385495	33.00	30.00	43.38414966	-81.69563362
T-27	2017-08-24	Silver-haired Bat	Unknown	Early	Unknown	12	1	Silt sand	443655.925170285	4803664.36782929	25.00	133.00	43.38373572	-81.69561099
T-29	2017-09-21	Bat spp. (unknown)	Unknown	Moderate	Unknown	24	3	Silt sand dried bean stalk	443162.478330796	4802367.11531043	19.00	152.00	43.37201828	-81.70156784
T-30	2017-09-26	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	1	Gravel pad	443007.046850322	4802012.29342018	4.00	236.00	43.36881174	-81.70344933
T-31	2017-07-04	Hoary Bat	Unknown	Early	Unknown	36	2	Silt sand grass	443525.464529844	4801084.45111235	30.00	208.00	43.36049676	-81.69695545
T-31	2017-07-14	Hoary Bat	Unknown	Moderate	Unknown	48	2	Silty sand grass	443575.987123945	4801100.02725382	38.00	106.00	43.36064081	-81.6963336
T-31	2017-07-21	Bat spp. (unknown)	Unknown	Advanced	Unknown	9999	2	Silt with grass	443536.016429917	4801079.96909313	31.00	186.00	43.3604572	-81.69682478
T-31	2017-07-24	Eastern Red Bat	Unknown	Moderate	Unknown	72	1	Cement pad	443540.813282105	4801112.68356814	2.00	33.00	43.36075212	-81.69676895
T-31	2017-07-25	Bat spp. (unknown)	Unknown	Advanced	Unknown	9999	2	Silt with grass	443528.369916834	4801081.80163747	31.00	201.00	43.36047313	-81.69691932
T-31	2017-07-28	Hoary Bat	Unknown	Fresh	Unknown	12	2	Sandy silt with grass	443507.184343578	4801106.17335966	33.00	261.00	43.36069097	-81.69718327
T-31	2017-07-28	Bat spp. (unknown)	Unknown	Advanced	Unknown	9999	2	Silt with grass	443514.469347814	4801113.11305642	25.00	274.00	43.360754	-81.69709409
T-31	2017-08-15	Big Brown Bat	Unknown	Advanced	Unknown	96	2	Silt sand grass	443550.163171203	4801098.46944548	16.00	139.00	43.36062484	-81.69665211
T-31	2017-08-18	Big Brown Bat	Unknown	Early	Unknown	24	1	Gravel pad	443540.224570869	4801108.88100307	2.00	165.00	43.36071784	-81.69677583
T-31	2017-09-01	Silver-haired Bat	Unknown	Advanced	Unknown	72	2	Silt sand grass	443494.712617217	4801128.81992225	48.00	291.00	43.36089394	-81.69733951
T-31	2017-09-01	Silver-haired Bat	Unknown	Early	Unknown	24	2	Silt sand grass	443554.8349683	4801099.93380056	19.00	125.00	43.36063838	-81.69659461
T-31	2017-09-08	Big Brown Bat	Unknown	Moderate	Unknown	24	2	Grass	443521.808852823	4801087.5397812	29.00	217.00	43.3605243	-81.69700088
T-33	2017-07-21	Hoary Bat	Unknown	Early	Unknown	24	2	Silt sand grass	442832.478121173	4800448.08047468	18.00	195.00	43.35471455	-81.70544062
T-33	2017-07-25	Hoary Bat	Unknown	Advanced	Unknown	9999	2	Silt with grass	442838.924329471	4800485.016261	19.00	4.00	43.35504756	-81.70536493
T-33	2017-07-25	Hoary Bat	Unknown	Fresh	Unknown	12	2	Silt with grass	442850.038933701	4800497.21521577	34.00	21.00	43.35515829	-81.70522906

Turbine	Date of Search	Common Name	Sex	Carcass Condition	Injuries	Time Since Death (Hours)	Visibility Class	Substrate	Easting	Northing	Distance from Turbine (m)	Direction from Turbine	Latitude	Longitude
T-33	2017-07-28	Hoary Bat	Unknown	Moderate	Unknown	36	2	Silt sand grass	442835.367204756	4800515.02676827	49.00	357.00	43.35531754	-81.70541195
T-33	2017-08-01	Eastern Red Bat	Unknown	Fresh	Unknown	6	1	Cement pad of turbine	442838.221364651	4800471.76123276	6.00	7.00	43.3549282	-81.70537222
T-33	2017-08-08	Hoary Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	442882.193169239	4800479.87509127	47.00	72.00	43.35500461	-81.7048305
T-33	2017-08-15	Big Brown Bat	Unknown	Advanced	Unknown	9999	2	Silt sand grass	442824.345777011	4800509.82764379	46.00	343.00	43.35526989	-81.7055474
T-33	2017-08-18	Hoary Bat	Unknown	Early	Broken Wing	12	2	Silt sand grass	442824.183869839	4800447.28018492	23.00	215.00	43.35470671	-81.70554288
T-33	2017-08-25	Big Brown Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	442871.1354938	4800485.67038619	39.00	59.00	43.35505595	-81.70496754
T-33	2017-08-29	Eastern Red Bat	Unknown	Early	Unknown	12	2	Silt sand grass	442876.642060957	4800460.43308507	40.00	97.00	43.35482913	-81.70489697
T-33	2017-09-05	Silver-haired Bat	Unknown	Moderate	Unknown	24	2	Silt sand grass	442842.07641456	4800501.90453255	37.00	7.00	43.3551999	-81.7053278
T-33	2017-10-13	Hoary Bat	Unknown	Fresh	Unknown	12	2	Silt sand grass	442841.464126788	4800500.18755446	35.00	6.00	43.3551844	-81.70533517
T-34	2017-09-27	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	3	Silt sand dried beans	442242.078023345	4800142.25142295	22.00	358.00	43.35191575	-81.71269331
T-35	2017-08-30	Hoary Bat	Unknown	Complete	Unknown	9999	4	Silt sand corn	442769.766227338	4800002.6794239	18.00	130.00	43.35069945	-81.70616792
T-37	2017-08-30	Silver-haired Bat	Unknown	Fresh	Unknown	6	3	Old crop cut wheat mixed with new crop wheat growing in silt sand. Old and new wheat approx 30cm	442047.345725908	4799642.62754795	31.00	207.00	43.34740222	-81.71504318
T-38	2017-06-12	Hoary Bat	Unknown	Early	Unknown	36	1	Silt with grass	442449.067418176	4799510.94450719	44.00	66.00	43.34624744	-81.71007313
T-38	2017-07-17	Eastern Red Bat	Unknown	Advanced	Unknown	48	2	Silt sand grass	442383.465365888	4799487.09401783	26.00	256.00	43.34602767	-81.71087997
T-38	2017-07-24	Hoary Bat	Unknown	Fresh	Unknown	12	1	Gravel from access road	442397.381549128	4799490.52699196	12.00	256.00	43.34605965	-81.71070864
T-38	2017-08-31	Silver-haired Bat	Unknown	Moderate	Unknown	24	2	Silt sand grass	442402.798551	4799500.35797805	9.00	318.00	43.34614858	-81.71064285
T-38	2017-08-10	Big Brown Bat	Unknown	Early	Laceration	24	2	Silt sand grass	442447.279914703	4799506.8775717	41.00	70.00	43.34621069	-81.71009475
T-38	2017-08-27	Silver-haired Bat	Unknown	Fresh	Unknown	1	2	Silt sand grass	442422.616148939	4799471.56808182	26.00	148.00	43.34589088	-81.71039533
T-38	2017-09-11	Eastern Red Bat	Unknown	Advanced	Unknown	96	2	Silt sand grass	442371.878881408	4799481.19760469	39.00	251.00	43.34597369	-81.7110223
T-39	2017-08-16	Hoary Bat	Unknown	Advanced	Unknown	96	3	Silt sand wheat stubble	441767.716847665	4799357.6938508	40.00	143.00	43.3448151	-81.71846283
T-39	2017-09-14	Hoary Bat	Unknown	Complete	Unknown	9999	3	Silt sand dry cut wheat	441712.864012975	4799357.277261	45.00	223.00	43.3448071	-81.7191395
T-41	2017-09-13	Hoary Bat	Unknown	Advanced	Unknown	9999	4	Silt sand corn 2 meters tall	441755.471820915	4798100.74357897	46.00	190.00	43.33349677	-81.71848043
T-42	2017-06-15	Silver-haired Bat	Unknown	Moderate	Unknown	72	1	Silt	441619.963392485	4797861.13228886	17.00	55.00	43.33132883	-81.72012638
T-42	2017-06-15	Eastern Red Bat	Unknown	Early	Unknown	48	1	Gravel pad	441604.239084427	4797862.80860624	11.00	351.00	43.3313427	-81.72032051
T-42	2017-07-20	Big Brown Bat	Unknown	Advanced	Decapitated	36	2	Silt with grass	441652.293781478	4797844.97653326	47.00	98.00	43.33118588	-81.7197259
T-42	2017-08-04	Big Brown Bat	Unknown	Advanced	Unknown	96	1	Gravel access road	441612.258854386	4797856.60926768	8.00	51.00	43.33128751	-81.72022093
T-42	2017-08-31	Eastern Red Bat	Unknown	Advanced	Unknown	72	2	Silt sand grass	441586.632315098	4797852.65983207	19.00	273.00	43.33124996	-81.72053659
T-42	2017-08-17	Hoary Bat	Unknown	Fresh	Unknown	12	1	Gravel from access road	441618.366542345	4797861.93261424	16.00	50.00	43.33133591	-81.72014616
T-42	2017-08-27	Hoary Bat	Unknown	Fresh	Unknown	12	2	Silt sand grass	441580.06381929	4797850.64052221	26.00	267.00	43.33123127	-81.72061739
T-42	2017-08-27	Silver-haired Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	441654.501123904	4797830.63997275	53.00	113.00	43.33105696	-81.71969715
T-42	2017-09-21	Eastern Red Bat	Unknown	Fresh	Unknown	8	1	Gravel pad	441605.833420389	4797849.11493205	2.00	183.00	43.33121953	-81.72029939
T-43	2017-07-26	Hoary Bat	Unknown	Early	Unknown	24	1	Gravel and silt	442258.749983681	4797848.58702241	20.00	29.00	43.33126521	-81.71224614
T-43	2017-08-30	Silver-haired Bat	Unknown	Moderate	Unknown	24	1	Gravel pad	442245.05552072	4797833.31570035	5.00	298.00	43.33112666	-81.71241344
T-43	2017-08-30	Silver-haired Bat	Unknown	Moderate	Unknown	24	3	Silt sand 60cm bean growth	442266.551232605	4797847.77113151	24.00	46.00	43.33125846	-81.71214983
T-44	2017-06-28	Hoary Bat	Unknown	Fresh	Unknown	24	2	Silt sand 3 inch bean	442242.472227366	4797827.62653278	7.00	241.00	43.33107524	-81.7124447
T-44	2017-07-26	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	3	Silt sand cropped wheat	441137.873881557	4797274.45437074	50.00	17.00	43.32600888	-81.72600964
T-44	2017-08-30	Hoary Bat	Unknown	Advanced	Unknown	48	1	Gravel access road	441134.179644907	4797198.97458779	30.00	157.00	43.32532898	-81.72604711
T-45	2017-07-26	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	1	Gravel	440143.441386998	4796946.89991226	15.00	219.00	43.32298113	-81.73823833
T-46	2017-07-26	Bat spp. (unknown)	Unknown	Complete	Unknown	9999	4	Silt sand corn 8 ft tall.	440554.26571673	4796913.9282217	22.00	11.00	43.32271684	-81.73316829
T-48	2017-07-17	Hoary Bat	Unknown	Advanced	Unknown	72	2	Silt sand grass	440520.743185012	4796601.18054707	47.00	350.00	43.31989826	-81.73354782
T-48	2017-07-24	Hoary Bat	Unknown	Fresh	Broken Wing	12	2	Sandy silt with grass	440527.365908766	4796564.31821551	9.00	353.00	43.31956688	-81.73346216
T-48	2017-07-31	Hoary Bat	Unknown	Fresh	Unknown	10	2	Silt sand grass	440559.511929516	4796562.33701132	32.00	76.00	43.31955159	-81.73306553
T-48	2017-08-31	Eastern Red Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	440489.264025426	4796566.10057716	41.00	285.00	43.31957992	-81.73393222
T-48	2017-08-31	Hoary Bat	Unknown	Early	Unknown	12	2	Silt sand grass	440567.848057375	4796555.71486147	39.00	88.00	43.31949262	-81.73296201
T-48	2017-08-10	Big Brown Bat	Unknown	Early	Unknown	12	2	Silt sand grass	440510.259764949	4796584.64163832	35.00	328.00	43.31974852	-81.73367531
T-48	2017-08-14	Big Brown Bat	Unknown	Moderate	Unknown	48	2	Silt sand grass	440497.98729031	4796574.14155916	36.00	302.00	43.31965301	-81.73382551
T-48	2017-08-17	Big Brown Bat	Unknown	Early	Unknown	24	2	Silt sand grass	440570.800393219	4796541.2688923	45.00	107.00	43.31936278	-81.73292404
T-48	2017-08-21	Eastern Red Bat	Unknown	Complete	Unknown	9999	2	Silt sand grass	440528.442762222	4796515.89600667	39.00	179.00	43.31913098	-81.73344363
T-48	2017-09-04	Silver-haired Bat	Unknown	Advanced	Unknown	48	2	Silt sand grass	440555.481716637	4796525.9918328	40.00	137.00	43.31922402	-81.73311129

**Table 5**  
**Grand Bend Wind Farm Year 1 Incidental Mortality Results - 2017 (found outside of the 50 m search radius or found incidentally during other tasks)**

Turbine	Date of Search	Common Name	Sex	Carcass Condition	Injuries	Time Since Death (Hours)	Visibility Class	Substrate	Easting	Northing	Distance from Turbine (m)	Direction from Turbine	Latitude	Longitude
T-09	2017-10-04	Eastern Red Bat	Unknown	Complete	Unknown	9999	1	Gravel access road	444266.76776902	4808847.71797074	57.00	261.00	43.43045116	-81.68859869
T-16	2017-05-02	Savannah Sparrow	Unknown	Moderate	Unknown	96	1	Sand	443862.308866395	4807656.72573391	56.00	323.00	43.41969756	-81.6934731
T-22	2017-05-17	Red-tailed Hawk	Unknown	Advanced	Unknown	9999	1	Sand	443943.247246249	4804592.84483455	53.00	215.00	43.39211707	-81.69215916
T-31	2017-08-29	Bird spp. (unknown)	Unknown	Complete	Unknown	96	2	Silt sand grass	443573.203182483	4801060.24886665	61.00	146.00	43.36028244	-81.69636386
T-34	2017-08-03	Cliff Swallow	Unknown	Advanced	Unknown	96	1	Gravel access road	442369.622982642	4800044.14708583	100.00		43.35104223	-81.7111093
T-48	2017-06-29	Hoary Bat	Unknown	Fresh	Broken Neck	24	2	Silt	440515.992147853	4796610.46633248	57.00	347.00	43.31998149	-81.73360742
T-48	2017-07-27	Hoary Bat	Unknown	Fresh	Broken Wing	12	2	Silt sand grass	440495.343566698	4796511.52289421	55.00	217.00	43.31908899	-81.73385133



**Table 6**  
**Grand Bend Wind Farm Year 1 Searcher Efficiency Trial Results - 2017**

Turbine	Placed By	Searcher	Species Common Name	Visibility Class	Condition	Substrate	Weather	Found	Scavanged	Dog Used	Date Placed	Time
T-16	Tara	Sara	Red-breasted Nuthatch	1	Thawed	Sand	Sun	no	no	No	2017-06-01	12:01
T-16	Tara	Sara	Red-breasted Nuthatch	1	Thawed	Sandy silt	Sun	no	no	No	2017-06-02	08:46
T-42	Tara	Sara	Red-breasted Nuthatch	1	Thawed	Silt	Grey cloud	no	no	No	2017-06-05	08:46
T-16	Tara	Sara	Red-breasted Nuthatch	1	Thawed	Silty sand	Grey cloud, 12'c	no	no	No	2017-06-06	08:49
T-16	Tara	Sara	Red-eyed Vireo	1	Thawed	Sand	Grey cloud, 15'c	yes	no	No	2017-06-09	09:03
T-33	Tara	Sara	Red-breasted Nuthatch	1	Thawed	Silt with grass	Grey cloud, 24'c	no	no	No	2017-06-13	08:39
T-33	Tara	Sara	Red-eyed Vireo	1	Thawed	Silt with grass	Grey cloud,24'c	yes	no	No	2017-06-13	08:40
T-02	Sara	Tara	Red-breasted Nuthatch	1	Thawed	Silt sand	Cloudy with chance of rain	no	no	Yes	2017-06-15	08:56
T-07	Tara	Sara	Eastern Red Bat	1	Thawed	Silt with grass	Sunny intervals, 24'c	no	no	No	2017-06-16	12:55
T-18	Sara	Tara	Red-breasted Nuthatch	1	Thawed	Silt sand	Sunny warm	yes	no	Yes	2017-06-16	09:44
T-20	Sara	Tara	Red-eyed Vireo	2	Thawed	Grass weed	Sunny	no	no	Yes	2017-06-19	09:24
T-02	Sara	Tara	Red-breasted Nuthatch	1	Thawed	Silt Sand	Sunny	yes	no	Yes	2017-06-19	09:11
T-38	Sara	Tara	Little Brown Myotis	2	Thawed	Silt sand grass	Sunny	yes	no	Yes	2017-06-19	09:55
T-27	Sara	Tara	Bird spp. (unknown)	2	Thawed	Silt sand old corn husk	Sunny	no	no	Yes	2017-06-19	09:38
T-20	Tara	Sara	Eastern Red Bat	1	Thawed	Sandy silt with maize	Sun, 21'c	no	no	No	2017-06-19	10:24
T-31	Tara	Sara	Eastern Red Bat	1	Thawed	Silty sand	Grey cloud, 15'c	no	no	No	2017-06-20	08:50
T-33	Sara	Tara	Red-eyed Vireo	1	Thawed	Silt sand grass	Cloudy chance of rain	yes	no	Yes	2017-06-20	08:04
T-31	Sara	Tara	Bird spp. (unknown)	2	Thawed	Silt sand grass	Cloudy with chance of rain	yes	no	Yes	2017-06-20	08:11
T-07	Sara	Tara	Silver-haired Bat	2	Thawed	Silt sand grass	Cloudy with chance of rain	no	yes	Yes	2017-06-20	08:42
T-38	Tara	Sara	European Starling	2	Thawed	Silt with grass	Grey cloud, 18'c, windy	no	no	No	2017-07-24	10:28
T-27	Tara	Sara	European Starling	2	Thawed	Sand with weeds	Grey cloud, 19'c. Windy.	no	no	No	2017-07-24	13:14
T-16	Tara	Sara	Hoary Bat	2	Thawed	Sand with grass	Sun, 20'c	yes	no	No	2017-07-25	09:36
T-31	Tara	Sara	Hoary Bat	2	Thawed	Silty sand with grass	Sun, 20'c	no	no	No	2017-07-25	09:52
T-16	Tara	Sara	European Starling	2	Thawed	Sand with grass	Sun, 20'c	no	no	No	2017-07-25	09:34
T-27	Tara	Sara	Hoary Bat	2	Thawed	Sand with weeds	Sun, grey cloud, 24'c	no	no	No	2017-07-27	09:48
T-27	Tara	Sara	European Starling	2	Thawed	Sand with weeds	Sun, grey cloud, 24'c	no	no	No	2017-07-27	09:50
T-27	Tara	Sara	Hoary Bat	2	Thawed	Sand with weeds	Sun, grey cloud, 24'c	no	no	No	2017-07-27	09:51
T-07	Tara	Sara	Hoary Bat	2	Thawed	Silt with grass	Grey cloud, 18'c, windy	yes	no	No	2017-07-28	09:42
T-07	Tara	Sara	European Starling	2	Thawed	Silt with grass	Grey cloud, 18'c, windy	yes	no	No	2017-07-28	09:43
T-07	Tara	Sara	Hoary Bat	2	Thawed	Silt with grass	Grey cloud, sunny intervals, 18'c, windy.	yes	no	No	2017-07-28	09:45
T-11	Sara	Tara	European Starling	2	Thawed	Silt sand bean	Sunny 26 Celsius	yes	no	No	2017-08-02	12:54
T-11	Sara	Tara	Bobolink	2	Thawed	Silt sand bean	Sunny 26 Celsius	no	no	No	2017-08-02	13:02
T-11	Sara	Tara	Eastern Red Bat	2	Thawed	Silt sand bean	Sunny 26 Celsius	yes	no	No	2017-08-02	12:57
T-13	Sara	Tara	Cliff Swallow	2	Thawed	Silt sand bean gravel pieces	19 Celsius sunny	yes	no	No	2017-08-09	08:24
T-13	Sara	Tara	European Starling	2	Thawed	Silt sand bean	19 Celsius sunny	yes	no	No	2017-08-09	08:26
T-14	Sara	Tara	Cliff Swallow	2	Thawed	Silt sand dead weed	Sunny	no	no	No	2017-08-16	08:28
T-13	Sara	Tara	Hoary Bat	2	Thawed	Silt sand grass	Sunny	yes	no	No	2017-08-16	08:30
T-14	Sara	Tara	Hoary Bat	2	Thawed	Silt sand grass	Sunny	no	no	No	2017-08-16	08:27
T-17	Paul	Sara	Silver-haired Bat	1	Thawed	Gravel	70% cloud, windy.	yes	no	No	2017-08-29	10:07
T-17	Paul	Sara	European Starling	1	Thawed	Gravel	70% cloud, windy.	yes	no	No	2017-08-29	10:05
T-16	Paul	Sara	Hoary Bat	1	Thawed	Gravel	100% cloud, windy.	yes	no	No	2017-08-29	09:37
T-42	Paul	Sara	Hoary Bat	1	Thawed	Bare earth	Sunny, warm mild wind.	yes	no	No	2017-09-21	09:56
T-48	Paul	Sara	Hoary Bat	1	Thawed	Gravel	Sunny, warm, light wind	no	no	No	2017-09-21	09:30
T-42	Paul	Sara	Hoary Bat	1	Thawed	Bare earth	Sunny, warm, mild wind.	yes	no	No	2017-09-21	09:53
T-18	Paul	Sara	Hoary Bat	1	Thawed	Gravel	Sunny, warm, light wind.	yes	no	Yes	2017-09-22	09:11

Turbine	Placed By	Searcher	Species Common Name	Visibility Class	Condition	Substrate	Weather	Found	Scavaged	Dog Used	Date Placed	Time
T-17	Paul	Sara	Hoary Bat	1	Thawed	Gravel	Sunny warm, light wind	yes	no	No	2017-09-22	09:31
T-18	Paul	Sara	Hoary Bat	1	Thawed	Gravel	Sunny, warm, light wind	yes	no	No	2017-09-22	09:13
T-27	Paul	Sara	Bobolink	1	Thawed	Dirt	Overcast, mild wind, chilly.	no	no	No	2017-09-28	08:53
T-38	Paul	Sara	Hoary Bat	2	Thawed	Grass	Windy, overcast, chilly.	no	yes	No	2017-10-12	10:20
T-02	Paul	Sara	Hoary Bat	1	Thawed	Dirt	Windy, oversast, cool	yes	no	No	2017-10-12	09:38
T-02	Paul	Sara	Hoary Bat	1	Thawed	Dirt	Overcast, windy	no	yes	No	2017-10-12	09:35
T-16	Paul	Sara	Hoary Bat	2	Thawed	Grass	Mild, overcast, light wind.	yes	no	Yes	2017-10-13	09:44
T-16	Paul	Sara	Ruby-throated Hummingbird	1	Thawed	Gravel	Mild, light wind, overcast.	no	no	Yes	2017-10-13	09:46
T-33	Paul	Sara	Hoary Bat	2	Thawed	Grass	Mild, light wind, overcast.	no	no	Yes	2017-10-13	10:07
T-42	Paul	Sara	Eastern Red Bat	2	Thawed	Dirt	Sunny, windy, mild	yes	no	Yes	2017-10-19	11:42
T-48	Paul	Sara	Golden-crowned Kinglet	2	Thawed	Dirt	Windy, sunny,mild	yes	no	Yes	2017-10-19	11:13
T-48	Paul	Sara	Hoary Bat	1	Thawed	Gravel	Sunny, windy, mild	yes	no	Yes	2017-10-19	11:16
T-16	Paul	Sara	Hoary Bat	2	Thawed	Grass	Cool sunny and a light wind	no	no	No	2017-10-20	08:31
T-17	Paul	Sara	Hoary Bat	2	Thawed	Grass	Cool sunny and light wind	no	no	Yes	2017-10-20	08:48
T-18	Paul	Sara	Hoary Bat	2	Thawed	Grass	Cool light wind sunny	no	no	Yes	2017-10-20	09:00
T-02	Paul	Sara	Hoary Bat	1	Thawed	Mud	Sunny light wind cool	no	no	No	2017-10-26	10:10
T-27	Paul	Sara	Eastern Red Bat	1	Thawed	Gravel	Clear sunny light wind cool	yes	no	No	2017-10-26	10:44
T-20	Paul	Sara	Hoary Bat	2	Thawed	Grass	Sunny very light wind warm	no	no	No	2017-10-26	11:04
T-33	Paul	Sara	Silver-haired Bat	2	Thawed	Grass	Cool overcast and windy	no	no	No	2017-10-27	11:08
T-31	Paul	Sara	Hoary Bat	1	Thawed	Gravel	Cool overcast very windy	no	no	No	2017-10-27	10:43
T-31	Paul	Sara	Hoary Bat	1	Thawed	Gravel dirt transition	Cool overcast windy	no	no	No	2017-10-27	10:53
T-42	Paul	Sara	Hoary Bat	1	Thawed	Mud	Overcast windy cold raining	yes	no	No	2017-10-30	10:55
T-02	Paul	Sara	Silver-haired Bat	1	Thawed	Gravel	Windy call light rain overcast	yes	no	No	2017-10-30	11:19

**Table 7**  
**Grand Bend Wind Farm Year 1 Scavenger Removal Trials Results - 2017**

Spring Trial (May/June)																
Turbine #	Date Placed	Species	Marking	Condition	Visibility Class	Substrate	UTM		Distance from TB (m)	Direction from TB (degree)	Visit 0 # carcasses placed	Visit 1 # remaining	Visit 2 # remaining2	Visit 3 # remaining3	Visit 4 # remaining4	Scavenged?
							Easting	Northing								
T3	30-May-17	Tree Swallow	Yellow paint	Thawed	1	Sandy silt	4810049.822	4810049.822	22.14	140	1	1	1	0	-	Yes
T3	30-May-17	Blue Jay	Yellow paint	Thawed	1	Sandy silt	4810073.966	4810073.966	14.06	59	1	1	1	0	-	Yes
T3	30-May-17	Savannah Sparrow	Yellow paint	Thawed	1	Sandy silt	4810091.642	4810091.642	26.88	22	1	1	1	0	-	Yes
T3	30-May-17	Mouse	Yellow paint	Thawed	1	Sandy silt	4810091.058	4810091.058	27.59	332	1	1	0	0	-	Yes
										<b>TOTAL</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>-</b>	
T19	30-May-17	Wilson's Snipe	Yellow paint	Thawed	1	Sandy silt	4804823.403	4804823.403	22.60	255	1	1	0	0	-	Yes
T19	30-May-17	Poultry wing	Yellow paint	Thawed	1	Sandy silt	4804824.497	4804824.497	29.92	88	1	1	1	0	-	Yes
T19	30-May-17	Mouse	Yellow paint	Thawed	1	Sandy silt	4804852.848	4804852.848	27.45	30	1	1	0	0	-	Yes
T19	30-May-17	Mouse	Yellow paint	Thawed	1	Sandy silt	4804799.849	4804799.849	37.88	219	1	0	0	0	-	Yes
										<b>TOTAL</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>-</b>	
T32	30-May-17	Mouse	Yellow paint	Thawed	1	Silt	4800449.09	4800449.09	16.25	273	1	1	0	-	-	Yes
T32	30-May-17	Mouse	Yellow paint	Thawed	1	Silt	4800462.667	4800462.667	27.47	302	1	1	0	-	-	Yes
T32	30-May-17	Mouse	Yellow paint	Thawed	1	Silt	4800467.834	4800467.834	21.94	26	1	1	0	-	-	Yes
										<b>TOTAL</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>-</b>	<b>-</b>	
<b>Total</b>										<b>TOTAL</b>	<b>11</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>-</b>	
Summer Trial (July/August)																
Turbine #	Date Placed	Species	Marking	Condition	Visibility Class	Substrate	UTM		Distance from TB (m)	Direction from TB (degree)	Visit 0 # carcasses placed	Visit 1 # remaining	Visit 2 # remaining2	Visit 3 # remaining3	Visit 4 # remaining4	Scavenged?
							Easting	Northing								
9	6-Jul-17	Turkey Vulture	Orange paint	Thawed	3	Sandy silt with corn	4808854.337	4808854.337	35.36	91	1	1	1	1	1	No
										<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	
14	6-Jul-17	Mouse	Orange paint	Thawed	2	Sandy silt with soy	4807903.998	4807903.998	39.46	87	1	1	0	0	-	Yes
14	6-Jul-17	Mouse	Orange paint	Thawed	2	Sandy silt with soy	4807867.968	4807867.968	48.41	134	1	1	1	0	-	Yes
14	6-Jul-17	Mouse	Orange paint	Thawed	2	Sandy silt with soy	4807890.1	4807890.1	51.27	103	1	1	0	0	-	Yes
										<b>TOTAL</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>-</b>	
22	6-Jul-17	Mouse	Orange paint	Thawed	3	Sand with corn	4804641.523	4804641.523	13.98	61	1	1	1	1	1	No
22	6-Jul-17	Mouse	Orange paint	Thawed	3	Sand with corn	4804620.413	4804620.413	14.39	185	1	1	0	0	0	Yes
22	6-Jul-17	Mouse	Orange paint	Thawed	3	Sand with corn	4804663.545	4804663.545	31.22	337	1	1	0	0	0	Yes
										<b>TOTAL</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	
30	6-Jul-17	Mouse	Orange paint	Thawed	2	Sandy silt with beans	4802013.758	4802013.758	0.17	120	1	1	0	-	-	Yes
30	6-Jul-17	Mouse	Orange paint	Thawed	2	Sandy silt with beans	4802009.085	4802009.085	15.56	108	1	1	0	-	-	Yes
30	6-Jul-17	Mouse	Orange paint	Thawed	2	Sandy silt with beans	4801992.019	4801992.019	39.44	236	1	1	0	-	-	Yes
										<b>TOTAL</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>-</b>	<b>-</b>	
<b>Total</b>										<b>TOTAL</b>	<b>10</b>	<b>10</b>	<b>3</b>	<b>2</b>	<b>2</b>	
Fall Trial (September/October)																
Turbine #	Date Placed	Species	Marking	Condition	Visibility Class	Substrate	UTM		Distance from TB (m)	Direction from TB (degree)	Visit 0 # carcasses placed	Visit 1 # remaining	Visit 2 # remaining2	Visit 3 # remaining3	Visit 4 # remaining4	Scavenged?
							Easting	Northing								
34	2-Oct-17	Cliff Swallow	Orange paint	Thawed	2	Sandy silt and dry leaves/cut soy	4800089.35	4800089.35	30.91	166	1	1	1	1	1	No

34	2-Oct-17	Silver-haired Bat	Orange paint	Thawed	2	Sandy silt and dry leaves/cut soy	4800096.281	4800096.281	23.08	182	1	1	1	1	1	No
										<b>TOTAL</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	
37	2-Oct-17	Hoary Bat	Orange paint	Thawed	1	Gravel access road	4799642.316	4799642.316	29.77	154	1	1	1	1	1	No
37	2-Oct-17	Silver-haired Bat	Orange paint	Thawed	4	Sandy silt and wheat	4799639.351	4799639.351	32.24	157	1	1	1	0	0	Yes
37	2-Oct-17	Magnolia Warbler	Orange paint	Thawed	4	Sandy silt and wheat	4799649.021	4799649.021	26.70	139	1	1	0	0	0	Yes
										<b>TOTAL</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	
44	2-Oct-17	Cliff Swallow	Orange paint	Thawed	3	Sandy silt with clover	4797213.062	4797213.062	16.83	137	1	1	1	0	-	Yes
44	2-Oct-17	Golden-crowed Kinglet	Orange paint	Thawed	1	Gravel access road	4797206.026	4797206.026	20.26	163	1	1	0	0	-	Yes
44	2-Oct-17	Silver-haired Bat	Orange paint	Thawed	3	Sandy silt with clover	4797204.912	4797204.912	20.66	174	1	1	0	0	-	Yes
										<b>TOTAL</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>-</b>	
46	2-Oct-17	Hoary Bat	Orange paint	Thawed	4	Sandy silt with corn	4796871.442	4796871.442	37.11	237	1	1	0	-	-	Yes
46	2-Oct-17	Bird spp.	Orange paint	Thawed	4	Sandy silt with corn	4796867.408	4796867.408	35.89	228	1	0	0	-	-	Yes
										<b>TOTAL</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>-</b>	<b>-</b>	
<b>Total</b>										<b>TOTAL</b>	<b>10</b>	<b>9</b>	<b>5</b>	<b>3</b>	<b>3</b>	

**Table 8**  
**Grand Bend Wind Farm Scavenger Removal Weather - 2017**

Column1	Visit 0	Visit 1	Visit 2	Visit 3	Visit 4
<b>Spring</b>	30-May-17	1-Jun-17	5-Jun-17	8-Jun-17	-
	19°C, overcast, no precipitation	17°C, partly cloudy, no precipitation	14°C, overcast, no precipitation	20°C, sunny, no precipitation	-
<b>Summer</b>	6-Jul-17	7-Jul-17	11-Jul-17	14-Jul-17	18-Jul-17
	18°C, sunny, no precipitation	21°C, sunny, no precipitation	25°C, sunny, no precipitation	20°C, overcast, foggy	24°C, sunny, no precipitation
<b>Fall</b>	2-Oct-17	3-Oct-17	6-Oct-17	10-Oct-17	13-Oct-17
	23°C, mostly sunny, no precipitation	26°C, sunny, no precipitation	18°C, overcast, no precipitation	17°C, overcast, no precipitation	19°C, mostly cloudy, no precipitation