

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION OF
CROWNED RIDGE, LLC FOR A FACILITIES PERMIT TO
CONSTRUCTION 300 MEGAWATT WIND FACILITY**

Docket No. EL19-003

**REBUTTAL TESTIMONY AND EXHIBITS
OF JAY HALEY**

May 24, 2019

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jay Haley. My business address is 3100 DeMers Ave., Grand Forks, ND, 58201.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am a Partner in EAPC Wind Energy and work as a Wind Engineer.

Q. WHAT ARE YOUR RESPONSIBILITIES?

A. My responsibility was to conduct the sound and shadow/flicker studies for Crowned Ridge Wind, LLC ("CRW").

Q. ARE YOU THE SAME JAY HALEY WHO SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING ON JANUARY 30, 2019 AND SUPPLEMENTAL DIRECT TESTIMONY ON APRIL 1, 2019?

A. Yes.

Q. HAS THIS TESTIMONY BEEN PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REBUTTAL TESTIMONY.

A. The purpose of my rebuttal testimony is to response to the direct testimony of Staff witness Darren Kearney, Staff witness David Hessler, Intervenor witness John Thompson, and Intervenor's proposed conditions as set forth in Staff witness Darren Kearney's Direct Testimony, Exhibit DK-8.

Shadow Flicker Modeling

1
2 **Q. STAFF WITNESS KEARNEY'S TESTIMONY AT PAGE 10, LINES 16-18**
3 **REQUESTS THAT CRW FILE UPDATED FIGURES FROM APPENDIX D OF**
4 **THE SHADOW FLICKER STUDY TO SHOW THE TOTAL EXPECTED**
5 **LEVELS OF SHADOW FLICKER ON RECEPTORS FROM ALL TURBINES,**
6 **WHETHER THOSE TURBINES ARE PROPOSED TO BE CONSTRUCTED BY**
7 **CROWNED RIDGE WIND OR ANOTHER PROJECT. DO AGREE WITH THIS**
8 **REQUEST?**

9 **A.** Yes. Let me start by pointing out that I did explain the cumulative impacts from all
10 turbines, whether they be proposed by CRW, Crowned Ridge Wind II, or Dakota Range
11 Wind I and II, in my supplemental testimony on page 6. The tables in Exhibit 3 of the
12 supplemental testimony show the cumulative results from all turbines in CRW, Crowned
13 Ridge Wind II, and Dakota Range Wind I and II. Also, attached is the Iso-line map book
14 for cumulative shadow flicker to my testimony as Exhibit JH-R-1. This document has
15 also been updated to the most current land status.

16
17 **Q. STAFF WITNESS KEARNEY'S TESTIMONY AT PAGE 10, LINES 22-33**
18 **STATES THAT IF CRW CANNOT OBTAIN A WAIVER FOR NON-**
19 **PARTICIPATING RECEPTOR (CR1-C61-NP), WHO IS EXPECTED TO**
20 **EXPERIENCE 49 HOURS AND 6 MINUTES OF SHADOW FLICKER PER**
21 **YEAR, THAT CRW SHOULD ELIMINATE THE USE OF THE WIND TURBINE**
22 **CAUSING THE SHADOW/FLICKER OR AUTOMATICALLY CONTROL THE**
23 **TURBINE SO THAT THE RECEPTOR DOES NOT EXPERIENCE OVER 30**
24 **HOURS OF SHADOW/FLICKER PER YEAR. HE ALSO REQUESTS THAT**
25 **CROWNED RIDGE PROVIDE IN REBUTTAL TESTIMONY THE FINAL PLAN**
26 **FOR LIMITING SHADOW/FLICKER AT RECEPTOR (CR1-C61-NP). WHAT**

1 **IS YOUR UNDERSTANDING OF CRW'S FINAL PLAN FOR THIS**
2 **RECEPTOR?**

3 A. The final plan for this receptor is set forth in the rebuttal testimony of witnesses Wilhelm
4 and Massey. If CR1-16 is curtailed by 20 hours per year, this reduces the shadow-flicker
5 at receptor CR1-C61-NP to less than 30 hours of shadow flicker per year, with 21:33
6 hours contributed by Dakota Range turbines. This was determined by running the model
7 with all turbines from CRW, Crowned Ridge Wind II and Dakota Range I and II, and
8 then with and without turbine CR1-16.

9
10 **Sound Modeling**

11
12 **Q. STAFF WITNESS KEARNEY'S TESTIMONY AT PAGE 12, LINES REQUESTS**
13 **THAT CROWNED RIDGE WIND UPDATE THE FIGURES FOR APPENDIX D**
14 **TO 5 THE SOUND STUDY THAT PROVIDE THE ISO-LINES FOR SOUND**
15 **LEVELS THAT ACCOUNT FOR THE CROWNED 6 RIDGE, DAKOTA RANGE,**
16 **AND CROWNED RIDGE II WIND TURBINE ARRAYS? DO AGREE WITH**
17 **THIS REQUEST?**

18 A. Yes, and I have attached a sound Iso-line map book to my testimony as Exhibit JH-R-2.
19 This document has been updated to the most current land participation status.

20
21 **Q. STAFF WITNESS HESSLER'S TESTIMONY AT PAGE 3, LINES 11-20 CLAIMS**
22 **THAT THE CRW SOUND STUDY SHOULD HAVE EVALUATED OR**
23 **ASSESSED THE POTENTIAL NOISE IMPACT FOR THE PROJECT ON THE**
24 **COMMUNITY THROUGH A BASELINE SOUND SURVEY. DO YOU AGREE?**

25
26 A. No, I do not. In my years of performing these studies, I have not been asked or required
27 to assess community perception based on the difference between the turbine noise and the

1 background noise. For the Crowned Ridge project, I was hired to perform the noise study
2 pertaining to the noise emissions from the turbines. There was no requirement to perform
3 background noise measurements, as there was no regulatory requirement to do so.

4
5 **Q. STAFF WITNESS HESSLER'S TESTIMONY AT PAGE 6, LINES 17-19**
6 **RECOMMENDS THAT THE ENTIRE CRW PROJECT SHOULD ADOPT THE**
7 **GRANT COUNTY ORDINANCE LEVEL OF NO MORE THAT 45 DBA AT ALL**
8 **NON-PARTICIPATING RESIDENCES. DO YOU AGREE?**

9
10 A. I have modeled the entire project using the Grant County Ordinance. The results show
11 that with turbines CR-40 and CR-17 being removed and replaced by turbines CR1-Alt42
12 and CR1-Alt45, all Codington non-participating residences are at or below 45 dBA, and
13 the highest noise level at a Codington participating residence is 47.9 dBA. For Grant
14 County, all non-participants are below 45 dBA and all but 3 participants are below 45
15 dBA except for three, with the highest of those being 45.3 dBA. The results of this
16 model rule is in Exhibit JH-R-3.

17
18 **Q. STAFF WITNESS HESSLER'S TESTIMONY AT PAGE 5 LINES 17 TO PAGE 6**
19 **LINE 5 CLAIMS THAT CRW SHOULD MOVE 16 PRIMARY TURBINE**
20 **LOCATIONS TO ALTERNATIVE LOCATIONS TO REDUCE THE DBA FOR**
21 **NON-PARTICIPANTS FROM A RANGE OF 43-45 DBA TO 41 OR 42 DBA. DID**
22 **YOU MODEL STAFF WITNESS HESSLER'S RECOMMENDATION?**

23 A. Yes. The results are attached as Exhibit JH-R-4. As these results show, only 13
24 Receptors of the 50 that were above 42 dBA were lowered to a level of 42 dBA or less by
25 eliminating the 16 suggested turbines.

Non-Participant

Q. INTERVENOR WITNESS THOMPSON SUBMITTED TESTIMONY EXPLAINING THAT HE IS NOT PARTICIPATING IN THE PROJECT. DOES IS NON-PARTICIPATION CHANGE YOUR STUDY RESULTS?

A. No, since there is no occupied structure on the property, it does not change any of the study results.

Q. WHERE THERE OTHER PROPERTY STATUS CHANGES THAT IMPACTED YOUR SOUND AND SHADOW/FLICKER STUDY RESULTS?

A. Yes, I have confirmed with Tyler Wilhelm, the Project Manager, that the data that was provided to me is accurate and complete with respect to who is a participant and who is a non-participant. I have attached a shadow flicker Iso-line map book to my testimony as Exhibit JH-R-2. This document has also been updated to the most current land participation status.

Q. GIVEN THE CONSIDERATION OF CUMULATIVE IMPACTS FROM DAKOTA RANGE AND LAND STATUS CHANGES ARE THERE RECEPTORS THAT ARE NO LONGER IN COMPLIANCE WITH EITHER THE GRANT COUNTY OR CODINGTON COUNTY ORDINANCE?

A. Yes, those receptors are CRI-C46-NP and CRI-C58-NP.

Q. HAS CRW ELIMINATED PRIMARY TURBINES AND ACTIVATED ALTERNATIVE TURBINES IN RESPONSE TO THE SOUND RESULTS?

A. Yes, it is my understanding that CRW will not use primary turbines CRI-40 and CRI-17 and will activate alternative turbines CRI-Alt42 and CRI-Alt45.

Q. BASED ON THESE CHANGES TO TURBINES ARE THE SOUND LEVELS IN COMPLIANCE WITH THE GRANT AND CODINGTON COUNTY ORDINANCES?

1
2 A. Yes, this is shown in Exhibit JH-R-5.
3

4 **Q. DOES THE ENTIRE CRW PROJECT ALSO MEET THE STANDARD THAT**
5 **ALL NON-PARTICIPANTS ARE BELOW 45 DBA AND ALL PARTICIPANTS**
6 **ARE BELOW 50 DBA WHEN MEASURED 25 FEET FROM THEIR**
7 **RESIDENCE?**
8

9 A. Yes, this is shown in Exhibit JH-R-3.
10

11 **Intervenors Proposed Conditions**
12

13 **Q. THE INTERVENORS' PROPOSED CONDITION 2 (KEARNEY EXHIBIT DK-8)**
14 **WOULD REQUIRE A 2 MILE SETBACK OF WIND TURBINES FROM**
15 **WAVERLY SCHOOL. BASED ON YOUR MODELING, WHAT LEVEL OF**
16 **SOUND WILL BE EXPERIENCED AT THE SCHOOL?**

17 A. The distance from the school to the nearest wind turbine is 5,892 feet, which is a
18 Crowned Ridge II turbine. The nearest Crowned Ridge turbine is 6,208 feet away from
19 the school. The sound pressure level at the school would be 39.4 dBA.
20

21
22 **Q. BASED ON YOUR MODELING, WHAT LEVEL OF SHADOW/FLICKER WILL**
23 **BE EXPERIENCED AT THE SCHOOL?**

24 A. The distance from the school to the nearest wind turbine is 5,892 feet, which is a
25 Crowned Ridge II turbine. The nearest Crowned Ridge turbine is 6,208 feet away from
26 the school. There would be 46 minutes per year of shadow flicker at the school.

1
2 **Q. THE INTERVENORS' PROPOSED CONDITION 18 (KEARNEY EXHIBIT DK-**
3 **8) WOULD REQUIRE "NO FLICKER SHALL BE ALLOWED TO CROSS NON-**
4 **PARTICIPATING LANDOWNER'S PROPERTY LINE." BASED ON YOUR**
5 **EXPERIENCE MODELING WHAT AMOUNT OF SHADOW AND FLICKER IS**
6 **CROSSING A NON-PARTICIPATING LANDOWNER'S PROPERTY LINE?**

7 A. Shadow flicker occurs when a moving shadow passes over a constrained opening such as
8 a window or doorway of a building. A moving shadow out in an open field is not
9 considered to be "flicker". The specialized software programs that calculate shadow
10 flicker are designed to calculate flicker that would occur inside of a building by modeling
11 the size and location of windows because the shadow flicker impacts occur inside the
12 buildings. They do not calculate shadow movement across property lines.

13
14 **Q. DO YOU AGREE WITH THE CONDITION THAT NO FLICKER SHALL BE**
15 **ALLOWED TO CROSS NON-PARTICIPATING LANDOWNER'S PROPERTY**
16 **LINE?**

17 A. No, I do not agree with this condition. A moving shadow crossing a property line is not
18 shadow flicker. Shadow flicker occurs when the shadow moves across a window in a
19 room. The shadow in that case causes the light intensity level in the room to fluctuate,
20 causing a flickering sensation. This does not happen out in an open field.

21
22 **Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?**

23 A. Yes, it does.

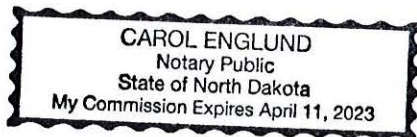
STATE OF NORTH DAKOTA)
) ss
COUNTY OF GRAND FORKS)

I, Jay Haley, being duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.


Jay Haley

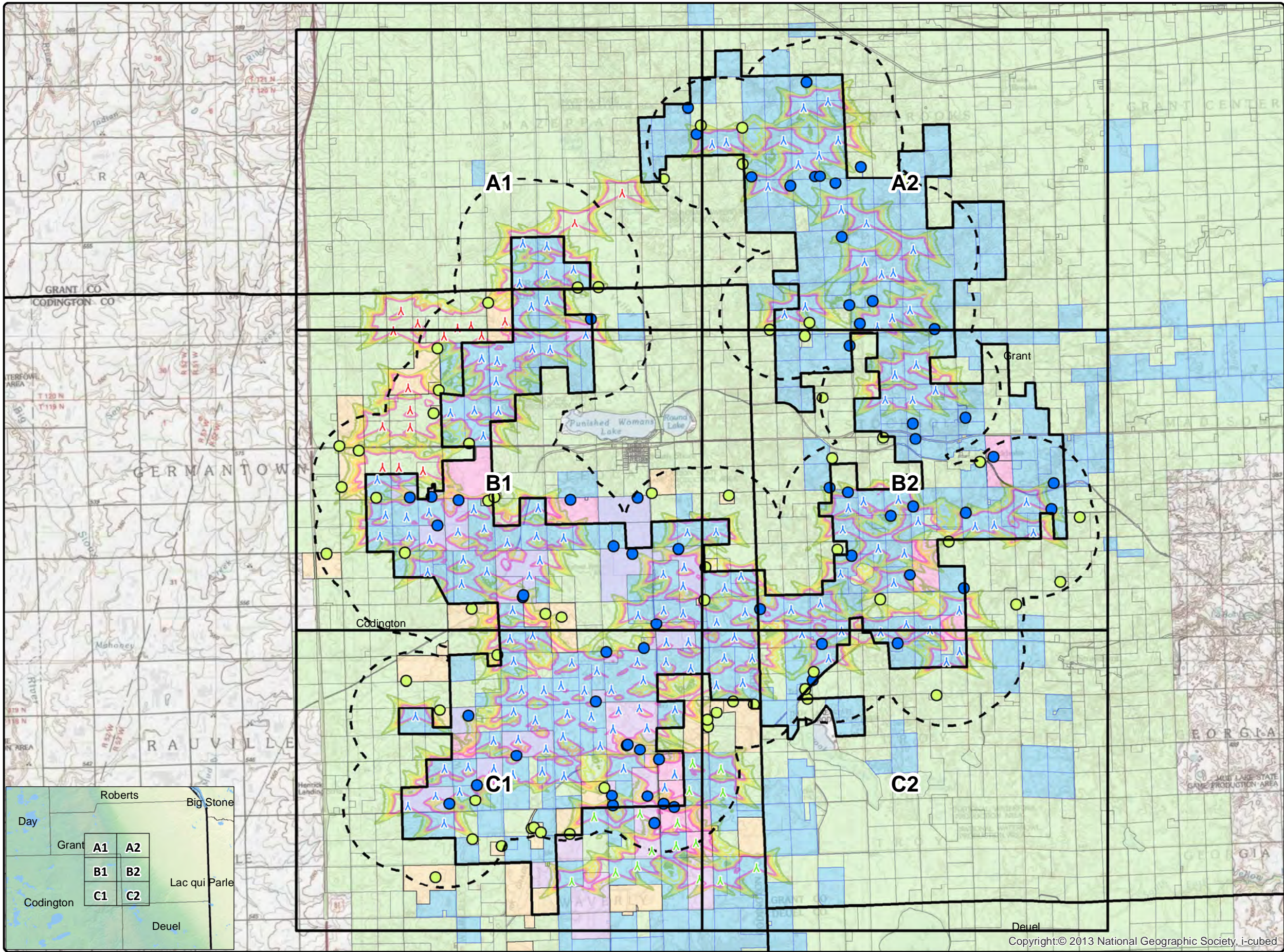
Subscribed and sworn to before me this 24rd day of May,
2019.


SEAL




Notary Public

My Commission Expires April 11, 2023





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**Crowned Ridge Wind Farm
Shadow Flicker Iso-Lines
Overview Map**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

#	Description	Date
1	Original	2019.05.24

Drawn By: AS *Checked By:* JH

Legend


- Crowned Ridge Wind Turbines
- Crowned Ridge II Wind Turbines
- Dakota Range Wind Turbines
- 2 km Turbine Buffer
- County Lines
- CR1 Project Boundary
- Non Participants
- Participants

Shadow Flicker (hr/yr)

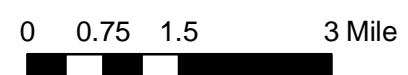
- 10
- 15
- 20
- 25
- 30

- Non-Participating Codington Parcels
- Participating Codington Parcels
- Participating Parcels
- Pending Parcels
- Non-Participating Parcels

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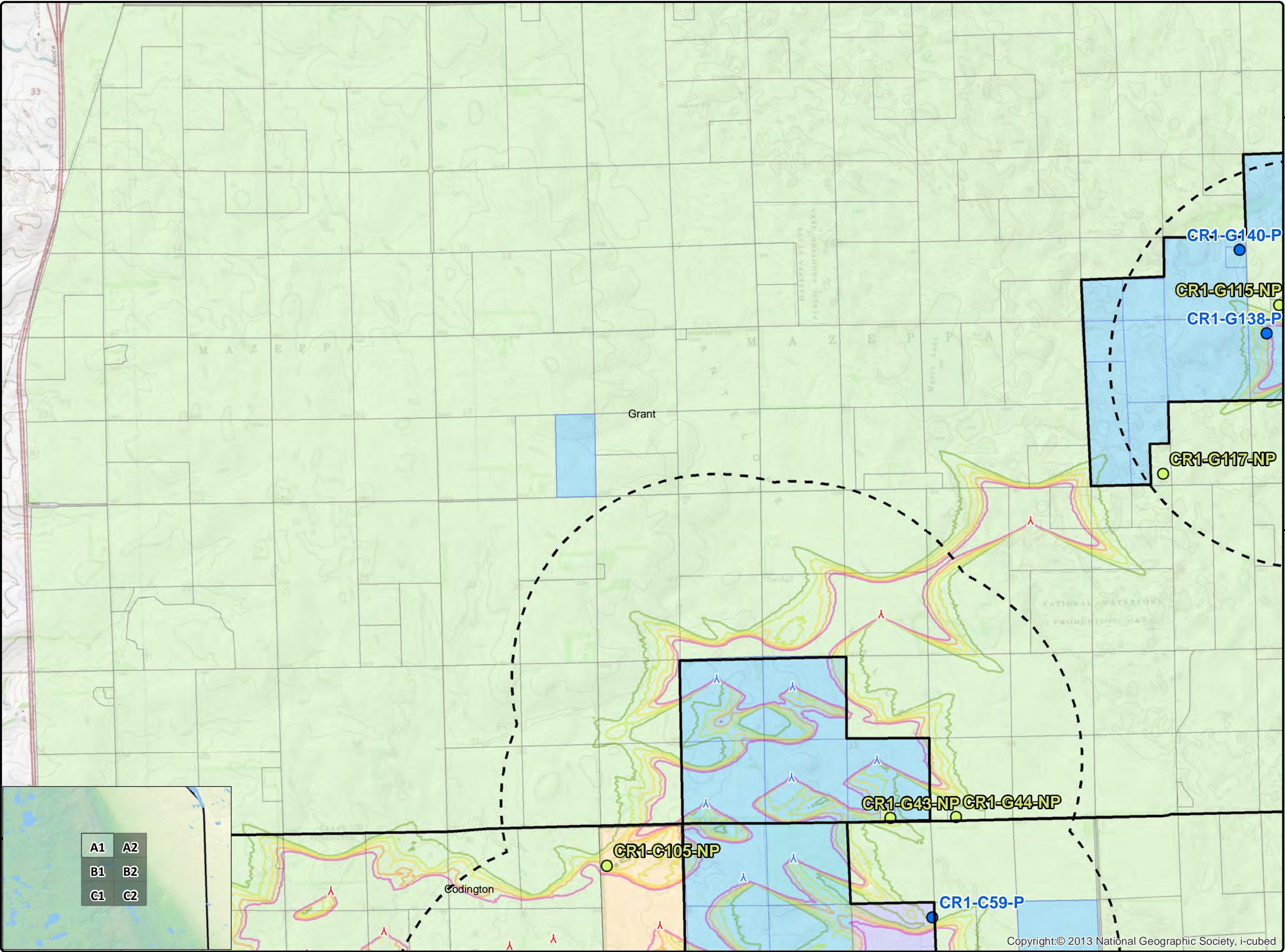



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Crowned Ridge Wind Farm Shadow Flicker Iso-Lines

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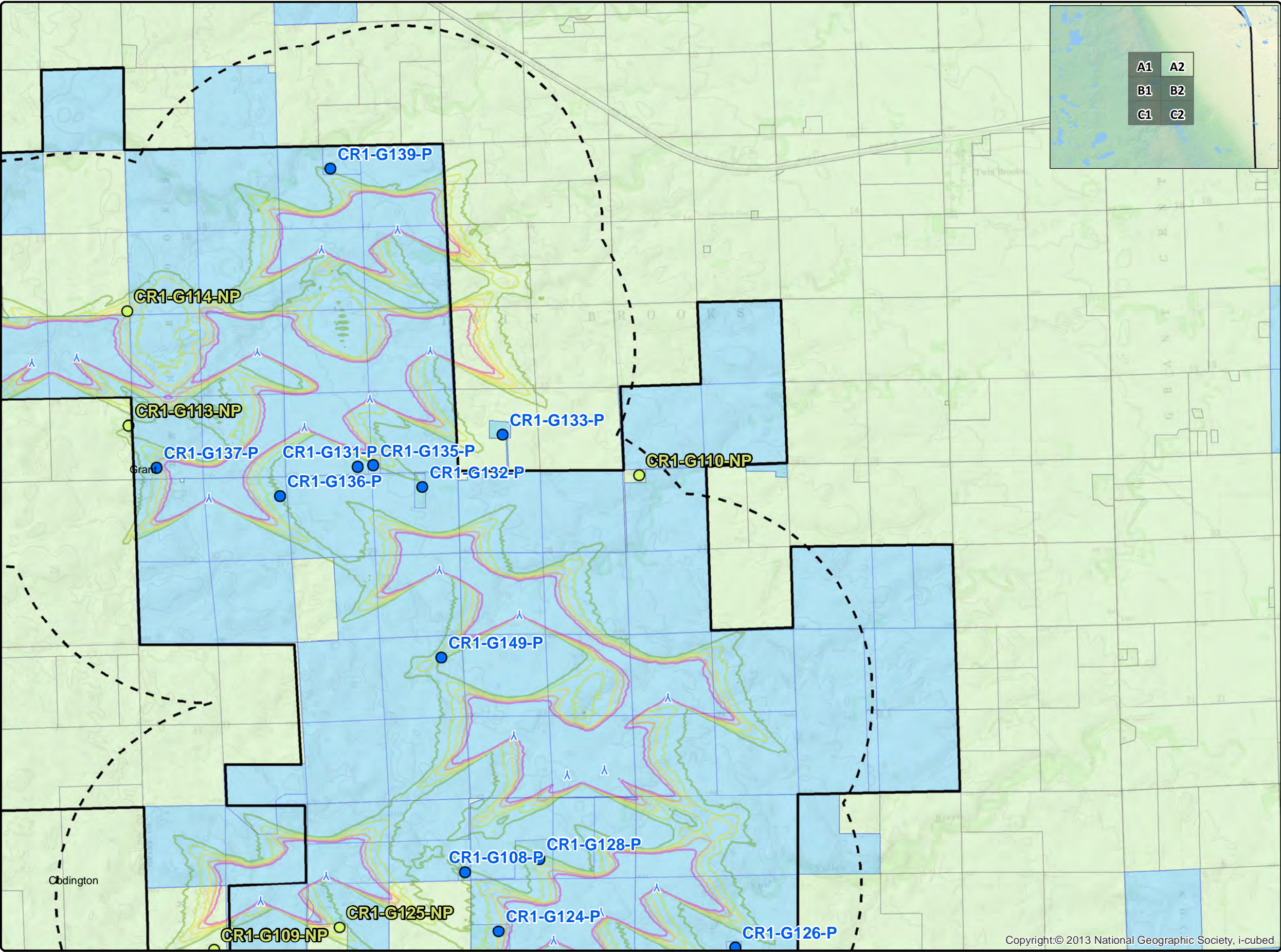
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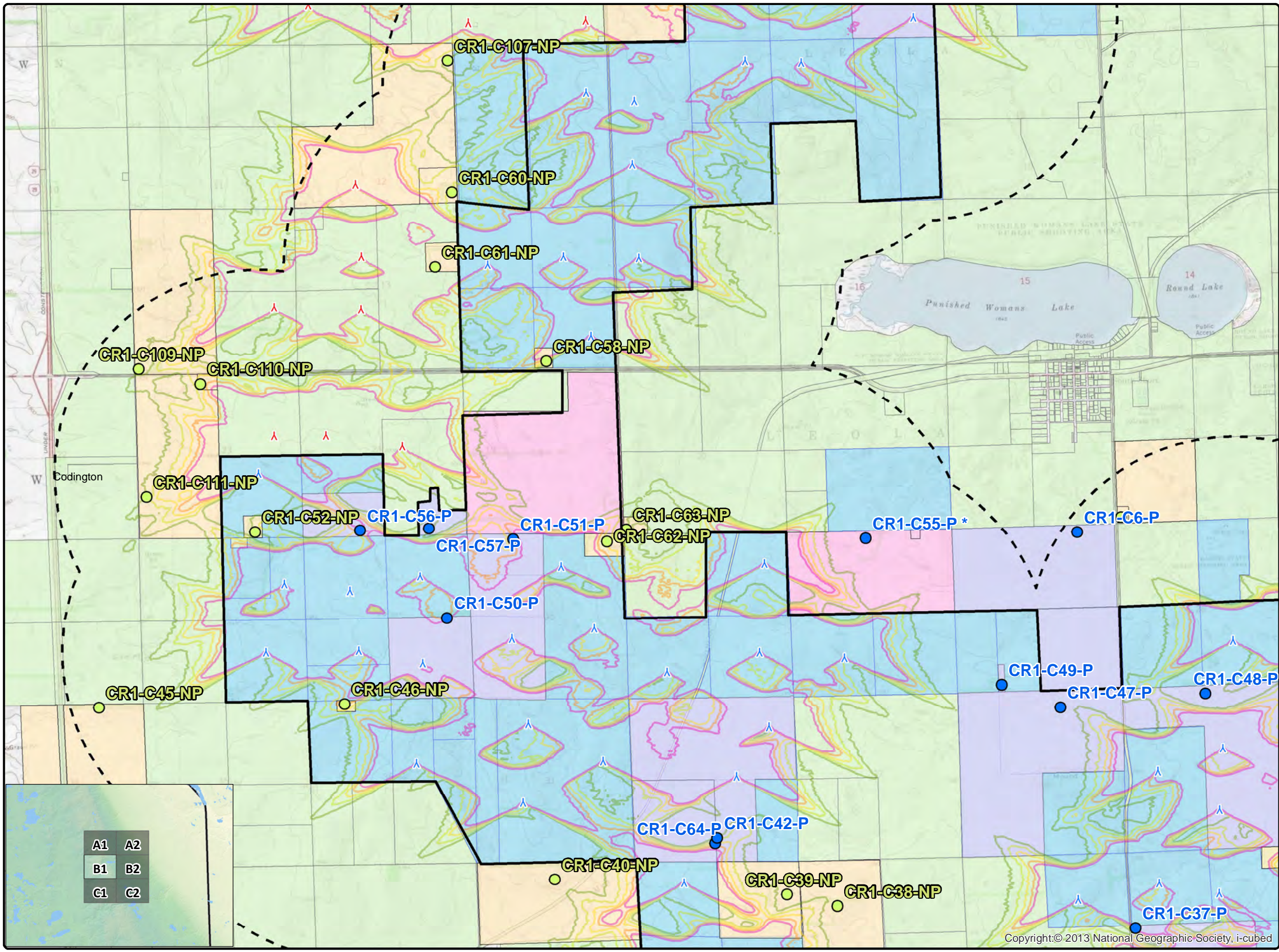
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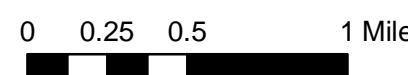
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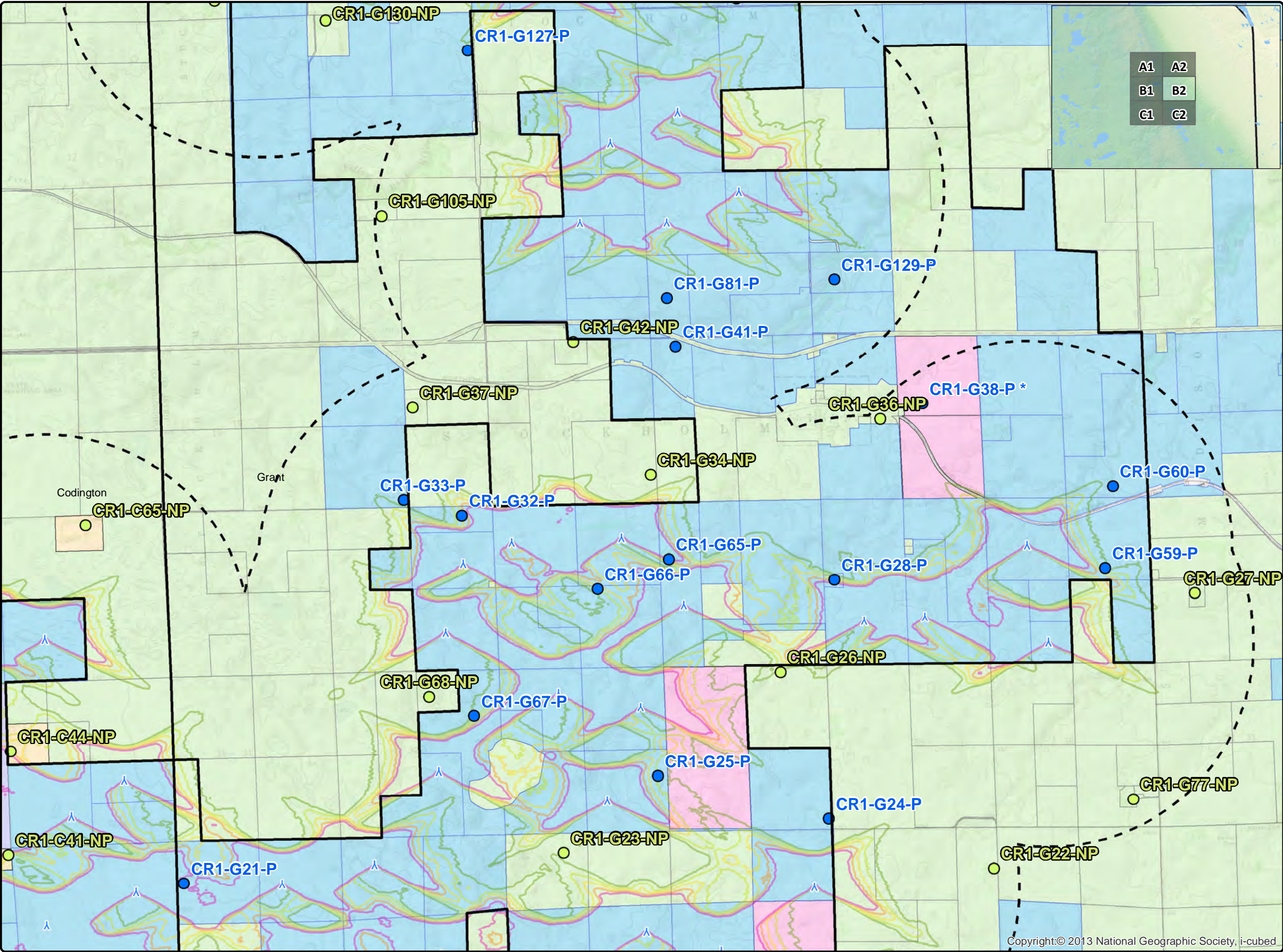
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Shadow Flicker Iso-Lines**

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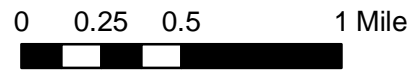
Shadow Flicker (hr/yr)

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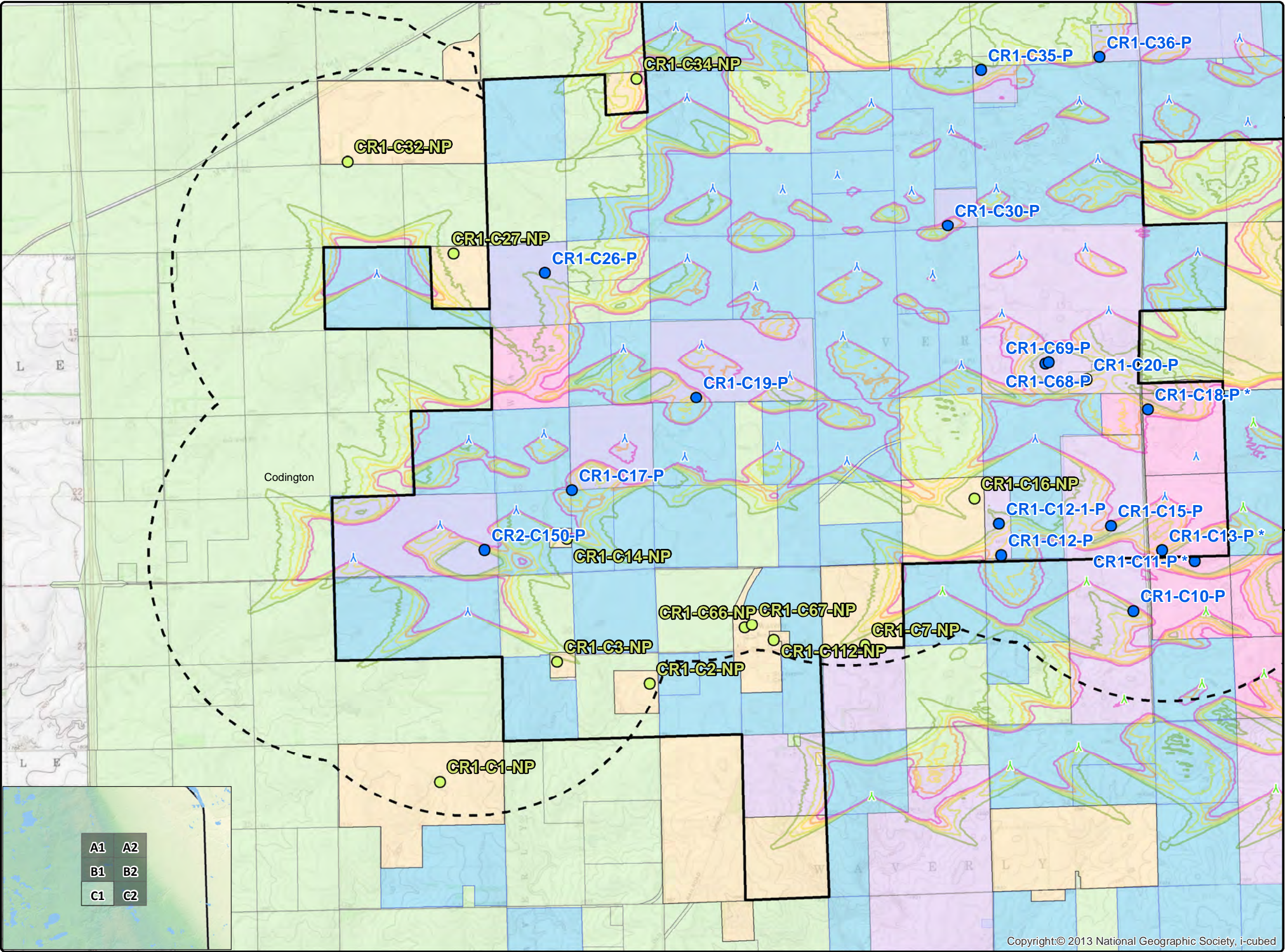
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**Crowned Ridge Wind Farm
Shadow Flicker Iso-Lines**

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Location: Watertown, SD
Project #: 20174431

Issue Dates

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Drawn By:	AS	Checked By: JH

Legend


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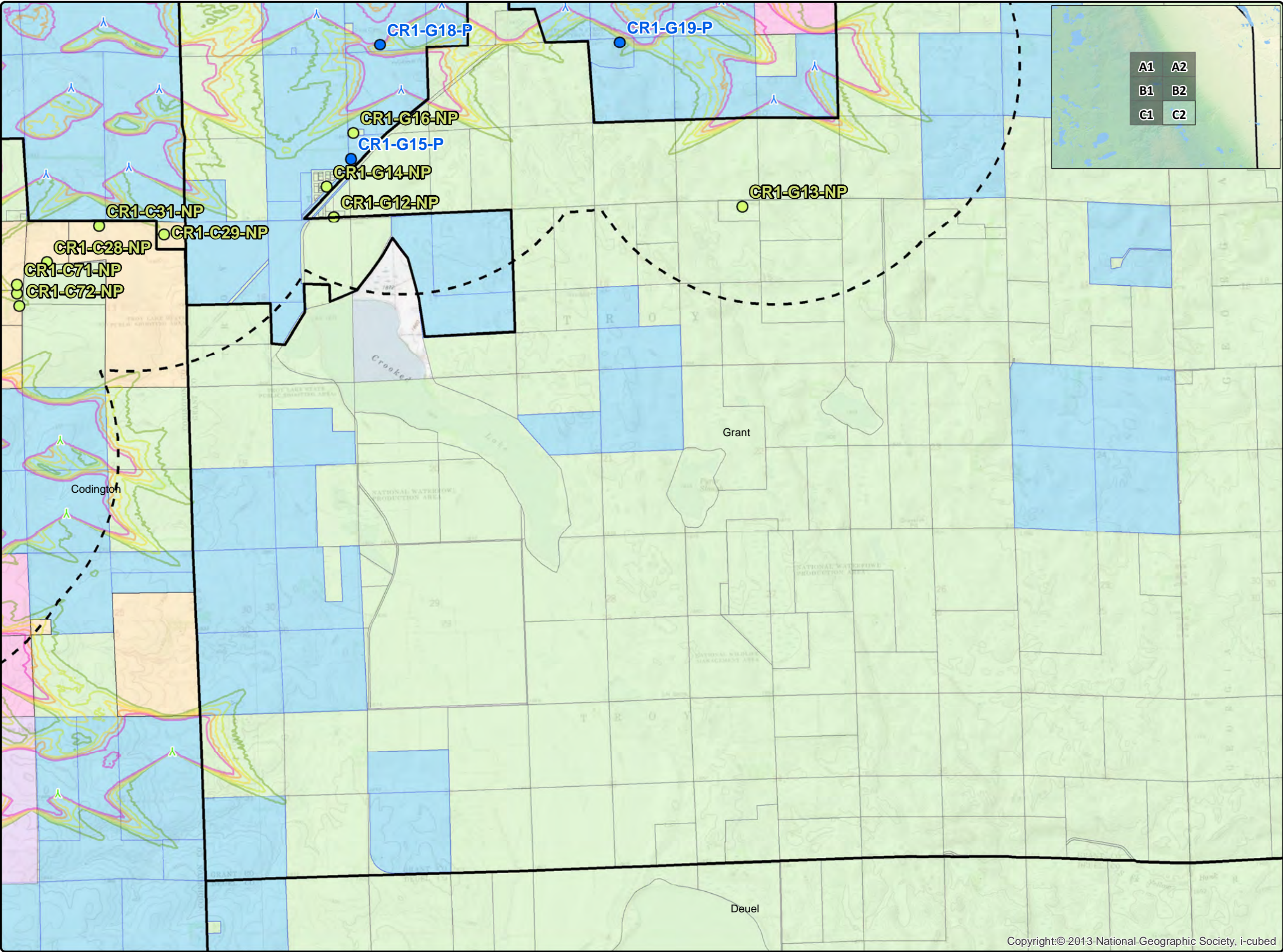
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Crowned Ridge Wind Farm Shadow Flicker Iso-Lines

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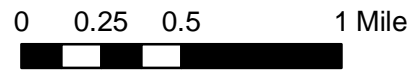
Shadow Flicker (hr/yr)

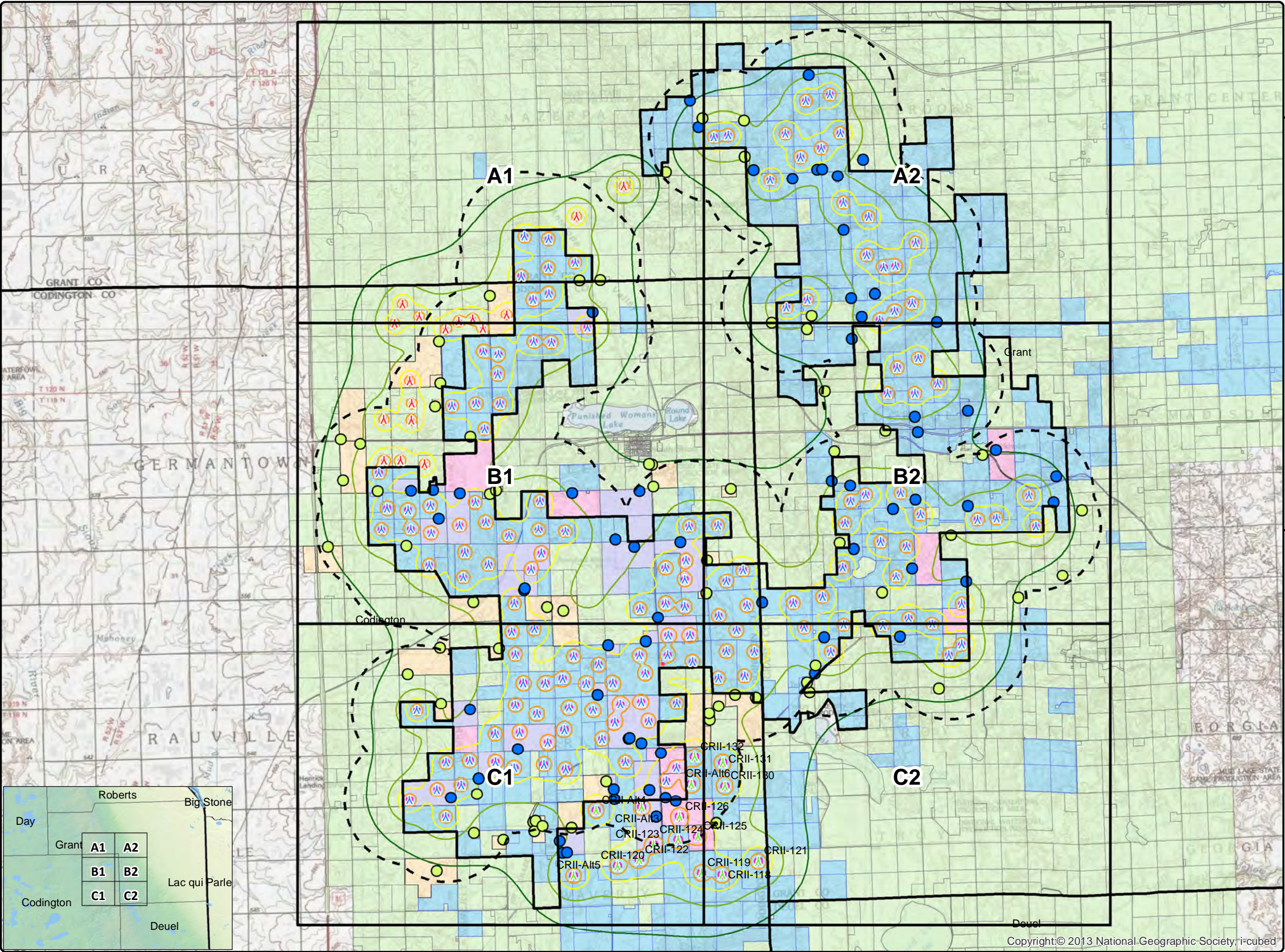
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**Crowned Ridge Wind Farm
Sound Pressure Iso-Lines
Overview Map**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km as well as parcel boundaries.

Predicted sound pressure levels at existing residences and land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

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1	Original	2019.05.24

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- Participants
- <all other values>

Sound Pressure (dBA)

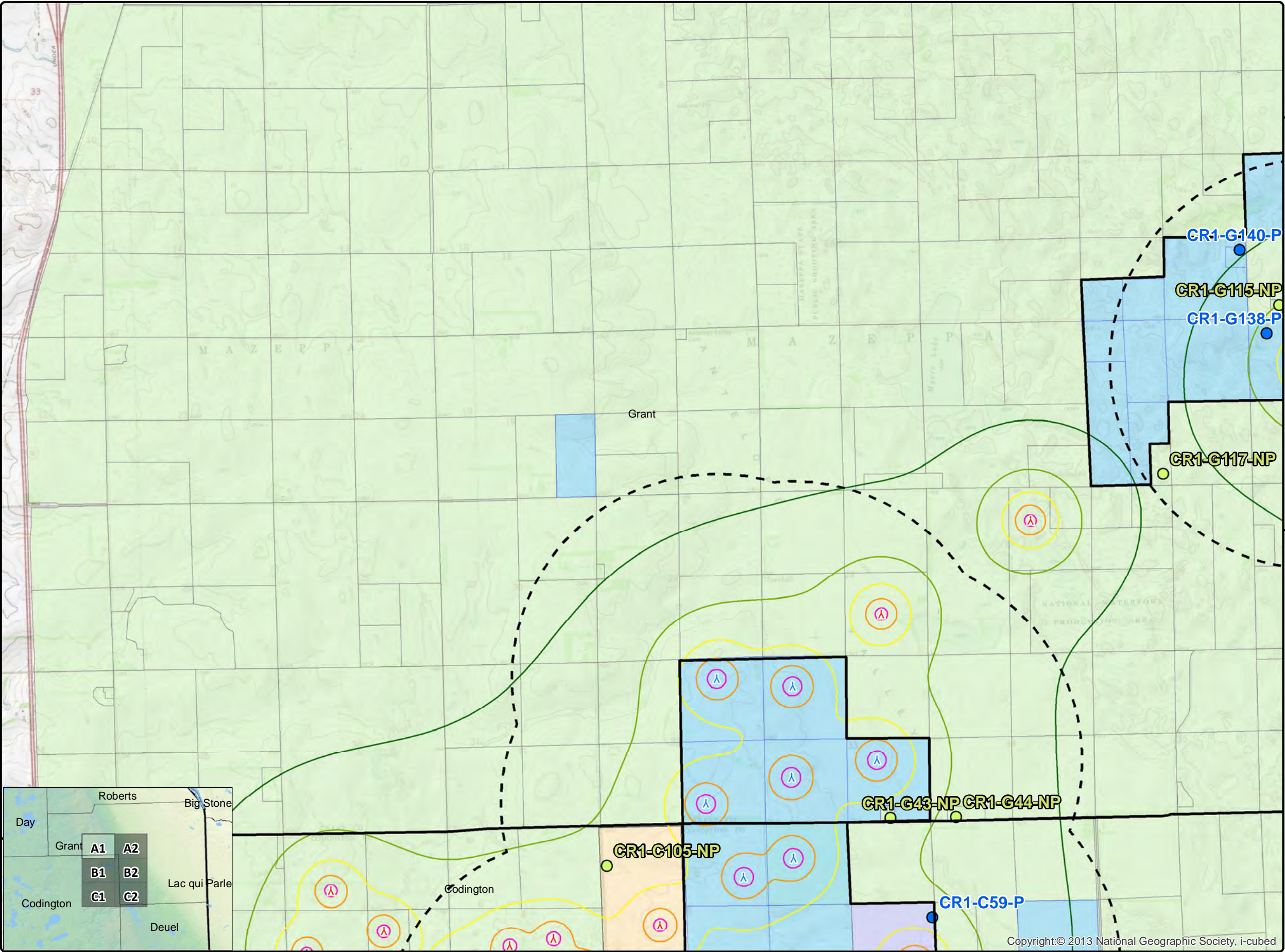
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- Participating Parcels
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Crowned Ridge Wind Farm Sound Pressure Iso-Lines

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
Legend


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-  Crowned Ridge II Wind Turbines
-  Dakota Range Wind Turbines
-  2 km Turbine Buffer
-  County Lines
-  CR1 Project Boundary
-  Non Participants
-  Participants
-  <all other values>


Sound Pressure (dBA)


-  35
-  40
-  45
-  50
-  55

 Participating Codington Parcels


 Non-Participating Codington Parcels

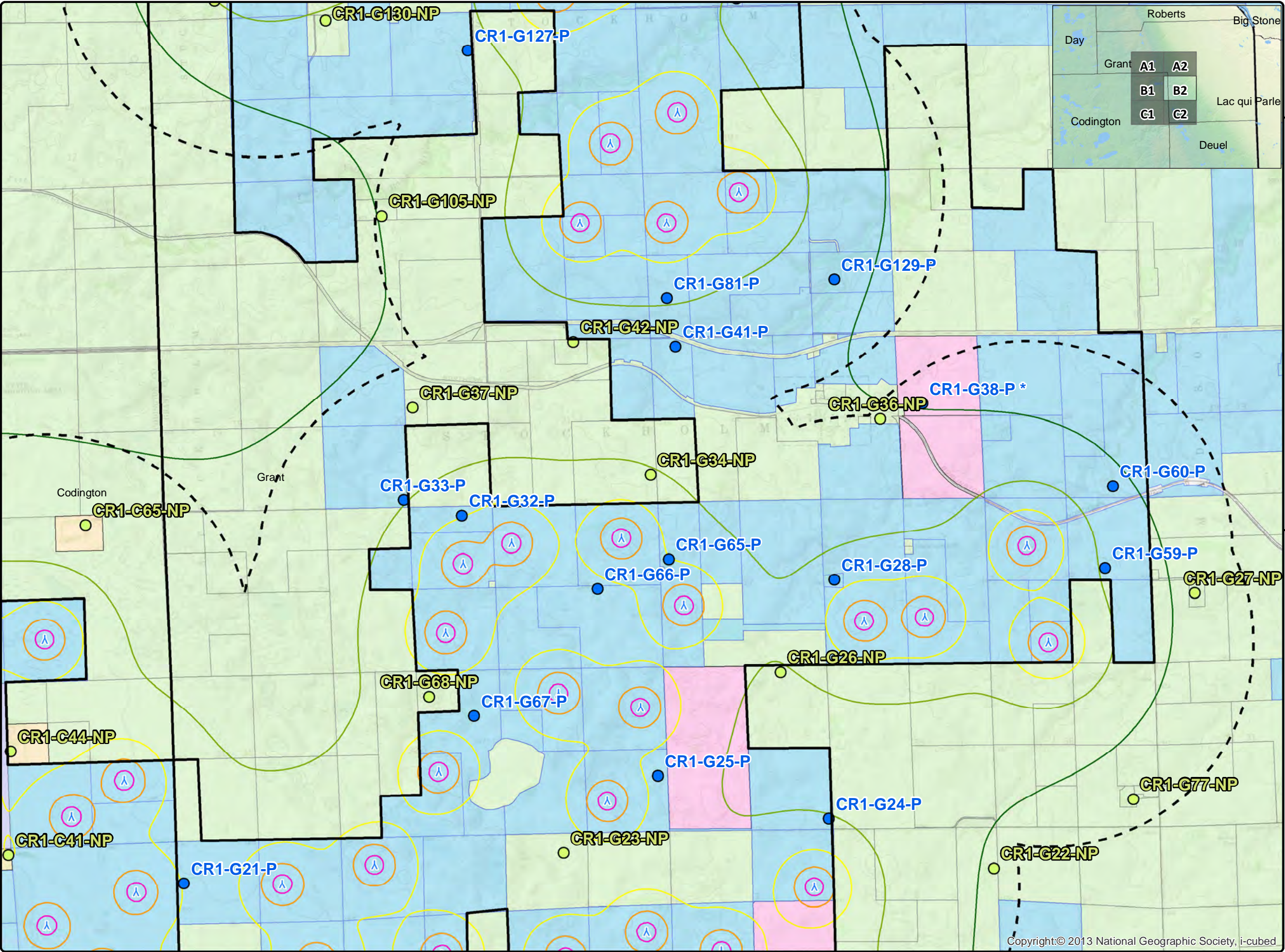
 Participating Parcels


 Pending Parcels

 Non-Participating Parcels

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Crowned Ridge Wind Farm Sound Pressure Iso-Lines

Client

SWCA Environmental Consultants

Project Description

Wind turbine layout with occupied structures within 2 km as well as parcel boundaries.

Predicted sound pressure levels at existing residences and land parcel boundaries.

Additional 2 dBA added.




















Location: Watertown, SD

Project #: 20174431


Issue Dates

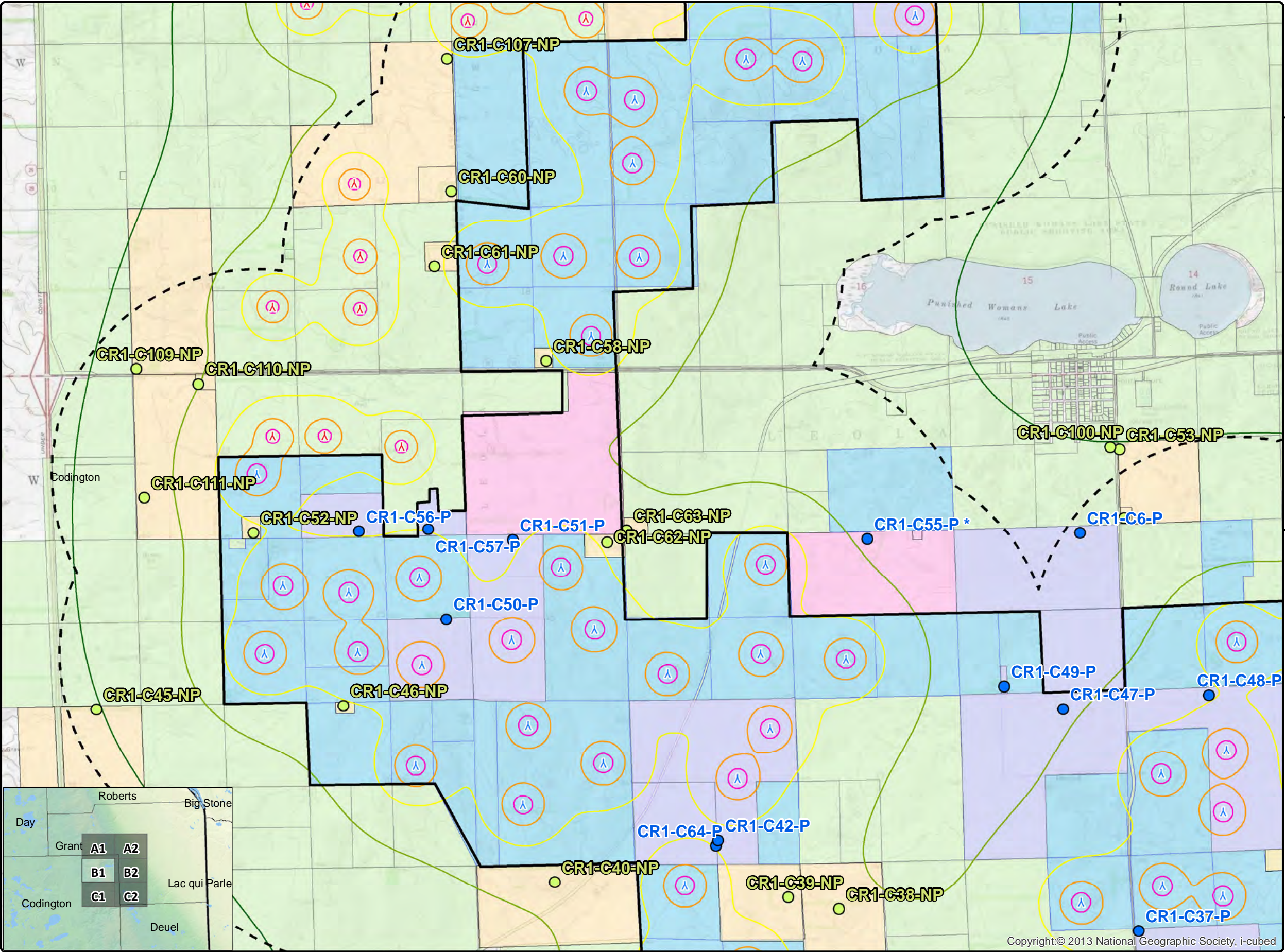
1	Original	2019.05.24
#	Description	Date
Drawn By:	AS	Checked By: JH


Legend

-  Crowned Ridge Wind Turbines
-  Crowned Ridge II Wind Turbines
-  Dakota Range Wind Turbines
-  2 km Turbine Buffer
-  County Lines
-  CR1 Project Boundary
-  Non Participants
-  Participants
-  <all other values>
- Sound Pressure (dBA)**
 -  35
 -  40
 -  45
 -  50
 -  55
-  Participating Codington Parcels
-  Non-Participating Codington Parcels
-  Participating Parcels
-  Pending Parcels
-  Non-Participating Parcels

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Crowned Ridge Wind Farm Sound Pressure Iso-Lines

Client
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Project Description
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Predicted sound pressure levels at existing residences and land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431


Issue Dates

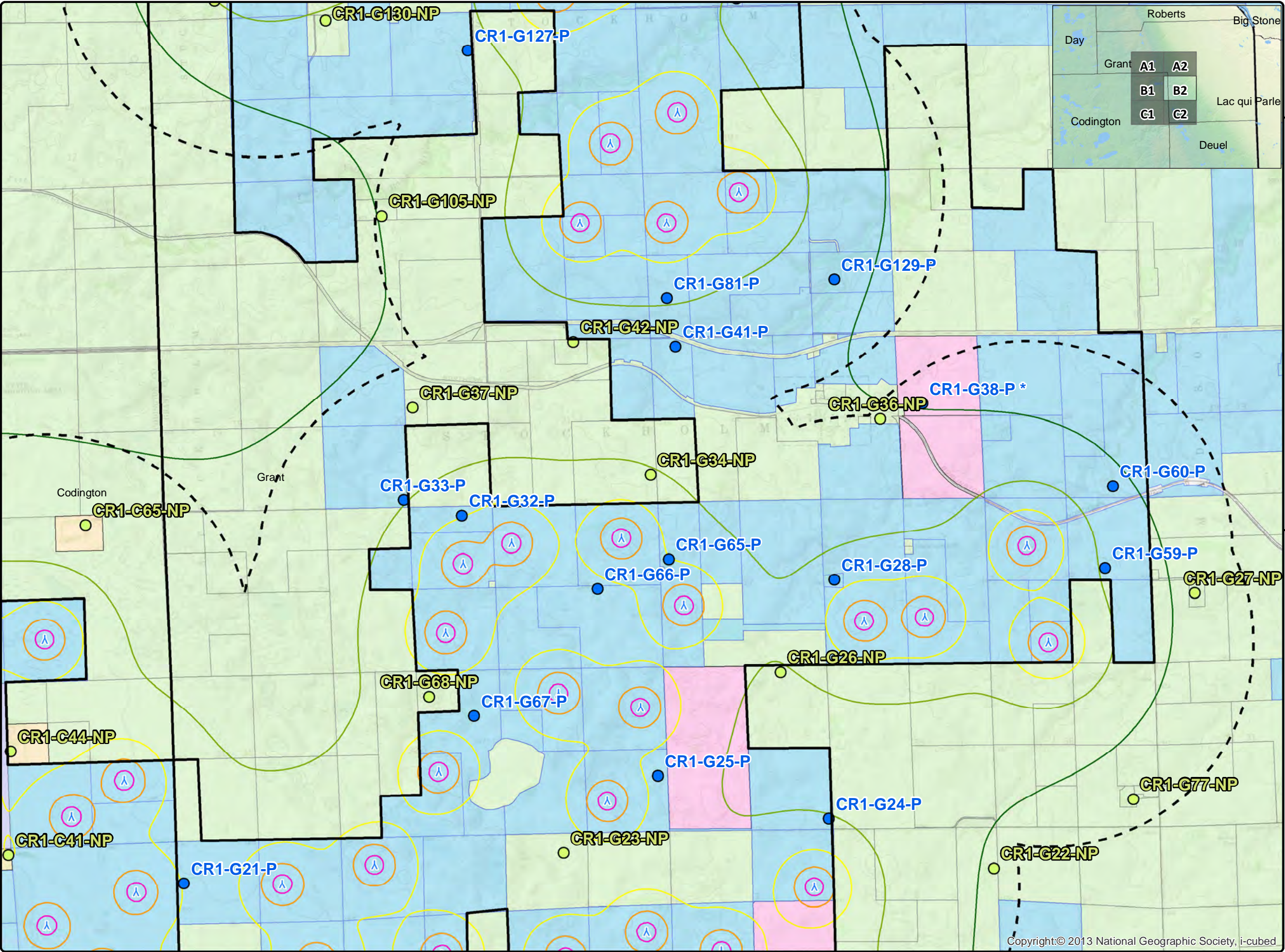
#	Description	Date
1	Original	2019.05.24


Legend

- Crowned Ridge Wind Turbines
- Crowned Ridge II Wind Turbines
- Dakota Range Wind Turbines
- 2 km Turbine Buffer
- County Lines
- CR1 Project Boundary
- Non Participants
- Participants
- <all other values>
- Sound Pressure (dBA)**
 - 35
 - 40
 - 45
 - 50
 - 55
- Participating Codington Parcels
- Non-Participating Codington Parcels
- Participating Parcels
- Pending Parcels
- Non-Participating Parcels

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Crowned Ridge Wind Farm Sound Pressure Iso-Lines

Client
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Project Description
Wind turbine layout with occupied structures within 2 km as well as parcel boundaries.

Predicted sound pressure levels at existing residences and land parcel boundaries.




















Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431


Issue Dates

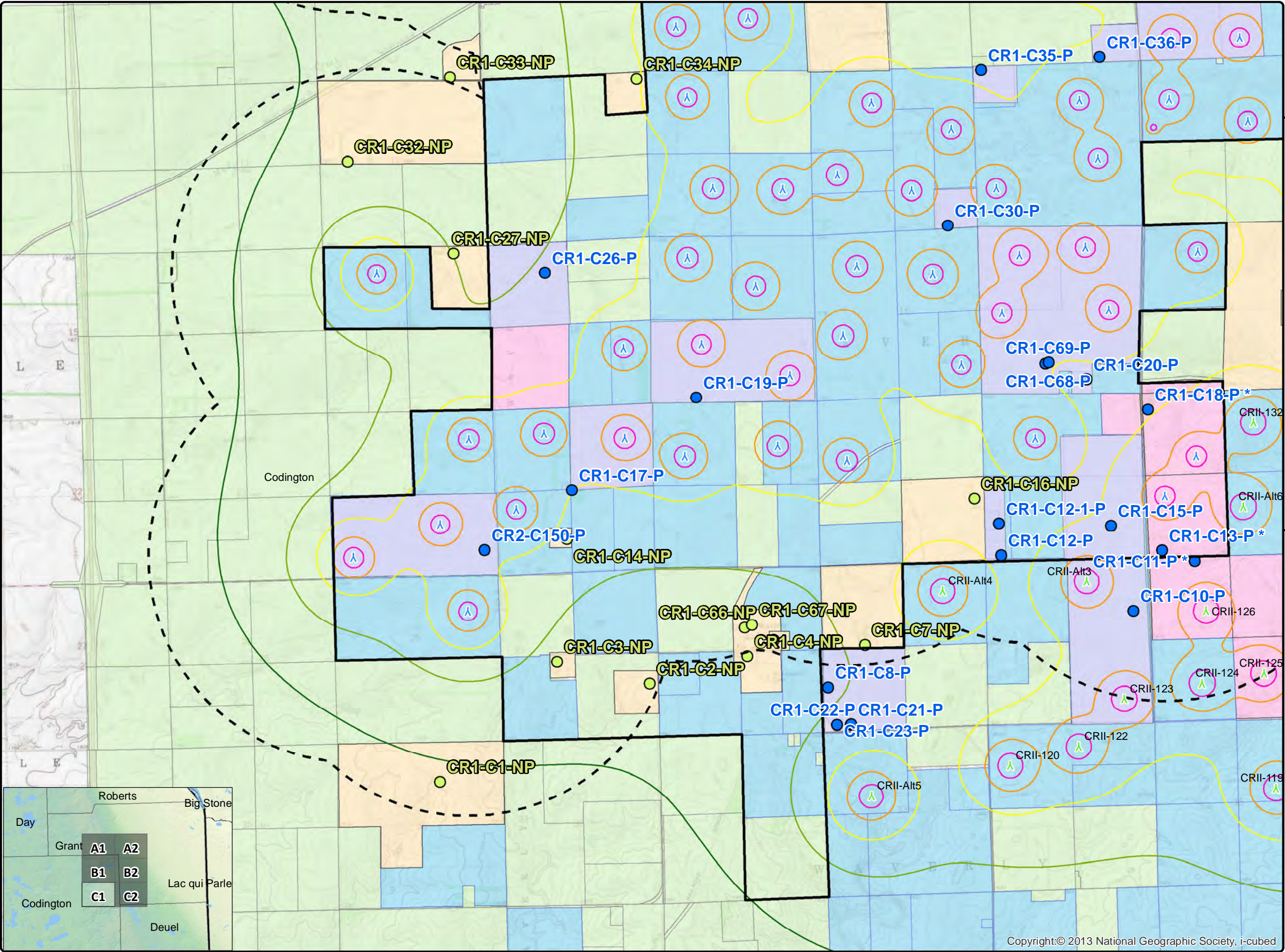
1	Original	2019.05.24
#	Description	Date
Drawn By:	AS	Checked By: JH


Legend

-  Crowned Ridge Wind Turbines
-  Crowned Ridge II Wind Turbines
-  Dakota Range Wind Turbines
-  2 km Turbine Buffer
-  County Lines
-  CR1 Project Boundary
-  Non Participants
-  Participants
-  <all other values>
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-  Participating Parcels
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Crowned Ridge Wind Farm
Sound Pressure Iso-Lines

Client

SWCA Environmental Consultants

Project Description

Wind turbine layout with occupied structures within 2 km as well as parcel boundaries.

Predicted sound pressure levels at existing residences and land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD




















Project #: 20174431

Issue Dates

1	Original	2019.05.24
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#	Description	Date
Drawn By:	AS	Checked By: JH

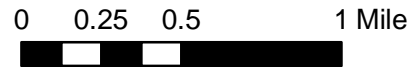
Legend

-  Crowned Ridge Wind Turbines
-  Crowned Ridge II Wind Turbines
-  Dakota Range Wind Turbines
-  2 km Turbine Buffer
-  County Lines
-  CR1 Project Boundary
-  Non Participants
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-  <all other values>
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 -  35
 -  40
 -  45
 -  50
 -  55
-  Participating Codington Parcels
-  Non-Participating Codington Parcels
-  Participating Parcels
-  Pending Parcels
-  Non-Participating Parcels

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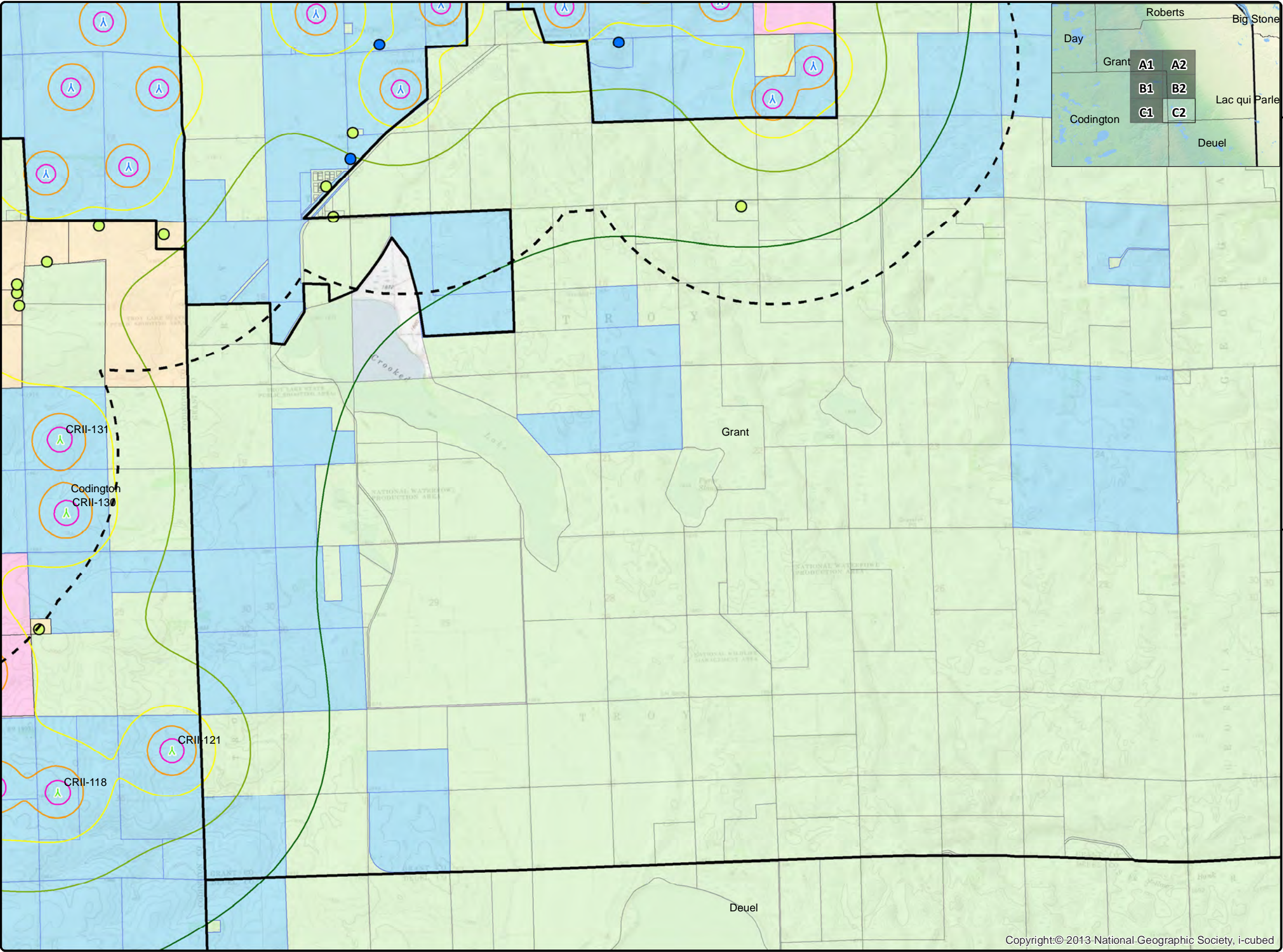
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004723





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**Crowned Ridge Wind Farm
Sound Pressure Iso-Lines
Overview Map**

Client

SWCA Environmental Consultants

Project Description

Wind turbine layout with occupied structures within 2 km as well as parcel boundaries.

Predicted sound pressure levels at existing residences and land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD

Project #: 20174431

Issue Dates


1	Original	2019.05.24
#	Description	Date

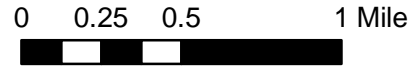
Drawn By: AS Checked By: JH

Legend

- Crowned Ridge Wind Turbines
- Crowned Ridge II Wind Turbines
- Dakota Range Wind Turbines
- 2 km Turbine Buffer
- County Lines
- CR1 Project Boundary
- Non Participants
- Participants
- <all other values>
- Sound Pressure (dBA)**
 - 35
 - 40
 - 45
 - 50
 - 55
- Participating Codington Parcels
- Non-Participating Codington Parcels
- Participating Parcels
- Pending Parcels
- Non-Participating Parcels

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004724

Table C-4: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C41-NP	Non-P	665,053	4,992,084	576.1	45.0	2,359
CR1-C34-NP	Non-P	658,661	4,990,389	589.1	44.7	1,726
CR1-C52-NP	Non-P	654,924	4,995,231	603.0	44.7	1,883
CR1-C46-NP	Non-P	655,802	4,993,540	609.7	44.6	1,680
CR1-C9-NP	Non-P	665,352	4,985,004	609.0	44.5	1,621
CR1-C61-NP	Non-P	656,690	4,997,831	612.0	44.3	1,686
CR1-C107-NP	Non-P	656,811	4,999,855	598.8	44.1	1,401
CR1-C62-NP	Non-P	658,375	4,995,138	615.0	44.1	1,676
CR1-C44-NP	Non-P	665,076	4,993,095	578.2	44.0	2,155
CR1-C58-NP	Non-P	657,781	4,996,906	615.0	43.9	1,647
CR1-C14-NP	Non-P	657,982	4,985,894	609.0	43.5	1,880
CR1-C31-NP	Non-P	665,939	4,988,950	585.4	43.5	2,126
CR1-C16-NP	Non-P	661,960	4,986,288	606.0	43.3	2,736
CR1-C39-NP	Non-P	660,144	4,991,670	588.0	42.3	2,605
CR1-C105-NP	Non-P	658,372	5,001,257	601.5	42.2	2,549
CR1-C63-NP	Non-P	658,566	4,995,254	612.6	42.2	2,408
CR1-C28-NP	Non-P	665,429	4,988,598	590.8	42.1	2,831
CR1-C60-NP	Non-P	656,855	4,998,565	613.5	42.1	2,592
CR1-C70-NP	Non-P	665,135	4,988,293	595.7	42.1	3,540
CR1-C71-NP	Non-P	665,137	4,988,378	594.6	42.1	3,448
CR1-C72-NP	Non-P	665,158	4,988,170	595.2	42.1	3,776
CR1-C29-NP	Non-P	666,572	4,988,867	575.9	41.5	2,457
CR1-C40-NP	Non-P	657,865	4,991,818	583.8	41.5	2,690
CR1-C7-NP	Non-P	660,893	4,984,861	593.2	41.3	3,022
CR1-C38-NP	Non-P	660,639	4,991,557	597.0	41.0	3,474
CR1-C110-NP	Non-P	654,385	4,996,686	593.9	40.2	2,910
CR1-C27-NP	Non-P	656,876	4,988,683	583.0	40.1	2,549
CR1-C112-NP	Non-P	660,002	4,984,908	604.6	39.1	5,627
CR1-C67-NP	Non-P	659,789	4,985,057	606.0	39.0	5,791
CR1-C3-NP	Non-P	657,888	4,984,697	604.2	38.9	3,294
CR1-C5-NP	Non-P	659,958	4,984,794	605.2	38.9	5,659
CR1-C66-NP	Non-P	659,718	4,985,032	606.0	38.9	5,800
CR1-C4-NP	Non-P	659,744	4,984,749	605.9	38.5	5,981
CR1-C111-NP	Non-P	653,857	4,995,573	591.0	38.4	3,678
CR1-C2-NP	Non-P	658,791	4,984,483	601.6	37.4	6,273
CR1-C65-NP	Non-P	665,805	4,995,305	579.0	37.4	3,884
CR1-C33-NP	Non-P	656,839	4,990,404	569.8	37.3	6,719
CR1-C109-NP	Non-P	653,780	4,996,828	588.0	37.2	4,797
CR1-C32-NP	Non-P	655,843	4,989,581	568.6	37.0	3,714

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-4: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C54-NP	Non-P	663,421	4,995,376	583.4	36.5	5,351
CR1-C53-NP	Non-P	663,376	4,996,043	578.6	35.4	7,201
CR1-C45-NP	Non-P	653,390	4,993,503	573.0	35.1	5,673
CR1-C1-NP	Non-P	656,743	4,983,525	595.9	35.0	5,541
CR1-C11-P *	Participant	664,111	4,985,679	609.0	48.0	1,614
CR1-C30-P	Participant	661,699	4,988,957	615.0	47.9	1,614
CR1-C10-P	Participant	663,510	4,985,195	609.0	47.0	1,762
CR1-C13-P *	Participant	663,792	4,985,785	612.0	47.0	1,739
CR1-C50-P	Participant	656,806	4,994,388	621.0	46.8	1,591
CR1-C37-P **	Participant	663,563	4,991,342	605.1	46.5	1,631
CR1-C19-P	Participant	659,243	4,987,276	611.5	46.4	1,722
CR1-C36-P	Participant	663,181	4,990,600	615.0	46.3	1,532
CR2-C150-P	Participant	657,178	4,985,788	612.0	46.2	1,640
CR1-C15-P	Participant	663,291	4,986,026	615.0	46.1	1,952
CR1-C68-P	Participant	662,652	4,987,606	609.0	45.4	2,146
CR1-C69-P	Participant	662,685	4,987,619	609.0	45.4	2,185
CR1-C17-P	Participant	658,031	4,986,373	609.1	45.2	1,886
CR1-C57-P	Participant	656,628	4,995,266	615.0	45.0	1,568
CR1-C64-P	Participant	659,436	4,992,174	581.0	45.0	1,614
CR1-C18-P *	Participant	663,651	4,987,157	610.5	44.9	2,146
CR1-C48-P	Participant	664,247	4,993,646	588.0	44.8	1,847
CR1-C56-P	Participant	655,953	4,995,244	606.0	44.8	1,972
CR1-C42-P	Participant	659,458	4,992,229	580.0	44.7	1,801
CR1-C20-P	Participant	663,054	4,987,455	606.0	44.6	2,336
CR1-C12-P	Participant	662,222	4,985,736	603.0	44.4	2,201
CR1-C51-P	Participant	657,455	4,995,160	621.0	44.2	1,768
CR1-C35-P	Participant	662,025	4,990,475	609.0	44.0	2,123
CR1-C12-1-P	Participant	662,199	4,986,047	606.0	43.6	2,818
CR1-C59-P	Participant	661,548	5,000,754	584.1	42.9	1,644
CR1-C21-P	Participant	660,756	4,984,086	594.8	42.1	2,388
CR1-C22-P	Participant	660,755	4,984,082	594.8	42.1	2,375
CR1-C23-P	Participant	660,619	4,984,078	596.0	41.6	2,523
CR1-C26-P	Participant	657,767	4,988,493	597.0	40.6	3,484
CR1-C8-P	Participant	660,532	4,984,445	599.7	40.1	3,740
CR1-C47-P	Participant	662,825	4,993,508	613.8	39.5	3,750
CR1-C55-P *	Participant	660,914	4,995,169	607.9	39.5	3,360
CR1-C49-P	Participant	662,250	4,993,731	609.0	38.4	5,148
CR1-C6-P	Participant	662,989	4,995,228	599.8	36.5	6,102

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-4: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Grant County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-G68-NP	Non-P	669,159	4,993,632	564.7	43.0	2,113
CR1-G43-NP	Non-P	661,141	5,001,721	584.2	42.9	1,909
CR1-G125-NP	Non-P	668,289	5,000,643	543.0	42.8	1,716
CR1-G23-NP	Non-P	670,471	4,992,104	560.1	42.5	2,185
CR1-G16-NP	Non-P	668,419	4,989,861	576.0	41.8	2,070
CR1-G114-NP	Non-P	666,214	5,006,667	520.8	40.8	2,205
CR1-G34-NP	Non-P	671,320	4,995,798	531.0	40.8	2,238
CR1-G115-NP	Non-P	664,933	5,006,731	544.6	40.5	2,188
CR1-G113-NP	Non-P	666,228	5,005,549	537.0	40.3	2,746
CR1-G109-NP	Non-P	667,064	5,000,425	566.4	40.1	2,152
CR1-G26-NP	Non-P	672,589	4,993,869	531.0	39.9	3,140
CR1-G130-NP	Non-P	668,147	5,000,233	549.0	39.3	3,005
CR1-G44-NP	Non-P	661,781	5,001,732	583.7	39.2	3,123
CR1-G14-NP	Non-P	668,156	4,989,332	574.1	38.8	3,940
CR1-G42-NP	Non-P	670,566	4,997,097	518.9	38.1	3,819
CR1-G12-NP	Non-P	668,229	4,989,039	575.0	38.0	4,623
CR1-G13-NP	Non-P	672,216	4,989,142	558.0	37.2	3,576
CR1-G37-NP	Non-P	668,998	4,996,452	549.0	36.6	5,246
CR1-G36-NP	Non-P	673,559	4,996,344	498.1	35.5	6,211
CR1-G105-NP	Non-P	668,696	4,998,325	549.0	35.3	6,345
CR1-G117-NP	Non-P	663,801	5,005,084	581.3	35.3	4,501
CR1-G110-NP	Non-P	671,218	5,005,064	456.4	34.8	5,889
CR1-G22-NP	Non-P	674,670	4,991,955	527.6	34.8	5,781
CR1-G27-NP	Non-P	676,630	4,994,642	480.8	34.0	4,944
CR1-G77-NP	Non-P	676,031	4,992,629	503.1	33.2	5,728
CR1-G65-P	Participant	671,496	4,994,973	537.0	45.3	1,539
CR1-G18-P	Participant	668,678	4,990,722	585.0	45.1	1,585
CR1-G32-P	Participant	669,477	4,995,401	546.0	45.1	1,545
CR1-G21-P	Participant	666,766	4,991,807	577.1	44.9	1,555
CR1-G66-P	Participant	670,802	4,994,681	539.8	44.0	1,801
CR1-G25-P	Participant	671,391	4,992,858	549.0	43.8	1,804
CR1-G19-P	Participant	671,018	4,990,744	570.0	43.4	2,077
CR1-G28-P	Participant	673,113	4,994,772	514.1	43.2	1,614
CR1-G67-P	Participant	669,597	4,993,440	555.8	43.2	2,106
CR1-G128-P	Participant	670,242	5,001,314	513.0	42.9	2,612
CR1-G131-P	Participant	668,466	5,005,145	505.1	42.9	2,133
CR1-G124-P	Participant	669,843	5,000,605	525.0	42.7	1,791
CR1-G135-P	Participant	668,616	5,005,161	504.2	42.6	2,142

* Pending

** Under Option but Likely to Expire / Not Re-sign

Grant County
continued[illegible]

* Pending

**** Under Option but Likely to Expire / Not Re-sign**

Table C-3: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level

16 turbines removed as suggested by Mr. Hessler

Realistic case sound results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Hessler Case Sound (dB(A))	Real Case Sound (dB(A))	Reduction (DB(A))	Distance to Nearest Turbine (ft)
CR1-C46-NP	Non-P	655,802	4,993,540	609.7	45.8	46.0	0.2	1,680
CR1-C58-NP	Non-P	657,781	4,996,906	615.0	44.8	45.1	0.3	1,647
CR1-C9-NP	Non-P	665,352	4,985,004	609.0	44.4	44.5	0.1	1,621
CR1-C107-NP	Non-P	656,811	4,999,855	598.8	43.9	44.0	0.1	1,401
CR1-C62-NP	Non-P	658,375	4,995,138	615.0	43.9	44.0	0.1	1,676
CR1-C16-NP	Non-P	661,960	4,986,288	606.0	43.2	43.3	0.1	2,736
CR1-C44-NP	Non-P	665,076	4,993,095	578.2	42.5	44.0	1.5	2,155
CR1-C41-NP	Non-P	665,053	4,992,084	576.1	42.4	45.0	2.6	2,359
CR1-C61-NP	Non-P	656,690	4,997,831	612.0	42.4	44.7	2.3	1,686
CR1-C105-NP	Non-P	658,372	5,001,257	601.5	42.1	42.2	0.1	2,549
CR1-C63-NP	Non-P	658,566	4,995,254	612.6	42.0	42.2	0.2	2,408
CR1-C72-NP	Non-P	665,158	4,988,170	595.2	41.5	42.1	0.6	3,776
CR1-C70-NP	Non-P	665,135	4,988,293	595.7	41.3	42.1	0.8	3,540
CR1-C71-NP	Non-P	665,137	4,988,378	594.6	41.2	42.1	0.9	3,448
CR1-C7-NP	Non-P	660,893	4,984,861	593.2	41.2	41.3	0.1	3,022
CR1-C60-NP	Non-P	656,855	4,998,565	613.5	41.1	42.4	1.3	2,592
CR1-C14-NP	Non-P	657,982	4,985,894	609.0	41.0	43.4	2.4	1,880
CR1-C40-NP	Non-P	657,865	4,991,818	583.8	40.5	41.5	1.0	2,690
CR1-C52-NP	Non-P	654,924	4,995,231	603.0	40.5	44.7	4.2	1,883
CR1-C28-NP	Non-P	665,429	4,988,598	590.8	40.4	42.1	1.7	2,831
CR1-C27-NP	Non-P	656,876	4,988,683	583.0	39.7	40.0	0.3	2,549
CR1-C31-NP	Non-P	665,939	4,988,950	585.4	39.7	43.4	3.7	2,126
CR1-C39-NP	Non-P	660,144	4,991,670	588.0	39.4	42.3	2.9	2,605
CR1-C38-NP	Non-P	660,639	4,991,557	597.0	39.3	41.0	1.7	3,474
CR1-C110-NP	Non-P	654,385	4,996,686	593.9	39.0	40.2	1.2	2,910
CR1-C112-NP	Non-P	660,002	4,984,908	604.6	38.9	39.1	0.2	5,627
CR1-C34-NP	Non-P	658,661	4,990,389	589.1	38.9	44.5	5.6	1,726
CR1-C67-NP	Non-P	659,789	4,985,057	606.0	38.8	39.0	0.2	5,791
CR1-C29-NP	Non-P	666,572	4,988,867	575.9	38.7	41.4	2.7	2,457
CR1-C5-NP	Non-P	659,958	4,984,794	605.2	38.7	38.9	0.2	5,659
CR1-C66-NP	Non-P	659,718	4,985,032	606.0	38.7	38.9	0.2	5,800
CR1-C3-NP	Non-P	657,888	4,984,697	604.2	38.3	38.8	0.5	3,294
CR1-C4-NP	Non-P	659,744	4,984,749	605.9	38.3	38.5	0.2	5,981
CR1-C2-NP	Non-P	658,791	4,984,483	601.6	37.0	37.4	0.4	6,273
CR1-C65-NP	Non-P	665,805	4,995,305	579.0	36.9	37.4	0.5	3,884
CR1-C32-NP	Non-P	655,843	4,989,581	568.6	36.6	37.1	0.5	3,714
CR1-C33-NP	Non-P	656,839	4,990,404	569.8	36.5	37.4	0.9	6,719
CR1-C111-NP	Non-P	653,857	4,995,573	591.0	36.4	38.4	2.0	3,678
CR1-C109-NP	Non-P	653,780	4,996,828	588.0	36.3	37.2	0.9	4,797

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-3: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
16 turbines removes as suggested by Mr. Hessler
Realistic case sound results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Hessler Case Sound (dB(A))	Real Case Sound (dB(A))	Reduction (DB(A))	Distance to Nearest Turbine (ft)
CR1-C54-NP	Non-P	663,421	4,995,376	583.4	36.0	36.5	0.5	5,351
CR1-C53-NP	Non-P	663,376	4,996,043	578.6	34.9	35.4	0.5	7,201
CR1-C1-NP	Non-P	656,743	4,983,525	595.9	34.6	34.9	0.3	5,541
CR1-C45-NP	Non-P	653,390	4,993,503	573.0	34.6	35.4	0.8	5,673
CR1-C11-P *	Participant	664,111	4,985,679	609.0	47.9	47.9	0.0	1,614
CR1-C30-P	Participant	661,699	4,988,957	615.0	47.8	47.9	0.1	1,614
CR1-C10-P	Participant	663,510	4,985,195	609.0	47.0	47.0	0.0	1,762
CR1-C13-P *	Participant	663,792	4,985,785	612.0	46.9	46.9	0.0	1,739
CR1-C50-P	Participant	656,806	4,994,388	621.0	46.7	46.8	0.1	1,591
CR1-C19-P	Participant	659,243	4,987,276	611.5	46.3	46.4	0.1	1,722
CR1-C37-P **	Participant	663,563	4,991,342	605.1	46.3	46.5	0.2	1,631
CR1-C15-P	Participant	663,291	4,986,026	615.0	46.1	46.1	0.0	1,952
CR1-C36-P	Participant	663,181	4,990,600	615.0	46.0	46.2	0.2	1,532
CR1-C68-P	Participant	662,652	4,987,606	609.0	45.3	45.4	0.1	2,146
CR1-C69-P	Participant	662,685	4,987,619	609.0	45.3	45.3	0.0	2,185
CR1-C18-P *	Participant	663,651	4,987,157	610.5	44.8	44.8	0.0	2,146
CR1-C57-P	Participant	656,628	4,995,266	615.0	44.6	44.9	0.3	1,568
CR1-C20-P	Participant	663,054	4,987,455	606.0	44.5	44.5	0.0	2,336
CR2-C150-P	Participant	657,178	4,985,788	612.0	44.5	46.1	1.6	1,640
CR1-C12-P	Participant	662,222	4,985,736	603.0	44.3	44.3	0.0	2,201
CR1-C48-P	Participant	664,247	4,993,646	588.0	44.3	44.7	0.4	1,847
CR1-C51-P	Participant	657,455	4,995,160	621.0	44.0	44.1	0.1	1,768
CR1-C56-P	Participant	655,953	4,995,244	606.0	44.0	44.8	0.8	1,972
CR1-C17-P	Participant	658,031	4,986,373	609.1	43.7	45.1	1.4	1,886
CR1-C35-P	Participant	662,025	4,990,475	609.0	43.7	43.9	0.2	2,123
CR1-C12-1-P	Participant	662,199	4,986,047	606.0	43.5	43.6	0.1	2,818
CR1-C59-P	Participant	661,548	5,000,754	584.1	42.7	42.7	0.0	1,644
CR1-C42-P	Participant	659,458	4,992,229	580.0	42.1	44.6	2.5	1,801
CR1-C22-P	Participant	660,755	4,984,082	594.8	42.0	42.0	0.0	2,375
CR1-C21-P	Participant	660,756	4,984,086	594.8	41.9	42.0	0.1	2,388
CR1-C64-P	Participant	659,436	4,992,174	581.0	41.6	44.9	3.3	1,614
CR1-C23-P	Participant	660,619	4,984,078	596.0	41.5	41.5	0.0	2,523
CR1-C26-P	Participant	657,767	4,988,493	597.0	40.2	40.6	0.4	3,484
CR1-C8-P	Participant	660,532	4,984,445	599.7	40.0	40.1	0.1	3,740
CR1-C55-P *	Participant	660,914	4,995,169	607.9	39.2	39.5	0.3	3,360
CR1-C47-P	Participant	662,825	4,993,508	613.8	38.9	39.5	0.6	3,750
CR1-C49-P	Participant	662,250	4,993,731	609.0	38.0	38.4	0.4	5,148
CR1-C6-P	Participant	662,989	4,995,228	599.8	36.0	36.5	0.5	6,102

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-3: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
16 turbines removes as suggested by Mr. Hessler
Realistic case sound results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Grant County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Hessler Case Sound (dB(A))	Real Case Sound (dB(A))	Reduction (DB(A))	Distance to Nearest Turbine (ft)
CR1-G43-NP	Non-P	661,141	5,001,721	584.2	42.8	43.0	0.2	1,909
CR1-G125-NP	Non-P	668,289	5,000,643	543.0	42.6	42.8	0.2	1,716
CR1-G68-NP	Non-P	669,159	4,993,632	564.7	40.8	43.0	2.2	2,113
CR1-G114-NP	Non-P	666,214	5,006,667	520.8	40.7	40.8	0.1	2,205
CR1-G34-NP	Non-P	671,320	4,995,798	531.0	40.5	40.8	0.3	2,238
CR1-G115-NP	Non-P	664,933	5,006,731	544.6	40.3	40.5	0.2	2,188
CR1-G23-NP	Non-P	670,471	4,992,104	560.1	40.3	42.6	2.3	2,185
CR1-G113-NP	Non-P	666,228	5,005,549	537.0	40.2	40.3	0.1	2,746
CR1-G109-NP	Non-P	667,064	5,000,425	566.4	39.9	40.1	0.2	2,152
CR1-G26-NP	Non-P	672,589	4,993,869	531.0	39.6	39.9	0.3	3,140
CR1-G130-NP	Non-P	668,147	5,000,233	549.0	39.2	39.3	0.1	3,005
CR1-G44-NP	Non-P	661,781	5,001,732	583.7	39.1	39.2	0.1	3,123
CR1-G16-NP	Non-P	668,419	4,989,861	576.0	38.2	41.8	3.6	2,070
CR1-G42-NP	Non-P	670,566	4,997,097	518.9	37.8	38.1	0.3	3,819
CR1-G14-NP	Non-P	668,156	4,989,332	574.1	37.1	38.8	1.7	3,940
CR1-G13-NP	Non-P	672,216	4,989,142	558.0	36.9	37.2	0.3	3,576
CR1-G12-NP	Non-P	668,229	4,989,039	575.0	36.6	38.0	1.4	4,623
CR1-G37-NP	Non-P	668,998	4,996,452	549.0	36.1	36.6	0.5	5,246
CR1-G36-NP	Non-P	673,559	4,996,344	498.1	35.3	35.5	0.2	6,211
CR1-G117-NP	Non-P	663,801	5,005,084	581.3	35.2	35.3	0.1	4,501
CR1-G105-NP	Non-P	668,696	4,998,325	549.0	35.0	35.3	0.3	6,345
CR1-G110-NP	Non-P	671,218	5,005,064	456.4	34.7	34.8	0.1	5,889
CR1-G22-NP	Non-P	674,670	4,991,955	527.6	34.6	34.8	0.2	5,781
CR1-G27-NP	Non-P	676,630	4,994,642	480.8	33.8	34.0	0.2	4,944
CR1-G77-NP	Non-P	676,031	4,992,629	503.1	33.0	33.2	0.2	5,728
CR1-G65-P	Participant	671,496	4,994,973	537.0	45.1	45.3	0.2	1,539
CR1-G32-P	Participant	669,477	4,995,401	546.0	44.6	45.1	0.5	1,545
CR1-G21-P	Participant	666,766	4,991,807	577.1	44.2	44.9	0.7	1,555
CR1-G66-P	Participant	670,802	4,994,681	539.8	43.6	44.0	0.4	1,801
CR1-G19-P	Participant	671,018	4,990,744	570.0	43.1	43.4	0.3	2,077
CR1-G28-P	Participant	673,113	4,994,772	514.1	42.9	43.2	0.3	1,614
CR1-G128-P	Participant	670,242	5,001,314	513.0	42.8	42.9	0.1	2,612
CR1-G131-P	Participant	668,466	5,005,145	505.1	42.8	42.9	0.1	2,133
CR1-G124-P	Participant	669,843	5,000,605	525.0	42.5	42.7	0.2	1,791
CR1-G135-P	Participant	668,616	5,005,161	504.2	42.4	42.6	0.2	2,142
CR1-G18-P	Participant	668,678	4,990,722	585.0	42.4	45.1	2.7	1,585
CR1-G136-P	Participant	667,706	5,004,861	522.0	42.1	42.2	0.1	2,277
CR1-G67-P	Participant	669,597	4,993,440	555.8	42.1	43.2	1.1	2,106

* Pending

** Under Option but Likely to Expire / Not Re-sign

continued

**** Under Option but Likely to Expire / Not Re-sign**

Table C-1: Crowned Ridge Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C1-NP	Non-P	Boundary	657,276	4,983,921	590.3	36.5	4,258
CR1-C2-NP	Non-P	Boundary	658,435	4,984,609	601.8	37.7	5,036
CR1-C3-NP	Non-P	Boundary	657,812	4,984,785	603.4	39.4	2,936
CR1-C4-NP	Non-P	Boundary	659,890	4,985,620	605.2	40.5	3,914
CR1-C6-P	Participant	Boundary	663,383	4,994,502	591.0	38.5	3,878
CR1-C7-NP	Non-P	Boundary	661,266	4,985,387	591.0	46.6	1,253
CR1-C8-P	Participant	Boundary	661,277	4,984,852	597.0	43.1	2,139
CR1-C9-NP	Non-P	Boundary	665,462	4,985,115	609.0	45.0	1,079
CR1-C10-P	Participant	Boundary	662,869	4,985,477	601.7	52.2	610
CR1-C11-P *	Participant	Boundary	664,473	4,985,211	608.8	51.5	738
CR1-C12-P	Participant	Boundary	662,067	4,985,677	605.1	45.3	1,670
CR1-C13-P *	Participant	Boundary	664,431	4,986,195	615.0	54.0	574
CR1-C14-NP	Non-P	Boundary	657,803	4,986,003	609.0	46.1	1,191
CR1-C15-P	Participant	Boundary	663,047	4,985,700	612.9	51.1	722
CR1-C16-NP	Non-P	Boundary	661,642	4,985,677	597.0	48.8	948
CR1-C17-P	Participant	Boundary	658,819	4,986,842	611.4	49.7	1,837
CR1-C18-P *	Participant	Boundary	664,114	4,986,526	609.4	52.4	591
CR1-C19-P	Participant	Boundary	660,393	4,987,529	608.4	50.1	784
CR1-C20-P	Participant	Boundary	662,024	4,987,612	604.2	51.0	640
CR1-C26-P	Participant	Boundary	658,015	4,987,993	606.7	43.5	1,867
CR1-C27-NP	Non-P	Boundary	656,658	4,988,484	587.2	42.1	1,749
CR1-C28-NP	Non-P	Boundary	665,432	4,989,009	583.9	44.9	1,483
CR1-C29-NP	Non-P	Boundary	666,496	4,989,001	574.3	42.7	1,952
CR1-C30-P	Participant	Boundary	661,978	4,989,318	612.8	51.3	633
CR1-C31-NP	Non-P	Boundary	665,639	4,989,013	584.7	44.5	1,637
CR1-C32-NP	Non-P	Boundary	657,187	4,989,566	573.2	38.1	4,970
CR1-C33-NP	Non-P	Boundary	657,126	4,990,843	567.0	38.0	5,856
CR1-C34-NP	Non-P	Boundary	658,763	4,990,247	589.4	45.8	1,293
CR1-C35-P	Participant	Boundary	661,955	4,990,153	606.1	47.2	1,112
CR1-C36-P	Participant	Boundary	663,564	4,990,731	610.7	48.3	1,033
CR1-C37-P **	Participant	Boundary	663,879	4,990,574	594.0	51.1	699
CR1-C38-NP	Non-P	Boundary	660,955	4,990,468	591.2	47.3	1,027
CR1-C39-NP	Non-P	Boundary	659,741	4,991,242	583.3	48.5	856
CR1-C40-NP	Non-P	Boundary	658,706	4,991,231	579.8	44.9	1,555
CR1-C41-NP	Non-P	Boundary	664,801	4,991,929	578.8	46.1	1,585
CR1-C42-P	Participant	Boundary	659,828	4,992,807	580.1	51.1	604
CR1-C44-NP	Non-P	Boundary	665,447	4,992,972	578.1	44.4	1,824
CR1-C45-NP	Non-P	Boundary	653,821	4,993,552	573.0	36.7	4,291
CR1-C46-NP	Non-P	Boundary	655,910	4,993,469	609.0	45.1	561

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-1: Crowned Ridge Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C47-P	Participant	Boundary	663,454	4,992,888	612.0	46.8	1,076
CR1-C48-P	Participant	Boundary	664,262	4,992,514	586.6	53.6	410
CR1-C49-P	Participant	Boundary	662,224	4,993,664	609.0	38.5	5,105
CR1-C50-P	Participant	Boundary	656,239	4,994,042	618.0	49.6	984
CR1-C51-P	Participant	Boundary	657,753	4,994,889	620.0	51.5	564
CR1-C52-NP	Non-P	Boundary	654,986	4,995,398	603.0	45.8	1,335
CR1-C53-NP	Non-P	Boundary	664,171	4,995,340	580.5	37.4	4,009
CR1-C54-NP	Non-P	Boundary	663,495	4,995,329	582.9	36.6	5,075
CR1-C55-P *	Participant	Boundary	660,139	4,994,937	607.0	49.4	722
CR1-C56-P	Participant	Boundary	655,385	4,995,606	603.0	45.6	627
CR1-C57-P	Participant	Boundary	656,526	4,995,198	616.1	45.8	1,319
CR1-C58-NP	Non-P	Boundary	657,839	4,997,040	615.0	45.4	732
CR1-C59-P	Participant	Boundary	661,380	5,000,092	591.5	50.2	623
CR1-C60-NP	Non-P	Boundary	656,539	4,998,453	609.3	42.6	2,218
CR1-C61-NP	Non-P	Boundary	656,926	4,997,851	612.0	47.8	912
CR1-C62-NP	Non-P	Boundary	658,155	4,994,994	614.5	48.7	820
CR1-C63-NP	Non-P	Boundary	658,543	4,995,211	606.8	42.4	2,277
CR1-C64-P	Participant	Boundary	659,129	4,991,995	576.6	50.0	679
CR1-C65-NP	Non-P	Boundary	665,516	4,995,045	578.0	39.2	2,825
CR1-C70-NP	Non-P	Boundary	664,953	4,987,981	596.1	42.7	3,225
CR1-C71-NP	Non-P	Boundary	664,658	4,987,355	600.0	48.6	1,050
CR1-C105-NP	Non-P	Boundary	658,351	5,000,265	609.0	49.8	604
CR1-C107-NP	Non-P	Boundary	655,923	4,998,435	595.6	48.5	673
CR1-C109-NP	Non-P	Boundary	654,533	4,997,357	592.6	40.9	1,909
CR1-C110-NP	Non-P	Boundary	654,553	4,996,633	588.7	41.3	2,365
CR1-C111-NP	Non-P	Boundary	654,576	4,995,809	599.1	45.6	1,240
CR1-C112-NP	Non-P	Boundary	660,152	4,984,994	604.0	39.4	5,075
CR2-C150-P	Participant	Boundary	657,308	4,986,173	600.0	51.3	591
CR1-C1-NP	Non-P	Structure	656,743	4,983,525	596.0	34.9	5,541
CR1-C2-NP	Non-P	Structure	658,791	4,984,483	602.0	37.4	6,273
CR1-C3-NP	Non-P	Structure	657,888	4,984,697	604.2	38.8	3,294
CR1-C4-NP	Non-P	Structure	659,744	4,984,749	606.0	38.5	5,981
CR1-C5-NP	Non-P	Structure	659,958	4,984,794	604.8	38.9	5,659
CR1-C6-P	Participant	Structure	662,989	4,995,228	599.8	36.5	6,102
CR1-C7-NP	Non-P	Structure	660,893	4,984,861	593.2	41.3	3,022
CR1-C8-P	Participant	Structure	660,532	4,984,445	599.4	40.1	3,740
CR1-C9-NP	Non-P	Structure	665,352	4,985,004	609.0	44.5	1,621
CR1-C10-P	Participant	Structure	663,510	4,985,195	609.0	47.0	1,762

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-1: Crowned Ridge Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C11-P *	Participant	Structure	664,111	4,985,679	609.0	47.9	1,614
CR1-C12-1-P	Participant	Structure	662,199	4,986,047	606.0	43.6	2,818
CR1-C12-P	Participant	Structure	662,222	4,985,736	603.0	44.3	2,201
CR1-C13-P *	Participant	Structure	663,792	4,985,785	612.0	46.9	1,739
CR1-C14-NP	Non-P	Structure	657,982	4,985,894	609.0	43.4	1,880
CR1-C15-P	Participant	Structure	663,291	4,986,026	615.0	46.1	1,952
CR1-C16-NP	Non-P	Structure	661,960	4,986,288	606.0	43.3	2,736
CR1-C17-P	Participant	Structure	658,031	4,986,373	609.1	45.1	1,886
CR1-C18-P *	Participant	Structure	663,651	4,987,157	610.4	44.8	2,146
CR1-C19-P	Participant	Structure	659,243	4,987,276	611.6	46.4	1,722
CR1-C20-P	Participant	Structure	663,054	4,987,455	606.0	44.5	2,336
CR1-C21-P	Participant	Structure	660,756	4,984,086	594.0	42.0	2,388
CR1-C22-P	Participant	Structure	660,755	4,984,082	594.0	42.0	2,375
CR1-C23-P	Participant	Structure	660,619	4,984,078	595.8	41.5	2,523
CR1-C26-P	Participant	Structure	657,767	4,988,493	597.0	40.6	3,484
CR1-C27-NP	Non-P	Structure	656,876	4,988,683	583.0	40.0	2,549
CR1-C28-NP	Non-P	Structure	665,429	4,988,598	590.9	42.1	2,831
CR1-C29-NP	Non-P	Structure	666,572	4,988,867	575.9	41.4	2,457
CR1-C30-P	Participant	Structure	661,699	4,988,957	615.0	47.9	1,614
CR1-C31-NP	Non-P	Structure	665,939	4,988,950	585.4	43.4	2,126
CR1-C32-NP	Non-P	Structure	655,843	4,989,581	568.8	37.0	3,714
CR1-C33-NP	Non-P	Structure	656,839	4,990,404	569.8	37.3	6,719
CR1-C34-NP	Non-P	Structure	658,661	4,990,389	588.2	44.5	1,726
CR1-C35-P	Participant	Structure	662,025	4,990,475	609.0	43.9	2,123
CR1-C36-P	Participant	Structure	663,181	4,990,600	615.0	46.2	1,532
CR1-C37-P **	Participant	Structure	663,563	4,991,342	605.1	46.5	1,631
CR1-C38-NP	Non-P	Structure	660,639	4,991,557	597.0	41.0	3,474
CR1-C39-NP	Non-P	Structure	660,144	4,991,670	588.0	42.2	2,605
CR1-C40-NP	Non-P	Structure	657,865	4,991,818	583.7	41.5	2,690
CR1-C41-NP	Non-P	Structure	665,053	4,992,084	576.1	45.0	2,359
CR1-C42-P	Participant	Structure	659,458	4,992,229	580.0	44.6	1,801
CR1-C44-NP	Non-P	Structure	665,076	4,993,095	578.2	44.0	2,155
CR1-C45-NP	Non-P	Structure	653,390	4,993,503	573.2	35.1	5,673
CR1-C46-NP	Non-P	Structure	655,802	4,993,540	609.1	44.4	1,680
CR1-C47-P	Participant	Structure	662,825	4,993,508	613.9	39.5	3,750
CR1-C48-P	Participant	Structure	664,247	4,993,646	588.0	44.7	1,847
CR1-C49-P	Participant	Structure	662,250	4,993,731	609.0	38.4	5,148
CR1-C50-P	Participant	Structure	656,806	4,994,388	621.0	46.8	1,591

* Pending

** Under Option but Likely to Expire / Not Re-sign

[illegible]

**** Under Option but Likely to Expire / Not Re-sign**

Table C-1: Crowned Ridge Sound Level Tabular Results Sorted by Receptor ID

Realistic case sound results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's

UTM NAD83 Zone 14

Grant County

continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-G12-NP	Non-P	Structure	668,229	4,989,039	575.0	38.0	4,623
CR1-G13-NP	Non-P	Structure	672,216	4,989,142	558.0	37.2	3,576
CR1-G14-NP	Non-P	Structure	668,156	4,989,332	574.1	38.8	3,940
CR1-G15-P	Participant	Structure	668,396	4,989,607	576.0	40.1	2,746
CR1-G16-NP	Non-P	Structure	668,419	4,989,861	576.0	41.8	2,070
CR1-G18-P	Participant	Structure	668,678	4,990,722	585.0	45.1	1,585
CR1-G19-P	Participant	Structure	671,018	4,990,744	570.0	43.4	2,077
CR1-G21-P	Participant	Structure	666,766	4,991,807	577.1	44.9	1,555
CR1-G22-NP	Non-P	Structure	674,670	4,991,955	527.6	34.8	5,781
CR1-G23-NP	Non-P	Structure	670,471	4,992,104	560.0	42.5	2,185
CR1-G24-P	Participant	Structure	673,058	4,992,440	539.4	40.6	2,231
CR1-G25-P	Participant	Structure	671,391	4,992,858	549.0	43.8	1,804
CR1-G26-NP	Non-P	Structure	672,589	4,993,869	531.0	39.9	3,140
CR1-G27-NP	Non-P	Structure	676,630	4,994,642	480.8	34.0	4,944
CR1-G28-P	Participant	Structure	673,113	4,994,772	513.9	43.2	1,614
CR1-G32-P	Participant	Structure	669,477	4,995,401	546.0	45.1	1,545
CR1-G33-P	Participant	Structure	668,911	4,995,550	548.7	39.9	2,779
CR1-G34-NP	Non-P	Structure	671,320	4,995,798	531.0	40.8	2,238
CR1-G36-NP	Non-P	Structure	673,559	4,996,344	498.0	35.5	6,211
CR1-G37-NP	Non-P	Structure	668,998	4,996,452	549.0	36.6	5,246
CR1-G38-P *	Participant	Structure	673,972	4,996,493	494.5	35.0	5,646
CR1-G41-P	Participant	Structure	671,563	4,997,050	497.6	37.9	3,983
CR1-G42-NP	Non-P	Structure	670,566	4,997,097	518.9	38.1	3,819
CR1-G43-NP	Non-P	Structure	661,141	5,001,721	583.6	42.9	1,909
CR1-G44-NP	Non-P	Structure	661,781	5,001,732	583.7	39.2	3,123
CR1-G59-P	Participant	Structure	675,755	4,994,888	487.7	39.6	2,605
CR1-G60-P	Participant	Structure	675,830	4,995,687	477.0	36.4	3,343
CR1-G65-P	Participant	Structure	671,496	4,994,973	537.0	45.3	1,539
CR1-G66-P	Participant	Structure	670,802	4,994,681	539.7	44.0	1,801
CR1-G67-P	Participant	Structure	669,597	4,993,440	556.1	43.2	2,106
CR1-G68-NP	Non-P	Structure	669,159	4,993,632	565.6	43.0	2,113
CR1-G77-NP	Non-P	Structure	676,031	4,992,629	502.7	33.2	5,728
CR1-G81-P	Participant	Structure	671,478	4,997,523	508.8	40.7	2,421
CR1-G105-NP	Non-P	Structure	668,696	4,998,325	549.0	35.3	6,345
CR1-G108-P	Participant	Structure	669,516	5,001,186	522.2	39.7	3,586
CR1-G109-NP	Non-P	Structure	667,064	5,000,425	566.2	40.1	2,152
CR1-G110-NP	Non-P	Structure	671,218	5,005,064	456.2	34.8	5,889
CR1-G113-NP	Non-P	Structure	666,228	5,005,549	537.0	40.3	2,746

* Pending

** Under Option but Likely to Expire / Not Re-sign

Grant County
continued[illegible]

Table C-2: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C105-NP	Non-P	Boundary	658,351	5,000,265	609.0	49.8	604
CR1-C16-NP	Non-P	Boundary	661,642	4,985,677	597.0	48.8	948
CR1-C62-NP	Non-P	Boundary	658,155	4,994,994	614.5	48.7	820
CR1-C71-NP	Non-P	Boundary	664,658	4,987,355	600.0	48.6	1,050
CR1-C107-NP	Non-P	Boundary	655,923	4,998,435	595.6	48.5	673
CR1-C39-NP	Non-P	Boundary	659,741	4,991,242	583.3	48.5	856
CR1-C61-NP	Non-P	Boundary	656,926	4,997,851	612.0	47.8	912
CR1-C38-NP	Non-P	Boundary	660,955	4,990,468	591.2	47.3	1,027
CR1-C7-NP	Non-P	Boundary	661,266	4,985,387	591.0	46.6	1,253
CR1-C14-NP	Non-P	Boundary	657,803	4,986,003	609.0	46.1	1,191
CR1-C41-NP	Non-P	Boundary	664,801	4,991,929	578.8	46.1	1,585
CR1-C34-NP	Non-P	Boundary	658,763	4,990,247	589.4	45.8	1,293
CR1-C52-NP	Non-P	Boundary	654,986	4,995,398	603.0	45.8	1,335
CR1-C111-NP	Non-P	Boundary	654,576	4,995,809	599.1	45.6	1,240
CR1-C58-NP	Non-P	Boundary	657,839	4,997,040	615.0	45.4	732
CR1-C46-NP	Non-P	Boundary	655,910	4,993,469	609.0	45.1	561
CR1-C9-NP	Non-P	Boundary	665,462	4,985,115	609.0	45.0	1,079
CR1-C28-NP	Non-P	Boundary	665,432	4,989,009	583.9	44.9	1,483
CR1-C40-NP	Non-P	Boundary	658,706	4,991,231	579.8	44.9	1,555
CR1-C31-NP	Non-P	Boundary	665,639	4,989,013	584.7	44.5	1,637
CR1-C44-NP	Non-P	Boundary	665,447	4,992,972	578.1	44.4	1,824
CR1-C29-NP	Non-P	Boundary	666,496	4,989,001	574.3	42.7	1,952
CR1-C70-NP	Non-P	Boundary	664,953	4,987,981	596.1	42.7	3,225
CR1-C60-NP	Non-P	Boundary	656,539	4,998,453	609.3	42.6	2,218
CR1-C63-NP	Non-P	Boundary	658,543	4,995,211	606.8	42.4	2,277
CR1-C27-NP	Non-P	Boundary	656,658	4,988,484	587.2	42.1	1,749
CR1-C110-NP	Non-P	Boundary	654,553	4,996,633	588.7	41.3	2,365
CR1-C109-NP	Non-P	Boundary	654,533	4,997,357	592.6	40.9	1,909
CR1-C4-NP	Non-P	Boundary	659,890	4,985,620	605.2	40.5	3,914
CR1-C112-NP	Non-P	Boundary	660,152	4,984,994	604.0	39.4	5,075
CR1-C3-NP	Non-P	Boundary	657,812	4,984,785	603.4	39.4	2,936
CR1-C65-NP	Non-P	Boundary	665,516	4,995,045	578.0	39.2	2,825
CR1-C32-NP	Non-P	Boundary	657,187	4,989,566	573.2	38.1	3,714
CR1-C33-NP	Non-P	Boundary	657,126	4,990,843	567.0	38.0	5,856
CR1-C2-NP	Non-P	Boundary	658,435	4,984,609	601.8	37.7	5,036
CR1-C53-NP	Non-P	Boundary	664,171	4,995,340	580.5	37.4	4,009
CR1-C45-NP	Non-P	Boundary	653,821	4,993,552	573.0	36.7	4,291
CR1-C54-NP	Non-P	Boundary	663,495	4,995,329	582.9	36.6	5,075
CR1-C1-NP	Non-P	Boundary	657,276	4,983,921	590.3	36.5	4,258

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-2: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C13-P *	Participant	Boundary	664,431	4,986,195	615.0	54.0	1,739
CR1-C48-P	Participant	Boundary	664,262	4,992,514	586.6	53.6	410
CR1-C18-P *	Participant	Boundary	664,114	4,986,526	609.4	52.4	2,146
CR1-C10-P	Participant	Boundary	662,869	4,985,477	601.7	52.2	610
CR1-C11-P *	Participant	Boundary	664,473	4,985,211	608.8	51.5	1,614
CR1-C51-P	Participant	Boundary	657,753	4,994,889	620.0	51.5	564
CR1-C30-P	Participant	Boundary	661,978	4,989,318	612.8	51.3	1,614
CR2-C150-P	Participant	Boundary	657,308	4,986,173	600.0	51.3	1,640
CR1-C15-P	Participant	Boundary	663,047	4,985,700	612.9	51.1	1,952
CR1-C37-P **	Participant	Boundary	663,879	4,990,574	594.0	51.1	1,631
CR1-C42-P	Participant	Boundary	659,828	4,992,807	580.1	51.1	1,801
CR1-C20-P	Participant	Boundary	662,024	4,987,612	604.2	51.0	2,336
CR1-C59-P	Participant	Boundary	661,380	5,000,092	591.5	50.2	623
CR1-C19-P	Participant	Boundary	660,393	4,987,529	608.4	50.1	1,722
CR1-C64-P	Participant	Boundary	659,129	4,991,995	576.6	50.0	1,614
CR1-C17-P	Participant	Boundary	658,819	4,986,842	611.4	49.7	1,886
CR1-C50-P	Participant	Boundary	656,239	4,994,042	618.0	49.6	984
CR1-C55-P *	Participant	Boundary	660,139	4,994,937	607.0	49.4	3,360
CR1-C36-P	Participant	Boundary	663,564	4,990,731	610.7	48.3	1,532
CR1-C35-P	Participant	Boundary	661,955	4,990,153	606.1	47.2	2,123
CR1-C47-P	Participant	Boundary	663,454	4,992,888	612.0	46.8	3,750
CR1-C57-P	Participant	Boundary	656,526	4,995,198	616.1	45.8	1,568
CR1-C56-P	Participant	Boundary	655,385	4,995,606	603.0	45.6	1,972
CR1-C12-P	Participant	Boundary	662,067	4,985,677	605.1	45.3	1,670
CR1-C26-P	Participant	Boundary	658,015	4,987,993	606.7	43.5	3,484
CR1-C8-P	Participant	Boundary	661,277	4,984,852	597.0	43.1	3,740
CR1-C49-P	Participant	Boundary	662,224	4,993,664	609.0	38.5	5,148
CR1-C6-P	Participant	Boundary	663,383	4,994,502	591.0	38.5	3,878
CR1-C9-NP	Non-P	Structure	665,352	4,985,004	609.0	47.7	1,621
CR1-C41-NP	Non-P	Structure	665,053	4,992,084	576.1	45.0	2,359
CR1-C52-NP	Non-P	Structure	654,924	4,995,231	603.0	44.6	1,883
CR1-C34-NP	Non-P	Structure	658,661	4,990,389	588.2	44.5	1,726
CR1-C46-NP	Non-P	Structure	655,802	4,993,540	609.1	44.4	1,680
CR1-C61-NP	Non-P	Structure	656,690	4,997,831	612.0	44.2	1,686
CR1-C44-NP	Non-P	Structure	665,076	4,993,095	578.2	44.0	2,155
CR1-C62-NP	Non-P	Structure	658,375	4,995,138	615.0	44.0	1,676
CR1-C107-NP	Non-P	Structure	656,811	4,999,855	598.8	43.9	1,401
CR1-C58-NP	Non-P	Structure	657,781	4,996,906	615.0	43.7	1,647

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-2: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-C14-NP	Non-P	Structure	657,982	4,985,894	609.0	43.4	1,880
CR1-C31-NP	Non-P	Structure	665,939	4,988,950	585.4	43.4	2,126
CR1-C16-NP	Non-P	Structure	661,960	4,986,288	606.0	43.3	2,736
CR1-C105-NP	Non-P	Structure	658,372	5,001,257	600.3	42.2	2,549
CR1-C39-NP	Non-P	Structure	660,144	4,991,670	588.0	42.2	2,605
CR1-C28-NP	Non-P	Structure	665,429	4,988,598	590.9	42.1	2,831
CR1-C60-NP	Non-P	Structure	656,855	4,998,565	613.5	42.1	2,592
CR1-C63-NP	Non-P	Structure	658,566	4,995,254	612.4	42.1	2,408
CR1-C70-NP	Non-P	Structure	665,135	4,988,293	595.9	42.1	3,540
CR1-C71-NP	Non-P	Structure	665,137	4,988,378	595.6	42.1	3,448
CR1-C72-NP	Non-P	Structure	665,158	4,988,170	594.6	42.1	3,776
CR1-C40-NP	Non-P	Structure	657,865	4,991,818	583.7	41.5	2,690
CR1-C29-NP	Non-P	Structure	666,572	4,988,867	575.9	41.4	2,457
CR1-C7-NP	Non-P	Structure	660,893	4,984,861	593.2	41.3	3,022
CR1-C38-NP	Non-P	Structure	660,639	4,991,557	597.0	41.0	3,474
CR1-C110-NP	Non-P	Structure	654,385	4,996,686	593.9	40.2	2,910
CR1-C27-NP	Non-P	Structure	656,876	4,988,683	583.0	40.0	2,549
CR1-C112-NP	Non-P	Structure	660,002	4,984,908	604.6	39.0	5,627
CR1-C67-NP	Non-P	Structure	659,789	4,985,057	606.0	39.0	5,791
CR1-C5-NP	Non-P	Structure	659,958	4,984,794	604.8	38.9	5,659
CR1-C66-NP	Non-P	Structure	659,718	4,985,032	606.0	38.9	5,800
CR1-C3-NP	Non-P	Structure	657,888	4,984,697	604.2	38.8	3,294
CR1-C4-NP	Non-P	Structure	659,744	4,984,749	606.0	38.5	5,981
CR1-C111-NP	Non-P	Structure	653,857	4,995,573	591.0	38.3	3,678
CR1-C2-NP	Non-P	Structure	658,791	4,984,483	602.0	37.4	6,273
CR1-C33-NP	Non-P	Structure	656,839	4,990,404	569.8	37.3	6,719
CR1-C65-NP	Non-P	Structure	665,805	4,995,305	579.0	37.3	3,884
CR1-C109-NP	Non-P	Structure	653,780	4,996,828	588.0	37.1	4,797
CR1-C32-NP	Non-P	Structure	655,843	4,989,581	568.8	37.0	3,714
CR1-C54-NP	Non-P	Structure	663,421	4,995,376	583.4	36.5	5,351
CR1-C53-NP	Non-P	Structure	663,376	4,996,043	578.8	35.3	7,201
CR1-C45-NP	Non-P	Structure	653,390	4,993,503	573.2	35.1	5,673
CR1-C1-NP	Non-P	Structure	656,743	4,983,525	596.0	34.9	5,541
CR1-C11-P *	Participant	Structure	664,111	4,985,679	609.0	47.9	1,614
CR1-C30-P	Participant	Structure	661,699	4,988,957	615.0	47.9	1,614
CR1-C10-P	Participant	Structure	663,510	4,985,195	609.0	47.0	1,762
CR1-C13-P *	Participant	Structure	663,792	4,985,785	612.0	46.9	1,739
CR1-C50-P	Participant	Structure	656,806	4,994,388	621.0	46.8	1,591

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-2: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

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*** Pending**

**** Under Option but Likely to Expire / Not Re-sign**

Table C-2: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Grant County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	Distance to Nearest Turbine (ft)
CR1-G68-NP	Non-P	Structure	669,159	4,993,632	565.6	43.0	2,113
CR1-G43-NP	Non-P	Structure	661,141	5,001,721	583.6	42.9	1,909
CR1-G125-NP	Non-P	Structure	668,289	5,000,643	543.0	42.8	1,716
CR1-G23-NP	Non-P	Structure	670,471	4,992,104	560.0	42.5	2,185
CR1-G16-NP	Non-P	Structure	668,419	4,989,861	576.0	41.8	2,070
CR1-G114-NP	Non-P	Structure	666,214	5,006,667	521.1	40.8	2,205
CR1-G34-NP	Non-P	Structure	671,320	4,995,798	531.0	40.8	2,238
CR1-G115-NP	Non-P	Structure	664,933	5,006,731	544.6	40.5	2,188
CR1-G113-NP	Non-P	Structure	666,228	5,005,549	537.0	40.3	2,746
CR1-G109-NP	Non-P	Structure	667,064	5,000,425	566.2	40.1	2,152
CR1-G26-NP	Non-P	Structure	672,589	4,993,869	531.0	39.9	3,140
CR1-G130-NP	Non-P	Structure	668,147	5,000,233	549.0	39.3	3,005
CR1-G44-NP	Non-P	Structure	661,781	5,001,732	583.7	39.2	3,123
CR1-G14-NP	Non-P	Structure	668,156	4,989,332	574.1	38.8	3,940
CR1-G42-NP	Non-P	Structure	670,566	4,997,097	518.9	38.1	3,819
CR1-G12-NP	Non-P	Structure	668,229	4,989,039	575.0	38.0	4,623
CR1-G13-NP	Non-P	Structure	672,216	4,989,142	558.0	37.2	3,576
CR1-G37-NP	Non-P	Structure	668,998	4,996,452	549.0	36.6	5,246
CR1-G36-NP	Non-P	Structure	673,559	4,996,344	498.0	35.5	6,211
CR1-G105-NP	Non-P	Structure	668,696	4,998,325	549.0	35.3	6,345
CR1-G117-NP	Non-P	Structure	663,801	5,005,084	581.3	35.3	4,501
CR1-G110-NP	Non-P	Structure	671,218	5,005,064	456.2	34.8	5,889
CR1-G22-NP	Non-P	Structure	674,670	4,991,955	527.6	34.8	5,781
CR1-G27-NP	Non-P	Structure	676,630	4,994,642	480.8	34.0	4,944
CR1-G77-NP	Non-P	Structure	676,031	4,992,629	502.7	33.2	5,728
CR1-G65-P	Participant	Structure	671,496	4,994,973	537.0	45.3	1,539
CR1-G18-P	Participant	Structure	668,678	4,990,722	585.0	45.1	1,585
CR1-G32-P	Participant	Structure	669,477	4,995,401	546.0	45.1	1,545
CR1-G21-P	Participant	Structure	666,766	4,991,807	577.1	44.9	1,555
CR1-G66-P	Participant	Structure	670,802	4,994,681	539.7	44.0	1,801
CR1-G25-P	Participant	Structure	671,391	4,992,858	549.0	43.8	1,804
CR1-G19-P	Participant	Structure	671,018	4,990,744	570.0	43.4	2,077
CR1-G28-P	Participant	Structure	673,113	4,994,772	513.9	43.2	1,614
CR1-G67-P	Participant	Structure	669,597	4,993,440	556.1	43.2	2,106
CR1-G128-P	Participant	Structure	670,242	5,001,314	513.0	42.9	2,612
CR1-G131-P	Participant	Structure	668,466	5,005,145	505.2	42.9	2,133
CR1-G124-P	Participant	Structure	669,843	5,000,605	525.0	42.7	1,791
CR1-G135-P	Participant	Structure	668,616	5,005,161	504.0	42.6	2,142

* Pending

** Under Option but Likely to Expire / Not Re-sign

Table C-2: Crowned Ridge Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.3-116-80 m HH WTG's
UTM NAD83 Zone 14
Grant County
continued

[illegible]

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

IN THE MATTER OF THE APPLICATION)	
BY CROWNED RIDGE WIND, LLC FOR A)	EL19-003
PERMIT OF A WIND ENERGY FACILITY)	
IN GRANT AND CODINGTON COUNTIES)	CERTIFICATE OF SERVICE
)	

I hereby certify that true and correct copies of Jay Healy Rebuttal testimony and exhibits 3, 4 and 5 in this matter were served electronically to the parties listed below on the 24th day of May, 2019, addressed to:

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