GENESEE COUNTY PLANNING BOARD REFERRALS
NOTICE OF FINAL ACTION

GCDP Referral ID	**T-01-ALEX-5-22**
Review Date	**5/12/2022**
Municipality	**ALEXANDER, T.**
Board Name	**PLANNING BOARD**
Applicant's Name	**Dale and Brenda Spring**
Referral Type	**Special Use Permit**
Variance(s)	**Area Variance(s)**
Description:	**Special Use Permit, Site Plan Review and Area Variances to construct a 5 MW Wind Energy Conversion Facility consisting of one 650 ft. tower.** **Tower Height** **Maximum allowed: 500 ft.** **Proposed: 650 ft.** **Lot Line Setback** **Minimum required: 1.5X tower height or 975 ft.** **Proposed: 892.7 ft. (north) & 910 ft. (west)**
Location	**Broadway Rd. (NYS Rt. 20), Alexander**
Zoning District	**Agricultural-Residential (A-R) District**

PLANNING BOARD RECOMMENDS:

APPROVAL WITH MODIFICATION(S)

EXPLANATION:

The required modifications are as follows: 1) Per the recommendation of the Genesee County Sheriff's Emergency Communications Office, the applicant perform updated analyses for the tower and microwave path studies that includes updated paths and public safety frequencies from the Genesee County tower at 268 Molasses Hill Rd. in Attica, NY; 2) The applicant obtains a driveway permit from NYS DOT prior to approval by the Town; 3) Given that the project will disturb more than one acre of land, the applicant completes a Stormwater Pollution Prevention Plan (SWPPP) and obtains a Stormwater Permit for Construction Activity from DEC prior to final approval from the Town; and 4) Given that the Environmental Assessment Form (EAF) states that the project is located in an archaeological sensitive area, the applicant obtain documentation from the State Historic Preservation Office (SHPO) as to the project's impacts on archaeological resources. With these required modifications, the proposed wind energy conversion system should pose no significant county-wide or intercommunity impact. It is recommended that the applicant submits the enclosed application for 9-1-1 Address Verification to the Genesee County Sheriff's Office to ensure that the address of the proposed tower meets Enhanced 9-1-1 standards.

Felipe A. Oltramari

Director

May 12, 2022

Date

If the County Planning Board disapproved the proposal, or recommends modifications, the referring agency shall NOT act contrary to the recommendations except by a vote of a majority plus one of all the members and after the adoption of a resolution setting forth the reasons for such contrary action. Within 30 days after the final action the referring agency shall file a report of final action with the County Planning Board. An action taken form is provided for this purpose and may be obtained from the Genesee County Planning Department.

SEND OR DELIVER TO:
GENESEE COUNTY DEPARTMENT OF PLANNING
3837 West Main Street Road
Batavia, NY 14020-9404
Phone: (585) 815-7901

Clear Form

DEPARTMENT USE ONLY:
GCDP Referral # T-01-ALEX-5-22

* GENESEE COUNTY *
PLANNING BOARD REFERRAL

RECEIVED
Genesee County
Dept. of Planning
5/5/2022

Required According to:
GENERAL MUNICIPAL LAW ARTICLE 12B, SECTION 239 L, M, N
(Please answer ALL questions as fully as possible)

1. REFERRING BOARD(S) INFORMATION

Board(s) Town of Alexander Planning and ZBA
Address 3350 Church St
City, State, Zip Alexander, NY 14005
Phone (585) 708 - 4167 Ext.

2. APPLICANT INFORMATION

Name Dale and Brenda Spring
Address 4033 Spring Rd
City, State, Zip Alexander, NY 14005
Phone (585) 356 - 5158 Ext. Email

MUNICIPALITY: ☐ City ☒ Town ☐ Village of Alexander

3. TYPE OF REFERRAL: (Check all applicable items)

- ☒ Area Variance
- ☐ Use Variance
- ☒ Special Use Permit
- ☒ Site Plan Review
- ☐ Zoning Map Change
- ☐ Zoning Text Amendments
- ☐ Comprehensive Plan/Update
- ☐ Other:

Subdivision Proposal
- ☐ Preliminary
- ☐ Final

4. LOCATION OF THE REAL PROPERTY PERTAINING TO THIS REFERRAL:

A. Full Address Drybridge Rd
B. Nearest intersecting road Chaddock Rd
C. Tax Map Parcel Number 12.-1-15
D. Total area of the property 75.7 acres Area of property to be disturbed > 5 acres
E. Present zoning district(s) Agricultural/Residential

5. REFERRAL CASE INFORMATION:

A. Has this referral been previously reviewed by the Genesee County Planning Board?

☒ NO ☐ YES If yes, give date and action taken

B. Special Use Permit and/or Variances refer to the following section(s) of the present zoning ordinance and/or law
Town of Alexander Zoning Code Section 618 Wind Energy Conversion Facility

C. Please describe the nature of this request Applicant is applying to construct a 650' wind turbine, which requires Site Plan Review, Special Use Permit and three (3) Area Variances. One Variance for height and two seperate Variances for set-backs.

6. ENCLOSURES – Please enclose copy(s) of all appropriate items in regard to this referral

- ☒ Local application
- ☒ Site plan
- ☐ Subdivision plot plans
- ☒ SEQR forms
- ☐ Zoning text/map amendments
- ☒ Location map or tax maps
- ☐ Elevation drawings
- ☒ Agricultural data statement
- ☐ New or updated comprehensive plan
- ☐ Photos
- ☐ Other:

7. CONTACT INFORMATION of the person representing the community in filling out this form (required information)

Name Matthew Mahaney Title CEO Phone (585) 343 - 1729 Ext. 238
Address, City, State, Zip 3833 West Main St Rd Batavia, NY 14020 Email mmahaney@townofbatavia.com

ERDMAN ANTHONY

April 15, 2022

Mr. Matthew Mahaney, Code Enforcement Officer
Town of Alexander
3350 Church Street
Alexander, NY 14005

SUBJECT: Site Plan Application Package
Dry Bridge Road, Alexander, NY

Dear Mr. Mahaney;

On behalf of Alexander Wind 1, LLC and Borrego Solar Systems, Inc., we are submitting the enclosed *Site Plan Application* documents for the subject project site. This proposed project will construct and operate a 650-ft. tall 5.0 Mw (AC) wind energy generation turbine on a portion of agricultural land at the subject address.

Included with this submission is one (1) check written on behalf of the Applicant: Alexander Wind 1, LLC; and payable to the Town of Alexander as follows:

From Borrego Solar Systems, Inc; San Diego branch;

Check No. 51286 for Variance Requests fee.. $ 300.00

Note: Check Amount includes all three Area Variances.

A second check is being sent under separate cover:

Check No. 50308 for Special Use Permit and Site Plan Review fee.......................... $ 2,500.00

Enclosed please find one (1) copies of the Site Plans and one (1) copy of the following Application documents:

1. Completed "*Building and Zoning Application*".
2. Completed "*Area Variance – Height*".
3. Completed "*Area Variance – Setback North*".
4. Completed "*Area Variance – Setback West*".
5. Completed "*Agricultural Data Statement*".
6. Owner's Authorization.
7. Completed *Part 1 Full Environmental Assessment Form.*
8. Photo Simulations.
9. Wetland Delineation Report dated December 2021.
10. Listed Species Investigation Memorandum.
11. Soils Report.
12. Shadow Flicker Modeling Report.
13. Borrego Wind Turbine Sound Standards.
14. Sound Level Modeling Report.
15. Borrego Transportation Standards.
16. Structural General Description 4MW Platform – 4.5MW.
17. Construction Phasing Document.
18. Communication Tower Study.

ERDMAN ANTHONY

19. Microwave Study.
20. Preliminary Operations & Maintenance Plan.
21. Site Plans.

All the above documents and the Site Plans are also being submitted to you electronically via e-mail.

We understand that the Town Planning Board will make the referral to the Genesee County Planning Board. Please let us know ASAP if: 1) additional copies of any of the above listed Application documents will be needed; and 2) additional information is needed for the Application to be considered complete.

Also, please be advised that a comprehensive *Stormwater Pollution Prevention Plan (SWPPP)* and a *Notice-of-Intent (NOI)* for SPDES Stormwater Permit coverage will be prepared and submitted for the Town's review following the Planning Board's preliminary consideration of the Application and well before their recommendation for approval to the Town Board.

If you have any questions or need additional information, please contact me at (585) 813-4212; or Brandon Smith (Borrego Solar Systems, Inc.) at (603) 819-9693.

Sincerely,

Marc Kenward

Marc Kenward, PE
Senior Associate
ERDMAN ANTHONY

enc: As noted above

c: Brandon Smith, Borrego Solar Systems, Inc.
Lydia Lake, Borrego Solar Systems, Inc.
David Strong, Borrego Solar Systems, Inc.

Building and Zoning Application **Permit No.___________**

Town of Alexander 3350 Church Street PO Box 248 Alexander, NY 14005 (585)591-2455

Date 4 / 15 / 2022 Zone A-R Flood Zone_____ Wellhead Protection _____ Corner Lot_____

New Construction ☐ Fence ☐ Pond ☐ Sign ☐ Alteration(s) ☐ Addition ☐ Demolition ☐

Accessory Bldg. ☐ Mobile Home ☐ Fill Permit ☐ Home Occupation ☐ Land Separation ☐ Site Plan Approval ☐

Special Use Permit ☒ Temporary Use ☐ Subdivision ☐ Zoning Variance Request ☒ Other ☐ Specify:_______________

Tax Map No. 12.-1-15, 12.-1-17

Owners Name Dale and Brenda Spring Phone No. (585) 356 - 5158

Address 4033 Spring Road, Alexander, NY 14005 Project Road Width ________ft

Applicants Name Alexander Wind 1, LLC; c/o Borrego Solar Systems, Inc. 55 Technology Drive; Suite 102, Lowell, MA 01851 Project Address 4000 block of Dry Bridge Road, (north side of road)

E Mail Address David Strong dstrong@borregosolar.com Phone No (603) 819 - 9693

Description of Project: Construct and operate a 650-ft tall, 5 MW wind energy generation turbine
Project includes construction of 20-ft. wide , 4,500-ft. long gravel access road to turbine site from Broadway Rd. (NY Rte 20) on easement through (north) abutting Daniel McCormick parcel (TMP 9.-1-28.11); and 14-ft. wide, 300-ft access driveway & pole farm for interconnection off Dry Bridge Rd.

Existing Use Agricultural and forested Proposed Use Agricultural, forested & Wind turbine

Estimated Cost Building_____________ Plumbing____________ Mechanical____________ Miscellaneous____________

SEQR CLASSIFICATION Type 1 ☐ Type 2 ☐ Unlisted ☐

Review completed by Planning Board ☐__________________________ Zoning Board of Appeals ☐________________________

Permit Fee $____________ Application Date ____/____/____ Permit Expires On ____/____/____

Issuing Officer ____ Date____/____/____

IN SIGNING THIS DOCUMENT I HEARBY GIVE THE RIGHT OF AN ON SITE INSPECTION TO THE TOWN OF BATAVIA CODE ENFORCEMENT OFFICIAL OR THEIR DESIGNE. ALL PROVISIONS OF LAWS AND ORDINANCES GOVERNING THIS TYPE OF WORK WILL BE COMPLIED WITH WHETHER SPECIFIED HEREIN OR NOT. THE GRANTING OF A PERMIT DOES NOT PRESUME TO GIVE AUTHORITY TO VIOLATE OR CANCEL THE PROVISIONS OF ANY OTHER STATE OR LOCAL LAW REGULATING CONSTRUCTION OR THE PREFORMANCE OF CONSTRUCTION.

I, Brandon Smith, as Owner or Authorized Agent hereby declare that the statements and information on the foregoing application are true and accurate, to the best of my knowledge.

_______________________________ 04/15/2022

Signature of Owner or Authorized Agent Date

GUIDELINES AND CRITERIA TO SUPPORT ZONING APPEAL

AREA VARIANCE

In order to be entitled to an Area Variance, an Applicant to the Town of Alexander must show by documentation in the record that the benefit to the Applicant from the proposed variance will not outweigh the detriment to the health, safety, and welfare of the community and the neighborhood, if the variance is granted. (See Town Law §267-b(3)).

In making this determination the Zoning Board of Appeals shall consider the following factors, and the Applicant must respond to these questions with facts and circumstances and not merely repeat all or part of the questions.

1. Whether or not an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the Area Variance.

The installation of a 650-foot (total height) turbine instead of a 500-foot turbine (maximum allowable per Town code) does not result in a change of character of the neighborhood, nor will it create a detriment to the nearby properties. Tall wind turbines are an allowable special use, and the project involves the installation of a single wind turbine and associated gravel access road. The change in turbine height does not alter the size of the project or the area coverage. The gravel access road also remains the same in size and location. The Town Board has determined that tall wind turbines are an appropriate use in this neighborhood by allowing them as a special use, a legislative determination that the use is in harmony with general zoning plan and will not adversely affect the neighborhood. The higher turbine does not create a change in the allowable uses or an impact on the character of the neighborhood.

2. Whether or not the benefit sought by the Applicant can be achieved by some method, feasible for the applicant to pursue, other than an Area Variance.

An area variance to deviate from Alexander's Zoning Code maximum wind tower height of 500-ft. is needed because wind turbines of that height are no longer available in today’s market. Achieving comparable power output from legacy 500-ft. turbine technology would require multiple turbines, which could not be sited on this parcel due to required spacing and setbacks.[1] There are no other alternatives nor redesigning that will achieve the applicant’s goal of constructing a wind turbine as manufacturers have moved to higher, more efficient and powerful turbines to increase energy production. The benefit of a renewable energy source, which under community wind project will be provided to the local electrical grid, cannot be achieved by other methods at this site. Additionally, granting the Applicant’s request for a 650-ft. tower is the minimum variance necessary as this is the minimum height of turbine towers on the market today. Therefore, it is not feasible to purchase a wind turbine that meets the Town’s zoning requirements as the standard height of wind turbines has increased to 650-ft.

3. Whether or not the requested Area Variance is substantial.

The increase in turbine height is not substantial. A higher turbine will not appear substantially different to the surrounding area. When comparing the numerical difference of the wind turbines of 500-ft. versus 650-ft., this may appear to be a substantial increase. The ZBA should not look at the substantiality of the variance in a vacuum; instead, it should evaluate the totality of the relevant circumstances. This determination is not a purely mathematical calculation, but should consider the unique facts and circumstances, including whether the variance sought will have a negative impact on the community. This deviation in turbine height will be insignificant and will not cause negative impacts to the community. Please see the attached visual simulations which show a comparison of a 500' turbine with the proposed turbine. The visual appearance with the change in height will be minimal and the Project complies with all other applicable local laws.

[1] There have been significant advances in wind blade technology since the Alexander Code was adopted, "including greater size and more height (which means the turbine can tap higher wind speeds), with less noise," Kevin Hand, How New Wind Turbines Produce Far More Energy, Wall Street Journal, May 16, 2021, available at https://www.wsj.com/articles/wind-turbine-renewable-energy-11620848318.

4. Whether or not the proposed variance will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district.

The Project will not adversely affect or impact the physical conditions of the neighborhood or district. As discussed above, the visual impacts of this deviation in height are negligible. Additionally, the advancement of turbine technology results in a decrease in noise production from the turbine at increased heights. An increase in tower height will not pose a negative environmental impact to the community. The project features that impact the area (i.e., wetlands, trees, surface waters) remain the same under increased tower height. Additionally, the area of the base of the tower does not change, therefore, the project will not increase in lot coverage. Thus, the requested tower height variance will not negatively impact the physical features or environment of the community.

5. Whether or not the alleged difficulty was self-created, which consideration shall be relevant to the decision of the Board of Appeals, but shall not necessarily preclude the granting of the Area Variance.

This request is not self-created because it is due to the advance in technology in wind turbines and the increased efficiency of longer blades, which has resulted in turbines complying with the Town Code being unavailable. The Applicant does not have control over the change in technology or the market availability of wind turbines and cannot construct an allowable use without the variance. It is also respectfully submitted that even if viewed as self-created, it is not a dispositive factor, and the self-created nature of the variance must generally be considered through the lens of the impact the variance will have if it is granted, which, as noted above, is minimal.

CONCLUSION:

It is respectfully submitted that the benefit of the proposed variance to the Applicant outweighs the potential detriment to the neighborhood and community. When evaluating the five factors, the requested area variance should be granted. Finally, the ZBA, "in the granting of area variances, shall grant the minimum variance that it shall deem necessary and adequate and at the same time preserve and protect the character of the neighborhood and the health, safety and welfare of the community," pursuant to Town Law Section 267-b. The requested variance is the minimum necessary.

Applicant Signature

04/13/2022

Date

GUIDELINES AND CRITERIA TO SUPPORT ZONING APPEAL

AREA VARIANCE

In order to be entitled to an Area Variance, an Applicant to the Town of Alexander must show by documentation in the record that the benefit to the Applicant from the proposed variance will not outweigh the detriment to the health, safety, and welfare of the community and the neighborhood, if the variance is granted. (See Town Law §267-b(3)).

In making this determination the Zoning Board of Appeals shall consider the following factors, and the Applicant must respond to these questions with facts and circumstances and not merely repeat all or part of the questions.

1. Whether or not an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the Area Variance.
   The requested 82.3-ft. area variance will not change the character of the neighborhood or nearby properties. No construction or alteration of the subject tower site property or abutting property is required or warranted by the proposed area variance. The abutting land owner has agreed to an 85-ft wide easement to accommodate the variance request but it does not impact or change the current use of the easement area.

2. Whether or not the benefit sought by the Applicant can be achieved by some method, feasible for the applicant to pursue, other than an Area Variance.
   Moving the wind turbine further south to achieve the required setback results in undesirable flicker impacts on nearby residential a properties. A shorter turbine height reduces project feasibility. The abutting land owner has agreed to an 85-ft easement to accommodate the variance request.

3. Whether or not the requested Area Variance is substantial.
   Variance is not substantial. Setback requirement is 1.5 times the turbine height, which for this site is 975-ft. Proposed setback to northern property line is 892.7-ft. which is 91.6% of required setback. Variance is needed for 82.3-ft or 8.4% of the required setback.

4. Whether or not the proposed variance will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district.
The requested 82.3-ft. area variance will not adversely effect or impact the physical or environmental conditions in the neighborhood or the A-R Zoning District. No construction or alteration of the subject tower site property or the abutting McCormick property is required or warranted by the proposed area variance. The abutting land owner has agreed to an 85-ft. wide easement for the variance request and it does not impact or change the current use of the easement area.

5. Whether or not the alleged difficulty was self-created, which consideration shall be relevant to the decision of the Board of Appeals, but shall not necessarily preclude the granting of the Area Variance.
Although the hardship is self created, a shorter turbine height of 595-ft (55-ft. shorter) would reduce the project's feasibility. A reduced turbine height (8.5% height reduction) would have limited affect (e.g. improvement) on the visual environment as compared to a 650-ft tall turbine.

Applicant Signature

04/15/2022
Date

After Recording Return to:

____
c/o Borrego Solar Systems, Inc.
55 Technology Drive, Unit 102
Lowell, MA 01851
Attn: Legal Department

SETBACK WAIVER EASEMENT

This SETBACK WAIVER EASEMENT (this "**Waiver Easement**") is executed this ____ day of ___________, 20__ (the "**Effective Date**") by the undersigned Daniel McCormick, residing at 10889 Sandpit Rd., Alexander, NY 14005 (together with the successors, assigns and heirs of the undersigned, "**Owner**") for the benefit of Alexander Wind 1, LLC, a Delaware limited liability company whose principal business address is 1814 Franklin Street, Suite 700, Oakland, CA 94612 (together with their successors, assigns and heirs, "**Company**"):

RECITALS

WHEREAS, Company is developing a wind energy generating project on real property in Genesee County, State of New York (the "**Project**"), consisting of wind turbine generators ("**Generators**") and related facilities, including, among other things, access roads, foundations, and buried electric cables (collectively including Generators, the "**Windpower Facilities**"); and,

WHEREAS, Owner holds the fee simple title to that certain real property located adjacent to or near the Project as specifically described on the attached Exhibit A (the "**Property**"); and,

WHEREAS, the location of the Windpower Facilities on the Project may be subject to noise and setback requirements in accordance with applicable laws (federal, state and local, which includes without limitation, Section 618 of the Town of Alexander Zoning Law (the "**Local Law**") and environmental reviews performed in accordance with the State Environmental Quality Review Act (together with the Local Law, "**Applicable Law**"); and,

WHEREAS, Owner is aware of the Windpower Facilities and desires to grant one or more easements waiving the setback and other requirements applicable to Company's Windpower Facilities, if any, contained in the Applicable Law.

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Owner hereby agrees as follows:

(1) Acknowledgment. Owner acknowledges and is aware of Company's development of the Windpower Facilities and the noise, shadow flicker and/or setback limitations imposed in the Local Law and Owner hereby consents to waive the following restrictions, if any, contained in Applicable Law: (a) noise level maximum limits; (b) setback requirements; and (c) shadow flicker restrictions.

(2) Setback from Residence. Owner hereby grants an easement to allow Company to install Windpower Facilities within the area(s) specified in Exhibit B (the "**Benefitted Parcel**") even though such installation could result in the Windpower Facilities being closer to any residences, other structures, or rights-of-way on the Property than would otherwise be allowed by Applicable Law.

(3) Setback from Property Boundary. Owner hereby grants an easement to allow Company to install Windpower Facilities within the Benefitted Parcel even though such installation could result in the Windpower Facilities being closer to the nearest boundary of the Property than would otherwise be allowed by Applicable Law.

(4) Right to Convey. Owner represents, warrants and covenants that Owner is the sole owner of the Property and has the unrestricted right and authority to execute this Waiver Easement and that the person signing on behalf of Owner is authorized to do so.

(5) Successors. The covenants of Owner set forth in this Waiver Easement shall be appurtenant to the Property, shall run with the land, and shall be enforceable at law or in equity by Company and the transferees, successors and assigns of Company.

(6) Legal Description. At Company's request or in order to satisfy requirements of the Applicable Law, the legal description of the Property and the Benefitted Parcel may be prepared by a qualified surveyor or engineer, and Owner shall execute and deliver to Company an amendment to this Waiver Easement setting forth the legal description.

(7) Consideration. In consideration of the rights granted hereunder, Company will pay to Owner the amounts listed on the attached Exhibit C. Exhibit C shall be removed prior to the recording of this Waiver Easement.

(8) Waiver.The terms and conditions contained in this Waiver Easement shall constitute a permanent, non-revocable easement and waiver for the Property, which may not be revoked without the consent of the Zoning Board of Appeals of the Town of Alexander (the "**Board**"). Such consent of the Board shall be granted upon either: (a) the completion of the decommissioning of the Windpower Facilities on the Benefited Parcel in accordance with the Local Law, or (b) the acquisition of the Property by the owner of the Benefitted Parcel or the owner of the Windpower Facilities.

(9) Recording. Company may record this Waiver Easement in the real property records maintained by the county in which the Property and/or the Benefitted Property are located.

(10) Governing Law. This Waiver Easement shall be governed by and interpreted in accordance with the laws of the State of New York, excluding principles of conflicts of laws.

(11) Counterparts. This Waiver Easement may be executed in any number of counterparts, which shall together constitute one and the same agreement. Company and Owner each agree that signatures transmitted by facsimile or electronically shall be legal and binding and have the same full force and effect as if an original of this Waiver Easement and had been delivered and hereby waive any defenses to the enforcement of the terms of this Waiver Easement based on the foregoing forms of signature.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

[EXECUTION PAGE]

IN WITNESS WHEREOF, Owner and Company have executed this Waiver Easement under seal as of the date first above written.

OWNER

By:____________________________________
Name:

STATE OF NEW YORK)
: ss.
COUNTY OF)

On the _____day of _____________, in the year __________, before me, the undersigned, personally appeared __________________________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public

COMPANY

______________________________, LLC,
A Delaware limited liability company

By: 110 Wind Development, LLC,
its sole member and manager

By:___________________________________
Name:
Title:

STATE OF)
: ss.
COUNTY OF)

On the _____day of ____________, in the year _________, before me, the undersigned, personally appeared ________________________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public

EXHIBIT A

Description of the Property

All the tracts or parcels of land, situated in the County of Genesee, New York, described as follows:

Parcel ID Number	Town	Deed Reference (Liber, Page)	Acreage
9.-1-28.11	Alexander		87.7
12.-1-14.1	Alexander		161.1
		Total Acreage	248.8

EXHIBIT B

Description of the Area(s) Owner Authorizes Company to Install Windpower Facilities

1. All areas located within 85 feet of the Property boundary
2. SBL:12.-1-15. Deed dated July 22, 2014, and recorded on August 12, 2014, in 907/523, Genesee County, New York.
3. SBL:12.-1-17. Deed dated March 23, 1998 and recorded on March 27, 1998, in 711/160, Genesee County, New York.

EXHIBIT C

Payment Schedule

[TO BE REMOVED WHEN RECORDING]

1. Within thirty (30) days after the Effective Date, Company shall pay to Owner a payment equal to ______________ ($_______).
2. Within thirty (30) days after the Commercial Operation Date (as defined herein below), Company shall pay to Owner a payment equal to ______________ ($________).

   "***Commercial Operation Date***" means the date on which the System(s) commences selling electricity to a third party purchaser on a commercial basis (excluding the sale of test energy).

GUIDELINES AND CRITERIA TO SUPPORT ZONING APPEAL

AREA VARIANCE

In order to be entitled to an Area Variance, an Applicant to the Town of Alexander must show by documentation in the record that the benefit to the Applicant from the proposed variance will not outweigh the detriment to the health, safety, and welfare of the community and the neighborhood, if the variance is granted. (See Town Law §267-b(3)).

In making this determination the Zoning Board of Appeals shall consider the following factors, and the Applicant must respond to these questions with facts and circumstances and not merely repeat all or part of the questions.

1. Whether or not an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the Area Variance.
   The requested 65-ft. area variance will not change the character of the neighborhood or nearby properties. No construction or alteration of the subject tower site property or abutting property is required or warranted by the proposed area variance. The abutting land owner has agreed to an 85-ft. easement to accommodate the variance request but it does not impact or change the current use of the easement area.

2. Whether or not the benefit sought by the Applicant can be achieved by some method, feasible for the applicant to pursue, other than an Area Variance.
   Moving the wind turbine further east to achieve the required setback further encroaches and impacts an existing wetland. A shorter turbine height reduces project feasibility. The abutting land owner has agreed to an 85-ft. wide easement to accommodate the variance request.

3. Whether or not the requested Area Variance is substantial.
   Variance is not substantial. Setback requirement is 1.5 times the turbine height, which for this site is 975-ft.
   Proposed setback to western property line is 910-ft. which is 93.3% of required setback.
   Variance is needed for 65-ft or 6.7% of the required setback.

4. Whether or not the proposed variance will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district.
   The requested 65-ft. area variance will not adversely effect or impact the physical or environmental conditions in the neighborhood or the A-R Zoning District. No construction or alteration of the subject tower site property or the abutting McCormick property is required or warranted by the proposed area variance. The abutting land owner has agreed to an 85-ft wide easement to accommodate the variance request and it does not impact or change the current use of the easement area.

5. Whether or not the alleged difficulty was self-created, which consideration shall be relevant to the decision of the Board of Appeals, but shall not necessarily preclude the granting of the Area Variance.
   Although the hardship is self created, a shorter turbine height of 606-ft (44-ft. shorter) would reduce and project's feasibility. A reduced turbine height (6.8% height reduction) would have limited affect (e.g. improvement) on the visual environment as compared to a 650-ft tall turbine.

Applicant Signature

Date: 04/15/2022

After Recording Return to:

____
c/o Borrego Solar Systems, Inc.
55 Technology Drive, Unit 102
Lowell, MA 01851
Attn: Legal Department

SETBACK WAIVER EASEMENT

This SETBACK WAIVER EASEMENT (this "**Waiver Easement**") is executed this ____ day of ___________, 20__ (the "**Effective Date**") by the undersigned Daniel McCormick, residing at 10889 Sandpit Rd., Alexander, NY 14005 (together with the successors, assigns and heirs of the undersigned, "**Owner**") for the benefit of Alexander Wind 1, LLC, a Delaware limited liability company whose principal business address is 1814 Franklin Street, Suite 700, Oakland, CA 94612 (together with their successors, assigns and heirs, "**Company**"):

RECITALS

WHEREAS, Company is developing a wind energy generating project on real property in Genesee County, State of New York (the "**Project**"), consisting of wind turbine generators ("**Generators**") and related facilities, including, among other things, access roads, foundations, and buried electric cables (collectively including Generators, the "**Windpower Facilities**"); and,

WHEREAS, Owner holds the fee simple title to that certain real property located adjacent to or near the Project as specifically described on the attached Exhibit A (the "**Property**"); and,

WHEREAS, the location of the Windpower Facilities on the Project may be subject to noise and setback requirements in accordance with applicable laws (federal, state and local, which includes without limitation, Section 618 of the Town of Alexander Zoning Law (the "**Local Law**") and environmental reviews performed in accordance with the State Environmental Quality Review Act (together with the Local Law, "**Applicable Law**"); and,

WHEREAS, Owner is aware of the Windpower Facilities and desires to grant one or more easements waiving the setback and other requirements applicable to Company's Windpower Facilities, if any, contained in the Applicable Law.

NOW THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Owner hereby agrees as follows:

(1) Acknowledgment. Owner acknowledges and is aware of Company's development of the Windpower Facilities and the noise, shadow flicker and/or setback limitations imposed in the Local Law and Owner hereby consents to waive the following restrictions, if any, contained in Applicable Law: (a) noise level maximum limits; (b) setback requirements; and (c) shadow flicker restrictions.

(2) Setback from Residence. Owner hereby grants an easement to allow Company to install Windpower Facilities within the area(s) specified in Exhibit B (the "**Benefitted Parcel**") even though such installation could result in the Windpower Facilities being closer to any residences, other structures, or rights-of-way on the Property than would otherwise be allowed by Applicable Law.

(3) Setback from Property Boundary. Owner hereby grants an easement to allow Company to install Windpower Facilities within the Benefitted Parcel even though such installation could result in the Windpower Facilities being closer to the nearest boundary of the Property than would otherwise be allowed by Applicable Law.

(4) Right to Convey. Owner represents, warrants and covenants that Owner is the sole owner of the Property and has the unrestricted right and authority to execute this Waiver Easement and that the person signing on behalf of Owner is authorized to do so.

(5) Successors. The covenants of Owner set forth in this Waiver Easement shall be appurtenant to the Property, shall run with the land, and shall be enforceable at law or in equity by Company and the transferees, successors and assigns of Company.

(6) Legal Description. At Company's request or in order to satisfy requirements of the Applicable Law, the legal description of the Property and the Benefitted Parcel may be prepared by a qualified surveyor or engineer, and Owner shall execute and deliver to Company an amendment to this Waiver Easement setting forth the legal description.

(7) Consideration. In consideration of the rights granted hereunder, Company will pay to Owner the amounts listed on the attached Exhibit C. Exhibit C shall be removed prior to the recording of this Waiver Easement.

(8) Waiver.The terms and conditions contained in this Waiver Easement shall constitute a permanent, non-revocable easement and waiver for the Property, which may not be revoked without the consent of the Zoning Board of Appeals of the Town of Alexander (the "**Board**"). Such consent of the Board shall be granted upon either: (a) the completion of the decommissioning of the Windpower Facilities on the Benefited Parcel in accordance with the Local Law, or (b) the acquisition of the Property by the owner of the Benefitted Parcel or the owner of the Windpower Facilities.

(9) Recording. Company may record this Waiver Easement in the real property records maintained by the county in which the Property and/or the Benefitted Property are located.

(10) Governing Law. This Waiver Easement shall be governed by and interpreted in accordance with the laws of the State of New York, excluding principles of conflicts of laws.

(11) Counterparts. This Waiver Easement may be executed in any number of counterparts, which shall together constitute one and the same agreement. Company and Owner each agree that signatures transmitted by facsimile or electronically shall be legal and binding and have the same full force and effect as if an original of this Waiver Easement and had been delivered and hereby waive any defenses to the enforcement of the terms of this Waiver Easement based on the foregoing forms of signature.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

[EXECUTION PAGE]

IN WITNESS WHEREOF, Owner and Company have executed this Waiver Easement under seal as of the date first above written.

OWNER

By:___________________________________
Name:

STATE OF NEW YORK)
: ss.
COUNTY OF)

On the _____day of ____________, in the year _________, before me, the undersigned, personally appeared ________________________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public

COMPANY

______________________________, LLC,
A Delaware limited liability company

By: 110 Wind Development, LLC,
its sole member and manager

By:___________________________________
Name:
Title:

STATE OF)
: ss.
COUNTY OF)

On the _____day of ____________, in the year _________, before me, the undersigned, personally appeared ________________________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public

EXHIBIT A

Description of the Property

All the tracts or parcels of land, situated in the County of Genesee, New York, described as follows:

Parcel ID Number	Town	Deed Reference (Liber, Page)	Acreage
9.-1-28.11	Alexander		87.7
12.-1-14.1	Alexander		161.1
		Total Acreage	248.8

EXHIBIT B

Description of the Area(s) Owner Authorizes Company to Install Windpower Facilities

1. All areas located within _85_ feet of the Property boundary
2. SBL:12.-1-15. Deed dated July 22, 2014, and recorded on August 12, 2014, in 907/523, Genesee County, New York.
3. SBL:12.-1-17. Deed dated March 23, 1998 and recorded on March 27, 1998, in 711/160, Genesee County, New York.

EXHIBIT C

Payment Schedule

[TO BE REMOVED WHEN RECORDING]

1. Within thirty (30) days after the Effective Date, Company shall pay to Owner a payment equal to _______________ ($________).
2. Within thirty (30) days after the Commercial Operation Date (as defined herein below), Company shall pay to Owner a payment equal to _______________ ($_________).

   "***Commercial Operation Date***" means the date on which the System(s) commences selling electricity to a third party purchaser on a commercial basis (excluding the sale of test energy).

TOWN VILLAGE CITY OF ______________ Application #______________

(circle one)

Agricultural Data Statement

Date ______________

Instructions: This form must be completed for any application for a special use permit, site plan approval, use variance or a subdivision approval requiring municipal review that would occur on property within 500 feet of a farm operation located in a NYS Dept. of Ag & Markets certified Agricultural District.

Applicant	Owner if Different from Applicant
Name: Alexander Wind 1, LLC; c/o Borrego Solar Systems, Inc. Address: 55 Technology Drive; Suite 102 Lowell, MA 01851	Name: Dale and Brenda Spring Address: 4033 Spring Road Alexander, NY 14005

1. Type of Application: ☑ Special Use Permit; ☑ Site Plan Approval ; ☐ Use Variance;
(circle one or more) ☐ Subdivision Approval

2. Description of proposed project: Construct and operate a 650-ft tall, 5 MW wind energy generation turbine. Project includes construction of 20-ft wide, 4,500-ft long gravel access road to turbine site from Broadway Rd. (NY Rte. 20) on easement through (north) abutting Daniel McCormick parcel (TMP 9.-1-28.11); and 14-ft wide, 300-ft access driveway & pole farm for interconnection off Dry Bridge Rd.

3. Location of project: Address: ______________
Tax Map Number (TMP) 12.-1-15, 12.-1-17 & 9.-1-28.11

4. Is this parcel within an Agricultural District? ☐ NO ☑ YES (Check with your local assessor if you do not know)
5. If YES, Agricultural District Number 4
6. Is this parcel actively farmed? ☐ NO ☑ YES
7. List all farm operations within 500 feet of your parcel. Attach additional sheets if necessary.

#1 Name: David Rhodes (Tax Map No. 9.-1-34) Address: Parcel: Off Broadway Rd., Alexander, NY 14005 Mail: 4074 Browns Mill Rd., Alexander, NY 14005 Is this parcel actively farmed? ☐ NO ☑ YES	#2 Name: Daniel McCormick (Tax Map No. 12.-1-14.1) Address: Parcel: Dry Bridge Rd., Alexander, NY 14005 Mail: 10889 Sandpit Rd., Alexander, NY 14005 Is this parcel actively farmed? ☐ NO ☑ YES
#3 Name: Letha Kreutter (Tax Map No. 12.-1-10.111) Address: Parcel: Dry Bridge Rd., Alexander, NY 14005 Mail: 4025 Spring Rd., Alexander, NY 14005 Is this parcel actively farmed? ☐ NO ☑ YES	#4 Name: Dale Spring (Tax Map No. 12.-1-16) Address: Parcel: Off Dry Bridge Rd., Alexander, NY 14005 Mail: 4033 Spring Rd., Alexander, NY 14005 Is this parcel actively farmed? ☐ NO ☑ YES

______________ Please see owners authorization letter

Signature of Applicant Signature of Owner (if other than applicant)

Reviewed by: ______________ ______________

Signature of Municipal Official Date

NOTE TO REFERRAL AGENCY: County Planning Board review is required. A copy of the Agricultural Data Statement must be submitted along with the referral to the County Planning Department.

Applicant	Owner if Different from Applicant
Name: Alexander Wind 1, LLC c/o Borrego Solar Systems, Inc. Address: 55 Technology Drive; Suite 102 Mail: Lowell, MA 01851	Name: Dale and Brenda Spring Address: 4033 Spring Road Mail: Alexander, NY 14005

Mail: 4033 Spring Rd., Alexander, NY 14005

#5 Name: Henry Kreutter (Tax Map No. 12.-1-43)
Address: Parcel: 4025 Spring Rd., Alexander, NY 14005
Mail: 4025 Spring Rd., Alexander, NY 14005

Is this parcel actively farmed? ☐NO ☒YES

#6 Name: Barbara Spring (Tax Map No. 12.-1-34.1)
Address: Parcel: 11000 Chaddock Rd., Alexander, NY 14005
Mail: 11000 Chaddock Rd., Alexander, NY 14005

Is this parcel actively farmed? ☐NO ☒YES

#7 Name: Eric Radder (Tax Map No. 12.-1-33.2)
Address: Parcel: 4030 Dry Bridge Rd., Alexander, NY 14005
Mail: 4030 Dry Bridge Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☐YES

#8 Name: Michael Reeves (Tax Map No. 12.-1-33.12)
Address: Parcel: 4080 Dry Bridge Rd., Alexander, NY 14005
Mail: 4080 Dry Bridge Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☐YES

#9 Name: Terry Cramer (Tax Map No. 12.-1-33.11)
Address: Parcel: 4144 Dry Bridge Rd., Alexander, NY 14005
Mail: 4144 Dry Bridge Rd., Alexander, NY 14005

Is this parcel actively farmed? ☐NO ☒YES

#10 Name: Donald Partridge (Tax Map No. 12.-1-25.111)

Address: Parcel: Dry Bridge Rd., Alexander, NY 14005

Mail: 4957 Ellicot St Rd., Batavia, NY 14020

Is this parcel actively farmed? ☐NO ☒YES

#11 Name: Kenneth Bittner (Tax Map No. 12.-1-25.12)

Address: Parcel: 4192 Dry Bridge Rd., Alexander, NY 14005

Mail: 4192 Dry Bridge Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☒YES

#12 Name: Cory Mower (Tax Map No. 12.-1-18.12)

Address: Parcel: 4193 Dry Bridge Rd., Alexander, NY 14005

Mail: 4193 Dry Bridge Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☒YES

#13 Name: Cory Mower (Tax Map No. 12.-1-18.11)

Address: Parcel: Dry Bridge Rd., Alexander, NY 14005

Mail: 4193 Dry Bridge Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☒YES

#14 Name: Donald Partridge (Tax Map No. 12.-1-18.2)

Address: Parcel: Dry Bridge Rd., Alexander, NY 14005

Mail: 4957 Ellicott St Rd., Batavia, NY 14020

Is this parcel actively farmed? ☐NO ☒YES

#15 Name: Patrick Morse (Tax Map No. 12.-1-21.111)

Address: Parcel: 10838 Molasses Hill Rd., Alexander, NY 14005

Mail: 10838 Molasses Hill Rd., Alexander, NY 14005

Is this parcel actively farmed? ☐NO ☒YES

#16 Name: Lor-Rob Associates II LLC (Tax Map No. 12.-1-19)

Address: Parcel: Off Dry Bridge Rd., Alexander, NY 14005

Mail: 10171 Betheny Center Rd., East Bethany, NY 14054

Is this parcel actively farmed? ☐NO ☒YES

#17 Name: Lor-Rob Associates II LLC (Tax Map No. 9.-1-27.1)
Address: Parcel: Off Broadway Rd., Alexander, NY 14005
Mail: 10171 Betheny Center Rd., East Bethany, NY 14054

Is this parcel actively farmed? ☐NO ☒YES

#18 Name: Charles Say (Tax Map No. 9.-1-30.11)
Address: Parcel: 4119 Broadway Rd., Alexander, NY 14005
Mail: 4119 Broadway Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☐YES

#19 Name: Michelle Maniace (Tax Map No. 9.-1-30.2)
Address: Parcel: 4107 Broadway Rd., Alexander, NY 14005
Mail: 4107 Broadway Rd., Alexander, NY 14005

Is this parcel actively farmed? ☒NO ☐YES

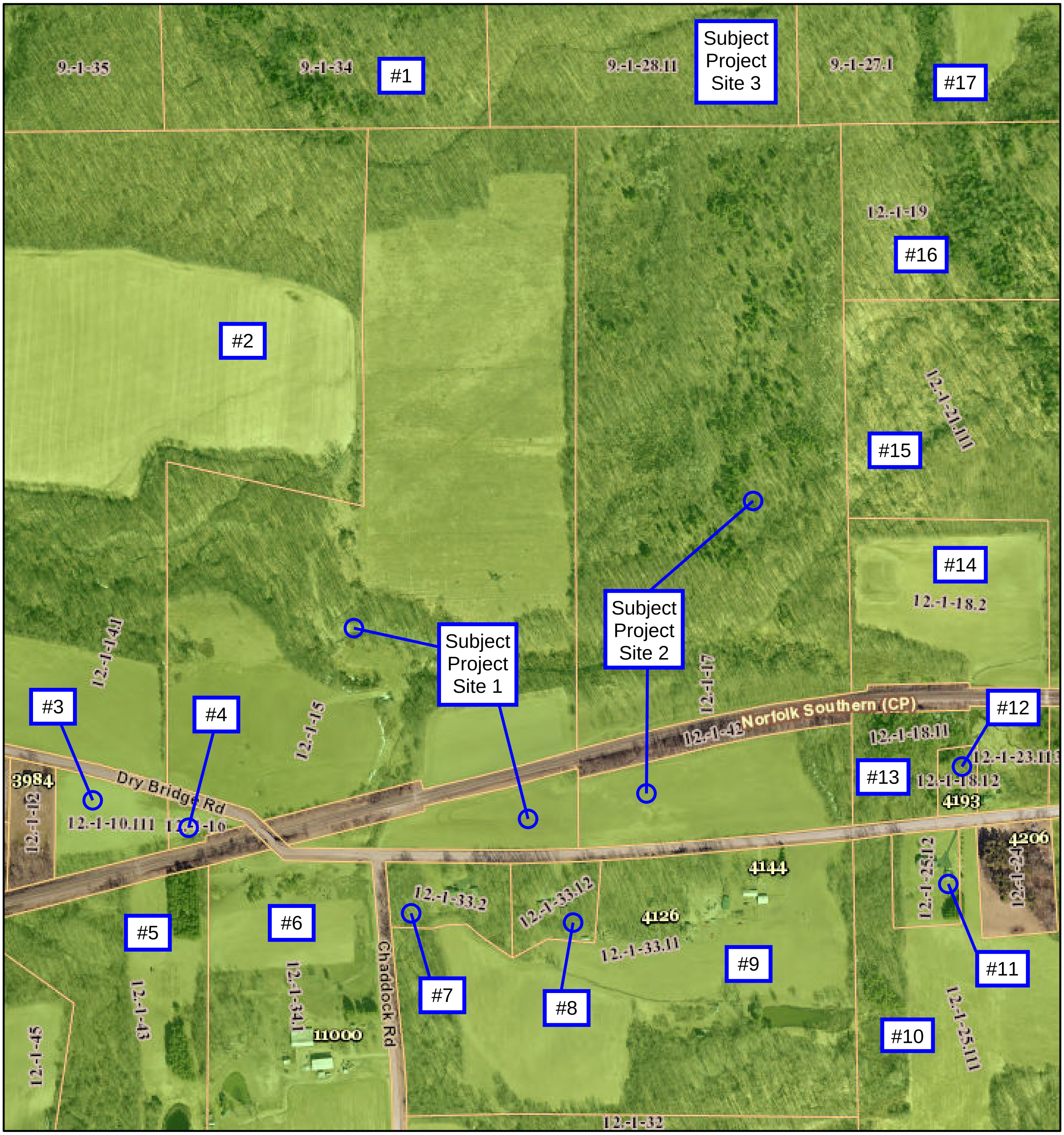
#20 Name: Stephen Bachan (Tax Map No. 9.-1-30.12)
Address: Parcel: Broadway Rd., Alexander, NY 14005
Mail: 110 Barnard St., Buffalo, NY 14206

Is this parcel actively farmed? ☒NO ☐YES

#21 Name: David Rhodes (Tax Map No. 9.-1-31)
Address: Parcel: Off Broadway Rd., Alexander, NY 14005
Mail: 4074 Brown Mill Rd., Alexander, NY 14005

Is this parcel actively farmed? ☐NO ☒YES

Dry Bridge Rd Map 1



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Parcels with labels

Year 2021 Aerial Photos (Scale Dependent)9in

Red: Band_1

Green: Band_2

Blue: Band_3

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Esri, HERE, Garmin, GeoTechnologies, Inc., New York State, Maxar

Web AppBuilder for ArcGIS
Earthstar Geographics | Esri, HERE, Garmin |

Dry Bridge Rd Map 2

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Parcels with labels

Year 2021 Aerial Photos (Scale Dependent)9in

Red: Band_1

Green: Band_2

Blue: Band_3

1:9,100

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0 0.07 0.15 0.3 km

Esri, HERE, Garmin, GeoTechnologies, Inc., New York State, Maxar

Web AppBuilder for ArcGIS
Earthstar Geographics | Esri, HERE, Garmin |

EXHIBIT F

____, 2021

To Whom It May Concern

Borrego Solar Systems, Inc. and its employees and affiliates are hereby authorized to act as our agent for submission of applications and related plans and documents, and to appear before boards and other officials, with respect to obtaining approvals for solar installations to be constructed on my property located at Dry Bridge Road, Alexander, NY

Sincerely,

Brenda Spring

Dale Spring

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Dry Bridge Rd., Alexander NY Wind Project		
Project Location (describe, and attach a general location map): Dry Bridge Rd., Alexander, NY 14005 (Tax Map No. 12.-1-15, 12.-1-17 & 9.-1-28.11)		
Brief Description of Proposed Action (include purpose or need): Construct and operate a 650-ft tall, 5 MW wind energy generation turbine. Project includes construction of 20-ft wide, 4,500-ft long gravel access road to turbine site from Broadway Rd. (NY Rte. 20) on easement through (north) abutting Daniel McCormick parcel (TMP 9.-1-28.11); and 14-ft wide, 300-ft access driveway & pole farm for interconnection off Dry Bridge Rd.		
Name of Applicant/Sponsor: Alexander Wind 1, LLC; c/o Borrego Solar Systems, Inc. Name [Brandon Smith]	Telephone: 603-819-9693 E-Mail: bsmith@borregosolar.com	
Address: 55 Technology Drive, Suite 102		
City/PO: Lowell	State: Massachusetts	Zip Code: 01851
Project Contact (if not same as sponsor; give name and title/role): Marc Kenward, PE, Erdman Anthony Consulting Engineers	Telephone: (585) 427 - 8888 E-Mail: Kenwardmd@erdmananthony.com	
Address: 145 Culver Road, Suite 200		
City/PO: Rochester	State: New York	Zip Code: 14620
Property Owner (if not same as sponsor): Dale and Brenda Spring	Telephone: (585) 356-5158 E-Mail: N/A	
Address: 4033 Spring Road		
City/PO: Alexander	State: New York	Zip Code: 14005

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity		If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees	☐Yes ☑No		
b. City, Town or Village Planning Board or Commission	☐Yes ☑No		
c. City, Town or Village Zoning Board of Appeals	☑Yes ☐No	Town of Alexander Planning Board & Town Board Site Plan Approval, Special Use Permit	
d. Other local agencies	☐Yes ☑No		
e. County agencies	☑Yes ☐No	Genesee County Planning Board Special Use Permit	
f. Regional agencies	☐Yes ☑No		
g. State agencies	☑Yes ☐No	NYSDEC GP-0-20-001 for Stormwater Discharges NYS DEC Wetland Permit	
h. Federal agencies	☑Yes ☐No	US Army Corps of Engineers - Nationwide Permit 51 (Renewable Energy) for minor wetland impacts	

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☑No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☑Yes ☐No

If Yes, identify the plan(s):

Genesee County Agricultural and Farmland Protection Plan.

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Agricultural - Residential and Commercial - Industrial

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? ____________

C.4. Existing community services.

a. In what school district is the project site located? Alexander Central School District

b. What police or other public protection forces serve the project site?
Genesee County Sheriff and New York State Police

c. Which fire protection and emergency medical services serve the project site?
Alexander Fire Department

d. What parks serve the project site?
Not Applicable

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Wind Energy generation turbine project construction and operation.

b. a. Total acreage of the site of the proposed action? 229.8 acres
b. Total acreage to be physically disturbed? 8.5 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 229.8 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % ____________ Units: ____________

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
____
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? ______
iv. Minimum and maximum proposed lot sizes? Minimum ______ Maximum ______

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: ____________

f. Does the project include new residential uses? ☐Yes ☑No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	___________	___________	___________	___________
At completion of all phases	___________	___________	___________	___________

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No

If Yes,

i. Total number of structures 1 Wind Turbine Structure

ii. Dimensions (in feet) of largest proposed structure: 650 ft (blade tip) height; 16 ft diameter Tower Base

iii. Approximate extent of building space to be heated or cooled: N/A square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☑No

If Yes,

i. Purpose of the impoundment: ___________

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐Surface water streams ☐Other specify: ___________

iii. If other than water, identify the type of impounded/contained liquids and their source. ___________

iv. Approximate size of the proposed impoundment. Volume: ___________ million gallons; surface area: ___________ acres

v. Dimensions of the proposed dam or impounding structure: ________ height; _______ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): ___________

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No

If Yes:

i .What is the purpose of the excavation or dredging? ___________

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): ___________
- Over what duration of time? ___________

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. ___________

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No

If yes, describe. ___________

v. What is the total area to be dredged or excavated? ___________acres

vi. What is the maximum area to be worked at any one time? ___________ acres

vii. What would be the maximum depth of excavation or dredging? ___________ feet

viii. Will the excavation require blasting? ☐Yes ☐No

ix. Summarize site reclamation goals and plan: ___________

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): ___________

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

____

____

____

____

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No

If Yes, describe: ____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No

If Yes:

- acres of aquatic vegetation proposed to be removed: ____
- expected acreage of aquatic vegetation remaining after project completion:_________________________
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): ___________________

  ____
- proposed method of plant removal: ____
- if chemical/herbicide treatment will be used, specify product(s): ___________________________________

v. Describe any proposed reclamation/mitigation following disturbance: __________________________________

____

c. Will the proposed action use, or create a new demand for water? ☐Yes ☑No

If Yes:

i. Total anticipated water usage/demand per day: ___________________________ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☐Yes ☐No

If Yes:

- Name of district or service area: ____
- Does the existing public water supply have capacity to serve the proposal? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No
- Do existing lines serve the project site? ☐Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: ______________________________

  ____
- Source(s) of supply for the district: ____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No

If, Yes:

- Applicant/sponsor for new district: ____
- Date application submitted or anticipated: ____
- Proposed source(s) of supply for new district: ____

v. If a public water supply will not be used, describe plans to provide water supply for the project: __________________________

____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _______ gallons/minute.

d. Will the proposed action generate liquid wastes? ☐Yes ☑No

If Yes:

i. Total anticipated liquid waste generation per day: ________________ gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): ____

____

____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☐Yes ☐No

If Yes:

- Name of wastewater treatment plant to be used: ____
- Name of district: ____
- Does the existing wastewater treatment plant have capacity to serve the project? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No

- Do existing sewer lines serve the project site? ☐Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☐No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: ____________________

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☐No

If Yes:

- Applicant/sponsor for new district: ____________________
- Date application submitted or anticipated: ____________________
- What is the receiving water for the wastewater discharge? ____________________

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans): ____________________

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: ____________________

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 2.508 acres (impervious surface)

_____ Square feet or 229.8 acres (parcel size)

ii. Describe types of new point sources. Impervious Gravel Access Drive. The compacted soils where the crane pad and turnaround will be at the tower site. The gravel there is temporary but when it is removed the soils will remain compacted for use of the turnaround and use of the crane pad if they need to do work on the blades.

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Sheet flow across grass meadow. Proposed stormwater run-off is equal to existing conditions with an overall composite (run-off) curve number (CN) of 78 compared to the existing curve number (CN) of 78.

- If to surface waters, identify receiving water bodies or wetlands: ____________________

  Drains to roadside ditch / dry swales that eventually bring water to the ephemeral ditches and streams that the water flows to in existing conditions.

- Will stormwater runoff flow to adjacent properties? ☑Yes ☐No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- ___________Tons/year (short tons) of Carbon Dioxide (CO_2)
- ___________Tons/year (short tons) of Nitrous Oxide (N_2O)
- ___________Tons/year (short tons) of Perfluorocarbons (PFCs)
- ___________Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- ___________Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- ___________Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): ______________________________

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): ______________________________

____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

____

____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend

☐ Randomly between hours of __________ to ________.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): ______________

____

iii. Parking spaces: Existing ____________________ Proposed ___________ Net increase/decrease ______________________

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: ______________________________

____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

____

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00 am - 6:00 pm
- Saturday: 7:00 am - 1:00 pm
- Sunday: ____________
- Holidays: ____________

ii. During Operations:

- Monday - Friday: up to 24 hours per day
- Saturday: up to 24 hours per day
- Sunday: up to 24 hours per day
- Holidays: up to 24 hours per day

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☐ Yes ☑ No

If yes:

i. Provide details including sources, time of day and duration:

____

____

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☐ No

Describe: ______________________________

____

n. Will the proposed action have outdoor lighting? ☐ Yes ☑ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

____

____

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☐ No

Describe: ______________________________

____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: ______________________________

____

____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored ______________________________

ii. Volume(s) ______ per unit time ____________ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:______________________________

____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

____

____

____

____

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: ____________________ tons per ________________ (unit of time)
- Operation : ____________________ tons per ________________ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: ______________________________

  ____
- Operation: ______________________________

  ____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: ______________________________

  ____
- Operation: ______________________________

  ____

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): ____________________

ii. Anticipated rate of disposal/processing:

- ________ Tons/month, if transfer or other non-combustion/thermal treatment, or
- ________ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: ________________ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: ____________________

ii. Generally describe processes or activities involving hazardous wastes or constituents: ____________________

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: ____________________

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: ____________________

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

____

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☑ Industrial ☑ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☑ Forest ☑ Agriculture ☐ Aquatic ☐ Other (specify): ____________________

ii. If mix of uses, generally describe:

____

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	2.508	+2.508
• Forested	41.131	38.864	-2.267
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	19.810	20.391	+0.581
• Agricultural (includes active orchards, field, greenhouse etc.)	43.555	42.572	-0.983
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Pervious Driveway	0	0.162	+0.162

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: ______________________________

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No
If Yes,
i. Identify Facilities:
____
____

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: ______________ feet
- Dam length: ______________ feet
- Surface area: ______________ acres
- Volume impounded: ______________ gallons OR acre-feet

ii. Dam's existing hazard classification: ______________________________
iii. Provide date and summarize results of last inspection:
____
____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No
If Yes:
i. Has the facility been formally closed? ☐ Yes ☐ No
- If yes, cite sources/documentation: ______________________________

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
____
____
iii. Describe any development constraints due to the prior solid waste activities: ______________________________
____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:
____
____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database   Provide DEC ID number(s): ______________
☐ Yes – Environmental Site Remediation database   Provide DEC ID number(s): ______________
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: ______________________________
____
____
iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No
If yes, provide DEC ID number(s): ______________________________
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):
____
____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: ____
- Describe the type of institutional control (e.g., deed restriction or easement): ____
- Describe any use limitations: ____
- Describe any engineering controls: ____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: ____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 1.67 feet to >6.67 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? ____%

c. Predominant soil type(s) present on project site:

Remsen silt loam	44.6 %
Madalin silty clay loam	15.5 %
Darien silt loam	9.9 %

d. What is the average depth to the water table on the project site? Average: 0 to >6.67 feet

e. Drainage status of project site soils:

☑ Well Drained:	8.4 % of site
☑ Moderately Well Drained:	0.2 % of site
☑ Poorly Drained	91.3 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	80.8 % of site
☑ 10-15%:	10.0 % of site
☑ 15% or greater:	9.1 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: ____

h. Surface water features.
i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No
ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No
If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.
iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No
iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name 837-100 Classification A
- Lakes or Ponds: Name ____ Classification ____
- Wetlands: Name Federal Waters, Federal Waters, Federal Waters,... Approximate Size ____
- Wetland No. (if regulated by DEC) ____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☑ Yes ☐ No
If yes, name of impaired water body/bodies and basis for listing as impaired: ____
Name - Pollutants - Uses:Tonawanda Creek, Upper, and minor tribs – Silt/Sediment – Water Supply

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☑ Yes ☐ No
If Yes:
i. Name of aquifer: Principal Aquifer, Primary Aquifer

m. Identify the predominant wildlife species that occupy or use the project site:

Deer, possum, raccoon, skunk	Fox, woodchucks	
Songbirds, Turkey, Hawks, blackhawks	Meadow Moles, Field Mice	

n. Does the project site contain a designated significant natural community? ☐Yes ☑No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): ______

ii. Source(s) of description or evaluation: ______

iii. Extent of community/habitat:

- Currently: ______ acres
- Following completion of project as proposed: ______ acres
- Gain or loss (indicate + or -): ______ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐Yes ☑No

If Yes:

i. Species and listing (endangered or threatened): ______

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No

If Yes:

i. Species and listing: ______

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No

If yes, give a brief description of how the proposed action may affect that use: ______

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☑Yes ☐No

If Yes, provide county plus district name/number: GENE001

b. Are agricultural lands consisting of highly productive soils present? ☑Yes ☐No

i. If Yes: acreage(s) on project site? Farmland of Statewide Importance - 70.4%, Prime Farmland if Drained - 13.3%

ii. Source(s) of soil rating(s): USDA NRCS Web Soil Survey

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: ______

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No

If Yes:

i. CEA name: ______

ii. Basis for designation: ______

iii. Designating agency and date: ______

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: ____

iii. Brief description of attributes on which listing is based: ____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): ____

ii. Basis for identification: ____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Attica Nature Trail, Lei-Ti Recreation Resort, Genesee County Park & Forest, Skyline RV & Camping Resort

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): Scenic Trail, Parks, Camping Site

iii. Distance between project and resource: 3.5, 3.7, 4.4, 4.8 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: ____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Marc Kenward   Date April 15, 2022

Signature *Marc Kenward*   Title Senior Associate

Erdman Anthony Consulting Engineers
145 Culver Road, Suite 200
Rochester, NY 14620   (585) 427-8888
Kenwardmd@erdmananthony.com

PRINT FORM

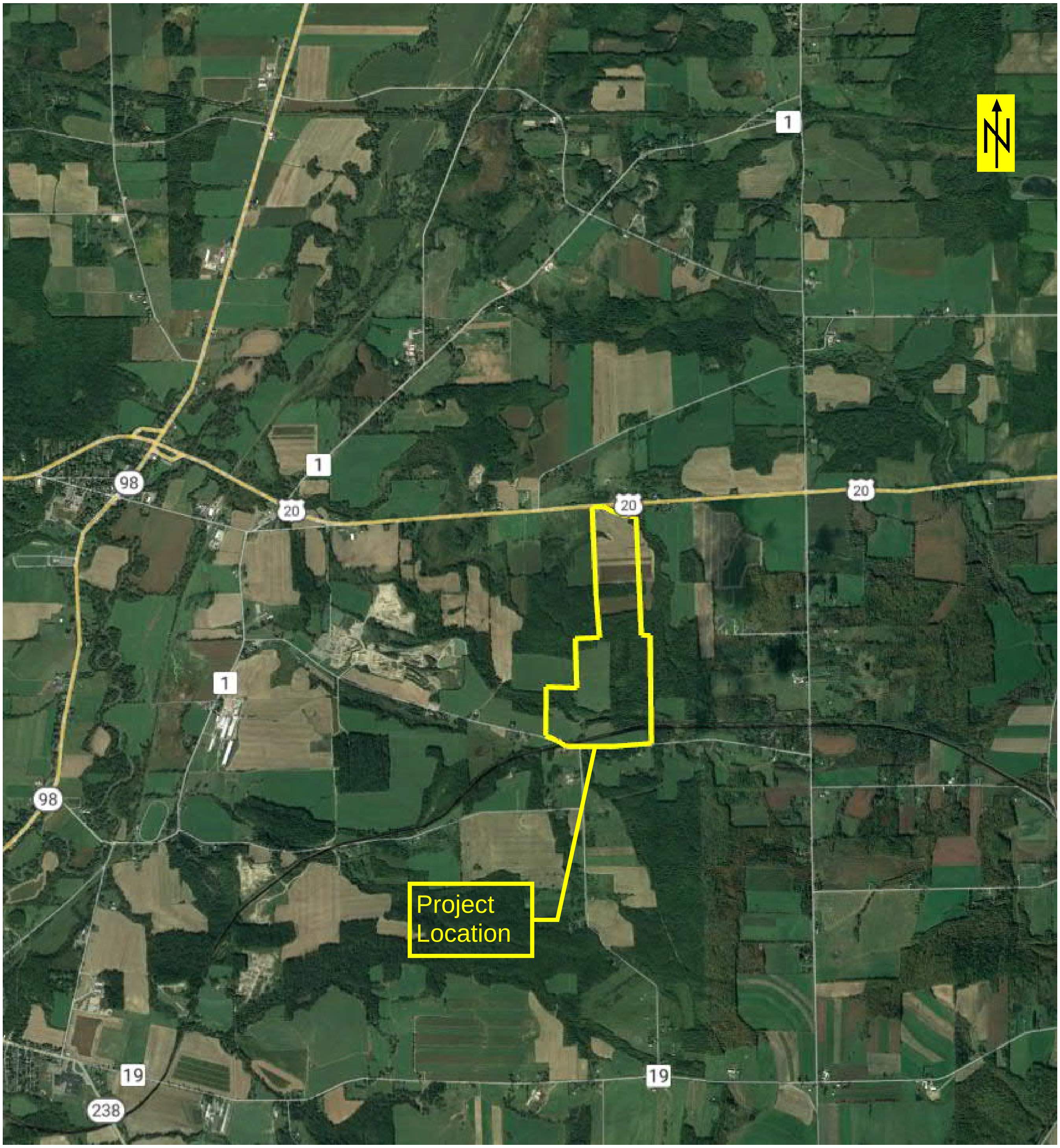
EAF Mapper Summary Report

Tuesday, March 8, 2022 11:17 AM

Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Stream Name]	837-100
E.2.h.iv [Surface Water Features - Stream Classification]	A
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters
E.2.h.v [Impaired Water Bodies]	Yes
E.2.h.v [Impaired Water Bodies - Name and Basis for Listing]	Name - Pollutants - Uses:Tonawanda Creek, Upper, and minor tribs – Silt/Sediment – Water Supply
E.2.i. [Floodway]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.

E.2.j. [100 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.k. [500 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.l. [Aquifers]	Yes
E.2.l. [Aquifer Names]	Principal Aquifer, Primary Aquifer
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	Yes
E.3.a. [Agricultural District]	GENE001
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No



ERDMAN ANTHONY

145 Culver Road, Suite 200
Rochester, NY 14620
(585) 427-8888

TITLE:

PROJECT LOCATION MAP

Dry Bridge Road, Alexander, New York

Prepared For: Borrego Solar Systems, Inc.

DRAWING BY:	DATE:	PROJECT:
NA	March, 2022	19575.36

SCALE:
NTS

REFERENCE:

FIGURE I

Photo 1 - Broadway Rd near # 3945
EXISTING CONDITION

Figure 1
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 54' 00.7740" N, 78° 13' 11.6796" W
Time:	2:01 p.m.		
Focal Length:	50 mm	Distance to Fence:	4,800 ft
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 1 - Broadway Rd near # 3945
SIMULATED CONDITION - 640

Figure 2
PHOTO SIMULATIONS

SARATOGA
ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

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Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 2 - Broadway Rd near # 4271
EXISTING CONDITION

Figure 3
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 54' 03.9312" N, 78° 12' 10.9908" W
Time:	2:04 p.m.		
Focal Length:	50 mm	Distance to Fence:	4,850 ft
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 2 - Broadway Rd near # 4271
SIMULATED CONDITION - 640

Figure 4
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

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Time:	2:04 p.m.		
Focal Length:	50 mm	Distance to Fence:	4,850 ft
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 2 - Broadway Rd near # 4271
SIMULATED CONDITION - 640

Photo 2 - Broadway Rd near # 4271
SIMULATED CONDITION - 500

Figure 5
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022
Time:	2:04 p.m.
Focal Length:	50 mm
Camera:	Canon EOS 6D MarkII
Photo Location:	42° 54' 03.9312" N, 78° 12' 10.9908" W
Distance to Fence:	4,850 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 3 - Molasses Hill Rd near # 10788
EXISTING CONDITION

Figure 6
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 28.5144" N, 78° 11' 30.7716" W
Time:	2:08 p.m.	Distance to Fence:	1 mile
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 3 - Molasses Hill Rd near # 10788
SIMULATED CONDITION - 640

Figure 7
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 28.5144" N, 78° 11' 30.7716" W
Time:	2:08 p.m.	Distance to Fence:	1 mile
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 4 - Molasses Hill Rd near # 10903
EXISTING CONDITION

Figure 8
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 13.0848" N, 78° 11' 30.3900" W
Time:	2:14 p.m.		
Focal Length:	50 mm	Distance to Fence:	1 mile
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 4 - Molasses Hill Rd near # 10903
SIMULATED CONDITION - 640

Figure 9
PHOTO SIMULATIONS

SARATOGA
ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022
Time:	2:14 p.m.
Focal Length:	50 mm
Camera:	Canon EOS 6D MarkII
Photo Location:	42° 53' 13.0848" N, 78° 11' 30.3900" W
Distance to Fence:	1 mile

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

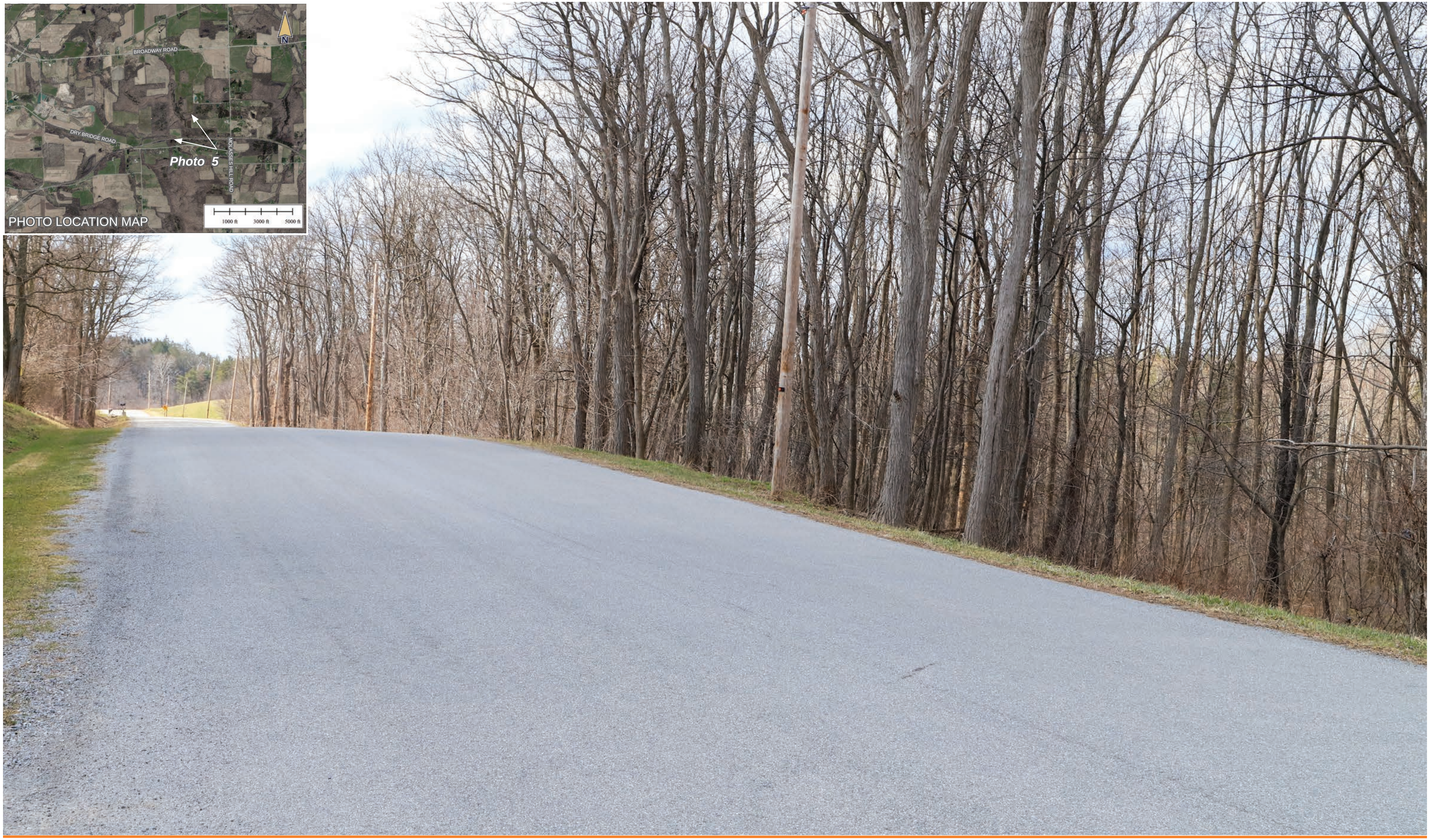

Photo 5 - Dry Bridge Rd near # 4338
EXISTING CONDITION

Figure 10
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022
Time:	2:16 p.m.
Focal Length:	50 mm
Camera:	Canon EOS 6D MarkII
Photo Location:	42° 53' 00.9564" N, 78° 11' 41.6796" W
Distance to Fence:	4,650 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 5 - Dry Bridge Rd near # 4338
SIMULATED CONDITION - 640

Figure 11
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Photo Location:	42° 53' 00.9564" N, 78° 11' 41.6796" W
Distance to Fence:	4,650 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 6 - Dry Bridge Rd near # 4080
EXISTING CONDITION

Figure 12
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 02.7132" N, 78° 12' 19.1340" W
Time:	2:20 p.m.	Distance to Fence:	2,300 ft
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 6 - Dry Bridge Rd near # 4080
SIMULATED CONDITION - 640

Figure 13
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

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Time:	2:20 p.m.	Distance to Fence:	2,300 ft
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 7 50mm- Dry Bridge Rd near # 4030
EXISTING CONDITION

Figure 14
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 02.2668" N, 78° 12' 24.7716" W
Time:	2:22 p.m.	Distance to Fence:	2,100 ft
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 7 50mm - Dry Bridge Rd near # 4030
SIMULATED CONDITION - 640

Figure 15
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

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Date:	April 5, 2022
Time:	2:22 p.m.
Focal Length:	50 mm
Camera:	Canon EOS 6D MarkII
Photo Location:	42° 53' 02.2668" N, 78° 12' 24.7716" W
Distance to Fence:	2,100 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 7 50mm - Dry Bridge Rd near # 4030
SIMULATED CONDITION - 640

Photo 7 50mm - Dry Bridge Rd near # 4030
SIMULATED CONDITION - 500

Figure 16
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022
Time:	2:04 p.m.
Focal Length:	50 mm
Camera:	Canon EOS 6D MarkII
Photo Location:	42° 54' 03.9312" N, 78° 12' 10.9908" W
Distance to Fence:	4,850 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 7 35 mm - Dry Bridge Rd near # 4030
EXISTING CONDITION

Figure 17
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 02.2668" N, 78° 12' 24.7716" W
Time:	2:22 p.m.		
Focal Length:	35 mm	Distance to Fence:	2,100 ft
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 7 35mm - Dry Bridge Rd near # 4030
SIMULATED CONDITION - 640

Figure 18
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Time:	2:22 p.m.	Distance to Fence:	2,100 ft
Focal Length:	35 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

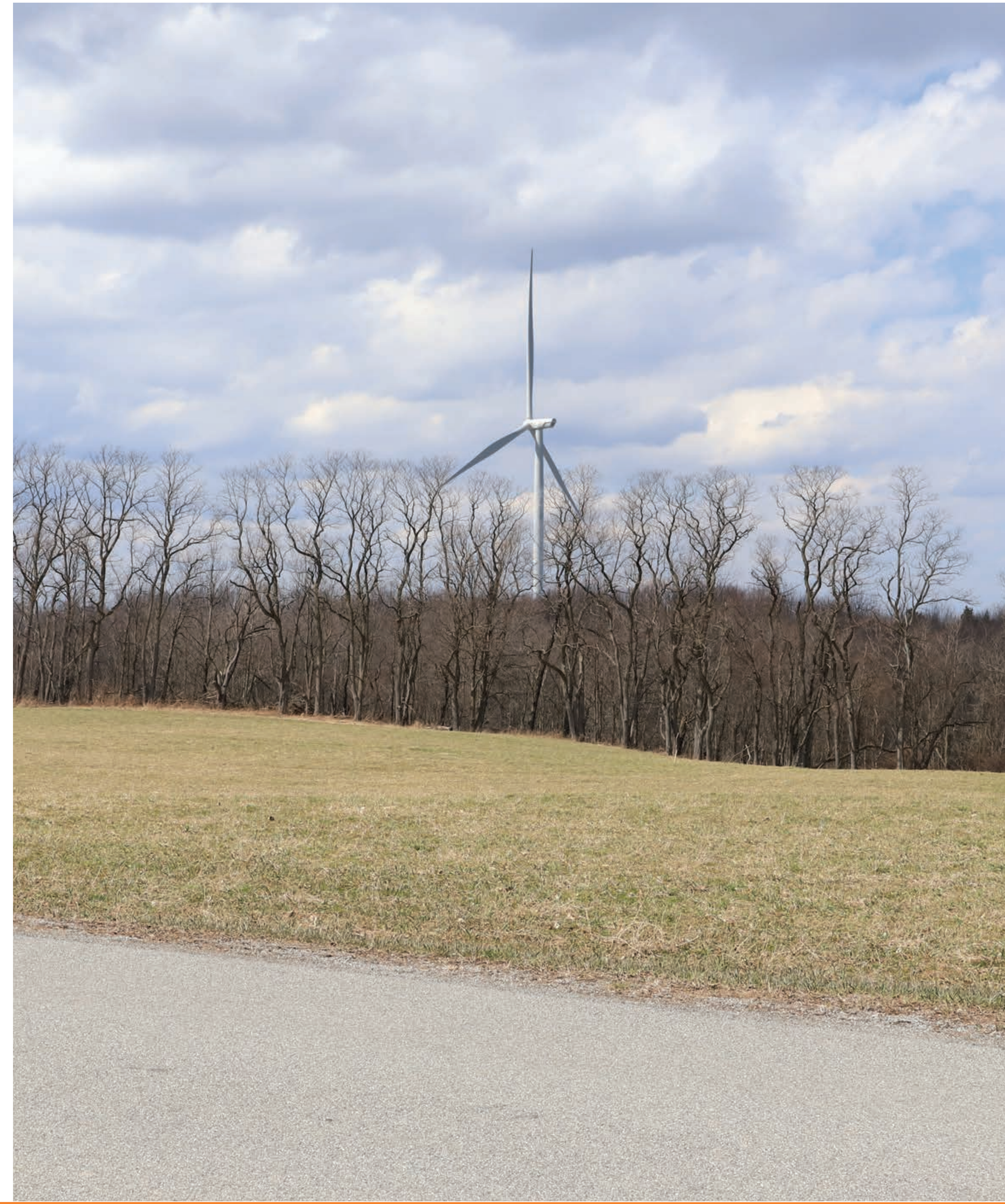

Photo 7 35 mm - Dry Bridge Rd near # 4030
SIMULATED CONDITION - 640

Photo 7 35mm - Dry Bridge Rd near # 4030
SIMULATED CONDITION - 500

Figure 19
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Camera:	Canon EOS 6D MarkII
Photo Location:	42° 54' 03.9312" N, 78° 12' 10.9908" W
Distance to Fence:	4,850 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 8 50mm - Dry Bridge Rd near # 3959
EXISTING CONDITION

Figure 20
PHOTO SIMULATIONS

SARATOGA
ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 01.5144" N, 78° 12' 45.8136" W
Time:	2:24 p.m.	Distance to Fence:	2,000 ft
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 8 50mm - Dry Bridge Rd near # 3959
SIMULATED CONDITION - 640

Figure 21
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

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Time:	2:24 p.m.	Distance to Fence:	2,000 ft
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 8 35mm - Dry Bridge Rd near # 3959
EXISTING CONDITION

Figure 22
PHOTO SIMULATIONS

SARATOGA
ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

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Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 8 35mm - Dry Bridge Rd near # 3959
SIMULATED CONDITION - 640

Figure 23
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Focal Length:	35 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

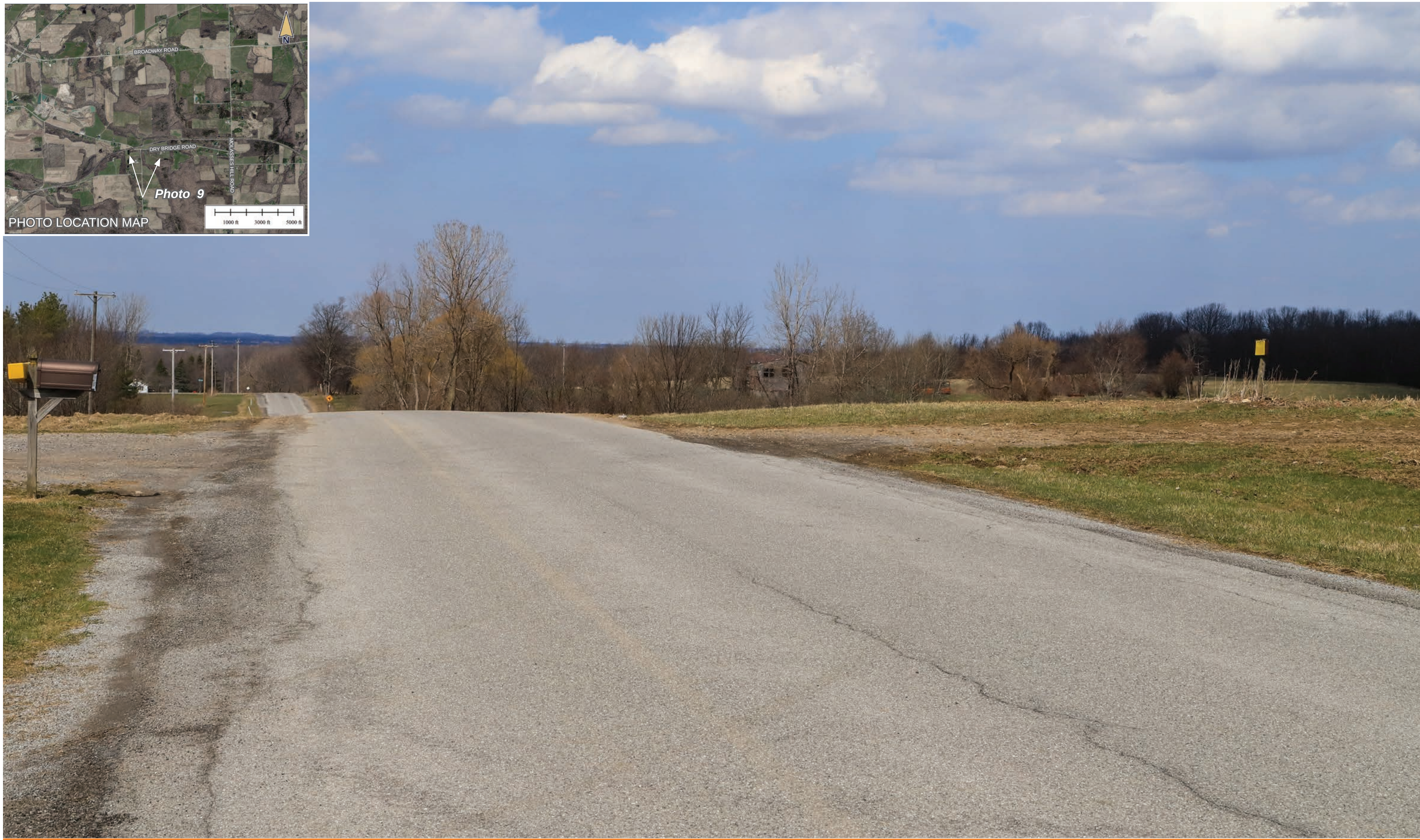

Photo 9 - Chaddock Rd near # 11080
EXISTING CONDITION

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 52' 31.0440" N, 78° 12' 46.6740" W
Time:	2:27 p.m.		
Focal Length:	50 mm	Distance to Fence:	1 mile
Camera:	Canon EOS 6D MarkII		

Figure 24
PHOTO SIMULATIONS

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 9 - Chaddock Rd near # 11080
SIMULATED CONDITION - 640

Figure 25
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Time:	2:27 p.m.		
Focal Length:	50 mm	Distance to Fence:	1 mile
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 10 - Dry Bridge Rd near # 3959
EXISTING CONDITION

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 05.9748" N, 78° 13' 10.1856" W
Time:	2:31 p.m.		
Focal Length:	50 mm	Distance to Fence:	2,800 ft
Camera:	Canon EOS 6D MarkII		

Figure 26
PHOTO SIMULATIONS

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 10 - Dry Bridge Rd near # 3959
SIMULATED CONDITION - 640

Figure 27
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 10 - Dry Bridge Rd near # 3959
SIMULATED CONDITION - 500

Figure 28
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Photo Location:	42° 53' 05.9748" N, 78° 13' 10.1856" W
Distance to Fence:	2,800 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 10 - Dry Bridge Rd near # 3959
SIMULATED CONDITION - 640

Photo 10 - Dry Bridge Rd near # 3959
SIMULATED CONDITION - 500

Figure 29
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Time:	2:04 p.m.
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Camera:	Canon EOS 6D MarkII
Photo Location:	42° 54' 03.9312" N, 78° 12' 10.9908" W
Distance to Fence:	4,850 ft

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 11 - Dry Bridge Rd near # 3810
EXISTING CONDITION

Figure 30
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

This photograph was taken using a 50mm normal angle lens. To appear at the correct scale this page is intended to be viewed approximately 18 inches from the reader's eye when printed on 11"x17" paper.

Photograph Information

Date:	April 5, 2022
Time:	2:34 p.m.
Focal Length:	50 mm
Camera:	Canon EOS 6D MarkII
Photo Location:	42° 53' 14.0712" N, 78° 13' 49.9044" W
Distance to Fence:	1 mile

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

Photo 11 - Dry Bridge Rd near # 3810
SIMULATED CONDITION - 640

Figure 31
PHOTO SIMULATIONS

SARATOGA ASSOCIATES

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Photograph Information

Date:	April 5, 2022	Photo Location:	42° 53' 14.0712" N, 78° 13' 49.9044" W
Time:	2:34 p.m.	Distance to Fence:	1 mile
Focal Length:	50 mm		
Camera:	Canon EOS 6D MarkII		

borrego

Alexander Wind Project
Dry Bridge Rd,
Alexander, NY 14005

WETLAND AND STREAM DELINEATION REPORT

Dry Bridge Alexander - Wind
3846 Dry Bridge Road Alexander, NY
LaBella Project No. 2220031

Prepared For: Borrego Solar Systems
55 Technology Drive, Suite 102
Lowell, Massachusetts 01851
Brandon Smith
(978) 221-3093
bsmith@borregosolar.com

Prepared By: LaBella Associates, D.P.C.
300 State Street, Suite 201
Rochester, New York 14614

Date: December 2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Borrego Solar Systems (Borrego) retained LaBella Associates, D.P.C. (LaBella) to perform a wetland and stream delineation for the Dry Bridge Alexander – Wind Project (Project). For the purposes of the wetland and stream delineation, the Study Area is defined as a 128-acre area consisting of portions of three adjacent tax parcels in the town of Alexander, Genesee County, New York. Please refer to Appendix A, Figure 1 for the Study Area location and boundary. The geographic coordinates of the approximate Study Area center are: 42.891904, -78.210190 (NAD83). Wetland and stream delineation field work was performed on November 8 to 11, 2021.

1.2 PURPOSE

This report was prepared for the purpose of obtaining concurrence from the United States Army Corps of Engineers (USACE)–Buffalo District and the New York State Department of Environmental Conservation (NYSDEC) Region 8 on jurisdictional wetland and stream boundaries within the Study Area, in support of the Project. Specific tasks performed for this report include a field delineation of Federal Waters of the United States (WOUS) encompassing wetlands and streams, New York State Article 24 Freshwater Wetlands (State wetlands), and Article 15 State-classified Streams within the Study Area, a survey of jurisdictional water boundaries, and a detailed description of the delineated waters based on hydrology, vegetation, and soils information collected in the field.

This report describes the results of the delineation and data collection efforts performed by LaBella, and a description of the wetlands and streams that were delineated. This document is intended to provide the information required to support a Jurisdictional Determination with the USACE-Buffalo District, or a Joint Permit Application if regulatory permit authorizations are required.

2.0 METHODOLOGY

2.1 RESOURCES

Materials and literature supporting this investigation are derived from a number of sources, including: United States Geological Survey (USGS) 7.5-minute Topographic Quadrangles; United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Genesee County, New York Soil Survey (USDA-NRCS, 1969); USDA-NRCS Soil Map Unit shapefiles; USDA-NRCS Field Indicators of Hydric Soils in the United States (USDA-NRCS, 2018); Munsell Soil Color Charts (Kollmorgen Corporation, 1988); Federal Emergency Management Agency (FEMA) digital Flood Hazard data; United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) shapefiles; NYSDEC Freshwater Wetland shapefiles; NYSDEC Environmental Resource Mapper (NYSDEC, 2019); and NYSDEC Stream Classification shapefiles. Vascular plant names follow nomenclature found in the USDA plants database (USDA, 2021). Wetland indicator status for vegetative species was determined by reference to the National Wetland Plant List (Lichvar et al., 2018). Jurisdictional features are characterized according to the NWI mapped wetlands and deepwater habitat classification system (Cowardin, 1979).

2.2 JURISDICTIONAL AREA DELINEATION

LaBella field staff performed the wetland and stream delineation within the Study Area on November 8-11, 2021 in accordance with the methods presented in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), as supplemented by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (USACE, 2012).

Wetland and stream boundaries were defined in the field with sequentially-numbered pink surveyor's flagging or pink pin flags. Each flag was digitally recorded using a sub-foot Global Positioning System unit. Data and observations were collected from both wetland and upland data points within the Study Area. These data points were recorded on routine USACE Wetland Determination Data Forms (Appendix B).

Representative photographs were taken of the data point locations, delineated wetlands, and streams within the Study Area (Appendix C).

The USACE has jurisdiction of WOUS under section 404 of the Clean Water Act (CWA) (40 Code of Federal Regulations [CFR] 230) (CFR, 2010).

The Freshwater Wetlands Act (FWA) (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law [ECL]) gives the NYSDEC jurisdiction over State wetlands and a 100-foot adjacent area. Article 24 of the FWA requires the NYSDEC to map all State-protected wetlands (generally 12.4 acres or greater) to allow landowners and other interested parties a means to determine where State jurisdictional wetlands exist.

Under Article 15 of the ECL (Protection of Waters), the NYSDEC has jurisdiction over any activity that disturbs the bed or banks of protected streams. A protected stream is any stream, or particular portion of a stream, that has been assigned by the NYSDEC any of the following classifications or standards: AA, AA(t), A, A(t), A(ts), B, B(t), B(ts), C(t), or C(ts) (6 NYCRR Part 701). Additional NYSDEC stream classifications include: C and D.

3.0 PHYSICAL CHARACTERISTICS AND RESOURCES

3.1 PHYSIOGRAPHY

The Project is located in the Northeastern Forage and Forest Land Resource Region (LRR R), Glaciated Allegheny Plateau and Catskill Mountains Major Land Resource Area (MLRA 140). The Study Area topography consists of a majority upland hilltop with moderately sloped glacial hillsides containing multiple stream gullies. Land cover within the Study Area consists of forests, fields, and pasture. Elevations within the Study Area range from approximately 1,000 feet above mean sea level (AMSL) to approximately 1,200 feet AMSL.

3.2 SOILS

The Soil Survey of Genesee County, New York and NRCS Web Soil Survey indicates there are 17 soil map units within the Project Study Area, as outlined in Table 1.

Table 1. Soil Map units within the Study Area

NRCS Soil Map Unit	Map Unit Symbol	Drainage Class	Hydric Soil?	Hydric Rating (%)
Angola silt loam, 3 to 8 percent slopes	AnB	Somewhat poorly drained	Yes	5
Conesus silt loam, 3 to 8 percent slopes	CoB	Moderately well drained	Yes	1
Conesus silt loam, 8 to 15 percent slopes	CoC	Moderately well drained	No	0
Darien silt loam, 3 to 8 percent slopes	DaB	Somewhat poorly drained	Yes	5
Darien silt loam, 8 to 15 percent slopes	DaC	Somewhat poorly drained	Yes	5
Fonda mucky silt loam	Fo	Very poorly drained	Yes	100
Ilion silt loam, 0 to 3 percent slopes	IoA	Poorly drained	Yes	95
Madalin silty clay loam, 0 to 3 percent slopes	Ma	Poorly drained	Yes	95
Manlius channery silt loam, 3 to 8 percent slopes	MlB	Well drained	No	0
Palatine channery silt loam, 15 to 25 percent slopes	PbD	Well drained	No	0
Remsen silt loam, 0 to 3 percent slopes	ReA	Somewhat poorly drained	Yes	10
Remsen silt loam, 3 to 8 percent slopes	ReB	Somewhat poorly drained	Yes	10
Remsen silt loam, 8 to 15 percent slopes	ReC	Somewhat poorly drained	Yes	5
Remsen silty clay loam, 8 to 15 percent slopes, eroded	RmC3	Somewhat poorly drained	Yes	5
Remsen silty clay loam, 15 to 25 percent slopes, eroded	RmD3	Somewhat poorly drained	Yes	5
Remsen soils, 25 to 40 percent slopes	RnE	Somewhat poorly drained	Yes	5
Wayland soils complex, 0 to 3 percent slopes, frequently flooded	Wy	Poorly drained	Yes	90

Source: USDA, NRCS, 1969; Soil Survey Staff, 2021

The Hydric Soil ratings outlined in Table 1 and the Web Soil Survey map provided in Appendix D indicate there are 14 soil map units that contain hydric components.

3.3 HYDROLOGY

The Study Area is located in the Niagara watershed (USGS Hydrologic Unit code 04120104). The source of surface hydrology for the Study Area is precipitation and surface waters from the adjacent hillsides. Groundwater is also a source of hydrology in some of the wetland areas on-site. The nearest mapped stream is an unnamed tributary of Tonawanda Creek that flows through the southern portion of the Study Area. The nearby Town of Batavia receives an average of 36.81 inches of precipitation annually (NRCC, 2021).

4.0 AGENCY RESOURCES

4.1 USFWS NATIONAL WETLAND INVENTORY

USFWS NWI mapping indicates there are seven NWI-mapped wetlands within the Study Area (refer to Appendix A, Figure 2), as outlined in Table 2.

Table 2. USFWS-NWI Mapped Wetlands within the Study Area

NWI Wetland Code	Classification Code description	Delineated Wetland/Stream
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	Stream 1
PSS1E	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated	Wetland 3
R3UBH	Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded	Stream 7
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	Stream 7
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	Stream 8
PFO1/SS1A	Palustrine, Forested, Broad-Leaved Deciduous/Scrub-Shrub, Broad-Leaved Deciduous, Temporary Flooded	Wetland 2
PFO1/SS1A	Palustrine, Forested, Broad-Leaved Deciduous/Scrub-Shrub, Broad-Leaved Deciduous, Temporary Flooded	Wetland 2

4.2 NYSDEC FRESHWATER WETLANDS AND PROTECTED STREAMS

NYSDEC freshwater wetland mapping indicates there are no State-mapped wetlands within the Study Area (refer to Appendix A, Figure 3). The closest State wetland is located 0.40 miles west of the Study Area. According to NYSDEC stream classification mapping there is one State-classified stream within the Study Area (refer to Appendix A, Figure 3), as outlined in Table 3.

Table 3. NYSDEC Classified Streams within the Study Area

Stream Name	Stream Classification	Delineated Stream
Unnamed tributary of Tonawanda Creek	A	Stream 7

4.3 FEMA 100-YEAR FLOOD ZONES

FEMA Flood Zone FIRM Panel #3602770017C (11/18/1983) encompasses the Study Area but is not printed. Therefore, flood zones within the Study Area are unknown (Appendix A, Figure 4).

5.0 RESULTS

LaBella field staff delineated two palustrine emergent wetlands, one mixed palustrine emergent/forested wetland, two perennial streams, two intermittent streams, four ephemeral streams, and one ephemeral ditch within the Study Area (see Appendix A, Figures 5 and 6). Tables 4 and 5 provide areas and classifications of the delineated wetlands and streams. The remainder of the Study Area is considered upland forest and agricultural land. These habitats lack wetland hydrology and hydric soils.

Table 4. Delineated Wetlands

Wetland ID	Cowardin Classification	Acreage On-site	Latitude, Longitude (NAD83)	Jurisdiction
Wetland 1	PEM	0.38	42.892784, -78.208849	USACE
Wetland 2	PEM	0.21	42.885758, -78.212295	USACE
Wetland 3	PEM	0.17	42.888249, -78.211855	USACE
	PFO	2.13	42.888248, -78.209872	

Table 5. Delineated Streams

Stream ID	Flow Regime/Stream Order	NYSDEC Class	Stream Length/Width in Study Area (lf)	Stream Bed Substrate	Latitude, Longitude (NAD83)	Jurisdiction
Stream 1	Intermittent/1st	Unclassified	270/4	Silt, cobble	42.900510, -78.211557	USACE
Stream 2	Ephemeral/1st	Unclassified	1,500/2	Gravel, cobble	42.899900, -78.212085	USACE
Stream 3	Ephemeral/1st	Unclassified	875/1	Silt	42.895036, -78.210537	USACE
Stream 4	Intermittent/1st	Unclassified	670/2-4	Silt	42.892514, -78.210532	USACE
Stream 5	Ephemeral/1st	Unclassified	160/1	Silt, gravel	42.892215, -78.210214	USACE
Stream 6	Ephemeral/1st	Unclassified	260/1	Silt	42.892280, -78.209173	USACE
Stream 7	Perennial/2nd	A	1,065/3-10 (Bank Width: 4-11)	Bedrock	42.886241, -78.214444	NYSDEC/ USACE
Stream 8	Perennial/1st	Unclassified	280/3	Bedrock	42.886025, -78.212932	USACE

Stream ID	Flow Regime/Stream Order	NYSDEC Class	Stream Length/Width in Study Area (lf)	Stream Bed Substrate	Latitude, Longitude (NAD83)	Jurisdiction
Ditch 1	Ephemeral/1st	Unclassified	930/3	Silt	42.895199, -78.209589	Potentially Non-Jurisdictional

5.1 UPLANDS

Dominant vegetation within the upland forest communities on-site includes sugar maple (*Acer saccharum*), red pine (*Pinus resinosa*), black cherry (*Prunus serotina*), white ash (*Fraxinus americana*), wild strawberry (*Fragaria vesca*), American beech (*Fagus grandifolia*), white clover (*Trifolium repens*), Kentucky bluegrass (*Poa pratensis*), multiflora rose (*Rosa multiflora*), spotted knapweed (*Centaurea stoebe*), apple (*Malus sp.*), black raspberry (*Rubus occidentalis*), Tatarian honeysuckle (*Lonicera tatarica*), European wood sedge (*Carex sylvatica*), summer grape (*Vitis aestivalis*), spicebush (*Lindera benzoin*), and late goldenrod (*Solidago altissima*). Data Forms, provided in Appendix B, summarize the observed conditions adequate to characterize all uplands and wetlands within the Study Area.

5.2 WETLANDS

5.2.1 Wetland 1- PEM

Wetland 1 is a palustrine emergent (PEM) wetland that originates in a depression at the bottom of two adjacent hillsides east of the Site and drains west into Stream 4. At the time of the Site visit, Wetland 1 appeared to have a hydrologic regime driven by precipitation, groundwater, and incoming flow from Stream 6 that feeds Wetland 1 from the south.

The plant community of PEM Wetland 1 is dominated by red maple (*Acer rubrum*), American hophornbeam (*Ostrya virginiana*), orange jewelweed (*Impatiens capensis*), and sensitive fern (*Onoclea sensibilis*). At the time of the site visit, hydrology indicators observed include saturated soils, water stained leaves, geomorphic position, and results of a FAC-neutral test. Clay loams from 0 to 20 inches in the soil column consisted of a dark gray (10YR 4/1) matrix with dark yellowish brown (10YR 3/6) prominent redoximorphic concentrations (i.e., mottles).

5.2.2 Wetland 2- PEM

Wetland 2 is a PEM wetland that lies within the riparian floodplain of Stream 7 at the base of two adjacent steep hillsides and directly abuts Stream 7. At the time of the Site visit, Wetland 2 appeared to have a hydrologic regime primarily driven by precipitation and incoming flow from Stream 7.

The plant community of PEM Wetland 2 is dominated by fox sedge (*Carex vulpinoidea*), common rush (*Juncus effusus*), boneset (*Eupatorium perfoliatum*), and creeping buttercup (*Ranunculus repens*). At the time of the site visit, hydrology indicators observed include geomorphic position and drift deposits. Hydric soils were assumed based on the strong hydrophytic vegetation and riparian position abutting a perennial stream.

5.2.3 Wetland 3- PFO/PEM

Wetland 3 is a mixed palustrine forested (PFO) and PEM wetland that originates in a forested depression east of the Site and flows west across a cattle pasture before returning to a non-jurisdictional channelized drainage that feeds Stream 7 off-site to the west. At the time of the Site visit, Wetland 3 appeared to have a hydrologic regime driven by precipitation.

The plant community of PFO Wetland 3 is dominated by silver maple (*Acer saccharinum*), gray dogwood (*Cornus racemosa*), fox sedge, and hop sedge (*Carex lupuliformis*). At the time of the site visit, hydrology indicators observed include surface water, water stained leaves, microtopographic relief, and results of a FAC-neutral test. Clay loams from 0 to 20 inches in the soil column consisted of a gray (10YR 5/1) matrix with dark yellowish brown (10YR 3/6) prominent redoximorphic concentrations (i.e., mottles).

The plant community of PEM Wetland 3 is dominated by creeping bentgrass (*Agrostis stolonifera*). At the time of the site visit, hydrology indicators observed include surface water, a high water table, saturated soils, saturation visible on aerial imagery, and results of a FAC-neutral test. Clay loams from 0 to 20 inches in the soil column consisted of a dark grayish brown (10YR 4/2) matrix with dark yellowish brown (10YR 3/6) prominent redoximorphic concentrations (i.e., mottles).

5.3 STREAMS

5.3.1 Intermittent Streams 1 and 4

Streams 1 and 4 are intermittent streams that flow east to west before eventually feeding Tonawanda Creek approximately two miles west of the Site. Stream 1 is approximately 270 linear feet long and four feet wide within the Study Area and contains silt and cobble substrates. Stream 1 receives water from Stream 2. Stream 4 is approximately 670 linear feet long and two to four feet wide within the Study area and contains a silt substrate. Stream 4 receives water from Wetland 1, Stream 6 and Stream 5.

5.3.2 Ephemeral Streams 2, 3, 5, and 6

Streams 2, 3, 5, and 6 are ephemeral streams that all flow in a northerly direction and feed intermittent Streams 1 and 4, except for Stream 3. These streams range from 260 to 1,500 linear feet in length, have widths ranging from one to two feet, and contain silt, gravel, and cobble substrates. These streams generally drain agricultural fields and upland forested hillsides.

5.3.3 Perennial Streams 7 and 8

Stream 7 is a NYSDEC Class A perennial stream that flows approximately 1,065 feet west across the southern portion of the Study Area. This stream has a width ranging from three to ten feet, with banks ranging from four to 11 feet. Stream 8 is a perennial stream that flows approximately 280 feet north into Stream 7 and has a width of three feet. Both streams contain a bedrock substrate.

5.3.4 Ephemeral Ditch 1

Ditch 1 is a potentially non-jurisdictional excavated ditch dug in an otherwise upland area along the edge of an agricultural field. This ephemeral ditch drains west for approximately 930 feet across the

Study Area where it convenes with Stream 3, has an average width of 3 feet, and contains a silt substrate.

6.0 CONCLUSIONS

LaBella field staff delineated two palustrine emergent wetlands, one mixed palustrine emergent/forested wetland, two perennial streams, two intermittent streams, four ephemeral streams, and one ephemeral ditch within the Study Area. All wetlands mapped on-site were identified based on the observed presence of hydrophytic vegetation, hydric soils, and wetland hydrology indicators. The primary functions provided by these wetlands appear to include water retention, water quality improvement, wildlife habitat, and nutrient production and cycling. All streams mapped on-site were identified by the presence of a continuous bed and bank and an ordinary high water mark.

Wetlands 1 to 3 and Streams 1 to 8 are considered to be jurisdictional WOUS under the CWA due to the eventual connection to Tonawanda Creek, a tributary of Lake Ontario, the nearest Traditional Navigable Water. Any Project-related filling or disturbances within the delineated boundaries of these wetlands and streams (as approved by the USACE and NYSDEC) will require Federal CWA Section 404 authorization through the USACE. In addition, such activities would also require a CWA Section 401 Water Quality Certification from the NYSDEC. Stream 7 is a NYSDEC protected Class A stream that would require an Article 15 permit with NYSDEC for any fill or disturbance below the top of bank of the stream. Authorizations with USACE and NYSDEC may be obtained through the Joint Permit Application process. Ditch 1 appears to be non-jurisdictional because it has ephemeral flow and was constructed in upland. The final jurisdictional status and boundaries of wetlands and streams on-site are subject to final determination by the USACE-Buffalo District and NYSDEC-Region 8, under their respective jurisdictions.

7.0 SIGNATURE OF WETLAND PROFESSIONALS

We appreciate the opportunity to serve your professional environmental needs. If you have any questions, please do not hesitate to contact Dustin Bradley at (716) 867-1810.

Report Prepared By:	Report Prepared By:
Dustin Bradley	Connor Ramsdell
Dustin Bradley Wetlands Ecologist	Connor Ramsdell Environmental Scientist

8.0 REFERENCES

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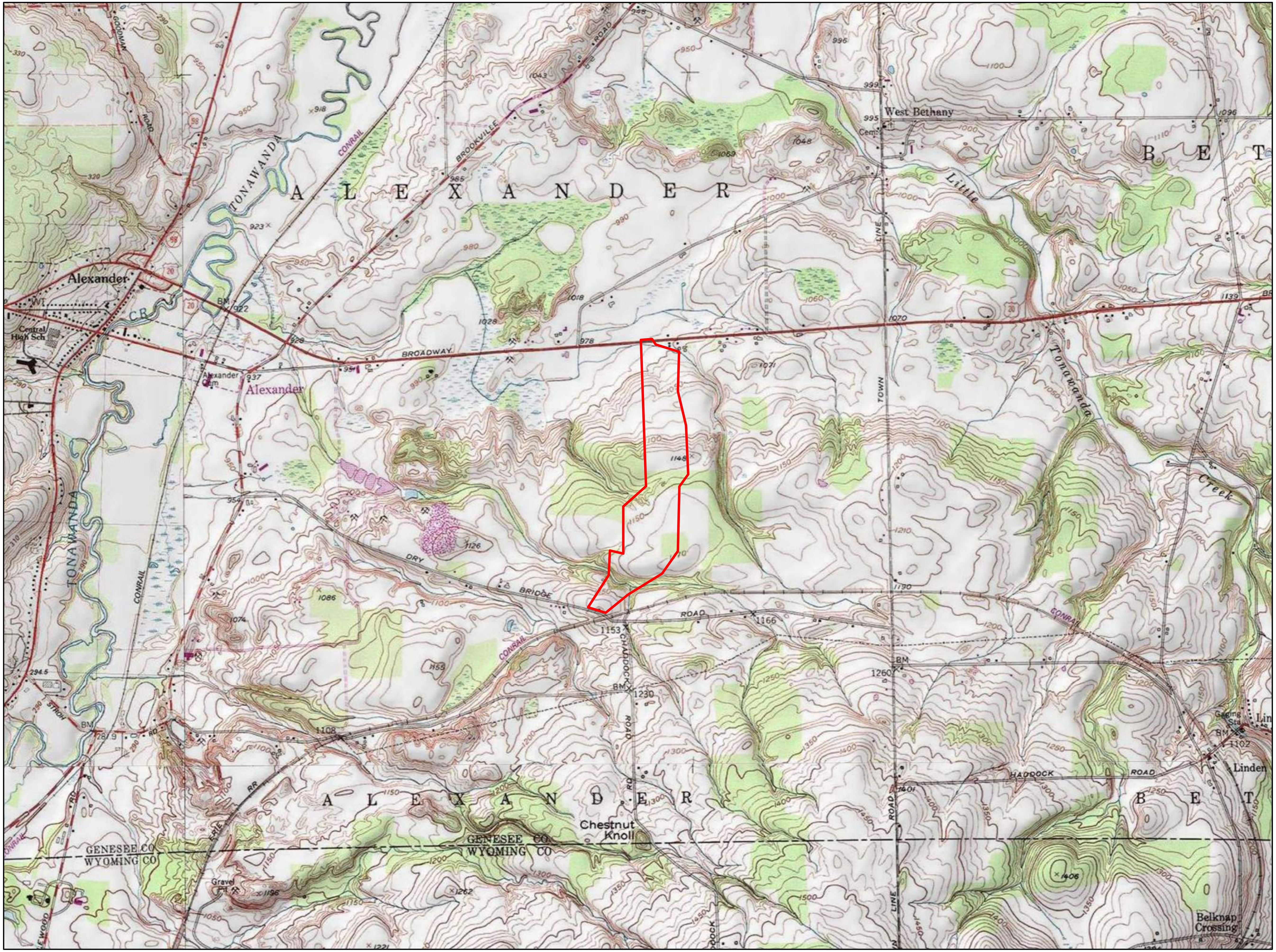
APPENDIX A

FIGURES



![LaBella — Powered by partnership.]

Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road
Alexander, NY

N

0 1,000 2,000 Feet

1 inch = 2,000 feet

Legend

Study Area

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: ESRI USA Topo Map (Updated: 2020) in reference to USGS Topographic Batavia South Quadrangle (1978).

USGS Site Location

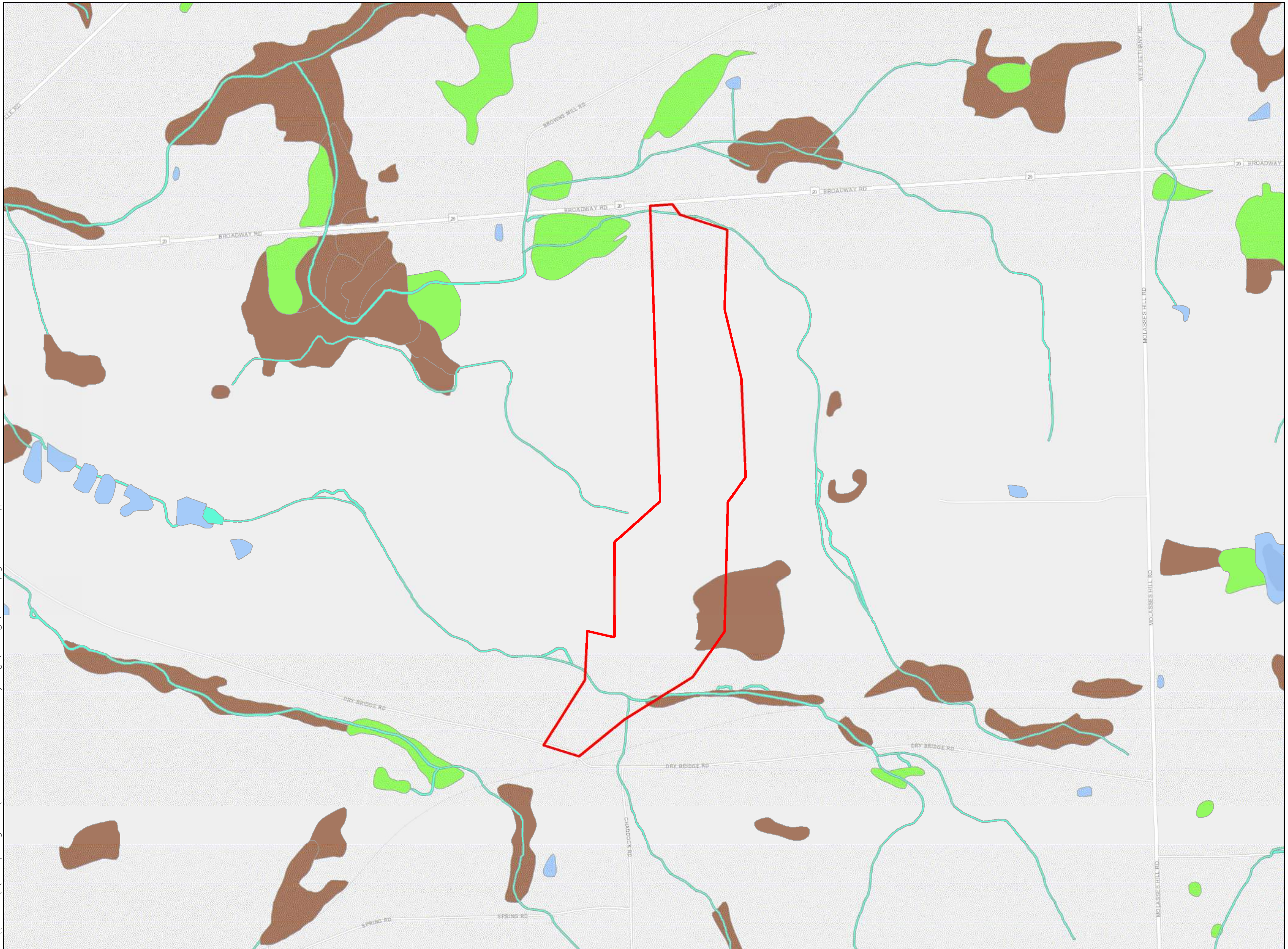
FIGURE 1

LaBella Project No: 2220031
Date: November 2021

Creator: CR Reviewer: LD

Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 1 - USGS Site Location.mxd

Creator: CR Reviewer: LD



Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 2 - NWI-Mapped Resources.mxd

LaBella
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Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road
Alexander, NY

N

0 500 1,000 Feet
1 inch = 1,000 feet

Legend

Study Area

National Wetland Inventory

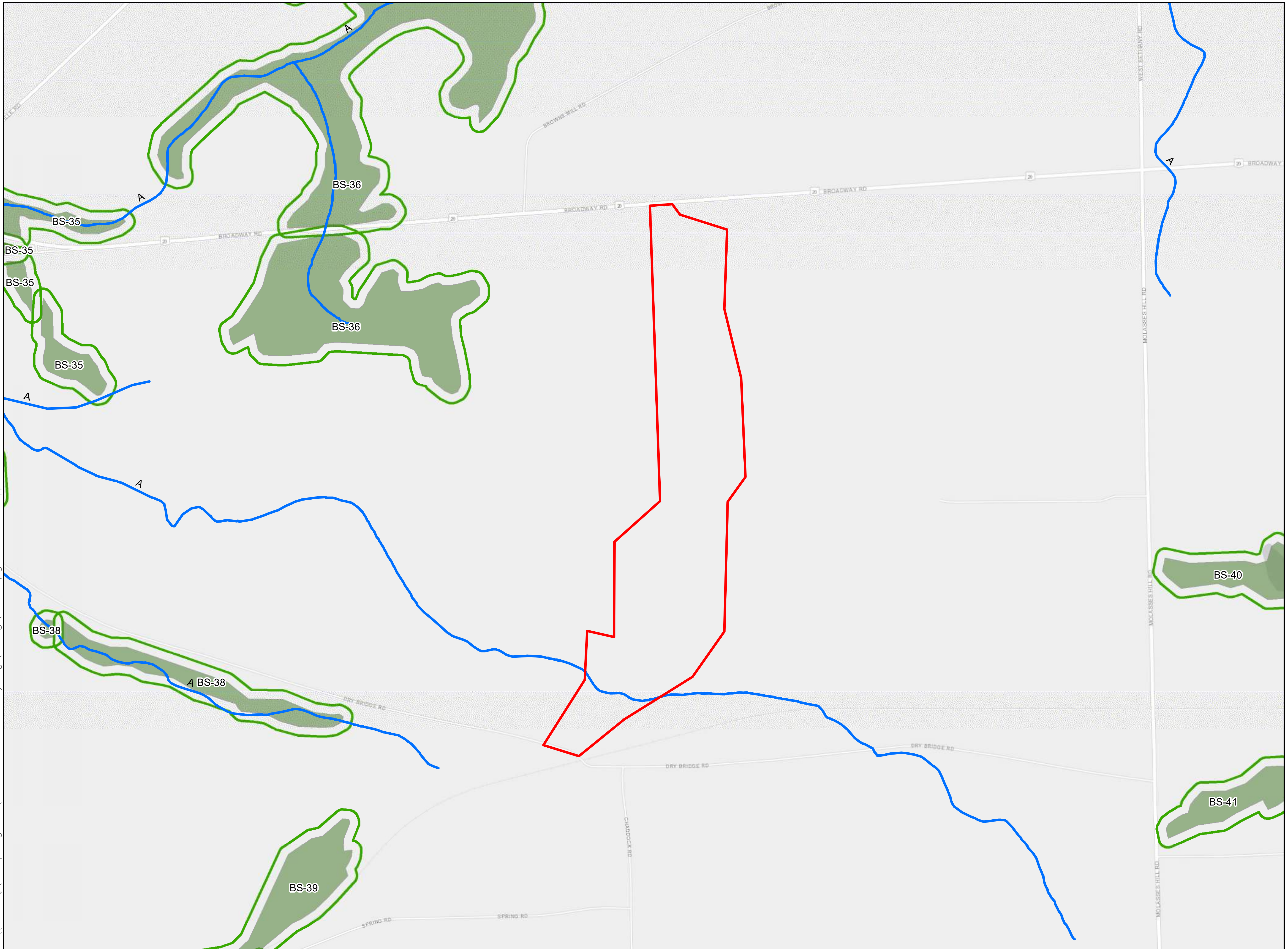
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Riverine

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap:Esri, HERE, Garmin, (c) OpenStreetMap contributors 2020.

NWI-Mapped Resources

FIGURE 2

LaBella Project No: 2220031
Date: November 2021



Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 3 - NYSDEC-Mapped Wetlands and Streams.mxd Creator: CR Reviewer: LD

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Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road
Alexander, NY

N

0 500 1,000 Feet

1 inch = 1,000 feet

Legend

- Study Area
- NYSDEC-Classified Stream
- NYSDEC Wetland
- NYSDEC 100-Foot Adjacent Area

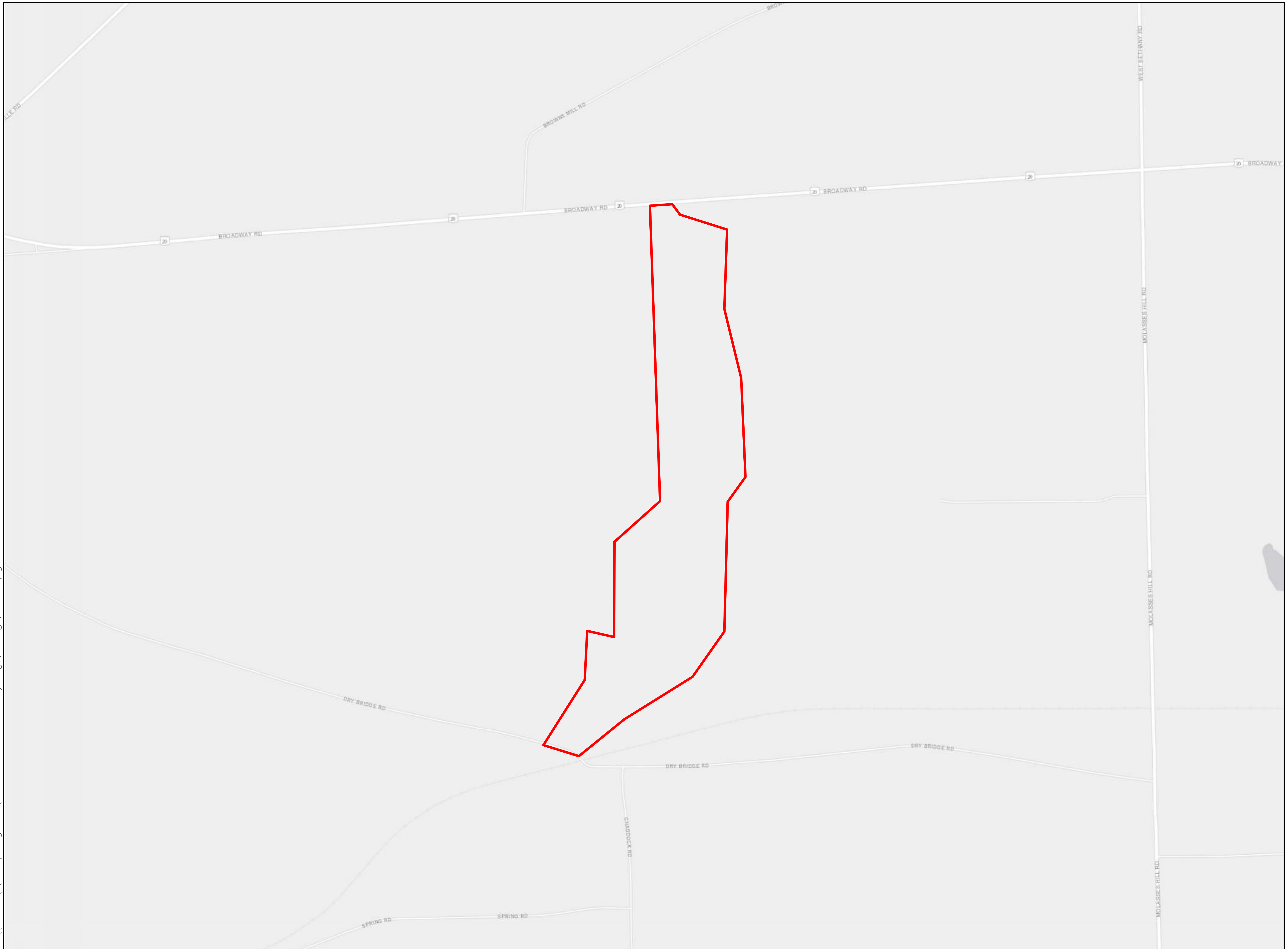
Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap:Esri, HERE, Garmin, (c) OpenStreetMap contributors 2020.

NYSDEC-Mapped Wetlands and Streams

FIGURE 3

LaBella Project No: 2220031
Date: November 2021

Creator: CR Reviewer: LD



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Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road Alexander, NY

N

0 500 1,000 Feet

1 inch = 1,000 feet

Legend

Study Area

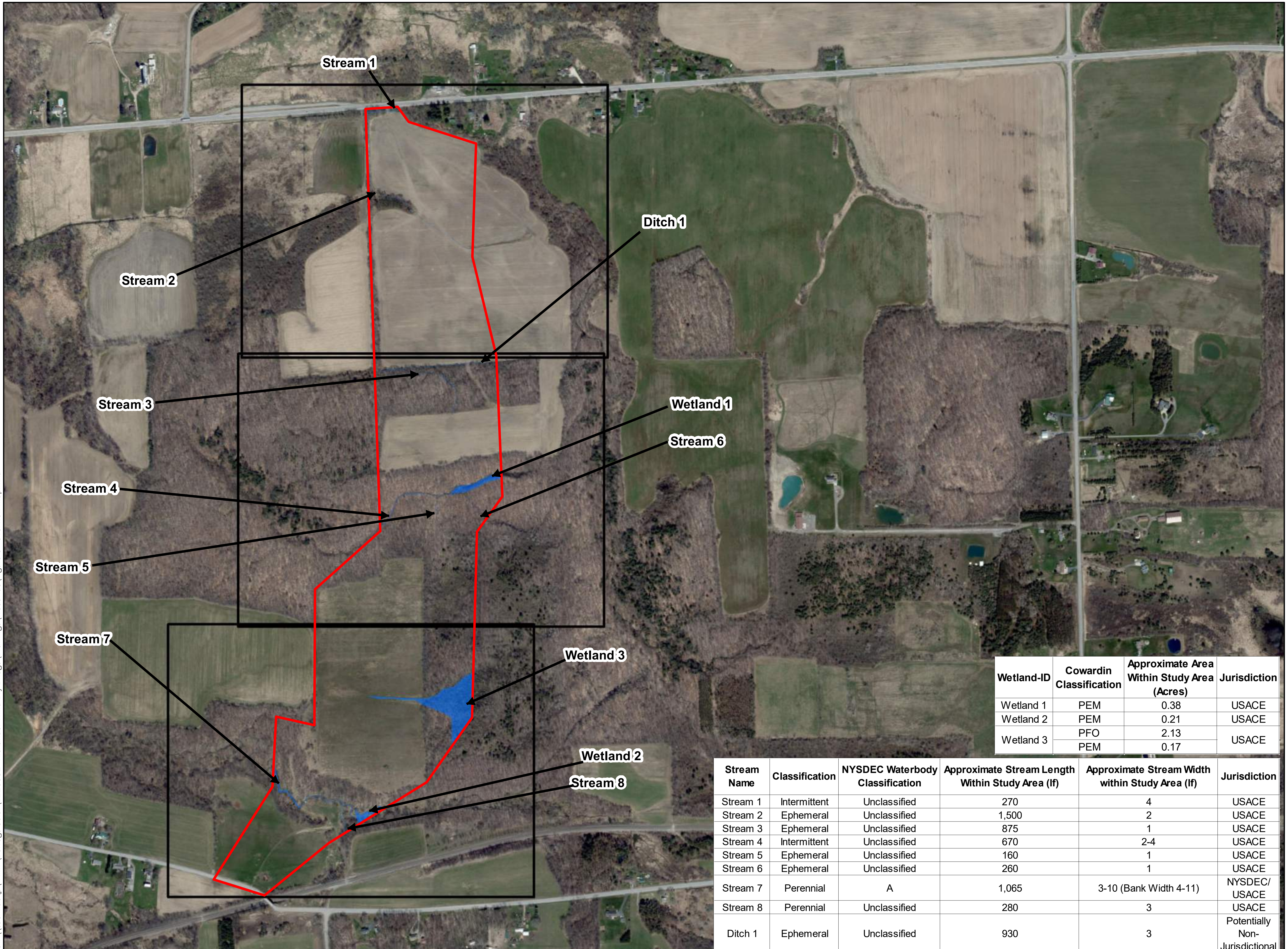
Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap:Esri, HERE, Garmin, (c) OpenStreetMap contributors 2020.
3. FEMA Flood Zone FIRM Panel #3602770017C (11/18/1983) encompasses the Study Area but is not printed. Therefore, flood zones within the Study Area are unknown.

FEMA Flood Zones

FIGURE 4

LaBella Project No: 2220031
Date: November 2021

Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 4 - FEMA Flood Zones.mxd



Wetland-ID	Cowardin Classification	Approximate Area Within Study Area (Acres)	Jurisdiction
Wetland 1	PEM	0.38	USACE
Wetland 2	PEM	0.21	USACE
Wetland 3	PFO	2.13	USACE
	PEM	0.17	

Stream Name	Classification	NYSDEC Waterbody Classification	Approximate Stream Length Within Study Area (lf)	Approximate Stream Width within Study Area (lf)	Jurisdiction
Stream 1	Intermittent	Unclassified	270	4	USACE
Stream 2	Ephemeral	Unclassified	1,500	2	USACE
Stream 3	Ephemeral	Unclassified	875	1	USACE
Stream 4	Intermittent	Unclassified	670	2-4	USACE
Stream 5	Ephemeral	Unclassified	160	1	USACE
Stream 6	Ephemeral	Unclassified	260	1	USACE
Stream 7	Perennial	A	1,065	3-10 (Bank Width 4-11)	NYSDEC/ USACE
Stream 8	Perennial	Unclassified	280	3	USACE
Ditch 1	Ephemeral	Unclassified	930	3	Potentially Non-Jurisdictional

Creator: CR Reviewer: LD

Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 5 - Overview Map.mxd

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Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road Alexander, NY

N

0 350 700 Feet

1 inch = 700 feet

Legend

Study Area

Delineated Wetlands and Streams

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: Esri, DigiGlobe, GeoEye, Earthstar, Geographics, CNES/Airbus DS, USDA, USGS AeroGRID, IGN, and GIS User Community, 2020

Overview Map

FIGURE 5

LaBella Project No: 2220031
Date: November 2021

Creator: CR Reviewer: LD

Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 6 - Wetland and Stream Delineation Survey.mxd

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Wetland and Stream Delineation Report

3846 Dry Bridge Road Alexander, NY

N

0 100 200 Feet

1 inch = 200 feet

Legend

- Study Area
- Data Point Location
- Wetland/Stream Flag Location
- Culvert
- Forested Wetland (PFO)
- Emergent Wetland (PEM)
- Perennial Stream
- Perennial Stream (Top of Bank)
- Intermittent Stream
- Ephemeral Stream/Ditch
- Culvert Area
- Approximate Offsite Wetland/Stream Boundary
- Stream Flow Direction
- Road
- Soil

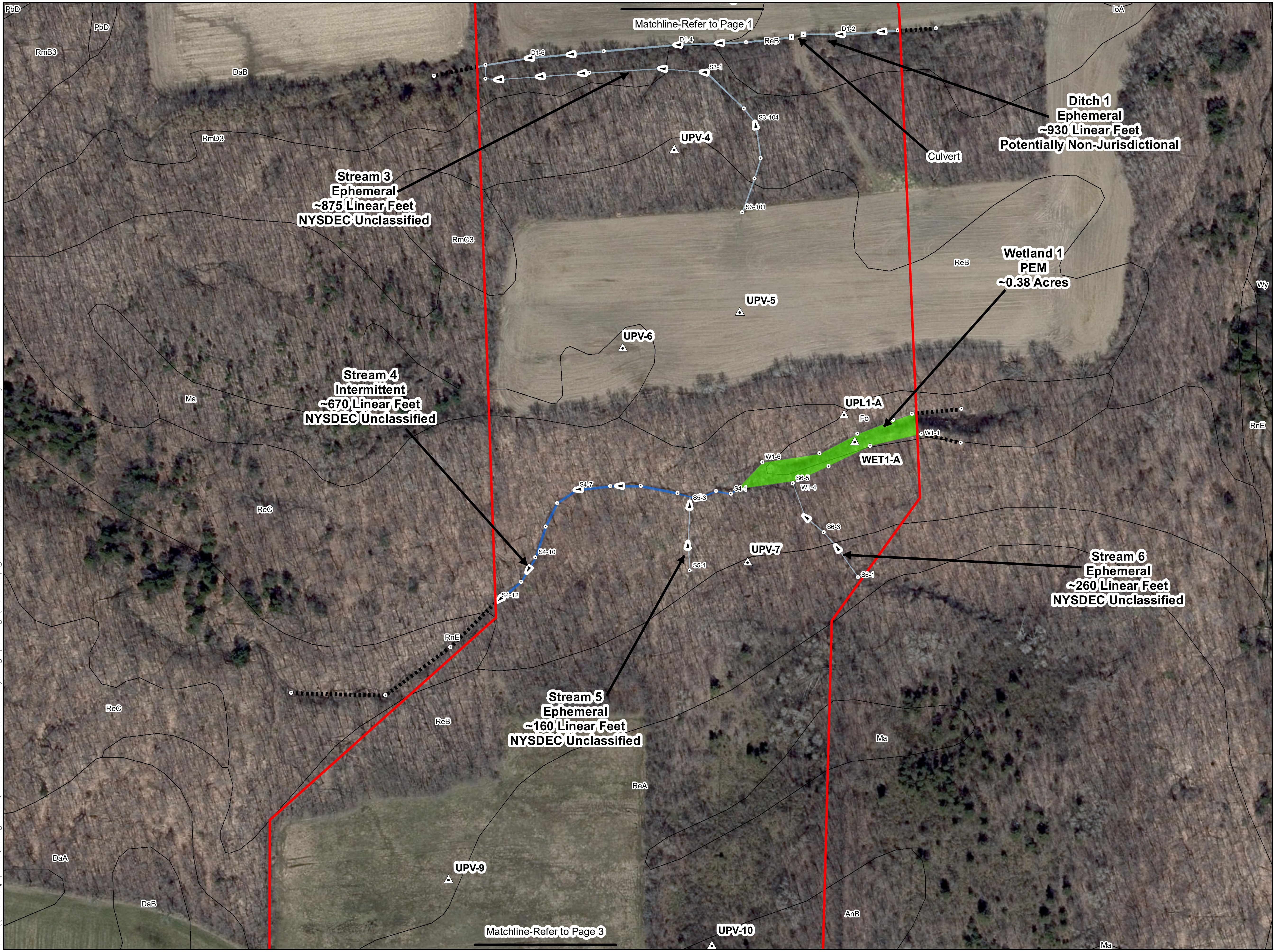
Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: Esri, DigiGlobe, GeoEye, Earthstar, Geographics, CNES/Airbus DS, USDA, USGS AeroGRID, IGN, and GIS User Community, 2020
3. Mapped soil data were obtained from the NRCS online Soil Data (soildatamart.nrcs.usda.gov).

Wetland and Stream Delineation Survey

FIGURE 6

Page 1 of 3

LaBella Project No: 2220031
Date: December 2021



Creator: CR Reviewer: LD
Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 6 - Wetland and Stream Delineation Survey.mxd

LaBella
Powered by partnership.

Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road Alexander, NY

N

0 100 200 Feet

1 inch = 200 feet

Legend

- Study Area
- Data Point Location
- Wetland/Stream Flag Location
- Culvert
- Forested Wetland (PFO)
- Emergent Wetland (PEM)
- Perennial Stream
- Perennial Stream (Top of Bank)
- Intermittent Stream
- Ephemeral Stream/Ditch
- Culvert Area
- Approximate Offsite Wetland/Stream Boundary
- Stream Flow Direction
- Road
- Soil

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: Esri, DigiGlobe, GeoEye, Earthstar, Geographics, CNES/Airbus DS, USDA, USGS AeroGRID, IGN, and GIS User Community, 2020
3. Mapped soil data were obtained from the NRCS online Soil Data (soildatamart.nrcs.usda.gov).

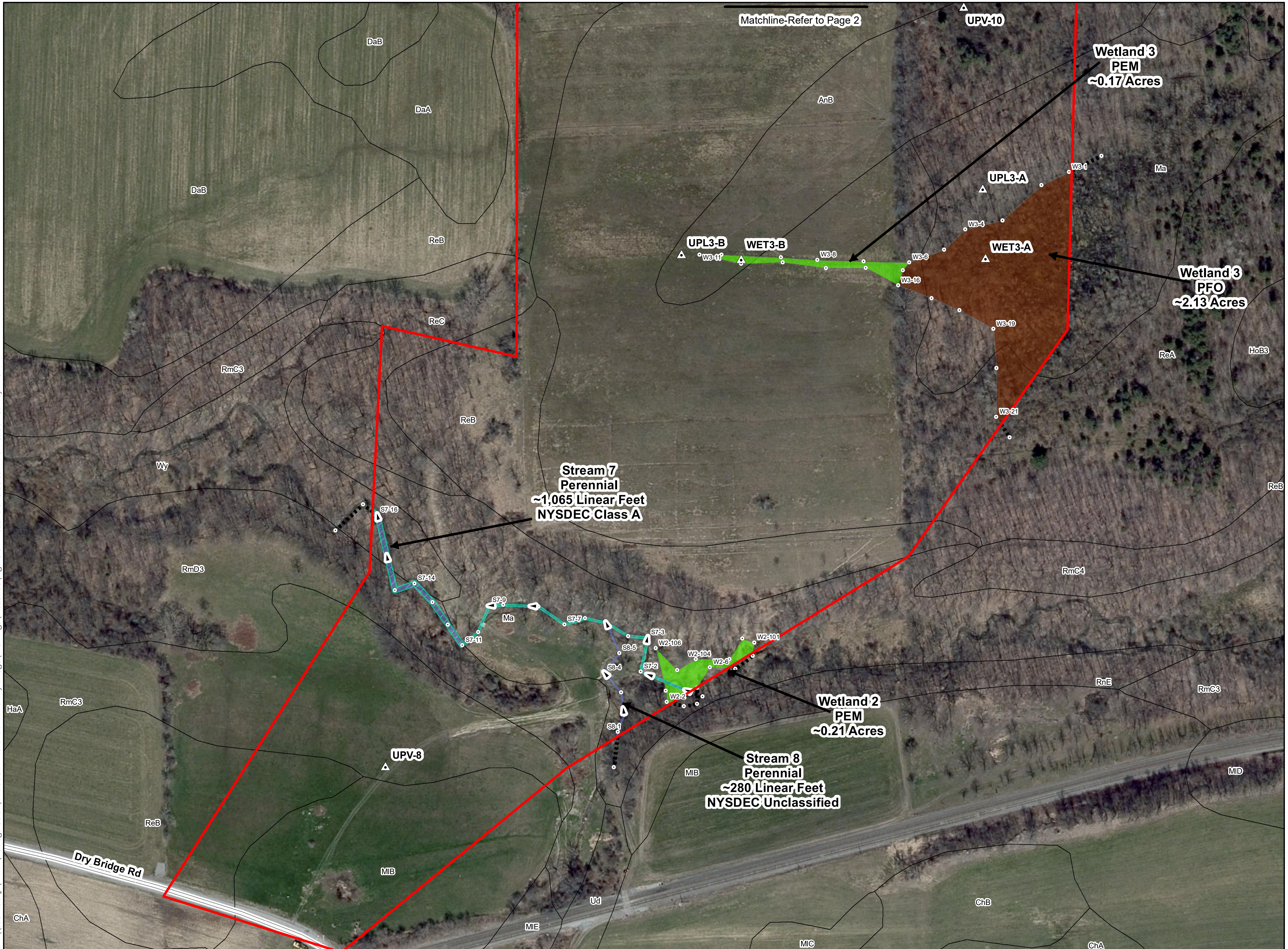
Wetland and Stream Delineation Survey

FIGURE 6

LaBella Project No: 2220031
Date: December 2021

Creator: CR Reviewer: LD

Path: \\cash.lab\p\PAM7\Borrego Solar\2220031 - Alexander-Wind Dry Bridge\Drawings\Wetlands\Figure 6 - Wetland and Stream Delineation Survey.mxd



LaBella
Powered by partnership.

Borrego Solar

Wetland and Stream Delineation Report

3846 Dry Bridge Road Alexander, NY

N

0 100 200 Feet

1 inch = 200 feet

Legend

- Study Area
- Data Point Location
- Wetland/Stream Flag Location
- Culvert
- Forested Wetland (PFO)
- Emergent Wetland (PEM)
- Perennial Stream
- Perennial Stream (Top of Bank)
- Intermittent Stream
- Ephemeral Stream/Ditch
- Culvert Area
- Approximate Offsite Wetland/Stream Boundary
- Stream Flow Direction
- Road
- Soil

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: Esri, DigiGlobe, GeoEye, Earthstar, Geographics, CNES/Airbus DS, USDA, USGS AeroGRID, IGN, and GIS User Community, 2020
3. Mapped soil data were obtained from the NRCS online Soil Data (soildatamart.nrcs.usda.gov).

Wetland and Stream Delineation Survey

FIGURE 6

LaBella Project No: 2220031
Date: December 2021

APPENDIX B

Data Forms

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: D1

Date: 11/8/2021

Bank Width: 3'

Flow Regime: Ephemeral

Stream Width: 3'

Flow Direction: W

SUBSTRATE

	Bed Rock
	Boulder
	Cobble
	Gravel
	Sand
X	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Constructed in uplands. Non-jurisdictional.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S1

Date: 11/8/2021

Bank Width: 6'

Flow Regime: Intermittent

Stream Width: 4'

Flow Direction: West

SUBSTRATE

	Bed Rock
	Boulder
X	Cobble
	Gravel
	Sand
X	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Natural stream ditched for a distance along the road then flows away from the road through a natural corridor. Natural corridor upstream and downstream of site. USACE jurisdiction.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S2

Date: 11/8/2021

Bank Width: 2'

Flow Regime: Ephemeral

Stream Width: 2'

Flow Direction: NW

SUBSTRATE

	Bed Rock
	Boulder
X	Cobble
X	Gravel
	Sand
	Silt
	Clay

INSTREAM COVER

	Undercut bank
X	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Fed by a drain tile to the east. USACE jurisdiction.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S3

Date: 11/8/2021

Bank Width: 1'

Flow Regime: Ephemeral

Stream Width: 1'

Flow Direction: W

SUBSTRATE

	Bed Rock
	Boulder
	Cobble
	Gravel
	Sand
X	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Flows west into Ditch 1. USACE jurisdiction.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S4

Date: 11/8/2021

Bank Width: 2-4'

Flow Regime: Intermittent

Stream Width: 2-4'

Flow Direction: W

SUBSTRATE

	Bed Rock
	Boulder
	Cobble
	Gravel
	Sand
X	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Flows west out of Wetland 1. USACE jurisdiction.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S5

Date: 11/8/2021

Bank Width: 1'

Flow Regime: Ephemeral

Stream Width: 1'

Flow Direction: N

SUBSTRATE

	Bed Rock
	Boulder
	Cobble
X	Gravel
	Sand
X	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Flows north and convenes with S4. USACE jurisdiction.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S6

Date: 11/8/2021

Bank Width: 1'

Flow Regime: Ephemeral

Stream Width: 1'

Flow Direction: N

SUBSTRATE

	Bed Rock
	Boulder
	Cobble
	Gravel
	Sand
X	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Flows north and drains into Wetland 2. USACE jurisdiction.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S7

Date: 11/8/2021

Bank Width: 4-11'

Flow Regime: Perennial

Stream Width: 3-10'

Flow Direction: W

SUBSTRATE

	Bed Rock
	Boulder
X	Cobble
	Gravel
	Sand
	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
X	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Flows west. USACE/NYSDEC jurisdiction- Class A.

STREAM DETERMINATION DATA FORM

Investigator: **Dustin Bradley**

Project Name: Dry Bridge Alexander - Wind

Stream Name: S8

Date: 11/8/2021

Bank Width: 3'

Flow Regime: Perennial

Stream Width: 3'

Flow Direction: N

SUBSTRATE

X	Bed Rock
	Boulder
	Cobble
	Gravel
	Sand
	Silt
	Clay

INSTREAM COVER

	Undercut bank
	Overhanging vegetation
	Logs/woody debris
	Deep pools

Culvert Type:

Field Notes:

Flows north into S7. USACE jurisdiction.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPL1-A

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope %: 4

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.892947 Long: -78.208934 Datum: NAD83

Soil Map Unit Name: Fonda mucky silt loam NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
? Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPL1-A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	90	Yes	FACU
2. *Acer saccharum*	10	No	FACU
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Fagus grandifolia*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	110 (A)		440 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPL1-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100						
4-20	10YR 5/3	95	10YR 4/6	5	C	M		Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPL3-A

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Convex Slope %: 2

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.888663 Long: -78.209892 Datum: NAD83

Soil Map Unit Name: Madalin silty clay loam, 0 to 3 percent slopes NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPL3-A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	50	Yes	FACU
2. *Populus tremuloides*	10	No	FACU
3. *Carya ovata*	5	No	FACU
4. *Acer saccharinum*	15	No	FACW
5. *Ostrya virginiana*	5	No	FACU
6. *Carpinus caroliniana*	5	No	FAC
7.			
	90	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Rosa multiflora*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Solidago altissima*	15	Yes	FACU
2. *Fragaria vesca*	5	Yes	UPL
3. *Carex sylvatica*	5	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	5	x 3 =	15
FACU species	95	x 4 =	380
UPL species	5	x 5 =	25
Column Totals:	120 (A)		450 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPL3-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/3	100						
8-20	10YR 5/4	70	10YR 4/6	10	C	M		Distinct redox concentrations
	10YR 4/1	20						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPL3-B

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): None Slope %: 2

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.88828 Long: -78.21234 Datum: NAD83

Soil Map Unit Name: Angola silt loam, 3 to 8 percent slopes NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPL3-B

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Rosa multiflora*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Daucus carota*	5	No	UPL
2. *Pyrus calleryana*	5	No	UPL
3. *Centaurea stoebe*	15	No	UPL
4. *Euthamia graminifolia*	15	No	FAC
5. *Trifolium repens*	20	Yes	FACU
6. *Taraxacum officinale*	5	No	FACU
7. *Poa pratensis*	50	Yes	FACU
8.			
9.			
10.			
11.			
12.			
	115	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	80	x 4 =	320
UPL species	25	x 5 =	125
Column Totals:	120 (A)		490 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPL3-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 4/3	100						
2-8	10YR 4/2	90	10YR 3/6	10	C	M		Prominent redox concentrations
8-20	10YR 5/3	95	10YR 4/6	5	C	M		Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPV-1

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope %: 4

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.899326 Long: -78.210382 Datum: NAD83

Soil Map Unit Name: Ilion silt loam, 0 to 3 percent slopes NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Disturbed vegetation due to active farming. Atypical situation methodology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPV-1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		

Herb Stratum (Plot size: 5')			
1. *Medicago sativa*	95	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 =Total Cover		

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	95	x 5 =	475
Column Totals:	95 (A)		475 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-20	10YR 4/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPV-2

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope %: 7

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.898566 Long: -78.211344 Datum: NAD83

Soil Map Unit Name: Palatine channery silt loam, 15 to 25 percent slopes NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: UPV-2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus resinosa*	70	Yes	FACU
2. *Prunus serotina*	30	Yes	FACU
3. *Fraxinus americana*	10	No	FACU
4.			
5.			
6.			
7.			
	110	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Fraxinus americana*	10	Yes	FACU
2. *Prunus serotina*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Vitis aestivalis*	5	Yes	FACU
2.			
3.			
4.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	135	x 4 =	540
UPL species	0	x 5 =	0
Column Totals:	135 (A)		540 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPV-3

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ______

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope %: 3

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.896399 Long: -78.210304 Datum: NAD83

Soil Map Unit Name: Darien silt loam, 3 to 8 percent slopes NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)
Vegetation disturbed due to active farming. Atypical situation methodology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPV-3

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Medicago sativa*	80	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPV-4

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope %: 7

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.89455 Long: -78.210317 Datum: NAD83

Soil Map Unit Name: Remsen silt loam, 3 to 8 percent slopes NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ___ No X

Hydric Soil Present? Yes ___ No X

Wetland Hydrology Present? Yes ___ No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: UPV-4

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	40	Yes	FACU
2. *Fraxinus americana*	40	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rubus occidentalis*	5	No	UPL
2. *Fragaria vesca*	30	Yes	UPL
3. *Solidago canadensis*	5	No	FACU
4. *Fraxinus americana*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	35	x 5 =	175
Column Totals:	125 (A)		535 (B)

Prevalence Index = B/A = 4.28

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPV-5

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ____

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Convex Slope %: 3

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.893568 Long: -78.209786 Datum: NAD83

Soil Map Unit Name: Remsen silt loam, 3 to 8 percent slopes NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X , Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Disturbed from active farming. No natural vegetation

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
___ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPV-5

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Medicago sativa*	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-20	5Y 5/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind City/County: Town of Alexander/Genesee Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems State: NY Sampling Point: UPV-6

Investigator(s): Dustin Bradley, Connor Ramsdell Section, Township, Range: ______

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): Convex Slope %: 3

Subregion (LRR or MLRA): LRR R, MLRA 140 Lat: 42.893356 Long: -78.210747 Datum: NAD83

Soil Map Unit Name: Madalin silty clay loam, 0 to 3 percent slopes NWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID:	______

Remarks: (Explain alternative procedures here or in a separate report.)
Disturbed from active agriculture. No natural vegetation due to farming

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)
___ High Water Table (A2)	___ Aquatic Fauna (B13)
___ Saturation (A3)	___ Marl Deposits (B15)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
X Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPV-6

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Medicago sativa*	50	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	50 (A)		250 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	5Y 5/3	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Dry Bridge Alexander - Wind | City/County: Town of Alexander/Genesee | Sampling Date: 11/8/21

Applicant/Owner: Borrego Solar Systems | State: NY | Sampling Point: UPV-7

Investigator(s): Dustin Bradley, Connor Ramsdell | Section, Township, Range: ____

Landform (hillside, terrace, etc.): Hillslope | Local relief (concave, convex, none): convex | Slope %: 3

Subregion (LRR or MLRA): LRR R, MLRA 140 | Lat: 42.892061 | Long: -78.209731 | Datum: NAD83

Soil Map Unit Name: Remsen silt loam, 3 to 8 percent slopes | NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPV-7

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia*	75	Yes	FACU
2. *Acer saccharum*	20	No	FACU
3. *Tilia americana*	10	No	FACU
4.			
5.			
6.			
7.			
	105	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Fagus grandifolia*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Vitis aestivalis*	5	Yes	FACU
2.			
3.			
4.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	120	x 4 =	480
UPL species	0	x 5 =	0
Column Totals:	120 (A)		480 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPV-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

APPENDIX C

Photo Log

Wetland and Stream Delineation Photos – Dry Bridge Alexander - Wind
Alexander, NY November 8-11, 2021

WET1-A data point location

UPL1-A data point location

Wetland 2

WET3-A data point location

UPL3-A data point location

WET3-B data point location

UPL3-B data point location

Stream 1

Stream 2

Stream 3

Stream 4

Stream 5

Stream 6

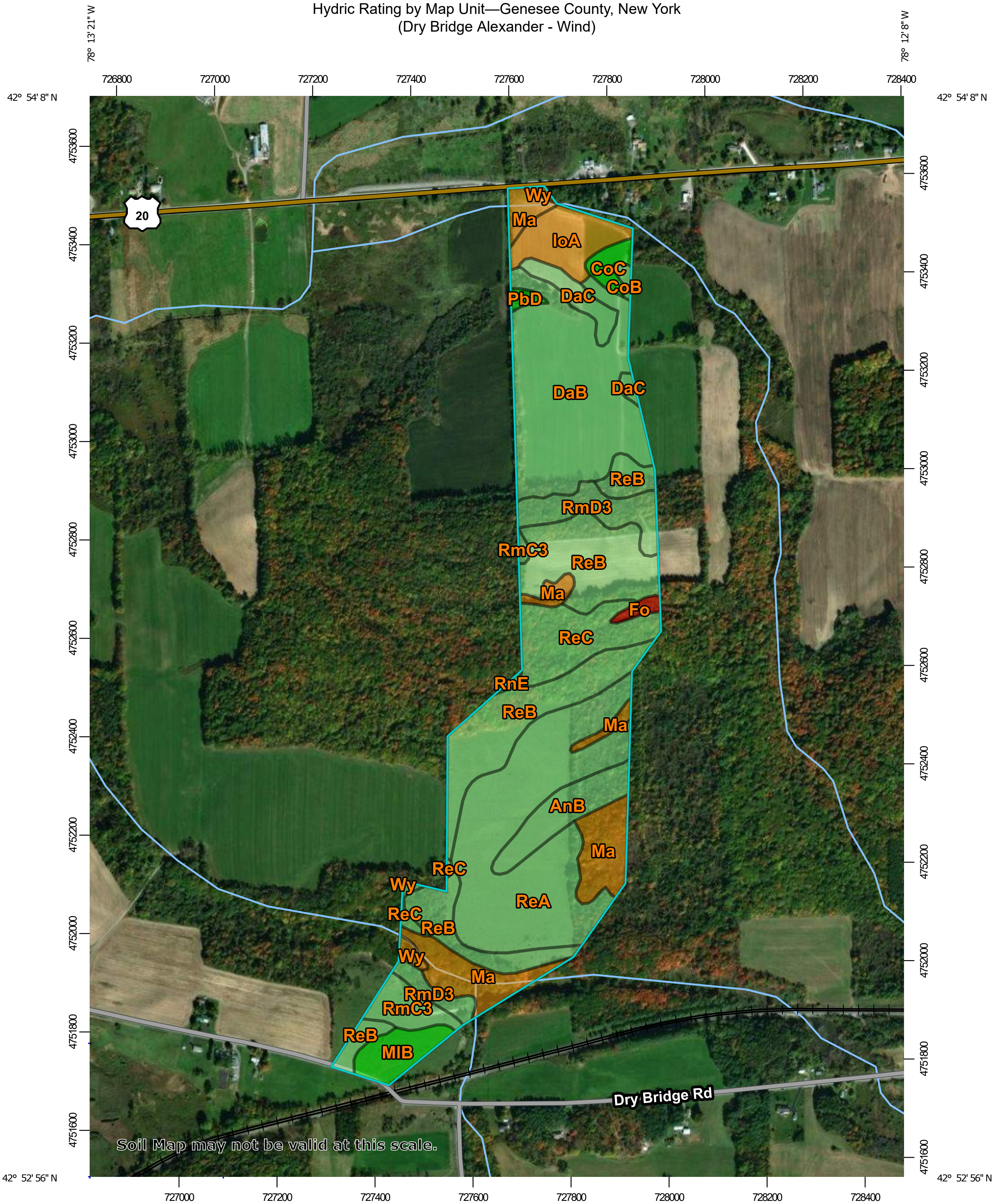
Stream 7

Stream 8

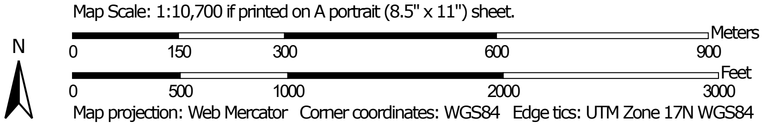
Ditch 1

APPENDIX D

Hydric Soil Map



Map Scale: 1:10,700 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Genesee County, New York
Survey Area Data: Version 22, Aug 29, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 29, 2011—Oct 18, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnB	Angola silt loam, 3 to 8 percent slopes	5	5.0	3.9%
CoB	Conesus silt loam, 3 to 8 percent slopes	1	0.4	0.3%
CoC	Conesus silt loam, 8 to 15 percent slopes	0	1.5	1.2%
DaB	Darien silt loam, 3 to 8 percent slopes	5	22.9	17.9%
DaC	Darien silt loam, 8 to 15 percent slopes	5	2.8	2.1%
Fo	Fonda mucky silt loam	100	0.6	0.5%
IoA	Ilion silt loam, 0 to 3 percent slopes	95	5.3	4.1%
Ma	Madalin silty clay loam, 0 to 3 percent slopes	95	12.1	9.4%
MlB	Manlius channery silt loam, 3 to 8 percent slopes	0	3.4	2.7%
PbD	Palatine channery silt loam, 15 to 25 percent slopes	0	0.5	0.4%
ReA	Remsen silt loam, 0 to 3 percent slopes	10	27.2	21.2%
ReB	Remsen silt loam, 3 to 8 percent slopes	10	27.9	21.7%
ReC	Remsen silt loam, 8 to 15 percent slopes	5	8.3	6.4%
RmC3	Remsen silty clay loam, 8 to 15 percent slopes, eroded	5	3.2	2.5%
RmD3	Remsen silty clay loam, 15 to 25 percent slopes, eroded	5	6.3	4.9%
RnE	Remsen soils, 25 to 40 percent slopes	5	0.2	0.1%
Wy	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	90	0.8	0.6%
Totals for Area of Interest			**128.4**	**100.0%**

Memorandum

To: Brandon Smith and Lydia Lake (Borrego Solar Systems, Inc.)

From: Environmental Design & Research, D.P.C. (EDR)

Date: January 11, 2022

Reference: Alexander Wind Project Listed Species Investigation

EDR Project No: 21218

Introduction

On behalf of Borrego Solar Systems, Inc. (the Client), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) conducted a desktop review of publicly available data to provide information about the potential for state-listed threatened or endangered species to occur in the vicinity of the proposed Alexander Wind Project (the Project) located in the Town of Alexander, Genesee County, New York (see Attachment 1, Figure 1).

On August 20, 2021, the Client received a letter in response to a request submitted to the New York Natural Heritage Program (NYNHP) indicating that there were no known records of state-listed threatened or endangered species in the vicinity of the Project. To investigate this issue further, EDR reviewed data from eBird, the New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper (ERM), the NYSDEC Environmental Assessment Form (EAF) Mapper, the New York State Breeding Bird Atlas, and the U.S. Fish and Wildlife Service (USFWS) online Information for Planning and Consultation (IPaC) system to determine if there were other records of state-listed threatened or endangered species occurring in the vicinity of the Project Site (see Attachment 1, Figure 2).

In addition, EDR conducted a reconnaissance-level site visit on December 8, 2021 to evaluate habitat conditions on the Project Site. This memorandum summarizes the publicly available databases considered by EDR and the findings of the desktop review. This memorandum also identifies the existing habitat conditions and features evaluated for listed species within the proposed Project Site during the reconnaissance-level site visit.

Findings

Avian Species

The eBird database, managed by the Cornell Lab of Ornithology, is an on-line database of bird observations collected by citizen scientists around the world and vetted by regional experts. Data are used to document bird distribution, abundance, habitat use, and trends within a simple, scientific framework to help inform bird research worldwide (eBird, 2021a). The nearest eBird hotspot, Alexander Bald Eagle Nest, is located approximately 2 miles west of the Project. Since 2016, a total of 6 species have been observed at this hotspot. Within the last five years, one state-listed threatened bird species (bald eagle [*Haliaeetus leucocephalus*]) has been observed at this hotspot. EDR's habitat assessment for this species is provided below.

- In New York State, bald eagles usually winter and breed in undisturbed areas with large bodies of water that support high populations of fish and waterfowl, their primary food sources. Large, heavy nests are built in tall pine, spruce, fir, cottonwood, oak, poplar, or beech trees (NYNHP, 2021a). Although the proposed Project Site contains deciduous forest composed of oak and beech trees and several small streams (see Attachment 2, Photos 3, 4, 8, 13, and 15), these areas do not appear to provide suitable breeding or wintering habitat for bald eagles, as there are no nearby areas of open water that could provide their primary food sources. However, eBird data suggest that bald eagles do nest approximately 2 miles west of the Project Site, and review of aerial imagery suggests that Tonawanda Creek could potentially represent suitable wintering habitat.

The second closest eBird hotspot is the Carlton Hill Multiple Use Area—Brine Swamp, located approximately 7 miles east of the proposed Project. Since 2016, a total of 106 unique species have been observed at this hotspot. Within the last five years, one state-listed threatened bird (bald eagle), and three state-listed Species of Special Concern (SSC) (common nighthawk [*Chordeiles minor*], sharp-shinned hawk [*Accipiter striatus*], and Cooper's hawk [*Accipiter cooperii*]) have been observed at the Carlton Hill Multiple Use Area—Brine Swamp. EDR's habitat assessment for these species is provided below.

- Common nighthawks are found in natural open habitats and other open areas, and near wetlands and wooded areas (NYNHP, 2021b). Breeding season habitats include gravel bars, rock outcrops, forest clearings, open pine woods, coastal sand dunes, beaches, and sparsely vegetated grasslands. Based on EDR's review of publicly available databases and on-site habitat conditions, although unlikely, there is potential for common nighthawks to utilize wetlands and wooded areas within the Project Site for foraging (see Attachment 2, Photo 10).

- The sharp-shinned hawk is a widespread breeder in all of New York except the coastal lowlands. It is a common migrant and a rare but increasing winter resident. This species occurs from sea level to nearly alpine habitats, breeding and foraging in mixed, deciduous, and coniferous forests. Nests are most often placed in wooded areas where the canopy is dense and trees are small in diameter and closely spaced (NYSDEC, 2014a). Forested habitat that could potentially support nesting and/or foraging sharp-shinned hawks was identified within and adjacent to the proposed Project Site (see Attachment 2, Photos 9 and 11).

- The Cooper's hawk is a woodland raptor that uses deciduous, mixed, and coniferous woodlands for nesting and feeding, as well as urban and suburban areas (Cornell Lab of Ornithology, 2021). Forested habitat that could potentially support nesting and/or foraging Cooper's hawks was identified within and adjacent to the proposed Project Site (see Attachment 2, Photos 9 and 11).

The ERM is an interactive mapping application developed by the NYSDEC that can be used to identify some of New York State's natural resources and environmental features that are state or federally protected, or of conservation concern (NYSDEC, 2021a). Specifically, the maps display general areas where rare animals and rare plants have been documented by the NYNHP. The ERM desktop analysis did not indicate the known presence of any state-listed species in the vicinity of the Project Site. However, the ERM did identify an area approximately 1.4 miles west of the proposed Project Site where unspecified animals listed as endangered or threatened have been identified. Additionally, a rich sloping fen natural community is located 0.5 mile north of the proposed Project Site within Alexander Swamp Southwest, where unspecified animals and plants listed as endangered, threatened, or rare have been identified. Lastly, an identified area in the vicinity of unspecified animals listed as endangered or threatened is present 0.6 mile southeast of the proposed Project Site.

The EAF Mapper is a tool developed by the NYSDEC that searches multiple Geographic Information System (GIS) data sets within a user-defined project area. Review of the EAF Mapper did not identify any state-listed species or endangered and threatened species habitat occurring in the vicinity of the proposed Project Site.

The New York State Breeding Bird Atlas (BBA) is a statewide inventory of all breeding birds (eBird, 2021b). The first atlas inventory was conducted from 1980 – 1985, the second from 2000 – 2005 (BBA II), and NYSDEC is currently working with agency and conservation partners to conduct the third atlas inventory from 2020 – 2024. Field work is conducted by dividing the state into blocks of approximately 9 square miles, within which volunteers record all the bird species observed during the breeding season and document evidence of breeding activity (NYSDEC, 2021b). The proposed Project is located in Block 2375C. The only data available for review on the NYSDEC website was from BBA II efforts (2000 – 2005). Most of the species recorded are common birds of the field and forest habitats present in the region. However, a total of six SSC have been documented within BBA Block 2375C: sharp-shinned hawk, Cooper's hawk, American bittern (*Botaurus lentiginosus*), horned lark (*Eremophila alpestris*), vesper sparrow (*Pooecetes gramineus*), and grasshopper sparrow (*Ammodramus savannarum*). EDR's habitat assessment for species not already discussed above is provided below.

- American bitterns utilize freshwater wetlands with tall emergent vegetation and abundant amphibian populations. This species can thrive in wetlands of many types as long as suitable prey and adequate cover are available (NYSDEC, 2014b). In winter this species moves south to areas where water bodies do not freeze. Wintering birds may also forage in dry grasslands or other terrestrial habitats (Cornell Lab of Ornithology, 2021). Nesting occurs in grasslands adjacent to wetland habitat (NYSDEC, 2014b). While wetland habitat does occur within the Project Site, on-site emergent wetlands are unlikely to have sufficient open water area or ample amphibian supply for this species to breed and forage (see Attachment 2, Photo 12). Therefore, it is unlikely that American bitterns would be present within the Project Site.

- Horned larks are found year-round throughout much of New York, with northern populations migrating to central or southern parts of the breeding range during the winter months. Two races of horned lark occur in New York State: the nominate *alpestris*, which is migratory, breeding in Ontario and Quebec and wintering in large numbers in New York, and the race *practicola*, which breeds in New York and is at least partially sedentary (NYSDEC, 2014c). Horned larks favor bare, dry ground and areas of short, sparse vegetation; they avoid places where grasses grow more than a couple of inches high. Common habitats include crop fields, prairies, deserts, tundra, beaches, dunes, mowed airstrips, and heavily grazed pastures (Cornell Lab of Ornithology, 2021). Currently, the horned lark is only a locally common breeder in agricultural areas of New York, nesting on unplowed fields early in the year, often raising and fledging young before fields are planted in the spring (NYSDEC, 2014c). EDR identified areas of cropland and pastureland within and adjacent to the Project Site that could be used by breeding and/or wintering horned larks (see Attachment 2, Photos 1, 2, 7, and 14).

- Vesper sparrows occur throughout much of the United States and Canada and are partially migratory, as northern populations may winter in the southern United States southward to Central America. They are found throughout most of New York State in open areas with short, sparse grass, and scattered shrubs. Vesper sparrows are most frequently found in old fields, pastures, hayfields, weedy fence lines, roadsides, and native grasslands. They forage low in the vegetation for seeds and insects. Nests are located on the ground in shallow depressions, often under or near clumps of vegetation, logs, or branches (Cornell Lab of Ornithology, 2021; NYSDEC, 2014d). Review of on-site habitat conditions indicated that hayfields/pastureland and open areas with scattered shrubs are present within and adjacent to the Project Site. These areas could potentially be used by breeding vesper sparrows (see Attachment 2; Photos 1, 2, 5, 6, and 14).

- Grasshopper sparrows occur throughout much of central and eastern North America, with disjunct populations further west (Cornell Lab of Ornithology, 2021). They are found throughout most of New York State, except at higher elevations. Grasshopper sparrows are found in open, grassy areas with little to no shrub cover and often with patches of bare ground. However, they typically avoid small patches of grassland habitat and seek out large grassland areas so they can build nests far from cultivated fields, fence lines, and woods. In New York, grasshopper sparrows are most frequently found in old, grass-dominated hayfields with short, sparse, and patchy litter cover (NYNHP, 2021c). Based on patch size and the amount of small shrub and forb cover, preferred habitat for this species does not appear to be present within the Project Site. However, pastureland located adjacent to the proposed Project Site may represent suitable habitat (see Attachment 2, Photo 7).

Other Listed Species

A shapefile of the Project Site was upload to the USFWS IPaC system on December 29, 2021. According to the IPaC system, one federally and state-listed threatened species, the northern long-eared bat (*Myotis septentrionalis*), may occur within the boundaries of the Project Site and/or may be potentially affected by the proposed Project.

- Northern long-eared bats spend the winter hibernating in caves and mines, called hibernacula. They typically use sizable caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur.

- During the summer months, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat species seems opportunistic in selecting roosts, using a variety of tree species providing they retain bark or provide cavities or crevices. Rarely, northern long-eared bats have also been found roosting in artificial structures such as barns and sheds. Review of on-site habitat conditions indicated that mature forested habitat is present within and adjacent to the Project Site. These areas could potentially be used by northern long-eared bats for foraging and breeding habitat (see Attachment 2; Photos 3, 4, 11, 13, and 15).

Conclusions

In summary, publicly available data sources were queried to identify threatened and endangered species that have the potential to be present within the Project Site. This review suggested that the proposed Project Site is likely to include a wildlife community dominated by relatively common species typically found in agricultural and forested habitats. However, based on state-listed species with documented occurrences in the vicinity of the proposed Project Site within the past five years, and a reconnaissance-level site visit conducted to evaluate habitat suitability, EDR determined that potential breeding and/or foraging habitat may exist within or adjacent to the Project Site for four of the eight listed avian species identified. These species include sharp-shinned hawk, Cooper's hawk, horned lark, and vesper sparrow. Suitable habitat for common nighthawk and American bittern is unlikely to be present within the Project Site, and it is also unlikely for bald eagles or grasshopper sparrows to occur within the proposed Project Site given these species' habitat requirements. However, it is possible that these species may utilize areas adjacent to the Project Site, and an active bald eagle nest may be present approximately 2 miles west of the Project Site. In addition to avian species, the USFWS IPaC database indicated that the northern long-eared bat may occur within or near the Project Site.

Attachments: Attachment 1: Figures
Attachment 2: Representative Photographs

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New York Natural Heritage Program (NYNHP). 2021a. *Online Conservation Guide for Haliaeetus leucocephalus*. Available at: https://guides.nynhp.org/bald-eagle (Accessed December 2021).

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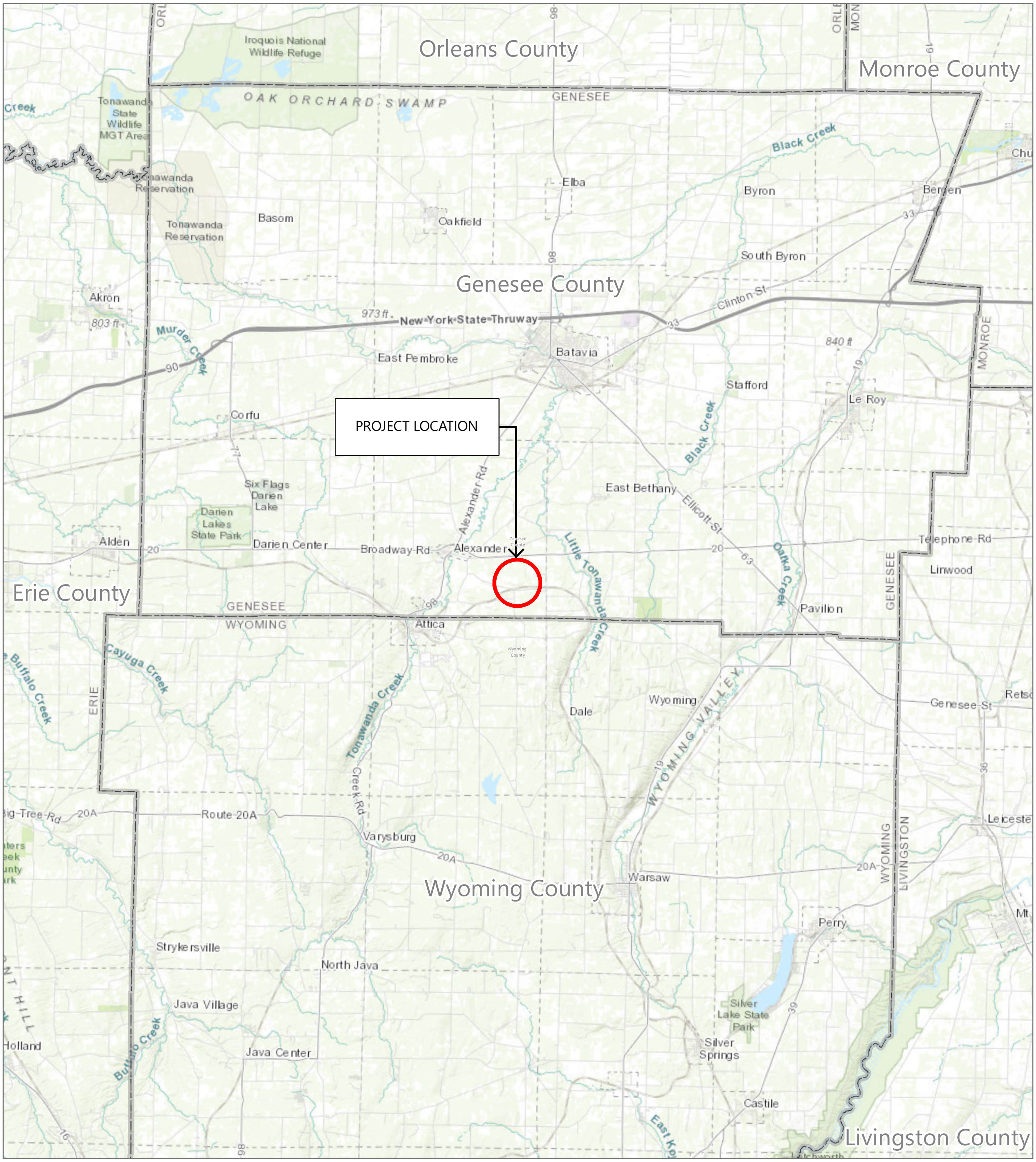
Attachment 1: Figures

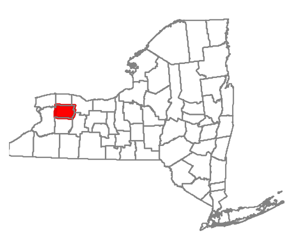
Figure 1. Regional Project Location

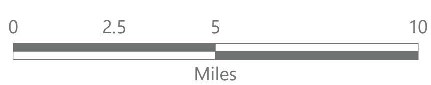


Alexander Wind

Town of Alexander, Genessee County, New York

Listed Species Investigation





Prepared December 16, 2021

Basemap: ESRI ArcGIS Online "World Topographic Map" map service

EDR

Figure 2. Project Site

Alexander Wind

Town of Alexander, Genesee County, New York

Project Site

0 500 1,000 2,000
Feet

Listed Species Investigation

EDR

Prepared December 16, 2021
Basemap: Esri ArcGIS Online "World Imagery" map service.

Attachment 2: Representative Photographs

Photo 1

Representative photo of pastureland within the Southwestern portion of the Project Site

Photo 2

Representative photo of pastureland within the Southwestern portion of the Project Site

Photo 3

Representative photo of stream located within the Southern portion of the Project Site

Photo 4

Representative photo of deciduous forest comprised of oak, beech, and cherry within the Western portion of the Project Site

Photo 5

Representative photo of an open, grassy meadow with forbs located in the Western portion of the Project Site

Photo 6

Secondary representative photo of open, grassy meadow with forbs within the Northwestern portion of the Project Site

Photo 7

Representative photo of hayfield/ pastureland to the West of the Project Site

Photo 8

Representative photo of one of several small tributaries within the Southeastern portion of the Project Site

Photo 9

Representative photo of shrubby area within an early successional deciduous forest located in the Northeastern portion of the Project Site

Photo 10

Representative photo of forested wetland with standing water within the Eastern portion of the Project Site

Photo 11

Representative photo of mixed coniferous and deciduous forest located within the Eastern portion of the Project Site

Photo 12

Representative photo of an emergent wetland within the Southeastern portion of the Project Site

Photo 13

Representative photo of the meandering stream within the Southern portion of the Project Site

Photo 14

Photo of hayfield/ pastureland within the Southern portion of the Project Site

Photo 15

Representative photo of deciduous forest and ravine located in the Southern portion of the Project Site

United States Department of Agriculture

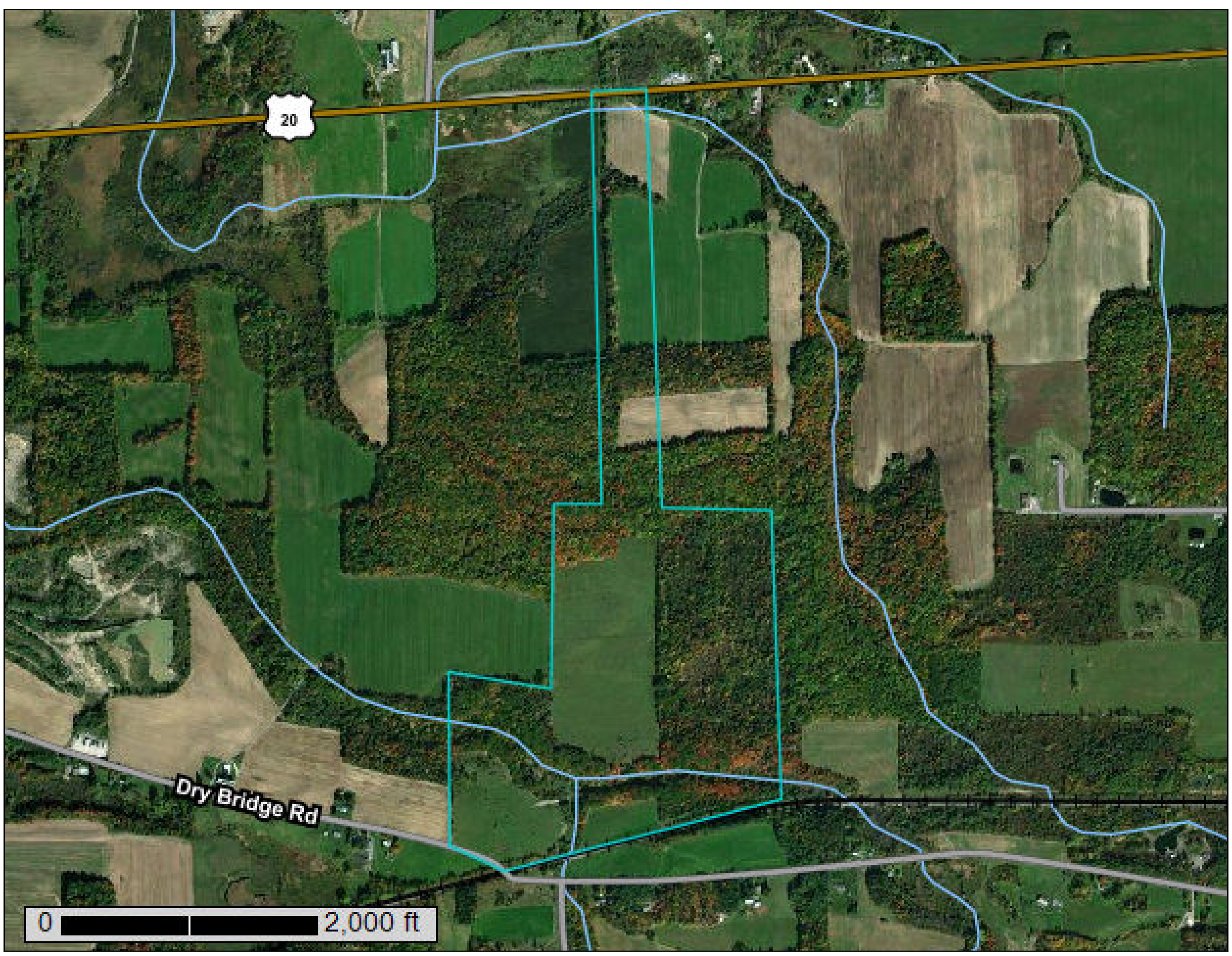
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Genesee County, New York



September 9, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map (Dry Bridge Road, Alexander, NY 14005)

Map Scale: 1:10,800 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Genesee County, New York
Survey Area Data: Version 21, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 29, 2011—Oct 18, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Dry Bridge Road, Alexander, NY 14005)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AnB	Angola silt loam, 3 to 8 percent slopes	6.1	3.8%
DaB	Darien silt loam, 3 to 8 percent slopes	15.2	9.5%
DaC	Darien silt loam, 8 to 15 percent slopes	0.7	0.4%
HoB3	Hornell silty clay loam, 3 to 8 percent slopes, eroded	1.3	0.8%
IoA	Ilion silt loam, 0 to 3 percent slopes	2.4	1.5%
Ma	Madalin silty clay loam, 0 to 3 percent slopes	24.7	15.5%
MlB	Manlius channery silt loam, 3 to 8 percent slopes	12.1	7.6%
MlD	Manlius channery silt loam, 15 to 25 percent slopes	0.2	0.1%
MlE	Manlius channery silt loam, 25 to 40 percent slopes	0.2	0.1%
PbD	Palatine channery silt loam, 15 to 25 percent slopes	0.9	0.6%
ReA	Remsen silt loam, 0 to 3 percent slopes	43.0	26.9%
ReB	Remsen silt loam, 3 to 8 percent slopes	20.7	12.9%
ReC	Remsen silt loam, 8 to 15 percent slopes	7.7	4.8%
RmC3	Remsen silty clay loam, 8 to 15 percent slopes, eroded	7.7	4.8%
RmC4	Remsen silty clay loam, 8 to 25 percent slopes, severely eroded	2.0	1.3%
RmD3	Remsen silty clay loam, 15 to 25 percent slopes, eroded	6.8	4.3%
RnE	Remsen soils, 25 to 40 percent slopes	4.4	2.7%
Ud	Udifluvents and Fluvaquents, frequently flooded	0.4	0.2%
Wy	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	3.3	2.1%
Totals for Area of Interest		**159.9**	**100.0%**

Map Unit Descriptions (Dry Bridge Road, Alexander, NY 14005)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Genesee County, New York

AnB—Angola silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b3x6
Elevation: 800 to 1,310 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Angola and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Angola

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived mainly from shale and siltstone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 21 inches: silt loam
H3 - 21 to 31 inches: channery silty clay loam
H4 - 31 to 41 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Ilion

Percent of map unit: 5 percent

Landform: Depressions
Hydric soil rating: Yes

Darien
Percent of map unit: 5 percent
Hydric soil rating: No

Appleton
Percent of map unit: 5 percent
Hydric soil rating: No

Aurora
Percent of map unit: 5 percent
Hydric soil rating: No

DaB—Darien silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: b3y3
Elevation: 850 to 1,440 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Darien and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Darien

Setting
Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived predominantly from calcareous gray shale

Typical profile
H1 - 0 to 11 inches: silt loam
H2 - 11 to 19 inches: clay loam
H3 - 19 to 32 inches: silty clay loam
H4 - 32 to 72 inches: channery silty clay loam

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Appleton

Percent of map unit: 5 percent
Hydric soil rating: No

Burdett

Percent of map unit: 5 percent
Hydric soil rating: No

Ilion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Remsen

Percent of map unit: 5 percent
Hydric soil rating: No

DaC—Darien silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b3y4
Elevation: 850 to 1,360 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Darien and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Darien

Setting

Landform: Hills, till plains, drumlinoid ridges
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived predominantly from calcareous gray shale

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 19 inches: clay loam
H3 - 19 to 32 inches: silty clay loam
H4 - 32 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 10 percent
Hydric soil rating: No

Danley

Percent of map unit: 5 percent
Hydric soil rating: No

Ilion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Burdett

Percent of map unit: 5 percent
Hydric soil rating: No

Remsen

Percent of map unit: 5 percent
Hydric soil rating: No

HoB3—Hornell silty clay loam, 3 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: b3yt
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hornell, eroded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hornell, Eroded

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till, or till and residuum, derived from acid shale and siltstone

Typical profile

H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 20 inches: silty clay loam
H3 - 20 to 36 inches: channery silty clay
H4 - 36 to 46 inches: weathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 10 percent
Hydric soil rating: No

Fremont

Percent of map unit: 5 percent
Hydric soil rating: No

Kanona

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

IoA—Ilion silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b3yx
Elevation: 600 to 1,800 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ilion and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ilion

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till derived from calcareous dark shale

Typical profile

H1 - 0 to 14 inches: silt loam
H2 - 14 to 36 inches: silty clay loam
H3 - 36 to 72 inches: channery silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F101XY014NY - Wet Till Depression
Hydric soil rating: Yes

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Lyons

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Fonda

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Ma—Madalin silty clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2spjz
Elevation: 330 to 1,200 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Madalin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Madalin

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Brown clayey glaciolacustrine deposits derived from calcareous shale

Typical profile

Ap - 0 to 7 inches: silty clay loam
Bg - 7 to 9 inches: silty clay loam
Btg1 - 9 to 21 inches: clay
Btg2 - 21 to 30 inches: silty clay
Cg - 30 to 79 inches: stratified silt to clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 7 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F101XY010NY - Wet Lake Plain Depression
Hydric soil rating: Yes

Minor Components

Rhinebeck

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Fonda

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Canandaigua

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Barre

Percent of map unit: 2 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

MlB—Manlius channery silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b3zk
Elevation: 200 to 1,800 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Manlius and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manlius

Setting

Landform: Benches, ridges, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from local acid shale bedrock

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 22 inches: very channery silt loam
H3 - 22 to 30 inches: very channery loam
H4 - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Benson

Percent of map unit: 5 percent
Hydric soil rating: No

Marilla

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Mohawk

Percent of map unit: 5 percent
Hydric soil rating: No

MID—Manlius channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b3zm
Elevation: 200 to 1,800 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Manlius and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manlius

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from local acid shale bedrock

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 22 inches: very channery silt loam
H3 - 22 to 30 inches: very channery loam
H4 - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Mohawk

Percent of map unit: 7 percent
Hydric soil rating: No

Marilla

Percent of map unit: 6 percent
Hydric soil rating: No

Benson

Percent of map unit: 6 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

MlE—Manlius channery silt loam, 25 to 40 percent slopes

Map Unit Setting

National map unit symbol: b3zn
Elevation: 200 to 1,800 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Manlius and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manlius

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from local acid shale bedrock

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 22 inches: very channery silt loam
H3 - 22 to 30 inches: very channery loam
H4 - 30 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 40 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Mohawk

Percent of map unit: 6 percent
Hydric soil rating: No

Marilla

Percent of map unit: 6 percent
Hydric soil rating: No

Benson

Percent of map unit: 6 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: Unranked

PbD—Palatine channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: p9fx
Elevation: 890 to 1,250 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Palatine and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palatine

Setting

Landform: Till plains, benches, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till dominated by calcareous dark shale

Typical profile

H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 26 inches: very channery silt loam
H3 - 26 to 32 inches: very channery silt loam
H4 - 32 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Angola

Percent of map unit: 6 percent
Hydric soil rating: No

Wassaic

Percent of map unit: 6 percent
Hydric soil rating: No

Manlius

Percent of map unit: 6 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 6 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

ReA—Remsen silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: b40x
Elevation: 850 to 1,340 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Ilion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Burdett

Percent of map unit: 5 percent
Hydric soil rating: No

ReB—Remsen silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b40y
Elevation: 850 to 1,360 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Ilion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Burdett

Percent of map unit: 5 percent
Hydric soil rating: No

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

ReC—Remsen silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: b40z
Elevation: 850 to 1,280 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Nunda

Percent of map unit: 5 percent
Hydric soil rating: No

Ilion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Burdett

Percent of map unit: 5 percent
Hydric soil rating: No

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

RmC3—Remsen silty clay loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: b411
Elevation: 850 to 1,300 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silty clay loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Nunda

Percent of map unit: 5 percent
Hydric soil rating: No

RmC4—Remsen silty clay loam, 8 to 25 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: b412
Elevation: 950 to 1,230 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silty clay loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Nunda

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

RmD3—Remsen silty clay loam, 15 to 25 percent slopes, eroded

Map Unit Setting

National map unit symbol: b413
Elevation: 870 to 1,360 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silty clay loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Nunda

Percent of map unit: 5 percent
Hydric soil rating: No

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

RnE—Remsen soils, 25 to 40 percent slopes

Map Unit Setting

National map unit symbol: b414
Elevation: 890 to 1,310 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Remsen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Remsen

Setting

Landform: Till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey till derived predominantly from calcareous or neutral shale

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 35 inches: clay
H3 - 35 to 72 inches: clay

Properties and qualities

Slope: 25 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Uplands
Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Darien

Percent of map unit: 5 percent
Hydric soil rating: No

Nunda

Percent of map unit: 5 percent
Hydric soil rating: No

Hornell

Percent of map unit: 5 percent
Hydric soil rating: No

Ud—Udifluvents and Fluvaquents, frequently flooded

Map Unit Setting

National map unit symbol: p5vc
Elevation: 100 to 3,000 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Udifluvents and similar soils: 40 percent
Fluvaquents and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium with a wide range of texture

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 72 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 18 to 48 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium with highly variable texture

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 72 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Middlebury

Percent of map unit: 5 percent
Hydric soil rating: No

Wyalusing

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Wy—Wayland soils complex, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgv
Elevation: 160 to 1,970 feet
Mean annual precipitation: 31 to 68 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent
Wayland, very poorly drained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: silt loam
Bg1 - 6 to 12 inches: silt loam
Bg2 - 12 to 18 inches: silt loam
C1 - 18 to 46 inches: silt loam
C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D
Ecological site: F139XY009OH - Wet Floodplain
Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: mucky silt loam
Bg1 - 6 to 12 inches: silt loam
Bg2 - 12 to 18 inches: silt loam
C1 - 18 to 46 inches: silt loam
C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: FrequentNone
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F139XY009OH - Wet Floodplain
Hydric soil rating: Yes

Minor Components

Wakeville

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

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SHADOW FLICKER MODELING REPORT

Dry Bridge Road Wind Project
Genesee County, New York

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April 14, 2022

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1.0 EXECUTIVE SUMMARY

The Dry Bridge Road Wind Project (the Project) is a proposed wind power generation facility expected to consist of one (1) wind turbine in Genesee County, New York. The Project is being developed by Borrego Solar Systems, Inc. (Borrego). Epsilon Associates Inc. (Epsilon) has been retained by Borrego to conduct a shadow flicker modeling study for this Project. This report presents results of the shadow flicker modeling of the proposed wind turbine in Genesee County.

Shadow flicker modeling was conducted for two different scenarios: one (1) Vestas V150-4.3 wind turbine; and one (1) GE 3.4-140 wind turbine. The purpose of this analysis is to predict the annual durations of wind turbine shadow flicker at nearby receptors, and to compare the results to regulatory limits. The Project is required to comply with the Local Law of the Town of Alexander, Genesee County, New York (Local Laws) which are presented in Section 3 of this report. The Local Laws limit shadow flicker produced by wind energy conversion facility (WECF) to 30 hours per year and 30 minutes per day at any sensitive structure.

For the Vestas V150-4.3 wind turbine, the maximum expected annual duration of shadow flicker at a modeling receptor is 12 hours, 8 minutes per year, this occurs at receptor #10. The maximum shadow flicker duration per day is 35 minutes, this occurs at receptor #9. For the GE 3.4-140 wind turbine, the maximum expected annual duration of shadow flicker at a modeling receptor is 10 hours, 26 minutes per year, this occurs at receptor #10. The maximum shadow flicker duration per day is 33 minutes, this occurs at receptor #9. The modeling results are conservative in that modeling receptors were treated as “greenhouses” (i.e. having windows on all sides) and the surrounding area was assumed to be without vegetation or structures (“bare earth”). In order to address locations which are currently predicted to exceed the daily shadow flicker limits, Borrego has committed to implement mitigation to ensure that these receptors comply with the Local Laws.

2.0 INTRODUCTION

The proposed Project will consist of one (1) wind turbine. Borrego is considering two different wind turbines: a Vestas V150-4.3 unit with a hub height of 120 meters, or a GE 3.4-140 unit with a hub height of 120 meters. Figure 2-1 shows the locations of the wind turbine in Genesee County over aerial imagery.

Shadow flicker can be defined as an intermittent change in the intensity of light in a given area resulting from the operation of a wind turbine due to its interaction with the sun. An indoor observer experiences repeated changes in the brightness of the room as shadows cast from the wind turbine blades briefly pass by windows as the blades rotate. In order for this to occur, the wind turbine must be operating, the sun must be shining, and the window must be within the shadow region of the wind turbine, otherwise there is no shadow flicker. A stationary wind turbine only generates a stationary shadow similar to any other structure.

This report presents the findings of a shadow flicker modeling study for the Project. The wind turbines were modeled with the WindPRO software package using information provided by Borrego. The expected annual duration of shadow flicker and maximum duration of shadow flicker per day was calculated at modeling receptors. Shadow flicker isolines for the area surrounding the Project were generated. The results of the modeling are found within this report.

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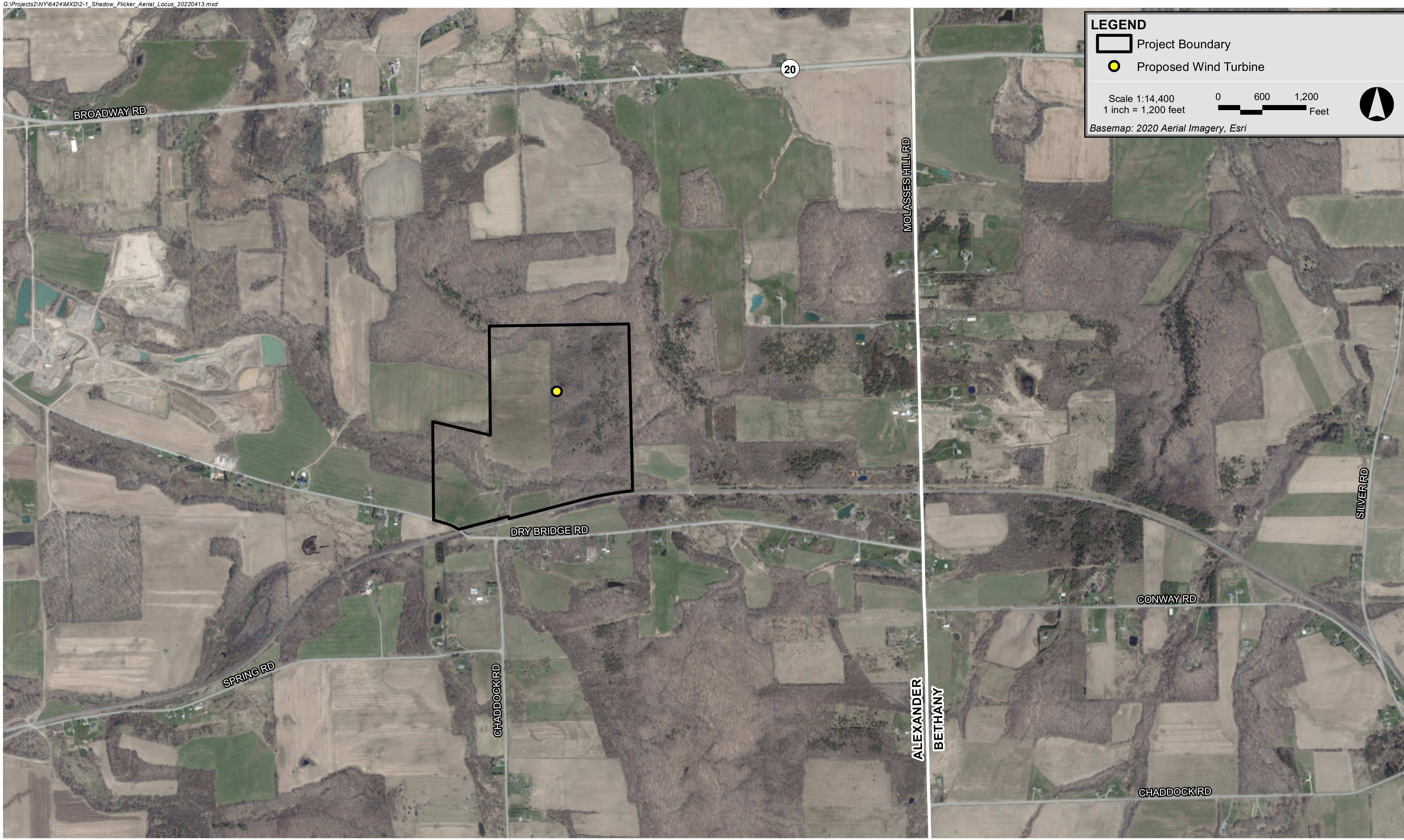

Dry Bridge Road Wind **Genesee County, New York**

Figure 2-1
Aerial Locus

3.0 REGULATIONS

3.1 Federal Regulations

There are no federal shadow flicker regulations applicable to this Project.

3.2 State Regulations

There are no shadow flicker regulations for the state of New York that are applicable to this Project.

3.3 Local Regulations

The Project, located within the Town of Alexander, NY is required to comply with the Local Law of the Town of Alexander, Genesee County, New York which states:

1. Shadow Flicker Map – Maps shall be prepared showing projected annual hours of shadow flicker impact for all sensitive areas/locations within the project area including, but not limited to, any residence, school, hospital, church or public library.

2. Shadow Flicker Duration – Shadow flicker for all sensitive areas/locations within the project area shall be limited to thirty (30) hours per year and shall not exceed thirty (30) minutes per day.

Therefore, receptors have been evaluated against shadow flicker limits of 30 hours per year and 30 minutes per day.

4.0 SHADOW FLICKER MODELING

4.1 Modeling Methodology

Shadow flicker was modeled using a software package, WindPRO version 3.4. WindPRO is a software suite developed by EMD International A/S and is used for assessing potential environmental impacts from wind turbines. Using the Shadow module within WindPRO, worst-case shadow flicker in the area surrounding the wind turbines was calculated based on data inputs including: location of the wind turbines, location of discrete receptor points, wind turbine dimensions, flicker calculation limits, and terrain data. Based on these data, the model was able to incorporate the appropriate sun angle and maximum daily sunlight for this latitude into the calculations. The resulting worst-case calculations assume that the sun is always shining during daylight hours and that the wind turbine is always operating. The WindPRO Shadow module can be further refined by incorporating sunshine probabilities and wind turbine operational estimates by wind direction over the course of a year. The values produced by this further refinement are known as the "expected" shadow flicker. Worst-case, expected annual shadow flicker durations, and max shadow flicker hours per day are presented in this section.

This analysis is for the wind turbine array provided to Epsilon on March 21, 2022. The location of the wind turbine is shown in Figure 3-1 and the coordinates are provided in Appendix A. The wind turbine will either be a Vestas V150-4.3 unit with a 150-meter rotor diameter and a hub height of 120 meters, or a GE 3.4-140 unit with a 140-meter rotor diameter and a hub height of 120 meters. The wind turbine has the following characteristics based on the technical data provided by Borrego:

		Vestas V150-4.3	GE 3.4-140
♦ Rated Power	=	4,300 kW	3,400 kW
♦ Hub Height	=	120 meters	120 meters
♦ Rotor Diameter	=	150 meters	140 meters
♦ Cut-in Wind Speed	=	3 m/s	3 m/s
♦ Cut-out Wind Speed	=	24.5 m/s	26 m/s[1]

To-date, there are no federal, state, or local regulations regarding the maximum radial distance from a wind turbine to which shadow flicker should be analyzed applicable to this Project. In the United States, shadow flicker is commonly evaluated out to a distance of ten times the rotor diameter. According to the Massachusetts Model Bylaw for wind energy facilities, shadow flicker impacts are minimal at and beyond a distance of ten rotor diameters.[2] Defining the shadow flicker calculation area has also been addressed in Europe where the ten times rotor diameter approach

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[1] Identified as "preliminary" by GE.

[2] Massachusetts Department of Energy Resources, "Model As-of-Right Zoning Ordinance or Bylaw: Allowing Use of Wind Energy Facilities" 2009.

has been accepted in multiple European countries.[3] Some jurisdictions conservatively require a larger calculation area. The New Hampshire Site Evaluation Committee through rulemaking docket 2014-04 adopted rules on December 15, 2015 outlining application requirements and criteria for energy facilities, including wind energy facilities. As part of these revised regulations, Site 301.08(a)(2) requires an evaluation distance of at least 1 mile from a wind turbine.[4] Section 16-50j-94, part (g), of the Regulations of Connecticut State Agencies identifies the components required in a shadow flicker evaluation report which includes the calculation of shadow flicker from each proposed wind turbine to any off-site occupied structure within a 1.25 mile radius.[5] For this Project, ten times the largest rotor diameter of the proposed wind turbines corresponds to a distance of 0.93 miles (1,500 m). Conservatively, this analysis includes shadow flicker calculations out to 1.25 miles (2,012 m) from each wind turbine in the model for the proposed layout.

A modeling receptor dataset including 63 receptors was provided by Borrego and input into the sound level model. Each modeling point was assumed to have a window facing all directions ("greenhouse" mode) which yields conservative results. All modeling receptors are identified in Figure 3-1. The model was set to limit calculations to 2,012 meters from a wind turbine, the equivalent of 1.25 miles. Consequently, shadow flicker at any of the 63 modeling receptors greater than the corresponding limitation distance from a wind turbine was zero. In addition to modeling discrete points, shadow flicker was calculated at grid points in the area surrounding the modeled wind turbines to generate flicker isolines. A 20-meter spacing was used for this grid as shown in Figure 4-2.

The terrain height contour elevations for the modeling domain were generated from elevation information derived from the National Elevation Dataset (NED) developed by the U.S. Geological Survey. Conservatively, obstacles, i.e. buildings and vegetation, were excluded from the analysis. This is effectively a "bare earth" scenario which is conservative. When accounted for in the shadow flicker calculations, such obstacles may significantly mitigate or eliminate the flicker effect depending on their size, type, and location. In addition, shadow flicker durations were calculated only when the angle of the sun was at least 3° above the horizon.

Monthly sunshine probability values were input for each month from January to December. These numbers were obtained from a publicly available historical dataset for Buffalo, New York from the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental

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3 Parsons Brinckerhoff, "Update of UK Shadow Flicker Evidence Base" Prepared for Department of Energy and Climate Change, 2011.

4 State of New Hampshire Site Evaluation Committee Site 300 Rules (2015), available at http://www.gencourt.state.nh.us/rules/state_agencies/site100-300.html Accessed in April 2022.

5 State of Connecticut CSC Wind Regulations (2014), available at https://eregulations.ct.gov/eRegsPortal/Browse/RCSA?id=Title_16Subtitle_16-50jSection_16-50j-94&content=shadow%20flicker/ Accessed in April 2022.

Information (NCEI).[6] Table 4-1 shows the percentage of sunshine hours by month used in the shadow flicker modeling. These values are the percentages that the sun is expected to be shining during daylight hours.

The number of hours the wind turbine is expected to operate for the 16 cardinal wind directions was input into the model. An hourly dataset for a one year period of wind directions and scaled wind speed was provided by Borrego for a height of 120 meters. Epsilon used this data to calculate the typical annual number of operational hours per wind direction sector. These hours per wind direction sector are used by WindPRO to estimate the "wind direction" and "operation time" reduction factors. Based on this dataset, the wind turbine would operate 91% of the year. Table 4-2 shows the distribution of operational hours for the 16 wind directions.

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[6] NCEI (formerly NCDC), https://www1.ncdc.noaa.gov/pub/data/ccd-data/pctpos20.dat. Accessed in February 2022.

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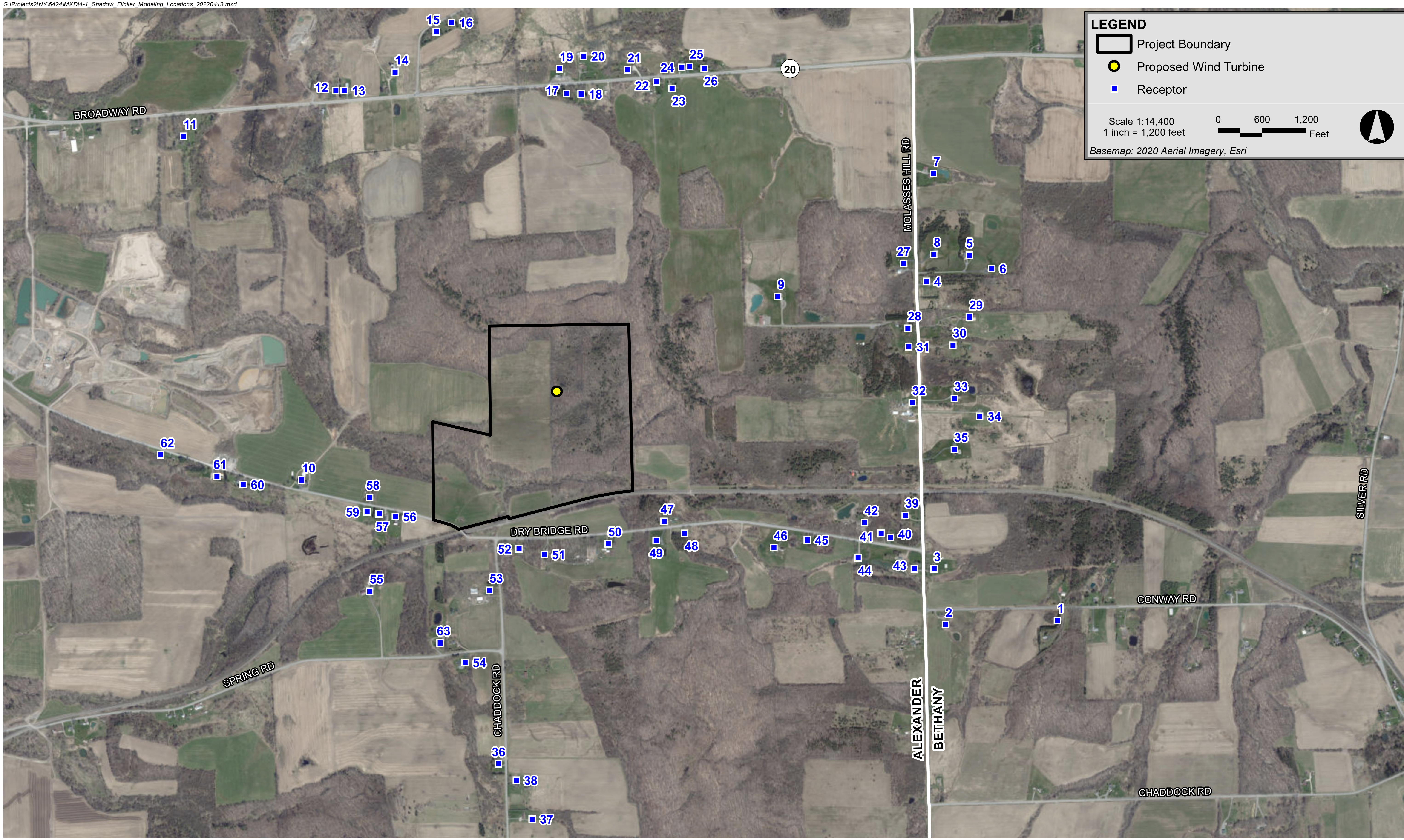

Dry Bridge Road Wind Genesee County, New York

Epsilon ASSOCIATES INC.

Figure 4-1

Shadow Flicker Modeling Locations

Table 4-1 Monthly Percent of Possible Sunshine

Month	Possible Sunshine
January	31%
February	36%
March	45%
April	54%
May	59%
June	62%
July	66%
August	63%
September	56%
October	44%
November	29%
December	23%

Table 4-2 Operational Hours per Wind Direction Sector

Wind Sector	Operational Hours
N	167
NNE	131
NE	187
ENE	252
E	262
ESE	206
SE	229
SSE	272
S	427
SSW	521
SW	817
WSW	1347
W	1628
WNW	837
NW	450
NNW	225
Annual	7958

4.2 Shadow Flicker Modeling Results

Following the modeling methodology outlined in Section 4.1, WindPRO was used to calculate shadow flicker at the 63 discrete modeling receptor points. In addition to the discrete modeling points, shadow flicker isolines were generated based on the grid calculations for the Project.

4.2.1 Shadow Flicker Modeling Results – V150-4.3

Table B-1 in Appendix B presents the modeling results. Worst-case, expected values, and max shadow hours per day are presented.

The predicted expected annual shadow flicker duration ranged from 0 hours, 0 minutes per year to 12 hours, 8 minutes per year for all 63 receptors. The maximum expected flicker modeled occurs at receptor #10. 33 of the 63 receptors were predicted to experience no annual shadow flicker. 29 receptors were predicted to experience some shadow flicker but less than 10 hours per year. The modeling results showed that one (1) receptor would be expected to have between 10 hours and 30 hours of shadow flicker per year. Zero (0) receptors are expected to have over 30 hours of flicker per year. Figure 4-2 displays the modeled flicker isolines (expected hours per year) over aerial imagery in relation to the modeled wind turbine and modeling receptors.

The predicted max shadow hours per day ranged from 0 minutes per day to 35 minutes per day for all 63 receptors. The maximum shadow hours per day modeled occurs at receptor #9. 33 of the 63 receptors were predicted to experience no daily shadow flicker. 27 receptors were predicted to experience some shadow flicker but less than 30 minutes per day. Three (3) receptors are expected to experience one or more days over 30 minutes of flicker per day. Table 4-3 summarizes all receptors over 30 minutes of max flicker hours per day.

Table 4-3 Modeling Receptors Predicted to Experience Over 30 min/day of Shadow Flicker – V150-4.3

Receptor ID	Expected Annual Shadow Flicker (HH:MM/year)	Max Shadow Hours per Day (HH:MM/year)
9	5:41	0:35
10	12:08	0:33
58	7:42	0:31

4.2.2 Shadow Flicker Modeling Results – GE 3.4-140

Table B-2 in Appendix B presents the modeling results. Worst-case, expected values, and max shadow hours per day are presented.

The predicted expected annual shadow flicker duration ranged from 0 hours, 0 minutes per year to 10 hours, 26 minutes per year for all 63 receptors. The maximum expected flicker modeled occurs at receptor #10. 33 of the 63 receptors were predicted to experience no annual shadow flicker. 29 receptors were predicted to experience some shadow flicker but less than 10 hours per year. The modeling results showed that one (1) receptor would be expected to have between 10 hours and 30 hours of shadow flicker per year. Zero (0) receptors are expected to have over 30 hours of flicker per year. Figure 4-3 displays the modeled flicker isolines (expected hours per year) over aerial imagery in relation to the modeled wind turbine and modeling receptors.

The predicted max shadow hours per day ranged from 0 minutes per day to 33 minutes per day for all 63 receptors. The maximum shadow hours per day modeled occurs at receptor #9. 33 of the 63 receptors were predicted to experience no daily shadow flicker. 28 receptors were predicted to experience some shadow flicker but less than 30 minutes per day. Two (2) receptors are expected to experience one, or more, days over 30 minutes of flicker per day. Table 4-4 summarizes all receptors at or above 30 minutes of max flicker hours per day.

Table 4-4 Modeling Receptors Predicted to Experience Over 30 min/day of Shadow Flicker – GE 3.4-140

Receptor ID	Expected Annual Shadow Flicker (HH:MM/year)	Max Shadow Hours per Day (HH:MM/year)
9	5:07	0:33
10	10:26	0:30

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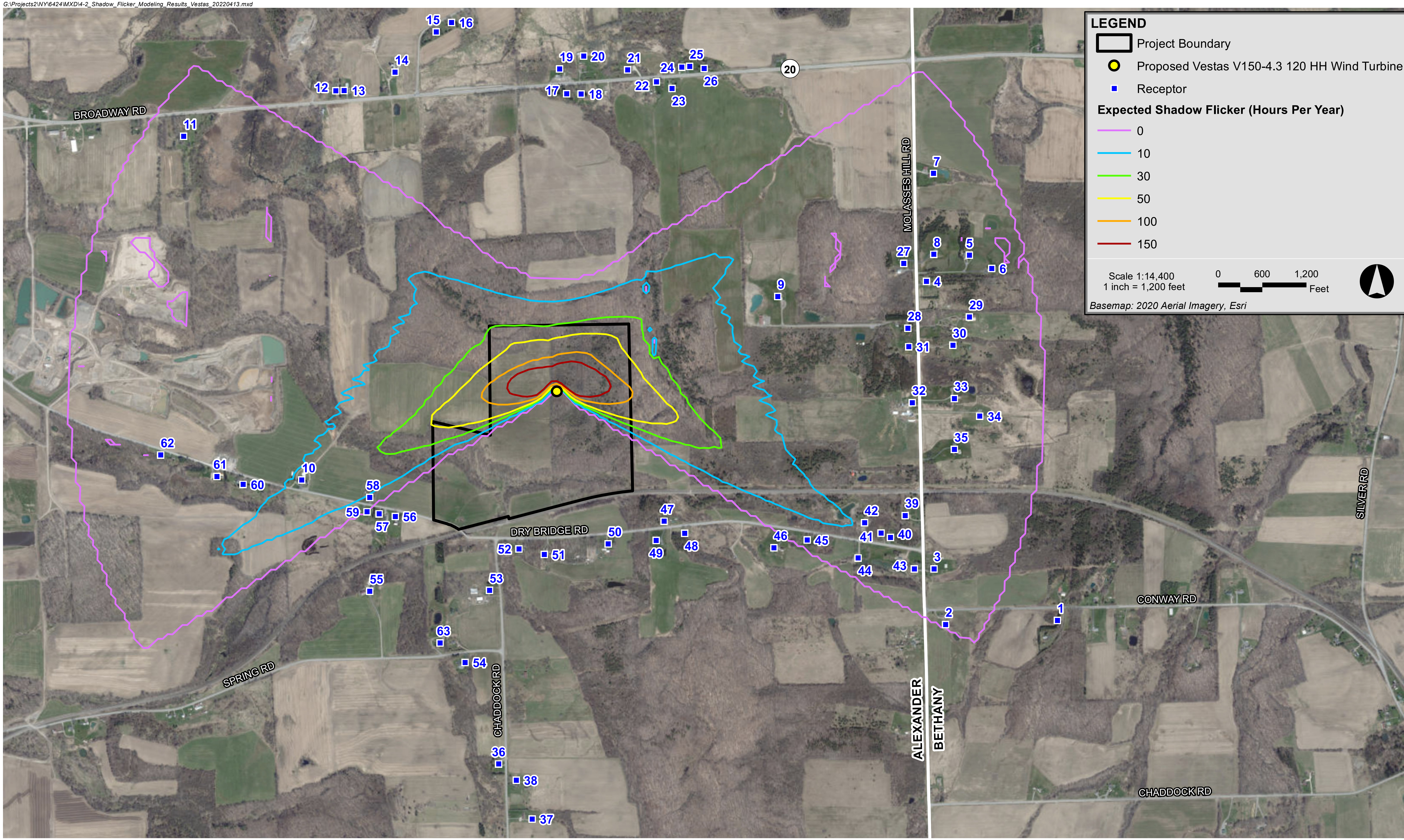

Dry Bridge Road Wind Genesee County, New York

Epsilon ASSOCIATES INC.

Figure 4-2
Shadow Flicker Modeling Results – Vestas V150-4.3

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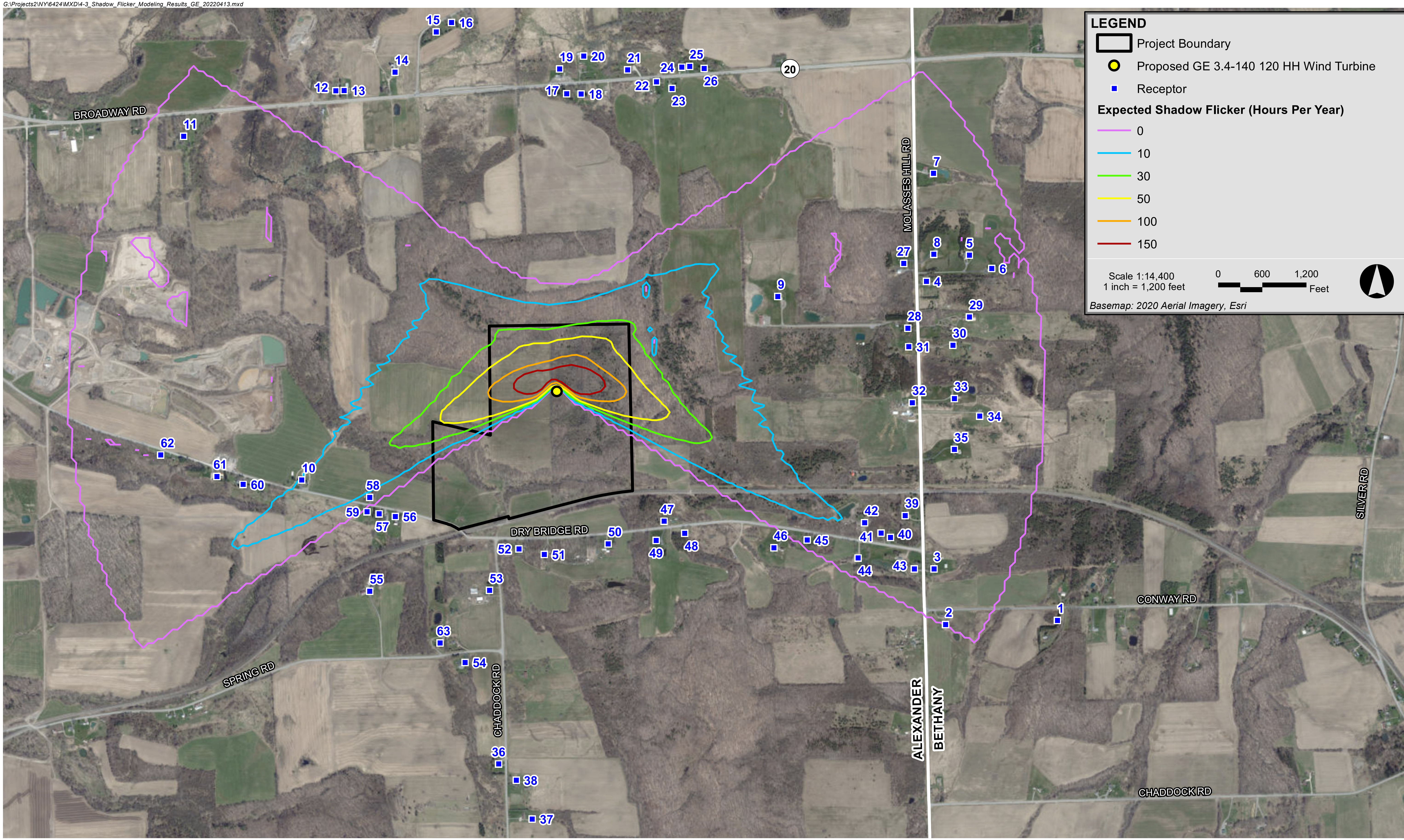

Dry Bridge Road Wind Genesee County, New York

Epsilon ASSOCIATES INC.

Figure 4-3

Shadow Flicker Modeling Results – GE 3.4-140

5.0 EVALUATION

The proposed Dry Bridge Road Wind Project within Genesee County, New York is required to comply with the Local Law of the Town of Alexander, Genesee County, New York regarding shadow flicker. The Local Law limits shadow flicker duration from wind turbines to 30 hours per year and 30 minutes per day. Therefore, receptors within the Town of Alexander have been evaluated against shadow flicker durations of 30 hours per year and 30 minutes per day in this analysis.

The highest predicted expected annual shadow flicker duration is 12 hours; 8 minutes assuming a Vestas V150-4.3 wind turbine, and 10 hours; 26 minutes assuming a GE 3.4-140 wind turbine. This occurs at receptor 10 for both scenarios. All annual shadow flicker durations are well below 30 hours per year.

Receptors 9, 10, and 58 are predicted to experience more than 30 minutes of max shadow hours per day if the Vestas V150-4.3 wind turbine is chosen. If the GE 3.4-140 wind turbine is chosen, receptors 9 and 10 are predicted to experience 30 minutes or more of max shadow hours per day. In order to address locations which are currently predicted to exceed the daily shadow flicker limits, Borrego has committed to implement mitigation to ensure that these receptors comply with the Local Laws.

6.0 CONCLUSIONS

A comprehensive shadow flicker modeling assessment was conducted for the proposed Dry Bridge Road Wind Project. A total of one (1) wind turbine is included for this Project with two different scenarios. Shadow flicker resulting from the operation of the wind turbine was calculated at 63 locations using the Project data provided by Borrego.

The modeling results are conservative in that modeling receptors were assumed to have a window facing all directions and the surrounding area was assumed to be without vegetation or structures. Shadow flicker was not predicted to exceed 30 hours per year at any residence for either scenario; however, the max shadow hours per day was predicted to exceed 30 minutes of flicker per day at three locations for the Vestas V150-4.3 wind turbine and at two locations for the GE 3.4-140 wind turbine. In order to address locations which are currently predicted to exceed the shadow flicker limits, Borrego has committed to implement mitigation to ensure that these receptors comply with the Local Laws.

Appendix A

Wind Turbine Coordinates

Table A-1: Wind Turbine Coordinates

Wind Turbine ID	Wind Turbine Type	Hub Height (m)	Coordinates NAD83 UTM Zone 18N (meters)	
			X (Easting)	Y (Northing)
1	Vestas V150-4.3 or GE 3.4-140	120	727802.59	4752291.95

Appendix B

Shadow Flicker Modeling Results: Modeling Receptors

Table B-1: Shadow Flicker Modeling Results at Discrete Points - Sorted by Receptor ID - V150-4.3

Receptor ID	Coordinates UTM NAD83 Zone 18N (meters)		Worst Case Shadow Flicker Hours per Year	Expected Shadow Flicker Hours per Year	Max Shadow Flicker Hours per Day
	X (Easting)	Y (Northing)	(HH:MM/year)	(HH:MM/year)	(HH:MM/day)
1	729901.94	4751403.83	0:00	0:00	0:00
2	729440.18	4751373.42	0:47	0:16	0:03
3	729385.20	4751602.48	10:29	3:54	0:16
4	729319.98	4752793.64	5:43	1:38	0:19
5	729494.49	4752906.88	4:04	1:07	0:16
6	729589.08	4752854.33	3:32	1:01	0:15
7	729336.26	4753240.78	8:28	1:47	0:20
8	729347.25	4752906.44	5:22	1:29	0:18
9	728705.95	4752713.10	21:22	5:41	0:35
10	726756.96	4751896.42	28:18	12:08	0:33
11	726226.62	4753305.99	12:39	1:59	0:20
12	726851.12	4753512.79	0:00	0:00	0:00
13	726885.28	4753515.37	0:00	0:00	0:00
14	727094.32	4753596.24	0:00	0:00	0:00
15	727260.70	4753768.22	0:00	0:00	0:00
16	727322.85	4753808.76	0:00	0:00	0:00
17	727807.80	4753527.55	0:00	0:00	0:00
18	727866.89	4753528.62	0:00	0:00	0:00
19	727775.32	4753629.58	0:00	0:00	0:00
20	727873.50	4753686.16	0:00	0:00	0:00
21	728057.21	4753633.57	0:00	0:00	0:00
22	728178.44	4753587.33	0:00	0:00	0:00
23	728243.33	4753562.31	0:00	0:00	0:00
24	728281.57	4753651.77	0:00	0:00	0:00
25	728313.99	4753656.10	0:00	0:00	0:00
26	728374.22	4753649.75	0:00	0:00	0:00
27	729223.34	4752864.71	6:59	1:56	0:21
28	729247.90	4752597.53	6:32	2:02	0:21
29	729502.04	4752651.13	3:42	1:07	0:15
30	729436.84	4752531.31	4:26	1:29	0:17
31	729254.33	4752520.76	6:37	2:12	0:21
32	729275.82	4752288.57	6:40	2:22	0:21
33	729449.30	4752311.34	4:39	1:38	0:17
34	729556.85	4752240.51	3:52	1:23	0:15
35	729455.54	4752099.96	4:54	1:49	0:17
36	727606.08	4750743.37	0:00	0:00	0:00
37	727751.74	4750518.65	0:00	0:00	0:00
38	727680.82	4750677.64	0:00	0:00	0:00
39	729259.14	4751820.72	9:11	3:27	0:21
40	729201.41	4751728.43	13:33	5:05	0:21
41	729162.11	4751745.36	15:50	5:56	0:23
42	729092.64	4751785.87	19:17	7:16	0:25
43	729304.35	4751600.20	15:32	5:44	0:18
44	729069.48	4751638.62	10:57	3:57	0:18
45	728856.98	4751707.15	6:13	2:12	0:14

Table B-1: Shadow Flicker Modeling Results at Discrete Points - Sorted by Receptor ID - V150-4.3

Receptor ID	Coordinates UTM NAD83 Zone 18N (meters)		Worst Case Shadow Flicker Hours per Year	Expected Shadow Flicker Hours per Year	Max Shadow Flicker Hours per Day
	X (Easting)	Y (Northing)	(HH:MM/year)	(HH:MM/year)	(HH:MM/day)
46	728719.21	4751671.06	0:00	0:00	0:00
47	728262.00	4751768.51	0:00	0:00	0:00
48	728349.28	4751720.98	0:00	0:00	0:00
49	728231.56	4751688.64	0:00	0:00	0:00
50	728032.98	4751668.18	0:00	0:00	0:00
51	727769.91	4751616.75	0:00	0:00	0:00
52	727663.79	4751636.65	0:00	0:00	0:00
53	727547.19	4751461.37	0:00	0:00	0:00
54	727454.78	4751159.19	0:00	0:00	0:00
55	727051.48	4751443.26	0:00	0:00	0:00
56	727147.86	4751755.31	0:00	0:00	0:00
57	727080.66	4751765.46	0:00	0:00	0:00
58	727039.81	4751832.47	17:51	7:42	0:31
59	727030.62	4751771.94	0:00	0:00	0:00
60	726514.74	4751870.27	15:17	6:24	0:27
61	726404.88	4751900.35	11:47	4:49	0:25
62	726168.97	4751982.42	7:31	2:57	0:21
63	727349.34	4751236.45	0:00	0:00	0:00

Table B-2: Shadow Flicker Modeling Results at Discrete Points - Sorted by Receptor ID - GE 3.4-140

Receptor ID	Coordinates UTM NAD83 Zone 17N (meters)		Worst Case Shadow Flicker Hours per Year	Expected Shadow Flicker Hours per Year	Max Shadow Flicker Hours per Day
	X (Easting)	Y (Northing)	(HH:MM/year)	(HH:MM/year)	(HH:MM/day)
1	729901.94	4751403.83	0:00	0:00	0:00
2	729440.18	4751373.42	0:30	0:10	0:02
3	729385.20	4751602.48	8:52	3:18	0:16
4	729319.98	4752793.64	5:01	1:25	0:18
5	729494.49	4752906.88	3:38	1:00	0:15
6	729589.08	4752854.33	3:09	0:54	0:14
7	729336.26	4753240.78	7:30	1:35	0:19
8	729347.25	4752906.44	4:49	1:20	0:17
9	728705.95	4752713.10	19:11	5:07	0:33
10	726756.96	4751896.42	24:20	10:26	0:30
11	726226.62	4753305.99	10:59	1:44	0:19
12	726851.12	4753512.79	0:00	0:00	0:00
13	726885.28	4753515.37	0:00	0:00	0:00
14	727094.32	4753596.24	0:00	0:00	0:00
15	727260.70	4753768.22	0:00	0:00	0:00
16	727322.85	4753808.76	0:00	0:00	0:00
17	727807.80	4753527.55	0:00	0:00	0:00
18	727866.89	4753528.62	0:00	0:00	0:00
19	727775.32	4753629.58	0:00	0:00	0:00
20	727873.50	4753686.16	0:00	0:00	0:00
21	728057.21	4753633.57	0:00	0:00	0:00
22	728178.44	4753587.33	0:00	0:00	0:00
23	728243.33	4753562.31	0:00	0:00	0:00
24	728281.57	4753651.77	0:00	0:00	0:00
25	728313.99	4753656.10	0:00	0:00	0:00
26	728374.22	4753649.75	0:00	0:00	0:00
27	729223.34	4752864.71	6:16	1:44	0:20
28	729247.90	4752597.53	5:49	1:48	0:20
29	729502.04	4752651.13	3:14	0:58	0:14
30	729436.84	4752531.31	3:59	1:20	0:16
31	729254.33	4752520.76	5:44	1:54	0:20
32	729275.82	4752288.57	5:51	2:05	0:20
33	729449.30	4752311.34	4:04	1:25	0:16
34	729556.85	4752240.51	3:23	1:13	0:14
35	729455.54	4752099.96	4:22	1:37	0:16
36	727606.08	4750743.37	0:00	0:00	0:00
37	727751.74	4750518.65	0:00	0:00	0:00
38	727680.82	4750677.64	0:00	0:00	0:00
39	729259.14	4751820.72	8:06	3:02	0:19
40	729201.41	4751728.43	11:46	4:24	0:20
41	729162.11	4751745.36	13:40	5:07	0:22
42	729092.64	4751785.87	16:33	6:13	0:24
43	729304.35	4751600.20	14:13	5:15	0:17

Table B-2: Shadow Flicker Modeling Results at Discrete Points - Sorted by Receptor ID - GE 3.4-140

Receptor ID	Coordinates UTM NAD83 Zone 17N (meters)		Worst Case Shadow Flicker Hours per Year	Expected Shadow Flicker Hours per Year	Max Shadow Flicker Hours per Day
	X (Easting)	Y (Northing)	(HH:MM/year)	(HH:MM/year)	(HH:MM/day)
44	729069.48	4751638.62	10:07	3:39	0:17
45	728856.98	4751707.15	4:56	1:44	0:12
46	728719.21	4751671.06	0:00	0:00	0:00
47	728262.00	4751768.51	0:00	0:00	0:00
48	728349.28	4751720.98	0:00	0:00	0:00
49	728231.56	4751688.64	0:00	0:00	0:00
50	728032.98	4751668.18	0:00	0:00	0:00
51	727769.91	4751616.75	0:00	0:00	0:00
52	727663.79	4751636.65	0:00	0:00	0:00
53	727547.19	4751461.37	0:00	0:00	0:00
54	727454.78	4751159.19	0:00	0:00	0:00
55	727051.48	4751443.26	0:00	0:00	0:00
56	727147.86	4751755.31	0:00	0:00	0:00
57	727080.66	4751765.46	0:00	0:00	0:00
58	727039.81	4751832.47	13:50	5:58	0:27
59	727030.62	4751771.94	0:00	0:00	0:00
60	726514.74	4751870.27	13:24	5:36	0:25
61	726404.88	4751900.35	10:26	4:15	0:23
62	726168.97	4751982.42	6:37	2:36	0:20
63	727349.34	4751236.45	0:00	0:00	0:00

Borrego Wind Turbine Sound Standards

Borrego's mission is to solve the worlds energy needs by responsibly developing clean, renewable energy facilities. Part of that mission means ensuring that the projects do not adversely impact the local community. Several measures are taken to investigate the resulting sound levels of the systems being developed.

Turbine Siting

Parcels of land that are pursued for development must provide adequate space to allow for proper siting of the wind turbine. Two of the most important factors are distance from receptors (typically residences) as well as setbacks from property lines. Borrego strives to balance many site constraints while aiming to achieve the greatest distance possible from any sensitive receptors.

Turbine Certification

Sound levels emitted by all turbines specified by Borrego will be evaluated using International Electrotechnical Commission (IEC) 61400-11. This standard provides a uniform methodology that will ensure consistency and accuracy in the measurement and analysis of acoustical emissions by wind turbine generator systems. The adherence to this standard means that overseeing authorities can have a high degree of confidence in the published sound levels, and the resulting sound modeling. Borrego does not specify lower quality turbine manufacturers that do not adhere to this standard.

Manufacturers Guarantee

The turbine manufacturers Borrego partners with provide sound level warranties on their turbines. This means that if a turbine is operating outside of the stated Sound Level Performance Standard, the manufacturer will remedy the situation to ensure the turbine is operating at or below the Sound Level Performance Standard. This standard has been used in the Sound Level Modeling Report to ensure compliance with applicable local and state ordinances, and to ensure there will be no adverse effect to local residences. This sound level warranty brings with it sound level liquidated damages, which provide assurances that any turbine operating outside of its stated Sound Level Performance Standard will be swiftly corrected.

Sound Level Modeling Report

Borrego partners with Epsilon Associates to provide acoustic modeling reports for all our proposed wind turbine projects. Epsilon Associates is a recognized national leader in sound level studies for the wind industry. Epsilon Associates follow International Organization for Standardization (ISO) standards in their sound level modeling reports, which are used to ensure that wind turbines are responsibly located to minimize sound impacts to the community and ensure compliance with local and state requirements.

Borrego. Powering your Growth.

SOUND LEVEL MODELING REPORT

Dry Bridge Road Wind Project
Genesee County, New York

Prepared for:

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Latham, NY 12110

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Maynard, MA 01754

April 14, 2022

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1.0 EXECUTIVE SUMMARY

The Dry Bridge Road Wind Project (the Project) is a proposed wind power generation facility expected to consist of one (1) wind turbine in Genesee County, New York. The Project is being developed by Borrego Solar Systems, Inc (Borrego). Epsilon Associates Inc. (Epsilon) has been retained by Borrego to conduct a sound level modeling study for this Project. This report presents results of the sound level modeling from the proposed wind turbine in Genesee County.

This sound level assessment includes computer modeling to predict worst-case future L_{eq} sound levels from the Project, and a comparison of operational sound levels to regulatory limits. The analysis was conducted for two different scenarios: one (1) Vestas V150-4.3 wind turbine; and one (1) GE 3.4-140 wind turbine. This Project is required to comply with the Local Law of the Town of Alexander, Genesee County, New York (Local Laws) which are presented in Section 4 of this report. The Local Laws limit sound produced by wind energy conversion facility (WECF) to 50 dBA at any noise sensitive structure.

The worst-case L_{eq} sound levels produced by the Project were predicted through modeling. The highest predicted worst-case Project Only L_{eq} sound level at a modeling receptor is 38 dBA with the Vestas V150-4.3 wind turbine, and 39 dBA with the GE 3.4-140 wind turbine. Therefore, with the Vestas or GE wind turbine option, the Project meets the Town of Alexander sound limit of 50 dBA.

2.0 INTRODUCTION

The proposed Project will consist of one (1) wind turbine. Borrego is considering two different wind turbines: a Vestas V150-4.3 unit with a hub height of 120 meters, or a GE 3.4-140 unit with a hub height of 120 meters. Figure 2-1 shows the location of the wind turbine in Genesee County over aerial imagery.

A detailed discussion of sound from wind turbines is presented in a white paper prepared by the Renewable Energy Research Laboratory.[1] A few points are repeated herein. Wind turbine sound can originate from two different sources: mechanical sound from the interaction of turbine components, and aerodynamic sound produced by the flow of air over the rotor blades. Prior to the 1990's, both were significant contributors to wind turbine sound. However, recent advances in wind turbine design have greatly reduced the contribution of mechanical sound. Aerodynamic sound has also been reduced from modern wind turbines due to slower rotational speeds and changes in materials of construction. Aerodynamic sound, in general, is broadband (has contributions from a wide range of frequencies). It originates from encounters of the wind turbine blades with localized airflow inhomogeneities and wakes from other turbine blades and from airflow across the surface of the blades, particularly the front and trailing edges. Aerodynamic sound generally increases with increasing wind speed up to a certain point, then typically remains constant, even with higher wind speeds. However, sound levels in general also increase with increasing wind speed with or without the presence of wind turbines.

This report presents the findings of a sound level modeling analysis for the Project. The Project wind turbine was modeled in CadnaA using sound data from Vestas and GE technical reports. The results of this analysis are found within this report.

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[1] Renewable Energy Research Laboratory, Department of Mechanical and Industrial Engineering, University of Massachusetts at Amherst, Wind Turbine Acoustic Noise, June 2002, amended January 2006.

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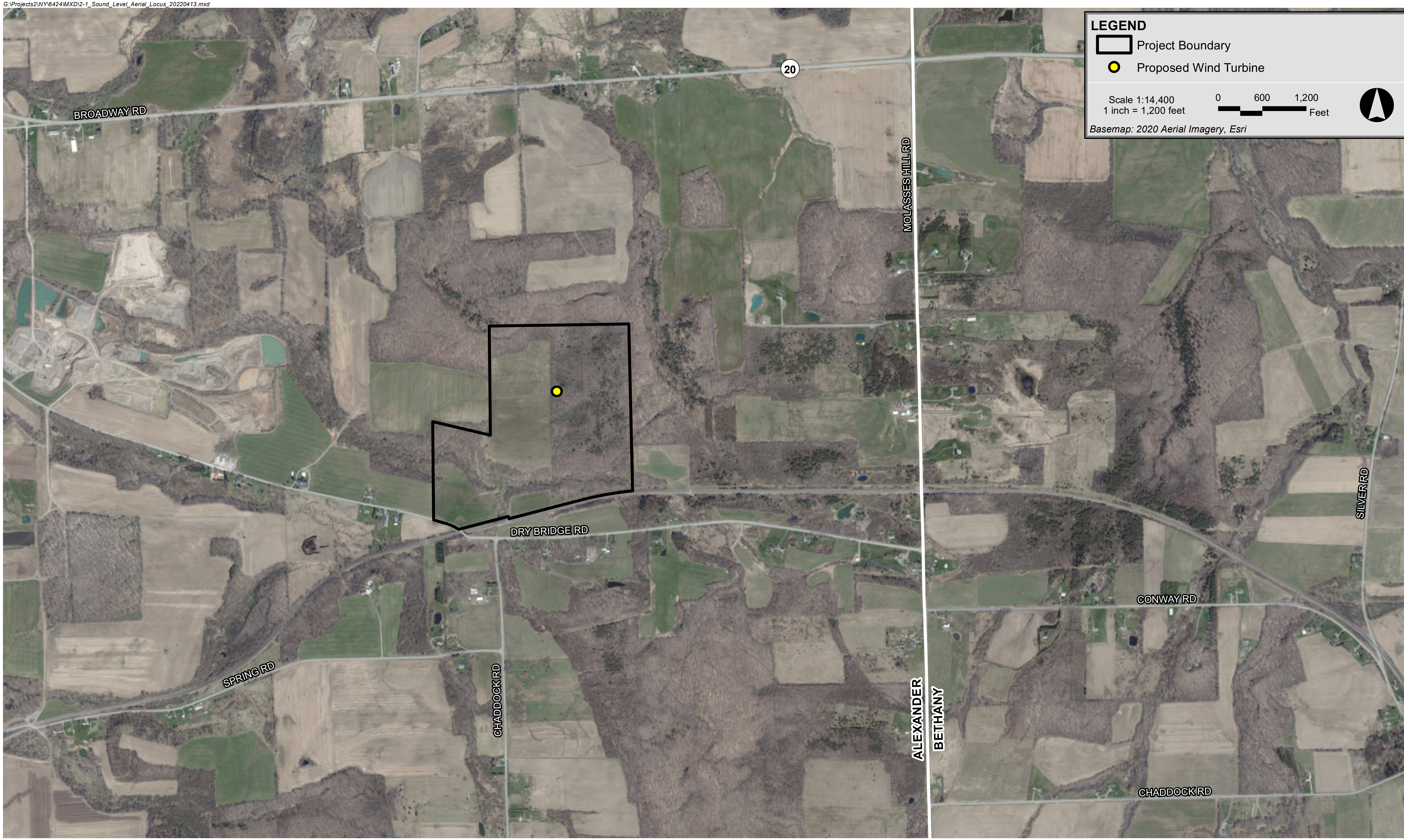

Dry Bridge Road Wind **Genesee County, New York**

Epsilon ASSOCIATES INC.

Figure 2-1
Aerial Locus

3.0 SOUND TERMINOLOGY

There are several ways in which sound levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two or more separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (53 dB), which is equal to doubling in sound energy, but not equal to a doubling in decibel quantity (100 dB). Thus, every 3-dB change in sound level represents a doubling or halving of sound energy. The human ear does not perceive changes in the sound pressure level as equal changes in loudness. Scientific research demonstrates that the following general relationships hold between sound level and human perception for two sound levels with the same or very similar frequency characteristics[2]:

- 3 dBA increase or decrease results in a change in sound that is just perceptible to the average person,
- 5 dBA increase or decrease is described as a clearly noticeable change in sound level, and
- 10 dBA increase or decrease is described as twice or half as loud.

Another mathematical property of decibels is that if one source of sound is at least 10 dB louder than another source, then the total sound level is simply the sound level of the higher-level source. For example, a sound source at 60 dB plus another sound source at 47 dB is equal to 60 dB.

A sound level meter (SLM) that is used to measure sound is a standardized instrument.[3] It contains "weighting networks" (e.g., A-, C-, Z-weightings) to adjust the frequency response of the instrument. Frequencies, reported in Hertz (Hz), are detailed characterizations of sounds, often addressed in musical terms as "pitch" or "tone". The most commonly used weighting network is the A-weighting because it most closely approximates how the human ear responds to sound at various frequencies. The A-weighting network is the accepted scale used for community sound level measurements; therefore, sounds are frequently reported as detected with a sound level meter using this weighting. A-weighted sound levels emphasize middle frequency sounds (i.e., middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. These sound levels are reported in decibels designated as "dBA". The C-weighting network has a nearly flat response for frequencies between 63 Hz and 4,000 Hz and is noted as dBC. Z-weighted sound

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[2] Bies, David, and Colin Hansen. 2009. *Engineering Noise Control: Theory and Practice*, 4th Edition. New York: Taylor and Francis.

[3] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983 (R2006), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

levels are measured sound levels without any weighting curve and are otherwise referred to as "unweighted". Sound pressure levels for some common indoor and outdoor environments are shown in Figure 3-1.

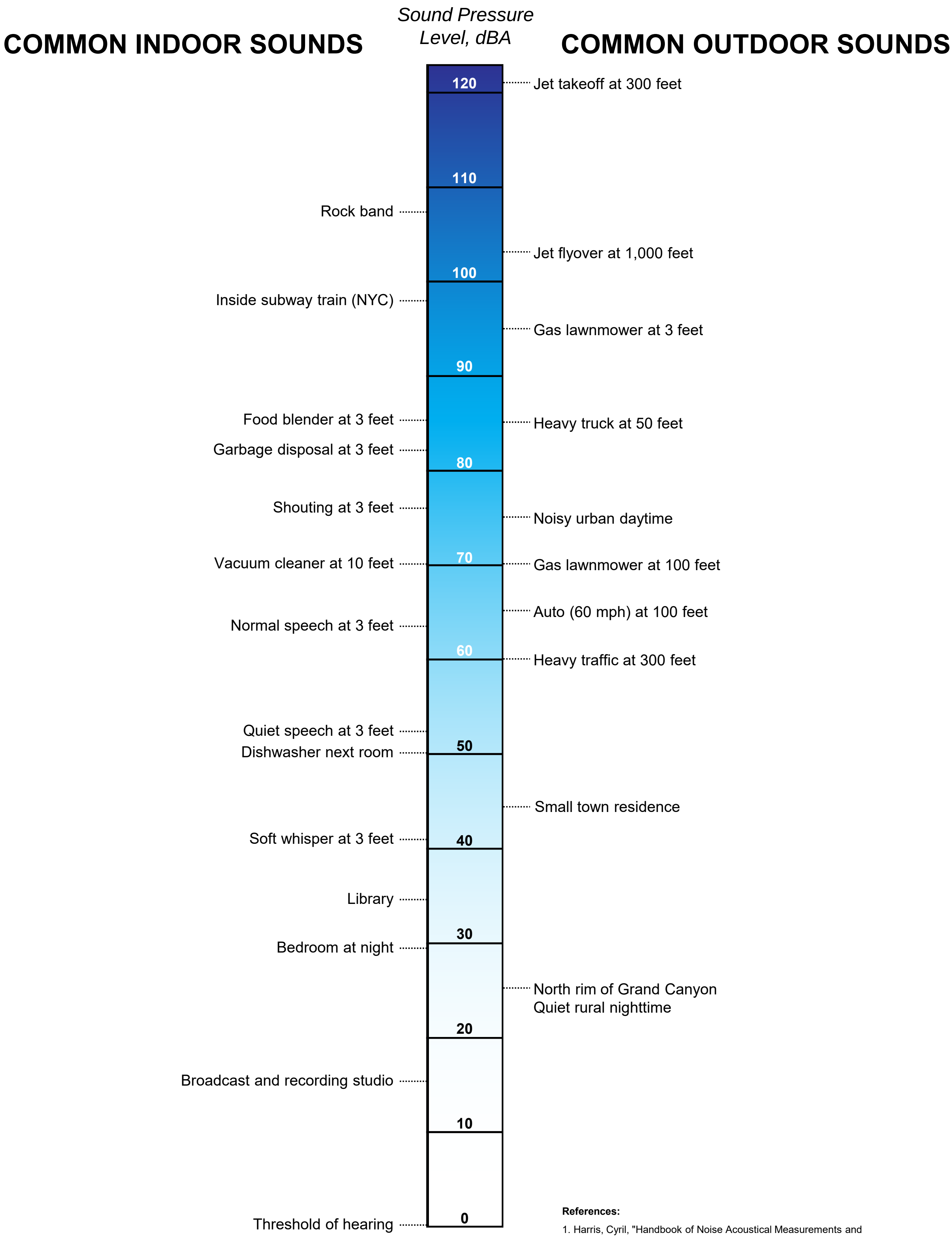
Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from some number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value between 0 and 100 in terms of percentage. Several sound level metrics that are commonly reported in community sound level monitoring are described below.

- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder sounds like those from passing motor vehicles.

- L_{50} is the sound level exceeded 50 percent of the time. It is the median level observed during the measurement period. The L_{50} is affected by occasional louder sounds like those from passing motor vehicles; however, it is often found comparable to the equivalent sound level under relatively steady sound level conditions.

- L_{90} is the sound level exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent sound sources.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is typically A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by loud sounds if there are fluctuating sound levels.



References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 3-1

Common Indoor and Outdoor Sound Levels

4.0 NOISE REGULATIONS

4.1 Town of Alexander, NY Local Law

The Project, located within the Town of Alexander, NY is required to comply with the Local Law of the Town of Alexander, Genesee County, New York which states:

> Audible noise due to the operation of any part of the Wind Energy Conversion Facility must not exceed 50 dBA for any period of time, when measured at any residence, school, hospital, church, public park, or public library, unless the applicant obtains a noise easement.

Therefore, receptors have been evaluated against the L_{eq} sound level limit of 50 dBA in this analysis.

5.0 MODELED SOUND LEVELS

5.1 Sound Sources

5.1.1 Project Wind Turbine

The sound level analysis for the Project includes one (1) wind turbine. The Project will consist of either one Vestas V150-4.3 unit with Serrated Trailing Edge (STE) blades, or one GE 3.4-140 unit with Low Noise Trailing Edge (LNTE) blades.

The V150-4.3 wind turbine has a rotor diameter of 150 meters. The wind turbine has a hub height of 120 meters. A technical report from Vestas[4] was provided to Epsilon which documented the expected sound power levels associated with the V150-4.3 under normal operation.

The GE 3.4-140 wind turbine has a rotor diameter of 140 meters. The wind turbine has a hub height of 120 meters. A technical report from GE[5] was provided to Epsilon which documented the expected sound power levels associated with the GE 3.4-140 under normal operation.

5.2 Modeling Methodology

The sound impacts associated with the proposed wind turbine were predicted using the CadnaA sound level calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation.[6] The benefits of this software are a more refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections (if applicable), drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave band calculation of sound from multiple sources as well as computation of diffraction.

Inputs and significant parameters employed in the model are described below.

- *Project Layout:* This analysis is for the wind turbine array provided to Epsilon on March 21, 2022. The proposed Project layout is identified in Figure 5-1 and location coordinates are provided in Appendix A.
- *Modeling Receptor Locations:* A modeling receptor dataset including 63 receptors was provided by Borrego and input into the sound level model. All modeling receptors were

4 Restricted V150-4.3 MW Third Octave Noise Emission, 11-11-2020.

5 General Electric Company, Technical Documentation Wind Turbine Generator Systems Sierra 140 – 60 Hz Product Acoustic Specifications, 2021.

6 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation,* International Standard ISO 9613-2:1996 (International Organization for Standardization, Geneva, Switzerland, 1996).

input as discrete points at a height of 1.5 meters above ground level to mimic the ears of a typical standing person.

- *Modeling Grid:* A modeling grid with 20-meter spacing was calculated for the entire Project Area and the surrounding region. The grid was modeled at a height of 1.5 meters above ground level for consistency with the discrete modeling points. This modeling grid allowed for the creation of sound level isolines.
- *Terrain Elevation:* Elevation contours for the modeling domain were directly imported into CadnaA which allowed for consideration of terrain shielding where appropriate. The terrain height contour elevations for the modeling domain were generated from elevation information derived from the National Elevation Dataset (NED) developed by the U.S. Geological Survey.
- *Source Sound Levels:* Sound power levels used in the modeling were described in Section 5.1. Documentation from Vestas and GE provided levels that represent "worst-case" operational sound level emissions for the Project's proposed wind turbine.
- *Meteorological Conditions:* A temperature of 10°C (50°F) and a relative humidity of 70% was assumed in the model.
- *Ground Attenuation:* Spectral ground absorption was calculated using a G-factor of 0 which corresponds to "hard ground" consisting of a hard ground surface. The model, consistent with the standard, allows inputs between 0 (hard ground) and 1 (porous ground). This is a conservative approach as the vast majority of the area is actually agricultural.

Octave band sound power levels corresponding to the highest available wind turbine broadband sound power level for the wind turbine were input into CadnaA to model wind turbine generated broadband sound pressure levels during conditions when worst-case sound power levels are expected. Sound pressure levels were modeled at 63 receptors within the vicinity of the Project. In addition to modeling at discrete points, sound levels were also modeled throughout a large grid of points, each spaced 20 meters apart to allow for the generation of sound level isolines.

Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by Epsilon, were implemented in the CadnaA model to ensure conservative results (i.e., higher sound levels), and are described below:

- All modeled sources were assumed to be operating simultaneously and at the design wind speed corresponding to the greatest sound level impacts.
- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night or equivalently downwind propagation.
- Meteorological conditions assumed in the model (T=10°C/RH=70%) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave bands where the human ear is most sensitive.

- No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

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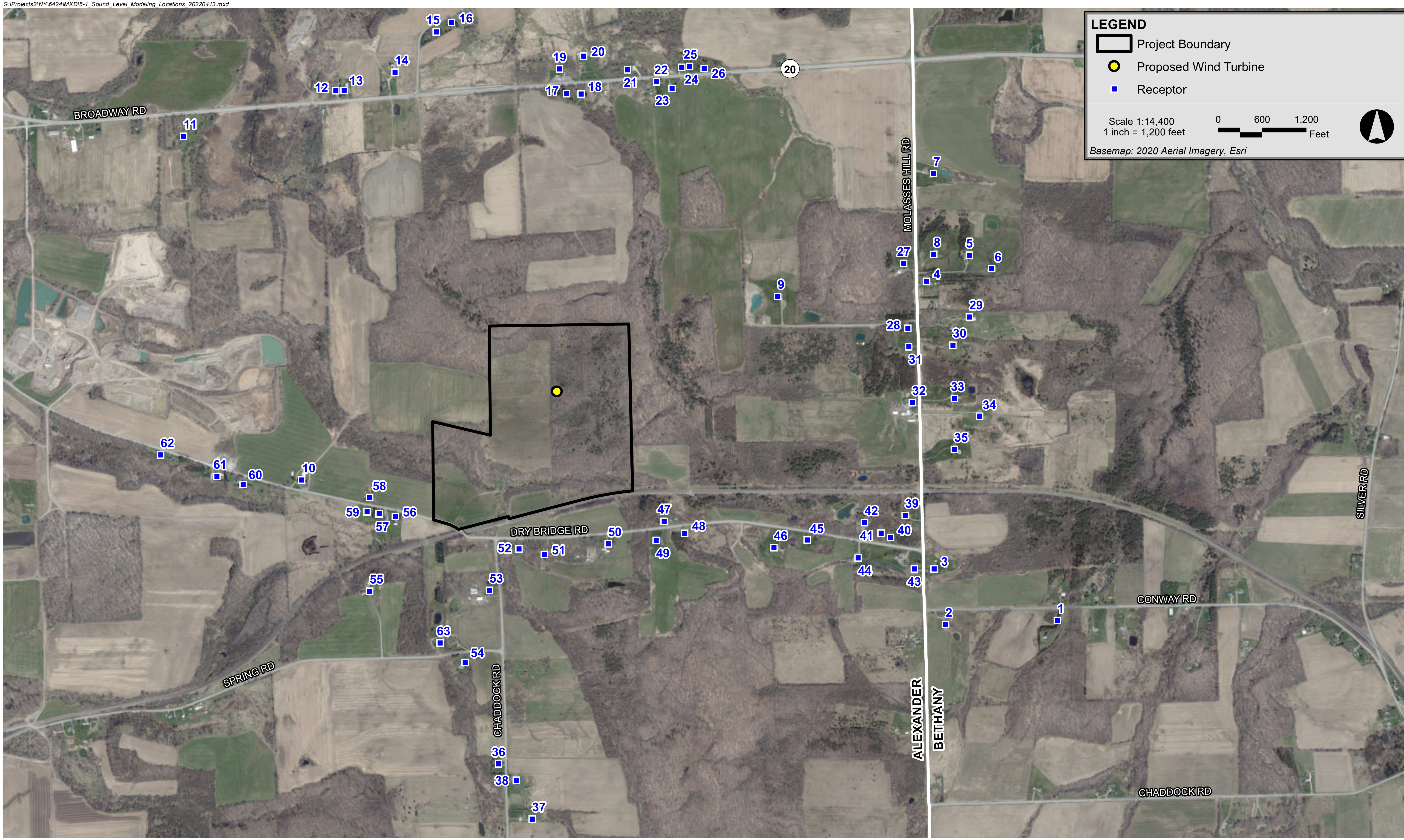

Dry Bridge Road Wind Genesee County, New York

Epsilon ASSOCIATES INC.

Figure 5-1
Sound Level Modeling Locations

5.3 Sound Level Modeling Results

All modeled sound levels, as output from CadnaA are A-weighted equivalent sound levels (L_{eq}, dBA). Calculations were conducted at the 63 receptors modeled within the project area. In addition to the discrete modeling points, sound level isolines were generated from the modeling grid.

5.3.1 Project Only Results – V150-4.3

Table B-1 in Appendix B shows the predicted "Project Only" broadband (L_{eq}, dBA) sound levels from the Vestas V150-4.3 wind turbine at the 63 receptors modeled in the vicinity of the Project. These broadband sound levels range from 24 to 38 dBA and represent the worst-case sound levels produced solely by the Project wind turbine. The highest predicted sound level of 38 dBA occurs at receptor #50. In addition to the discrete modeling points, sound level isolines generated from the modeling grid are presented in Figure 5-2.

5.3.2 Project Only Results – GE 3.4-140

Table B-2 in Appendix B shows the predicted "Project Only" broadband (L_{eq}, dBA) sound levels from the GE 3.4-140 wind turbine at the 63 receptors modeled in the vicinity of the Project. These broadband sound levels range from 25 to 39 dBA and represent the worst-case sound levels produced solely by the Project wind turbine. The highest predicted sound level of 39 dBA occurs at receptor #50. In addition to the discrete modeling points, sound level isolines generated from the modeling grid are presented in Figure 5-3.

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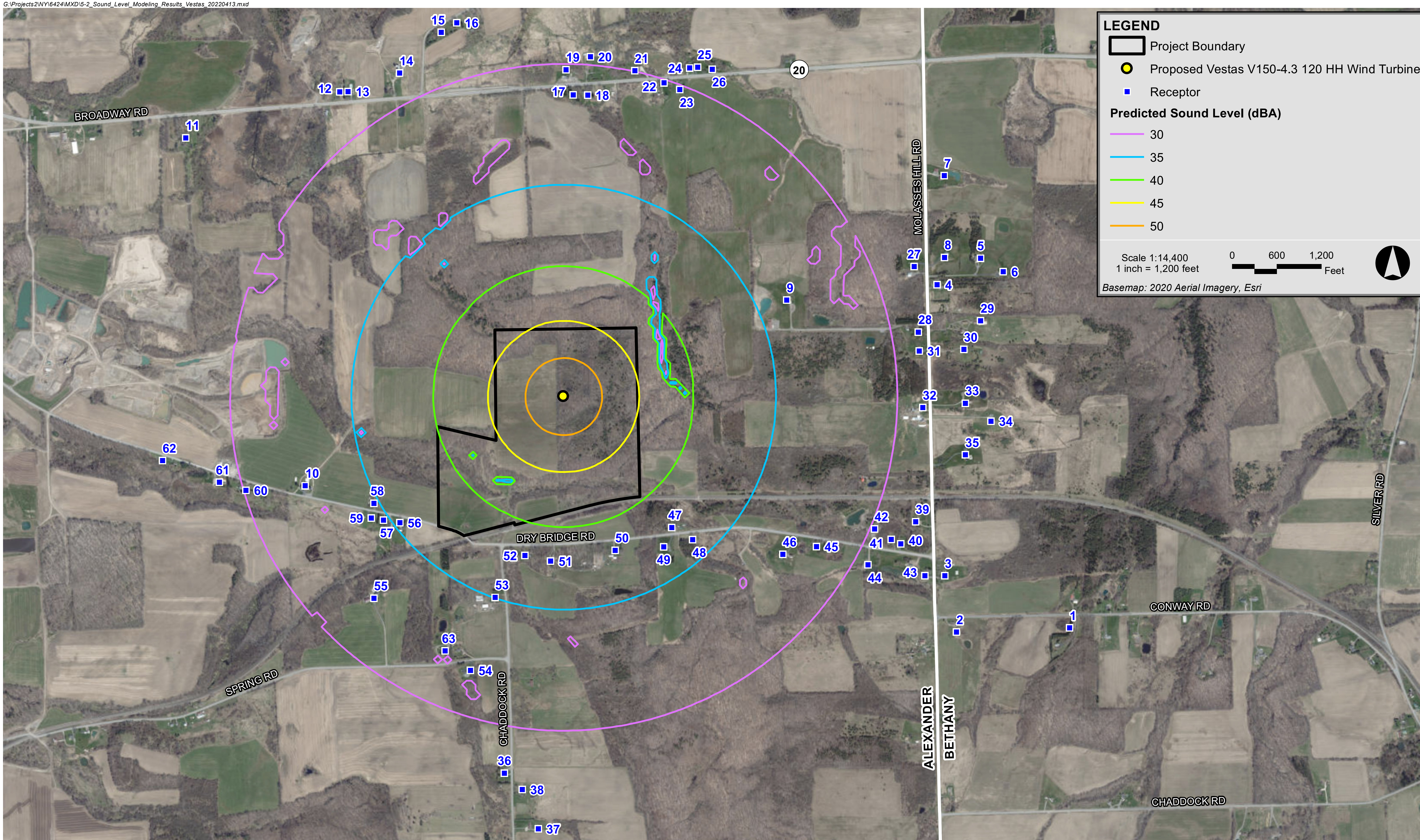

Dry Bridge Road Wind Genesee County, New York

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Figure 5-2

Project Only Sound Level Modeling Results – Vestas V150-4.3

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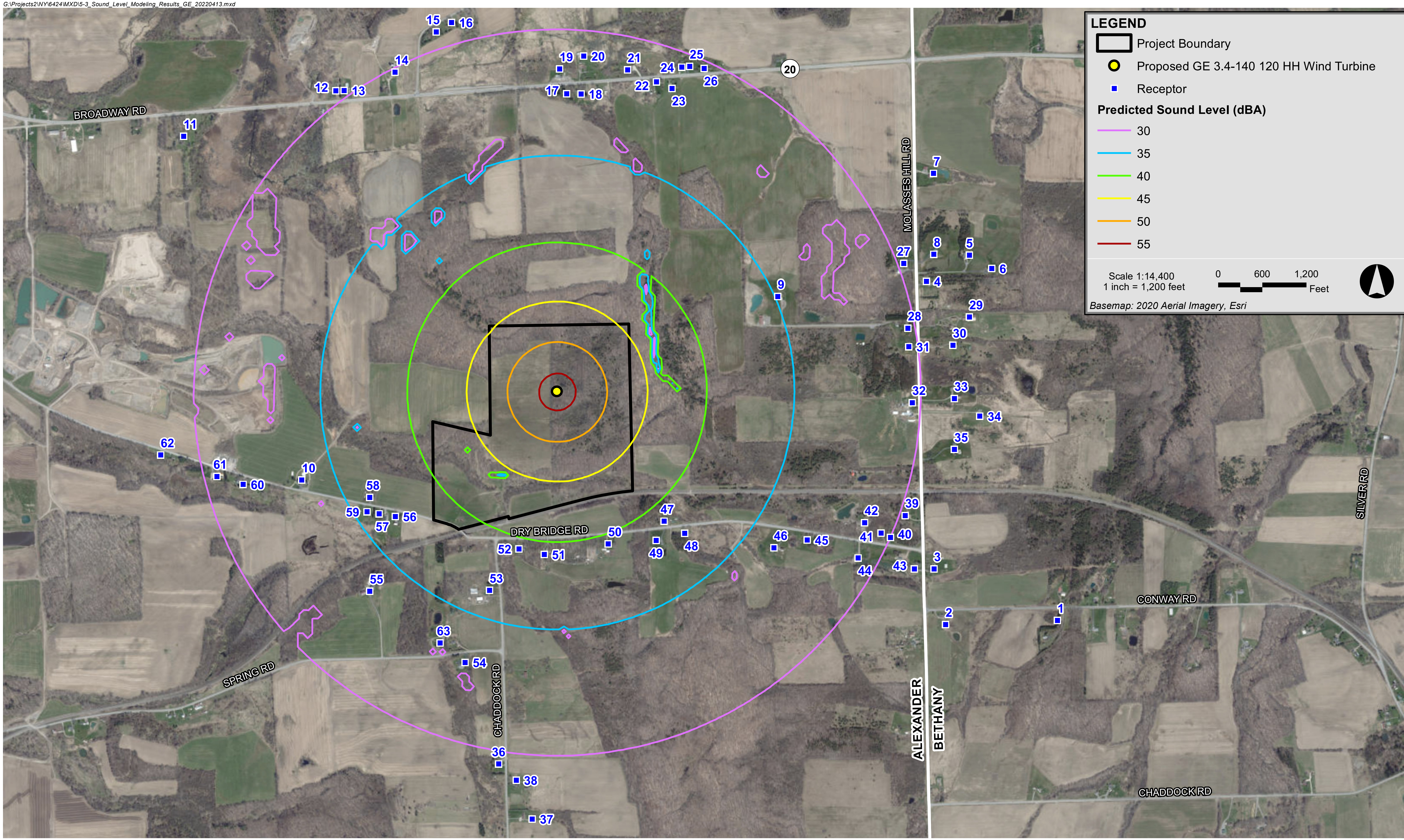

Dry Bridge Road Wind Genesee County, New York

Epsilon ASSOCIATES INC.

Figure 5-3

Project Only Sound Level Modeling Results – GE 3.4-140

6.0 EVALUATION OF SOUND LEVELS

The proposed Dry Bridge Road Wind Project within Genesee County, New York is required to comply with the sound level requirements in the Local Law of the Town of Alexander, New York. The Local Law limits sound levels from wind turbines to 50 dBA at noise sensitive structures. Therefore, receptors within the Town of Alexander have been evaluated against the sound level limit of 50 dBA in this analysis.

All modeled sound levels, as output from CadnaA, are A-weighted equivalent sound levels (L_{eq}, dBA). These levels may be used in evaluating measured sound pressure levels over typical averaging durations, (i.e., 10 minutes or 1 hour). The highest predicted worst-case Project Only L_{eq} sound level at a modeling receptor is 38 dBA with the Vestas V150-4.3 wind turbine, and 39 dBA with the GE 3.4-140 wind turbine. This occurs at receptor ID #50 for both modeling scenarios. All predicted worst-case Project Only L_{eq} sound levels are below 50 dBA; therefore, the Project meets the requirements with respect to sound in the Local Law.

7.0 CONCLUSIONS

A comprehensive sound level modeling assessment was conducted for the proposed Dry Bridge Road Wind Project. A total of one (1) wind turbine is included for this Project with two different scenarios. Sound levels resulting from the operation of these two scenarios were calculated at 63 discrete modeling points, and isolines were generated from a grid encompassing the area surrounding the wind turbine using the provided layout. The predicted sound levels at receptors in the Town of Alexander ranged from 24 to 38 dBA assuming a Vestas V150-4.3 wind turbine, and 25 to 39 dBA assuming a GE 3.4-140 wind turbine. Therefore, the Project meets the requirements with respect to sound in the Town of Alexander Local Law.

Appendix A

Wind Turbine Coordinates

Table A-1: Wind Turbine Coordinates

Wind Turbine ID	Wind Turbine Type	Hub Height (m)	Coordinates NAD83 UTM Zone 18N (meters)	
			X (Easting)	Y (Northing)
1	Vestas V150-4.3 or GE 3.4-140	120	727802.59	4752291.95

Appendix B

Project Only Sound Level Modeling Results at Discrete Points

Table B-1: Sound Level Modeling Results Sorted by Receptor ID (V150-4.3)

Receptor ID	Coordinates UTM NAD83 Zone 18N		Source Only L_{eq} Broadband Sound Level (dBA)
	X (m)	Y (m)	
1	729901.94	4751403.83	24
2	729440.18	4751373.42	26
3	729385.20	4751602.48	27
4	729319.98	4752793.64	28
5	729494.49	4752906.88	27
6	729589.08	4752854.33	26
7	729336.26	4753240.78	27
8	729347.25	4752906.44	28
9	728705.95	4752713.10	34
10	726756.96	4751896.42	32
11	726226.62	4753305.99	26
12	726851.12	4753512.79	29
13	726885.28	4753515.37	29
14	727094.32	4753596.24	29
15	727260.70	4753768.22	28
16	727322.85	4753808.76	28
17	727807.80	4753527.55	31
18	727866.89	4753528.62	31
19	727775.32	4753629.58	30
20	727873.50	4753686.16	30
21	728057.21	4753633.57	30
22	728178.44	4753587.33	30
23	728243.33	4753562.31	30
24	728281.57	4753651.77	29
25	728313.99	4753656.10	29
26	728374.22	4753649.75	29
27	729223.34	4752864.71	29
28	729247.90	4752597.53	29
29	729502.04	4752651.13	27
30	729436.84	4752531.31	28
31	729254.33	4752520.76	29
32	729275.82	4752288.57	29
33	729449.30	4752311.34	28
34	729556.85	4752240.51	27
35	729455.54	4752099.96	28
36	727606.08	4750743.37	29
37	727751.74	4750518.65	27
38	727680.82	4750677.64	28
39	729259.14	4751820.72	29
40	729201.41	4751728.43	29
41	729162.11	4751745.36	29
42	729092.64	4751785.87	30

Table B-1: Sound Level Modeling Results Sorted by Receptor ID (V150-4.3)

Receptor ID	Coordinates UTM NAD83 Zone 18N		Source Only L_{eq} Broadband Sound Level (dBA)
	X (m)	Y (m)	
43	729304.35	4751600.20	28
44	729069.48	4751638.62	30
45	728856.98	4751707.15	31
46	728719.21	4751671.06	32
47	728262.00	4751768.51	37
48	728349.28	4751720.98	36
49	728231.56	4751688.64	37
50	728032.98	4751668.18	38
51	727769.91	4751616.75	38
52	727663.79	4751636.65	38
53	727547.19	4751461.37	35
54	727454.78	4751159.19	32
55	727051.48	4751443.26	32
56	727147.86	4751755.31	35
57	727080.66	4751765.46	35
58	727039.81	4751832.47	35
59	727030.62	4751771.94	34
60	726514.74	4751870.27	30
61	726404.88	4751900.35	29
62	726168.97	4751982.42	28
63	727349.34	4751236.45	32

Table B-2: Sound Level Modeling Results Sorted by Receptor ID (GE 3.4-140)

Receptor ID	**Coordinates UTM NAD83 Zone 18N**		**Source Only L_{eq} Broadband Sound Level (dBA)**
	X (m)	**Y (m)**	
1	729901.94	4751403.83	25
2	729440.18	4751373.42	27
3	729385.20	4751602.48	28
4	729319.98	4752793.64	29
5	729494.49	4752906.88	28
6	729589.08	4752854.33	27
7	729336.26	4753240.78	28
8	729347.25	4752906.44	29
9	728705.95	4752713.10	35
10	726756.96	4751896.42	34
11	726226.62	4753305.99	27
12	726851.12	4753512.79	30
13	726885.28	4753515.37	30
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18	727866.89	4753528.62	32
19	727775.32	4753629.58	31
20	727873.50	4753686.16	31
21	728057.21	4753633.57	31
22	728178.44	4753587.33	31
23	728243.33	4753562.31	31
24	728281.57	4753651.77	31
25	728313.99	4753656.10	30
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27	729223.34	4752864.71	30
28	729247.90	4752597.53	30
29	729502.04	4752651.13	28
30	729436.84	4752531.31	29
31	729254.33	4752520.76	30
32	729275.82	4752288.57	30
33	729449.30	4752311.34	29
34	729556.85	4752240.51	28
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37	727751.74	4750518.65	28
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Table B-2: Sound Level Modeling Results Sorted by Receptor ID (GE 3.4-140)

Receptor ID	Coordinates UTM NAD83 Zone 18N		Source Only L_{eq} Broadband Sound Level (dBA)
	X (m)	Y (m)	
43	729304.35	4751600.20	29
44	729069.48	4751638.62	31
45	728856.98	4751707.15	33
46	728719.21	4751671.06	34
47	728262.00	4751768.51	39
48	728349.28	4751720.98	37
49	728231.56	4751688.64	38
50	728032.98	4751668.18	39
51	727769.91	4751616.75	39
52	727663.79	4751636.65	39
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60	726514.74	4751870.27	31
61	726404.88	4751900.35	30
62	726168.97	4751982.42	29
63	727349.34	4751236.45	33

Borrego Transportation Standards

Borrego's mission is to solve the world's energy needs by responsibly developing clean, renewable energy facilities. Part of that mission means ensuring that the projects do not adversely impact the local community. Several measures are taken to ensure local roadways are protected during wind turbine transport and construction at no expense to the local municipality.

Transportation Study

Transport studies are completed by professional engineers to determine the optimal delivery route of the wind turbine and accompanying blades. This analysis identifies load capacities and restrictions of roads, bridges, and culvert crossings. Intersection-level temporary improvements are identified and quantified. Once the preferred route is identified, Borrego will work with the appropriate agencies for coordinating and permitting any temporary modifications to the roadways as necessary. The selected route will be driven by certified professionals prior to the turbine delivery to confirm proper access. The turbine is delivered via specialized drivers and vehicles to the site.

Road Use Agreement

A road use agreement will be negotiated with the appropriate communities prior to construction. The road use agreement will include the following:

1. Statement of no adverse impact or expense to the community.
2. Designated roads to be used over the course of the project.
3. Pre- and post- road evaluations, including before and after photographs, to confirm no damages of the traversed roads have occurred.
4. Any damages to the roads will be repaired in a timely manner.

Road Bond

A road bond will be required for each designated road in an amount to be determined prior to signing the final road use agreement. This road bond is a guarantee. If our work is not done to a certain standard and timescale, the community can use this bond money to complete the project to the applicable standard.

6.11 Fire Protection/First Aid

A handheld 5-6 kg CO_2 fire extinguisher, first aid kit and fire blanket are required to be located in the nacelle during service and maintenance.

- A handheld 5-6 kg CO_2 fire extinguisher is required only during service and maintenance activities, unless a permanently mounted fire extinguisher located in the nacelle is mandatorily required by authorities.
- First aid kits are required only during service and maintenance activities.
- Fire blankets are required only during non-electrical hot work activities.

6.12 Warning Signs

Warning signs placed inside or on the turbine must be reviewed before operating or servicing the turbine.

6.13 Manuals and Warnings

The Vestas Corporate OH&S Manual and manuals for operation, maintenance and service of the turbine provide additional safety rules and information for operating, servicing or maintaining the turbine.

7 Environment

7.1 Chemicals

Chemicals used in the turbine are evaluated according to the Vestas Wind Systems A/S Environmental System certified according to ISO 14001:2015. The following chemicals are used in the turbine:

- Anti-freeze to help prevent the cooling system from freezing.
- Gear oil for lubricating the gearbox.
- Hydraulic oil to pitch the blades and operate the brake.
- Grease to lubricate bearings.
- Various cleaning agents and chemicals for maintenance of the turbine.

8 Design Codes

8.1 Design Codes – Structural Design

The turbine design has been developed and tested with regard to, but not limited to, the following main standards:

Design Codes	
Nacelle and Hub	IEC 61400-1 Edition 3 EN 50308
Tower	IEC 61400-1 Edition 3 Eurocode 3
Blades	DNV-OS-J102 IEC 1024-1

Design Codes	
	IEC 60721-2-4 IEC 61400 (Part 1, 12 and 23) IEC WT 01 IEC DEFU R25 ISO 2813 DS/EN ISO 12944-2
Gearbox	IEC 61400-4
Generator	IEC 60034
Transformer	IEC 60076-11, IEC 60076-16, CENELEC HD637 S1
Lightning Protection	IEC 62305-1: 2006 IEC 62305-3: 2006 IEC 62305-4: 2006 IEC 61400-24:2010
Rotating Electrical Machines	IEC 34
Safety of Machinery, **Safety-related Parts of Control Systems**	IEC 13849-1
Safety of Machinery – Electrical Equipment of Machines	IEC 60204-1

Table 32: Design codes

9 Colours

9.1 Nacelle Colour

Colour of Vestas Nacelles	
Standard Nacelle Colour	RAL 7035 (light grey)
Standard Logo	Vestas

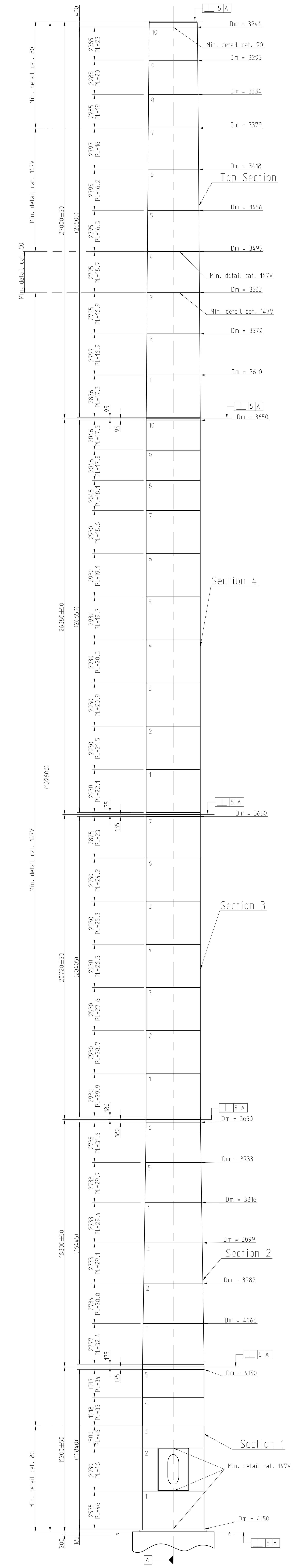
Table 33: Colour, nacelle

9.2 Tower Colour

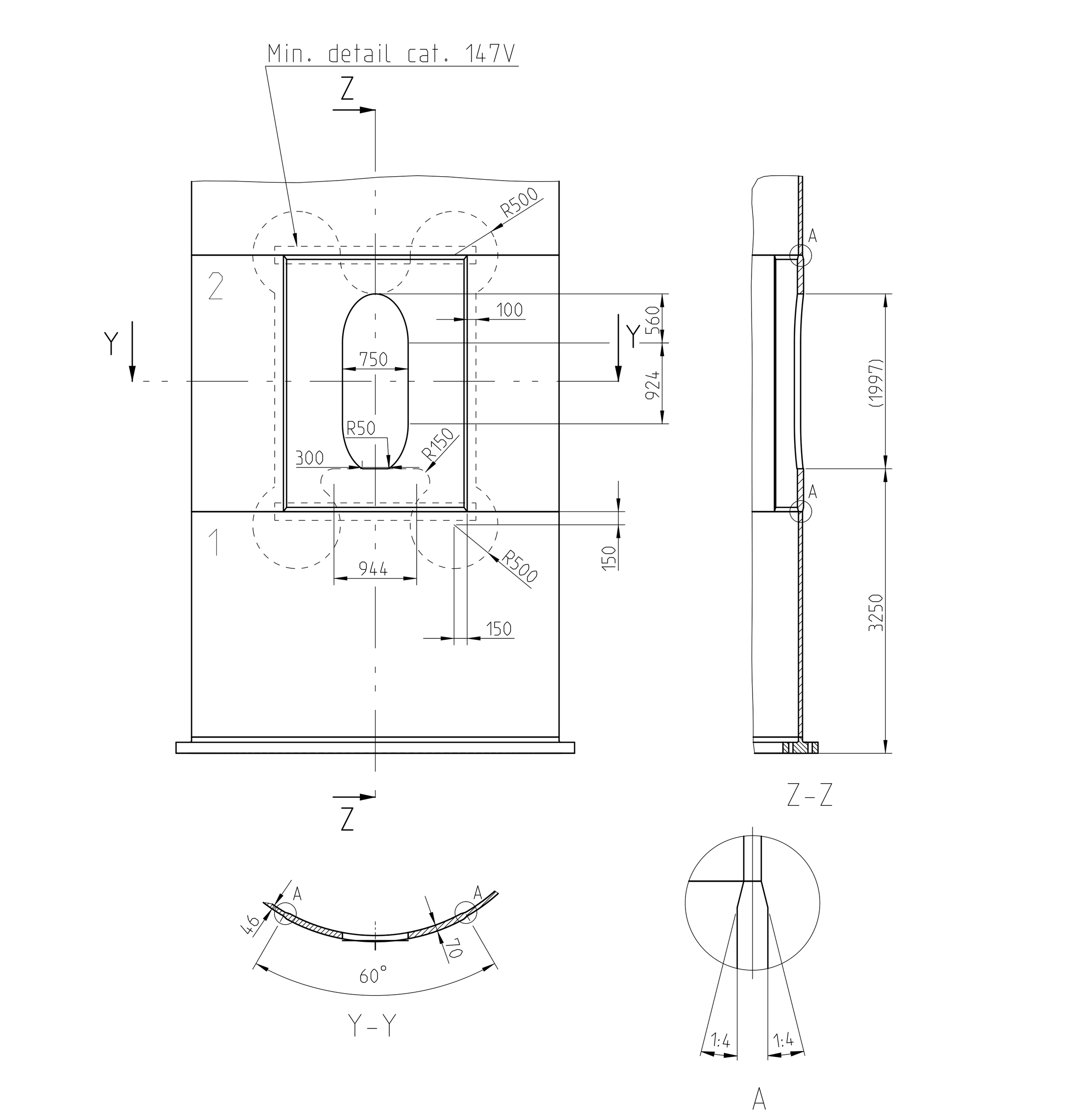
Colour of Vestas Tower Section		
	External:	**Internal:**
Standard Tower Colour	RAL 7035 (light grey)	RAL 9001 (cream white)

Table 34: Colour, tower

9.3 Blade Colour

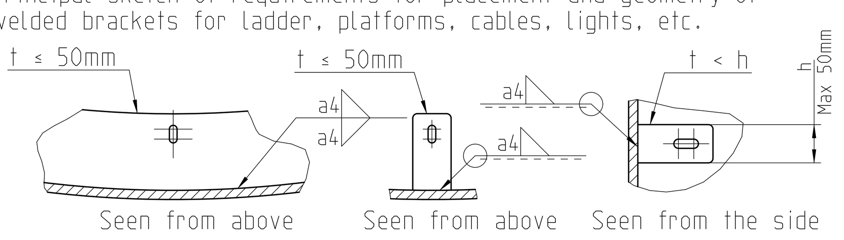


Door Segment



Weld Brackets and Ring Stiffeners

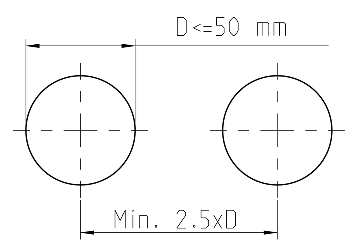
Principal sketch of requirements for placement and geometry of welded brackets for ladder, platforms, cables, lights, etc.



Detail category 80 acc. to EN 1993-1-9 table 8.4 detail 6 and 1 respectively.
Min. 100 mm distance from welding of brackets to other weldings or holes.

Circular Holes

Principal sketch of requirements for placement and geometry of holes in the tower shells.



Detail category 90 acc. to EN 1993-1-9 table 8.1 detail 11.
Min. 100 mm distance from other weldings to holes.
A maximum of two holes at each level throughout the tower is allowed.
4 holes (D<30 mm) at each level are allowed if they are displaced 90 degrees to each other.

IN GENERAL
In general reference is made to the newest edition of referred norms, standards, quality and purchase specifications incl. amendments.

Manufacturing acc. to EN 1090-2 and VAD no. 961592.

All welds to be examined with relevant methods in accordance with EN ISO 17635.
Extent of non-destructive testing (NDT):
- 100% VT of all welds.
- 100% examination for internal imperfections in circ. butt welds between shell / flanges.
- 100% examination for internal imperfections in circ. butt welds where detail cat. 147V is specified.
- 20% examination for internal imperfections in other circular butt welds.
- 10% examination for internal imperfections in longitudinal butt welds.
- 10% examination of fillet welds.

All welds must comply with ISO 5817 level B.

All welds between flanges, shells and door segment must be full penetration butt welds and welded from both sides in flat position. Slope of splice (weld or chamfer) must be ≤ 1/4.

Detail categories according to EN 1993-1-9 and Tower design guideline no. 990803.
Longitudinal butt welds: Detail category 125 according to EN 1993-1-9 Table 8.2 Detail 11.
Circumferential butt welds: Detail category 80, 90 or 147V according to EN 1993-1-9 Table 8.3 Detail 11 and 5 respectively and Tower design guideline no. 990803.

Where detail category 90 or 147V is specified for circ. butt welds between shells and shells/flanges the height of the weld convexity may not be greater than 10% of the weld width.
For circ. butt welds where different adjacent detail categories are specified the highest one applies.

It is only allowed to weld brackets or drill holes in shells where a "Min. det. cat. 80" is specified.
It is allowed to drill holes in shells where a "Min. det. cat. 90" is specified.
It is not allowed to weld brackets or drill holes within the marked area surrounding the door segment shown by the dashed line.

TOLERANCES
Thermal cutting of door opening and/or other holes according to EN/ISO 9013 - 331 and all visible signs of edge discontinuities to be removed. The cut areas are to be ground and all burrs to be removed.

Tolerances for shell according to EN 1993-1-6 class B.
Shell diameters are dimensioned to the centerline in the material.
Longitudinal welds in adjacent shells incl. door segment shall be staggered minimum 90°.
For the door segment reference is made to the symmetry line (staggering of min. 60°).

QUALITY OF MATERIALS
Requirements regarding min. air temp.: Tmd >=-30°C (operational)

FLANGES:
S355NL EN 10025-3 - 3.1/EN 10204

SHELLS:
S355J0 EN 10025-2 - 3.1/EN 10204

DOOR SEGMENT:
S355K2 EN 10025-2 - 3.1/EN 10204

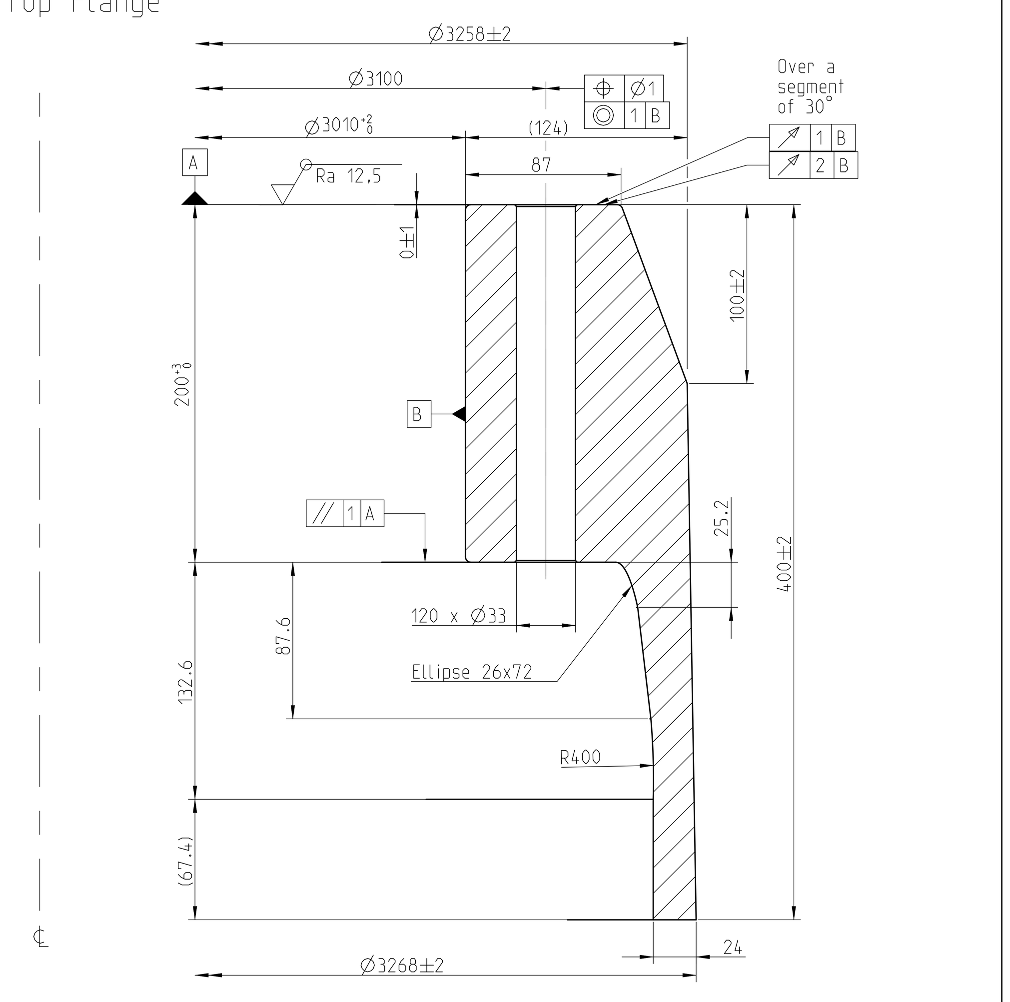
SECONDARY STRUCTURE - BRACKETS, STIFFENERS, DAMPERS ETC
S235JR EN 10025-2

TOWER WEIGHT (SHELLS AND FLANGES):
Weight Section 1 = 55 t
Weight Section 2 = 53 t
Weight Section 3 = 53 t
Weight Section 4 = 50 t
Weight Top Section = 43 t

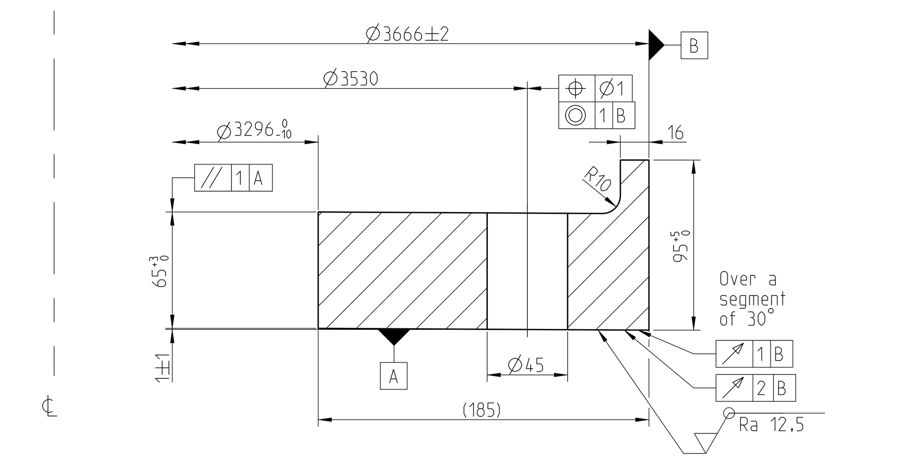
WELDING
Fillet welds: Min. a4

SURFACE TREATMENT
Environment class: According to ISO 12944-2; Outside: C5.
Inside: C3. Durability: According to ISO 12944-1 High (H). Out/-inside.

Top Flange

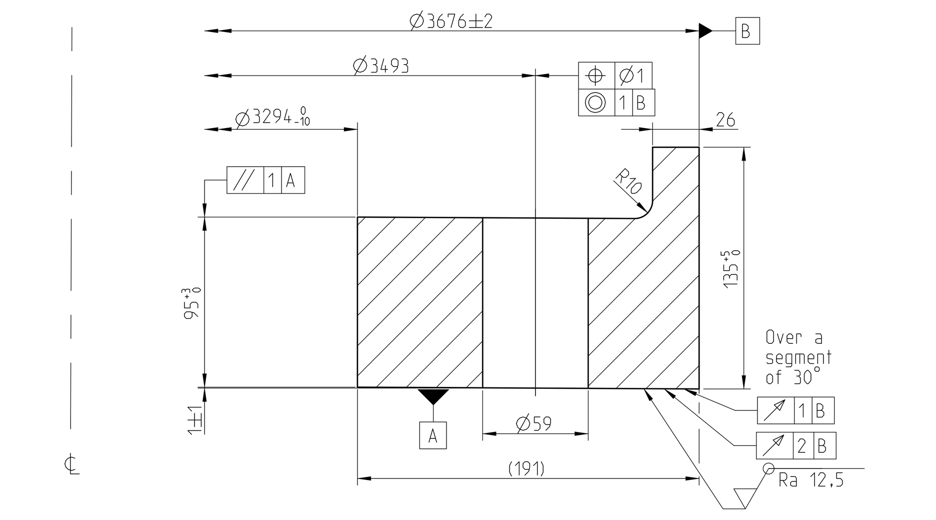


Middle Flange 4



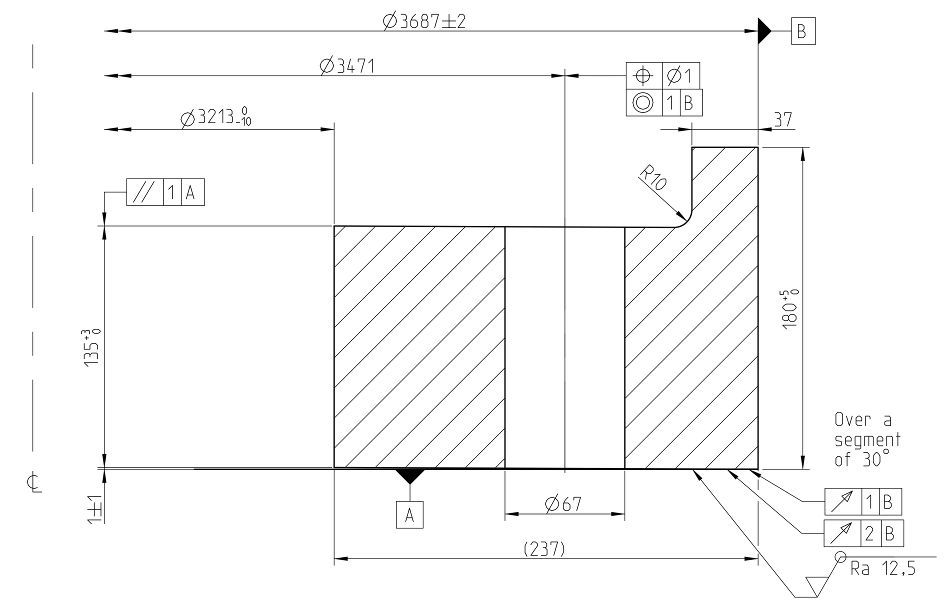
Stud Bolts: 68 pcs. M42 x 285-10.9-tZn; TPS 0081-3753.
Prestress force F.M.: 710 kN; Assembly installation force F.VM.: 958 kN.

Middle Flange 3



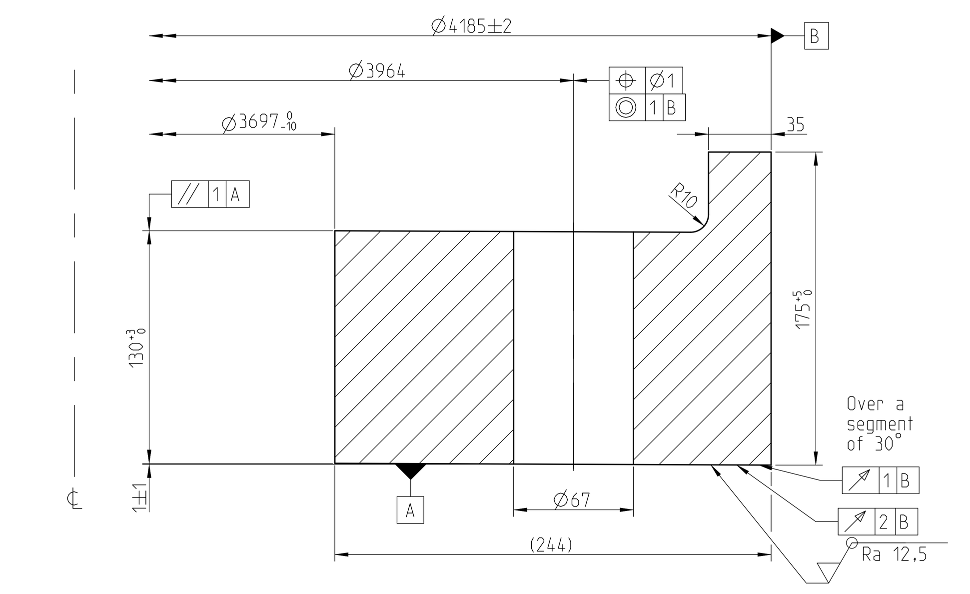
Stud Bolts: 92 pcs. M56 x 390-10.9-tZn; TPS 0081-3753.
Prestress force F.M.: 1280 kN; Assembly installation force F.VM.: 1736 kN.

Middle Flange 2



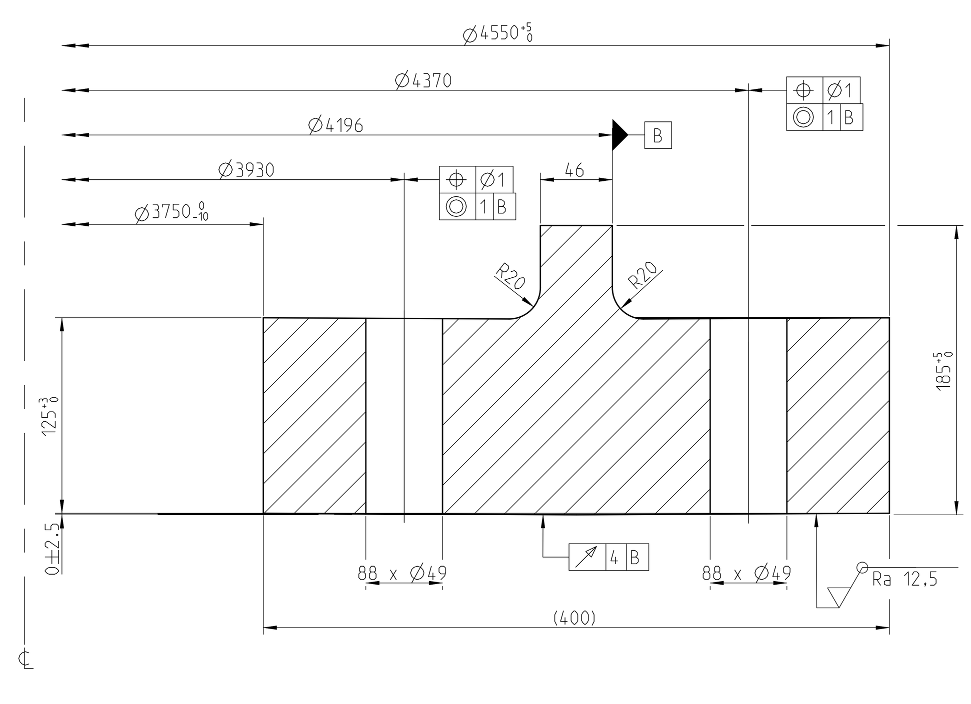
Stud Bolts: 88 pcs. M64 x 495-10.9-tZn; TPS 0081-3753.
Prestress force F.M.: 1680 kN; Assembly installation force F.VM.: 2288 kN.

Middle Flange 1



Stud Bolts: 96 pcs. M64 x 485-10.9-tZn; TPS 0081-3753.
Prestress force F.M.: 1680 kN; Assembly installation force F.VM.: 2288 kN.

Bottom Flange



NOTE !
The drawing can not be used for purchase and production purpose

Item no.	Mass (kg)	Certificate	Format	Status	Revised by	Created date	Created by
A011-2871	0	-	A0	Released	-	2020-11-02	VARIA
Material specification			Scale	Change no.	PDM ver.	Approved date	Approved by
-			1:100	CN042706	1.2	2021-03-04	JOCYU

Vestas. vestas.com

Proj. Pro/E — Item description: T96690D-V150 4.0/4.2 MW Mk3 IEC3B(S) HH105m V155 3.3MW MK3 IECS

Metric — Dimensions shown in mm unless otherwise specified | Replaces / Copy of: - | Drawing no.: A011-2871 | Ver.: 1 | Sheet: 1 of 1

Alexander Wind Construction Sequencing

Nature of the Construction Activities

The construction of the community wind project in Alexander, NY will be similar in many ways to a typical construction project. Tree clearing, site grading, erosion and sediment control measures will all be typical to any construction project in New York. Additionally, utility work associated with the project will be conducted to local utility standards. The unique feature of this project is the installation and wiring of the wind turbine. The community wind project in Alexander will consist of a single wind turbine. Associated developments for access and interconnection of the project include a gravel access road, laydown areas, a crane pad, and utility pole mounted interconnection equipment. The following section of this document identifies the phases and durations expected for construction of the Alexander community wind project.

Construction Sequencing

The sequence of major activities is expected to be as follows:

- **Preconstruction –** A building permit will be applied for with the local Building Department. Any conditions of the projects Special Permit that are required to be addressed prior to construction will be submitted to the town during this phase. Additionally, this time will be used to survey and inventory the turbine delivery route. This will document the existing conditions of the roadway to allow for remediation/repair as needed upon completion of construction.

- **Site Mobilization and Environmental Controls -** Prior to any earth disturbances, erosion control measures will be installed on site. These will initially consist primarily of silt fence and silt sock, which not only serve as erosion control measures, but also denote limits of work as well as wetland features. Wetlands will also be re-flagged as needed and limits of work will be established in order to protect environmental resources.

- **Tree Clearing -** The site will be cleared of trees as outlined in the site construction plans, beginning with the access road area. A temporary logging access will be installed in the location of the proposed access road. This will provide access to the main turbine area while tree clearing continues. Tree clearing is expected to be complete within the first month of construction.

- **Access road construction -** The proposed access road and wetland crossings will be installed once the area has been cleared of trees and stumps. The road will extend south from US-20 and cross several streams on the way to the turbine area. Culverts will be installed to ensure surface water flows will not be disrupted. All crossings will be performed to the applicable ACOE or DEC standard.

- **Site earthwork -** Once the site has been cleared of trees, earthwork will commence. The turbine area will be leveled as needed to provide the slopes and grades shown on the construction plans. Additionally, road grading and stormwater features will be shaped and installed early in the project construction. This phase is estimated to take approximately 1 month.

- **Foundation Work and conduit installation -** As the final grades of the turbine area and road are completed the excavation and concrete work for the turbine foundation will begin. Rebar work, construction of the foundation forms, and concrete placement will likely partially overlap with the previous phase and also last approximately 1 month.

- **Delivery and Installation of Turbine –** Upon completion of civil site work, the turbine delivery will commence. Components will be delivered, including delivery of the primary crane to be utilized for construction. With the crane completed and turbine components delivered, the actual installation of the turbine will begin. The turbine assembly is anticipated to be performed an 1 month.

- **Electrical wiring including Installation of transformers and inverters -** As electrical equipment is installed, the various electrical connections and wiring will be pulled. This includes utility poles and associated interconnection equipment located off of Dry Bridge Road. This phase will be the final significant construction on site.

- **Final site seeding and stabilization –** Throughout construction, the site will be stabilized to ensure no sediment is transported offset. Upon completion of major site work, the site will be seeded with the permanent seed mix, as designated on the site plans.

Commissioning

Upon completion of the sequencing listed above, which is anticipated to take approximately 6 months in total, the project will reach mechanical completion. Significant construction activities will cease, and the site will begin the commissioning phase. During this period, a limited number of personnel will be on site, with the purpose of testing and commissioning equipment. Final project completion will be obtained once all equipment is commissioned, and Permission To Operate (PTO) is obtained from the utility. Upon final completion, the site will be unmanned, with personnel on site only for routine operation and maintenance.

Compliance Testing and Final Road Inspection & Remediation

Upon commissioning of the turbine, regular operation will begin. During the initial operation of the turbine, any conditions or compliance testing required will be performed. At this time, any special conditions or post-construction monitoring or reporting as required in the Special Use Permit will be completed. Additionally, at this stage, construction traffic will have ceased, and so a final road inspection will be performed to identify areas that may have been damaged during turbine component delivery. The final phase will remediation of any road damage, as outlined in the project’s Road Use Agreement.

Wind Power GeoPlanner™

Communication Tower Study

Dry Bridge Rd - Alexander

Prepared on Behalf of
Borrego Solar Systems

February 11, 2021

COMSEARCH
A CommScope Company

Table of Contents

1. Introduction

This Communication Tower Study was performed for the Dry Bridge Rd - Alexander project in Genesee County, New York to identify the tower structures as well as FCC-licensed communication antennas that exist in and around the project area. This information is useful in the planning stages of the wind energy facilities to identify turbine setbacks and to prevent disruption to the services provided by the tenants on the towers. This data can be used in support of the wind energy facilities communications needs in addition to avoiding any potential impact to the current communications services provided in the region.

2. Summary of Results

The communication towers and antennas in the study area were derived from a variety of sources including the FCC's Antenna Structure Registration (ASR) database, Universal Licensing System (ULS), national and regional tower owner databases, and the local planning and zoning boards. The data[1] was imported into GIS software and the structures mapped in the wind energy area of interest. Each tower location is identified with a unique ID number associated with detailed structure and contact information provided in a spreadsheet attachment.

No tower structures were identified within two miles of the Dry Bridge Rd - Alexander project area using the data sources described in our methodology above. Four communication antennas were identified, which may be located on a variety of structure types such as guyed towers, monopoles, silos, rooftops or portable structures. The specific type of structure would normally need to be determined by an on-site visit.

Detailed information about the tower structures and communication antennas is provided in Table 1 and Table 2 including location coordinates, structure height above ground level, and owner-operator name[2].

A discussion of turbine setback distances is provided in section three.

[1] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

[2] Please note that this report analyzes all known operators on the towers from data sources available to Comsearch. Unidentified operators may exist on the towers due to unlicensed or federal government systems, mobile phone operators with proprietary locations, erroneous data on the FCC license, and other factors beyond our control.

Tower ID	ASR Number	Owner	Structure Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to the Project Area (km)
*No communication tower were identified within the Area of Interest						

Table 1: Summary of Tower Structures

ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to the Project Area (km)
1	WPQF924	Land Mobile	GENESEE, COUNTY OF	60.9	42.869806	-78.196472	1.78
2	WQYN840	Land Mobile	GENESEE, COUNTY OF	56.7	42.869806	-78.196472	1.78
3	WRJK720	Microwave	GENESEE, COUNTY OF	20.73/46.63	42.870139	-78.196639	1.74
4	WRAI991	Land Mobile	McCormick Family Farms	10.7	42.886361	-78.245694	2.40

Table 2: Summary of Communication Antennas

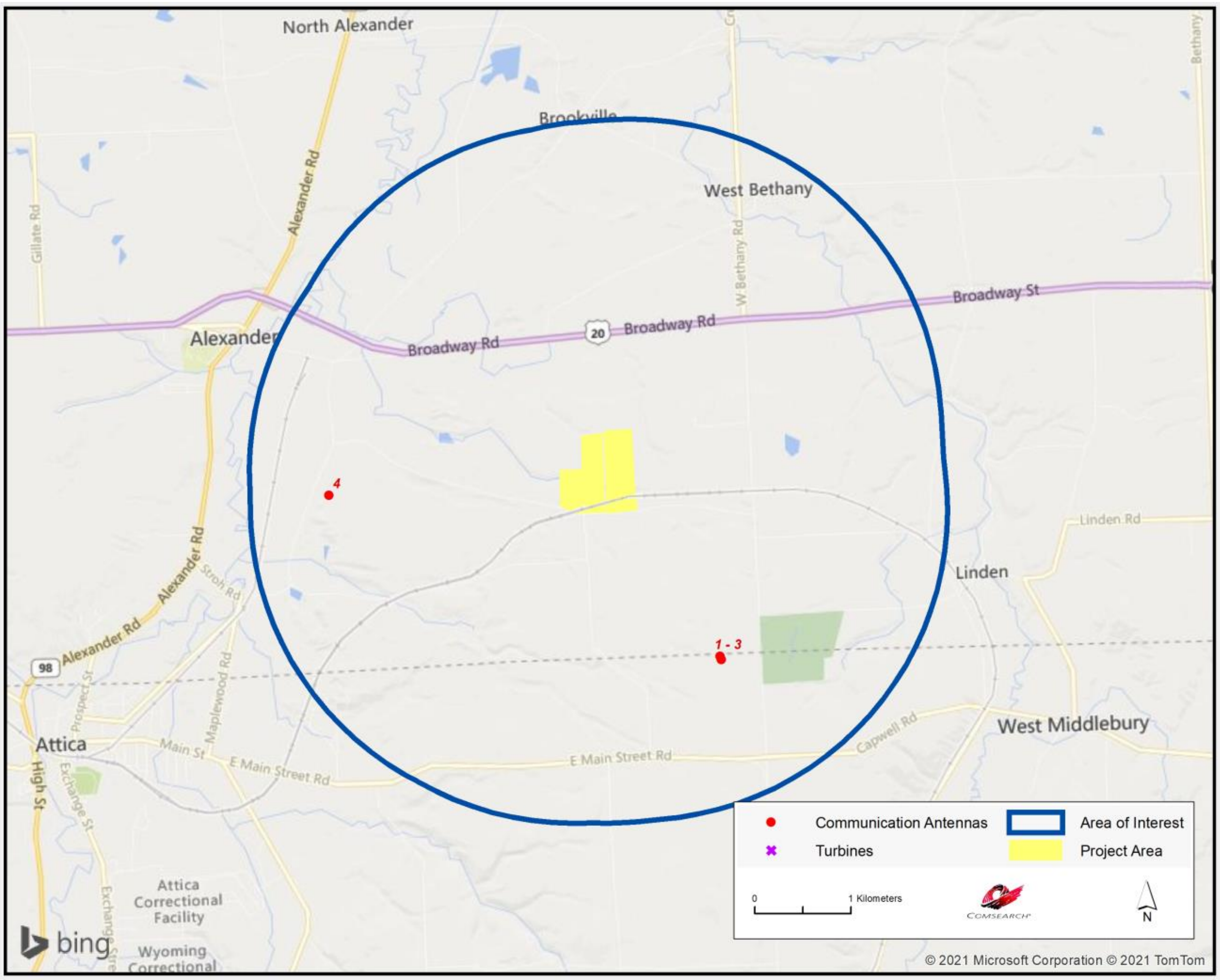


Figure 1: Communication Antennas within the Area of Interest

3. Discussion of Separation Distances

In planning the wind energy turbine locations, a conservative approach would dictate not locating any turbines in close proximity to existing tower structures to avoid any possible impact to the communications services provided by the structures. Reasonable distance between communication towers and wind turbine towers is a function of two things: (1) the physical turning radius of the wind turbine blades and (2) the characteristics of the communication systems on the communication tower.

Since wind turbine blades can rotate 360º, the first consideration of separation distance to other structures is clearance of the blades. If the blade radius is 50 meters, then a separation distance greater than 50 meters is necessary. From a practical standpoint, a setback distance greater than the maximum height of the turbine is necessary to insure a “fall” safety zone in the unlikely event of a turbine tower failure. Setback requirements for “fall” safety are typically specified by the local zoning ordinances.

The required separation distance based on the characteristics of the communication systems will vary depending on the type of communication antennas that are installed on the tower. For example, AM broadcast antennas should be separated by distances that allow for normal coverage which can extend up to 3 kilometers. For land mobile and mobile phone systems, setback distances are based on FCC interference emission limits from electrical devices in the land mobile and mobile phone frequency bands.

Finally, the tower structures identified could be a potential benefit in support of communications network needs for the wind energy facility. An example would be the implementation of a Supervisory Control and Data Acquisition (SCADA) system that monitors and provides communications access to the wind energy facility.

4. Conclusions

No tower structures were identified within two miles of the project area. Four communication antennas were found. They are used for microwave and land mobile services in the area.

5. Contact Us

For questions or information regarding the Communication Tower Study, please contact:

Contact person:	David Meyer
Title:	Senior Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5656
Fax:	703-726-5595
Email:	dmeyer@comsearch.com
Web site:	www.comsearch.com

Wind Power GeoPlanner™

Microwave Study

Dry Bridge Rd - Alexander

Prepared on Behalf of
Borrego Solar Systems

February 11, 2021

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. This report focuses on the potential impact of wind turbines on licensed, proposed and applied non-federal government microwave systems.

2. Project Overview

Project Information

Name: Dry Bridge Rd - Alexander

County: Genesee

State: New York

Number of Turbines: TBD

Blade Diameter: 150 meters

Hub Height: 105 meters

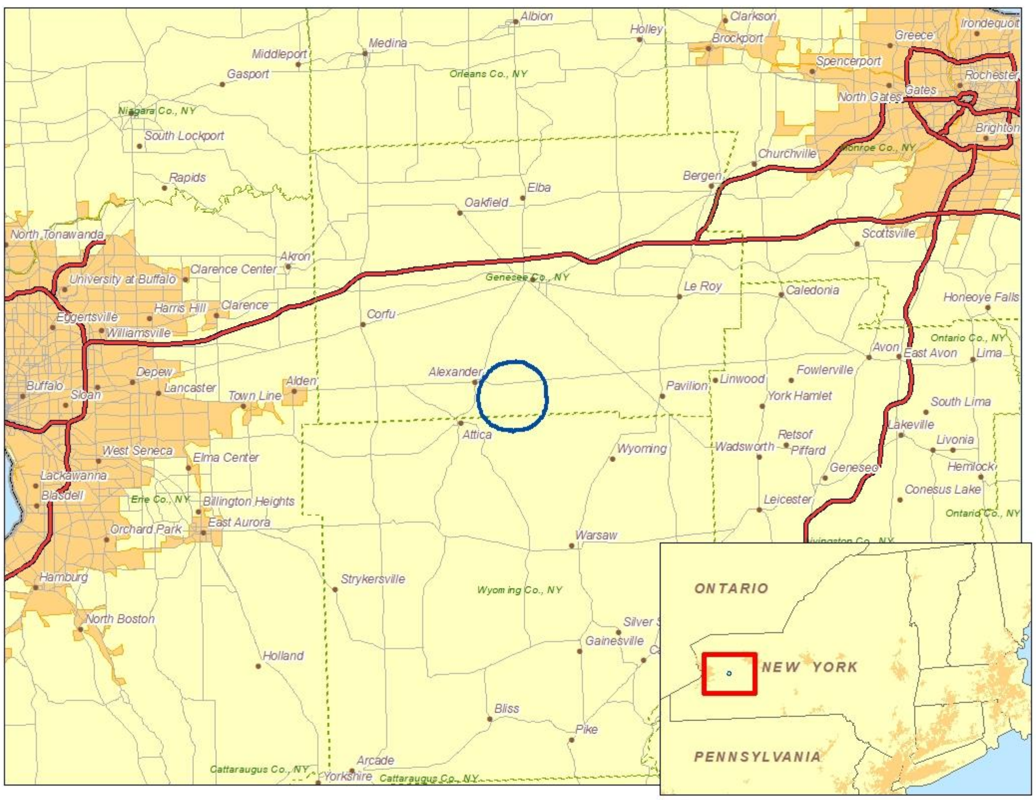


Figure 1: Area of Interest

3. Fresnel Zone Analysis

Methodology

Our obstruction analysis was performed using Comsearch's proprietary microwave database, which contains all non-government licensed, proposed and applied paths from 0.9 - 23 GHz[1]. First, we determined all microwave paths that intersect the area of interest[2] and listed them in Table 1. These paths and the area of interest defined as two miles from the Project Area that encompasses the planned turbine locations are shown in Figure 2.

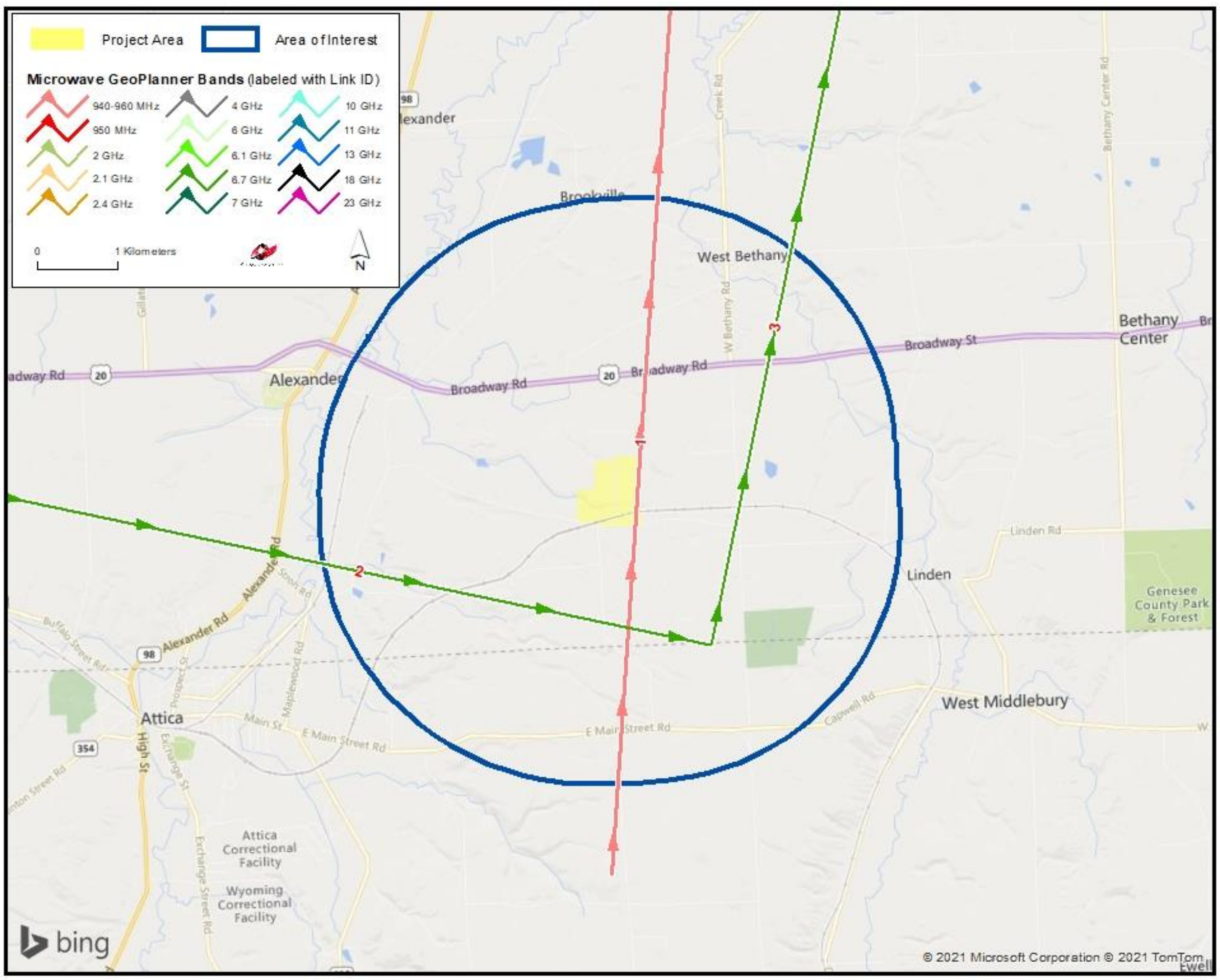


Figure 2: Microwave Paths that Intersect the Area of Interest

1 Please note that this analysis does not include unlicensed microwave paths or federal government paths that are not registered with the FCC.

2 We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

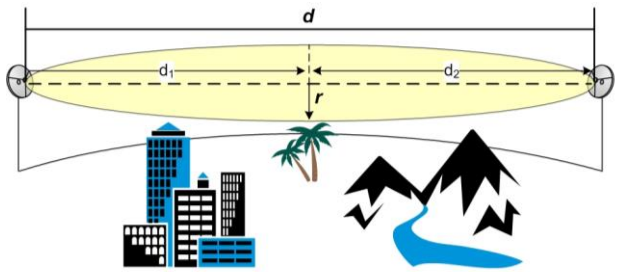
ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Licensed	WQSU735	WRFI245	11 GHz	13.88	Orleans, County of
2	Licensed	WRBZ777	WRCA480	11 GHz	5.47	T-Mobile License LLC
3	Licensed	WREZ528	WREZ527	11 GHz	7.64	Transwave Communication Systems, Inc.

Table 1: Summary of Microwave Paths that Intersect the Area of Interest

(See enclosed mw_geopl.xlsx for more information and GP_dict_matrix_description.xls for detailed field descriptions)

Next, we calculated a Fresnel Zone for each path based on the following formula:

$$r \cong 17.3\sqrt{\frac{n}{F_{GHz}}\left(\frac{d_1 d_2}{d_1 + d_2}\right)}$$



Where,

- r = Fresnel Zone radius at a specific point in the microwave path, meters
- n = Fresnel Zone number, 1
- F_{GHz} = Frequency of microwave system, GHz
- d_1 = Distance from antenna 1 to a specific point in the microwave path, kilometers
- d_2 = Distance from antenna 2 to a specific point in the microwave path, kilometers

The calculated Fresnel Zone shows the narrow area of signal swath and is calculated for each microwave path in the project area. In general, this is the area where the planned wind turbines should be avoided, if possible. Likewise, Comsearch recommends that an area directly in front of each microwave antenna should be avoided. This corresponds to the Consultation Zone which measures 1 kilometer along the main beam of the antenna and 24 ft (7.3 meters) wide. A depiction of the individual Fresnel and Consultation Zones is shown in Figure 3, and is also included in the shapefiles[3,4].

[3] The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 17 projected coordinate system.

[4] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

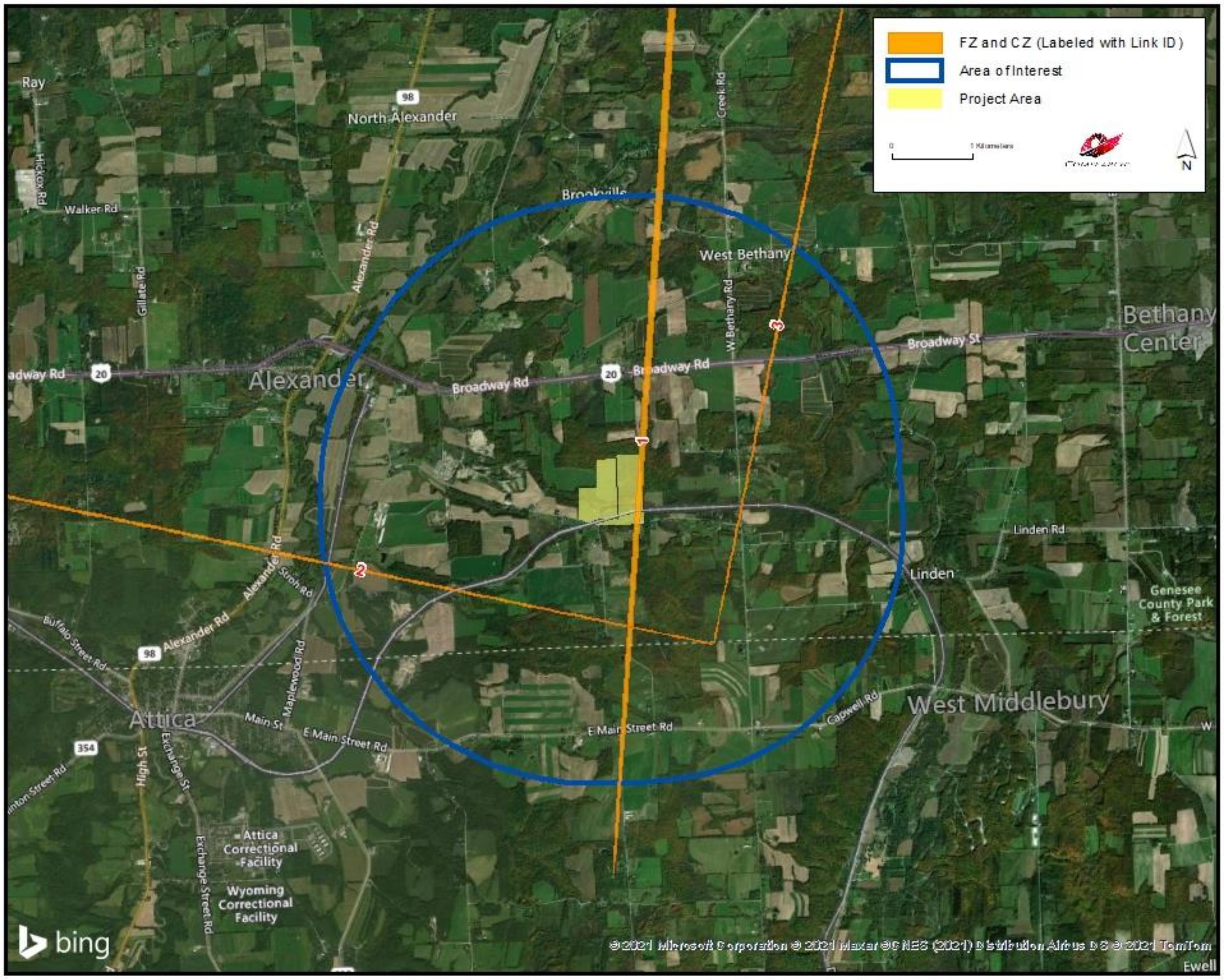


Figure 3: Fresnel and Consultation Zones in the Area of Interest

Discussion of Potential Obstructions

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines intersecting Fresnel Zones
3	N/A	N/A	N/A

For this project, turbine locations were not provided; thus we could not determine if any potential obstructions exist between the planned wind turbines and the incumbent microwave paths. If the latitude and longitude values for turbine locations are provided, Comsearch can identify where a potential conflict might exist.

4. Conclusion

Our study identified three microwave paths withing two miles of the Dry Bridge Rd - Alexander Project with one intersecting the project area. The Fresnel and Consultation Zones for these microwave paths were calculated and mapped. We recommend that all turbines be sited in locations that will not encroach on these exclusion zones.

5. Contact

For questions or information regarding the Microwave Study, please contact:

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5656
Fax: 703-726-5595
Email: dmeyer@comsearch.com
Web site: www.comsearch.com

PRELIMINARY OPERATIONS & MAINTENANCE PLAN

Alexander Wind Turbine

For Proposed Work at:

Dry Bridge Road
Alexander, NY 14005

Prepared by:

borrego

Borrego Solar Systems, Inc.
55 Technology Drive, Suite 102
Lowell, MA 01851

Dated: February 15, 2022

Table of Contents

Introduction

An Operations and Maintenance Plan is a project-specific plan that is typically created based on the specific turbine selected, the turbine manufacturer, and other project specific considerations. This preliminary Operations and Maintenance Plan ("O&M Plan") is intended to be the foundation of the final O&M Plan that will be implemented at Dry Bridge Road (the "Project") once it becomes operational and is based off typical industry O&M maintenance requirements. The Project Operators will be responsible for the Plan's implementation.

The objective of the Plan is to optimize the Project's operational capacity and availability through best-in-class maintenance guidelines and inspections that are designed to pro-actively detect any significant safety or maintenance issues.

O&M Philosophy and Process

Borrego partners with operators who have strong operational philosophies and processes to ensure facilities are operated and maintained in an efficient and responsible manner. These include:

- Best in Class
    - Safety, First and Foremost
    - Continuous safety and technical training
    - Community and environment stewardship
    - High turbine availability that translates into strong production
    - Proactive management -minimizing Mean Time Between Failure (MTBF)
    - Technical library that is comprehensive and up to date
    - WTGs are maintained to the highest industry standards.
- Taking Ownership
    - Holistic approach to project operations working closing with stakeholders including turbine maintenance providers, Balance Of Plant (BOP) providers, utilities, state agencies and local communities
    - Technical oversight of turbine manufacturers' teams on a day-to-day basis
    - Contract compliance
    - Ensure critical BOP infrastructure is well maintained
    - Technical and Safety Audits
- Asset Optimization
    - Real-time performance monitoring via control center
    - Internal SCADA system converts turbine manufacturers' SCADAs to a common platform
    - What we want to improve, we need to measure.
        - Maximize revenues and enhance performance
            - Standardization of performance metrics for the entire fleet

        - Validation of actual production levels regardless of under- or over- production
        - Validation of wind energy models to real asset performance
        - Site manager bonus incentives tied to specific performance indicators
    - Lightning detecting program – to reduce major damage
    - Anomaly Detection Algorithm - thousands of data points monitored
    - Feedback loop to site managers

Scope of Work

The Alexander community wind energy project consists of one wind-to-energy generator (turbine). The turbine requires periodic preventive maintenance as well as corrective maintenance in the event of a malfunction within the individual generator. In addition, the collection system that ties the generators together, as well as the equipment that steps up voltage for delivery to the distribution system, require periodic maintenance.

Turbines

Each individual wind turbine generator (WTG) typically requires preventive maintenance semi-annually. One of these maintenance outages is typically designated as “minor scheduled maintenance” and is completed in one working day per unit. The other is “major scheduled maintenance” and usually takes one to two working days to complete. For a typical wind energy facility, each semi-annual maintenance cycle is scheduled to be performed outside of high-wind season (usually spring or fall) and a crew or crews will work on individual units until the entire project maintenance cycle is completed.

Turbine operators O&M responsibilities and contracting typically include:

a. Ensure Turbine O&M service providers are fulfilling contractual obligations including but not limited to: availability guarantees, maintenance schedule, manpower requirements, turbine repairs, safety, etc. Typical contract services provided by the Turbine Supplier consists of an all- inclusive service (schedule and unscheduled repairs, all parts, labor, and ancillary equipment or tooling necessary to perform the work).

b. Contract typically includes a warranty period for serial defects

c. Turbine Contractor typically performs two Schedule Services each year at 6 month intervals. This consists of replacement of consumables, torque checks, equipment testing, and housekeeping.

d. Monitoring security and safety lighting to ensure appropriate function

Balance of Plant Components

Interconnection equipment for community wind projects typically consist of disconnects, combiner boxes, transformers, meters, switches, and reclosers. The maintenance for distribution level equipment required for community wind is less intensive than what is required for transmission level wind farms. Maintenance activities are typically performed once a year.

Project Balance of Plant (BOP) O&M responsibilities typically include:

a. Oversee operations, repair and maintenance of BOP including but not limited to (interconnect transmission lines, roads, grounds, foundations, transformers, etc.).

b. Furnish all labor (or cause to be furnished) and perform (or cause to be performed) all maintenance and repair activities, sufficient to maintain the BOP in good working condition, consistent with prudent business practices and any applicable operation and maintenance manual

c. Maintain all materials, including spare parts inventory, required to maintain the BOP in the normal course of business

d. Prepare purchase orders to procure parts, materials and supplies necessary for the operation, maintenance and repair of the Projects

e. Schedule power outages and maintenance shutdowns in coordination with the turbine operator and utility to minimize revenue loss and interference with facility operations

f. Supervise, monitor and report on the operations and maintenance of interconnection facilities

g. Respond to trips as reported by the auto-dial monitoring system and provide trip reports of all faults, defects and breakdowns occurring

h. Calibrate and record operational data from meters.

i. Inspect DC disconnects and combiner boxes.

j. Inspect grounding transformer and;

    - Clean out all electrical enclosures
    - Perform preventative maintenance per manufacturer protocol as required to maintain warranty

k. Check for proper operation of AC disconnects

l. Produce monthly operating reports including turbine performance, BOP performance, safety and environmental matters, and others requested by the Prospective Buyer

m. Coordinate and pursue all warranty and other claims against suppliers of materials and equipment to the BOP or Turbines, including any claims against any insurance carrier for payment of claims, liabilities, or losses in connection with the BOP and Turbines or its operation covered by such insurance, and including any litigation associated with any such claims

n. Oversee NERC compliance

o. Operate and maintain the Projects in compliance with all governmental requirements, Loan and Material Project Documents

p. Produce and provide facility data and information requested by the Prospective Buyer, for Governmental Authorities

q. Provide SCADA overlay service which includes tracking, trending, and internet access to Dashboard as well as record of the Facility data

Access Road and Winter Maintenance

Access to the turbine location will be maintained throughout the year. During warmer months, maintenance will include vegetation management to ensure the access road and crane pad remain in good condition and are not obstructed. Roads should be stable enough that very little sediment is released during weather events. Preventative maintenance is required to avoid erosion to the roadway or roadbed. Inspections of the roadway will check for rill erosion in the road or along the shoulders, and areas of poor drainage resulting from subgrade settlement or poor compaction. These conditions shall be noted and supported with photographs and locations as part of the annual report.

Maintenance:

Inspect roadways a minimum of once per year. Maintenance is required when:

- Erosion of the roadway or shoulders is identified
- Clean out roadside ditches when they become clogged with sediments or debris, to prevent ponding, bank overflows, and road washouts
- Fill in areas of erosion or settlement with clean washed stone. If erosion is along shoulder, ensure shoulder is properly revegetated

Winter road maintenance is limited to plowing the access road from the site entrance to the turbine. This ensures access for maintenance personnel access and the fire department as needed. Snow stockpiling will be limited to the edge of the road and at the end of the road. No de-icing chemicals shall be used.

Stormwater Management Maintenance

Swales

Swale maintenance effects how efficiently water will be transported. Swales should resist erosion, be self-cleaning, and discharge onto nearly level vegetated or stabilized areas, thus maximizing the length of time between regrading or cleaning, reducing maintenance costs. Typically, little maintenance is required.

<u>Maintenance:</u>

Check the diversion swale after major storm events (greater than 2.5” in 24 hours) and in spring and fall for:

- Obstructions, erosion, or bank collapse
- Sediment or debris clogging or impeding the flow of water. Clean swale to prevent ponding, bank overflows, and road washouts.
- Re-grade swale only when necessary and line with vegetation or stone as necessary. Re-grading of swale should be limited to late spring or summer, after spring rains have diminished and drier weather has set in, and when vegetation can be re-established. Other times may be suitable depending on weather patterns, work to be performed, and urgency of work to be done.

Culverts
Culverts are designed to transfer stormwater, generally to allow the flow of water beneath roadways to retain the pre-construction drainage characteristics of a site. Typically, no grate is required for wind facility installations, and large debris is absent from the site, so little maintenance is required.

<u>Maintenance is required when:</u>

- Too much sediment or debris accumulates and interferes with volume capacity,
- Erosion is observed either at the culvert inlet or outlet.

Training and Notifications

New site personnel will be oriented to the O&M Plan via a copy and review of this document in combination with their orientation to other operator policies and plans such as the Emergency Action Plan and Health and Safety Plan.

If work is necessary within a public right-of-way in order to conduct maintenance in accordance with the O&M Plan, notification and any necessary work permit(s) will be discussed and obtained with the appropriate agencies prior to starting the work.

SITE USE PERMIT SET

DRY BRIDGE ROAD, ALEXANDER, NY 14005
4.50 MWAC RATED WIND ELECTRIC SYSTEM

GENERAL NOTES

1. AS CONTAINED HEREIN, "CONTRACTOR" IS ASSUMED TO BE THE EPC PROVIDER HIRED BY THE SYSTEM/PROJECT OWNER.
2. WHEN THERE IS A CONFLICT BETWEEN THESE GENERAL NOTES AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.
3. ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE FOLLOWING: LOCAL BUILDING CODE, LOCAL ELECTRICAL CODE, ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK AND THOSE CODES AND STANDARDS LISTED IN THESE DRAWINGS.
4. THESE DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING A CONSTRUCTION LEVEL DESIGN AND ASSOCIATED DRAWINGS AND DETAILS.
5. COORDINATE THESE DRAWINGS WITH SPECIFICATIONS AND MANUFACTURER INSTALLATION AND OPERATION MANUALS.
6. UNLESS OTHERWISE NOTED, THE DESIGN REPRESENTED ON THESE PLANS IS BASED ON THE INFORMATION AND CRITERIA LISTED IN THE "BASIS OF DESIGN" SECTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY SUCH INFORMATION IN PREPARATION OF THE CONSTRUCTION DESIGN.
7. THE EXISTING CONDITIONS REPRESENTED ON THESE PLANS ARE BASED ON PUBLICLY AVAILABLE INFORMATION AND THE SITE DISCOVERY SUMMARIZED IN THESE DRAWINGS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF SUCH INFORMATION AND SUPPLEMENT WITH ANY ADDITIONAL REQUIRED INFORMATION.
8. UNLESS INDICATED AS EXISTING (E), ALL PROPOSED MATERIALS AND EQUIPMENT SHALL BE CONSIDERED TO BE NEW.
9. ALL EQUIPMENT AND COMPONENTS SHALL BE MOUNTED IN COMPLIANCE WITH THE MANUFACTURER'S REQUIREMENTS, CONSTRUCTION DETAILS, AND/OR PRUDENT INDUSTRY STANDARDS.
10. TO THE EXTENT THAT TRESS AND OTHER FEATURES AFFECT THE SYSTEM'S PRODUCTION, SUCH PRODUCTION MODELING IS BASED ON THE EXISTING APPROXIMATE HEIGHTS AND LOCATIONS RELATIVE TO THE SYSTEM AND MAY BE IMPACTED AS TREES GROW AND OTHER FEATURES CHANGE.

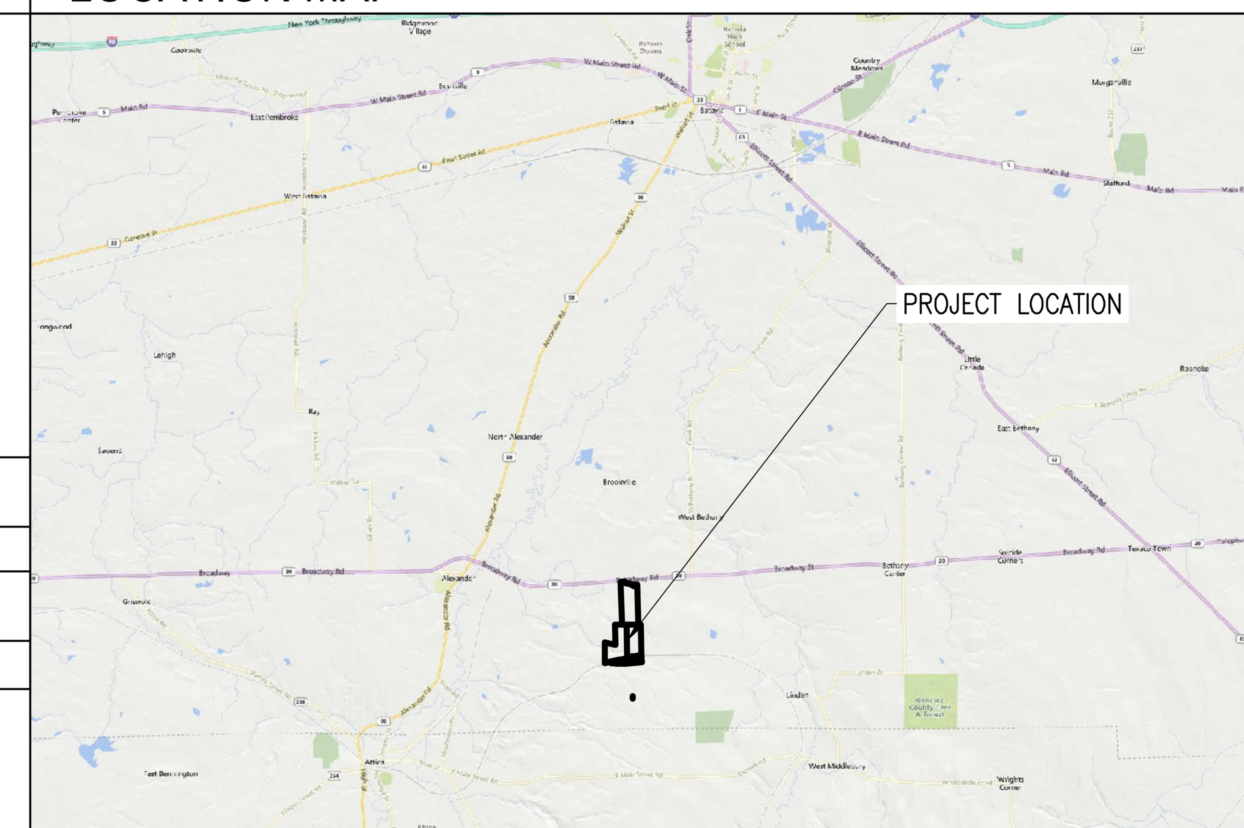
PROJECT SCOPE

THE FACILITY IS A PROPOSED WIND-POWERED ELECTRIC GENERATION PROJECT CONSISTING OF ONE WIND TURBINES GENERATING UP TO 4.5 MEGAWATTS (MWAC) OF ELECTRICITY. THE PROJECT WILL INCLUDE WIND TURBINES, ACCESS ROADS, ELECTRICAL COLLECTION LINES, AND TEMPORARY CONSTRUCTION STAGING AND STORAGE AREAS. THE PROJECT WILL BE INTERCONNECTED TO THE EXISTING ELECTRICAL SYSTEM UPON COMPLETION.

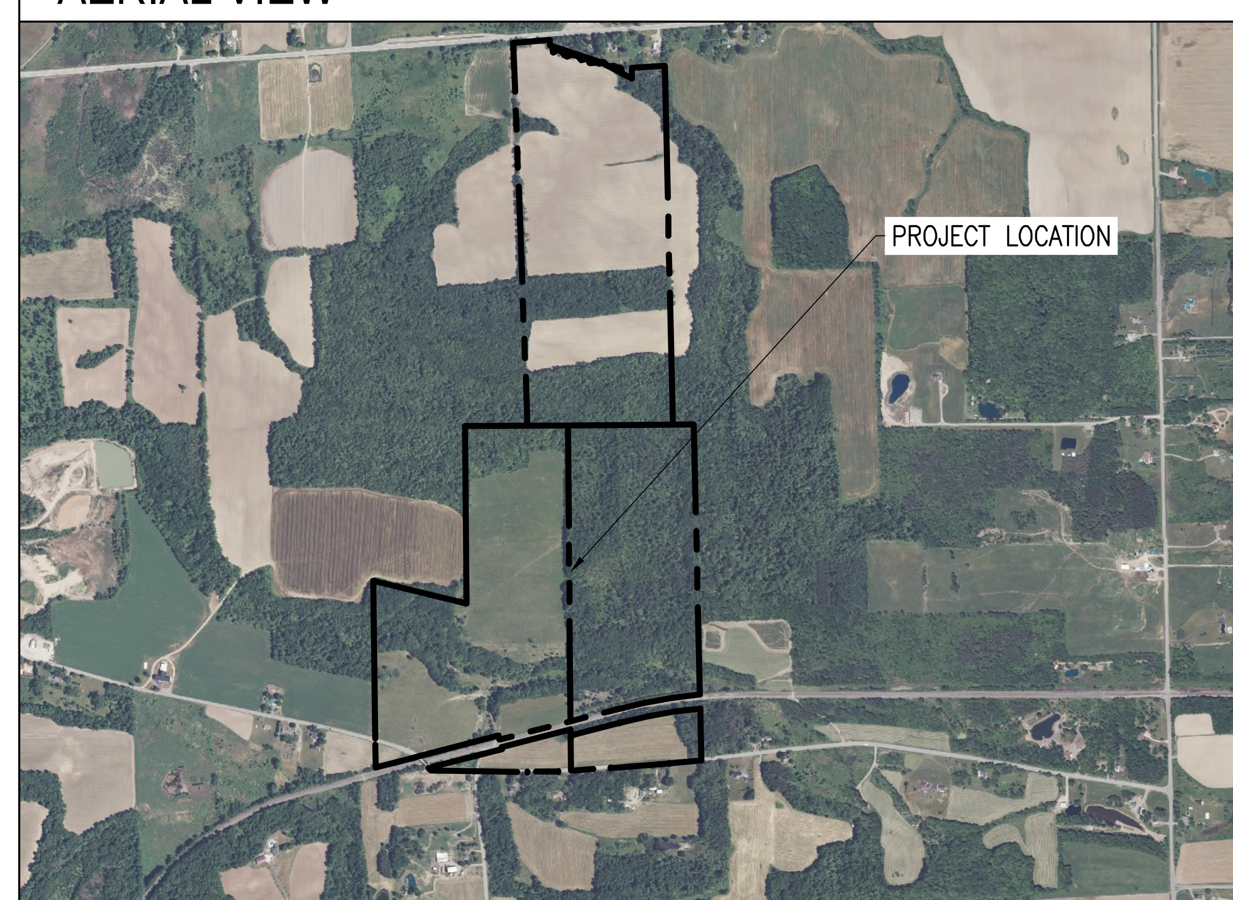
SYSTEM DESCRIPTION

MODULES	4.5 MWAC	TURBINE MODEL	VESTAS V150
NUMBER OF TURBINES	1	ROTOR DIAMETER (FT)	493
HUB HEIGHT (FT)	394	TIP HEIGHT (FT)	650

LOCATION MAP



AERIAL VIEW



DRAWING LIST

APPLICABLE CODES AND STANDARDS

2017 NATIONAL ELECTRICAL CODE
2020 BUILDING CODE OF NEW YORK STATE
UL-1741 – INVERTERS

PROJECT DIRECTORY

SYSTEM / PROJECT OWNER
ALEXANDER WIND 1 LLC
1814 FRANKLIN STREET, SUITE 700
OAKLAND, CA 94612

LAND OWNER / HOST
DALE & BRENDA SPRING
(585) 356-5158
4033 SPRING RD.
ALEXANDER, NY 14005

AUTHORITY HAVING JURISDICTION
TOWN OF ALEXANDER
3350 CHURCH STREET
ALEXANDER, NY 14005

UTILITY
NGRID

CIVIL ENGINEER
FIRM: ERDMAN ANTHONY & ASSOCIATES
CONTACT: MARC D. KENWARD, P.E.
PHONE: (585) 427-8888

ELECTRICAL ENGINEER
FIRM: BORREGO SOLAR SYSTEMS, INC
CONTACT: AHARON WRIGHT, P.E.
PHONE: 978-221-3081

DESIGN ENGINEER
FIRM: BORREGO SOLAR SYSTEMS, INC
CONTACT: JUSTIN MARTIN
PHONE: 518-217-2509

GENERAL ABBREVIATIONS

(E)	EXISTING
AHJ	AUTHORITY HAVING JURISDICTION
AL	ALUMINUM
APPROX	APPROXIMATE
ARY	ARRAY
BLDG	BUILDING
BSS	BORREGO SOLAR SYSTEM
CL	CENTERLINE
DAS	DATA ACQUISITION SYSTEM
DIA	DIAMETER
DO	DITTO
EW	EAST-WEST
FBO	FURNISHED BY OTHERS
FF	FORWARD FACING
GALV	GALVANIZED
HDG	HOT DIP GALVANIZED
HVAC	HEATING VENTILATION AND AIR CONDITIONING
ID	INSIDE DIAMETER
MFR	MANUFACTURER
MOD	SOLAR MODULE
NS	NORTH-SOUTH
NTS	NOT TO SCALE
OAE	OR APPROVED EQUAL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
PV	PHOTOVOLTAIC
PVC	POLY VINYL CHLORIDE
SCH	SCHEDULE
SS	STAINLESS STEEL
SSS	SOLAR SUPPORT STRUCTURE
STC	STANDARD TEST CONDITIONS
TBD	TO BE DETERMINED
TP	TAMPER PROOF
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
WP	WEATHER PROOF

REV 1.0

BORREGO
30 CENTURY HILL DRIVE, SUITE 301
LATHAM, NY 12110
PHONE: (888) 898-6273
FAX: (888) 843-6778
WWW.BORREGOSOLAR.COM

ERDMAN ANTHONY
145 Culver Road, Suite 200
Rochester, NY 14620
Telephone 585 427 8888
Facsimile 585 427 8914
www.erdmananthony.com

NOT FOR CONSTRUCTION

STATE OF NEW YORK
MARC DAVID KENWARD
070261
LICENSED PROFESSIONAL ENGINEER
4/15/22

DRY BRIDGE RD - ALEXANDER
DRY BRIDGE ROAD
ALEXANDER, NY 14005

PROJECT NUMBER:
XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	04/15/22	JM/DK	MK	SUP SET

SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

T-1
TITLE PAGE

GENERAL CIVIL NOTES

GENERAL NOTES

1. AS CONTAINED HEREIN, "CONTRACTOR" IS ASSUMED TO BE THE EPC PROVIDER HIRED BY THE SYSTEM OWNER. "SUBCONTRACTOR" IS THE EPC PROVIDER'S INSTALLATION SUBCONTRACTORS (INCLUDING SITE WORK SUBCONTRACTOR) AND CIVIL ENGINEER OF RECORD (CEOR) IS THE EPC PROVIDER'S DESIGNATED CIVIL ENGINEER.
2. EXISTING CONDITIONS SURVEY INFORMATION WAS PREPARED BY ERDMAN ANTHONY, PERFORMED ON DEC. 2021. HORIZONTAL DATUM IS REFERENCED TO THE NAD 83 (2011) NYSP WEST ZONE, VERTICAL DATUM IS REFERENCED TO NAVD 88.
3. THERE IS NO GUARANTEE THAT ALL THE EXISTING UTILITIES, WHETHER FUNCTIONAL OR ABANDONED WITHIN THE PROJECT LIMITS ARE ON THIS DRAWING. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UNDERGOUND UTILITIES BEFORE STARTING WORK AND SHALL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM THIS WORK. A DIG SAFE TICKET NUMBER INDICATING ALL EXISTING UTILITIES HAVE BEEN LOCATED AND MARKED SHALL BE OBTAINED PRIOR TO COMMENCING WORK. CONTACT "JULIE" AT 1-800-892-0123 AND PROVIDE 72 HOURS NOTICE TO RECEIVE A TICKET NUMBER.
4. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE ELECTRIC UTILITY COMPANY. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTIONS WITH THE RESPECTIVE COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION.
5. TOWN APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES.
6. PRIOR TO CONSTRUCTING THE SITE ENTRANCES ONTO PUBLIC ROADS, THE CONTRACTOR SHALL OBTAIN A HIGHWAY/DRIVEWAY PERMIT FROM THE APPLICABLE AHJ.
7. SUBCONTRACTOR(S) SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS, AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
8. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS, AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE CONTRACTOR/CEOR FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
9. AREAS USED AS FOR PARKING DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS INCLUDING, BUT NOT LIMITED TO, REGRADING, LOAMING AND SEEDING. IN NO CASE SHALL PARKING AREAS, LAYDOWN AREAS, CONSTRUCTION TRAILERS, AND PORTABLE TOILETS BE LOCATED WITHIN A WETLAND RESOURCE AREA AND/OR ANY BUFFER ZONES.

SITE PREPARATION NOTES

1. AREAS DESIGNATED FOR TREE CLEARING SHALL BE CLEARED ONLY. NO GRUBBING OR STRIPPING OF TOPSOIL IS NECESSARY, UNLESS SPECIFICALLY SHOWN OTHERWISE AND APPROVAL HAS BEEN GIVEN BY THE CONTRACTOR.
2. TREE CLEARING AND STUMP REMOVAL SHALL BE IN ACCORDANCE WITH APPROVED LOCAL, STATE, AND FEDERAL PERMITS. TREES TO BE REMOVED SHALL BE MARKED BY THE CONTRACTOR'S PROJECT MANAGER OR SITE SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORK ON-SITE.
3. SEASONAL TREE CLEARING RESTRICTIONS MAY BE REQUIRED FOR ENDANGERED SPECIES PROTECTION. THE CONTRACTOR SHALL REFER TO THE TREE CLEARING PLAN FOR ANY RESTRICTIONS.
4. THE SUBCONTRACTOR(S) IS/ARE RESPONSIBLE FOR ANY DAMAGE TO EXISTING SITE CONDITIONS TO REMAIN THAT ARE DUE TO SUBCONTRACTOR(S) OPERATIONS.
5. ITEMS TO BE REMOVED THAT ARE NOT STOCKPILED FOR LATER REUSE ON THE PROJECT OR DELIVERED TO THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE SUBCONTRACTOR(S).
6. THE SUBCONTRACTOR(S) SHALL BE RESPONSIBLE FOR COORDINATING THEIR EFFORTS WITH ALL TRADES.
7. THE SUBCONTRACTOR(S) SHALL COORDINATE ALL ADJUSTMENT OR ABANDONMENT OF UTILITIES WITH THE RESPECTIVE UTILITY COMPANY.
8. TEMPORARY CONSTRUCTION HAUL ROADS (IF DEEMED NECESSARY) SHALL BE EXCAVATED AND THE SUB-BASE COMPACTED TO 95% SPMDD. THE USE OF SEPARATION FABRICS SHALL BE USED TO FACILITATE FUTURE REMOVAL AND RECOVERY OF GRANULAR MATERIALS. HAUL ROADS SHALL HAVE AT LEAST 9" OF 3-INCH MINUS STONE AND SHALL BE MAINTAINED DURING CONSTRUCTION.

EROSION AND SEDIMENT CONTROL MEASURES

1. A SPDES STORMWATER GENERAL PERMIT SHALL BE IN PLACE PRIOR TO COMMENCING ANY EARTH DISTURBANCE.
2. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR DISTURBANCE AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
3. SEDIMENT BARRIERS SHALL BE INSPECTED AND APPROVED BY THE TOWN OF ALEXANDER OR THEIR REPRESENTATIVE AND THE CONTRACTOR/CEOR BEFORE CONSTRUCTION BEGINS.
4. STRAW BALES AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE OF NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY WHEN INSTALLED.
5. DISTURBED AREAS SHALL BE BLANKETED OR SEEDED AND MULCHED AS SOON AS PRACTICAL AFTER CONSTRUCTION ACTIVITIES IN THAT AREA HAVE CONCLUDED. ALL ERODABLE/BARE AREAS SHALL BE BLANKETED OR SEEDED AND MULCHED WITHIN 7 DAYS WITH TEMPORARY EROSION CONTROL SEEDING.
9. PRIOR TO SEEDING, ACCESS AISLES, TEMPORARY STAGING, STORAGE, AND PARKING AREAS ARE TO BE DE-COMPACTED AND RESTORED PER THE SWPPP.
10. STABILIZE SLOPES GREATER THAN 12:1 (HORIZONTAL: VERTICAL) WITH SEED, SECURED GEOTEXTILE FABRIC, SPRAYED COMPOST BLANKET, OR RIP-RAP AS REQUIRED TO PREVENT EROSION DURING CONSTRUCTION.
11. SEDIMENT BARRIERS SHALL BE CONSTRUCTED AROUND ALL SOIL STOCKPILE AREAS.
12. CLEAN OUT PROJECT DRAINAGE FEATURES AND STRUCTURES (I.E. CULVERTS, BASINS, SWALES, ETC.) AFTER COMPLETION OF CONSTRUCTION.
13. SEDIMENT COLLECTED DURING CONSTRUCTION BY THE VARIOUS EROSION CONTROL SYSTEMS SHALL BE DISPOSED OF ON THE SITE ON A REGULAR BASIS. SEDIMENT SHALL BE REMOVED FROM EROSION CONTROL SYSTEMS WHEN THE HEIGHT OF THE SEDIMENT EXCEEDS ONE-HALF OF THE HEIGHT OF THE SEDIMENT CONTROL MEASURE.
14. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE SUBCONTRACTOR(S) SHALL REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AT THE CONTRACTOR/CEOR DIRECTION.
15. AFTER THE REMOVAL OF TEMPORARY EROSION CONTROL MEASURES, THE SUBCONTRACTOR(S) SHALL GRADE AND SEED AREA OF TEMPORARY EROSION CONTROL MEASURE.
16. DAMAGED OR DETERIORATED EROSION AND SEDIMENT CONTROL ITEMS WILL BE REPAIRED IMMEDIATELY AFTER IDENTIFICATION OR AS DIRECTED BY THE CONTRACTOR/CEOR.
17. THE CONTRACTOR'S SITE SUPERINTENDENT IS RESPONSIBLE FOR DAILY INSPECTIONS, MAINTENANCE, AND DIRECTING REPAIR ACTIVITIES. THE CONTRACTOR SHALL INSPECT EROSION CONTROL MEASURES TWICE EVERY SEVEN (7) CALENDAR DAYS (IF GREATER THAN 5 ACRES IS TO BE DISTURBED AT ANY ONE TIME) OR ONCE EVERY FOURTEEN (14) DAYS AND WITHIN 24 HOURS OF ANY STORM EXCEEDING 1/2 INCH PRECIPITATION, IN ACCORDANCE WITH THE NPDES REQUIREMENTS. DAMAGED AND INEFFECTIVE EROSION CONTROL MEASURES SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS.
18. PIPE OUTLETS (IF ANY) SHALL BE STABILIZED WITH STONE. REFER TO DETAILS.
19. WATER PUMPED OR OTHERWISE DISCHARGED FROM THE SITE DURING CONSTRUCTION DEWATERING SHALL BE FILTERED.
20. WHEN TEMPORARY DRAINAGE IS ESTABLISHED, EROSION/SEDIMENTATION CONTROL MEASURES MAY BE REQUIRED BY CONTRACTOR/CEOR.
21. GRAVEL ROADS, ACCESS DRIVES, PARKING AREAS OF SUFFICIENT WIDTH AND LENGTH, AND VEHICLE WASH DOWN FACILITIES, SHALL BE PROVIDED TO PREVENT SOIL FROM BEING TRACKED ONTO PUBLIC OR PRIVATE ROADWAYS. ANY SOIL REACHING A PUBLIC OR PRIVATE ROADWAY SHALL BE REMOVED BEFORE THE END OF EACH WORKDAY.
22. NECESSARY MEASURES SHALL BE TAKEN TO CONTAIN ANY FUEL OR POLLUTION RUNOFF. NO RE-FUELING SHALL OCCUR WITHIN 100 FEET OF ANY WETLAND RESOURCE AREA AND 200 FEET FROM RIVERFRONT. LEAKING EQUIPMENT OR SUPPLIES SHALL BE IMMEDIATELY REPAIRED OR REMOVED FROM THE SITE.
23. THE COST OF REPAIRING EROSION CONTROL MEASURES OR REMOVING SEDIMENT FROM EROSION CONTROL SYSTEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE APPLICABLE EROSION CONTROL ITEM.
24. EROSION CONTROL MEASURES SHALL BE KEPT OPERATIONAL AND MAINTAINED CONTINUOUSLY THROUGHOUT THE PERIOD OF LAND DISTURBANCE UNTIL PERMANENT SEDIMENT AND EROSION CONTROL MEASURES ARE OPERATIONAL.
25. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DUST FROM FORMING.
26. EROSION CONTROL MEASURES AS SHOWN ON THESE DRAWINGS IS INTENDED TO CONVEY MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES AS NECESSARY TO PREVENT SOIL EROSION AND TO COMPLY WITH THE PROJECT'S NPDES PERMIT STORMWATER POLLUTION PREVENTION PLAN.

LAYOUT AND MATERIAL NOTES

1. THE CONTRACTOR SHALL HAVE PERIMETER FENCE, ELECTRICAL TRENCHES, AND RACKING STAKED OUT BY A LICENSED LAND SURVEYOR PRIOR TO ANY INSTALLATION OF RACKING OR TRENCHES.
2. EXCESS TRENCH MATERIAL SHALL BE PLACED ON THE SIDES OF THE TRENCH AND PLACED AT OR NEAR THE SAME LOCATION AS WHERE EXCAVATED. TOPSOIL REMOVED SHALL BE PLACED ON TOP AND LIGHTLY COMPACTED.
3. SUBCONTRACTOR SHALL INSTALL CONDUITS FOR ALL ELECTRIC CONDUIT CROSSINGS PRIOR TO INSTALLATION OF THE GEOGRID MATERIAL. THE GEOGRID SHALL NOT BE HORIZONTALLY CUT ONCE INSTALLED.

GRADING NOTES

1. WHERE PROPOSED GRADES MEET EXISTING GRADES, SUBCONTRACTOR(S) SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ALLOWED.
2. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS, STRUCTURES, PUBLIC ROADWAYS, AND ELECTRICAL EQUIPMENT AREAS.

MEASURES TO LIMIT IMPACTS TO AGRICULTURAL LAND

1. TOPSOIL SEGREGATION IS REQUIRED WHEN OPEN-CUT TRENCHING IN AGRICULTUAL AREAS.
2. STRIPPED TOPSOIL SHALL BE STOCKPILED AWAY FROM WORK AREAS AND KEPT SEPARATE FROM OTHER EXCAVATED MATERIALS UNTIL COMPLETION OF THE PROJECT FACILITY FOR FINAL RESTORATION. TOPSOIL STOCKPILE AREAS ARE SHOWN ON THE PLANS.
3. ANY TEMPORARY CONSTRUCTION DRAINGE MODIFICATIONS SHALL BE RESOTRED TO EXISTING CONDITIONS POST-CONSTRUCTION.

ABBREVIATIONS

BIT	BITUMINOUS
BMP	BEST MANAGEMENT PRACTICE
BVW	BORDERING VEGETATED WETLANDS
CB	CONCRETE BOUND
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
DH	DRILL HOLE
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
ECB	EROSION CONTROL BARRIER
FES	FLARED END SECTION
FH	FIRE HYDRANT
FND	FOUND
GG	GAS GATE
HDPE	HIGH-DENSITY POLYETHYLENE
HW	HEADWALL
ILSF	ISOLATED LANDS SUBJECT TO FLOODING
IP	IRON PIPE
ISW	ISOLATED WETLANDS (FEDERAL JURISDICTION)
LA	LANDSCAPED AREA
LOW	LIMIT OF WORK
N/F	NOW OR FORMERLY
NTS	NOT TO SCALE
OCS	OUTLET CONTROL STRUCTURE
OHW	OVERHEAD WIRE
RCP	REINFORCED CONCRETE PIPE
RET	RETAINING
ROW	RIGHT-OF-WAY
SB	STONE BOUND
TEL	TELEPHONE CABLE
TYP	TYPICAL
UP	UTILITY POLE
WG	WATER GATE

REV 1.1

LEGEND

- SOLAR MODULES
- ROAD (GRAVEL)
- FENCE LINE
- PROPERTY LINE
- FLOW DIRECTION
- WF — BANK LINE/FLAG
- WF — WETLAND LINE/FLAG
- 100 — (E) MAJOR CONTOUR
- 99 — (E) MINOR CONTOUR
- 100 — PROPOSED MAJOR CONTOUR
- 99 — PROPOSED MINOR CONTOUR
- 100' WBZ — 100' WETLAND BUFFER ZONE
- 200' RFA — 200' RIVERFRONT AREA
- 100-YEAR FLOOD LINE — 100-YEAR FLOOD LINE
- WATER RESOURCE OVERLAY DISTRICT — WATER RESOURCE OVERLAY DISTRICT
- TREELINE
- STONE WALL
- SILT FENCE
- SILT SOCK
- D — DRAIN PIPE
- E — ELECTRICAL TRENCH
- OHV — OVERHEAD ELECTRIC
- S — SEWER LINE
- V — WATER LINE
- GAS — GAS MAIN
- 23-23A — ASSESSORS MAP-LOT

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4/15/22

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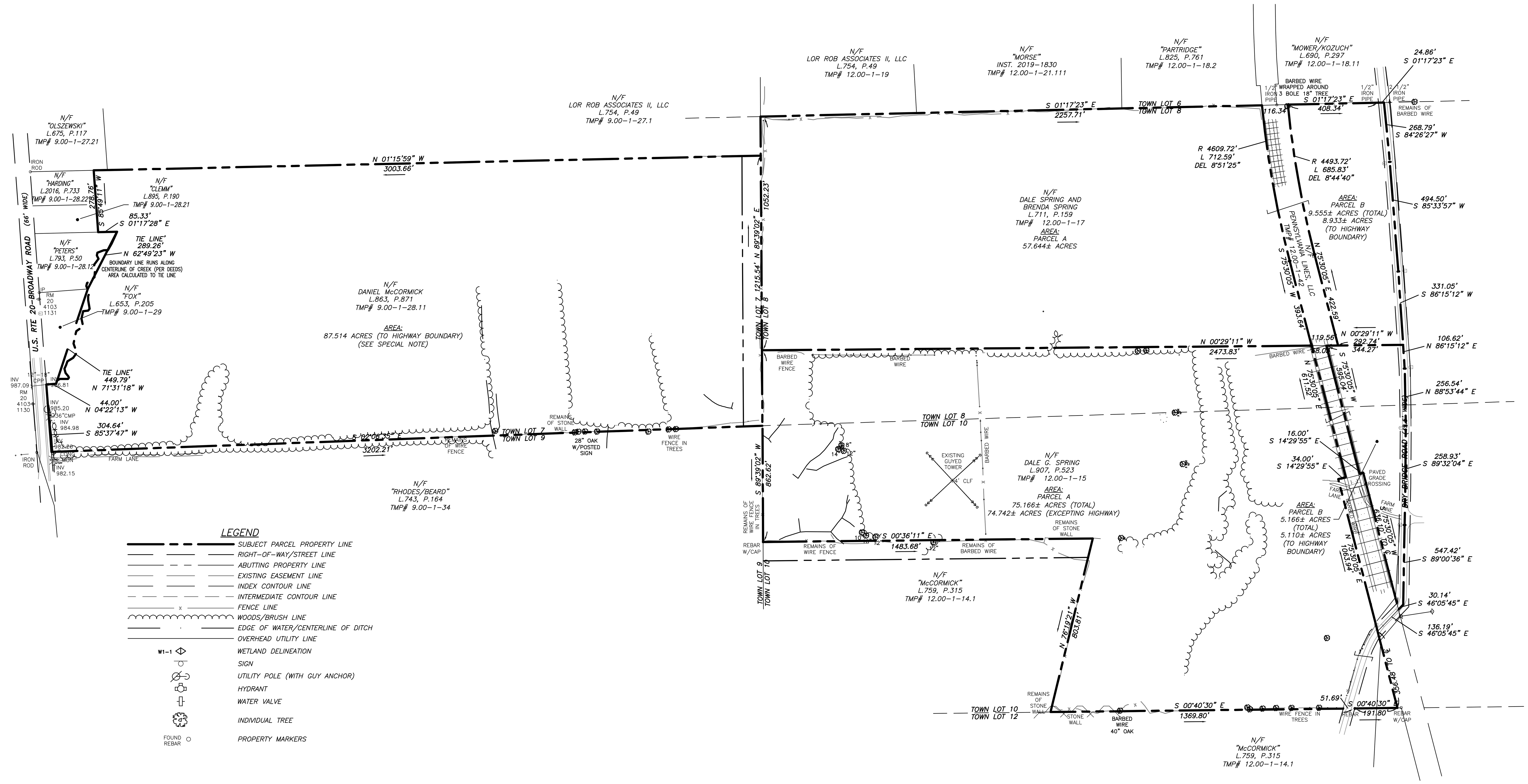
DRY BRIDGE ROAD
ALEXANDER, NY 14005

PROJECT NUMBER:
XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	04/15/22	JM/DK	MK	SUP SET

SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-0.0
CIVIL NOTES



SURVEY NOTES:

1. MAPPING PREPARED FROM FIELDWORK PERFORMED BY ERDMAN ANTHONY DATED JANUARY 2022, REFERENCING FIELD BOOK #2021-06, P.56, FIELD BOOK #2021-07, P.53, FIELD BOOK #2021-08, P.18 & FIELD BOOK #2021-09, P.1
2. NORTH ORIENTATION AND COORDINATES SHOWN HEREON BASED ON GPS OBSERVATIONS TAKEN AT THE TIME OF THE FIELDWORK. HORIZONTAL DATUM REFERENCES NAD83(2011), NYSP WEST ZONE, EXPRESSED IN US SURVEY FEET.
3. VERTICAL INFORMATION SHOWN HEREON BASED ON GPS OBSERVATIONS TAKEN AT THE TIME OF THE FIELDWORK. VERTICAL DATUM REFERENCES NAVD88, EXPRESSED IN US SURVEY FEET.
4. UTILITIES SHOWN BASED ON VISIBLE SURFACE EVIDENCE GATHERED AT THE TIME OF THE SURVEY ONLY, AND OTHERS MAY EXIST.
5. TITLE INFORMATION WAS PROVIDED BY THE CLIENT FOR THIS SURVEY (REF. #1).

REFERENCES:

1. CERTIFICATE AND REPORT OF TITLE ISSUED BY STEWART TITLE INSURANCE COMPANY. (TMP# 12.00-1-15). TITLE NUMBER 71143991, EFFECTIVE DATE JANUARY 21, 2021.
2. CERTIFICATE AND REPORT OF TITLE ISSUED BY STEWART TITLE INSURANCE COMPANY. (TMP# 12.00-1-17). TITLE NUMBER 71143982, EFFECTIVE DATE JANUARY 22, 2021.
3. CERTIFICATE AND REPORT OF TITLE ISSUED BY STEWART TITLE INSURANCE COMPANY. (TMP# 9.00-1-28.11). TITLE NUMBER 71178430, EFFECTIVE DATE SEPTEMBER 15, 2021.
4. TAX/DEED INFORMATION AVAILABLE FROM GENESEE COUNTY CLERK'S OFFICE AND SHOWN HEREON.

I, AS AN AGENT OF ERDMAN ANTHONY HEREBY CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 6(b), 7(a), 7(b1), 8, 11(a), 11(b), 13, 14, 16, 17, 19, and 20 (LOCATION OF WETLAND DELINEATION) OF TABLE A THEREOF. THE FIELDWORK WAS PERFORMED IN JANUARY, 2022. MAPPING PERFORMED IN JANUARY, 2022.

PRELIMINARY

DAVID L. STANDINGER, NYSPLS No. 050107 DATE

BOUNDARY SURVEY MAP

SCALE: 1" = 250'

0 250' 500'

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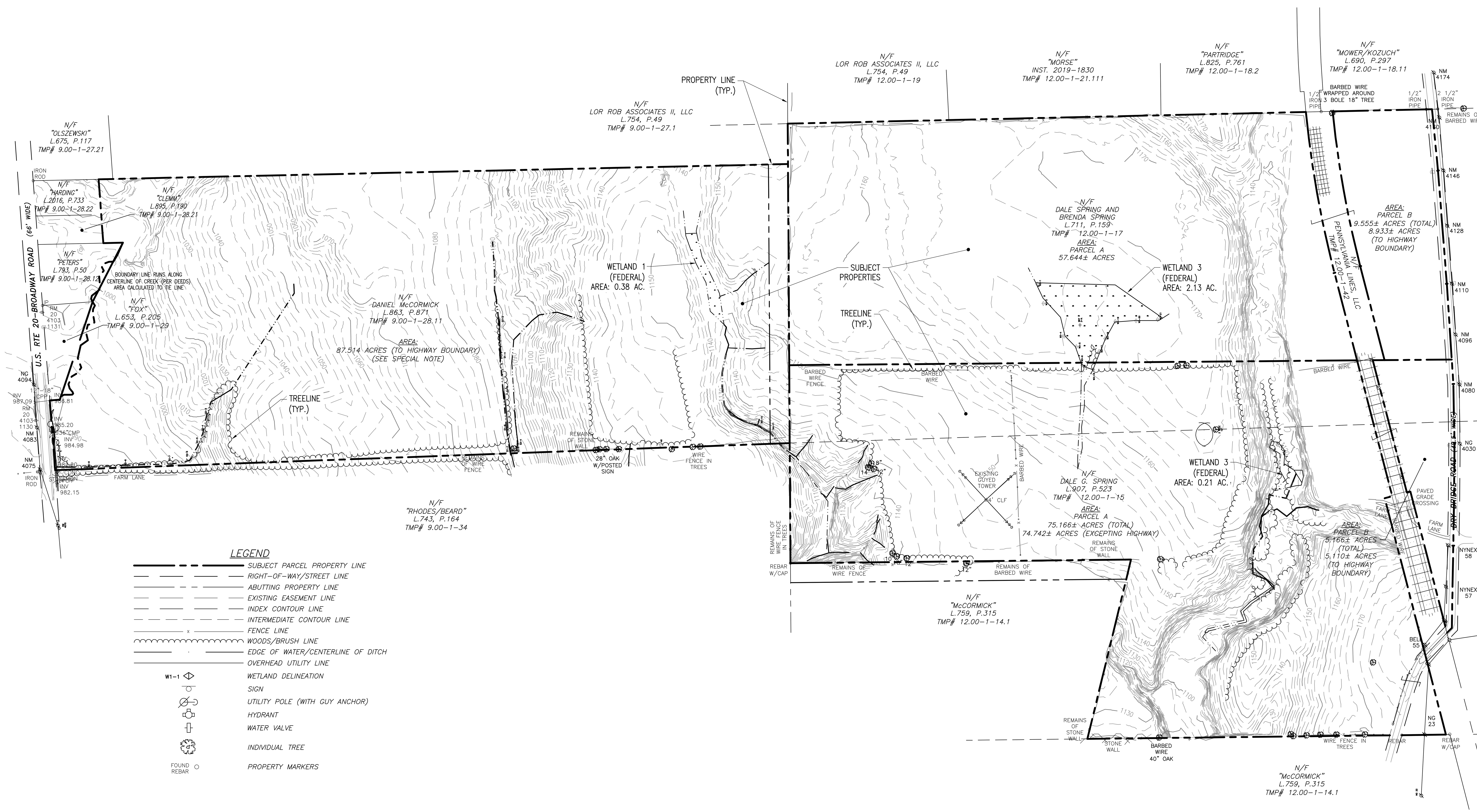
C-0.1
BOUNDARY SURVEY MAP



EXISTING CONDITIONS PLAN

SCALE: 1" = 200'

0 200' 400'

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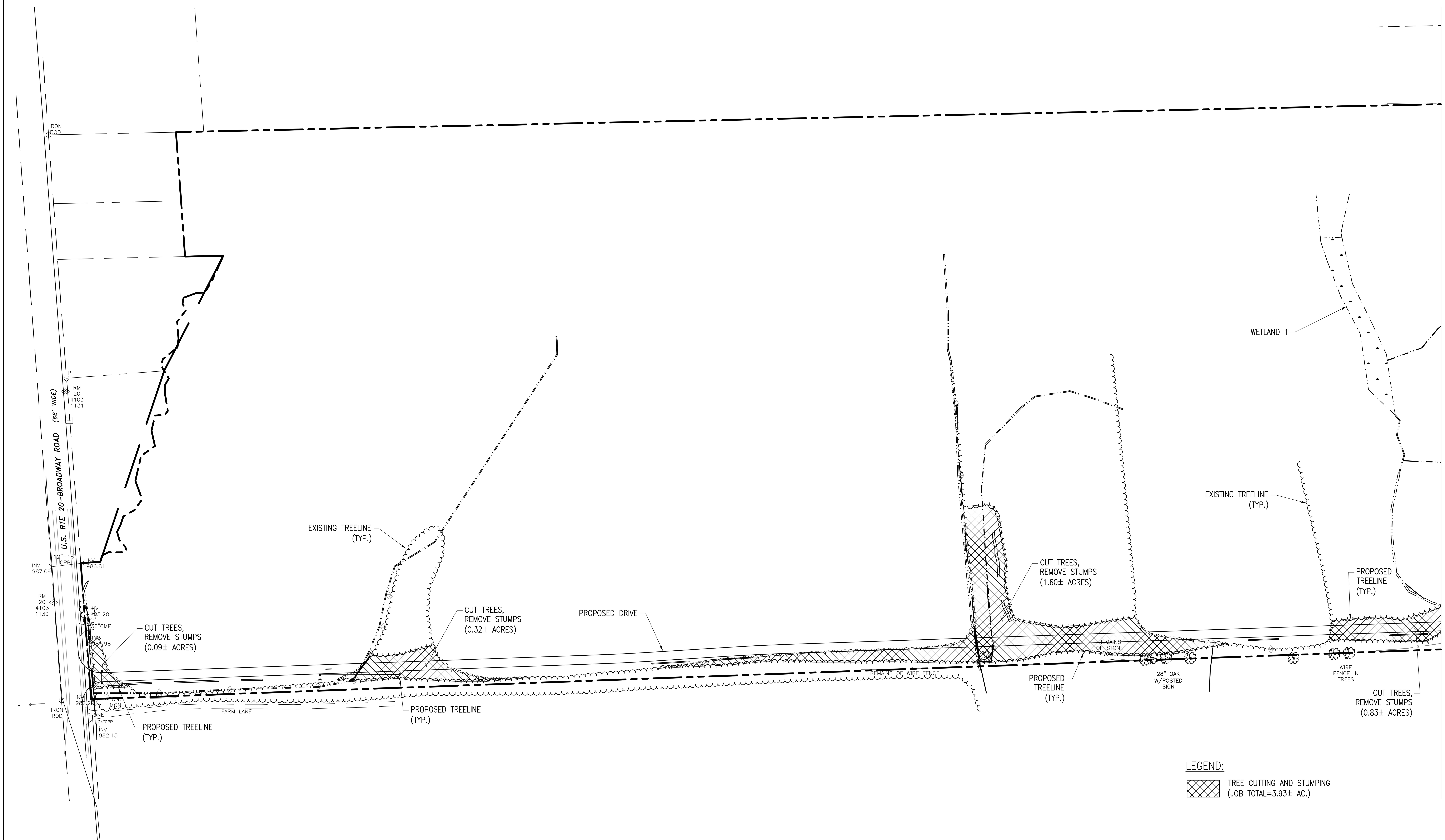
C-1.0
EXISTING CONDITIONS PLAN



TREE CLEARING PLAN

SCALE: 1" = 100'

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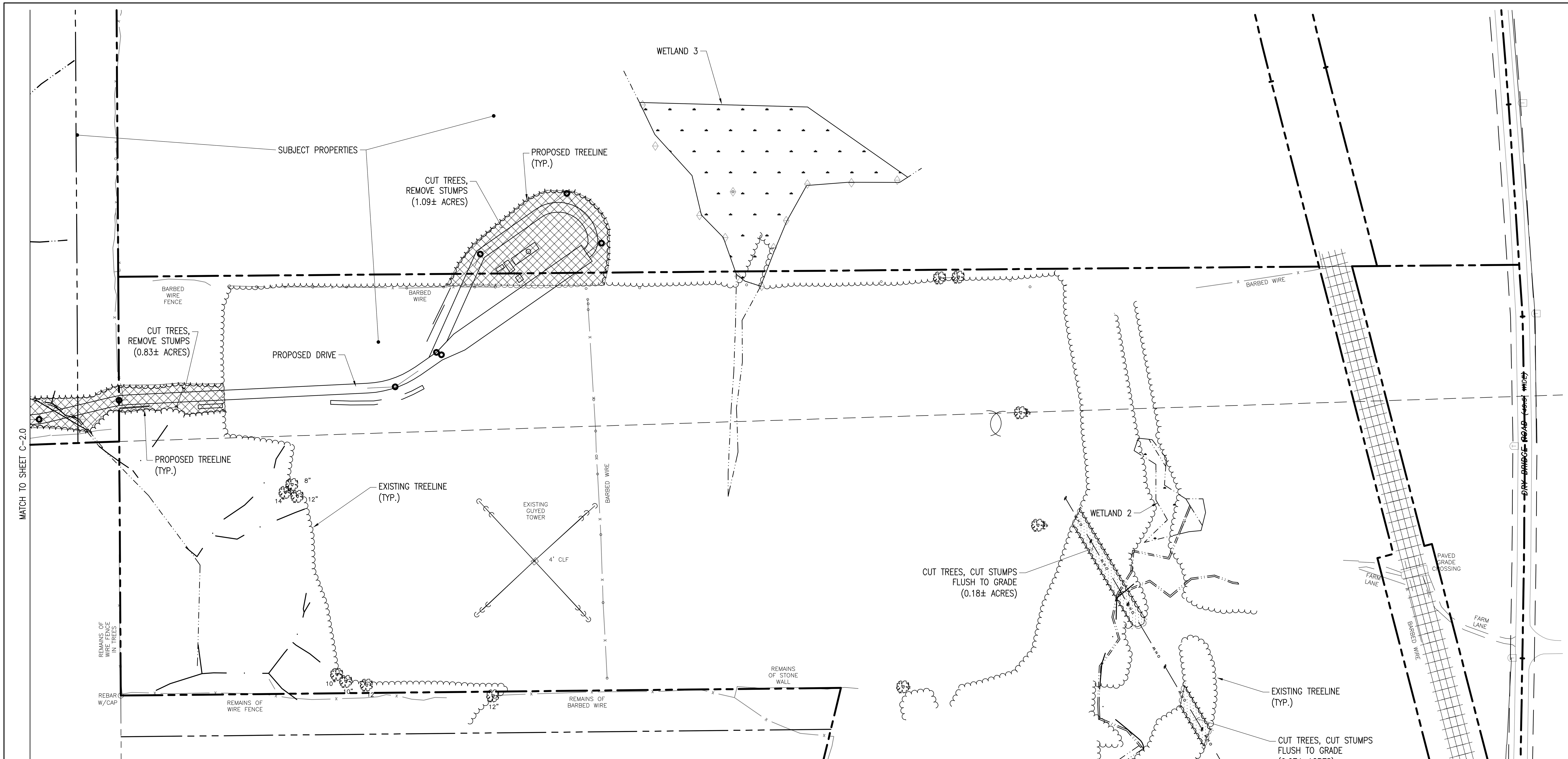
C-2.0
TREE CLEARING PLAN



LEGEND:

(cross-hatch)	TREE CUTTING AND STUMPING (JOB TOTAL=3.93± AC.)
(stipple)	TREE CUTTING ONLY (CUT STUMPS FLUSH TO GRADE) (JOB TOTAL=0.25± AC.)

TREE CLEARING PLAN

SCALE: 1" = 100'

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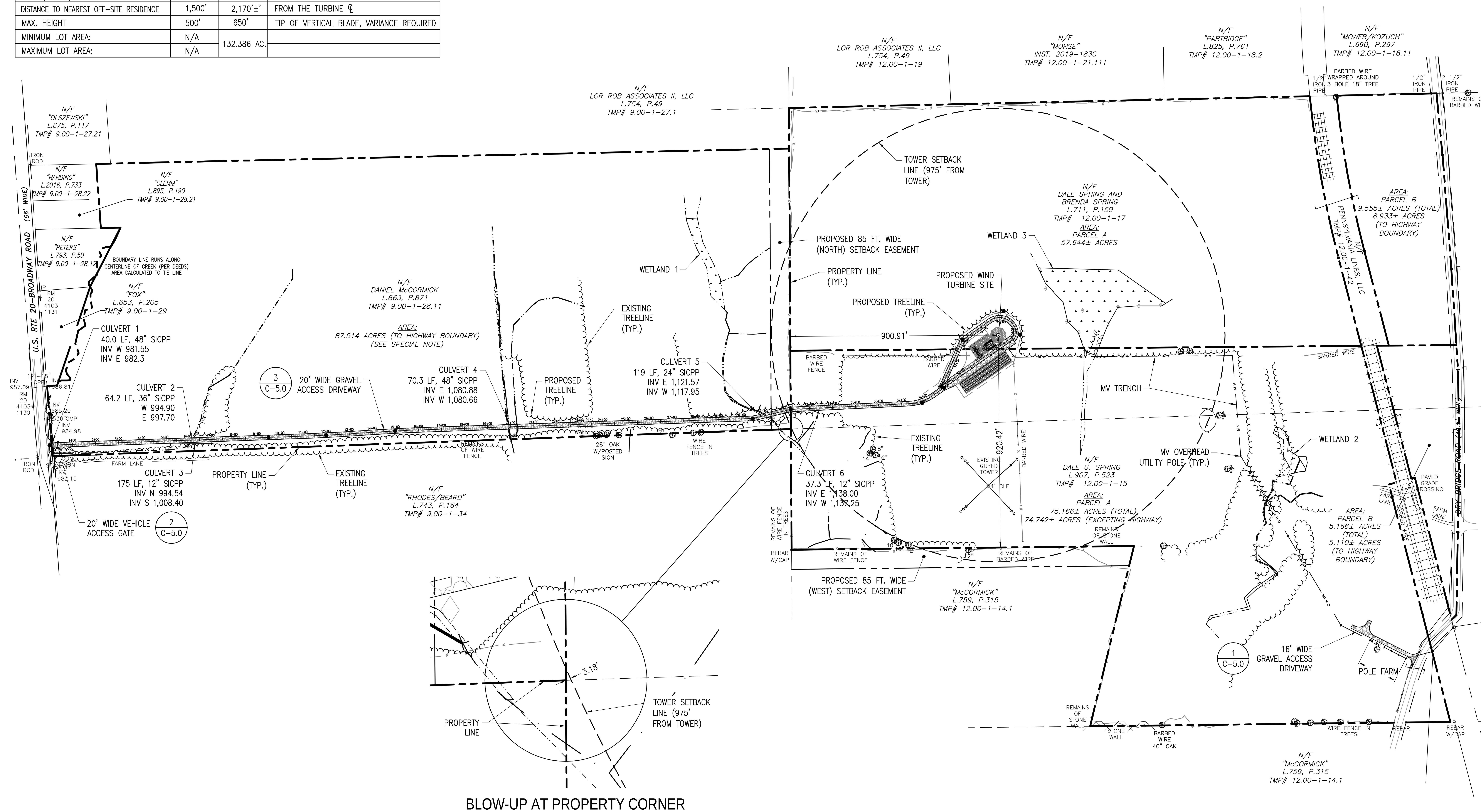
C-2.1
TREE CLEARING PLAN

ZONING SUMMARY			
ASSESSORS PARCEL: 12.00-1-15 & 12.00-1-17 ZONED: AGRICULTURAL-RESIDENTIAL			
SETBACKS: 1.5X TOTAL HEIGHT	REQUIRED:	PROVIDED:	NOTES:
FRONT (SOUTH TO DRY BRIDGE RD.)	975'	1,953.7'±	FROM THE TURBINE ℄
SIDE			
ONE SIDE	975'	1,005'±	FROM THE TURBINE ℄
BOTH	975'	920.4'±	FROM THE TURBINE ℄, VARIANCE REQUIRED
REAR (NORTH)	975'	901'±	FROM THE TURBINE ℄, VARIANCE REQUIRED
DISTANCE TO NEAREST OFF-SITE RESIDENCE	1,500'	2,170'±'	FROM THE TURBINE ℄
MAX. HEIGHT	500'	650'	TIP OF VERTICAL BLADE, VARIANCE REQUIRED
MINIMUM LOT AREA:	N/A	132.386 AC.	
MAXIMUM LOT AREA:	N/A		



LAYOUT AND MATERIALS PLAN

SCALE: 1" = 200'

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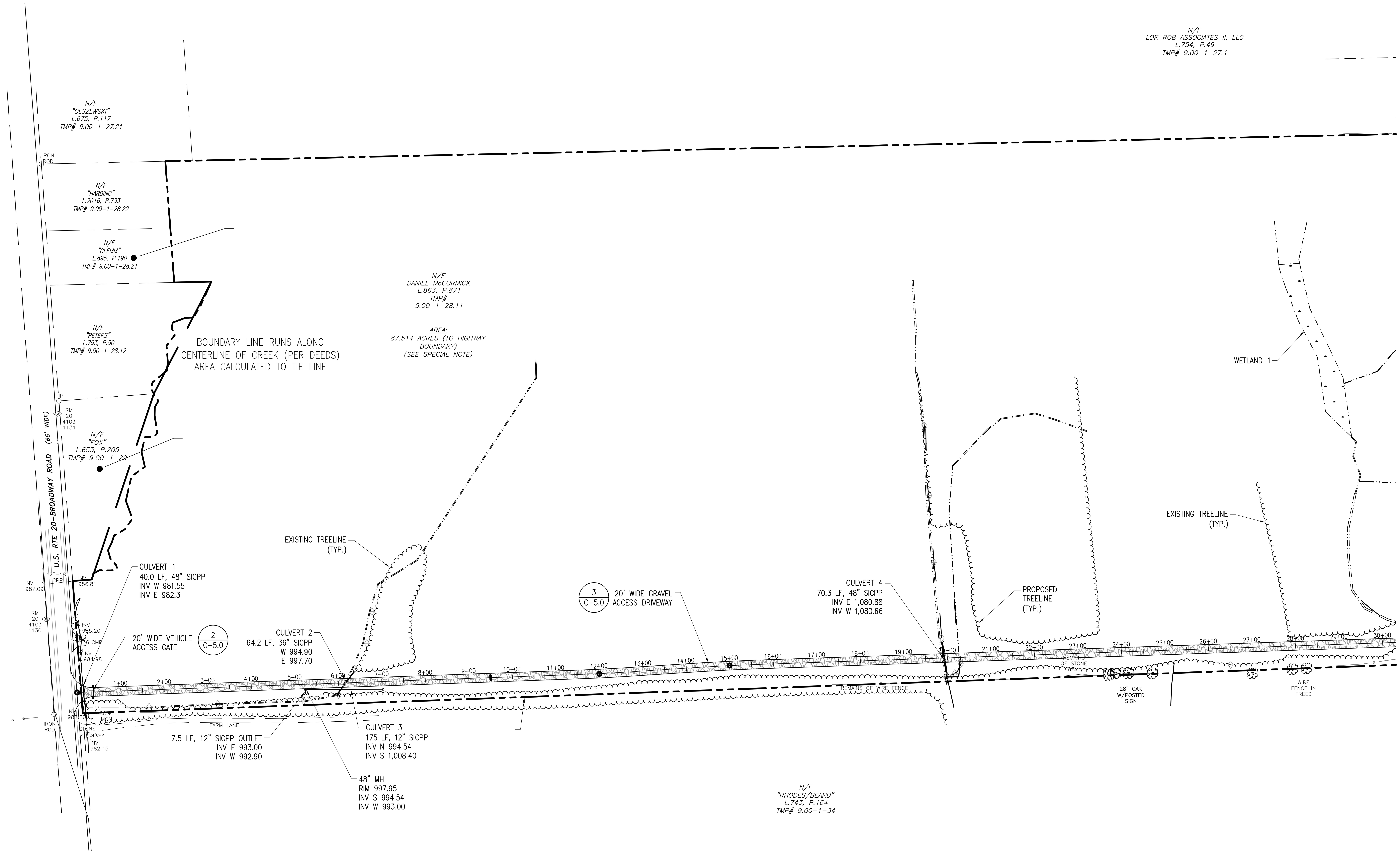
C-3.0
LAYOUT AND MATERIALS PLAN



LAYOUT AND MATERIALS PLAN

SCALE: 1" = 100'

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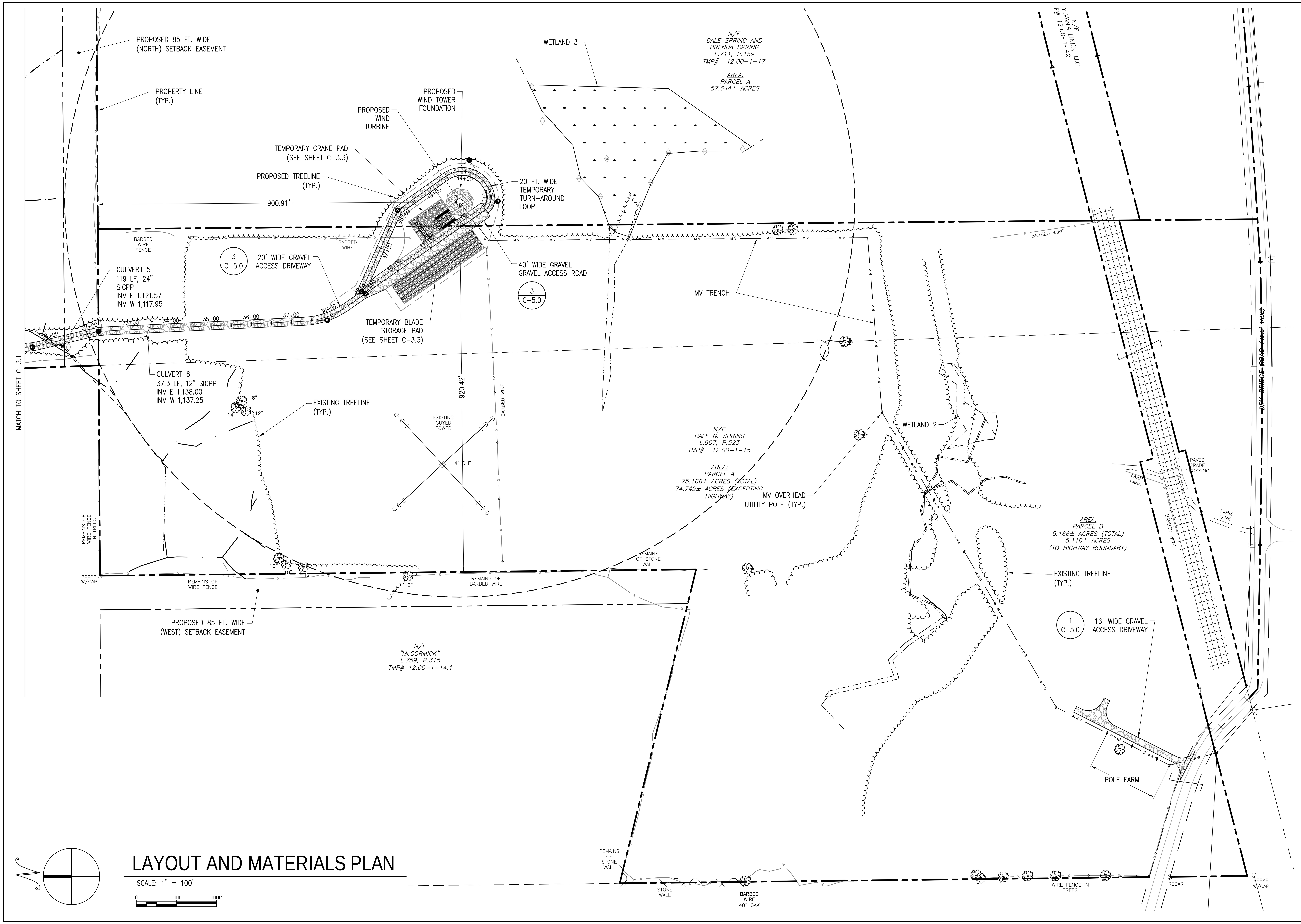
C-3.1

LAYOUT AND MATERIALS PLAN



LAYOUT AND MATERIALS PLAN

SCALE: 1" = 100'

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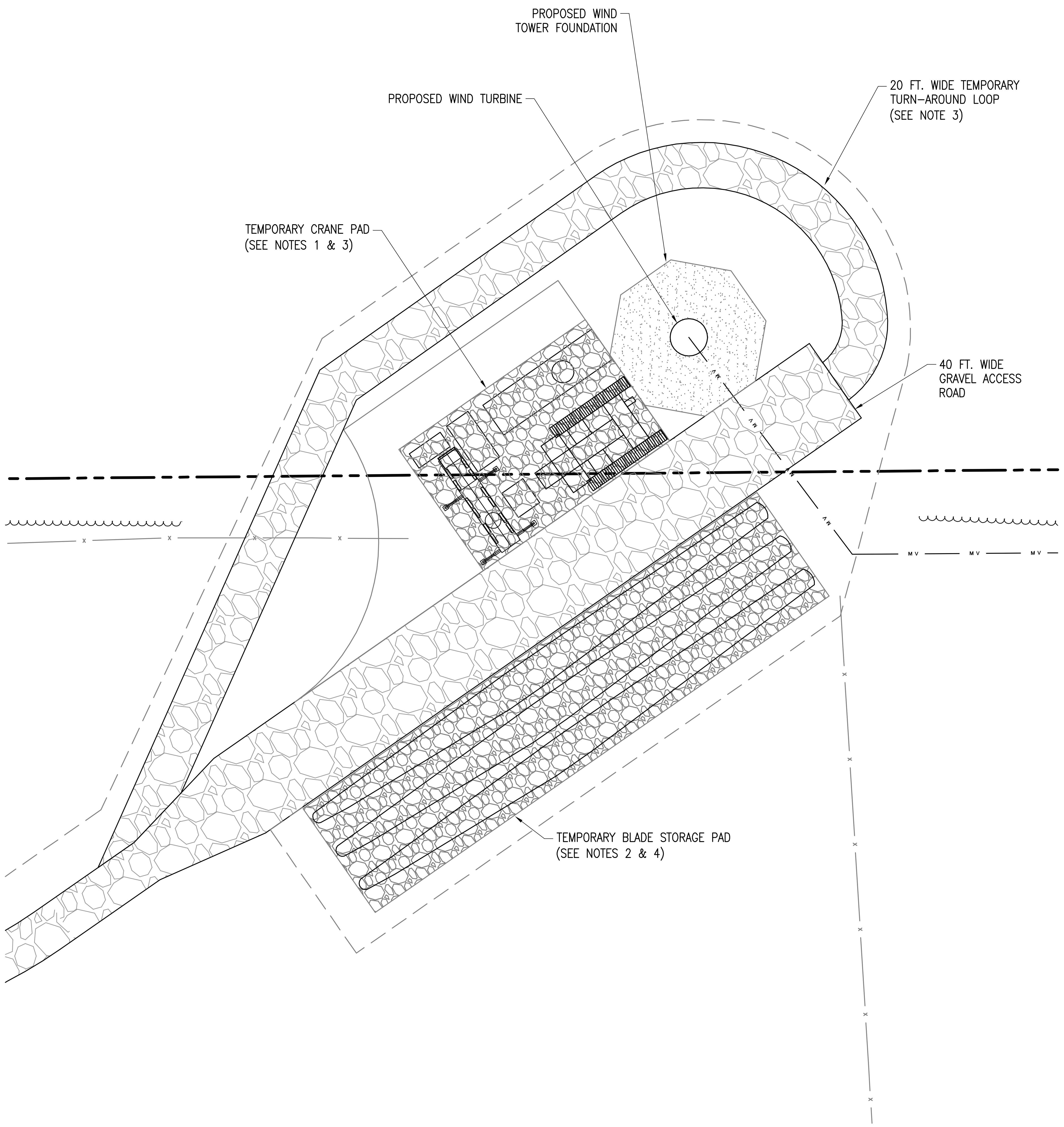
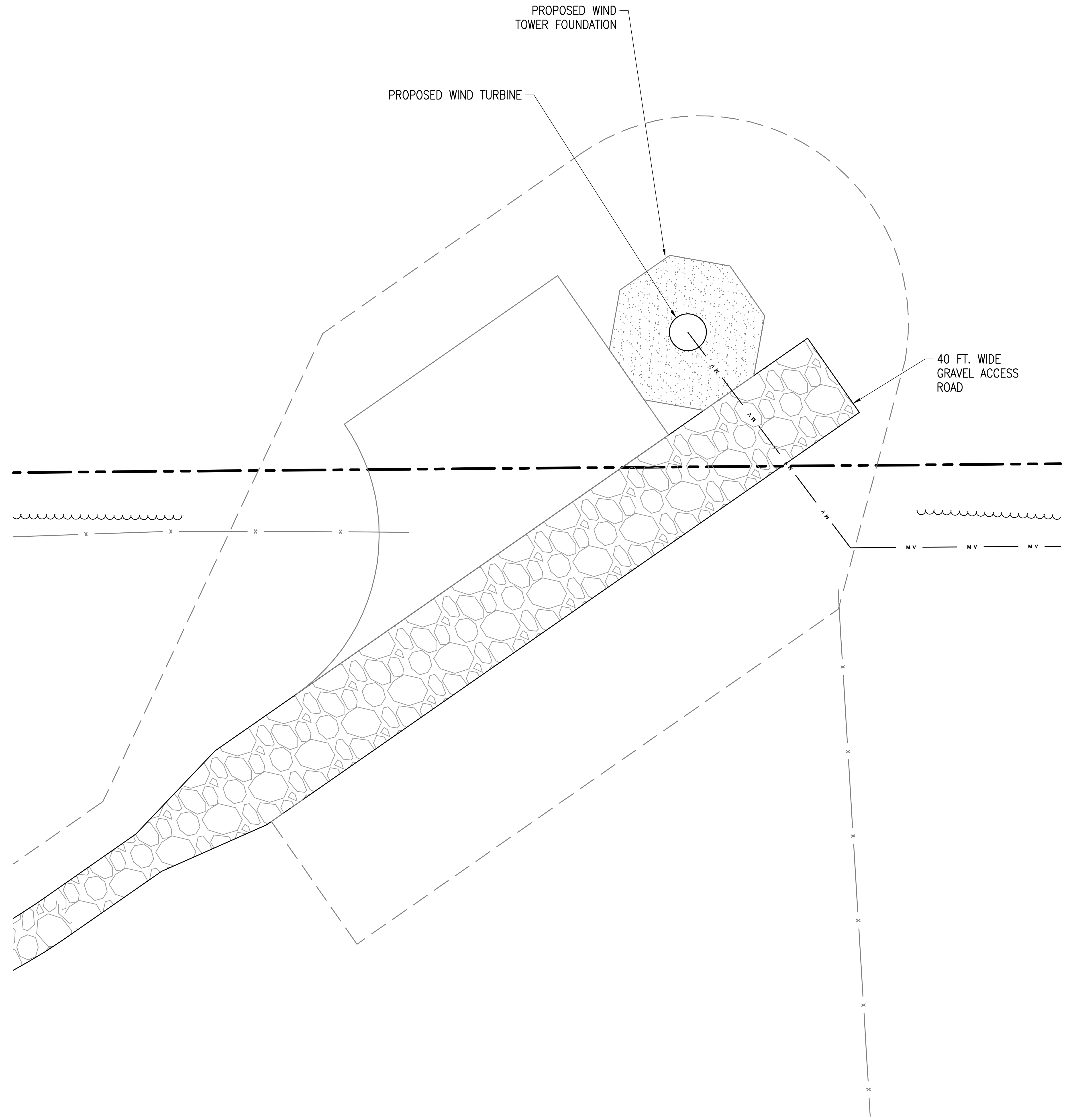
C-3.2

LAYOUT AND MATERIALS PLAN



DURING CONSTRUCTION CONDITION



POST CONSTRUCTION CONDITION

NOTES

1. CRANE PAD: 12" MIN. CRUSHED STONE GRAVEL OVER GEOTEXTILE SEPARATION FABRIC; MIN. BEARING CAPACITY 6000 PSF. FINAL DEPTH, MATERIAL AND MIN. REQUIRED BEARING CAPACITY TO BE DETERMINED BY WTG CONTRACTOR / ERECTOR BASED ON GEOTECHNICAL REPORT.

2. BLADE STORAGE PAD: 8" MIN. CRUSHED STONE GRAVEL OVER GEOTEXTILE SEPARATION FABRIC. FINAL DEPTH AND MATERIAL REQUIREMENTS TO BE DETERMINED BY WTG CONTRACTOR / ERECTOR BASED ON GEOTECHNICAL REPORT.

3. UPON COMPLETION OF WTG CONSTRUCTION, CRUSHED STONE GRAVEL FOR CRANE PAD AND TURN-AROUND LOOP ARE TO BE REMOVED, BACKFILLED WITH TOPSOIL TO FINISHED GRADE AND SURFACE RESTORATION WITH GRASS SEED. DECOMPACTION OF SUBGRADE IS NOT REQUIRED.

4. UPON COMPLETION OF WTG CONSTRUCTION, CRUSHED STONE GRAVEL FOR BLADE STORAGE PAD IS TO BE REMOVED AND HE SUBGRADE DECOMPACTED PER NOTE #26 ON SHEET C-4.2; FOLLOWED BY BACKFILL TO FINISHED GRADE WITH TOPSOIL AND SURFACE RESTORATION WITH GRASS SEED.

LAYOUT AND MATERIALS PLAN

SCALE: 1 = 30'

0 30' 60'

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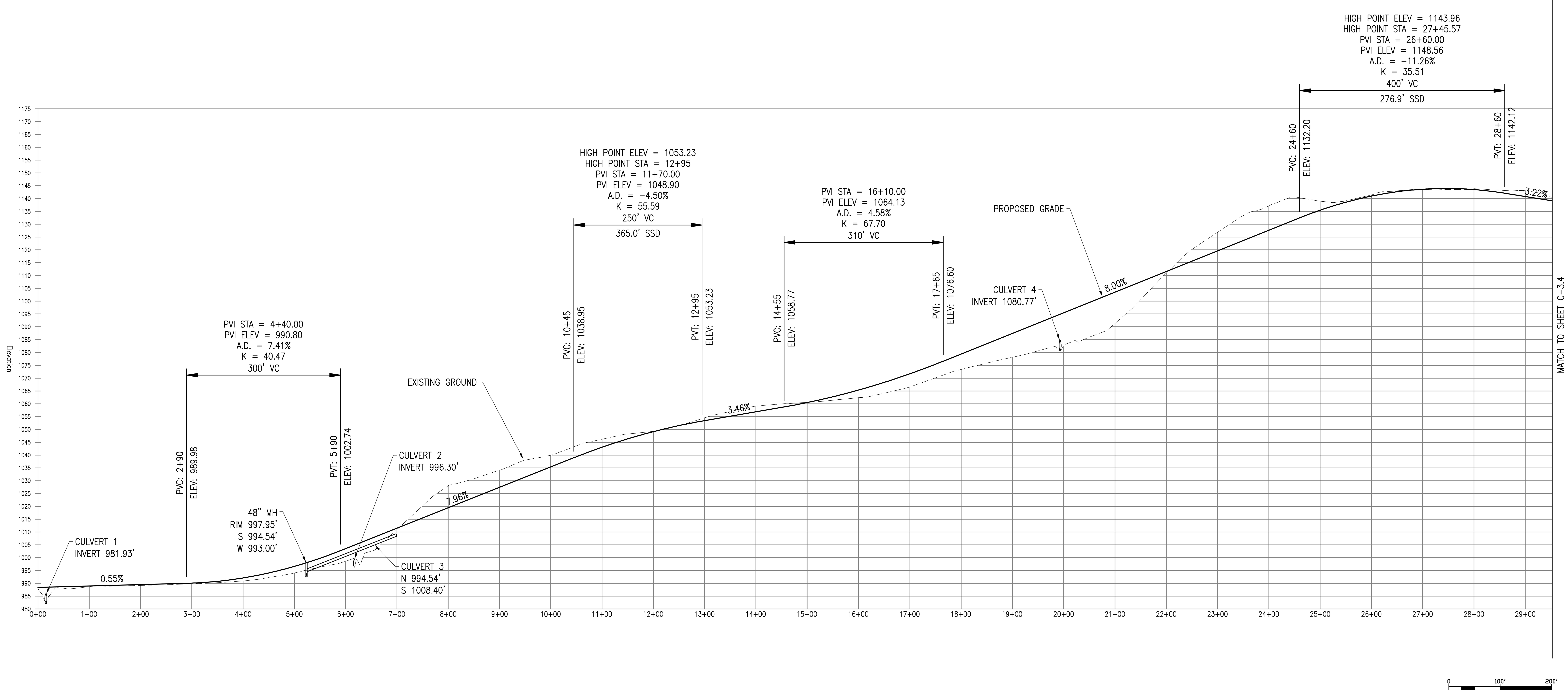
C-3.3

LAYOUT AND MATERIALS PLAN



ROAD PROFILE

SCALE: 1" = 100' HORIZ.
1" = 20' VERT.

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NOT FOR CONSTRUCTION

STATE OF NEW YORK
MARC DAVID KENWARD
070261
LICENSED PROFESSIONAL ENGINEER
4/15/22

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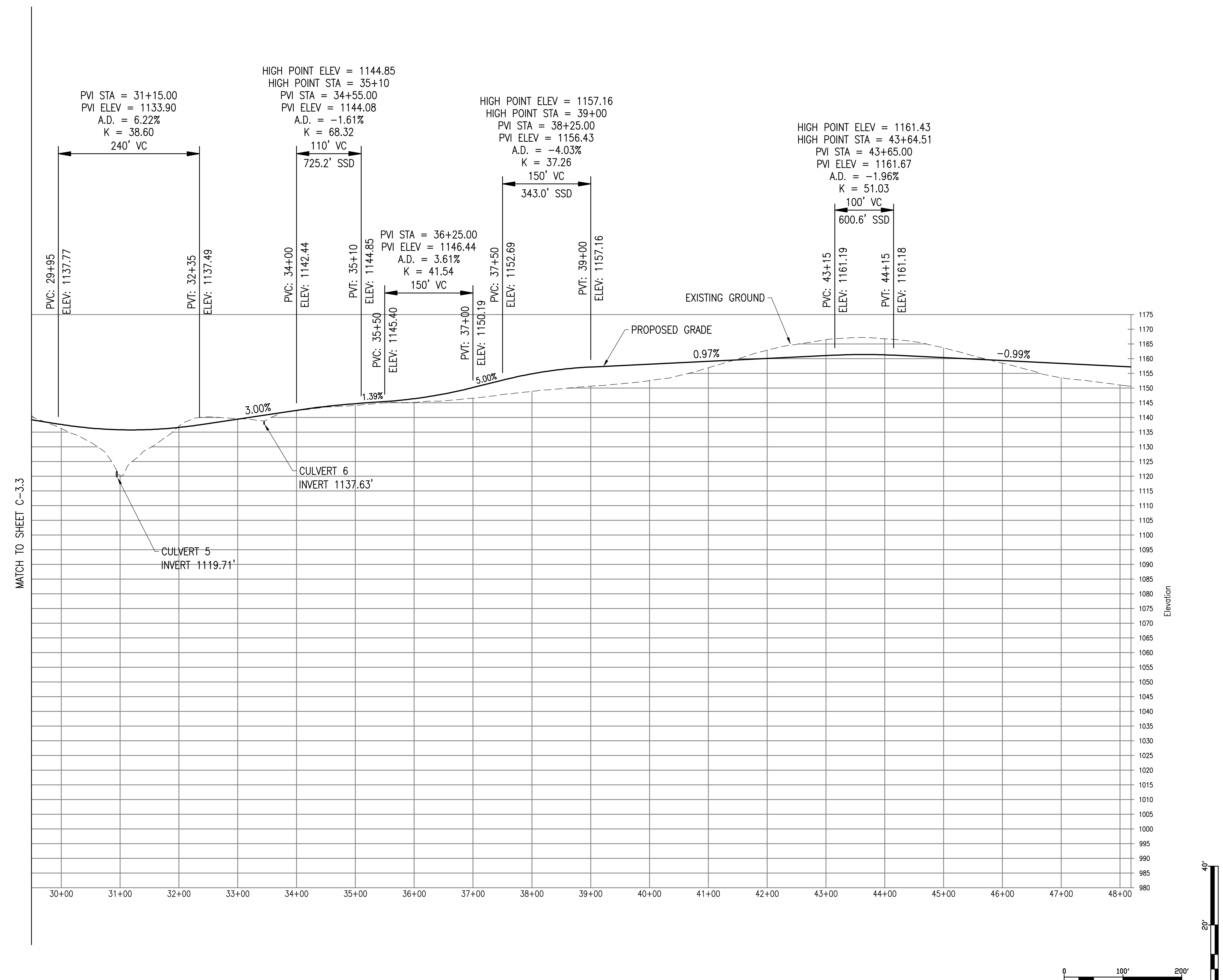
DRY BRIDGE ROAD
ALEXANDER, NY 14005

PROJECT NUMBER:
XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	04/15/22	JM/DK	MK	SUP SET

SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-3.4
ROAD PROFILE



ROAD PROFILE

SCALE: 1" = 100' HORIZ.
1" = 20' VERT.

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DRY BRIDGE RD - ALEXANDER
DRY BRIDGE ROAD
ALEXANDER, NY 14005

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XXX-XXXX

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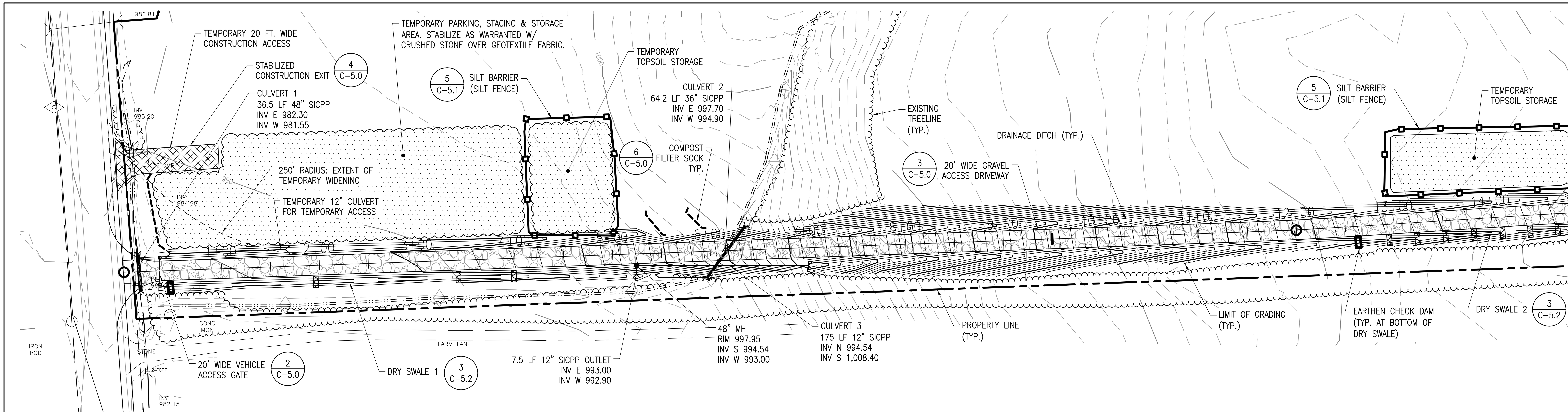
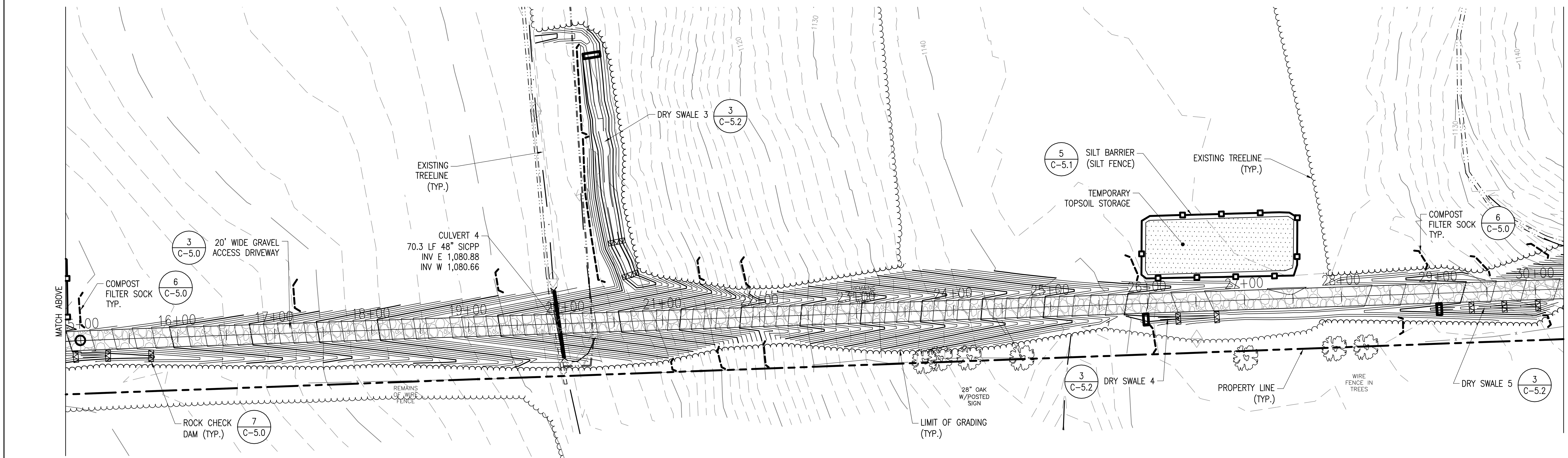
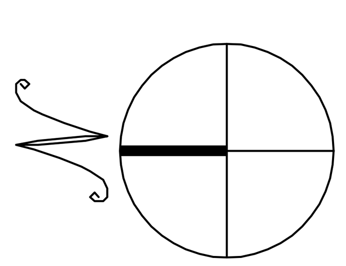
C-3.5
ROAD PROFILE





SEEDING SPECIFICATIONS:			
LOCATION	NAME/SPECIES	SUPPLIER	SEEDING RATE
NON-GRAZED MEADOW & ALL SLOPES	REBEL TALL FESCUE, CHEWINGS FESCUE OR HARD FESCUE	SEEDLAND.COM	3.5 LBS/1,000 SF
	QUICK EROSION CONTROL COVER MIX	ERNMX-104	1.5 LBS/1,000 SF
GRAZED / MOWED MEADOW, 0-10% SLOPES	HONEY BEE FORAGE MIX	ERNMX-157	10#/ACRE
1. BETWEEN DECEMBER 1ST AND APRIL 1ST, EACH TYPE OF SEED SHALL HAVE AN ADDITIONAL 1#/1,000 SF OF WINTER RYE GRASS OR GRAIN RYE GRASS SEED INCLUDED.			
2. IT SHALL BE THE SUBCONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE PROJECT LIMIT OF WORK IS STABILIZED (IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS/REQUIREMENTS/PERMIT APPROVALS) DURING THE LENGTH OF THE PROJECT.			



GRADING AND EROSION CONTROL PLAN

SCALE: 1" = 50'

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ALEXANDER, NY 14005

PROJECT NUMBER: XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
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SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-4.0
GRADING AND EROSION CONTROL PLAN

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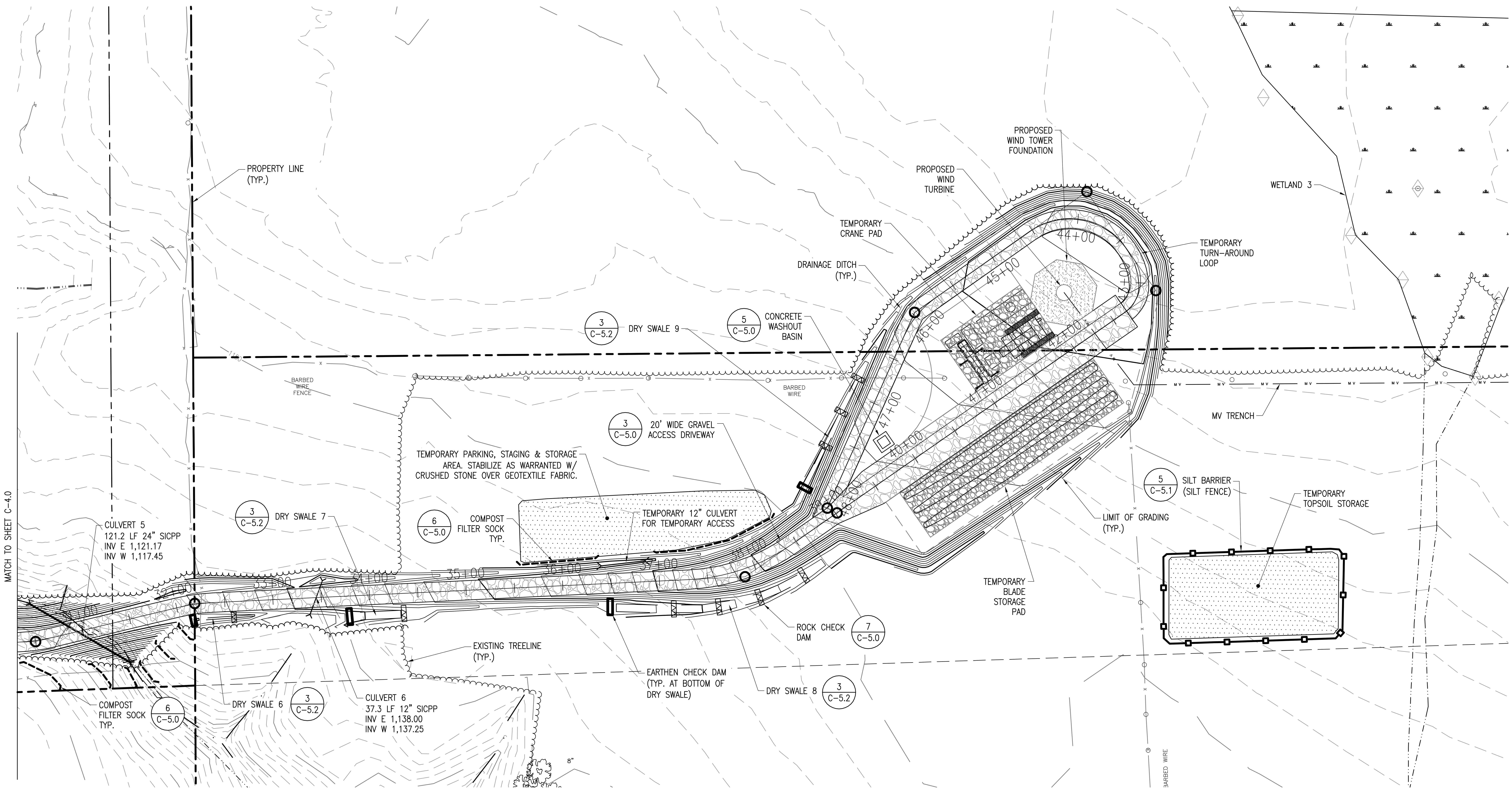
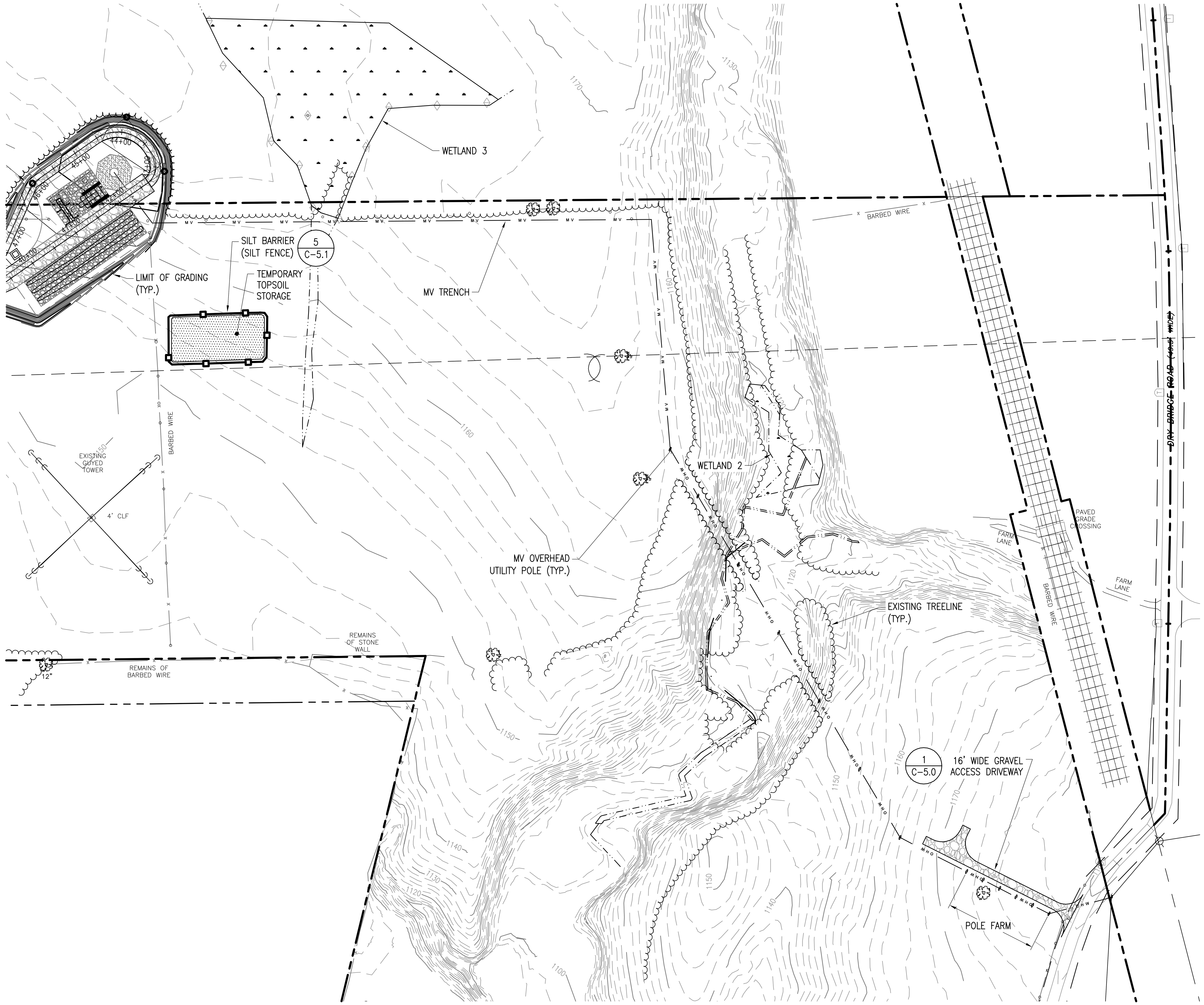
C-4.1

GRADING AND EROSION CONTROL PLAN



GRADING AND EROSION CONTROL PLAN

SCALE: #" = ##'



GRADING AND EROSION CONTROL PLAN

SCALE: 1" = 100'

EROSION AND SEDIMENT CONTROL NOTES:

1. A SPDES PERMIT SHALL BE IN PLACE PRIOR TO COMMENCING ANY EARTH DISTURBANCE. THE SPDES PERMIT # IS (TBD), AND WAS ISSUED ON (DD/MM/20YY).
2. EROSION CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE SEQUENCE OF STAGED CONSTRUCTION PROVIDED IN THE SWPPP. A COPY OF THE APPROVED SWPPP SHALL BE MAINTAINED ON THE SITE.
3. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR DISTURBANCE AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME.
4. SEDIMENT BARRIERS SHALL BE INSPECTED AND APPROVED BY THE CEOR BEFORE CONSTRUCTION CAN START.
5. STRAW AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE OF NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY WHEN INSTALLED.
6. IN AREAS WHERE SOIL DISTURBANCE ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED, THE APPLICATION OF SOIL STABILIZATION MEASURES MUST BE INITIATED BY THE END OF THE NEXT BUSINESS DAY AND COMPLETED WITHIN FOURTEEN (14) DAYS FROM THE DATE THE CURRENT SOIL DISTURBANCE ACTIVITY CEASED.
7. SEDIMENT BARRIERS SHALL BE CONSTRUCTED AROUND ALL SOIL STOCKPILE AREAS.
8. CLEAN OUT PROJECT DRAINAGE FEATURES AND STRUCTURES (I.E. CULVERTS, BASINS, SWALES, ETC.) AFTER COMPLETION OF CONSTRUCTION AND AS REQUESTED BY THE CEOR.
9. SEDIMENT COLLECTED DURING CONSTRUCTION BY THE VARIOUS EROSION CONTROL SYSTEMS SHALL BE DISPOSED OF ON THE SITE ON A REGULAR BASIS. SEDIMENT SHALL BE REMOVED FROM EROSION CONTROL SYSTEMS WHEN THE HEIGHT OF THE SEDIMENT EXCEEDS ONE-HALF OF THE HEIGHT OF THE SEDIMENT CONTROL MEASURE OR IN ACCORDANCE WITH SYSTEMS STANDARD SPECIFICATION.
10. THE "TRAINED CONTRACTOR" IS RESPONSIBLE FOR DAILY INSPECTIONS, MAINTENANCE, AND DIRECTING REPAIR ACTIVITIES.
11. DAMAGED OR DETERIORATED ITEMS WILL BE REPAIRED IMMEDIATELY AFTER IDENTIFICATION OR AS DIRECTED BY THE CONTRACTOR/CEOR.
12. PIPE OUTLETS (IF ANY) SHALL BE STABILIZED WITH STONE. REFER TO DETAILS.
13. TEMPORARY SEEDING (perennial RYE gRASS) SHALL BE AT A RATE OF 45 LBS PER ACRE. DISTURBED AREAS OUTSIDE AND DOWN SLOPE FROM THE CONSTRUCTION LIMITS SHALL BE SIMILARLY SEEDED.
14. WATER PUMPED OR OTHERWISE DISCHARGED FROM THE SITE DURING CONSTRUCTION DEWATERING SHALL BE FILTERED. A DEWATERING PLAN SHALL BE SUBMITTED FOR APPROVAL BY THE CONTRACTOR TO THE CEOR AND ADDED TO THE SWPPP.
15. WHEN TEMPORARY DRAINAGE IS ESTABLISHED, EROSION/SEDIMENTATION CONTROL MEASURES MAY BE REQUIRED BY THE CEOR AND WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
16. A STABILIZED CONSTRUCTION EXIT SHALL BE PROVIDED. A VEHICLE WASH DOWN FACILITIES SHALL BE PROVIDED IF THE STABILIZED CONSTRUCTION ENTRANCE IS INEFFECTIVE IN PREVENTING SOIL FROM BEING TRACKED ONTO PUBLIC OR PRIVATE ROADWAYS. ANY SOIL REACHING A PUBLIC OR PRIVATE ROADWAY SHALL BE REMOVED IMMEDIATELY.
17. NECESSARY MEASURES SHALL BE TAKEN TO CONTAIN ANY FUEL OR POLLUTION RUNOFF. NO RE-FUELING SHALL OCCUR WITHIN 100 FEET OF ANY WETLAND RESOURCE AREA AND 200 FEET FROM RIVERFRONT. LEAKING EQUIPMENT OR SUPPLIES SHALL BE IMMEDIATELY REPAIRED OR REMOVED FROM THE SITE.
18. THE COST OF REPAIRING EROSION CONTROL MEASURES OR REMOVING SEDIMENT FROM EROSION CONTROL SYSTEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE APPLICABLE EROSION CONTROL ITEM.
19. EROSION CONTROL MEASURES SHALL BE KEPT OPERATIONAL AND MAINTAINED CONTINUOUSLY THROUGHOUT THE PERIOD OF LAND DISTURBANCE UNTIL PERMANENT SEDIMENT AND EROSION CONTROL MEASURES ARE OPERATIONAL.
20. CONTRACTOR SHALL SPRAY WATER FROM A WATER TRUCK ON DRY AND WINDY DAYS TO PREVENT DUST FROM FORMING. OTHER ALLOWED FORMS OF DUST CONTROL INCLUDE: CALCIUM CHLORIDE.
21. FINAL STABILIZATION MEANS THAT ALL SOIL DISTURBANCE ACTIVITIES HAVE CEASED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY (80) PERCENT OVER THE ENTIRE PERVIOUS SURFACE HAS BEEN ESTABLISHED; OR OTHER EQUIVALENT STABILIZATION MEASURES, SUCH AS PERMANENT LANDSCAPE MULCHES, ROCK RIP-RAP OR WASHED/CRUSHED STONE HAVE BEEN APPLIED ON ALL DISTURBED AREAS THAT ARE NOT COVERED BY PERMANENT STRUCTURES, CONCRETE OR PAVEMENT.
22. AFTER ALL DISTURBED AREAS HAVE REACHED FINAL STABILIZATION, THE CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AT THE DIRECTION OF THE CEOR.
23. AFTER THE REMOVAL OF TEMPORARY EROSION CONTROL MEASURES, THE CONTRACTOR SHALL HAND RAKE AND SEED THE AREA OF THE TEMPORARY EROSION CONTROL MEASURE.
24. EROSION CONTROL MEASURES AS SHOWN ON THESE DRAWINGS ARE INTENDED TO CONVEY MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES AS NECESSARY TO PREVENT SOIL EROSION AND TO ACCOMPLISH THE PROJECT'S STORMWATER POLLUTION PREVENTION PLAN (SWPPP) OBJECTIVES.
25. ALL EXCESS TOPSOIL IS TO REMAIN ON-SITE, STOCKPILED AND PERMANENTLY STABILIZED WITH SEEDING.
26. DECOMPACTION AND DEEP TILLING FOR SOIL RESTORATION IS TO BE ACCOMPLISHED BY:
   - APPLY 3 INCHES OF COMPOST TO AFFECTED AREA.
   - TILL COMPOST INTO SOIL TO A DEPTH OF AT LEAST 12 INCHES. USE A CAT-MOUNTED RIPPER, TRACTOR MOUNTED DISC OR TILLER, MIXING AND CIRCULATING AIR AND COMPOST INTO THE SOIL.
   - ROCK-PICK UNTIL UPLIFTED ROCK/STONE MATERIALS OF 4 INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.

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4/15/22

DRY BRIDGE RD - ALEXANDER
DRY BRIDGE ROAD
ALEXANDER, NY 14005

PROJECT NUMBER:
XXX-XXXX

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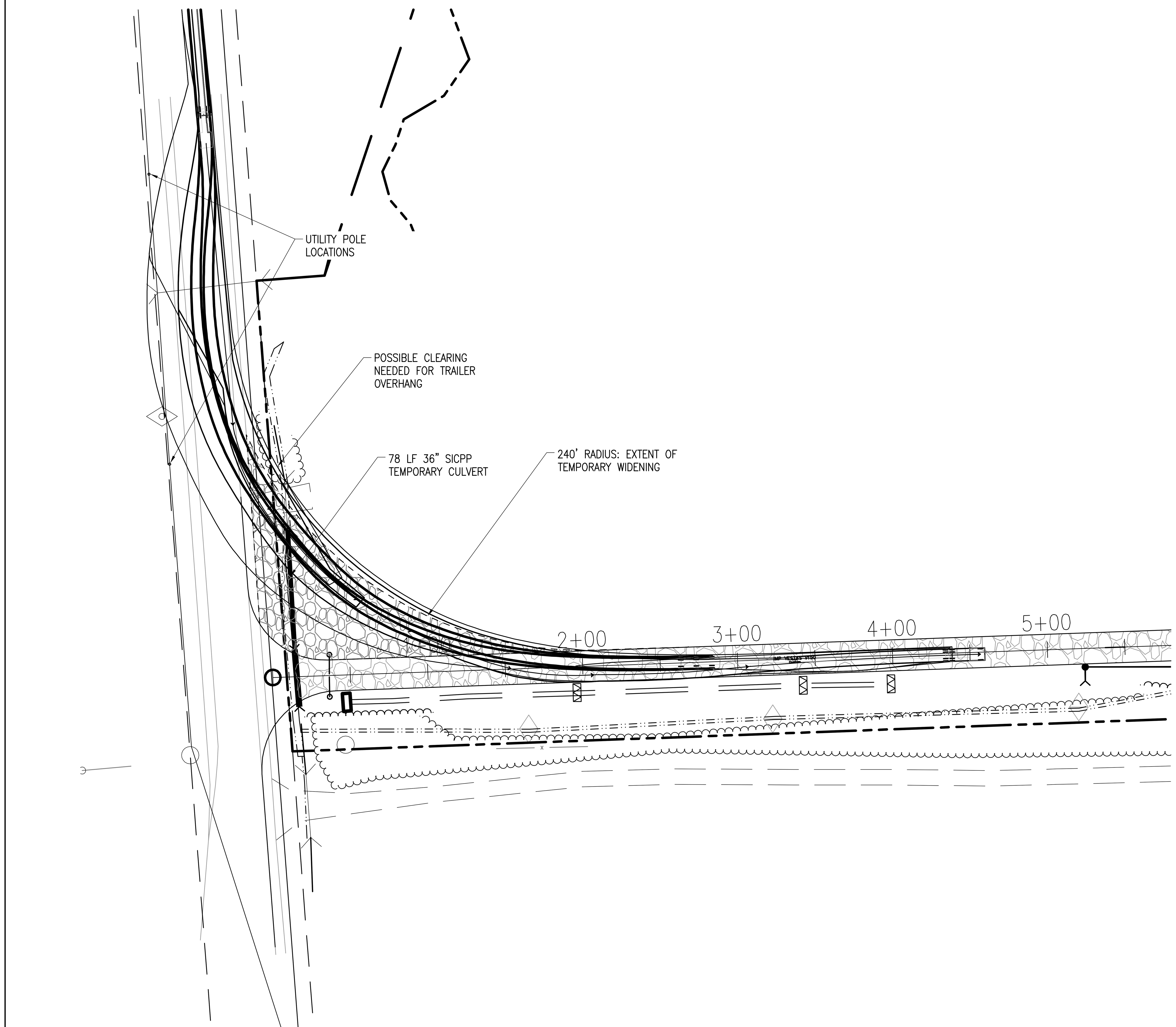
SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-4.2

GRADING AND EROSION CONTROL PLAN



GRADING AND EROSION CONTROL PLAN

SCALE: 1" = 40'

0 40' 80'

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4/15/22

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ALEXANDER, NY 14005

PROJECT NUMBER:
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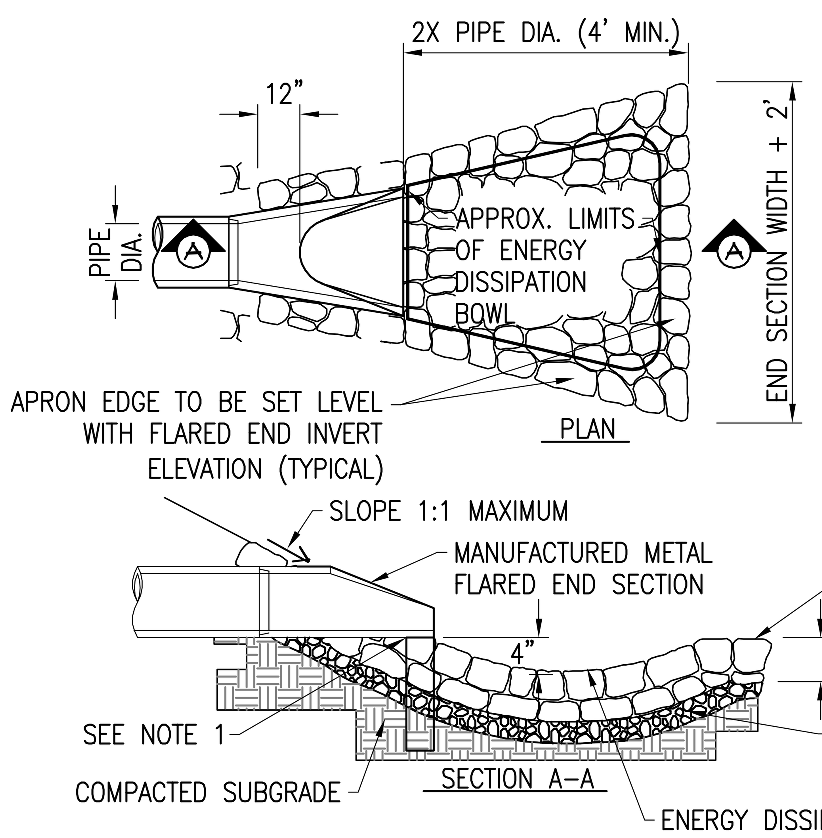
C-4.3

GRADING AND EROSION CONTROL PLAN

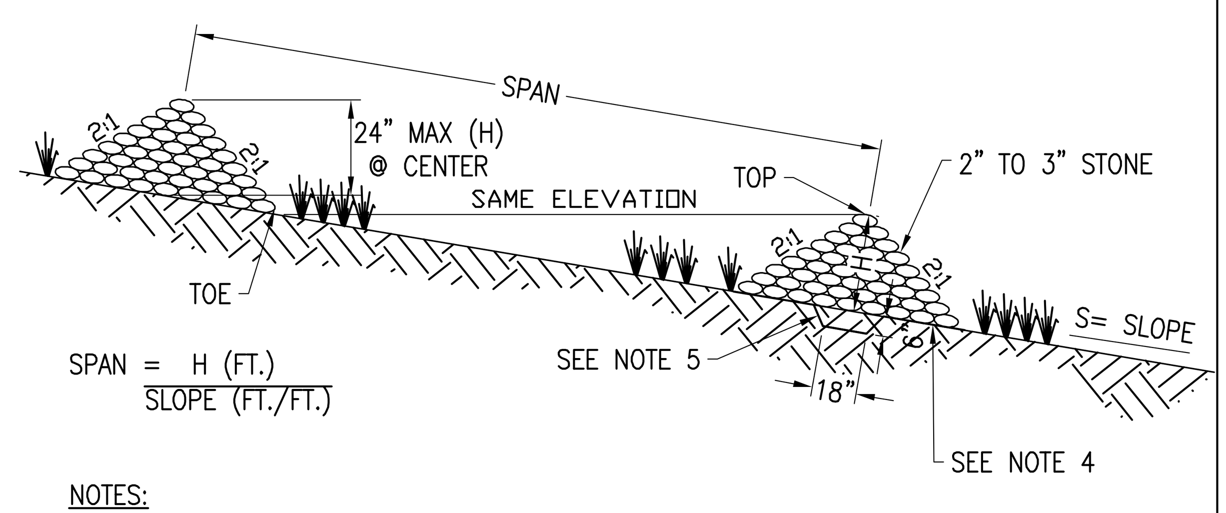


NOTES:

1. CUT OFF WALL TO BE POURED IF INDICATED ON THE PLANS.

8 FLARED END SECTION/RIP-RAP APRON

SCALE: N.T.S.



SPAN = H (FT.) / SLOPE (FT./FT.)

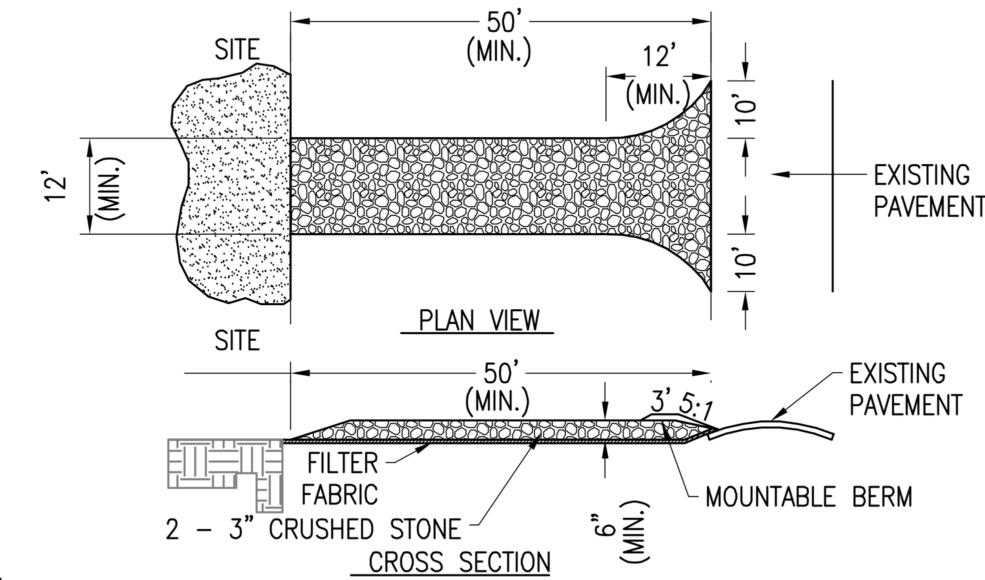
NOTES:

1. MAXIMUM DRAINAGE AREA ≤ 2 ACRES
2. USE NYSDOT LIGHT STONE FILL
3. H=THE LESSER OF [DITCH DEPTH – 6"] OR 24" MAX. HEIGHT @ CENTER)
4. STONE SHALL BE PLACED ON A FILTER FABRIC FOUNDATION
5. INSTALL 6" DEEP CUT-OFF TRENCH BELOW
6. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM

7 ROCK CHECK DAM

SCALE: N.T.S.

XD_CIVIL_CHECK DAM 08-15-2016



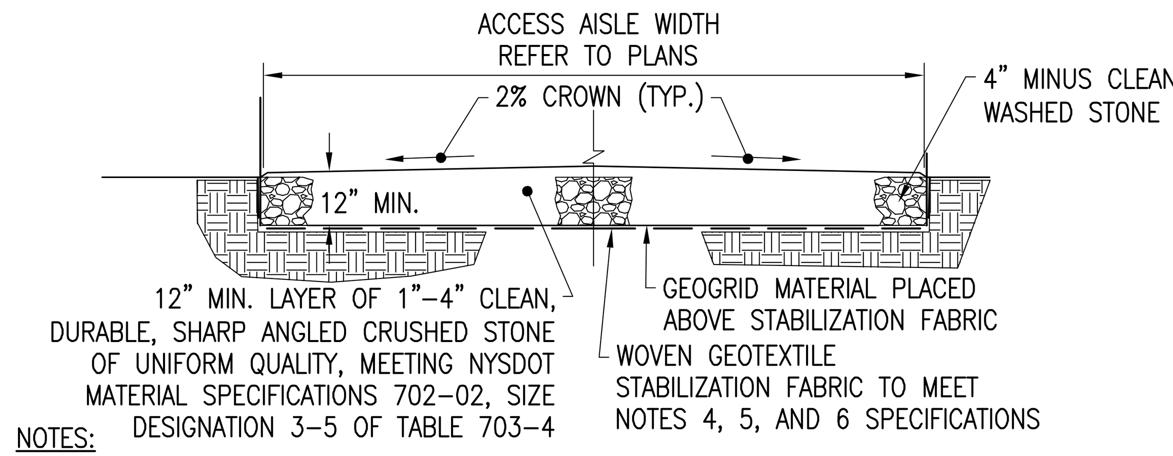
NOTES:

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50 FEET.
3. THICKNESS-NOT LESS THAN 6 INCHES.
4. WIDTH-NOT LESS THAN 12 FEET WHERE MORE THAN ONE (1) ACCESS POINT TO THE SITE. WHERE ONE (1) ACCESS POINT A MINIMUM OF 24 FEET IS REQUIRED.
5. GEOTEXTILE-SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER-SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5: 1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE-THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. WHEN WHEEL WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

4 STABILIZED CONSTRUCTION EXIT

SCALE: NTS

XD_CIVIL_TEMPORARY CONSTRUCTION_STABILIZED CONSTRUCTION EXIT_NY 2016-03-14



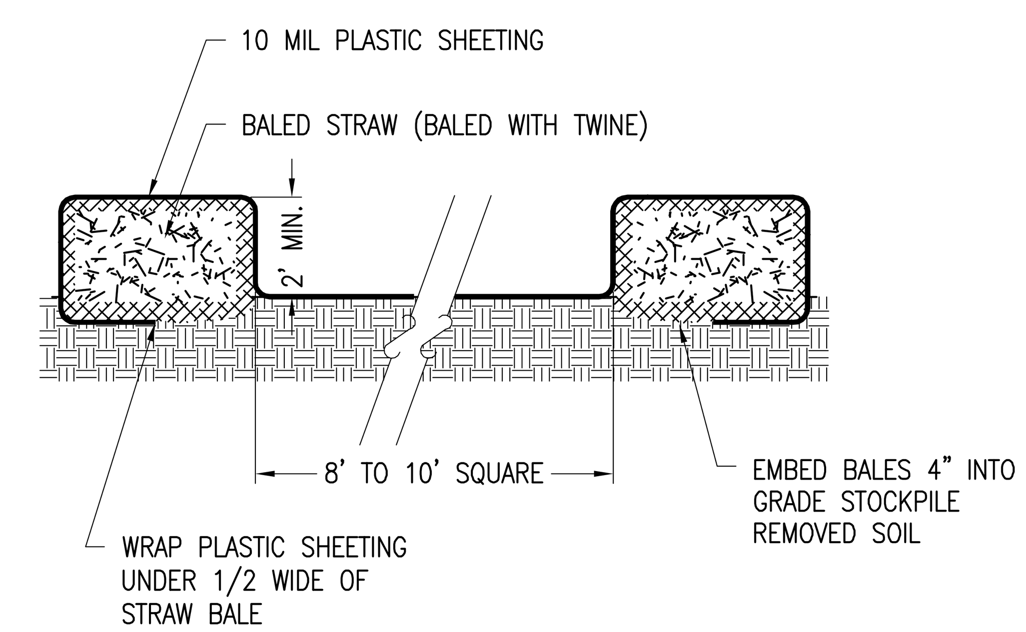
NOTES:

1. SUBCONTRACTOR SHALL CLEAR AND STRIP ROADBED AND PARKING AREAS OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
2. EXCAVATION BELOW GRADE BASED ON 9" TOPSOIL DEPTH.
3. SUBCONTRACTOR SHALL COMPACT SUBGRADE TO PROVIDE SUITABLE SURFACE TO PLACE ROAD.
4. GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS:
   - TENSILE STRENGTH: 56 LB MIN.
   - ELONGATION: 50%
   - CBR PUNCTURE: 309 LB MIN.
   - MINIMUM PERMITTIVITY: 0.1 SEC.
5. SUBCONTRACTOR SHALL FOLLOW GEOTEXTILE FABRIC MANUFACTURER INSTALLATION PROCEDURES.
6. WHERE OVERLAPPING OF GEOTEXTILE FABRIC IS REQUIRED, SUBCONTRACTOR SHALL OVERLAP A MINIMUM OF 24".
7. GEOGRID SHALL BE MIRAFI BXG110 OR APPROVED EQUAL. GEOGRID SHALL BE DESIGNED BASED ON EXISTING SOIL CONDITIONS AND PROPOSED HAUL ROAD SLOPES.
6. SUBCONTRACTOR SHALL INSTALL CONDUITS FOR ALL ELECTRICAL CONDUIT CROSSINGS PRIOR TO INSTALLATION OF THE GEOGRID MATERIAL. THE GEOGRID SHALL NOT BE HORIZONTALLY CUT ONCE INSTALLED.

1 PERMEABLE GRAVEL ACCESS ROAD

SCALE: N.T.S.

XD_CIVIL_GRAVEL_ROAD_NY 07-24-2017



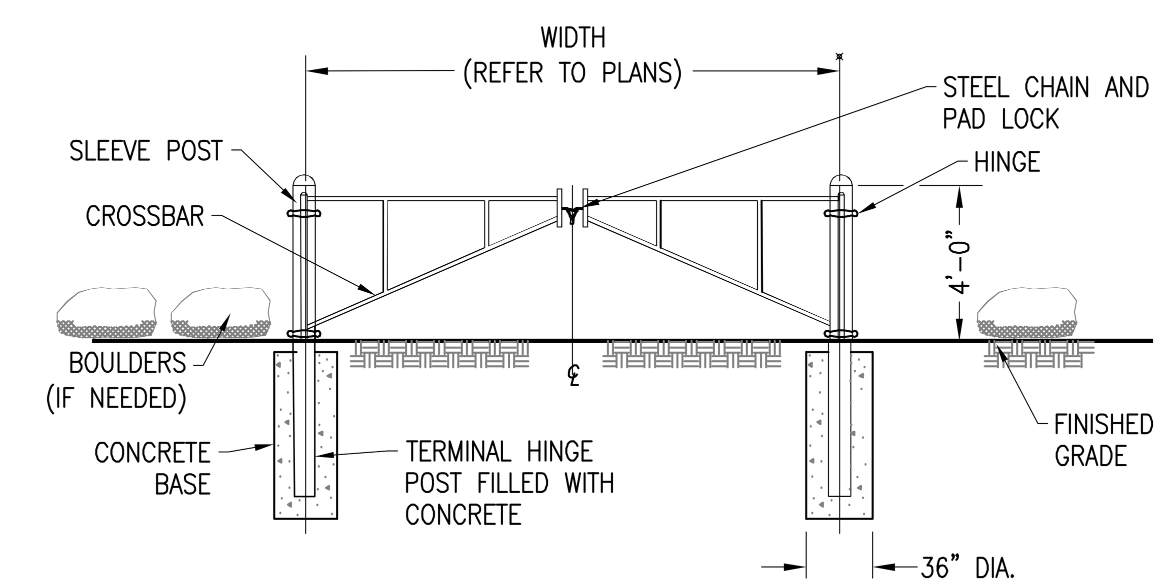
NOTES:

1. BASIN SHALL BE INSPECTED DAILY.
2. PLASTIC SHEETING SHALL BE FREE OF TEARS OR HOLES. DAMAGED OR LEAKING BASINS SHALL BE REPLACED OR REPAIRED IMMEDIATELY.
3. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE BASIN IS FILLED. WASHWATER FROM WASHOUT BASIN SHALL EVAPORATE OR BE VACUUMED OUT. REMOVE REMAINING HARDENED SOLIDS. REPLACE PLASTIC SHEETING WITH EACH CLEANING. REPLACE STRAWBALES AS REQUIRED.
4. DISPOSE OF HARDENED MATERIAL OFF-SITE OR PER THE PROJECTS SWPPP.

5 CONCRETE WASHOUT BASINS

SCALE: NTS

XD_CIVIL_CONCRETE WASHOUT BASINS 07-26-2017



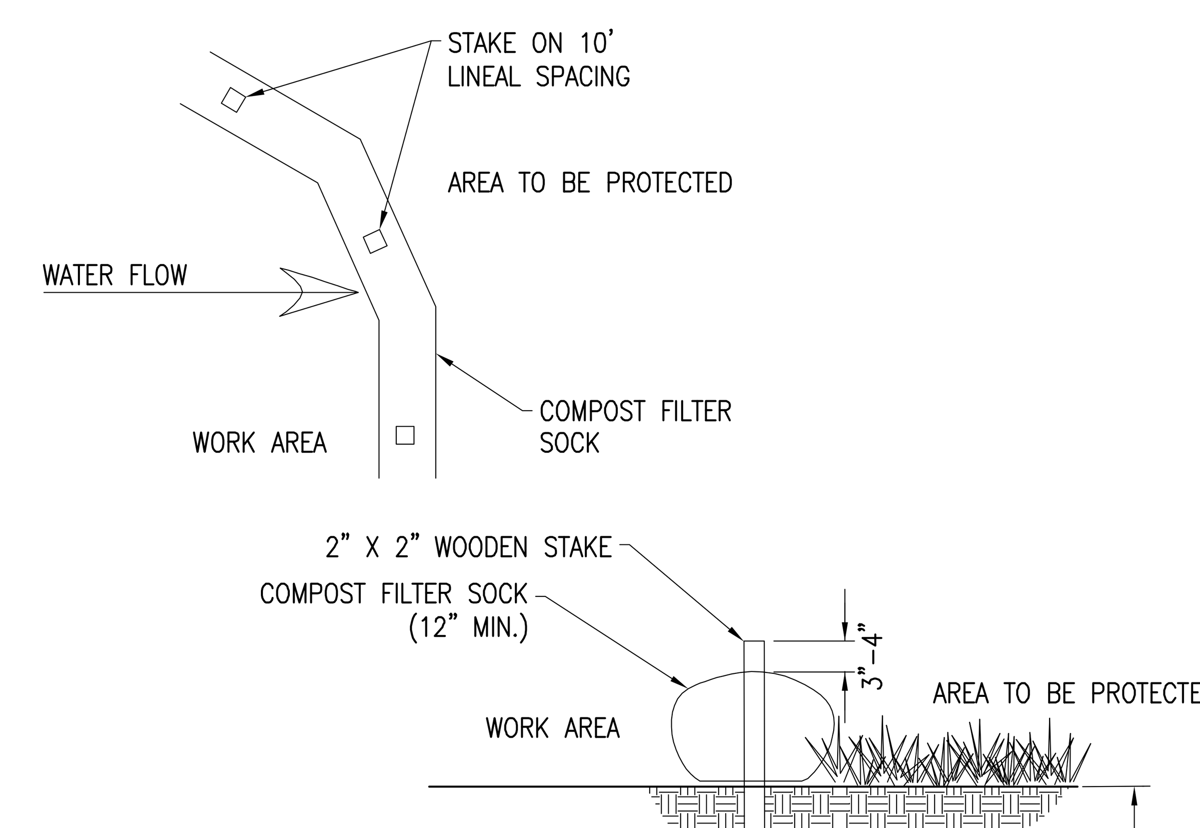
NOTE:

CONTRACTOR SHALL ENSURE NO VEHICULAR ACCESS (INCLUDING MOTORCYCLES, ATV'S, ETC.) AROUND BARRIER GATE.

2 BARRIER GATE

SCALE: NTS

XD_CIVIL_ACCESS_BARRIER_GATE 10-24-2018

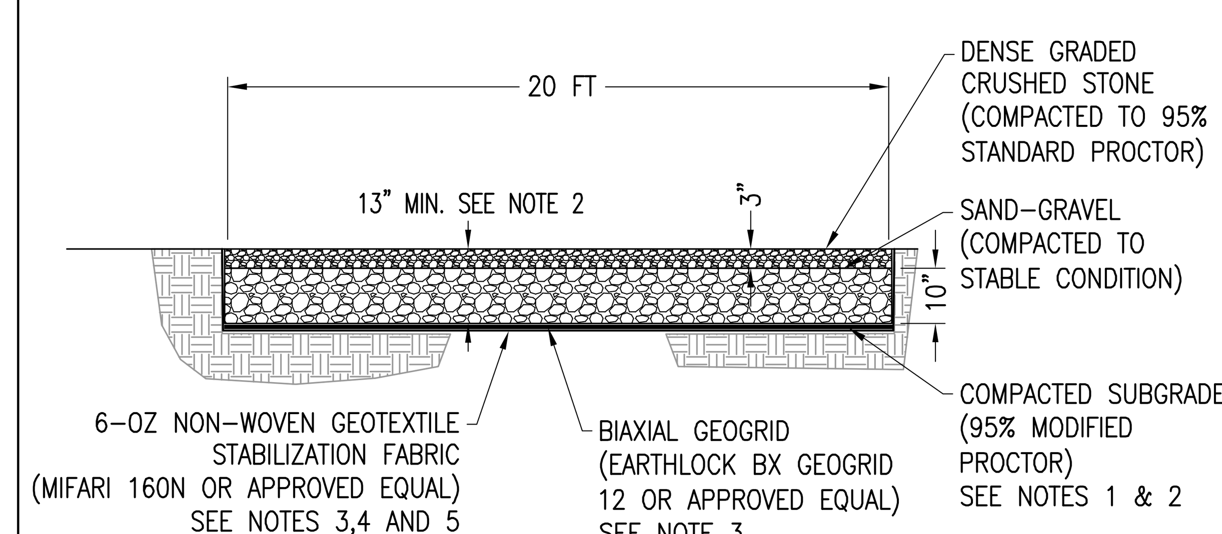


NOTE: MAY BE USED WHEREVER EROSION CONTROL IS SPECIFIED AT THE DISCRETION OF THE CONTRACTOR.

6 COMPOST FILTER SOCK

SCALE: NTS

XD_CIVIL_FILTREXX_FILTER_SOCK 03-29-2016



NOTES:

1. SUBCONTRACTOR SHALL EXCAVATE TO SUITABLE MATERIAL FOR SUBGRADE.
2. SUBCONTRACTOR SHALL COMPACT SUBGRADE TO PROVIDE SUITABLE SURFACE TO PLACE ROAD. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPERATION CRITERIA.
3. SUBCONTRACTOR SHALL FOLLOW MANUFACTURER INSTALLATION PROCEDURES.
4. WHERE OVERLAPPING OF GEOTEXTILE FABRIC IS REQUIRED, SUBCONTRACTOR SHALL OVERLAP A MINIMUM OF 24".
5. SUBCONTRACTOR SHALL REMOVE TEMPORARY CONSTRUCTION ACCESS ROADS, AND RESTORE TO PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE CEOR AND THE GOVERNING AGENCIES.
6. SUBCONTRACTOR SHALL INSTALL CONDUITS FOR ALL ELECTRICAL CONDUIT CROSSINGS PRIOR TO INSTALLATION OF THE GEOGRID MATERIAL. THE GEOGRID SHALL NOT BE HORIZONTALLY CUT ONCE INSTALLED.

3 IMPERMEABLE GRAVEL ACCESS ROAD

SCALE: NTS

XD_CIVIL_GRAVEL_ROAD_IL 04-30-2019

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4/15/22

DRY BRIDGE RD - ALEXANDER
DRY BRIDGE ROAD
ALEXANDER, NY 14005

PROJECT NUMBER: XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
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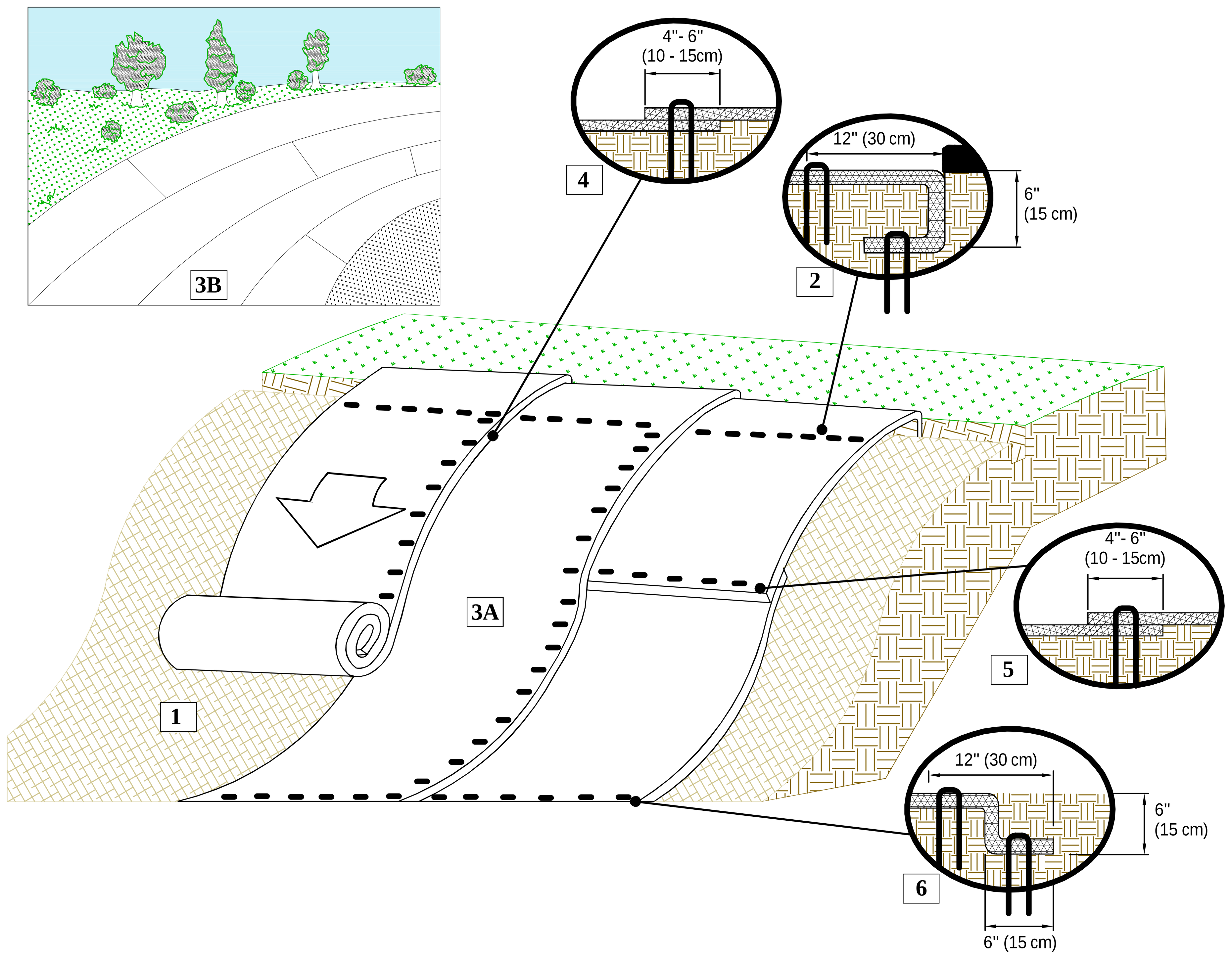
C-5.0

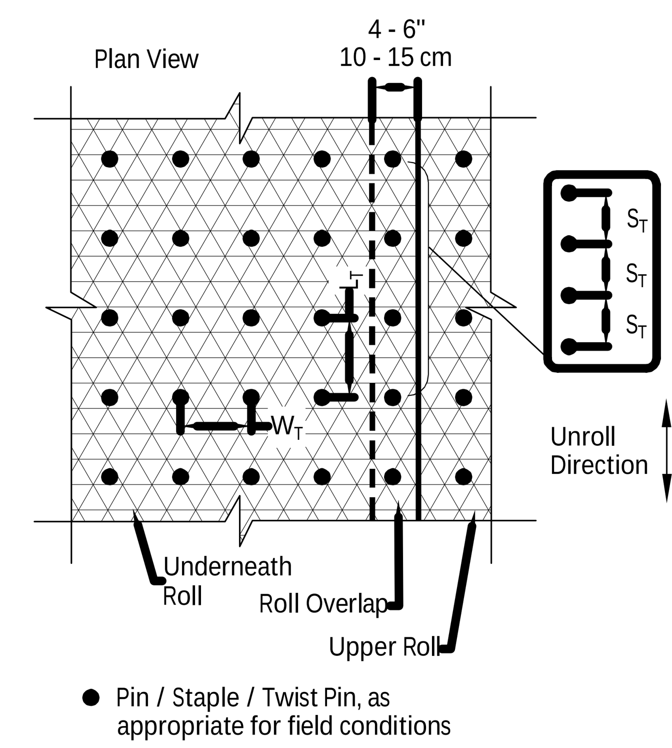
CIVIL DETAILS



Instructions

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed. Ground surface must be free of debris, rocks, clay clods and raked smooth sufficient to allow intimate contact of the RECP with the soil over the entirety of the installation.
2. Begin at the top of the slope by anchoring the RECPs in a 6" (15 cm) deep X 6" (15 cm) wide trench. Anchor the RECPs with a row of staples/stakes/pins spaced at S_T apart in the bottom of the trench. Backfill and compact the trench after stapling and fold the roll over downslope. Secure RECPs over compacted soil with a row of staples/stakes/pins spaced at S_T apart across the width of the RECPs.
3. Roll the RECPs (A) down or (B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes/pins in appropriate locations as shown in the staple pattern guide. RollMax RECPs and ECBs should utilize Staple Pattern C, TRMs and VMax materials should utilize Staple Pattern D.
4. The edges of parallel RECPs must be stapled with approximately 4" - 6" (10 - 15 cm) overlap.
5. Consecutive RECPs spliced down the slope must overlapped with the upstream mat atop the downstream mat (shingle style). The overlap should be 4" - 6" (10 - 15 cm).
6. At the terminal end, secure each mat across the width with a row of staples/stakes/pins spaced at S_T. If exposed to flow, foot traffic, wind uplift or other disruption, trench the terminal end in as shown in detail.
7. Fasteners should provide a minimum of twenty pounds of pullout resistance. Six-inch (10 cm) X one-inch (2.5 cm) eleven gauge staples are typically adequate. In loose soils, longer staples may be necessary, twist pins can provide the greatest pullout resistance. In hard or rocky soils, straight pins may by used where staples or twist pins are refused, provided the minimum pullout requirements are met. Bio-degradable fasteners shall not be used with VMax (TRM) or TMax (HPTRM) materials.

Staple Pattern Guide

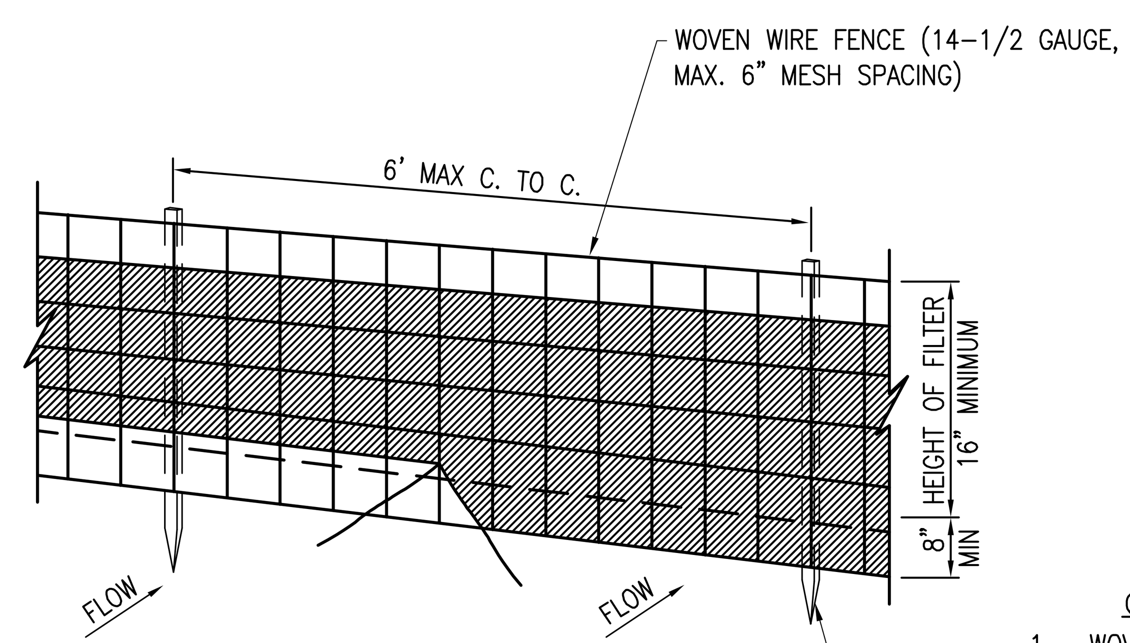


● Pin / Staple / Twist Pin, as appropriate for field conditions

	Staple Pattern	
Dimension	C	D
W_T	30" (75 cm)	24" (60 cm)
L_T	30" (75 cm)	20" (50 cm)
S_T	18" (45 cm)	18" (45 cm)
Nominal Frequency	1.7 / SY	3.0 / SY
Application	ECB (Degradable)	TRM (Permanent)

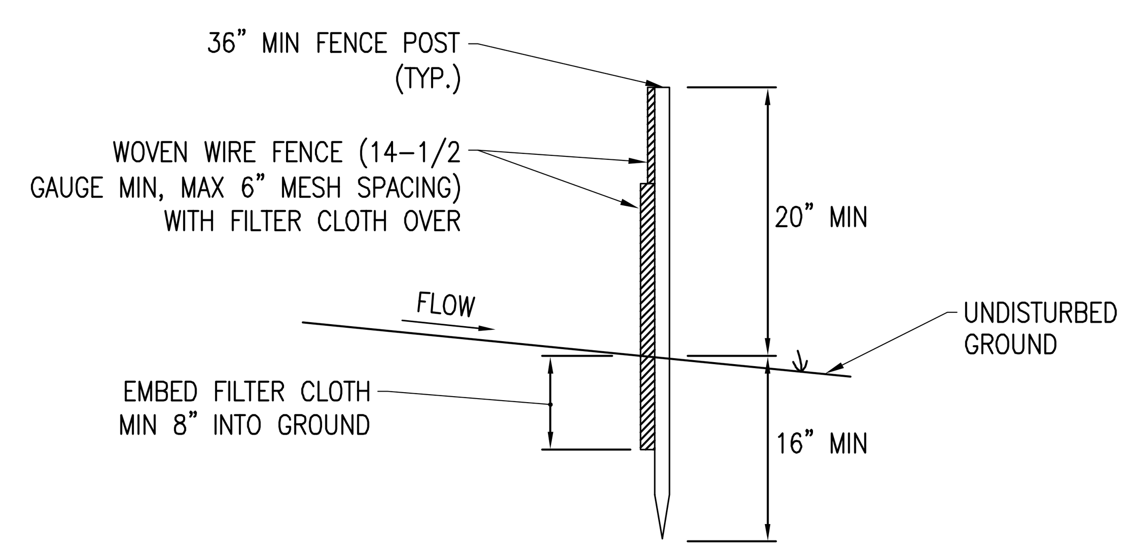
*Note: Staple Pattern A and B used prior to 8/2019 have been discontinued.

4 EROSION CONTROL BLANKET



PERSPECTIVE VIEW

36" MIN FENCE POSTS, DRIVEN MINIMUM 16" INTO GROUND



SECTION

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN BULGES DEVELOP IN THE SILT FENCE.

POSTS: STEEL, EITHER T OR U TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE, 14 GAUGE 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

5 SILT FENCE DETAIL

SCALE: NTS

XD_CIVIL_SILT-FENCE-DETAIL 03-07-2016

BORREGO
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ERDMAN ANTHONY
145 Culver Road, Suite 200
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www.erdmananthony.com

NOT FOR CONSTRUCTION

4/15/22

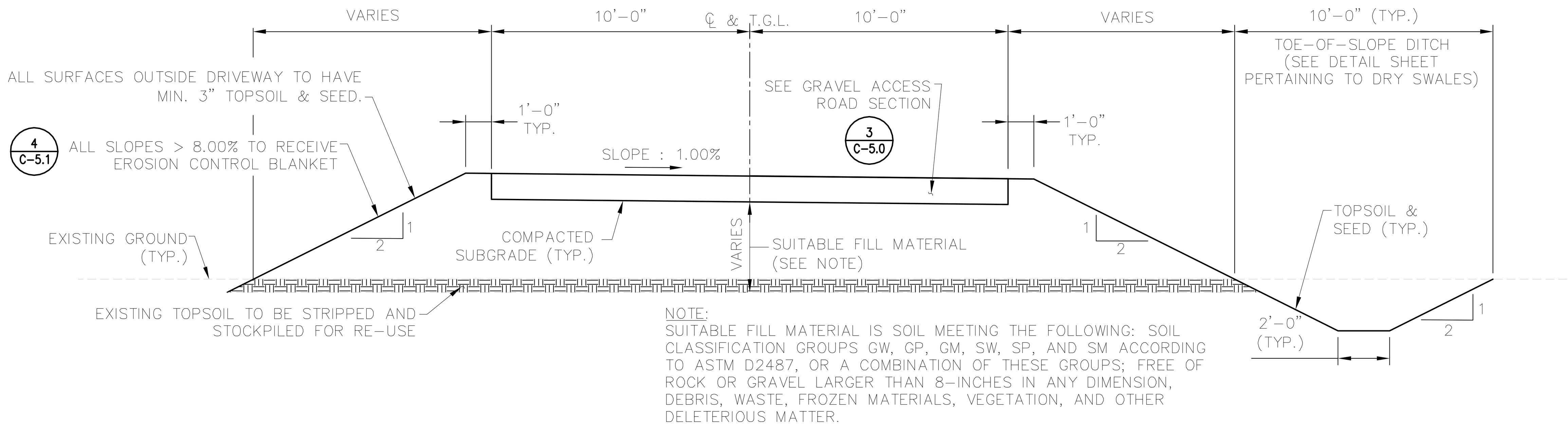
DRY BRIDGE RD - ALEXANDER
DRY BRIDGE ROAD
ALEXANDER, NY 14005

PROJECT NUMBER:
XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	04/15/22	JM/DK	MK	SUP SET

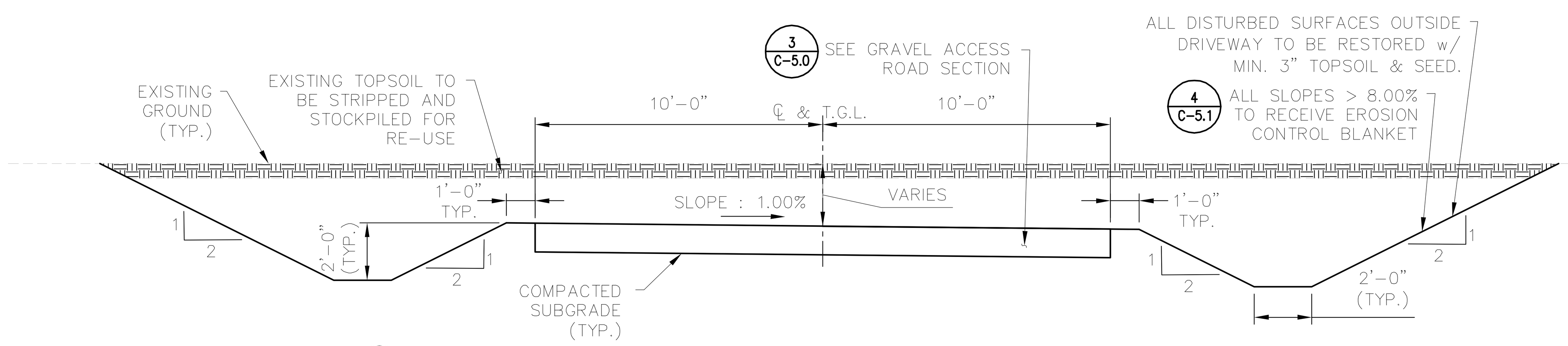
SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-5.1
CIVIL DETAILS



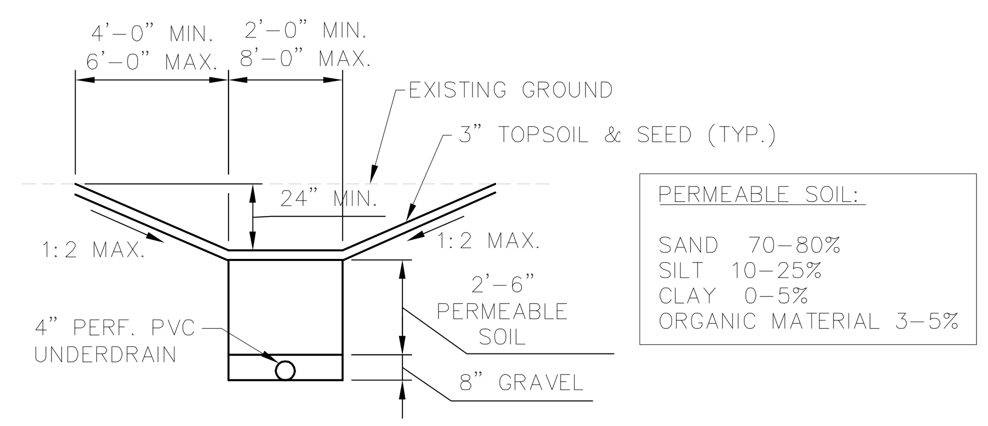
1 TYPICAL ACCESS DRIVE w/ TOE-OF-SLOPE DITCH (FILL SECTION)

SCALE: 1/4"=1'-0"



2 TYPICAL ACCESS DRIVE w/ ROADSIDE DITCHES (CUT SECTION)

SCALE: 1/4"=1'-0"

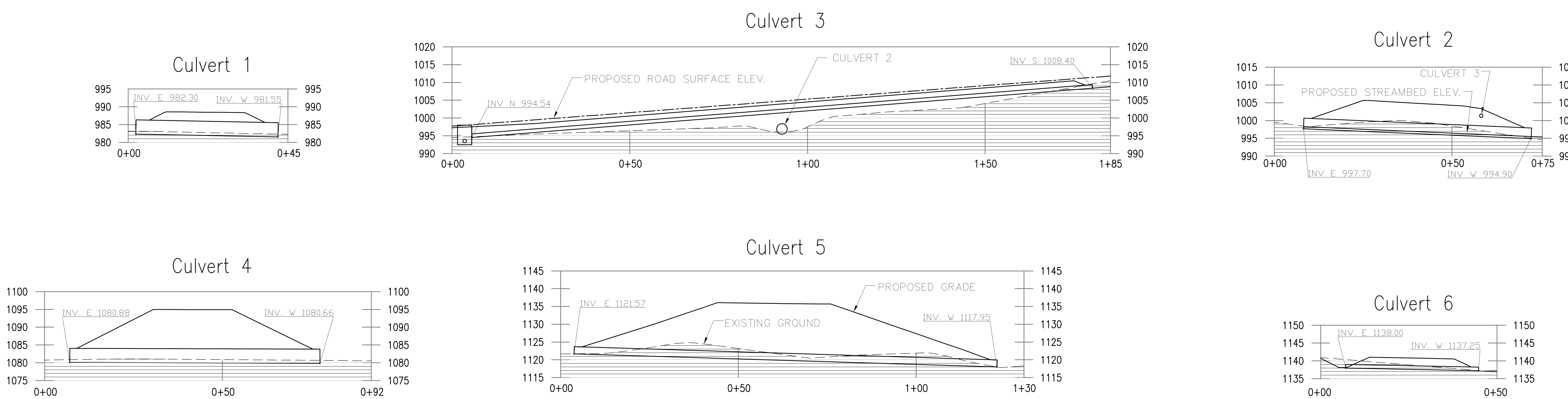


3 TYPICAL DRY SWALE DETAIL

SCALE: 1/4"=1'-0"

DRY SWALE TABLE

SWALE NO.	START STATION , (OFFSET)	END STATION , (OFFSET)	WIDTH	SIDESLOPE
1	0 + 50 , (17.5')	4 + 00 , (19.0')	3'	2:1
2	12 + 60 , (16.0')	15 + 75 , (19.8')	2'	2:1
3	20 + 36 , (- 272.6')	20 + 70 , (- 44.3')	5'	3:1
4	26 + 00 , (16.0')	26 + 75 , (16.0')	2'	2:1
5	29 + 00 , (16.0')	30 + 00 , (16.0')	2'	2:1
6	32 + 20 , (16.0')	32 + 60 , (16.0')	2'	2:1
7	33 + 75 , (21.9')	34 + 40 , (21.5')	8'	3:1
8	36 + 50 , (25.0')	38 + 50 , (33.8')	8'	3:1
9	46 + 85 , (25.8')	48 + 05 , (29.4')	4'	2:1



4 CULVERT PROFILE VIEWS (FILL SECTIONS)

SCALE: 1" = 20'

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ERDMAN ANTHONY

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4/15/22

IT IS A VIOLATION OF LAW FOR ANY PERSON TO ALTER ANY DOCUMENT WHICH BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER.

DRY BRIDGE RD - ALEXANDER
DRY BRIDGE ROAD
ALEXANDER, NY 14005

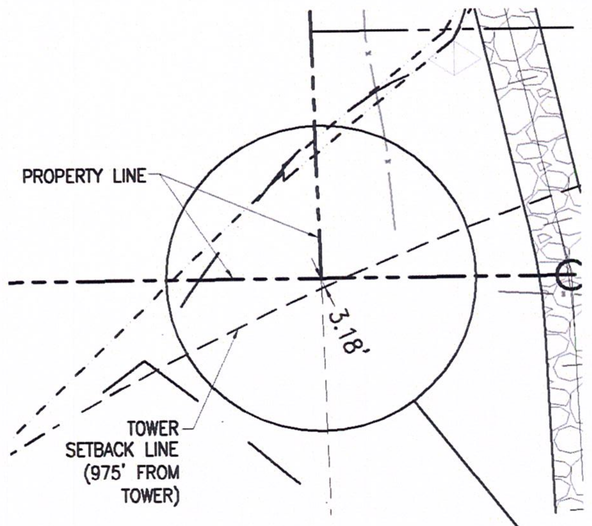
PROJECT NUMBER:
XXX-XXXX

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
	04/15/22	JM/DK	MK	SUP SET

SCALES STATED ON DRAWINGS ARE VALID ONLY WHEN PLOTTED ARCH D 24" X 36"

C-5.2

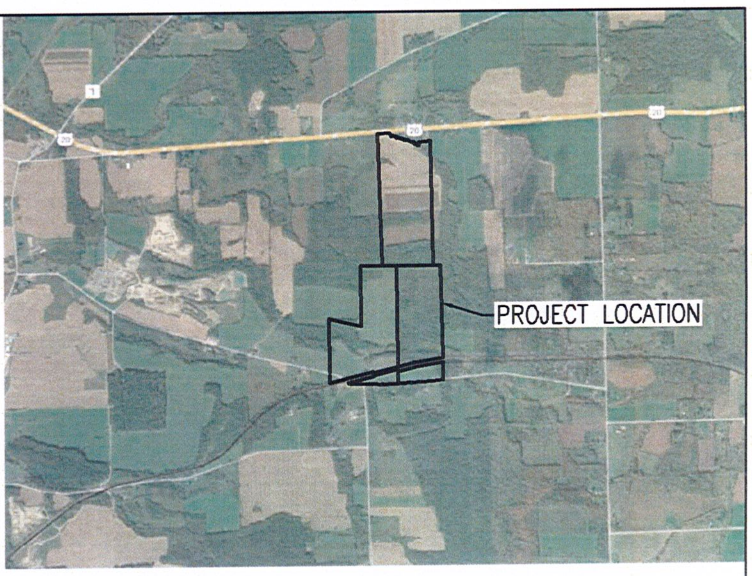
CIVIL DETAILS



BLOW-UP AT PROPERTY CORNER

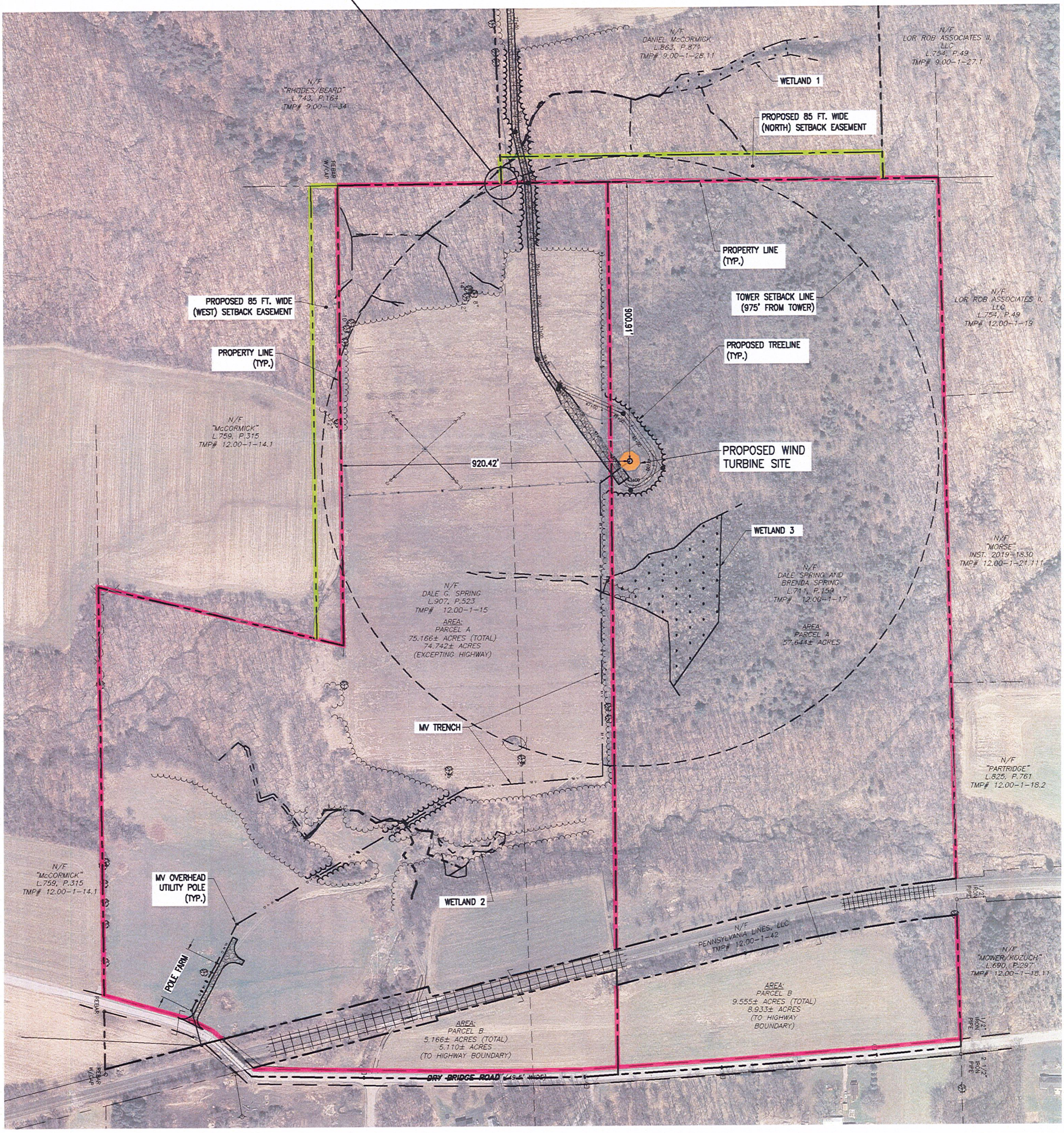
PROJECT SCOPE

THE FACILITY IS A PROPOSED WIND-POWERED ELECTRIC GENERATION PROJECT CONSISTING OF ONE WIND TURBINES GENERATING UP TO 4.5 MEGAWATTS (MWAC) OF ELECTRICITY. THE PROJECT WILL INCLUDE WIND TURBINES, ACCESS ROADS, ELECTRICAL COLLECTION LINES, AND TEMPORARY CONSTRUCTION STAGING AND STORAGE AREAS. THE PROJECT WILL BE INTERCONNECTED TO THE EXISTING ELECTRICAL SYSTEM UPON COMPLETION.



LOCATION MAP

NOT TO SCALE



ZONING EXHIBIT

SCALE: 1" = 150'

0 150' 300'

1918 US-11 - HASTINGS
1918 US-11
HASTINGS NY 13076

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JOURNAL REPORTS: ENERGY

How New Wind Turbines Produce Far More Energy

Lighter materials and improved design have enabled blades to get much longer and more efficient at capturing the wind

By Kevin Hand Follow

May. 16, 2021 10:00 am ET

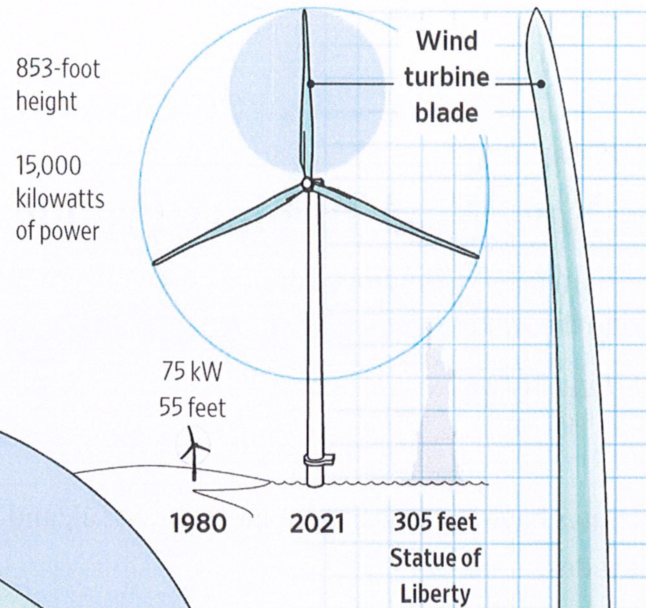
Wind turbines have become bigger, more powerful, and more cost-efficient to operate in recent decades.

A key improvement has been modern blades that are far more sophisticated in design, from aerodynamic properties to materials. This has enabled a variety of other improvements to the turbine, including greater size and more height (which means the turbine can tap higher wind speeds), with less noise.

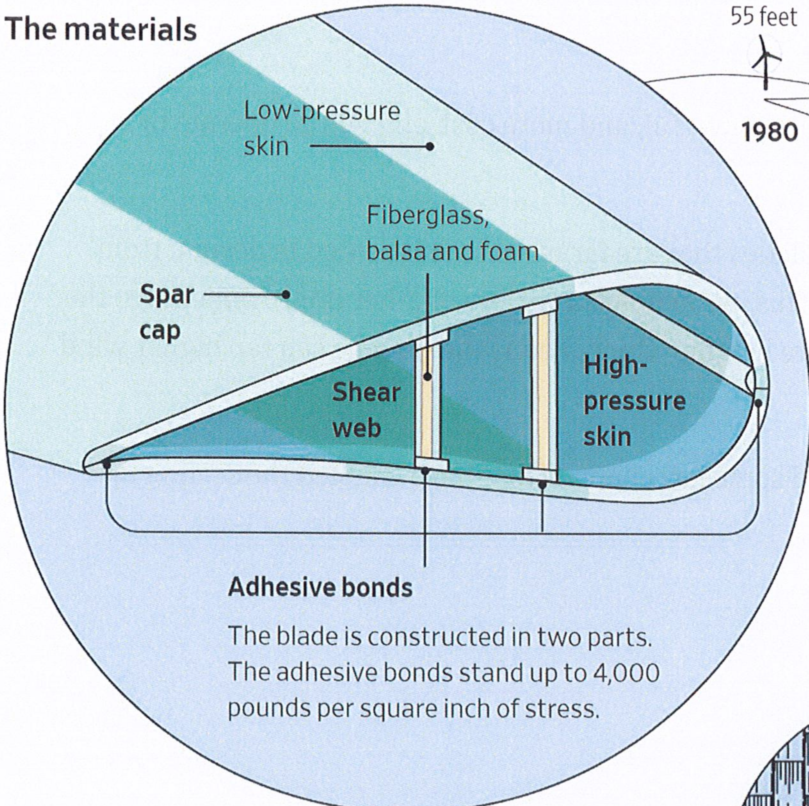
Here's how the blades have evolved and some key changes that have enabled the scaling up.

The size

Forty years ago typical wind-turbine blades were around 26 feet long. Today, with lighter materials, the blades have reached 351 feet, longer than the Statue of Liberty is tall, and are packed with new technology.

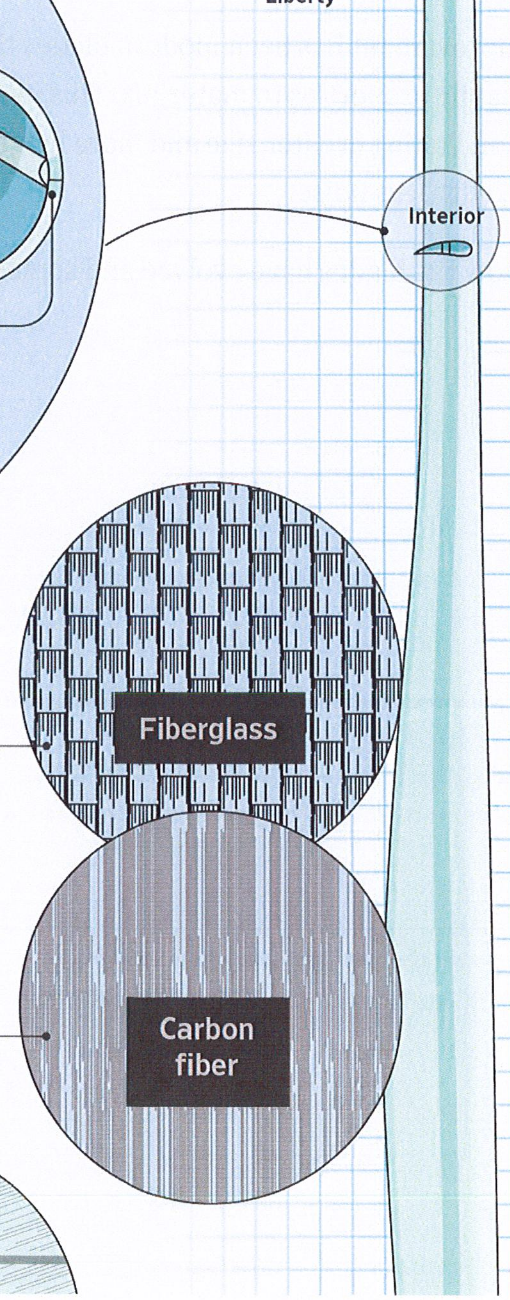


The materials



Adhesive bonds

The blade is constructed in two parts. The adhesive bonds stand up to 4,000 pounds per square inch of stress.



1980

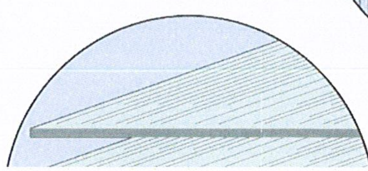
Early wind-turbine blades were made from fiberglass and resin. The materials limited their size and thus their power output.

2021

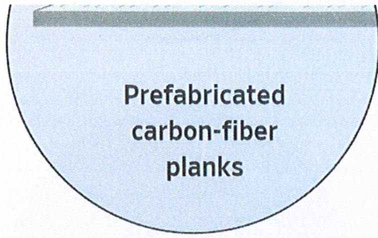
Modern blades, made from carbon fiber and other advanced materials, are 90% lighter than 1980s blades would be if scaled to current turbine sizes. Because of their size and design, turbines with the new blades can produce up to 15,000 kW of energy.

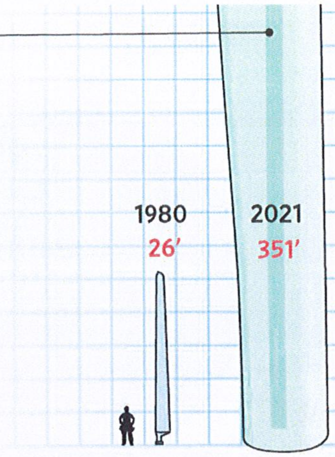
Spar cap

This section of the blade takes an enormous amount of stress. It is now reinforced



with a carbon-fiber strip the entire length of the span for strength. Sometimes the strip is made with carbon-fiber planks instead of cloth.

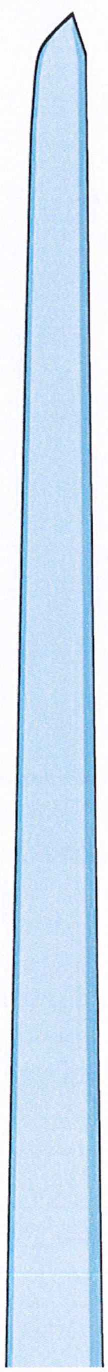




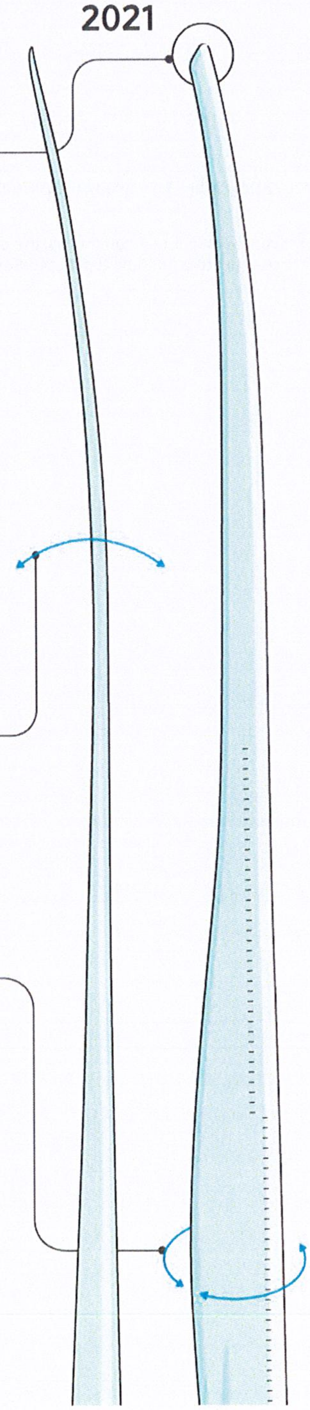
The shape

Innovations for the modern wind-turbine blades include higher strength that can withstand more stress, bend-twist coupling to reduce loads, and aerodynamic improvements to the blade tip for noise mitigation.

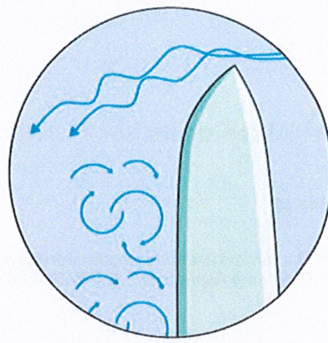
1980



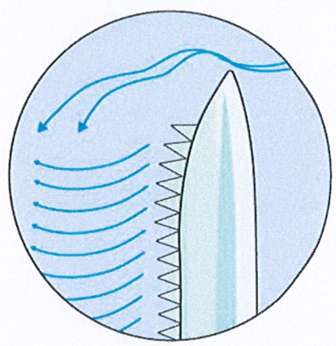
2021



Blade tip
Since the blade tip moves faster than the blade nearest the hub, more noise is generated on the tip.



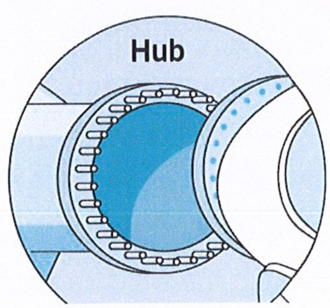
Tip shape
Rounded tips and serrated edges make blades quieter.

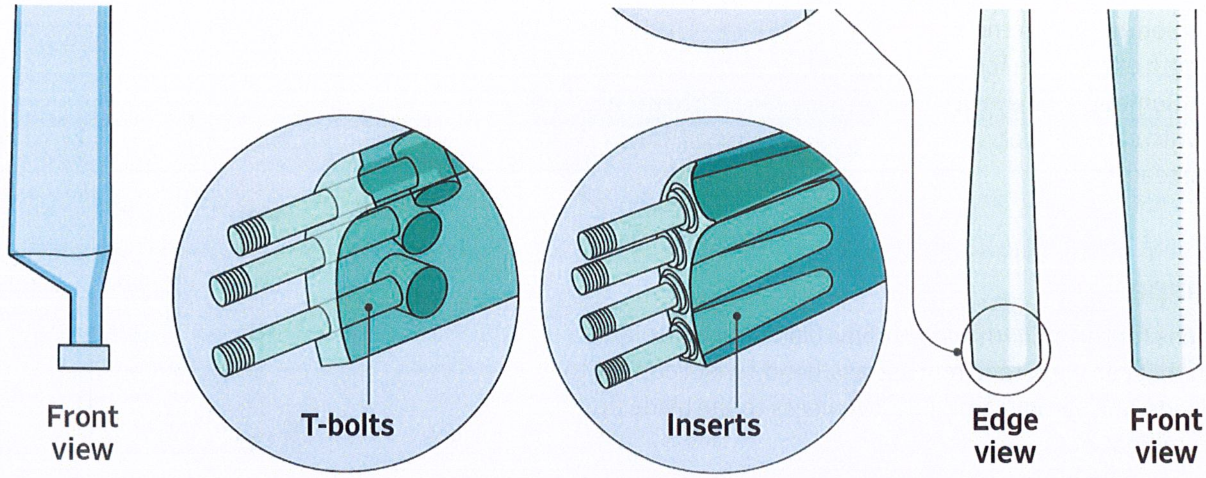


Bend
Greater swept area captures more wind, but requires longer blades that are more slender and flexible in bending. Manufacturing in a bend in the blade (known as a pre-bend) allows more room to deflect while avoiding contact with the tower.

Twist
Passive bend-twist coupling reduces the sensitivity to natural turbulence in the wind and allows even longer blades without increasing the weight.

New attachments
Blades were attached to the hub first with bolted flanges, then using heavy T-bolts. Inserts are a lighter alternative that is even stronger.





Sources: Paul Veers, National Renewable Energy Laboratories; Steve Nolet, TPI Composites Inc.; LM Wind Power; GE