

Stephen Tomasik
Project Manager
Energy Projects and Management
Division of Environmental Permits
NYS Department of Environmental Conservation
625 Broadway - 4th Floor
Albany, New York 12233-1750

Steven Riva
Chief, Permitting Section
Air Programs Branch
United States Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Subject:

Response to USEPA and NYSDEC Comments on PSD Air Permit Application and State Air Facility Permit Application (#3-1326-00275/00004)

Dear Mr. Tomasik and Mr. Riva:

This letter provides responses to agency review comments received on the PSD Air Permit Application and State Air Facility Permit Application for the proposed Cricket Valley Energy Center (CVE), which were submitted on March 26, 2010. Comments were provided by the United States Environmental Protection Agency (USEPA) Region 2 and the New York State Department of Environmental Conservation (NYSDEC) via the following correspondence:

- letter from Steven C. Riva (USEPA) to Frederick M. Sellars, May 5, 2010
- letter from Margaret Valis (NYSDEC) to Frederick Sellars, June 15, 2010
- letter from Jeffrey Lawyer (NYSDEC) to Frederick Sellars, August 3, 2010

This letter also addresses NYSDEC comments on the initial draft of Section 4 (Air Resources) of the Draft Environmental Impact Statement (DEIS) being prepared for

ARCADIS U.S., Inc.
2 Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978.937.9999
Fax 978.937.7555
www.arcadis-us.com

Date:
November 15, 2010

Contact:
Frederick Sellars

Phone:
978-937-9999 ext 317

Email:
Frederick.sellars@arcadis-us.com

Our ref:
CO001447.0003.00004

the CVE Project, which were sent to Frederick Sellars via email on November 3, 2010.

NYSDEC Comments on DEIS Section 4

This section addresses the comments received from NYSDEC via email on Section 4 of the DEIS.

Comment NYSDEC-1: There are some discrepancies between DEIS Section 4 and the (State Air Facility) SAF application, namely:

- a) the heat input rating of the auxiliary boiler,*
- b) the emissions presented in Tables 4-12, 4-13, 4-14 (for the auxiliary boiler only), 4-15, and 4-16 in the DEIS,*
- c) the proposed BACT limits for $PM_{10}/PM_{2.5}$, SO_2 , and H_2SO_4 for the combustion turbines,*
- d) the proposed LAER or BACT limits for NO_x , VOC, and SO_2 for the auxiliary boiler.*

The values used for each of these need to be consistent in the DEIS and air application. If the values have been revised, provide an explanation of why they have been revised.

Response NYSDEC-1: At the time of the air permit application submittal, an F-class turbine was specified, but a specific vendor had not been chosen. Since that time, CVE has chosen the General Electric (GE) 7FA.05 combustion turbine for the project. As such, the vendor has provided updated information on the turbines including heat rate and emissions. Concurrent with these updates, the project has slightly increased the proposed size of the auxiliary boiler. This updated information is reflected in Section 4 of the DEIS, in Tables 4-12 through 4-16 and in the BACT/LAER analysis, and supersedes the information in the SAF application. This updated information will be incorporated into the revised air permit application.

Comment NYSDEC-2: Section 4.6.5, Energy Use and Greenhouse Gas Emissions

a) *It should be stated in Section 4.6.5.1 that CH₄ has 21 times the global warming potential of CO₂ and that NO₂ has 298 times the global warming potential of CO₂.*

b) *It should also be stated that the proposed project will control emissions of CH₄ and NO₂ with the installation of the CO catalyst and the SCR, respectively.*

Response NYSDEC-2: We believe that there was a typographical error in the comment. The global warming potential of N₂O (not NO₂) is 298 times that of CO₂. Section 4.6.5.1 of the DEIS has been updated to include the additional statements for CH₄ and N₂O as requested in your comment. The updated section is provided with this letter as Attachment A.

USEPA Comments

The USEPA letter provided comments on both the air quality modeling and the Best Available Control Technology (BACT) analysis in the permit application. The USEPA comments, and their corresponding responses are provided below.

USEPA Comments on BACT

Comment USEPA-1: *Please provide information on the monitoring strategies to be employed by CVE to ensure compliance with the proposed LAER for NO_x and VOC and BACT for CO, PM₁₀/PM_{2.5}, SO₂ and H₂SO₄.*

Response USEPA-1: CVE will be continuously monitoring NO_x and CO to demonstrate compliance with their associated emission limits. The facility will conduct a stack test at facility commissioning to demonstrate compliance with VOC and PM₁₀/PM_{2.5} emission limits. Emissions of SO₂ and H₂SO₄ are based upon the maximum sulfur content of the fuel and will be verified through tracking of fuel usage.

Comment USEPA-2: *Please provide a definition for hot startup and warm startup.*

Response USEPA-2: Since the PSD air permit application was submitted, CVE has chosen the GE 7FA.05 combustion turbine for the project. As such, the vendor has provided updated information on the turbines including startup and shutdown information. Based on this updated information, the emissions and duration (1 hour) for a warm start and hot start are identical. A warm startup occurs after a downtime of 8 to 72 hours. A hot start occurs after a downtime of 0 to 8 hours.

Comment USEPA-3: *Please discuss whether emissions from the startup and shutdown of the auxiliary boiler have already been included in Table 2-6 and the total for the facility.*

Response USEPA-3: The emissions in Table 2-6 and the total for the facility are based upon steady state emissions for the auxiliary boiler. However, because the boiler does not utilize add-on control equipment such as Selective Catalytic Reduction (SCR) or oxidation catalyst, startup emissions from the boiler are considered to be the same as steady state emissions. Unlike the combustion turbines, there is no period of time during the startup sequence that emissions from the boiler are “uncontrolled.”

Comment USEPA-4: *Please discuss how the proposed weight percent of ammonia (19%) in the aqueous ammonia solution will be monitored to ensure compliance.*

Response USEPA-4: The ammonia content of the aqueous ammonia solution will be guaranteed in a contract with the supplier and monitored via vendor delivery records. CVE will implement procedures to ensure that only 19% aqueous ammonia solution is accepted at the facility.

Comment USEPA-5: *Please discuss CVE’s strategy to comply with its proposed limit of 5 ppm_v for ammonia slip.*

Response USEPA-5: CVE will use a continuous monitoring system to demonstrate compliance with applicable ammonia emission limits. In addition, the facility will follow all recommended manufacturer operating and maintenance procedures to ensure that the SCR system operates within its design parameters.

Comment USEPA-6: *Please discuss circumstances that would affect the effectiveness of the oxidizing catalyst and steps CVE will take to ensure continual effectiveness.*

Response USEPA-6: The primary operational circumstance that could affect the effectiveness of the oxidation catalyst is degradation of the catalyst media, which generally occurs due to pollutants such as metals in the exhaust stream. As such, the use of natural gas as the only fuel will greatly reduce the potential for catalyst degradation. During plant operations, the continuous emissions monitoring system (CEMS) will monitor the concentration of CO in the exhaust stream, which is a good indicator of catalyst performance. If a systemic increase in CO concentration is observed, indicating a drop-off in overall catalyst performance, then the oxidation system will be undergo a thorough review during the next outage. There will be sample buttons in the oxidation catalyst media that can be removed and analyzed during an outage for additional performance monitoring. If there is an indication that the CO emission limits are exceeded, then the system will be immediately shut down.

USEPA Comments on Air Quality Modeling

Comment: *(General Comment) The application was submitted with an air quality modeling analysis using meteorological data collected from the Dutchess County Airport between March 2005 and December 2009. USEPA's Guideline on Air Quality Models recommends that the modeling analysis be performed using 5 years of recent, readily available meteorological data. We understand that at the time of the submittal the 5 years of measured meteorological data were not yet available from the Dutchess County Airport. The additional data must now be obtained and the analysis supplemented to include the complete data record.*

Response: The meteorological record has been extended to encompass five full years, beginning March 10, 2005 through March 9, 2010. Each modeling "year" runs from March 10 through March 9 of the succeeding year. The revised modeling has been performed with these data, and as discussed in more detail below, is provided in attachments to this letter.

Comment USEPA-1: *On March 23, 2010, USEPA's Office of Air Quality Planning and Standards issued guidance on how modeling should be performed when assessing the air quality impacts of PM_{2.5}. The methodology in this guidance should be used for PM_{2.5}. In brief, this methodology recommends that if a facility's average maximum impacts are greater than the Significant Impact Levels (SILs), then the cumulative*

assessment should be based on the modeled average maximum impact over the 5 year period plus the average 98th percentile of the 3 year ambient data (or annual average for the annual NAAQS). This is a first tier screen and other more refined options could be considered if you propose.

Response USEPA-1: Procedures for determining predicted impacts and background concentrations for comparison with ambient air quality standards for PM_{2.5} have been revised, consistent with USEPA guidance provided in "Modeling Procedures for Demonstrating Compliance with PM_{2.5} (National Ambient Air Quality Standards) NAAQS." (March 23, 2010). The cumulative assessment is based on the modeled average maximum impact over the 5 year period plus the average 98th percentile for 3 years of measured ambient data. The revised modeling results for CVE show peak predicted impacts for 100% load at 59°F, with duct burning. The maximum distance to a receptor with predicted impact (5-year average maximum 24-hour value) above the SIL is 6.1 km (no change from the previous result). Cumulative impact modeling results for all receptors where CVE has a significant impact are summarized in Attachment B. The modeled 5-year average predicted maximum 24-hour impact from all sources, plus background, results in a peak predicted concentration of 31.3 µg/m³, which demonstrates that the project is in attainment of the 24-hour (98th percentile) NAAQS for PM_{2.5}.

Comment USEPA-2: *Certain details on Table 5-1 need to be corrected. In particular, the 1 hour NO₂ NAAQS is 188 µg/m³ rather than 189 µg/m³. In addition, a new Lead NAAQS was promulgated in October 2009. The new Lead NAAQS is 0.15 µg/m³ based on a 3 month rolling average. Further, while not yet promulgated, USEPA proposed a new 1 hour SO₂ NAAQS last December. This new SO₂ NAAQS is expected to be finalized later this summer. The Table and the modeling analyses need to reflect these new NAAQS.*

Response USEPA-2: Updated tables reflecting the current values for NAAQS (and for SILs and interim SILs established since the comment letter was received) are provided as Attachment C. The updated tables will be included in the revised permit application.

Comment USEPA-3: *A 1 hour NO₂ impact was presented. However, the modeling is not a cumulative assessment which includes other nearby sources. This assessment must be expanded to include a cumulative assessment with other nearby sources. You may want to note that USEPA will soon issue a clarification memo which will provide confirmation on the 3 tier processes in the Guideline on Air Quality Model as*

it relates to the 1 hour NO₂ NAAQS as well as a SIL for both the 1 hour NO₂ and the proposed 1 hour SO₂ NAAQS. It should be noted that while NESCAUM issued an interim 1 hour NO₂ SIL, this SIL is appropriate only for State issued permits. It does not have a legal basis for use in federally issued permits.

Response USEPA-3: A pair of USEPA memoranda, "Applicability of Appendix W Modeling Guidance for the 1-hour NO₂ NAAQS" and "Guidance Concerning the Implementation of the 1-hour NO₂ NAAQS for the Prevention of Significant Deterioration Program," were issued June 28, 2010. The "PSD" memo defines an interim SIL for 1-hour average NO₂. CVE project impacts have been assessed in relation to the interim SIL, following the modeling guidance provided in these memoranda. The results indicate that predicted CVE project impacts exceed the interim SIL, and a Significant Impact Area (SIA) of 29 km has been identified. The isopleth plot of 5-year average maximum predicted 1-hour impacts is provided as Attachment D. The emissions inventory for a cumulative assessment is currently being developed. ARCADIS is consulting closely with NYSDEC concerning this inventory development effort. Following completion of the cumulative modeling for the new 1-hour NO₂ NAAQS, CVE will submit a revised permit application incorporating these results as well as the information contained in this response letter.

Comment USEPA-4: *The modeling assumed that the 3 turbine stacks were merged as one using a combined effective stack diameter. This may be acceptable provided that the separation distance is close enough where the plumes are truly merging. Generally, USEPA accepts this distance to be approximately 1 stack diameter. Please confirm that this is the case or provide further explanation for using the merged technique in the refined analysis.*

Response USEPA-4: The turbine stacks satisfy the USEPA criteria for modeling as a merged plume. The turbine stacks are 19 feet in diameter, and the separation distance between stacks is approximately 9 feet (less than 1 stack diameter). The site plan showing the configuration of the stacks is provided as Attachment E.

Comment USEPA-5: *The application should be clearer as to why only 12 of at least 39 case scenarios are listed in Table 5-2. If these are explained further in the spreadsheet contained in the electronic CD, it should be referenced in the application for ease in review.*

Response USEPA-5: The purpose of the dispersion modeling analysis is to evaluate project impacts for scenarios that represent the range of conditions over which the proposed facility will operate, with particular attention to conditions that may produce peak (worst case) impacts for each pollutant and averaging time of concern. The 24 scenarios modeled for the application (12 with a single turbine, 12 with all three) span the range of operating conditions (ambient temperature and operating load, plus duct burning at full load). The results indicate that peak predicted impacts generally occur at full load, with duct burning, or occasionally at minimum (50%) load, depending on the pollutant and averaging time. The air permit application proposed a generic F-class combustion turbine, but did not specify a vendor. Since submittal of the application, CVE has chosen the GE 7FA.05 combustion turbines. As such, updated information on this turbine has been provided by the vendor. An updated table of turbine operating scenarios has been generated, with revised emissions and stack parameters. The new table (Attachment F) presents 12 scenarios which span the range of load conditions and ambient temperatures for proposed turbine operation (minimum, 75% and 100% loads, plus duct burning at 100% load, at three ambient temperatures). Modeling has been performed to assess impacts for all 12 scenarios, with either a single turbine or all three turbines operating.

Comment USEPA-6: *It appears that downwash was not considered from the existing nearby sources in the cumulative PM_{2.5} modeling assessment. USEPA recommends that if these sources are subject to downwash that could potentially affect the design concentration, that they should be modeled in this mode.*

Response USEPA-6: The cumulative PM_{2.5} modeling assessment was revised to correct input information for existing nearby sources (see comments NYSDEC-3 and NYSDEC-4 on air quality analysis). For the revised modeling, building wake downwash was included for facilities located within the SIA. Building inputs were developed in consultation with NYSDEC. AERMOD input files with building inputs for nearby sources are provided on the enclosed computer diskette (Attachment G).

Comment USEPA-7: *As stated in our comments on the modeling protocol, if the facility would like to have operational flexibility to operate under simple cycle mode, a modeling analysis under this scenario must also be assessed.*

Response USEPA-7: The CVE facility will operate only in combined-cycle mode.

Comment USEPA-8: Also, as stated on our comments on the modeling protocol, the soils and vegetation section needs to include effects from the other PSD affected pollutants as well as SO₂ and NO₂.

Response USEPA-8: Potential impacts on soils and vegetation have been assessed for other PSD affected pollutants, using information provided to ARCADIS by USEPA. This impact assessment is provided as Attachment H.

Comment USEPA-9: The project is located on 57 acres within 131 acre industrial zone. Please clarify the ambient air boundary that is used in the modeling analysis.

Response USEPA-9: The CVE property is transected by an active rail line. The railroad right-of-way therefore represents the “ambient boundary” on the northwest side of the facility, even though CVE property extends farther to the west. Receptors were placed along the railroad right-of-way to assess air quality impacts in this area. The right-of-way is shown on the Site Plan (Attachment E).

Comment USEPA-10: Please provide us with an update regarding the findings from the Fish and Wildlife Service regarding the endangered species in the nearby area.

Response USEPA-10: The U.S. Fish and Wildlife Service identified two Federally listed species in the project area, the Federally listed threatened and state-listed endangered bog turtle (*Glypemys [Clemmys] muhlenbergii*) and the Federally and state-listed endangered Indiana bat (*Myotis sodalis*). The project conducted a habitat survey for the bog turtle and found no suitable habitat on site. Similarly, the project demonstrated that direct Indiana bat habitat loss or habitat fragmentation would be avoided by use of a previously disturbed site and limiting any tree removal to the non-roosting season (October 1 through March 31). The U.S. Fish and Wildlife Service provided guidance in terms of potential indirect impacts to these two species, as detailed below.

Adverse indirect impacts to bog turtles associated with development projects include: introduction of contaminated surface water runoff into wetlands from pesticides, herbicides, fertilizers, road deicers; alteration of wetland hydrology; introduction of nutrients from septic systems; introduction of yard and other waste materials into wetlands; introduction of people, pets, and recreational vehicles into wetlands; and death/injury to bog turtles that wander into lawns and roads. The project as proposed will not pose a significant direct or indirect impact to bog turtles, and the

U.S. Fish and Wildlife Service did not identify air quality impacts as a specific concern with respect to bog turtles.

Adverse indirect impacts to Indiana bats can occur from increased lighting in the area, and the agency provided lighting recommendations which have been incorporated into the project design. The agency also discourages the use of chemicals in/around storage detention basins, which will be addressed through best management practices. The U.S. Fish and Wildlife Service did not identify air quality impacts as a specific concern with respect to Indiana bats.

Pertinent agency correspondence with the U.S. Fish and Wildlife Service is provided as Attachment I.

NYSDEC Comments

NYSDEC provided two comments letters on the air permit application. The first letter, from Margaret Valis, commented on the air quality analysis and the second letter, from Jeffrey Lawyer, commented on the remainder of the application. Both sets of comments are addressed in the sections below.

NYSDEC Comments on Air Quality Modeling

Comment NYSDEC-1: Maximum impacts are predicted at the edge of the 100m grid. The 100m grid should extend beyond these areas to ensure the maxima are modeled.

Response NYSDEC-1: Receptors were added to extend the area covered at 100 m resolution. The plot of 5-year average maximum predicted 24-hour impacts for PM-2.5 (Attachment J) demonstrates that the 100 m grid now extends beyond the area where maximum CVE project impacts are predicted.

Comment NYSDEC-2: Maps of the land use and sectors used in AERSURFACE surrounding the met site and the facility should be included in the meteorology discussion in the application. These were provided to NYSDEC at an earlier date, but should be included as part of the public document.

Response NYSDEC-2: The figures in question will be included in the revised PSD/State Facility Air Permit Applications.

Comment NYSDEC-3: . Corrections to the source inventory were e-mailed from Jeffery Lawyer on May 14, 2010. Also, Hunt Country Furniture EP 10 is listed twice in the modeling inventory; the first one (under Emission Unit A00002) is correct, and the other one should be deleted (e-mail dated March 15, 2010 from Jeffrey Lawyer). The inventory should be corrected and the changes incorporated into the next round of modeling runs.

Response NYSDEC-3: The corrections noted in this comment and in the May 14, 2010 e-mail from Jeffrey Lawyer have been incorporated in the revised emissions inventory for PM_{2.5} modeling. The enclosed CD (Attachment G) provides revised model input files and spreadsheet files documenting revisions to the emissions inputs.

Comment NYSDEC-4: Coordinates for Hunt Country Furniture appear to be incorrect. Based on the address Webatuck Ln., Wingdale, I used Google Maps and ArcMap to estimate the coordinates to be: 621557E, 4612500N (UTM-18, nad83). These coordinates, and all other interactive source coordinates should be verified prior to performing any additional AERMOD runs.

Response NYSDEC-4: In response to this comment and subsequent discussions with NYSDEC, ARCADIS independently determined the location and elevation coordinates for each facility in the cumulative impact inventory for PM_{2.5}. Revised coordinates were reviewed with NYSDEC and then incorporated into the revised PM_{2.5} emissions inventory. Documentation relating to source locations is provided as Attachment K.

Comment NYSDEC-5: Cumulative source modeling results show violations due to an interactive source. Although Cricket Valley's impacts are below the SIL at these receptors, as stated in the attached e-mail dated March 8, 2010, if there are modeled violations, the receptors and the source(s) which cause the modeled violation must be identified.

Response NYSDEC-5: No violations are predicted at any receptors with significant impacts from CVE (see Attachment B). The files documenting cumulative source modeling results for all receptors within the SIA are provided on the enclosed CD (Attachment G). These files include tables (plot files) of the maximum total impact at each receptor and of maximum impacts from selected source groups. Model input files are also provided, so that additional runs could be made.

Comment NYSDEC-6: *The 1 hour SO₂ NAAQS was finalized on June 2, 2010 and will be effective 60 days from the date of publication in the Federal Register. Any permits not finalized prior to the effective date must assess their 1-hour SO₂ impacts.*

Response NYSDEC-6: A pair of USEPA memoranda, "Applicability of Appendix W Modeling Guidance for the 1-hour SO₂ NAAQS" and "Guidance Concerning the Implementation of the 1-hour SO₂ NAAQS for the Prevention of Significant Deterioration Program," were issued August 23, 2010. The "PSD" memo defines an interim SIL for 1-hour average SO₂. CVE project impacts have been assessed in relation to the interim SIL, following the modeling guidance provided in these memoranda. The 5-year average maximum predicted 1-hour impact is 6.8 µg/m³, below the SIL of 7.8 µg/m³. These results will be documented in the revised PSD/State Facility Air Permit Applications.

NYSDEC Comments on Remainder of Application

Comment NYSDEC-1: *The emergency generators and fire pump must be identified in the application as emission sources, because these sources are subject to 6NYCRR part 231.*

Response NYSDEC-1: Updated forms will be provided for the revised PSD air permit application. These forms will include the emergency generators and fire pump as emission sources.

Comment NYSDEC-2: *Processes must be redefined in the application. The same processes (P01, P02, and P03) cannot be identified in more than one emission unit, and it is not necessary to repeat natural gas combustion as a process in the same emission unit.*

Response NYSDEC-2: Updated forms will be provided in the revised PSD air permit application. These forms will define unique processes and emission points for the combustion turbines.

Comment NYSDEC-3: *In addition to items (1) and (2) processes and emission points for the emergency generators and fire pump must be defined.*

Response NYSDEC-3: Updated forms will be provided in the revised PSD air permit application. These forms will define processes for the emergency generators and the fire pump.

Comment NYSDEC-4: *Why will the auxiliary boiler be limited to 4500 hours per year (which equates to natural gas usage of 226 million cubic feet per year)?*

Response NYSDEC-4: CVE does not anticipate that they will need to operate the auxiliary boiler for greater than 4500 hours per year. As such, it has decided to take a limit on annual hours of operation for the boiler. This also reduces its facility-wide potential to emit for criteria pollutants, specifically non-attainment pollutants NO_x and Volatile Organic Compounds (VOC).

Comment NYSDEC-5: *Will there be any operational limits on the duct burners?*

Response NYSDEC-5: CVE is not proposing an operational limit on the duct burner operation. They would like to maintain the flexibility to operate the duct burners unrestricted.

Comment NYSDEC-6: *The manufacturer of the F class turbines must be provided in order to establish start up and shutdown emission limits for oxides of nitrogen and carbon monoxide.*

Response NYSDEC-6: At the time of the air permit application submittal, a generic F-class turbine was specified, but a vendor had not been chosen. Since that time, CVE has chosen the GE 7FA.05 combustion turbine for the project. This new turbine will be reflected in the updated air permit application.

Comment NYSDEC-7: *It appears that the potential emissions from the combustion turbines and duct burners were calculated using the lower heating value of natural gas, as indicated in the first table of Appendix B in the application. Why was the lower rather than the higher value used?*

Response NYSDEC-7: CVE has chosen the GE 7FA.05 combustion turbine for the project. As such, the vendor has provided updated information on the turbines including emissions. Generally, the emissions presented in the air permit application are based upon vendor guarantees, and are not calculated from heat rate. The updated turbine information will be incorporated into the revised air permit application.

If you have any questions or comments regarding these responses, please do not hesitate to contact me at 978-937-9999 ext 317 or frederick.sellars@arcadis-us.com. Thank you for your review of the CVE air permit application. We look forward to continuing to work with you on this important project.

Sincerely,

ARCADIS U.S., Inc.

Frederick M. Sellars
Vice President

Copies:

M. Valis, NYSDEC
J. Lawyer, NYSDEC
J. Aherns, CVE

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Attachment A

Revised DEIS Section 4.6.5.1

4.6.5.1 GHG Direct Emissions

The principal GHGs are CO₂, methane (CH₄), and nitrous oxide (N₂O). Because these gases differ in their ability to trap heat, one ton of CO₂ in the atmosphere has a different effect on warming than one ton of CH₄ or one ton of N₂O. For example, CH₄ and N₂O have 21 times and 298 times the global warming potential of CO₂, respectively.

Direct GHG emissions include both stack and fugitive emissions from combustion processes or industrial processes conducted on-site, and from fleet vehicles owned (or leased) and operated by the project. GHGs emissions from the proposed project are primarily attributable to combustion of fuels. The project will not have any other industrial processes releasing GHGs, and will not operate fleet vehicles. The greatest proportion of potential GHGs emissions are from CO₂. Trace amounts of VOCs (expressed as methane) and N₂O would be emitted in varying quantities depending on operating conditions. However, emissions of VOCs and N₂O are considered negligible when compared to total CO₂ emissions, and would not be considered significant to climate change issues. In addition, these compounds are also controlled, to varying degrees, by the Selective Catalytic Reduction (SCR) system and the oxidation catalyst. Table 4-31 presents potential emissions of CO₂ from combustion sources associated with the project. These emissions estimates assume steady-state emissions at 59° F ambient temperature with a 100 percent capacity factor.

Table 4-31 Summary of Potential CO₂ Emissions from the Cricket Valley Energy Project (tons/year)

Emission Source	CO ₂ Emissions
Three Combustion Turbines	3,576,943
Auxiliary Boiler	15,887
Emergency Fire Pump	114
Three Black Start Generators	3,616
TOTAL	3,596,560

Attachment B

PM_{2.5} Cumulative Impacts

Table B-1. Predicted PM_{2.5} Cumulative Impacts of Cricket Valley Energy and Nearby Sources at Receptors with Significant Impact from CVE

		5-year average Maximum (µg/m ³)	PSD Increment (µg/m ³)	Background (µg/m ³)	Total (µg/m ³)	NAAQS (µg/m ³)
Annual						
CVE	Highest	0.29	4 ^a			
All	Highest	0.895		8.8	9.7	15.0 ^b
24-Hour						
CVE	Highest at Peak Receptor	3.00	9 ^a			
All	Highest at Peak Receptor	6.70		24.6	31.3	35.0 ^c

- a. PSD increment values for PM_{2.5} for Class II Areas designated by USEPA on September 29, 2010.
- b. Annual standard based on 3-year average of annual concentrations.
- c. 24-hour standard based on 3-year average of 98th percentile concentration values.

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Attachment C
Revised NAAQS Tables

Table C-1: Summary of Primary Federal and State Ambient Air Quality Standards

Pollutant	Averaging Period	Ambient Air Quality Standards	
		NAAQS ($\mu\text{g}/\text{m}^3$) ^a	NYAAQS ($\mu\text{g}/\text{m}^3$) ^a
SO ₂	1-hour	196 ^c	none ^c
	3-hour	1,300	1,300
	24-hour	365	365
	Annual	80	80
PM ₁₀	24-hour	150	None
	Annual	revoked	None
PM _{2.5}	24-hour	35	None
	Annual	15	None
Total Suspended Particulate (TSP)	24-hour	None	250
	Annual	None	45
CO	1-hour	40,000	40,000
	8-hour	10,000	10,000
NO ₂	1-hour	188 ^d	None ^d
	Annual	100	100
Lead (Pb)	Rolling 3-month	0.15	None
Fluorine (F) ^b	12-hour	None	3.70
	24-hour	None	2.85
	1-week	None	1.65
	1-month	None	0.80
Beryllium (Be)	1-month	None	0.01
Hydrogen Sulfide (H ₂ S)	1-hour	None	14
<p>a. micrograms per cubic meter.</p> <p>b. This pollutant will not be emitted from the proposed project.</p> <p>c. The new 1-hour standard for SO₂ took effect on June 2, 2010. The new standard has not yet been incorporated into NYSDEC air regulations.</p> <p>d. The new 1-hour standard for NO₂ took effect on January 22, 2010. The new standard has not yet been incorporated into NYSDEC air regulations.</p>			

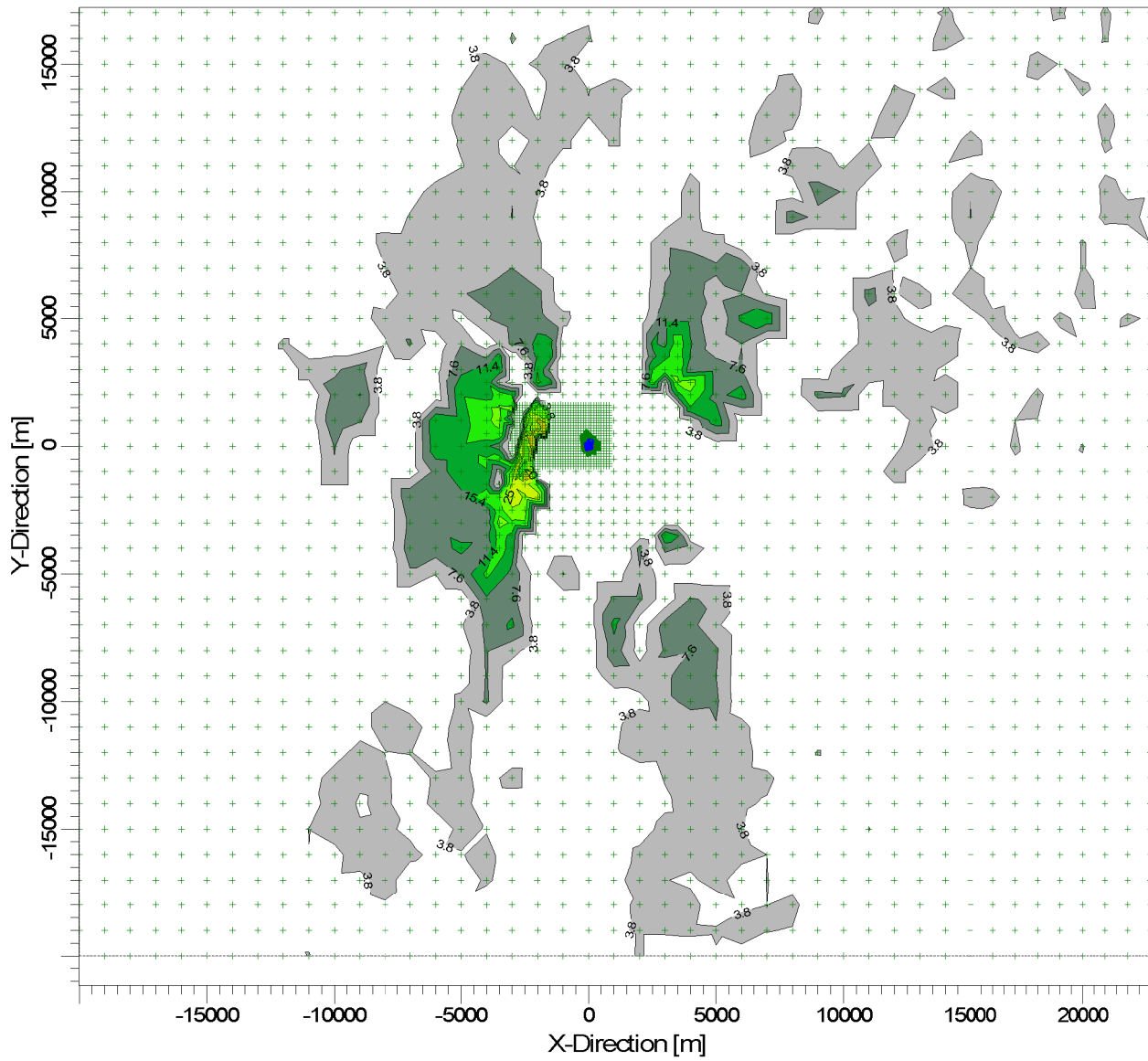
Table C-2: Summary of PSD Increment Value, Significant Impact Levels (SIL) and Significant Monitoring Concentrations (SMC)

Pollutant	Averaging Period	PSD Increment Class II ($\mu\text{g}/\text{m}^3$)	SIL ($\mu\text{g}/\text{m}^3$)	SMC ($\mu\text{g}/\text{m}^3$)
SO ₂	1-hour	not yet proposed	7.8 ^a (interim)	not yet proposed
	3-hour	512	25	none
	24-hour	91	5	13
	Annual	20	1	none
PM ₁₀	24-hour	30	5	10
	Annual	17	1	none
PM _{2.5}	24-hour	9 ^b	1.2 ^b	4 ^b
	Annual	4 ^b	0.3 ^b	none
TSP	24-hour	None	None	none
	Annual	None	None	none
CO	1-hour	None	2,000	none
	8-hour	None	500	575
NO ₂	1-hour	not yet proposed	7.5 ^c (interim)	not yet proposed
	Annual	25	1	14
Pb	3-month	None	None	0.1
<p>a. In guidance published August 23, 2010, USEPA recommends use of 3 ppb as an Interim SIL for 1-hour SO₂.</p> <p>b. On September 29, 2010, USEPA published final guidance on PM_{2.5} increments, SILs, and SMCs.</p> <p>c. In guidance published June 28, 2010, USEPA recommends use of 4 ppb as an Interim SIL for 1-hour NO₂.</p>				

Attachment D
Isopleths for NO₂

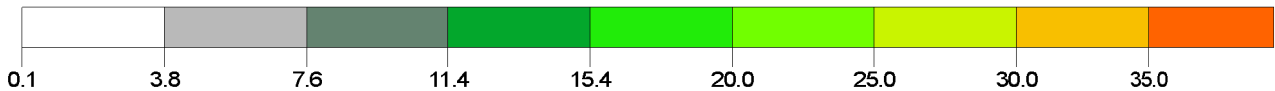
PROJECT TITLE:


**Cricket Valley Energy
Five-Year Average Maximum 1-Hour NO2 Impacts**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: COLD

ug/m³



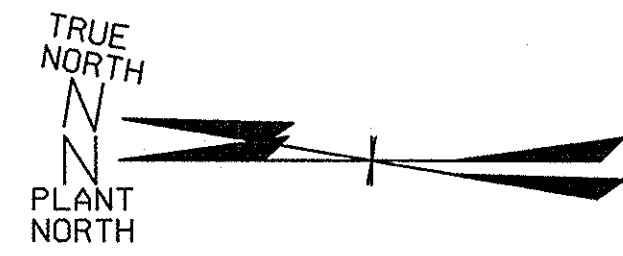
COMMENTS:	SOURCES: 1	COMPANY NAME: Cricket Valley Energy Center, LLC
	RECEPTORS: 3251	MODELER: ARCADIS
	OUTPUT TYPE: Concentration	SCALE: 1:270,338 0  10 km
	MAX: 35.27507 ug/m³	DATE: 10/8/2010
		PROJECT NO.:



ARCADIS

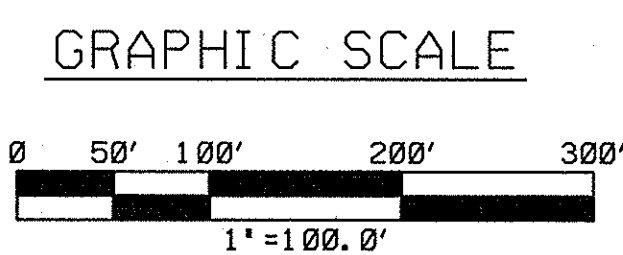
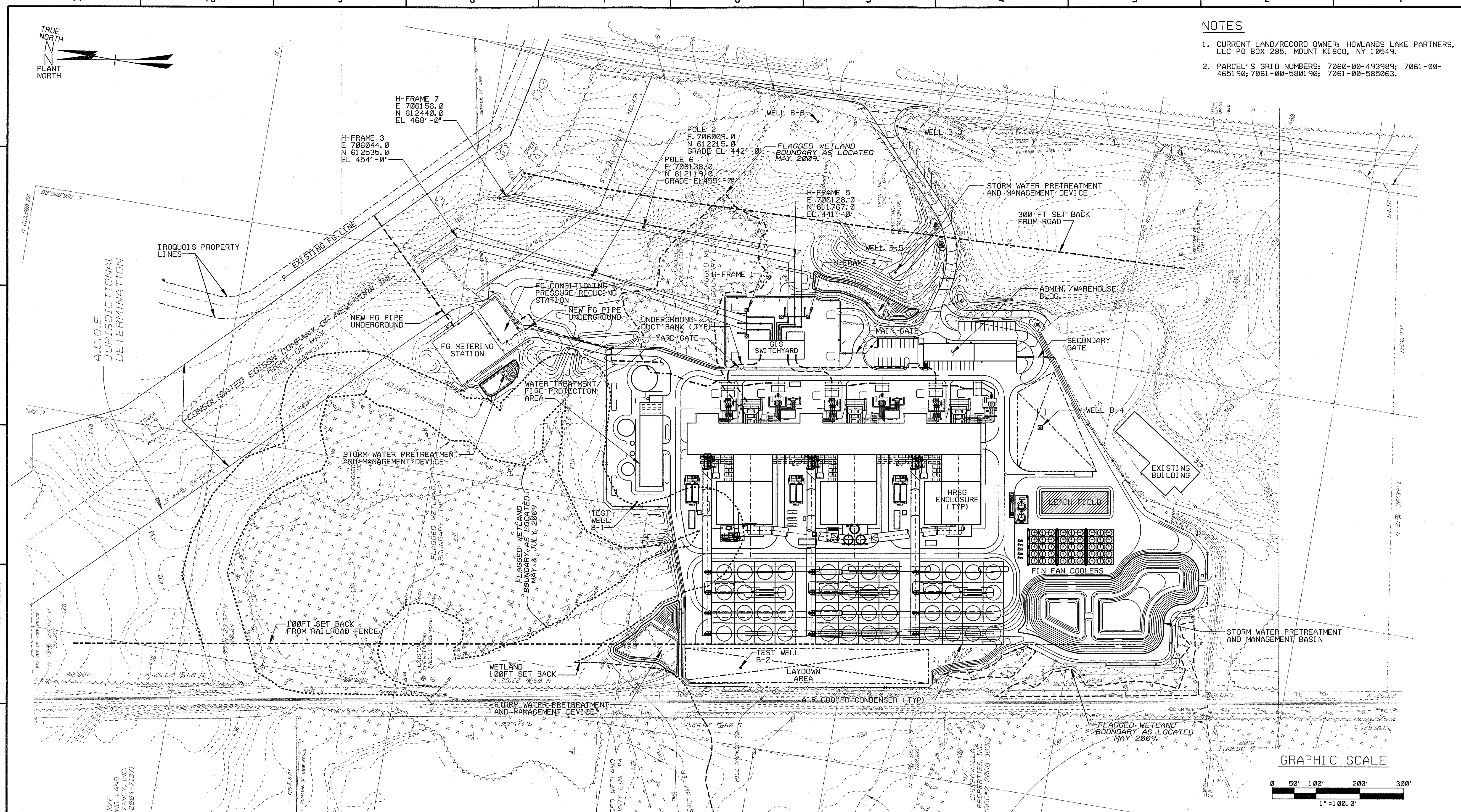
Attachment E

Site Plan Depicting Stack Configuration



NOTES

- CURRENT LAND/RECORD OWNER: HOWLANDS LAKE PARTNERS, LLC PO BOX 285, MOUNT KISCO, NY 10549.
- PARCEL'S GRID NUMBERS: 7060-00-493989; 7061-00-465190; 7061-00-580190; 7061-00-585063.



Rev No	Revision	Date	Dwn	Chkd	Approved Chief Engr
S	REVISED SWITCHYARD AND ARRANGEMENT OF TRANSMISSION LINE POLES/FRAMES.	08/4/10	SM	JGF	JGF

Rev No	Revision	Date	Dwn	Chkd	Approved Chief Engr
N	ISSUED FOR PERMITTING	10/6/09	JGF	JGF	JGF
P	REVISED TO INCLUDE HRSG AND GENERATOR ENCLOSURES	10/29/09	JFH	JEF	JGF
Q	GENERAL REVISION	6/24/10	ZU	JGF	JGF
R	ADDED: WELLS 5&6. REVISED: SWITCHYARD ARRANGEMENT AND RELOCATED TRANSMISSION LINE POLES.	7/22/10	JGF	JGF	JGF

Drawing Control		Purpose		Approved By		Date		Released By		Date	
For Information	JGF	JGF	9/10	JGF	9/10	JGF	9/10	JGF	9/10	JGF	9/10
For Comment											
For Fabrication											
For Construction											

JORGE E. FERRERO
 STATE OF NEW YORK
 LICENSED PROFESSIONAL ENGINEER
 No. 12110
 NEW YORK
 ENGINEER NO. 062862-1

Engineering Review		Disc		Engr		Date	
Mech							
Elec							
Civil							
Arch							
Instr							

advanced power CRICKET VALLEY ENERGY
 TOWN OF DOVER
 DUTCHESS COUNTY, NEW YORK

GENERAL ARRANGEMENT PLOT PLAN STUDY

BURNS AND ROE ENTERPRISES, INC.
 Engineers and Constructors - Oradell, NJ
 New York Certificate of Authorization No. 0004677

Scale: 1"=100'-0"
 Work Order: 3000
 Drawing No: M200
 Sh: S

M2001.DGN 11:42 04-AUG-2010

Attachment F

Updated Emissions and Stack Parameters for Turbine Scenarios



Table F-1: Stack Parameters and Emission Rates for a Single Combustion Turbine

	Units	Design Cases											
		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12
Fuel Type	--	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas
Ambient Temperature	°F	105	105	105	105	59	59	59	59	-8	-8	-8	-8
Percent Load Rate	%	100	100	75	52	100	100	75	49	100	100	75	52
Duct Burner Operation	--	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
Stack Diameter (feet)	19	19	19	19	19	19	19	19	19	19	19	19	19
Stack Height (feet)	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5
Stack Temperature	°K ^a	371.5	373.7	364.8	363.2	354.8	363.7	355.9	352.6	358.2	365.9	361.5	352.6
Stack Exit Velocity	m/s ^b	21.7	21.7	16.2	14.7	21.4	21.8	16.7	14.1	23.4	23.7	18.7	14.6
NO _x Emission Rate	g/s ^c	2.09	1.89	1.45	1.21	2.36	1.99	1.59	1.26	2.56	2.19	1.73	1.39
CO Emission Rate	g/s	1.27	1.15	0.88	0.74	1.44	1.21	0.97	0.77	1.56	1.34	1.06	0.84
VOC Emission Rate	g/s	0.73	0.33	0.25	0.21	0.82	0.35	0.28	0.21	0.89	0.38	0.30	0.24
SO ₂ Emission Rate	g/s	0.40	0.36	0.28	0.23	0.45	0.38	0.30	0.24	0.49	0.41	0.33	0.27
Total PM ₁₀ /PM _{2.5}	g/s	1.59	1.27	1.24	1.22	1.82	1.27	1.25	1.22	1.85	1.29	1.26	1.23
a. degrees Kelvin b. meters per second c. grams per second													

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Attachment G

Computer Diskette with Modeling Files

ARCADIS

Attachment H

Potential Impact on Soils and Vegetation

Potential Impact on Soils and Vegetation

PSD review requirements include an analysis to determine the potential air quality impacts on sensitive vegetation or soil types that may be present in the vicinity of a proposed project. Ambient air quality screening levels for sensitive vegetation are provided in USEPA guidance (USEPA, 1980) and in related technical publications.

Soil characteristics for the project site and surrounding area have been evaluated. None of the identified soil types has been identified as having any particular sensitivity to the air pollutants emitted by the CVE project.

The predominant land use classifications in the area surrounding the project are deciduous and evergreen forest and wooded wetlands. The Great Swamp CEA extends from project site south into Putnam County. This area has been identified as the largest and most high quality red maple hardwood swamp in southern New York. About 10 percent of the surrounding area is classified as Pasture/Hay, and another 5 percent as cropland. The 2007 Census of Agriculture lists Nursery & Floriculture, Vegetables & Potatoes, and Fruits & Nuts as significant crop categories for Dutchess County.

Maximum predicted project impacts are compared to the relevant screening levels in Tables H-1, H-2, H-3 and H-4. All predicted project impacts are well below the vegetation impact threshold levels. The screening analysis and USEPA guidance support the conclusion that the proposed project will not adversely impact vegetation or soils in the project surroundings.

Table H-1: Predicted Air Quality Impacts Compared to NO₂ Vegetation Impact Thresholds

NO ₂ Averaging Period	Predicted Project Impact (µg/m ³)	Threshold for Impact to Vegetation (µg/m ³)	Applicability
1-hour	105 (1-hour)	66,000 ^a	Leaf Injury to Plant
2-hour		1,130 ^b	Affects to Alfalfa
Annual	0.56	100 ^c	Protects all vegetation
		190 ^d	Metabolic and growth impact to plants

a. "Diagnosing Injury Caused by Air Pollution", USEPA-68-02-1344, Prepared by Applied Science Associates, Inc. under contract to the Air Pollution Training Institute, Research Triangle Park, North Carolina. 1976.

b. "Synergistic Inhibition of Apparent Photosynthesis Rate of Alfalfa by Combinations of SO₂ and NO₂" Environmental Science and Technology, vol. 8(6): p.574-576, 1975. The limit is based on a concentration in ambient air of 0.6 ppm NO₂ (U 1,130 • g/m³) which was found to depress the photosynthesis rate of alfalfa during a 2-hour exposure.

c. "Secondary National Ambient Air Quality Standard (• g/m³) which is a limit set to avoid damage to vegetation resulting in economic losses in commercial crops, aesthetic damage to cultivated trees, shrubs, and other ornamentals, and reductions in productivity, species richness, and diversity in natural ecosystems to protect public welfare (Section 109 of the Clean Air Act). These thresholds are the most stringent of those found in the literature survey.

d. "Air Quality Criteria for Oxides of Nitrogen," USEPA/600/8-91/049aF-cF.3v, Office of Health and Environment Assessment, Environmental Criteria and Assessment Office, U.S. Environmental Protection Agency, Research Triangle Park, NC. 1993.

Table H-2: Predicted Air Quality Impacts Compared to CO Vegetation Impact Thresholds

NO ₂ Averaging Period	Predicted Impact (µg/m ³)	Threshold for Impact to Vegetation (µg/m ³)	Applicability
1-hour	764	40,000 ^a	Protects all Vegetation
8-hour	187 (8-hour)	10,000 ^a	Protects all Vegetation
Multiple Day		10,000 ^b	No Known Effects to Vegetation
1-week		115,000 ^c	Effects to Some Vegetation
Multiple Week		115,000 ^d	No effect on various plant species

a. Secondary National Ambient Air Quality Standard (• g/m³) which is a limit set to avoid damage to vegetation resulting in economic losses in commercial crops, aesthetic damage to cultivated trees, shrubs, and other ornamentals, and reductions in productivity, species richness, and diversity in natural ecosystems to protect public welfare (Section 109 of the Clean Air Act). These thresholds are the most stringent of those found in the literature survey.

b. "Air Quality Criteria for Carbon Monoxide," USEPA/600/8-90/045F (NTIS PB93-167492), Office of Health and Environment Assessment, Environmental Criteria and Assessment Office, U.S. Environmental Protection Agency, Research Triangle Park, NC. 1991. Various CO concentrations were examined the lowest of these was 10,000 • g/m³. Concentrations this low had no effects to various plant species. For many plant species, concentrations as high as 230,000 • g/m³ caused no effects. The exception was legume seedlings which were found to experience abnormal leaf growth when exposed to CO concentrations of only 27,000 • g/m³. Also related to this family of plants, CO concentrations in the soil of 113,000 • g/m³ were found to inhibit nitrogen fixation. It is clear that ambient CO concentrations as low as 10,000 • g/m³ will not affect vegetation.

c. "Diagnosing Injury Caused by Air Pollution", USEPA-68-02-1344, Prepared by Applied Science Associates, Inc. under contract to the Air Pollution Training Institute, Research Triangle Park, North Carolina. 1976. A CO concentration of 115,000 • g/m³ was found to affect certain plant species.

d. "Polymorphic Regions in Plant Genomes Detected by an M13 Probe" Zimmerman, P.A., et al. 1989. Genome 32: 824-828. 115,000 • g/m³ was the lowest CO concentration included in this study. This concentration was not found to cause a reduction in growth rate to a variety of plant species.

Table H-3: Predicted Air Quality Impacts Compared to Particulate and SO₂ Vegetation Impact Thresholds

NO ₂ Averaging Period	Predicted Impact (µg/m ³)	Threshold for Impact to Vegetation (µg/m ³)	Applicability
SO₂			
1-hour SO ₂	6.8	131 ^a	Suggested worst-case limit
3-hour SO ₂	3.2	390 ^b	Protects SO ₂ sensitive species
3-hour SO ₂		1,300 ^c	Protects all vegetation
24-hour SO ₂	0.98	63 ^d	Insignificant effect to wheat and barley
Annual SO ₂	0.08	130 ^b	Protects SO ₂ sensitive species
PM₁₀			
24-hour PM ₁₀	4.9	150 ^c	Protects all vegetation
Annual PM ₁₀	0.43	50 ^c	Protects all vegetation
Annual PM ₁₀		579 ^e	Damage to sensitive species (fir tree)
<p>a. "Crop and Forest Losses due to Current and Projected Emissions from Coal-Fired Power Plants in the Ohio River Basin" Loucks, O.L., R.W. Miller, et al. 1980. The Institute of Ecology. In this publication, the authors propose 1-hour thresholds from 131 to 262 • g/m³.</p> <p>b. "Impacts of Coal-fired Power Plants on Fish, Wildlife, and their Habitats" Dvorak, A.J., et al.. Argonne National Laboratory. Argonne, Illinois. Fish and Wildlife Service Publication No. FWS/OBS-78/29. March 1978. This document indicates the lowest 3-hour SO₂ concentration expected to cause injury to sensitive plants growing under compromised conditions is approximately 390 • g/m³. Similarly, a threshold of 130 • g/m³ is suggested for chronic exposure.</p> <p>c. Secondary National Ambient Air Quality Standard (• g/m³) which is a limit set to avoid damage to vegetation resulting in economic losses in commercial crops, aesthetic damage to cultivated trees, shrubs, and other ornamentals, and reductions in productivity, species richness, and diversity in natural ecosystems to protect public welfare (Section 109 of the Clean Air Act). These thresholds are the most stringent of those found in the literature survey.</p> <p>d. "Concurrent Exposure to SO₂ and/or NO₂ Alters Growth and Yield Responses of Wheat and Barley to Low Concentrations of O₃" (New Phytologist, 118 (4). 1991. pp. 581-592). This paper indicates exposure to 63 • g/m³ of SO₂ during the growing season had insignificant effects to wheat but did affect the weight of Barley seeds.</p> <p>e. "Responses of Plants to Air Pollution" Lerman, S.L., and E.F. Darley. 1975. "Particulates," pp. 141-158 (Chap. 7). In J.B. Mudd and T.T. Kozlowski (eds.). Academic Press. New York, NY. Results of studies conducted indicated that particulate deposition rates of 365 g/m²/yr caused damage to fir trees, but rates of 274 g/m²/year and 400 to 600 g/m²/yr did not cause damage to vegetation. 365 g/m²/yr translates to W579 • g/m³, using a worst-case deposition velocity of 2 cm/s.</p>			

Table H-4: Predicted Air Quality Impacts Compared to Formaldehyde Vegetation Impact Thresholds

NO ₂ Averaging Period	Predicted Impact (µg/m ³)	Threshold for Impact to Vegetation (µg/m ³)	Applicability
Repeated 4.5 hour	0.007 (1-hour)	18 ^a	Sensitive species affected
5-hour		840 ^b	Signs of injury to sensitive species (alfalfa)
5-hour		367 ^c	Signs of injury to pollen tube length (lily)
Repeated 7-hour		78 ^d	Stimulated shoot growth (beans)
<p>a. "Formaldehyde-Contaminated Fog Effects on Plant Growth" Barker J.R. & Shimabuku R.A. (1992). In Proceedings of the 85th Annual Meeting and Exhibition, Air and Waste Management Association, pp. 113. 92150.01. Pittsburgh, PA. The authors examined the affects on vegetation grown in fog with formaldehyde concentrations of 18 and 54 • g/m³. Exposure rates were 4.5 hours per night, 3 nights/week, for 40 days. The growth rate of rapeseed was found to be affected in this study. However, slash pine grown under the same conditions showed a significant increase in needle and stem growth. No effects were observed in wheat or aspen at test concentrations</p> <p>b. "Investigation on Injury to Plants from air Pollution in the Los Angeles Area" Haagen-Smit AJ, Darley EE, Zaitlin M, Hull H, Noble WM (1952). Plant physiology, 27:18-34. The authors found a 5-hour exposure to 700 ppb (840 Yg/m³) caused mild atypical signs of injury in alfalfa, but no injury to spinach, beets, or oats.</p> <p>c. "Effects of Exposure to Various Injurious Gases on Germination of Lily Pollen" Masaru N, Syozo F, Saburo K (1976). Environmental pollution, 11:181-188. The authors fund a significant reduction of the pollen tube length of lily following a 5-hour exposure to ambient formaldehyde concentrations of 367 ppb (440 Yg/m³).</p> <p>d. "Formaldehyde exposure affects growth and metabolism of common bean" Mutters RG, Madore M, Bytnerowicz A (1993). Journal of the Air and Waste Management Association, 43:113-116. The authors found that repeated exposure of sensitive plants to ambient formaldehyde concentrations of 78 • g/m³ could cause plant shoots to grow faster than the roots. It is pointed out that this effect would not be a problem except for crops growing in a water starved condition,</p>			

Attachment I

**Correspondence with Fish and Wildlife Service
Pertaining to Endangered Species**



Infrastructure, environment, buildings

U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045-9349
Attn: Robyn Niver

Subject:
Advanced Power NA - Cricket Valley Site

Dear Ms. Niver:

The purpose of this letter is to request a determination from the U.S. Fish and Wildlife Service (USFWS) regarding the potential for the presence of threatened/endangered wildlife species or significant habitat on the 131.6-acre area shown on the attached Figure 1 in Dover, Dutchess County, New York. As can be seen on Figure 1, the site is bounded on the east by Route 22, and the Swamp River flows through the site's westernmost extent. An active railroad line also extends through the site in a north-south direction. The area east of the railroad tracks includes dilapidated structures that would be removed as part of project development at this previously developed industrial site. The proposed development area will focus on the portion of the site east of the railroad tracks, although some related activities could occur to the west.

Consistent with the current USFWS protocol for evaluating the potential presence of protected species on a site, we have reviewed the information presented on your website for Dutchess County and found the bog turtle and Indiana bat listed as present in the County. As we discussed, a meeting last week with the New York State Department of Environmental Conservation (NYSDEC) identified that proximate bog turtle records indicated the need for a Phase 1 survey. We understand that Indiana bat records exist to the south of the site. The project goal is to avoid substantial tree clearing to the greatest extent possible, which should minimize the potential for this species impact.

We would appreciate your input regarding the need for species review and look forward to working with you at this site. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

Sincerely,

ARCADIS

Lynn Gresock
Environmental Consultant

Copies: C. Hogan, NYSDEC; J.Ahrens, Advanced Power

ARCADIS
Two Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978.937.9999
Fax 978.937.7555
www.arcadis-us.com

Date:
June 2, 2009

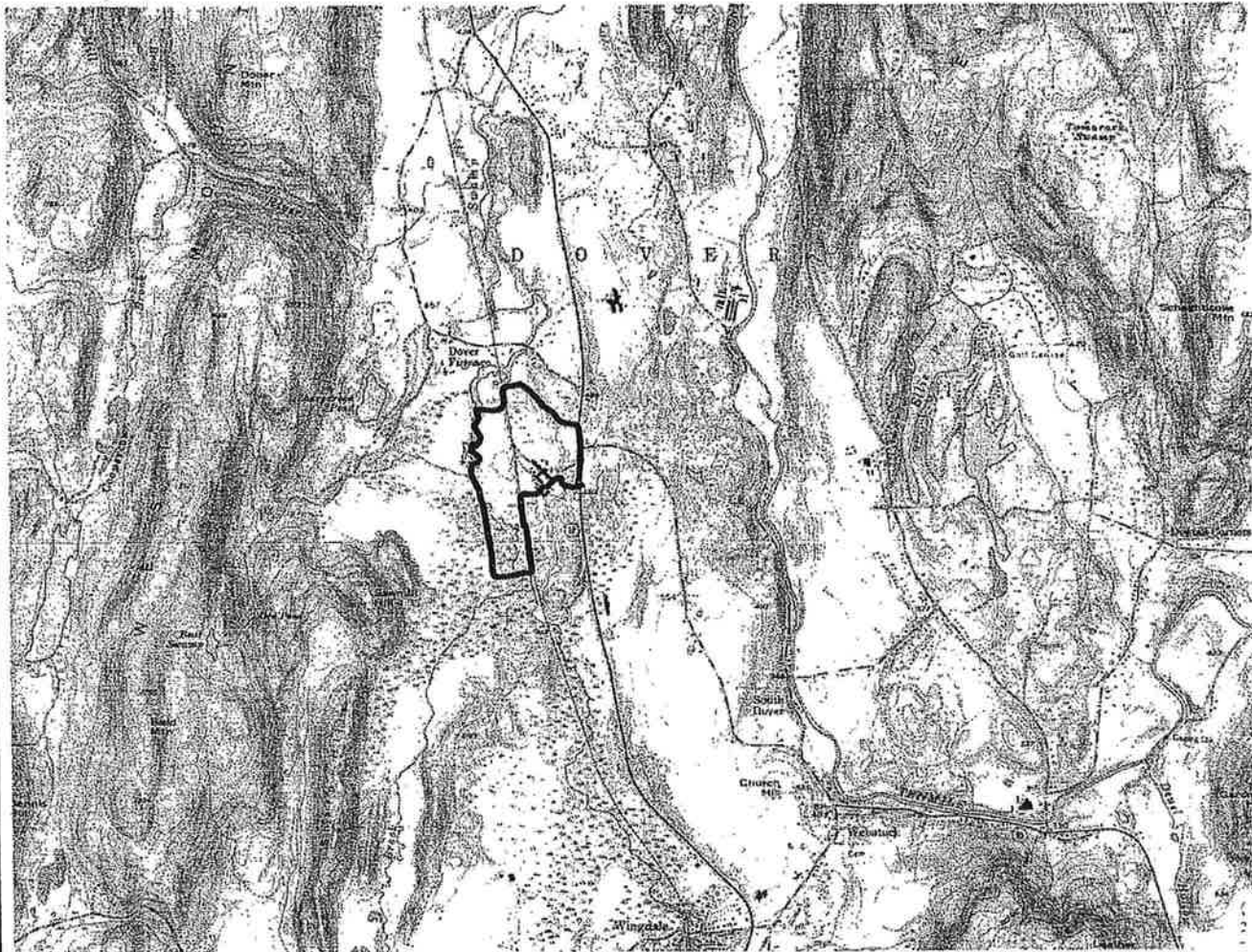
Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320


Email:
lynn.gresock@arcadis-us.com

Our ref:
CO001447

Imagine the result



Source: USGS Dover Plains Quadrangle; 7.5 Minute Series (Topographic); Revised 1958.

<p>CRICKET VALLEY SITE - DOVER, NY</p> <p>ADVANCED POWER NA</p>	
<p>SITE LOCATION MAP</p>	
 <p>ARCADIS</p> <p><i>Infrastructure, environment, buildings</i></p>	<p>FIGURE</p> <p>1</p>



United States Department of the Interior



FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, NY 13045

July 20, 2009

Mr. Lynn Gresock
Associate Vice President
ARCADIS
Two Executive Drive, Suite 303
Chelmsford, MA 01824

Dear Mr. Gresock:

This is in response to your June 2, 2009, letter regarding the proposed 131.6-acre Cricket Valley Site in the Town of Dover, Dutchess County, New York. The following comments are provided pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This response does not preclude additional U.S. Fish and Wildlife Service (Service) comments under other legislation.

Given our understanding of the project site, it appears that the Federally-listed threatened and State-listed endangered bog turtle (*Glypsemys [=Clemmys] muhlenbergii*) occurs within and around the vicinity of the project area. Therefore, efforts must be made to avoid direct and indirect effects to the wetlands within and offsite of the proposed project area.

At this time, the Service has no information regarding the plans for the site. However, adverse impacts associated with residential and commercial development could include, but are not limited to, fragmentation of habitat and alterations to bog turtle dispersal routes; introduction of contaminated surface water runoff into the wetland from pesticides, herbicides, fertilizers, road deicers, etc.; alteration of wetland hydrology; introduction of nutrients from septic systems; introduction of yard and other waste materials into wetlands; introduction of people, pets, and recreational vehicles into wetlands; and death/injury of bog turtles that wander onto lawns and roads. Generally, the larger the upland buffer, the lower the risk of many of these potential adverse effects. However, some of the effects may not be adequately addressed by buffers. The Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan (U.S. Fish and Wildlife Service 2001) (Appendix A - Bog Turtle Conservation Zones) includes recommendations for minimum buffers for various activities. You can find this document at <http://nyfo.fws.gov/es/btconszone.pdf>. Please note that the Service generally recommends a minimum of a 300-foot buffer around wetlands with known or likely bog turtle populations. The Recovery Plan recommends avoiding many activities within this area including development, delineation of lot lines, herbicide application, and pesticide or fertilizer application.

In addition to the bog turtle, there is potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area. Two males were captured approximately 2 miles from the project area and there is likely a maternity colony approximately

5 miles from the site. The Service recommends that the applicant conduct mist netting between May 15 and August 15. The Service's current mist-netting guidelines are available on our website.* Should any Indiana bats be captured during mist-netting activities, a radio-transmitter should be attached to the bat and the bat should be tracked to determine whether there is roosting, foraging, and/or maternity habitat present within the proposed project area. We encourage the applicant to coordinate with the Service to develop the proposed survey and tracking scope of work. This type of information can greatly assist the Service and any involved Federal agencies with a full analysis of the effects of the proposed activity. We recommend that the applicant provide the requested information to the Service to determine whether additional conservation measures may be needed to avoid or minimize adverse effects to Indiana bats.

In addition, the New England cottontail (*Sylvilagus transitionalis*) is known to occur within 4 miles of the proposed project. The New England cottontail is a candidate species which is being considered by the Service for addition to the Federal List of Endangered and Threatened Wildlife and Plants. Candidate species are species for which the Service has on file sufficient information on the biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. Candidate species do not receive substantive or procedural protection under the ESA; however, the Service does encourage Federal agencies and other appropriate parties to consider these species in the project planning process.

Should the New England cottontail be proposed for listing as endangered or threatened prior to completion of this project, conference procedures pursuant to Section 7(a)(4) of the ESA may be necessary if your project involves Federal authorizations. Should this species be listed prior to completion of the project, further coordination or consultation pursuant to the ESA will be required to evaluate potential adverse effects of project implementation on the New England cottontail or its habitat, and to determine if formal consultation is necessary. Please visit our website for more information on New England cottontail.


The most recent compilation of Federally-listed and proposed endangered and threatened species in New York is available for your information. Until the proposed project is complete, we recommend that you check our website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.

As stated above, the Indiana bat and bog turtle are listed as endangered by the State of New York. The New England cottontail is a New York State Species of Special Concern. Any additional information regarding the project and its potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

In summary, we have concerns about potential impacts to Federally-listed species from the proposed project. We recommend additional coordination among the appropriate consulting firms, the NYSDEC, any involved Federal agencies, the applicant, and the Service regarding these potential impacts.

Thank you for your time. If you require additional information please contact Robyn Niver at (607) 753-9334. Future correspondence with us on this project should reference project file 90453.

Sincerely,



David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at:
<http://www.fws.gov/northeast/nyfo/es/section7.htm>

References:

U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Massachusetts. 103 pp.

cc: NYSDEC, New Paltz, NY (Attn: L. Masi/A. Ciesluk)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
COE, New York, NY (Attn: B. Orzel)



U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045-9349
Attn: Robyn Niver

Subject:

Advanced Power NA – Cricket Valley Site – Project File Number 90453

Dear Ms. Niver:

This letter is to provide follow-up information regarding the correspondence received from David Stilwell of your office dated July 20, 2009. We appreciate that the information you provided was based on site location only, and that no details of the project had been provided. Since that time, additional efforts on the project have occurred that better characterize the site and project details. We would appreciate your review of the information in this letter, and your response with regard to the conclusions we have reached for each issue. Below, please find additional information with regard to the Federal-listed threatened and State-listed endangered bog turtle (*Glypemys [=Clemmys] muhlenbergii*); the Federal- and State-listed endangered Indiana bat (*Myotis sodais*); and the candidate species New England cottontail (*Sylvilagus transitionalis*).

Bog Turtle

As recommended by New York State Department of Environmental Conservation (NYSDEC) and using an expert from the list provided by the United States Fish and Wildlife Services (USFWS), a Phase I Bog Turtle Survey has been completed for the project site. The report, included with this letter, concludes that suitable bog turtle habitat is not located at the site. We look forward to review of the report by your office and NYSDEC to confirm whether any further actions are recommended in this regard. Note that the report also includes a habitat assessment for timber rattlesnake (*Crotalus horridus*), which was also recommended by NYSDEC; that assessment concluded that this site does not have suitable den habitat and that abundant and more suitable habitat for this species exists more proximate to documented regional den sites.

Indiana Bat

Your correspondence notes the potential for Indiana bat to occur in the project area, with reference to two males captured within 2 miles from the project area and the likelihood of a maternity colony approximately 5 miles away. A mist netting survey was suggested, consistent with USFWS guidelines, which would require completion of the survey between May 15 and August 15. Due to the specific location of the

ARCADIS
Two Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978.937.9999
Fax 978.937.7555
www.arcadis-us.com

Date:
August 17, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@arcadis-us.com

Our ref:
CO001447

proposed project and existing buildings, we do not believe a mist netting survey is warranted for the project in order to provide adequate protection for the avoidance and minimization of adverse effects to Indiana bats. Information about the existing condition and location of the proposed project, a general description of project activities, and the area and characteristics for anticipated tree encroachment are provided below to provide additional context for this issue.

Site Location and Condition

As previously provided, the site is located in Dover, Dutchess County (Figure 1). As shown on Figure 1, the site is bounded on the east by Route 22, and the Swamp River flows through the site's westernmost extent. An active railroad line also extends through the site in a north-south direction. The area east of the railroad tracks includes many dilapidated structures that would be removed as part of project development at this previously developed industrial site. The proposed development area will focus on the portion of the site east of the railroad tracks; no work is proposed west of the railroad. The entire parcel optioned by Cricket Valley Energy is 131.6 acres. The proposed development parcel, however, is considerably smaller at approximately 56 acres (the portion of the site east of the railroad tracks on Figure 1).

Figure 2 provides representative photographs showing some of the industrial buildings currently located on the site. The extent of the development area currently disturbed can also be seen on the aerial photograph in Figure 3.

Project Activities and Characteristics

The proposed Cricket Valley Energy project is a 1,000 megawatt natural gas-fired combined-cycle electric generating facility. Figure 4 provides a preliminary site plan for the facility. As shown in that figure, natural gas (the project's sole fuel) and electrical interconnections will be made with existing infrastructure adjacent to the site. The project will utilize air cooling and a zero liquid discharge system in order to minimize water demand and eliminate the need for wastewater discharge (with the exception of septic and stormwater flows).

Project Location and Tree Encroachment

The project's preliminary layout can be overlain onto the aerial photograph to illustrate the degree to which the proposed facility would utilize previously disturbed and developed industrial area. Three separate areas around the perimeters of the

existing developed land are anticipated to require clearing, as shown in Figure 3. A significant priority in the layout of the project has been maintaining trees throughout the site for their benefits that include visual buffer. No work is proposed west of the railroad tracks, where much of the on-site forested habitat and the Swamp River are located.

Area 1, the gas insulated switchgear (GIS) switchyard area, is partially wooded with eastern red cedar, sycamore, black cherry, red maple and cottonwood of diameters ranging from 1 inch to 10 inches. The use of a GIS switchyard has been selected at significant cost to the project in order to greatly minimize the potential for wetland encroachment and tree clearing. It is estimated that approximately 2.24 acres of clearing would occur in this area.

Area 2 includes elements associated with the project that are related to the natural gas and electrical interconnections. Again, a GIS substation has been selected to substantially minimize the footprint. Access and piping estimates have been conservatively located for the assessment of potential impact. The vegetated portions of this area contain relatively small white ash, eastern red cedar, black walnut and black cherry trees. It is estimated that approximately 4.24 acres of clearing would occur in this area.

Area 3 is the detention pond and a portion of one air-cooled condenser. This area supports small (< 6" diameter) cottonwood, aspen, and eastern red cedar trees that recently colonized a formerly open area of the site. Layout elements have avoided wetland impact in this area, and will be further optimized as design work continues for the project. As currently shown, approximately 2.74 acres of clearing would occur in this area.

Summary

Although clearing will occur at the site, relatively small areas of clearing in disparate locations around the perimeter of previously developed area are proposed. Significant forested area will remain, more proximate to the Swamp River and more contiguous forest. The project itself is unlikely to pose a risk to Indiana bat individuals with the potential to utilize the area. We do not believe that additional surveys, such as mist netting, would conclusively determine the use of the area, nor would provide for additional species protection. We look forward to your comments and will be pleased to work with USFWS to address any remaining concerns.

New England Cottontail

Although the New England cottontail is not yet a listed species, we appreciate the information regarding its current proposed status. We understand that the New England cottontail prefers early successional forests, often called thickets, with thick and tangled vegetation. A dense shrub layer allows them to forage more safely from predators. As is the case for the Indiana bat, we believe the selection of a site that utilizes previously developed industrial property and selection of technologies that minimize the footprint limit potential concerns about encroachment on habitat.

We look forward to your additional guidance with regard to species issues at this site. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

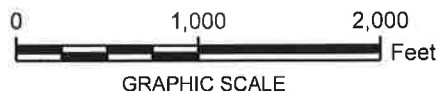
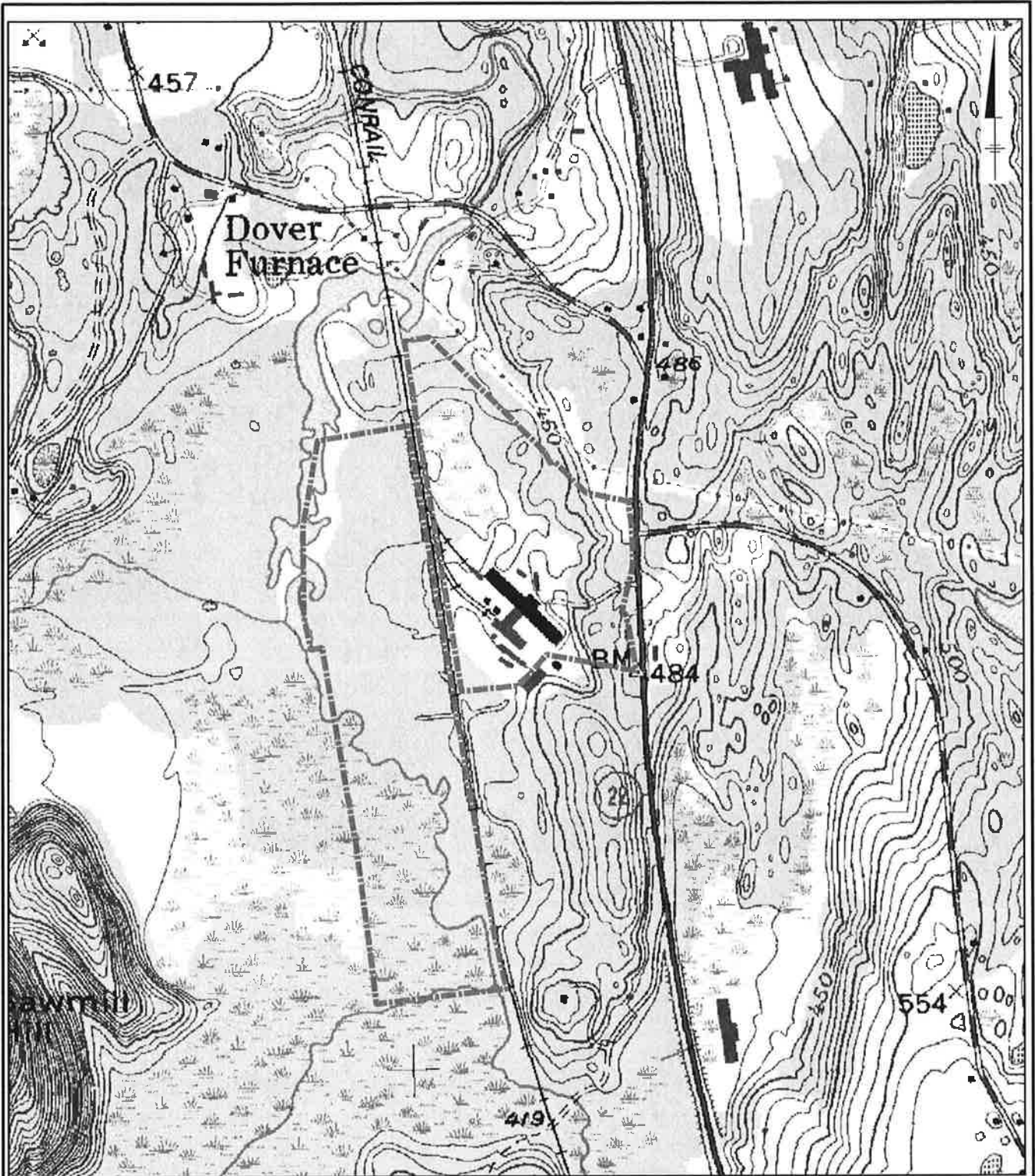
Sincerely,

ARCADIS



Lynn Gresock
Environmental Consultant

Copies: C. Hogan, NYSDEC; J.Ahrens, Advanced Power



GRAPHIC SCALE

NOTE:

1. DOVER PLAINS, NY USGS QUAD MAP PHOTOREVISED 1984.

CRICKET VALLEY ENERGY CENTER LLC
DOVER, NY
**WETLAND IDENTIFICATION AND
BOUNDARY DELINEATION REPORT**

SITE LOCATION MAP



FIGURE
1

CITY: SYR DIV\GROUP: SYE40 DB: KEW.JCR
Adv. Power (CO001447 0001 00002)
QA-AdvancedPower\Dover\NY\WetlandID_and_Boundary\DelinReport\mxd\SiteLocationMap_v2.mxd - 7/28/2009 @ 10:59:21 AM

ARCADIS



View towards site to the east from driveway off of Route 22



View from the east towards main building



Site buildings viewed from the south





Site buildings viewed from the north

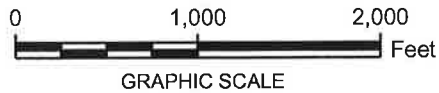
Figure 2. Representative Photographs of Existing Site Structures

CITY_SVR_DIV\GROUP:SYE40_DB:KEW
Adv_Power (C0001447,0001,00002)
C:\AdvancedPowerDoverNY\WetlandID_and_BoundaryDelineation\VegetationClearing.mxd - 8/14/2008 @ 5:00:08 PM



LEGEND:

-  VEGETATION CLEARING
-  WETLAND ASSESSMENT AREA



CRICKET VALLEY ENERGY CENTER LLC
DOVER, NY
**WETLAND IDENTIFICATION AND
BOUNDARY DELINEATION REPORT**

VEGETATION CLEARING AREAS



FIGURE
3

Faxed 09/21/2009



United States Department of the Interior

FISH AND WILDLIFE SERVICE

3817 Luker Road
Cortland, NY 13045



September 21, 2009

Ms. Lynn Gresock
Environmental Consultant
ARCADIS
Two Executive Drive, Suite 303
Chelmsford, MA 01824

Dear Ms. Gresock:

This is in response to your August 17, 2009, letter regarding the proposed 131.6-acre Cricket Valley Site in the Town of Dover, Dutchess County, New York. The following comments are provided pursuant to the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This response does not preclude additional U.S. Fish and Wildlife Service (Service) comments under other legislation.

The Service previously provided initial comments on the potential for listed species to occur at the project area in our July 20, 2009, letter to you. As you are aware, we stated that the Federally-listed threatened and State-listed endangered bog turtle (*Glypemys [=Clemmys] muhlenbergii*) is known to occur within and around the vicinity of the project area. In addition, we noted the potential for the Federally- and State-listed endangered Indiana bat (*Myotis sodalis*) to occur within the proposed project area.

We have reviewed the additional information provided in your August 17, 2009, letter and the above statements continue to represent our general findings of known/potential presence. We offer specific comments and recommendations by species below.

Bog turtle

We understand that Phase 1 bog turtle surveys were conducted in June 2009. While no suitable habitat was found within the property limits, New York State Department of Environmental Conservation (NYSDEC) wetland DP-22 (part of which occurs within the property) contains known occurrences of bog turtles off-site. Therefore, the next step is to determine the potential for impacts to this species. We previously provided you with a list (although not exhaustive) of potential impacts to bog turtles to consider. Given the negative results of the Phase 1 surveys within the project limits, it appears that the focus of the assessment should address potential indirect effects to wetland DP-22.

Indiana bat

We have reviewed the additional details (size of the patches [2.24-4.24 acres], overall acreage of tree removal [9.22 acres], separation of patches, tree description, current developed nature of the portion of the parcel proposed for development, and remaining forested acreage) provided on proposed tree-clearing activities for the project and agree with your conclusion that mist-netting is not warranted to assist with an analysis of impacts to the Indiana bat. Without any additional site-specific bat studies, it is reasonable to assume that Indiana bats are using the project area given its location and natural features of the site. Therefore, similar to the bog turtle, the next step is to determine the potential impacts to this species.



The Service considers the potential for direct and indirect effects to Indiana bats. For example, indirect effects may result from the loss and/or fragmentation of roosting or foraging habitat. In addition, lighting may deter Indiana bats from using areas (Sparks et al. 2005). It appears that tree removal associated with the project is unlikely to result in indirect effects to Indiana bats. However, additional information is necessary to evaluate the potential for other impacts. We offer the following recommended conservation measures for the proposed project and look forward to discussing these with you further. Tree removal should occur between October 1 and March 31 to avoid direct effects to Indiana bats associated with tree clearing. Bright orange fencing/flagging should clearly demarcate trees to be protected compared with those to be cut prior to the initiation of any construction activities at the site. This will help ensure that contractors do not accidentally remove more trees than anticipated. To minimize potential impacts to Indiana bats from increased lighting in the area, we recommend limiting the number of lights, including motion sensors or timers, directing the lights towards the ground and buildings, and including shields to direct the light downward. We discourage the use of lighting and chemicals in/around storage detention basins. Finally, we recommend placing a conservation easement on the property west of the railroad tracks. As we continue to further understand the proposed project, we may have additional recommendations for you.

We have no further comments on the New England cottontail (*Sylvilagus transitionalis*) at this time.

As a reminder, the most recent compilation of Federally-listed and proposed endangered and threatened species in New York* is available for your information. Until the proposed project is complete, we recommend that you check our website* every 90 days from the date of this letter, to ensure that the listed species presence/absence information for the proposed project is current. Any additional information regarding the project and its potential to impact listed species should be coordinated with both this office and with the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC contact for the Endangered Species Program is Mr. Peter Nye, Endangered Species Unit, 625 Broadway, Albany, NY 12233 (telephone: [518] 402-8859).

Thank you for your time. If you require additional information please contact Robyn Niver at (607) 753-9334. Future correspondence with us on this project should reference project file 90453.

Sincerely,

David A. Stilwell
Field Supervisor

*Additional information referred to above may be found on our website at:
<http://www.fws.gov/northeast/nyfo/es/section7.htm>

References:

Sparks, D.W., C. M Ritz, J. E. Duchamp, and J. O. Whitaker, Jr. 2005. Foraging habitat of the Indiana bat (*Myotis sodalis*) at an urban-rural interface. *Journal of Mammalogy* 86:713-718.

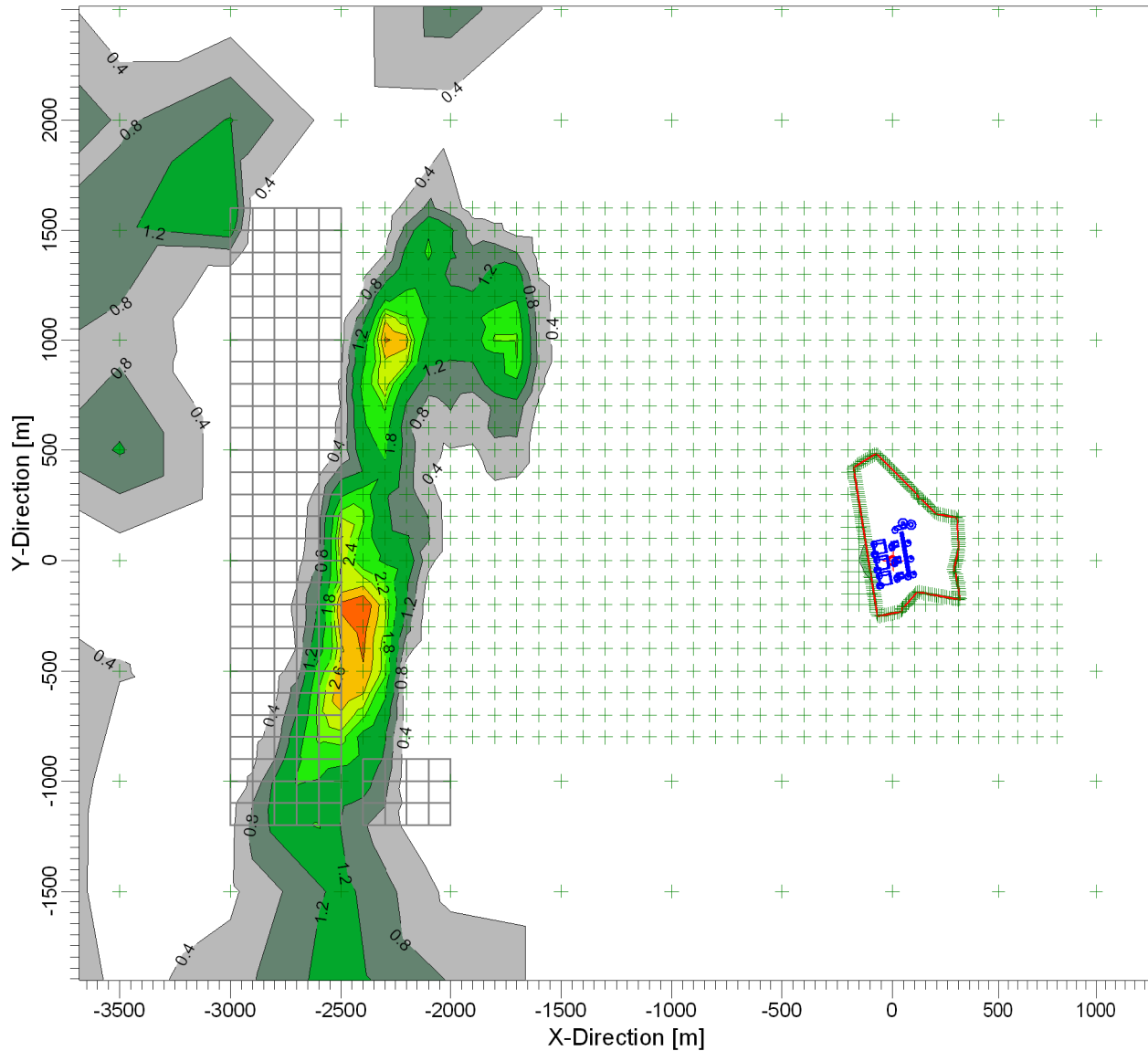
cc: NYSDEC, New Paltz, NY (Attn: L. Masi/A. Ciesluk)
NYSDEC, Albany, NY (Endangered Species; Attn: P. Nye)
COE, New York, NY (Attn: B. Orzel)

Attachment J

Plot of Maximum Predicted 24-hour Impacts for PM_{2.5}

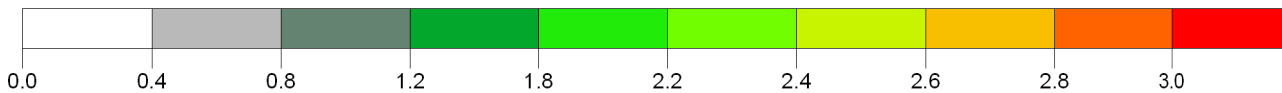
PROJECT TITLE:

**Cricket Valley Energy
Maximum 5-Year Average 24-Hour Impact for PM-2.5**



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: STK1

ug/m³



COMMENTS:

enlarged to show 100 m grid

SOURCES:

2

COMPANY NAME:

Cricket Valley Energy Center, LLC

RECEPTORS:

1737

MODELER:

ARCADIS

OUTPUT TYPE:

Concentration

SCALE:

1:31,176

0 1 km



MAX:

2.99996 ug/m³

DATE:

11/3/2010

PROJECT NO.:

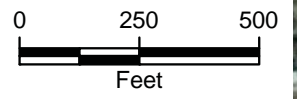
ARCADIS

Attachment K

Documentation for Locations of Existing Sources

**WHEELABRATOR
WESTCHESTER LP**
(Elev: 21ft)

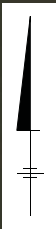
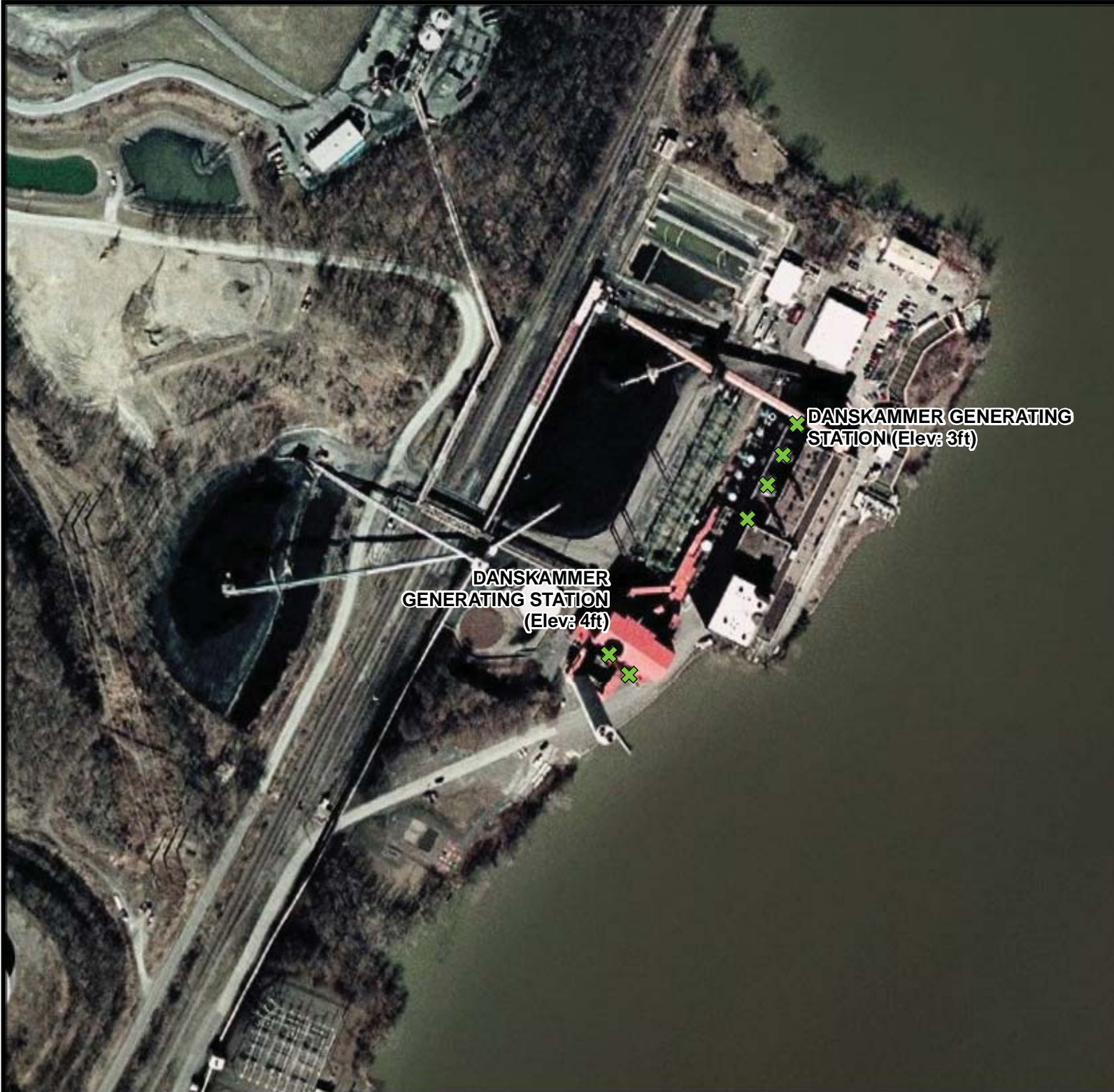
BASF CORP
(Elev: 38ft)



**CRICKET VALLEY
ENERGY CENTER**

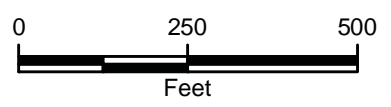
**PM 10
INVENTORY**

Dutchess County, New York



**DANSKAMMER GENERATING
STATION (Elev: 3ft)**

**DANSKAMMER
GENERATING STATION
(Elev: 4ft)**



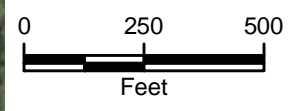
**CRICKET VALLEY
ENERGY CENTER**

**PM 10
INVENTORY**

Dutchess County, New York



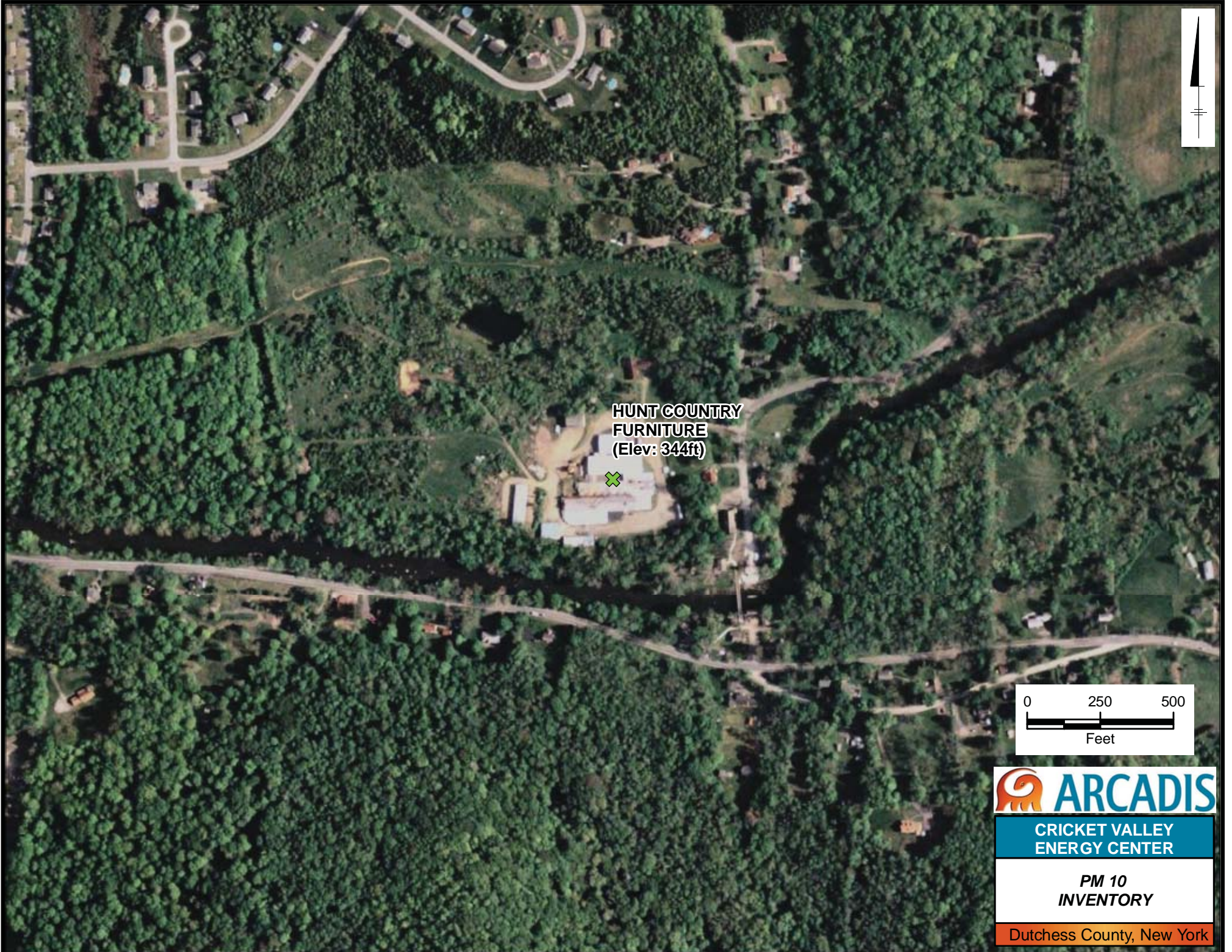
**DOVER COMPRESSOR
STATION
(Elev: 451ft)**



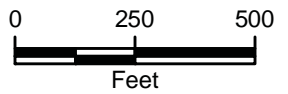
**CRICKET VALLEY
ENERGY CENTER**

**PM 10
INVENTORY**

Dutchess County, New York



HUNT COUNTRY
FURNITURE
(Elev: 344ft)



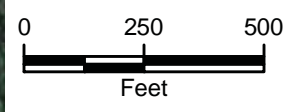
CRICKET VALLEY
ENERGY CENTER

PM 10
INVENTORY

Dutchess County, New York



J & J LUMBER
CORP (Elev:
379ft)



**CRICKET VALLEY
ENERGY CENTER**

**PM 10
INVENTORY**

Dutchess County, New York



LAFARGE NORTH AMERICA
INC - BUCHANAN
(Elev: 48ft)



CRICKET VALLEY
ENERGY CENTER

PM 10
INVENTORY

Dutchess County, New York



**NORTHEAST SOLITE
CORPORATION**
(Elev: 202ft)



**CRICKET VALLEY
ENERGY CENTER**

**PM 10
INVENTORY**

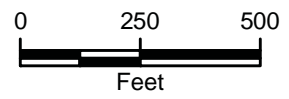
Dutchess County, New York



ROSETON GENERATING
STATION
(Elev: 48ft)

ROSETON GENERATING
STATION
(Elev: 65ft)

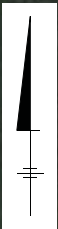
ROSETON GENERATING
STATION
(Elev: 30ft)



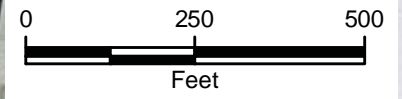
CRICKET VALLEY
ENERGY CENTER

PM 10
INVENTORY

Dutchess County, New York



WHEELABRATOR
WESTCHESTER LP
(Elev: 21ft)



CRICKET VALLEY
ENERGY CENTER

PM 10
INVENTORY

Dutchess County, New York