ARCADIS

Appendix A

AERMAP Files

ARCADIS

Appendix B

Meteorological Data Processing

New York State Department of Environmental Conservation
Division of Air Resources
Bureau of Stationary Sources, 2nd Floor
625 Broadway, Albany, New York 12233-3254
Phone: (518) 402-8403 • **FAX:** (518) 402-9035
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

November 19, 2009

Mr. Frederick Sellars
ARCADIS
2 Executive Dr.
Suite 303
Chelmsford, MA 01824

Dear Mr. Sellars:

This letter summarizes my review of the "Cricket Valley Energy Dispersion Modeling Protocol," dated September 2009. Although DEC finds that the protocol is acceptable once these comments are addressed and incorporated into a revised protocol, EPA Region 2 must still approve the protocol prior to submission of the PSD Application.

1. Comments pertaining to the processing of meteorological data and the use of AERSURFACE were listed in an e-mail to Richard Londergan on October 21, 2009 (enclosed). Subsequent e-mails to and from Mr. Londergan dated October 27 – November 3, 2009 (enclosed) further addressed met data issues and proposed sensitivity runs to account for differences in estimated surface characteristics between the Poughkeepsie Airport and the Facility.

2. Due to a high percentage of calm winds reported by the Poughkeepsie Airport the project has proposed to use ASOS archived 1-minute meteorological data. EPA OAQPS should be involved in the review of the proposed methodology to process this data to ensure consistency with the 1-minute ASOS program under development by EPA.

3. Because less than 5 years of the 1-minute data is available, the project proposes to use the highest 98th percentile value predicted for comparison to the 24-hr PM2.5 standard and the maximum predicted concentrations for other short-term impacts. This issue needs to be discussed further with EPA Region 2 prior to finalizing the protocol.

4. Stack parameters reflecting the 50% load case are proposed to be used in modeling of start-up conditions. Please provide details as to how these parameters best represent the start-up conditions.

5. A more detailed plot plan which clearly identifies the building footprints, stack locations and fenceline with associated scale should be submitted with the GEP/BPIP analysis. The geo-referenced AutoCAD file for the facility would be preferred.

6. Although SILs for PM2.5 are pending (Table 10), NESCAUM has recommended values of 0.3 ug/m3 for annual averages and 2.0 ug/m3 for 24-hr averages. These values should be used until EPA finalizes the PM2.5 SILs.

7. Receptors should be placed every 25 meters along the fenceline or wherever the public has access. As such, receptors should also be placed along the commuter rail line which runs through the property.

8. If available for the area, NED data for use in ARCMAP should be the 1/3 arc-second resolution data (approximately 10m horizontal resolution).

9. The FLM should be contacted and made aware of the project to confirm that Class I modeling is not necessary.

10. Note that AERMOD was recently updated; the most current version (09292) should be used in the modeling analysis.

If you have any questions, please contact me by phone at (518) 402-8403 or by e-mail at mxvalis@gw.dec.state.ny.us.

Sincerely,

Margaret Valis
Air Pollution Meteorologist
Bureau of Stationary Sources
Division of Air Resources

Enclosure

cc: L. Sedefian
C. Hogan
J. Lawyer
A. Coulter
R. Londergan

MV:dd

H:\Cricket Protocol 111909.docx

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 15 2009

Mr. Fredrick M. Sellars
Vice President, Arcadis
2 Executive Drive, Suite 303
Chelmsford, Massachusetts 01824

Re: Air Quality Modeling Protocol for the Cricket Valley Energy Project, Dover, New York

Dear Mr. Sellars:

The U.S. Environmental Protection Agency, Region 2 Office reviewed the September 2009 air quality modeling protocol in support of a Prevention of Significant Deterioration (PSD)of Air Quality permit application. The PSD permit is for the proposed Cricket Valley Energy Project, a 1000 MW combined cycle electric generating facility located in Dover, Dutchess County, New York. The protocol proposes to use the EPA model AERMOD with meteorological data obtained from Poughkeepsie-Dutchess airport between 2005 and 2009. With the exception of 2 points in the protocol in which we are seeking further concurrence from our Office of Air Quality Planning and Standards, our comments on the protocol are discussed below. The 2 points are the first two bullets below. We will respond to these in a separate letter. The remaining bullets pertain to the remaining protocol. See below:

1.) The protocol proposed to obtained refined meteorology for input to the dispersion model. That is, you proposed a method to determine an hourly average wind speed and direction derived from the 1 minute averages measured during the hour rather than taking the a single reading every hour as is traditionally done. Using this procedure reduces the number of "calm" or "missing hours" substantially. EPA Region 2 would like to support this procedure but is seeking OAQPS concurrence since OAQPS is also in the process of developing a similar approach. We would want to provide you with the best guidance on implementing this for your project.

2.) The National Weather Service began archiving the 1 minute data in 2005. Therefore, for now there are only 4 years of data available. The Guideline on Air Quality Models recommends 5 years of data for demonstrating compliance with the NAAQS. Section 7.2.1.1c of this same Guideline also has provisions for cases where less than 5 years of data are available. However, this section has not been updated with respect to PM2.5. Therefore, you propose to use the maximum 98th percentile impact of any given year. While this proposal has merit, it establishes a policy precedent where we need to seek concurrence from OAQPS before we respond.

3.) Furthermore, you may want to note that although we are seeking guidance from OAQPS regarding your proposal to use the maximum 98th percentile for demonstrating compliance with the 24 hour average PM2.5 this does not apply to the single source modeling analysis where impacts are compared to the SILs. The SILs analysis is based on the maximum impact.

4.) Page 23 states that since EPA has not yet finalized a significant impact level for PM2.5 that the modeling will comprise of Cricket Valley's impact plus the measured ambient monitoring data. This is not acceptable. The NAAQS compliance demonstration must be a cumulative modeling analysis of Cricket Valley and other existing sources, in addition to the measured background in accordance with the Guideline on Air Quality Models (40 CFR Part 51 Appendix W). We understand that EPA has not yet finalized the PM2.5 Significant Impact Levels (SILs). However, we suggest using the strictest SILs that were proposed in order to define the significant impact area and whether the single source analysis is sufficient. This procedure is also in accordance with a NESCAUM agreement for the North East States.

5.) A preconstruction ambient air monitoring waiver must be submitted to our Region 2 office in order to be exempt from preconstruction ambient air monitoring requirements. A waiver may be considered based on the preliminary modeled impacts of the project when compared to the Significant Monitoring Concentration in 40 CFR Part 52.21. If impacts are above the SMC, we may consider the use of existing monitoring data provided the concentrations are representative of your project site.

6.) The protocol states that the project will operate in combined cycle mode. If the applicant would like to have operational flexibility to operate in simple cycle, a modeling analysis of these impacts must also be provided. Otherwise, the permit will be limited to combine cycle mode.

7.) Impacts due to startups and shut downs must be provided. The protocol states that the start ups will be self correcting on an annual basis. This does not ensure that any short term NAAQS are protected. Therefore, please provide a separate modeling analysis that demonstrates compliance with short term limit. As you may know, there will be a BACT limit defined in the permit for this scenario.

8.) Page 17 states that the terrain data will be based on 1 degree DEM data. Later in the protocol it states that 7.5 minute data will be used. EPA guidance prefers the use of the 7.5 minute data. This point needs to be clarified in the protocol.

9.) The additional impacts analysis must conform to 40 CFR Part 52.21(o). This includes a visibility analysis of the plume in the nearby area. It is not sufficient to state that there are no scenic vistas.

10.) The additional impact analysis must also address impacts on soils and vegetation that the project is PSD affected. The proposal stated only NOx and SO2.

11.) An Environmental Justice analysis should be part to the application. We recommend visiting our website for a copy of the EPA Region 2 EJ Interim Policy for further guidance.

12.) A letter from the Federal Land Manager which states that the requirements of the Endangered Species Act have been met must be part of the application.

Please provide us with a copy of the modeling analyses on a CD/DVD with clearly defined input and output files including a detailed readme file. If you have any questions regarding this letter you may contact Annamaria Coulter of my staff at (212) 637-4016.

Sincerely,

Steven C. Riva, Chief
Permitting Section, APB

cc: Leon Sedefian, NYSDEC
Margaret Valis, NYSDEC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JAN 26 2010

Mr. Fredrick M. Sellars
Vice President, Arcadis
2 Executive Drive, Suite 303
Chelmsford, Massachusetts 01824

Re: Additional Comments on the Air Quality Modeling Protocol for the Cricket Valley Energy Project in Dover, New York.

Dear Mr. Sellars:

This is a follow up letter to our December 15, 2009 letter to you regarding the modeling protocol for the Cricket Valley Energy Project. In that letter we indicated that we would respond to 2 proposals made in the protocol where we needed to confirm with our EPA Office of Air Quality Planning and Standards (OAQPS). We have not formally received a response from OAQPS. However, in order to provide you with some direction, we are making the following recommendations. These comments are as follows:

1.) We agree that the use of the 1 minute ASOS data is an acceptable approach for determining hourly average meteorological conditions measured at the Poughkeepsie-Dutchess airport (POU). As you know, EPA is in the process of developing a similar preprocessor for the AERMET model that would allow the use of the 1 minute ASOS data. This model has not yet been released. However, some sensitivity analyses performed by NYSDEC shows that the two models produce virtually identical results. There are 2 differences between the models and we recommend that you make these adjustments to your preprocessor in order to better match the approach that is under consideration by EPA. These 2 differences are described in the table below.

The key differences in the 2 programs for processing the minute data are listed below.

ARCADIS - Cricket Valley	EPA
A valid hour is: Six 2-minute average values	A valid hour is: At least 2 non-calm observations in the 1st half of an hour, or at least 1 non-calm observation in the last half hour
Instrument threshold: 1-knot	Instrument threshold: If station has Ice Free Winds (IFW) instrumentation (POU has as of 9/12/06), 1knot is the threshold. If not part of IFW, 2knots is the threshold

In addition, please confirm that the hourly wind data is calculated in accordance with the methods described section 6 of the Meteorological Monitoring Guidance for Regulatory Modeling Applications (EPA-454/R-99-005, February 2000).
We approve the use of your preprocessor for this project since it greatly improves the data base. In addition, we have seen from other studies that air quality impacts using 1 minute data tends to calculate more conservative impacts. However, we would like to note that if EPA finalizes its preprocessor prior to the completion of your permit application, that you reassess the impacts to ensure compliance with the EPA procedures.

2.) At the time of the protocol submittal, there were less than the required 5 years of the 1 minute meteorological data available at this Poughkeepsie-Dutchess site. The EPA Guideline on Air Quality Models under section 7.2.1.1c contains provisions for situations when there are less than 5 years of representative meteorological data. For example, for SO2, this provision states that the highest impact rather than the highest-2nd-highest impact must be used to show compliance with the 24 hour average NAAQS. However, this section has not been updated with respect to PM2.5. Since the form of the NAAQS is different for PM2.5 than for other pollutants, you proposed to use the highest 98th percentile for any given year rather than the highest 8th highest.

We have consulted with our Office of Air Quality Planning and Standards. While we agree that this method has merit, it is still uncertain what the final agency decision will be on this policy. Your colleague, Richard Londergan, has contacted our office and requested if the application could be submitted at this time using your proposed procedure with the understanding that you would revise the analysis once you obtain the remaining meteorological data through March 2010 (i.e., thereby negating the need to implement section 7.2.1.1c.) Since the final decision on the air quality analysis will be based on the complete 5 years of data, we agree that this is acceptable.

If you have any questions on this letter please contact Annamaria Coulter of my staff at (212) 637-4016.

Sincerely,

Steven C. Riva, Chief
Permitting Section, APB

cc: Richard Londergan, Arcadis
Leon Sedefian, NYSDEC
Margaret Valis, NYSDEC

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

Margaret Valis
Bureau of Stationary Sources
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-3254

Steven C. Riva
Chief, Permitting Section, APB
United States Environmental Protection Agency
290 Broadway
New York, New York 10007-1866

Date:
January 27, 2010

Contact:
Frederick Sellars

Phone:
978.937.9999 ext. 317

Email:
Frederick.Sellars
@arcadis-us.com

Our ref:
CO001447.0003.00004

Subject:
Revisions to Cricket Valley Energy Dispersion Modeling Protocol

Dear Ms. Valis and Mr. Riva:

On behalf of the proposed Cricket Valley Energy (CVE) project, ARCADIS submitted a draft dispersion modeling protocol on September 25, 2009. Comments have been received to clarify and refine the procedures outlined in the protocol. This letter (with attachments) summarizes resolution of each issue and documents the proposed revisions to the planned modeling effort.

Comments on the draft protocol were provided in two letters, one from the New York State Department of Environmental Conservation (NYSDEC) (Margaret Valis to Frederick Sellars, dated November 19, 2009) and one from the United States Environmental Protection Agency (EPA Region 2) (Steven C. Riva to Frederick Sellars, dated December 15, 2009).

The comments from NYSDEC are discussed below, followed by comments from EPA Region 2.

Response to NYSDEC comments.

Comment NY-1. Comments pertaining to the processing of meteorological data and the use of AERSURFACE were listed in an e-mail to Richard Londergan on October 21, 2009 (enclosed). Subsequent e-mails to and from Mr. Londergan dated October 27-November 3, 2009 (enclosed) further addressed met data issues and proposed sensitivity runs to account for differences in estimated surface characteristics between the Poughkeepsie Airport and the Facility.

Response to NY-1. As referenced in the e-mail exchange (reproduced in Attachment A), the primary concern was the use of AERSURFACE for processing surface meteorological data. Specific issues included: the choice between processing the meteorological data using surface characteristics for the area surrounding the National Weather Service (NWS) anemometer (at Poughkeepsie Dutchess County Airport) versus surface characteristics for the area surrounding the CVE project site; details concerning how to apply AERSURFACE for each site; and the sensitivity analysis that would be required to determine which site was preferred. The referenced e-mails document the approval by NYSDEC of the land-use sectors proposed for each site. The agreed approach is modeling to assess single-source impacts using two separate sets of meteorological data, one set with AERSURFACE inputs reflecting land use from the anemometer site and one set reflecting the CVE project site. The meteorological data set that results in the highest impacts will be used to compare project impacts to respective Significant Impact Levels (SILs). Cumulative impact modeling, should any SIL be exceeded, would also be performed using the meteorological data set that results in higher predicted project impacts.

Comment NY-2. Due to a high percentage of calm winds reported by the Poughkeepsie Dutchess County Airport the project has proposed to use ASOS archived 1-minute meteorological data. EPA OAQPS should be involved in the review of the proposed methodology to process this data to ensure consistency with the 1-minute ASOS program under development by EPA.

Response to NY-2. EPA has completed its review of the proposed methodology. See response below to Comment EPA-1.

Comment NY-3. Because less than 5 years of the 1-minute data is available, the project proposes to use the highest 98th percentile value predicted for comparison to the 24-hr PM2.5 standard and the maximum predicted concentrations for other short-term impacts. This issue needs to be discussed further with EPA Region 2 prior to finalizing the protocol.

Response to NY-3. See response below to comment EPA-2.

Comment NY-4. Stack parameters reflecting the 50% load case are proposed to be used in modeling of start-up conditions. Please provide details as to how these parameters best represent the start-up conditions.

Response to NY-4. We now propose to use time-weighted average flow rates and conservative exhaust temperature estimates based on operating curves for startup and shutdown provided by turbine vendors, rather than stack parameters for 50% load. Table NY-4 presents the short term emission rates and stack parameters associated with each startup event that will be used in modeling. We propose to model only the cold start and warm start cases; the hot start and shutdown cases have shorter duration, lower emission rates, and higher exhaust temperatures, as compared to the cold start and warm start cases, and would therefore have lower impacts. For computing annual average impacts, all pollutants will be modeled based on steady-state operating conditions; annual emission rates for modeling will include the contribution from the maximum permitted number of startups and shutdowns.

Table NY-4. Modeling Inputs for Startup and Shutdown Events

Pollutant	Cold Startup	Hot Startup	Warm Startup	Shutdown
$PM_{10}/PM_{2.5}$ (g/s)	2.5	1.4	2.3	2.0
SO_2 (g/s)	0.087	0.056	0.082	0.071
CO (g/s)	78.8	37.9	58.1	50.4
Exit Temperature (K)	359.8	379.3	369.5	N/A
Exit Velocity (m/s)	12.3	9.2	7.4	N/A

Comment NY-5. A more detailed plot plan which clearly identifies the building footprints, stack locations and fenceline with associated scale should be submitted with the GEP/BPIP analysis. The geo-referenced AutoCAD file for the facility would be preferred.

Response to NY-5. The detailed plot plan and geo-referenced AutoCAD file will be provided with the GEP/BPIP analysis in the Permit Application submittal.

Comment NY-6. Although SILs for PM2.5 are pending (Table 10), NESCAUM has recommended values of 0.3 µg/m^3 for annual averages and 2.0 µg/m^3 for 24-hr averages. These values should be used until EPA finalizes the PM2.5 SILs.

Response to NY-6. The 24-hour SIL value referenced above (2.0 µg/m^3) is higher than the value recommended by EPA. We propose to use SIL values of 0.3 µg/m^3 for annual averages and 1.2 µg/m^3 for 24-hour averages, as discussed in response to EPA-4.

Comment NY-7. Receptors should be placed every 25 meters along the fenceline or wherever the public has access. As such, receptors should also be placed along the commuter rail line which runs through the property.

Response to NY-7. Given the fenceline's proximity to the facility, we propose to place receptors at 10 m spacing along the fenceline, including along the commuter rail line.

Comment NY-8. If available for the area, NED data for use in ARCMAP should be the 1/3 arc-second resolution data (approximately 10m horizontal resolution).

Response to NY-8: National Elevation Dataset (NED) data is available at 1/3 arc-second resolution and will be used with AERMAP to determine receptor elevations.

Comment NY-9. The FLM *should be contacted and made aware of the project to confirm that Class I modeling is not necessary.*

Response to NY-9. The nearest Class I Area is Lye Brook Wilderness in the Green Mountain National Forest. The responsible Federal Land Manager (FLM), the U.S. Forest Service, Region 9, has been contacted. The FLM response, which is provided in Attachment B, confirmed that dispersion modeling to assess Class I impacts is not necessary.

Comment NY-10. Note that AERMOD was recently updated; the most current version (09292) should be used in the modeling analysis.

Response to NY-10. The modeling analysis will be performed with the most current regulatory version of AERMOD (version 09292).

Response to EPA comments

Comment EPA-1. The protocol proposed to obtain refined meteorology for input to the dispersion model. That is, you proposed a method to determine an hourly average wind speed and direction derived from the 1 minute averages measured during the hour rather than taking a single reading every hour as is traditionally done. Using this procedure reduces the number of "calm" or "missing hours" substantially. EPA Region 2 would like to support this procedure but is seeking OAQPS concurrence since OAQPS is also in the process of developing a similar approach. We would want to provide you with the best guidance on implementing this for your project.

Response to EPA-1. EPA has now given provisional approval for the proposed averaging method, with revisions to procedures for minimum wind speed and to the criteria for the number of valid one-minute values to report a valid hourly average (Attachment C – letter from S. Riva to F. Sellars, January 26, 2010);. The averaging method has been revised to address these comments; the new version will be provided to NYSDEC and EPA Region 2 electronically.

Comment EPA-2. The National Weather Service began archiving the 1 minute data in 2005. Therefore, for now there are only 4 years of data available. The Guideline on Air Quality Models recommends 5 years of data for demonstrating compliance with the NAAQS. Section 7.2.1.1c of this same Guideline also has provisions for cases where less than 5 years of data are available. However, this section has not been updated with respect to PM2.5. Therefore, you propose to use the maximum 98th percentile impact of any given year. While this proposal has merit, it establishes a policy precedent where we need to seek concurrence from OAQPS before we respond.

Response to EPA-2. The permit application will be prepared and submitted using the proposed criteria (maximum 98^{th} percentile value for any year). At such time as a fifth complete year of one-minute data becomes available, modeling will be performed for that additional year to supplement the Permit Application. Revised modeling results will then be reported, based on five full years of data; the highest 3-year average 98^{th} percentile value will then be used to assess compliance with the 24-hour standard for $PM_{2.5}$. We understand that Permit Application review will proceed prior to receipt of this supplemental modeling.

Comment EPA-3. Furthermore, you may want to note that although we are seeking guidance from OAQPS regarding your proposal to use the maximum 98th percentile for demonstrating compliance with the 24 hour average PM2.5 this does not apply to the single source modeling analysis where impacts are compared to the SILs. The SILs analysis is based on the maximum impact.

Response to EPA-3. It is understood that comparisons to SILs will be based on maximum predicted impacts for all averaging times.

Comment EPA-4. Page 23 states that since EPA has not yet finalized a significant impact level for PM2.5 the modeling will be comprised of Cricket Valley's impact plus the measured ambient monitoring data. This is not acceptable. The NAAQS compliance demonstration must be a cumulative modeling analysis of Cricket Valley and other existing sources, in addition to the measured background in accordance with the Guideline on Air Quality Models (40 CFR Part 5 1 Appendix W). We understand that EPA has not yet finalized the PM2.5 Significant Impact Levels (SILs). However, we suggest using the strictest SILs that were proposed in order to define the significant impact area and whether the single source analysis is sufficient. This procedure is also in accordance with a NESCAUM agreement for the North East States.

Response to EPA-4. We propose to use the most stringent SIL values from the alternatives proposed for $PM_{2.5}$ by EPA (Federal Register p.54112, September 21, 2007), specifically, 0.3 $\mu g/m^3$ for annual averages and 1.2 $\mu g/m^3$ for 24-hour averages.

Comment EPA-5. A preconstruction ambient air monitoring waiver must be submitted to our Region 2 office in order to be exempt from preconstruction ambient air monitoring requirements. A waiver may be considered based on the preliminary modeled impacts of the project when compared to the Significant Monitoring Concentration in 40 CFR Part 52.21. If impacts are above the SMC, we may consider the use of existing monitoring data provided the concentrations are representative of your project site.

Response to EPA-5. The request for a preconstruction ambient air monitoring waiver will be prepared upon completion of the modeling analysis and included in the Permit Application package. The submittal will include a comparison of modeled impacts of the project to SILs and to SMCs, including the most stringent proposed SMC for 24-hour average $PM_{2.5}$ (2.3 $\mu g/m^3$).

Comment EPA-6. The protocol states that the project will operate in combined cycle mode. If the applicant would like to have operational flexibility to operate in simple cycle, a modeling analysis of these impacts must also be provided. Otherwise, the permit will be limited to combined cycle mode.

Response to EPA-6. The project does not propose to operate in simple cycle mode.

Comment EPA-7. Impacts due to startups and shut downs must be provided. The protocol states that the startups will be self correcting on an annual basis. This does not ensure that any short term NAAQS are protected. Therefore, please provide a separate modeling analysis that demonstrates compliance with short term limits. As you may know, there will be a BACT limit defined in the permit for this scenario.

Response to EPA-7. Impacts during startups will be assessed as part of the modeling analysis. Please see the related discussion in response to NY-4.

Comment EPA-8. Page 17 states that the terrain data will be based on 1 degree DEM data. Later in the protocol it states that 7.5 minute data will be used. EPA guidance prefers the use of the 7.5 minute data. This point needs to be clarified in the protocol.

Response to EPA-8. As noted in response to NY-8, NED data is available at 1/3 arc-second resolution and will be used with AERMAP to determine receptor elevations. This represents the highest resolution digital terrain data available from the U.S. Geological Survey.

Comment EPA-9. The additional impacts analysis must conform to 40 CFR Part 52.21(0). This includes a visibility analysis of the plume in the nearby area. It is not sufficient to state that there are no scenic vistas.

Response to EPA-9. A visibility impact analysis of the plume will be provided, consistent with 40 CFR Part 52.21(0). We will consult with EPA and NYSDEC to determine specific locations for this analysis.

Comment EPA-10. The additional impact analysis must also address impacts on soils and vegetation for which the project is PSD affected. The proposal stated only NOx and S02.

Response to EPA-10. Potential impacts of the project on soils and vegetation will be addressed for all PSD affected pollutants, consistent with EPA guidance and criteria.

Comment EPA-11. An Environmental Justice analysis should be part of the application. We recommend visiting our website for a copy of the EPA Region 2 EJ Interim Policy for further guidance.

Response to EPA-11. Federal, state and local resources have been reviewed to identify the location of any potential minority or economically disadvantaged population in the project vicinity. Based on Census 2000 data, the federal and state GIS systems identify one potential EJ area associated with the former Harlem Valley State Hospital. This facility and its population of patients and residents no longer exist . Documentation following the EPA Region 2 EJ Interim Policy will be included in the Permit Application package.

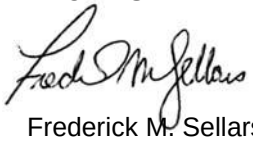
Comment EPA-12. A letter from the Federal Land Manager which states that the requirements of the Endangered Species Act have been met must be part of the application.

Response to EPA-12. As noted in response to NY-9, no Class I Area analysis will be required. The U.S. Fish and Wildlife Service has been consulted to ensure that any endangered species present within the project vicinity have been identified. Potential impacts of project air emissions on such species will be assessed, consistent with requirements of the Endangered Species Act.

Thank you for your valuable input on the CVE project modeling protocol. I look forward to your written confirmation that, with amendments as discussed in this letter, the CVE modeling protocol is approved for implementation. Please do not hesitate to contact me if any of the above responses require further clarification or discussion.

Sincerely,

ARCADIS



Frederick M. Sellars
Vice President

Copies:
J. Ahrens, CVE
C. Hogan, NYSDEC
L. Sedefian, NYSDEC
R. Londergan, ARCADIS


ARCADIS
Infrastructure, environment, buildings

ARCADIS

Infrastructure, environment, buildings

Attachment A

Margaret Valis - Cricket Valley Protocol

From: Margaret Valis
To: richard.londergan@arcadis-us.com
Date: 10/21/2009 11:17 AM
Subject: Cricket Valley Protocol
CC: Coulter.Annamaria@EPA.GOV; Sedefian, Leon

Dick,

I wanted to summarize our comments and our recent discussions regarding the land use and AERSURFACE described in Section 4.4 Meteorological Data in the protocol. We will formalize these comments and any others we may have on the remainder of the protocol soon, but we wanted to resolve any met data issues now, so we don't hold up the met data processing.

1. The correct coordinates to be used in AERSURFACE and AERMET for the Poughkeepsie Airport met tower are: 41.626, -73.882 (lat, lon).

2. A more thorough comparison of the airport met site and the facility site to determine met site representativeness should be included in the final protocol. This would include maps of the land use surrounding both the airport and facility and AERSURFACE results using 12 sectors and sectors appropriate for final met processing. Proposed sectors should be depicted on the land use maps. All AERSURFACE input and output files should be submitted for review. Also, a sensitivity analysis will be necessary to determine whether differences in Zo for the airport vs. the facility have a significant difference in impacts. This would entail processing the met data with surface characteristics for both the airport and the facility and running AERMOD for the worst-case scenario to ensure maximum impacts are modeled.

3. A explanation and justification for use of the non-default month to season assignment in the AERSURFACE runs should be included in the final protocol.

Thank you for the items that you have already sent to me in response to some of these comments. If you have any questions, please contact me.

Margaret

Margaret Valis

NYSDEC - Division of Air Resources
625 Broadway
Albany, NY 12233-3254
---
(518)402-8403
mxvalis@gw.dec.state.ny.us

Margaret Valis - RE: protocol

From: "Londergan, Richard" <Richard.Londergan@arcadis-us.com>
To: Margaret Valis <mxvalis@gw.dec.state.ny.us>
Date: 11/3/2009 12:18 PM
Subject: RE: protocol
CC: "coulter.annamaria@epa.gov" <coulter.annamaria@epa.gov>, Leon Sedefian <lxsedefi@gw.dec.state.ny.us>, "Sellars, Fred" <Frederick.Sellars@arcadis-us.com>
Attachments: Cricket Site 5 sector 1103.pdf; KPOU 4 sector 1103.pdf; SURF_CVE_5sect.log; SURF_CVE_5sect.out

Margaret – we have prepared land use figures with an overlay of the proposed AERSURFACE sectors for Poughkeepsie Dutchess County Airport (KPOU) and for the CVE Project Site, as you requested.

While preparing these figures, I discovered that I had specified the wrong datum for LATLON coordinates for the project site in the earlier land use figure and AERSURFACE run. I have revised the proposed sectors to reflect the new location. (The turbine stacks are at the center of the circle.) The proposed (now five) sectors for the project site are 0-55, 55-90, 90-180, 180-270 and 270-0. I have also attached new AERSURFACE output files based on the revised location and sectors.

To respond briefly to two other items that you raised:

- The intent is to operate a duct burner only when a turbine is at full load, and the proposed modeling scenarios reflect that intent.
- Regarding the "smaller sources", the black start generators and the auxiliary boiler will be exhausted through the (GEP) stack for Turbine 1, so the turbine sensitivity runs should be reasonably representative. Only the fire pump will have a short stack, and that unit would only run in the event of a fire, aside from test firing.

Please give me a call when you receive this. Thanks – Dick L

From: Margaret Valis [mailto:mxvalis@gw.dec.state.ny.us]
Sent: Friday, October 30, 2009 10:36 AM
To: Londergan, Richard
Cc: coulter.annamaria@epa.gov; Leon Sedefian
Subject: Re: protocol

Dick,

I have looked at your proposal for the sensitivity analysis and discussed it with Leon and I have a couple of comments.

First, we need to resolve the definition of sectors for AERSURFACE runs for both the airport and the facility site. During a phone conversation, we had discussed using 4 sectors at the airport (25-120, 120-180, 180-210 and 210-25) and 4 sectors for the facility (25-80, 80-165, 165-295 and 295-25). Looking at a land use map of the surrounding areas, these sectors seem to be acceptable, but a map with the sectors overlaid on the land use will be needed to make a final determination.

As for the sensitivity analysis, all sources will need to be modeled, not just the turbines, since the smaller

sources may be more sensitive to the differences in the Zo. Also, limiting the analysis to just the max emission case will not be enough if the worst-case scenario is different for the max emission scenario. Although you propose to look at just one year for the sensitivity analysis initially, please note that it may need to be expanded to the full set of meteorology in the impact analysis for the application. There also could be more than one operating scenario that you carry out throughout the impact analysis using both sets of surface characteristics, for example one scenario for short-term averages and another for annual.

I have a question regarding Table 2 from the Protocol. I notice you have only listed stack parameters for Duct Burner Operation only for the 100% load rate. Will the duct burners operate for other loads? If so will it effect the emissions and/or the stack parameters for the other load conditions?

I will get formal comments out soon so that you will be able to revise the protocol to incorporate our comments as well as any EPA may have.

Margaret

Margaret Valis

NYSDEC - Division of Air Resources
625 Broadway
Albany, NY 12233-3254
---
(518)402-8403
mxvalis@gw.dec.state.ny.us

>>> "Londergan, Richard" <Richard.Londergan@arcadis-us.com> 10/27/2009 2:07 PM >>>
Margaret – we are still preparing for the sensitivity runs. Those will be completed as soon as we have a GEP stack height. (Building dimensions are still being finalized.)

I have attached a matrix of the turbine scenarios we propose to run – once we get past the surface roughness sensitivity issue. After we have run the full matrix for the turbines, we plan to run the "worst case" turbine scenarios in combination with ancillary equipment (fire pumps, black start generators, aux boiler).

For the sensitivity runs, I plan to model the max emissions scenario: 3 turbines at 100% load, with duct burners, at ambient temperature of -8 F. Please let me know if there is a different scenario that you want to see. (we have not modeled the full matrix yet, so we aren't certain what will turn out to be "worst case" for predicted impacts).

One last detail: please confirm that the LAT-LON coordinates you provided for the anemometer are NAD83 (that's what I have assumed).

Thanks - Dick

ARCADIS
Dick Londergan
Principal Scientist

2 Executive Drive, suite 303
Chelmsford, MA 01824
Tel 978-937-9999 ext 349
Fax 978-937-7555
Mobile 860-593-5280
richard.londergan@arcadis-us.com
www.arcadis-us.com

New York State Department of Environmental Conservation
Division of Air Resources
Bureau of Stationary Sources, 2nd Floor
625 Broadway, Albany, New York 12233-3254
Phone: (518) 402-8403 • **FAX:** (518) 402-9035
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

February 11, 2010

Mr. Frederick Sellars
ARCADIS
2 Executive Drive
Suite 303
Chelmsford, MA 01824

Dear Mr. Sellars:

I have reviewed your revisions to the Cricket Valley Protocol, dated January 27, 2010. The responses provided in your submission adequately address our previous comments. However, there are a few points that need some clarification and are listed below.

1. Per regulatory requirement, the preconstruction monitoring waiver must be obtained from EPA Region 2 prior to submittal of the permit application.

2. As a follow up to EPA Comment #9, I suggest using James Baird State Park as the location for the visibility analysis. The Park is located in the Town of LaGrange, approximately 15 km to the west of the proposed Cricket Valley facility, and is the closest State Park.

3. Inventory data for sources within a 55km radius from the proposed facility were provided by Tom Christoffel (e-mail dated February 2, 2010). Any questions regarding that data should be directed to him. Please confer with Jeffrey Lawyer to assist with other data which may be needed to complete an accurate interactive source inventory for the modeling analysis. Prior to performing the cumulative impact analysis, the final source inventory should be submitted for review and approval.

4. The recent publication of the one-hour NO2 NAAQS, effective April 12, 2010, will require that one-hour NO2 impacts be modeled and compared to the new NAAQS. EPA OAQPS is developing a post-processor to assist with this analysis.

If you have any questions, please contact me at (518) 402-8403 or by e-mail at mxvalis@gw.dec.state.ny.us.

Sincerely,

Margaret Valis

Margaret Valis
Air Pollution Meteorologist
Bureau of Stationary Sources
Division of Air Resources

cc: L. Sedefian
C. Hogan
J. Lawyer
A. Coulter
R. Londergan
T. Christoffel

ARCADIS
Infrastructure, environment, buildings

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

Steven C. Riva
Chief, Permitting Section, APB
United States Environmental Protection Agency
290 Broadway
New York, New York 10007-1866

Subject:
Request for Preconstruction Monitoring Waiver - Cricket Valley Energy, Dover, Dutchess County, New York

Date:
February 25, 2010

Contact:
Frederick Sellars

Phone:
978.937.9999 ext. 317

Email:
Frederick.Sellars
@arcadis-us.com

Our ref:
CO001447.0003.00004

Dear Mr. Riva:

As we have previously discussed, Cricket Valley Energy Center, LLC proposes to construct a new 1,000 megawatt natural gas fired combined-cycle electric generating facility in Dover, New York (Dutchess County). ARCADIS is preparing the Prevention of Significant Deterioration (PSD) air permit application for this facility. On behalf of the applicant, ARCADIS is requesting a waiver from PSD preconstruction monitoring requirements. Predicted impacts of the project are well below all of the Significant Monitoring Concentrations (SMCs) established by the United States Environmental Protection Agency (USEPA). However, predicted impacts for particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$) fall within the range of SMC values proposed, but not yet promulgated, by USEPA. Nonetheless, existing ambient air quality monitoring stations for $PM_{2.5}$ maintained by the New York State Department of Environmental Conservation and the Connecticut Department of Environmental Protection provide more than three years of concentration measurements representative of conditions in the project vicinity.

Dispersion modeling performed in accordance with the approved modeling protocol demonstrates that peak impacts from the project are below the established SMCs. Table 1 summarizes peak predicted impacts, based on modeling for four years and 9.5 months of meteorological data (beginning March 10, 2005). For $PM_{2.5}$, USEPA has not yet established an SMC. On November 21, 2007, USEPA proposed three candidate SMC values for 24-hour average $PM_{2.5}$, ranging from 2.3 micrograms per cubic meter ($\mu g/m^3$) to10 $\mu g/m^3$. The project's peak predicted 24-hour average impact, 3.9 $\mu g/m^3$, falls within the range of SMC values currently under consideration by USEPA.

Table 1. Comparison of Maximum Predicted Project Impacts to SMCs

Pollutant	Averaging Time	Maximum Predicted Impact	Significant Monitoring Concentration
		($\mu g/m^3$)	($\mu g/m^3$)
NO_2	**annual**	0.4	14
CO	**8-hour**	20.9	575
SO_2	**24-hour**	3.6	13
PM_{10}	**24-hour**	3.9	10
$PM_{2.5}$	**24-hour**	3.9	2.3 – 10*

*SMC not yet established.

Since peak predicted impacts exceed the lowest candidate SMC value for $PM_{2.5}$, ARCADIS has reviewed the ambient monitoring stations that provide measurements of $PM_{2.5}$ in the region surrounding the project. The three closest monitoring stations are listed in Table 2; their locations are shown on the attached figure.

Table 2. PM-2.5 Monitoring Stations in the Project Region

Site ID	Location	Distance from Project	Population Density (persons/square mile)
090050005	Mohawk Mountain (Cornwall, CT)	29 kilometer (km)	31
090050004	Thomaston, CT	42 km	624
360710002	Newburgh, NY	41 km	7,394

All three stations provide at least three years of $PM_{2.5}$ data, collected using the Federal Reference Method. Two of the stations are relatively rural, with population densities similar to that of Dover Township (154 persons/square mile), where the project is located. The closest station to Cricket Valley (29 km) is Mohawk Mountain, Connecticut; this station is part of the USEPA IMPROVE network. Thomaston, Connecticut and Newburgh, New York are at comparable distances from the project, but the population density of Newburgh is higher than that of Dover by more than a factor of 40. The rural area extending east from Poughkeepsie across Dutchess County, New York and Litchfield County, Connecticut includes the project site and both of the Connecticut monitoring stations.

ARCADIS believes that measured $PM_{2.5}$ concentrations from the existing monitoring stations at Mohawk Mountain and Thomaston, Connecticut are representative of

conditions in the project vicinity, based on geographic proximity and comparable population density. The modest impacts predicted from the project (less than all of the established SMCs and two of the three $PM_{2.5}$ SMC values currently under consideration), and the availability of representative data from existing monitors, provide a sound technical basis for a waiver from preconstruction monitoring.

Please do not hesitate to contact me if you have any questions or comments concerning this waiver request.

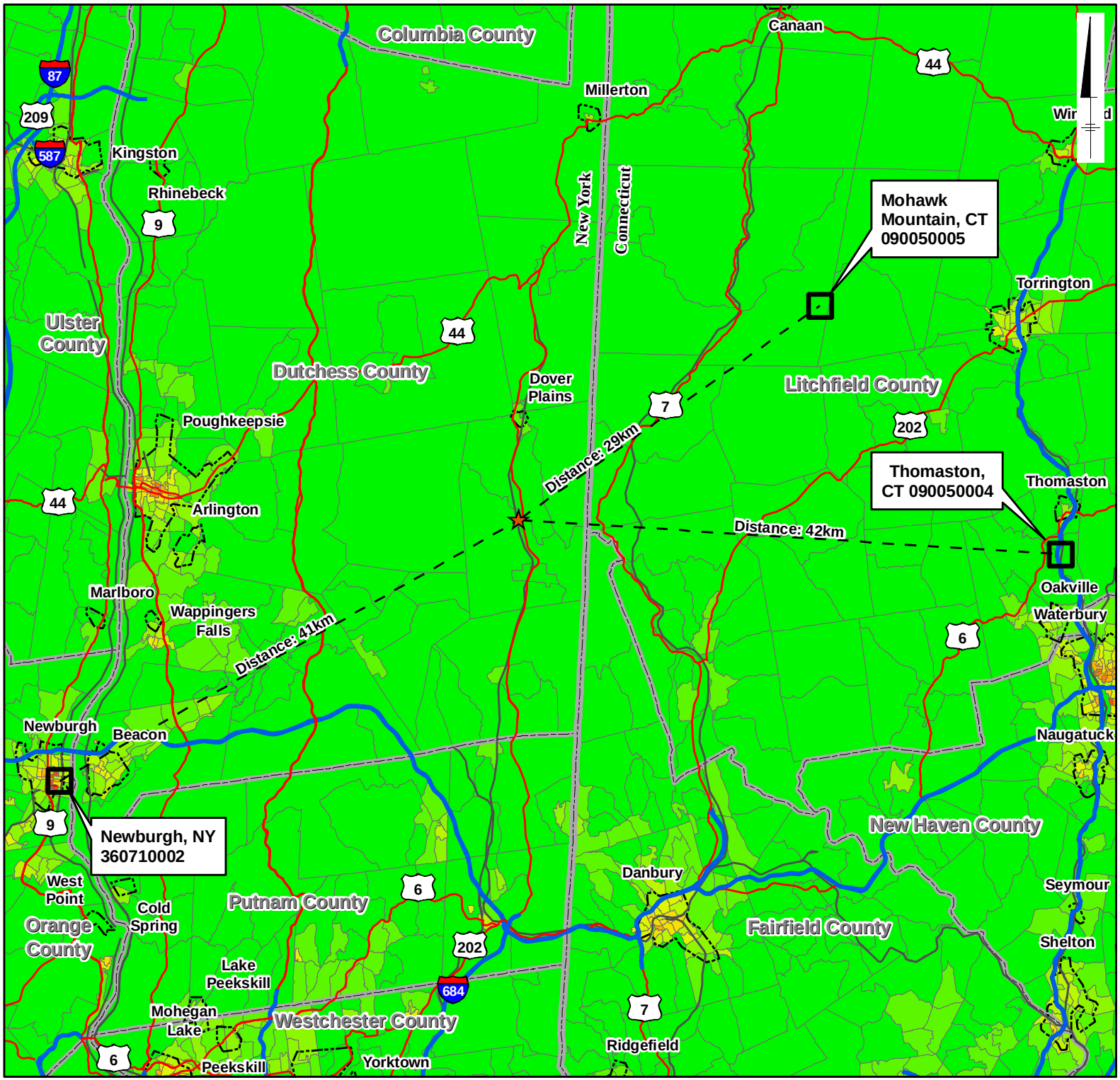
Sincerely,

ARCADIS

Frederick M. Sellars
Vice President

Copies:
J. Ahrens, CVE
C. Hogan, NYSDEC
L. Sedefian, NYSDEC
R. Londergan, ARCADIS


ARCADIS
Infrastructure, environment, buildings



Legend

- Cricket Valley Energy Center N41.676168/W73.580618
- PM 2.5 Monitoring Stations
- Primary Limited Access or Interstate
- Primary US or State Highway
- County Boundary

Block Groups

POP07_SQMI

- 0.0 - 994.4
- 994.5 - 2280.0
- 2280.1 - 3954.5
- 3954.6 - 6124.4
- 6124.5 - 9015.2
- 9015.3 - 12900.0
- 12900.1 - 17400.0
- 17400.1 - 23140.1
- 23140.1 - 34257.1
- 34257.2 - 65300.0

0 5 10 15
Kilometers

Base data courtesy of ESRI Street Map Pro

ARCADIS

CRICKET VALLEY ENERGY CENTER

PM 2.5 MONITORING STATIONS

Dutchess County, New York

C:\Projects\PP_Misc\20090511_CricketHillGIS\FIGURES\MXDS\20100224_PM_MonStations.mxd - 2/24/2010 @ 11:00:53 AM

Request for Applicability of Class I Area Modeling Analysis
Eastern Region, U.S. Forest Service

Facility Name (Company Name)	Cricket Valley Energy Center, LLC
New Facility or Modification?	New facility
Source Type	Combined cycle electric generating facility
Project Location (County/State/ Lat. & Long. in decimal degrees)	Dutchess County NY; N41.676168º, W73.580618º (NAD83)

Application Contacts

Applicant		*Consultant*		*Air Agency Permit Engineer*	
Company	Cricket Valley Energy Center, LLC	**Company**	ARCADIS	**Agency**	NYSDEC
Contact	Robert De Meyere	**Contact**	Frederick Sellars	**Contact**	Leon Sedefian
Address	31 Milk Street, Suite 1001 Boston, MA 02109	**Address**	2 Executive Drive Suite 303 Chelmsford MA 01824	**Address**	625 Broadway Albany, NY 12233-3254
Phone #	617-456-2214	**Phone #**	978-937-9999 ext 317	**Phone #**	518-402-8403
Email	bdemeyere@advancedpowerna.com	**Email**	frederick.sellars@arcadis-us.com	**Email**	lxsedefi@gw.dec.state.ny.us

Briefly Describe the Proposed Project

Combined cycle electric generating facility (approx. 1,000 MW) firing natural gas as sole fuel.

Proposed Emissions and BACT

Criteria Pollutant	***Proposed Emissions (tons/year)***	***Emission Factor (AP-42, Stack Test, Other?)***	***Proposed BACT***
Nitrogen Oxides	282.1	Equipment vendor	2.0 ppm - Selective Catalytic Reduction
Sulfur Dioxide	50.1	Fuel specification	0.002 lb/MMBtu – natural gas usage
Particulate Matter	195.2	Equipment vendor	0.007 lb/MMBtu – natural gas usage
Volatile Organic Compounds	73.7	Equipment vendor	2.0 ppm – oxidation catalyst
Sulfuric Acid Mist	15.5	Engineering estimate	6.2×10^{-4} lb/MMBtu – natural gas usage

Proximity to U.S. Forest Service Class I Areas

Class I Area	Lye Brook Wilderness		
Distance from Facility (km)	167		

For Additional Information or Questions, Contact Ralph Perron
(802) 222-1444 or rperron@fs.fed.us

United States Department of Agriculture
Forest Service
Green Mountain & Finger Lakes National Forests
Supervisor's Office
231 North Main St.
Rutland, Vermont 05701
Tel. (802) 747-6700
FAX (802) 747-6766
www.fs.fed.us/r9/gmfl

File Code: 2580-3
Date: November 12, 2009

Frederick Sellars
ARCADIS
2 Executive Drive
Suite 303
Chelmsford, MA 01824

Dear Mr. Sellars,

Thank you for the opportunity to review the proposed Cricket Valley Energy Center, LLC project in Dutchess County, New York. I understand that this new facility would consist of a combined cycle electric generating facility. It is also my understanding that the Cricket Valley Energy Center's proposed emissions include those listed in Table 1. The total of these emissions, divided by the distance in kilometers (167) from proposed Cricket Valley Energy Center to Lye Brook Wilderness Area, results in a Q/d value of less than 4.

Table 1

Criteria Pollutant	Nitrogen Oxides	Sulfur Dioxide	Particulate Matter	Sulfuric Acid Mist
Proposed Emissions (tons/year)	282.1	50.1	195.2	15.5

As the Federal Land Manager for Lye Brook Class I Wilderness Area my role is to address Air Quality Related Values including visibility and deposition. After reviewing the proposed emissions and the distance from the source to Lye Brook Wilderness Area, the US Forest Service will not require further analysis of the Cricket Valley Energy Center project.

I appreciate being consulted as part of your plans. If you have any further questions please contact Ralph Perron (802-222-1444 or rperron@fs.fed.us), the Green Mountain National Forest's Air Quality Specialist.

Sincerely,

/s/ Jerri Marr
JERRI MARR
Acting Forest Supervisor

cc: Richard Londergan

Alex Sienkiewicz
Ann Acheson
Charles E Sams
Thomas R Doane
Ralph Perron

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

Mr. Jude Catalano
Planning & Standards
Bureau of Air Management
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Subject:
Modeling Inventory for the Cricket Valley Energy Project, Dover, New York

Date:
January 19, 2010

Contact:
Fred Sellars

Phone:
978.937-9999 x317

Email:
frederick.sellars@
arcadis-us.com

Our ref:
CO001447-0003-00004

Dear Mr. Catalano:

Cricket Valley Energy Center LLC (CVEC) is proposing to construct a nominal 1,000 megawatt natural gas fired combined cycle electric generating facility in Dover, NY (Dutchess County). ARCADIS is preparing the air permit application for this facility. We anticipate that cumulative impact modeling for $PM_{2.5}$ will be required to support the air permit application for this facility. The likely domain for cumulative impact modeling (Significant Impact Area [SIA] plus 50 kilometers [km]) from the proposed facility) is anticipated to extend into Connecticut. We are therefore requesting the assistance of the Connecticut Department of Environmental Protection (CTDEP) to obtain inventory (modeling) data for existing and proposed (permitted) major emissions sources to support cumulative impact modeling.

The attached map illustrates the likely domain for interactive modeling. The facility location is Latitude N41.676168 degrees, Longitude W73.580618 degrees (NAD83). Based on a preliminary modeling analysis, we anticipate that the predicted impacts of the CVEC project will exceed the most stringent proposed 24-hour average Significant Impact Level (SIL) for $PM_{2.5}$ (1.2 µg/m^3) on elevated terrain in the project vicinity; the predicted SIA is expected to extend less than 5 km from the facility. Since the estimated SIA for the project does not extend into Connecticut, facilities in CT with potential emissions exceeding 100 tons per year (tpy) of $PM_{2.5}$ will be of primary concern for cumulative impact modeling.

The likely modeling domain includes most of Litchfield County, northern Fairfield County, western Hartford County, and a small area in the northwest corner of New Haven County. Our initial search has identified the following Title V sources in CT located within 55 km of the CVEC project:

- City of Danbury Landfill and Wastewater Treatment Plant
- Kingswood Kitchens (Danbury)
- Risdon (Danbury)
- Vishnay Vitramon (Monroe)

- Borough of Naugatuck Sludge Incinerator
- Kimberly Clark (New Milford)
- Waste Management Landfill (New Milford)
- Quality Rolling (Thomaston)
- Whyco Technology (Thomaston)
- Eyelet Design (Waterbury)
- Somers Thin Strip (Waterbury)
- Coats America (Watertown)
- Eyelematic (Watertown)

Based on a quick review of the Title V permits on CTDEP's website, none of these facilities may warrant inclusion for cumulative impact modeling, since they are not major sources of particulate emissions. We are also interested in identifying any permitted, but not yet constructed, major sources of PM, as well as existing sources, in the area of concern.

We look forward to working with CTDEP to identify candidate facilities (if any), determine their potential emissions and develop emission inputs for modeling. Please contact me if you have any questions or require any additional information relating to this request.

Sincerely,

ARCADIS U.S., Inc

Frederick M. Sellars
Vice President

Copies:
Steve Riva, USEPA
Chris Hogan, NYSDEC
Leon Sedefian, NYSDEC
Chris Mulcahy, CTDEP
Jeff Ahrens, CVEC

ARCADIS
Infrastructure, environment, buildings

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

Craig Goff
Permit Chief
Massachusetts Department of Environmental Protection
Western Region
436 Dwight Street
Springfield, MA 01103

Subject:
Modeling Inventory for the Cricket Valley Energy Project, Dover, New York

Date:
January 19, 2010

Contact:
Fred Sellars

Phone:
978.937-9999 x317

Email:
frederick.sellars@
arcadis-us.com

Our ref:
CO001447-0003-00004

Dear Mr. Goff:

Cricket Valley Energy Center LLC (CVEC) is proposing to construct a nominal 1,000 megawatt natural gas fired combined cycle electric generating facility in Dover, NY (Dutchess County). ARCADIS is preparing the air permit application for this facility. We anticipate that cumulative impact modeling for $PM_{2.5}$ will be required to support the air permit application for this facility. The likely domain for cumulative impact modeling (Significant Impact Area [SIA] plus 50 kilometers [km]) from the proposed facility) is anticipated to extend into a small area of Massachusetts. We are therefore requesting the assistance of the Massachusetts Department of Environmental Protection (MADEP) to obtain inventory (modeling) data for existing and proposed (permitted) major emissions sources to support cumulative impact modeling.

The attached map illustrates the likely domain for interactive modeling. The facility location is Latitude N41.676168 degrees, Longitude W73.580618 degrees (NAD83). Based on a preliminary modeling analysis, we anticipate that the predicted impacts of the CVEC project will exceed the most stringent proposed 24-hour average Significant Impact Level (SIL) for $PM_{2.5}$ (1.2 µg/m^3) on elevated terrain in the project vicinity; the predicted SIA is expected to extend less than 5 km from the facility. Since the estimated SIA for the project does not extend into Massachusetts, facilities in Massachusetts with potential emissions exceeding 100 tons per year (tpy) of $PM_{2.5}$ will be of primary concern for cumulative impact modeling.

The likely modeling domain extends into the southwest corner of Berkshire County, including the town of Sheffield. Our initial search has identified no Title V sources in MA located within 55 km of the CVEC project. The closest Title V source, Fox River Paper in Great Barrington, is more than 60 km from the CVEC project. We are seeking to confirm that the area of concern (in Massachusetts) does not contain any permitted major sources of particulate matter.

We look forward to working with MADEP to identify candidate facilities (if any), to determine their potential emissions and to develop emission inputs for modeling. Please contact me if you have any questions or require any additional information relating to this request.

Sincerely,

ARCADIS U.S., Inc

Frederick M. Sellars
Vice President

Copies:
Jeff Ahrens, CVEC
Steve Riva, USEPA
Chris Hogan, NYSDEC
Leon Sedefian, NYSDEC

ARCADIS
Infrastructure, environment, buildings

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

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

Lynn Gresock
Environmental Consultant

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

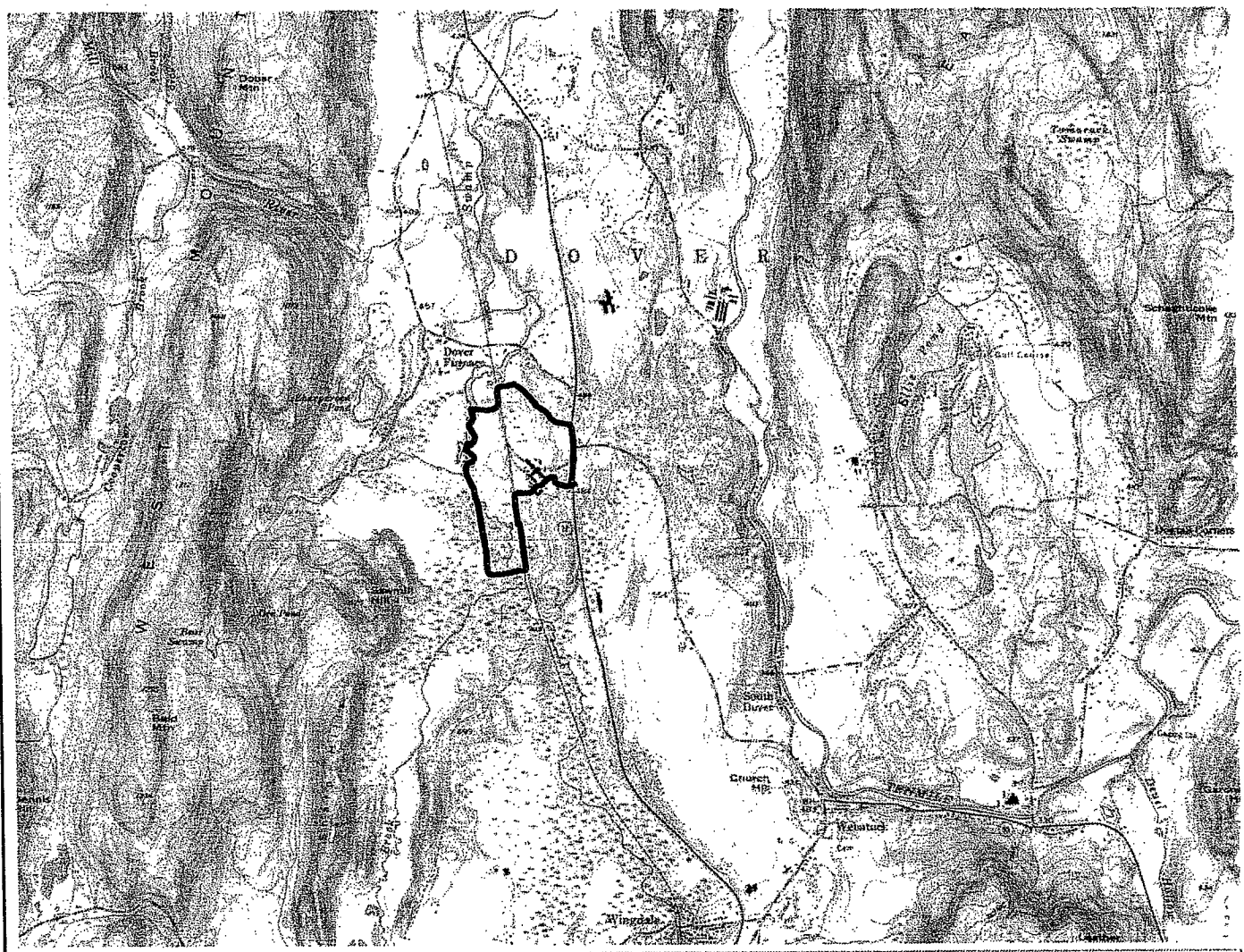
Date:
June 2, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@
arcadis-us.com

Our ref:
CO001447



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

CRICKET VALLEY SITE - DOVER, NY

ADVANCED POWER NA

SITE LOCATION MAP

ARCADIS
Infrastructure, environment, buildings

FIGURE 1

Figure 1 - Site Location.xlsm
6/2/2009

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 (*Glypemys [=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 affects. 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)

ARCADIS
Infrastructure, environment, buildings

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

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

Date:
August 17, 2009

Contact:
Lynn Gresock

Phone:
978.937.9999, ext. 320

Email:
lynn.gresock@
arcadis-us.com

Our ref:
CO001447

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

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.

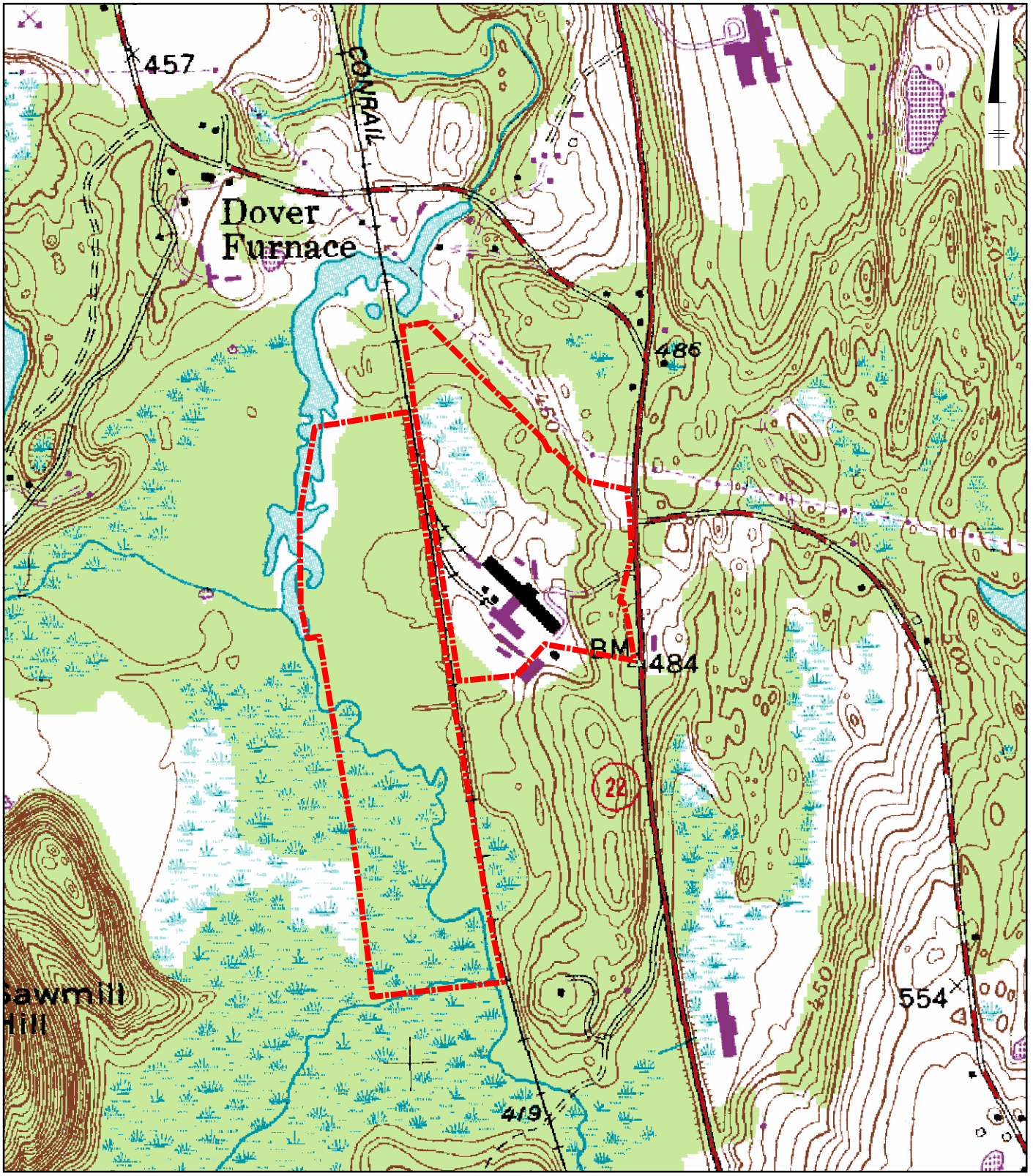
We look forward to your additional guidance with regard to species issues at this site. If you have any questions or require additional information, please do not hesitate to contact me. Thank you in advance for your assistance.

Sincerely,

ARCADIS

Lynn Gresock
Environmental Consultant

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



0 1,000 2,000 Feet

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

ARCADIS

FIGURE 1

CITY: SYR DIV/GROUP: SYE40 DB: KEW JCR
Adv. Power (CO001447.0001.00002)
Q:\AdvancedPower\DoverNY\WetlandID_and_BoundaryDelinReport\mxd\SiteLocationMap_v2.mxd - 7/28/2009 @ 10:59:21 AM

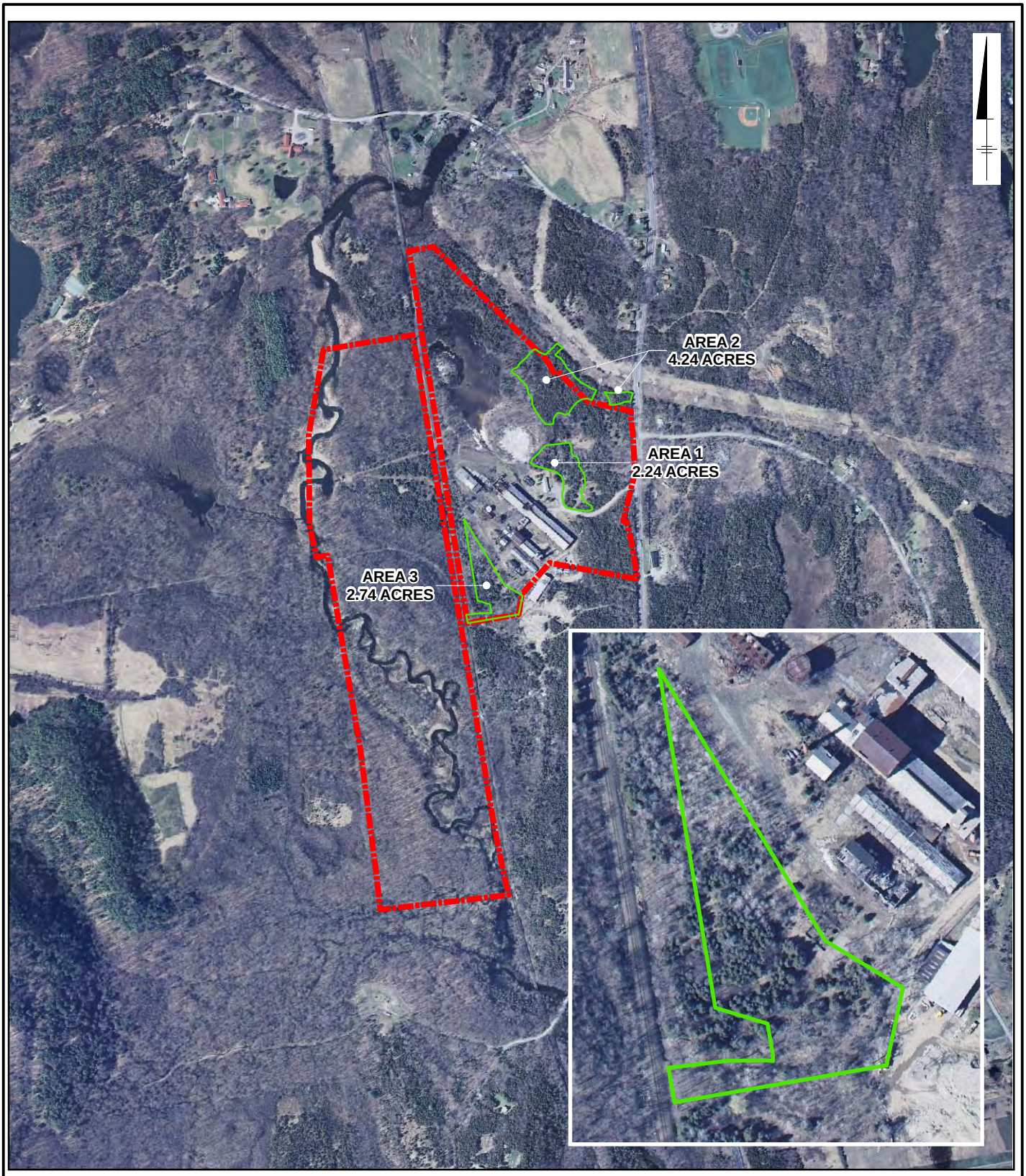
View towards site to the east from driveway off of Route 22

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



LEGEND:

VEGETATION CLEARING

WETLAND ASSESSMENT AREA

0 1,000 2,000 Feet

GRAPHIC SCALE

CRICKET VALLEY ENERGY CENTER LLC
DOVER, NY

WETLAND IDENTIFICATION AND BOUNDARY DELINEATION REPORT

VEGETATION CLEARING AREAS

ARCADIS

FIGURE 3

CITY: SYR DIV/GROUP: SYE40 DB: KEW
Adv. Power (CO001447.0001.00002)
Q:\AdvancedPower\Dover\NY\WetlandID_and_BoundaryDelinReport\mxd\VegetationClearing.mxd - 8/14/2009 @ 5:00:09 PM

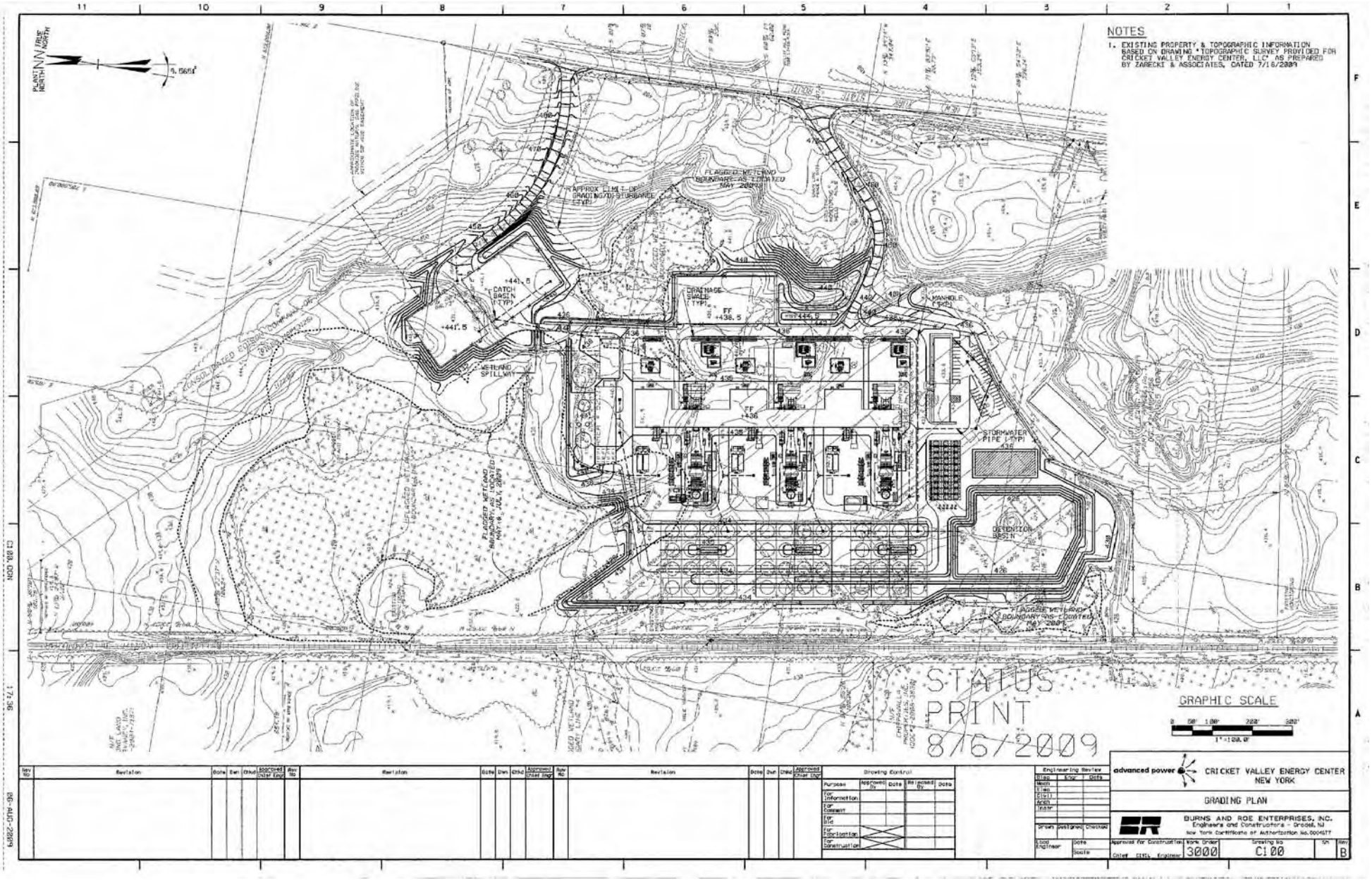


Figure 4. Preliminary Site Plan

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 accidently 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 Ritzi, 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)

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

Mr. Jeff Lawyer
Division of Air Resources, Region 3
New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, New York 12561-1696

Subject:
NO_2 Modeling Inventory for the Cricket Valley Energy Project, Dover, New York

Dear Mr. Lawyer:

Date:
October 22, 2010

Contact:
Fred Sellars

Phone:
978.937-9999 x317

Email:
frederick.sellars@
arcadis-us.com

Our ref:
CO001447-0003-00004

Cricket Valley Energy Center LLC (CVEC) is proposing to construct a nominal 1,000 megawatt natural gas fired combined cycle electric generating facility in Dover, NY (Dutchess County). ARCADIS is preparing the air permit application for this facility. With your assistance, we have completed cumulative impact modeling for $PM_{2.5}$. Similar modeling for 1-hour NO_2 will now be required to support the air permit application for this facility. The proposed facility is located within New York State Department of Environmental Conservation (NYSDEC) Region 3. The domain for cumulative impact modeling, extending 50 kilometers [km] from the proposed facility, will include a large area within Region 3. We are therefore requesting your assistance to obtain inventory (modeling) data for existing and proposed (permitted) major emissions sources to support cumulative impact modeling, consistent with the procedures specified in NYSDEC's Air Guide 36.

The attached map illustrates the domain for interactive modeling. The facility location is Latitude N41.676168 degrees, Longitude W73.580618 degrees (NAD83). Based on a preliminary modeling analysis, we anticipate that the predicted impacts of the CVEC project will exceed the Significant Impact Level (SIL) for 1-hour average NO_2 (7.6 µg/m^3) on elevated terrain in the project vicinity; the predicted SIA is expected to extend 29 km from the facility. Since the estimated SIA for the project is located primarily in Region 3, we are requesting your assistance in identifying all permitted sources of NO_x emissions within the SIA (most of Dutchess County, and northeast Putnam County), plus facilities with potential NO_x emissions exceeding 100 tons per year (tpy) located within 50 km, but outside of the SIA. For facilities within the SIA, we will also need building locations and dimensions, in order to account for the effects of building wake downwash.

The 50-km radius modeling domain includes Dutchess County, Putnam County, northern Westchester County, eastern Orange County and Ulster County; it also covers the southern portion of Columbia County, in NYSDEC Region 4. Based on the inventory developed for $PM_{2.5}$ cumulative impact modeling, we anticipate that Danskammer Generating Station and

Roseton Generating Station will need to be considered as major sources of NO_x emissions. Permitted (non-major) sources of NO_x emissions within 29 km of the Project will include Dover Compressor Station, Hunt Country Furniture, and J&J Lumber.

We look forward to working with Region 3 to identify candidate facilities, to determine their potential NO_x emissions, to identify any inventory-consuming sources for PSD analysis, and to develop emission inputs for modeling. Please contact me if you have any questions or require any additional information relating to this request.

Sincerely,

ARCADIS U.S., Inc

Frederick M. Sellars
Vice President

Copies:
Jeff Ahrens, Cricket Valley Energy
Steve Riva, USEPA
Chris Hogan, NYSDEC
Leon Sedefian, NYSDEC

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

Robert Boisselle
Air Emissions Inventory
Massachusetts Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

Subject:
Modeling Inventory for the Cricket Valley Energy Project, Dover, New York

Dear Mr. Boisselle:

Cricket Valley Energy Center LLC (CVEC) is proposing to construct a nominal 1,000 megawatt natural gas fired combined cycle electric generating facility in Dover, NY (Dutchess County). ARCADIS is preparing the air permit application for this facility. We anticipate that cumulative impact modeling for NO_2 will be required to support the air permit application for this facility. The domain for cumulative impact modeling (50 kilometers [km] from the proposed facility) is anticipated to extend into a small area of Massachusetts. We are therefore requesting the assistance of the Massachusetts Department of Environmental Protection (MADEP) to obtain inventory (modeling) data for existing and proposed (permitted) major emissions sources to support cumulative impact modeling.

The attached map illustrates the anticipated domain for interactive modeling. The facility location is Latitude N41.676168 degrees, Longitude W73.580618 degrees (NAD83). Based on a preliminary modeling analysis, we anticipate that the predicted impacts of the CVEC project will exceed the 1-hour average Significant Impact Level (SIL) for NO_2 (7.6 µg/m^3) on elevated terrain in the project vicinity; the predicted SIA is expected to extend 29 km from the facility. Since the estimated SIA for the project does not extend into Massachusetts, facilities in Massachusetts with potential emissions exceeding 100 tons per year (tpy) of NO_2 will be of primary concern for cumulative impact modeling.

The modeling domain extends about 8 km into the southwest corner of Berkshire County. Our initial search has identified no Title V sources in MA located within 50 km of the CVEC project. Your search earlier this year for major sources of $PM_{2.5}$ found no major emission sources within 55 km of this project. We are seeking to confirm that the area of concern (in Massachusetts) does not contain any permitted major sources of NO_x emissions.

Date:
October 22, 2010

Contact:
Fred Sellars

Phone:
978.937-9999 x317

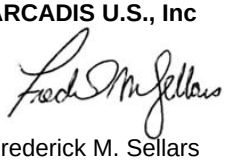
Email:
frederick.sellars@
arcadis-us.com

Our ref:
CO001447-0003-00004

We look forward to working with MADEP to identify candidate facilities (if any), to determine their potential emissions and to develop emission inputs for modeling. Please contact me if you have any questions or require any additional information relating to this request.

Sincerely,

ARCADIS U.S., Inc



Frederick M. Sellars
Vice President

Copies:
Jeff Ahrens, CVEC
Steve Riva, USEPA
Chris Hogan, NYSDEC
Leon Sedefian, NYSDEC

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

Mr. Christopher J. Mulcahy
Planning & Standards
Bureau of Air Management
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Subject:
Modeling Inventory for the Cricket Valley Energy Project, Dover, New York

Date:
October 22, 2010

Contact:
Fred Sellars

Phone:
978.937-9999 x317

Email:
frederick.sellars@
arcadis-us.com

Our ref:
CO001447-0003-00004

Dear Mr. Mulcahy:

Cricket Valley Energy Center LLC (CVEC) is proposing to construct a nominal 1,000 megawatt natural gas fired combined cycle electric generating facility in Dover, NY (Dutchess County). ARCADIS is preparing the air permit application for this facility. We anticipate that cumulative impact modeling for NO_2 will be required to support the air permit application for this facility. The domain for cumulative impact modeling will extend 50 kilometers (km) from the proposed facility, and includes part of western Connecticut. We are therefore requesting the assistance of the Connecticut Department of Environmental Protection (CTDEP) to obtain inventory (modeling) data for existing and proposed (permitted) NO_x emissions sources to support cumulative impact modeling.

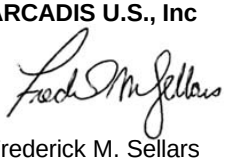
The attached map illustrates the likely domain for interactive modeling. The facility location is Latitude N41.676168 degrees, Longitude W73.580618 degrees (NAD83). Based on a preliminary modeling analysis, we anticipate that the predicted impacts of the CVEC project will exceed the interim 1-hour average Significant Impact Level (SIL) for NO_2 (7.6 µg/m^3) on elevated terrain in the project vicinity; the predicted SIA is expected to extend 29 km from the facility. Since the estimated SIA for the project extends into Connecticut, we are interested in identifying all facilities with significant potential NO_x emissions within 29 km of the project, plus any facilities within 50 km, with potential NO_x emissions exceeding 100 tons per year (tpy).

The anticipated modeling domain includes most of Litchfield County, northern Fairfield County, western Hartford County, and a small area in the northwest corner of New Haven County. Based on a quick review of the Title V permits on CTDEP's website, none of the facilities located within 50 km of the project may warrant inclusion for cumulative impact modeling, since they are not major sources of NO_x emissions. We are also interested in identifying any permitted, but not yet constructed, major sources of NO_x emissions, in the area of concern.

We look forward to working with CTDEP to identify candidate facilities (if any), determine their potential emissions and develop emission inputs for modeling. Please contact me if you have any questions or require any additional information relating to this request.

Sincerely,

ARCADIS U.S., Inc



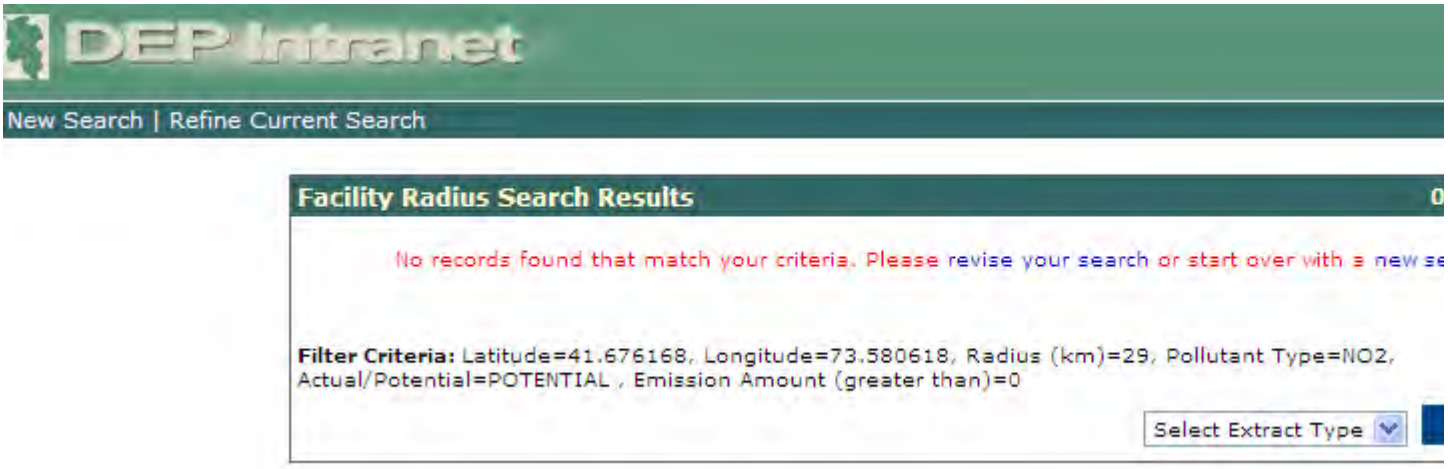
Frederick M. Sellars
Vice President

Copies:
Steve Riva, USEPA
Chris Hogan, NYSDEC
Leon Sedefian, NYSDEC
Jude Catalano, CTDEP
Jeff Ahrens, CVEC

Londergan, Richard

From: Sellars, Fred
Sent: Tuesday, November 16, 2010 2:39 PM
To: Berceli-Boyle, Tina; Londergan, Richard; 'jahrens@advancedpowerna.com'
Subject: Fw: Cricket Valley energy Project.

From: Boisselle, Robert (DEP)
To: Sellars, Fred
Sent: Tue Nov 16 14:37:29 2010
Subject: Cricket Valley energy Project.
Results from our Radius search program has shown no major sources of NOx emissions 29 KM from coordinates given in your letter of 10/22/2010.



Robert Boisselle
Engineer
Massachusetts Department of Environmental Protection
BWP
One Winter Street 7th floor
Boston, Mass. 02176
617.292.5609

Londergan, Richard

From: Sellars, Fred
Sent: Friday, November 19, 2010 4:52 PM
To: Londergan, Richard; Berceli-Boyle, Tina; Kallin, Robert
Subject: FW: Arcadis Radius Search
Attachments: Arcadis_NOx_GT_0_29Km_.txt; Arcadis_NOx_GT_100_50Km_.txt

CT data…

From: Mulcahy, Chris [mailto:Chris.Mulcahy@ct.gov]
Sent: Friday, November 19, 2010 4:16 PM
To: Catalano, Jude; Sellars, Fred
Cc: Bouffard, Ernest
Subject: Arcadis Radius Search

Hi Fred,

A radius search of Connecticut's Department of Environmental Protection's (DEP) 2008 point source inventory was conducted as requested in your letter dated October 22, 2010. The results are listed in the two attached to files.

The file "Arcadis_NOx_GT_0_29Km_.txt" contains a listing of all sources in the DEP's 2008 point source inventory that fall within 29 km of the subject source and have potential NOx emissions greater than 0 tons per year.

The file "Arcadis_NOx_GT_100_50Km_.txt" contains a listing of all sources in the DEP's 2008 point source inventory that fall within 50 km of the subject source and have potential NOx emissions greater than 100 tons per year.

Please note that our radius search program uses UTM coordinates. The facility's location provided in latitude and longitude was converted to
618.135 km East and 4614.774 Km North in UTM zone 18.

Thanks,
Chris

Chris Mulcahy
Environmental Engineer III
Bureau of Air Management
Department of Environmental Protection
79 Elm Street, Hartford, CT 06106
Phone (860) 424-3413
Fax (860) 424-4063

Londergan, Richard

From: Londergan, Richard
Sent: Tuesday, November 30, 2010 12:48 PM
To: Margaret Valis; Coulter.Annamaria@epamail.epa.gov; riva.steven@epa.gov
Cc: Sellars, Fred
Subject: NO2 modeling for Cricket Valley

Dear Ms. Valis and Mr. Riva,

As a followup to ARCADIS' response to USEPA and NYSDEC review comments on the Cricket Valley Energy (CVE) PSD Air Permit Application, the modeling procedures which ARCADIS proposes to follow for evaluating 1-hour average NO_2 impacts for the CVE project are described below.

The proposed modeling approach is based on EPA modeling guidance pertaining to the new 1-hour average NO_2 National Ambient Air Quality Standard (NAAQS). On June 28, 2010, EPA issued a pair of technical memoranda concerning 1-hour NO_2. The first document, "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level", included guidance for the preparation of PSD permits. The second memorandum, "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard", includes modeling guidance specific to the estimation of ambient NO_2 impacts and criteria for determining compliance with the new 1-hour NAAQS.

ARCADIS proposes to apply AERMOD using the "Plume Volume Molar Ratio Method" (PVMRM) option, which is one of the "Tier 3" screening methods referenced in the second memorandum. Hourly ambient ozone concentrations proposed for use with the PVMRM option are the measured concentrations from the NYSDEC monitoring station at the Cary Institute of Ecosystems Studies in Millbrook, NY, 11 miles northwest of the Project (site ID 36-027-0007). The Millbrook ozone monitor operated continuously throughout the modeling period (March 2005 through March 2010). The proposed "default" ozone concentration for hours with missing data is 40 ppb, which is the 90th percentile observed concentration. For the five-year modeling period, the frequency of hours with missing data is 2.5 percent.

The ambient ratio of NO_2 to NO_x will be set to the "default" value of 0.90. Stack ratios of NO_2 to NO_x will be based on the best available information. For CVE emission units, we propose to utilize values provided by equipment manufacturers. For other nearby sources, ARCADIS will use stack ratio values developed by regulatory agencies based on technical literature and reported source measurements. The proposed "default" ratio for boilers is 0.10; for simple cycle turbines, 0.20; for diesel or gas-fired generators, 0.80. Any process sources lacking agency-approved values will be assigned a ratio of 0.80.

ARCADIS is coordinating the development of a model input emissions inventory for nearby sources with NYSDEC, including confirmation of source locations, criteria to determine which facilities and which individual emission units to include based on distance and potential emissions, and which facilities require building inputs.

The "OLMGROUP ALL" option will be used with PVMRM for cumulative impact modeling, as recommended by EPA. Compliance with the 1-hour NAAQS will be assessed based on the predicted 5-year average 98th percentile predicted 1-hour concentration, plus background. As recommended in the "Applicability" memorandum, the initial background concentration for assessing compliance will be 122.8 $\mu g/m^3$ (65.3 ppb), the three-year average (2006-2008) maximum observed 1-hour NO_2 value from the Thomaston, CT monitoring site (ID 09-005-0004). If compliance problems are predicted using this conservative background estimate, ARCADIS will develop "refined" background estimates that reflect peak observed NO_2 concentrations as a function of season and time-of-day.

If violations of the 1-hour NAAQS are predicted with the refined background estimates, at any receptor where CVE project impacts exceed the SIL, a "source contribution" analysis will be performed. With PVMRM, which incorporates an Ozone Limiting approach, the predicted incremental contribution of CVE to the total predicted impact is not equal to the

impact predicted for CVE alone. The net contribution of CVE must instead be determined by comparing the impacts predicted for all sources, including CVE, versus the impacts predicted for all sources, excluding CVE. (These impacts will be determined in separate model runs.) The incremental impact of the CVE project, measured as the difference in predicted concentration between the two model runs, for a given hour and receptor, will indicate whether the CVE project is contributing significantly (based on the SIL for 1-hour NO_2) to a predicted exceedance.

ARCADIS welcomes your comments on these modeling procedures. Please contact me if you have questions or need any additional information.

Dick Londergan

ARCADIS
Dick Londergan
Principal Scientist

2 Executive Drive, suite 303
Chelmsford, MA 01824
Tel 978-937-9999 ext 349
Fax 978-937-7555
Mobile 978-319-1005
richard.londergan@arcadis-us.com
www.arcadis-us.com

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