

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

**Petition of BNE Energy Inc. for a
Declaratory Ruling for the Location,
Construction and Operation of a 4.8 MW
Wind Renewable Generating Project on
Winsted-Norfolk Road in Colebrook,
Connecticut (“Wind Colebrook North”)**

Petition No. 984

May 2, 2011

PRE-FILED TESTIMONY OF WILLIAM F. CARBONI

Q27. You have previously filed testimony in this proceeding. Why are you submitting this supplemental testimony?

A27. The petitioner, BNE Energy Inc. (“BNE”), has submitted a revised set of site plans, a new stormwater management plan, a new erosion control plan, pre-filed testimony of some of its witnesses and interrogatory responses related to my pre-filed testimony. I am submitting this additional pre-filed testimony to provide the Council with a more complete analysis of the stormwater and erosion impact of the proposed project on the site.

Q28. Have you reviewed the site plans submitted by BNE on March 25, 2011, attached to the pre-filed testimony of Curtis Jones?

A28. Yes, I have.

Q29. Has your opinion that this project fails to comply with water quality standards changed as a result of your review of the revised site plans?

A29. No. The revised site plans make significant improvements to the project and clearly demonstrate that the original plans are deficient. These revised plans show that the original proposed project, submitted with the petition, did not comply with the water quality standards of the State. However, the revised plans contain errors that will negatively impact the waters of the State.

Q30. What is your most significant finding?

A30. The stormwater detention facilities in the revised plans are undersized and may not adequately maintain the pre-development conditions. Section 2.2 of the Stormwater Management Plan states that the area to be disturbed is 7.86 acres. (C. Jones Pre-Filed Testimony, Ex. 3, page 2-1.) However, in Appendix K to that same plan, the input data for the detention analysis shows the area disturbed as only 3.67 acres. C. Jones Pre-Filed Testimony, Ex. 3, App'x K (Post-Development Drainage Calculations).). That means less than half of the disturbed area was used to determine the post-development peak rate of flow.

According to the Stormwater Management Plan, the post-development peak runoff rate is 98 percent of pre-development rate of flow in a 2-year design storm. If the amount of disturbed area used in the calculations was doubled, the results of the analysis would be different. At best, this error means that the detention basins adjacent to the wetlands need to be larger. At worst, the project would not conform to the water quality standards.

Q31. Are there other problems with hydrologic studies?

A31. Yes. The watershed boundaries are not accurately depicted in the studies. In particular, the area tributary to Temporary Sediment Trap ("TST") 3 and Stormwater Pond 1 is underestimated. These facilities are in the same location and should have the same tributary area. There is no boundary map provided in the Stormwater Management Plan. Attached to my testimony is Figure 1, which shows the area tributary to TST 3 and Pond 1. According to my analysis, the tributary area is approximately 10.9 acres. In Appendix K, the sediment trap sizing calculation shows the area drainage area to be 3.60 acres. (C. Jones Pre-Filed Testimony, Ex. 3, App'x K (Supporting Calculations).) In Appendix K, the input data for the detention analysis shows the area disturbed to the same location to be 4.70 acres. (C. Jones Pre-Filed Testimony, Ex. 3, App'x K (Post-Development Drainage Calculations).)

The underestimation of the tributary areas has significant consequences for the design of the facilities required to protect the water quality. First, the sediment trap shown on the plans should be a sediment basin, because the 2002 Guidelines require the use of a sediment basin when the tributary area exceeds 5 acres. The criteria for sediment basins are more rigorous than those for a sediment trap. Mr. Jones states in his supporting calculations that the sediment trap provided is significantly oversized. In fact, it is less than half of the required size.

Stormwater Pond 1 is similarly undersized. The detention calculations show that the pond will have a water elevation of 1242.41 during a 100-year storm. The pond has a maximum usable elevation of 1242.50. If, as my analysis shows, the tributary area is more than twice the size that the pond was designed to handle, runoff will overtop the spillway and will not provide the necessary reduction in peak runoff.

I note that a drainage area map was provided in BNE's response to my clients' third set of interrogatories. Those responses were provided on April 25, 2011. That drainage map is based on USGS topographic quadrangle maps. The map shows a different configuration of the land than the DEP mapping used on the site plans. That difference in topography results in a different area tributary to the pond. BNE has maintained that the DEP mapping is accurate for this level of design. Therefore, it should be used in lieu of the USGS mapping because the USGS mapping is not accurate for defining small watersheds.

Q32. Do the flood control practices presented in the Stormwater Management Plan meet the 2002 Guidelines?

A32. No. The 2004 Manual states:

The stream channel protection criterion is intended to protect stream channels from erosion and associated sedimentation and downstream receiving waters and wetlands as a result of urbanization within a watershed. By restricting peak flows from storm events that result in bankfull flow conditions (typically the two-year storm, which controls the form of the stream channel), damaging effects to the channel from increased runoff due to urbanization can be reduced.

(Section 7.6.1, page 7-8.) Either of two methods can be used to meet the stream channel protection criterion:

- Control the 2-year, 24-hour post-development peak flow rate to 50 percent of the two-year, 24-hour predevelopment level or
- Control the 2-year, 24-hour post-development peak flow rate to the 1-year, 24-hour predevelopment level.

(Section 7-6-1, page 7-9.) The Stormwater Management Plan, Section 2.3.2, shows that the pre-construction peak rate of flow during a 2-year storm is 13.9 cfs. The plan states that the post-construction runoff will be 13.6 cfs. This does not meet the 2004 Manual criterion. Further, the analysis accounted for less than half the disturbed area and less than half the tributary area.

Q33. Are there inconsistencies in the data presented?

A33. The Supporting Calculations for both the Stormwater Management Plan and the Erosion and Sediment Control Plan present the design calculations for TSTs 5, 6, 7 and 8. These traps are not located on the erosion control plan, Sheets C-200 through C-204. The calculations show the need for more than 6,000 cubic feet of sediment storage that has not been incorporated in the plans.

Also, the Supporting Calculations refer to a road with a length of 7,700 feet. The total road lengths shown on the plans are 2040 and 400 feet.

Q34. The petitioner has recently stated that the 2002 Guidelines and 2004 Manual are not “requirements,” which is a word you have used repeatedly in your testimony. Do you have a response to that statement?

A34. Yes. BNE is correct that both the 2002 Guidelines and the 2004 Manual are guidance documents. However, in practice, these documents provide the minimum requirements for site engineering. There are 20 different programs in the State regulating stormwater management. Compliance with the 2002 Guidelines and 2004 Manual ensures compliance with

all the applicable laws and requirements, including the Soil and Erosion Control Act and the General Permit.

There are other innovative measures that can be devised and used to meet the requirements of state law. For example, the 2002 Guidelines state:

Innovative modifications to the control measures or design procedures contained in this guide are acceptable, and encouraged, especially if they improve upon sediment-loss mitigation. However, designers and plan reviewers must be sure that the modified procedure will be successful. Designers must present to plan reviewers sufficient technical data that show the proposed modification is at least as effective as the guideline measure meant to be replaced.

(Chapter 1, page 1-4.) As is clear from that quote, however, use of innovative measures to accomplish the same goals accomplished by following these guidance documents requires supporting technical data, meaning that BNE must conduct the site investigation and analyses that show its measures will work. If BNE's position is that it does not have to comply with the 2002 Guidelines and the 2004 Manual, then it must present to the Council and the parties sufficient technical data that show its proposed departures from those guidance documents are at least as effective as the measures meant to be replaced. In four attempts at the Prospect site, two attempts at Colebrook South, and now two attempts at Colebrook North, BNE and its engineers have not even managed to comply with the 2002 Guidelines and the 2004 Manual. BNE has not provided any technical data that prove that the proposed plans are innovative and contain measures that are at least as effective as the baseline measures contained in the 2002 Guidelines and the 2004 Manual.


Q35. Do the revised plans comply with the water quality standards of the State?

A35. Although the revised plans are a significant improvement from the original plans, there are technical and engineering errors. BNE's submission contains calculations that do not accurately represent the site and minimize the size of the facilities required to protect the water

quality. The proposed project, its plans and reports therefore do not comply with the requirements of the State of Connecticut.

The statements above are true and accurate to the best of my knowledge.

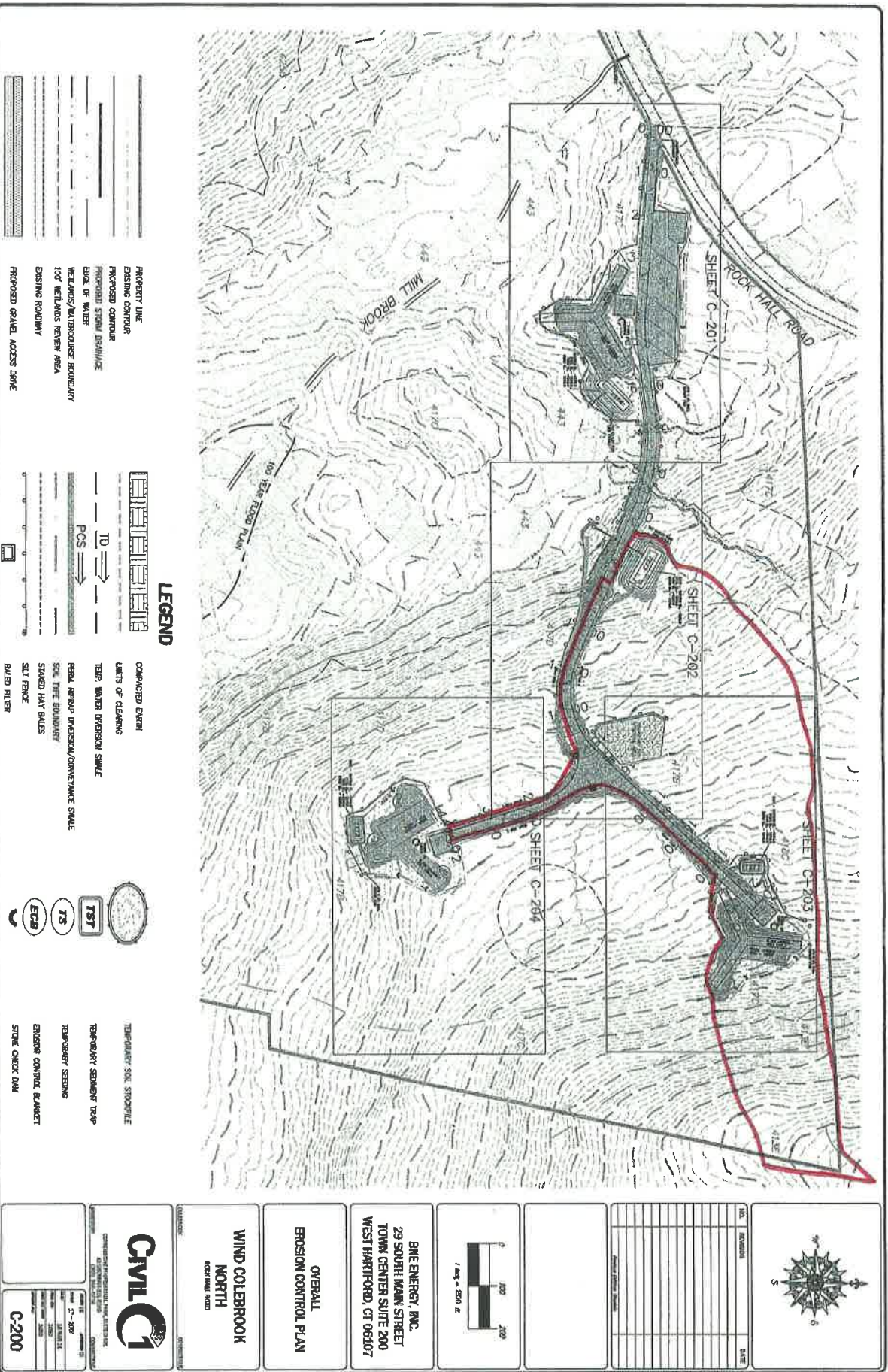
May 2, 2011
Date


William F. Carboni, P.E., No. 22722

ATTACHMENT

Figure 1 Area Tributary to Temporary Sediment Trap 3 and Stormwater Pond 1

FIGURE 1
Area tributary to Temporary Sediment Trap 3 and Stormwater Pond 1



CERTIFICATION

I hereby certify that a copy of the foregoing document was delivered by first-class mail and e-mail to the following service list on the 2nd day of May, 2011:

Carrie L. Larson
Paul Corey
Jeffery and Mary Stauffer
Thomas D. McKeon
David M. Cusick
Richard T. Roznoy
David R. Lawrence and Jeannie Lemelin
Walter Zima and Brandy L. Grant
Eva Villanova

and sent via e-mail only to:

John R. Morissette
Christopher R. Bernard
Joaquina Borges King


Emily Gianquinto