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September 16, 2008

Judge Daniel F. Caruso,
Chairman,
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **DOCKET NO. 364** The Connecticut Light and Power Company application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a new bulk power 115- to 23- kV substation located at 325 Waterford Parkway North, Waterford, Connecticut.

Dear Judge Caruso:

Enclosed please find an original 20 copies and an electronic version of CL&P's pre-filed testimony in the above referenced matter.

Very truly yours,



Robert S. Golden, Jr.

Copies to service List

STATE OF CONNECTICUT

SITING COUNCIL

THE CONNECTICUT LIGHT AND POWER :
COMPANY APPLICATION FOR A CERTIFICATE OF :
ENVIRONMENTAL COMPATIBILITY AND PUBLIC : DOCKET NO. 364
NEED FOR THE CONSTRUCTION, MAINTENANCE, :
AND OPERATION OF A PROPOSED SUBSTATION :
LOCATED AT 325 WATERFORD PARKWAY : SEPTEMBER 16, 2008
NORTH, WATERFORD, CONNECTICUT :

DIRECT TESTIMONY OF RAYMOND GAGNON
REGARDING PLANNING MATTERS CONCERNING
THE PROPOSED WATERFORD SUBSTATION

INTRODUCTION

Q. Please identify yourself and the other members of the panel who will respond to cross examination regarding planning and environmental matters concerning the proposed Waterford Substation and related facilities (the "Project").

A. I am Raymond Gagnon – Director, Transmission Projects, employed by Northeast Utilities Service Company ("NUSCO"), agent for The Connecticut Light and Power Company (the "CL&P"). With me on this panel are NUSCO employee, Girish Behal, PMP, and Michael Libertine, Director of Environmental Services for Vanasse Hangen Brustlin, Inc. Our resumes are attached.

Q. Does the Company expect to call on any other personnel to respond to planning or environmental issues?

A. NUSCO employees, including Robert Carberry, Gregory J. Oberst, Jr., James Borowitz and Dahlia Nunes may be called upon to respond to questions relating to specific siting, engineering design or environmental topics. In addition, the Company may call Dr. Linda S. Erdreich, Senior Managing Scientist of Exponent, CL&P's consultant. Their resumes are attached. Further direct testimony on environmental matters concerning the Project will be provided by Michael Libertine of Vanasse Hangen Brustlin, Inc., CL&P's consultants.

Q. What responsibility have you had in connection with the Application to the Siting Council?

A. I have supervised the preparation and submission of the Application and interrogatory responses with the assistance of Girish Behal and Michael Libertine. The Application was compiled under my supervision by NUSCO staff and environmental consultants.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide an overview of the proposed Waterford Substation. I will cover eight primary topics pertaining to planning matters:

1. Overview and General Location of the Project;
2. Transmission Line Connections;
3. Need;

4. Review of Siting Criteria;
5. Electric and Magnetic Fields;
6. Safety and Reliability;
7. Municipal Consultations; and
8. Notices.

1. **OVERVIEW AND GENERAL LOCATION OF THE PROJECT**

Q. Please describe the Project.

A. CL&P proposes to construct a new bulk-power 115- to 23-kilovolt (“kV”) substation (the “Substation”) on property located at 325 Waterford Parkway North in Waterford, Connecticut (the “Property” or “Site”). The Substation will add needed distribution delivery-system capacity to serve the growing electric power demands in the Town of Waterford, a town that does not currently have its own bulk-power substation source, as well as portions of adjacent towns. The Substation will be strategically positioned to facilitate connection to an existing 115-kV transmission circuit that is located just north of the Property.

Q. Please briefly describe the existing service capabilities in the Town of Waterford.

A. The existing distribution system supplying the Town of Waterford lacks the capacity to efficiently and reliably meet growing electric power demands. Currently, CL&P’s electric load in the Town of Waterford is served from bulk-power substations

located in New London, East Lyme, and, to a lesser degree, Uncasville. Growing electric power demands are straining the capacity of these three substations and they cannot meet future demands without reducing their respective service areas. The addition of a new bulk-power substation in the Town of Waterford will create a more reliable system that will serve the growing needs of the Town of Waterford while alleviating demands on the existing substations.

Q. Please describe generally the location of the proposed Substation.

A. The proposed Substation would be located in the western portion of CL&P's 5-acre property, which currently consists of undeveloped land located immediately northeast of the intersection of Oil Mill Road and Waterford Parkway North.

Q. How does the Company intend to access the proposed Substation?

A. The Substation would be accessible, by a gravel driveway, directly from Waterford Parkway North.

Q. Approximately how many vehicle trips to the Site would occur per month?

A. Normally three to four.

Q. What will be the dimensions of the proposed Substation within the fence line?

A. The fenced area of the proposed Substation area will be approximately 200 by 245 feet.

Q. What do you propose for the surface of the Substation?

A. The surface would be covered with trap rock.

Q. What facilities and equipment will be located within the proposed Substation?

A. The Substation will be within a fenced area and would consist of:

- two new 115-kV line-terminal structures within the Substation, each of which would also support a line-disconnect switch,
- one 115-kV circuit breaker with associated disconnect switches,
- two 115-kV line circuit switchers,
- two 60-MVA power transformers to step down the voltage from 115 kV to 23 kV,
- four transformer disconnect switches and three transformer circuit switchers,
 - A 115-kV transformer disconnect switch and circuit switcher will be in the supply path to each of the two 60-MVA power transformers
 - A third 115-kV transformer disconnect switch will be available to serve a future 60-MVA power transformer, if needed
 - The fourth 115-kV transformer disconnect switch and circuit switcher will be used to make a mobile transformer connection, when a mobile transformer is necessary to perform maintenance or to replace a failed transformer

- two metal-clad switchgear enclosures, each approximately 27 feet long, 14 feet wide and 14 feet high, to provide the switching equipment for seven 23-kV distribution feeders, of which four will be activated initially,
- a protective relay and control equipment enclosure, approximately 48 feet long by 14 feet wide by 14 feet high (the “Control Enclosure”). The Control Enclosure will house protective relaying and control equipment and transmission equipment used to operate the Substation,
- a battery enclosure, approximately 24 feet long by 14 feet wide by 14 feet high, in the southwest corner of the Substation. The battery enclosure will house the Substation battery and charger,
- a well and septic system to serve the Control Enclosure.

In addition, development of the Substation requires protective relay system changes within the control enclosures at three other existing bulk substations – Montville, Williams Street and Flanders.

Q. Please describe the distribution feeders.

A. Although there will be switching equipment for seven 23-kV distribution feeders, only four will be initially activated. Cables for each of the four distribution feeders would exit the Substation via underground conduits and rise above ground on wood poles alongside streets near the Substation. The cables for three circuits will connect on these poles to the conductors of three existing overhead distribution feeders, and the fourth circuit’s cables will go underground along the southerly route on Oil Mill Road and then connect to a new aerial cable line supported on street-side wood poles after I-95.

2. TRANSMISSION LINE CONNECTIONS

Q. Could you briefly describe how the Substation will be connected with the 115-kV line?

A. The existing 115-kV line is a double-circuit line, and the Substation will connect to the circuit on the south side of these poles, circuit 1605. One steel pole will be installed within the existing ROW and one steel pole will be installed in the northwest corner of the Property to break open the 1605 circuit. The new steel poles will be free standing (no guy wires required) and mounted on reinforced concrete foundations. From each of these new poles, new conductors would extend to two new line-terminal structures within the Substation, each of which would also support a line-disconnect switch. A 115-kV bus within the Substation would connect the two line terminals together, and a 115-kV circuit breaker will be installed in this Substation bus to electrically separate the existing 1605 circuit into two circuits: one will retain the 1605 circuit designation and the other will be designated circuit 1617.

Q. Will the Substation have room to add more power transformers if needed in the future?

A. Yes, there will be a third transformer disconnect to connect a future 60-MVA power transformer, if needed.

Q. Will the Substation have the capability for an additional temporary transformer?

A. Yes. There will be an available transformer disconnect switch and circuit switcher that could be used for a temporary mobile transformer connection, when necessary to perform maintenance or to replace a failed transformer.

Q. What is the estimated cost of the Project?

A. \$13.2 million. Of that cost approximately \$5.7 million will be allocated to transmission system costs and \$7.5 million will be allocated to distribution system costs.

Q. What is the service life of the equipment?

A. In excess of 40 years.

Q. How long do you anticipate the construction phase of the Project to take?

A. Construction is expected to take up to 17 months.

Q. When do you expect to begin construction activities?

A. CL&P plans to begin construction of the Substation as soon as possible following Council approval in 2009.

Q. What is the tentative in-service date?

A. June of 2010.

Q. What will be the general operation of the proposed Substation?

A. The proposed Substation will operate on a 24-hour per day basis.

Q. Will staff be on site?

A. No, not normally. The equipment will be designed so it can be monitored remotely, and personnel will be dispatched for unusual or emergency situations and for routine/scheduled maintenance or inspections.

3. **NEED**

Q. What is the purpose of the Project?

A. The addition of the Waterford Substation is essential for creating a stronger and more reliable distribution system. Development of the Waterford Substation would effectively alleviate loads on the two existing substations currently serving Waterford by adding a new capacity source to the distribution system. The Project will increase the electric distribution-system capacity and improve reliability in Waterford by establishing a new bulk-power substation in the Town. Currently, the electric load in Waterford is served primarily from two bulk-power substations in other towns: Flanders Substation located in East Lyme and Williams Substation in New London. The current configuration that supplies Waterford's load relies entirely on distribution feeders from these two substations, and this configuration is not a viable long-term option for reliably meeting the Town's growing electric demands.

Q What is the present situation in Waterford?

A. Peak electric demand continues to increase in the Waterford area. Electric power supplied by the Flanders and Williams Substations from 2004 to 2006 increased from 129.6 MVA to 143.7 MVA (a 5% increase per year). It would have increased even more in 2007 but for an abnormally cool summer. Much of this increase is associated with growth in the Town of Waterford and surrounding areas. In addition to Waterford's recent growth, there is significant potential for additional industrial/commercial development and expansion in the near and long term. Utilizing a 3% per year load growth in the area over the coming years, the Flanders and Williams Street Substations are projected to exceed their capacities. In 2008, both substations are expected to exceed their permissible load ratings.

Q. How does this affect CL&P's ability to meet this new demand?

A. The demands of increased growth have taxed the ability of the existing substations to supply the Town of Waterford's growing needs and maintain service reliability. One short term solution is the Forced Load Transfer (FLT) scheme at the Flanders Substation. The FLT scheme allows the transfer of approximately 9 MVA of load off of Flanders Substation (to Judd Brook Substation and Bokum Substation), thus temporarily increasing the permissible load rating of this substation by 9 MVA and providing the necessary time window to construct the Waterford Substation for operation beginning in 2010.

Q. How will the proposed Substation improve reliability?

A. Construction of the proposed Waterford Substation would add necessary capacity to the system through the installation of two 60-MVA, 115- to 23-kV, bulk-power transformers. This new 23-kV distribution power source at the Waterford Substation would relieve the Flanders Substation of 30 MVA of load and would add 87 MVA of new capacity to the distribution system. Once Waterford Substation is operative, a new 23-kV feeder would be created from Waterford Substation and relieve 10 MVA of load from the Williams Substation. The capacity relief on the Flanders and Williams Substations will then be available to meet future load growth in other areas served by these two substations.

Q. Was this substation identified in the Council's Review of The Ten-Year Forecast of Connecticut Loads and Resources for the period of 2008-2017?

A. Yes. This Project was identified in the *Connecticut Siting Council Review of the Connecticut Electrical Utilities Ten-Year Forecast of Loads and Resources*, published in 2005, 2006, 2007 and again in the draft report for 2008.

Q. What ISO-NE approvals has the Project received?

A. By letter dated January 11, 2008, CL&P received ISO-NE approval per *Section I.3.9 of the ISO New England Inc. Transmission, Markets and Service Tariff* for the Waterford Substation.

Q. Did CL&P examine system alternatives?

A. Yes, however, available options would produce a distribution system in the Town of Waterford that would not be as reliable and flexible as the system that will result from the proposed Waterford Substation and, ultimately, would not eliminate the need for the proposed facility to meet projected system capacity needs. The Waterford Substation is the preferred solution because of its proximity to customer load and existing distribution feeders. In addition, it offers improved reliability because of decreased feeder length and by enabling load transfers during feeder outages.

Alternative system options that were considered and rejected are as discussed below:

Flanders Substation

- Insurmountable space constraints prevent the installation of a third transformer.
- The net capacity increase from changing out the two existing power transformers with larger transformers would be much less than that provided by the proposed Substation with two transformers and would be labor intensive.
- The Niantic River creates an irresolvable bottleneck because: (i) three feeders (the maximum allowed by CL&P's standards) are currently installed on the pole line that crosses the Niantic River into Waterford; (ii) these feeders are at their capacity limits under peak load; and (iii) adding more feeders to that pole line would not be acceptable due to compromised reliability.

Williams Substation

- Replacement of the existing power transformers at this substation with larger transformers or the installation of a third transformer were evaluated and ultimately rejected. Williams Street Substation is located outside of the Waterford load pocket, its feeders are at their capacity limits under peak load and there is no opportunity to install new feeders in the same duck bank system. The addition of another transformer and new feeders would require extensive and costly underground distribution work.

Improvements at Williams Street Substation would be insufficient to address existing and projected load needs in the Town of Waterford.

- Construction of the Waterford Substation along with the installation of a new feeder pushes out the projected overload year at Williams Street Substation beyond 2013. At that point in time, more 13.2-kV load would be converted to 23-kV and added to the Waterford Substation.

Uncasville Substation

- The option of using Uncasville Substation to relieve load in Waterford is not as reliable as the proposed Substation. The 13.2-kV distribution voltage from Uncasville Substation is different than the 23-kV distribution voltage from Flanders Substation, and the most efficient method of supply is for higher voltages to supply lower voltages. In addition, it would be difficult bringing out new feeders from this location to Waterford since it is six miles away from the load area, new feeders would have to traverse residential areas, and long feeders could result in low voltage issues. Uncasville is projected to overload in the year 2013, which makes it a poor candidate to provide near-term load relief to another area.

Q. Could you briefly elaborate on customer-side programs that CL&P has embarked on in the region where the proposed Substation is planned?

A. In its analysis of alternative system design options to meet the challenges in Town of Waterford, CL&P considered increases to the energy efficiency and Demand Side Management (“DSM”) programs that CL&P manages. In addition, CL&P evaluated the potential impacts of the development of distributed generation (“DG”) and emergency generation (“EG”) projects. While helpful toward addressing the overall growing need in the Waterford area, these customer-side programs will not preclude the need for the Waterford Substation.

CL&P develops and manages an array of traditional energy efficiency and DSM programs statewide through the Connecticut Energy Efficiency Fund (“CEEF”). In 2005, 2006 and 2007, CL&P estimates that through participation in these CEEF programs,

customers in the towns of East Lyme, New London and Montville have achieved summer peak-demand savings of approximately 2,608 kW. Annual savings for the period 2005 through 2007 are 15,804,993 kilowatt hours (“kWh”) and customers will save approximately 181,213,277 kWh of energy over the life of the installed measures.

Q. Please elaborate more on CL&P’s customer-side efforts.

A. Pursuant to Public Act 05-01, An Act Concerning Energy Independence, the Connecticut Department of Public Utility Control (“Department”) established a program to award monetary grants for capital costs of customer-side distributed resources (“Grant Program”) to support the development of DG and EG projects. The Grant Program is designed to reduce costs borne by Connecticut electric consumers that are associated with the region’s competitive generation market.

Specifically regarding projects in the Waterford area, six projects (totaling 5,200 kW) have been approved by the Department, consisting of three EGs (2,125 kW) and three DGs (3,075 kW). To date, four of the six projects in the Waterford area, specifically two EGs (875 kW) and two DGs (575 kW), have been completed.

The Department has suspended the EG portion of the Grant Program. In addition, because it is most likely that the best opportunities for DG projects have already been proposed, CL&P does not expect a significant level of future DG or EG projects in this area.

Q. If all these approved projects were completed and operational, would they eliminate the need for the Waterford Substation?

A. No. The pressing need for the Waterford Substation would remain because the projects would not provide nearly enough relief for the area. The three DG units will only reduce load during the peak periods by about 3,075 kW, and it is not prudent planning to assume their 100% availability during such periods. Moreover, the three EG commitments, which are required to participate in the ISO-NE Demand Response program, will operate only when called upon during ISO-NE, Operating Procedure 4. Operating Procedure 4 is implemented only if the New England demand for electricity exceeds operable capacity limits; therefore, this Procedure and these EGs serve to reduce system peaks for a limited number of hours only, and not during normal peak loads.

In addition to CEEF and DG, CL&P and ISO-NE jointly support an initiative to reduce the region's peak electricity demand. The program, Demand Response, provides incentives to power users, such as manufacturing plants and office complexes, to reduce their electric load during periods of peak demand. The Demand Response program helps customers manage their facility's load while obtaining revenue opportunities created by today's variable electric market.

As a result of the CEEF, the Grant Program and Demand Response programs, the summer peak demand has been reduced in the Waterford area by 5,533 kW in 2007. The Forecasted Summer Peak Loads assume that the reductions achieved through 2007 are maintained throughout the forecasting period.

4. **REVIEW OF SITING CRITERIA**

Q. Please review the siting criteria that were used to identify the proposed Substation site.

A. CL&P evaluated sites for the best location for the proposed Substation using the following criteria:

- Sufficient space for needed facilities;
- Proximity to an existing 115-kV transmission line;
- Central location with respect to local distribution (customer) load area;
- Proximity to neighbors and other surrounding features;
- Natural resource and cultural resource constraints;
- Zoning and present land use;
- Access from a public road;
- Earthwork requirements based on existing topography, and
- Availability of property, if not owned by the Company, for purchase or, at a minimum negotiable, for purchase.

Q. Who was involved in the identification and evaluation process?

A. Company engineers and land planners conducted the identification and evaluation process.

Q. What other locations were considered?

A. As discussed in Section I of the Application, Volume 1 of 2, five other locations were considered:

- 994 Route 85 Hartford Turnpike
- Southeast of 969 Petroleum Station - Route 85 Hartford Turnpike
- North of 813 Vauxhall Street (Cohanzie Junction)
- Northwest of 130 Old Colchester Road
- North of Bloomingdale Road

Q. Why was the Waterford Parkway North location selected?

A. This location was selected because it was the only site that met all nine of the major siting criteria and effectively balances the Project goals while minimizing adverse environmental effects.

5. ELECTRIC AND MAGNETIC FIELDS

Q. What are Electric and Magnetic Fields?

A. Electric fields ("EF") are produced when a voltage is applied to a conductor. The level of an electric field at a given location near to a power line depends on the magnitude of the voltage applied, the arrangement and spacing of the line conductors and the distance from the conductors to the location.

Magnetic Fields ("MF") are produced when electric current flows on a conductor. The level of a magnetic field at a given location near to a power line depends on the magnitude of the current, the arrangement and spacing of the line conductors, and the distance from the conductors to the location.

EF and MF are collectively referred to as “EMF”. Levels of each field fall off quickly as the distance from the conductor source is increased. Objects such as trees or building walls weaken or block electric fields, but magnetic fields are not affected by most materials. In the case of parallel lines of circuit conductors, the levels of EF and MF also depend upon the phasing of the circuit conductors and the directions of current flow.

Q. Will the Waterford Substation produce electric and magnetic fields nearby?

A. Yes. However, the fields produced by the Waterford Substation equipment will decrease in level rapidly with distance, reaching very low levels at short distances beyond the fenced area. Typical background magnetic field levels in residences range up to 4 milligauss (“mG”), and the magnetic fields off the property of this proposed Substation due to currents in the substation equipment will commonly be in this same range. Like most other substations, the highest levels of electric and magnetic fields around the perimeter fence and property lines of the Waterford Substation will be produced by the transmission and distribution lines entering and leaving the Substation.

Q. Do magnetic fields currently exist at the property lines of the proposed Substation?

A. Yes. The predominant sources of existing power-frequency electric and magnetic fields ("EMF") at and beyond the boundaries of the Property are from the existing double-circuit transmission line (115-kV circuits 1500 and 1605) that crosses the northwest corner of the Property. Additional sources of EMF are from a three-phase 23-kV distribution line on the south side of Waterford Parkway North and a single-phase branch of this 23-kV distribution line crossing Oil Mill Road to the west of the Property.

The highest levels of EMF would be found on the northerly property boundary and the northwesterly property boundary where the 1500 and 1605 transmission circuits cross over the property boundary. Field levels drop off rapidly with distance from a source, so the levels of EMF at all points south of these transmission circuits will be much lower than the levels found directly beneath the circuits. Many locations along the Property line, particularly on its southwest, eastern and southerly sides, are at relatively long distances from the transmission circuits where EMF levels from these circuits are at negligible levels.

Q. Have you made any measurements of existing magnetic field levels along the proposed Substation Property boundaries?

A. Yes. Measurements of magnetic fields were taken along the west property line and the north property line of the Property on April 9, 2008. The locations of these measurements are depicted on Figures M-5 and M-7, Volume 1 of 2 of the Application. In accordance with an industry standard, these measurements were made at one meter

above grade over a path on the Property that is perpendicular to the existing transmission lines.

The highest magnetic field levels recorded were 10.7 mG beneath the transmission line on the right-of-way, and 4.7 mG at the south edge of the right-of-way. These measurements represent magnetic field levels recorded for a specific time and should only be considered as an example of existing conditions on or near the Property. During peak-load periods, loads on the two transmission circuits would be higher resulting in higher MF levels.

Q. Have you made calculations to project what changes to the magnetic fields are anticipated at the boundaries of the Property?

A. The highest post-project levels of MF will be found near the transmission circuits and on the property lines directly beneath where the transmission circuit conductors cross or come closest to the property line.

Q. Will there be any changes to the magnetic field levels, for any other reason, at points along the existing property boundaries?

A. Yes. The MF levels along the west property line will be very low – lower than they are now under the same load conditions. The highest MF levels along the west property line will be 3.77 mG under modeled peak-load conditions and 1.59 mG under modeled peak-day average load conditions. Without the Substation, the comparable highest levels would be 6.9 mG and 4.49 mG respectively. Even though this is an application for a substation, CL&P calculated the peak-hour and peak-day average circuit

loads to be consistent with the Council's Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut, December 14, 2007.

Q. Why would the levels be lower?

A. The use of the transmission circuits will be changed by the load shifts between substations, and together with the reverse phasing of the 1500 circuit, will result in reduced MF levels at all points proximate to the transmission line.

Q. Will there be any changes along other areas along the property line?

A. Yes, the north property line will experience an increase in MF levels because of the new Substation entry span of the 1605 circuit where it crosses the north property line. The highest off-right-of way point along the north property line will be 15.77 mG under modeled peak-load condition and 10.27 mG under the modeled peak-day average load condition. The comparable highest MF levels without the Substation would be 6.75 mG and 4.40 mG respectively.

Q. Why would the levels be higher?

A. The proximity of the loop-line span is the primary reason. At this location, the two transmission circuits are separated by a greater distance so that the reverse phasing of the 1500 circuit makes little difference.

Q. What about the other property lines?

A. The levels of MF drop off dramatically as the distance from the transmission circuits increases. For example, at the southeast corner of the Substation fence, the peak MF levels on the property line will be less than 0.7 mG.

Q. Where is the closest residence to the Substation?

A. The closest residence is 619 feet, located to the north of the proposed location of the Substation.

Q. How far is that residence from the existing transmission line, closest to the Substation?

A. Approximately 225 feet.

Q. What effect will the new loads have on the MF at this property owner?

A. To the extent that the existing transmission line produced any detectable MF at this distance from the line, the Project would reduce that field level.

Q. Has the Company considered the Council's EMF Best Management Practices?

A. Yes. The location of the Substation will incorporate field management practices that are consistent with the Council's Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in

Connecticut, dated December 14, 2007. The projected changes to magnetic fields described above are consistent with the policy within this document.

Q. Has the Company complied with State and Federal EMF standards?

A. There are no State or Federal limits to electric or magnetic field levels at the property line of a substation; however, the Institute of Electrical and Electronic Engineers ("IEEE") International Committee for Electromagnetic Safety (ICES) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) have issued guidelines for long-term public exposures to magnetic fields. The ICES reference level is 9,040 mG; the ICNIRP reference level is 833 mG.

Q. How will the MF from the proposed Substation compare with those guidelines?

A. The existing and proposed levels of magnetic fields at and beyond the property lines of the Substation are well below these limits and typical for all similar substations. Based on these aforementioned guidelines and reviews of EMF research by the World Health Organization and other national and international scientific and health agencies, these magnetic field exposure levels will not pose a safety or health hazard to persons or property at or adjacent to the Property.

6. SAFETY AND RELIABILITY

Q. How would reliability be maintained?

A. The Substation would be equipped with measures to ensure continued service in the event of outages or faults on transmission or substation equipment. Protective relaying equipment would automatically detect abnormal system conditions (e.g., a faulted overhead transmission line) and would send a protective trip signal to circuit breakers to isolate the faulted section of the transmission system.

Additional protection will be provided by a Supervisory Control and Data Acquisition system (“SCADA”). The SCADA system allows for remote control and equipment monitoring by the Connecticut Valley Electric Exchange System Operator, and would be housed in a weatherproof, environmentally-controlled electrical enclosure. Moreover, the “loop-through” design configuration for the 115-kV line helps ensure operational reliability.

Q. Would the proposed Substation pose any safety risk to the public?

A. The proposed Substation would not pose a safety threat or create any undue hazard to the general public. The proposed Substation would be designed and constructed in accordance with all applicable national, electric utility industry, State and, to the extent practical, local codes. Importantly, the perimeter of the proposed Substation would be surrounded by a seven-foot high chain-link fence with an additional foot of barbed wire on top to discourage unauthorized entry or vandalism. A locked gate would be installed across the driveway entrance. Visitors would never be left alone on the Property. They would be accompanied by Company employees and required to adhere to

prescribed safety rules including, when required, the wearing of protective clothing and safety glasses.

Q. What fire protection systems will be maintained at the proposed Substation?

A. CL&P incorporates IEEE, American National Standards Institute (“ANSI”) and National Fire Protection Association (“NFPA”) standards for fire protection in its new substation designs and operates these facilities to minimize the occurrence or impact of fire. CL&P also trains its employees and the local fire department on the safe methods to deal with a substation fire. The relay/control enclosure would be locked and equipped with fire extinguishers, and also equipped with smoke detectors that would be monitored from a remote location. Smoke detection would automatically activate an alarm at CONVEX and the system operators would then take appropriate action.

Q. Could you describe worker protection at the proposed Substation?

A. In addition to the careful design and construction of the Substation in accordance with all applicable national, electric utility industry, State and, to the extent practical, local codes, strict procedures and training for worker safety will be maintained when employees and contractors are on the site.

7. **MUNICIPAL CONSULTATIONS**

Q. Did you consult with officials of the Town of Waterford? If so, please provide details of those consultations.

A. Yes. On several occasions over the twelve months prior to filing this application CL&P consulted with several Waterford officials. On January 23, 2008, CL&P consulted with the Chief Elected Official of the Town of Waterford, First Selectman Daniel M. Steward regarding the electric service provided by CL&P to the Waterford community and CL&P's desire to improve the reliability of that service. In addition, on other dates, CL&P representatives met with the Planning Director, Thomas Wagner, and Environmental Director, Maureen Fitzgerald.

Q. Have local land-use agencies reviewed the Project?

A. Yes. CL&P filed a "Location Review" submission with the Waterford Conservation Commission on February 11, 2008 and gave a presentation to the Conservation Commission at its regular meeting on February 14, 2008. The Commission issued comments, which CL&P has addressed.

CL&P also filed a Location Review submission with the Planning and Zoning Commission ("P&Z") on February 21, 2008 and presented the Project to the P&Z on February 25, 2008. The P&Z issued comments, which CL&P has addressed.

Q. Did CL&P meet with the Board of Selectmen?

A. CL&P presented an overview of the project to the Board of Selectmen at a public meeting where it received comments and answered questions from neighbors about the Project. CL&P sent notices of this meeting to the Property's neighbors by certified mail.

Q. Did CL&P meet with any other Waterford agencies?

A. Yes. On April 16, 2008, CL&P met with the Waterford Economic Development Commission to present the Project and its benefits to the community. The Commission voted to support the Project.

Q. Has First Selectman Steward commented on the Project?

A. First Selectman Steward sent CL&P a letter on June 4, 2008, acknowledging that the information in the municipal consultation filing supports the need for this facility to meet Waterford's and surrounding towns' growth, indicating that the site selected appears to be a logical choice, and, reiterating comments received from the land use officials and the public and emphasizing his desire for as much screening as possible.

8. **NOTICES**

Q. What measures were undertaken to inform the public and the property owners in the vicinity of the Project?

A. As more fully described in Section Q of the Application, Volume 1 of 2, legal notice for the Project was published on May 22 and May 29, 2008 in the New London Day, a daily newspaper circulated in the Town of Waterford. Additionally, notices were sent by certified mail to all abutters and nearby property owners.

CL&P representatives sent letters to neighbors with general information conducted a door-to-door public outreach and mailed notices to the abutters and nearby neighbors about the Town meetings regarding this Project.

Q. Does this conclude your testimony?

A. Yes.

RAYMOND GAGNON

Director-Transmission Projects
Northeast Utilities System

107 Selden St
Berlin, CT 06037

BACKGROUND

Mr. Gagnon is the Director - Transmission Projects responsible for project management of transmission projects in the three-state service area for Northeast Utilities. Mr. Gagnon has worked for Northeast Utilities for 24 years in various positions throughout his career.

EXPERIENCE

2008 – Present Northeast Utilities Berlin, CT
Director - Transmission Projects

- Responsible for project management of transmission projects in the three-state service area for Northeast Utilities. Responsible for the overall aspects of Transmission Projects management including: project estimating, forecasting, scheduling, contract evaluation, contract administration, project execution, and project closeout. Responsible for the administration of the Transmission Contracts and Project Cost & Scheduling Departments.

2003–2008 Northeast Utilities Berlin, CT
Project Manager

- Responsible for managing transmission infrastructure projects in Connecticut and Massachusetts. Primary responsibility to oversee the project life cycle of an assigned project from the early planning stages through siting and permitting, implementation, follow-up reporting, and closeout. Responsible for transmission substation and transmission line construction projects.

1995–2002 Northeast Utilities Berlin, CT
Senior Engineer

- Responsible for managing telecommunications projects in Connecticut, Massachusetts and New Hampshire. Primary responsibility to engineer and design mobile radio, microwave and lightwave telecommunication systems in support of the primary business. Responsible for designing, procurement, siting & permitting, constructing and closeout of telecommunication facilities projects.

1988-1995 Northeast Utilities Meriden, CT
Engineer

- For the Telecommunication Department, primary responsibility for engineering assignments in support of design, construction, operation and maintenance of telecommunication projects.

1984-1987 Northeast Utilities Berlin, & Meriden, CT
Associate/Assistant Engineer

- For the System Test Department, performed engineering assignments supporting the operation and maintenance of process computer systems operated by generation facilities, CONVEX operations center, and the NEPOOL/NEPEX operations center.

EDUCATION

1980-1984 Rensselaer Polytechnic Institute Troy, NY

- Bachelor of Science in Electrical Engineering

1990-1994 University of New Haven New Haven, CT

- Master's Degree in Business Administration

2002-2003 George Washington University Washington, DC

- Master's Certificate in Project Management

PROFESSIONAL LICENSES/CERTIFICATIONS

Registered Professional Engineer

- Connecticut (# 16704)
- Massachusetts (# 37267)

Certified Project Management Professional (PMP)

- PMP (# 234980)

Girish Behal, PMP
119 Skyview Drive, Cromwell, CT-06416
860-818-7850 (M)

Transmission Group
Northeast Utilities Service Company
107 Selden Street
Berlin, CT 06037
(860) 665-3962

EXPERIENCE

Northeast Utilities Service Company, Berlin, CT. (www.nu.com)

Project Lead – Transmission Business Projects (01/07 – Present)

Associate Engineer/Project Lead – Transmission Business Projects (10/2005- 12/2006)

- Responsible for development of project scope, budget, schedule performance for assigned electrical transmission capital improvement projects.
- Responsible for assembling and leading a diverse, multifunctional project team consisting of internal company employees, contractors, consultants to effectively and efficiently deliver projects on time.
- Responsible for establishing outage dates and coordinating outages with system operators and the outage teams.
- Responsible for creating detailed project schedules, including identification of major milestones, for overseeing, controlling, communicating and managing all activities required to complete assigned transmission system capital improvement projects.
- Responsible for monitoring and controlling project costs through preparation of monthly cash flows, verification of actual or committed costs to estimated costs and identification of cost variances that require further action to ensure completion within budget.
- Responsible for working with cross functional teams in developing, evaluating and recommending construction contracts and procurement of high value project specific equipment and services.

Assistant Engineer (04/2004 – 09/2005)

- Complete responsibilities for assigned portions of project management responsibilities.
- Assist Project Manager in developing and evaluating construction contracts and procurement of high value items like Shunt Reactors.
- Assist Project Managers in managing overall scope, budget and schedule of high profile electrical transmission projects including schedule adherence, project communications and projects engineering, design and construction services.
- Coordinate project team efforts with maintenance for project turnover to maintenance.
- Perform technical and commercial review and provide recommendation to the management for project changes.
- Performed first line technical and commercial approval of contractor invoices.
- Performed technical and commercial review of bids.

Curtis Partition Corp., New York City, NY.

Project Engineer – Field Operations (10/2003 – 03/2004)

- Assist project managers in daily field operations including manpower allocations, create and track RFI's submitted to GC, attend project meetings, prepare project catch-up plans.
- Evaluate general contractor schedule, prepare resource-loaded schedule for the company to assist in manpower optimization.
- Evaluate new project management softwares and recommend project management software for organization wide implementation.

International Experience

Larsen & Toubro Ltd, Baroda, India (www.lntenc.com)

Project Engineer – Design/Build (07/1999 – 07/2001)

- Assisted project manager in preparation of project progress reports, scheduling, schedule updating, vendor follow up, contractor invoice processing.
- Assisted project manager in consolidating change order documentation.
- Coordinated with client/owner's engineers, detail engineering contractor, site engineering for design review and drawing submittal etc. at design/build refinery project site.
- Reviewed and processed site and contract related drawings and documentation (RFI's).
- Construction observation, inspection and issuance of rectification "punch lists".
- Assisted engineering manager in project engineering issues, including discussions and clarifications of contractual and technical issues with detail engineering sub contractor for shop drawings review.
- Provided field support for preparation of "As-Built" drawings.
- Technical discussions and clarifications with engineering and vendor as required.

Indian Oil Corporation Ltd., Gujarat Refinery Baroda, India

Summer Intern (June 1998 – July 1998)

- The internship covered on site first line client supervision with complete responsibilities of a project engineer, including monitoring of 1400 cu m of continuous heavy concreting in running refinery.

Other Experience

The Ohio State University.

Graduate Research Associate, GE Math Fund (02/03 –09/03)

- Development of engineering enrichment activities for exploring engineering program for middle and high school students.
- Development of mathematics curriculum for 7th and 8th grades for Chase Elementary School and Aiken High School, Cincinnati, OH.

EDUCATION

Worcester Polytechnic Institute, Worcester, MA

M S in Electrical Engineering

Continuing Education Program in Power Systems (ongoing)

Maharaja Sayajirao University, Baroda, India

B.E. in Civil Engineering, May 1999.

Major GPA 4.00(4.00 scale) Overall GPA 3.72

Certifications

- **Certified Project Management Professional**
- **Certificate in Project Management – Boston University**
- **Graduate level coursework:** Project Management, Strategic Management, Construction Contracts and Claims

HONORS & AWARDS

- University fellowship recipient of The Ohio State University for year 2001-2002.
- First (1st) place winner of "Young Managers Competition" held by Baroda Management Association for the year 2000.
- Recipient of three (3) Gold medals for academic achievements at undergraduate level.

AFFILIATIONS:

- PMI and SNEC PMI member
- Alumni support member of international organization AIESEC
- Student member of AIESEC in India (August 1997 – January 1999)

Publications:

Sharp Edge Functions For Three Dimensional Solids, McGee O.G., Kim J.W., Leissa A.W., Behal G.K., International Journal of Solids and Structures (Submitted For Publication (SFP)).

- 1.) Eroding Values and Emerging Ethical Issues in Contemporary Indian Management: Young Managers Competition, 2000, Baroda, India.
- 2.) Environmental Impact Assessment Methodologies: Critical Review, conference paper: Published in ENEAP'98 Jhansi, India.

Michael Libertine, LEP
Director of Environmental Services

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Mr. Libertine is a Licensed Environmental Professional in Connecticut. His primary responsibilities at VHB are managing and overseeing the environmental science and engineering projects in our Middletown, Connecticut office. His experience includes regulatory compliance, site assessments and field investigations for property transfers, remedial strategy development, environmental due diligence and permitting support, environmental assessments for NEPA compliance, RI/FS investigations, Brownfields redevelopment projects, and remedial investigations at RCRA facilities, state and federally recognized hazardous waste sites, and Manufactured Gas Plant (MGP) sites. Mike has been Project Manager on over 1600 environmental site assessments (ESAs) and field investigations for property transfers in Connecticut, Rhode Island, New Hampshire, Massachusetts, Vermont, New Jersey, New York, Washington, D.C., Florida, Kansas, and Canada. Representative projects are summarized below.

Environmental Services for Wireless Telecommunications Clients

Program Manager for environmental due diligence and permitting services in support of various telecommunications clients in Connecticut. Mr. Libertine has worked directly with the major licensed PCS carriers since 1997. Management duties include the coordination and oversight of preliminary site screenings, compliance documentation and environmental assessments to fulfill NEPA requirements, land use evaluations, Phase I ESAs, Phase II field investigations, remedial planning and oversight, wetland assessments, vegetative/biological surveys, noise analyses, visual resource analyses, graphic support, preparation of regulatory applications and permitting support, including representation at municipalities and Connecticut Siting Council hearings.

Certificate of Environmental Compatibility and Public Need, Killingly, Connecticut

Project Manager in support of an Application to the Connecticut Siting Council (CSC) for the permitting of a new 345/115 kV substation in eastern Connecticut on behalf of Connecticut Light & Power (CL&P). This project required extensive coordination of numerous team members, including client's in-house discipline managers and engineers, consultants, legal counsel, VHB staff, and subcontractors. Mike was responsible for overseeing Site data collection and analysis, site/civil layout, and drafting of municipal documents and the Application to the CSC. Services included conducting natural resources inventories of existing flora and fauna, habitat evaluations, wetland delineation, noise and EMF analyses, hazardous waste investigations, site layout and design drawings, landscape architecture, preparation of technical documents, coordination with State and local agencies, and permitting. His team has also provided environmental monitoring for adherence to the CTDEP's General Permit for Construction Activities and environmental requirements set forth in the Client's contract documents and specifications.

Regulatory Permitting, Barbour Hill Substation Modifications, South Windsor, Connecticut

Project Manager responsible for the preparation of a Petition to the Connecticut Siting Council for a determination that no Certificate of Environmental Compatibility and Public Need was required for the proposed modifications to CL&P's Barbour Hill Substation in South Windsor, Connecticut. The project included the replacement and expansion of an existing facility and the modification of line interconnections. Responsibilities included conducting natural resource inventories, wetland delineation, noise study, soil and groundwater sampling, preparation of site/civil design drawings, supporting graphics, photo-simulations, and local and state permit documents. Under Mr. Libertine's supervision, VHB also supported CL&P during its contractor selection process and developed a site-wide soil and water management plan for implementation during construction activities.

Regulatory Permitting, Transition Station Modifications, Storrs, Connecticut

Assisted CL&P in the preparation of a Petition to the Connecticut Siting Council for a determination that Certificate of Environmental Compatibility and Public Need was not required for the proposed installation of a transition station. The facility was require to facilitate connect of a new generation plant at the

University of Connecticut to an existing CL&P substation. Services included evaluation of natural resources, wetlands, soils and groundwater and the proposed construction's potential effects to these resources; and, the preparation of site/civil design drawings and landscaping design. Under Mr. Libertine's supervision, VHB also supported CL&P during its interface with contractors responsible for the interconnection of the two facilities, secured permits from state agencies, and developed a best-management practices guidance for managing dewatering activities during construction activities.

NEPA-CEPA Permitting Services, Connecticut Department of Public Works (2003 – 2005)

Program Manager for environmental support services to the CTDPW at various Connecticut locations. Representative projects included preparation of an Environmental Impact Evaluation for the Great Path Academy magnet school proposed for development on the Manchester Community College campus and Phase I Environmental Site Assessment in association with the Three Rivers Community College campus consolidation project in Norwich.

EA/FONSI for State Routes 7 & 15 in Norwalk and Wilton, CT

Project Manager of Final Environmental Assessment/Section 4(f) Evaluation (EA) for Finding of No Significant Impact (FONSI) on two state projects along Routes 7 and 15 in Norwalk and Wilton, Connecticut (1998-1999). These projects, completed for ConnDOT, involved the evaluation of seven different build/no build alternatives involving two interchanges and a proposed freeway extension. The evaluation included assessments of current conditions, potential impacts of alternatives, analysis of impacts associated with proposed actions, and development of mitigation techniques to be employed during design and construction. The Final EA document was submitted to the Federal Highway Administration, which provided a determination of FONSI in March 2000.

Environmental Review and Redevelopment Planning, Stratford, CT

Project Manager assisting the town in taking the. The town of Stratford sought a plan to redevelop the Stratford Army Engine Plant, which was closed under the Military Base Closure Act of 1997. The facility included over 2 million sq. ft. of space in approximately 40 buildings on a 50-acre site along the Housatonic River waterfront. This project required close coordination with the Client, VHB Planners and a socioeconomic sub-consultant to assist the town with the required steps to redevelop this industrial/military site. The planning process included the assessment of existing buildings, environmental and regulatory constraints associated with industrial site redevelopment, and an analysis of alternative reuse options for community benefits and impacts. A preferred redevelopment approach was created which included significant building demolition, site cleanup, and infrastructure upgrades. VHB completed preliminary plans and remediation cost scenarios for the decontamination/demolition of site structures, schematic waterfront park layout in consideration of environmental compliance issues, roadway and drainage design, and utility modification. A green space and waterfront park, providing recreational opportunities and access to Long Island Sound for town residents, was completed in 2001.

Publications

The Newly Adopted Connecticut Remediation Standard Regulations Coincide with Brownfields Legislation, February 1996, Brogie, Martin and Libertine, Michael.

Education

University of Connecticut, B.S. Natural Resources Management, December 1990
Stonehill College, B.A. Marketing, May 1981

Certifications / Licenses

Licensed Environmental Professional, State of Connecticut, LEP No. 345
OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Training (29 CFR 1910.120)

August, 2008

Robert E. Carberry
Manager – Project Manager, NEEWS Siting and Permitting
Northeast Utilities Service Company
Hartford, Connecticut

Education:

Bachelor of Science in Electric Power Engineering, June, 1972, Rensselaer Polytechnic Institute, Troy, NY

Master of Engineering in Electric Power Engineering, June 1973, Rensselaer Polytechnic Institute, NY

Management Development Program, Hartford Graduate Center, 1989

Experience:

June 1973 to March 1974 - Bechtel Associates Professional Corp., electrical design of Midland nuclear plant including load flow and voltage studies.

March 1974 to March 1975 - NUSCO, Protection Engineering Section. Performed relay settings and assisted Transmission Line Engineering.

March 1975 to March 1984 - NUSCO, Transmission Line Engineering. Standards, investigations and studies for permanent and temporary grounding, radio and audible noise, electrical/biological effects of AC fields, special insulation, thermal rating studies and research projects, high phase order, HVDC, compact line design, insulated shield wires, and lightning performance.

March 1984 to April 1985 - NUSCO, Substation Project Engineering. Project conceptual development and management plus associated studies and standards activities.

April 1985 to March 1988 - NUSCO, Substation Project Engineering Manager.

March 1988 to November 1992 - NUSCO, Manager of Substation Engineering and Design.

December 1992 to June 1997 - NUSCO, Manager of Transmission Line and Civil Engineering.

June 1997 to October 2000 - NUSCO, Manager of T&D Asset Strategy.

October 2000 to September 2001 - NUSCO, Manager of Transmission Engineering.

September 2001 to March 2003 - NUSCO, Project Manager – Bethel to Norwalk Transmission Project.

March 2003 to October 2004 - NUSCO, Project Director – Bethel to Norwalk Transmission Project.

October 2004 to January 2008 – NUSCO, Manager – Transmission Siting and Permitting.

February 2008 to Present – NUSCO, Project Manager, NEEWS Siting and Permitting

NU's EMF expert 1975- present and leader of the NU EMF Task Force established in 1990.

Other Experiences:

Adjunct Faculty Member, University of Hartford, College of Engineering, January to May, 1987. Conducted portions of course in Power Systems Analysis.

T&D Emergency plan assignment as First Deputy to the Director, Electric, a liaison position with the CT Office of Emergency Management, 1985 to 2002.

Member of Advisory Committee serving the Connecticut Interagency EMF Task Force, 1991 to present.

Professional Engineering Registration: Connecticut and Massachusetts

Industry and Professional Society Activities/Senior Member, IEEE (1983)

IEEE Power Engineering Society, Transmission and Distribution Committee memberships.

- 1) Corona and Field Effects (C&FE) Subcommittee, Member 1976 to present, Vice Chairman 1983 to 1985.
- 2) C&FE Working Groups on AC Fields and Audible Noise, 1976 to present.
- 3) Chairman of C&FE Working Group on Design and Environmental Considerations, 1977 to 1985.
- 4) Secretary and Vice Chairman of Administrative Subcommittee's Coordinating Group on Environment, Safety and Public Affairs, 1981 to 1984.

IEEE Power Engineering Society, Substations Committee memberships

- 1) Substations Committee, member 1987 to 1995
- 2) Environmental Subcommittee and Associated Working Groups, member 1985 to 1995.
- 3) Various Working Groups of the Distribution Substations Subcommittee and the Gas Insulated Substations Subcommittee, member 1985 to 1995.

Edison Electric Institute - Chairman of the Electric Light and Power group delegation to the American National Standards Committee C63 on Electromagnetic Compatibility, 1980 to 1985.

Electric Power Research Institute - Industry advisor on project RP1591, Assessment of AC Transmission Line Field Effects, 1982 to 1984. NU representative on Transmission Line Business Unit Council, October, 1995 to December, 1996, and on EMF/RF Area Council, 2005-present.

International Electrotechnical Commission, CISPR C - Member of an advisory group assisting the Technical Advisor to the U.S. National Committee of the IEC on matters pertaining to interferences from overhead power lines, 1980 to 1988.

Edison Electric Institute - EMF Task Force, 1990 to present: EMF Steering Committee 1995 to 2003.

Professional Recognitions:

IEEE PES Working Group Recognition and/or Prize Paper Awards

- AC Fields Working Group (1992)
- Working Group on Design and Location of Substations for Community Acceptance (1992)
- Substation Security Working Group
- "A Survey of Methods for Calculating Transmission Line Conductor Surface Voltage Gradients," 1980
- "Corona and Field Effects of AC Overhead Transmission Lines: Information for Decision Makers," 1986

Resume

Gregory J. Oberst, Jr.

Summary

More than 30 years experience in all aspects of transmission line engineering & design including: routing/siting, right-of-way requirements, structural analysis & design, project coordination, material specification & procurement, cost estimating, scheduling, construction specification development, and expert testimony at municipal and state administrative hearings. Developed programs for scheduled maintenance and identifying need for maintenance. Provided forensic engineering for transmission material failures to identify trends and needed preventative maintenance. Conducted and oversaw engineering studies and R&D related to transmission lines.

Home Address

172 Brimfield Road, Wethersfield CT, 06109

Education

Bachelor of Science in Engineering with a Concentration in Structures & Mechanics, Old Dominion College, Norfolk, VA, 1969

Experience

- 2003 – Present: Northeast Utilities Service Company
Transmission Line & Civil Engineering, Senior Engineer
- 2001 – 2003: Obersthaus Associates, LLC
Owner/Principal, performed transmission line engineering and studies
- 1982 – 2001: New York State Electric & Gas
Transmission Engineering Department, various positions of increasing responsibility from Senior Engineer to Engineering Supervisor
- 1969 – 1982: General Public Utilities at Jersey Central Power & Light
Transmission Engineering Department, various positions of increasing responsibility from entry level engineer to Senior Engineer

Professional Affiliations:

- American Society of Civil Engineers (ASCE), Member
- Structural Engineering Institute (SEI), Member
- Northeast Transmission Group Member 1987 – present, Chairman 1995 -1996

Professional Qualification:

Registered Professional Engineer:
New Jersey, New York, Pennsylvania, Vermont, Virginia

Publications:

- *Pole Materials: One Engineer's View of What's Out There* Presented: Northeast Pole Conference, Binghamton, NY, October 2000
- *Lattice Tower Ground Line Corrosion and Mitigation: A Case Study* Presented: ESMO98, and the Northeast Pole Conference 2000
- *Structure Inspection Practices* Discussion leader at the Pennsylvania Energy Association

JAMES W. BOROWITZ, P.E.
94 Linbert Street
Middletown, CT 06457
(860) 343-9343
james.borowitz@comcast.net

OBJECTIVE Opportunity to contribute to the safe, reliable and cost-effective design and operation of facilities used in the distribution of electrical energy.

EXPERIENCE

1999 - Present Northeast Utilities Service Company, Berlin, CT

Project Engineering Manager -
Distribution Substation Engineering & Design 2002 - Present

- Responsible for the engineering of electrical substation projects, including estimating, scope determination, regulatory approvals, and the coordination of various disciplines responsible for the detailed design and purchase of materials.
- Responsible for specification of power transformers for use in distribution substations within the service territories of Connecticut Light & Power, Public Service Company of New Hampshire, and Western Massachusetts Electric Co.

Engineer - Distribution Material and Construction Standards 1999 - 2002

- Responsible for specification of equipment and materials and development of construction standards used in the installation and operation of overhead distribution lines.
- Provide field support, including the evaluation and implementation of suggested improvements to material specifications and construction standards.
- Provide training to linemen, technicians and engineers as necessary.

1989 - 1999 Connecticut Yankee Atomic Power Company, Haddam Neck, CT

Operations Engineer 1998 - 1999

Responsible for operations support for various decommissioning activities.

Control Operator 1994 - 1998

Responsible for startup, operation, testing and shutdown of reactor, steam turbine, electric generator and all auxiliary systems. Directed personnel performing operations outside the control room and provided on-the-job training to new employees.

Nuclear Systems Operator 1991 - 1994

Responsible for local operation, inspection and testing of plant systems, including reactor and steam systems and their auxiliaries, emergency diesel generators and auxiliary steam boilers.

Associate Engineer 1989 - 1991

Responsible for the design and installation of various retrofit projects.

1987 - 1989 Veterans Administration

Engineer

Acted as project engineer for various medical center renovation projects.

EDUCATION 1987: B.S., Electrical Engineering, Rensselaer Polytechnic Institute, Troy, NY

LICENSES Licensed Professional Engineer, CT

DALIA B. NUNES

59 Monticello Drive, Wethersfield, Connecticut 06109

Home: (860) 656-6103

Work: (860) 665-5089

Email: nunesdb@nu.com

SUMMARY

Over 15 years of experience in electrical engineering. A successful track record in generation, design and reliability improvements of distribution systems with specialization in protection. A team player with excellent work ethics and strong drive to succeed.

AREAS OF EXPERTISE

Asset Management
Project Management

Loop Scheme Design
Short-Circuit Expertise

Load/Voltage Modeling
Protection/Coordination Specialist

EXPERIENCE

Northeast Utilities – Berlin, CT

1993-Present

SENIOR ENGINEER- Asset Management, Berlin, CT

2007-Present

Perform Distribution Design, Distribution Planning, Distribution Special Projects and Distribution Standards applications.

- Project leader for System Distribution Engineering for ongoing assignments for specific areas of distribution engineering. Performed demanding and unique distribution engineering activities requiring extensive imagination, expertise and experience.
- Representative for NU Distribution to NU system committees involving the development and/or review of data systems with which the Distribution Group interfaces or has a significant interest.
- Provided work direction to technicians, engineers and other technical specialists as required.

SENIOR CIRCUIT OWNER – Asset Management, New London, CT

2006-2007

Responsible for improving the reliability performance of 19 distribution circuits in New London district, served by 3 bulk and 2 distribution substations.

- Re-design the Mystic bulk substation to meet new demands.
- Design a new bulk substation to meet new load growth.
- Operations Supervisor on call.
- Provided work direction to technicians, engineers and other technical specialists as required.

CIRCUIT OWNER – Asset Management, Madison and New London, CT

1998-2006

Responsible for improving the reliability performance of 17 distribution circuits in Madison district, served by 1 bulk and 4 distribution substations:

- Develop and present numerous projects Asset Management Operating Company Review Committee, to prevent projected over-load condition to meet future load growth. Over \$18 million of cost was approved from projects I presented, based on future higher reliability benefits from investments.
- Patrol circuit to identify deficiencies and degradation due to age of distribution circuits.
- Investigate voltage and power quality concerns from customers. Develop remedies to solve voltage problems to meet customer and DPUC requirements. Communicate with customers

reliability concerns. Provide technical support to Account Executives for commercial customers and address issues raised by the town officials.

- Voltage profile (Load flow studies on PTI), substation and circuit loads during normal and contingency operations.
- Supervised crews during major storms.

PROTECTION ENGINEER - Distribution Protection & Control Engineering 1995-1998

Determined and coordinated settings for substation relay, reclosers, and fuses for CL&P and WMECO. Analyzed vendor proposals and attended seminars of new relays and controls. Reviewed interruptions involving protective devices and recommended corrective actions. Designed protection schemes for distribution circuits to improve reliability. Managed recloser's inventory to fulfill regional customer needs by providing reclosers and controls in a timely manner. Updated and maintained Relay Data File Settings.

- Performed fault duty studies.
- Coordinated the RSAM recloser's projects for 1996-97.
- Introduced and managed Digital Feeder Monitor relay pilot program in WMECO.

DESIGN ENGINEER - Northeast Nuclear Energy Company 1993-1995

Designed changes to Millstone 1 and Site electrical systems. Planned, coordinated, and implemented engineering assignments in support of the operation and maintenance of Millstone Unit 1 Nuclear Power Plant.

- Developed voltage profiles and short circuits calculations using PSS/U.
- Led electrical motor-operated valve modification projects.
- Managed the replacement of obsolete motor control center (MCC) parts with vendors, resulting in the improvement of safety and reliability.

Electrical Engineer Student- University of Hartford, West Hartford, CT

Summer 1992

Redesigned several electrical underground distribution system options for the University of Hartford, and provided recommendations based on cost/benefit analysis, risk assessment and return in assets.

EDUCATION

M.S. Electric Engineering - Power, GPA 3.8

University of Hartford, West Hartford CT

B.S. Electrical Engineering - Power

Superior Institute of Engineering, Coimbra, Portugal

PSS/U Certification

TECHNICAL SKILLS

Windows products: Word, Excel, Visio, Power Point. V-Pro, Aspen, Usamp, Pronto, Adept.
Knowledge of several host based systems (EDS, eMIB, TCIAS, CAMS, WRES, STORMS,).

COMPANY ACTIVITIES

PUR Guide

Safety Committee Member

NU Mentoring Program

Linda S. Erdreich, Ph.D.
Senior Managing Scientist**Professional Profile**

Dr. Linda S. Erdreich is a Senior Managing Scientist in Exponent's Health Sciences Center for Epidemiology, Biostatistics, and Computational Biology. She is an epidemiologist with 28 years of experience in environmental epidemiology and health risk assessment. She specializes in assessing epidemiological research and integrating this information with that from other disciplines for qualitative and quantitative risk assessments. She has prepared risk assessments for environmental and occupational chemicals, radiofrequency energy, electric and magnetic fields (EMF), and stray voltage. Dr. Erdreich has also prepared analyses of complex epidemiological evidence suitable for communication with interested parties of various backgrounds, including other scientists, executives, elected officials, and the general public. She has been particularly active in updating standards regarding non-ionizing radiation, both low frequencies (EMF) and radio frequencies. Dr. Erdreich has provided support to government agencies and private clients in health risk assessment and epidemiology.

Prior to joining Exponent, Dr. Erdreich was a Principal Scientist with Bailey Research Associates, where she specialized in epidemiologic research and analysis. Before that, Dr. Erdreich managed a research program in risk assessment at the U.S. Environmental Protection Agency and contributed to the development of risk assessment methods and guidelines. Dr. Erdreich has served on advisory committees to government, regulatory organizations, and industry regarding health risk assessments of chemicals and electromagnetic fields. Dr. Erdreich is also an adjunct associate professor at the Robert Wood Johnson Medical School in New Jersey.

Academic Credentials and Professional Honors

Ph.D., Epidemiology, University of Oklahoma, 1979
M.S., Biostatistics and Epidemiology, University of Oklahoma, 1977
M.Ed., Science Education, Temple University, 1968
B.A., Biological Sciences, Temple University, 1964

Fellow, American College of Epidemiology

U.S. Environmental Protection Agency: Special Achievement Award for Development of EPA's Proposed Risk Assessment Guidelines (1984), Certificate of Achievement, Mentor: Research Apprenticeship Program (1983); Special Achievement Award for Development of Methodologic Approaches to Risk Assessment Essential to the Agency (1982)

U.S. Public Health Service Traineeship (1975-1979); Graduate Dean's Research Prize, University of Oklahoma (1978)

Publications

Erdreich LS, Van Kerkhove MD, Scrafford CG, Barraji L, McNeely M, Shum M, Sheppard AR, Kelsh M. Factors that influence the radiofrequency power output of GSM mobile phones. *Radiation Res* 2007; 168(2):253–261.

Bailey WH, Erdreich LS. Accounting for human variability and sensitivity in setting standards for electromagnetic fields. *Health Phys* 2007; 92:649–657.

Yarborough CM, Erdreich LS. Child neurocognitive and behavioral outcomes and maternal solvent exposure during pregnancy. *Arch Pediatr Adolesc Med* 2005; 159:690.

Moulder JE, Foster KR, Erdreich LS, McNamee JP. Mobile phone, mobile phone base stations and cancer: A review. *Int J Radiat Biol* 2005; 81:189–203.

Erdreich LS, Friedman MA. Epidemiologic evidence for assessing the carcinogenicity of acrylamide. *Regul Toxicol Pharmacol* 2004; 39:150–157.

Erdreich LS, Klauenberg BJ. Radio frequency radiation exposure standards: Considerations for harmonization. *Health Physics* 2001; 80:430–439.

Dourson ML, Anderson M, Erdreich LS, MacGregor J. Using human data to protect the public's health. *Regul Toxicol Pharmacol* 2001; 33(22):234–256.

Haber LT, Diamond GL, Zhao Q, Erdreich LS, Dourson ML. Hazard identification and dose-response of ingested nickel soluble salts. *Regul Toxicol Pharmacol* 2000; 31:231–241.

Haber LT, Erdreich LS, Diamond DL, Maier AM, Ratney R, Zhao Q, Dourson ML. Hazard identification and dose-response of inhaled nickel soluble salts. *Regul Toxicol Pharmacol* 2000; 31:210–230.

Foster KF, Erdreich LS. Thermal models for microwave hazards and their role in standards development. *Bioelectromagnetics* 1999; 20:52–63.

Moulder JE, Erdreich LS, Malyapa RS, Merritt J, Pickard WF, Vijayalaxmi. Cell phones and cancer: what is the evidence for a connection? *Radiation Res* 1999; 151:513–531.

Foster KR, Erdreich LS, Moulder J. Weak electromagnetic fields and cancer in the context of risk assessment. *Proc IEEE* 1997; 85:733–746.

Erdreich LS. Scientific evidence—issues in EMF epidemiology. *Shepard's Expert and Scientific Evidence Quarterly* 1993; 1:213–226.

Brown K, Erdreich LS. Statistical uncertainty in the no-observed-effect level. *Fund Appl Toxicol* 1989; 13:235–244.

Hill RN, Erdreich LS, Paynter OE, Roberts PA, Rosenthal SL, Wilkinson CF. Thyroid follicular cell carcinogenesis: a review. *Fund Appl Toxicol* 1989; 12:629-697.

Hattis D, Erdreich LS, Ballew M. Human variability in susceptibility to toxic chemicals—a preliminary analysis. *Risk Anal* 1987; 7:415-426.

Erdreich LS, Burnett C. Improving the use of epidemiologic data in health risk assessment. *Toxicol Environ Health* 1985; 1:65-81.

Stara JF, Erdreich LS (eds). Approaches to risk assessment for multiple chemical exposures. Conference Proceedings, EPA-600/9-84-008, U.S. Environmental Protection Agency, 1984.

Erdreich LS. Comparing epidemiologic studies of ingested asbestos for use in risk assessment. *Environ Health Prospect* 1983; 43:99-104.

Erdreich LS, Lee, ET. Use of relative operating characteristic analysis in epidemiology—a method for dealing with subjective judgment. *Am J Epidemiol* 1981; 114:649-662.

Erdreich LS, Asal NR, Hoge AF. Morphological types of breast cancer: age, bilaterality and family history. *Southern Med J* 1980; 73:28-32.

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Reports

Erdreich LS, Mullin, CS. Hypersusceptible subgroups of the population in multiple chemical risk assessment. In: *Approaches to Risk Assessment for Multiple Chemical Exposures*. EPA-600/9-84-008. Stara JF, Erdreich LS (eds.), U.S. Environmental Protection Agency, 1984.

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Non Peer-Reviewed Publications

Erdreich LS, Roberts W. Identifying flawed reasoning in biomedical science: A more cogent argument than "Junk Science." *Toxic Torts and Environmental Law Committee Newsletter*. American Bar Association, Summer 2006.

Committee on Man and Radiation of the IEEE (COMAR) Technical Reports

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Invited Presentations

Erdreich L. Epidemiologic methods in analysis of scientific issues in the courtroom. Acoustical Society of American 146th Meeting, Austin, TX, November 2003.

Erdreich, LS. Epidemiology of radio frequency energy exposure and health. Armed Forces Epidemiology Board, San Diego, CA, February 2002.

Erdreich, L. Epidemiology: What it can tell you and what it can't? Short Course on Electromagnetic Energy. RF Safety: Science, Compliance and Communications. Co-sponsored by the Electromagnetic Energy Association and the Center for Environmental Radiation Toxicology of the University of Texas Health Sciences Center at San Antonio, San Antonio, TX, January 2000.

Erdreich, L. What are the policy issues? Short Course on Electromagnetic Energy. RF Safety: Science, Compliance and Communications. Co-sponsored by the Electromagnetic Energy Association and the Center for Environmental Radiation Toxicology of the University of Texas Health Sciences Center at San Antonio, San Antonio, TX, January 2000.

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Erdreich L. Epidemiologic studies of EMF. The EMF Regulation and Litigation Institute: Anticipating, Avoiding and Managing EMF Claims, Business Development Associates, Inc., Washington, DC, April 1996.

Erdreich L. Health issues and radiofrequency devices. Defining the role of local government: antennas, towers, and satellite dishes. Pace University School of Law, White Plains, NY, March 1996.

Erdreich L, Klauenberg BJ. Recent developments in non-cancer risk assessment and optimal use of radiofrequency data. Michaelson Research Conference, Colorado Springs, CO, August 1996.

Erdreich L. Overview of EMF epidemiological research; update. Electric and Magnetic Fields: Science and Policy Update, Sponsored by Northwestern University, University of Illinois, IIT Research Institute and Commonwealth Edison. Chicago, IL, October 1995.

Erdreich L. EMF and residential and occupational health risks. Conference on Electromagnetic Fields—Legal and Technical Update of the Bar of the City of New York and Society for Risk Analysis, September 1995.

Erdreich LS. The two newest studies: what questions should we ask? EMF Seminar: Focus on Research, Electric Power Research Institute, March 1994.

Erdreich LS. Epidemiology in developing exposure standards: science and policy roles. Electromagnetic Energy Association Annual Meeting and Symposium, May 1994.

Erdreich LS. Research: answers or more questions? 9th Annual Meeting and Symposium of the Electromagnetic Energy Policy Alliance, Alexandria, VA, May 1993.

Erdreich LS. EMF research: Summarizing the evidence. Symposium on Possible Health Effects of EMFs Associated with Electric Power Generation and Distribution. Iowa Academy of Science, Des Moines, IA, February 1992.

Erdreich LS. EMF health issues briefing. Residential and Small Commercial Services Seminar, Electric Council of New England, Manchester, NH, May 1991.

Erdreich LS. State policy options for managing extremely low frequency electromagnetic fields. Conference on Health Effects of High Voltage Power Lines, Center for Environmental Health, University of Connecticut, West Hartford, CT, June 1990.

Erdreich LS. Current public health issues in EMF. University of Oklahoma College of Public Health Alumni Day, Oklahoma City, OK, October 1989.

Thorslund T, Erdreich LS, Hegner R. Testing hypotheses of mechanism using epidemiologic data. Presented at the International Symposium on Chemical Mixtures: Risk Assessment and Management, Cincinnati, OH, June 1988.

Erdreich LS, Sonich C. Hypersusceptible subgroups of the population: determining numbers at risk. Presented at Satellite Meeting of the Environmental Mutagen Society, March 1983.

Prior Experience

Bailey Research Associates, Principal Scientist (1991–1999)

Environmental Research Information (ERI), Senior Research Associate (1989–1991)

Clement Associates, Senior Associate (1987–1989)

U.S. Environmental Protection Agency, Office of Research and Development, Methods Evaluation and Development Staff, Group Leader (1984–1987)

U.S. Environmental Protection Agency, Office of Research and Development, Environmental Criteria and Assessment Office, Senior Epidemiologist (1980–1984)

Linda S. Erdreich, Ph.D.

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Current Academic Appointments

- Adjunct Associate Professor, Department of Environmental and Community Medicine, Robert Wood Johnson Medical School, University of Medicine & Dentistry of New Jersey (1993–present)

Teaching Appointments

- Lecturer, Short Course on Electromagnetic Energy: University of Texas Health Science Center, Center for Environmental Radiation Toxicology, San Antonio, Texas (1998, 2000)
- Adjunct Assistant Professor, Institute of Environmental Health, University of Cincinnati Medical Center (1982–1987)
- Teaching Assistant, Department of Biostatistics and Epidemiology, University of Oklahoma School of Public Health (1975–1979)
- Teacher of Biology and Chemistry, Ann Arbor, MI; Philadelphia, PA; Montgomery County, MD (1964–1972)

Advisory Positions

- Institute of Electrical and Electronics Engineers (IEEE) (1992–present)
 - Chair, Epidemiology Workgroup of Subcommittee 4 Safety Level with Respect to Human Exposure to Radiofrequency Fields (3 kHz–33 GHz), for the Standards Coordinating Committee 28 Non-Ionizing Radiation (1992–2000)
 - Member, Standards Coordinating Committee 28 Non-Ionizing Radiation, and Subcommittee 3 Safety Levels with Respect to Human Exposure (0-3 kHz), Institute of Electrical and Electronics Engineers (IEEE)
- Member of the Committee on Man and Radiation (COMAR) of the Engineering in Medicine and Biology Society (1995–2000; 2002–2007)
- Chair of the Expert Panel to advise the Massachusetts Department of Public Health, Bureau of Environmental Health Assessment regarding radio-frequency exposure from the Air Force Space Command's PAVE PAWS radar system on Cape Cod (1998–1999)
- Member of a panel convened by Health Canada to review a toxicity assessment of a priority substance under the Canadian Environmental Protection Act (1,3-butadiene) (1998)
- Served on peer review panels for risk assessments for chromium, cadmium, acrylamide, and for methylmercury, convened by Toxicology Excellence for Risk Assessment, a non-profit, 501(c)(3) corporation (1997–1998)

- Contributor to NATO Standardization Agreement: Evaluation and Control of Personnel Exposure to Radio-Frequency Fields - 3 kHz to 300 GHz (1995)
- At EPA, managed and co-authored the agency's first draft Interim Methods for Development of Inhalation Reference Doses (1987-1988)
- Member of U.S. EPA's work group to develop Oral Reference Doses for non-carcinogens, available on Integrated Risk Information System (IRIS) (1986-1987)
- Member of EPA's Risk Assessment Forum's Technical Panel: Developing a Scientific Policy for Thyroid Neoplasia (1986-1987)
- Panel member for an EPA workshop in weight of evidence/hazard identification for non-cancer health endpoints (1986-1987)
- Co-Chair of EPA's agency-wide committee to write Risk Assessment Guidelines for Chemical Mixtures (1985-1986)
- Program Committee to plan a national symposium Epidemiology and Health Risk Assessment, sponsored by private, governmental and academic institutions (1984-1985)
- Member, Environmental Advisory Council to the City of Cincinnati. Appointed to the Executive Committee, (1986, 1984-1987)
- Planned and managed an international symposium on "Advances in Risk Assessment of Systematic Toxicants and Chemical Mixtures," held October 1984; co-edited the proceedings (1983-1984)
- Chairperson for two international symposia: "Risk Assessment for Multiple Chemical Exposures," sponsored by EPA (1981-1983).

STATE OF CONNECTICUT

SITING COUNCIL

THE CONNECTICUT LIGHT AND POWER :
COMPANY APPLICATION FOR A CERTIFICATE OF :
ENVIRONMENTAL COMPATIBILITY AND PUBLIC : DOCKET NO. 364
NEED FOR THE CONSTRUCTION, MAINTENANCE, :
AND OPERATION OF A PROPOSED SUBSTATION :
LOCATED AT 325 WATERFORD PARKWAY : SEPTEMBER 16, 2008
NORTH, WATERFORD, CONNECTICUT :
:

DIRECT TESTIMONY OF MICHAEL LIBERTINE
REGARDING ENVIRONMENTAL MATTERS
CONCERNING THE PROPOSED WATERFORD SUBSTATION

EXECUTIVE SUMMARY

Q. Please identify yourself and the other members of the panel who will respond to cross examination regarding environmental matters concerning the proposed Waterford Substation (“Substation”) and related facilities (the “Project”).

A. I am Michael Libertine, a licensed environmental professional and Director of Environmental Services in the Middletown, Connecticut office of Vanasse Hangen Brustlin, Inc. (“VHB”). A copy of my resume is attached as Exhibit A to this testimony. In addition, Northeast Utilities Service Company employees and specialized Project consultants may be called upon to respond to questions that require knowledge of specific topics.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to summarize the environmental factors that were considered during the development of plans for the Project, factors which will continue to be important as the Project design, certification, permitting, and construction proceed.

My testimony will cover the following three topics:

1. Approach used to compile baseline environmental data;
2. Environmental studies; and
3. Environmental resources.

1. APPROACH USED TO COMPILE BASELINE ENVIRONMENTAL DATA

Q. What types of data were collected to characterize existing environmental conditions in the Project area?

A. Environmental data for the Project were compiled in accordance with the specifications of the Council's June 2007 Electric Substation Facility Application Guide, and involved the collection and analysis of information to support the environmental documents in the Application, including the performance of field investigations and consultations with state, federal, and local agencies.

Information was compiled from published sources such as the Connecticut Department of Environmental Protection ("CTDEP") files, historic and contemporary aerial photographs, soil surveys, U.S. Geological Survey maps, Federal Emergency Management Agency maps and municipal land-use plans. In addition, agencies such as

the CTDEP Natural Diversity Data Base and the State Historic Preservation Office (“SHPO”) were consulted regarding specific resources within the Project area.

Field surveys were conducted of wetlands, watercourses and wildlife habitats. Baseline noise studies were performed to characterize conditions in the vicinity of the proposed Substation.

2. ENVIRONMENTAL STUDIES

Q. Please describe the wetland and watercourse studies.

A. As more fully described in Exhibit 2, *Wetlands Delineation Report*, of the Application (Volume 2 of 2), wetlands and watercourses located in proximity to the proposed Substation footprint were inspected and delineated in the field by professional soil scientists on September 14, 2007. VHB wetland scientists identified wetland boundaries based on both Federal criteria (defined at 33 CFR 328-329) and State criteria set forth in the Connecticut Inland Wetlands and Watercourses Act (sections 22a-36 through 22a-45 of the Conn. Gen. Stats.). As depicted on Figure H-1 of the Application, *Existing Conditions*, (Volume 1 of 2), two wetland areas were identified on the Substation property (the “Property”).

Q. Are there any direct or indirect impacts to wetlands from the construction of the Project?

A. No. Construction of the proposed Substation would not result in any direct or indirect impacts on wetlands.

Q. Are there any direct or indirect impacts to wetlands from the installation of the proposed new structures necessary for connecting the existing 115-kV transmission line to the Substation?

A. No. There will be no impacts to wetlands from these installations.

Q. Are there any direct or indirect impacts to watercourses?

A. No. There would be no direct or indirect impact to the intermittent stream located to the east of the proposed Substation yard.

Q. Are there any direct or indirect impacts to the Town of Waterford's 100-foot upland review area?

A. Yes. Limited work is anticipated within a small 1,241 ± square foot portion of the upland review area of the perennial watercourse and its bordering wetlands located on the Property. This work consists of the construction of a corner of the Substation yard and associated tree removal and grading.

Q. Will there be any substantial impacts on the environment after construction of the Project is complete?

A. No. After construction is complete, the Project will have no permanent adverse effects on the environment. CL&P will take the following steps to ensure this:

- All disturbed/exposed areas would be stabilized and revegetated. These areas would be dressed with topsoil and seeded with a New England conservation/wildlife mix, to establish a cover of grasses, forbs, wildflowers and legumes that would provide both soil stability and wildlife habitat value.

- Erosion controls would remain in place until final site stabilization is achieved.
- The power transformers within the Substation would contain insulating fluid. Surrounding each transformer will be secondary containment, consisting of an Imbiber Beads Drain Protection System® for the sump, designed to hold 110% of a transformer's fluid capacity.

Q. Will the construction activities have any significant long-term adverse effect on vegetation, wildlife or habitat values?

A. No. The construction activities would not have any significant long-term adverse effect on vegetation, wildlife or habitat values. The Substation would occupy what is currently early successional upland forest. Sufficient habitat of similar nature (in excess of 50 acres) exists to the east across the intermittent stream. The Project would not have an adverse effect on wildlife due to the Substation footprint's immediate proximity to similar habitats that would allow for natural relocation of potential wildlife from the construction zone. In addition, the adjacent transmission corridor provides valuable and diverse wildlife habitat.

Q. Does the site serve as habitat for any "Threatened Species," "Endangered Species" or "Species of Special Concern"?

A. No. There are no threatened, endangered species or species of special concern of plant or animal life on the site.

Q. Will the construction activities have any effect on Federal or State-listed species?

A. No.

Q. SHPO has reviewed the Project, could you please summarize the SHPO's response?

A. SHPO has determined that the Project will have no adverse effect on historic, architectural or archaeological resources on or eligible for inclusion on the National Register of Historic Places. A letter of "no effect" was issued by the SHPO on May 9, 2008. A copy of the SHPO Determination Letter is included in CL&P's Application, Volume 2 of 2, Exhibit 6 (*SHPO Determination Letter*).

Q. Please describe the results of the noise analysis.

A. The noise analysis determined that the addition of the Substation would result in an increase of sound levels. However, this increase would be negligible due to the existing elevated background noise levels. Nevertheless, the projected noise levels generated by the Substation would be below applicable noise regulations at the Property line. To the largest extent possible, general site construction hours would be limited to 7 am to 5 pm, Monday through Friday. Because of the difficulty of scheduling outages for interconnecting to the transmission system, there could be relatively short periods when some work will need to take place on a weekend or hours beyond the 7 am to 5 pm period.

Q. Have you reviewed local, State and federal land use plans, particularly with respect to existing and future development?

A. Yes.

Q. Will the Project be consistent with the land uses and policies presented in these plans?

A. Yes. In particular, the Project has been designed to meet the intent of local land use regulations.

3. ENVIRONMENTAL RESOURCES

Q. Will the Project have any adverse effect on any water supply areas?

A. No. The closest public water supply wells are part of the Groton Pond Wellfield (a State-designated Preliminary Regulated Aquifer Protection Area), located approximately 2.1 miles southwest of the Substation. Based on design considerations and the physical distance of the water supply wells to the Substation, the Project would have no adverse environmental effect on the aquifer.

Furthermore, the design of the facility will protect ground water from any adverse effects. As noted, among other things, there will be containment and sump protection associated with each oil-filled transformer; a gravel base within the Substation to help reduce surface water runoff; a post-construction restoration plan to re-vegetate disturbed areas of ground; and very limited activity at the site after the Substation becomes operational.

Q. How would the environment be protected from the insulating fluid used for the transformers?

A. As previously noted, surrounding each transformer will be a secondary containment system, designed to hold 110% of the transformer's fluid capacity. This design has been approved by CTDEP and incorporated into other operational substation designs by CL&P.

Q. How would the sumps be protected from storm-water infiltration?

A. A shallow trench around the entire sump will inhibit surface water that migrates towards the sumps from undermining the edge of the sump liner. This shallow trench will not prevent surface water from entering the sump and in general, any surface water that runs into the perimeter of the sump will eventually leach through the Imbiber Bead System.

Q. Will the sumps be inspected and maintained on a regular basis?

A. Yes. The design of these sumps requires minimal maintenance. Annual maintenance inspections are performed to assess accumulations of silt and debris that could inhibit water from discharging through the system.

Q. Approximately how many trees six (6) inches or greater in diameter will be removed in connection with the construction of the Substation?

A. Approximately 225 trees six inches or greater in diameter will be removed to enable construction of the Substation footprint.

Q. What efforts were undertaken to minimize tree removal?

A. The area of the Property selected for development possesses moderate tree cover consisting of early successional upland forest with some small clearings and limited growth in its central portion. The layout of the Substation and driveway were

selected to balance overall potential environmental impacts, and only those trees directly within construction areas would be removed.

Q. What efforts will be implemented to mitigate the loss of trees?

A. CL&P will provide landscaping features in order to mitigate the loss of trees.

Q. Would the removal of affected trees provide significant degradation to wildlife habitat value?

A. No. Any effects on wildlife and habitat would be temporary disturbance during construction. The Property is currently used by wildlife species that are common to the region and are adaptable to minor habitat modifications. Sufficient habitat of similar nature (in excess of 50 acres) exists directly to the east of the construction area across the intermittent stream. Therefore, species diversity and abundance should be maintained after the Substation is completed and operational.

Q. Will the loss of trees result in substantial visibility of the Substation to the neighbors?

A. No. There are only a few residential neighbors in the immediate area of the Substation Property (limited to locations north) and the combination of existing, intervening vegetation and topography minimize direct sight lines into the Substation. Additionally, the proposed landscaping features will further mitigate any direct views

into the Substation and effectively screen the Substation from the neighboring parcels throughout the seasons.

Q. Has the Town requested any modifications to the perimeter of the Property?

A. Yes. In a memorandum dated March 7, 2008, Thomas Wagner, AICP, Planning Director of the Town of Waterford, requested that the sight line at the intersection of Oil Mill Road and Waterford Parkway be improved.

Q. Will CL&P implement efforts to improve this sight line?

A. Yes. Proposed construction activities would include removal of the existing vegetation and reduction of a soil berm in the southwest corner of the Property. As a result of vegetation removal and Site grade reduction in this area, the sight line northwestward (up Oil Mill Road) from the stop sign on Waterford Parkway North would improve from current conditions.

Q. Does this conclude your testimony?

A. Yes.

Exhibit A

Resume of Michael Libertine

Michael Libertine, LEP
Director of Environmental Services

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Mr. Libertine is a Licensed Environmental Professional in Connecticut. His primary responsibilities at VHB are managing and overseeing the environmental science and engineering projects in our Middletown, Connecticut office. His experience includes regulatory compliance, site assessments and field investigations for property transfers, remedial strategy development, environmental due diligence and permitting support, environmental assessments for NEPA compliance, RI/FS investigations, Brownfields redevelopment projects, and remedial investigations at RCRA facilities, state and federally recognized hazardous waste sites, and Manufactured Gas Plant (MGP) sites. Mike has been Project Manager on over 1600 environmental site assessments (ESAs) and field investigations for property transfers in Connecticut, Rhode Island, New Hampshire, Massachusetts, Vermont, New Jersey, New York, Washington, D.C., Florida, Kansas, and Canada. Representative projects are summarized below.

Environmental Services for Wireless Telecommunications Clients

Program Manager for environmental due diligence and permitting services in support of various telecommunications clients in Connecticut. Mr. Libertine has worked directly with the major licensed PCS carriers since 1997. Management duties include the coordination and oversight of preliminary site screenings, compliance documentation and environmental assessments to fulfill NEPA requirements, land use evaluations, Phase I ESAs, Phase II field investigations, remedial planning and oversight, wetland assessments, vegetative/biological surveys, noise analyses, visual resource analyses, graphic support, preparation of regulatory applications and permitting support, including representation at municipalities and Connecticut Siting Council hearings.

Certificate of Environmental Compatibility and Public Need, Killingly, Connecticut

Project Manager in support of an Application to the Connecticut Siting Council (CSC) for the permitting of a new 345/115 kV substation in eastern Connecticut on behalf of Connecticut Light & Power (CL&P). This project required extensive coordination of numerous team members, including client's in-house discipline managers and engineers, consultants, legal counsel, VHB staff, and subcontractors. Mike was responsible for overseeing Site data collection and analysis, site/civil layout, and drafting of municipal documents and the Application to the CSC. Services included conducting natural resources inventories of existing flora and fauna, habitat evaluations, wetland delineation, noise and EMF analyses, hazardous waste investigations, site layout and design drawings, landscape architecture, preparation of technical documents, coordination with State and local agencies, and permitting. His team has also provided environmental monitoring for adherence to the CTDEP's General Permit for Construction Activities and environmental requirements set forth in the Client's contract documents and specifications.

Regulatory Permitting, Barbour Hill Substation Modifications, South Windsor, Connecticut

Project Manager responsible for the preparation of a Petition to the Connecticut Siting Council for a determination that no Certificate of Environmental Compatibility and Public Need was required for the proposed modifications to CL&P's Barbour Hill Substation in South Windsor, Connecticut. The project included the replacement and expansion of an existing facility and the modification of line interconnections. Responsibilities included conducting natural resource inventories, wetland delineation, noise study, soil and groundwater sampling, preparation of site/civil design drawings, supporting graphics, photo-simulations, and local and state permit documents. Under Mr. Libertine's supervision, VHB also supported CL&P during its contractor selection process and developed a site-wide soil and water management plan for implementation during construction activities.

Regulatory Permitting, Transition Station Modifications, Storrs, Connecticut

Assisted CL&P in the preparation of a Petition to the Connecticut Siting Council for a determination that Certificate of Environmental Compatibility and Public Need was not required for the proposed installation of a transition station. The facility was require to facilitate connect of a new generation plant at the

University of Connecticut to an existing CL&P substation. Services included evaluation of natural resources, wetlands, soils and groundwater and the proposed construction's potential effects to these resources; and, the preparation of site/civil design drawings and landscaping design. Under Mr. Libertine's supervision, VHB also supported CL&P during its interface with contractors responsible for the interconnection of the two facilities, secured permits from state agencies, and developed a best-management practices guidance for managing dewatering activities during construction activities.

NEPA-CEPA Permitting Services, Connecticut Department of Public Works (2003 – 2005)

Program Manager for environmental support services to the CTDPW at various Connecticut locations. Representative projects included preparation of an Environmental Impact Evaluation for the Great Path Academy magnet school proposed for development on the Manchester Community College campus and Phase I Environmental Site Assessment in association with the Three Rivers Community College campus consolidation project in Norwich.

EA/FONSI for State Routes 7 & 15 in Norwalk and Wilton, CT

Project Manager of Final Environmental Assessment/Section 4(f) Evaluation (EA) for Finding of No Significant Impact (FONSI) on two state projects along Routes 7 and 15 in Norwalk and Wilton, Connecticut (1998-1999). These projects, completed for ConnDOT, involved the evaluation of seven different build/no build alternatives involving two interchanges and a proposed freeway extension. The evaluation included assessments of current conditions, potential impacts of alternatives, analysis of impacts associated with proposed actions, and development of mitigation techniques to be employed during design and construction. The Final EA document was submitted to the Federal Highway Administration, which provided a determination of FONSI in March 2000.

Environmental Review and Redevelopment Planning, Stratford, CT

Project Manager assisting the town in taking the. The town of Stratford sought a plan to redevelop the Stratford Army Engine Plant, which was closed under the Military Base Closure Act of 1997. The facility included over 2 million sq. ft. of space in approximately 40 buildings on a 50-acre site along the Housatonic River waterfront. This project required close coordination with the Client, VHB Planners and a socioeconomic sub-consultant to assist the town with the required steps to redevelop this industrial/military site. The planning process included the assessment of existing buildings, environmental and regulatory constraints associated with industrial site redevelopment, and an analysis of alternative reuse options for community benefits and impacts. A preferred redevelopment approach was created which included significant building demolition, site cleanup, and infrastructure upgrades. VHB completed preliminary plans and remediation cost scenarios for the decontamination/demolition of site structures, schematic waterfront park layout in consideration of environmental compliance issues, roadway and drainage design, and utility modification. A green space and waterfront park, providing recreational opportunities and access to Long Island Sound for town residents, was completed in 2001.

Publications

The Newly Adopted Connecticut Remediation Standard Regulations Coincide with Brownfields Legislation, February 1996, Brogie, Martin and Libertine, Michael.

Education

University of Connecticut, B.S. Natural Resources Management, December 1990
Stonehill College, B.A. Marketing, May 1981

Certifications / Licenses

Licensed Environmental Professional, State of Connecticut, LEP No. 345
OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Training (29 CFR 1910.120)