



**Connecticut
Light & Power**

The Northeast Utilities System

**APPLICATION TO THE
CONNECTICUT SITING COUNCIL**

FOR A

**CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY AND PUBLIC NEED**

FOR THE

Stepstone Substation

**Stepstone Hill Road
Guilford, Connecticut**

December 2006

Submitted by:

**The Connecticut Light & Power Company
107 Selden Street
Berlin, CT 06037**

**Volume 2 of 2
Appendices**

STEPSTONE SUBSTATION

Volume II

Appendices

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Appendix B Site Photographs

Appendix C Environmental Assessment Report

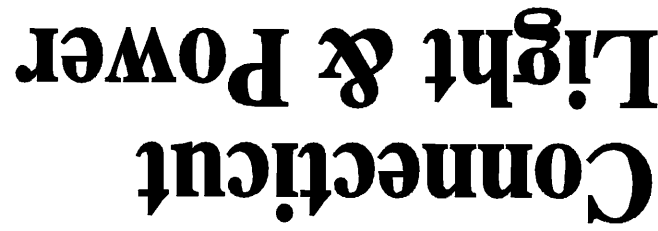
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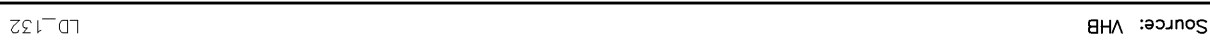
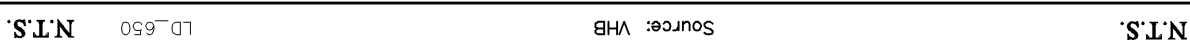


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Stepstone Substation																		
Guilford, Connecticut																		

Tel: 860 632-1500 • Fax: 860 632-7879

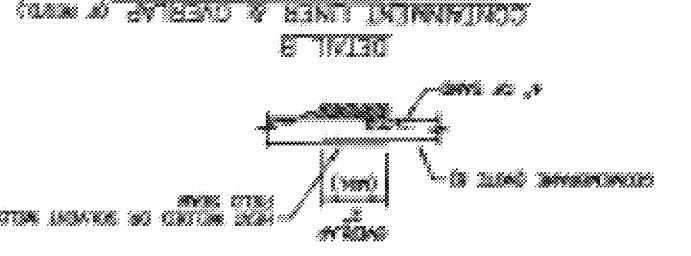
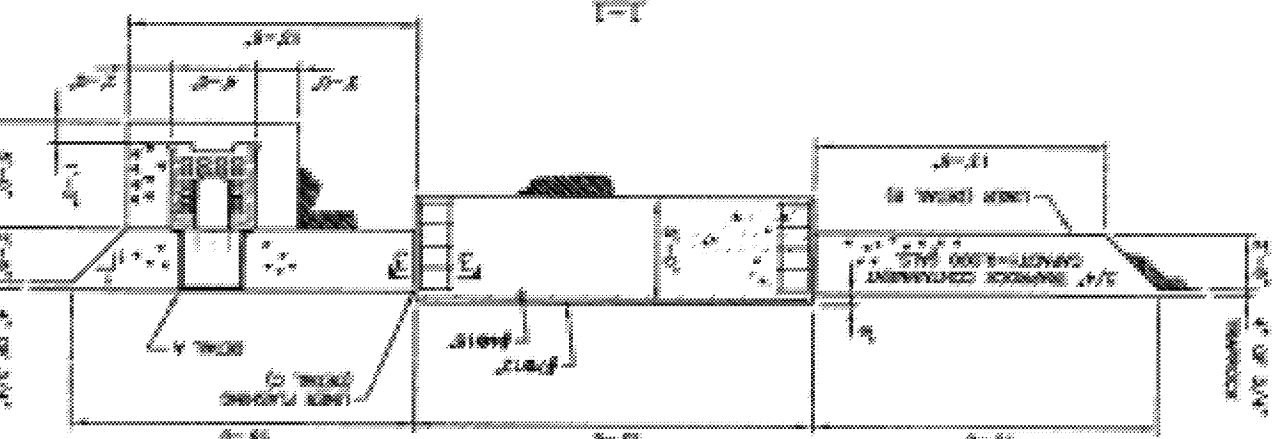
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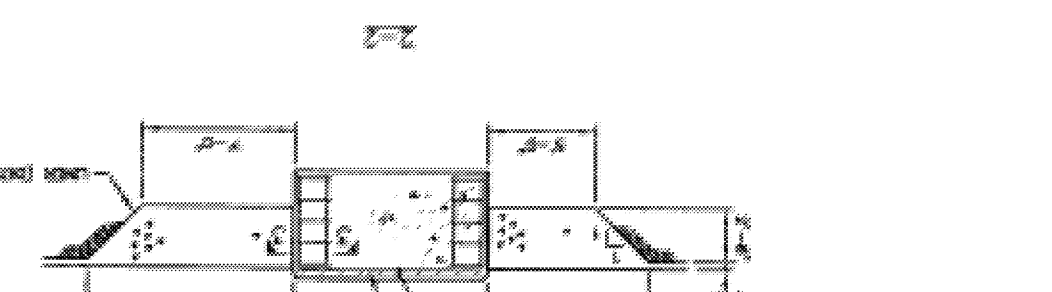
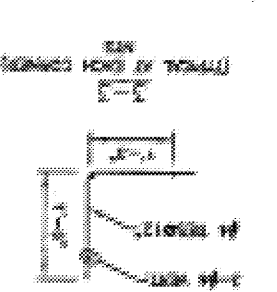
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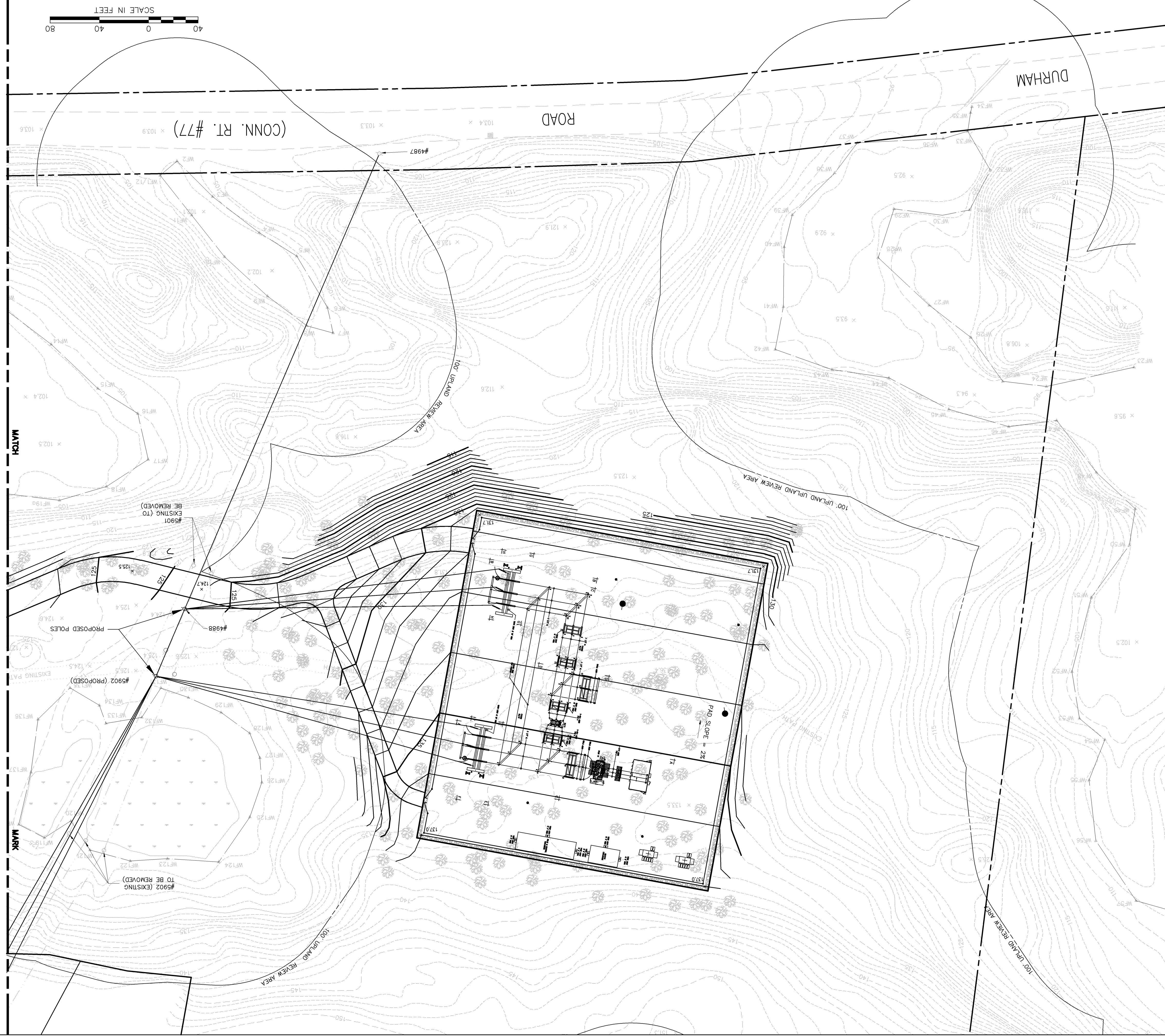
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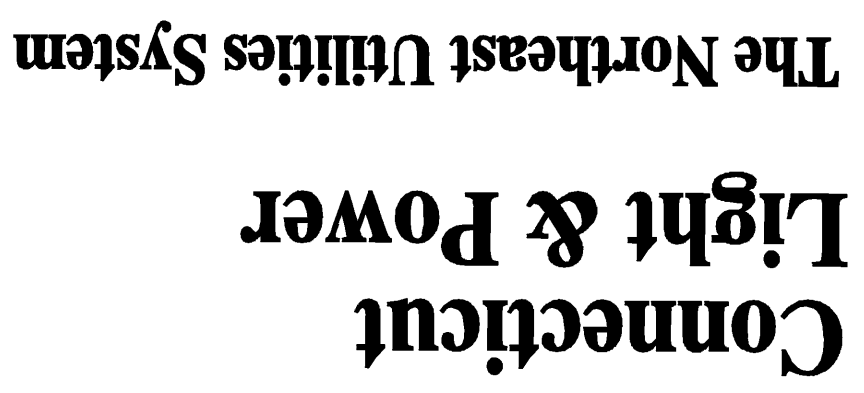
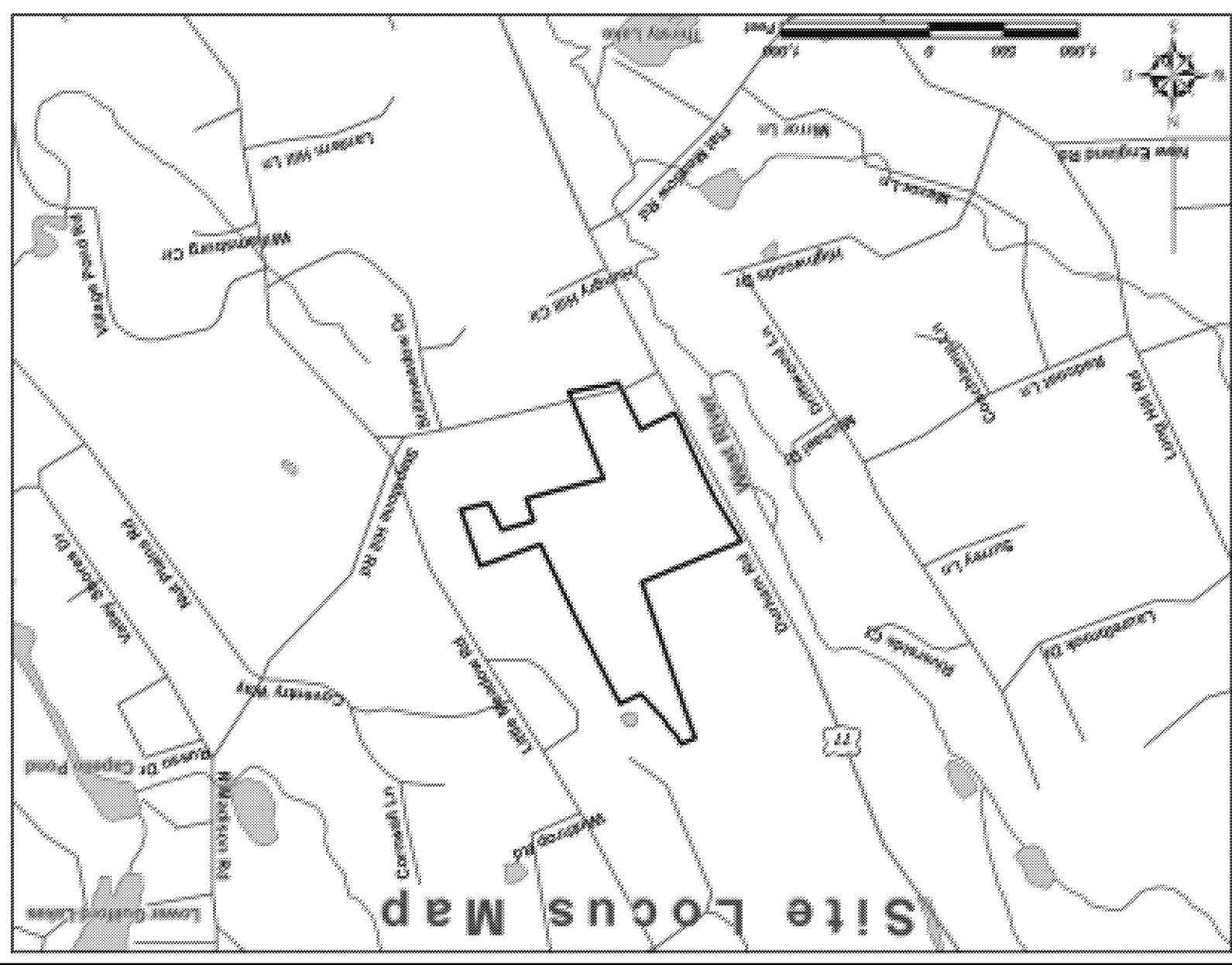
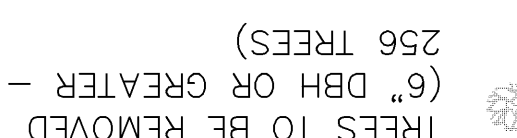
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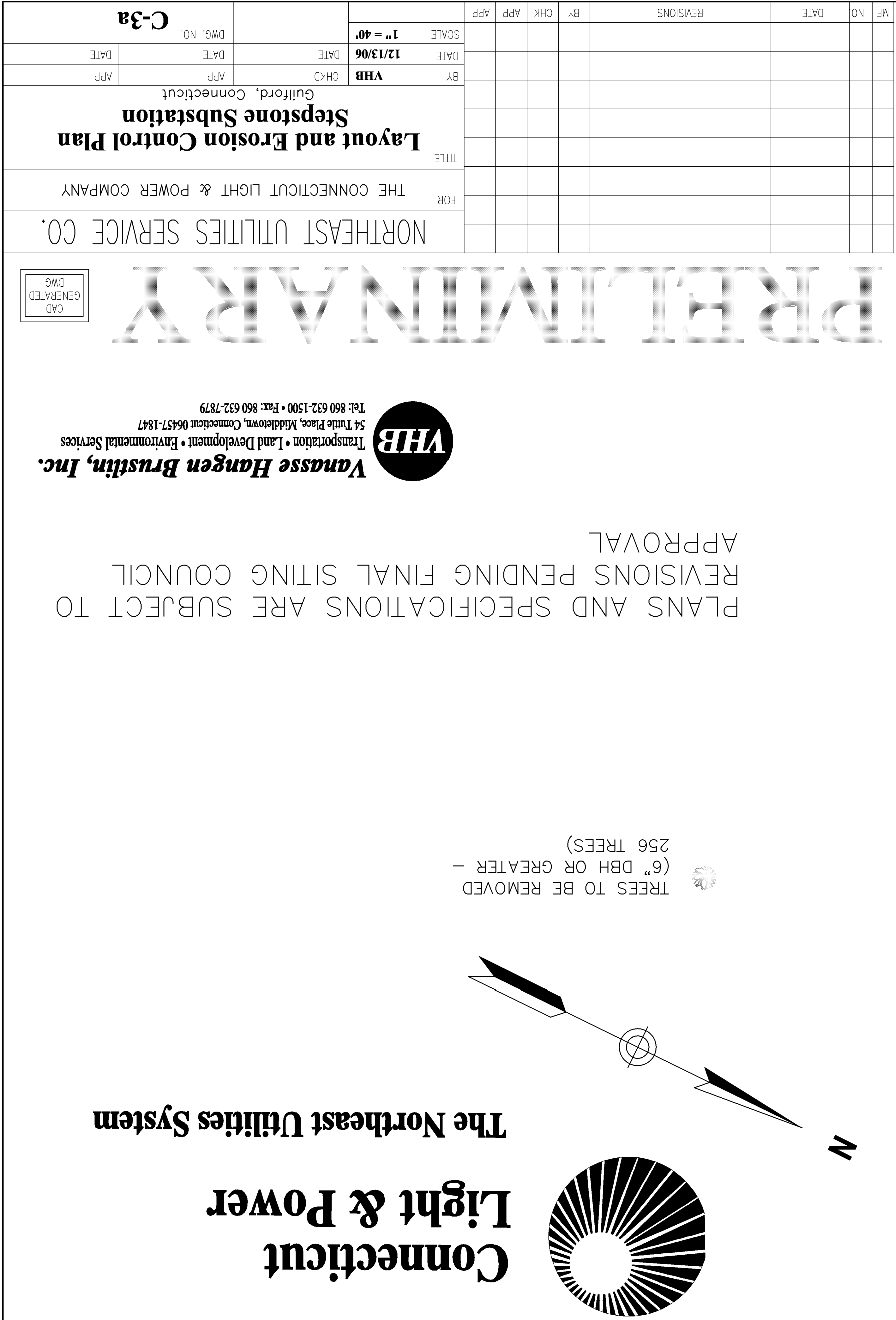
PLANS AND SPECIFICATIONS ARE SUBJECT TO
REVISIONS PENDING FINAL SITING COUNCIL
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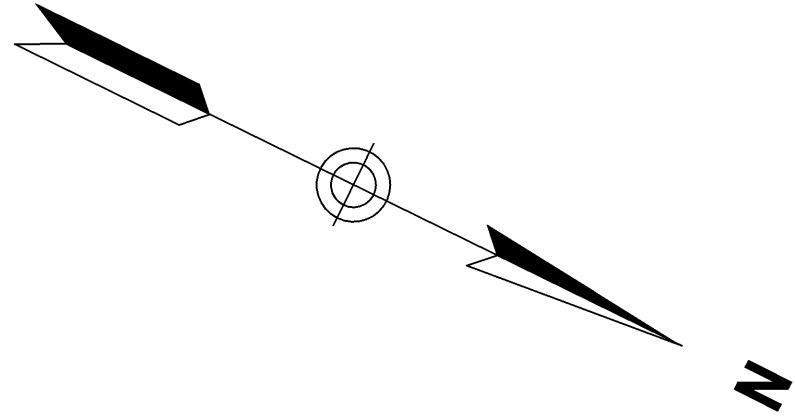
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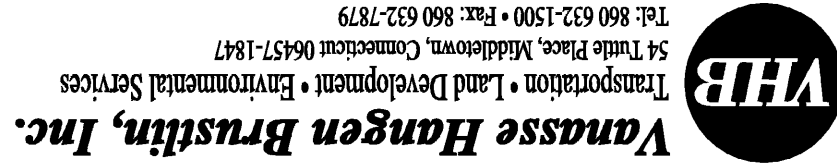
Vanasse Hangen Brustlin, Inc.
Transportation • Land Development • Environmental Services
54 Tindle Place, Middletown, Connecticut 06457-1847
Tel: 860 632-1500 • Fax: 860 632-7879

PRELIMINARY



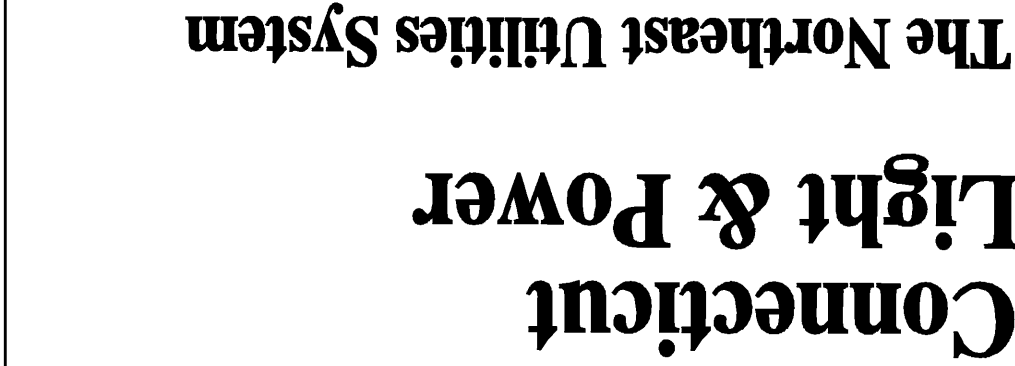


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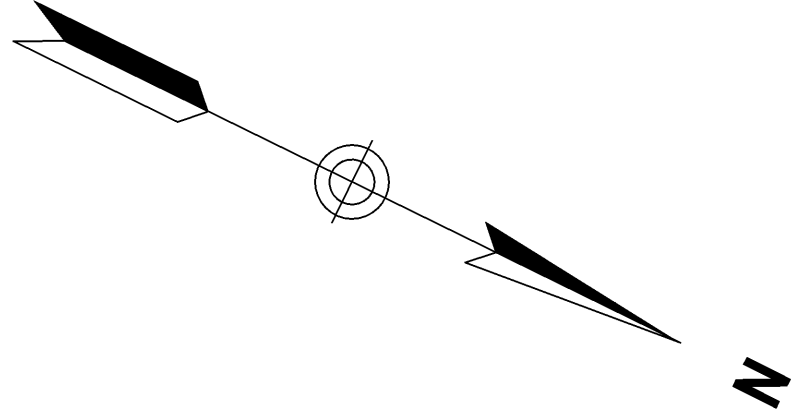
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NORTHEAST UTILITIES SERVICE CO.	FOR	THE CONNECTICUT LIGHT & POWER COMPANY	TITLE	Layout and Erosion Control Plan Stepstone Substation							
				C-3							
DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
BY	VHB	CAD/C	APP	APP	APP	APP	APP	APP	APP	APP	APP
SOURCE	1" = 40'										



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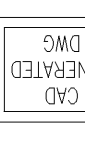


Exit		Prop.	
	CONCRETE		CONCRETE
	HEAVY DUTY PAVEMENT		HEAVY DUTY PAVEMENT
	RIPRAP		RIPRAP
	CONSTRUCTION ENTRANCE		CONSTRUCTION ENTRANCE
27.55 10 x	TOP OF CURB ELEVATION	26.85 80 x	TOP OF CURB ELEVATION
132.75 x	SPOT ELEVATION	45.0 TM x 38.5 BM	SPOT ELEVATION TOP & BOTTOM OF WALL ELEVATION
	TEST PIT LOCATION		TEST PIT LOCATION
	MONITORING WELL		MONITORING WELL
	UNDERDRAIN		UNDERDRAIN
	ROOF DRAIN		ROOF DRAIN
	SEWER		SEWER
	FORCE MAIN		FORCE MAIN
	OVERHEAD WIRE		OVERHEAD WIRE
	WATER		WATER
	FIRE PROTECTION		FIRE PROTECTION
	DOMESTIC WATER		DOMESTIC WATER
	GAS		GAS
	ELECTRIC		ELECTRIC
	STEAM		STEAM
	TELEPHONE		TELEPHONE
	FIRE ALARM		FIRE ALARM
	CABLE TV		CABLE TV
	CATCH BASIN		CATCH BASIN
	DOUBLE CATCH BASIN		DOUBLE CATCH BASIN
	GUTTER INLET		GUTTER INLET
	DRAIN MANHOLE		DRAIN MANHOLE
	TRENCH DRAIN		TRENCH DRAIN
	CLEANOUT		CLEANOUT
	FLARED END SECTION		FLARED END SECTION
	HEADWALL		HEADWALL
	CURB STOP & BOX		CURB STOP & BOX
	WATER VALVE & BOX		WATER VALVE & BOX
	TAPPING SLEEVE, VALVE & BOX		TAPPING SLEEVE, VALVE & BOX
	SAMESEX CONNECTION		SAMESEX CONNECTION
	FIRE HYDRANT		FIRE HYDRANT
	WATER METER		WATER METER
	POST INDICATOR VALVE		POST INDICATOR VALVE
	WATER WELL		WATER WELL
	GAS GATE		GAS GATE
	GAS METER		GAS METER
	ELECTRIC MANHOLE		ELECTRIC MANHOLE
	ELECTRIC METER		ELECTRIC METER
	LIGHT POLE		LIGHT POLE
	TELEPHONE MANHOLE		TELEPHONE MANHOLE
	TRANSFORMER PAD		TRANSFORMER PAD
	UTILITY POLE		UTILITY POLE
	GUY POLE		GUY POLE
	GUY WIRE & ANCHOR		GUY WIRE & ANCHOR
	HAND HOLE		HAND HOLE
	PULL BOX		PULL BOX

Legend

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Abbreviations	N
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		DWG. NO.	C-1
	DATE		
	APP		
d, Connecticut General Notes Substation			
LIGHT & POWER COMPANY			
ILITIES SERVICE CO.			
			
			
Hangen Brustin, Inc. Development • Environmental Services town, Connecticut 06457-1847 Tel: 860.632-7879			
E SUBJECT TO G COUNCIL			

Notes:

860 632-7879

UNITED STATES SERVICE CO.

GENERAL NOTES

C-1

Site Plans

Issued for: **Siting Council Review**

Date Issued: December 13, 2006

Latest Issue: December 13, 2006

Index			
No.	Drawing Title	Latest Issue	
C-1	Legend and General Notes	12/13/06	Reference Drawings
C-2	Overall Site Plan	12/13/06	
C-3	Layout and Erosion Control Plan	12/13/06	
C-3a	Layout and Erosion Control Plan	12/13/06	
C-4	Grading, Drainage and Utility Plan	12/13/06	
C-4a	Grading, Drainage and Utility Plan	12/13/06	Existing Conditions Plan
C-5	Site Details	12/13/06	
Sv-1		12/13/06	

Stepstone Substation

Stepstone Hill Road

Guilford, Connecticut

Property Information

Site:
The Connecticut Light and Power Company
Stepstone Hill Road
Guilford, Connecticut

Applicant:
The Connecticut Light and Power Company
P.O. Box 270
Hartford, Connecticut 061414-0270
(860) 605-5000

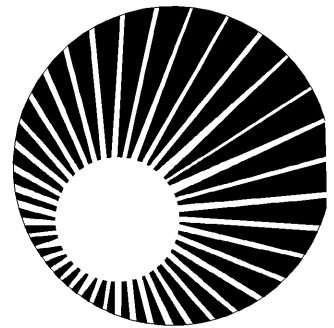
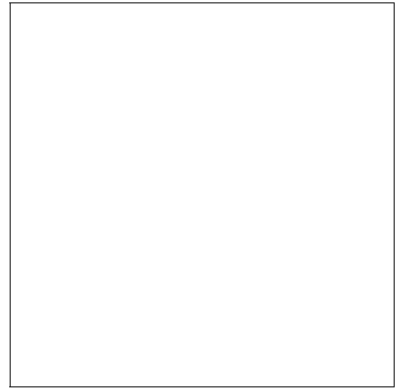
Assessor's Plat: Map 91
Lot: 46 and 46A



Site Location Map



Vannasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services



**Connecticut
Light & Power**
The Northeast Utilities System

THE PROPERTY LINES SHOWN ON THIS PLAN
WERE COMPILED FROM LOCAL ASSESSOR'S PLATS
RECORD, WHO HAS NOT PERFORMED A FIELD
SURVEY TO VERIFY THE PROPERTY LINES.

THIS EXISTING CONDITIONS SHOWN ON THIS PLAN
WERE DEVELOPED FROM A COMBINED EFFORT OF
AERIAL PHOTOGRAMMETRIC MAPPING BY AERIAL
CARTOGRAPHIC OF AMERICA, BASED ON AERIAL
PHOTOGRAPHS TAKEN ON 12-3-87.

THE LOCATIONS OF EXISTING UNDERGROUND
UTILITIES SHOWN ON THIS PLAN ARE BASED ON
FIELD OBSERVATIONS AND INFORMATION OF
RECORD. THEY ARE NOT WARRANTED TO BE
EXACTLY LOCATED NOR IS IT WARRANTED THAT
ALL UNDERGROUND UTILITIES OR OTHER
STRUCTURES ARE SHOWN ON THIS PLAN.

PARCEL LIES WITHIN ZONE C (AREA OF MINIMUM
 FLOODING) AS SHOWN ON THE FLOOD INSURANCE
 RATE MAP FOR THE TOWN OF GUILFORD,
 CONNECTICUT COMMUNITY PANEL NUMBER
 0900077 00108, EFFECTIVE DATE AUGUST 19,
 1986.
 THE WETLANDS SHOWN ON THIS PLAN WERE
 DEDICATED BY VHB, INC., AND FIELD SURVEYED
 BY VHB IN 2006.

THE WETLANDS SHOWN ON THIS PLAN WERE
DELINEATED BY VHB, INC., AND FIELD SURVEYED
BY VHB IN 2006.

Scale 1"=60'	Date	December 13, 2006
Project Title		

Stepstone Hill Road

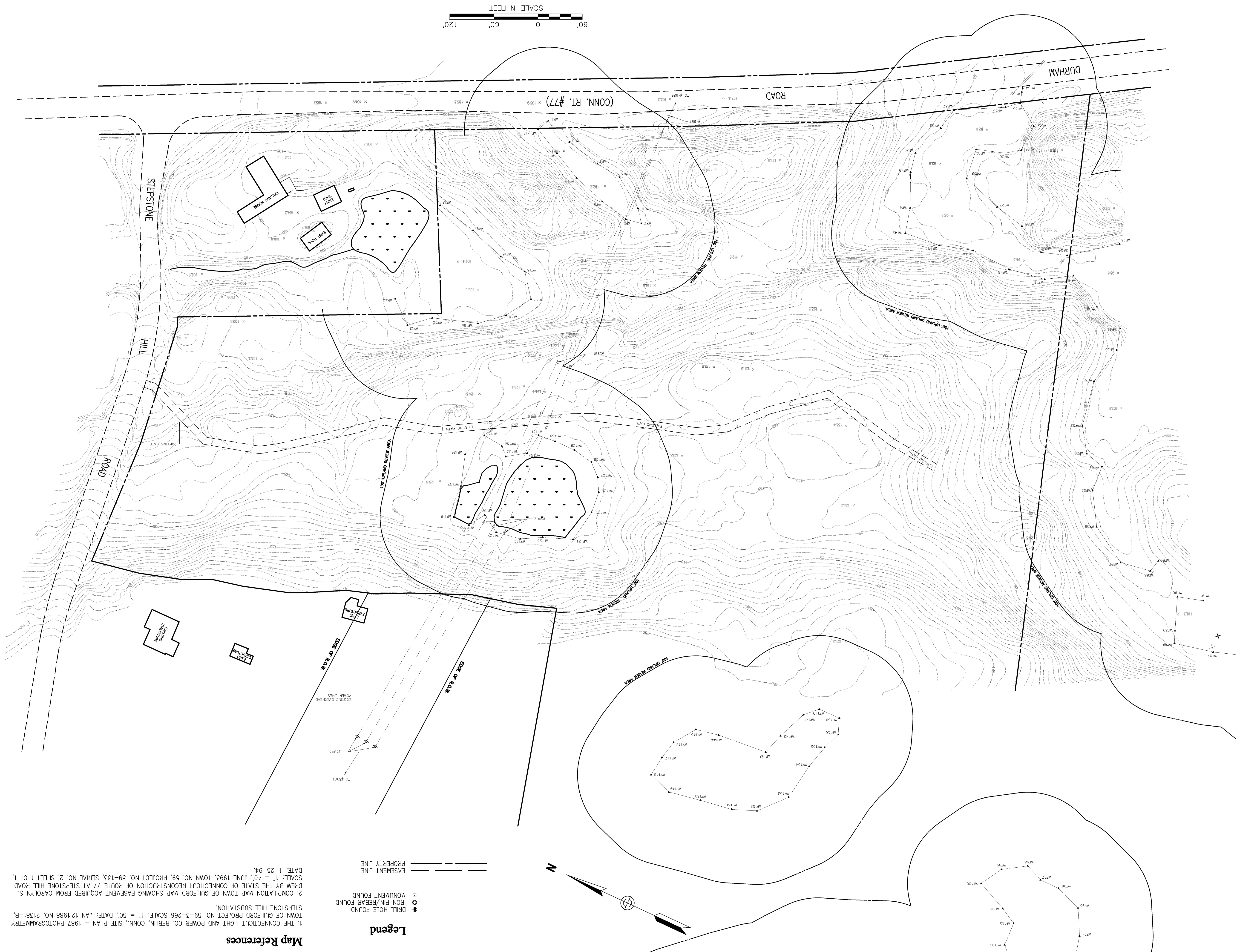
Guilford, Connecticut

Review

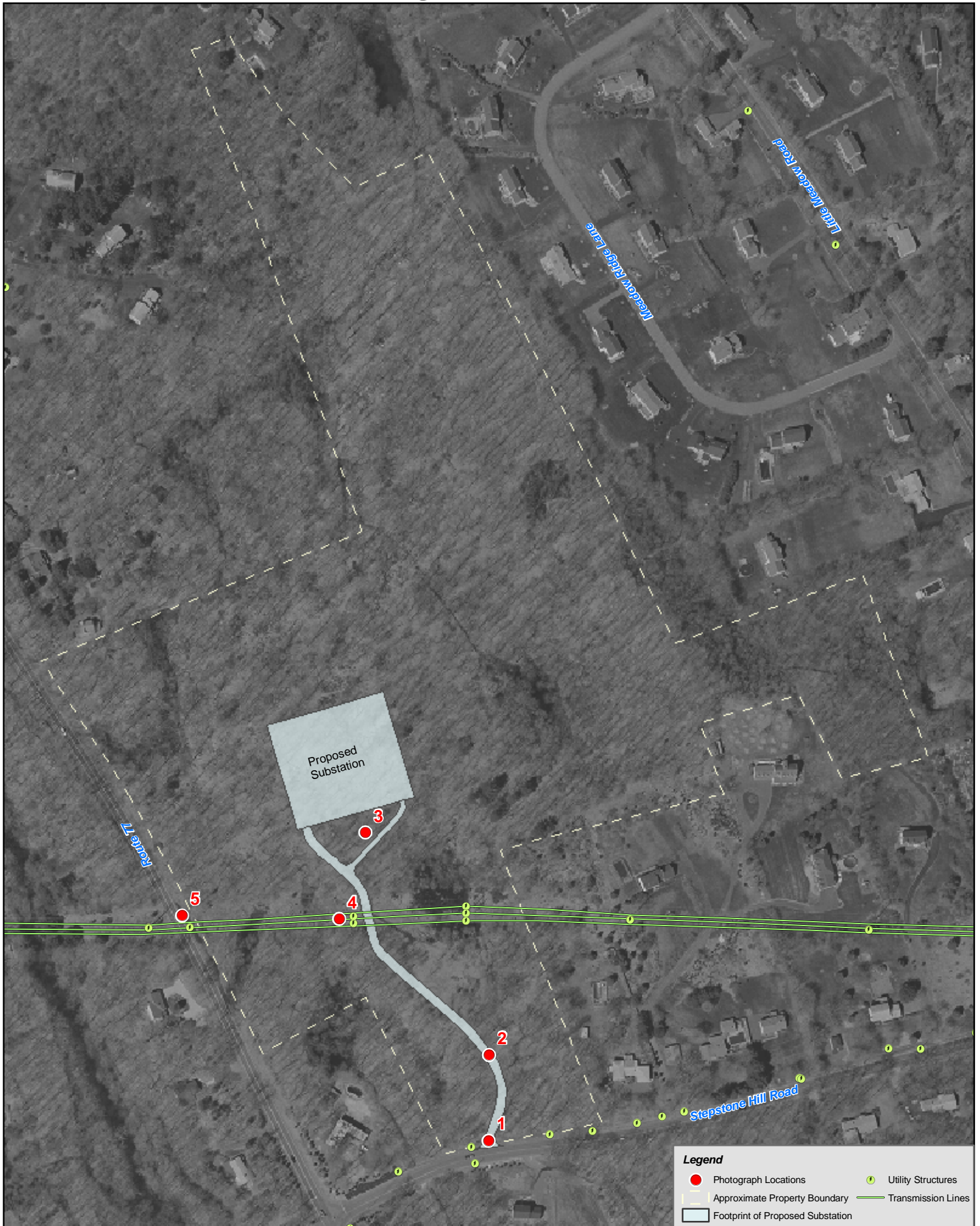
Drowning Number

Sheet 1
of 1

41033



PhotoLog Documentation



Vanasse Hangen Brustlin, Inc.
PHOTOLOG DOCUMENTATION
Stepstone Substation
Stepstone Hill Road
Guilford, Connecticut



View 1 - Existing entrance off of Stepstone Hill Road.



View 2 - Existing access drive.

Vanasse Hangen Brustlin, Inc.
PHOTOLOG DOCUMENTATION
Stepstone Substation
Stepstone Hill Road
Guilford, Connecticut



View 3 - General substation location.



View 4 - Existing transmission corridor on property.

Vanasse Hangen Brustlin, Inc.
PHOTOLOG DOCUMENTATION
Stepstone Substation
Stepstone Hill Road
Guilford, Connecticut



View 5 - Existing transmission corridor at Route 77.

Stepstone Substation

Stepstone Hill Road
Guilford, Connecticut

Prepared for



**Connecticut
Light & Power**

The Northeast Utilities System

Prepared by

VHB/Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, Connecticut 06457
(860) 632-1500

November 2006

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Attachment	Description
Attachment A	Wildlife Habitat Evaluation Checklists
Attachment B	Soil Report

I. Introduction

The Connecticut Light and Power Company (“CL&P”) is evaluating the feasibility of developing a new bulk power substation (to be known as the Stepstone Substation, referred to herein as the “Substation”) on a portion of its ±38-acre property adjacent to Stepstone Hill Road and Route 77 in the Town of Guilford (the “Property”). The Substation is proposed to be located in the south-central portion of the Property in the vicinity of an existing transmission line right-of-way (ROW). Figure 1 depicts the location of the Property.

This Environmental Assessment Report provides a general description of the Property as well as a detailed analysis of the various wildlife habitats occupying the Property. A wildlife habitat survey was performed by Vanasse Hangen Brustlin, Inc. (VHB) personnel in accordance with the requirements for a Certificate of Environmental Compatibility and Public Need from the Connecticut Siting Council (“CSC”) for the construction of an electric substation facility as defined in General Statutes § 16-50l (a) (1). The overall goal of the study is to identify and document the wildlife and vegetation existing on the Property and to determine potential environmental impacts of the proposed Substation Facility development.

II. General Site Description

The Property in its entirety encompasses approximately 38 acres of land. The majority of the Property is undeveloped and forested with the exception of an overhead transmission line, five transmission line structures and respective maintained corridor, which bisects the southern portion of the Property. The majority of vegetation is common to post agricultural mid-successional forest growth.

A. Topography and Drainage Basins

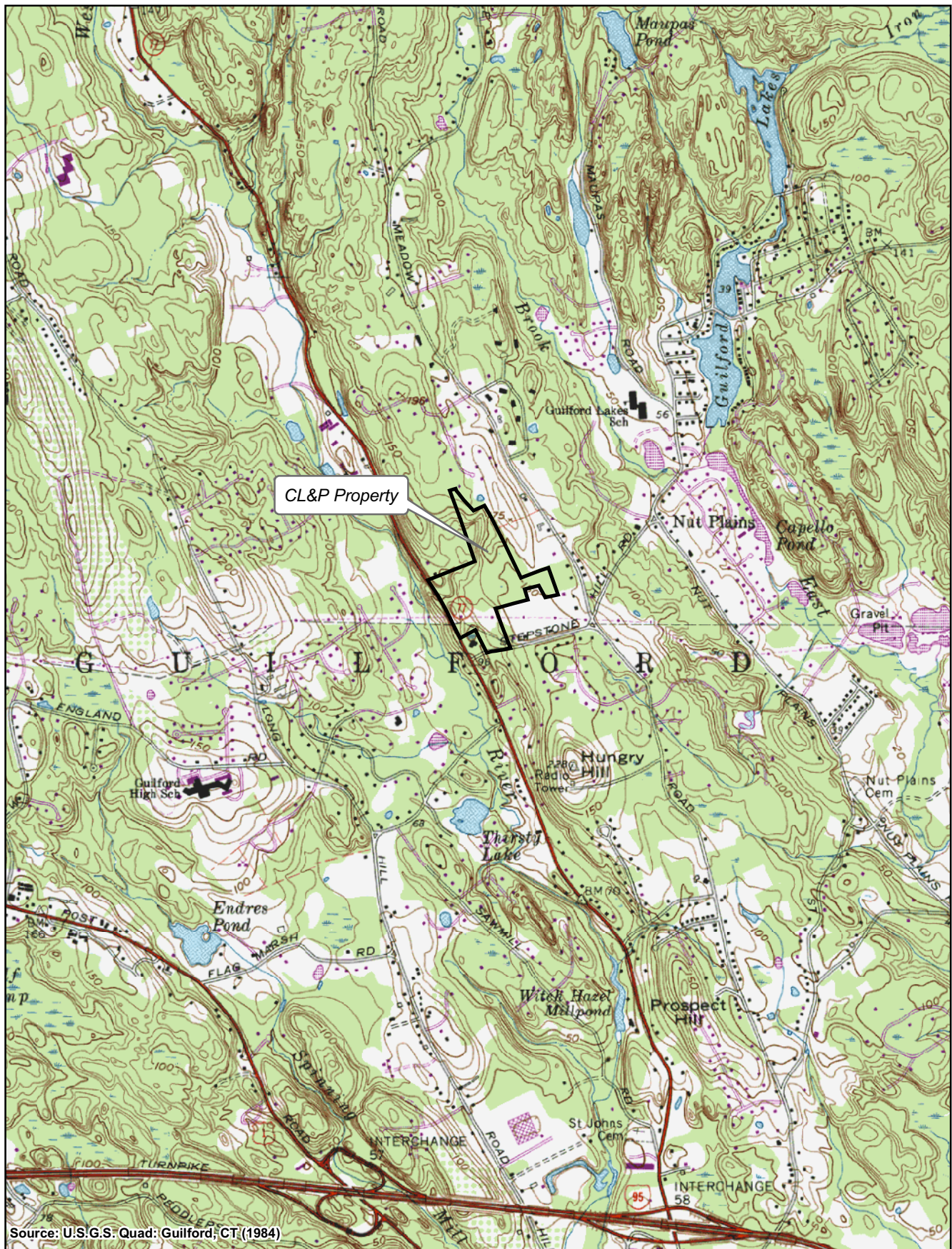
The general topography of the Property is moderately sloping from east to west. The highest elevations occur at approximately 175 feet along the northeastern boundary of the Property and the lowest elevations are approximately 90 feet along the western boundary.

The Property is located in the West River drainage basin. This drainage basin is located within the South Central Eastern Regional Complex, which is within the South Central Coast Major Basin.

B. Water Supply Area

The closest public water supply wells are part of the Pinewood Wellfield, located approximately 900 feet southwest of the proposed Substation. Northern and western portions of the Property are located within the Pinewood Well Field aquifer protection area. Land use activities within the Pinewood Wellfield APA are regulated by both the CTDEP and the Town of Guilford to protect the quality of the groundwater. However, substations and other utility electrical equipment are not included in the definition of regulated facilities under CTDEP regulations (Regulations of Connecticut State Agencies [“RCSA”], §§22a-354i-1 to 22a-354i-10, effective 2/2/04). In addition, under § 273-92 Groundwater

Figure 1: USGS Topographic Site Location Map



08/15/06

Protection District of the Town of Guilford's Zoning Regulations, substations and other utility electrical equipment are not identified as a prohibited land use or special permit land use within a Groundwater Protection District.

C. Geology

According to the Bedrock Geological Map of Connecticut (Connecticut Geological and Natural History Survey, 1985), the bedrock underlying the Property consists of gneiss, granofels and amphibolite. Gneiss is a light and dark, medium- to coarse-grained metamorphic rock characterized by compositional banding of light and dark minerals. It is typically composed of quartz, feldspar, and various amounts of dark minerals. Granofels is a light to dark, medium- to coarse-grained, massive to poorly layered metamorphic rock composed primarily of quartz and feldspar and lacks the compositional banding of gneiss. Amphibolite is a dark-colored, fine-to coarse-grained, massive to poorly layered metamorphic rock containing amphibole and plagioclase with little or no quartz.

The Surficial Materials Map of Connecticut indicates that most of the Property is underlain by thin till. Till in this area is generally less than 10-15 feet thick and includes areas of bedrock outcrop where till is absent.

D. Soil Description

A detailed wetland delineation and soil survey was performed by Thomas W. Pietras, Soil Scientist, of Soil Science and Environmental Services, Inc. of Cheshire, CT on May 10 and 11, 2005. Details of the wetland delineation and identified soils can be found in the attached Soil Report, included as Attachment B.

Wetland soils on the site consist of poorly drained Leicester fine sandy loam and poorly drained and very poorly drained Ridgebury, Leicester and Whitman extremely stony fine sandy loam complex.

Upland soil types consist of complexes of well drained Charlton fine sandy loam and somewhat excessively drained Hollis fine sandy loam as well as moderately well drained Sutton fine sandy loam. The area within the transmission line right-of-way consists of Udorthents smoothed.

III. Habitat Study Methodology

The wildlife habitat evaluation was divided into five parts: 1) Vegetation Assessment, 2) Bird Monitoring, 3) Vernal Pool Monitoring, 4) Habitat Structure Assessment and 5) NEWild™ analysis. All five components of the wildlife habitat evaluation were completed for the entire Property. This section discusses the methodology used to perform the wildlife habitat study.

A. Vegetation Assessment

The Property was segmented into three major habitat types, which were delineated using upland and wetland boundaries and dominant vegetative cover types. The boundaries of each habitat type are outlined in Figure 2, Habitat Assessment. The three habitat types identified are deciduous upland forest, palustrine forested wetland and vernal pool. The dominant tree, shrub and herbaceous layers of each habitat were identified and documented on a Vanasse Hangen Brustlin, Inc. (VHB) Wildlife Habitat Evaluation Checklist, included in Attachment A of this report.

B. Bird Monitoring

The avian study component of this report was designed in accordance with standard avian monitoring techniques, such as those being utilized by the Massachusetts Audubon Society¹, which are recognized by the Connecticut Audubon Society and Connecticut Department of Environmental Protection. Bird observations were conducted at six stations chosen randomly across the Property (see Figure 2 for avian station locations). Each location was visited on June 18, 2005 between 5 am and 9 am. Visual and auditory observations of avifauna were recorded at each station over a 10-minute period. Observations included bird calls, songs, and visual sightings such as nesting/brooding and birds in flight. Avian findings for each plot are located in the Fauna section of this report.

C. Vernal Pool Monitoring

The methods employed on the Property to conclusively identify potential vernal pool habitats included a variety of recognized field exploration techniques. Potential vernal pools located on the Property are conclusively identified based on both physical characteristics (i.e., occurs within a confined depression or basin that lacks a permanent outlet stream, standing water for approximately two months during the growing season, lacks any fish population, and dries out most years) and the occurrence of one or more obligate wildlife species (i.e., spotted, Jefferson, and marbled salamanders, wood frogs, and fairy shrimp). This methodology generally follows the guidelines noted in the University of Connecticut Cooperative Extension System, *A Guide to the Identification and Protection of Vernal Pool Wetlands of Connecticut*. The identification of vernal pool species utilized methods described in the *Guidelines for Certification of Vernal Pool Habitat* (Massachusetts Division of Fisheries and Wildlife, 1998) along with various amphibian and vernal pool species field guides.

Vernal pools located on the Property were inspected in the field by a wetland scientist and subsequently described and mapped. Potential vernal pools were inspected for any indirect (i.e., chorusing) or direct evidence of amphibian breeding (such as the presence of two or more egg masses or sightings of adults). In addition, cover searches were performed (i.e., downed tree limbs, logs, large rocks) in the immediate vicinity of the vernal pool, including the proposed development and access/utility easement areas, for adult salamanders and frogs. Vernal pool inspections were conducted periodically during the months of May, June and July 2005 and March, April, May and June 2006. Vernal pool locations are identified on Figure 2. Details of the investigation can be found in the Vernal Pool section of this report.

¹ Vickery P.D. and Perkins, S.A. *Massachusetts Audubon Society Recommended Protocol for Monitoring Songbird Populations*.

Figure 2: Habitat Assessment



D. Habitat Structure Assessment

Various habitat structural features were identified and documented for each habitat type. Forested areas were evaluated for canopy cover, perch height and midstory composition. All habitat areas were assessed to determine soil and substrate type, depth to bedrock, slash piles, depth of leaf litter, topography and groundwater elevation. The locations of dirt paths, structures and stone walls were also documented. VHB scientists searched for and documented the occurrence of burrows, tree cavities, snags and vernal pools (seven vernal pool habitats were identified on the Property). Habitat structure assessments were documented for each habitat type on Wildlife Habitat Evaluation Checklists, which are included in Attachment A of this report.

E. NEWILD™ Study

New England Wildlife Database (“NEWild™”) software was utilized by environmental scientists as a general predictive tool to identify potential fauna that may be occupying the Property. NEWild™ is a computer based wildlife habitat evaluation program developed by Scott A. Thomasma and Linda E. Thomasma of the USDA Forest Service. The program includes a database of 338 species and is based on the book, “New England Wildlife: Habitat, Natural History, and Distribution”, written by Richard DeGraaf and Deborah Rudis in 1986. The program determines potential avian, amphibian, reptile and mammal species that may occupy the Property based on general habitat requirements. The habitat conditions found at the Property were entered into the program and a list of potential species was generated. As the program generally over predicts the variety of species utilizing a particular habitat, potential species were reviewed by experienced scientists. The list of potential species (Table 15) that may be utilizing the Property is included in the Mammal and Herpetofauna Evaluation section of this report.

IV. Habitat Descriptions

Three major habitat types exist on the Property, which are deciduous upland forest, deciduous wetland forest and vernal pool. The majority of the Property is deciduously forested with the exception of the disturbed transmission line ROW. Of the wetland forest habitat, seven wetland areas exist in various locations on the Property. Each of the wetland areas contain vernal pool habitat which provide varying degrees of amphibian breeding habitat quality. Woods roads that traverse the Property appear to be free from excessive ATV usage. An informal paint-ball course is situated in the northern extent of the Property.

Details of the habitats are summarized below and provided in the Wildlife Habitat Evaluation Checklists, provided as Attachment A.

A. Habitat Areas

Deciduous Upland Forest

The majority of the Property is occupied by deciduous upland forest common to post agricultural mid-successional forest growth. The forest contains scattered areas with ledge outcroppings, ledge walls and talus slopes. Woods roads traverse various areas of the Property, many of which are being reclaimed by the forest. Navigable woods roads appear to receive little ATV traffic. The majority of the upland forest is dominated by well drained or somewhat excessively drained soils with the exception of a moderately well drained rich-woods slope immediately upgradient north of Wetland 4.

The forest on the Property is primarily occupied by poletimber with an average diameter breast height (DBH) of 10 inches. Canopy closure is generally greater than 65 percent resulting in moderate herbaceous and shrub layers with many tree snags and tree throws. Selective timber harvesting appears to have occurred in small summit and side slope areas within the last 10 to 15 years. Areas that were subjected to timber harvesting are primarily occupied by pole timber and sapling/seedling sized trees with a DBH less than 8 inches, a closed canopy of less than 60 percent and dense shrub and herbaceous layers. Few wood chips piles, cut logs and slash piles remain.

The highest elevations of the upland forest are primarily vegetated with black oak (*Quercus velutina*), scarlet oak (*Quercus coccinea*), red oak (*Quercus rubra*), beech (*Fagus grandifolia*), black birch (*Betula lenta*), hickory (*Carya* sp.), mountain laurel (*Kalmia latifolia*), huckleberry (*Gaylussacia baccata*), early low bush blueberry (*Vaccinium vacillans*), partridgeberry (*Mitchella repens*) and green briar (*Smilax rotundifolia*). Mid-slope and toe-slope forested upland areas are commonly vegetated with tulip poplar (*Liriodendron tulipifera*), red oak, red maple, hickory, white oak (*Quercus alba*), beech, black birch, black cherry (*Prunus serotina*), sassafras (*Sassafras albidum*), mountain laurel, mapleleaf viburnum (*Viburnum acerifolium*), saspirilla (*Aralia hispida*), early low bush blueberry, Canada may flower (*Maianthemum canadense*), sedge (*Carex pennsylvatica*) and ground pine (*Lycopodium obscurum*). The rich woods seepage slope north of Wetland 4 is dominantly vegetated with sugar maple (*Acer Saccharum*), green ash (*Fraxinus pennsylvanica*) tulip poplar, beech,

mapleleaf viburnum, sassafras, jack-in-the-pulpit (*Arisaema triphyllum*), doll's eyes (*Actaea pachypoda*) and enchanter's nightshade (*Circaea quadrisulcata*).

Palustrine Forested Wetland

There are seven palustrine forested wetland areas on the Property (Wetlands 1 – 7 depicted on Figure 2). These wetlands primarily function to receive and store groundwater and surface runoff, recharge groundwater and provide production export and wildlife habitat. All of the wetland areas on the Property are seasonally inundated and provide varying degrees of vernal pool habitat. Wetlands 3 and 4 are part of a large wetland system that facilitates the movement of water from an area north of the Property westward to the West River and as such additionally function to provide nutrient removal, retention and transformation. Most of the wetlands on the Property offer visual quality and aesthetic value especially during the growing season and during the late winter/early spring period due to the vernal pool habitats.

Wetland 1 (flags #1 through #12) is a small isolated wetland located near the western property boundary adjacent to Route 77. The northern portion of the wetland extends into the transmission line right-of-way. The wetland contains seasonal shallow inundation in a ± 75 -foot long by ± 20 -foot wide depression for a short period during the growing season. The forested portion of the wetland is primarily vegetated with red oak, ironwood (*Carpinus caroliniana*), swamp azalea (*Rhododendron viscosum*), pepperbush (*Clethra alnifolia*), royal fern (*Osmunda regalis*), cinnamon fern (*Osmunda cinnamomea*) and sphagnum moss. The portion of the wetland in the disturbed ROW is primarily vegetated with gray dogwood (*Cornus racemosa*), steplebush (*Spiraea tomentosa*), pepperbush, bristly dewberry (*Rubus hispidus*), deer-tongue grass (*Dichanthelium clandestinum*), spotted joe-pye weed (*Eupatorium dubium*), lurid sedge (*Carex lurida*), Canada rush (*Juncus canadensis*), soft rush (*Juncus effuses*), beggar-tick (*Bidens frondosa*), mad-dog skullcap (*Scutellaria lateriflora*), sensitive fern (*Onoclea sensibilis*), bladder sedge (*Carex intumescense*), sedge, royal fern, cinnamon fern and sphagnum moss. Trees within the forested area are generally pole timber with the majority of wetland vegetated with shrubs and herbaceous species.

Wetland 2 (flags #13 through #22) is a large groundwater-controlled depressional wetland located in the southwest corner of the Property. The wetland extends off the Property onto the adjacent residential property and drains south under Stepstone Hill Road. The portion of the wetland on the Property is palustrine forested with seasonal saturation and pockets of seasonal inundation. The portion of the wetland on the adjacent property consists of a sparsely-vegetated large basin-shaped depression that experiences seasonal inundation and palustrine forested wetland. The wetland extends east to a ledge wall and talus slope. The wetland is dominantly vegetated with pin oak (*Quercus palustris*), tulip poplar, red maple, pepperbush, spicebush (*Lindera benzoin*), highbush blueberry (*Vaccinium corymbosum*) and sphagnum moss. The forested wetland contains a range of timber sizes from sapling/seedling to mature sawtimber with a canopy closure greater than 60 percent. Tree snags, tree throws and broken limbs are abundant in this wetland area.

Wetland 3 (flags #118 through #137) consists of a small wetland located in the southeastern portion of the Property. The majority of the wetland is located under the transmission line ROW with a small portion extending north into a wooded area. This wetland is groundwater controlled and experiences seasonally shallow inundation. The forested portion of the wetland is dominantly vegetated with pin

oak, red maple, highbush blueberry and mountain laurel. Under the ROW the wetland is dominantly vegetated with steplebush, pepperbush, bristly dewberry, deer tongue grass (*Dichanthelium clandestinum*) and soft rush (*Juncus effuses*). Trees within the forested area are generally pole timber with the majority of wetland vegetated with shrubs and herbaceous species.

Wetland 4 (flags #138 through #156) is a large seasonally inundated pond and surrounding palustrine forested wetland. The groundwater-controlled depressional wetland is isolated in a central portion of the Property. The wetland is dominated by the sparsely vegetated pool with the narrow wetland forest surrounding the pool dominated by red maple, red oak, pepperbush and mountain laurel. Timber ranges from sapling/seedling to mature sawtimber with an average canopy closure greater than 50 percent.

Wetland 5 (flags #92 through #117) is located along the eastern Property boundary. The majority of this groundwater-controlled depressional wetland is located off-site on the adjacent residential properties east of the Property. The portion of this wetland on the Property is palustrine forest with areas of seasonal saturation and shallow inundation. Dominant vegetation within the wetland includes red maple, red oak, American elm, pin oak, highbush blueberry, ironwood, pepperbush and winterberry (*Ilex Verticillata*). Tree sizes range from sapling/seedling to mature sawtimber with an average canopy closure greater than 65 percent.

Wetland 6 (flags #60 through #91) is a palustrine forested wetland located in the northern portion of the Property. It is a small portion of a large wetland system that meanders on and off of the Property in two locations, originating from a pond north of the Property and eventually discharging to the West River to the west of Route 77. Wetland 4 includes an intermittent watercourse, palustrine forested wetland and seasonally inundated pool. The intermittent watercourse conveys flow from a pond north of the Property and discharges it to the palustrine forested wetland. This wetland area contains many fallen tree limbs, tree throws and tree snags. A previously undocumented State special concern species, featherfoil (*Hottonia inflata*), was identified in the seasonally inundated pool. Dominant species within the wetland forest include pin oak (*Quercus palustris*), red maple, sycamore (*Platanus occidentalis*), tulip poplar, pepperbush, spicebush, sensitive fern, Virginia chain fern (*Woodwardia virginica*), cinnamon fern and sphagnum moss. Trees within the forested wetland generally have a DBH greater than 12 inches with a canopy closure greater than 65 percent.

Wetland 7 (flags #23 through #59) is a palustrine forested wetland area adjacent to Route 77 in the northwest corner of the Property. It is a small portion of a large wetland system that meanders on and off of the Property in two locations, originating from a pond north of the Property and eventually discharging to the West River to the west of Route 77. The area identified as Wetland 3 is seasonally saturated and includes several braided intermittent watercourses and a shallow seasonally-inundated pool created by a small stone dam. The forested portions of the wetland are dominantly vegetated with tulip poplar, red oak, red maple, American elm (*Ulmus americana*), shagbark hickory, black birch, ironwood, pepperbush, spicebush skunk cabbage (*Symplocarpus feotidus*), false hellebore (*Veratrum viride*), water horehound (*Lycopus virginicus*), meadow-rue (*Thalictrum pubescens*), fowl mana grass (*Glyceria striata*), rice cutgrass (*Leersia oryzoides*), fringed sedge (*Carex crinita*), marsh blue violet (*Viola cucullata*), sensitive fern, cinnamon fern, marsh fern (*Thelypteris thelypteroides*), New York fern (*Thelypteris noveboracensis*) and sphagnum moss. Many tree snags, fallen branches and tree

throws occur in this area. Trees range from sapling/seedling to mature sawtimber with an average canopy closure greater than 65 percent.

B. Fauna

This section describes the results of the vernal pool, bird and mammal investigation. Vernal pool inspections were conducted periodically during the months of May and June 2005. Vernal pools located on the Property were inspected in the field by a wetland scientist and subsequently described and mapped. The avian study was conducted at six stations chosen randomly across the Property. The study plots were visited on June 18, 2005 between 5 am and 9 am. NEWild™ software was also utilized by environmental scientists to determine potential fauna that may be occupying the Property. Certain limitations are inherent in this type of survey due to the timing, both seasonal and time of day, which may limit the opportunity to observe other species that might use various habitats on the Property.

■ 1. Bird Monitoring

Plot One

Plot One was located in the northern end of the Property within a rich woods upland hillside immediately north of Wetland 6. The location of Plot One enabled the visual and auditory identification of avifauna within this forested wetland and upland areas. Table 1 details the birds that were identified, the number of individuals identified and the habitat they were identified in.

Table 1: Avian Study Plot One – Upland/Wetland Edge in Northern Portion of Property

Common Name	Scientific Name	No.	Habitat Identified In
Cardinal	<i>Cardinalis cardinalis</i>	1	Deciduous upland forest
Crow	<i>Corvus brachyrhynchos</i>	2 – 4	Deciduous upland forest
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1	Deciduous upland forest
Eastern Wood-Pewee	<i>Contopus virens</i>	1	Deciduous upland forest
Red-Bellied Wood Pecker	<i>Melanerpes erythrocephalus</i>	1	Deciduous upland forest
Red-eyed vireo	<i>Vireo olivaceus</i>	1	Wetland forest
Scarlet Tanager	<i>Piranga olivacea</i>	1	Deciduous upland forest
Wood Thrush	<i>Hylocichla mustelina</i>	1	Deciduous upland forest

Plot Two

Plot Two was established on a woods road within the deciduous upland forest ± 75 feet west of the northern portion of Wetland 5. The birds in this area were heavily concealed by vegetation and were generally identified by their vocalizations. Table 2 details the birds that were identified, the number of individuals identified and the habitat they were identified in.

Table 2: Avian Study Plot Two – Woods Road in Upland Forest

Common Name	Scientific Name	No.	Habitat Identified In
Blue Jay	<i>Cyanocitta cristata</i>	1	Deciduous Upland Forest
Cardinal	<i>Cardinalis cardinalis</i>	1	Deciduous Upland Forest
Eastern Wood-Pewee	<i>Contopus virens</i>	1	Deciduous Upland Forest
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	2	Deciduous Upland Forest
Mockingbird	<i>Mimus polyglottos</i>	1	Deciduous Upland Forest
Ovenbird	<i>Seiurus aurocapillus</i>	1	Deciduous Upland Forest
Red-eyed Vireo	<i>Vireo olivaceus</i>	1	Deciduous Upland Forest
Tufted Titmouse	<i>Baeolophus bicolor</i>	1	Deciduous Upland Forest
Veery	<i>Catharus fuscescens</i>	1	Deciduous Upland Forest
Wood Thrush	<i>Hylocichla mustelina</i>	1	Deciduous Upland Forest

Plot Three

Plot Three was established at the edge of Wetland 5 along the eastern property boundary. The birds in this area were heavily concealed by vegetation and were primarily identified by their vocalizations.

Table 3 details the birds that were identified, the number of individuals identified and the habitat they were identified in.

Table 3: Avian Study Plot Three – Upland and Wetland Forest Edge

Common Name	Scientific Name	No.	Habitat Identified In
Blue Jay	<i>Cyanocitta cristata</i>	2	Deciduous Upland Forest
Crow	<i>Corvus brachyrhynchos</i>	3	Wetland Forest
Eastern Wood-Pewee	<i>Contopus virens</i>	1	Wetland Forest
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	2	Deciduous Upland Forest
Ovenbird	<i>Seiurus aurocapillus</i>	1	Deciduous Upland Forest
Wood Thrush	<i>Hylocichla mustelina</i>	1	Wetland Forest

Plot Four

Plot Four was established on a hill under the transmission line ROW to the east of the Property. The location of Plot Four enabled the visual identification of avifauna within the majority of the ROW on the subject Property as well as the auditory identification of avifauna within the nearby upland forest. Table 4 details the birds that were identified, the number of individuals identified and the habitat they were identified in.

Table 4: Avian Study Plot Four – Hilltop under Transmission Line ROW

Common Name	Scientific Name	No.	Habitat Identified In
Blue Jay	<i>Cyanocitta cristata</i>	2	Deciduous Upland Forest
Blue-winged Warbler	<i>Vermivora pinus</i>	1	ROW
Baltimore Oriole	<i>Icterus galbula</i>	2 (Male and Female)	Deciduous Upland Forest
Brown-headed Cowbird	<i>Molothrus ater</i>	1	ROW/Upland Forest Edge
Cardinal	<i>Cardinalis cardinalis</i>	1	Deciduous Upland Forest
Catbird	<i>Dumetella carolinensis</i>	1	Scrub/Shrub at ROW edge
Fish Crow	<i>Corvus ossifragus</i>	1	ROW
House Finch	<i>Carpodacus mexicanus</i>	1	Deciduous Upland Forest
House Wren	<i>Troglodytes aedon</i>	1	ROW
Mourning Dove	<i>Zenaida macroura</i>	4	Perched on ROW structures
Pine Warbler	<i>Dendroica pinus</i>	1	ROW
Robin	<i>Turdus migratorius</i>	1	ROW

Plot Five

Plot Five was established within the upland forest ± 200 feet east of Route 77 proximate to a large ledge outcropping. The birds in this area were again heavily concealed by vegetation and were primarily identified by their vocalizations. Table 5 details the birds that were identified, the number of individuals identified and the habitat they were identified in.

Table 5: Avian Study Plot Five – Upland Forest near Ledge Outcropping

Common Name	Scientific Name	No.	Habitat Identified In
Baltimore Oriole	<i>Icterus galbula</i>	1	Deciduous Upland Forest
Brown-headed Cowbird	<i>Molothrus ater</i>	4	Deciduous Upland Forest
Downy Woodpecker	<i>Picoides pubescens</i>	1	Deciduous Upland Forest
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1	Deciduous Upland Forest
Mourning Dove	<i>Zenaida macroura</i>	1	Deciduous Upland Forest
Northern Flicker	<i>Colaptes auratus</i>	1	Deciduous Upland Forest
Ovenbird	<i>Seiurus aurocapillus</i>	1	Deciduous Upland Forest
Red-Bellied Wood Pecker	<i>Melanerpes erythrocephalus</i>	1	Deciduous Upland Forest
Robin	<i>Turdus migratorius</i>	1	Deciduous Upland Forest
Tufted Titmouse	<i>Baeolophus bicolor</i>	2	Deciduous Upland Forest
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1	Deciduous Upland Forest
Wood Thrush	<i>Hylocichla mustelina</i>	3	Deciduous Upland Forest

Plot Six

Plot Six was established on a woods road approximately 200 feet north of Stepstone Hill Road. The birds in this area were heavily concealed by vegetation and were primarily identified by their vocalizations. Table 6 details the birds that were identified, the number of individuals identified and the habitat they were identified in.

Table 6: Avian Study Plot Six – Woods Road in Upland Forest

Common Name	Scientific Name	No.	Habitat Identified In
Baltimore Oriole	<i>Icterus galbula</i>	2	Deciduous Upland Forest
Red-Bellied Wood Pecker	<i>Melanerpes erythrocephalus</i>	1	Deciduous Upland Forest
Tufted Titmouse	<i>Baeolophus bicolor</i>	1	Deciduous Upland Forest
House Wren	<i>Troglodytes aedon</i>	1	Deciduous Upland Forest
Goldfinch	<i>Carduelis tristis</i>	1	Deciduous Upland Forest
Cardinal	<i>Cardinalis cardinalis</i>	1	Deciduous Upland Forest
Brown-headed Cowbird	<i>Molothrus ater</i>	1	Deciduous Upland Forest
Grackle	<i>Quiscalus quiscula</i>	1	Deciduous Upland Forest
Catbird	<i>Dumetella carolinensis</i>	1	Deciduous Upland Forest

Master Bird List

Table 7 contains all of the bird species that were identified on the Property during the avian study. Special habitat features for each species are given below as detailed in the book *New England Wildlife: Habitat, Natural History, and Distribution*. Most of the birds observed on the Property are common in New England.

Table 7: Master Bird List Including Special Habitat Features

Common Name	Scientific Name	Special Habitat features
Baltimore Oriole	<i>Icterus galbula</i>	Tall deciduous trees for nesting
Blue-winged Warbler	<i>Vermivora pinus</i>	Old fields with scattered shrubs and small trees, commonly near water.
Blue Jay	<i>Cyanocitta cristata</i>	Almost anywhere trees are found in grassy areas; prefers to nest in conifer thickets in mixed woodlands
Brown-headed Cowbird	<i>Molothrus ater</i>	Open fields, actively grazed pasture lands, mowed grassy areas
Cardinal	<i>Cardinalis cardinalis</i>	Nests in thick underbrush or shrubs
Catbird	<i>Dumetella carolinensis</i>	Low, dense shrubby vegetation
Brown-headed Cowbird	<i>Molothrus ater</i>	Open fields, actively grazed pasture lands, mowed grassy areas.
Crow	<i>Corvus brachyrhynchos</i>	Open areas for foraging
Downy Woodpecker	<i>Picoides pubescens</i>	Dead or living trees greater than 6 in dbh for nesting.
Eastern Wood-Pewee	<i>Contopus virens</i>	Open deciduous or mixed forests or forest edge
Fish Crow	<i>Corvus ossifragus</i>	None listed
Goldfinch	<i>Carduelis tristis</i>	Open weedy fields and marshes with thistle and other composites or cattails, and scattered woody growth for nesting
Grackle	<i>Quiscalus quiscula</i>	Open areas with open water for foraging adjacent to graves or woodlots for nesting and roosting
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Deciduous forest edge, tree cavities
House Finch	<i>Carpodacus mexicanus</i>	Developed areas with open ground
House Wren	<i>Troglodytes aedon</i>	Thickets and cavities for nesting in trees with a minimum diameter breast height of 10 inches.
Mockingbird	<i>Mimus polyglottos</i>	Low, dense woody vegetation, elevated perches, a variety of persistent edible fruits
Mourning Dove	<i>Zenaida macroura</i>	Open country with some bare ground and seed-producing vegetation
Northern Flicker	<i>Colaptes auratus</i>	Cavity nest sites in large trees (preferably dead or dying) in open woodlands or along forest edges.
Ovenbird	<i>Seiurus aurocapillus</i>	Large area of contiguous mature deciduous or mixed forest interior habitat
Pine Warbler	<i>Dendroica pinus</i>	Open pine forests. Pitch pine is preferred, but other species of pine are used as well

Common Name	Scientific Name	Special Habitat features
Red-Bellied Wood Pecker	Melanerpes erythrocephalus	Relatively open areas with snags and lush herbaceous ground cover
Red-eyed Vireo	Vireo olivaceus	Deciduous trees. A fairly continuous canopy rather than presence of an understory.
Robin	Turdus migratorius	Conifers for early nests
Scarlet Tanager	Piranga olivacea	Mature or pole-sized deciduous or mixed woodlands
Tufted Titmouse	Baeolophus bicolor	Nesting cavities in deciduous or mixed woods
Veery	Catharus fuscescens	Moist woodlands and thick understory of low trees and shrubs
White-breasted Nuthatch	Sitta carolinensis	Natural tree cavities for nesting, preferable in trees with a diameter breast height of 12 in.
Wood Thrush	Hylocichla mustelina	Mature, moist deciduous or mixed forests with closed canopies

■ 2. Vernal Pool Monitoring

Vernal Pool 1

This small pool occurs within Wetland 1 (flags #1 through #12) in the western portion of the Property and extends from the transmission line ROW to Route 77. The pool is approximately 75 feet long and 20 feet wide and is characterized by a cigar-shaped depression with water-stained leaves. It is sparsely vegetated in the forest with few arching shrubs and downed limbs and has a dense herbaceous layer in the ROW. Water contained in the pool completely dried before viable vernal pool species could complete the aquatic phase of their life cycle during the 2005 season and did not contain enough water during the spring migration for obligate species to utilize the pool during the 2006 season. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 8 details the species that were identified, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 8: Vernal Pool Study – Vernal Pool 1

Common Name	Scientific Name	No. Of Individuals	Depth (in)	Inspection Date
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	4 - 8	5/11/05
Mosquito		Numerous larvae	4 - 8	5/11/05
Caddisflies		Not reported	4 - 8	
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	< 4	5/19/05
n/a*	n/a	n/a	Dry	5/27/05
n/a	n/a	n/a	<0.5	3/30/06
n/a	n/a	n/a	<1	4/6/2006
n/a	n/a	n/a	<1	4/14/06
n/a	n/a	n/a	10	4/28/06
n/a	n/a	n/a	2	5/11/06
n/a	n/a	n/a	12	5/26/06
n/a	n/a	n/a	7	6/12/06

Common Name	Scientific Name	No. Of Individuals	Depth (in)	Inspection Date
n/a	n/a	n/a	Dry	6/22/06

* Not any

Vernal Pool 2

Vernal Pool 2 occurs within Wetland 2 (flags # 13 through 22) located in a southwest portion of the Property. During the 2005 and 2006 seasons this vernal pool habitat consisted of small shallow pools of water on the Property and a large 100 foot long by 60 foot wide seasonally inundated pond along the Property boundary and on the adjacent residential property to the south. The shallow fragmented pools of water observed on the Property during the 2005 season dried before obligate vernal pool species were unable to complete the aquatic phase of their lifecycle and did not become inundated during the 2006 season. The large pool maintained a sufficient amount of water through both the 2005 and 2006 season to allow vernal pool species to complete the aquatic development phase of their lifecycle. Habitat characteristics within the vernal pool habitat consist of mature trees with large buttresses, tree throws, tree snags, arching shrubs and fallen tree limbs. A large ledge wall and talus slope is located northeast of wetland 2. Egg masses observed within the large pool during both seasons were typically attached to fallen branches and arching shrubs. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 9 details the species that were identified, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 9: Vernal Pool Study – Vernal Pool 2

Common Name	Scientific Name	No. Of Individuals	Depth (± in)	Inspection Date
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	24	5/11/05
Mosquito		Numerous larvae	24	5/11/05
Caddisflies		Numerous larvae	24	5/19/05
Spotted turtle	<i>Clemmys guttata</i>	1	24	5/19/05
Spotted salamander	<i>Ambystoma maculatum</i>	50 ± egg masses	22	5/19/05
Spotted salamander	<i>Ambystoma maculatum</i>	1 larvae	22	5/19/05
Marbled salamander	<i>Ambystoma opacum</i>	1 larvae	22	5/19/05
Wood frog	<i>Rana sylvatica</i>	1 adult	22	5/19/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	22	5/19/05
Predaceous diving beetle		Numerous larvae	22	5/19/05
Mosquito		Numerous larvae	22	5/19/05
Wood frog	<i>Rana sylvatica</i>	Numerous larvae	17	5/27/05
Mosquito		Numerous larvae	17	5/27/05
Spotted turtle	<i>Clemmys guttata</i>	3 basking	14	6/3/05
Marbled salamander	<i>Ambystoma opacum</i>	1 larvae	14	6/3/05
n/a*	n/a	n/a	<1	6/30/05
Wood frog	<i>Rana sylvatica</i>	Chorusing	ND**	3/30/06
Turtle (unidentified)		1 basking	ND**	3/30/06
Wood frog	<i>Rana sylvatica</i>	20 ± egg masses	22	4/6/06
Spotted salamander	<i>Ambystoma maculatum</i>	10 ± egg masses	22	4/6/06

Common Name	Scientific Name	No. Of Individuals	Depth (± in)	Inspection Date
Wood frog	<i>Rana sylvatica</i>	16 ± egg masses	21	4/14/06
Spotted salamander	<i>Ambystoma maculatum</i>	15 ± egg masses	21	4/14/06
Wood frog	<i>Rana sylvatica</i>	4 ± egg masses	20	4/28/06
Spotted salamander	<i>Ambystoma maculatum</i>	8 ± egg masses	20	4/28/06
Spotted salamander	<i>Ambystoma maculatum</i>	5-10 egg masses	22	5/11/06
Wood frog	<i>Rana sylvatica</i>	5 ± egg masses	25	5/26/06
Spotted Salamander	<i>Ambystoma maculatum</i>	5 ± egg masses	25	5/26/06
Green frog	<i>Rana clamitans</i>	1 Adult	25	5/26/06
Spotted salamander	<i>Ambystoma maculatum</i>	Larvae 1 egg mass	24	6/12/06
Marbled salamander	<i>Ambystoma opacum</i>	Larvae	24	6/12/06
Wood frog	<i>Rana sylvatica</i>	tadpoles	24	6/12/06
Fairy shrimp	<i>Anostraca</i>		24	6/12/06
n/a	n/a	n/a	20	6/22/06

* Not any, **Not determined

Vernal Pool 3

This large pool occurs within Wetland 3 (flags #118 through #137) in the southeastern portion of the Property under the transmission line ROW and extending into the forest. The pool is approximately 150 feet long and 40 feet wide and is characterized by a large depression with water-stained leaves. It is sparsely vegetated in the forest with few arching shrubs and downed limbs and has a dense herbaceous layer in the ROW. Water contained in the pool completely dried before viable vernal pool species could complete the aquatic phase of their life cycle during the 2005 season. The pool did not contain water during the spring 2006 migration and as such obligate species were unable to utilize the pool. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 10 details the species that were identified, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 10: Vernal Pool Study – Vernal Pool 3

Common Name	Scientific Name	No. Of Individuals	Depth (± in)	Inspection Date
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	8 – 12	5/11/05
Wood frog	<i>Rana sylvatica</i>	1 adult	8 – 12	5/11/05
Green frog	<i>Rana clamitans</i>	2	8 – 12	5/11/05
Eastern American toad	<i>Bufo americanus</i>	2	8 – 12	5/11/05
Spotted turtle	<i>Clemmys guttata</i>	1	8 – 12	5/11/05
Mosquito larvae		Many larvae	8 – 12	5/11/05
n/a*	n/a	n/a	dry	5/20/05
n/a	n/a	n/a	dry	3/28/06
n/a	n/a	n/a	dry	4/6/06
n/a	n/a	n/a	dry	4/14/06
n/a	n/a	n/a	14-19	4/28/06

Common Name	Scientific Name	No. Of Individuals	Depth (± in)	Inspection Date
n/a	n/a	n/a	dry	5/11/06
n/a	n/a	n/a	10	5/26/06
n/a	n/a	n/a	5	6/12/06
n/a	n/a	n/a	dry	6/22/06

* Not any

Vernal Pool 4

This large pool dominates the area identified as Wetland 4 (flags #138 through #156) located in a central portion of the Property. The pool is approximately 200 feet long and 60 feet wide and is characterized by a large basin-depression with water-stained leaves. It is sparsely vegetated with few arching shrubs along the perimeter and contains many downed limbs with little herbaceous vegetation within its interior. Water contained in the pool completely dried before viable vernal pool species could complete the aquatic phase of their life cycle during the 2005 season. Although the pool was sufficiently inundated during the 2006 season, no obligate vernal pool species were observed. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 11 details the species that were identified, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 11: Vernal Pool Study – Vernal Pool 4

Common Name	Scientific Name	No. Of Individuals	Depth (in)	Inspection Date
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	24	5/11/05
Green frog	<i>Rana clamitans</i>	2	24	5/11/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	12	5/20/05
Spotted salamander	<i>Ambystoma maculatum</i>	14 egg masses	12	5/20/05
backswimmer		Numerous	12	5/20/05
Predacious diving beetle		Numerous	12	5/20/05
Waterstrider		Numerous	12	5/20/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	6	5/27/05
n/a*	n/a	n/a	Empty	6/3/05
n/a	n/a	n/a	13	4/14/06
n/a	n/a	n/a	28	4/28/06
n/a	n/a	n/a	21	5/11/06
n/a	n/a	n/a	25	5/26/06
n/a	n/a	n/a	24	6/12/06
n/a	n/a	n/a	12	6/22/06

* Not any

Vernal Pool 5

Vernal Pool 5 is located within Wetland 5 (flags # 92 through 117) along the eastern Property boundary. At the beginning of the spring 2005 and 2006 seasons the majority of Wetland 5 was inundated with shallow water. As the 2005 and 2006 seasons progressed the large inundated area dissipated to small isolated pools both on and off the Property. Small pools on the Property dried before viable vernal pool species could complete the aquatic phase of their life cycle. Wood frog tadpoles were observed in the shallow pool on the Property before it dried. A remaining small pool on the adjacent residential property to the east maintained a sufficient amount of water through the growing season to allow vernal pool species to complete the aquatic development phase. The remaining small pool off the Property is 400 ± square feet with many arching shrubs and broken limbs and a thick layer of organic material on the bottom. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 12 details the species that were identified in the remaining area of inundation just off of the Property, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 12: Vernal Pool Study – Vernal Pool 5

Common Name	Scientific Name	No. Of Individuals	Depth (in)	Inspection Date
Spotted Salamander	<i>Ambystoma maculatum</i>	3 egg masses	28	5/20/05
Fingernail clams		Numerous	28	5/20/05
Marbled Salamander	<i>Ambystoma opacum</i>	1 larvae	28	5/20/05
Spotted Salamander	<i>Ambystoma maculatum</i>	1 egg mass	26	5/27/05
Fingernail clams		Numerous	26	5/27/05
Wood Frog	<i>Rana sylvatica</i>	3 tadpoles	24	6/3/05
n/a*	n/a	n/a	24	6/30/05
n/a	n/a	n/a	9	4/14/06
n/a	n/a	n/a	14	4/28/06
n/a	n/a	n/a	3	5/11/06
n/a	n/a	n/a	6	5/26/06
n/a	n/a	n/a	8	6/12/06
Green frog	<i>Rana clamitans</i>	3 adult	18	6/22/06
Wood frog	<i>Rana sylvatica</i>	2 adult	18	6/22/06
		1 tadpole		

*Not any

Vernal Pool 6

The pool is located in the northern end of the Property within Wetland 6 (flags # 60 through 91). This pool receives flow from an intermittent watercourse that conveys water from a pond located on an adjacent residential property to the north. The pool is characterized by a shallow ±125-foot by ±45-foot basin-shaped depression with numerous fallen branches, arching shrubs and a thick layer of organic material. Egg masses observed within the pool were moderate to large in size, typically attached to submerged branches and arching shrubs. This pool maintained a sufficient amount of water

through the 2005 and 2006 growing season to allow vernal pool species to complete the aquatic development phase of their lifecycle. The forest canopy parts over the center of the pool allowing patches of broken sunlight to reach the surface. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 13 details the species that were identified, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 13: Vernal Pool Study – Vernal Pool 6

Common Name	Scientific Name	No. Of Individuals	Depth (in)	Inspection Date
Spotted salamander	<i>Ambystoma maculatum</i>	Several egg masses	18	5/11/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	18	5/11/05
Green frog	<i>Rana clamitans</i>	1 adult	18	5/11/05
Mosquito		Numerous larvae	18	5/11/05
Spotted salamander	<i>Ambystoma maculatum</i>	± 60	18	5/19/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	18	5/19/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	14	5/27/05
Wood frog	<i>Rana sylvatica</i>	Numerous tadpoles	14	6/3/05
Spotted salamander	<i>Ambystoma maculatum</i>	3 larvae	14	6/3/05
Dragonfly		Several larvae	14	6/3/05
Water scavenger beetle		Several larvae	14	6/3/05
n/a*	n/a	n/a	4	6/30/05
Wood frog	<i>Rana sylvatica</i>	3 egg masses	18	4/14/06
Spotted salamander	<i>Ambystoma maculatum</i>	5 egg masses	18	4/14/06
Spotted salamander	<i>Ambystoma maculatum</i>	100 + egg masses	18	4/28/06
Wood frog	<i>Rana sylvatica</i>	Many	18	4/28/06
Northern water snake	<i>Nerodia sipedon</i>	2	18	4/28/06
Spotted salamander	<i>Ambystoma maculatum</i>	50 egg masses	18	5/11/06
Wood frog	<i>Rana sylvatica</i>	10 egg masses	18	5/11/06
Spotted salamander	<i>Ambystoma maculatum</i>	30 egg masses	20	5/26/06
Spotted salamander	<i>Ambystoma maculatum</i>	20 egg masses	20	6/12/06
Fairy shrimp	<i>Anostraca</i>	Numerous	20	6/12/06
Green frog	<i>Rana clamitans</i>	1 adult	18	6/22/06
Wood frog	<i>Rana sylvatica</i>	2 adult	18	6/22/06
Spotted salamander	<i>Ambystoma maculatum</i>	1 egg mass (hatched)	18	6/22/06

* Not any

Vernal Pool 7

The pool is located in the northern end of Wetland 7 (flags # 23 through 59) and extends north off of the Property. A small stone dam impounds seasonal intermittent watercourse flows within the interior

of the wetland to form the vernal pool within a 25 foot by 160 foot area. The pool is sparsely vegetated with few arching shrubs and herbaceous aquatic plants. Egg masses observed within the pool were small to moderate in size, typically not attached to vegetation and resting on the bottom of the pool. This pool maintained a sufficient amount of water through the growing season during the 2005 and 2006 seasons to allow vernal pool species to complete the aquatic development phase of their lifecycle; however, no vernal pool species were observed within the pool during the 2006 season. This pool does not have a permanent inlet or outlet. No finfish were observed during any of the inspections. Table 14 details the species that were identified, the number of individuals that were identified, the depth of the pool, and the date of the finding.

Table 14: Vernal Pool Study – Vernal Pool 7

Common Name	Scientific Name	No. Of Individuals	Pool Depth (in)	Inspection Date
Spotted salamander	<i>Ambystoma maculatum</i>	Several egg masses	12	5/11/05
Spring peeper	<i>Pseudacris crucifer</i>	Several egg masses	12	5/11/05
Spotted salamander	<i>Ambystoma maculatum</i>	Several egg masses	6 - 12	5/19/05
Green frog	<i>Rana clamitans</i>	4 adults	6 – 12	5/19/05
Spotted salamander	<i>Ambystoma maculatum</i>	1 larvae	7	5/27/05
Spring peeper	<i>Pseudacris crucifer</i>	1 tadpole	5	6/3/05
n/a*	n/a	n/a	3	6/30/05
n/a	n/a	n/a	3	4/14/06
n/a	n/a	n/a	12	4/28/06
n/a	n/a	n/a	7	5/11/06
n/a	n/a	n/a	10	5/26/06
n/a	n/a	n/a	5	6/12/06
n/a	n/a	n/a	5	6/22/06

* Not any

■ 3. Mammal and Herpetofauna NEWild™ Evaluation

A mammal and herpetofauna evaluation was conducted to determine possible amphibian, reptile and mammal species that may be utilizing the habitats found on the Property. Potential species were identified with the use of NEWild™ computer software program. Species suggested by the NEWild™ program were researched for accuracy and special habitat needs. Table 15 lists the potential mammal, reptile and amphibian species that may be found on the Property and the special habitat features that they require as described in the book *New England Wildlife: Habitat, Natural History, and Distribution* (species typed in bold print were directly observed during on-site investigations).

Eastern Box Turtle (*Terrapene c. carolina*), a Connecticut Species of Special Concern, was identified by the database as a potential species that may utilize the Property. Box turtles favor old field habitat and deciduous forest areas, including power line cuts and logged woodland. During the various inspections of the Property, no live evidence of Eastern Box Turtle was observed, however a deceased specimen was recovered from the forest immediately south of Wetland 3 near Route 77. No previous identification of this species on the Property has been documented nor listed in Connecticut Department of Environmental Protection (“CTDEP”) Natural Diversity Data Base (“NDDB”).

Brown Thrasher (*Toxostoma rufum*), a Connecticut Species of Special Concern, was identified by the database as a potential species that may utilize the Property. Brown Thrasher prefers open areas with patches of bare ground on which to feed and nest in suburban and rural areas, particularly in brushy thickets and woodland edges. This type of habitat is limited to the area under the overhead transmission lines as a result of vegetation management activities. No evidence of Brown Thrasher was observed during the various inspections of the property. In addition, no previous identification of this species on the Property has been documented nor listed in CTDEP NDDB.

Jefferson Salamander (*Ambystoma jeffersonianum*), a Connecticut Species of Special Concern, was identified by the database as a potential species that may utilize the Property. Jefferson Salamander requires vernal pools for breeding habitat and prefers deciduous forests with steep rocky areas with rotten logs and heavy duff layers. This type of habitat is present in the southwest corner of the Property and extends onto the adjacent residential property to the southwest. No evidence of Jefferson Salamander was observed during the various inspections of the Property. In addition, no previous identification of this species on the Property has been documented nor listed in CTDEP NDDB.

Table 15: New England Wildlife Database Search of Possible Amphibians, Reptiles and Mammals Anticipated To Use the Property

Common Name	Scientific Name	Special Habitat features
American Black Duck	<i>Anas rubripes</i>	Inhabits a wide variety of coastal and freshwater habitats
American Kestrel	<i>Falco sparverius</i>	Nest Cavities in trees with diameter breast height greater than 12 in, and elevated perches from which to sight prey.
Black Rat Snake	<i>Elaphe o. obsoleta</i>	None listed.
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Low, dense, shrubby vegetation.
Black-capped Chickadee	<i>Poecile atricapillus</i>	Comparatively open sites near deep woods, and dead standing trees larger than 4 in diameter breast height for nesting and feeding.
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	An abundant supply of arthropods.
Blue-spotted salamander	<i>Ambystoma laterale</i>	Wooded swamps, ponds, marshes, ditches or semi -permanent water for breeding; relatively open or forested aquatic sites.
Bobcat	<i>Lynx rufus</i>	Dense hardwood and softwood understories with high hare densities and slopes less than 5 percent. Prefers to den in rock crevices, under windfalls, brush piles, or hollow logs.
Broad-winged Hawk	<i>Buteo platypterus</i>	Forests with openings
Brown Thrasher	<i>Toxostoma rufum</i>	Low, dense, woody vegetation for nesting and cover.

Common Name	Scientific Name	Special Habitat features
Brown-headed Cowbird	<i>Molothrus ater</i>	Open fields, actively grazed pasture lands, mowed grassy areas.
Canada Warbler	<i>Wilsonia Canadensis</i>	Forest with dense understory, especially along streams, bogs, swamps, or moist areas.
Cardinal	<i>Cardinalis cardinalis</i>	Nests in thick underbrush or shrubs
Carolina Wren	<i>Thryothorus ludovicianus</i>	Low, brushy vegetation
Catbird	<i>Dumetella carolinensis</i>	Low, dense shrubby vegetation
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Trees and shrubs that produce fruit and berries.
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Early second-growth deciduous woodlands with dense vegetation 1 to 3 meters tall for nesting and foraging.
Chipping Sparrow	<i>Spizella passerine</i>	None listed.
Common Yellowthroat	<i>Geothlypis trichas</i>	Moist areas with dense, herbaceous vegetation mixed with shrubs and small trees.
Cooper's Hawk	<i>Accipiter cooperii</i>	Mature coniferous or deciduous woodlands in otherwise open or semi-open country.
Coyote	<i>Canis latrans</i>	Open or semiopen country for hunting, sunny well-drained secluded den sites formerly used by foxes and porcupines, also in hollow logs, rocky caves, or in excavated burrows.
Crow	<i>Corvus brachyrhynchos</i>	Open areas for foraging.
Deer Mouse	<i>Peromyscus maniculatus</i>	Down logs, rotting stumps, tree cavities, exposed rocks (stone walls, boulders and ledge).
Eastern American Toad	<i>Bufo a. americanus</i>	Needs shallow water for breeding.
Eastern Bluebird	<i>Sialia sialis</i>	Low cavities for nesting and perches for foraging
Eastern Box Turtle	<i>Terrapene c. Carolina</i>	Old fields, powerline clearings, ecotones with sandy soils favored, seldom far from water. (Found dead specimen on subject property)
Eastern Chipmunk	<i>Tamias striatus</i>	Cover in the form of decaying stumps and logs, rock piles and outcrops, and stone walls; elevated perches for observation and vocalization activities. Activity is centered around burrow locations.
Eastern Cottontail	<i>Sylvilagus floridanus</i>	Brush piles, stone walls, dens or burrows for year-round protection from storms and cold weather. Interspersion of herbaceous and shrubby cover important.
Eastern Milk Snake	<i>Lampropeltis t. triangulum</i>	Suitable cover or loose soil for egg laying.
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	Aquatic habitats
Eastern Screech-Owl	<i>Otus asio</i>	Cavities for nesting and roosting

Common Name	Scientific Name	Special Habitat features
Ermine	<i>Mustela erminea</i>	Plentiful small mammal prey and dense brushy cover
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Acidic wet woodlands with sphagnum mats. Prefers sandy soils, acid woods adjacent to red maple swamps in Connecticut. (Soil material is loamy on subject property).
Fox Sparrow	<i>Passerella iliaca</i>	Dense shrubby undergrowth
Goldfinch	<i>Carduelis tristis</i>	Open weedy fields and marshes with thistle and other composites or cattails, and scattered woody growth for nesting
Grackle	<i>Quiscalus quiscula</i>	Open areas with open water for foraging adjacent to graves or woodlots for nesting and roosting
Gray Treefrog	<i>Hyla versicolor</i>	Aquatic sites for breeding
Great Blue Heron	<i>Ardea herodias</i>	Open water or wetland habitats, forested wetlands or tall trees near water in areas free from human disturbance.
Green Frog	<i>Rana clamitans melanota</i>	Riparian areas
Green Heron	<i>Butorides virescens</i>	Wooded wetlands, shallow water bodies for feeding.
Hooded Warbler	<i>Wilsonia citrine</i>	Low, dense deciduous woody vegetation.
House Wren	<i>Troglodytes aedon</i>	Thickets and cavities for nesting in trees with a minimum diameter breast height of 10 inches
Indigo Bunting	<i>Passerina cyanea</i>	High song perches, thick weeds or shrubs, open areas at forest edges, old fields.
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Requires temporary ponds with deep leaf litter in upland deciduous forest with some portion of the wetland bordered by forest and isolated from urbanization or disturbance.
Long-tailed Weasel	<i>Mustela frenata</i>	Open woods and woodland edges. Prefers to be near water. Uses or enlarges previously excavated small burrows or natural holes in crevices for dens; areas of abundant prey.
Marbled Salamander	<i>Ambystoma opacum</i>	Requires temporary ponds, vernal pools, or fishless swamps in wooded areas for breeding.
Masked Shrew	<i>Sorex cinereus</i>	High humidity, ground cover especially leaves, rotten logs, herbaceous vegetation.
Mockingbird	<i>Mimus polyglottos</i>	Low, dense woody vegetation, elevated perches, a variety of persistent edible fruits
Northern Black Racer	<i>Coluber c. constrictor</i>	Thrive in areas that are periodically cleared or mowed
Northern Brown Snake	<i>Storeria d. dekayi</i>	Prefers disturbed areas
Northern Copperhead	<i>Agkistrodon contortrix mokasen</i>	Usually associated with deciduous forest. Rocky hillsides, talus slopes.
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	Low vegetation, loose leaf litter, high humidity
Painted Turtle	<i>Chrysemys picta</i>	Aquatic habitat with basking structures and areas of open water

Common Name	Scientific Name	Special Habitat features
Raccoon	<i>Procyon lotor</i>	Ground dens, usually abandoned woodchuck burrows or culverts in areas lacking in tree dens. Prefers hollow trees. Dens are usually located in trees 10 feet or more above ground and commonly located near water.
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Large trees for nesting and perching.
Robin	<i>Turdus migratorius</i>	Conifers for early nests
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	Edges of mature deciduous forest with dense brush or sapling stands.
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Plants that provide tubular nectar-bearing (especially red) flowers such as honeysuckle, lantana, gilia and trumpet vine.
Ruffed Grouse	<i>Bonasa umbellus</i>	Drumming sites (logs or stone walls), in relatively dense hardwood saplings, small poles or brushy escape cover, hardwood stands for nesting and feeding, sunny openings for dusting.
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>	Dense Brushy dry cover (Noted during a vernal pool investigation)
Song Sparrow	<i>Melospiza melodia</i>	Moist areas with brushy vegetation
Spotted Salamander	<i>Ambystoma maculatum</i>	Mesic woods with fish-free permanent, semi permanent or ephemeral water for breeding.
Turkey Vulture	<i>Cathartes aura</i>	Mixed farmland and forest, which provides the best opportunity to forage on both domestic and wild carrion.
Veery	<i>Catharus fuscescens</i>	Moist woodlands and thick understory of low trees and shrubs
Virginia Opossum	<i>Didelphis virginiana</i>	Dry to wet wooded areas; commonly found in wet woods near rivers and swamps, less often in wooded uplands or cultivated fields. Common near human habitation, here they are attracted to garbage
White-footed Mouse	<i>Peromyscus leucopus</i>	Down logs rotting stumps, tree cavities, exposed rocks (stone walls, boulders and ledge).
White-tailed Deer	<i>Odocoileus virginianus</i>	Dense cover for winter shelter, adequate browse.
Wild Turkey	<i>Meleagris gallopavo</i>	Forests with mast-producing trees, forest openings, and dense coniferous or mixed forests for roosting. (Found feathers during vegetation survey).
Wood Frog	<i>Rana sylvatica</i>	Prefers temporary woodland pools, backwaters of slow-moving streams.
Woodland Vole	<i>Microtus pinetorum</i>	Uses variable depths of leaf litter, duff or grass; moist well-drained soils
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Low, dense shrubby vegetation

Note: Species in bold were observed on the Property

V. Discussion and Conclusions

Wildlife habitats associated with the Property were assessed by conducting field inventories to identify herpetofauna, avian, and mammal species present, taking into account the habitat conditions present within each resource area. Habitat variables considered in this wildlife evaluation included the size of the vegetative communities, the plant cover types present, the degree of habitat disturbance, interspersions of cover types, the abundance and diversity of fruit and seed-bearing plants, the size (average diameter) and abundance of tree snags and ground debris and surrounding land uses. These vegetative communities were evaluated in providing cover, foraging, and breeding habitats. The results of the field inventories and assessment of the wildlife conditions indicate that most of the Property contributes relatively high value wildlife habitat.

The proposed Stepstone Substation development location is occupied by deciduous forest habitat. The proposed access drive will generally follow an existing maintenance drive, thereby minimizing disturbances. Although the proposed Substation development will affect the forest habitat, the majority of this habitat cover type will remain intact in the future as no additional development is proposed on the ±38-acre Property beyond the utility usage. The numerous wetland and vernal pool habitats on the Property will remain unaffected by the proposed project. In addition, the majority of upland habitat adjoining and supporting these vernal pool habitats will not be affected by the proposed development. Proposed Substation and access drive development areas are located within and in proximity to existing utility corridors occupied by overhead electrical transmission lines. These corridors generally extend off the Property in a northeast to southwest direction for numerous miles. Therefore, the proposed development is not anticipated to have a significant impact on wildlife due to the remaining undisturbed habitat and immediate proximity to similar habitats that will allow for natural relocation of potential wildlife from the development zone. As a result, no long-term impacts on wildlife are anticipated from the proposed development activities at the subject Property. In addition, since the facility will be unmanned, wildlife should not be adversely affected during its operation.

Featherfoil, a Connecticut Species of Special Concern, was identified on the subject Property during the wildlife habitat survey. Featherfoil is an aquatic plant typically occurring in shallow water in ponds and slow streams. The population on the Property occurs in a shallow pool within Wetland 4 (flags #60 through #91) located in the northern portion of the Property. The population is approximately 500 feet from the proposed development activities. It is not anticipated that this species will be affected by construction activities associated with the proposed Substation.

The Property is within a listed area as shown on the Connecticut Department of Environmental Protection ("CTDEP") Natural Diversity Data Base ("NDDB") map. Information obtained from the CTDEP (see CTDEP letter in Appendix E of this Volume II) indicates that Virginia snakeroot (*Aristolochia serpentaria*), a species of special concern, was found to occur atop rock ledges a few feet from Route 77 under the 115 kV transmission line. Subsequent documentation indicates that the species had been covered by a wood chip pile approximately 5 years ago and only one individual plant was found. The area under the 115kV line as well as the entire ±38-acre Property was searched

intensively on June 21, 2005 by a VHB botanist. Virginia snakeroot was not found on the Property or in the formerly documented location.

Evidence of Eastern Box Turtle (*Terrapene c. carolina*), a Connecticut Species of Special Concern, was observed on the Property. During the various inspections of the Property, no live evidence of Eastern Box Turtle was observed, however a deceased specimen was recovered from the forest immediately south of Wetland 3 near Route 77. Box turtles favor old field habitat and deciduous forest areas, including power line cuts and logged woodland. No previous identification of this species on the Property has been documented nor listed in the CTDEP NDDB.

Seven vernal pools were found on the Property to contain the necessary physical and biological characteristics to be conclusively classified as vernal pool habitats during the 2005 and 2006 season. Pools 1, 3, and 4 were observed to have either dried out before obligate vernal pool species could develop to a point where they could survive outside of the pool or were not inundated during the spring migration and therefore were not utilized by obligate vernal pool species. Pools 2, 5, 6 and 7 retained water for a duration long enough to produce viable obligate vernal pool species. Hydrologic conditions within vernal pools can change substantially from one year to the next. For example, vernal pools observed to dry out too early for successful completion of amphibian life cycle this year may sustain sufficient inundation during seasons of higher precipitation. Pools which do not sustain sufficient inundation to allow for the full development of juvenile amphibians into adults are generally considered to provide less significant vernal pool habitat than those that do not sustain proper inundation. However, none of the vernal pools on the Property will be directly impacted by the proposed Substation or access road and the majority of their bordering uplands will also remain unaffected.

This report was prepared by:

Sara Fusco – Ms. Fusco is a Soil Scientist/Wetland Scientist at Vanasse Hangen Brustlin. Her areas of expertise include wetland delineation, wetland assessments, wildlife habitat investigations and permit preparation.

This report was reviewed by:

Dean Gustafson – Mr. Gustafson is a Professional Soil Scientist and Senior Wetland Scientist with Vanasse Hangen Brustlin (VHB), and has 18 years of experience with a wide variety of wetland environmental issues. His areas of expertise include wetland delineation and evaluation, permit preparation, local, state and federal regulatory coordination and wetland mitigation.

Attachment A

Wildlife Habitat Evaluation Checklists

VHB WILDLIFE HABITAT EVALUATION CHECKLIST
COVER TYPE: Deciduous Upland Forest

Project Number: 41033.00	Project Name: Stepstone Road Substation
Date: Various – May and June 2005	Observer: Lisa Standley, Jeff Peterson, Sara Fusco

Topography		Soils/Substrate	
Groundwater elevation	Variable	Substrate type/soil	Glacial Till/ Charlton-Hollis Hollis-charlton Hollis-Rock Outcrop Sutton Udorthents, smooted
Depressions	Hill/Valley topography	Depth to bedrock	Several ledge outcroppings
Vernal pools	Yes (see vernal pool habitat type)	Burrows present (size)	None observed
Rocks or boulders	Yes	Depth of leaf litter	1 - 2 inch

Plant Community

Stratum	Dominant Species	
Trees	black oak scarlet oak red oak beech red maple tulip poplar shagbark hickory white oak black birch black cherry sugar maple green ash	<i>Quercus velutina</i> <i>Quercus coccinea</i> <i>Quercus rubra</i> <i>Fagus grandifolia</i> <i>Acer rubrum</i> <i>Liriodendron tulipifera</i> <i>Carya ovata</i> <i>Quercus alba</i> <i>Betula lenta</i> <i>Prunus serotina</i> <i>Acer Saccharum</i> <i>Fraxinus pennsylvanica</i>
Shrubs	mountain laurel huckleberry early low blueberry partridgeberry green briar sassafras mapleleaf viburnum saspirilla ground pine	<i>Kalmia latifolia</i> <i>Gaylussacia baccata</i> <i>Vaccinium vacillans</i> <i>Mitchella repens</i> <i>Smilex rotundifolia</i> <i>Sassafras albidum</i> <i>Viburnum acerifolium</i> <i>Aralia hispida</i> <i>Lycopodium obscurum</i>
Herbaceous	Canada may flower sedge jack-in-the-pulpit doll's eyes enchanter's nightshade	<i>Maianthemum canadense</i> <i>Carex pennsylvatica</i> <i>Arisaema triphyllum</i> <i>Actaea pachypoda</i> <i>Circaea quadrisulcata</i>
Average DBH:	Greater than 10 inches	
% Canopy Closure:	60 – 70 %	

VHB WILDLIFE HABITAT EVALUATION CHECKLIST
COVER TYPE: Deciduous Upland Forest (Continued)

Comments:	Vegetation in upland transmission line ROW:	
	red cedar	<i>Juniperus virginiana</i>
	sugar maple	<i>Acer rubrum</i>
	tree of heaven	<i>Ailanthus altissima</i>
	winged sumac	<i>Rhus copallina</i>
	Russian olive	<i>Elaeagnus angustifolia</i>
	Japanese honeysuckle	<i>Lonicera japonica</i>
	Virginia creeper	<i>Parthenocissus quinquefolia</i>
	beggar tick	<i>Bidens sp.</i>
	multiflora rose	<i>Rosa multiflora</i>
	mountain laurel	<i>Kalmia latifolia</i>
	sweetfern	<i>Comptonia peregrina</i>
	grape	<i>Vitis sp.</i>
	black raspberry	<i>Rubus occidentalis</i>
	strawberry	<i>Fragaria virginiana</i>
	ruff-stemmed goldenrod	<i>Solidago arguta</i>
	whorled loosestrife	<i>Lysimachia quadrifolia</i>
	Common Cinquefoil	<i>Potentilla simplex</i>
	Sedge	<i>Carex pennsylvatica</i>
	Deer-tongue grass	<i>Panicum clandestinum</i>
	Blue toadflax	<i>Linaria canadensis</i>
	wild carrot	<i>Daucus carota</i>

Wildlife Habitat Features

Tree cavities (number, diameter)	Several (typically in trees with DBH > 10 inches)
Dead logs (number, diameter)	Numerous (various diameters)
Rocks, boulders	Numerous (talus slope east of Wetland 2)
Evidence of wildlife usage	Observed in upland forest and ROW: Baltimore Oriole, Blue Jay, Blue-winged Warbler, Brown-headed Cowbird, Brown-headed Cowbird, Cardinal, Catbird, Catbird, Crow, Downy Woodpecker, Eastern Box Turtle (dead specimen), Eastern Chipmunk, Eastern Wood-Pewee, Fish Crow, Goldfinch, Grackle, Great Crested Flycatcher, House Wren, Mockingbird, Mourning Dove, Northern Flicker, Ovenbird, Pine Warbler, Red-Bellied Wood Pecker, Red-eyed Vireo, Robin, Rufous-sided Towhee, Scarlet Tanager, Tufted Titmouse, Veery, White-breasted Nuthatch, White-tailed deer, Wild Turkey, Wood Thrush

VHB WILDLIFE HABITAT EVALUATION CHECKLIST
COVER TYPE: Palustrine Wetland Forest

Project Number: 41033.00	Project Name: Stepstone Road Substation
Date: Various – May and June 2005	Observer: Lisa Standley, Jeff Peterson, Sara Fusco

Topography		Soils/Substrate	
Groundwater elevation	Commonly at or just below the soil surface	substrate type/Soil	Glacial Till/Leicester Ridgebury, Leicester and Whitman
Depressions	Observed in every wetland	Depth to bedrock	Typically > 60 inches below the soil surface
Vernal pools	Yes (see vernal pool habitat description)	Burrows present (size)	None observed
Rocks or boulders	Yes	Depth of leaf litter	> 1 inch

Plant Community

Stratum	Dominant Species	
Trees	American elm black birch ironwood pin oak red maple red oak shagbark hickory sycamore tulip poplar	<i>Ulmus americana</i> <i>Betula lenta</i> <i>Carpinus caroliniana</i> <i>Quercus palustris</i> <i>Acer rubrum</i> <i>Quercus rubra</i> <i>Carya ovata</i> <i>Platanus occidentalis</i> <i>Liriodendron tulipifera</i>
Shrubs	highbush blueberry mountain laurel pepperbush spicebush swamp azela winterberry	<i>Vaccinium corymbosum</i> <i>Kalmia latifolia</i> <i>Clethra alnifolia</i> <i>Lindera benzoin</i> <i>Rhododendron viscosum</i> <i>Ilex Verticillata</i>
Herbaceous	beggar-tick cinnamon fern false hellebore fowl mana grass fringed sedge marsh blue violet marsh fern meadow-rue New York fern rice cutgrass royal fern sensitive fern skunk cabbage sphagnum moss Virginia chain fern water horehound	<i>Bidens frondosa</i> <i>Osmunda cinnamomea</i> <i>Veratrum viride</i> <i>Glyceria striata</i> <i>Carex crinita</i> <i>Viola cucullata</i> <i>Thelypteris thelypteroides</i> <i>Thalictrum pubescens</i> <i>Thelypteris noveboracensis</i> <i>Leersia oryzoides</i> <i>Osmunda regalis</i> <i>Onoclea sensibilis</i> <i>Symplocarpus foetidus</i> <i>Sphagnum</i> <i>Woodwardia virginica</i> <i>Lycopus virginicus</i>

VHB WILDLIFE HABITAT EVALUATION CHECKLIST
COVER TYPE: Palustrine Wetland Forest (Continued)

Average DBH:	Greater than 10 inches	
% Canopy Closure:	Typically greater than 60 % (with the exception of areas under the transmission line and areas dominated by vernal pool habitat)	
Comments:	Vegetation in wetland area under power lines	
	gray dogwood steplebush pepperbush bristly dewberry deer-tongue grass spotted joe-pye weed lurid sedge Canada rush soft rush beggar-tick mad-dog skullcap sensitive fern royal fern bladder sedge sedge cinnamon fern	<i>Cornus racemosa</i> <i>spirea tomentosa</i> <i>clethra acuminata</i> <i>Rubus hispidus</i> <i>Dichanthelium clandestinum</i> <i>Eupatorium dubium</i> <i>Carex lurida</i> <i>Juncus canadensis</i> <i>Juncus effuses</i> <i>Bidens frondosa</i> <i>Scutellaria lateriflora</i> <i>Onoclea sensibilis</i> <i>Osmunda regalis</i> <i>Ccarex intumescense</i> <i>Carex scoparia</i> <i>Osmunda cinnamomea</i>

Wildlife Habitat Features

Tree cavities (number, diameter)	Several observed (generally in trees with DBH > 10 inches)
Dead logs (number, diameter)	Many logs, broken branches and tree throws throughout
Rocks, boulders	Many large rocks within wetland and watercourse areas
Evidence of wildlife usage	Observed in wetland forest and ROW: Red-eyed vireo, Crow, Eastern Wood-Pewee, Wood Thrush, Wood frog, Green frog, White-tailed Deer (See vernal pool species observed in Vernal Pool Habitat section)

VHB WILDLIFE HABITAT EVALUATION CHECKLIST
COVER TYPE: Vernal Pool

Project Number: 41033.00	Project Name: Stepstone Road Substation
Date: Various – May and June 2005	Observer: Lisa Standley, Jeff Peterson, Sara Fusco

Topography		Soils/Substrate	
Groundwater elevation	Commonly at or just below the soil surface	substrate type/Soil	Glacial Till/Leicester Ridgebury, Leicester and Whitman
Depressions	Observed in every wetland	Depth to bedrock	Typically > 60 inches below the soil surface
Vernal pools	7 vernal pool areas	Burrows present (size)	None observed
Rocks or boulders	None observed	Depth of leaf litter	> 1 inch

Plant Community

Stratum	Dominant Species	
Trees	red maple pin oak	<i>Acer rubrum</i> <i>Quercus palustris</i>
Shrubs	pepperbush spicebush swamp azalea highbush blueberry	<i>Clethra alnifolia</i> <i>Lindera benzoin</i> <i>Rhododendron viscosum</i> <i>Vaccinium corymbosum</i>
Herbaceous	Featherfoil	<i>Hottonia inflata</i>
Average DBH:	2 inches	
% Canopy Closure:	25 - 65 %	
Comments:		

Wildlife Habitat Features

Tree cavities (number, diameter)	None observed
Dead logs (number, diameter)	Many downed limbs
Rocks, boulders	None observed
Evidence of wildlife usage	Wood frog, Spotted Turtle, Spotted Salamander, Marbled Salamander, Spring peeper, Green frog, Eastern American toad

Attachment B

Soil Report

SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.

545 Highland Avenue • Route 10 • Cheshire • Connecticut • 06410 • (203) 272-7837 • Fax (203) 272-6698

SOIL REPORT

TO: Northeast Utilities
P.O. Box 270
Hartford, CT 06141

SSS Job No. 2005-220-CT-GUI-3
Client Job No. _____
Site Inspection Date May 10 & 11, 2005

PROJECT TITLE AND LOCATION CL & P Property, Stepstone Hill Road & Durham Road
(CT Rte 77), Guilford, CT

PROJECT DESCRIPTION: *Inland wetland identification and classification of soils*

METHOD FOR IDENTIFICATION OF MAP UNITS

Wetlands

- ☒ Field marking (flagging) for survey.
☒ Field plotting on property map, scale: 1"=200', contour: none.
☐ Field plotting on aerial photography.

Non Wetland Soils

- ☒ High intensity field identification by Soil Scientist.
☐ Medium intensity identification from USDA, Soil Conservation Service Soil Maps.

METHOD OF SOIL IDENTIFICATION

- ☒ Spade and Auger
☐ Deep test pits (backhoe)
☐ Other _____

SOIL MOISTURE CONDITION

☐ Dry ☒ Moist ☐ Wet

Frost Depth _____ in.

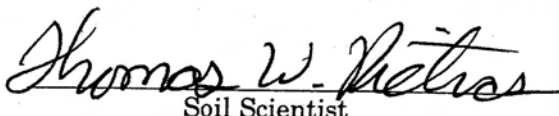
Snow Depth _____ in.

The classification system of the National Cooperative Soil Survey, USDA, Soil Conservation Service and the County Identification Legend were used in this investigation. The investigation was conducted by the undersigned Certified Soil Scientist.

All wetland boundary lines established by the undersigned Soil Scientist are subject to change until officially adopted by local, state or federal regulatory agencies.

Respectively submitted by

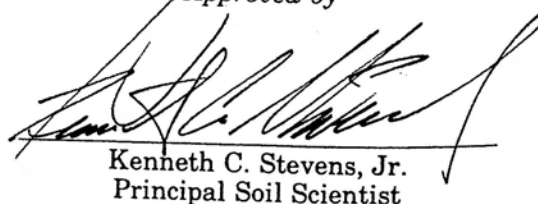
SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.


Soil Scientist

Field Investigator

Thomas W. Pietras

Approved by


Kenneth C. Stevens, Jr.
Principal Soil Scientist

SOIL REPORT *continued*

CL&P Property, Stepstone Hill & Durham Rds, Guilford, CT

PROJECT TITLE: _____

MAPS/PLANS TRANSMITTED TO CLIENT

- ☒ Sketch location of Wetlands and other Soil Types.
☐ None

NUMBERING SEQUENCE OF WETLAND BOUNDARY LINE MARKERS

1 THRU 12	13 THRU 22	23 THRU 59	60 THRU 71	72 THRU 91
92 THRU 117	118 THRU 137	138 THRU 156		

SUMMARY SOIL DESCRIPTIONS

WETLAND SOILS

Leicester fine sandy loam (Lc). This is a poorly drained, moderately coarse textured, friable glacial till soil.

Ridgebury, Leicester and Whitman extremely stony fine sandy loams (RN). These are poorly and very poorly drained, moderately coarse textured glacial till soils.

NONWETLAND SOILS

Charlton-Hollis fine sandy loams (Cr). These are deep, moderately deep, and shallow to bedrock, well drained, moderately coarse textured, friable glacial till soils.

Hollis-Charlton fine sandy loams (Hp). These are shallow, moderately deep and deep to bedrock, somewhat excessively drained, moderately coarse textured, friable glacial till soils. About 20 to 25 percent of the area is rock outcrop.

Hollis-Rock outcrop complex (Hr). These are steeply sloping, mostly shallow to bedrock, somewhat excessively drained, moderately coarse textured, friable glacial till soils. About 30 percent of the area is rock outcrop.

Sutton fine sandy loam (Sv). This is a deep, moderately well drained, moderately coarse textured, friable glacial till soil.

Udorthents, smoothed (UD "cut"). This is a well to moderately well drained disturbed soil that has had two (2) feet or more of its original soil surface excavated.

For further information about the soils, refer to Soil Survey of New Haven County, Connecticut.

SOIL REPORT *continued*

CL&P Property, Stepstone Hill & Durham Rds, Guilford, CT
PROJECT TITLE: _____

MAPS/PLANS TRANSMITTED TO CLIENT

- ☒ Sketch location of Wetlands and other Soil Types.
☐ None

NUMBERING SEQUENCE OF WETLAND BOUNDARY LINE MARKERS

1 THRU 12 13 THRU 22 23 THRU 59 60 THRU 71 72 THRU 91
92 THRU 117 118 THRU 137 138 THRU 156

SUMMARY SOIL DESCRIPTIONS

Soil Report (continued)

Note: The wetland identified as **Lc/Sv** (Wetland flags 118 thru 137) has to a large extent been artificially created. A large amount of fill material was placed to the south of the wetland which resulted in the blockage of surface flows and creation of seasonal, trapped water within the wetland. Much of the soil in the wetland was originally moderately well drained Sutton. Presently, the **Lc/Sv** soils are subject to periodic shallow inundation and prolonged seasonal saturation.



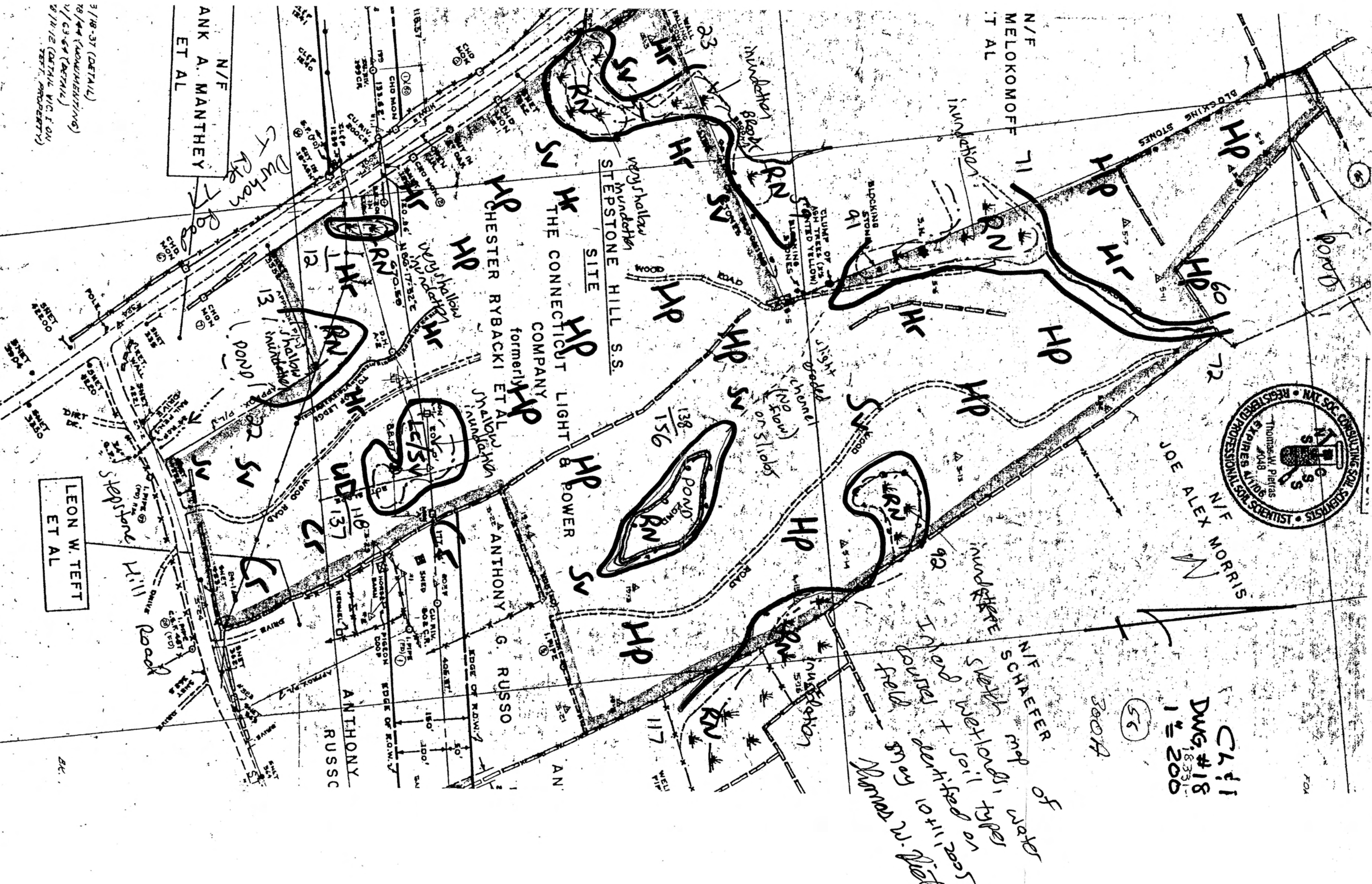
N/F
JOE ALEX MORRIS

(56)

CL:1
DWG. #18
18331
1" = 200'

3004

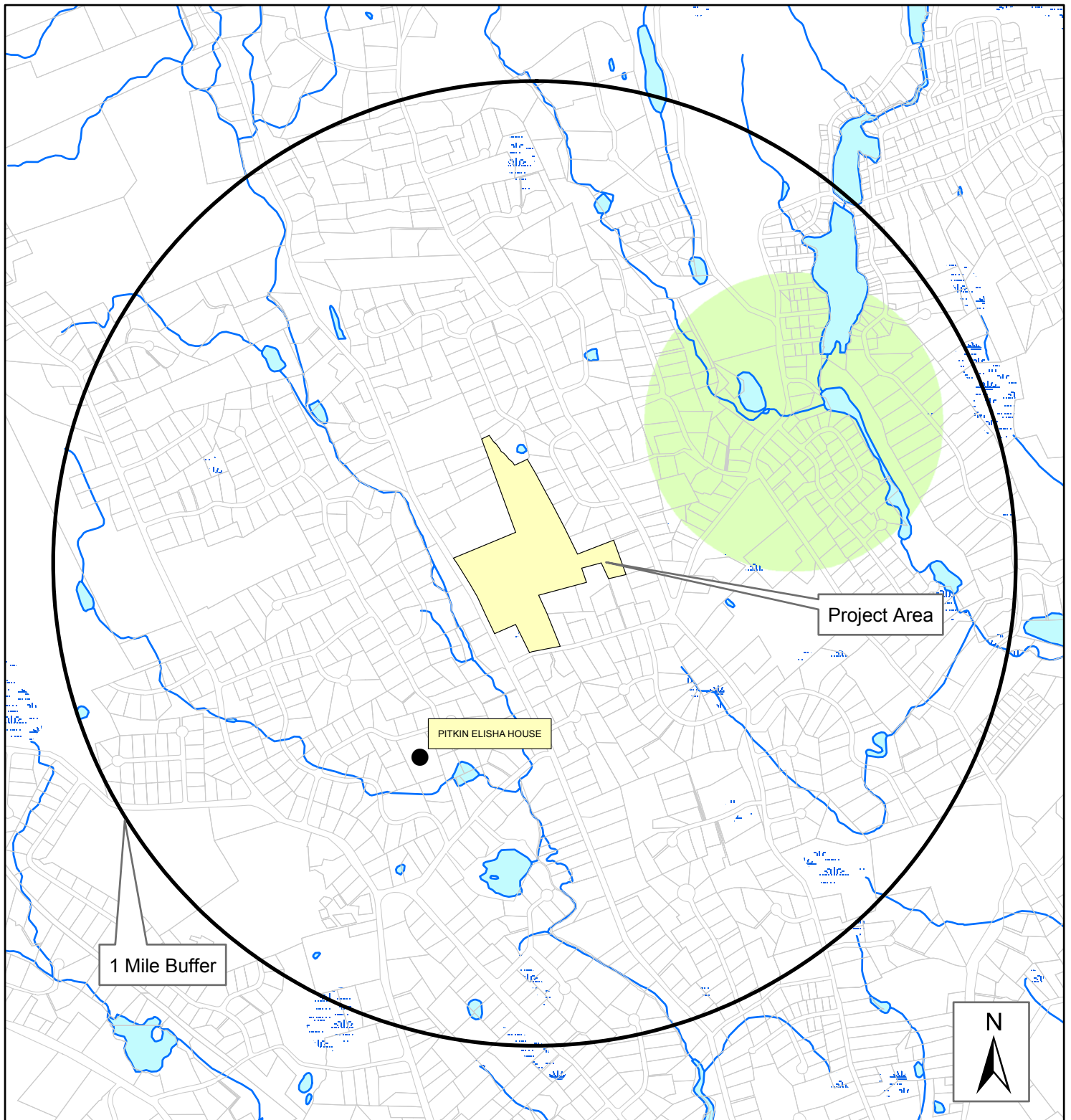
INFLATION OF
NIF SCHAEFER
AND WATER
SHEATH VERTICAL TYPES
INFLATION + JERIFIED ON
FIELD SNOWY FRET
Narrow m. flat







N/F
ANK A. MANTHEY
ET AL

3/18-37 (DETAIL)
78/44 (DOCUMENTING)
1/13-64 (DETAIL)
8/11/12 (DETAIL VIC. E. ON
TEST. PROPERTY)

LEON W. TEFT
ET AL



Legend

-  Project Area
-  National Register (points)
-  National Register (polygon)
-  Reported Archaeological Sites Buffered
-  1 Mile Buffer

Vanasse Hangen Brustlin, Inc.

Cultural Resources Screen
 STEPSTONE SUBSTATION
 1294 PLEASANT VALLEY ROAD
 GUILFORD, CONNECTICUT
 DECEMBER 14, 2006
 USGS QUAD:GUILFORD

0 0.3 0.6
 Miles



THE OLD STONE HOUSE

TOWN OF GUILFORD

31 Park Street
GUILFORD, CONNECTICUT 06437
SETTLED IN 1639

October 27, 2006

TELEPHONE 453-8015
FAX 453-8467

Mr. Robert E. Carberry, P.E.
Manager Transmission Siting & Permitting
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

Re: CL&P – Stepstone 35L Substation

Dear Mr. Carberry:

Town officials and CL&P representatives have had a number of discussions concerning the electric service provided to customers within Guilford and its surrounding communities. We have been informed of CL&P's plans to construct a new substation, to be known as the Stepstone 35L Substation, on its 38 acre property located north of Stepstone Hill Road and east of Route 77 in Guilford.

In addition, CL&P filed location approval applications with Guilford's Inland Wetlands Commission and Planning & Zoning Commission. On August 6, 2006, CL&P received wetlands approval. After holding a public hearing on September 12, 2006, at which time the Commission received additional information from CL&P and heard testimony from a number of residents, the Planning & Zoning Commission unanimously approved CL&P's application on September 20, 2006.

The Town understands that its electric load is currently served from substations located outside Guilford that also serve other communities and that the increasing peak loads are straining CL&P's resources. Further, the Town recognizes the critical need for a reliable electric supply in the Town and its surrounding communities. Therefore, the Town supports the siting of a substation in Guilford, specifically on the property identified by CL&P for the Stepstone 35L Substation.

Sincerely,


Carl A. Balestracci, Jr.
First Selectman



THE OLD STONE HOUSE

TOWN OF GUILFORD

INLAND WETLANDS COMMISSION

50 BOSTON STREET - TOWN HALL SOUTH

GUILFORD, CONNECTICUT 06437

SETTLED IN 1639

TELEPHONE (203) 453-8146

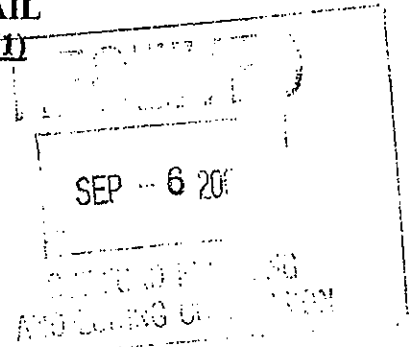
FAX (203) 453-8034

CERTIFIED MAIL RRR AND REGULAR MAIL
CERTIFIED MAIL (7004 2510 0003 9854-9571)

September 6, 2006

CL&P

Attn: Robert Carberry
107 Selden Street
Berlin, CT 06307



Re: regulated activity for CL&P; property located at Stepstone Hill Road and Route 77, Map 91
Lot 46-46A, Zone R-5 a for Location approval

Dear Mr. Carberry,

At its walk meeting of August 2, 2006, the Guilford Inland Wetlands Commission took the following action;

VOTED: That the Guilford Inland Wetlands Commission approve a regulated activity for CL&P; property located at Stepstone Hill Road and Route 77, Map 91 Lot 46-46A, Zone R-5 a for Location approval – substation as shown on, “Northeast Utilities Service Co. The Connecticut Light & Power Company Overall Site Plan Stepstone Hill Substation Guilford, Connecticut” Sheet C-2, “Layout And Erosion Control Plan Stepstone Hill Substation Guilford Connecticut” Sheets C-3 and C-3a, “Grading & Utility Plan Stepstone Hill Substation Guilford, Connecticut” Sheets C-4 and C-4a, Site Details Stepstone Hill Substation Guilford, Connecticut Sheet C-5 dated 06/26/06, prepared by Vanasse Hangen Brustlin, Inc. with the following conditions;

1. Prior to construction:
 - a. Soil erosion and sediment control measures shall be installed as shown on the approved plan.
 - b. That all installation shall be done by hand.

2. A row of bright orange construction fencing as well as erosion controls shall be installed at the limit of landscaping / construction as shown on the permit map prior to the commencement of construction activities. The construction and silt fencing shall be inspected by the Inland Wetlands Enforcement Officer in the field prior to the commencement of construction activities.
3. During construction, piles of fill, erodible material and debris shall not be created within 100 feet of regulated inland wetland and watercourse areas.
4. No grading, clearing, landscaping or other ground surface disturbance shall occur within 100 feet of the regulated inland wetland and watercourse area unless specifically authorized in this permit.
5. Any material, man-made or natural, which is in any way disturbed and / or utilized during work herein authorized shall not be deposited in any wetland or watercourse, either on- or off-site, unless specifically authorized in this permit.
6. Steps taken to control sedimentation, erosion and downstream siltation shall include but need not be limited to:
 - The stabilization of all disturbed earth surfaces with a suitable ground cover and/or hay mulch during and following construction activities.
 - The installation of a temporary erosion control fence or other suitable erosion control measure as indicated on the permit map or as required by Inland Wetlands Enforcement Officer. This erosion control measure will be installed prior to the start of construction activities. Its location will be reviewed and approved in the field by Inland Wetlands Enforcement Officer.
 - The limitations of all construction activities to a specified area reviewed and approved by the Inland Wetlands Enforcement Officer and as defined by the permit map.
 - The placement of additional erosion controls as reviewed and approved by Inland Wetlands Enforcement Officer prior to commencement of clearing and construction activities.
7. A stone or rip-rap anti-tracking pad shall be installed at the entrance and exit areas of the site in order to prevent erodible material from being tracked onto paved areas and subsequently being deposited into adjacent storm drainage systems, inland wetlands or watercourses.
8. This permit may be revoked or suspended if the permittee exceeds the conditions of approval of this permit or has secured this permit through deception or inaccurate information.

9. This permit does not obviate the permittee's obligation to obey all other applicable federal, state and local laws or obtain any applicable federal, state and local permits.
10. The permittee shall immediately inform the Inland Wetlands Enforcement Officer of problems involving sedimentation, erosion, downstream siltation, or any other adverse impacts which develop in the course of or are caused by the work herein authorized.
11. Prior to issuance of a Certificate of Occupancy for any lot, the Inland Wetlands Enforcement Officer shall be notified so that an inspection may be conducted to determine that all soil erosion and sedimentation control measures have been maintained in the manner in which they were approved on the site plan and are in compliance.
12. That all soil erosion and sedimentation control measures shall be maintained in the manner in which they were approved on the site plan and are in compliance for a period of one year or one growing season after completion of the project and that vegetation is established to the satisfaction of the Inland Wetlands Enforcement Officer prior to removal of such soil erosion and sedimentation control measures. In the event that the property/permit area is transferred to another party prior to a period of one year or one growing season after completion of the project;
13. That a note be added to the approved plan saying that unless an extension is granted,
 - a. Construction must begin within TWO years of approval.
 - b. This permit expires two years from the date of approval.

This regulated activity was unanimously approved based upon the finding that there is no feasible or prudent alternative in completion of this project.

Very truly yours,



Douglas Summerton
Chairman
DS:ljmk

CC: Mike Libertine, VHB

Assessor, Environmental Planner, Town Clerk, Town Engineer, P&Z, Health Department



THE OLD STONE HOUSE

GUILFORD TOWN HALL

06-SEP-29 AM 11:55

TOWN OF GUILFORD

PLANNING AND ZONING COMMISSION
50 BOSTON STREET
GUILFORD, CONNECTICUT 06437
SETTLED IN 1639

E-MAIL: planning.zoning@ci.guilford.ct.us
WEBSITE: www.ci.guilford.ct.us

TELEPHONE: (203) 453-8039
FAX: (203) 453-8034

September 29, 2006

CERTIFIED MAIL RRR AND REGULAR MAIL
CERTIFIED NUMBER 7004 2510 0003 9855 0454

Attn: Robert E. Carberry
The Connecticut Light and Power Company
PO Box 270
Hartford, CT 06141

Re: The Connecticut Light and Power Company (Vanasse Hangen Brustlin, Inc.: (860) 632-1500); property located N of Stepstone Hill Road and E of RT.77. Map 91, Lots 46 & 46A, Zone R-5. **Special Permit and Site Plan: Location approval of power substation (Stepstone 35L Substation).** Table 2A, Permitted Uses in Residential Districts, Line 18. Received 7/19. Opened 9/6 and immediately tabled to 9/12/06. Public Hearing held at 9/12 special meeting. PH kept open for staff comments only.

Dear Mr. Carberry:

At its regular meeting of September 20, 2006 the Guilford Planning and Zoning Commission took the following action on the above-named application:

VOTED: That the Guilford Planning and Zoning Commission approve the location of a proposed electric power substation for the Connecticut Light and Power Company, for property on Stepstone Hill Road, Map 91, Lot 46 and 46A, Zone R-5, as shown on Site Plans (7 pages) titled: "Stepstone Hill Substation," prepared by Vanasse Hangen Brustlin, C-1, Legend and General Notes; C-2, Overall site Plan; C-3, Layout and Erosion control Plan; C-4, Grading, Drainage and Utility Plan; C-4a, Grading, Drainage and Utility Plan; C-5, Site Details and as heard at a Public Hearing held on September 12, 2006.

This approval is made pursuant to CGS 16-50x(d) and based upon a finding that the location is suitable for such a facility considering the central placement of the facility within a large, 38 acre site will provide visual screening and insure that noise impacts are minimized.

This approval is made on the condition of the following orders necessary to regulate and restrict such location:

1. CL&P, or its successors and assigns, will continue to own the entire 38 acre parcel as long as the substation is located on the parcel.
2. Final construction plans for the substation include: a) an A-2 survey of the property and b) a storm water collection detention and treatment system for the construction area.
3. CLP will not further develop the site for other uses.

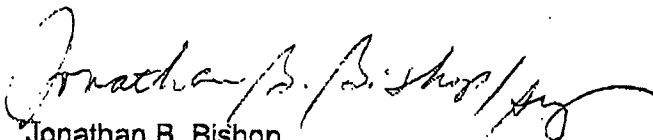


CL&P
9-29-06
Page 2 of 2

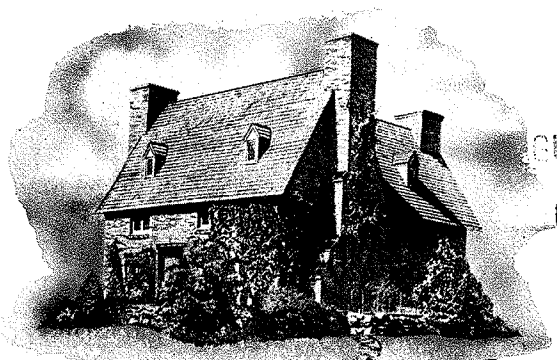
4. Considering the location's proximity within and adjacent to the Groundwater Protection District, CL&P will conform to the requirements of 273-92 of the Zoning Code, including specifically the storage of hazardous materials with 150% containment.
5. CL&P will conform to Guilford's noise ordinance.
6. CL&P will minimize the number of trees cut and all such trees to be removed will be done with the approval of the Tree Warden.
7. CL&P will otherwise maintain the existing foliage to insure visual and noise screening.
8. No lights will be visible except for maintenance and emergency lighting.
9. Any conditions of the Fire Marshall of the Town.
10. CL&P will agree to all conditions of the Inland Wetlands Commission.
11. The access road will be curved to minimize visual impacts on Stepstone Hill Rd.

This application is approved based upon a finding that it conforms with the Zoning Code of the Town.

Very truly yours,


Jonathan B. Bishop
Secretary
/srg

cc: Town Clerk, Assessor, ZEO
Attn: Robert E. Carberry CL&P 107 Selden St. Berlin, CT 06037
Michael Libertine Vanasse Hangen Brustlin, Inc. 54 Tuttle Place Middletown, CT 06457
Marianne Barbino Dubuque, Esq. Carmody & Torrance, LLP PO Box 1110
Waterbury, CT 06721-1110



THE OLD STONE HOUSE
October 26, 2006

GUILFORD TOWN HALL

06 OCT 26 PM 4:19

TOWN OF GUILFORD

PLANNING AND ZONING COMMISSION
50 BOSTON STREET
GUILFORD, CONNECTICUT 06437
SETTLED IN 1639

E-MAIL: planning.zoning@ci.guilford.ct.us
WEBSITE: www.ci.guilford.ct.us

TELEPHONE: (203) 453-8039
FAX: (203) 453-8034

CERTIFIED MAIL RRR AND REGULAR MAIL
CERTIFIED NUMBER 7004 2510 0003 9855 0645

Attn: Robert E. Carberry
The Connecticut Light and Power Company
PO Box 270
Hartford, CT 06141

Re: The Connecticut Light and Power Company (Vanasse Hangen Brustlin, Inc.: (860) 632-1500); property located N of Stepstone Hill Road and E of RT.77. Map 91, Lots 46 & 46A, Zone R-5. **Special Permit and Site Plan: Location approval of power substation (Stepstone 35L Substation).** Table 2A, Permitted Uses in Residential Districts, Line 18. Opened 9/6 and immediately tabled to 9/12/06. Public Hearing held at 9/12 special meeting. PH kept open to 9/20 for staff comments only. 10/18 - Discussion of the 11 conditions of the 9/20/06 location approval.

This letter of approval supercedes the letter dated 9-29-2006.

Dear Mr. Carberry:

At its regular meeting of October 18, 2006 the Guilford Planning and Zoning Commission voted to modify or delete some of the 11 conditions of the approval granted 9/20/06 for the above-named application:

VOTED: That the Guilford Planning and Zoning Commission approve the location of a proposed electric power substation for the Connecticut Light and Power Company, for property on Stepstone Hill Road, Map 91, Lot 46 and 46A, Zone R-5, as shown on Site Plans (7 pages) titled: "Stepstone Hill Substation," prepared by Vanasse Hangen Brustlin, C-1, Legend and General Notes; C-2, Overall Site Plan; C-3, Layout and Erosion Control Plan; C-4, Grading, Drainage and Utility Plan; C-4a, Grading, Drainage and Utility Plan; C-5, Site Details and as heard at a Public Hearing held on September 12, 2006. (Conditions modified 10-18-06).

This approval is made pursuant to CGS 16-50x(d) and based upon a finding that the location is suitable for such a facility considering the central placement of the facility within a large, 38 acre site which will provide visual screening and insure that noise impacts are minimized.

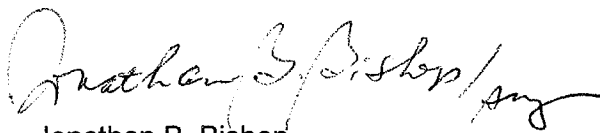
This approval is made on the condition of the following orders necessary to regulate and restrict such location:

1. Plans for storm water management be reviewed by the Town Engineer prior to commencement of construction for this facility.

2. No hazardous material as defined by Guilford's Groundwater Protection District regulations will be stored at this site.
3. CL&P will conform to Guilford's noise ordinance.
4. That prior to removal of trees as part of this construction, the Town Tree Warden be notified to coordinate a site visit.
5. CL&P will otherwise maintain the existing foliage to insure visual and noise screening.
6. No lights will be visible except for maintenance and emergency lighting.
[But understand the need to use the low-level lighting that would already be in place if vandalism should become a problem.]
7. That Guilford's Fire Marshall review construction plans for the facility prior to commencement of construction.
8. CL&P will agree to all conditions of the Inland Wetlands Commission.
9. The access road will be curved to minimize visual impacts on Stepstone Hill Rd.
[No further curvature or modification from what is planned is required.]

This location approval is based upon a finding that the proposed development on the 38 acre parcel is a good location for the described facility. The large parcel with the consequent buffer between the substation and the surrounding residences make this a proper site.

Very truly yours,



Jonathan B. Bishop
Secretary
/srg

cc: Town Clerk, Assessor, ZEO
Attn: Robert E. Carberry CL&P 107 Selden St. Berlin, CT 06037
Michael Libertine Vanasse Hangen Brustlin, Inc. 54 Tuttle Place Middletown, CT 06457
Marianne Barbino Dubuque, Esq. Carmody & Torrance, LLP PO Box 1110
Waterbury, CT 06721-1110
The Connecticut Siting Council
The Department of Public Utility Control 10 Franklin Square New Britain, CT 06051

Stepstone Substation

Stepstone Hill Road,
Guilford, Connecticut

Prepared for **The Connecticut Light & Power Company**
 107 Selden Street
 Berlin, CT 06037

Prepared by ***VHB*/Vanasse Hangen Brustlin, Inc.**
 54 Tuttle Place
 Middletown, CT 06457

November 2006

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Executive Summary

The purpose of the noise analysis is to evaluate the potential noise impacts associated with the proposed Stepstone Substation to be located on Connecticut Light and Power Company property north of Stepstone Hill Road and east of Route 77 (Durham Road) in Guilford, Connecticut. This noise analysis evaluated the existing and future build sound levels. Existing condition sound levels were determined by noise monitoring. The project-generated sound levels were calculated using manufacturer's sound data for transformers and the principles of acoustical propagation of sound over distance. The build condition sound levels were calculated by using noise addition of existing condition and project-generated sound levels.

In order to provide a thorough analysis of the project area, fourteen nearby noise receptor locations were identified at or beyond the property boundaries. These receptor locations were selected based on land use considerations, and represent the most sensitive locations (i.e., the residential neighbors) that may experience changes in sound levels due to the proposed project.

The build sound levels were compared to the Town of Guilford's Noise Control Ordinance and the Connecticut Department of Environmental Protection's noise control regulations. The results of the noise analysis demonstrate that the proposed development would not increase existing sound levels emanating from the property. In addition, the Stepstone Substation would not violate applicable daytime and nighttime noise control standards.

Noise Impact Analysis

Introduction

The purpose of this noise analysis is to evaluate the potential noise impacts associated with the proposed Stepstone Substation (the "Substation") to be located on Connecticut Light and Power Company ("CL&P") property north of Stepstone Hill Road and east of Route 77 in Guilford, Connecticut (the "Property"). This noise analysis evaluated the existing condition and build condition sound levels. The sound levels were compared to the Town of Guilford's Noise Control Ordinance and the Connecticut Department of Environmental Protection's (CTDEP) noise control regulations (Regulations of Connecticut State Agencies (RCSA), Title 22a, Section 22a-69-1 to 22a-69-7.4).

Impact Criteria

The Town of Guilford and the CTDEP have developed noise impact criteria that establish noise thresholds deemed to result in adverse impacts. The noise analysis for the Substation used these criteria to evaluate whether the proposed development will generate sound levels that result in adverse impacts.

Town of Guilford Criteria

Guilford recently adopted a Noise Control Ordinance that provides regulations for residential, commercial and industrial uses. The Substation would be located within a residential zone. The noise level standards for a noise source within a residential zone, as established in the Town of Guilford Noise Control Ordinance, are presented in Table 1.

Table 1
Town of Guilford Noise Level Standards (L₉₀ dBA)

	Receptor Zone			
	Industrial	Commercial	Residential (Daytime)	Residential (Nighttime)
Residential Emitter:	62	55	55	45

Source: Town of Guilford Noise Control Ordinance, August 16, 2006.

Connecticut DEP Criteria

The CTDEP's noise control regulations identify the limits of sound that can be emitted from specific premises and what activities are exempt. The noise control regulations (Title 22a, §§ 22a-69-1 to 22a-69-7.4) are contained in the Regulations of Connecticut State Agencies (RCSA). This policy states that a source located in a "Class A Noise Zone" shall not emit noise exceeding the levels stated in Table 2 at the adjacent Noise Zones. The noise zone standards presented in Table 1 are L_{90} , which is discussed in the Background section.

Table 2
Noise Zone Standards (L_{90} dBA)

	Receptor Noise Zone			
	C	B	A (Daytime)	A (Nighttime)
Class A Emitter to:	62	55	55	45

Source: Control of Noise (Title 22a, Section 22a-69-1 to 22a-69-7.4), Regulations of Connecticut State Agencies, June 1978.

A Class C land use is defined as generally industrial where protection against damage to hearing is essential, and the necessity for conversation is limited. The land use for Class B is defined as generally commercial in nature, where human beings converse and such conversations are essential to the intended use of the land. The land use in Class A is defined as generally residential where human beings sleep or areas where serenity and tranquility are essential to the intended use of the land. The proposed Stepstone Substation would be classified as a Class C land use. However, because the Property is located in an area of Guilford zoned for residential uses (and surrounding land uses are solely residential in nature), the type of emitter and each receptor location used in this analysis was classified as a Class A. Note that the Guilford's Noise Control Ordinance is consistent with the CTDEP noise zone standards.

Background

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, work, or recreation. How people perceive sound depends on several measurable physical characteristics. These factors include:

- Intensity - Sound intensity is often equated to loudness.
- Frequency - Sounds are comprised of acoustic energy distributed over a variety of frequencies. Acoustic frequencies, commonly referred to as tone or pitch, are typically measured in Hertz. Pure tones have all their energy concentrated in a narrow frequency range.

Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from the threshold of hearing (0 dB) to the threshold of pain (120 dB). Because sound levels are measured in dB, the addition of two sound levels is not linear. Adding two equal sound levels creates a 3 dB increase in the overall level. Research indicates the following general relationships between sound level and human perception:

- A 3 dB increase is a doubling of acoustic energy and is the threshold of perceptibility to the average person.
- A 10 dB increase is a tenfold increase in acoustic energy but is perceived as a doubling in loudness to the average person.

The human ear does not perceive sound levels from each frequency as equally loud. To compensate for this phenomenon in perception, a frequency filter known as A-weighted (dBA) is used to evaluate environmental noise levels.

A variety of sound level indicators can be used for environmental noise analysis. These indicators describe the variations in intensity and temporal pattern of the sound levels. The indicators used in this analysis are defined as follows:

- L_{max} is the maximum A-weighted sound level measured during the time period.
- L₁₀ is the A-weighted sound level, which is exceeded for 10 percent of the time during the time period.
- L₉₀ is the A-weighted sound level, which is exceeded for 90 percent of the time during the time period. The L₉₀ is generally considered to be the background sound level. It should be noted that the L₉₀ eliminates the lowest 10 percent of the sound levels that occur in the study area.

Table 3 presents a list of common indoor and outdoor sound levels.

Table 3
Indoor and Outdoor Sound Levels

Outdoor Sound Levels	Sound Pressure (μ Pa)		Sound Level (dBA)	Indoor Sound Levels
	6,324,555	-	110	Rock Band at 5 m
Jet Over-Flight at 300 m		-	105	
	2,000,000	-	100	Inside New York Subway Train
Gas Lawn Mower at 1 m		-	95	
	632,456	-	90	Food Blender at 1 m
Diesel Truck at 15 m		-	85	
Noisy Urban Area—Daytime	200,000	-	80	Garbage Disposal at 1 m
		-	75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	-	70	Vacuum Cleaner at 3 m
Suburban Commercial Area		-	65	Normal Speech at 1 m
	20,000	-	60	
Quiet Urban Area—Daytime		-	55	Quiet Conversation at 1 m
	6,325	-	50	Dishwasher Next Room
Quiet Urban Area—Nighttime		-	45	
	2,000	-	40	Empty Theater or Library
Quiet Suburb—Nighttime		-	35	
	632	-	30	Quiet Bedroom at Night
Quiet Rural Area—Nighttime		-	25	Empty Concert Hall
Rustling Leaves	200	-	20	
		-	15	Broadcast and Recording Studios
	63	-	10	
		-	5	
Reference Pressure Level	20	-	0	Threshold of Hearing

μ PA MicroPascals describe pressure. The pressure level is what sound level monitors measure.

dBA A-weighted decibels describe pressure logarithmically with respect to 20 μ Pa (the reference pressure level).

Source: Highway Noise Fundamentals, Federal Highway Administration, September 1980.

Methodology

This noise analysis evaluated the sound levels from the proposed Substation. The existing condition sound levels were determined by noise monitoring. The project-generated sound levels were calculated using manufacturer's sound data and the principles of acoustical propagation of sound over distance. The build condition (i.e., future conditions once the Substation is operable) sound levels were calculated by using noise addition of existing condition and project-generated sound levels.

Noise monitoring was conducted to determine the existing sound levels in the vicinity of the Property. Noise monitoring was conducted at two locations during the weekday daytime and nighttime periods:

- The CL&P property line along Route 77 (Durham Road), and
- A nearby residential area southeast of the proposed Stepstone Substation.

The monitoring data was used to establish existing conditions and represent the areas that may experience the greatest noise impact associated with the Substation.

A Type I noise analyzer was used to measure sound levels during the two evaluated time periods. The noise measurements were conducted during the daytime (7 a.m. to 10 p.m.) and nighttime periods (10:00 p.m. to 7:00 a.m.) to represent the background sound levels that would occur near the proposed Stepstone Substation. The sound measurements included typical sources, such as mechanical equipment, daily operations, and vehicle traffic.

The project-generated sound levels were calculated for each receptor location based on manufacturer provided reference sound level data. The only significant project-generated noise sources at the Substation would be one (1) new 47-Megavolt-Ampere ("MVA") bulk power transformer and two (2) new distribution transformers. The manufacturer's sound level data for the 47-MVA transformer was used for all three transformers in the noise analysis. This assumption is conservative because the distribution transformers have lower sound levels. The manufacturer's sound level data was projected to specific receptor locations using the acoustical properties of sound propagation over soft (grass) ground terrain.

Finally, the existing condition and project-generated sound levels were added together to determine their potential impact on neighboring properties and conformance with the Town and State standards.

Receptor Locations

In order to provide a thorough analysis of the project area, fourteen noise receptor locations were identified in the vicinity of the proposed Substation. The receptor locations were selected based on proximity and land use considerations. They represent the most sensitive locations in the immediate area that may experience changes in sound levels once the Substation is in operation. These receptor locations represent the residential parcels that surround the Property. They include:

- Receptor Location 1 (R1) – Route 77 (Durham Road) to the west ,
- Receptor Location 2 (R2) – Residence across Route 77 (Durham Road) to the west,
- Receptor Location 3 (R3) – Residence at northeast corner of Route 77 (Durham Road) and Stepstone Hill Road intersection to the south,
- Receptor Location 4 (R4) – Residence on south side of Stepstone Hill Road to the south,
- Receptor Location 5 (R5) – Residence in cul-de-sac north of Stepstone Hill Road to the southeast,
- Receptor Location 6 (R6) – Residence in cul-de-sac north of Stepstone Hill Road to the southeast ,
- Receptor Location 7 (R7) – Residence in cul-de-sac north of Stepstone Hill Road to the east,
- Receptor Location 8 (R8) – Residence in cul-de-sac north of Stepstone Hill Road to the east,
- Receptor Location 9 (R9) – Residence south of Meadow Ridge Lane to the northeast,
- Receptor Location 10 (R10) – Residence on Meadow Ridge Lane to the northeast,
- Receptor Location 11 (R11) – Residence on Meadow Ridge Lane to the northeast,
- Receptor Location 12 (R12) – Residence on Bunker Hill Road to the north,
- Receptor Location 13 (R13) – Residence east of Route 77 (Durham Road) to the north, and
- Receptor Location 14 (R14) – Residence on east side of Route 77 (Durham Road) to the northwest.

Land use in the vicinity of the Property is predominately residential. The receptor and existing conditions noise monitoring locations used in the noise analysis are presented in Figure 1.



Noise Monitoring and Receptor Locations Figure 1

Existing Conditions

The existing sound levels in the vicinity of the Property were established by actual measurement of sound levels at two locations, including an area along Route 77 (Durham Road) to the west of the Property and the residential area located at the intersection of Little Meadow Road and Still Meadow Drive to the southwest. These measured sound levels establish a baseline to evaluate the Substation's sound impacts. The Route 77 measurements provide a representative sound baseline for the receptor properties located adjacent to Route 77. The measurements in the residential area provide a representative sound baseline for the receptor properties located in an area where the sound levels are not excessively influenced by the traffic along Route 77.

The noise monitoring was conducted using a Larson-Davis 824 Type I sound level analyzer and followed standard noise monitoring procedures. The noise sources included local vehicle traffic and typical neighborhood sounds.

The noise monitoring was conducted to establish the existing sound levels at the receptor locations. The sound levels were measured at each location during both the weekday daytime (7 a.m. to 10 p.m.) and weekday nighttime periods (10:00 p.m. to 7:00 a.m.) on June 22, 2005. The lowest recorded hourly L_{90} sound levels are presented in Table 4.

Table 4
Existing Sound Levels

Measurement	Daytime SPL **	Nighttime SPL **
<u>Location*</u>	<u>L_{90} – dBA</u>	<u>L_{90} – dBA</u>
Along Route 77 (Durham Road) to west of proposed site	46	38
Residential Area at the intersection of Little Meadow Road and Still Meadow Drive to the southwest of the proposed site	39	38

Source: Vanasse Hangen Brustlin, Inc.

* Refer to Figure 1 for locations.

** SPL - Overall (broadband) sound pressure level. L_{90} is the ambient (background) sound level.

Project-Generated Sound Levels

The primary source of noise from the proposed project will be the 47-MVA bulk power and two smaller, distribution transformers. CL&P requires the use of state-of-the-art transformers. The maximum sound levels from the transformers are 68 dB sound pressure levels, measured immediately adjacent to the transformer. This sound level will only occur during periods of high transformer loading. The remaining time the transformer sound levels will be lower. For purposes of this analysis, a conservative assumption of 68 dB at 5 feet was used for the hourly reference sound level. The project-generated hourly sound levels were projected to each receptor location based upon the properties of sound propagation over distance, terrain, and geometry. The project-generated hourly L_{90} sound level contribution for each receptor location is presented in Table 5.

Table 5
Project Generated Sound Levels

Receptor <u>Location</u>	SPL * <u>L_{90} – dBA</u>
R1 – Route 77 (west)	32
R2 – Route 77 (west)	30
R3 – Route 77/Stepstone Hill Road (south)	27
R4 – Stepstone Hill Road (south)	19
R5 – Cul-de-sac north of Stepstone Hill Road (southeast)	19
R6 – Cul-de-sac north of Stepstone Hill Road (southeast)	21
R7 – Cul-de-sac north of Stepstone Hill Road (east)	23
R8 – Cul-de-sac north of Stepstone Hill Road (east)	19
R9 – Meadow Ridge Lane (east)	15
R10 – Meadow Ridge Lane (northeast)	16
R11 – Meadow Ridge Lane (northeast)	14
R12 – Bunker Hill Road (north)	10
R13 – East of Route 77 (north)	21
R14 – Route 77 (north)	21

Source: Vanasse Hangen Brustlin, Inc.

*SPL - Overall (broadband) sound pressure level. L_{90} is the ambient (background) sound level, present in the absence of transient noise sources.

Build Conditions

Using acoustic addition, the existing condition and project-generated sound levels were combined to determine the future build condition sound levels at each of the receptor locations. The project-generated sound levels are substantially lower than the existing sound levels due to the location of the proposed Substation in relation to the receptor locations. As a result, the project-generated sound levels do not result in a noticeable increase in the existing sound levels. When adding two sound levels where one of the sound levels is 10 decibels greater or lower than the other sound level, then acoustical addition results in no change to the higher sound level. Table 6 presents existing condition, project-generated, and build condition sound levels, as well as the most conservative noise control standard (Town or State) for each receptor.

Table 6
Build Condition Sound Levels

Receptor Location*	Daytime Sound levels				Nighttime Sound Levels			
	Existing L90 - dBA	Project L90 - dBA	Build L90 - dBA	Noise Control Standard L90 - dBA	Existing L90 - dBA	Project L90 - dBA	Build L90 - dBA	Noise Control Standard L90 - dBA
R1 – Route 77	46	32	46	55	38	32	39	45
R2 – Route 77	46	30	46	55	38	30	39	45
R3 – Route 77/Stepstone Hill Rd	46	27	46	55	38	27	38	45
R4 – Stepstone Hill Road	39	19	39	55	38	19	38	45
R5 – Cul-de-sac north of Stepstone Hill Rd	39	19	39	55	38	19	38	45
R6 – Cul-de-sac north of Stepstone Hill Rd	39	21	39	55	38	21	38	45
R7 – Cul-de-sac north of Stepstone Hill Rd	39	23	39	55	38	23	38	45
R8 – Cul-de-sac north of Stepstone Hill Rd	39	19	39	55	38	19	38	45
R9 – Meadow Ridge Lane	39	15	39	55	38	15	38	45
R10 – Meadow Ridge Lane	39	16	39	55	38	16	38	45
R11 – Meadow Ridge Lane	39	14	39	55	38	14	38	45
R12 – Bunker Hill Road	39	10	39	55	38	10	38	45
R13 – East of Route 77	39	21	39	55	38	21	38	45
R14 – Route 77	46	21	46	55	38	21	38	45

Source: Vanasse Hangen Brustlin, Inc.

* Refer to Figure 1 for receptor locations.

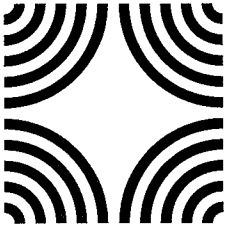


The results of the noise analysis demonstrate that the Substation will generate sound levels that are substantially below the existing sound levels. Adding the Substation sound levels to the existing nighttime conditions will not result in any discernable increases of the existing nighttime sound levels. The Town of Guilford and CTDEP noise level standards for nighttime are 45 dBA for residential zones. The build condition sound levels for the proposed Substation are well below the nighttime noise control standards.

The daytime project-generated sound levels for the Substation are the same as the nighttime project-generated sound levels. Adding the Substation sound levels to the existing daytime conditions will not result in any increases of the existing daytime sound levels. The Town of Guilford and CTDEP noise level standards for daytime are 55 dBA for residential zones. The daytime build condition sound levels are also substantially below the daytime noise control standards.

Conclusion

The results of the noise analysis demonstrate that the proposed project will not violate the applicable nighttime and daytime noise control standards at each receptor location. The noise analysis demonstrates that, upon completion and operation of the Substation, the sound levels generated by the Substation will not exceed the Town's or CTDEP's noise control standards.



Connecticut Commission on Culture & Tourism

June 23, 2005

Historic Preservation
& Museum Division

Ms. Amanda Carroll
Northeast Utilities System
PO Box 270
Hartford, CT 06141-0270

59 South Prospect Street
Hartford, Connecticut
06106

(v) 860.566.3005
(f) 860.566.5078

Subject: 115-kV Substation
Stepstone Hill Road and Route 77
Guilford, CT

Dear Ms. Carroll:

The State Historic Preservation Office has reviewed the above-named project. This office expects that the proposed undertaking will have no effect on historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places.

This office appreciates the opportunity to have reviewed and commented upon the proposed undertaking.

We recommend that the responsible agency provide concerned citizens with the opportunity to review and comment upon the proposed undertaking in accordance with the National Historic Preservation Act and the Connecticut Environmental Policy Act.

For further information please contact Dr. David A. Poirier, Staff Archaeologist.

Sincerely,

J. Paul Loether
Division Director and Deputy
State Historic Preservation Officer



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



ENVIRONMENTAL AND GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, CT 06106-5127
Geological and Natural History Survey
Natural Diversity Data Base

June 21, 2005

Amanda Carroll
Northeast Utilities
P.O. Box 270
Hartford, CT 06141

Re: Proposed Stepstone Hill
substation; Guilford, CT

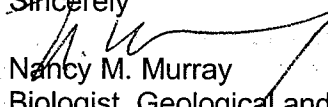
Dear Ms. Carroll

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided and listed above. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question. We do have records of *Aristolochia serpentaria*, Virginia snakeroot from the site. This population occurs adjacent to the Route 77 under the powerlines that run along the road. Construction activities should be designed to avoid this area. I have attached a map showing the area of concern.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions (424-3589). Thank you for consulting the Natural Diversity Data Base.

Sincerely

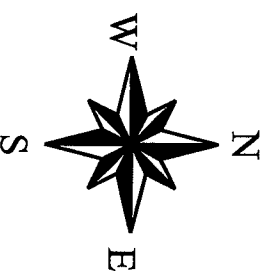

Nancy M. Murray
Biologist, Geological and Natural History Survey
NDDB Program Coordinator

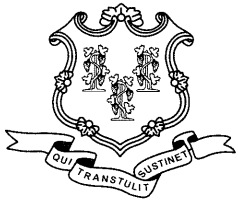
Aristolochia serpentaria



0.4 0 0.4 0.8 Miles

© - plant location





STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Wildlife Division
Geological and Natural History Survey
Natural Diversity Data Base
79 Elm Street, Store Level
Hartford, CT 06106-5127

November 21, 2006

Dean Gustafson
Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457

Subject: Stepstone Hill Road
Guilford, CT-Proposed Substation
Species of Special Concern

Dear Mr. Gustafson,

Thank you for providing the detailed site map of the CL&P property on Stepstone Hill Road indicating the locations of 2 State listed plant species and the location of the proposed substation and access road. The proposed activities will not affect the locations of *Hottonia inflata* and *Aristolochia serpentaria*, State Special Concern species. I recommend that, prior to construction, these two areas be flagged to prevent any inadvertent negative impacts.

The *Aristolochia serpentaria* site adjacent to the power line right of way should not yet be considered historic at this time. It may be that the site can be managed to provide for the continued existence of the species. This is something I shall follow up on.

I appreciate your providing the Special Plant Species Reporting Form for the new population of *Hottonia inflata* that was located during your site planning. Thank you for consulting the Natural Diversity Data Base and working with us to protect State listed species. If you have any questions please contact me (860-424-3589 or nancy.murray@po.state.ct).

Sincerely,


Nancy M. Murray
Biologist, Geological and Natural History Survey
NDDB Program Coordinator

C: A. Johnson, NU





Stephen G. Whitley
Senior Vice President & Chief Operating Officer

November 8, 2005

Mr. Allen Scarfone
Mr. Oswaldo Ortega
Northeast Utilities Service Company
P. O. Box 270
Hartford, CT 06141-0270

Subject: NU-05-T20

Gentlemen:

ISO New England has determined pursuant to Section I.3.9 of the ISO New England Inc. Transmission, Markets and Service Tariff ("ISO Tariff") that implementation of the Participant's Proposed Plan identified in the following application will not have a significant adverse effect on the stability, reliability or operating characteristics of Northeast Utilities System Companies' (NU) transmission facilities, the transmission facilities of another Transmission Owner, or the system of a Market Participant, subject to satisfaction of any conditions identified below with respect thereto:

The Northeast Utilities System Companies (NU) Transmission Facilities Proposed Plan Application NU-05-T20 for the construction of the new Stepstone 35L Substation to be located in Guilford, Connecticut by tapping and segmenting the 115 kV 1508 Line between the Green Hill and Branford Substations, creating the Stepstone to Green Hill 1508 Line and the Stepstone to Branford 1738 Line. The substation will consist of a 47 MVA, 115/13.2 kV distribution transformer and a 115 kV circuit breaker, associated disconnects, circuit switchers, wave traps and current transformers to support the new substation that is required to relieve projected overloads on the Branford 11J Substation, with an in service date of June 1 2007, as detailed in Mr. Oswaldo Ortega's September 27, 2005 letter to Mr. Stephen Rourke, Chairman – Reliability Committee,

The above plan is hereby approved for implementation.

Sincerely,

A handwritten signature in black ink, appearing to read "S G Whitley".

Stephen G. Whitley
Senior Vice President and Chief Operating Officer

cc: Proposed Plan Application



Stephen J. Rourke
Vice President, System Planning

April 24, 2006

Mr. Oswaldo Ortega
Transmission Planning Department
Northeast Utilities Company
107 Selden Street
Berlin, CT 06037

Re: NU-06-TCA-02: Request for Pool-Supported PTF Cost Treatment for the New Stepstone Substation; ISO New England Written Finding and Determination

Dear Mr. Ortega:

This letter is being sent in accordance with Section 2 of Schedule 12C of Part II of the ISO New England Inc. ("ISO") Tariff and ISO Planning Procedure 4.¹

On March 28, 2006, Northeast Utilities ("NU") filed a transmission allocation application ("TCA") pursuant to Schedule 12C of the ISO Tariff. The TCA application requested Pool Transmission Facility ("PTF") cost allocation treatment for costs associated with the construction of the new Stepstone (35L) substation in Guilford, Connecticut, specifically the installation of a 115 kV circuit breaker and associated relaying, to relieve projected overloads on the Branford (11J) substation. Pursuant to Schedule 12 of the ISO Tariff, the Reliability Committee reviewed the NU application and, on April 4, 2006, recommended that the ISO approve NU's application to treat \$4,466,288 as pool-supported PTF costs.

The ISO concurs with the Reliability Committee's vote in favor of approving PTF regional rate treatment of \$4,466,288. Only actual expenditures may be included in the PTF regional rate.

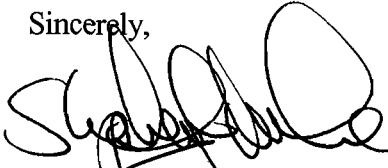
The ISO Tariff requires submission and review of this TCA application because the amount of the transmission upgrade that NU is seeking to be rolled-in to the PTF rate is in excess of \$500,000. In making its determination that the costs associated with this project should be Pool-Supported PTF costs, the ISO concurs with the Reliability Committee's recommendation that the costs identified by NU as PTF should be approved for regional allocation. The ISO's

¹ Capitalized terms not defined in this letter have the meanings ascribed thereto in the ISO Open Access Transmission Tariff ("Tariff").

Mr. Oswaldo Ortega
April 24, 2006
Page 2 of 2

decision is based on the facts that the project provides a regional reliability benefit, is consistent with Good Utility Practice, and is consistent with current engineering and design practices in the area in which the project is being constructed. Further, the proposed project provides greater reliability than the alternatives considered, to address load growth in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephen J. Rourke', written over a horizontal line.

Stephen J. Rourke
Vice President, System Planning

cc: TCApps



**Northeast
Utilities System**

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-6774

Robert E. Carberry
Manager – Transmission Siting and
Permitting

October 5, 2006

Connecticut Energy Advisory Board
c/o CERC
805 Brook Street, Building 4
Rocky Hill, CT 06067

Attn: Mr. Donald Downes, Chairman

Re: Application of The Connecticut Light & Power Company to the Connecticut Siting
Council for a Certificate of Environmental Compatibility and Public Need for the
Construction of the Stepstone Substation in Guilford

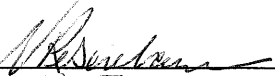
Dear Mr. Downes:

In order to increase the capacity to transform electricity to reliability and adequately deliver power to customers, in response to the increasing peak-load demands for electricity in the Town of Guilford and surrounding areas, The Connecticut Light and Power Company is proposing to construct the Stepstone Substation Project. Pursuant to Connecticut General Statutes Section 16-50(e), CL&P is filing information with the Town of Guilford, comprising the Municipal Consultation Filing ("MCF") for the Stepstone Substation. As required by Section 16-50(e), CL&P respectfully submits to the Connecticut Energy Advisory Board a copy of the MCF, which is being filed with the Town of Guilford on this date.

The Connecticut Light & Power Company

By: 
Robert E. Carberry

The above material was received by the CEAB.

By: 
Date: 10-5-06



Northeast
Utilities System

107 Selden Street, Berlin, CT 06037

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The Connecticut Light & Power Company

By: Robert E. Carberry
Robert E. Carberry

The above material was received by the CEAB.

By: _____
Date: _____

Received by: Kathy Bantley
Mary Healey
Date: 10/05/06



**Northeast
Utilities System**

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-6774

Robert E. Carberry
Manager – Transmission Siting and
Permitting

October 5, 2006

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c/o CERC
805 Brook Street, Building 4
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The Connecticut Light & Power Company

By: 
Robert E. Carberry

The above material was received by the CEAB.

By: _____
Date: _____

Received by: Karen Martin
Donald Downes
Date: 10/05/06



October 5, 2006

Vanasse Hangen Brustlin, Inc.

VIA FEDERAL EXPRESS

Mr. Daniel Peaco
President
LaCapra Associates
20 Winthrop Square
Boston, MA 02110

Mr. Harvey Salgo
Principal
LaCapra Associates
20 Winthrop Square
Boston, MA 02110

Mr. Richard Hahn
LaCapra Associates
20 Winthrop Square
Boston, MA 02110

Re: CL&P – Stepstone Substation, Guilford, CT

Gentlemen:

At Gretchen Deans' request, enclosed please find three (3) sets of the Municipal Consultation Filing for the Stepstone Substation and one (1) CD for your office.

Very truly yours,

Michael Libertine, LEP
Director of Environmental Services, CT

Enclosures
cc: Ms. Gretchen Deans

[Close Window](#)Track Shipments
Detailed Results

Print

Tracking number	798514169655	Reference	4103300 mike I
Signed for by	L.FREEDMAN	Destination	Boston, MA
Ship date	Oct 5, 2006	Delivered to	Receptionist/Front Desk
Delivery date	Oct 6, 2006 8:53 AM	Service type	Priority Box
		Weight	6.0 lbs.

Status Delivered**Signature Proof of Delivery**Click **Request copy of signature** to view delivery information for this shipment.[Request copy of signature](#)

<i>Date/Time</i>	<i>Activity</i>	<i>Location</i>	<i>Details</i>
Oct 6, 2006	8:53 AM Delivered	Boston, MA	
	7:15 AM On FedEx vehicle for delivery	SOUTH BOSTON, MA	
	7:14 AM At local FedEx facility	SOUTH BOSTON, MA	
	1:03 AM At dest sort facility	FRANKLIN, MA	
Oct 5, 2006	9:14 PM Left origin	WINDSOR LOCKS, CT	
	5:29 PM Picked up	WINDSOR LOCKS, CT	
	2:05 PM Package data transmitted to FedEx		

[Email results](#)[Track more shipments](#)*Subscribe to tracking updates (optional)***Your Name:****Your Email Address:**

Email address	Language	Exception updates	Delivery updates
	English	<input type="checkbox"/>	<input type="checkbox"/>
	English	<input type="checkbox"/>	<input type="checkbox"/>
	English	<input type="checkbox"/>	<input type="checkbox"/>
	English	<input type="checkbox"/>	<input type="checkbox"/>

Select format: ☒ HTML ☐ Text ☐ Wireless**Add personal message:**

Not available for Wireless or non-English characters.

☐ By selecting this check box and the Submit button, I agree to these [Terms and Conditions](#)[Submit](#)

CARMODY & TORRANCE LLP

Attorneys at Law

Marianne Barbino Dubuque
Partner

50 Leavenworth Street
Post Office Box 1110
Waterbury, Connecticut
06721-1110

Telephone: 203 573-1200
Facsimile: 203 575-2600
www.carmodylaw.com

Direct: 203-578-4218
mdubuque@carmodylaw.com

November 29, 2006

Donald W. Downes, Chairman
Connecticut Energy Advisory Board
c/o CERC
805 Brook Street, Building 4
Rocky Hill, CT 06067-3405

Re: Stepstone Substation

Dear Mr. Downes:

Enclosed are CL&P's responses to the questions posed in an email message dated October 30, 2006 that was sent by Mr. Richard Hahn of LaCapra Associates to Mr. Robert Carberry, NU's Manager of Transmission Siting and Permitting. Three paper copies and a CD-ROM are enclosed, and an electronic mailing of the responses has been sent to Mr. Hahn.

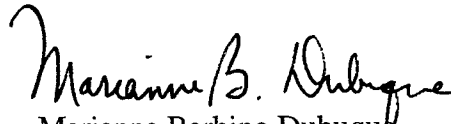
In addition, it is important to note that CL&P is preparing its application to the CSC for the Stepstone Substation in accordance with the CSC's Guidelines for Substations. Those Guidelines differ in some respects from the Preferential Criteria adopted by the CEAB. Keeping in mind that the CEAB's Preferential Criteria were adopted to facilitate a comparative analysis of alternatives presented by CSC applicants with those presented by third parties and that CL&P cannot predict the outcome of CEAB's RFP process, or if in fact, any proposals will be submitted by third parties, CL&P has not undertaken analyses of all conceivable proposals. Rather, CL&P has focused its efforts on a long-term solution to address reliability issues and to provide opportunities for load growth. That solution, the Stepstone Substation, has received the support of the First Selectman of the Town of Guilford as a method of addressing a critical need. Moreover, the site location in Guilford satisfies the Town's objectives for orderly development, as evidenced by the location approvals CL&P received from the Town's land use agencies.

Mr. Hahn posed these questions to assist LaCapra's preparation of CEAB's RFP for alternatives to CL&P's proposed Stepstone Substation. CL&P currently expects to file an application with the Connecticut Siting Council for this substation by December 15, 2006. Please note that the questions have been answered on the basis of

information in CL&P's possession. That is, CL&P has not undertaken any new studies or analyses for the purpose of responding to these questions.

As a courtesy to the Connecticut Siting Council, we are forwarding a copy of this letter and CL&P's responses to the Council so that the Council will have the same information as the CEAB.

Very truly yours,


Marianne Barbino Dubuque

MBD/pam
Enclosures

cc: Connecticut Siting Council (w/encl)
Mr. Robert E. Carberry

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-001
Page 1 of 1

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Are the Race Hill and existing Guilford substations currently fed from Branford? Are these loads included in the table on page G-5? If not, please describe where they are served from. If so, please separate those loads from other loads at Branford in the table on page G-5.

Response:

The Race Hill substation is fed solely from the Green Hill substation, via a 23-kV feeder circuit. The Guilford substation has two transformers: the 29F-1X fed from Branford substation, via a 23-kV feeder circuit, and the 29F-2X fed from Green Hill substation, via a 23-kV feeder circuit. The loads at the Race Hill and Guilford substations are therefore included within the Branford and Green Hill substation loads in the table on page G-5.

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:
Please describe and include in the table on page G-5 all other substations adjacent to Guilford.

Response:
The table on page G-5 already includes the only two adjacent bulk substations, Branford Substation in Branford and Green Hill Substation in Madison. The next closest bulk substation to the east is Bokum Substation in Old Saybrook, which is the fourth town east of Guilford. The next closest bulk substation to the north is Dooley Substation in Middletown, which is the second town north of Guilford and approximately 15 miles to the north of the Guilford town line. To the west and north of Branford is the service territory of the United Illuminating Company. To the south is the Long Island Sound.

In the immediately adjacent towns of Branford and Madison, CL&P also has five distribution-class substations which are served by feeders from the bulk substations. A tabulation of these distribution-class substations in a similar format to the table on page G-5 follows:

	Permissible Load Rating (MVA)	2006	2007	2008	2009	2010	2011	2012
Race Hill (fed by Green Hill)	12.5	11.9	9.6	6.6	6.8	7.0	7.3	7.5
Madison (fed by Green Hill)	7.7	8.1	6.5	6.7	6.9	7.1	7.3	7.5
Meadow (fed by Branford)	24.5	14.5	14.9	15.4	15.8	16.3	16.8	17.3
Pine Orchard (fed by Branford)	3.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3
East River (fed by Green Hill)	4.1	2.1	2.1	2.2	2.2	2.3	2.4	2.5

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:
Regarding the table on page G-5, please provide the most recent five years of actual annual peak loads for all adjacent substations.

Response:
The requested information for the adjacent distribution-class substations identified in the response to Data Request CEAB-01, Q-CEAB-003 is as follows:

	Permissible Load Rating (MVA)	2002	2003	2004	2005	2006
Branford	95	80	79.9	76.7	86	87.8
Green Hill	89 ¹	85	85	83.4	91.3	100.5
Race Hill (fed by Green Hill)	12.5	9.5	10.4	8.9	11.5	11.9
Madison (fed by Green Hill)	7.7	6.9	6.9	6.8	7.6	8.1
Meadow (fed from Branford)	24.5	11.1	12.4	11.6	12.9	14.5
Pine Orchard (fed from Branford)	3.1	0.8	0.8	0.8	0.8	1.1
East River (fed by Green Hill)	4.1	3.2	3.3	1.5	1.2	2.1

1 The rating after the third transformer is placed into service will be approximately 130 MVA. The majority of the new capacity (41 MVA) from the addition is dedicated to serving the growing needs of Madison and Clinton.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-004
Page 1 of 5

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

For each primary circuit currently being served by each of the substations listed in the table on page G-5 and other adjacent substations, please provide the most recent peak loads. Also provide a map showing the geographic area served by each primary circuit.

Response:

See the attached spreadsheet for the most recent peak loads on each primary circuit currently being served by each of the substations. See the attached Pre-Stepstone Circuit Map of the geographic areas served by each primary distribution circuit in the Town of Guilford.



Feeder Loads 2006 Q4.xls



Pre-Stepstone Circuit Map.vsd

CL&P Docket No. Stepstone
Substation

Data Request CEAB-01

Dated: 10/30/2006

Q-CEAB-004

Page 2 of 5

		<u>Limit</u>	<u>2006</u>
Green Hill 30R-			
2X & 3X	MVA	89.0	100.5
	amps	2248	2538
23 kV 30R7	MVA	17.5	15.1
	amps	442	382
23 kV 30R8	MVA	19.1	17.3
	amps	483	437
23 kV 30R9	MVA	25.1	10.5
	amps	634	265
23 kV 30R10	MVA	19.1	14.4
	amps	483	364
23 kV 30R12	MVA	25.1	11.2
	amps	634	283
23 kV 30R13	MVA	23.9	17.0
	amps	604	430
23 kV 30R14	MVA	14.9	15.7
	amps	377	397
23 kV 30R15	MVA	18.3	10.4
	amps	462	263

A third transformer (30R-1X) will be added in 2007 increasing the rating of the station to approximately 130 MVA.

Green Hill 30R serves the 29F-2X (at Guilford sub), 27G-1X (Madison sub), 15D1-1X (Race Hill sub), and 11U-1X (East River sub)

Guilford 29F-2X	MVA	12.5	11.8
served by 30R13,			
see above	amps	523	494
13.8 kV 29F1	MVA	10.5	5.7
	amps	439	238
13.8 kV 29F4	MVA	10.2	7.3
	amps	427	305

Race Hill			
15D-1X	MVA	12.5	11.9
served by 30R14,			
see above	amps	867	826
8.32 kV 15D1	MVA	7.7	7.4
	amps	534	514
8.32 kV 15D3	MVA	7.7	4.6
	amps	534	319

Madison
27G-1X MVA **7.7** **8.1**
 served by 30R15
 see above amps 926 974
 4.8 kV 27G1 MVA **3.0** 1.6
 amps 361 192
 4.8 kV 27G2 MVA **3.1** **3.5**
 amps 373 421
 4.8 kV 27G3 MVA **3.7** 3.2
 amps 445 385

East River
11U-1X MVA **4.1** 2.1
 served by 30R10,
 see above amps 490 247
 4.8 kV 11U1 MVA **4.1** 2.1
 amps 490 247

		<u>Limit</u>	<u>2006</u>
Branford			
11J-1X & 2X	MVA	95.0	87.8
	amps	2401	2219
23 kV 11J30	MVA	29.1	21.4
	amps	735	541
23 kV 11J40	MVA	28.7	20.6
	amps	725	521
23 kV 11J41	MVA	17.5	9.1
	amps	442	230
23 kV 11J43	MVA	23.1	14.9
	amps	584	377
23 kV 11J45	MVA	17.5	14.5
	amps	442	366
23 kV 11J58	MVA	28.7	10.1
	amps	725	255

**Branford 11J serves
 the 29F-1X at
 Guilford substation**

Guilford
29F-1X MVA **12.5** **12.9**
 served by 11J40,
 see above amps 523 540
 13.8 kV 29F2 MVA **10.5** 8.6
 amps 439 360
 13.8 kV 29F3 MVA **10.5** 4.3
 amps 439 180

**CL&P Docket No. Stepstone
 Substation
 Data Request CEAB-01
 Dated: 10/30/2006
 Q-CEAB-004
 Page 3 of 5**

Meadow**28J-1X MVA 12.5 7.1**

served by 11J43,

see above amps 523 298

13.8 kV 28J1 MVA 13.7 7.1

amps 575 298

CL&P Docket No. Stepstone**Substation****Data Request CEAB-01****Dated: 10/30/2006****Q-CEAB-004****Page 4 of 5****Meadow****28J-2X MVA 12.0 7.4**

served by 11J43,

see above amps 502 308

13.8 kV 28J2 MVA 10.5 7.4

amps 439 308

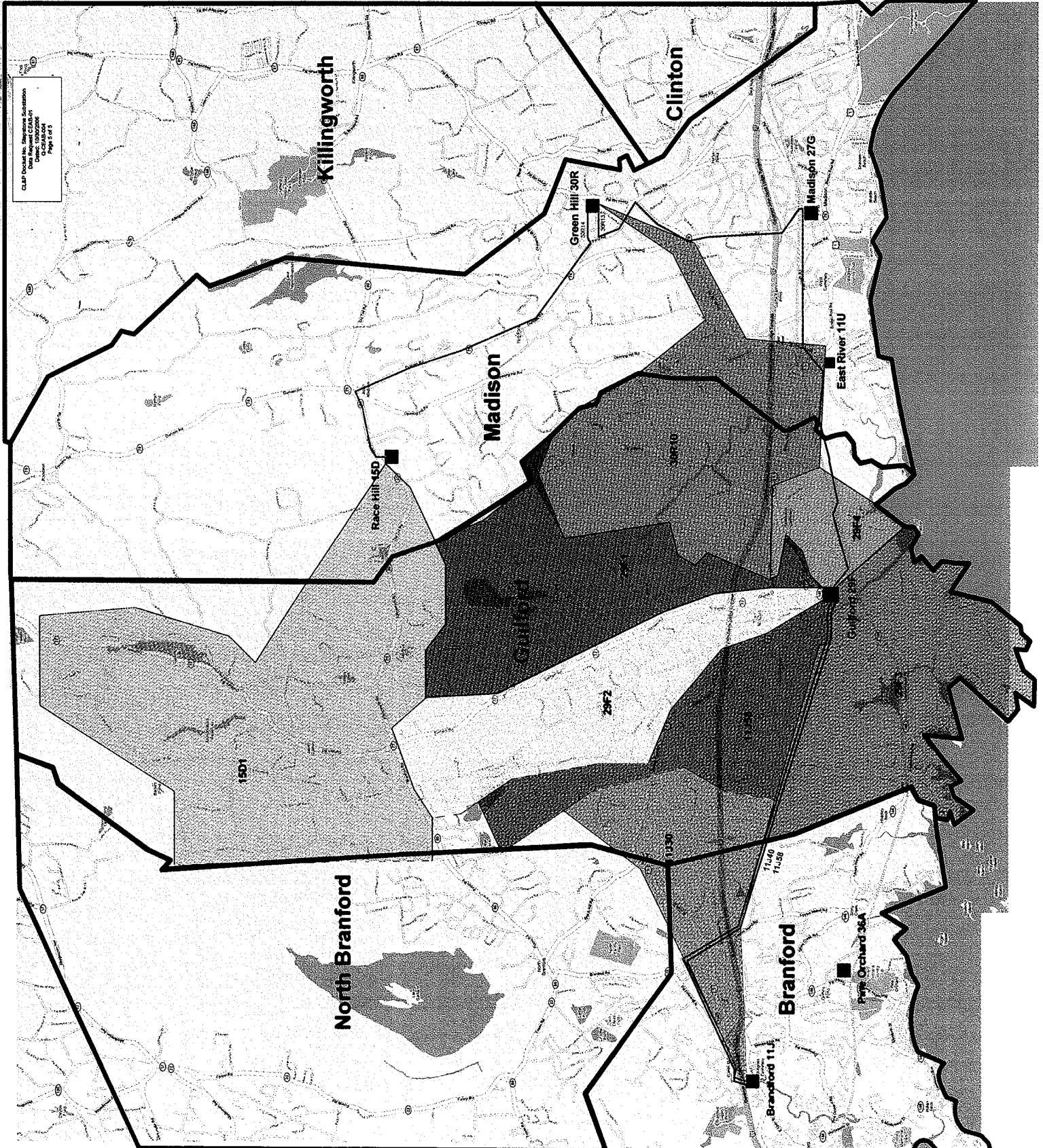
Pine Orchard**36A-1X MVA 3.1 1.1**

served by 11J58,

see above amps 375 132

4.8 kV 36A1 MVA 3.1 1.1

amps 375 132



CLIP DocId:36000000
Data Request: CLIP
CLIP DocId:36000000
Page 5 of 5

Killingworth

Clinton

Madison

North Branford

Branford

Green Hill 30R

Madison 27G

East River 11U

Race Hill 45D

Pine Orchard 36A

Branford 11L

11u40
11u38

15D1

25F2

11u39

25F4

Guilford 10R

Guilford

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-005
Page 1 of 1

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Do any other substations besides the two listed in the table on page G-5 serve a geographic area whose load will be transferred to the new Stepstone Substation? If so, please provide the information requested in the above questions for those additional substations.

Response:

There are no other bulk substations besides the two listed in the table on page G-5 which will have load transfers to the new Stepstone Substation.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-006
Page 1 of 2

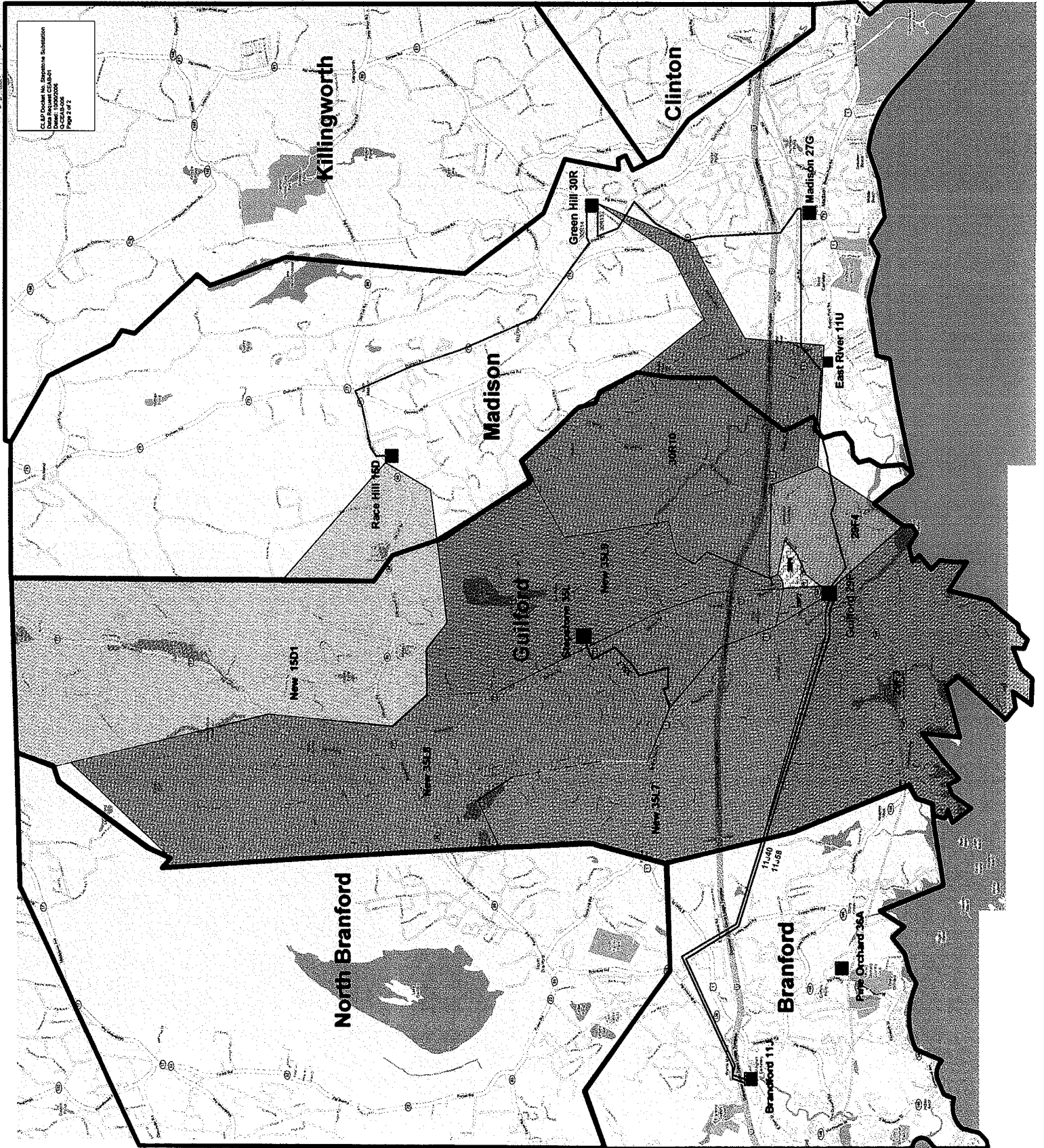
Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

For the proposed Stepstone Hill Substation, please provide a map showing the geographic area served by each circuit that will be supplied by this substation.

Response:

Please see the attached Post-Stepstone Circuit Map.



Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Please provide a table similar to the table on page G-5 after assumed load transfers to the proposed Stepstone Hill Substation are made. The intent of this question is to determine how much load is being transferred and how much unused capacity will exist at each of these substations after installation of the Stepstone Hill Substation.

Response:

Load on the "bulk" substations once Stepstone (2008) is in service:

	Permissible Load Rating (MVA)	2006	2007	2008	2009	2010	2011	2012
Stepstone	44			31.6	32.5	33.5	34.5	35.6
Branford	95	87.8	90.4	72.9	75.1	77.4	79.7	82.1
Green Hill	89*	100.5	103.5	95.2	98.1	101.0	104.0	107.2

* The permissible load rating for Green Hill will increase to approximately 130 MVA once the third transformer is placed into service in early 2007.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-008
Page 1 of 2

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

The load forecasts for the table on page G-5 is stated as 3%. Please provide the basis for that assumed growth rate. Does CL&P have estimates of specific projects or new customers, as was provided for the Town of Oxford? If so, please provide those details.

Response:

CL&P does not have estimates of specific projects or new customers for the area including and surrounding Guilford. The data that acts as the basis for the assumed growth rate is included in the attached spreadsheet. Historical data supports a growth rate even higher than the base 3% we have assumed for our forecast tables.

Growth Rate Calculation Based on Annual
Bulk Substation Summer Peak Loads in MW

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Branford 11J	79.7	78.0	86.0	79.0	78.4	78.1	78.3	76.0	85.0	86.9
Green Hill 30R	57.1	57.0	57.0	62.3	84.4	82.9	74.2	76.7	89.8	98.2
Total MW	136.8	135.0	143.0	141.3	162.8	161.0	152.5	152.7	174.8	185.1

Yearly Increases

2 year =	+6.7% from 1999 to 2001	1.0670
3 year =	+4.0% from 1999 to 2002	1.0403
4 year =	+1.6% from 1999 to 2003	1.0162
5 year =	+1.3% from 1999 to 2004	1.0132
6 year =	+3.4% from 1999 to 2005	1.0340
7 year =	+3.7% from 1999 to 2006	1.0375

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-009
Page 1 of 1

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Does CL&P have a forecast of load growth after 2012 for this area? If so, please provide the forecast or assumed growth rate.

Response:

No, the load growth was determined by applying a constant growth rate of 3%, based on past data.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-010
Page 1 of 3

Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Please provide a map of the transmission system to which the Stepstone Hill Substations and all existing adjacent substations connect or will connect to.

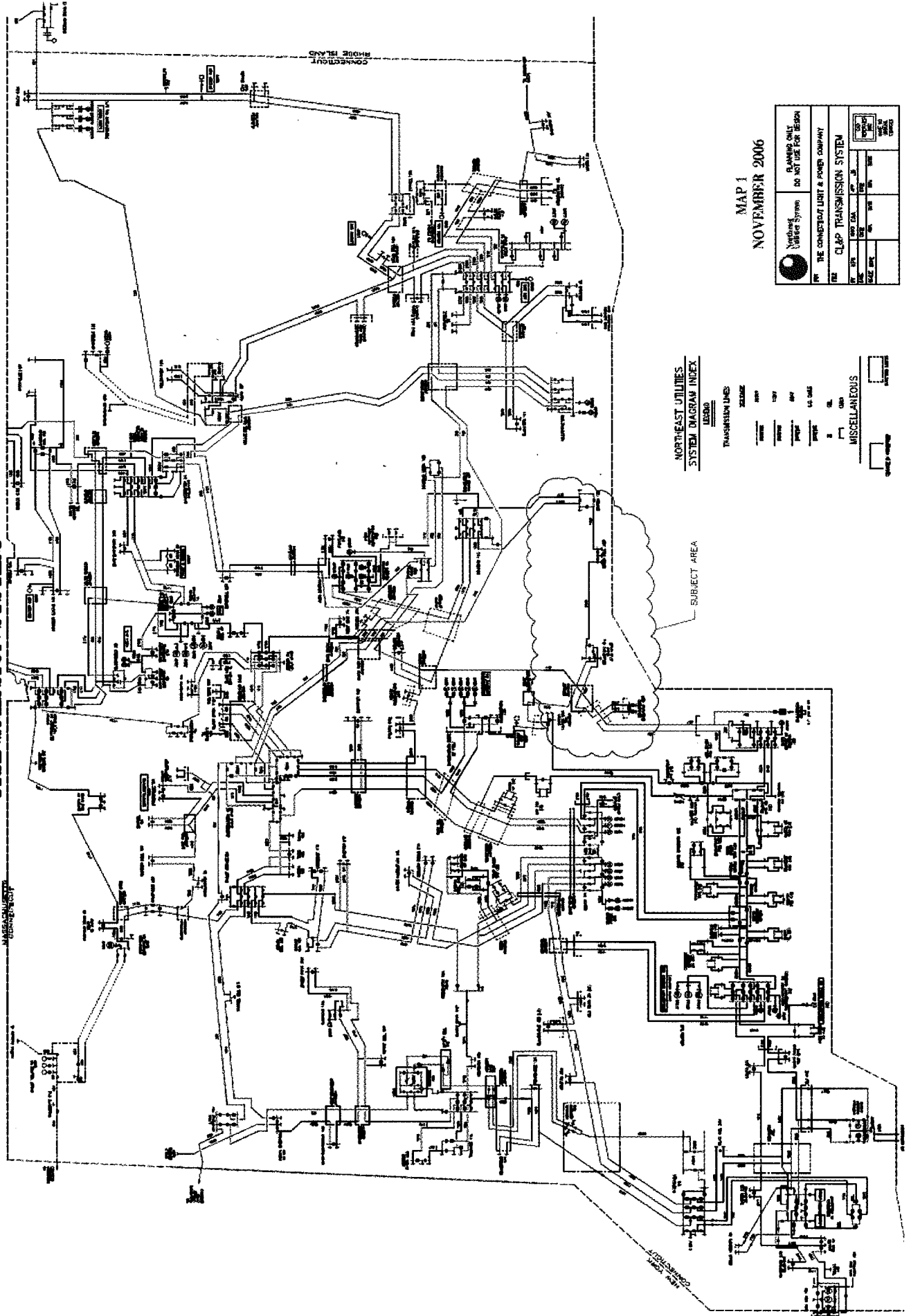
Response:

Attached are two maps showing the transmission system to which the Branford, Green Hill, and Stepstone substations connect or will connect to.



T System Maps.ppt

EXISTING CONNECTICUT TRANSMISSION SYSTEM



NORTHEAST UTILITIES SYSTEM DIAGRAM INDEX

TRANSMISSION LINES

LINE	138KV	115KV	69KV	33KV
138KV	138KV	115KV	69KV	33KV
115KV	115KV	69KV	33KV	
69KV	69KV	33KV		
33KV	33KV			

MISCELLANEOUS

138KV	115KV	69KV	33KV
138KV	115KV	69KV	33KV
138KV	115KV	69KV	33KV
138KV	115KV	69KV	33KV

MAP 1
 NOVEMBER 2006

	Planning Only Do Not Use For Design
THE CONNECTICUT LIGHT & POWER COMPANY	CL&P TRANSMISSION SYSTEM
138KV 115KV 69KV 33KV	138KV 115KV 69KV 33KV



**Northeast
Utilities System**

PLANNING ONLY
NOT USE FOR DESIGN

FOR
THE CONNECTICUT LIGHT & POWER COMPANY

TIME CL&P TRANSMISSION SYSTEM

BY	KPK	CHQ CAA	APP JG	CO- ORDINATED INVC	MAKE NO MANUAL CHANGES
SCALE	NONE				

MISCELLANEOUS



Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

The existing CL&P easement through the Stepstone Hill site contains a single 115 kV circuit. What was the rating and current loading of this circuit at the time of the most recent annual peak load? What will the loadings be after the Stepstone Hill Substation is installed and load is transferred to it?

Response:

The following table contains the requested rating and current loading data at the time of the most recent annual peak load in Connecticut.

Circuit Number	Summer Normal Rating, Amperes	Current During CT Peak Load, August 3, 2006, Amperes
1508	1,145	251

The Stepstone Substation will be looped into the 1508 circuit, splitting that circuit into two circuits. This configuration received ISO-NE's Proposed Plan Application ("I.3.9") approval on November 8, 2005. Under normal transmission system conditions and reasonable generation dispatches during peak loads in the years immediately following the interconnect of Stepstone Substation, the peak current on either circuit section is not expected to exceed 400 amperes.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-012

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Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Will the existing Race Hill and Guilford substations be retired after the Stepstone Hill substation is completed and load transferred to it.

Response:

No. While the load on the Guilford substation will be reduced following the addition of the Stepstone substation, the Guilford substation will provide an alternate supply source to the 13.8-kV load served by the Stepstone substation. The town of Guilford will continue to have areas serviced by 13.8-kV distribution and areas serviced by 23-kV distribution. Furthermore, the permissible load limits on the Branford and the Green Hill substations are increased by the designed switching capability at the Guilford substation to quickly shift the load served by one of the 12.5-MVA transformers at Guilford substation between the two bulk substations. A portion of the existing Race Hill load area will be converted to either 13.8 or 23 kV so that it can be supplied directly by feeders from the Green Hill and Stepstone substations, thus relieving potential overloads of the Race Hill substation. Even so, the Race Hill substation will still be needed to serve the northeastern section of Guilford that will continue to be fed by the 8.32-kV distribution system.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-013
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Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Will the average length of the primary circuits served from the Branford, Green Hill, Race Hill, Guilford, and any other adjacent substation change with the installation of the Stepstone Hill Substation? If possible please quantify the change.

Response:

The 13.8-kV feeder circuits from Guilford substation will be shorter because the two 13.8-kV circuits from Stepstone Substation will acquire portions of those circuits. Also the 23-kV Branford 11J30 and 11J58 circuits will be shorter for the same reason, i.e, portions of those circuits will be acquired by the 23-kV circuit from Stepstone Substation.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-014
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Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Has CL&P implemented any Demand Side Management (either energy efficiency or demand response) programs with customers in the area served by any of the above substations? If so, please describe these efforts and an estimate of the KW and KWH saved.

Response:

The Company offers an array of Connecticut Energy Efficiency Fund ("CEEF") programs to its residential, commercial and industrial customers statewide. Since 2005, CL&P estimates that through participation in these CEEF programs, customers in the towns of Guilford, Branford, Madison, Clinton and Killingworth have achieved peak-demand savings of approximately 3.3 MW and will save approximately 111,202,820 kWh of energy over the life of the installed measures.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-015
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Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Has CL&P performed assessments of the technical potential for additional DSM programs, distributed generation (DG), or combined heat and power (CHP) in the area served by any of the above substation? If so, please provide.

Response:

As part of Public Act 05-01 efforts to support the development of DG, CL&P has contacted a number of customers in the area to determine if they will consider installing DG or CHP projects. To date two parties are considering emergency diesel generators rated 170 kW and 1,350 kW respectively. These generators will not operate in parallel with the CL&P system. No other customers have expressed interest in installing DG or CHP in Guilford. CL&P continues to pursue conservation and load management programs throughout its system and offers those programs to customers located in the area served by these substations.

The Connecticut Light and Power Company
Docket No. Stepstone Substation

Data Request CEAB-01

Q-CEAB-016
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Witness: CL&P Panel
Request from: Connecticut Energy Advisory Board

Question:

Has CL&P estimated the amount of load reduction that would be necessary to defer or eliminate the need for the proposed Stepstone Hill Substation? If so, please provide the estimate and the basis for it.

Response:

Demand response resources, if available, may slightly delay, but not eliminate the need for the Stepstone Substation and, in any event, would not fully accomplish the Project's objectives. CL&P has not conducted studies to determine the cost effectiveness of demand-response resources as an alternative to the Stepstone Substation because such resources would not fully meet the need which this project is designed to address.

CL&P estimates that a minimum of 20 MVA of new and firm distributed resource capacity, distributed to the Race Hill, Guilford and Branford service areas would be required to justify a short-term delay in the construction of the Stepstone Substation. "Distributed resources" are demand-side and supply-side resources, typically small in scale and distributed throughout a network, close to customers and load centers.