January 17, 2005

Ms. Pamela B. Katz
Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 272 - Middletown-Norwalk 345kV Transmission Line

Dear Ms. Katz:

This letter provides the response to requests for the information listed below.

Response to CSC-03 Interrogatories dated 06/07/2004
CSC - 070 SP-01*

Response to OCC-03 Interrogatories dated 12/29/2004
OCC - 016 , 017

Very truly yours,

Anne B. Bartosewicz
Project Director - Transmission Business

ABB/tms
cc: Service List

* Due to the bulk nature of this material, the Companies request bulk filing status.

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Connecticut Siting Council**

Question:
For the Durham/Middletown Royal Oaks route deviation provide the following:

a. Identification of property owners
b. cross-section profile of existing and proposed structures
c. delineation of inland wetlands and/or watercourses within the right-of-way
d. identification of adjacent land use
e. identification of species and natural diversity database buffer zone(s) along the right-of-way
f. identification of historic and/or archeological resource along the right-of-way
g. existing and proposed electric and magnetic fields for the cross-section profiles
h. noise assessment
i. sensitive receptors as identified in Public Act 04-246.

Response:
Attached please find the Supplementary Cultural Resources Assessment for the Royal Oak Bypass Overhead Alternative prepared by Raber Associates.

* Due to the bulk nature of this material, the Companies request bulk filing status.

Raber Royal Oak Bypass FIGURE 1.pdf

Raber Royal Oak Bypass FIGURE- 2.pdf

RABER - FINAL REVISED ROYAL OAK TEXT-011305.pdf

RABER ASSOCIATES
CONSULTANTS IN THE HISTORICAL AND SOCIAL SCIENCES

SUPPLEMENTARY CULTURAL RESOURCES ASSESSMENT

FOR

MIDDLETOWN-NORWALK 345 KV TRANSMISSION PROJECT:

ROYAL OAK BYPASS OVERHEAD ALTERNATIVE

Michael S. Raber

prepared for:

Northeast Utilities Service Company
107 Selden Street
Berlin, CT 06037

January 2005

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I. INTRODUCTION

A. Purpose of Study

The Connecticut Light and Power Company (CL&P) and The United Illuminating Company (UI) propose to enhance electric service and reliability to Southwest Connecticut by the construction and operation of a new 345,000-volt (345-kV) transmission line and associated substation facilities. The project will be located in portions of Middlesex, New Haven, and Fairfield counties, and will extend from CL&P's existing Scovill Rock Substation, located in the City of Middletown in Middlesex County, to CL&P's existing Norwalk Substation, located in the City of Norwalk in Fairfield County. In October 2003, CL&P/UI submitted an application (Application) to the Connecticut Siting Council ("Siting Council", "Council") for a Certificate of Environmental Compatibility and Public Need (Certificate) for a Proposed Route of 345-kV transmission facilities between these substations. The location, size, and nature of associated new transmission structures and facilities remain undetermined, pending completion of a CL&P/UI Development and Management Plan (D&M Plan) approved by the Siting Council.

Among the issues to be addressed for approval of the Project's environmental compatibility, potential Project effects on cultural resources must be reviewed by the State Historic Preservation Office (SHPO) under the Connecticut Environmental Policy Act (Connecticut General Statutes Chapter 439 Section 22a) and under the Connecticut Public Utilities Environmental Standards Act (PUESA; Connecticut General Statutes Chapter 277a. Section 16-50p(a)(2)). Cultural resources subject to review under these acts include historic architectural properties, historic industrial or engineering resources, and prehistoric or historic archaeological sites. As part of the Application process, Raber Associates prepared a cultural resources assessment in September 2003, based in part on an April 2003 assessment of an earlier route configuration (Raber and Wiegand 2003a, 2003b).

During the Council's continuing proceedings for the review of the Application, the Royal Oak Bypass Overhead Alternative in Middlefield and Middletown was identified as an option to a portion of the Proposed Route (Figures 1-2). This report supplements the 2003 cultural resource assessment by presenting a summary of known or possible cultural resources in the vicinity of this bypass alternative. This supplementary assessment is based on the same methods and data sources used for the 2003 cultural resource assessment for the Proposed Route, as specifically referenced below.

B. Summary Description of Alternative

The Proposed Route in Middlesex County would follow an existing CL&P transmission corridor in which existing facilities generally consist of a 115-kV and 345-kV transmission lines on 57-to-130-foot tall structures including wooden H frames, steel monopoles, and steel lattices. In most places, these structures are located in 80-to-320-foot-wide rights-of-way (ROWs). The new 345-kV line would be installed on 80-to-130-foot-high structures, which would also carry the 115-kV line. New overhead structures would include steel H frames and/or steel delta-style monopoles, and may require concrete footings.

The Royal Oak Bypass Overhead Alternative would involve a deviation from the existing CL&P corridor and the creation of a new ROW across privately-owned land. This bypass alternative was suggested to avoid installation of the new 345-kV line within the existing ROW through the Royal Oak subdivision. The bypass alternative would use structures of similar visual character to those described for the Proposed Route, and would diverge from the existing transmission ROW for approximately 5800 linear feet at the municipal border junction of Middlefield, Middletown, and Durham. Immediately adjacent to the bypass route, the existing corridor runs along the Durham-Middlefield boundary and enters Middlefield as it proceeds west. The Royal Oak Bypass would run north of the existing corridor through Middlefield and Middletown, crossing State Route 17 (Figure 1).

To construct the new 345-kV line, the bypass alternative would be 125 feet wide and require acquisition of approximately 16 acres of new right-of-way. Clearing of vegetation in the new right-of-way would involve selective cutting of trees at ground level without grubbing or stump removal, so that belowground effects could be minimized or eliminated as needed to avoid known or possible archaeological resources.

C. Study Issues and Definitions

a. Visual Effects

Any project effects on historic architectural or engineering resources in the Royal Oak Bypass will be limited to the visual intrusion of taller and/or closer transmission line structures, heights of which will vary depending on project alternatives. Available guidelines for SHPO assessment of visual effects on cultural resources appear in Section 16-50p(a)(4)(C) of the Connecticut Public Utilities Environmental Standards Act (PUESA; Connecticut General Statutes Chapter 277a), and in regulations of the federal Advisory Council on Historic Preservation (36CFR 800.5). Both sets of guidelines apply to properties listed, or eligible for listing, on the National Register of Historic Places. Based on Federal Power Commission guidelines to which it refers, PUESA mandates avoidance of National Register properties where possible, or, if avoidance is not possible, minimization of transmission structure visibility or effects on the character of National Register property environ. Advisory Council on Historic Preservation (ACHP) regulations, while not required in SHPO review of projects subject to Connecticut Siting Council approval, provide *de facto* guidelines commonly used by SHPO. Criteria for findings of adverse effects on historic properties include change of the physical features within a property's setting which contribute to property significance, and introduction of visual elements which diminish the integrity of a property's significant features.

These guidelines provide no established or objective criteria for determining when a visual effect is adverse, leaving identification of adverse effects to the judgment of the reviewer (personal communications, David A. Poirier (SHPO)). In general, visual effects will be diminished if new structures are as low as possible relative to existing structure heights, and/or if new structures are located further from historic properties. Based on results of a similar, recent study for upgraded transmission facilities from Plumtrees Substation in Bethel, CT to the Norwalk, CT Substation (Raber and Wiegand 2002), and discussions with SHPO staff which established the procedures used for the Middletown-Norwalk project cultural resources assessment (Raber and Wiegand 2003b), this assessment attempts to distinguish among three categories of visibility:

- Visibility with No Effect: the structure is too far from a historic property, and/or too masked by forest cover or built environments, to be perceived as a distinct landscape feature

- Visibility with Non-Adverse Effect: the structure can be perceived as a distinct landscape feature, but because of distance, forest cover, or built environments there is no significant change to the visual environment of a historic property

- Visibility with Adverse Effect: by virtue of proximity, size, or appearance, the structure degrades the existing visual environment of a historic property.

For historic architectural and engineering resources in the overhead route section, assessment objectives included:

- identifying all historic properties listed on, or previously determined as eligible for listing on, the state or national registers of historic places within 0.25 mile of proposed new structures

- providing graphic evidence of the extent of potential visual effects for each such historic property

Data developed to meet these objectives can be used by CL&P/UI, the Connecticut Siting Council, and interested local parties to determine which potential visual effects are adverse, and to identify possible means of mitigating or avoiding adverse effects.

b. Archaeological Resources

The potential for prehistoric or historic archaeological resources has not been previously evaluated in the Royal Oak Bypass project area. The present study included an archaeological assessment subject to property access restrictions noted below. Based on this assessment, recommendations for future investigations were developed for implementation if the Royal Oak Bypass is included within the project alignment approved by the CSC. The assessment was conducted to meet all standards of the SHPO *Environmental Primer for Connecticut's Archaeological Resources*, with the following objectives:

- identification of any known or possible archaeological resources in project areas, based on available background material and surface inspection;
- assessment of the known or potential eligibility of such resources to the national or state registers of historic places;
- development of recommendations on the need for any additional investigations to confirm or identify such resources, or to determine their eligibility to the national or state registers.

As described in the Project Application, cultural resources eligible for the national or state registers must possess physical integrity and meet at least one of the following criteria:

A. Association with important historic events or activities;
B. Association with important persons;
C. Distinctive design or physical characteristics, including representation of a significant entity whose individual components may lack distinction;
D. Potential to provide important information about prehistory or history.

II. ASSESSMENT STUDY METHODS

Assessment methods are discussed in Raber and Wiegand 2003a: 5-7. Due to lack of property access rights along most of the Royal Oak Bypass route, surface inspection was limited to a short publicly-accessible area immediately west of Route 17. Environmental data used for the present assessment included published information and other wetlands limits compiled by NUSCO (Figure 2).

III. PROJECT AREA ENVIRONMENT

The Royal Oak Bypass lies within Connecticut's South-Central Lowlands ecoregion, an area of generally rolling terrain formed on eroded sedimentary bedrock. The bypass route, underlain by Portland arkose with till-based soils, ranges in elevation between about 320-480 feet above mean sea level and traverses three tributaries of the Connecticut River Basin. The western half of the bypass route, including extensive wetlands west of Route 17, drains into Laurel Brook, a tributary of the Coginchaug River. East of Route 17, the route rises to a broad hilltop which drains south into Allyn Brook— another Coginchaug River tributary— and north into Long Hill Brook which drains into Sumner Brook in Middletown. The bypass route east of Route 17 consists of well- or moderately-drained loam or silt loam soils, with dense shrub growth for about 650 feet immediately east of the road and mature mixed hardwood forest beyond, with small wetland areas and at least one short section with slopes of approximately 20 percent. The forest area appears to be undisturbed, and the shrub growth area may have only been disturbed by historic land clearance and plowing. Based on reported soil types, some of the route east of Route 17 appears to include stony surfaces. The westernmost section of the bypass route is wooded wetlands for approximately 1900 feet. Immediately west of Route 17, the north half of the route appears disturbed by slope excavation and creation of a gravel roadway for approximately 500 feet, and the south half of the route appears poorly drained for approximately 700 feet (Figures 1 and 2; Dowhan and Craig 1976; U.S. Department of Agriculture 1979; Rodgers, comp. 1985; Stone *et al*. 1998).

IV. NATIVE AMERICAN ARCHAEOLOGICAL SENSITIVITY

General context for research issues, available information on Native American archaeological sites in the Project area vicinity, and methods used to assess Project area sensitivity for possible Native American sites appear in Raber and Wiegand 2003a: 8, 15-26. The discussion below focuses on assessment results for the Royal Oak Bypass, based on these methods and on review of information from files of the Office of the State Archeologist (OSA), cultural resource management reports on file at the University of Connecticut's Special Collections in the Dodd Center, and the author's previous research in the region. To preclude damage to archaeological sites, no maps showing specific locations of known sites are included with this report.

OSA files indicate there is only one reported Native American archaeological site within about one mile of the bypass route, the Gastler Site in Durham approximately 1600 feet from the route. Of undetermined National Register status, this site had a variety of stone artifacts suggesting occupation sometime during the Archaic era of regional prehistory (ca. 8000-1000 B.C.). This paucity of reported sites often reflects lack of prior archaeological survey rather than absence of potentially significant resources, and the apparently undisturbed parts of the bypass route matching certain environmental characteristics appear sensitive for possible Native American archaeological sites which could contribute to our knowledge of local and regional prehistory.

Environmental characteristics of known Native American sites in the very general vicinity of the bypass route allow for identification of areas sensitive for undiscovered sites, based on the limited surface inspection presently possible and on publicly-available information about slope and drainage conditions. Slope, drainage and proximity to streams and wetlands are generally the indicators of Native American site sensitivity. The vast majority of sites are located in areas of less than 12-15% slopes, in well-drained soils. While some fairly large sites that may have been used as permanent, semi-permanent or seasonal sites may be located along major streams and wetlands, previous experience has shown that uplands settings with small level areas adjacent to smaller streams and wetlands do contain prehistoric sites. The smaller sites encountered in such settings would probably have been used as temporary camps, hunting camps and stations, resource acquisition sites for the obtaining of workable stone or food items, or temporary refuges. It would be expected that rock overhangs in many of the areas with steeper, rocky topography would have also been used as short-term shelters.

While proximity to available water in the form of streams, wetlands and ponds with their associated floral and faunal resources would usually be a good indication of potential Native American sites, the absence of nearby water should not be considered great enough to exclude some site locations, particularly in the steeper portions of the project area. As many sites in such locations are small temporary camps or hunting sites, they may have been occupied during the late fall through early spring, when the presence of snow may have eliminated the need for a stream or wetlands. Conversely, it is important to understand if areas now poorly drained have been either created or enlarged due to modern land use. It is possible that some sites may now lie within wet areas that were formerly well-drained, although we are presently not aware of any such areas among those identified as non-sensitive.

Other factors that may have been important in prehistoric times include the presence of rocks and minerals used for tools. Outcrops of quartz and steatite may exist in surficial exposures of bedrock that were once used as quarry-workshops by prehistoric Native Americans. The presence of steep, narrow gorges and stream valleys and natural rock enclosures may have also been used as natural ambush and game drive sites for hunters.

Based on these considerations and known environmental conditions, approximately 52% of the Royal Oak Bypass route appears sensitive for possible Native American resources (Figure 1). Non-sensitive areas are poorly drained, disturbed, or have slopes exceeding 15%, although field inspection of the small area in the latter category is recommended to identify any potential rockshelters. Reconnaissance archaeological testing will be necessary to confirm the presence or absence of Native American sites at any future transmission structures placed in these sensitive areas, or in any other parts of the route subject to subsurface disturbance during project development.

V. EUROAMERICAN RESOURCE SENSITIVITY

A general summary of Euroamerican background for the area including the Royal Oak Bypass appears in Raber and Wiegand 2003b: 13-15. Of the three towns in or adjacent to the bypass route, Middletown was established in 1649, the Durham area was first settled by English families in the 1660s and the town established in 1708, and the Middlefield area was first settled in the 1670s and the town established in 1744. Present Route 17 originated as a colonial-era through road which operated as the Middletown, Durham and New Haven Turnpike ca.1813-1850. There are no reported Euroamerican archaeological sites in or anywhere near the bypass route, and historical maps do not suggest any Euroamerican development in this narrow corridor. The bypass route thus appears non-sensitive for Euroamerican archaeological resources (Walling 1856; Beers 1874; U.S. Geological Survey 1893; Wood 1919).

To assess possible visual effects on historic resources, identification of historic properties within 0.25 mile listed on, or previously determined as eligible for listing on, the state or national registers of historic places was based on:

- maps available with National Register of Historic Places nomination forms, State Register of Historic Places nominations or other materials, and townwide surveys of historic architectural or industrial resources

- lists with addresses of properties considered eligible for the National Register in townwide surveys of historic architectural or industrial resources

- a statewide inventory of many historic bridges (Historic Resource Consultants 1990, 1991)

Sufficient detail was available in historic resource surveys of Durham, Middlefield, and Middletown to locate resources identified as eligible for the National Register. No such resources were found located within 0.25 mile of the Royal Oak Bypass. Project development along the bypass alternative therefore appears to have no potential for visual effects on historic cultural resources (Cunningham 1981, 1995; Cunningham *et al.* 1983-84; Greater Middletown Preservation Trust 1979).

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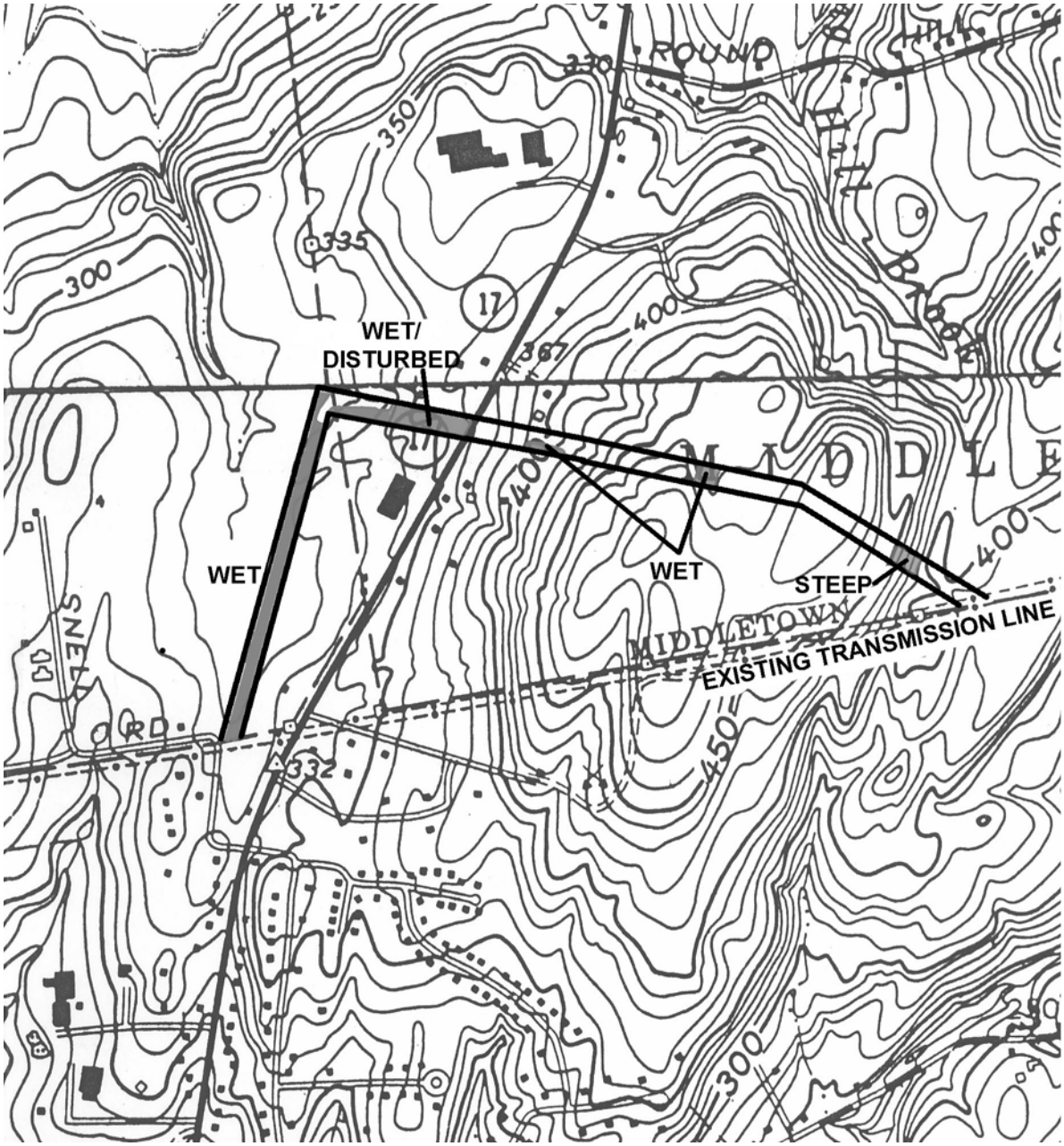
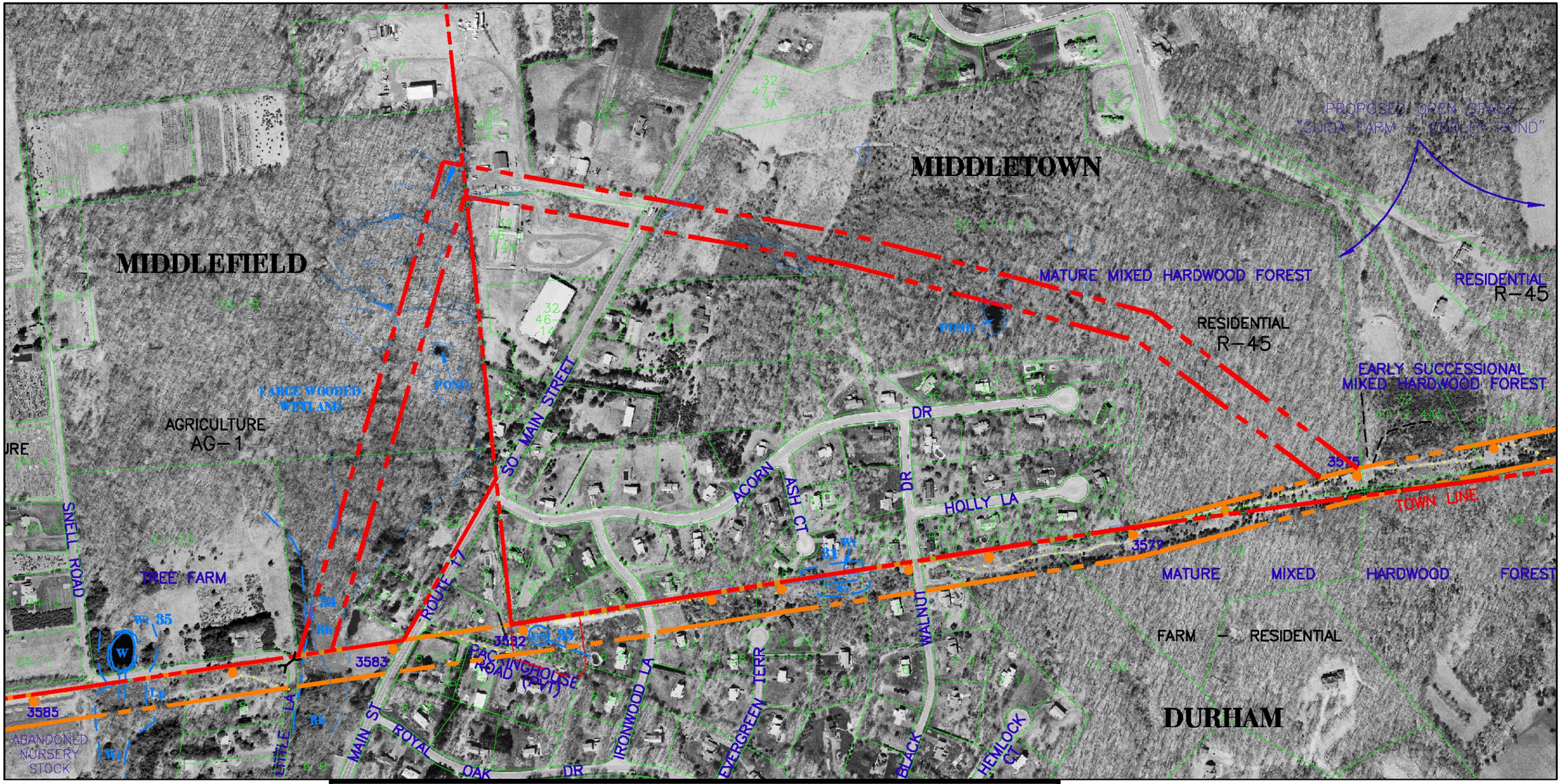


Figure 1. ROYAL OAK BYPASS LOCATION AND ARCHAEOLOGICAL SENSITIVITY
1" = 1000'
(base map: U.S. Geological Survey Middletown and Durham 7.5-minute quadrangles)

Unshaded areas appear to be sensitive for possible Native American archaeological resources. Shaded areas, probably not sensitive, are labelled for basic environmental criteria of non-sensitivity. Most areas have not been field inspected, however; area labelled "STEEP" could be sensitive for possible rockshelters if bedrock outcrops are present.



DATE OF AERIAL PHOTOGRAPHY:
SPRING 2002

Northeast Utilities System

The United Illuminating Company

LEGEND

9080	EXISTING STRUCTURE
	PROPOSED UNDERGROUND TRANSMISSION LINE
	SUPPORTED CHANGE
	LIMIT OF R.O.W.
	PROPOSED LIMIT OF R.O.W.
	NORTHEAST UTILITIES SYSTEM PROPERTY LINE
	TOWN LINE
	PROPERTY LINE
	ZONE BOUNDARY LINE
R–R	ZONE TYPE
	WATERCOURSE
	100 YEAR FLOODLINE
10	WETLANDS
Wt	WETLANDS SOIL TYPE
	ACCESS ROAD

ROYAL OAK BY-PASS
MIDDLETOWN - NORWALK
345-kV TRANSMISSION LINE

CITY OF MIDDLETOWN
TOWN OF MIDDLEFIELD

SCALE 1" = 400'

FIGURE 2

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Office of Consumer Counsel**

Question:
In order to build the modified Proposed Route, modified Alternative A or modified Alternative B, would any additional right-of-way ("ROW") acquisitions be needed, compared to the ROW needs associated with these three options as originally described in the October 2003 Application?
(a) If yes, please describe the additional ROW needed.
(b) If yes, please state whether the associated costs of such additional ROW have been taken into account in the new cost estimates presented in the Bartosewicz/Prete Testimony.

Response:
No. The modifications contemplated by the ROC Report would not change the overhead ROW requirements described in the October 2003 application.
(a) N/A
(b) N/A

Witness: **Allen W. Scarfone**
Request from: **Office of Consumer Counsel**

Question:
In the initial Application of October 2003, the Proposed Route is characterized as the best choice for this project, and Alternatives A and B are characterized as less desirable for specific reasons even though technically feasible.

(a) Do the Applicants believe that this relative ranking of these three options remains appropriate (that is, as a ranking of these options as now modified)? Please explain any answer in specific detail.

(b) Please refer to the ROC Report filed 12/20/04, and particularly to its conclusion (Executive Summary, p. 4) that ISO and the Companies "would prefer" a transmission design that contains more overhead transmission, because "Case 5" (a/k/a the modified Proposed Route) would be more difficult to construct and operate and carries more risk than "Case 2" (a/k/a the modified Alternative A). Please explain how, if at all, this ROC Report conclusion has been taken into account in the answer provided to Part (a) of this question, just above.

Response:
The modified Proposed Route is the preferred choice, given the need to comply with P.A. 04-246. Alternative A remains preferable to Alternative B because it better balances the need for system reliability with social impacts by minimizing the land and structures (including homes) that would have to be acquired.

From a strict electrical engineering perspective, Alternative A and Alternative B would both be preferable to the modified Proposed Route, because the modifications necessary to maximize undergrounding renders the modified Proposed Route less reliable than the original Proposed Route.