PETITION TO THE

CONNECTICUT SITING COUNCIL FOR DECLARATORY RULING

MODIFICATIONS TO

THE MIX AVENUE SUBSTATION IN

HAMDEN, CONNECTICUT

SUBMITTED BY

THE UNITED ILLUMINATING COMPANY

SEPTEMBER 4, 2015

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

PETITION OF THE UNITED ILLUMINATING COMPANY FOR A DECLARATORY RULING THAT NO CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED FOR MODIFICATIONS TO THE MIX AVENUE SUBSTATION IN HAMDEN, CONNECTICUT	:	PETITION NO. _____

SEPTEMBER 4, 2015

PETITION FOR DECLARATORY RULING

Pursuant to Conn. Gen. Stat. §§ 4-176(a) and 16-50k and Conn. Agencies Regs. §§16-50j-39 through 16-50j-40, The United Illuminating Company ("UI" or the "Company") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Conn. Gen. Stat. §16-50k for the project hereinafter described. UI submits that such Certificate is not required because the project, although it encompasses "modifications" of a "facility", will not have a substantial adverse environmental effect.

As part of a continuing effort to maintain a reliable electric power system in southwestern Connecticut, results generated from the ISO-NE Southwest Connecticut Transmission Needs Assessment Study identified that under certain contingency scenarios, low voltages can occur in the Mix Avenue – Sackett Substation transmission corridor. The study also revealed a need to restrict the flow of power between the Mix Avenue and Sackett substations in order to maintain the thermal ratings of the transmission corridor. In order to mitigate the low voltages that can occur at the Mix Avenue Substation (the "Site) and restrict the flow of power between the Mix Avenue and Sackett substations, UI is planning to install two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at its Mix Avenue Substation (the "Project") located at 690 Mix Avenue in Hamden. An aerial photograph of the existing Mix Avenue property is shown in Figure 1.

Figure 1: Aerial photo of existing Mix Avenue Substation

PROPOSED MODIFICATIONS

In order to accommodate for the installation of the two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor, the Project will require expansion of the existing substation yard to include the installation of one new 115 kV gas circuit breaker, three 115 kV circuit switchers, buswork, lightning masts, foundations, stormwater drainage system and the expansion of the existing control enclosure. In addition, the replacement / relocation of two 1610 line transmission structures directly west of the Site but within the existing UI property boundary will also be required. Nearly all modifications proposed as part of the Project will be within UI's existing property lines. The stormwater drainage system will require connection to existing drainage facilities located either within the property boundary of the adjacent abutter located directly to the south, or directly in front of the substation on Mix Avenue.

Figure 2 illustrates the Project above grade substation modifications.

Figure 2: Proposed Mix Avenue Modifications

In order to integrate the protection and control requirements of the new equipment within the existing transmission system, the existing shield wire along the 1610 line circuit will be replaced with new optical fiber ground wire ("OPGW"). Specifically, new OPGW will be required for two separate sections along the 1610 line circuit. The first span would run along the approximately 2.86 mile 1610 line circuit from Mix Avenue Substation west to the Glen Lake Junction. The second span would run along the 1610 line from June Street Substation to a location approximately 0.75 miles west to Pease Road. UI will evaluate and implement construction methods in accordance with accepted industry standards that have the least environmental disturbance when replacing the existing shield wire with OPGW.

In addition to the installation of the new capacitor banks and reactor, UI also proposes to work as detailed below:

a) Installation of a second battery bank to eliminate source of single point of failure,

b) Upgraded AC station service to accommodate additional relay panels,

c) Replacement of transformer motor operated disconnect switches and support structures due to age, faulty operation and structural deficiencies,

d) Upgrade miscellaneous structural components to meet current code for bending and load limits,

e) Addition/replacement of potential transformers and current capacitance transformers based upon project need or aging infrastructure,

f) Installation of additional substation yard fence, video cameras, motion monitors and public address system as part of UI's security initiative.

DISCUSSION

The ISO-NE Southwest Connecticut Transmission Needs Assessment study indicates that capacitor banks are needed at Mix Avenue to mitigate low voltages in the Mix Avenue – Sackett corridor which occur upon certain generation dispatch and line-out contingency scenarios. The proposed installation of two 115 kV 20 MVAR capacitor banks will mitigate the low voltages throughout this corridor. In addition, it was determined that a 7.5 Ohm series reactor is needed on the Mix Avenue 1610 terminal to limit both northern (Glen Lake Junction) and southern (Grand Avenue substation) sources of power flow throughout this corridor. This curtailment of power flow allows for existing elements not to exceed their thermal ratings and defers the need to upgrade the 1610 line between the Glen Lake Junction and Mix Avenue substations and the 84004 line between the Mix Avenue and Sackett substations.

While the above referenced installations constitute "modifications" of the existing facility, there will be no substantial adverse environmental impact associated with the proposed Project:

- Nearly all work performed will be entirely within the UI-owned Mix Avenue Substation, making use of existing property. It is anticipated that an easement with the abutter directly south of the

Substation will be required in order to connect to an existing stormwater drainage system. In the event an easement cannot be obtained, an alternative pumping system solution has been identified and will be implemented. No additional property or right-of-way will need to be purchased or secured.

- Based on a wetland, watercourse and vernal pool delineation performed by Fuss & O'Neill in January and April of 2013, and the location of construction activities and equipment on the Project there will be no effect on wetlands, watercourses or vernal pools.
- The visual character of the substation will not adversely change since the new equipment is visually similar in nature to existing equipment.
- EMF levels will remain in compliance with the Council's EMF best management practices.
- Noise analysis results indicate that the potential increase to the ambient sound levels due to the substation expansion range from 0 to 1 dBA with the overall predicted ambient sound levels to be within the Town of Hamden's daytime and nighttime noise ordinance requirements.

Based upon the above and as detailed in the attached Supplemental Report, UI respectfully submits that the proposed Project will not have a substantial adverse environmental impact and does not warrant submission of a full Certificate Application to the Council. Accordingly, UI requests that the Council declare that the proposed Project described herein will not have a substantial adverse environmental effect and, therefore, that no Certificate of Environmental Compatibility and Public Need is required.

The name, title, address and telephone number of the person to whom correspondence and communication in regard to this petition are to be addressed is:

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Very truly yours,

THE UNITED ILLUMINATING COMPANY

By: Richard J Reed

Richard J. Reed, PMP

MIX AVENUE CAPACITOR BANK AND REACTOR ADDITION PROJECT
SUPPLEMENTAL REPORT
IN SUPPORT OF THE PETITION FOR A DECLARATORY RULING

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EXECUTIVE SUMMARY

The Mix Avenue Capacitor Bank and Reactor Addition Project ("Project") will not result in any substantial adverse environmental impacts for the following reasons:

1) Installation of the new substation equipment will be within UI's existing property at Mix Avenue Substation.

2) Based upon a wetland, watercourse and vernal pool delineation performed by Fuss & O'Neill in January and April 2013 and a review of the project area, no wetlands, watercourses or vernal pools are present within the project area. As a result, there will be no effects on these sensitive areas from the installation of the new substation equipment.

3) The visual character of the substation will not adversely change. The new equipment is visually similar to existing equipment and will not detrimentally affect the overall visual character of the site.

4) EMF levels will remain in compliance with Council's EMF best management practices.

5) Noise levels due to the substation expansion are predicted to be within local daytime and nighttime requirements.

A. PROJECT BACKGROUND

As part of the continuing effort to maintain electric power system reliability in southwestern Connecticut, results from the Southwest Connecticut Transmission Planning Study indicate the 115 kV transmission equipment in the Mix Avenue area are exposed to potential low voltages and overload conditions. It has been determined by UI that two 20 mega volt ampere reactive ("MVAR") capacitor banks are needed on the Mix Avenue 1610 line terminal to mitigate the low voltages throughout this corridor. In addition, it was also determined by UI that a 7.5 Ohm series reactor is needed on the Mix Avenue 1610 transmission line terminal to limit both northern (Glen Lake Junction) and southern (Grand Avenue substation) power flow from these sources throughout this corridor. This curtailment of power flow allows for existing elements not to exceed their thermal ratings and defers the need to upgrade the transmission line ("1610 line") between Glen Lake Junction/Mix Avenue and the 84004 line between Mix Avenue/Sackett substations.

B. TECHNICAL DESCRIPTION

B.1. EXISTING FACILITY

Mix Avenue Substation (the "Site") is a 115kV to 13.8 kV distribution substation located at 690 Mix Avenue in Hamden, Connecticut. Built in the 1970's, the existing substation is located in an R-3 zoned area on a 2.8 acre parcel. The site is bounded on the east side by the control/switchgear enclosure that is situated facing Mix Avenue, and residential properties to the north and south. Existing access to the substation is at the northeast corner of the property.

The 115kV facility at Mix Avenue Substation consists of a combination of low-profile rigid bus and strain bus, with one overhead air-insulated transmission line connecting to a dead-end structure and one underground high pressure gas filled (HPGF) transmission line inside the substation. The major substation yard equipment includes: two 30/40/50 MV A and one 24/32/40 MVA station power transformers, two 115 kV breakers, three 115kV breaker isolation disconnect switches, two transmission circuit disconnect switches, two transformer high side disconnect switches, and various potential transformers, current transformers and station service transformers. In addition, the station has three 13.8 kV distribution buses with a total of eighteen feeder breakers along with four main breakers and one bus tie breaker located inside the existing control enclosure.

An aerial view of the existing substation facility is shown in Figure A.

Figure A. Mix Avenue Substation - Existing

B.2. PROPOSED MODIFICATIONS

UI proposes to install two 20 MVAR capacitor banks and one 7.5 ohm 115 kV series reactor on the west side of the existing substation. These devices will be connected to the 115kV electric transmission line ("1610 line") that enters the substation from the west side. To accommodate adding the two 115kV 20 MVAR capacitor banks and one 115 kV 7.5 Ohms series reactor, UI will expand the substation in the westerly direction by approximately 145 feet.

Electrical clearance requirements during construction necessitate UI's implementation of a temporary "wrap around" of the 1610 line entering the substation. This "wrap around" relocates the 115 kV 1610 line transmission cables in the substation yard providing sufficient clearances for construction equipment to operate safely. The "wrap around" will be implemented in two phases. Phase 1 will relocate the transmission cable to the north via the installation of three temporary wood structures. Phase 2 will encompass installation of two permanent structures by UI and the final relocation of the 1610 line onto these structures.

To protect against lightning strikes, UI will add seven new 55 foot lightning masts to the substation yard. UI also plans on installing additional area and task lighting in the substation to increase illumination of critical equipment. Due to lack of space in the transmission protection & control area of the existing controls enclosure, plans also include erecting a new prefabricated control enclosure that will be added in front of the existing enclosure that currently faces Mix Avenue. This new enclosure will look similar in nature to the existing enclosure with every effort being made to not

significantly alter the visual appearance from the street. Dimensions of the new enclosure will be approximately 19 feet wide by 60 feet long.

Substation stormwater management will be facilitated via the installation of an underground detention chamber located on the southeast area of the substation. The chamber will be sized per local requirements and will be tied into the existing underground storm water system located on the adjacent property directly south of the substation. UI will be required to obtain an easement from the abutter in order to gain access to this existing system. In the event an easement cannot be obtained, UI will implement an alternative pumped system solution that discharges stormwater into the town of Hamden's stormwater drainage system directly in front of the Site on Mix Avenue.

In order to facilitate communication between the new equipment to be installed at Mix Avenue and existing transmission and substation protective relaying systems, the existing shield wires on UI 1610 and 1685 transmission lines, between Mix Avenue Substation/Glen Lake Junction and between June Street Substation/ Pease Road respectively, will be replaced by UI with similar shield wire that contains optical fibers, commonly known as optical fiber composite overhead ground wire or ("OPGW"). UI will evaluate and implement construction methods that have the least environmental disturbance when replacing the existing shield wire with the OPGW.

UI will also perform the following additional work during the installation of the new capacitor bank and reactor as follows:

a) Installation of a second battery back to eliminate source of single point of failure,
b) Upgraded AC station service to accommodate additional relay panels,
c) Replacement of two transformer motor operated disconnect switches,
d) Upgrade miscellaneous structural components, and
e) Replacement of existing potential transformers and capacitor voltage transformers
f) Installation of additional substation yard fence, video cameras, motion detectors, and public address system as part of UI's security initiative.

With the exception of the possible easement with the adjacent abutter to the south, all substation modification work will be performed and located entirely within UI's existing property at 690 Mix Avenue. Construction impacts of the proposed project on the environment are expected to be minimal and will consist of short-term disturbances of surface soil incident to access and the placement of new equipment. UI is anticipating the removal of trees and low-lying shrubbery on the southwest side of the substation as needed to allow for the expansion of the substation yard. The remaining trees will still serve as a buffer between the adjacent properties and the substation. The fence surrounding the Site will be expanded by UI to accommodate the new equipment as well as allow for large equipment access on the south side of the site. The existing substation fence not directly affected by the new construction will be replaced as part of UI's security initiative. UI will also construct a new drive access for large equipment on the east side of the Site.

There will be a temporary increase in fugitive dust and noise levels attendant with typical civil construction activities. Any excess soil excavated during Site preparation will be stockpiled on site in preparation for disposal. Disposal methods and landfill locations for soil were determined by the soil pre-characterization event performed by UI and Fuss & O'Neill on April 8, 2015. In addition a groundwater pre-characterization event was performed on May 21, 2015 to determine how it will be managed. Based on this pre-characterization event all groundwater will be discharged to a sanitary sewer pending receipt of the necessary state and local permits.

Construction is anticipated to commence in March, 2016 with projected completion by December 31, 2016. Normal work hours for construction will be between 7:00 a.m. and 5:00 p.m. Work will proceed Monday through Friday, excluding some holidays. The proposed work hours may include evening and weekend work hours on a temporary and case-by-case basis in order to complete critical installation.

Figure B shows a computer rendering of the final configuration of the Mix Avenue Substation site.

Figure B. Mix Avenue Substation – Final Configuration

C. ENVIRONMENTAL EFFECTS

The environmental impacts from this Project will be limited to the construction phase and will be mitigated by adherence to standard procedures for erosion and sediment control, and for spill prevention. UI has performed the necessary environmental due diligence on the project and is confident there will not be any negative impact to the environment.

C.1. SURFACE AND STORMWATER MANAGEMENT DURING CONSTRUCTION ACTIVITIES

Based on the proposed scope of work at Mix Ave Substation, UI will register with the Connecticut Department of Energy and Environmental Protection ("DEEP") under the General Permit for the Discharge of Stormwater and Remediation Wastewaters from Construction Activities entitled DEEP-WPED-GP-015 and develop a Stormwater Pollution Control Plan ("SWPCP"). Outlined in these

documents will be UI's control measures and preventative maintenance techniques to be used during construction. Site Plan(s) showing where these measures and techniques are to be installed can be seen in Attachment J.

All sediment and erosion controls will be maintained by the onsite contractor and monitored throughout the duration of the Project by a third party compliance inspector. Once UI has completed the Project an inspection of the locations where construction occurred will take place prior to restoration. This inspection will outline the necessary stabilization and restoration techniques that will need to be initiated for the "Restoration Phase" of the project. Once the restoration has been completed, UI will continue to inspect the location(s) once a month for a period of three months to confirm stabilization.

C.2. INLAND WETLANDS/WATERCOURSES, VERNAL POOL AND FLOODPLAINS

Based on a review of previously delineated resource areas provided by Fuss & O'Neill in 2013 and State and local wetland mapping there are no wetlands, watercourses, vernal pools or floodplains present within the project area. The closest resource area is approximately 580 feet to the west of the existing substation. During the project, sediment and erosion controls will be used to isolate and manage any potential erosion into sensitive areas causing secondary impacts.

C.3. SOIL & GROUNDWATER

On April 8 and May 21, 2015 UI assessed both soil and groundwater conditions at the Mix Avenue Substation. Results were compared to the CT DEEP Remediation Standard Regulations to determine management techniques. Based on the analysis of the soil all material generated during construction will be handled and disposed of at an approved offsite facility in accordance with the State of Connecticut solid waste regulations. Additionally, groundwater analysis showed that there were levels of constituents that could not be simply discharged to an upland area. Therefore, UI will apply for the Connecticut General Permit for the Discharge of Groundwater Wastewater Directly to a Sanitary Sewer entitled GEP-WD-GP007. UI will also work with the local water pollution control authority to obtain any necessary discharge permits.

C.4. VEGETATION

During construction, UI will need to perform cutting, trimming and removal of certain vegetation. Based on the historic use of the substation, typically there is low growth vegetation which is maintained annually by UI through its Line Clearance & Vegetation Management Specification. However, due to expansion of the substation and access needed in certain areas the removal of certain additional vegetation may be required. Additionally, no pesticides or herbicides will be used on the project to clear vegetation. Where needed, UI will add vegetation to provide visual screening of the substation expansion from the adjacent property located directly to the north.

C.5. VISUAL

UI performed a visual analysis study of the proposed Project area and concluded that the visual character of the modified Substation will not detrimentally affect the overall visual character of the Site. In general, year-round views of the Substation and associated structures would be limited to a modest geographic footprint surrounding the Site by the combination of the relatively short heights of the infrastructure and the intervening development and existing vegetation.

C.6. NOISE

The Mix Avenue Substation is located within a residential district in the Town of Hamden. The Town of Hamden's noise ordinance, which was adopted in 2000, specifies that any property whose use is lawfully non-conforming to the district it resides in, will be required to meet the subject district's noise level requirements. Specifically, an industrial noise emitter, such as a substation, that resides within a residential district is required to meet 61 dBA daytime and 51 dBA nighttime noise levels on residential receptors.

To assess the existing sound environment in the vicinity of the proposed substation, UI commissioned a noise survey that was conducted in March, 2015. For the baseline noise survey, noise measurements were recorded at the boundaries of the existing Mix Avenue facility.

Daytime sound levels measured at the Site during the ambient survey ranged from 40 to 50 dBA along the northern property boundary and from 43 to 52 dBA along the southern property boundary. It should be noted that the measured sound levels include the acoustical contribution of traffic and other non-substation noise sources. During early morning hours when non-substation noise sources had subsided, the boundary sound levels were measured at the lowest levels (40 dBA northern boundary and 43 dBA southern boundary) and more closely represents the sound level associated with the existing substation.

The calculated sound levels due solely to the substation expansion equipment alone is expected to reach 36 dBA along the northern boundary and 33 dBA along the southern boundary. By adding the measured levels to the predicted levels associated with the new equipment to be installed at the Site, future ambient sound levels and potential increases can be calculated. The result of this calculation indicates that the potential increase to the ambient sound levels due to the substation expansion ranges from 0 to 1 dBA with the overall predicted ambient sound levels to be within the Town of Hamden's daytime and nighttime noise ordinance requirements.

C.7. CONNECTICUT NATURAL DIVERSITY DATABASE

Based on a review of the CT DEEP Natural Diversity Database for listed species the Project does not fall in or within a ¼ mile of an NDDB listed species area.

C.8. CULTURAL REVIEW AND STUDY

In May of 2015 UI retained Heritage Consultants Inc. to perform a thorough Cultural Resource Review/Study of the proposed project. The study was conducted using the Connecticut State Historic Preservation Office and the National Register of Historic Places. This correspondence can be viewed in Attachment E.

D. CONSTRUCTION

D.1. OVERVIEW OF CONSTRUCTION

UI will construct the project in several stages, some overlapping in time. Certain work activities and sequences may vary, based on factors such as site-specific conditions, the final Project design, the availability of transmission line outages and regulatory approval requirements.

D.2. CONSTRUCTION PROCEDURES

The Project will be constructed in accordance with UI specifications, established industry, Best Management Practices and any conditions of the decision issued by the Connecticut Siting Council ("Council").

D.2.1. Pre-construction activities include the following:

- Survey and stake the property lines, ROW boundaries, and proposed structure locations.
- Install erosion and sedimentation control measures

D.2.2. Construction activities include the following:

- Mobilize field construction,
- Install temporary fence
- Install foundation and temporary 1610 line terminal structure,
- Prepare site for development (cut, fill, grading),
- Excavate and install foundations, conduits, ground grid,
- Install stormwater retention and drainage,
- Install new equipment
- Install associated bus, control cable, protection and control relays, etc.,
- String and sag OPGW,
- Tie in 1610 line to new terminal structure,
- Remove temporary T-line structure,
- Commission new equipment,
- Install asphalt drive access,
- Complete site restoration activities,
- Remove temporary erosion and sedimentation control measures after site stabilization has been achieved, and
- No blasting will be required for construction. Excavating and grading will be performed as needed to level the substation site for installation of the new equipment.

Construction equipment such as pickup trucks, bucket trucks, front loaders, reel trailers, bulldozers, wood chippers, cranes, forklifts, side booms and dump trucks are anticipated to be involved in the overhead transmission lines within the existing ROW.

D.3. CONSTRUCTION SCHEDULE

The construction and testing of the new equipment are expected to occur over a nine to ten month period commencing in March 2016 and ending with a projected in-service date of December, 2016. In general, construction hours will be scheduled from 7:00 AM to 5:00 PM, Monday through Friday, although certain critical tasks will require extended work hours. Site preparation, including grading and installation of foundations, will take place during the initial three months of construction and will involve the use of earth-moving equipment and construction vehicles. The installation and testing of substation equipment will take approximately seven months.

E. ELECTRIC AND MAGNETIC FIELDS

UI retained Exponent, Incorporated ("Exponent") to model the EMF levels associated with the installation of the new capacitor bank and reactor at Mix Avenue Substation. Exponent modeled EMF levels associated with the existing and proposed configurations of the Mix Avenue Substation and existing 115 kV transmission lines utilizing two methods:

a) Three-dimensional modeling of magnetic fields, accounting for the arrangement of buswork, transmission-line interconnections, and other equipment inside the substation fence;
b) Two-dimensional modeling of electric and magnetic fields, accounting for the conductors of the existing transmission lines.

Magnetic field levels were calculated for peak loading conditions anticipated in 2017, as well as average loading conditions anticipated in 2022. In addition, electric and magnetic field measurements were recorded outside the existing perimeter of the substation.

The modeling shows that at most locations, the calculated magnetic field levels decrease or remain unchanged with the addition of the new equipment. This result is due to (1) the decrease loading of the 115 kV transmission lines terminating at the Mix Avenue Substation when the new equipment is in service, and (2) the loading of transformers and distribution feeders at the substation in pre- and post-installation conditions remain essentially unchanged.

On the south side of the expanded substation perimeter, the magnetic field increases in the vicinity of proposed buswork and a proposed circuit breaker. Under average-load conditions, the calculated magnetic field levels increase from approximately 3.3 mG (pre-Project) to 18.3 mG (post-Project) at the new substation fence. This elevation in Project-related fields decreases below 0.5 mG at a location 50 feet south of the expanded perimeter. Under peak-load conditions, the calculated magnetic field increases from approximately 3.4 mG (pre-Project) to 21.4 mG (post-Project) at the south edge of the expanded substation perimeter. Again, this elevation in Project-related magnetic fields persists for approximately 50 feet, moving south from the new fence.

Project-related changes in the load on the existing transmission lines result in a small decrease in the calculated magnetic field at other locations. The most pronounced decrease in the calculated magnetic-field levels is encountered near the northern edge of the existing ROW, with a decrease of approximate 4 mG under average- and peak-load conditions. Near dwellings in the surrounding neighborhoods, calculated magnetic fields remain the same or decrease slightly (0.1-0.2 mG) with operation of the new equipment.

The highest calculated electric field modeled outside the substation fence is 1.57 kV/m, beneath the conductors of the existing overhead 115-kV transmission line. The electric fields from transmission-line sources will not change significantly with operation of the Project, since the voltage of the line is not increased and the only change in the configuration of overhead 115-kV conductors will be made at the terminal span into the Site.

The figure below illustrates the calculated magnetic field profiles around the proposed fence line at Mix Avenue Substation for average load conditions in the year 2022. The profile begins at the northeast corner of the substation and proceeds clockwise along the east, south, west and north sides of the yard.

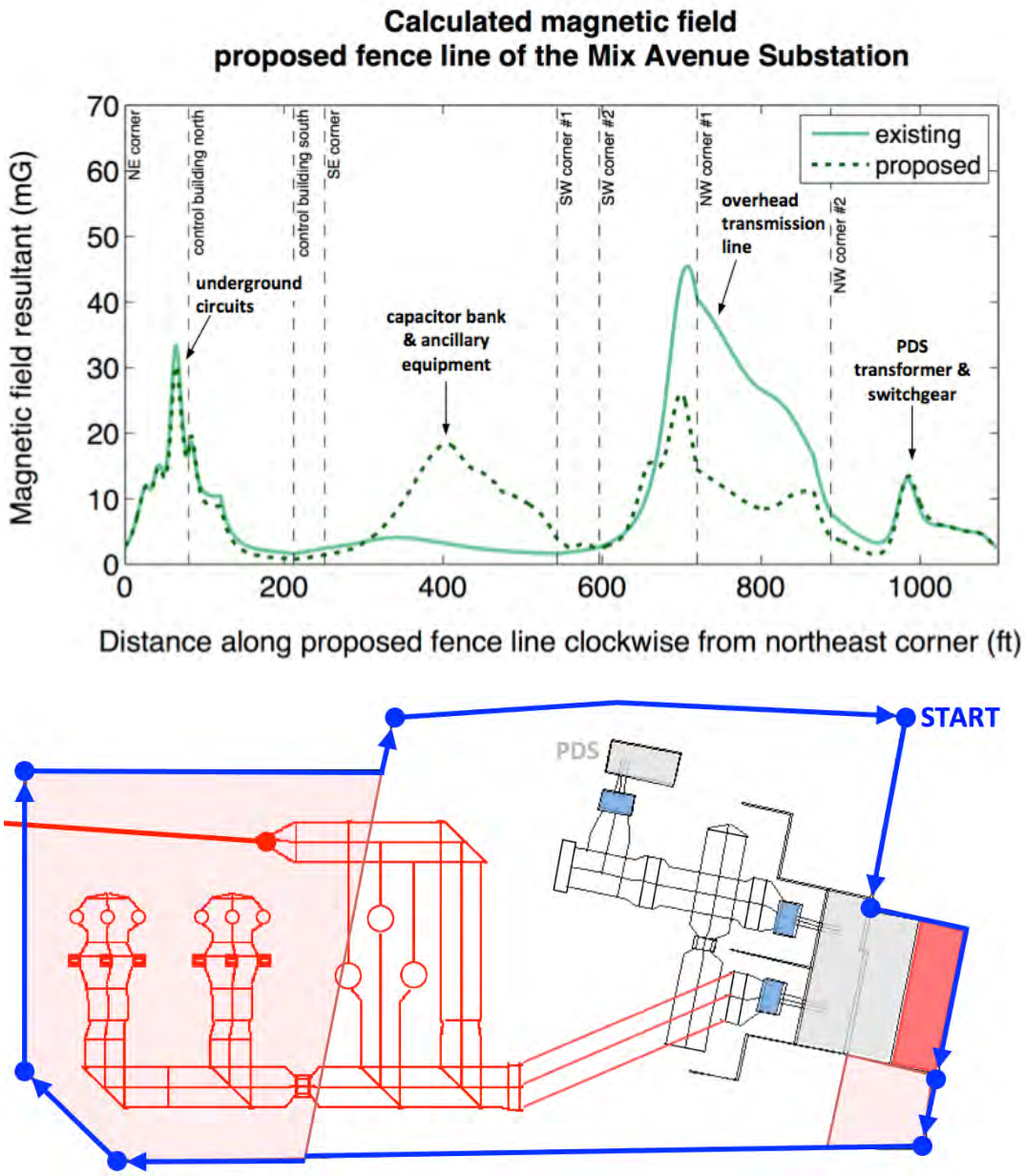


Figure X-1 Calculated magnetic field profiles around proposed fence line at the Mix Avenue Substation for average load conditions in the year 2022.

F. MUNICIPAL AND COMMUNITY OUTREACH

As a part of the Project planning process, UI has corresponded and coordinated with the municipality and the property abutters. On March 27, 2015, UI representatives met with Mayor Scott Jackson and Daniel Kops, Assistant Town Planner to discuss the proposed modifications to the Mix Avenue Substation. Subsequently, on April 14, 2015, UI received a letter of endorsement for the Project from Mayor Jackson. In preparation for the filing, and due to the extraordinary number of abutters to the Mix Avenue property, close to 280 invitations were sent to abutting property owners, and posters were delivered to apartment complexes, advising our neighbors of an Open House to be held at Hamden Middle School on May 26, 2015. UI also ran an advertisement in the Post Chronicle newspaper on May 13, 2015 and May 20, 2015, two weeks prior to the event. In addition, a sign was posted by UI on the lawn of the substation property as well. An invitation from UI was extended to then interim Mayor Pascarella, copying Daniel Kops, for the Open House. Ultimately, there were only nine attendees at the event. Efforts are currently being made to meet with the new Mayor of Hamden in order to review the project, discuss public outreach efforts, and obtain an endorsement.

G. CONCLUSION

Based on the foregoing, UI respectfully submits that the Project will not have a substantial adverse environmental effect and, therefore, does not require a Certificate of Environmental Compatibility and Public Need pursuant to Conn. Gen. Stat. § 16-50k(a).

Attachment A
Representative Photos

PHOTO LOG

Legend

Photo Location | Existing Mix Avenue Substation | Proposed Mix Avenue Substation Expansion

N W E S

200 100 0 200 Feet

1 inch = 200 feet

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

EXISTING CONDITIONS

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

PROPOSED CHANGES

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

FINAL CONFIGURATION

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION
1	**BROADMOOR APARTMENTS**	**NORTHWEST**

SIMULATION

PHOTO	LOCATION	ORIENTATION
1	**BROADMOOR APARTMENTS**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION
2	**MIX AVENUE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

SIMULATION

PHOTO	LOCATION	ORIENTATION
2	**MIX AVENUE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION
3	**SUTTON TOWERS**	**SOUTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

SIMULATION

PHOTO	LOCATION	ORIENTATION
3	**SUTTON TOWERS**	**SOUTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

Attachment B
Fuss & O'Neill – Wetland Technical Memo and Figure

FUSS & O'NEILL

MEMORANDUM

TO: Shawn Crosbie

FROM: William Heiple, PE, LEP

DATE: August 21, 2015

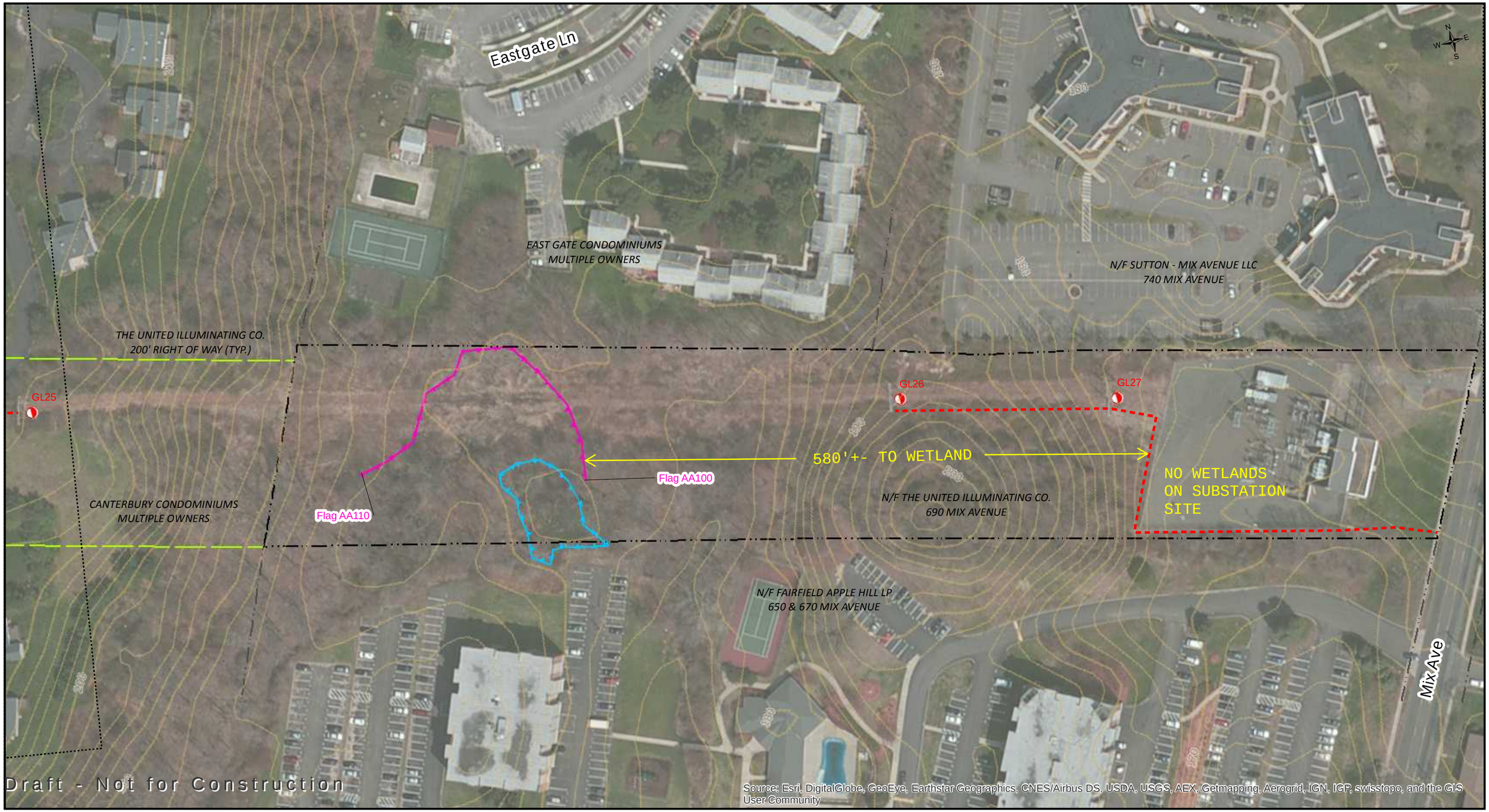
RE: Mix Ave. Substation Wetland Delineation

Shawn,

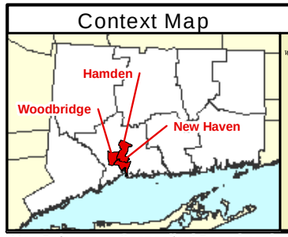
I am writing at the request of Yan Lachowicz of UI regarding the absence of wetlands at the Mix Ave. Substation site. Based on the detailed wetland delineation of the site and adjacent right of way conducted in 2013 by Fuss & O'Neill wetland scientists registered with the Society of Soil Scientists of Southern New England, there are no wetlands on the Mix Ave. site. The nearest wetlands are located approximately 580 feet to the west of the substation, in the right of way. The attached figure shows the proximity.

Please let us know if you or Yan require any additional information.

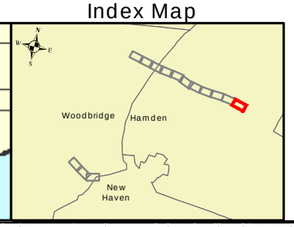
c: Yan Lachowicz



Context Map



Index Map



Wetland Boundary
Existing Structures
Temporary Access Route
Property Boundary
UI Right-of-Way
Vernal Pool Area
2 FT Contours
20 ft

The United Illuminating Company

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WEST SPRINGFIELD, MA 01089
(413) 452-0445
www.FandO.com

The United Illuminating Company

Mix Ave. Substation
Wetland Proximity

Hamden, CT

Project: 20121719.W11
Date: 6/29/2015
0 50 100
Feet
1 in = 100 ft

Figure 1

Map References: Connecticut Department of Energy & Environmental Protection (CTDEEP) GIS Data - NDDB Areas December 2014. Document Path J:\GIS\P2012\1719\W11\1610 Line Part1.mxd

Attachment C
Erosion and Sediment Control Plan

STOCKPILE AREA

ASSUMED PROPERTY BOUNDARY

SILT FENCE BARRIER (TYP)

EXISTING BUILDING

TRANSFORMER

EXISTING CONTROL HOUSE

CONCRETE WASHOUT FACILITY

DEWATERING BASIN

HAY BALE BARRIER (TYP)

CONSTRUCTION ENTRANCE

ASSUMED PROPERTY BOUNDARY

MIX AVENUE

MAP REFERENCE

"FOUNDATION PLAN AND GENERAL NOTES – MIX AVENUE SUBSTATION" DRAWING NO. 15238-408 PREPARED BY BLACK & VEATCH; LAST REVISED ON 5/22/2015

LEGEND

- PROPOSED CONSTRUCTION ENTRANCE
- PROPOSED HAY BALE BARRIER
- PROPOSED SILT FENCE
- PROPOSED TREE CLEARING LIMIT

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.				

SEAL

SEAL

The United Illuminating Company

SCALE:
HORZ.: 1" = 20'
VERT.:
DATUM:
HORZ.:
VERT.:
20 10 0 20
GRAPHIC SCALE

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TRUMBULL, CONNECTICUT 06611
203.374.3748
www.fando.com

THE UNITED ILLUMINATING COMPANY

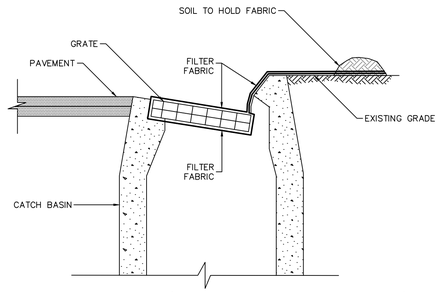
EROSION & SEDIMENTATION CONTROL PLAN

MIX AVENUE SUBSTATION

HAMDEN CONNECTICUT

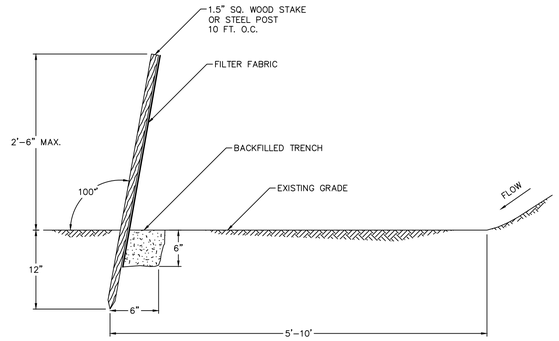
PROJ. No.: 20150138.A20
DATE: 6/17/2015

CE-101

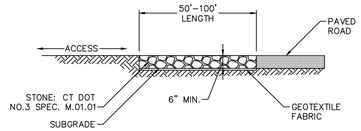


(DETAIL PROVIDED AS PRECAUTIONARY/ CURRENTLY NO BASINS SHOWN ON BASE MAPPING)

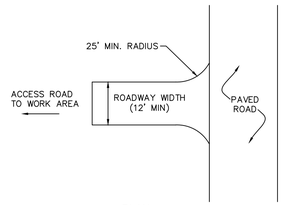
SEDIMENT CONTROL AT CATCH BASIN
NOT TO SCALE



SILT FENCE
NOT TO SCALE

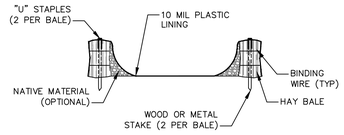


SECTION

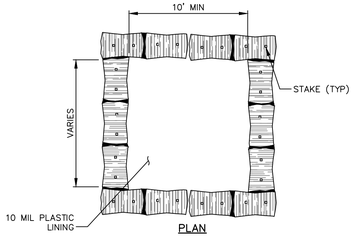


PLAN

ANTI TRACKING PAD/ CONSTRUCTION ENTRANCE
NOT TO SCALE



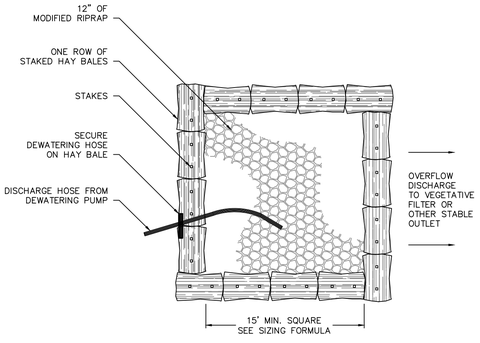
SECTION



PLAN

NOTES:
1. REMOVE HARDEN CONCRETE WHEN WITHIN 4" FROM TOP OF STRUCTURE.
2. CONSTRUCT NEW FACILITIES ONCE CURRENT FACILITIES ARE TWO-THIRDS FULL.
3. LINERS, HAYBALES, ETC. SHALL BE INSPECTED FOR DAMAGE ANY DAMAGE SHALL BE REPAIR PROMPTLY.

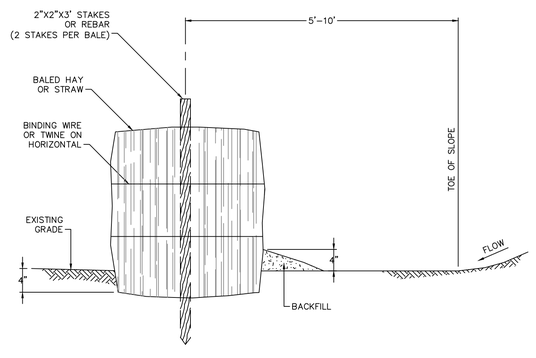
ABOVE GROUND TEMPORARY CONCRETE WASHOUT FACILITY
NOT TO SCALE



SIZING FORMULA:
CUBIC FT. OF REQUIRED STORAGE = PUMP DISCHARGE RATE (GPM) x 16

PLAN

DEWATERING PUMPING SETTLING BASIN TYPE I
NOT TO SCALE



TOE OF SLOPE HAY BALE BARRIER
NOT TO SCALE

EROSION & SEDIMENT CONTROL NOTES

1. CONSTRUCTION STANDARDS – CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MOST RECENT EDITION OF THE "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL." (CT DEP BULLETIN 34). ALL MEASURES SHALL BE MAINTAINED AND UPGRADED TO ACHIEVE PROPER SEDIMENT CONTROL DURING CONSTRUCTION.

2. PLAN IMPLEMENTATION – IMPLEMENT THIS EROSION AND SEDIMENT CONTROL PLAN. THIS IMPLEMENTATION INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES UNTIL PERMANENT STABILIZATION IS ACHIEVED, INFORMING ALL SUBCONTRACTORS OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE PROPER MUNICIPAL AGENCY OF ANY TRANSFER OF THIS RESPONSIBILITY. THE OWNER SHALL BE RESPONSIBLE FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN TO THE NEW OWNER IF THE TITLE OF THE LAND IS TRANSFERRED PRIOR TO ACHIEVING PERMANENT STABILIZATION.

3. INSTALLATION SCHEDULE – INSTALL THE CONSTRUCTION ENTRANCE BEFORE CONSTRUCTION TRAFFIC INTO AND OUT OF THE PROJECT AREA BEGINS. INSTALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO STUMP REMOVAL AND CONSTRUCTION. INSTALL ADDITIONAL CONTROL MEASURES DURING THE CONSTRUCTION PERIOD, IF DEEMED NECESSARY BY THE OWNER, HIS AGENTS OR AGENTS OF THE MUNICIPALITY.

4. FUGITIVE DUST – CONTROL FUGITIVE DUST USING WATER SPRAYS OR CALCIUM CHLORIDE ON SOIL SURFACES, SWEEPING PAVED AREAS, TEMPORARY WINDBREAKS OR NON-ASPHALTIC SOIL TACKIFIERS.

5. HAY BALE LIFE SPAN – INSTALL HAY BALES WHERE PROTECTION AND EFFECTIVENESS IS REQUIRED FOR LESS THAN 90 DAYS. OTHERWISE, INSTALL SILT FENCE.

6. CATCH BASINS – PROTECT CATCH BASINS WITH PROPER CONTROLS THROUGHOUT THE CONSTRUCTION PERIOD UNTIL ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.

7. STOCKPILES – ENCIRCLE STOCKPILES OF ERODIBLE SOIL WITH A HAY BALE OR SILT FENCE BARRIER. THE SIDE SLOPES OF ERODIBLE STOCKPILED MATERIAL SHALL BE NO STEEPER THAN 2:1. STOCKPILES THAT ARE NOT TO BE USED WITHIN 30 DAYS SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER THEY ARE FORMED.

8. TOE OF SLOPE – ESTABLISH AN EROSION CONTROL BARRIER (SILT FENCE OR HAY BALE BARRIER) APPROXIMATELY 5 TO 10 FEET FROM THE PROPOSED TOE OF THE CUT OR FILL AREA PRIOR TO BEGINNING EARTHWORK.

9. SEDIMENT REMOVAL – SEDIMENT REACHING ½ THE HEIGHT OF THE EROSION CONTROL BARRIER SHALL BE REMOVED. REMOVE AND DISPOSE OF SEDIMENT IN A MANNER CONSISTENT WITH THE INTENT OF THE PLAN.

10. SOIL STABILIZATION SCHEDULE – APPLY PERMANENT SOIL STABILIZATION MEASURES TO ALL GRADED AREAS WITHIN 7 DAYS OF ESTABLISHING FINAL GRADE. APPLY TEMPORARY SOIL STABILIZATION MEASURES IF FINAL GRADING IS TO BE DELAYED MORE THAN 30 DAYS.

11. TEMPORARY SEEDING – TEMPORARILY SEED ERODIBLE SOILS THAT WILL BE EXPOSED GREATER THAN 1 BUT LESS THAN 12 MONTHS WITHIN THE FIRST 7 DAYS OF SUSPENDING GRADING OPERATIONS. APPLY LIME AT A RATE OF 90 LBS/1000 SQ. FT. APPLY 10-10-10 FERTILIZER AT A RATE OF 7 ½ LBS/1000 SQ. FT. APPLY PERENNIAL RYE GRASS AT A RATE OF 2 LBS/1000 SQ. FT. TO A DEPTH OF ½ INCH. OPTIMUM SEEDING DATES ARE MARCH 15 TO JULY 1 AND AUGUST 1 TO OCTOBER 15. MULCH FOR SEED APPLIED WITHIN THE OPTIMUM SEEDING DATES SHALL BE APPLIED EVENLY SUCH THAT IT PROVIDES 90%-95% SOIL COVERAGE. MULCH FOR SEED APPLIED OUTSIDE OF THE OPTIMUM SEEDING DATES SHALL BE APPLIED EVENLY SUCH THAT IT PROVIDES 95%-100% COVERAGE.

12. PERMANENT SEEDING – SEED PERMANENT LAWN AREAS IN ACCORDANCE WITH THE SPECIFICATIONS.

13. INSPECTION – THE OWNER SHALL SECURE THE SERVICES OF A SOIL SCIENTIST OR PROFESSIONAL ENGINEER TO VERIFY IN THE FIELD THAT THE CONTROLS REQUIRED BY THIS PLAN ARE PROPERLY INSTALLED AND MAINTAINED. THESE INSPECTIONS SHALL BE NOT LESS FREQUENTLY THAN WEEKLY AND WITHIN 24 HOURS OF THE END OF A STORM HAVING A RAINFALL AMOUNT OF 0.1 INCH OR GREATER. FOLLOWING THESE INSPECTIONS, A WRITTEN REPORT SHALL BE PREPARED, INFORMING THE OWNER OR HIS AGENT NOT LESS FREQUENTLY THAN WEEKLY AND THE MUNICIPALITY NOT LESS FREQUENTLY THAN MONTHLY OF OBSERVATIONS, MAINTENANCE, AND CORRECTIVE ACTIVITIES UNDERTAKEN.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.				

SEAL

SEAL

The United Illuminating Company

SCALE:
HORZ.: N.T.S.
VERT.:
DATUM:
HORZ.:
VERT.:
0
GRAPHIC SCALE

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www.fando.com

THE UNITED ILLUMINATING COMPANY

EROSION & SEDIMENTATION CONTROL NOTES & DETAILS

MIX AVENUE SUBSTATION

HAMDEN CONNECTICUT

PROJ. No.: 20150138.A20
DATE: 6/17/2015

CE-501

Attachment D
SHPO Letter and Cultural Review and Study

HERITAGE
CONSULTANTS, LLC

INTEGRATED HISTORIC PRESERVATION PLANNING

April 14, 2015

Shawn C. Crosbie
The United Illuminating Company
180 Marsh Hill Road
Orange, Connecticut 06477

RE: Cultural Resources Review of the Proposed Expansion of a United Illuminating Substation Located 690 Mix Avenue in Hamden, Connecticut

Mr. Crosbie:

Heritage Consultants, LLC, is pleased to have this opportunity to provide United Illuminating with the following archeological assessment of the proposed expansion to an existing electrical substation located at 690 Mix Avenue in Hamden, Connecticut (Figure 1). The existing substation will increase in size and it will be expanded to the west. The current project entailed completion of an existing conditions cultural resources summary based on the examination of GIS data obtained from the Connecticut State Historic Preservation Office, as well as historical data, aerial photographs, and topographic quadrangles maintained by Heritage Consultants, LLC. This investigation did not consider the effects of the proposed construction upon built resources, and it is based upon project location information provided to Heritage Consultants, LLC by United Illuminating. The objectives of this study were to gather and present data regarding previously identified cultural resources situated within the vicinity of the existing substation and to investigate the proposed project parcel in terms of its natural and historical characteristics so that the need for completing additional cultural resources investigations could be evaluated.

Figures 2 and 3, historic maps from 1852 and 1867, respectively, show that although there were roads and residences in the project region by the mid to late nineteenth century, the area surrounding the existing substation remained rural in character, and the centers of population were located to the east and south of the Area of Potential Effect (APE). Figures 2 and 3 also show that this portion of Hamden was characterized by several small streams and hilly terrain, especially within the project parcel. The economy of this portion of Connecticut at that time was focused on a mixture of commerce, agriculture, and local industry. As seen in Figure 4, an aerial image dating from 1934, agricultural pursuits comprised the bulk of the activities in the immediate vicinity of the proposed project parcel. Figure 4 clearly shows that this area was used as an orchard during the early twentieth century. Figure 5, an aerial image captured in 1951, clearly shows that agriculture remained the dominant economic pursuit in this portion of Hamden well into the twentieth century. Figure 6, an aerial image recorded in 1965, shows that the proposed project region had undergone some changes, most notably a large build out of commercial and large residential areas to the east and north of the existing substation. Additional industrial facilities were constructed to the east of the substation location, and a large number of apartment complexes and residences surrounded the Mix Avenue Substation by 1990 (Figure 7). Finally, Figures 8 and 9, aerial image captured in 2004 and 2014, respectively, show the APE in its essentially modern state. The footprint of the existing substation and its proximity to the industrial and residential complexes remains

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Phone (860) 667-3001 • Fax (860) 667-3008
Email: info@heritage-consultants.com

unchanged from the 1990s. Overall, this portion of Hamden has been well developed and as a result little unaltered land remains in the area.

In addition, a review of previously recorded cultural resources on file with the Connecticut State Historic Preservation Office revealed that while no previously identified archaeological sites exist within the APE (Figure 10), a single National Register of Historic Places property, Hamden High School, is situated within 0.8 km (0.5 mi) of the proposed substation expansion area (Figure 11). Hamden High School was completed in 1935; thus Criterion A of 36 CFR 60.4 [a-d]) is applicable to this structure. With help from federal work-relief funds, Hamden was able to provide a modern comprehensive high school that would serve the needs of its children for decades to come. The high school is also significant architecturally: it is a large and elaborately detailed example of the Colonial Revival style of architecture, making it significant under Criterion C of 36 CFR 60.4 [a-d]). As is typical of that style, it draws upon early America's most formal architectural elements, including a red-brick exterior, pedimented center bay, entry fanlights, and tower. The building was designed by Roy W. Foote, one of New Haven's leading architects in the early twentieth century. Finally, Hamden High School is significant as it relates to the history of American art: its murals exemplify the realistic paintings of historical themes that characterized New Deal public art projects. This National Register of Historic Places property is located well away from the expansion areas and will not be impacted by construction.

Pedestrian survey of the proposed substation expansion area was completed by representatives of Heritage Consultants, LLC on April 13, 2015. As seen in Photos 1 through 12 below, the substation area and the proposed expansion area have been impacted in the past by cutting, filling, grading, tree clearing, and trash dumping. In addition, the proposed expansion area to the west of the existing substation footprint contains soils that have been classified as Urban Land Complex. These soils have been mechanically manipulated in the past and no longer retain the potential to yield intact archaeological deposits. Given the lack of previously identified cultural resources in the area, the highly developed nature of the region, and the presence of disturbed soils throughout the proposed project parcel, it is the professional opinion of Heritage Consultants, LLC that the substation area and its immediate surroundings, retain little possibility, if any, to yield intact cultural deposits. As a result, no additional archaeological research is recommended prior to expansion of the existing substation facilities.

If you have any questions regarding this Technical Memorandum, or if we may be of additional assistance with this or any other projects you may have, please do not hesitate to call us at 860-667-3001 or email us info@heritage-consultants.com. We are at your service.

Sincerely,

David R. George

David R. George, M.A., R.P.A.

P.O. Box 310249 • Newington, Connecticut 06131
Phone (860) 667-3001 • Fax (860) 667-3008
Email: info@heritage-consultants.com

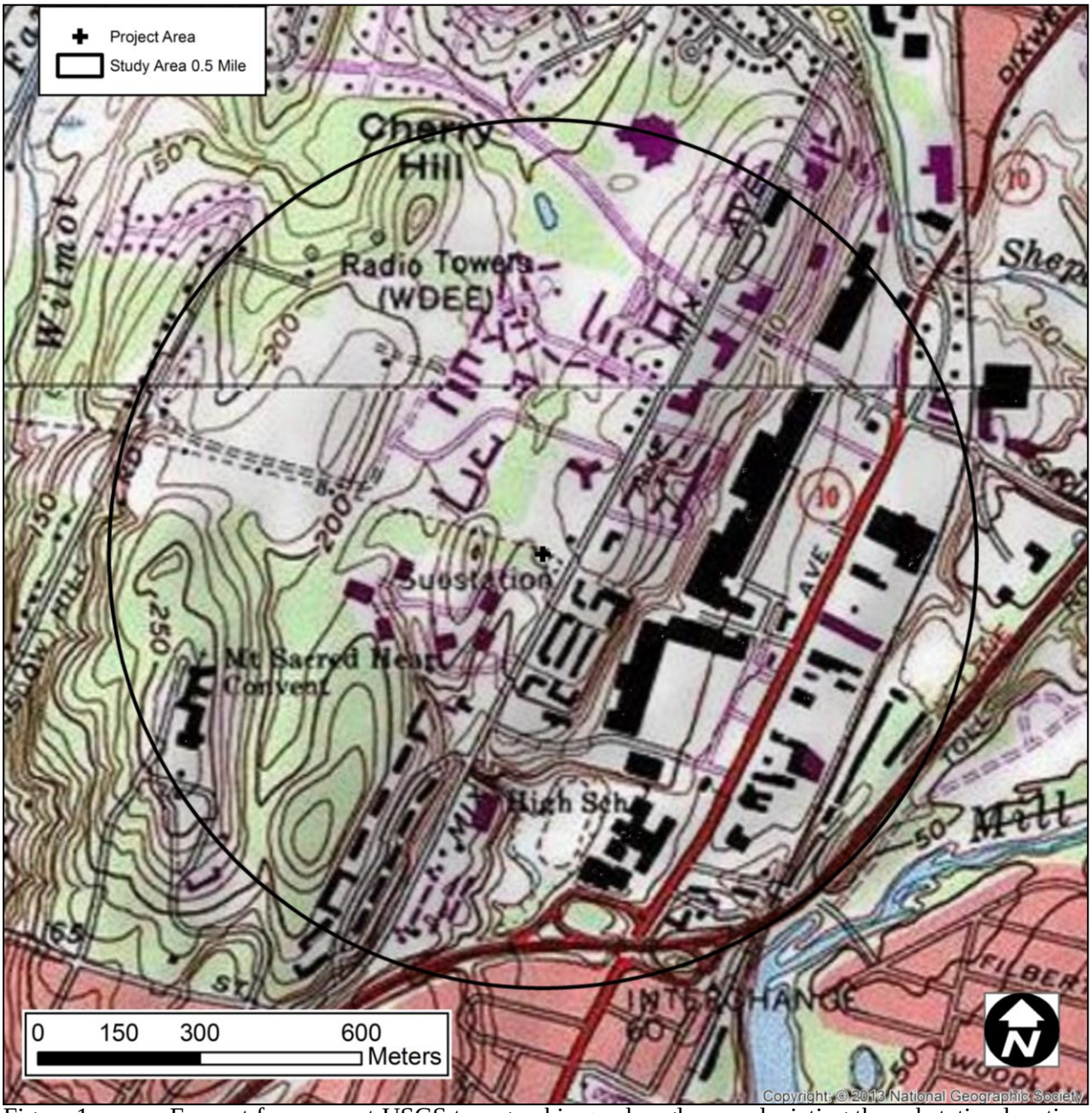

Figure 1. Excerpt from recent USGS topographic quadrangle map depicting the substation location in Hamden, Connecticut.

Figure 2. Excerpt from a 1852 historic map depicting the substation in Hamden, Connecticut.

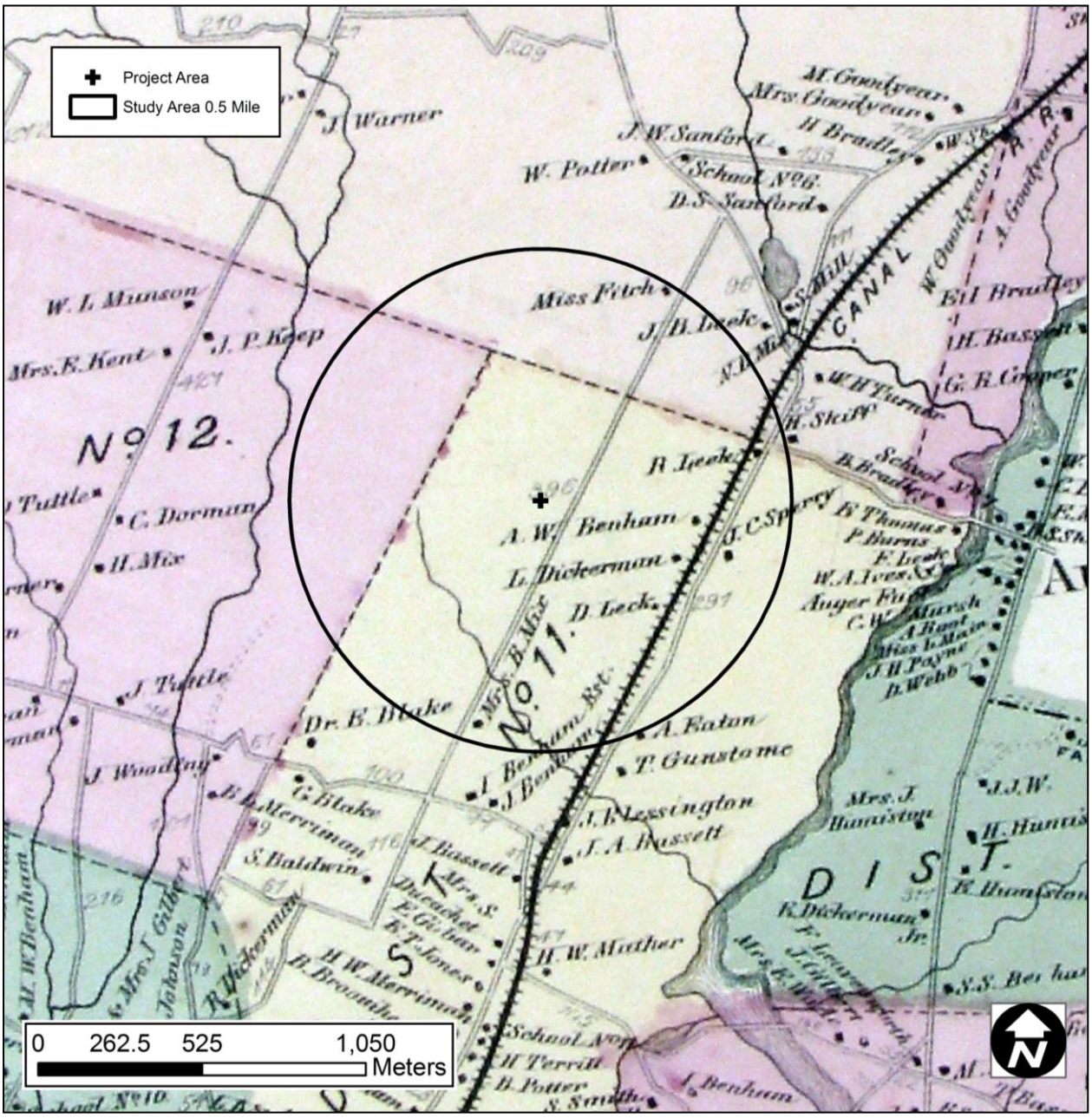

Figure 3. Excerpt from an 1867 historic map depicting the substation in Hamden, Connecticut.

Figure 4. Excerpt from a 1934 aerial image depicting the substation in Hamden, Connecticut.

Figure 5. Excerpt from a 1951 aerial image depicting the substation in Hamden, Connecticut.

Figure 6. Excerpt from a 1965 aerial image depicting the substation in Hamden, Connecticut.

Figure 7. Excerpt from a 1990 aerial image depicting the substation in Hamden, Connecticut.

Figure 8. Excerpt from a 2004 aerial image depicting the substation in Hamden, Connecticut.

Figure 9. Excerpt from a 2014 aerial image depicting the substation in Hamden, Connecticut.

Figure 10. Digital map depicting the locations of previously recorded archaeological sites in the vicinity of the substation in Hamden, Connecticut.

Figure 11. Digital map depicting the locations of previously recorded National Register of Historic Places properties in the vicinity of the substation in Hamden, Connecticut.

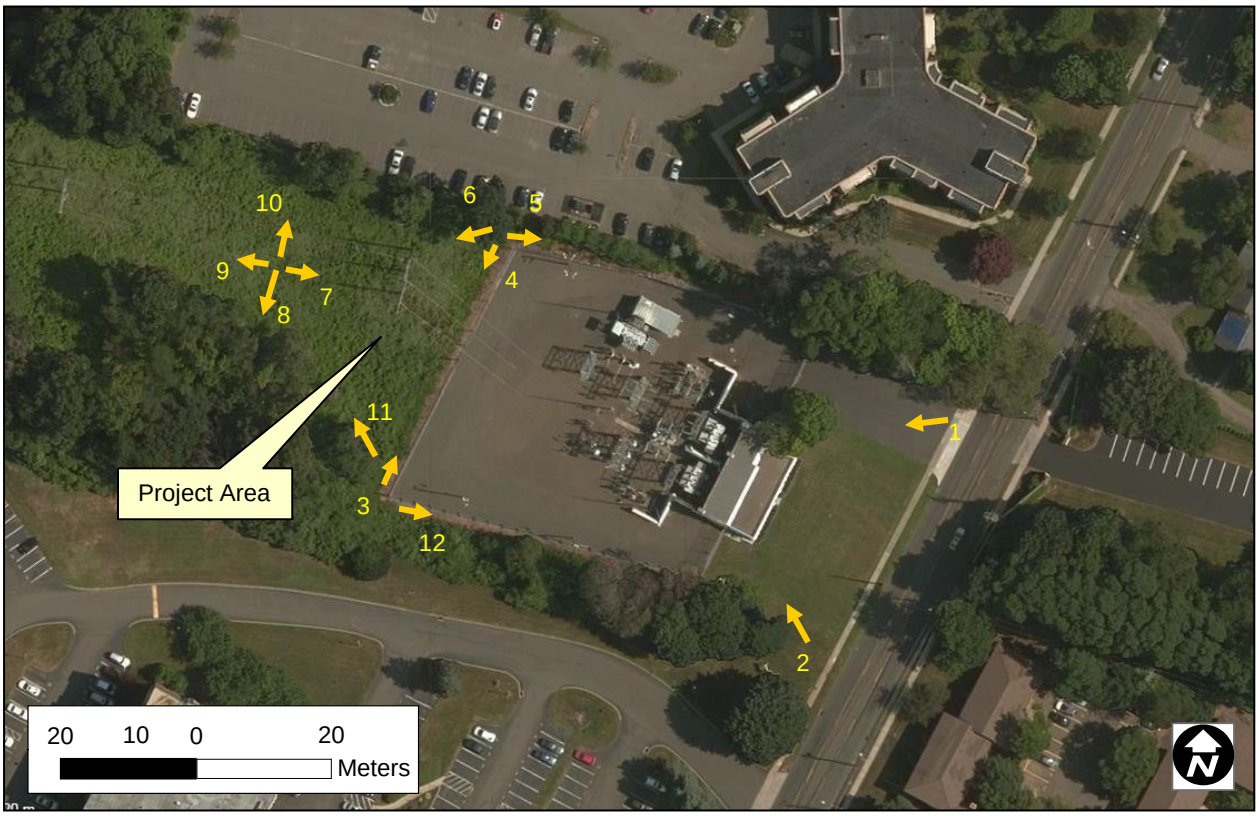

Figure 12. Aerial view of the Mix Avenue substation in Hamden, Connecticut depicting the location and direction of each the following photographs.

Photo 1. Overview photo of the existing Mix Avenue Substation facing southwest.

Photo 2. Overview photo of the existing Mix Avenue Substation facing northwest.

Photo 3. Overview photo of the area to the west of the Mix Avenue Substation facing north.

Photo 4. Overview photo of the area to the west of the Mix Avenue Substation facing south.

Photo 5. Overview photo of the area to the north of the Mix Avenue Substation facing east.

Photo 6. Overview photo of the area to the west of the Mix Avenue Substation facing southwest.

Photo 7. Overview photo of the area to the west of the Mix Avenue Substation facing east (note moderate slopes in this area).

Photo 8. Overview photo of the area to the west of the Mix Avenue Substation facing south (note that this area has been disturbed in the past).

Photo 9. Overview photo of the area to the west of the Mix Avenue Substation facing west (note that this area contains moderate slopes).

Photo 10. Overview photo of the area to the west of the Mix Avenue Substation facing north (note disturbed areas and debris in this area).

Photo 11. Overview photo of the area to the west of the Mix Avenue Substation facing northwest (note slopes in this area).

Photo 12. Overview photo of the area to the south of the Mix Avenue Substation facing east.

Department of Economic and Community Development

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PROJECT REVIEW COVER FORM

1. This information relates to a previously submitted project. ☐ You do not need to complete the rest of the form if you have been previously issued a SHPO Project Number. Please attach information to this form and submit

SHPO Project Number _____
(Not all previously submitted projects will have project numbers)

Project Address 690 Mix Avenue, Hamden, Connecticut
(Street Address and City or Town)

2. This is a new Project. [x] If you have checked this box, it is necessary to complete ALL entries on this form .

Project Name Mix Avenue Substation Expansion Project

Project Location 690 Mix Avenue
Include street number, street name, and or Route Number. If no street address exists give closest intersection.

City or Town Hamden
In addition to the village or hamlet name (if appropriate), the municipality must be included here.

County New Haven
If the undertaking includes multiple addresses, please attach a list to this form.

Date of Construction (for existing structures) 1960s

PROJECT DESCRIPTION SUMMARY (include full description in attachment):

United Illuminating is proposing to complete and expansion to the existing substation. The expansion will be to the west and within the previously disturbed electrical transmission corridor.

TYPE OF REVIEW REQUESTED

a. Does this undertaking involve funding or permit approval from a State or Federal Agency?

[x] Yes [ ] No

Agency Name/Contact	Type of Permit/Approval	State	Federal
CT-SHPO		[x]	[ ]
		[ ]	[ ]
		[ ]	[ ]

	Yes	No
b. Have you consulted the SHPO and UCONN Dodd Center files to determine the presence or absence of previously identified cultural resources within or adjacent to the project area?	[x]	[ ]
If yes: Was the project site wholly or partially located within an identified archeologically sensitive area?	[ ]	[x]
Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the CT State or National Registers of Historic Places?	[ ]	[x]
Does the project involve the rehabilitation, renovation, relocation, demolition or addition to any building or structure that is 50 years old or older?	[ ]	[x]

Department of Economic and Community Development

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PROJECT REVIEW COVER FORM

The Historic Preservation Review Process in Connecticut Cultural Resource Review under the National Historic Preservation Act – Section 106 http://www.achp.gov/106summary.html involves providing technical guidance and professional advice on the potential impact of publicly funded, assisted, licensed or permitted projects on the state's historic, architectural and archaeological resources. This responsibility of the State Historic Preservation Office (SHPO) is discharged in two steps: (1) identification of significant historic, architectural and archaeological resources; and (2) advisory assistance to promote compatibility between new development and preservation of the state's cultural heritage.

Project review is conducted in two stages. First, the SHPO assesses affected properties to determine whether or not they are listed or eligible for listing in the Connecticut State or National Registers of Historic Places. If so, it is deemed "historic" and worthy of protection and the second stage of review is undertaken. The project is reviewed to evaluate its impact on the properties significant materials and character. Where adverse effects are identified, alternatives are explored to avoid, or reduce project impacts; where this is unsuccessful, mitigation measures are developed and formal agreement documents are prepared stipulating these measures. For more information and guidance, please see our website at: http://www.cultureandtourism.org/cct/cwp/view.asp?a=3933&q=293820

ALL PROJECTS SUBMITTED FOR REVIEW MUST INCLUDE THE FOLLOWING MATERIALS*:

[x] **PROJECT DESCRIPTION** Please attach a full description of the work that will be undertaken as a result of this project. Portions of environmental statements or project applications may be included. The project boundary of the project should be clearly defined**

[x] **PROJECT MAP** This should include the precise location of the project – preferably a clear color image showing the nearest streets or roadways as well as all portions of the project. Tax maps, Sanborn maps and USGS quadrangle maps are all acceptable, but Bing and Google Earth are also accepted if the information provided is clear and well labeled. The project boundary should be clearly defined on the map and affected legal parcels should be identified.

[x] **PHOTOGRAPHS** Clear, current images of the property should be submitted. Black and white photocopies will not be accepted. Include images of the areas where the proposed work will take place. May require: exterior elevations, detailed photos of elements to be repaired/replaced (windows, doors, porches, etc.) All photos should be clearly labeled.

For Existing Structures	Yes	N/A	Comments
Property Card	☐	☐	
For New Construction	**Yes**	**N/A**	**Comments**
Project plans or limits of construction (if available)	☐	☒	
If project is located in a Historic District include renderings or elevation drawings of the proposed structure	☐	☐	
Soils Maps http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm	☐	☒	
Historic Maps http://magic.lib.uconn.edu/	☒	☐	
For non-building-related projects (dams, culverts, bridge repair, etc)	**Yes**	**N/S**	**Comments**
Property Card	☐	☐	
Soils Map (see above)	☐	☐	
Historic Maps (see above)	☐	☐	

STAFF REVIEW AREA	Above	Date	Below	Date
Indicate date of Review and Initials of Reviewer				

PROJECT CONTACT

Name Shawn Crosbie Title Environmental Analyst

Firm/Agency United Illuminating

Address 180 Marsh Hill Road

City Orange State CT Zip 06477

Phone 203-926-4595 Cell Fax

Email shawn.crosbie@uinet.com

*Note that he SHPO's ability to complete a timely project review depends largely on the quality of the materials submitted.

** Please be sure to include the project name and location on *each page* of your submission.

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State Historic Preservation Office

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PROJECT REVIEW COVER FORM

SHPO USE ONLY

Based on our review of the information provided to the State Historic Preservation Office, it is our opinion that:

- [X] No historic properties will be affected by this project. No further review is requested.
- [ ] This project will cause no adverse effects to the following historic properties. No further review is requested:
- [ ] This project will cause no adverse effects to the following historic properties, conditional upon the stipulations included in the attached letter:
- [ ] Additional information is required to complete our review of this project. Please see the attached letter with our requests and recommendations.
- [ ] This project will adversely affect historic properties as it is currently designed or proposed. Please see the attached letter for further details and guidance.

Daniel T. Forrest — 5/12/15

Daniel T. Forrest — Date

~~Deputy~~ State Historic Preservation Officer

Attachment E
Electric and Magnetic Fields (EMF)

Exponent®

Electric and Magnetic Field Assessment: The Mix Avenue Substation

Electric and Magnetic Field Assessment: The Mix Avenue Substation

Prepared for

The United Illuminating Company
180 Marsh Hill Rd.
Orange, CT 06477

Prepared by

Exponent
420 Lexington Ave.
Suite 1740
New York, NY 10170

August 3, 2015

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Notice

At the request of The United Illuminating Company, Exponent modeled the electric and magnetic field associated with the addition of 115-kV capacitor banks at the Mix Avenue Substation in Hamden, Connecticut. This report summarizes work performed to date and presents the findings resulting from that work. In the analysis, we have relied on geometry, material data, usage conditions, specifications, and various other types of information provided by the client. The United Illuminating Company has confirmed to Exponent that the summary of data provided to Exponent contained herein is not subject to Critical Energy Infrastructure Information restrictions. We cannot verify the correctness of this input data, and rely on the client for the data's accuracy. Although Exponent has exercised usual and customary care in the conduct of this analysis, the responsibility for the design and operation of the project remains fully with the client.

The findings presented herein are made to a reasonable degree of engineering and scientific certainty. Exponent reserves the right to supplement this report and to expand or modify opinions based on review of additional material as it becomes available, through any additional work, or review of additional work performed by others.

The scope of services performed during this investigation may not adequately address the needs of other users of this report, and any re-use of this report or its findings, conclusions, or recommendations presented herein are at the sole risk of the user. The opinions and comments formulated during this assessment are based on observations and information available at the time of the investigation. No guarantee or warranty as to future life or performance of any reviewed condition is expressed or implied.

Executive Summary

The United Illuminating Company proposes installation of two 115-kilovolt (kV) capacitor banks and one three-phase reactor to the Mix Avenue Substation in Hamden, Connecticut (the Project). The new equipment will be connected to the terminal of the existing 115-kV overhead transmission line that exits the substation to the west and proceeds along the adjoining right-of-way (ROW). To accommodate the new equipment, the substation will expand approximately 170 feet west on the existing ROW.

The effect of the new equipment on existing magnetic-field levels was evaluated by modeling magnetic fields for pre- and post-Project conditions. For the pre-Project conditions, the loading was calculated for the in-service year of 2017 – and later in 2022 – but without the effect of the proposed substation equipment on the transmission system. Pre-project magnetic fields were also measured around the substation on June 30, 2015. The post-Project condition uses loadings calculated in the same years but with the Project in operation, and includes magnetic-field contributions from new equipment. In each condition, two load cases were studied, corresponding to 2022 annual average load and 2017 annual peak load.

The modeling shows that at most locations, the calculated magnetic field levels decrease or remain unchanged with operation of the Project. This result is due to (1) the decreased loading of 115-kV transmission lines terminating at the Mix Avenue Substation when the Project is in service; and (2) the loading of transformers and distribution feeders at the substation in pre- and post-Project conditions are essentially unchanged.

On the south side of the expanded substation perimeter, the magnetic field increases in the vicinity of proposed buswork and a proposed circuit breaker. Under average-load conditions, the calculated magnetic field levels increase from approximately 3.3 milligauss (mG) (pre-Project) to 18.3 mG (post-Project) at the new substation fence. This elevation in Project-related fields decreases below 0.5 mG at a location 50 feet south of the expanded perimeter. Under peak-load conditions, the calculated magnetic field increases from approximately 3.4 mG (pre-Project) to 21.4 mG (post-Project) at the south edge of the expanded substation perimeter. Again, this elevation in Project-related magnetic fields persists for approximately 50 feet, moving south from the new fence.

Project-related changes in the load on the existing transmission lines result in a small decrease in the calculated magnetic field at other locations. The most pronounced decrease in the calculated magnetic-field levels is encountered near the northern edge of the existing ROW, with a decrease of approximate 4 mG under average- and peak-load conditions. Near dwellings in the surrounding neighborhoods, calculated magnetic fields remain the same or decrease slightly (0.1-0.2 mG) with operation of the Project.

The highest calculated electric field modeled outside the substation fence is 1.57 kilovolts per meter, beneath the conductors of the existing overhead 115-kV transmission line. The electric fields from transmission-line sources will not change significantly with operation of the Project,

since the voltage of the line is not increased and the only change in the configuration of overhead 115-kV conductors will be made at the terminal span into the Mix Avenue Substation.

Existing and Proposed Configurations

The Southwest Connecticut Transmission Planning Study has indicated that under certain dispatch and line-out contingency scenarios, low voltages and overloads can occur in the Mix Avenue – Sackett corridor. To mitigate these conditions, United Illuminating (UI) proposes to install two 115-kilovolt (kV) capacitor banks and one three-phase reactor at the Mix Avenue Substation located at 690 Mix Avenue in Hamden, Connecticut. The substation will expand west on the existing right-of-way (ROW) to accommodate the new equipment. *See* Figure 1.

As shown in the single-line diagram in Figure 2, two 115-kV circuits terminate at the Mix Avenue Substation:

- an overhead 115-kV circuit between the Mix Avenue Substation and Glen Lake Junction; and
- an underground 115-kV circuit between the Sackett Substation in North Haven and the Mix Avenue Substation.

A tie breaker is connected between the terminal buses of the underground and overhead circuits. The new equipment to be installed within the substation perimeter includes:

- two 20 MVAR three-phase capacitor banks having an ungrounded wye configuration;
- one 115-kV gas circuit breaker connecting both capacitor banks to the terminal bus of the overhead transmission line;
- three Reactors (0.4 Ohm/phase) for each capacitor bank; and
- one 123 kV 7.5 Ohm three-phase reactor in series with the overhead line termination.

As shown in Figure 1, an existing dead-end structure and the existing termination structure of the overhead transmission line will be removed. A proposed termination structure will be constructed in the expanded substation perimeter to connect the overhead circuit to the new series reactor and bypass the disconnect switch.

The existing major substation yard equipment includes two 30/40/50 MVA station power transformers (A and B); one modular substation with a 24/32/40 MVA transformer (MixPDS); and additional disconnect switches, surge arrestors, circuit switchers, potential transformers, current transformers, and station service transformers. Low voltage 13.8 kV distribution feeders are terminated in the modular substation and switchgear and control enclosure, and proceed east from the substation to Mix Avenue.

The site is surrounded by residential neighborhoods. The nearest existing equipment is approximately 130 feet away from the closest multi-family dwelling to the north.

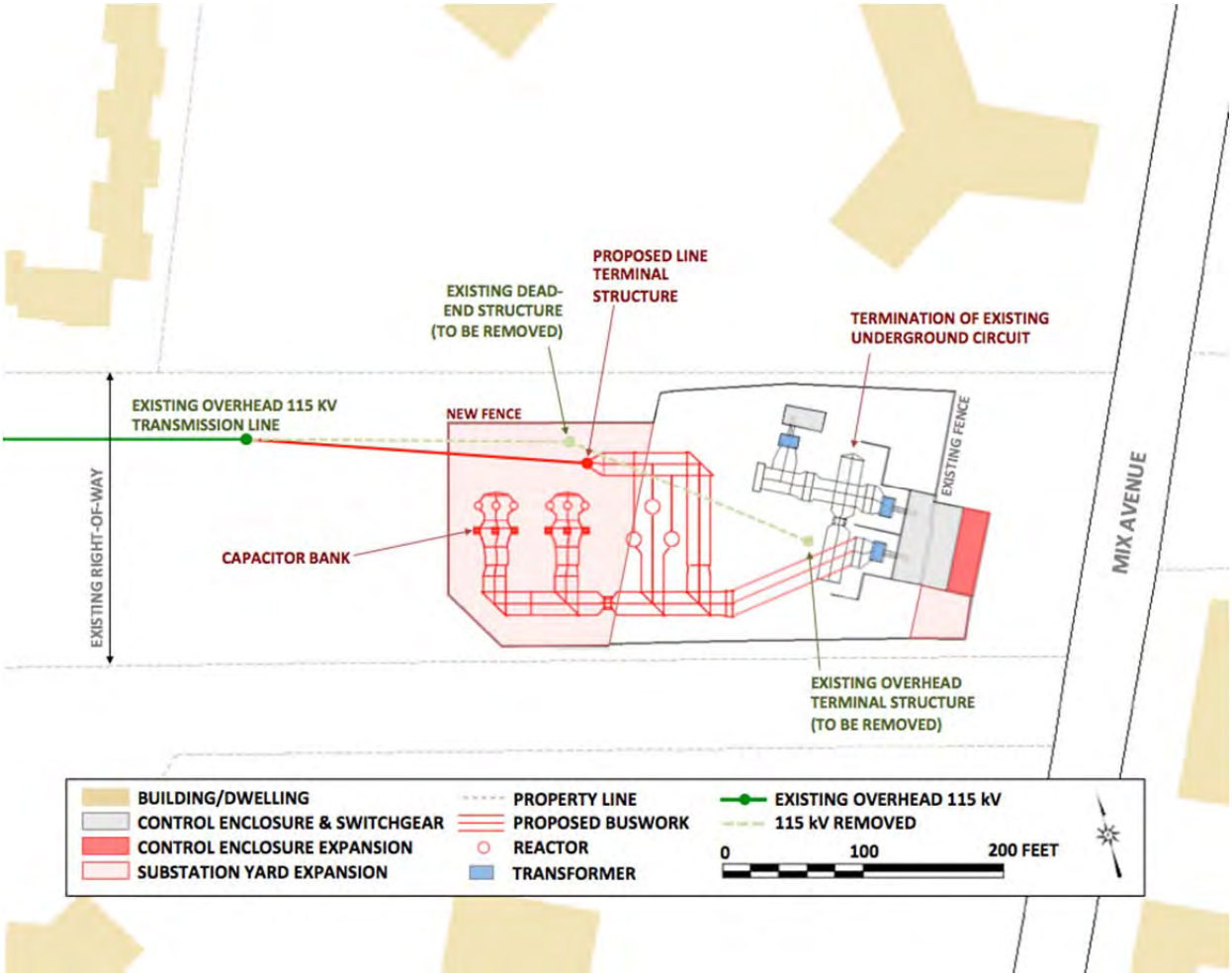

Figure 1. Plan view of the proposed expansion of the Mix Avenue Substation.

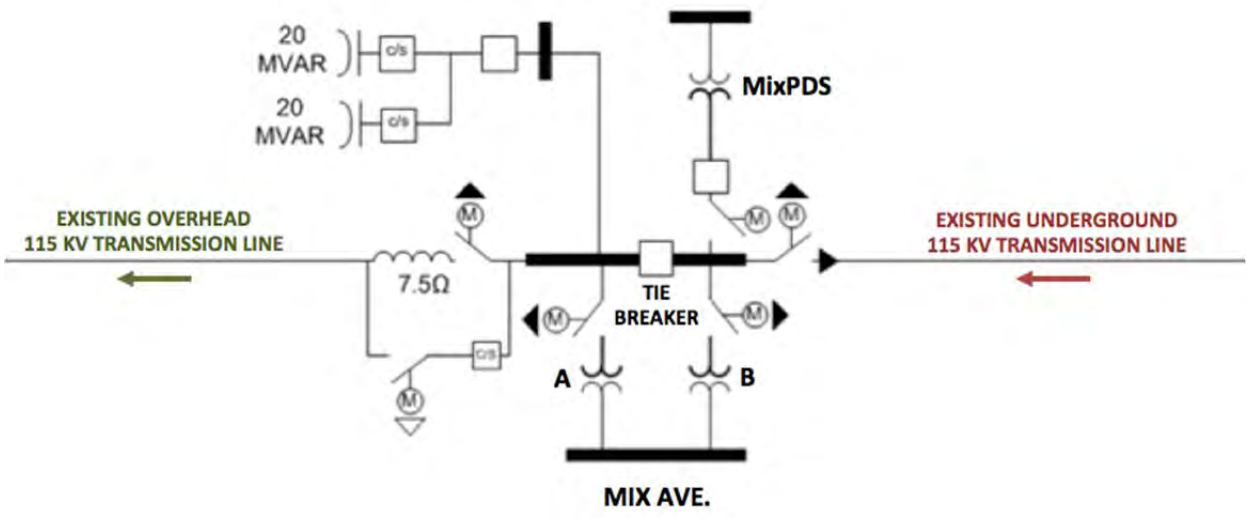

Figure 2. Diagram of the 115-kV transmission system showing the proposed capacitor banks connected to the overhead terminal bus.

The reference direction of current flow on the underground and overhead transmission lines is depicted, indicating a transfer of power from the Sackett Substation west to Glen Lake Junction. “A”, “B”, and “MixPDS” refer to substation transformers, “M” shows motorized disconnects, and “c/s” are circuit switchers.

In addition to calculations of magnetic field around the proposed fence of the Mix Avenue Substation, Exponent calculated the magnetic field along seven profiles perpendicular to the existing substation fence, directed outward onto adjoining property as shown in the listing below.

Profile 1 starts at the existing substation fence nearest substation transformer MixPDS, and proceeds north.

Profile 2 runs north from a point 15 feet west of the northeast corner of the substation yard.

Profile 3 runs west from a point 15 feet south of the northeast corner of the substation yard, near the entrance gate.

Profile 4 begins at the middle of the existing control enclosure and proceeds east, perpendicular to Mix Avenue.

Profile 5 begins south of Transformer A and proceeds south onto adjoining property.

Profile 6 runs south from the southern edge of the expanded substation perimeter, near the new buswork and capacitor circuit breaker.

Profile 7 begins near the new overhead termination structure, and proceeds north from the northern edge of the expanded substation perimeter.

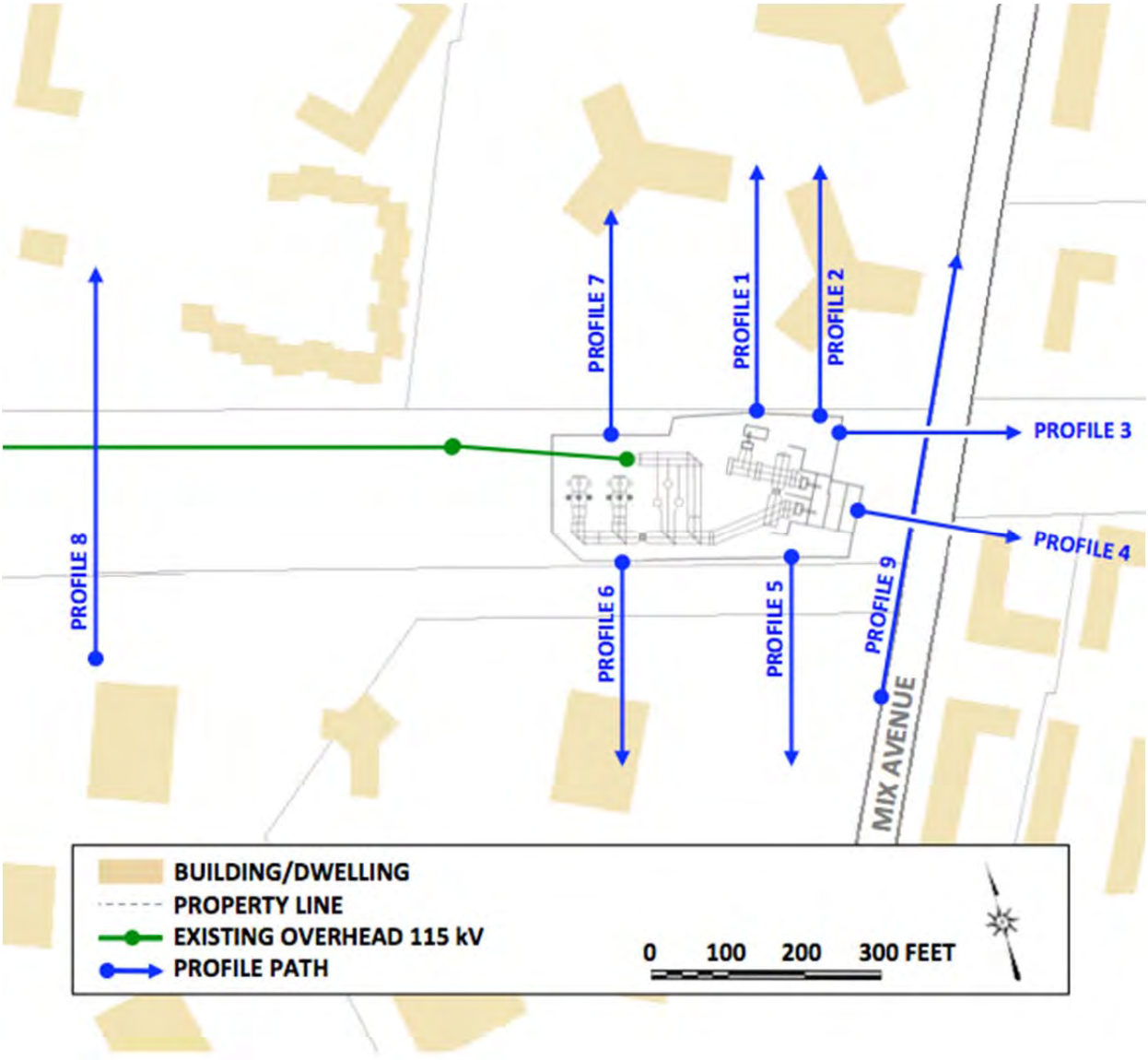

Figure 3. Plan view of the proposed Mix Avenue Substation, showing the proposed substation fence and the location of calculated profiles.

Profiles 8 and 9, shown in Figure 3, characterize the magnetic field at transects perpendicular to the route of the overhead and underground 115-kV transmission lines that terminate at the Mix Avenue Substation. Profile 8 models the electric and magnetic fields at a mid-span location of the existing overhead circuit, west of the substation on the existing ROW. Structure dimensions for the overhead circuit at tangent locations are shown on the left side of Figure 4. In addition, Figure 4 shows the dimensions of the existing dead-end structure immediately west of the existing substation fence, as well as the dimensions of the proposed line termination structure within the new fence. In Profile 8, the modeled height of the phase conductors above ground is 25 feet. To account for an elevated ridge west of the existing perimeter of the Mix Avenue Substation, the dead-end structure of the existing overhead circuit was modeled with an additional height of 12 feet.

Profile 9 runs along Mix Avenue on the street side of the substation property.[1] Profile 9 crosses above the existing 115-kV underground transmission circuit, as well above existing 13.8-kV distribution circuits that exit east from the substation.

Figure 5 shows 11 additional reporting points where the magnetic field was calculated in the surrounding neighborhood. As described in greater detail below, magnetic-field levels at these reporting locations were measured on June 30, 2015. Table 5 in the Results section, below, provides a summary of measured values, as well as calculated values before and after operation of the Project.

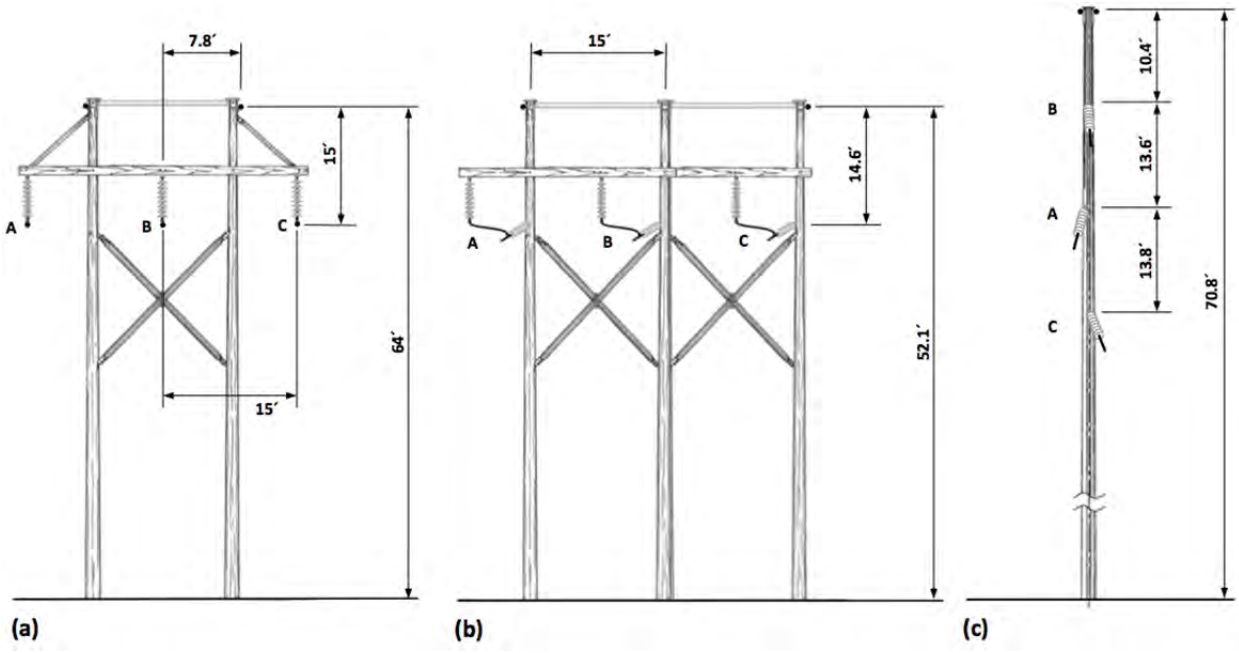

Figure 4. Profile view of overhead structures: a) typical existing tangent structure of the 115-kV overhead circuit connecting to the Mix Avenue Substation; b) dead-end structure of the 115-kV overhead circuit, approximately 50 feet west of the existing substation perimeter; and c) the proposed termination structure of the 115-kV overhead circuit within the Mix Avenue Substation. View facing west.

[1] Property throughout this report refers to the parcel on which the Mix Avenue Substation is located. *See* Figure 1.

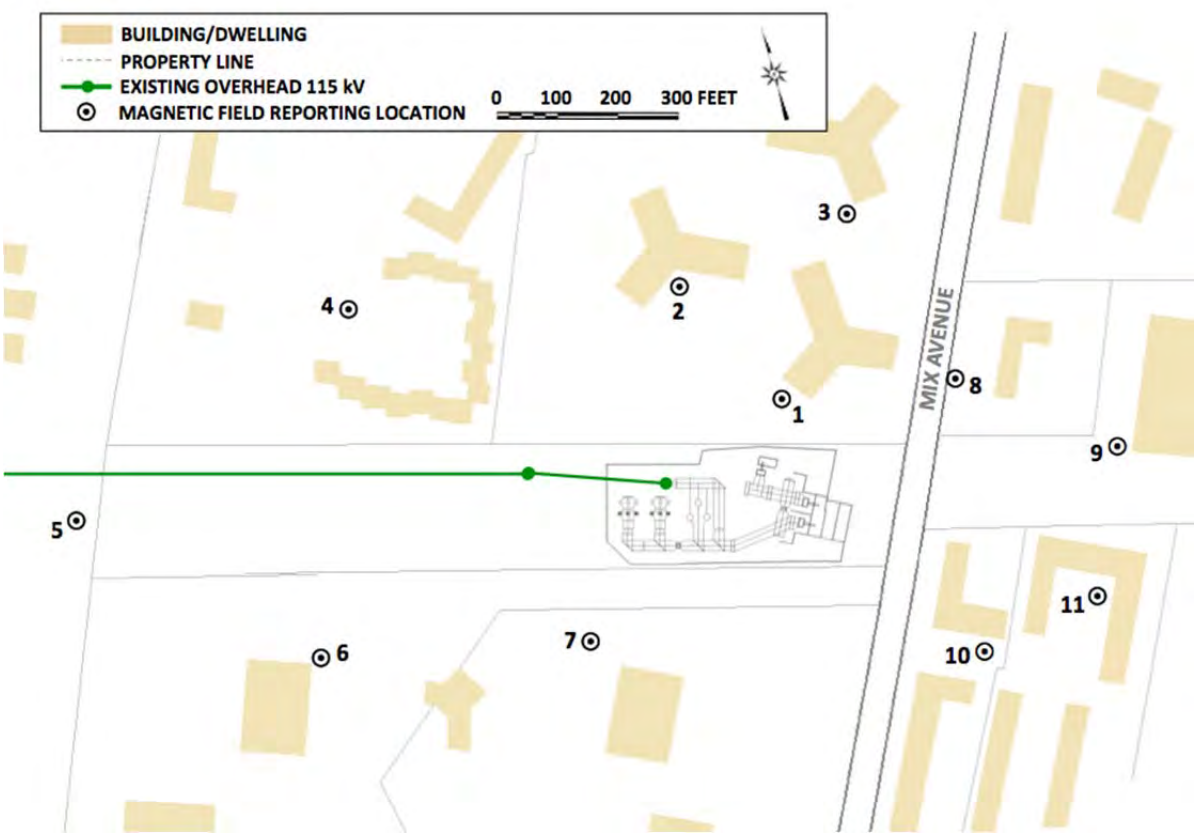

Figure 5. Expanded fence enclosing the Mix Avenue Substation in relation to the existing ROW and buildings in the vicinity of the Project.

The existing overhead circuit extends west from the substation along an existing 200-foot ROW.

Methods

Measurements

In order to characterize electric and magnetic field (EMF) levels for the existing configuration of the Mix Avenue Substation, magnetic and electric fields were measured outside the existing substation fence on June 30, 2015. The measurements were taken at a height of 1 meter (3.28 feet) above ground in accordance with the standard methods for measuring near power lines (IEEE Std. 644-1994a). Both electric and magnetic fields were expressed as the total field computed as the resultant of field vectors measured along vertical, transverse, and longitudinal axes.[2] The electric field was measured in units of kilovolts per meter (kV/m) with a single-axis field sensor and meter manufactured by Enertech Consultants. The magnetic field was measured in units of mG by orthogonally-mounted sensing coils whose output was logged by a digital recording meter (EMDEX II) manufactured by Enertech Consultants. These instruments meet the Institute of Electrical and Electronics Engineers **(**IEEE) instrumentation standard for obtaining accurate field measurements at power line frequencies (IEEE Std.1308-1994b). The meters were calibrated by the manufacturer by methods like those described in IEEE Std. 644-1994a.

Magnetic fields from these underground sources were measured on the northeast perimeter of the substation near the switchgear and control enclosure, as described in the Results section below.

Measurements shown in Profile 8 in the Results section were collected at spans of the overhead circuit near Paradise Avenue, west of the region shown in Figure 3. This site was chosen for even grade and absence of vegetation, and was selected to be representative of the midspan location in Profile 8.

Magnetic Field Modeling

Exponent modeled EMF levels associated with the existing and proposed configurations of the Mix Avenue Substation and the existing 115-kV transmission lines using two methods:

(1) Three-dimensional modeling of magnetic fields, accounting for the arrangement of buswork, transmission-line interconnections, and other equipment inside the substation fence;
(2) Two-dimensional modeling of both electric fields and magnetic fields, accounting only for the conductors of the existing transmission lines.

[2] Measurements along the vertical, transverse, and longitudinal axes were recorded as root-mean-square magnitudes. Root mean square refers to the common mathematical method of defining the effective voltage, current, or field of an alternating current system.

Magnetic-field levels were calculated for peak loading conditions anticipated in 2017, as well as average loading conditions anticipated in 2022. In addition EMF measurements were recorded outside the existing perimeter of the substation.

Substation modeling

Magnetic fields along the fence perimeter of the Mix Avenue Substation and along perpendicular profiles 1-9 were modeled using SUBCALC. SUBCALC, which is part of the Enertech EMF Workbench Suite, models the magnetic fields in and around substation equipment, accounting for the three-dimensional arrangement of breakers, transformers, reactors, capacitors, buswork, and transmission lines.

Two SUBCALC models were constructed using the substation plan and profile data, and accounting for grade south the proposed substation internal fence-line perimeter. The inputs to the program include data regarding voltage, current flow, circuit phasing, and conductor configurations, which were provided by UI.

The first SUBCALC model calculated magnetic fields for the existing configuration of the Mix Avenue Substation (Figure 6). The second SUBCALC model includes the proposed capacitors, reactors, breakers or buswork on the west side of the expanded substation perimeter (Figure 7). The average-load conditions in 2022 and peak-load conditions in 2017 were used to calculate magnetic fields for both models, as discussed further below. Based on these two models, changes in the calculated magnetic fields associated with the operation of the Project are provided in the Results section, below.

Along each profile and perimeter, magnetic-field levels were calculated at 1 meter (3.28 feet) above ground as the root mean square value of the field in accordance with IEEE Std. C95.3.1-2010 and IEEE Std. 644-1994. Calculated magnetic-field levels are reported as resultant quantities in units of mG.[3]

[3] The resultant magnetic field is the Euclidian norm (square root of the sum of the squares) of the component magnetic-field vectors calculated along vertical, transverse, and longitudinal axes.

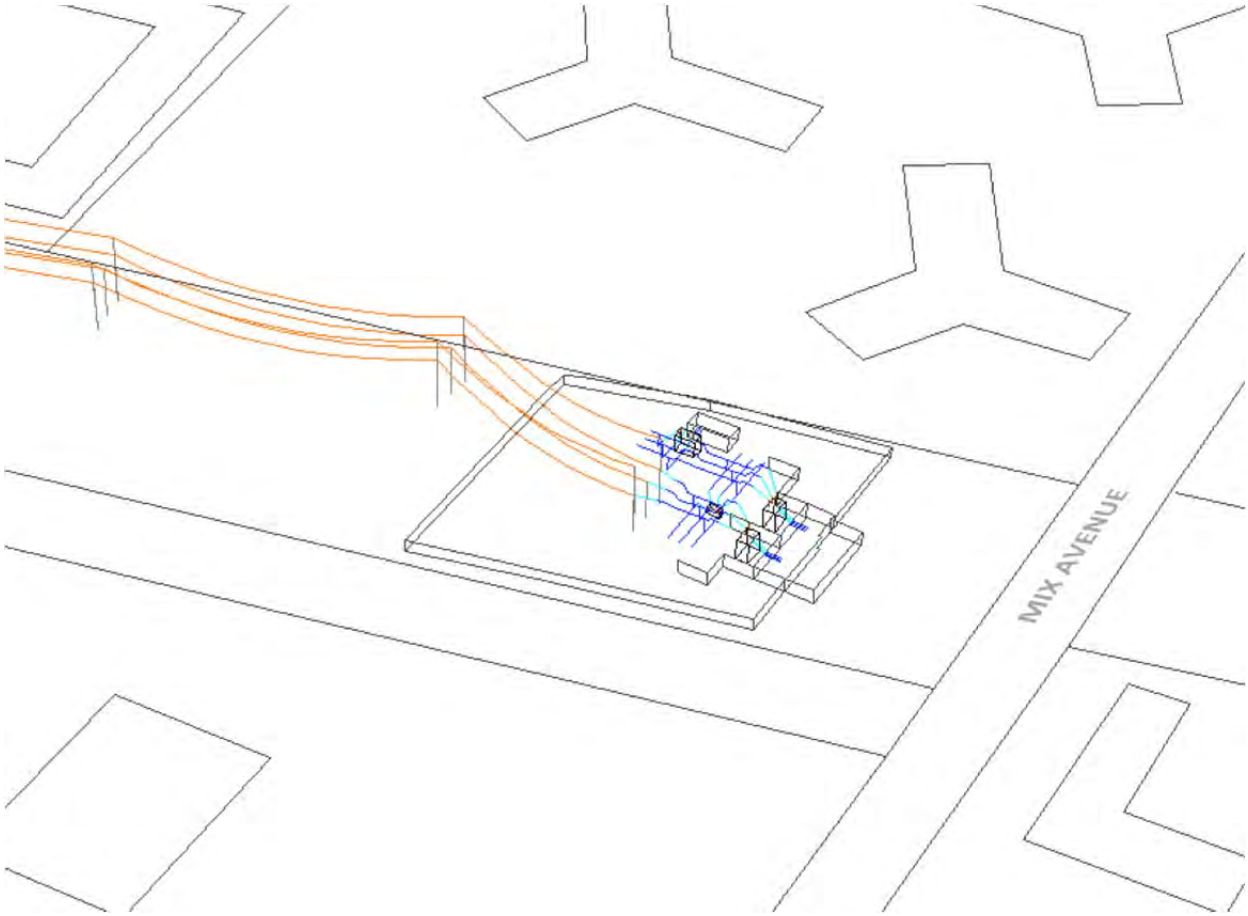

Figure 6. Overview of the three-dimensional SUBCALC model used to calculate magnetic fields for the existing configuration of the Mix Avenue Substation.

Figure 7. Overview of the three-dimensional SUBCALC model used to calculate magnetic fields for the proposed configuration of the Mix Avenue Substation.

Transmission line modeling

Project-related changes in EMF west of the proposed site were found to reflect loading changes in and out of Mix Avenue, therefore two-dimensional computational models of EMF on transects perpendicular to the overhead 115-kV circuit (Profile 8) also were constructed. The magnetic and electric fields on Profile 8 were calculated using computer algorithms developed by the Bonneville Power Administration (BPA), an agency of the U.S. Department of Energy (BPA, 1991). These algorithms have been shown to accurately predict EMF levels measured near transmission lines. The magnetic- and electric-field levels in Profile 8 were calculated at 1 meter (3.28 feet) above ground as the root mean square value of the field in accordance with IEEE Std. C95.3.1-2010 and IEEE Std. 644-1994. The conductors were assumed to be located on flat terrain and at uniform height for the entire distance between structures. Balanced currents were modeled on all three phase conductors. As with SUBCALC, the inputs to the BPA algorithm are data regarding voltage, current flow, phasing, and conductor configurations, and were provided by UI.

Loading

UI Transmission Planning provided the pre- and post-Project loadings for the 115-kV transmission lines and transformers involved in the Mix Avenue 115-kV Capacitor Bank & Series Reactor project. UI selected dispatches in such a way as to cause the maximum current flows on the two transmission-line sources into Mix Avenue. The current flows used for modeling are summarized in a table available from Exponent upon a request consistent with Critical Energy Infrastructure Information restrictions.

UI is required by the Connecticut Citing Council's (CSC) 2014 Electric and Magnetic Best Management Practices to provide line loadings for "pre and post project conditions under 1) peak load level at the time of the application filing and 2) at the projected seasonal maximum 24-hour average load level anticipated within five years" of operational in service date. As provided by UI transmission planning, the term "seasonal maximum 24-hour average" load level was replaced by the term "average daily peak." In this report, "average load" refers to this case.

For peak load analysis, UI modeled the system to reflect the topology of New England's transmission system in the year (including projects with in-service date of December 2017 or earlier). This included both Mix Avenue capacitors and series reactor to be in-service for the peak load analysis. In addition, the 2022 study year was used to measure the average daily peak load levels to satisfy the CSC requirement for obtaining EMF data within a five year horizon. The average daily peak load cases simulated a shoulder load scenario, and therefore one of the two capacitor banks was assumed off-line. In order to determine the scenario with the highest line loadings, generation dispatches were chosen that caused the highest projected flows. Sensitivity A was selected for the average-load case, and Sensitivity C was selected for the peak-load case.

In the average loading conditions provided by UI Transmission Planning for this report, power is transferred from the Sackett Substation north through the Mix Avenue Substation. Pass-through load enters the Mix Avenue Substation on the existing underground transmission line, and passes through the tie breaker to the overhead line terminal. In the peak-load conditions, the direction of power flow reverses on the overhead circuit. In this condition, power enters the Mix Avenue Substation through both the overhead and underground 115-kV circuits.

Results and Discussion

Figure 8 depicts the calculated and measured magnetic-field levels along the existing fence line of the Mix Avenue Substation. The magnetic field was modeled for average-load conditions in 2022, with only existing equipment in service. The calculated profile begins at the northeast corner of the substation, and proceeds clockwise around the site when viewed from above. The x-axis of Figure 8 is labeled with the cumulative distance along the fence. The highest calculated magnetic field is beneath the conductors of the overhead circuit where they pass above the existing perimeter of the substation. Figure 8 also depicts the magnetic field measured along the same path. The measured magnetic fields are lower than the calculated values beneath the conductors of the overhead transmission circuit, and above the conductors of the underground transmission circuit. This observation corresponds to the lower loading of these 115-kV transmission lines at the time of the measurements, which were approximately 40% percent lower for the overhead circuit than the loading assumed for modeling the magnetic field, and approximately 70% lower for the underground circuit.

Figure 9 depicts the calculated magnetic-field levels around the proposed fence line enclosing the Mix Avenue Substation on the property for average-load conditions in 2022 with one capacitor bank in service. The x-axis of Figure 9 is labeled with the cumulative distance along the proposed fence line, starting in the northeast corner and proceeding clockwise. Comparing the results for the existing and proposed configurations of the Mix Avenue Substation, calculated magnetic fields are within 2 mG at the east side of the substation yard. The effect of the new capacitor bank and ancillary equipment is discernible on south side of the expanded substation perimeter, where the calculated magnetic field levels increase from approximately 3.3 mG (pre-Project) to 18.3 mG (post-Project) at the new substation fence. The calculated magnetic fields decrease at the northern edge of the expanded substation perimeter, from 45 mG to 26 mG. This decrease results from the decreased loading of the overhead transmission line, as well as the higher proposed conductor positions in the terminal span of the overhead circuit.

Figure 10 depicts the calculated magnetic-field levels on the same path as Figure 9, but for peak-load conditions in 2017. Comparing the results for the existing and proposed configurations, Figure 10 shows a higher calculated magnetic field on the south side of the substation. At this location, the calculated magnetic field increases from 3.4 mG (pre-Project) to 21.4 mG (post-Project).

Figures 11-17 depict the calculated magnetic-field levels along perpendicular Profiles 1-7 for average-load conditions in 2022. Table 1 summarizes calculated magnetic-field levels from these profiles at several distances beyond the substation fence. Comparing the existing and proposed results at the proposed internal fence-line perimeter, calculated magnetic fields remain nearly the same or slightly decrease at most locations in Profiles 1-4 and Profile 7. Near the south side the substation (Profiles 5 and 6), the calculated magnetic field is higher in the post-Project condition compared to the pre-Project condition. This elevation in Project-related fields decreases below 0.5 mG at a location 50 feet south of the expanded perimeter. Under peak-load conditions, the elevation in Project-related magnetic fields again persists for approximately 50 feet, moving south from the new fence.

Table 2 summarizes calculated magnetic-field levels for Profiles 1-7 under peak-load conditions. In Profiles 1-4 and Profile 7, the calculated magnetic fields remain nearly the same, and increase by no more than 0.3 mG at distances of 100 feet or more from the substation perimeter.

Figure 18 and Figure 19 depict the calculated magnetic-field levels along Profiles 8 and 9, accounting for transmission- and distribution-line sources at these locations. Calculated magnetic fields are summarized in Table 3 at several locations along the Profile 8 and 9 transects of the ROW. The calculated magnetic-field levels in Profile 8 decrease slightly with operation of the Project (approximately 15 mG under average-load conditions), corresponding to the decrease in loading of the overhead line. At the northern edge of the existing ROW, calculated magnetic fields decrease by approximate 4 mG under average- and peak-load conditions.

Figure 20 depicts the calculated electric field along Profile 8, which is summarized in Table 4. The highest electric field in these sections is 1.57 kV/m, calculated beneath the conductors of the overhead circuit. The electric fields from transmission-line sources will not change significantly with operation of the Project, since overhead 115-kV conductors are reconfigured only at the terminal span within the Mix Avenue Substation.

Figure 21 depicts the location of electric-field measurements recorded on February 26, 2017. Measured electric-field values in three orthogonal axes are summarized in Table 6, along with calculated resultant quantities. The highest measured electric field (0.67 kV/m) was recorded beneath the conductors of the existing overhead Line. Away from overhead 115-kV transmission-line conductors, measured electric fields were low, below 0.04 kV/m. The lower measured values of the electric field are caused by shielding by the substation fence and surrounding vegetation.

Table 5 provides a summary of magnetic fields at eleven reporting points in the surrounding neighborhood. *See* Figure 5. Table 5 includes magnetic field levels measured on June 30, 2015, as well as calculated values before and after operation of the Project. Near dwellings in the surrounding neighborhoods, calculated magnetic fields remain the same or decrease slightly (0.1-0.2 mG) with operation of the Project. Measured magnetic field levels at some locations in Table 5 are higher than calculated values, due to the presence of unmodeled distribution line sources.

Table 1. Summary of calculated magnetic fields (mG) for Profiles 1-7 for average load conditions in 2022

			Distance from proposed substation perimeter (ft)			
Profile	Heading	Modeling condition	0	50	100	150
1	north	Pre-Project	12.5	1.1	0.4	0.2
		Post-Project	12.6	0.9	0.3	0.1
2	north	Pre-Project	4.7	0.3	0.2	0.1
		Post-Project	4.7	0.3	0.2	0.1
3	east	Pre-Project	7.6	4.0	3.9	0.9
		Post-Project	7.6	3.8	3.7	0.7
4	east	Pre-Project	6.5	3.0	3.0	3.2
		Post-Project	†6.3	2.2	2.4	2.7
5	south	Pre-Project	3.7	1.5	0.8	0.5
		Post-Project	4.2	1.2	0.5	0.3
6	south	Pre-Project	1.8	1.0	0.7	0.5
		Post-Project	9.5	1.5	0.6	0.3
7	north	Pre-Project	30.1	6.7	2.1	0.9
		Post-Project	10.0	2.4	0.9	0.4

† This location is within the proposed control-enclosure expansion.

Table 2. Summary of calculated magnetic fields (mG) for Profiles 1-7 for peak load conditions in 2017

			Distance from proposed substation perimeter (ft)			
Profile	Heading	Modeling condition	0	50	100	150
1	north	Pre-Project	16.3	0.8	0.5	0.3
		Post-Project	17.0	1.1	0.5	0.3
2	north	Pre-Project	7.1	0.6	0.3	0.2
		Post-Project	7.0	0.6	0.3	0.2
3	east	Pre-Project	11.3	4.7	4.8	0.6
		Post-Project	11.2	4.8	5.0	0.7
4	east	Pre-Project	11.7	1.4	1.4	1.3
		Post-Project	†10.4	1.5	1.7	1.7
5	south	Pre-Project	4.3	1.4	0.6	0.4
		Post-Project	7.3	1.7	0.6	0.3
6	south	Pre-Project	1.9	1.0	0.6	0.4
		Post-Project	7.8	1.1	0.5	0.3
7	north	Pre-Project	32.9	7.3	2.3	1.1
		Post-Project	9.0	2.6	1.0	0.5

† This location is within the control enclosure expansion

Table 3. Summary of calculated magnetic fields (mG) for Profiles 8 and 9

Profile	Modeling condition	Location				
		-50 ft beyond ROW edge	-ROW edge	Max on ROW	+ROW edge	+50 ft beyond ROW edge
8	Pre-project, average load	0.8	1.4	48.5	11.0	3.0
	Post-project, average load	0.5	0.9	32.1	6.9	2.0
	Pre-project, peak load	0.9	1.6	52.9	11.9	3.3
	Post-project, peak load	0.6	1.1	37.1	8.0	2.2
9	Pre-project, average load	0.6	0.8	25.7	0.8	0.2
	Post-project, average load	0.2	0.4	26.1	0.6	0.2
	Pre-project, peak load	0.3	0.4	41.0	0.7	0.2
	Post-project, peak load	0.3	0.3	40.4	0.8	0.2

Table 4. Summary of calculated electric fields (kV/m) for Profiles 8 and 9

Profile	Modeling condition	Location				
		-50 ft beyond ROW edge	-ROW edge	Max on ROW	+ROW edge	+50 ft beyond ROW edge
8	Pre-project	0.01	0.03	1.57	0.50	0.08
	Post-project	0.01	0.03	1.57	0.50	0.08
9†	Pre-project	<0.01	<0.01	<0.01	<0.01	<0.01
	Post-project	<0.01	<0.01	<0.01	<0.01	<0.01

† The underground circuits at this location are not a source of electric fields above grade.

Table 5. Summary of calculated magnetic fields (mG) at designated structures

Building designator*	Measured	2017 Average Load		2017 Peak Load	
		pre-Project	post-Project	pre-Project	post-Project
1	0.2	0.27	0.25	0.42	0.15
2	0.6	0.17	0.10	0.24	0.06
3	0.6	0.03	0.03	0.06	0.31
4	0.1	0.41	0.27	0.46	4.76
5	—	6.10	4.13	6.65	0.23
6	0.6	0.33	0.21	0.36	0.27
7	0.6	0.42	0.24	0.41	0.08
8	1.9†	0.06	0.05	0.08	0.19
9	0.4	0.39	0.31	0.13	0.06
10	0.6	0.15	0.06	0.07	0.06
11	1.2†	0.03	0.03	0.06	0.15

† Overhead distribution conductors within 80 feet of this location.

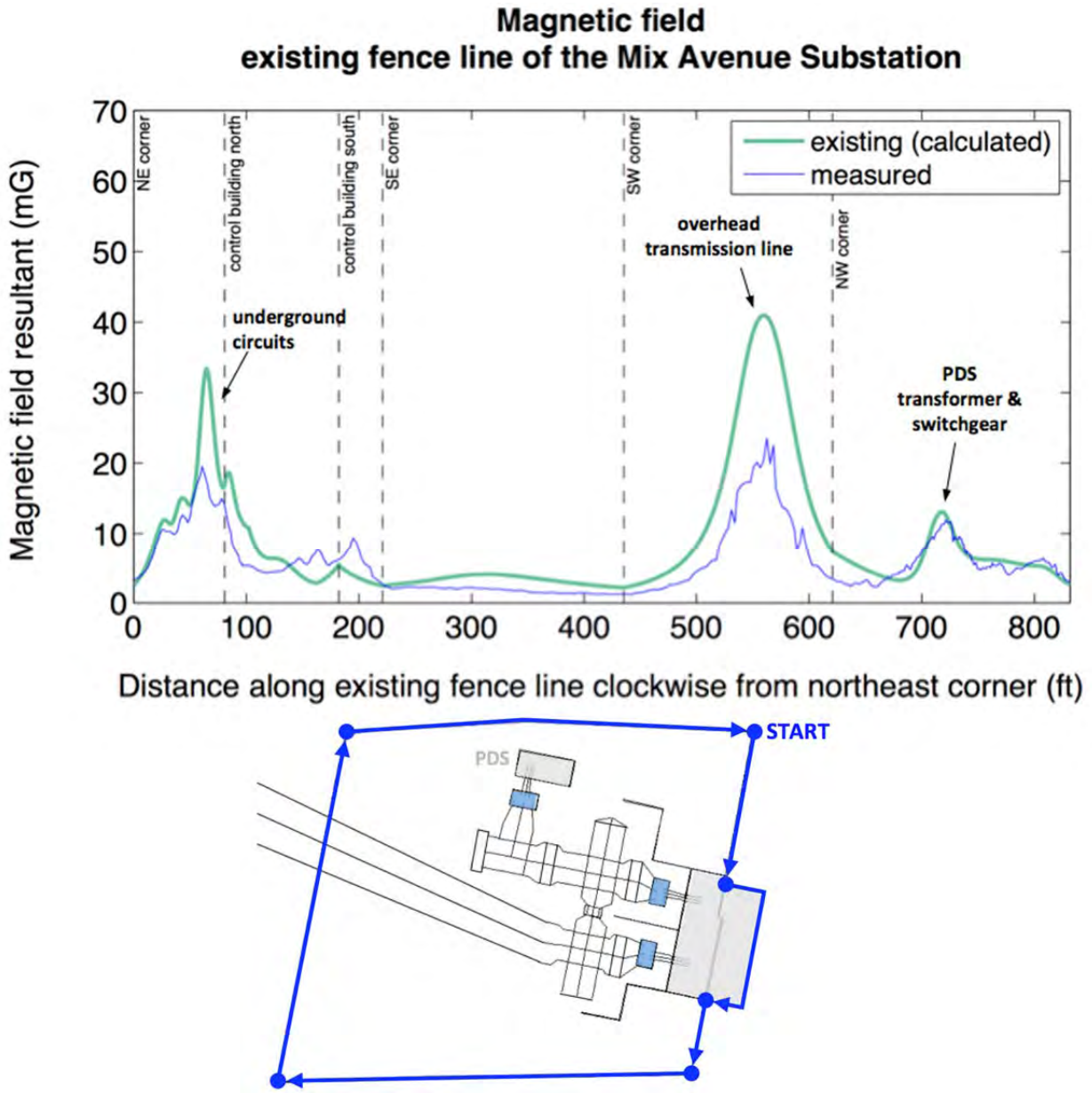

Figure 8. Calculated magnetic-field profiles around fence line of the Mix Avenue Substation for average-load conditions in the year 2022.
The profile begins at the northeast corner of the substation, and proceeds clockwise along the east, south, west, north sides of the yard.

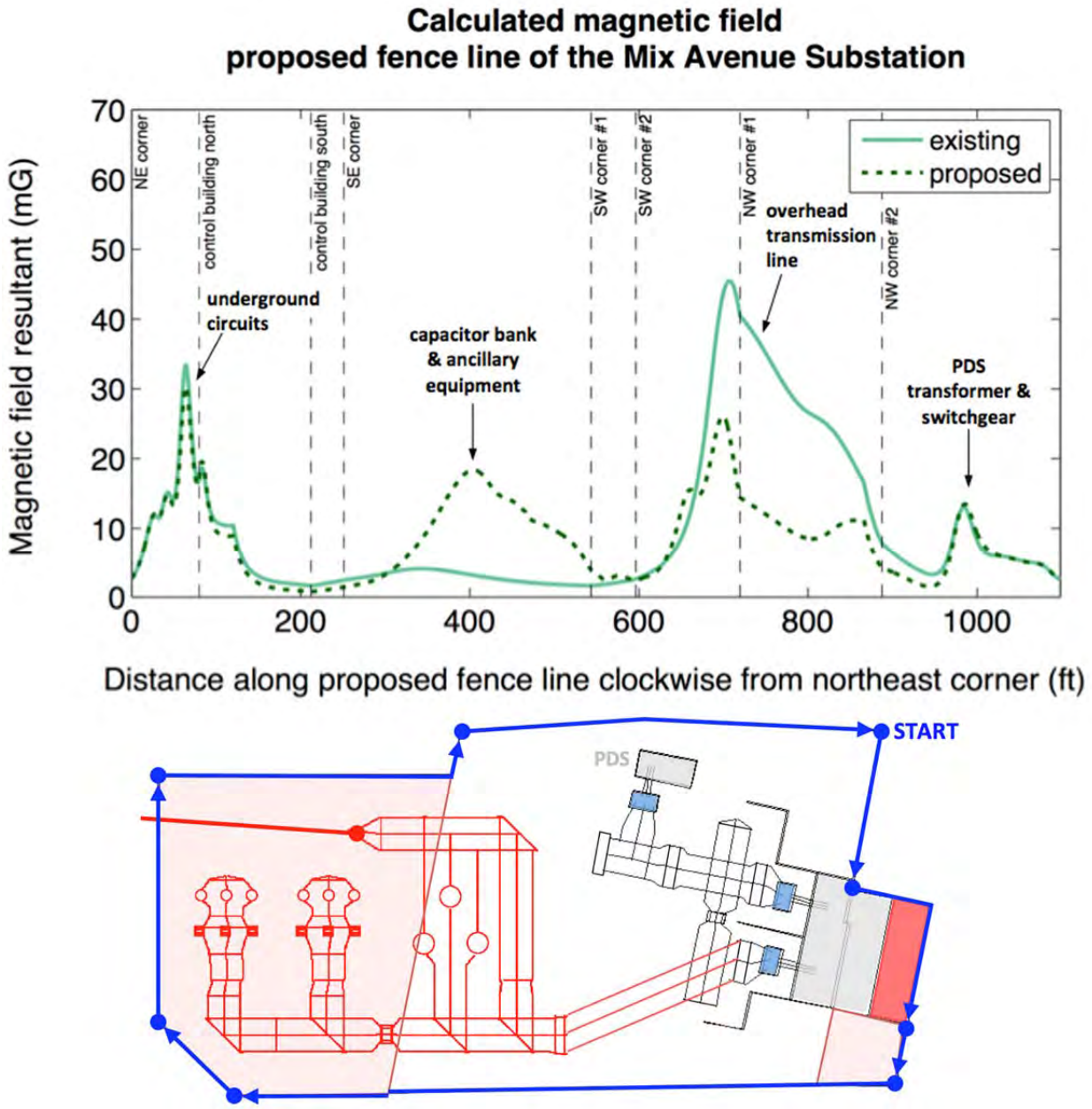

Figure 9. Calculated magnetic-field profiles around proposed fence line of the Mix Avenue Substation for average-load conditions in the year 2022.

The profile begins at the northeast corner of the substation, and proceeds clockwise along the fence line. The highest calculated fields are beneath the conductors of the overhead circuit where they pass above the proposed perimeter of the substation.

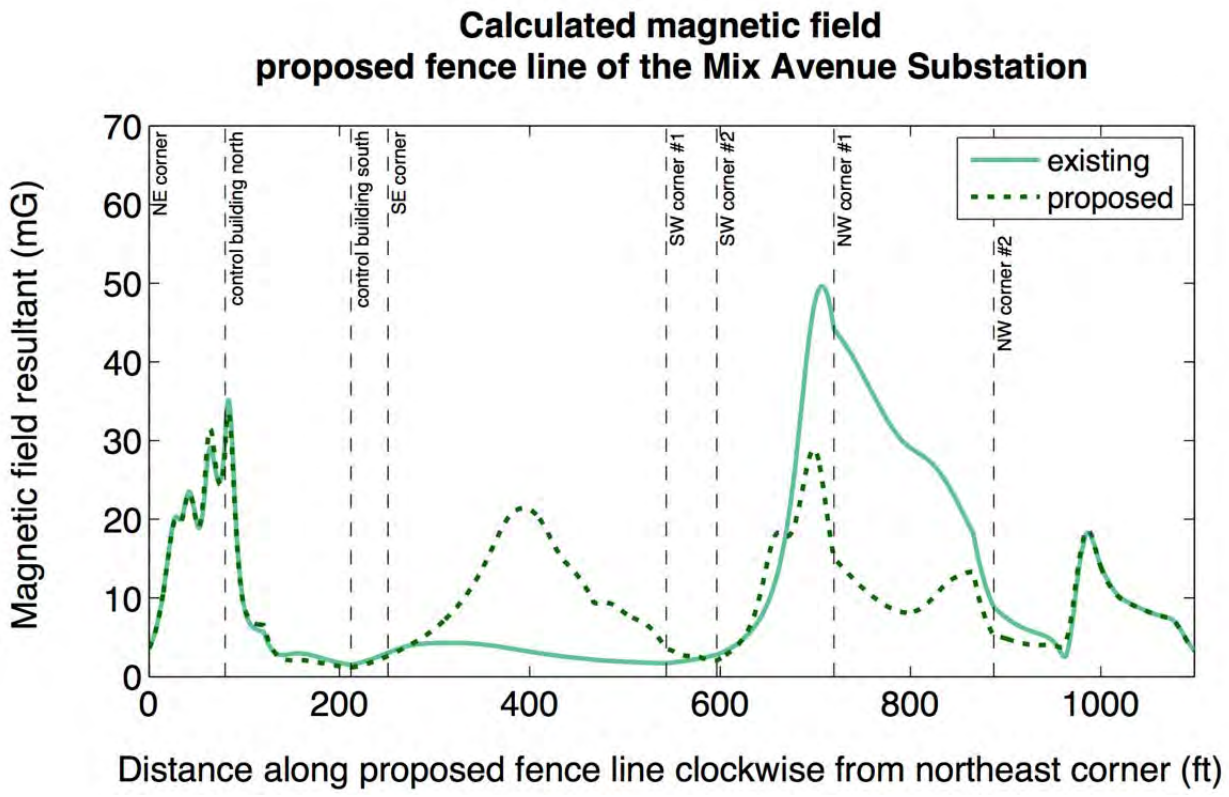

Figure 10. Calculated magnetic-field profiles around proposed fence line of the Mix Avenue Substation for peak-load conditions in the year 2017.

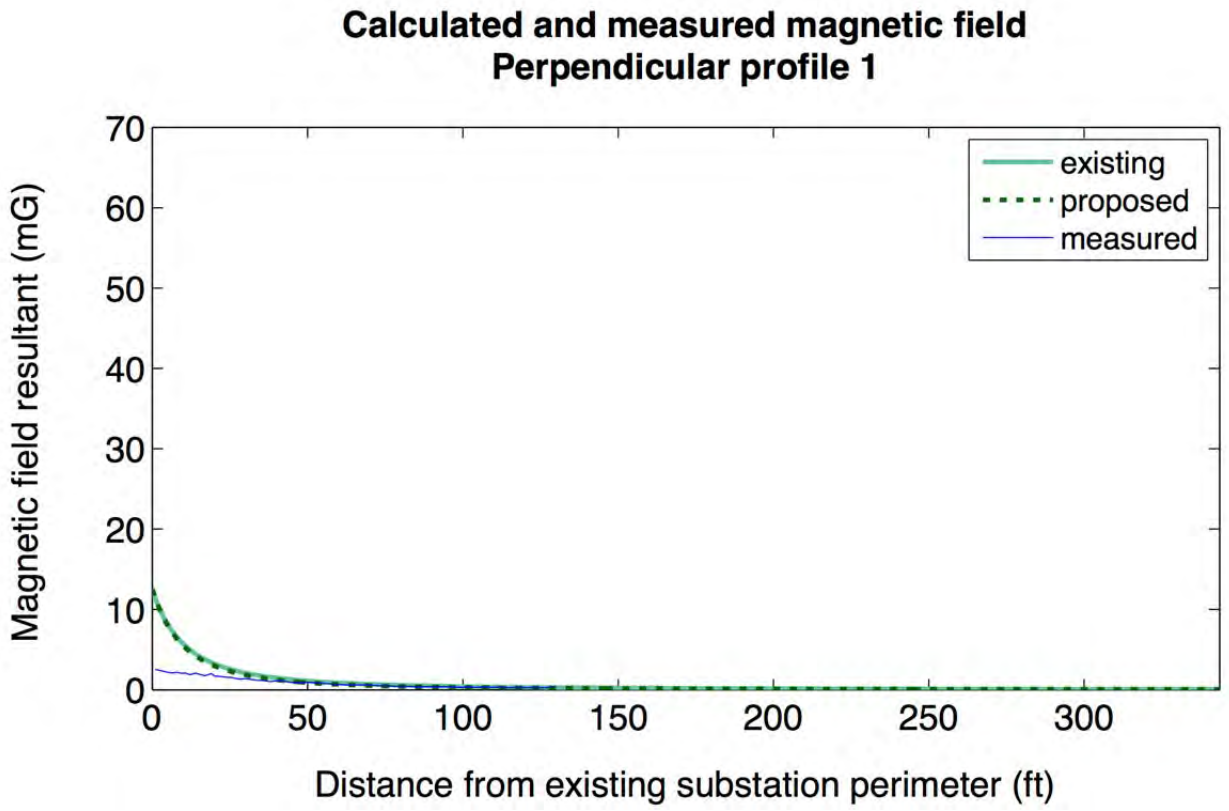

Figure 11. Calculated and measured magnetic-field levels along Profile 1.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

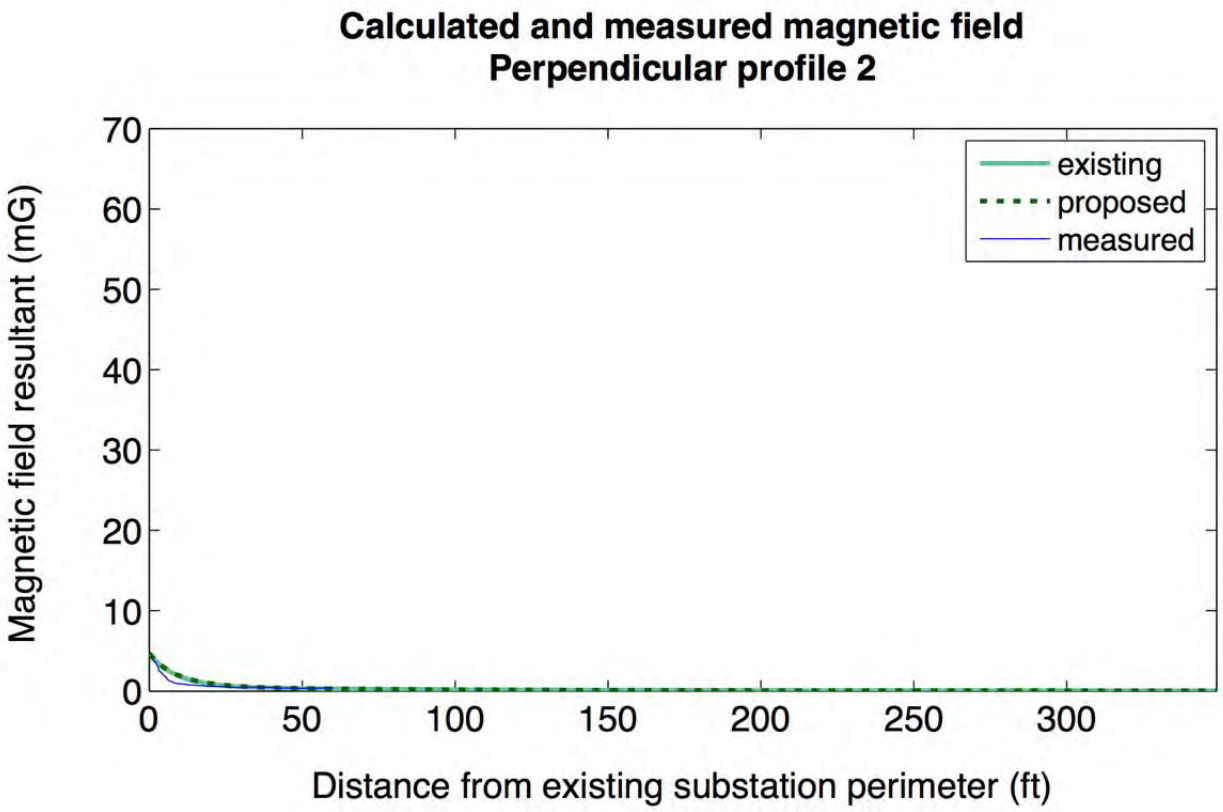

Figure 12. Calculated and measured magnetic-field levels along Profile 2.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

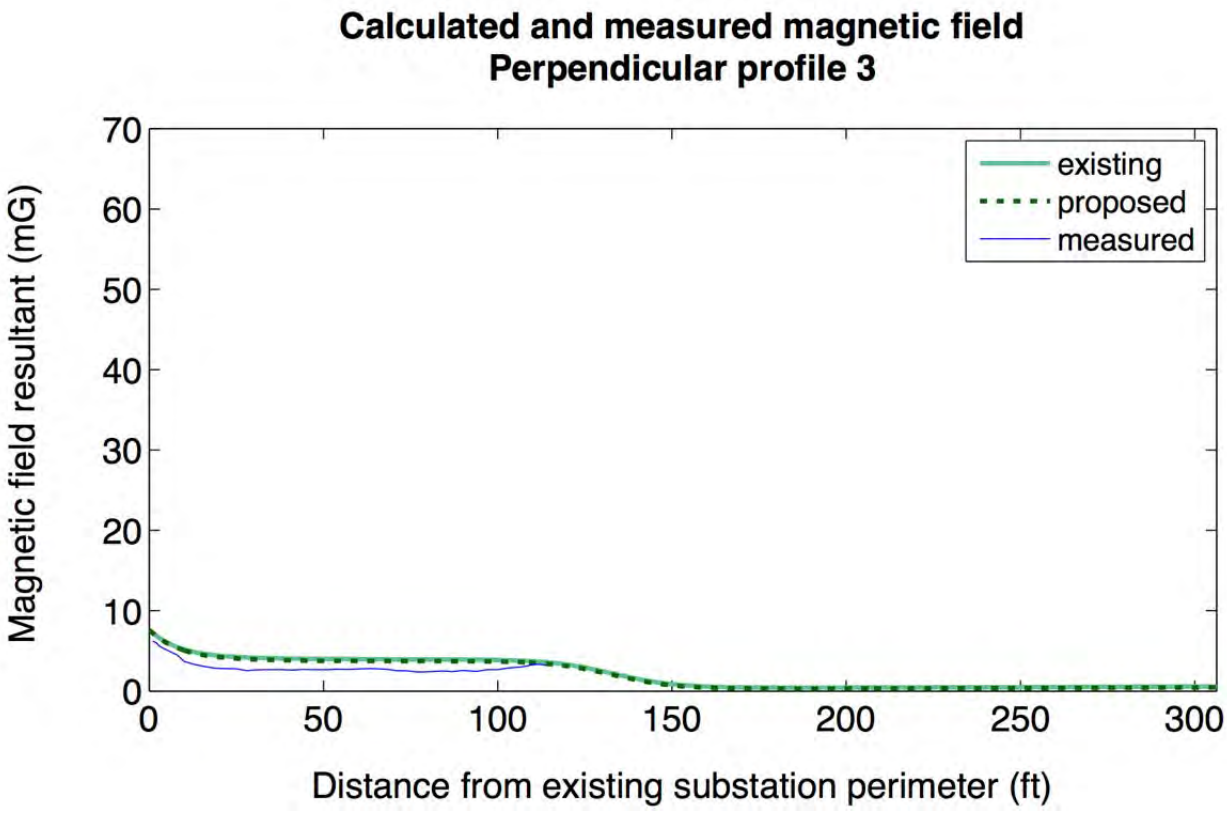

Figure 13. Calculated and measured magnetic-field levels along Profile 3.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

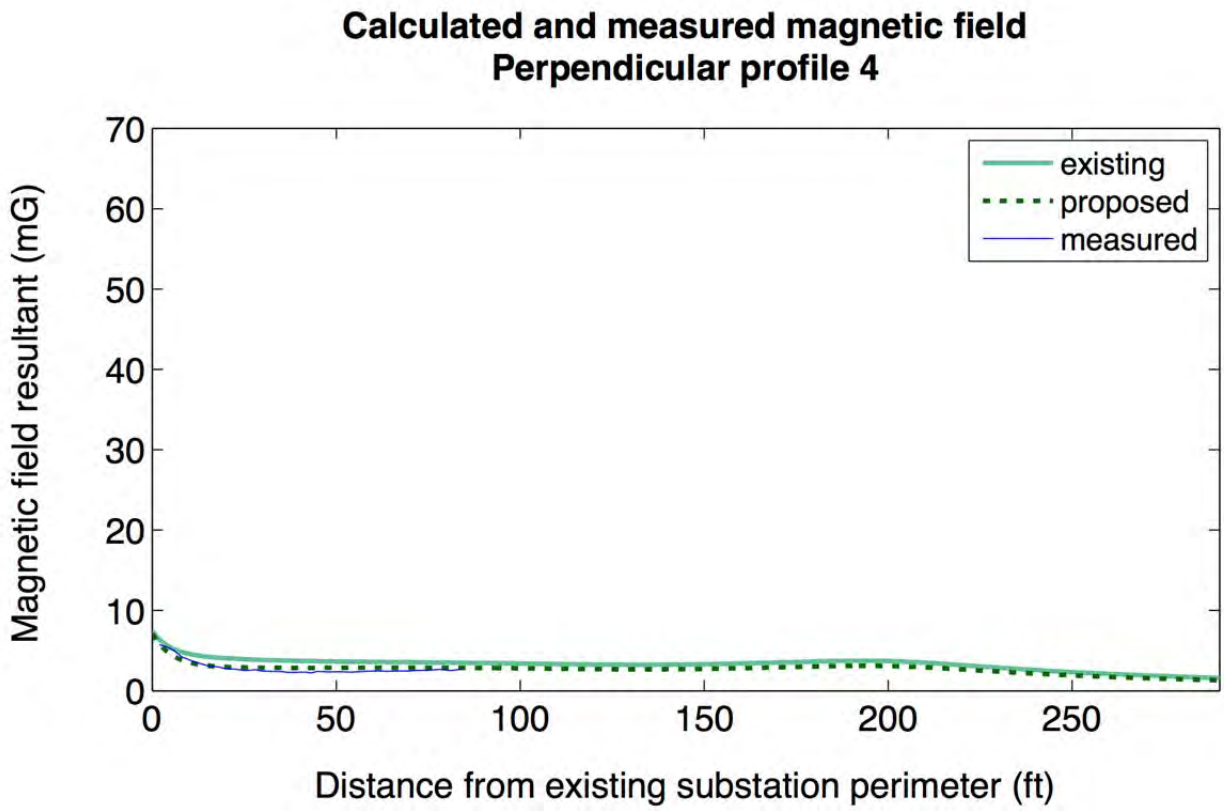

Figure 14. Calculated and measured magnetic-field levels along Profile 4.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

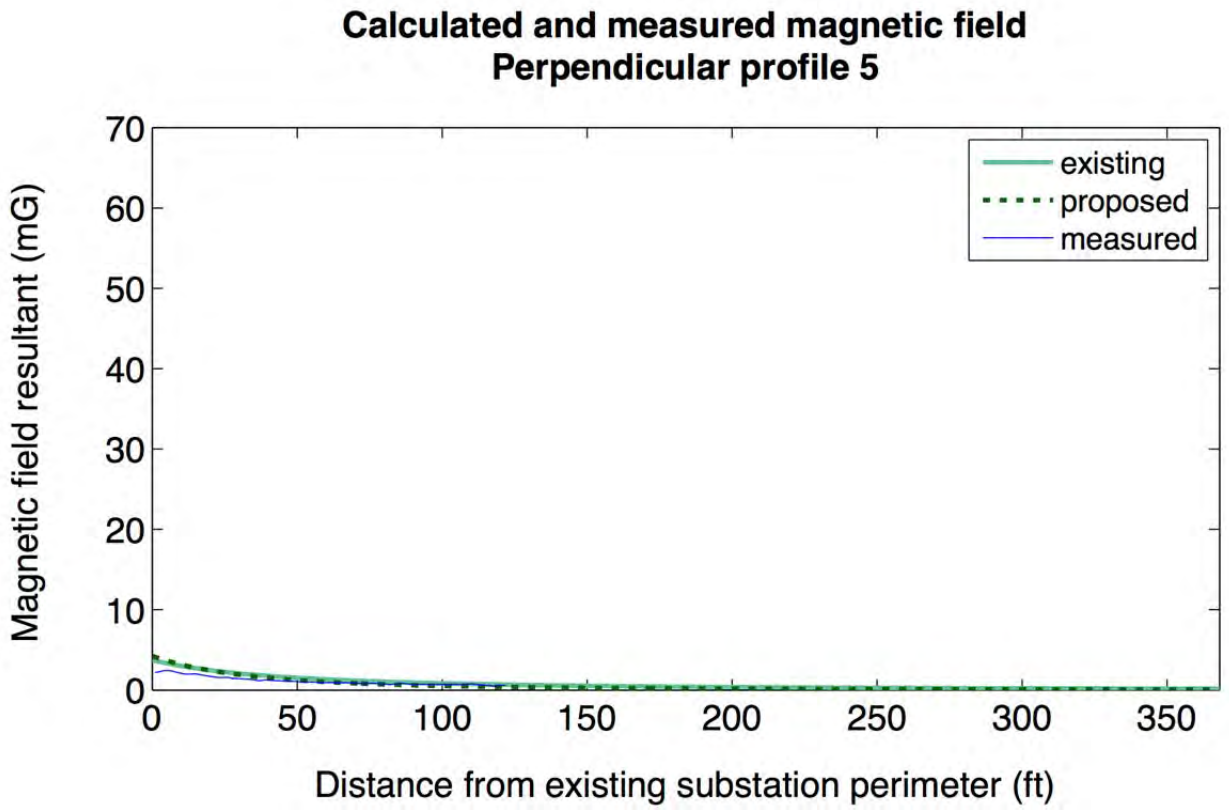

Figure 15. Calculated and measured magnetic-field levels along Profile 5.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

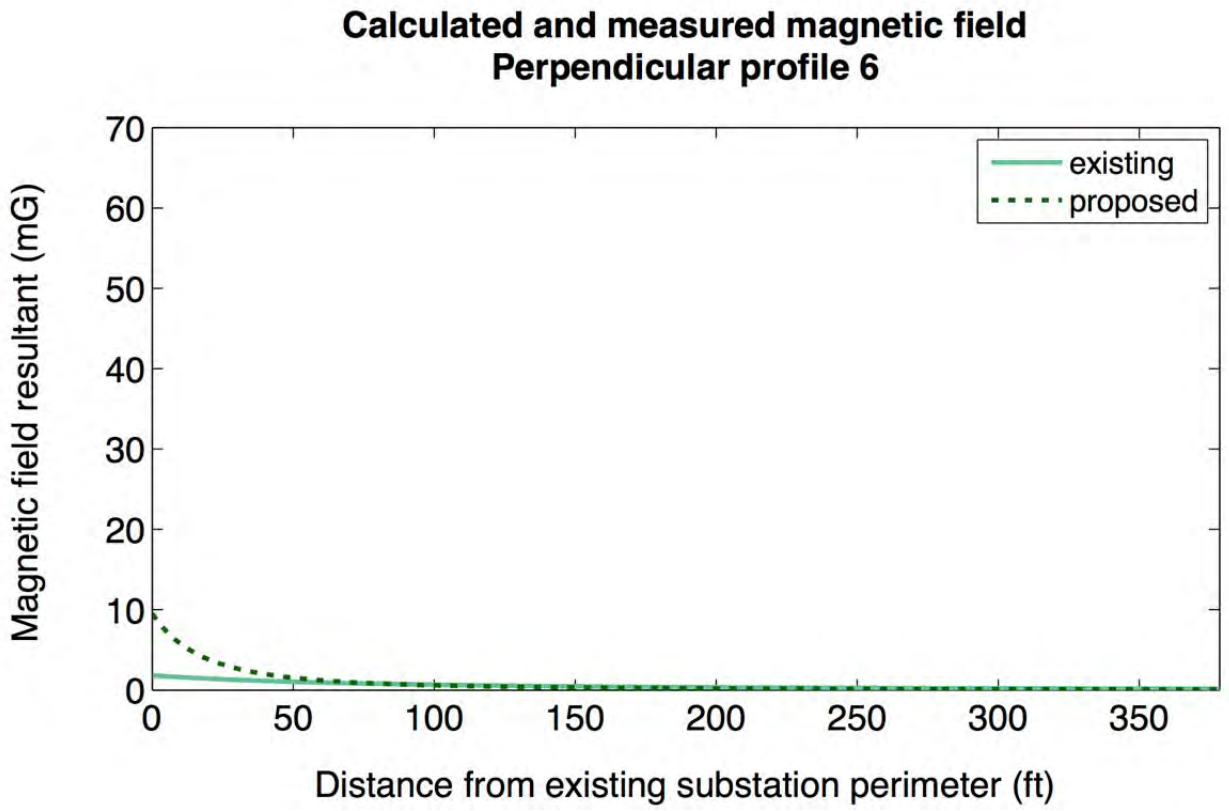

Figure 16. Calculated and measured magnetic-field levels along Profile 6.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

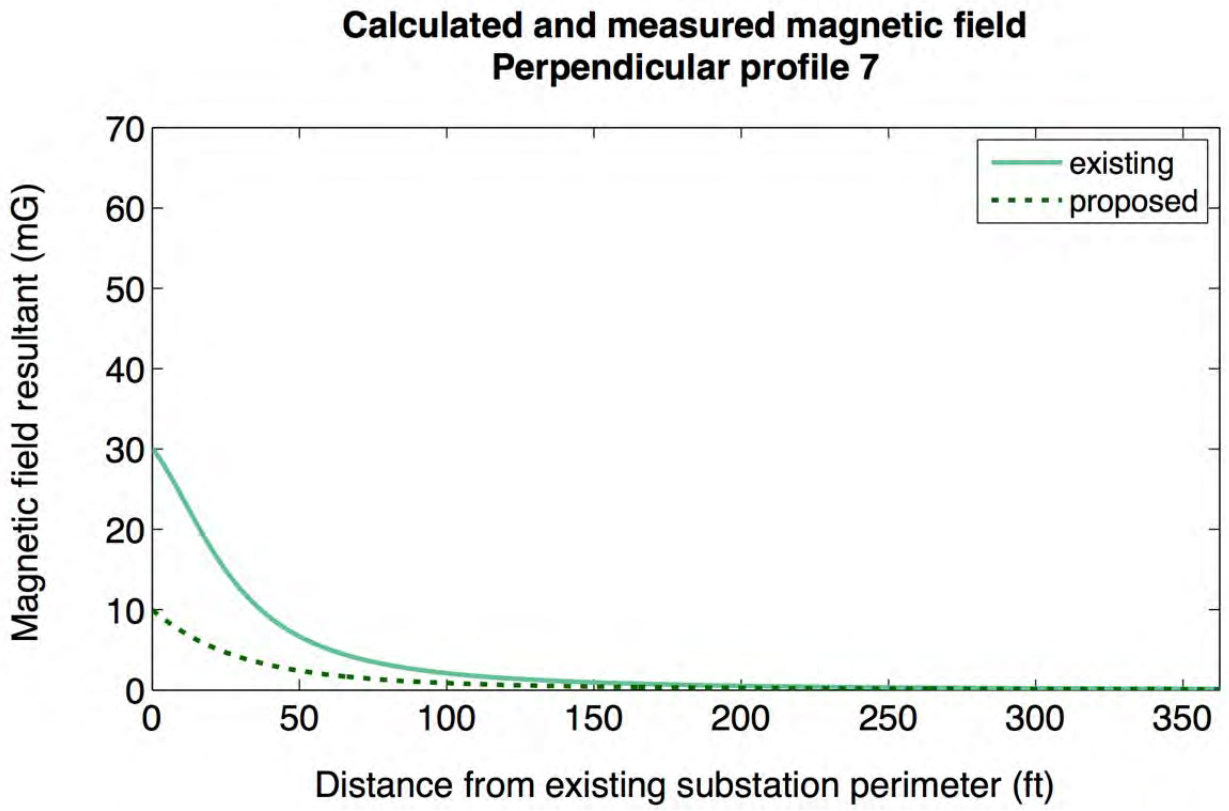

Figure 17. Calculated and measured magnetic-field levels along Profile 7.

The calculated magnetic-field levels are for existing and proposed configurations of the Mix Avenue Substation under average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

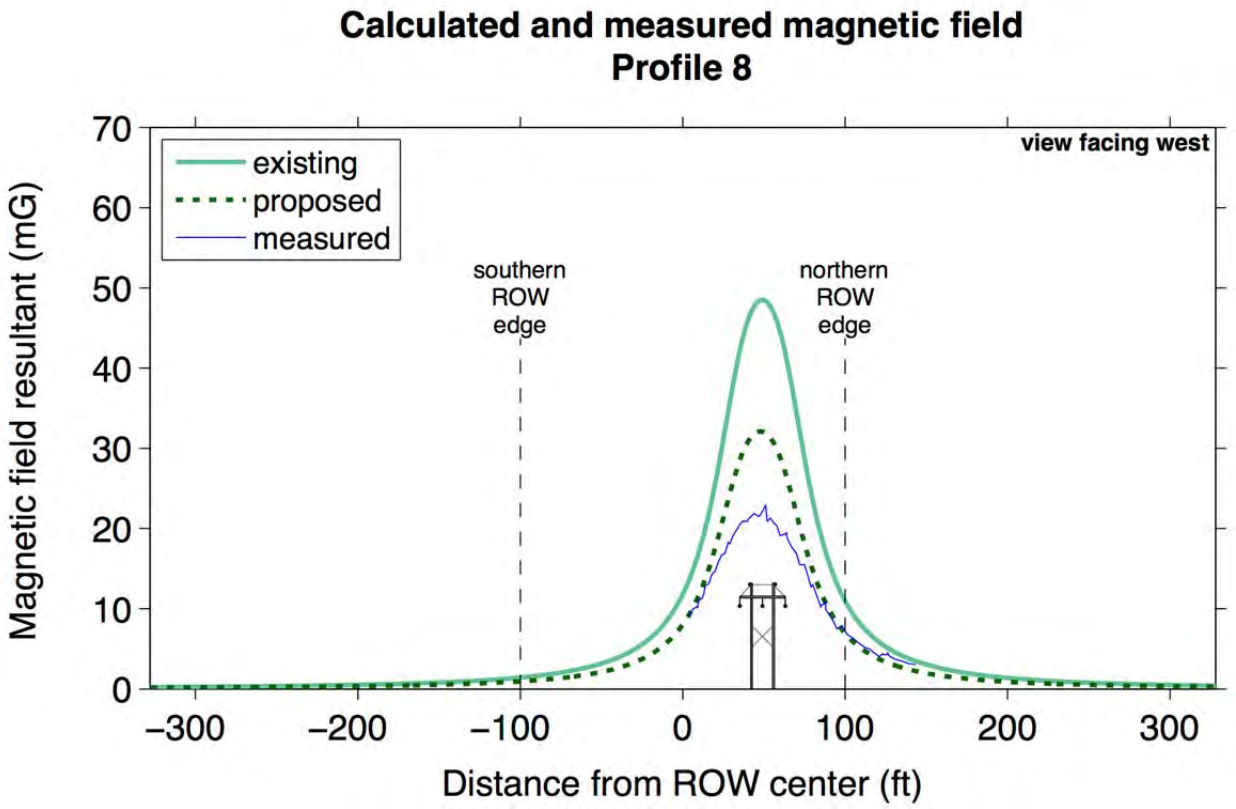

Figure 18. Calculated magnetic-field levels along Profile 8 for average-load conditions in 2022. Measured magnetic fields reflect existing substation and loading on June 30, 2015.

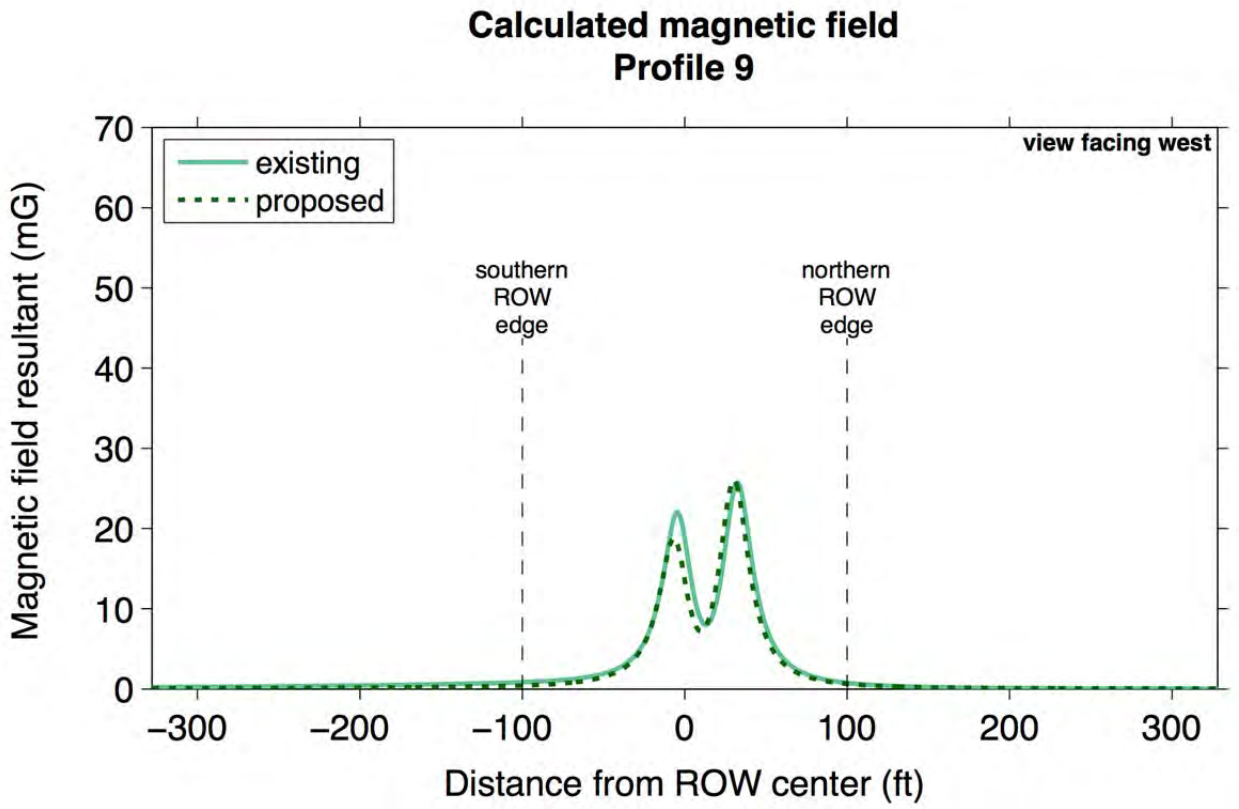

Figure 19. Calculated magnetic-field levels along Profile 9 for average-load conditions in 2022.

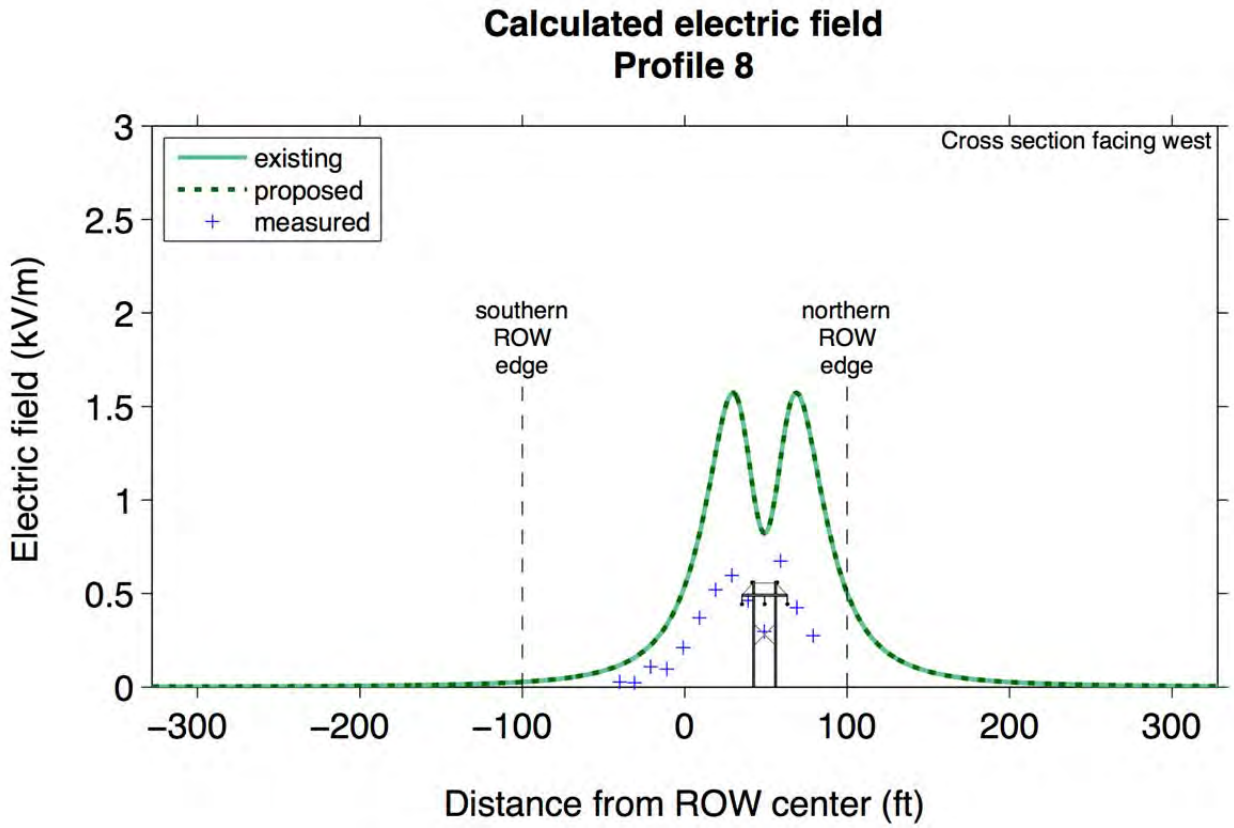

Figure 20. Calculated electric-field levels along Profile 8. Measured electric fields reflect existing substation on June 30, 2015.

Figure 21. Location of electric field-measurements.

Table 6. Summary of measured electric fields

Location (Figure 23)	Electric field (kV/m)			
	Vertical	North-South	East-West	Resultant
E1	0.021	0.01	0.01	0.03
E2	0.005	0.000	0.000	0.01
E3	0.000	0.000	0.000	0.00
E4	0.000	0.000	0.000	0.00
E5	0.000	0.000	0.000	0.00
E6	0.000	0.000	0.000	0.00
E7	0.016	0.005	0.000	0.02
E8	0.000	0.000	0.000	0.00
E9	0.000	0.000	0.000	0.00
E10	0.005	0.000	0.000	0.01
E11	0.396	0.53	0.128	0.67

Attachment F
Noise Analysis

FINAL

MIX AVENUE SUBSTATION PROJECT NOISE EVALUAITON

B&V PROJECT NO. 178470

PREPARED FOR

The United Illuminating Company

21 AUGUST 2015

BLACK & VEATCH
Building a world of difference.

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Executive Summary

The United Illuminating Company (UI) is proposing an expansion of the existing Mix Avenue Substation located at 690 Mix Avenue, Hamden, Connecticut. The expansion will include the installation of two (2) 20 MVAR three phase capacitor banks, one (1) three-phase air core reactor set, a control enclosure addition, and other non-noise related structures.

In order to characterize the existing acoustical environment surrounding the Substation site, an ambient sound level survey was conducted. The sound level survey was conducted at two (2) locations selected to evaluate current regulatory compliance along the Substation boundary. Measured ambient sound levels in the vicinity of the Substation ranged from 40 dBA to 52 dBA. During the early morning hours when the non-Substation noise sources had subsided, the measured ambient sound levels along the Substation property boundary, which included Substation noise, were as low as 40 to 45 dBA.

The Substation is subject to local regulations regarding noise emissions as specified by the Town of Hamden. Specifically, the Town of Hamden noise level standards are based upon the zoning designations of the emitting and receiving land and time of day. The Substation site and adjacent properties are currently zoned residential (R5). However, in accordance with the Town of Hamden regulations the Substation is classified as a lawfully nonconforming use within a residential zoning district and as such the Substation related sound levels should not exceed 51 dBA along the adjacent residential zoning boundaries. Based on the operating conditions at the time of the survey sound level measurements conducted along the boundary indicate that the Substation is currently compliant with the Town of Hamden noise regulations

An acoustical model was developed to predict the future Substation sound levels (i.e., after expansion) in order to evaluate future compliance with the applicable noise regulations. The primary noise sources associated with the future Substation that will remain are the three (3) existing transformers. The new expansion equipment will include two (2) 20 MVAR three phase capacitor banks, one (1) three-phase air core reactor set, and HVAC equipment associated with the control enclosure. The future Substation sound pressure levels along the adjacent residential zoning boundaries will be below 51 dBA and thus will comply with noise regulations specified by the Town of Hamden.

1.0 Introduction

The United Illuminating Company (UI) is proposing an expansion of the existing Mix Avenue Substation (Substation) located at 690 Mix Avenue, Hamden, Connecticut. The major existing substation equipment includes three (3) transformers (which will remain in service) and ancillary control enclosures. Based on available design information and drawings, the expansion will include the installation of two (2) 20 MVAR three phase capacitor banks, one (1) three-phase air core reactor set, a control enclosure addition, and other non-noise related structures. For reference an aerial view of the existing Substation and surrounding vicinity is shown in Figure 1-1.

In support of the Substation expansion, a project noise evaluation has been conducted to address the following questions:

- *What are the current existing ambient sound levels in the vicinity of the Substation?*
- *What noise regulations are applicable to the Substation?*
- *Is the current Substation compliant with the applicable noise regulations?*
- *What are the expected environmental noise emissions associated with the future Substation?*
- *What (if any) noise mitigation measures are anticipated to be necessary for the future Substation to support compliance with the applicable noise regulations?*

Figure 1-1 Aerial view of the Substation site and surrounding properties

2.0 Existing Acoustical Environment

An ambient sound level survey was conducted in order to characterize the existing acoustical environment in the area surrounding the existing Substation and to evaluate current regulatory compliance. This section describes the results of the survey and the nature of the existing acoustical environment.

2.1 SUBSTATION OPERATING CONDITIONS

Substation operating conditions and transformer loading fluctuates based on seasonal changes. During the survey, the Substation operation could be characterized as normal, steady state conditions typical of spring operation.

2.2 SURVEY PROCEDURE AND CONDITIONS

The ambient sound level survey was conducted March 30 through April 1, 2015. The survey procedure was based on relevant portions of general industry standards including, but not limited to, ANSI S1.13, ANSI S12.9, and ANSI S12.18. Sound level measurements were conducted using Type 1 sound level meters that meet the requirements of ANSI S1.4. The sound level meters were field calibrated immediately before and after each measurement period and the maximum variation was ±0.2 dB. All equipment had been laboratory calibrated within the last 12 months. A list of the measurement equipment utilized during the survey and copies of corresponding calibration certificates are included in Appendix A.

During the hours of the survey, meteorological conditions were suitable for environmental noise monitoring. Temperatures ranged from approximately 33 to 51°F and skies were generally clear. Wind speeds were calm ranging from 0 to 1 mph. The temperature, humidity, and wind speed trends during the hours of the ambient sound level survey are detailed in Appendix B.

In order to effectively quantify and qualify the existing daily sound levels surrounding the Substation, the ambient survey included continuous sound level monitoring and short-term (attended) sound level measurements. Noise monitoring locations (NML's) were selected to evaluate current regulatory compliance along the Substation boundary. Geographic coordinates and the location of each measurement are summarized in Table 2-1 and identified on Figure 2-1.

Several sound level metrics were used to quantify the fluctuating environmental noise. These metrics included the L_{10}, L_{50}, and L_{90} sound levels. The L_{90} sound level is generally considered representative of the residual or background sound level (i.e., without discrete noise events such as occasional traffic, aircraft, etc.), the L_{50} sound level is considered the median sound level, and the L_{10} sound level is generally considered the intrusive sound level (i.e., with the occasional discrete events such as traffic, aircraft, etc.). For a more detailed discussion regarding the acoustical terminology referenced within this report please refer to Appendix C.

Table 2-1 Nosie Measurement Locations (NMLs)

MEASUREMENT LOCATION	UTM COORDINATES ZONE 18 (m E/m N)	LOCATION DESCRIPTION	TYPE OF MONITORING
NML1	673610 / 4582191	North Substation fence line approx. 250 feet west of Mix Ave.	Continuous and Short-term
NML2	673584 / 4582137	South Substation fence line approx. 250 feet west of Mix Ave.	Continuous and Short-term

Figure 2-1 Noise measurement locations (NMLs)

2.3 SURVEY RESULTS

Continuous sound levels were monitored at both measurement locations throughout the survey period. Short-term, 10- to 20-minute measurements were conducted periodically at both NMLs in order to qualify the existing overall conditions and quantify the existing spectral conditions during various daytime and nighttime hours. The following sections detail the survey results at each measurement location.

2.3.1 NML1: Substation North Boundary

Sound levels were measured at NML1 to assess the existing Substation's acoustical contribution along the north property boundary and to evaluate the current regulatory status of the Substation. The monitoring results are detailed in Figure 2-2 and provide an indication of the daily sound level trends. The background sound levels (L_{90}) ranged from 41 dBA to 50 dBA during the daytime hours (7:00 AM to 9:00 PM) and 40 dBA to 50 dBA during the nighttime hours (9:00 PM to 7:00 AM). The cyclical on/off nature of the substation HVAC equipment is evident in the fluctuation of the L_{50} sound levels shown in Figure 2-2.

It is important to note that the L_{90} sound levels represent the background conditions without the influence of discrete events such as dogs barking, aircraft flyovers, etc. The L_{10} sound levels, shown in Figure 2-2, are generally representative of the higher sound levels that occurred during noisy discrete events.

Short-term sound levels were also measured at NML1 during both daytime and nighttime hours and are shown in Figure 2-3. The short-term measurements are consistent with the continuous monitoring results. Influential noise sources observed during the short-term measurements included traffic on Mix Avenue, air traffic, traffic into/out-of the neighboring residential complexes, and birds. Noise from the existing Substation transformers and HVAC equipment was audible at this location. Additionally, a tonal characteristic from the nearby transformer was observed and can be seen in Figure 2-3 as a peak in the 125 Hz one-third octave band center frequency.

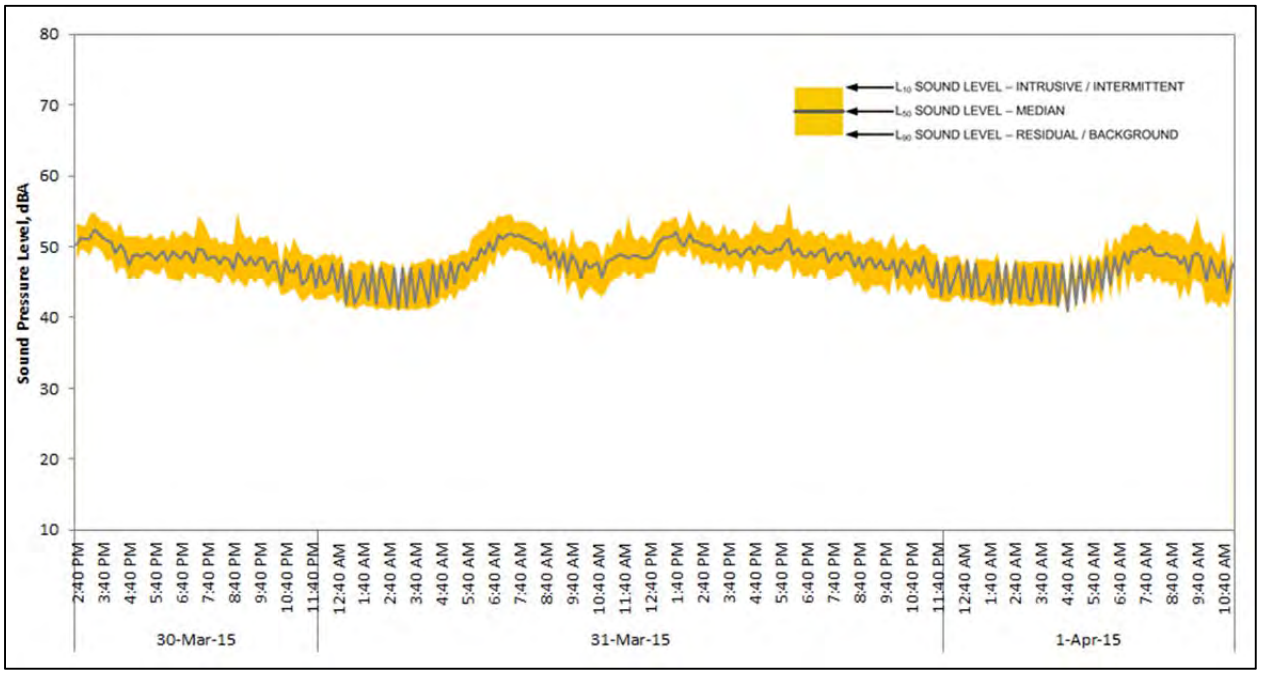


Figure 2-2 NML1 continuous monitoring results (10 min measurement interval).

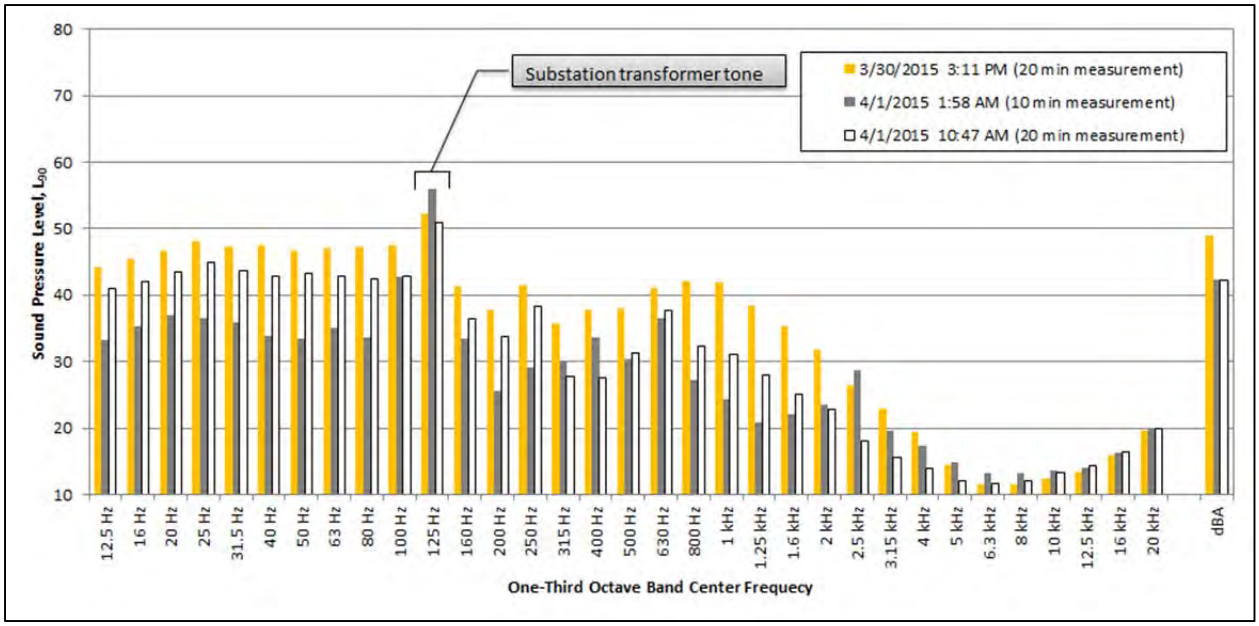


Figure 2-3 NML1 short-term measurement results (L_{90})

2.3.2 NML2: Substation South Boundary

Sound levels were measured at NML2 to assess the Substation's acoustical contribution along the southern boundary and to evaluate the current regulatory status of the facility. The 24-hour monitoring results are detailed in Figure 2-4 and provide an indication of the daily sound level trends. The background sound levels (L_{90}) ranged from 43 dBA to 52 dBA during the daytime hours (7:00 AM to 9:00 PM) and 45 dBA to 48 dBA during the nighttime hours (9:00 PM to 7:00 AM).

It is important to note that the L_{90} sound levels represent the background conditions without the influence of discrete events such as dogs barking, aircraft flyovers, etc. The L_{10} sound levels, shown in Figure 2-4, are generally representative of the higher sound levels that occurred during noisy discrete events.

Short-term sound levels were also measured at NML2 during both daytime and nighttime hours and are shown in Figure 2-5. The short-term measurements are consistent with the continuous monitoring results. Influential noise sources observed during the short-term measurements included traffic on Mix Avenue, air traffic, traffic into/out-of the neighboring residential complexes, insects, and birds. Noise from the Substation transformers was audible at this location. Additionally, a tonal characteristic from the Substation transformers was observed and can be seen in Figure 2-5 as a peak in the 125 Hz one-third octave band center frequency.

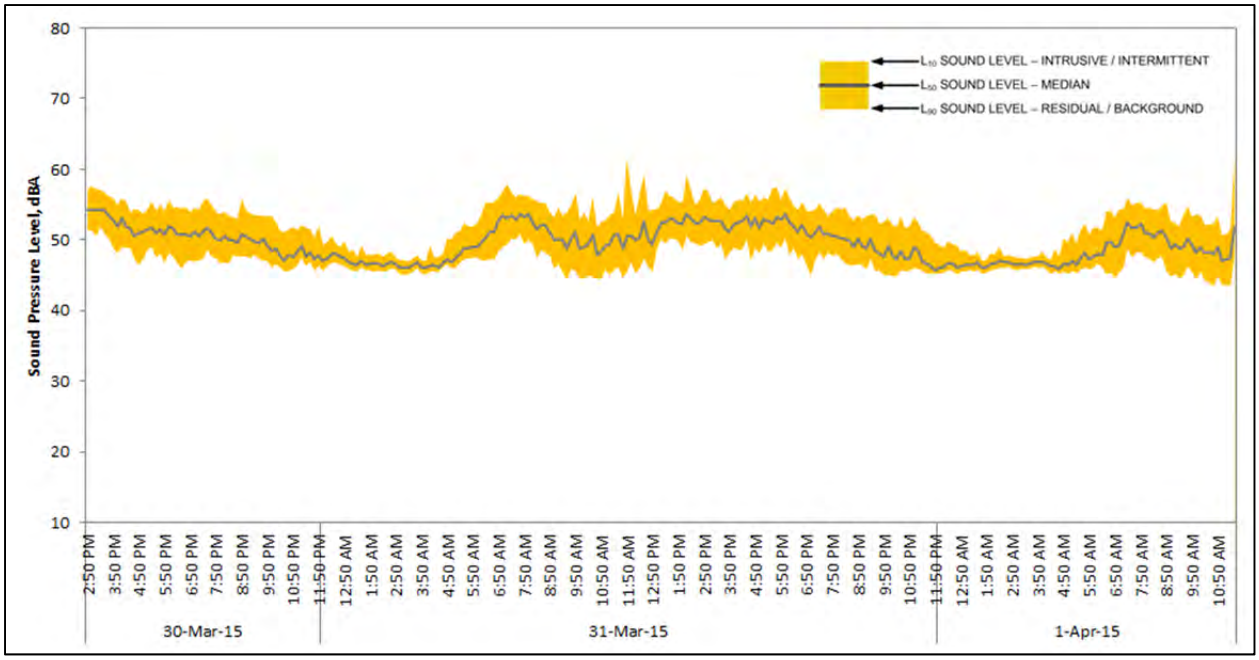


Figure 2-4 NML2 continuous monitoring results (10 min measurement interval).

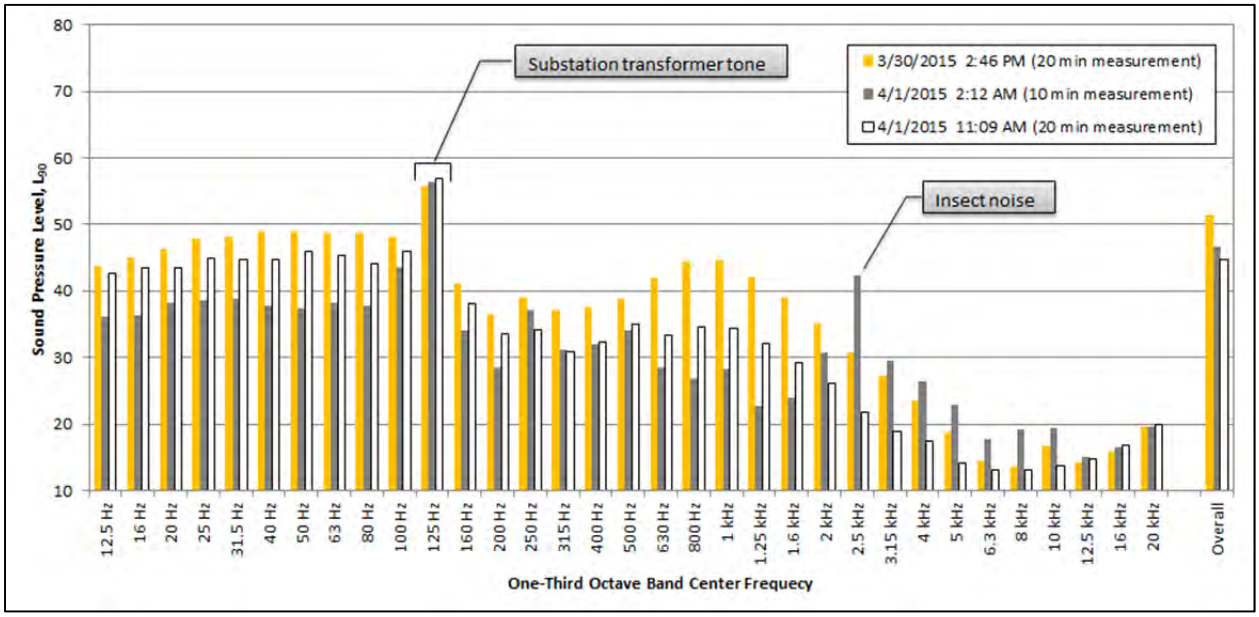


Figure 2-5 NML2 short-term measurement results (L_{90})

2.4 SURVEY RESULTS SUMMARY

As summarized in Table 2-2, the existing ambient sound levels in the vicinity of the Substation ranged from 40 dBA to 52 dBA at the two survey locations. In general, the existing ambient conditions are influenced by traffic on Mix Avenue, air traffic, traffic into/out-of the neighboring residential complexes, insects, birds, and noise from existing Substation transformers and HVAC equipment.

Table 2-2 Summary of Survey Results

LOCATION	RANGE OF DAYTIME BACKGROUND SOUND LEVELS (10 min L_{90}), dBA	RANGE OF NIGHTTIME BACKGROUND SOUND LEVELS (10 min L_{90}), dBA	OBSERVED NOISE SOURCES
NML1	41 to 50	40 to 50	Traffic on Mix Avenue, air traffic, traffic into/out-of the neighboring residential complexes, birds, and Substation transformers and HVAC equipment
NML2	43 to 52	45 to 48	Traffic on Mix Avenue, air traffic, traffic into/out-of the neighboring residential complexes, insects, birds, and Substation transformers

3.0 Applicable Noise Regulations

Regulations, standards, and guidelines related to environmental noise emissions were investigated and reviewed to determine applicability to the Substation. The following sections summarize the Town of Hamden noise regulations and evaluates Substations the current regulatory status.

3.1 TOWN OF HAMDEN

The Town of Hamden identifies noise level standards in Chapter 101 of the Town Code of Ordinances (http://www.amlegal.com/hamden_ct/, effective July 1, 2013). The Town of Hamden noise level standards are specified for the zoning designations of the emitting and receiving land and time of day. For parcels with a use that is lawfully nonconforming to the designated zoning district regulations, the noise emission limits are based upon the district for the nonconforming use. Referencing the Town of Hamden zoning map dated July 13, 2014 (http://www.hamden.com) the Substation site and adjacent properties are currently zoned residential (R5). Since the Substation can be classified as a lawfully nonconforming use within a residential zoning district, the Substation property will be classified based on the nonconforming use, which aligns with a manufacturing zoning district. For reference, daytime hours are defined as the hours between 7:00 AM to 9:00 PM Monday through Saturday and 8:00 AM to 9:00 PM on Sundays. Based upon these zoning designations and the noise level standards in specified in Chapter 101 of the Town Code of Ordinances, the noise limits and corresponding zone boundaries adjacent to the Substation are shown in Figure 3-1.

3.2 NOISE REGULATION APPLICABILITY

Since the Substation operates during both daytime and nighttime hours, it will need to comply with the more restrictive nighttime limit. Therefore, Substation related sound levels should not exceed 51 dBA along the adjacent residential zoning boundaries shown in Figure 3-1.

3.3 CURRENT REGULATORY COMPLAINCE

As previously discussed, sound level measurements conducted along the boundary locations to the north (NML1) and south (NML2) were conducted to assess the Substation's acoustical contribution and to evaluate the current regulatory status of the facility. During the early morning hours when non-Substation noise sources such as traffic had subsided, the measured ambient sound levels, which included Substation noise, were as low as 40 dBA and 45 dBA at NML1 and NML2, respectively. Therefore, based on the operating conditions at the time of the survey the existing Substation can be deemed compliant with the Town of Hamden noise regulations.

Figure 3-1 Substation noise limits per the Town of Hamden

4.0 Future Substation Noise Emissions

The environmental noise emissions from the future Substation (after expansion) have been predicted in order to evaluate compliance with the applicable noise regulations. This section discusses noise emissions solely from the Substation and considers equipment currently installed that will remain in service and new equipment associated with the Substation expansion. The Substation noise emissions are based on existing transformer sound levels provided by the manufacturer (Appendix D) and the site arrangement drawing provided by the substation design team (Appendix E).

4.1 PROJECT NOISE MODELING

The environmental noise emissions associated with the Substation have been modeled using noise prediction software (DataKustik Cadna/A version 4.5.151), which implements the calculation methodologies specified in ISO 9613. The model simulated the outdoor propagation of sound from each noise source and accounted for sound wave divergence, atmospheric and ground sound absorption, and sound shielding due to interceding barriers, buildings, and terrain. A database was developed which specified the location, and octave-band sound levels of each noise source. A receptor grid was specified which covered the entire area of interest. The sound pressure levels within the receptor grid were calculated based on the octave-band sound level contribution of each noise source. Finally, a noise contour plot was produced based on the overall sound pressure levels within the receptor grid, including at specific receptor locations.

To account for increased transformer sound levels associated with peak loading conditions, modeling was based on normal operation consistent with Summer months which included noise contributions from the transformer cooling fans. The Substation noise model did not consider any abnormal or upset operating conditions. Various structures associated with the Substation were included in the model to account for their shielding effect.

4.2 SUBSTATION EQUIPMENT SPECIFICATIONS

The primary noise sources associated with the future Substation will be the three (3) existing transformers. New equipment to be installed as part of the Substation expansion will include two (2) 20 MVAR three phase capacitor banks, one (1) three-phase air core reactor set, and HVAC equipment associated with the control enclosure addition. Existing and expansion equipment sound levels used to develop the acoustical model are shown in Table 4-1 and are based on manufacturer submitted data and in-house and empirical data from similar equipment.

Please note that any deviations from the current site arrangement, the assumed equipment specifications, or the acoustical design elements outlined herein, may affect the overall Substation noise emissions and thus the modeling results presented below. If such design or specification changes occur, the Substation noise emissions should be re-evaluated to determine the impacts of the proposed design change.

Table 4-1 Substation Equipment Sound Levels

EQUIPMENT	QTY	EQUIPMENT SOUND LEVELS	BASIS
GE Power Transformer (existing)	1	68 dBA per IEEE C57.12.90 9 (FOA, fans operation)	GE Power
Pennsylvania Power Transformer (existing)	1	68 dBA per IEEE C57.12.90 9 (FOA, fans operation)	Pennsylvania Power/ In-house[1]
Magnetek Power Transformer (existing)	1	65 dBA per IEEE C57.12.90 9 (FOA, fans operation)	Magnetek Power
20 MVAR Three Phase Capacitor Bank	2	56 dBA at 3 ft	In-house[1]
Three Phase Air Core Reactor	1	53 dBA at 3 ft	In-house[1]
6 Ton HVAC Unit	2	75 dBA at 3 ft	In-house[1]

Notes:
1. **In-house data is based on a combination of measured data of similar substation installations and information received from past equipment suppliers.**

4.3 REGULATORY COMPLIANCE

The calculated octave-band sound pressure levels associated with the future Substation are presented in Figure 4-1. It is important to note that the calculated noise emissions only include noise from the Substation and are exclusive of any other sound sources, including background noise. As shown, the future Substation sound pressure levels along the adjacent residential zoning boundaries are below 51 dBA and thus comply with the noise regulations specified by the Town of Hamden.

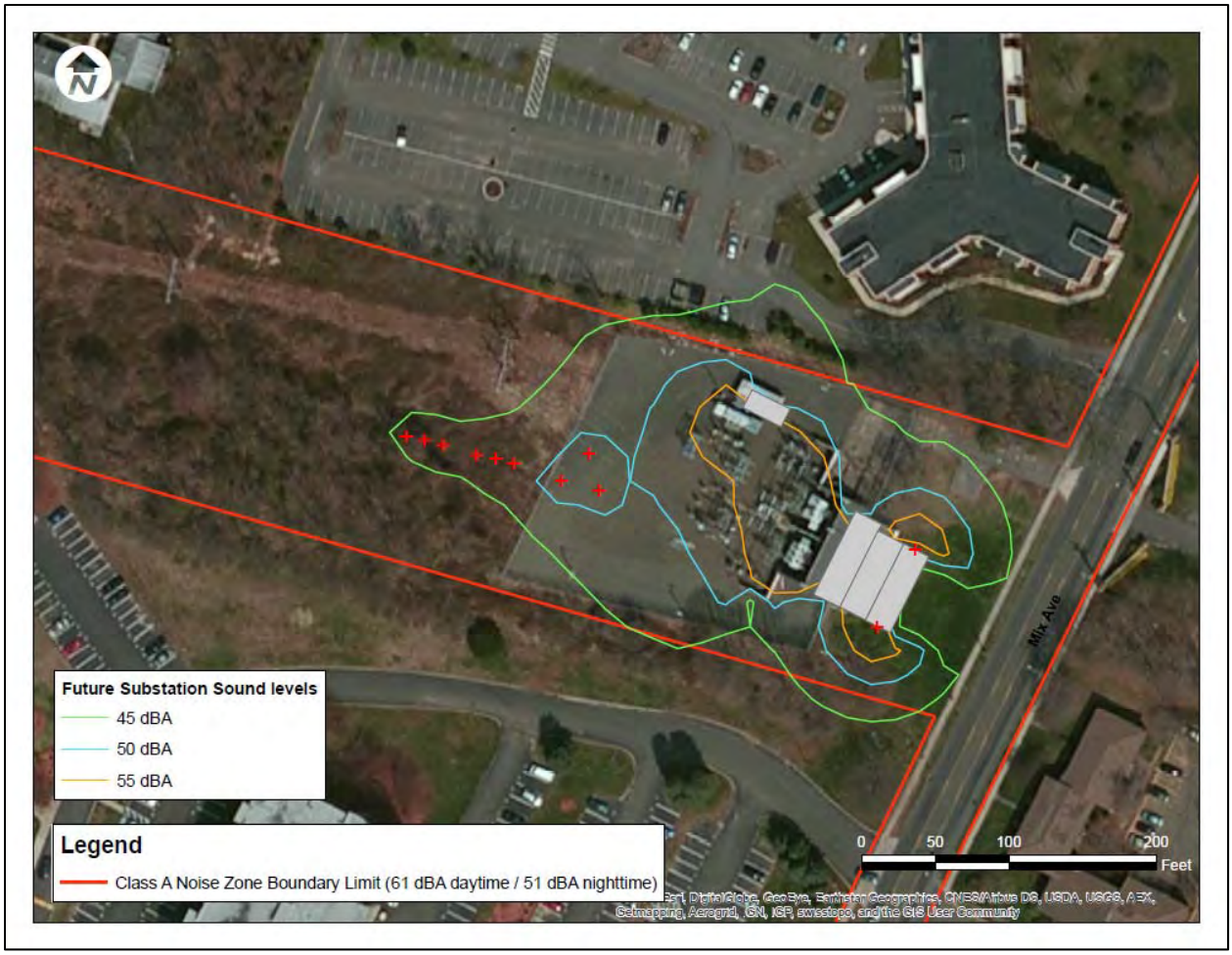
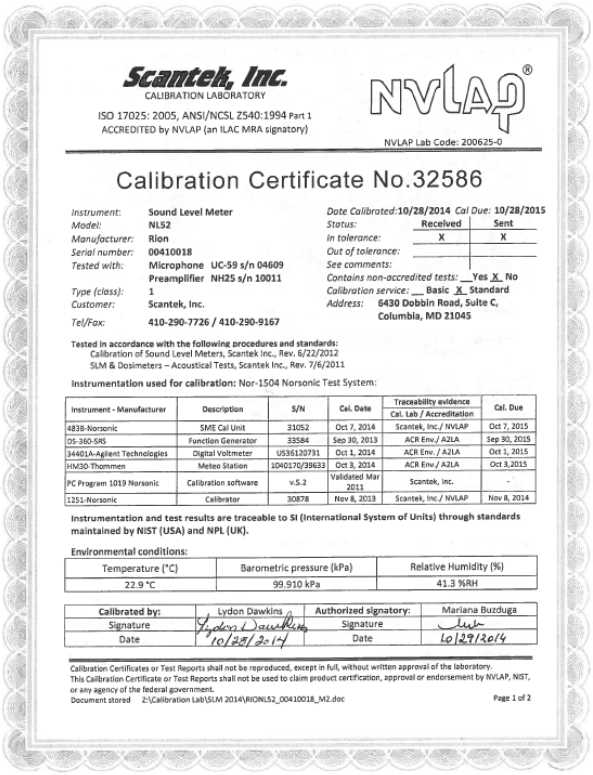


Figure 4-1 **Future Substation sound pressure levels, normal operation consistent with summer months.**

Appendix A. Ambient Survey Test Equipment

Table A-1 Ambient Survey Test Equipment

MODEL	SERIAL NUMBER	LAST CALIBRATION DATE
Rion Model NL-52	00410018	28 October 2014
Rion Model NL-52	01232541	16 July 2014
Rion Model NL-32	00630458	16 July 2014
CEL 177 Acoustic Calibrator	558038	15 July 2014



Scantek, Inc.
CALIBRATION LABORATORY
ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)
NVLAP Lab Code: 200625-0

Calibration Certificate No.32586

Instrument: Sound Level Meter
Model: NL52
Manufacturer: Rion
Serial number: 00410018
Tested with: Microphone UC-59 s/n 04609; Preamplifier NH25 s/n 10011
Type (class): 1
Customer: Scantek, Inc.
Tel/Fax: 410-290-7726 / 410-290-9167

Date Calibrated: 10/28/2014 Cal Due: 10/28/2015
Status: Received X; Sent X
In tolerance:
Out of tolerance:
See comments:
Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: 6430 Dobbin Road, Suite C, Columbia, MD 21045

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
4838-Norsonic	SME Cal Unit	31052	Oct 7, 2014	Scantek, Inc./ NVLAP	Oct 7, 2015
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 1, 2014	ACR Env. / A2LA	Oct 1, 2015
HM30-Thommen	Meteo Station	1040170/39633	Oct 3, 2014	ACR Env./ A2LA	Oct 3,2015
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc./ NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.9 °C	99.910 kPa	41.3 %RH

Calibrated by:	Lydon Dawkins	Authorized signatory:	Mariana Buzduga
Signature	Lydon Dawkins	Signature	
Date	10/28/2014	Date	10/29/2014

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Page 1 of 2

Scantek, Inc.
CALIBRATION LABORATORY
ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)
NVLAP Lab Code: 200625-0

Calibration Certificate No.31755

Instrument: Sound Level Meter
Model: NL52/EX
Manufacturer: Rion
Serial number: 01232541
Tested with: Microphone UC-59 s/n 05979; Preamplifier NH25 s/n 32569
Type (class): 1
Customer: Black & Veatch
Tel/Fax: 913-458-7823 / 913-458-7823

Date Calibrated: 7/16/2014 Cal Due: 7/16/2015
Status: Received X; Sent X
In tolerance:
Out of tolerance:
See comments:
Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: 11401 Lamar Avenue, Overland Park, KS 66211

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
4838-Norsonic	SME Cal Unit	31052	Oct 7, 2013	Scantek, Inc./ NVLAP	Oct 7, 2014
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2014
HM30-Thommen	Meteo Station	1040170/39633	Sep 30,2013	ACR Env./ A2LA	Sep 30, 2014
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc./ NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.7 °C	99.630 kPa	52.0 %RH

Calibrated by:	Lydon Dawkins	Authorized signatory:	Valeriia Buzduga
Signature	Lydon Dawkins	Signature	
Date	7/16/2014	Date	7/21/2014

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Scantek, Inc.
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ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)
NVLAP Lab Code: 200625-0

Calibration Certificate No.31752

Instrument:	**Sound Level Meter**	*Date Calibrated:* **7/16/2014**	*Cal Due:* **7/16/2015**
Model:	**NL32**	*Status:*	**Received** / **Sent**
Manufacturer:	**Rion**	*In tolerance:*	X / X
Serial number:	**00630458**	*Out of tolerance:*	
Tested with:	**Microphone UC53A s/n 304762**	*See comments:*	
	Preamplifier NH21 s/n 08156	*Contains non-accredited tests:*	**__Yes _X_ No**
Type (class):	**1**	*Calibration service:*	**__ Basic _X_ Standard**
Customer:	**Black & Veatch**	*Address:*	**11401 Lamar Avenue**
Tel/Fax:	**913-458-7823 / 913-458-7823**		**Overland Park, KS 66211**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
4838-Norsonic	SME Cal Unit	31052	Oct 7, 2013	Scantek, Inc./ NVLAP	Oct 7, 2014
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2014
HM30-Thommen	Meteo Station	1040170/39633	Sep 30,2013	ACR Env./ A2LA	Sep 30, 2014
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc./ NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.2 °C	99.670 kPa	54.1 %RH

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Valentin Barbuga
Signature	Lydon Dawkins	Signature	
Date	7/16/2014	Date	7/21/2014

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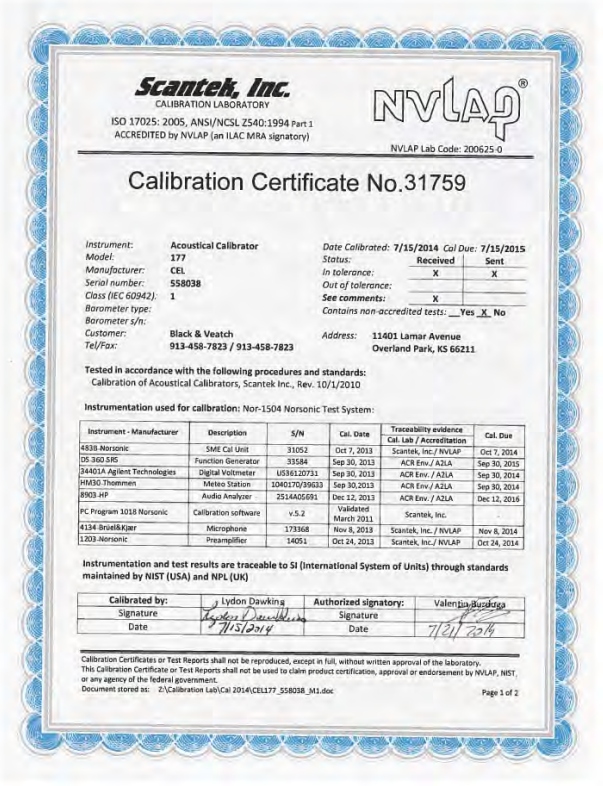
Document stored: Z:\Calibration Lab\SLM 2014\RION\32_00630458_M1.doc
Page 1 of 2



Scantek, Inc.
CALIBRATION LABORATORY
ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)
NVLAP Lab Code: 200625-0

Calibration Certificate No.31759

Instrument:	**Acoustical Calibrator**	*Date Calibrated:* **7/15/2014**	*Cal Due:* **7/15/2015**
Model:	**177**	*Status:*	**Received** / **Sent**
Manufacturer:	**CEL**	*In tolerance:*	X / X
Serial number:	**558038**	*Out of tolerance:*	
Class (IEC 60942):	**1**	***See comments:***	X
Barometer type:		*Contains non-accredited tests:*	**__Yes _X_ No**
Barometer s/n:			
Customer:	**Black & Veatch**	*Address:*	**11401 Lamar Avenue**
Tel/Fax:	**913-458-7823 / 913-458-7823**		**Overland Park, KS 66211**

Tested in accordance with the following procedures and standards:
Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
4838-Norsonic	SME Cal Unit	31052	Oct 7, 2013	Scantek, Inc./ NVLAP	Oct 7, 2014
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2014
HM30-Thommen	Meteo Station	1040170/39633	Sep 30,2013	ACR Env./ A2LA	Sep 30, 2014
8903-HP	Audio Analyzer	2514A05691	Dec 12, 2013	ACR Env. / A2LA	Dec 12, 2016
PC Program 1018 Norsonic	Calibration software	v.5.2	Validated March 2011	Scantek, Inc.	
4134-Brüel&Kjær	Microphone	173368	Nov 8, 2013	Scantek, Inc. / NVLAP	Nov 8, 2014
1203-Norsonic	Preamplifier	14051	Oct 24, 2013	Scantek, Inc./ NVLAP	Oct 24, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Valentin Barbuga
Signature	Lydon Dawkins	Signature	
Date	7/15/2014	Date	7/21/2014

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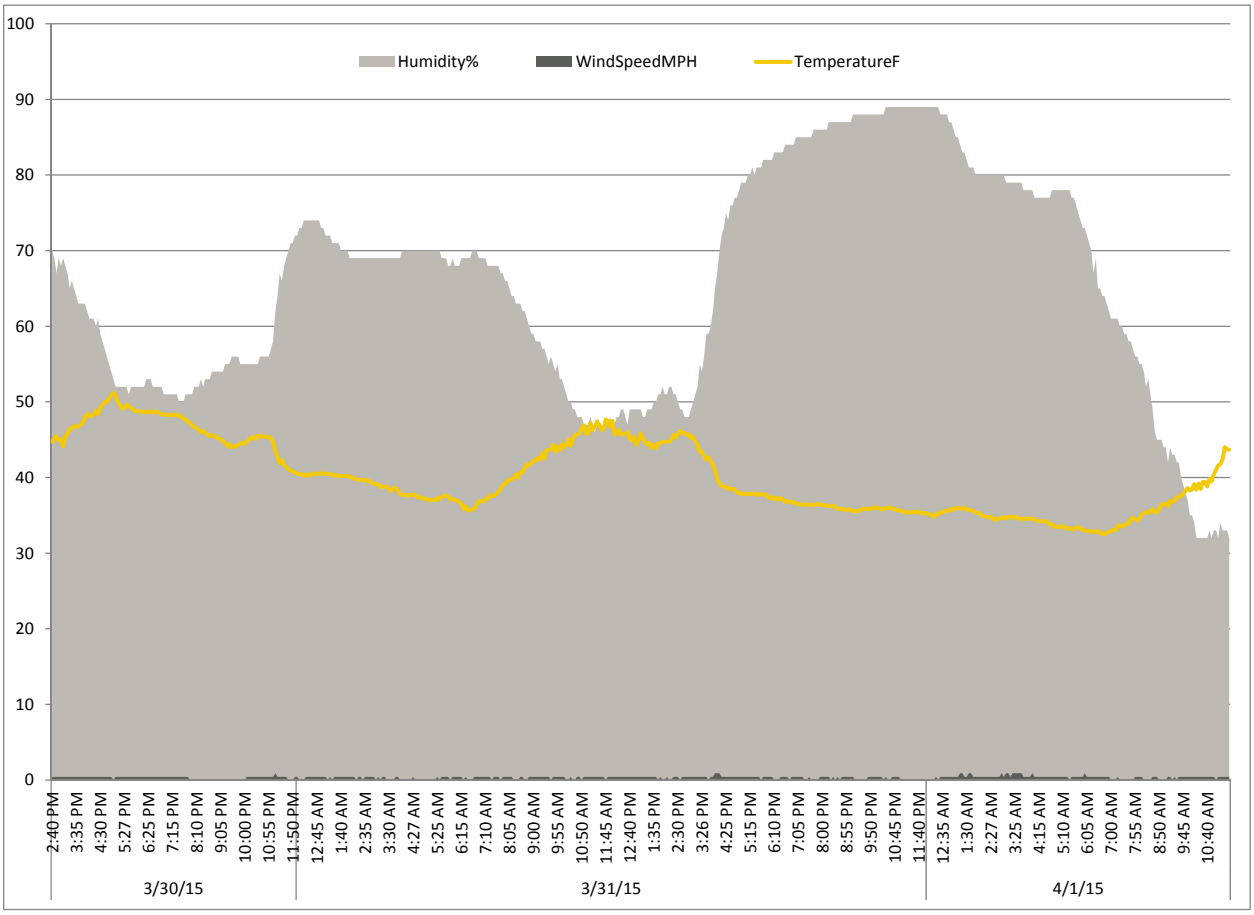
Page 1 of 2

Appendix B. Ambient Survey Meteorological Conditions



Appendix C. Acoustical Terminology

SOUND ENERGY

Sound is generated by the propagation of energy in the form of pressure waves. Being a wave phenomenon, sound is characterized by amplitude (sound level) and frequency (pitch). Sound amplitude is measured in decibels, dB. The decibel is the logarithmic ratio of a sound pressure to a reference sound pressure. Typically, 0 dB corresponds to the threshold of human hearing. A 3 dB change in a continuous broadband noise is generally considered "just barely perceptible" to the average listener. A 5 dB change is generally considered "clearly noticeable" and a 10 dB change is generally considered a doubling (or halving) of the apparent loudness (Bies and C.H. Hansen, Engineering Noise Control, 2009). For reference, the sound pressure levels and subjective loudness associated with common noise sources are shown in Table C-1.

Frequency is measured in hertz, Hz (cycles per second). Most sound sources (except those with pure tones) contain sound energy over a wide range of frequencies. In order to analyze sound energy over the range of frequencies, the sound energy is typically divided into sections called octave bands. Octave bands are identified by their center frequencies including 31.5, 63, 125, 250, 500 1000, 2000, 4000, and 8000 Hz. For more detailed analyses, narrow bands such as ⅓-octave bands or 1/12-octave bands are employed. The sum of the sound energy in all of the octave bands for a source represents the overall sound level of the source.

The normal human ear can hear frequencies ranging from 20 Hz to 20,000 Hz. At typical sound pressure levels, the human ear is more sensitive to sounds in the middle and high frequencies (1,000 to 8,000 Hz) than sounds in the low frequencies. Various weighting networks have been developed to simulate the frequency response of the human ear. The A-weighting network was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighting network emphasizes sounds in the middle to high frequencies and de-emphasizes sounds in the low frequencies. Most sound level instruments can apply these weighting networks automatically. Any sound level to which the A-weighting network has been applied is expressed in A-weighted decibels, dBA. To characterize sound that contains relatively more low frequency energy—and to approximate the ear's response to relatively high sound levels—the C-weighting network was developed. C-weighting places more equal emphasis on low and high frequencies relative to A-weighting. Any sound level to which the C-weighting network has been applied is expressed in C-weighted decibels, dBC.

SOUND LEVEL METRICS

Noise in the environment is constantly fluctuating, such as when a car drives by, a dog barks, or a plane passes overhead. Therefore, noise metrics have been developed to quantify fluctuating environmental noise levels. These metrics include the equivalent-continuous sound level and the exceedance sound levels.

The equivalent-continuous sound level, L_{eq}, is used to represent the equivalent sound pressure level over a specified time period. The L_{eq} metric is the sound level of a steady-state sound that has the same (equivalent) total energy as the time-varying sound of interest, taken over a specified time period and covering a specified set of conditions. Thus, L_{eq} is a single-value level that expresses the time-averaged total energy of a widely varying or fluctuating sound level.

The exceedance sound level, Lx, is the sound level exceeded "x" percent of the sampling period and is referred to as a statistical sound level. The most common Lx values are L_{90}, L_{50}, and L_{10}. L_{90} is the

sound level exceeded 90 percent of the sampling period. The L_{90} sound level represents the sound level without the influence of loud, transient noise sources and is therefore often referred to as the residual or background sound level (ANSI S12.9, Quantities and Procedures for Description and Measurement of Environmental Sound, 2003). The L_{50} sound level is the sound level exceeded 50 percent of the sampling period or the median sound level. The L_{10} sound level is the sound level exceeded 10 percent of the sampling period. The L_{10} sound level represents the occasional louder noises and is often referred to as the intrusive sound level. As previously discussed, the L_{90} environmental sound level typically represents the background (residual) sound level.

The variation between the L_{90}, L_{50}, and L_{10} sound levels can provide an indication of the variability of the acoustical environment. If the acoustical environment is perfectly steady, all values are identical. A large variation between the values indicates the environment experiences highly fluctuating sound levels. For instance, measurements near a roadway with frequent passing vehicles may cause a large variation in the statistical sound levels.

TYPICAL COMMUNITY SOUND LEVELS

Typical background (residual) sound levels in various types of communities are outlined in Table C-2 for reference. However, it is important to remember that each community is unique with regard to the sources of noise that contribute to the background sound levels.

HUMAN RESPONSE TO SOUND

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise will generally increase as environmental sound levels increase. However, many other factors will also influence people's response to noise. These factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the noise and those associated with it, and the predictability of the noise can also influence people's response. Response to noise varies widely from one person to another and with any particular noise, individual responses will range from "highly annoyed" to "not annoyed".

Table C-1 Typical Sound Pressure Levels Associated with Common Noise Sources

SOUND PRESSURE LEVEL, dBA	SUBJECTIVE EVALUATION	COMMON OUTDOOR ENVIRONMENT OR SOURCE	COMMON INDOOR ENVIRONMENT OR SOURCE
140	Deafening	Jet aircraft at 75 ft	
130	Threshold of pain	Jet aircraft during takeoff at a distance of 300 ft	
120	Threshold of feeling	Elevated Train	Hard rock band
110	Extremely loud	Jet flyover at 1000 ft	Inside propeller plane
100	Very loud	Power mower, motorcycle at 25 ft, auto horn at 10 ft	
90	Very loud	Propeller plane flyover at 1000 ft, noisy urban street	Full symphony or band, food blender, noisy factory
80	Moderately loud	Diesel truck (40 mph) at 50 ft	Inside auto at high speed, garbage disposal, dishwasher
70	Loud	B-757 cabin during flight	Close conversation, vacuum cleaner, electric typewriter
60	Moderate	Air-conditioner condenser at 15 ft, near highway traffic	General office
50	Quiet		Private office
40	Quiet	Farm field with light breeze, birdcalls	Soft stereo music in residence
30	Very quiet	Quiet residential neighborhood	Bedroom, average residence (without TV and stereo)
20	Just audible		Human breathing
10	Threshold of hearing		
0			

Source: Adapted by Black & Veatch from *Architectural Acoustics*, by David M. Egan (1988) and *Architectural Graphic Standards*, by Ramsey and Sleeper (1994.

Table C-2 Typical Daytime Background Sound Levels in Various Types of Communities

TYPE OF COMMUNITY	TYPICAL DAYTIME BACKGROUND SOUND PRESSURE LEVEL, dBA
Very Quiet Rural Areas	31 to 35
Quiet Suburban Residential	36 to 40
Normal Suburban Residential	41 to 45
Urban Residential	46 to 50
Noisy Urban Residential	51 to 55
Very Noisy Urban Residential	56 to 60
Adjacent Freeway or Major Airport	n/a

Source: Adapted by Black & Veatch from *Community Noise*, by the U.S. Environmental Protection Agency, (December 1971).

Appendix D. Existing Transformer Sound Levels

arch 14, 1991
CUSTOMER: United Illuminating Company
CUSTOMER ORDER NO.: NH55071A66
MAGNETEK ELECTRIC ORDER NO.: W031461

Impedance and load loss at and other than rated tap at 85 deg. C.:

Taps HV	LV	MVA	%Impedance	Load Loss Watts	Impedance Volts (V)
A	16R	24	14.44	105200	17885
C	16R	24	14.55	106600	17170
E	16R	24	15.00	110000	16820
A	N	24	14.22	-	-
B	N	24	14.21	-	-
C	N	24	14.28	-	-
D	N	24	14.44	-	-
E	N	24	14.67	-	-
A	16L*	21.6	12.76	103500	15806
C	16L*	21.6	12.78	104000	15075
E	16L*	21.6	13.06	106400	14638

*LTC Reduced Capacity

Zero Sequence Impedance Measurement at 24 MVA, C-N Tap: 14.22%.

Sound Level Test Results (dbA): (A weighted) at taps A-16R.
(Octave band sound test has been performed, results have been attached.)
Meter used: Quest Model #1800

MVA	Tested Decibels	Guaranteed Decibels
24	55.2	62
32	61.4	64
40	64.1	65

Unit passed leak test at 8 lbs. for 8 hours.

Page 8

ORM 535

PENNSYLVANIA TRANSFORMER DIVISION

McGRAW-EDISON COMPANY

Mailing Address: Box 330 — Canonsburg, Pennsylvania — L.T.C. TRANSFORMER

TRANSFORMER TEST REPORT

Customer: The United Illuminating Company

Date of Test: 4/15/65 — Customer's Order: 62412 — Our Order: C-02309-5-1

Type: OA/FA/FA — Phase: 3 — Cycles: 60 — Rise: 65°C — Taps: See N.P. Dwg. #231762 — Spec.: 10095

H. V. Volts: 116000 Delta — L. V. Volts: 13800Y/7970 — V. Volts:

KVA: 30000/40000/50000 — KVA: 30000/40000/50000 — KVA:

							Guarantees
Serial Number					C-02309-5-1		
Polarity See N.P. Dwg. #231762			Transf. Conn.:		116000 - 13800	Volts @ 30000 KVA	
W. M. Copper Loss @ Full Load 75°C					138760		
Core Loss @ 100% Voltage					32740		37000
Total Loss @ Full Load 100% Voltage					171500		177000
Core Loss @ 110% Voltage					43040		
% Exciting Current @ 100% Voltage					0.70		
% Exciting Current @ 110% Voltage					1.01		
% Impedance @ 75°C					11.48		12.00
% Resistance @ 75°C					0.463		
% Reactance @ 75°C					11.47		
% Regulation @ 100% P. F. Full Load					1.12		1.30
% Regulation @ 80% P. F. Full Load					7.65		8.00
% Efficiency @ Full Load 100% P. F.					99.43		
% Efficiency @ ¾ Load 100% P. F.					99.51		
% Efficiency @ ½ Load 100% P. F.					99.55		
% Efficiency @ ¼ Load 100% P. F.					99.45		
Total H. V. Resistance in Ohms @ 75°C (Tap "A")					7.504		
Total L. V. Resistance in Ohms @ 75°C (L.T.C. Position "N")					0.03842		
Audible Noise Level in Decibels @ OA Rating					63.2		65.0
Total Cooling Equipment Loss in Watts					8018		10000
INSULATION TESTS							
H. V. to L. V. and Core — Volts for 1 Min.					185000		185000
L. V. to Core — Volts for 1 Min.					34000		34000
Induced—Times Normal Voltage					2		2
TEMPERATURE RISE		@ 30000 KVA		@ 40000 KVA		@ 50000 KVA	
Connected: 110200 - 13800 Volts	H.V.	48.3	H.V.	55.6	H.V.	62.9	
Copper Rise Corrected to Shutdown °C	L.V.	46.9	L.V.	53.6	L.V.	60.9	65
Oil Rise °C		39.9		42.5		45.4	

Unless otherwise specified the above Tests are in accordance with the latest A. S. A. and N. E. M. A. Standards.

Remarks:

ENV. 147

Approved by: J. Zubenko, Engineer in Charge of Test

J. D. Douglass, Electrical Power Design Supervisor

Issued by: S. Zubenko — Date: May 4, 1965

S. Zubenko
caf

POWER TRANSFORMER DEPARTMENT

GENERAL ELECTRIC

PITTSFIELD, MASS.

Page #2
RTP69-227
G.E. Reqn. 302-74205
C/O # 8632
S/N D596209

Additional Test Data

Tap Impedances

Connection	KVA	% Volts
121800-13800	30000	11.28
110200-13800	30000	11.62
121800-15180	30000	11.44
116000-15180	30000	11.66
116000-12420	27000	10.33
110200-12420	27000	10.55
116000-14490	30000	11.53
116000-13866	30000	11.50
116000-13110	28500	10.90
110200-13866	30000	11.63

Additional Resistances @ 85°C

Connection	Test
121800	7.928
110200	7.168
(9) LTC Taps	0.09834
Ser. Wdg.(Sr. Tr.)	0.1322
Com. Wdg. (Sr. Tr.)	0.007355

110% Voltage		100% Voltage(LTC Pos 16R)	
No Load Loss Watts	% Excit. Current	No Load Loss Watts	% Excit. Current
34100	0.208	28000	0.180

Sound Level Test (db)

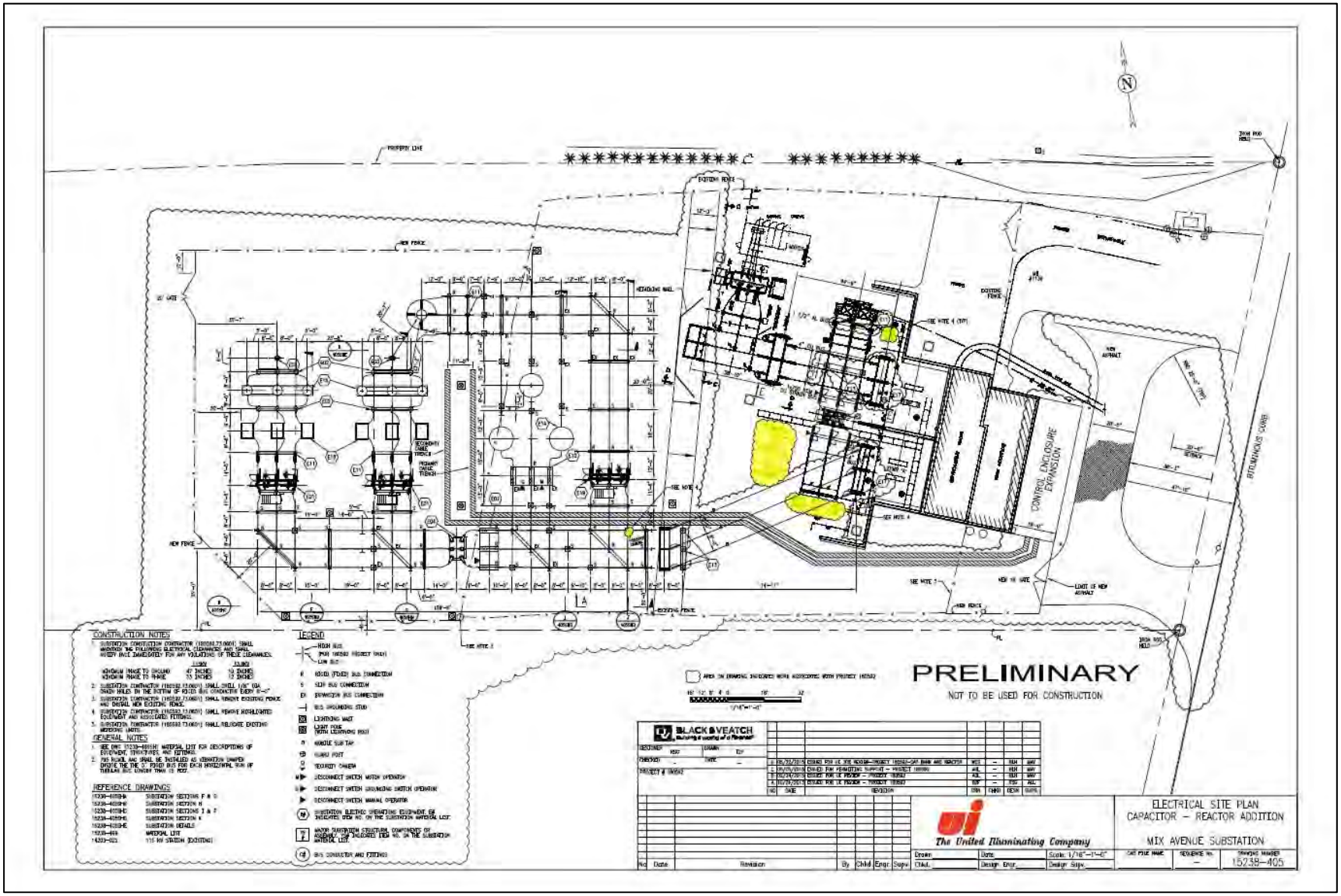
	OA	FOA
Test	58.58	66.06
NEMA	73	76
Guarantee	65	68

To check the calibration of the winding temperature indicator, apply 31.2 amperes across terminals X1 - Xo G for 30 minutes. Expect a 29.0°C rise over 25°C top oil with a .050 ohm resistance.

This value will be approximately 3°C higher in 0°C top oil and 3°C lower in 50°C top oil. The resistor should be in place for all tests.

ENV. 165

Appendix E. Site Arrangement Drawing



Attachment G
Visibility Analysis

ALL-POINTS TECHNOLOGY CORPORATION

VISIBILITY ANALYSIS

PROPOSED FACILITY MODIFICATIONS
MIX AVENUE SUBSTATION
HAMDEN, CONNECTICUT

Prepared for:

The United Illuminating Company
180 Marsh Hill Road
Orange CT 06477

Prepared by:

All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

AUGUST 2015

Project Introduction

The United Illuminating Company ("UIC") proposes to modify an existing electrical Substation at 690 Mix Avenue in Hamden, Connecticut (the "Site"). The Project requires expansion of the existing Substation yard and includes the installation of new electrical equipment and other infrastructure, including:

- Two (2) 115-kV 20 MVAR capacitor banks;
- One (1) 7.5-Ohm series reactor;
- One (1) new 115-kV gas circuit breaker;
- Three (3) 115 kV-circuit switchers;
- Buswork;
- Lightning masts; and
- Expansion of the existing control enclosure.

In addition, two (2) wooden, H-frame transmission line support structures will be replaced with new steel monopoles.

At the request of UIC, All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate potential views associated with the proposed Substation from locations within one (1) mile of the Site (the "Study Area").

Site Description and Setting

The 2.8+ acre Site is currently developed with the existing Mix Avenue Substation, originally constructed in 1970. The Site is located in a residential (R-3) zone and is bounded by Mix Avenue to the east, residential properties to the north and south, and maintained ROW to the west. Land use within the Site vicinity consists of a mix of commercial and residential development; the Wilbur Cross Highway (State Route 15) transportation corridor and Mill River extend generally north to south through the eastern portion of the Study Area.

Topography within the Study Area is generally characterized as rolling terrain, however the immediate area surrounding the Site is relatively level. Ground elevations range from approximately 40 feet AMSL to 700 feet AMSL within the Study Area.

Methodology

APT used the combination of a predictive computer model and in-field analysis to evaluate the visibility associated with the proposed facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of potential visibility throughout the entire Study Area including private properties and other areas inaccessible for direct observations. The in-field analyses included a reconnaissance of publicly-accessible locations within the Study Area to record existing conditions, verify results of the model, inventory visible and nonvisible locations associated with the existing Substation, and provide photographic documentation. A description of the procedures used in the analysis is provided below.

Computer Modeling

To conduct this assessment, a predictive computer model was developed specifically for this project using TerrSet, an image analysis program developed by Clark Labs at Clark University, to provide an estimation of potential visibility throughout the Study Area. The predictive model incorporates Project- and Study Area-specific data, including the site location, its ground elevation and the proposed facility component heights, as well as the surrounding topography, existing vegetation, and structures (which are the primary features that can block direct lines of sight).

Information used in the model included lidar[1]-based digital elevation data and customized land use data layers developed specifically for this analysis. Lidar is a remote-sensing technology that develops elevation data in meters by measuring the time it takes for laser light to return from the surface to the instrument's sensors. The varying reflectivity of objects also means that the returns can be classified based on the characteristics of the reflected light, normally into categories such as "bare earth," "vegetation," "road," or "building." The system is also designed to capture many more data points than older radar-based systems. Thus, lidar-based digital elevation models ("DEM"s) have a much finer resolution and can also identify the different features of the landscape at the time that it was captured.

Viewshed analysis using lidar data provide a much more detailed view of the potential obstacles (especially trees and buildings), and therefore the viewshed modeling produces results with many smaller areas of visibility than those produced by using radar-based DEMs. Its precision makes lidar a superior source of data, but at present it is only available for limited areas of the state. The viewshed results are also checked against the most current aerial photographs in case significant changes (a new housing development, for example) have occurred since the time the lidar data was captured.

The lidar-based DEM created for this analysis represents topographic information for the state of Connecticut that was derived through the spatial interpolation of airborne lidar-based data collected in the years 2007 through 2012 and has a horizontal resolution of approximately two (2) feet. In addition, multiple land use data layers were created from the Natural Resources Conservation Service (through the USDA) aerial photography (1-meter resolution, flown in 2012) using the image processing tools. Terrset develops light reflective classes defined by statistical analysis of individual pixels, which are then grouped based on common reflective values such that distinctions can be made automatically between deciduous and coniferous tree species, as well as grassland, impervious surface areas, surface water and other distinct land use features.

With these data inputs, the model was then queried to: determine where at least the top of the proposed lightning masts might be seen from any point(s) within the Study Area; and, similarly, where portions of the lower ground equipment might be visible. The results of the analysis are intended to provide a representation of those areas where portions of the facility **may** potentially

[1] Lidar (a word invented to mean "light radar") may also be referred to as LiDAR, an acronym for Light Detection and Ranging. It is a technology that utilized lasers to determine the distance to an object or surface. Lidar is similar to radar, but incorporates laser pulses rather than sound waves. It measures the time delay between transmission and reflection of the laser pulse.

be visible to the human eye without the aid of magnification, based on a viewer eye-height of five (5) feet above the ground and the combination of intervening topography, trees and other vegetation, and structures. The modified facility however may not necessarily be visible from all locations within those areas identified by the predictive model. It is important to note that the computer model cannot account for mass density, the height, diameter and branching variability of the trees, or the degradation of views that occur with distance. In addition, each point – or pixel - represents about one square meter in area, and thus is not predicting visibility from all viewpoints through all possible obstacles. Although large portions of the predicted viewshed may theoretically offer visibility of the facility, because of these unavoidable limitations the quality of those views may not be sufficient for the human eye to recognize the tower or discriminate it from other surrounding objects. Visibility also varies seasonally with increased, albeit obstructed, views occurring during "leaf-off" conditions. Beyond the density of woodlands found within the given Study Area, each individual tree has its own unique trunk, pole timber and branching pattern characteristics that provide varying degrees of screening in leafless conditions which cannot be precisely modeled.

Once the data layers were entered, image processing tools were applied and overlaid onto USGS topographic base maps and aerial photographs to achieve an estimate of locations where the modified ffacility componentsmight be visible.

In-Field Activities

To supplement and substantiate the results of the computer modeling efforts, APT completed in-field verification activities consisting of vehicular and pedestrian reconnaissance and photo-documentation. Information obtained from the field reconnaissance was subsequently incorporated into the computer model to refine the visibility map.

Field Reconnaissance

APT visited the Site and conducted field reconnaissance on April 24, 2015 and August 21, 2015. These events included both a pedestrian reconnaissance of the immediate Site vicinity and a drive-by inspection of the local and State roads within the Study Area. Those locations where infrastructure associated with the existing Substation could be seen were inventoried. Visual observations from the reconnaissance were also used to evaluate the results of the preliminary visibility mapping and assess any potential discrepancies in the initial modeling.

Photographic Documentation

During the field reconnaissance, APT photo-documented conditions from areas surrounding the existing Substation and Project area. Photographs were obtained from several vantage points to document the view towards the Site. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") equipment technology.

Photographic renderings of the proposed Substation expansion and modifications were generated to portray scaled representations of those portions of the facility that would be visible upon completion.

Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens, with the lens set to 50 mm.

> *"The lens that most closely approximates the view of the unaided human eye is known as the normal focal-length lens. For the 35 mm camera format, which gives a 24x36 mm image, the normal focal length is about 50 mm.[2]"*

Photographs and Renderings

Photographic renderings were generated to portray scaled representations of those portions of the modified Substation that would be visible from nearby locations. Photographs and renderings are provided in the attachment to this report. Using field data, site plan information and 3-dimension (3D) modeling software, spatially referenced models of the site area and Substation were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo renderings were then created using a combination of images generated in the 3D model and photo-rendering software programs.

For presentation purposes in this report, the photographs are produced in an approximate 7" by 10.5" format. When viewing in this format size, we believe it is important to provide the largest representational image while maintaining an accurate relation of sizes between objects within the frame of the photograph.

Visibility Analysis Results

The results of our analysis are graphically displayed on the View Shed Maps provided in the attachment to this report. The visual character of the modified Substation will not detrimentally affect the overall visual character of the Site. In general, year-round views of the Substation and associated structures would be limited to a modest geographic footprint surrounding the Site by the combination of the relatively short heights of the infrastructure and the intervening development and existing vegetation.

The tallest structures proposed for the Project are the lightning masts (55 feet tall) and replacement transmission structures (60 feet tall). The tops of these structures may be visible year-round above the trees from some locations within a total area of approximately 22 acres; primarily within 0.25 mile in all directions of the Site. To the south, views could extend a bit farther

[2] Warren, Bruce. Photography, West Publishing Company, Eagan, MN, c. 1993, (page 70).

but beyond this distance they would not be prominent because of intervening structures and vegetation. Seasonally, when the leaves are off the trees, views may extend to some locations over an additional 5± acres. The proposed new structures would create views that are similar to what is seen today.

The primary portions of the modified Substation are lower structures extending upwards of approximately 26 feet above the ground. Existing vegetation surrounding the Substation Site would obscure large portions of the Substation, even when the leaves are on the deciduous trees. The proposed expansion and modifications will not significantly change the views of the Site beyond the immediate area surrounding the facility. Year-round views may be achieved from locations within an area of approximately four (4) acres; seasonally, views could extend to locations within an additional two (2) acres. Views of the modified Substation may be gained from adjoining parking lots, but with the exception of the expanded control enclosure, views from Mix Avenue will not be much different from existing conditions.

The results of this analysis demonstrate that the proposed modifications to the Mix Avenue Substation will not have a substantial adverse visual effect on the surrounding environment.

Limitations

The viewshed maps presented in the attachment to this report depict areas where the proposed facility expansion may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of five (5) feet above the ground and intervening topography. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2012 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the facility is likely to be seen.

The simulations provide a representation of the facility under similar settings as those encountered during the time of the reconnaissance. Views of the facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on April 24, 2015 included partly to mostly cloudy skies; on August 21, 2015, the skies were mostly sunny. The photo-simulations presented in this report provide an accurate portrayal of the proposed facility modifications under comparable conditions.

ATTACHMENTS

PHOTO LOG

Legend

Photo Location | Existing Mix Avenue Substation | Proposed Mix Avenue Substation Expansion

N W E S

200 100 0 200 Feet

1 inch = 200 feet

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

EXISTING CONDITIONS

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

PROPOSED CHANGES

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

FINAL CONFIGURATION

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION
1	**BROADMOOR APARTMENTS**	**NORTHWEST**

SIMULATION

PHOTO	LOCATION	ORIENTATION
1	**BROADMOOR APARTMENTS**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION
2	**MIX AVENUE**	**NORTHWEST**

SIMULATION

PHOTO	LOCATION	ORIENTATION
2	**MIX AVENUE**	**NORTHWEST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

DOCUMENTATION

PHOTO	LOCATION	ORIENTATION
3	**SUTTON TOWERS**	**SOUTHEAST**

SIMULATION

PHOTO	LOCATION	ORIENTATION
3	**SUTTON TOWERS**	**SOUTHEAST**

ALL-POINTS TECHNOLOGY CORPORATION

The United Illuminating Company

Estimated Visibility of Lightning Masts and Replacement Transmission Structures

Estimated Visibility of Proposed Substation Expansion Ground Equipment

Viewshed Map – Aerial Base

Proposed Substation Modifications
Mix Avenue, Hamden, CT

NOTES

- Viewshed analysis conducted using Clark University's TerrSet.
- Areas of potential visibility are calculated based on facility location and heights, and Study Area topography, structures and vegetation.
- Maximum heights of proposed structures are 55 and 60 feet AGL, respectively.
- Heights of forest canopy and structures are derived from lidar data.
- Study area encompasses a one-mile radius and includes 2,010 acres of land.

DATA SOURCES

- Digital elevation model (DEM) derived from 10-foot contours obtained from official CT DEEP and CLEAR sources.
- Forest areas are generated with TerrSet (Clark University) image processing from 2012 NRCS/NAIP digital orthophotos with 1-foot pixel resolution.
- Municipal Open Space, State Recreation Areas, Trails, and Town Boundary data obtained from CT DEEP and the towns.

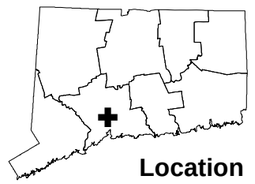
Map information field verified by APT on 4/24/2015 and 8/21/2015.

Legend

- Proposed Tower

Photo Locations

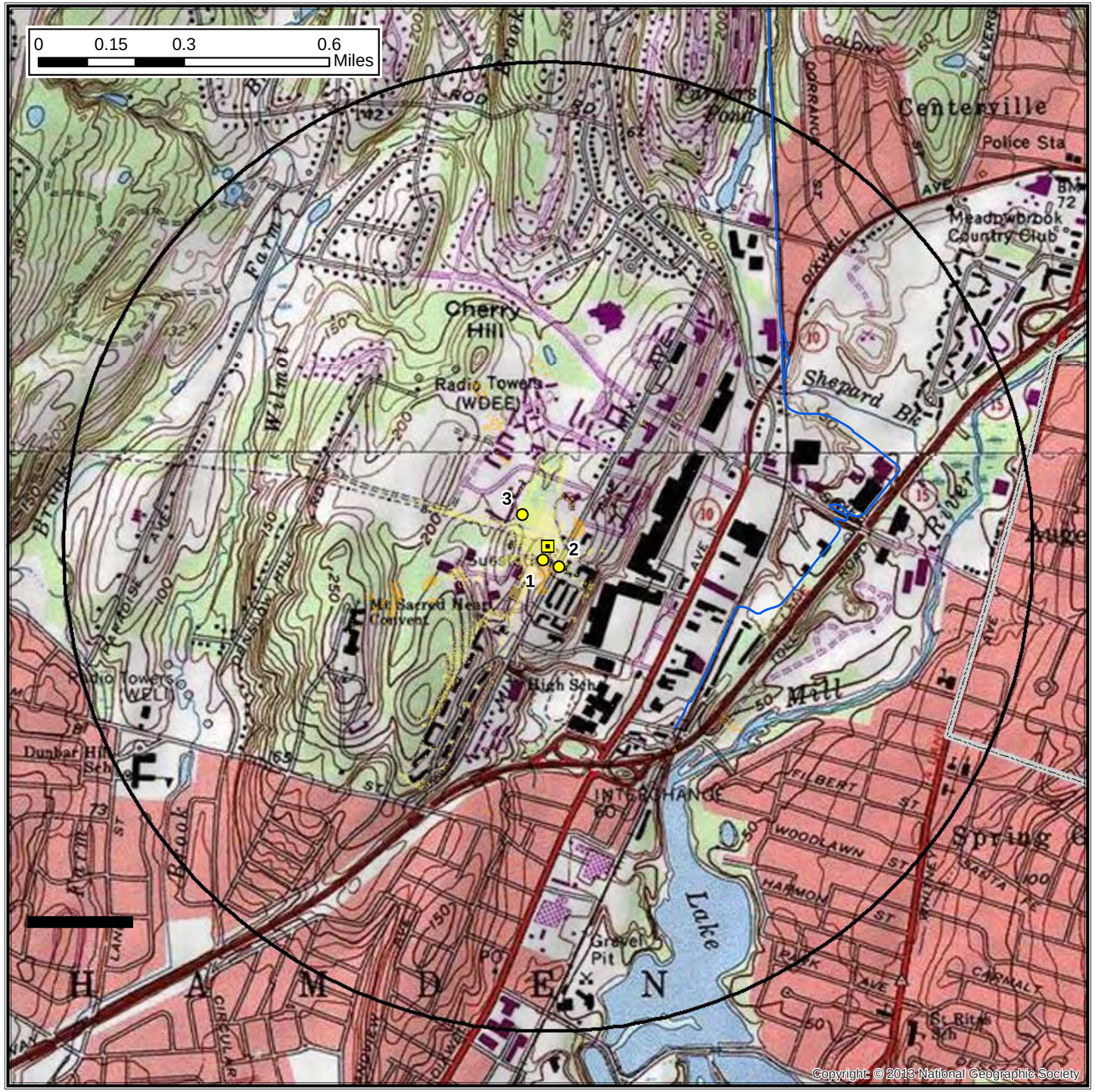
- Visible
- Trails
- Predicted Seasonal Visibility
- Predicted Year-Round Visibility
- Towns
- 1-Mile Study Area



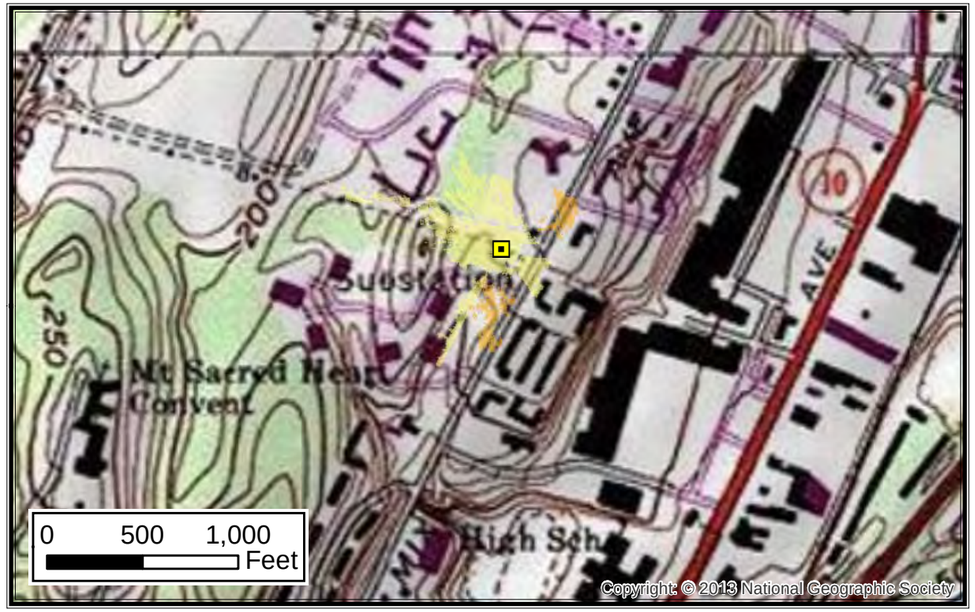
Location

ALL-POINTS TECHNOLOGY CORPORATION

Estimated Visibility of Lightning Masts and Replacement Transmission Structures



Estimated Visibility of Proposed Substation Expansion Ground Equipment



Viewshed Map – Topo Base

Proposed Substation Modifications
Mix Avenue, Hamden, CT

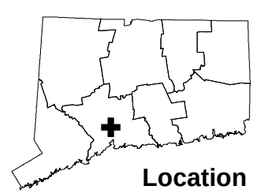
NOTES
- Viewshed analysis conducted using Clark University's TerrSet.
- Areas of potential visibility are calculated based on facility location and heights, and Study Area topography, structures and vegetation.
- Maximum heights of proposed structures are 55 and 60 feet AGL, respectively.
- Heights of forest canopy and structures are derived from lidar data.
- Study area encompasses a one-mile radius and includes 2,010 acres of land.

DATA SOURCES
- Digital elevation model (DEM) derived from 10-foot contours obtained from official CT DEEP and CLEAR sources.
- Forest areas are generated with TerrSet (Clark University) image processing from 2012 NRCS/NAIP digital orthophotos with 1-foot pixel resolution.
- Municipal Open Space, State Recreation Areas, Trails, and Town Boundary data obtained from CT DEEP and the towns.

Map information field verified by APT on 4/24/2015 and 8/21/2015.

Legend

- Proposed Tower
- **Photo Locations**
- Visible
- Trails
- Predicted Seasonal Visibility
- Predicted Year-Round Visibility
- Towns
- 1-Mile Study Area



Location

ALL-POINTS TECHNOLOGY CORPORATION

Attachment H
Letters from City Officials

TOWN OF HAMDEN
OFFICE OF THE MAYOR

Hamden Government Center
2750 Dixwell Avenue
Hamden, Connecticut 06518
Tel: (203) 287-7100
Fax: (203) 287-7101

Scott D. Jackson
Mayor

April 14, 2015

Ms. Samantha Marone
United Illuminating Company
180 Marsh Hill Road
Orange, CT 06477

Dear Ms. Marone:

I am writing to confirm information discussed in our meeting of March 27, 2015 regarding proposed upgrades to UI's Mix Avenue Substation located at 690 Mix Avenue in Hamden.

It is my understanding that the proposed upgrades to the Mix Avenue substation are necessary because the Southwest Connecticut Transmission Planning Study has indicated that under certain dispatch and line-out contingency scenarios, low voltages can occur in the Mix Avenue – Sackett corridor. In order to mitigate these low voltages, capacitor banks will need to be installed at UI's Mix Avenue substation. In addition, a series reactor is needed to restrict the flow of power in the Mix Avenue – Sackett corridor. This restriction will help keep power flow to within the thermal ratings of the corridor. The intended result of these modifications is to enhance the delivery of safe and reliable power to customers located in the Mix Avenue – Sackett corridor.

Obviously, the delivery of safe and reliable power is in the best interests of all parties. I thank you for taking the time to meet with me and encourage you to continue to keep open lines of communication with both the Town of Hamden and the neighbors of the Mix Avenue substation.

Sincerely,

Scott D. Jackson
Mayor, Town of Hamden

Attachment I
Signed Notice Letters

UI Railroad T-Line Upgrades
THE PLAN AHEAD

September 4, 2015

Mayor Curt Balzano Leng
Hamden Government Center
2750 Dixwell Avenue
Hamden, CT 06518

Dear Mayor Leng:

The United Illuminating Company ("UI") has filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI's Mix Avenue Substation Project. The project will include the installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at https://theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures

Railroad T-Line Upgrades
THE PLAN AHEAD

September 4, 2015

The Honorable Michael C. D'Agostino
State Representative – 91st Assembly
Legislative Office Building
300 Capitol Avenue
Hartford, CT 06106-1591

Dear Representative D'Agostino:

The United Illuminating Company ("UI") has filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI's Mix Avenue Substation Project. The project will include the installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

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Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at https://theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures

September 4, 2015

The Honorable Robyn A. Porter
State Representative – 94th Assembly
Legislative Office Building
300 Capitol Avenue
Hartford, CT 06106-1591

Dear Representative Porter:

The United Illuminating Company ("UI") has filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI's Mix Avenue Substation Project. The project will include the installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

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Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at https://theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures

September 4, 2015

The Honorable J. Brendan Sharkey
State Representative – 88th Assembly
Legislative Office Building
300 Capitol Avenue
Hartford, CT 06106-1591

Dear Representative Sharkey:

The United Illuminating Company ("UI") has filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI's Mix Avenue Substation Project. The project will include the installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at https://theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures

September 4, 2015

The Honorable Joe Crisco
State Senator – 17th District
Legislative Office Building
300 Capitol Avenue
Hartford, CT 06106-1591

Dear Senator Crisco:

The United Illuminating Company ("UI") has filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI's Mix Avenue Substation Project. The project will include the installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at https://theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures

September 4, 2015

The Honorable Martin M. Looney
State Senator – 11th District
Legislative Office Building
300 Capitol Avenue
Hartford, CT 06106-1591

Dear Senator Looney:

The United Illuminating Company ("UI") has filed a Petition for Declaratory Ruling ("Petition") with the Connecticut Siting Council ("Council") for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI's Mix Avenue Substation Project. The project will include the installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at https://theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures

A **UIL HOLDINGS** COMPANY

The United Illuminating Company
180 Marsh Hill Road, Orange, CT 06477-3629
203-499-2000

September 4, 2014

Dear Property Owner:

The purpose of this letter is to notify you that The United Illuminating Company ("UI") is filing a petition with the Connecticut Siting Council ("Council"), proposing modifications to UI's Mix Avenue Substation. The project will include the installation of two (2) 115 kV 20 MVAR capacitor banks and one (1) 7.5 Ohm series reactor at the facility.

Utilities that own transmission assets are required by the North American Electric Reliability Corporation ("NERC") to meet reliability and planning standards. UI, along with ISO-NE and CL&P, completed a long term (2018) reliability Needs Assessment of the Southwest Connecticut ("SWCT") area. This study indicated that capacitor banks are needed at Mix Avenue to mitigate low voltages in the Mix Avenue – Sackett corridor that occur upon certain generation dispatch and line-out contingency scenarios.

UI is required to notify town(s) and abutting property owners of its proposed activity and that town officials and abutting property owners be given 30 days to comment or express concerns to the Council. With this letter, UI is providing notice to you of its filing with the Council. You have 30 days from the date of this letter to send any comments or concerns to the Council at the following address:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Sincerely,

Yan Lachowicz, PMP
Sr. Project Manager

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

The United Illuminating Company Petition for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need is Required for the Proposed Modifications to the Mix Avenue Substation in Hamden, Connecticut	)	Petition ____
	)	September 4, 2015

AFFIDAVIT OF SERVICE OF NOTICE

STATE OF CONNECTICUT)
: ss: Orange September 4, 2015
COUNTY OF NEW HAVEN)

I, Yan Lachowicz, being duly sworn, states:

1. I am a Project Manager for The United Illuminating Company ("UI"), 180 Marsh Hill Road, Shelton, CT 06477. I am over the age of eighteen years and understand the obligations of making statements under oath.
2. I am familiar with *The United Illuminating Company Petition for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need is Required for the Proposed Modifications to the Mix Avenue Substation in Hamden, CT.*
3. I hereby certify, in accordance with Regulations of Connecticut State Agencies Section 16-50j-40 that a copy of the Petition concerning the proposed installation of two 115 kV 20 MVAR capacitor banks and one 7.5 Ohm series reactor at the facility was mailed on September 4, 2015 to the following:

Mayor Curt Balzano Leng Hamden Government Center 2750 Dixwell Avenue Hamden, CT 06518	The Honorable Martin M. Looney State Senator – 11th District Legislative Office Building 300 Capitol Avenue Hartford, CT 06106-1591
The Honorable Joe Crisco State Senator – 17th District Legislative Office Building 300 Capitol Avenue Hartford, CT 06106-1591	The Honorable J. Brendan Sharkey State Representative – 88th Assembly Legislative Office Building 300 Capitol Avenue Hartford, CT 06106-1591
The Honorable Michael C. D'Agostino State Representative – 91st Assembly Legislative Office Building 300 Capitol Avenue Hartford, CT 06106-1591	The Honorable Robyn A. Porter State Representative – 94th Assembly Legislative Office Building 300 Capitol Avenue Hartford, CT 06106-1591

Additionally, I hereby certify, in accordance with Regulations of Connecticut State Agencies Section 16-50j-40 that notice of the filing of the Petition was mailed on September 4, 2015 to owners of property that abuts the Mix Avenue Substation. The list of abutting property owners was developed from the Town of Hamden GIS website, available publicly on-line, as well as Hamden's Vision Appraisal Website. This process began in early August and was completed on August 31, 2015. The table below lists the property owners to whom notice of the filing of the Petition was provided. In accordance with the Council's March 16, 2015 Memorandum regarding Petitions for Declaratory Rulings – Notice Requirements, in addition to the list of abutters who were notified of the filing of the Petition, abutters maps are attached to this Affidavit.

Owner	St #	Street	Town	State	Zip
Beth Ann Kenney & Kristen Ann Signore	202	ROCKY TOP RD	HAMDEN	CT	06514
Todd A. Lane	720	Mix Avenue #A106	Hamden	CT	06514
Nedra Nobelman	720	Mix Avenue #A107	Hamden	CT	06514
Dorothy Douglas	720	Mix Avenue #A108	Hamden	CT	06514
Mark A. & Gail M. Arciuolo	720	Mix Avenue #A109	Hamden	CT	06514
Cindy Nero	202	HILL ST	Hamden	CT	06514
Matthew Goldbert	720	Mix Avenue #A116	Hamden	CT	06514
James Simoneau	720	Mix Avenue #B205	Hamden	CT	06514
Matthew Snyder	720	Mix Avenue #B215	Hamden	CT	06514
Francis & Marie O'Neill	33	BALSAM RIDGE CR	Wallingford	CT	06492
Syraquinn LLC	24	ALLISON CT	Prospect	CT	06712
King D. Burroughs	720	Mix Avenue #D415	Hamden	CT	06514
Yang Wu	139	Pease Road	Woodbridge	CT	06525
George J. Melillo & Patricia M. Kimball	2014	Shepard Avenue	Hamden	CT	06518
Bruce E. & Brian A. Martin	740	Mix Avenue #A107	Hamden	CT	06514
Stephen Talamo	740	Mix Avenue #A108	Hamden	CT	06514
Adam Pental	12	Waterhorse Brook Drive	Bethel	CT	06801
Lorranie M. Palacios	740	Mix Avenue #A117	Hamden	CT	06514
Stanton & Mark & Jeffrey Weiner	117	Lakewood Drive	Fairfield	CT	06430
G Properties LLC	740	Mix Avenue #B215	Hamden	CT	06514

Richard W. & Carol L. Siu	543	Hobart Road	Paramus	NJ	07652
Leslie P. Maisano	740	Mix Avenue #C305	Hamden	CT	06514
Benjamin S. Hawthorne	740	Mix Avenue #C306	Hamden	CT	06514
Marilyn T. Errato	740	Mix Avenue #D402	Hamden	CT	06514
Bhagya and Rajani Properties LLC	30	Evelyn Court	Cheshire	CT	06410
Marta P. Santiago-Vazquez	740	Mix Avenue #D406	Hamden	CT	06514
Nicole L. Sorrentino	2340	Shepard Avenue	Hamden	CT	06518
Sutton Views LLC	501	Chestnut Ridge Road	Chestnut Ridge	NY	10977
Frank Perrotti Jr.	2935	Dixwell Avenue	Hamden	CT	06518
Francis X Jr. and EllenJane C. Kelly	707	MIX AVE #U1-1	Hamden	CT	06514
Yolanda Morsicato Estate	31	POST FALLS RD	HAMDEN	CT	06514
Barbara V. Zuk	707	MIX AVE APT 19	HAMDEN	CT	06514
Shepard N. Cohen	707	MIX AVE #U1-4	Hamden	CT	06514
Jacquelyon S. Bell	13017	GRAYMIST DR	CHARLOTTE	NC	28215
Juliet B. Brown	24	RED ROCK TR	HAMDEN	CT	06514
Roberta F. Holt	707	MIX AVE #U1-7	Hamden	CT	06514
Edward F. & Rosemary H. Petrosemolo	707	MIX AVE #U1-8	Hamden	CT	06514
Richard H. & Barbara E. Green	707	MIX AVE #U2-1	Hamden	CT	06514
Taube Gurland	707	MIX AVE #U2-2	Hamden	CT	06514
Pauline P. Rosenberg	707	MIX AVE #U2-3	Hamden	CT	06514
Leonard & Joan D. Pearl	707	MIX AVE #U2-4	Hamden	CT	06514
Rosalind Berman	121	BLACK BEAR DR #1823	WALTHAM	MA	02451
Howard G. & Arlene S. Gold	707	MIX AVE #U2-6	Hamden	CT	06514
Evelyn J. Peters	707	MIX AVE #U2-7	Hamden	CT	06514
Linda M. Sink & Joanne M. Quigley	707	MIX AVE #U2-8	Hamden	CT	06514
Sonia Mirsky	707	MIX AVE #U3-1	Hamden	CT	06514
Frances Pardus-Abbadessa	21	SOUTH END RD	NEW YORK	NY	10280
Brenda M. Arovas	707	MIX AVE #U3-3	Hamden	CT	06514
Maria M. Mullally	707	MIX AVE #U3-4	Hamden	CT	06514
Marcel & Mary Bratu	707	MIX AVE #U3-5	Hamden	CT	06514
Florence Kern	707	MIX AVE #U3-6	Hamden	CT	06514
Paul R. & Helene K. Heinz	707	MIX AVE #U3-7	Hamden	CT	06514
Deborah Hoffman	707	MIX AVE #U3-8	Hamden	CT	06514
Herma Hinda Massey	2503	Ginger Wren Road	Pepper Pike	OH	44124
Arnold & Arnold & Jacqueline Gold	132	SKY TOP TR	FAIRFIELD	CT	06825
Kerrie Zigler & Scott Michalowski	34	EDGEWOOD RD	SHREWSBURY	MA	01545
Grace & Joseph Celentano	707	MIX AVE #U4-4	Hamden	CT	06514
Albert Harary	707	MIX AVE #U4-5	Hamden	CT	06514
Kenneth S. Langner	707	MIX AVE #U4-6	Hamden	CT	06514
Joseph G. & Alice Kresta	707	MIX AVE #U4-7	Hamden	CT	06514

Myriam M. Eldrich	2503	Ginger Wren Road	Pepper Pike	OH	44124
Marie A. Lipp	707	MIX AVE #U5-1	Hamden	CT	06514
Gail V. Zillian	707	MIX AVE #U5-2	Hamden	CT	06514
Louis J. & Harriet A. Pearlin	707	MIX AVE #U5-3	Hamden	CT	06514
Patricia Caplan	707	MIX AVE #U5-4	Hamden	CT	06514
Jeffrey S. Berke	707	MIX AVE #U5-5	Hamden	CT	06514
James Chrismond	707	MIX AVE #U5-6	Hamden	CT	06514
Leone & Dorothy Mancinelli	707	MIX AVE #U5-7	Hamden	CT	06514
Steven & Electra Sarigianis	707	MIX AVE #U5-8	Hamden	CT	06514
Maria D. Higuita	707	MIX AVE #UG-1	Hamden	CT	06514
Robert Kravet	41	Busher Lane	Hamden	CT	06518
Jane Murray	2	East Gate Lane	Hamden	CT	06514
Minerva Candelario	3	East Gate Lane	Hamden	CT	06514
Alexander Elkin Trustee	4	East Gate Lane	Hamden	CT	06514
MELBOURNE PROPERTIES LLC	304	TRINITY CT APT 5	PRINCETON	NJ	08540
Matthew Lutheran	6	East Gate Lane	Hamden	CT	06514
John Constantine	7	East Gate Lane	Hamden	CT	06514
Victoria Morgan-Parslow & Jon Parslow	8	East Gate Lane	Hamden	CT	06514
Sharon & David Cody	40	LONGBOW RD	DANVERS	MA	01923
Shannon Barth	10	East Gate Lane	Hamden	CT	06514
Joanne Pacelli	11	East Gate Lane	Hamden	CT	06514
Theresa & John Zikis	12	East Gate Lane	Hamden	CT	06514
Debra Mandra	13	East Gate Lane	Hamden	CT	06514
Sharon Noble-Howell	14	East Gate Lane	Hamden	CT	06514
Thomas W. & Thomas E. Hulk	296	DEERFIELD DR	HAMDEN	CT	06518
Ruth Ratner	27	NEWBRIDGE CR	CHESIRE	CT	06410
Edythe Tanenbaum	17	East Gate Lane	Hamden	CT	06514
Peter Masiar	18	East Gate Lane	Hamden	CT	06514
James Rohan	19	East Gate Lane	Hamden	CT	06514
Thomas W. & Christopher Thomas Hulk	296	DEERFIELD DR	HAMDEN	CT	06518
Elizabeth Wolf	21	East Gate Lane	Hamden	CT	06514
KAREN L RUBIN REALTY LLC	265	CHURCH ST STE 504	NEW HAVEN	CT	06510
Michael Gerbatini	23	East Gate Lane	Hamden	CT	06514
Christopher Nemier	24	East Gate Lane	Hamden	CT	06514
Sandra & Bertram Dressler	25	East Gate Lane	Hamden	CT	06514
William & Jenny Johnson	26	East Gate Lane	Hamden	CT	06514
Viola Arvai	27	East Gate Lane	Hamden	CT	06514
Linda Darling & Laura Sullivan	28	East Gate Lane	Hamden	CT	06514
Joan Harvey-Fields	29	East Gate Lane	Hamden	CT	06514
Roberta Held	30	East Gate Lane	Hamden	CT	06514
Barbara & Albert Kunst	31	East Gate Lane	Hamden	CT	06514
Patricia & Robert Tobin	32	East Gate Lane	Hamden	CT	06514
S & S HAMDEN REALTY LLC	161	ROCHELE DR	SOUTHINGTON	CT	06489

John & Agnes Terrill	499	PENDLETON HILL RD	NORTH STONINGTON	CT	06359
Thomas & Patricia Dest	35	East Gate Lane	Hamden	CT	06514
Joseph & Anne Petrini	36	East Gate Lane	Hamden	CT	06514
Andrew Gorry	37	East Gate Lane	Hamden	CT	06514
Alice White	38	East Gate Lane	Hamden	CT	06514
Susan Connors	39	East Gate Lane	Hamden	CT	06514
Susan Etkind	40	East Gate Lane	Hamden	CT	06514
Edward Cavanaugh	532	WINTERGREEN AVE	HAMDEN	CT	06514
John Bechara	42	East Gate Lane	Hamden	CT	06514
Kimberly Mucha	43	East Gate Lane	Hamden	CT	06514
Joan Hibbert	44	East Gate Lane	Hamden	CT	06514
Irina Kaplinkskaya	45	East Gate Lane	Hamden	CT	06514
Dinella Dodd	6	Malcolm Street	Hamden	CT	06514
Esther Ozeck	3	STONEGATE CIR	CHESHIRE	CT	06410
Stuart & Amy Feldshon	48	East Gate Lane	Hamden	CT	06514
Thomas Hulk	49	East Gate Lane	Hamden	CT	06514
Robin Atwater	50	East Gate Lane	Hamden	CT	06514
Lawrence & Jennifer Stein	51	East Gate Lane	Hamden	CT	06514
Frank Porto & Randi Bregman	52	East Gate Lane	Hamden	CT	06514
Maria Carmen Martinez	53	East Gate Lane	Hamden	CT	06514
Michael Benedetti	54	East Gate Lane	Hamden	CT	06514
Lynda Dio	55	East Gate Lane	Hamden	CT	06514
Greta Zimowska & Lidia Fox	56	East Gate Lane	Hamden	CT	06514
James & Agnieszka Brenia	477	CART LA	ORANGE	CT	06477
Lucia Dimatteo	59	East Gate Lane	Hamden	CT	06514
Roman & Barkhatova Ekaterina Khodzinsky	60	East Gate Lane	Hamden	CT	06514
Shelly Pinkert	49	COUNTRY CLUB DR	WOODBRIDGE	CT	06525
Phillip Sherwood Wexler	62	East Gate Lane	Hamden	CT	06514
Faith Otto	63	East Gate Lane	Hamden	CT	06514
Diana Zaino	64	East Gate Lane	Hamden	CT	06514
Laura Curran	65	East Gate Lane	Hamden	CT	06514
Christopher Hulk	66	East Gate Lane	Hamden	CT	06514
Alexander & Lanchinskaya Sifrovich	67	East Gate Lane	Hamden	CT	06514
Dorothy Connors	68	East Gate Lane	Hamden	CT	06514
HART UNITED INC	72	WASHINGTON AVE	NORTH HAVEN	CT	06473
Julie Wolf	70	East Gate Lane	Hamden	CT	06514
Linda & Harold Saslow	71	East Gate Lane	Hamden	CT	06514
Debra Rhine	72	East Gate Lane	Hamden	CT	06514
Paula & Raymond Demery	73	East Gate Lane	Hamden	CT	06514
Karen Rothenberg Trustee	965	LORIMER ST	BROOKLYN	NY	11222
Anne & Ann Valente	75	East Gate Lane	Hamden	CT	06514
Gabrielle Phoenix Cherie	76	East Gate Lane	Hamden	CT	06514

Harriet Malkin	77	East Gate Lane	Hamden	CT	06514
Sandra Blake	78	East Gate Lane	Hamden	CT	06514
Maria & Mauricio Silva	79	East Gate Lane	Hamden	CT	06514
Mark Moskowitz	80	East Gate Lane	Hamden	CT	06514
Marilyn Larolo	81	East Gate Lane	Hamden	CT	06514
Janet Kublin	82	East Gate Lane	Hamden	CT	06514
Francisco Mendizabal	83	East Gate Lane	Hamden	CT	06514
Linda Wood	84	East Gate Lane	Hamden	CT	06514
Geralidine & Paul Rosenberg	3763	Sanibel St	Clermont	FL	34711
Regina Gardner	86	East Gate Lane	Hamden	CT	06514
Deborah Smith	87	East Gate Lane	Hamden	CT	06514
Edward Carson	88	East Gate Lane	Hamden	CT	06514
Charles Matas	89	East Gate Lane	Hamden	CT	06514
Paula Kowalksi	90	East Gate Lane	Hamden	CT	06514
Hongpoing & Xiaoyun Liang	4	PARK LA	WOODBRIDGE	CT	06525
Sidney Siubun & Gao Yue Yu	92	East Gate Lane	Hamden	CT	06514
Lori Badger	93	East Gate Lane	Hamden	CT	06514
Lillian Silverman	94	East Gate Lane	Hamden	CT	06514
Kelly Moran	95	East Gate Lane	Hamden	CT	06514
Cheryl Mantiglia	96	East Gate Lane	Hamden	CT	06514
Brian & Cathy Planeta	97	East Gate Lane	Hamden	CT	06514
Belle Murray	98	East Gate Lane	Hamden	CT	06514
Ferris Nelson	99	East Gate Lane	Hamden	CT	06514
Tinika Montgomery	100	East Gate Lane	Hamden	CT	06514
Eva Overchuk Trustee	468	GRACE TRAIL	ORANGE	CT	06477
Erica Wilkins	102	East Gate Lane	Hamden	CT	06514
Edward Miller	103	East Gate Lane	Hamden	CT	06514
Lorraine Sabine	71	BROOKFIELD DR	NORTHFORD	CT	06472
Donna Delgrego	105	East Gate Lane	Hamden	CT	06514
Mattie Long	106	East Gate Lane	Hamden	CT	06514
Marc & Lucille Degregorio	19	CARRIAGE DR	NORTH HAVEN	CT	06473
Rick & Theresa Santos	108	East Gate Lane	Hamden	CT	06514
Mary O	109	East Gate Lane	Hamden	CT	06514
Pamela Troutman	110	East Gate Lane	Hamden	CT	06514
Michael Prescott	111	East Gate Lane	Hamden	CT	06514
Shelly Okuniew	49	COUNTRY CLUB DR	WOODBRIDGE	CT	06525
Joseph & Patricia Turiello	10	HEDWIG AVE	DENVILLE	NJ	07834
George & Carol Jerolman	114	East Gate Lane	Hamden	CT	06514
Michael Collier	115	East Gate Lane	Hamden	CT	06514
Paula Gomberg Trustee	116	East Gate Lane	Hamden	CT	06514
William & Julia Gillotti	117	East Gate Lane	Hamden	CT	06514
Laura Sullivan	118	East Gate Lane	Hamden	CT	06514
Philip & Lisa Cohen	119	East Gate Lane	Hamden	CT	06514
Ruby Elaine Williams Graham	120	East Gate Lane	Hamden	CT	06514

Parthasarathy Ragavan	121	East Gate Lane	Hamden	CT	06514
Barbara Battista	122	East Gate Lane	Hamden	CT	06514
Kenneth & Jeanette Farah	123	East Gate Lane	Hamden	CT	06514
Nancy & John Ferraro	124	East Gate Lane	Hamden	CT	06514
Celeste Weekes	125	East Gate Lane	Hamden	CT	06514
Brian McDermott	126	East Gate Lane	Hamden	CT	06514
Audrey Reynolds	127	East Gate Lane	Hamden	CT	06514
James Anderson	128	East Gate Lane	Hamden	CT	06514
Michael Factor	129	East Gate Lane	Hamden	CT	06514
Darcell & Michael Salter	130	East Gate Lane	Hamden	CT	06514
Renee Dineen	131	East Gate Lane	Hamden	CT	06514
Lynn Bullard	132	East Gate Lane	Hamden	CT	06514
Margaret McHale	133	East Gate Lane	Hamden	CT	06514
Joseph Marangell Jr.	134	East Gate Lane	Hamden	CT	06514
Rory Standish	135	East Gate Lane	Hamden	CT	06514
Vasant Khachane	14	SPEAR CR	WOODBRIDGE	CT	06525
Gina Forsa	137	East Gate Lane	Hamden	CT	06514
Adina Alexander	138	East Gate Lane	Hamden	CT	06514
Joe & Margaret Turner	139	East Gate Lane	Hamden	CT	06514
Lori Benedetto	140	East Gate Lane	Hamden	CT	06514
Lewis Keisha & Karen Amaker	141	East Gate Lane	Hamden	CT	06514
Paresh Rao & Amy Sham	142	East Gate Lane	Hamden	CT	06514
Eric Miller	143	East Gate Lane	Hamden	CT	06514
Sonia Smith	144	East Gate Lane	Hamden	CT	06514
Lewis Panzo	145	East Gate Lane	Hamden	CT	06514
Edward & Melissa Troiano	146	East Gate Lane	Hamden	CT	06514
Harold & Cecile Rudnick	147	East Gate Lane	Hamden	CT	06514
Nettie Levine	148	East Gate Lane	Hamden	CT	06514
Michael & Ashley Woodward	149	East Gate Lane	Hamden	CT	06514
Betty Winnick	150	East Gate Lane	Hamden	CT	06514
Donna Brown	151	East Gate Lane	Hamden	CT	06514
David M. Lenore	1	CANTERBURY RD	HAMDEN	CT	06514
Marie B. Warner & Joanne E. Blanck	39	DEVERON RD	MADISON	CT	06443
Anthony E. & Purzyk Infantolino	3	CANTERBURY RD U3	HAMDEN	CT	06514
Richard & Julia Mercugliano	4	CANTERBURY RD	HAMDEN	CT	06514
Patricia A. Denes	5	CANTERBURY RD	HAMDEN	CT	06518
Rosetta Fasulo	6	CANTERBURY RD	HAMDEN	CT	06514
Shirley C. Edelberg	7	CANTERBURY RD	HAMDEN	CT	06514
David Nudelman	8	CANTERBURY RD	HAMDEN CT	CT	06514
Louise Fezza L/U	9	CANTERBURY RD	HAMDEN	CT	06518
Geraldine N. & Joseph Jr. Reis	10	CANTERBURY RD U10	HAMDEN	CT	06514
Nedra June Crane & Crane Jacob Trustees	11	CANTERBURY RD U11	HAMDEN	CT	06514
Arthur D. & Claire M. Staple	12	CANTERBURY RD	HAMDEN	CT	06514

Joyce J. Albert	13	CANTERBURY RD	HAMDEN	CT	06514
Wendell & Lora Lee Bell	14	CANTERBURY RD	HAMDEN	CT	06514
Rossie Cooper Jr.	15	CANTERBURY RD	HAMDEN	CT	06514
David A. & Karen C. Ebmeier	928	ENFIELD CHASE	VIRGINIA BEACH	VA	23452
Richard G. Bell	17	CANTERBURY RD	HAMDEN	CT	06514
Barbara Horowitz-Bograd	18	CANTERBURY RD	HAMDEN	CT	06514
Betty & Melvin Zeidenberg	19	CANTERBURY RD	HAMDEN	CT	06514
Pamela J. Manor & Gary R. Pannone	20	CANTERBURY RD	HAMDEN	CT	06514
Lev & Faina Kotler	21	CANTERBURY RD	HAMDEN	CT	06514
Elizabeth Martin	22	CANTERBURY RD	HAMDEN	CT	06514
Elliot S. & Diane Alderman	23	CANTERBURY RD	HAMDEN	CT	06514
Jack F. Morici	24	CANTERBURY RD	HAMDEN	CT	06514
Bruce T. Brennan	25	CANTERBURY RD	HAMDEN	CT	06514
Laurence G. Nair	26	CANTERBURY RD	HAMDEN	CT	06514
Geoffrey & Patricia S. Miller	27	CANTERBURY RD	HAMDEN	CT	06514
Richard & Diane McMunn	28	CANTERBURY RD	HAMDEN	CT	06514
Maria C. Delucia	29	CANTERBURY RD	HAMDEN	CT	06518
Deva R. Laubstein & Richard J. Klein	30	CANTERBURY RD	HAMDEN	CT	06514
Harold & Shirley Kasowitz	31	CANTERBURY RD	HAMDEN	CT	06514
Myrna K. Cassin	32	CANTERBURY RD	HAMDEN	CT	06514
Sherman & Ruth Zudekoff	33	CANTERBURY RD	HAMDEN	CT	06514
Nicholas F. & Ann B. Izzo	34	CANTERBURY RD	HAMDEN	CT	06514
Amy Weiss Friedman Trustee	35	CANTERBURY RD U35	HAMDEN	CT	06514
Cathy Bennett Goodman	36	CANTERBURY RD	HAMDEN	CT	06514
Alexander & Zina Brayloysky	37	CANTERBURY RD	HAMDEN	CT	06514
Alexander & Elaine Weiss Trustees	38	CANTERBURY RD	HAMDEN	CT	06514
Robert & Richard Rosenberg Co-Trustees	39	CANTERBURY RD U39	HAMDEN	CT	06514
Richard & Lorraine Riccitelli	40	CANTERBURY RD U40	HAMDEN	CT	06514
Margaret R. Coffey	41	CANTERBURY RD U41	HAMDEN	CT	06514
Jewell Fitch	42	CANTERBURY RD U42	HAMDEN	CT	06514
Barbara & William J. Jr. Tito	43	CANTERBURY RD	HAMDEN	CT	06514
Bill & Nancy Horowitz	44	CANTERBURY RD U44	HAMDEN	CT	06514
Carol L. Cangiano	45	CANTERBURY RD U45	HAMDEN	CT	06514
Harvey C. Bixon	46	CANTERBURY RD	HAMDEN	CT	06514
Carol L. Kandall	47	CANTERBURY RD	HAMDEN	CT	06514
Michael P. Kamp	48	CANTERBURY RD	HAMDEN	CT	06514
Evelyn C. Kohrn	49	CANTERBURY RD	HAMDEN	CT	06514
Eugene A. & Natalia Alexandrov EST	172	BENDER RD	HAMDEN	CT	06518
CHEN LIEPING & ZHU GEFENG	51	CANTERBURY RD	HAMDEN	CT	06514
Rhoda M. Cohen	52	CANTERBURY RD	HAMDEN	CT	06514

Emilio J. Difrancesco	53	CANTERBURY RD	HAMDEN	CT	06514
Ann Goldberg Trustee	54	CANTERBURY RD	HAMDEN	CT	06514
Sharon C. Webb	1021	RIDGE RD	HAMDEN	CT	06517
Edith A. Slossberg Trustee	56	CANTERBURY RD	HAMDEN	CT	06514
Jonathan A. & Sarah L. White Trustees	57	CANTERBURY RD	HAMDEN	CT	06514
Robert A. & Joan L. Aceto & SV	58	CANTERBURY RD U58	HAMDEN	CT	06518
Holly A. Malloy & Kylle R. Ayer Trustees	59	CANTERBURY RD	HAMDEN	CT	06514
Christine A. Marzlin	60	CANTERBURY RD	HAMDEN	CT	06518
Reyna Harrison	61	CANTERBURY RD	HAMDEN	CT	06514
Astoria Federal Mortgage Corp	472	WHEELERS FARMS RD 3RD FL	MILFORD	CT	06461
Property Owner	92	River Road	Summit	NJ	07901
Property Owner	725	Mix Avenue, Suite B	Hamden	CT	06514
Property Owner	PO Box 707	c/o R. Schwartz	Freeport	NY	11520
Property Owner	690	Mix Avenue	Hamden	CT	06514

Yan Lachowicz

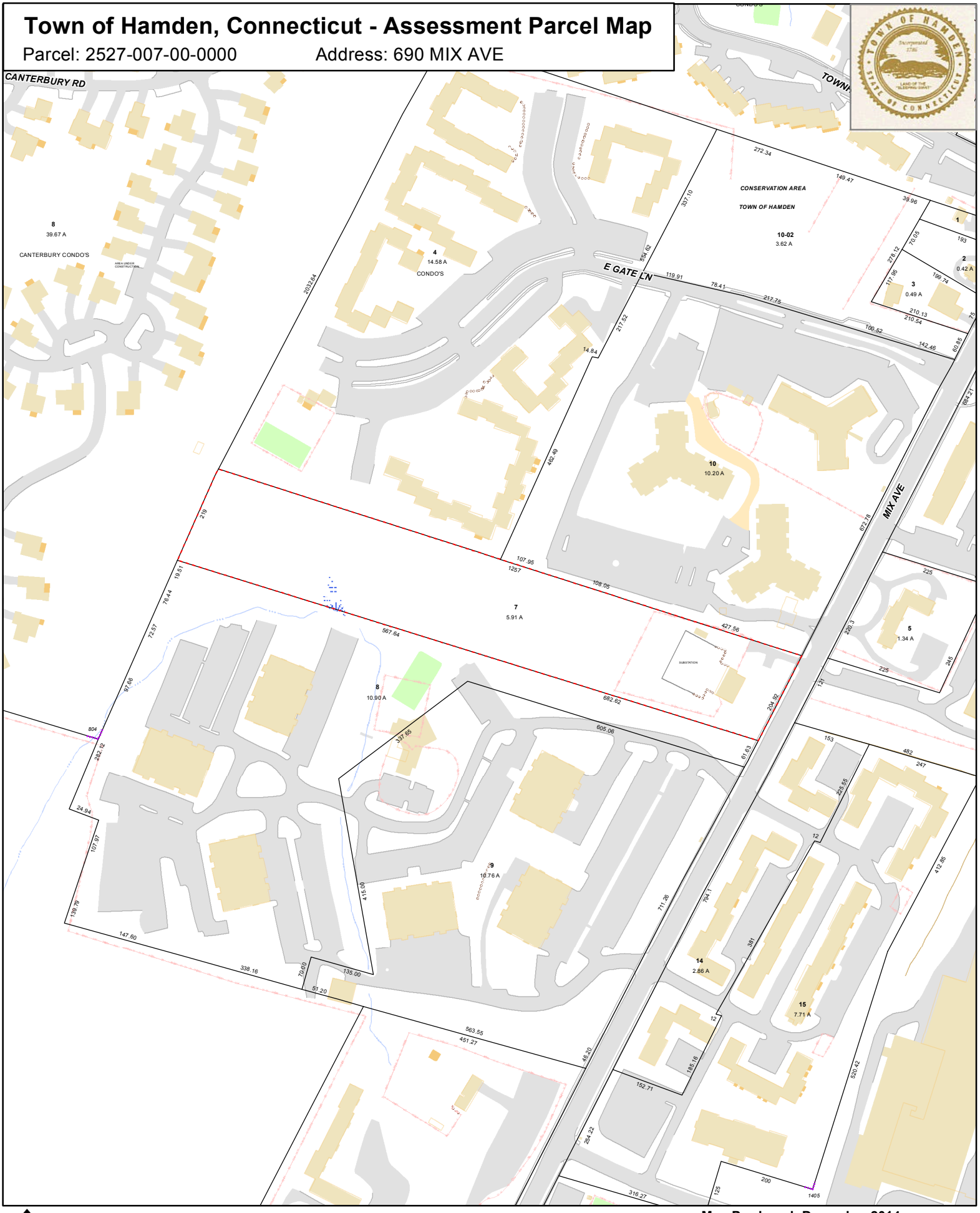
Subscribed and sworn to before
me this 4th day of September 2015

Notary Public/
Commissioner of Superior Court

KATHLEEN M. NOCE
NOTARY PUBLIC
MY COMMISSION EXPIRES SEP. 30, 2017

Town of Hamden, Connecticut - Assessment Parcel Map

Parcel: 2527-007-00-0000 Address: 690 MIX AVE



Approximate Scale: **1 inch = 250 feet**

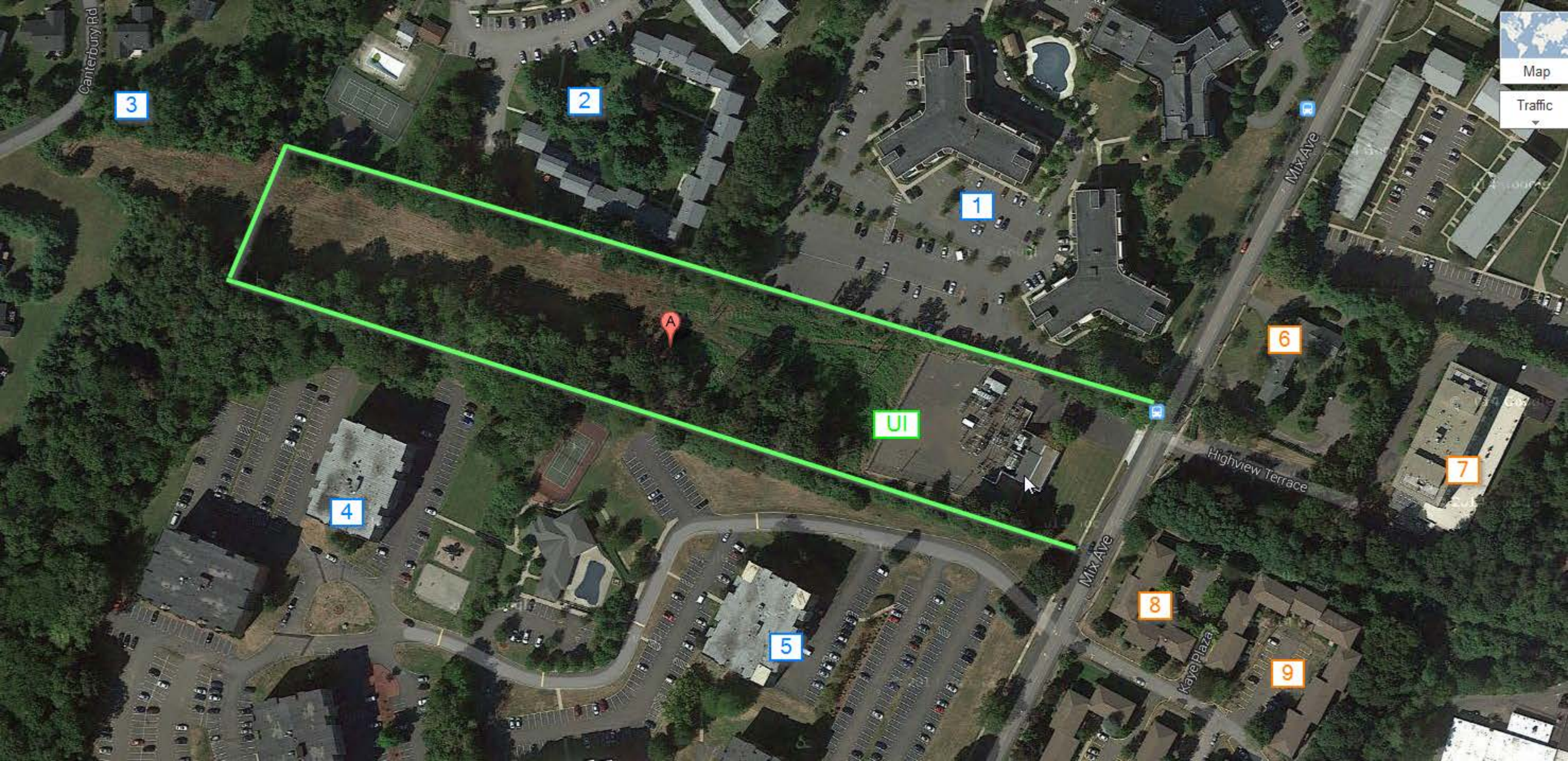
0 125 250 375 500 Feet

Map Produced: December 2014

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Hamden and its mapping contractors assume no legal responsibility for the information contained herein.

Mix Avenue Substation adjacent properties

Owner ID	Address	Parcel ID	Owner Name	Mailing Address	Note
1	720 Mix Avenue	2527-010	various	various	Condo/apartment combination - separately owned units, many owned by LLC
2	740 Mix Avenue	2527-010	various	various	Condo/apartment combination - separately owned units, many owned by LLC
3	760 Mix Avenue	2527-010	Sutton Views LLC	501 Chestnut Ridge Road Chestnut Ridge, NY 10977	Apartments
4	1 - 151 East Gate Lane	2527-004	various	various	East Gate Condos
5	1-62 Canterbury Road	2526-008	various	various	Canterbury Condos
6	670 Mix Avenue	2527-008	Broadmoor 1 LLC et al	c/o Solomon Organization 92 River Road Summit NJ 07901	Broadmoor Apartments 3 buildings 83 units each
7	650 Mix Avenue	2527-009	Broadmoor 1 LLC et al	same as above	Broadmoor Apartments 3 buildings 83 units each
8	725 Mix Avenue	2527-005	Desert Sands LLC	same	Apartments
9	707 Mix Avenue	2527-006	various	various	Clearview Condos
10	617 Mix Avenue	2527-014	Seramonte Associates LLC	c/o Hyperion Credit Service Box 707 c/o R. Schwartz Freeport NY 11520	Kaye View Apartments 7 buildings with variety of number of apartments in each
11	609 Mix Avenue	2527-015	Seramonte Associates LLC	same as above	Kaye View Apartments 1 building
UI	690 Mix Avenue	2527-007	The United Illuminating Company	Annette Potasz 180 Marsh Hill Road Orange, CT 06477	Subject


Canterbury Rd
Mix Ave
Highview Terrace
Mix Ave
Kaye Plaza
1
2
3
4
5
6
7
8
9
UI
A
Map
Traffic

Attachment J
Open House Materials

THE PLAN AHEAD℠

The United Illuminating Company
180 Marsh Hill Road
Orange, CT 06477

April 28, 2015

James Pascarella, Mayor
Hamden Government Center
2750 Dixwell Avenue
Hamden, CT 06518

Dear Mayor Pascarella,

Representatives from The United Illuminating Company (UI) had met recently with Mayor Jackson as well as Daniel Kops to discuss proposed upgrades to the Mix Avenue Substation located at 690 Mix Avenue in Hamden. Upgrades are required in order to address potential low voltages in the Mix-Sackett corridor. The proposed modification will result in enhanced delivery of safe and reliable power to UI's customers located in the Mix-Sackett corridor.

Due to the unusual number of project abutters, UI will be hosting an Open House to provide information about the proposed project. We would like to invite you and any interested staff to join us at the Open House scheduled for May 26th from 6-8 pm, at the Hamden Middle School located at 2623 Dixwell Avenue. Members of UI's Project Team will be on hand to answer any questions that you may have regarding the proposed project.

Notification of the Open House will be sent to abutters of our Mix Avenue substation, and will appear in local newspapers. We will also post a sign at 690 Mix Avenue. I've enclosed a sample of the abutter notification for your convenience. Please share this invitation with any members of your staff who wish to attend.

You may contact me at 203-499-3824 with any questions, or to set up a meeting should you wish to meet beforehand to discuss the project. We look forward to meeting you.

Sincerely,

Samantha Marone
Public Outreach & Permitting

Cc: Dan Kops
Encl.



A UIL HOLDINGS COMPANY

THE PLAN AHEAD℠

WHO: The United Illuminating Company
WHERE: Hamden Middle School, 2623 Dixwell Avenue
WHEN: May 26, 2015
TIME: 6 to 8 p.m.

The Southwest Connecticut Transmission Planning Study has indicated that under certain dispatch and line-out contingency scenarios, low voltages can occur in the Mix Avenue – Sackett corridor. In order to mitigate these low voltages, proposed upgrades to UI's Mix Avenue Substation located at 690 Mix Avenue in Hamden, will be submitted to the Connecticut Siting Council for approval. The proposed modifications will result in enhanced delivery of safe and reliable power to UI's customers located in the Mix Avenue – Sackett corridor.

Please join our Project Team at The Hamden Middle School to learn more about the Project. UI personnel will be on hand to discuss the project, and answer any questions that you may have regarding the proposed upgrades at the Mix Avenue Substation in Hamden.

OPEN HOUSE

The United Illuminating Company
c/o Amy Hicks
180 Marsh Hill Road
Orange, CT 06477

A **UIL HOLDINGS** COMPANY


PUBLIC OPEN HOUSE
A UIL HOLDINGS COMPANY
The United Illuminating Company is proposing to upgrade the existing substation located on this site.
An Open House will be held for the public on May 26, 2015 at Hamden Middle School, 2623 Dixwell Avenue, Hamden, CT from 6 to 8 p.m.
For more information, please contact The United Illuminating Company at 888-848-3697 (888-UITENYR).
THE PLAN AHEAD℠

NORTH HAVEN

Caregiver Support Group

Family caregiving is stressful. Meet with other caregivers to get support, advice and encouragement. VNA Community Healthcare's Caregiver Support Group is free and meets the first Monday of the month from 10:30 to 11:30 a.m. at VNA Community Healthcare Eldercare Resource Center, 2 Broadway.

Call their Helpline at (toll free) at 1-866-474-5230 for more information on this and other family caregiving support groups. More information can also be found on VNA Community Healthcare's website: ConnecticutHomecare.org.

Camera Club changes meeting location, dates

The North Haven Camera Club will meet in a new location. They will be meeting at The Hope Christian Church community room, which features plenty of off-street parking, a private entrance and a very large hall. The meeting night is also changing to the first and third Tuesday of the month. The Hope Christian Church is at 211 Montowese Ave. For more information visit www.northhavencameraclub.com.

Annual Tag Sale

Annual Tag Sale at the North Haven Congregational Church, 28 Church St., is set for Saturday, May 30, 9 a.m. to 2 p.m., rain or shine. Spaces now available for just $20 per space, must provide your own table. Great location, high traffic area, right across from the green in North Haven with ample free parking. Contact the North Haven Congregational Church 203-239-5691 to reserve a spot.

Historical Society to host wedding gown showcase

The North Haven Historical Society will hold a "Wedding Gown Showcase," displaying wedding dresses and gowns on loan from area residents, Sunday, May 31, 11 a.m. to 4 p.m., at the North Haven Corinthian Masonic Lodge, 30 Church St. Dig through your closet and take a walk down memory lane with a dress worn by you, your mother or grandmother and display it for all to see and enjoy! If you are interested in displaying a vintage or unique gown and would like more information, contact Mary Lou Stamp at 203-234-8007, Ann Clark at 203-239-9995 or Pat Buonpane at 203-239-9566. Space is limited.

Animal Haven's Giant Tag Sale

Reserve your spot at The Animal Haven's Giant Tag Sale, May 30 (rain date May 31), 8:30 a.m. to 1 p.m., on the North Haven Town Green.

Space is available for $20 (non-refundable) payable in advance. Set up is at 7:30. Deadline to reserve space is May 22.

Donated items will be accepted on the day of the sale by 8 a.m. Larger items such as furniture must be picked up if they do not sell.

Volunteers are needed for clean-up at 1 p.m.

To reserve your space or volunteer, contact chriskat32@aol.com or call 203-484-9648.

All proceeds benefit the Animal Haven.

National Active and Retired Federal Employees Association

The National Active and Retired Federal Employees Association monthly meeting will be held Monday, June 1, 1 p.m., at the North Haven Congregational Church, 28 Church St. All active and retired federal workers are invited to attend. A luncheon is planned; a $5 pp charge will be collected at the door. Members planning to attend are asked to contact Judy at 203-239-9234 or Joan at 203-934-0002 by May 26. NARFE is dedicated to protecting and preserving the earned benefits of federal workers and retirees.

For more information, visit www.narfe.org.

Touch a Truck and Kids Expo

Faith United Methodist Church, 81 Clintonville Road, to host a Touch a Truck and Kids Expo on Saturday, June 20, 10 a.m. to 2 p.m. Bring the kids for a fun filled day! Sit inside, touch, and take pictures with a dump truck, fire truck, police car, ambulance, school bus and more.

Register your children with our Amber Alert Registry truck. See snakes and lizards sponsored by the Hamden High School Reptile Club. Live entertainment, face painting, and bounce house available throughout the event. A Kid's activity sponsored by Home Depot will also be available.

Food will be available for purchase. Admission is $5 per person or $20 per family.

Help fill a truck for the North Haven Food Pantry and receive a free construction hat (while supplies last).

Vendor space still available. Contact Kim Bogert at 203-671-9897 if interested in a table.

Adult Programs at the Library

North Haven Library, 17 Elm St., hosts the following adult programs:

• Wednesday, June 24, 1 to 2 p.m.: Book Chat — This month's book chat theme is travel. We'll share what we're reading in an informal group. Bring your lunch if you'd like. Free coffee and dessert is provided.

THE PLAN AHEAD™

SIGN IN SHEET

Mix Avenue Substation Open House

May 26, 2015

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