STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Eversource Energy Application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 115-kilovolt (kV) bulk substation located at 290 Railroad Avenue, Greenwich, Connecticut, and two 115-kV underground transmission circuits extending approximately 2.3 miles between the proposed substation and the existing Cos Cob Substation, Greenwich, Connecticut, and related substation improvements.	DOCKET NO. 461 September 29, 2015

SUPPLEMENTAL DIRECT TESTIMONY OF KENNETH B. BOWES, RAYMOND GAGNON AND JACQUELINE GARDELL ON BEHALF OF THE CONNECTICUT LIGHT AND POWER COMPANY DOING BUSINESS AS EVERSOURCE ENERGY REGARDING SITE/ROUTE SELECTION, NEED AND DESIGN ASPECTS OF THE PROJECT

Q. What is the purpose of this supplemental testimony?

A. The purpose of this supplemental testimony is to provide additional background information on site/route selection, need and certain design aspects of the Project to address comments and questions raised at the September 1, 2015 hearings.

Q. Please explain the site selection process for the Preferred Site and Alternate Site for the Greenwich Substation.

A. Eversource conducted a thorough site selection process based on its criteria for locating a new substation, including proximity to customer demand (or "load pocket"); proximity to existing distribution feeders; proximity to existing transmission electrical circuits; proximity to public water supply, watershed and aquifer areas; ease of access for both construction and

maintenance; zoning and adjacent land uses; earthwork requirements; suitability of a site to accommodate the substation; and, minimizing effects on the environment. In addition, Eversource also considered other relevant factors including community impacts, cost, construction complexities, and timing.

Q. Why did Eversource choose the Preferred Site over the Alternate Site?

A. The Preferred Site has many features that compelled the conclusion that it was better suited for the proposed Greenwich Substation than the Alternate Site. These features include:

1. no residential abutters;
2. use would comply with noise regulations, without acquisition of abutting properties;
3. slightly larger property;
4. no need to relocate utility easements; and
5. avoids effort and cost to acquire new property for existing pole yard uses.

Q. What is the most advantageous route for the new underground transmission lines?

A. Locating a new transmission line from Cos Cob Substation to Greenwich's area of highest customer demand was challenging given the topographical constraints of the Town, such as waterways and dense private neighborhoods. Greenwich has limited east/west corridors in the southern part of Town. The options are either Route 1/Putnam Avenue or Bruce Park Drive. Based on engineering, design, construction and community impacts, Eversource has concluded that the most advantageous route for the new transmission lines is the Preferred Route with the Green Variation.

The Green Variation was developed during the municipal consultation phase of the Project. It offers a preferred location for setting up for the Horizontal Directional Drill (HDD) under the railroad and Interstate 95 because it avoids having to open trench across Indian Field Road. Indian Field Road is a major north/south corridor between Route 1/Putnam Avenue and both the Cos Cob train station and Interstate 95.

Q. Why does Eversource believe that the Preferred Route with Green Variation has greater advantages than the Northern Route?

A. The Preferred Route with Green Variation has many advantages over the Northern Route:

1. shorter route by almost 1 mile;
2. less costly;
3. reduces the amount of conflicts with existing utilities;
4. mitigates the need for private easements for off-road vault locations due to the Connecticut Department of Transportation's requirements;
5. less densely developed – for both residential properties and commercial properties;
6. supports the use of daytime work hours for almost the entire route; and
7. avoids historic districts.

Q. Why does Eversource believe that the Preferred Route with Green Variation has greater advantages than the Southern Route?

A. The Preferred Route with Green Variation has many advantages over the Southern Route:

- avoids having to acquire private property rights or use of the Metro North parking lot for the underground transmission lines due to Sound Shore Drive's lack of room for more infrastructure;

- provides a larger site for the location of the HDD under Interstate 95; and
- Shorter (more perpendicular) HDD over to the end of Kinsman Lane than the HDD from Sound Shore Drive; the Connecticut Department of Transportation informed Eversource it prefers the "straighter" HDD over the angled HDD from Sound Shore Drive.

Q. Has Eversource determined that use of the Town's Indian Field Road garage facility is no longer feasible?

A. Yes, as confirmed by Ms. Katie DeLuca at the public hearing on September 1, 2015, the Indian Field site is not sufficiently large to accommodate Eversource's proposed HDD construction and the Town garage operations.

Q. Has Eversource reviewed the 2014 actual load data for Cos Cob Substation?

A. Yes.

Q. Has Eversource reviewed the 2015 actual load data for Cos Cob Substation?

A. Yes, Eversource has reviewed the 2015 data through the end of July.

Q. Please explain the drop in Cos Cob Substation loads from 2013 to 2014.

A. The peak loads at Cos Cob Substation were reduced from 2013 to 2014 by the 17.5% - reference response to OCC-007. The peak loads across all of Connecticut also dropped by approximately 14% year over year and this was consistent with the drop in demand for ISO-NE.

Further analysis of the this data reflects that over the same time period 2013 to 2014, the usage at Cos Cob Substation dropped less than 1% - reference response to OCC-007 Page 3 of 3 - therefore the underlying customer loads are still present and the peak demand was impacted by the milder weather during that time period. The major difference in peak load is attributed to the 2013 summer heat wave with a succession of days with high heat index.

Q. Will the summer peak loads continue to decrease?

A. All indications are that the climate will continue to experience increased temperatures, and the likelihood of an extended summer heat wave with high heat index days is a necessary planning assumption.

Q. What other considerations are there besides peak demand at Cos Cob Substation?

A. Eversource experienced overloads three times this summer on the 27.6-kV underground feeders from Cos Cob to Prospect Substation - on July 20th upon loss of the 11R52 circuit, on July 22nd upon loss of the 11R56 circuit and again on July 29th with the loss of the 11R55 circuit. This caused the high loads to be spread to the remaining three feeders, thus overloading these circuits.

Q. What other considerations do you expect will affect future loads in Greenwich?

A. We have 94 new customer service and service upgrade requests presently in the design phase in the Town of Greenwich which will impact future usage and peak loads as early as next summer.

Q. Please explain how the proposed Greenwich Substation would increase system reliability given that past outages in Greenwich were related to weather events.

A. The new Greenwich Substation will provide a second bulk substation for the Town and relieve the forecasted capacity issue with Cos Cob Substation. By providing a second source into Greenwich, the substation redundancy is improved and will immediately allow for increased flexibility in supplying customer loads (e.g. the ability to move load between existing 27.6-kV distribution substations). The reliability of the 27.6-kV supply to the Greenwich downtown secondary network will be improved as the existing 13.2-kV load from Prospect

Substation will be removed from Cos Cob Substation and re-supplied from the new Greenwich Substation. This will increase the redundancy of supply to the Greenwich downtown area. Also, the Prospect Substation major equipment can be retired, thus saving the ultimate and necessary refurbishment of the Prospect Substation switchgear. The existing customers supplied at 13.2kV will be re-supplied from the new Greenwich Substation and benefit from the reliability of a new substation.

Q. Are there future capabilities that the new Greenwich substation will enable?

A. Yes, by adding the second bulk substation in Greenwich, there will be future capabilities to provide backup supply to customers using the Eversource automatic recloser loop schemes. This would improve the reliability for customers served both by Cos Cob and Greenwich Substations. Initially there will be unused feeder circuit positions at the new Greenwich Substation that will allow the interconnection of new distributed energy resources. The current Prospect Substation is limited in this capability.

Q. As compared with other communities that Eversource serves, by municipality, where does Greenwich rank in terms of overall electrical usage?

A. Greenwich has the third highest electrical usage for the 149 municipalities served by Eversource in Connecticut.

Q. What customers will be served by the proposed Project?

A. The proposed Project will provide increased electrical capacity to serve existing load and future growth of customer load in the Town of Greenwich only. The substation will not be serving load in Stamford or selling excess energy to Con Edison or any other electric utility. The new substation will serve as a new source for existing 13.2-kV distribution circuits currently originating from the Prospect and Byram Substations. These existing circuits supply customers

in the neighborhoods surrounding the respective substations, generally west of Indian Harbor and south of the Merritt Parkway. The Prospect and Byram Substations do not supply any customers outside of the Town of Greenwich, and there is no plan to extend existing circuits or add new circuits that would supply customers outside of Greenwich. Due to the distance from the proposed Greenwich Substation to Stamford, it is not practical to supply Stamford customers from the new substation without substantial new infrastructure, which would be costly.

Q. Will any customers in New York be served by the proposed Project?

A. Eversource does not supply any customers in New York from any circuit that serves customers in Greenwich, and has no plans to do so. This Project will not provide any electrical connections to New York.

Q. Can Bruce Park be restored at the conclusion of construction if Eversource uses the proposed HDD method or open cuts Bruce Park?

A. Yes. Eversource would restore the Park in those areas disturbed by construction.

Q. What procedures are in place if a fire were to occur at the proposed Greenwich Substation?

A. First, it should be noted that a substation is an intrinsically safe environment if a fire occurs there. If a fire were to occur within a substation, typically, it would not create a threat for nearby properties or the public. Eversource incorporates Institute of Electrical and Electronics Engineers, American National Standards Institute and National Fire Protection Association standards for fire protection in its substation design and operates these facilities to minimize the impact of fire, in the unlikely event that a fire at the substation should occur. For example, those standards include fire stopping, fire separations, equipment-spacing, use of non-

combustible construction materials, use of low-flame-spread/low-smoke-development rated materials and substation grading.

The substation components include fire walls for the transformers. The control enclosure would be locked and equipped with fire extinguishers, as well as smoke detectors that would be monitored from a remote location. The 13.2-kV switchgear enclosure would also be locked and equipped with smoke detectors. Smoke detection would automatically activate an alarm at the Connecticut Valley Electric Exchange and the system operators would then take appropriate action such as dispatching personnel to the substation. Additional equipment monitoring devices and relays would alert Eversource of any abnormal or emergency situations, such as electrical faults.

In the event of a fire, Eversource would dispatch personnel to the substation. Eversource's personnel, would work with the local fire department to extinguish any fire and would be responsible for establishing safe conditions for fire-fighting personnel.

Q. Would any equipment at the proposed Greenwich Substation contain PCBs?

A. No. In the United States, the manufacture of PCBs was banned in 1979.

Q. What insulating fluid does Eversource plan to use for the proposed transmission cables?

A. Eversource plans to use an industry standard synthetic insulating liquid, Polybutene, that goes by the trade name ELECTRIFILL 015CS (See Attachment 1, Material Safety Data Sheet), which is recommended by a leading equipment manufacturer.

Q. At the public hearing, the First Selectman of Greenwich, Peter Tesei, stated that the Town of Greenwich maintains storm and sanitary sewer systems that run in close proximity to segments of this project where horizontal directional drilling and trenching

may take place. Mr. Tesei requested that Eversource be required to maintain contingency resources during construction to be available for immediate deployment should any breach of the Town's sanitary sewer system occur. Is Eversource willing to agree to such a requirement?

A. Eversource will require its contractor to have a Contingency and Emergency Response Plan for the Town of Greenwich under which the contractor would mobilize labor, materials, tools, and equipment to respond to and appropriately remedy a breach, if it should occur.

Q. At the public hearing, Ms. DeLuca, on behalf of the Greenwich Planning and Zoning Commission, recommended that the Council consider certain requirements if the Project is approved. Has Eversource evaluated those recommendations?

A. Yes.

Q. What is Eversource's position as to the requirements recommended by Ms. DeLuca?

A. Eversource offers the following responses to the recommendations from Ms. DeLuca:

Detailed Spill Prevention Plan

In compliance with the Clean Water Act (40 CFR 112), Eversource will develop and implement a Spill Prevention Control and Countermeasures (SPCC) Plan for the underground cable between Cos Cob Substation and the proposed Greenwich Substation. The SPCC Plan would include information on preparedness, prevention, planning, spill response and spill notification in compliance with Federal regulations. In addition, the SPCC Plan would contain facility specific information related to equipment types, oil capacity, secondary

containment, topography and nearby waterways to ensure appropriate prevention and response to a discharge of oil into navigable waters or adjoining shorelines. An example of a SPCC Plan for existing underground fluid filled cables and an existing substation is provided in Attachment 2.

Detailed HAZMAT Plan

Because Eversource would not be using any hazardous materials in the transmission cable, there is no need for a HAZMAT Plan. The cable is filled with the synthetic liquid Polybutene, which is formed from environmentally acceptable base fluids consisting primarily of esters, olefins and synthetic paraffins, and is considered biodegradable exceeding the "readily biodegradable" standard of Organization for Economic Cooperation and Development Guidelines for the Testing of Chemicals, Section 3, Degradation and Accumulation Test No. 306: Biodegradability in Seawater, while exhibiting low toxicity. This material is not defined as a hazardous material or "HAZMAT" by the U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA), the U.S. Department of Transportation (DOT), and the U.S. Nuclear Regulatory Commission (NRC). Each has its own definition of a HAZMAT. If disposed, it is not considered a hazardous waste as defined by the EPA. The cable fluid is, however, considered oil. In the event of a release to the environment, Eversource will comply with the notification and cleanup standards under Connecticut and federal law.

Daily Street Cleaning

Stone tracking pads will be installed where the construction access road meets a paved access point to prevent construction machinery from tracking soil onto paved roadways. These measures will comply with the Eversource Best Management Practices (http://www.transmission-nu.com/contractors/pdf/CT_BMP.pdf) and CT DEEP and USACE permit conditions. In addition, Eversource and its contractors will monitor paved streets within

the active construction area for soils tracked onto paved roads. If tracked soils are identified, Eversource and its contractors will sweep the street (by hand or mechanically) to remove the tracked soils on a daily basis as required.

Prompt Restoration of Disturbed Areas

Eversource will install erosion and sedimentation control measures during transmission line and substation construction to avoid or minimize the potential for surface water runoff, erosion or sedimentation to occur outside of work limits. All areas disturbed by construction or future repair activities, will be restored. Disturbed areas will be re-graded to the approximate pre-construction elevations and then re-seeded and temporarily stabilized, as necessary, with mulch, or allowed to revegetate naturally. New compatible species trees will be planted in areas that will not interfere with either maintenance or the operation of the transmission lines or splice vaults.

Post-construction inspections of restored areas will be conducted at regular intervals throughout the growing season, as required by any applicable permits and/or after major storm events. Sites will be inspected for success or failure of revegetation, invasive species colonization, and erosion and sedimentation. In the event that additional measures are required to achieve site restoration and stabilization, corrective actions shall be identified and implemented.

These measures will comply with the 2002 Connecticut Guidelines for Erosion and Sediment Control (CGESC), as well as with Eversource Best Management Practices (BMP) (http://www.transmission-nu.com/contractors/pdf/CT_BMP.pdf) and CT DEEP and USACE permit conditions. Eversource BMP incorporate and are consistent with the 2002 Connecticut Guidelines for Erosion and Sediment Control.

Detailed Construction Vehicle Routing

Eversource will be developing construction vehicle routing plans for its third party contractors for the safe and efficient delivery of equipment as well as for its construction vehicles. Eversource will work with the Town on such a plan, as well as an overall plan for traffic management.

Curb to Curb Repaving

For the Preferred Route with Green Variation, Eversource plans to coordinate with Town officials regarding necessary curb to curb repaving for those streets where repaving has occurred recently. Otherwise, Eversource plans to repair the portions of any local streets that are disturbed during its construction process.

Replanting Plan

Eversource plans to include a replanting plan in its Development and Management Plan (D&M Plan) for all areas disturbed within Bruce Park. As noted in testimony by Eversource at the September 1, 2015 hearing, Eversource cannot allow direct burial of plantings over the underground transmission cables. Plantings would occur in areas that do not interfere with either the operation or the maintenance of the transmission lines. Eversource adheres to the guidelines in its *"Right Tree, Right Place" Program* to protect its equipment. Eversource is willing to retain an arborist to assist with the replanting plan.

Nov. 1 – April 1 Construction Window for Bruce Park Ball Field

Eversource is willing to abide by a November to April 1 construction window for the ball field located in Bruce Park.

Hold a Utility Coordination Meeting with Town Officials

Eversource plans to hold periodic meetings with Town officials and utility companies to ensure coordination of any work near existing utility facilities.

Corrosion Mitigation Plan

First, the pipes are designed with several layers of protection against corrosion. As explained in Section G.3 of the Application, three HPFF cables are pulled into a carbon steel pipe to constitute a single line (one circuit). The pipe is coated on the inside with an epoxy coating to prevent oxidation prior to pipe filling and to reduce pulling friction and tension. The pipe exterior is typically coated with polyethylene or epoxy to protect the pipe from environmental corrosion and to isolate the pipe from "ground" to allow use of a cathodic protection system. The cathodic protection system is highly effective at providing continuous protection for the coated pipes. In addition, Eversource's plan for corrosion protection includes periodic monitoring by Eversource of the steel pipe of the cable to validate that the cathodic protection is working effectively. If there are abnormal readings, the cathodic equipment is checked to make sure it is set up and functioning correctly, and if not, the cable would be examined to validate it is protected correctly. If the cable protection is suspected compromised, then an area around the cable would be excavated, inspected, and if necessary, the protective coating would be repaired. Eversource would promptly repair any damaged coatings.

Special Design for Elevation Changes

Based on preliminary investigations, Eversource does not believe that there will be any unusual elevation changes that would require implementation of protective measures. If such conditions are encountered, Eversource will install the proper equipment to provide stabilization for the underground transmission cable.

Leak Monitoring and Notification Plan

As described in Section J.2.2 of the Application, the three 60-MVA transformers associated with the Greenwich Substation would contain insulating oil (not containing PCBs).

The transformers would be installed on foundations and each would have secondary containment sufficient to contain 110% of the insulating fluid capacity of the transformer. Periodic inspections of the containment area would be performed by Eversource personnel to verify proper functioning of the containment systems.

For the transmission line, the pump house will be designed with a secondary containment sufficient to contain 110% of the fluid capacity. The HPFF cable system is a closed system in which the dielectric fluid volume within the pipe system and the pump house reservoir is monitored for loss of fluid. Pressurizing pumps used to maintain the operating pressure on the system are monitored regarding frequency of operation. Frequent operation may be an indicator of a leak on the system.

Q. Ms. DeLuca recommended that the Council require financial assurances to the Town. What is Eversource's position on this issue?

A. Pursuant to Connecticut General Statutes Section 16-230, The Connecticut Light and Power Company (now doing business as Eversource Energy) filed a Certificate of Solvency with the Secretary of State indicating that its combined paid-in capital and surplus was not less than five hundred thousand dollars ($500,000.00). See Attachment 3, certification from the Office of the Secretary of the State of Connecticut. Eversource's position on Ms. DeLuca's request is that no further financial assurances are necessary or appropriate.

Q. Has Eversource constructed underground transmission lines in communities with conditions similar to Greenwich?

A. Yes, in 2014, Eversource completed the construction of the Stamford Reliability Cable Project ("SRCP"), which involved complex construction in local roads in densely populated commercial and residential areas. Once construction was complete, officials of the

City of Stamford acknowledged and expressed appreciation to Eversource on its communication efforts with both the City and those areas along the route impacted by construction. SRCP utilized Field Outreach personnel who communicated with all businesses and homes along the route notifying them of each upcoming stage of construction, upcoming changes in traffic patterns or street closures, and any necessary changes in work hours. Accordingly, Eversource expects to utilize a similar approach for Field Outreach activities.

Q. Why does Eversource believe that solar energy does not provide a feasible alternative to the proposed Project?

A. As noted in Section F.3.2 of the Application at Page F-7, nearly 8,800 acres of solar panel coverage would be required in proximity to the load center (roughly equivalent to 147,400 roofs on an average 2,600 square foot northeastern home). These calculations assume all panels are south facing – additional solar panel coverage would be needed if some of the roofs having solar panels were not south facing. Given the much higher capital costs and the amount of solar panels coverage that would be required, solar is not a realistic alternative to the Project. Three commercial solar projects approved to date by the Council range in capacity from 2.2 MW to 5 MW and utilize anywhere from 22 acres to more than 90 acres. Using a local landmark as a basis for comparison, Bruce Park is approximately 100 acres so the equivalent of nearly 8,800 acres would be approximately 88 Bruce Parks.

Q. Did Eversource communicate with any of the abutters to the Preferred or Alternate Sites and Cos Cob Substation after September 1, 2015?

A. Yes, on September 18, 2015, Eversource notified the abutters to the Preferred or Alternate Sites and Cos Cob Substation of the Council's continuation of the evidentiary hearing to be held on October 6, 2015 at the Council's Office and the opportunities to participate in the

Council's process. See Attachment 4 for a copy of such communication and the abutters to whom it was sent.

Q. Please describe Eversource's GIS building design requirements.

A. Eversource requires the following building dimensions to house its Gas Insulated Substation (GIS) equipment, control room and battery room:

- 121 feet long (east to west) on its northern side (nearest Railroad Avenue); 134 feet long on south side. Note that the building dimensions are not rectangular as its northwest corner follows the outline of the Field Point Road and Railroad Avenue intersection;
- 31 feet high northern roofline (nearest Railroad Avenue) down to 28 feet in the rear (south). This is a single pitch roof design;
- 34 feet wide (north to south); and
- annex off the southeast corner measuring an additional 17 feet long (east to west) by 19 feet wide (north to south).

The proposed building configuration and dimensions in the Application (including "bump outs") are based on spatial requirements to house and maintain the substation equipment, and provide truck access to the building directly from the yard (rather than the street).

Q. Have you reviewed the GIS building design by Mr. Richard Granoff?

A. Yes.

Q. Would Mr. Granoff's GIS building design satisfy Eversource's requirements?

A. Eversource cannot determine whether Mr. Granoff's design would satisfy Eversource's GIS building requirements. On September 22, 2015, Eversource filed an interrogatory with the Siting Council asking Mr. Granoff to provide a detailed description of the exterior materials reflected in his rendering, including the types of materials, dimensions (including dimensions of windows) and manufacturers and/or suppliers and any other pertinent

information and/or specific features, including trees. On September 22, 2015, Mr. Granoff responded that his rendering was a preliminary concept based on the existing Eversource building located at 330 Railroad Avenue. No other information was provided by Mr. Granoff.

Q. Does Eversource have any corrections or clarifications to the testimony of its witness panel on September 1, 2015?

A. Yes, Eversource wishes to clarify that the depth of the underground cables at the railroad would be approximately 35 feet below the existing ground level, and at the highway would be approximately 60 feet below the existing ground level.

Additionally, Eversource would like to clarify that railroad commuter parking spots that are required for construction of the proposed Project may be replaced with parking spots that are located in a nearby unpaved area, where railroad employees currently park their vehicles.

Finally, Eversource would like to clarify that it expects to propose work hours in its D&M Plan for various aspects of the construction process that are appropriate for the tasks to be completed and the field conditions, taking into account community concerns and measures to reduce disruption of travel on local roads. An example would be Arch Street and the access areas around the Greenwich train station. Based upon daytime traffic usage in this area, including rush hour access to Interstate 95, Eversource would expect to propose nighttime work hours in this area rather than try and work compressed daytime hours.

Q. Does Eversource plan to have any other witnesses participate in this Docket?

A. At the present time, Eversource anticipates that it may wish to call on Ms. Lisa M. Cooper, C.P.A. of Eversource. Accordingly, her resume is attached as Attachment 5.

Q. Does this conclude your testimony?

A. Yes

Attachments

Attachment 1 – Material Safety Data Sheet for Polybutene

Attachment 2 – Spill Prevention, Control & Countermeasures Plan

Attachment 3 – Secretary of State of Connecticut Certification of Filing of Solvency Certificate

Attachment 4 – Supplemental Notice to Abutters with Abutters List

Attachment 5 – Resume of Lisa M. Cooper, C.P.A.

Attachment 1

Rev Date: 8/29/2011

1. Identification of Substance and Company

Trade name : ELECTRIFILL 015CS
Chemical name : Polybutene
Product number : EF015CS-01-G
Company : Soltex, Inc. (Synthetic Oils & Lubricants of Texas, Inc.)
3707 FM 1960 West, Suite 560
Houston, TX 77068 USA
Phone number: (281)587-0900
Emergency phone: Chemtrec 1-800-424-9300 (in USA and Canada)

2. Composition

CAS #	Chemical	%
9003-29-6	Polybutenes	100

3. Hazard Information

Hazardous Ingredients:
None

EU Risk phrases:
Symbols: None
R phrases: None

Canadian WHIMS:
Not a "Hazardous Product" under WHIMS classifications.

HMIS RATINGS

Health	0
Flammability	1
Reactivity	0
Personal Protection	C

4. First Aid Measures

Immediate treatment:
Eye contact:
May cause eye irritation. Flush with large amounts of water for at least 15 minutes. Call a physician.

Skin contact:
Wash skin thoroughly with soap and water after handling. Prolonged or repeated contact may cause dermatitis (skin irritation).

Inhalation:
Remove to fresh air. If breathing is difficult, give oxygen and call a physician.

Ingestion:
Contact a physician. Do not induce vomiting.

5. Fire Fighting Measures

Protective equipment:
As in any fire, firefighters must be equipped to prevent breathing of vapors or products of combustion. Wear an approved self-contained breathing apparatus and protective clothing.

Extinguishing media:
Dry chemical, water fog, CO2, foam, or sand/earth. Closed containers may be cooled with water.

6. Accidental Release Measures

Procedures for spill cleanup:
Shut off leak and dike up large spills. Eliminate heat and ignition sources, provide optimum explosion-proof ventilation. Absorb with an inert material such as sand, soil or vermiculite. Sweep up absorbent and dispose according to regulatory requirements.

7. Handling and Storage

Handling:
Keep drums tightly closed to prevent contamination. Avoid skin and eye contact. Wear recommended personal protection equipment. Discard or wash contaminated clothing before reuse.

ATTENTION: Never use pressure to empty drums.

Storage:
Do not store with strong oxidizers.

8. Exposure Control / Personal Protection

Ventilation required:
None normally required. Use additional ventilation if needed to control vapor concentrations particularly if a mist is generated or fumes from hot material are present.

Respiratory protection:
None required if area adequately ventilated. Use appropriate respiratory protection if used in confined areas. Use a respirator with dual organic vapor/mist and particulates cartridge if vapor concentration exceeds permissible exposure limit.

Skin protection:
Use neoprene type gloves and apron.

Eye protection:
Wear chemical safety goggles and/or a face shield. Contact lenses should not be worn.

9. Physical and Chemical Properties

Physical state at 25 °C:	Liquid
Color:	Clear
Odor:	Mild
Solubility in H_2O at 25 °C:	Insoluble
Flash point (ASTM D-93) °C:	150
Viscosity @ 98.9 °C (cSt):	32 - 37

10. Stability and Reactivity

This product is stable and not subject to hazardous polymerization.

Hazardous decomposition products:
Oxides of carbon (carbon monoxide carbon dioxide)

Incompatible materials:
Not Known

Conditions to avoid:
None

11. Toxicological Information

Acute toxicity:
May cause eye and skin irritation. The handling procedures and safety precautions in this MSDS should be followed to minimize employee exposure.

12. Ecological Information

No data available.

13. Disposal Considerations

Not a hazardous waste if disposed of as is, by the definitions of the U.S. EPA. Dispose of properly complying with appropriate laws and regulations.

14. Transportation Information

US Department of Transortation
Drums:
Not Regulated

Bulk:
Proper Shipping name: Elevated Temperature Liquid, N.O.S.
Hazard Class: 9
ID Number: UN3257
Packaging Group: III

15. Regulatory Information

All of the components comply with the following chemical inventory requirements: TSCA (United States), AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), ECL (Korea), PICCS (Philippines), and NZIoC (New Zealand).

Canadian WHIMS:
Not a "Hazardous Product" under WHIMS classifications.

16. Other Information

No warranties, express or implied, including warranties of merchantability or fitness for a particular use are made with respect to the products described herein. Nothing contained herein shall constitute permission or a recommendation or inducement to practice any invention covered by a patent without the permission of the patent owner. Customers/users are advised to test the product in advance to make certain it is suitable for their particular production conditions and use or uses of the product. Seller shall not be liable for and the customer assumes all risk and liability for any use or handling of the product.

Attachment 2

NU Transmission Group

Spill Prevention, Control & Countermeasures (SPCC) Plan

for
Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
in
Connecticut

Northeast Utilities System

FUSS & O'NEILL

Spill Prevention, Control and Countermeasures (SPCC) Plan

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Spill Prevention, Control and Countermeasures (SPCC) Plan

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1.0 GENERAL INFORMATION

Name of Facility: High Pressure Fluid Filled Pipe Type Transmission Cable (HPFF) – outside substation boundaries within State of Connecticut.

Location of Facility: The Northeast Utilities (NU) Transmission Group owns and operates HPFF circuits to deliver energy to its customers throughout Connecticut. The Transmission Group operates 14 HPFF circuits in Connecticut with operating voltages of 69kV, 115kV and 345kV. The table included within *Section 7.2* provides information regarding location, length and approximate oil storage capacity of each HPFF cable.

Cable line maps and sensitive environmental area maps are provided as Figures of this SPCC Plan.

Name of Operator or Owner: The Connecticut Light & Power (CL&P)

Address of Operator or Owner: P.O. Box 270, Hartford, CT 06141-0270

Designated Person Accountable for Oil Spill Prevention at the Facility:

Name / Title: Manager – Transmission Lines and Contract Services

A Distribution List for this Plan is provided as *Table 1.*

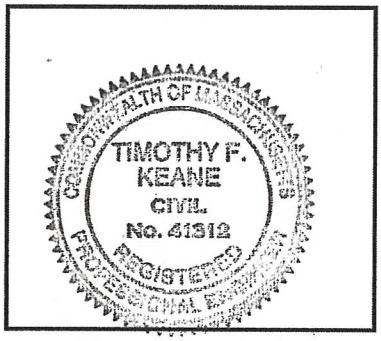
2.0 CONFORMANCE WITH 40 CFR 112

This site-specific SPCC Plan conforms to the requirements of 40 CFR Part 112. The table of contents at the beginning of this Plan is supplemented with a cross-reference that lists the regulatory citation as applicable.

3.0 CERTIFICATION

I hereby certify that I am familiar with the provisions of 40 CFR Part 112; that I or my agent have visited and examined the facility; that this SPCC Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of this part; that procedures for required inspection and testing have been established; and that this Plan is adequate for the facility. This SPCC Plan addresses only the oil-filled electrical equipment outlined under *Section 7.2*.

I have completed my review and evaluation of this SPCC Plan on the date below, and will not amend the plan as a result.



Timothy F. Keane
(Printed Name of Registered P.E.)

Timothy F. Keane
(Signature of Registered P.E.)

Nov. 13, 2012
(Date)

4.0 MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Title: Director of Transmission Maintenance

Signature: Michael B. McKwood
MICHAEL B. MCKWOOD

Date: 11/6/12

5.0 CERTIFICATION THAT FACILITY DOES NOT POSE SUBSTANTIAL HARM

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons ? **No**

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area ? **No**

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C–III to this appendix or a comparable formula [1]) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments ? **No**

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula 1) such that a discharge from the facility would shut down a public drinking water intake ? **No**

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years ? **No**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Timothy F. Keane
Signature

Associate for Fuss & O'Neill, Inc.
Title

Timothy F. Keane, P.E.
Name

Nov. 13, 2012
Date

6.0 OIL SPILL RESPONSE PROCEDURES

6.1 General

The probability of oil spills from "in use" electrical equipment at this facility into a navigable water is low. Northeast Utilities System Transmission and Distribution (T&D) Groups adhere to the following oil and hazardous substance procedures as applicable:

Number	Title
TD 206	Spill Prevention, Control and Countermeasure (SPCC) Plans
TD 405	Substation Spill Inspection, Repair and Containment
TD 406	Cleanup of Oil Contaminated Material and Equipment Including PCBs
TD 214	PCB PPE and PCB Contaminated Clothing
TD 222	Spill Identification and Reporting
TD 223	Regulated Waste Storage
TD 235	Responding to Fires or Hazardous Substance Spills

Oil spill response procedures described herein provide a readily useable set of response procedures, and are consistent with the aforementioned Northeast Utilities System T&D Group Procedures and Environmental Requirements.

6.2 When Finding a Spill

1. Determine the source and type of spill;
2. For incidental releases, stop the spill at source and contain, if possible and if it can be done safely;
3. Restrict access;
4. Report to your normal line of communication for notification and to obtain assistance. (NU maintains a network of reliable communications systems for timely notification of an oil discharge.)

Included as *Appendix A* to this Plan are the "Guidelines for the 3403 345-kV Circuit (Bethel – Norwalk 345 kV)." Provided as *Appendix B* is the "Addendum HPFF SPCC Plan – Emergency Response Guidelines for High Pressure Fluid Filled (HPFF) Cable Releases (CT and MA)."

6.3 Notification and Reporting of a Release

1. Initial Notification to the System Operation Center (SOC):

   - Tolland: 860-665-6411
   - Hartford: 860-665-6421
   - Waterbury: 860-665-6430

   Included as *Appendix C* to this Plan is NU's **Spill Notification Report – HPFF Cable Systems**.

   - The type, source, and quantity of release.
   - Type of containment that has been established.
   - Ensure that internal notification has been performed.

2. Federal Water Pollution Control Act (FWPCA) requires any discharge of "harmful quantities" of oil into waters of the United States be reported to the U.S. Environmental Protection Agency (EPA).

   - In general, harmful quantities has been defined as any amount of oil on the water or adjoining shore which causes a sheen or discoloration upon the surface, violates applicable water quality standards and/or causes a sludge or emulsion to be deposited below the surface of the navigable water.
   - In general, navigable waters include all lakes, rivers, and streams. Also included are tributaries, wetlands or impoundments, which could affect navigable waters. Further, on-site drainage systems with a potential for direct release to navigable waters should be assumed to have the *potential to impact* navigable waters unless there is prior knowledge otherwise.

   If an oil spill incident to the navigable water of the United States causes a film or sheen, or a violation of applicable water quality standards, then the National Response Center must be notified.

3. The following are the National Response Center and State-specific reporting requirements.

   - If spills are to waterways, the SOC will also report to the National Response Center.
     800-424-8802
   - If spills are to waterways and PCB content is ≥ 50 ppm, the SOC will also report to the U.S. EPA Region I Office of Pesticides and Toxic Substances.
     617-918-1527; within 24 hours

- SOC reports spills to the appropriate state agency:

  Connecticut: all spills reported to:

  CT DEEP 860-424-3338

6.4 Oil Spill Cleanup

Minor releases of oil which have the potential to reach navigable waterways defined under 40 CFR 112.1(b) will be responded to as follows:

1. Minor oil leakage from electrical equipment is contained in drip pans or is cleaned up with oil absorbing material. Spill kits and cleanup materials are available on most NU vehicles and at Northeast Utilities System warehouses.

2. Cleanup by washing with detergent, excavation or use of absorbents. Cleanup debris is to be segregated according to its fluid content. Transport all cleanup debris to applicable Area Work Center, Berlin Central Maintenance Service or Building 3333 in Newington, CT.

3. For **large spills or spills to navigable water**, a spill response company that specializes in oil spill containment and clean up would be contacted immediately if sufficient resources were not available at the facility or from the nearby area work center. If this is the case, then call one of the following spill response contractors (or other known locally) who will perform expedient cleanup.

Moran Environmental Recovery	
20 Commerce Road	(203) 270-0095
Newtown, CT 06470	(800) 562-7611
Environmental Services, Inc.	
90 Brookfield Street	(800) 486-7745
South Windsor, CT 06074	(860) 528-9500
True Blue Environmental	(203) 269-3355
5 Northfield Road	(877) 367-8237
Wallingford, CT 06492	

7.0 FACILITY OPERATIONS

7.1 Locality and Setting

In the event of an oil spill, it is important that environmental receptors at or near each cable corridor are identified and protected properly. Receptors include navigable waters (e.g., surface water bodies, wetlands areas) that are subject to 40 CFR Part 112, as well as wildlife habitats or other critical areas that could potentially be negatively impacted by a spill or release of oil. The environmental receptors identified in each corridor are illustrated in the corridor-specific maps provided as Figures to this SPCC Plan.

The cable systems require aboveground storage reservoirs (i.e., pressure vessels) of varying size, which are located within the NU system of electrical substations. The vessels at the substations are covered by the site-specific SPCC Plans for each substation.

7.2. Potential for Oil Spill - Sources, Operating Conditions, Flow Prediction and Control

The cables are poly paper-insulated (PPI) enclosed by steel pipes filled with insulating fluid which are buried underground. The specific insulating/cooling fluid in high the pressure pipe type cables varies based on location. The primary ~~manufactures~~ manufacturer is Soltex and the typical insulating/cooling fluids are DF100 and PB6E. The HPFF qualifies as *oil-filled operational equipment* under 40 CFR Part 112 regulations. The following table summarizes the HPFF circuits in Connecticut:

Circuit Number	Line Section	Operating Voltage	Circuit Length	Approx. Volume Oil in Cable (gals.)	Pump House Volumes (Gals.)
1120	AES Thames (Cogen) - Montville Station (section from Dock Road Manhole to AES Thames)	115 kV	0.31	5,860	1,400 gal. @ Montville S/S
	AES Thames (Cogen) - Montivlle Station (section from Montville S/S to Dock Road Manhole)	115 kV	0.43		
1270	Triangle 11A - Middle River 28M	115 kV	3.64	28,830	6,000 gal. @ Triangle S/S
1337	Triangle 11A - Middle River 28M	115 kV	3.66	28,830	6,000 gal. @ Middle River S/S
1704	South Meadow 1A - Southwest Hartford 47N	115 kV	3.80	30,100	16,000 gal. @ South Meadow S/S

Circuit Number	Line Section	Operating Voltage	Circuit Length	Approx. Volume Oil in Cable (gals.)	Pump House Volumes (Gals.)
1722	Northwest Hartford 2N - Southwest Hartford 47N	115 kV	2.70	30,100	16,000 gal. @ NW Hartford S/S
	Aetna Tap - Aetna (Cogen)		1.10		
1753	Glenbrook 1K - Cedar Heights 4R	115 kV	4.80	38,810	5,000 gal. @ Glenbrook S/S
1792	Glenbrook 1K - Cedar Heights 4R	115 kV	4.90	38,810	Same as 1753 circuit
1880	Norwalk Harbor 6J - Ely Avenue (Flax Hill)	115 kV	1.47	11,640	6,500 gal. @ Norwalk Harbor S/S
1890	Norwalk Harbor 6J - Ely Avenue (Flax Hill)	115 kV	1.47	11,640	Same as 1880 circuit
1867	Norwalk Harbor 6J - Ely Avenue (Flax Hill)	115 kV	1.47	11,640	6,000 gal. @ Norwalk Harbor S/S
500	Hallville Junction - Covanta	69 kV	2.84	22,490	2,800 gal. @SCRRAC (Cogen Plant)
1537	Branford S/S - A3 Bus	115 kV	<0.10	790	None- self contained fluid filled
3403C	Archers Lane - Norwalk Junction ("Bethel-Norwalk")	345 kV	9.70	170,000	15,000 gal. @ Archers Lane S/S (in Redding) and one 15,000 gal. tank at Norwalk Junction S/S
3403D	Archers Lane - Norwalk Junction ("Bethel-Norwalk")	345 kV	9.70		
	South Meadow-SW Hartford (spare)	None/N/A	3.8	N/A	No fluid (pressurized with Nitrogen)
	Tap to former Hartford steam plant (spare)	None/N/A	0.5	N/A	No fluid (pressurized with Nitrogen)

Included as *Appendix D* are the NU line maps for the various fluid-filled cable corridors.

The insulating fluid is normally maintained at pressures of approximately 200 pounds per square inch from terminal end enclosed pumping plants. The pumping plants require aboveground storage reservoirs of varying size (as indicated on table above). The Transmission Group also owns and operates one (1) underground self-contained fluid filled cable (SCFF) in Connecticut (Branford S/S 115kV A3 Bus). The cable is 115 kV and approximately <0.10 miles in length. The cable is taped insulation with paper; the insulation fluid is contained inside a metallic/polymeric sheath which is buried underground. The system does not require a pumping plant.

Based on NU's experience and the preventive measures in-places, there exists a low probability of an oil release to a navigable water from the HPFF cables, pump houses or the above ground reservoirs. Releases could be caused by external events (e.g., dig-in) equipment failure or some other unforeseen circumstance. A release in a cable could be detected by an outage or by the following alarm conditions:

- Low Tank Level
- Frequent Pumping Alarm
- Low Pressure

The above-noted circumstances are generally sensitive to gross leaks. These alarm conditions allow early detection and timely notification of a release. Given the design and operation of the cable systems, certain leak conditions in the system could go undetected without triggering an immediate alarm condition.

In the event of a release, the flow would be generally concentrated in the immediate area of the cable failure or penetration. Flow would be a function of surrounding soil type, operating pressure, topography and elevation head, nearby preferential pathways, and response time.

In addition to the reporting, response and cleanup responsibilities, there are practices that can help prevent spills and plan the resources necessary for an adequate response. Knowing how to prevent and manage occurrences and plan for a quick response is critical. NU procedures as well as applicable State laws are in place to control excavation at and near the underground cables:

- State law requires anyone who digs or excavates to notify utility companies before starting.

  CT - Call before Your Dig: 1-800-922-4455

- The NU operating companies shall be a member company with regards to its pipe type and self-contained cable systems.
- NU shall install and maintain warning signs along its cable routes to prevent unauthorized digging.

7.3 Containment and Pipe Cable Monitoring

Starting in 2004, existing cable systems with above ground cable reservoirs were equipped with low level and low pressure alarms.

The cable monitoring systems allows any abnormal cable operating conditions (e.g., un-planned outage, fault) to be detected by the Transmission System Operator, CONVEX. CONVEX will make the necessary internal notifications if necessary.

Given the construction and operation of the HPFF cable system, engineered (or passive) secondary containment structures or diversionary equipment is considered not practicable. The cables are part of the electrical transmission system and carry voltages ranging as high as 345kV. Installation of additional containment or diversionary structures could have the effect of compromising system reliability, access or safety of workers. Consistent with 40 CFR 112.7(d), NU has oil spill resources, action plans, and procedures in-place as a contingency.

As previously indicated, *Appendix B* of this SPCC Plan is NU's "Addendum HPFF SPCC Plan – Emergency Response Guidelines for High Pressure Fluid Filled (HPFF) Cable Releases (CT and MA)." This document further outlines spill contingency elements, including:

- Responsibility and reporting structure to augment the authorities, responsibilities and duties of spill response personnel, agencies and contractors.
- NU's formal arrangements with these oil spill contractors able to mobilize equipment, materials and supplies for response to maximum oil discharge reasonably anticipated.
- A "Spill Response Matrix – Connecticut" for well-defined and specific actions to be taken after discovery and notification of an oil discharge.

7.4 Preventive Maintenance

Routine maintenance of the cables, electronics, vaults and pump houses shall be performed according to the Transmission Maintenance Program Manual (TMPM) program. As necessary, pipe cable will be repaired under the direction of NU.

7.5 Cathodic Protection

Cable systems are protected by a cathodic protection system. Periodic system checks and an annual cathodic protection survey are conducted according to existing NU standards.

The purpose of the cathodic protection "minor inspection" is to monitor the condition of the rectifier by checking output voltage. The purpose of the cathodic protection annual survey is to perform a grounding cell inspection

7.6 Facility Transfer Operations

Filling and draining of the cable systems (and associated pressure vessels and electric equipment) during maintenance, is performed manually or with hoses and pumps from bulk containers with a trained operator in attendance. This equipment is subject to continuous inspection while oil transfers are in progress.

7.7 Tank Truck Loading and Unloading

Tank trucks (and associated equipment) for delivery of new or removal of waste dielectric oil have been inspected by and meet the requirements of the Connecticut Department of Transportation. Trained personnel are continuously in attendance during loading operations - see *Section 7.6*.

8.0 SECURITY

Pump house locations and cable pot heads are protected by a chain link fence, installed in accordance with the National Electric Safety Code. Access gates are closed and locked at all times to prevent unauthorized entry. All equipment drains will terminate in a closed valve or a cap, and are accessible only to authorized personnel.

9.0 INSPECTIONS AND RECORDS

As applicable, oil-filled electrical equipment in use and in storage, oil storage in drums, and vessels are inspected based upon the TMPM schedule.

Records of inspection required by 40 CFR Part 112 are maintained in accordance with Northeast Utilities T&D Group Procedures. These records are maintained for at least three years.

Each cable route shall be inspected by vehicle or foot patrol on an annual basis.

As indicated, the cable systems require holding vessels, which are located within the NU system of electrical substations. The vessels at the substations similarly qualify as *oil-filled operational equipment* under 40 CFR Part 112 regulations. These vessels are covered by the site-specific SPCC Plans for each substation.

10.0 PERSONNEL TRAINING

Personnel whose job functions include oil and fluid handling of the HPFF system shall participate in annual discharge prevention briefings, and receive requisite training in accordance with federal and state requirements. Such training consists of reporting and cleanup of oil and hazardous materials releases; all aspects of this SPCC Plan; and, applicable pollution control laws, rules, and regulations. Such oil handling personnel are made familiar with proper operation and maintenance of the equipment to prevent discharge to the environment.

Supervisory personnel accountable for discharge prevention and who report to facility management receive further instruction pertaining to spill prevention, reporting, and related administrative responsibilities.

11.0 PLAN REVIEW AND AMENDMENT PROCEDURES

Amendments to the SPCC Plan are required as follows:

1. When required by the EPA after review of the SPCC Plan, submitted because of a discharge event (see *Section 11.1* below); or

2. When there is a change in facility design, construction, operations, or maintenance which materially affects the potential for an oil spill; or

3. If the required five year SPCC Plan review indicates more effective control and prevention technology will significantly reduce the likelihood of a discharge, then the Plan must be amended within six (6) months from the time of that review to include such technology.

If this Plan must be amended, the designated person accountable for oil spill prevention (see *Section 1.0*) is responsible for having the Plan amended and implemented.

11.1 EPA Required Review and Amendments

If an oil spill incident to the navigable water of the United States causes a film or sheen, or a violation of applicable water quality standards, then the National Response Center must be notified. In accordance with § 112.4, if the oil spill incident meets either of the following criteria, a follow-up report must be filed:

- A discharge of more than 1,000 gallons of oil into navigable waters in a single discharge occurs; or,

- Discharges of more than 42-gallons of oil in each of two discharges as described in § 112.1(b) within any 12-month period.

Within sixty (60) days of the occurrence of either of the aforementioned spill scenarios, a report must be submitted to the EPA Regional Administrator. The content of the report is outlined under 40 CFR 112.4(a). In addition, a copy of the report will be provided to the appropriate state agency.

Should the EPA propose to require an amendment to the SPCC Plan following a review of that report, then NU will be notified by certified mail or by personal delivery. The EPA will specify the terms of such amendment. Within thirty (30) days from receipt of the notice, NU may submit written information, views, and arguments on the proposed amendment. After considering all material presented, EPA will either notify NU that an amendment is required or will rescind the notice. Any EPA proposed amendment becomes a part of the SPCC Plan thirty (30) days after such notice, unless appealed. Notwithstanding an appeal, the amendment must be implemented as soon as possible, but not later than six (6) months after the amendment becomes part of the SPCC Plan.

11.2 Facility Modification Required Review and Amendments

Whenever there is a change in facility design, construction, operations, or maintenance that materially affects the potential for a discharge, Northeast Utilities Systems is required to amend this SPCC Plan within six (6) months, and implement said changes as soon as possible, but not later than six (6) months following preparation of the amendment. Examples of changes necessitating a Plan amendment include, but are not limited to: commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at the facility.

11.3 Five Year Review Process

A complete review and evaluation of this SPCC Plan shall be undertaken by Northeast Utilities System management at least once every five (5) years. This review must also include an assessment of new technology that has become available for the prevention of spills since the Plan was last reviewed. As a result of this review and evaluation, the SPCC Plan must be amended within six (6) months, to include more effective spill prevention and control technology if the technology will significantly reduce the likelihood of a discharge, and if such technology has been field proven at the time of the review.

The five year review does not necessarily need to be undertaken by a registered Professional Engineer. If, following the review, it is decided by Northeast Utilities System personnel that there have been no facility modifications, including an evaluation of applicable industry standards and related technology, an amendment to the plan is not required and, therefore, a Professional Engineer's certification is not required. Amendments, which do not have to be certified by a Professional Engineer, are revisions that do not materially affect the facility's potential to discharge oil.

12.0 RECOMMENDED IMPROVEMENTS

The following improvements are recommended for the facility:

None.

TABLE 1

Oil Spill Contingency and Response Plan

Northeast Utilities System
Connecticut & Massachusetts

NU Distribution List

Transmission Group

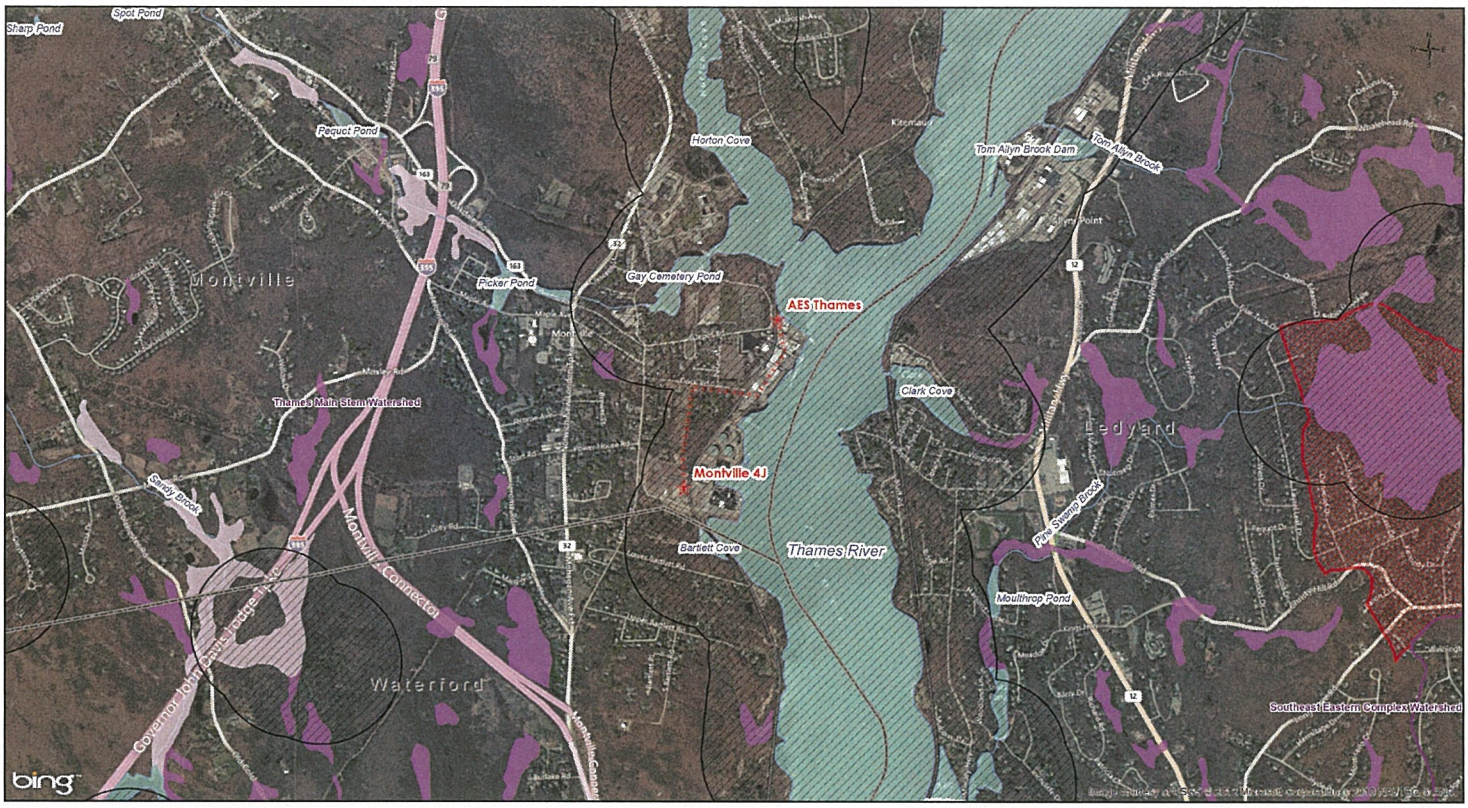
1. Director – Transmission Maintenance
2. Director – Environmental Affairs
3. Environmental Affairs – Environmental Coordinators
4. Manager – Transmission Line Construction & Maintenance (CT/MA)
5. Supervisors – Transmission Construction & Maintenance (CT/MA)
6. Manager – Transmission Test & Technical Support
7. Manager – Transmission Field Construction Services
8. Field Supervisors – Transmission Line Construction & Maintenance (CT)
9. Supervisor – Transmission Field Contract Services (MA)
10. Manager – Convex Operations
11. Manager – Transmission Asset Management
12. Director – Transmission Projects

CL&P

13. Manager – Construction & Maintenance
14. District Supervisor – Substations & Equipment
15. Supervisor – Distribution Substation Construction & Maintenance
16. Director - Operation Support & Engineering Compliance
17. Environmental Coordinator – CL&P

Other

18. Environmental Affairs



Context Map

Location Map

- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Dam
- Marsh Connector
- Water

- Final Adopted Aquifer Protection
- Final Aquifer Protection
- Preliminary Aquifer Protection

Northeast Utilities System

FUSS & O'NEILL
76 INTERSTATE DRIVE
WEST SPRINGFIELD, MA 01089
(413) 452-0445
www.fando.com

Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

AES THAMES - MONTVILLE STATION

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 1

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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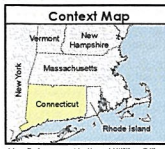
Context Map



Location Map

- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Dam
- Marsh Connector
- Other Connector
- Water
- Final Adopted Aquifer Protection
- Final Aquifer Protection
- Preliminary Aquifer Protection

Northeast Utilities System

FUSS & O'NEILL
75 INTERSTATE DRIVE
WEST SPRINGFIELD, MA 01089
(413) 452-0445
www.fando.com

Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables Massachusetts

TRIANGLE - MIDDLE RIVER

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500 Feet

1 in = 1,500 ft

FIGURE 2

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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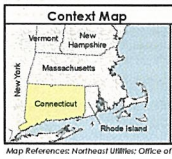
Context Map



Location Map

- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Pipeline Connector
- Other Connector
- Water
- Final Adopted Aquifer Protection
- Final Aquifer Protection
- Preliminary Aquifer Protection

Northeast Utilities System

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www.fando.com

Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables Massachusetts

SW HARTFORD - AETNA TAP - NW HARTFORD

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500

Feet

1 in = 1,500 ft

FIGURE 3A

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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Context Map

Location Map

- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Pipeline Connector
- Other Connector
- Water_
- Final Adopted Aquifer Protection
- Final Aquifer Protection
- Preliminary Aquifer Protection

Northeast Utilities System

FUSS & O'NEILL
70 INTERSTATE DRIVE
WEST SPRINGFIELD, MA 01089
(413) 452-0445
www.fando.com

Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

SOUTH MEADOW - SW HARTFORD

PROJ. No. 99549.A53
DATE: 9/5/2012

0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 3B

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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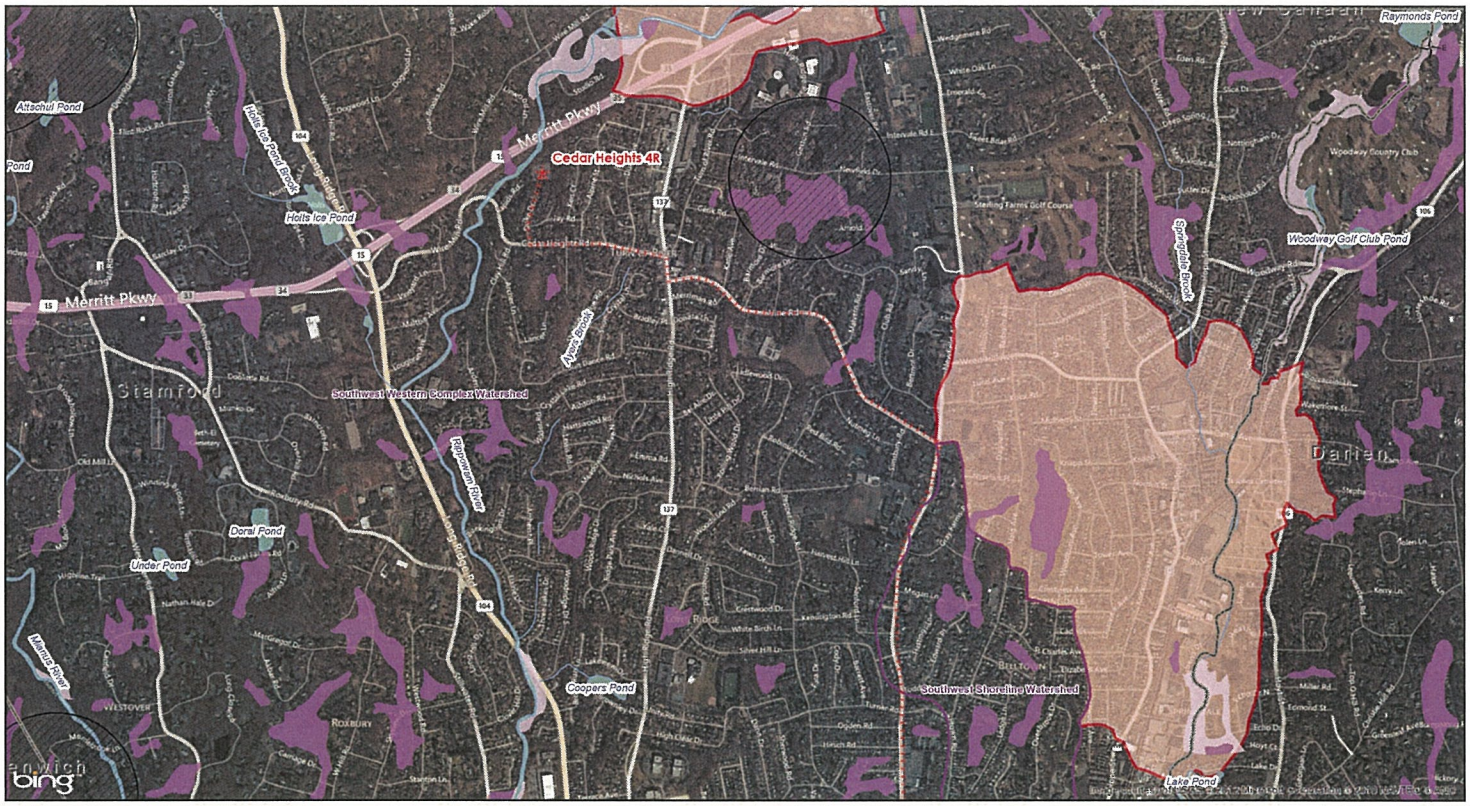
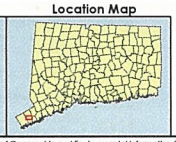


Context Map

Location Map



Substation
Fluid-Filled Cable
Town
Natural Diversity Area

Inland Wetland Soils
Poorly Drained and Very Poorly Drained Soils
Alluvial and Floodplain Soils
Regional Basin Area

Named Waterbody
Water
Other Connector
Water
Final Adopted Aquifer Protection

Final Aquifer Protection
Preliminary Aquifer Protection

Northeast Utilities System

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

Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

GLENBROOK - CEDAR HEIGHTS (NORTH)

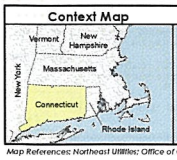
PROJ. No. 99549.A53
DATE: 9/5/2012
0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 4A

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

Document Path - J:\GIS\P99\99549\A53\CT HPFF.mxd

Context Map



Location Map

Substation
Fluid-Filled Cable
Town
Natural Diversity Area

Inland Wetland Soils
Poorly Drained and Very Poorly Drained Soils
Alluvial and Floodplain Soils
Regional Basin Area

Named Waterbody
Water
Other Connector
Water
Final Adopted Aquifer Protection

Final Aquifer Protection
Preliminary Aquifer Protection

Northeast Utilities System

FUSS & O'NEILL
70 INTERSTATE DRIVE
WEST SPRINGFIELD, MA 01089
(413) 452-0445
www.fando.com

Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables Massachusetts

GLENBROOK - CEDAR HEIGHTS (SOUTH)

PROJ. No. 99549.A53
DATE: 9/5/2012
0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 4B

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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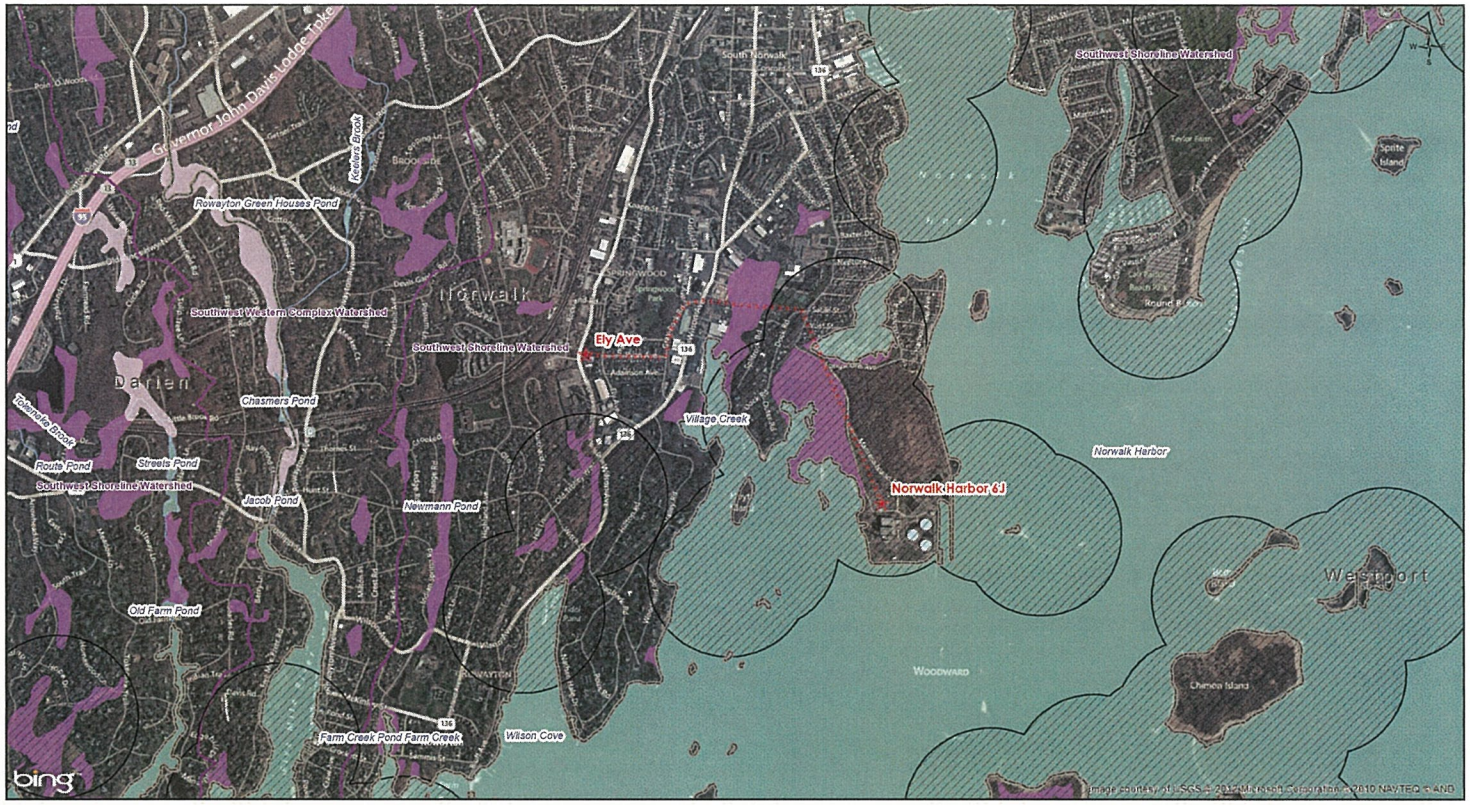

Context Map

Location Map

- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Water
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Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

NORWALK HARBOR - ELY AVE

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500
Feet

1 in = 1,500 ft

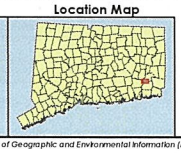
FIGURE 5

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

Document Path - J:\GIS\P99\99549\A53\CT HPFF.mxd

Context Map

Location Map



- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Water
- Final Adopted Aquifer Protection
- Final Aquifer Protection
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Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables Massachusetts

HALLVILLE JUNCTION - COVANTA

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500

Feet

1 in = 1,500 ft

FIGURE 6

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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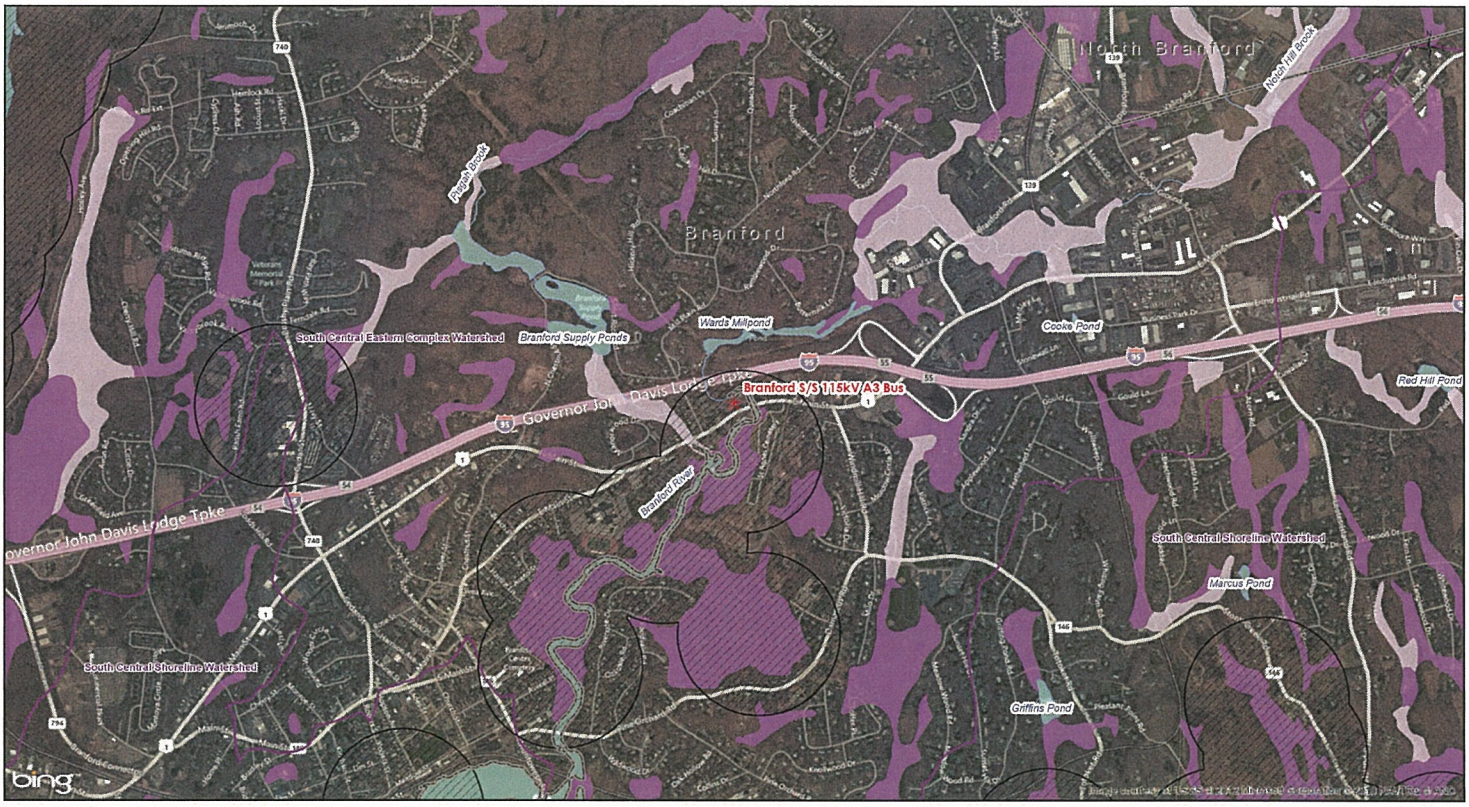
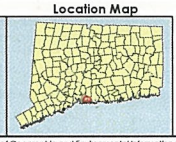


Context Map

Location Map



Substation
Fluid-Filled Cable
Town
Natural Diversity Area

Inland Wetland Soils
Poorly Drained and Very Poorly Drained Soils
Alluvial and Floodplain Soils
Regional Basin Area

Named Waterbody
Water
Water

Final Aquifer Protection
Preliminary Aquifer Protection
Final Adopted Aquifer Protection

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Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables Massachusetts

BRANFORD S/S 115kV A3 BUS

PROJ. No. 99549.A53
DATE: 9/5/2012
0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 7

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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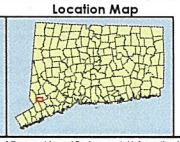
Context Map

Location Map



Substation
Fluid-Filled Cable
Town
Natural Diversity Area

Inland Wetland Soils
Poorly Drained and Very Poorly Drained Soils
Alluvial and Floodplain Soils
Regional Basin Area

Named Waterbody
Water
Marsh Connector
Water
Final Adopted Aquifer Protection

Final Aquifer Protection
Preliminary Aquifer Protection

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Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

ARCHERS LANE - NORWALK JUNCTION

PROJ. No. 99549.A53
DATE: 9/5/2012
0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 8A

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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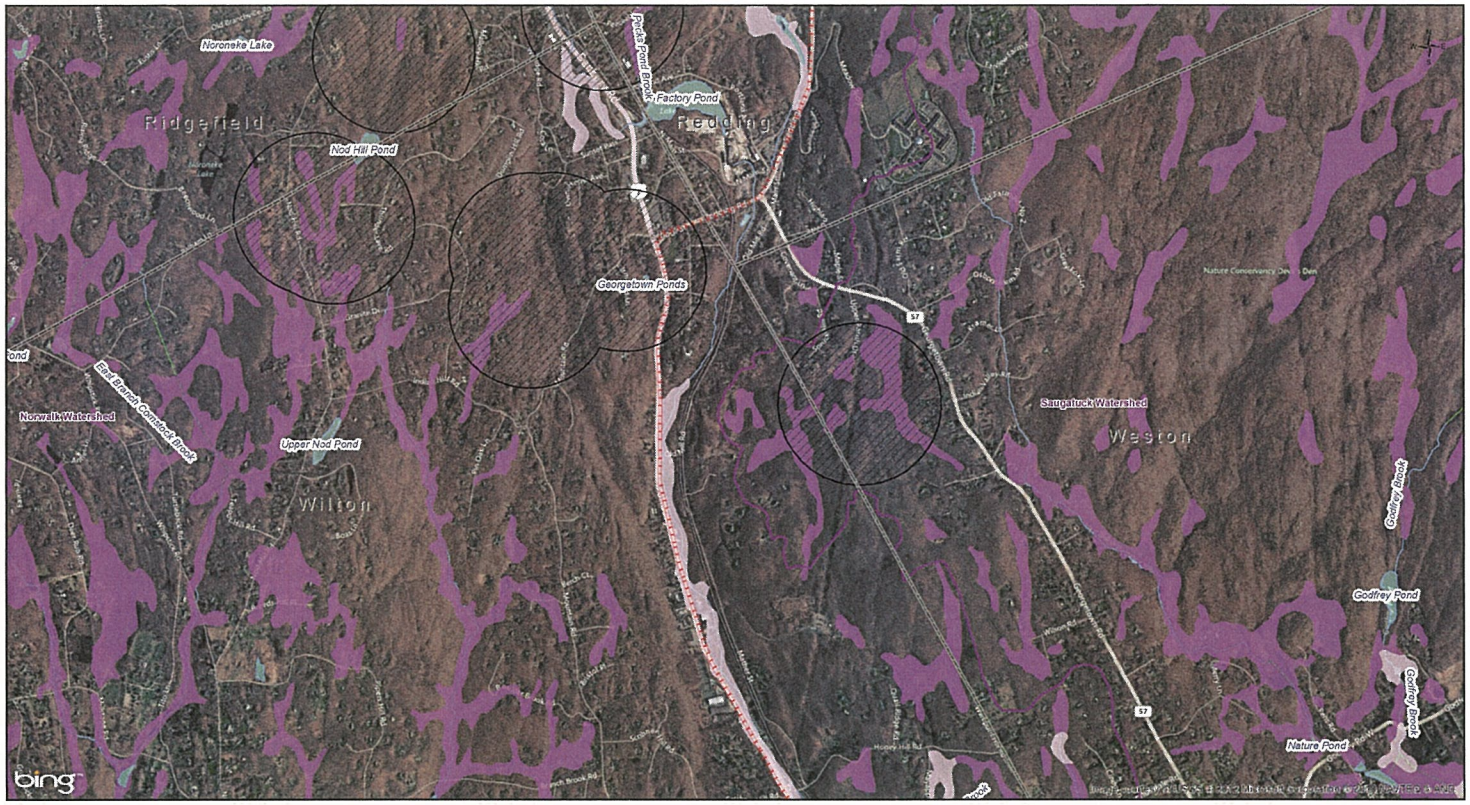
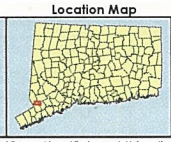


Context Map

Location Map



- Substation
- Fluid-Filled Cable
- Town
- Natural Diversity Area

Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Regional Basin Area

Named Waterbody

- Water
- Marsh Connector
- Other Connector
- Water
- Final Adopted Aquifer Protection
- Final Aquifer Protection
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ARCHERS LANE - NORWALK JUNCTION

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 8B

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

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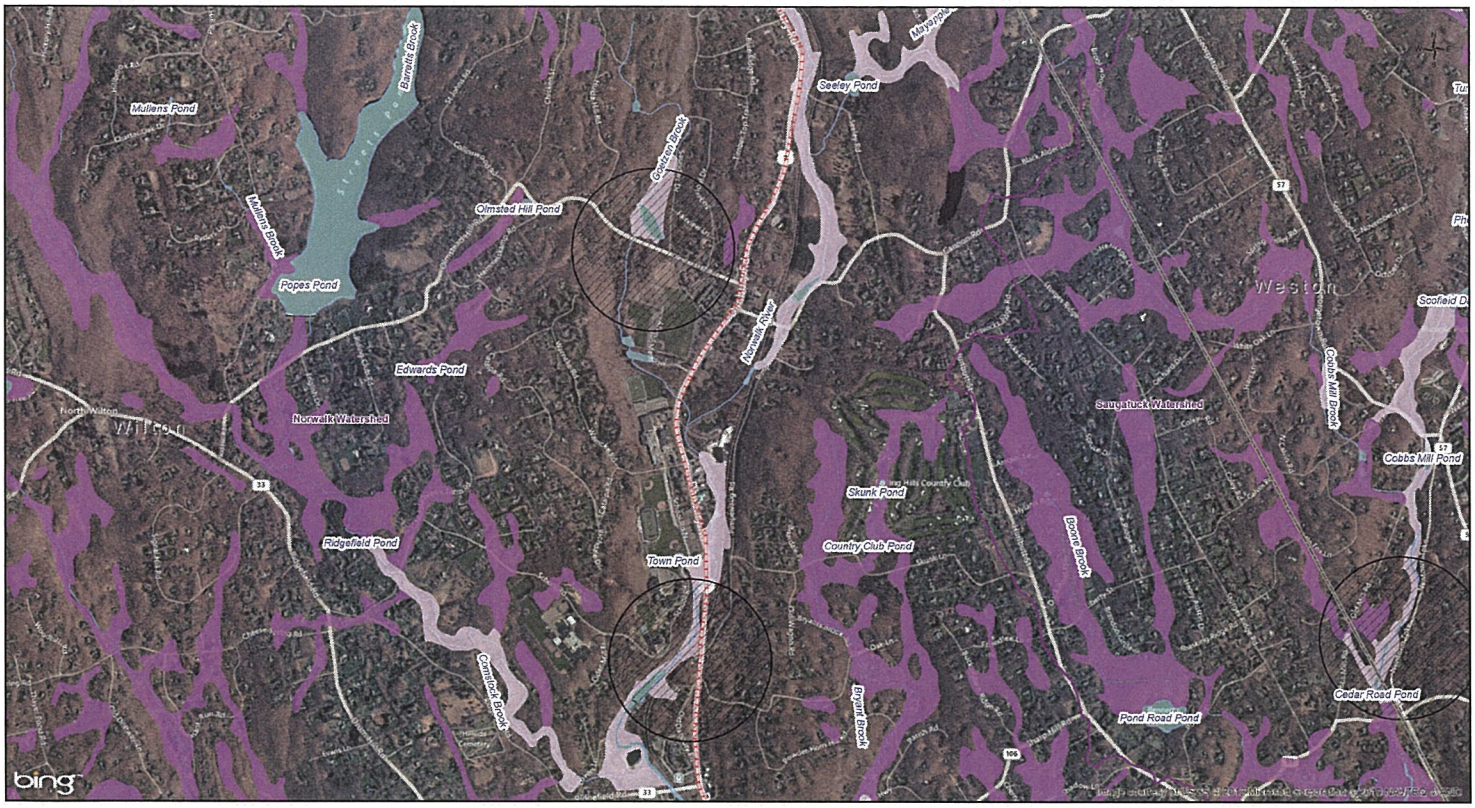

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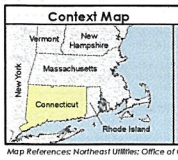

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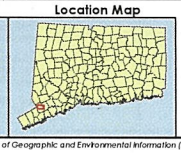

- Substation
- Fluid-Filled Cable
- Town
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Inland Wetland Soils

- Poorly Drained and Very Poorly Drained Soils
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ARCHERS LANE - NORWALK JUNCTION

PROJ. No. 99549.A53

DATE: 9/5/2012

0 750 1,500

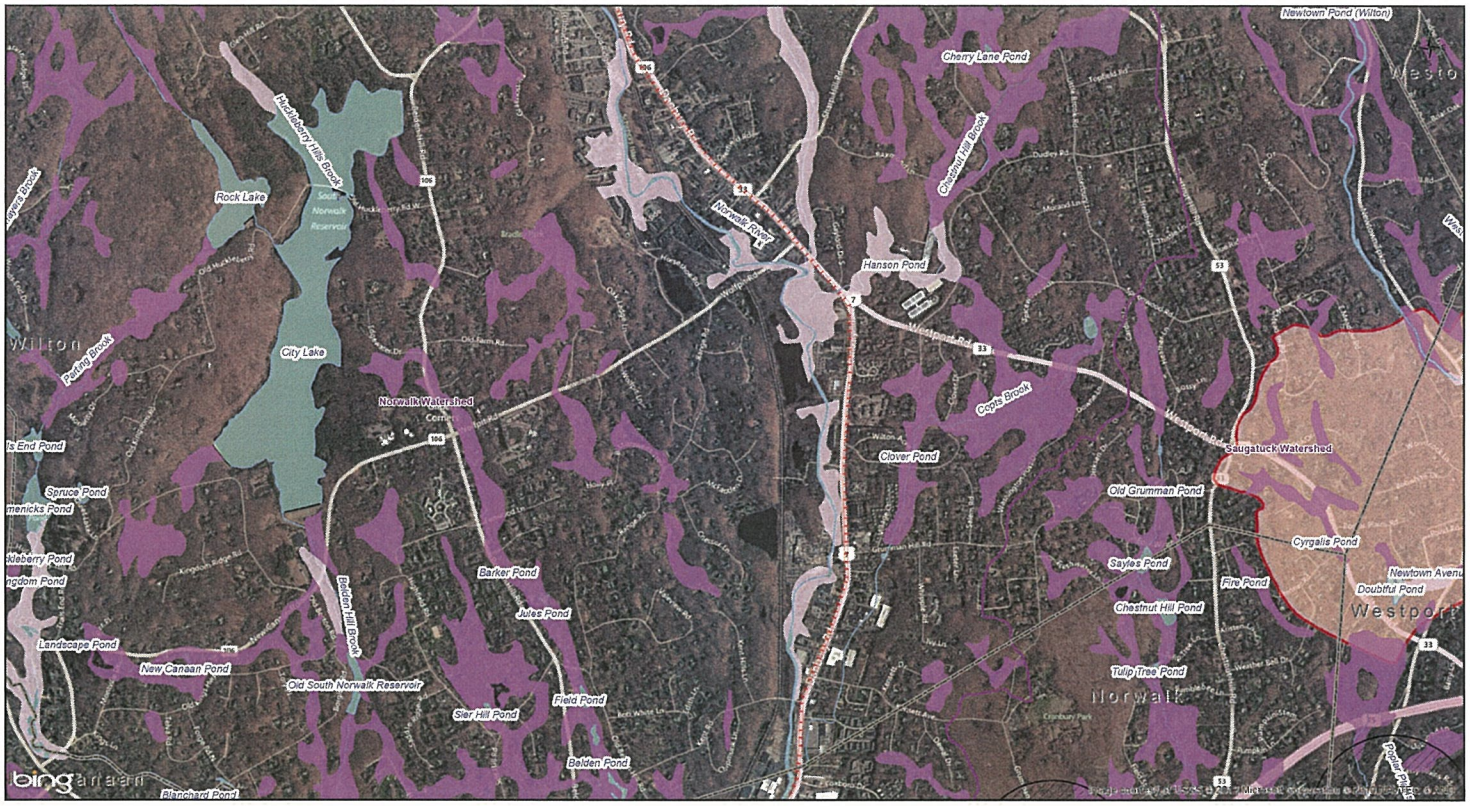
Feet

1 in = 1,500 ft

FIGURE 8C

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

Document Path - J:\GIS\P99\99549\A53\CT HPFF.mxd



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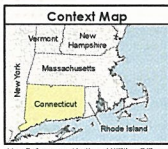
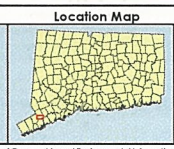


Location Map



- Substation
- Fluid-Filled Cable
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Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

ARCHERS LANE - NORWALK JUNCTION

PROJ. No. 99549.A53

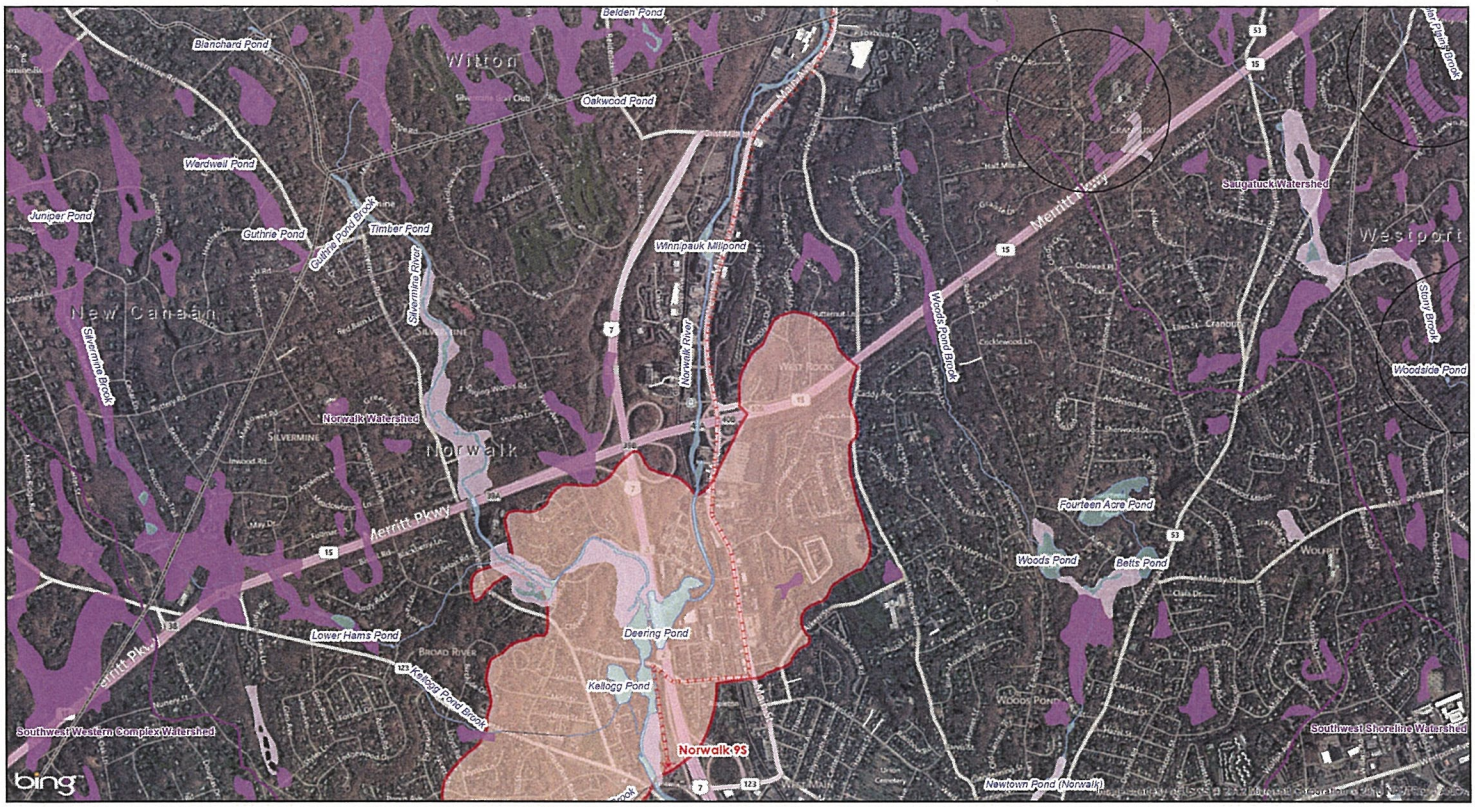
DATE: 9/5/2012

0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 8D

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

Document Path - J:\GIS\PPP\99549\A53\CT HPFF.mxd



Context Map

Location Map

Substation
Fluid-Filled Cable
Town
Natural Diversity Area

Inland Wetland Soils
Poorly Drained and Very Poorly Drained Soils
Alluvial and Floodplain Soils
Regional Basin Area

Named Waterbody
Water
Other Connector
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Final Adopted Aquifer Protection

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Northeast Utilities System

FUSS & O'NEILL
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WEST SPRINGFIELD, MA 01089
(413) 452-0445
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Northeast Utilities

Spill Prevention, Control & Countermeasures (SPCC) Plan

Pipe Type High Pressure Fluid Filled and Self Contained Fluid Filled Transmission Cables
Massachusetts

ARCHERS LANE - NORWALK JUNCTION

PROJ. No. 99549.A53
DATE: 9/5/2012
0 750 1,500
Feet
1 in = 1,500 ft

FIGURE 8E

Map References: Northeast Utilities; Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

Document Path - J:\GIS\P99\99549\A53\CT HPFF.mxd

APPENDIX A

Guidelines for the 3403 345-kV Circuit (Bethel – Norwalk 345 kV)

APPENDIX B

Addendum HPFF SPCC Plan

Emergency Response Guidelines for High Pressure Fluid Filled (HPFF) Cable Releases (CT and MA)

Northeast
Utilities System

Northeast Utilities -Transmission Group

Addendum HPFF SPCC Plan

Emergency Response Guidelines For High Pressure Fluid Filled (HPFF) Cable Releases (CT and MA)

Approved by:	**Revision:**
Date:	**Date:**

Table of Contents

Section 1 General Information

1.1 Scope

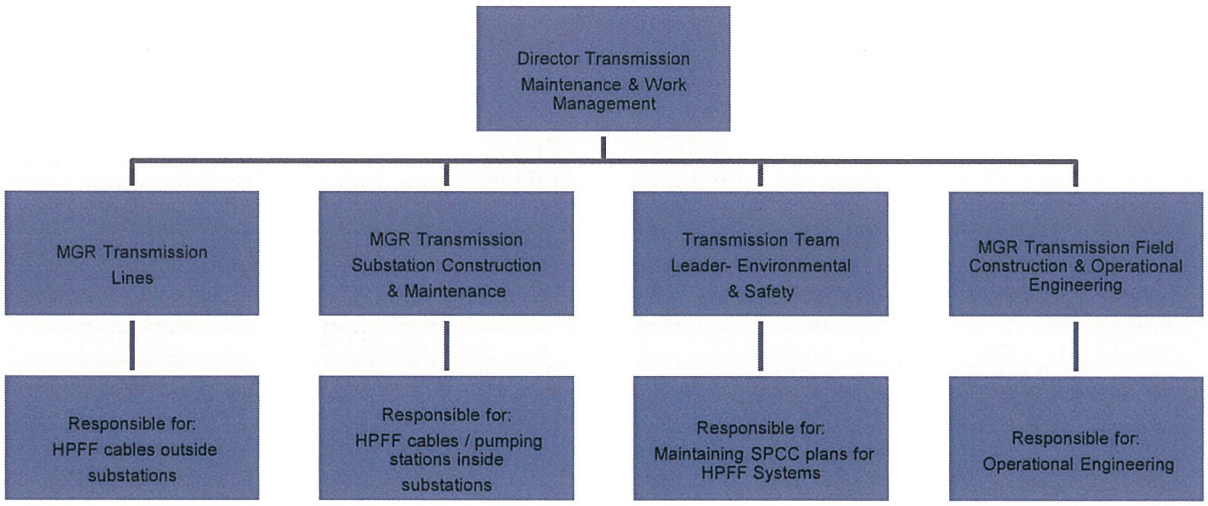
Responding to underground fluid filled cable system releases located outside a substation boundary.

1.2 Purpose

The Northeast Utilities Transmission Group owns and operates approximately 81 miles of underground high pressure fluid filled cable systems. These systems initiate and terminate within substations. Each substation that has an HPFF system has a specific Spill Prevention, Control & Countermeasure (SPCC) plan dedicated to its unique set-up. The cable systems themselves (outside the confines of the substations) are covered under separate SPCC plans for Connecticut and Massachusetts. This document was created as a guideline to assist in the response to a leak or spill within the cable systems.

Section 2 Responsibility Reporting Structure

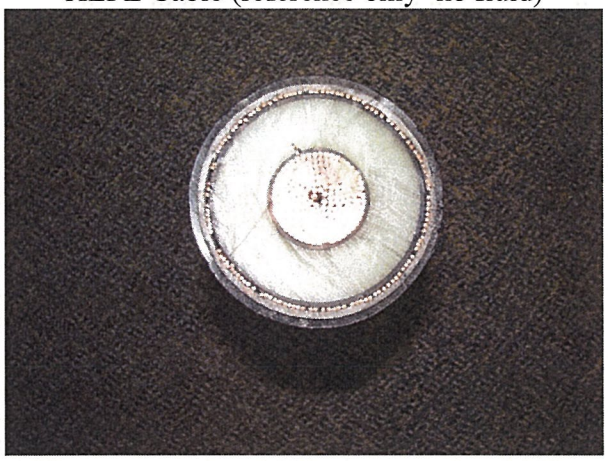
Organizational Chart HPFF Cable Systems



Section 3 HPFF Cable Construction

The NU Transmission system uses various types of underground cables. This document is to address "dielectric fluid filled" cable systems only. Below are pictures of the three types of cables. XLPE contain no oil and HPFF / SCFF cables either contain oil inside the cable or around the cable.

XLPE Cable (reference only- no fluid)



SCFF Cable (self-contained fluid filled)

HPFF cables are constructed of multiple layers of materials. Some cables have hollow cores to allow for oil flow inside the cable (SCFF) and others are solid core cables with oil contained around the cables located inside a larger pipe housing.

Single conductor HPFF

Single conductor HPFF – exterior pipe housing and other conductors not shown. This cable design is from the Bethel – Norwalk Project.

HPFF Cable

Three conductors enclosed within outer pipe housing. This cable design is from the West Springfield – Clinton Substations.

Section 4 Responding to a Fluid Filled Cable System Release

4.1 Decision Matrix

Spill response notifications to State agencies differs between NU operating companies and are contingent upon State and Federal requirements. As a result there are two separate matrix response plans to cover Connecticut and Massachusetts.

The matrix charts flow from two potential scenarios. In either case a response team is assembled to review field data and assess the system. These teams can incorporate multiple individuals but shall, at a minimum, contain a subject ~~mater~~matter expert from Maintenance Engineering, a representative from Transmission Lines (Supervisor or Manager) and a representative from Transmission Safety & Environmental. The team may also include craft workers with working knowledge of the HPFF systems, Managers from Substation Construction & Maintenance, Field Construction & Operational Engineering, or others with related experience in underground HPFF systems. The initial responsibility of the team would be to assess the condition of the cable systems, report known data to regulatory agencies, and to direct the process to locate and contain fluid releases. The goal is to have basic reportable information to regulating agencies within two hours or as soon as possible when notified by system alarms, outages, or field notifications so that cooperative efforts can be established to assist in mitigation efforts.

A Spill Response Team Lead shall be established to coordinate response efforts.

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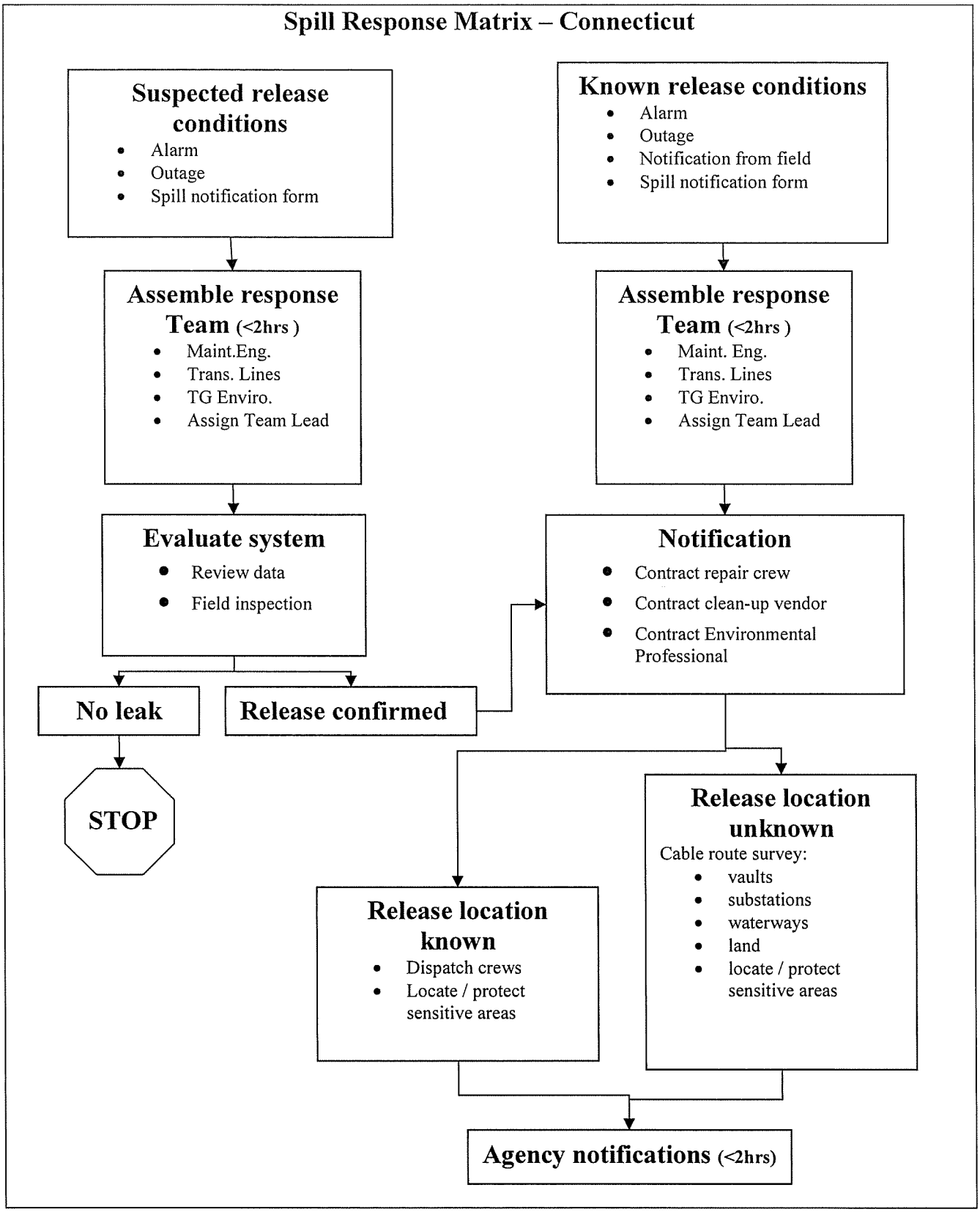
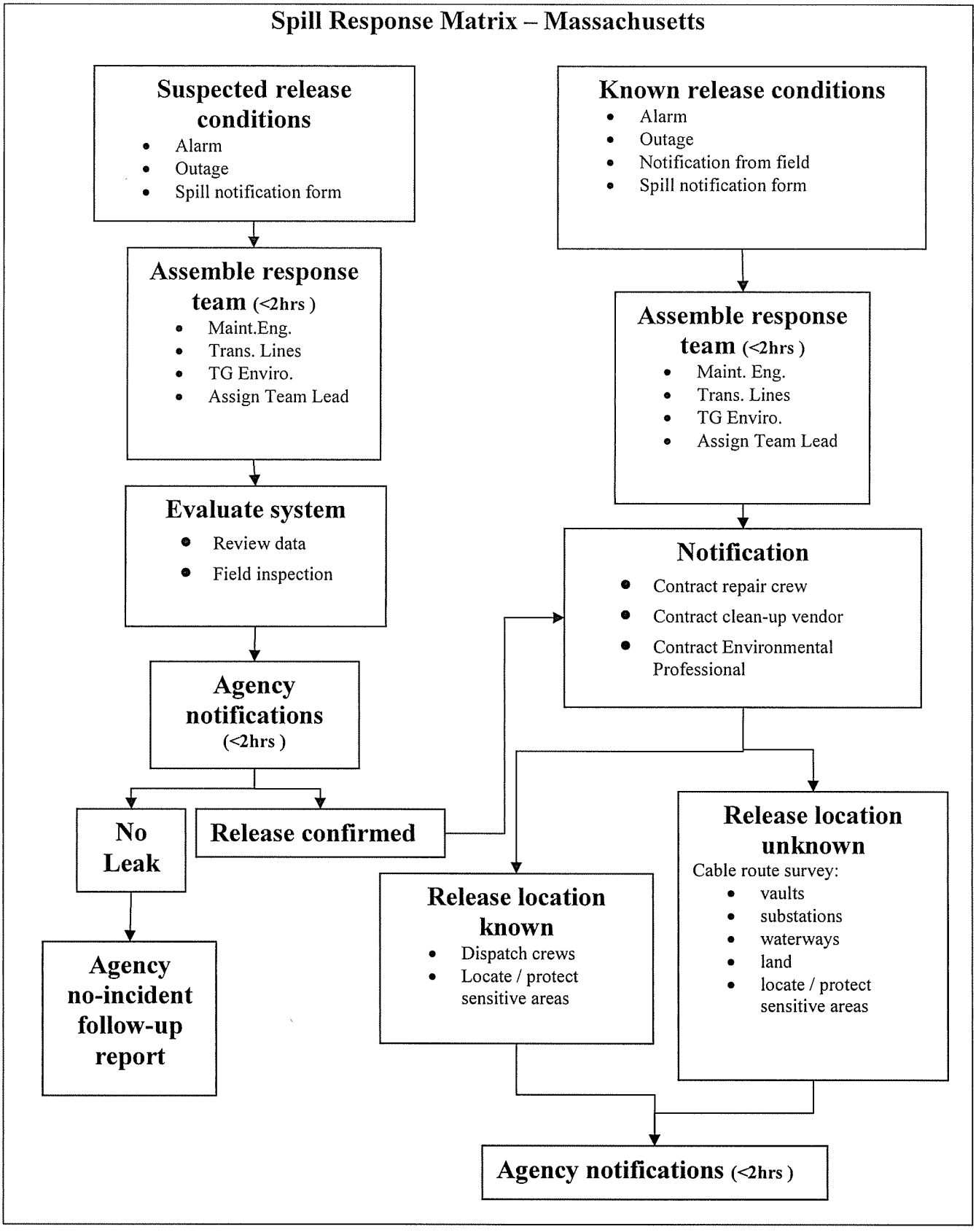
4.1.1 Connecticut Matrix



4.1.2 Massachusetts Matrix



4.1.3 Spill Notification Form

Fill out the Spill Notification Report form to track times and dates of notifications. This form can be obtained from the HPFF Cable Systems SPCC plan. Plans are available from NU Transmission supervision and management.. Initial notifications to NU Management should be from employees first notified. Notifications to agencies and contractors shall be completed by the assembled response team.

4.2 Spill Clean-up Contractors

In the event of a release in sufficient quantities that onsite clean-up equipment can not contain or eliminate the spill, contact the following spill response contractors:

Moran Environmental Recovery	
20 Commerce Road	(203) 270-0095
Newtown, CT 06470	(800) 562-7611
Environmental Services, Inc.	
90 Brookfield Street	(800) 486-7745
South Windsor, CT 06074	(860) 528-9500
True Blue Environmental	(203) 269-3355
5 Northfield Road	(877) 367-8237
Wallingford, CT 06492	

NU has developed formal arrangements with these oil spill response organizations so as to commit full resource capability during an oil discharge situation. This includes equipment, materials and supplies available locally and regionally.

4.3 Identification of Environmental Sensitive Areas

When the release area has been located refer to the **FIGURES** section in the SPCC plan to assist in identifying environmental sensitive areas within close proximity to the impacted area. The release volume, type of spill (dig-up, rupture, etc.), terrain, slope, and altitude should all be considered to determine if additional control measures are needed to contain the release from potential or further impact to environmentally sensitive areas. Areas with sensitizers identified should be given priority to minimize impacts of the release into these areas.

APPENDIX C

Spill Notification Report – HPFF Cable Systems

Northeast
Utilities System

Spill Notification Report – HPFF Cable Systems

Date:_____ **Time:**_____ **Location:**_____

Prepared by:_____

Spill Class:

☐ Suspected

☐ Declared

Report Type:

☐ Initial

☐ Follow-up

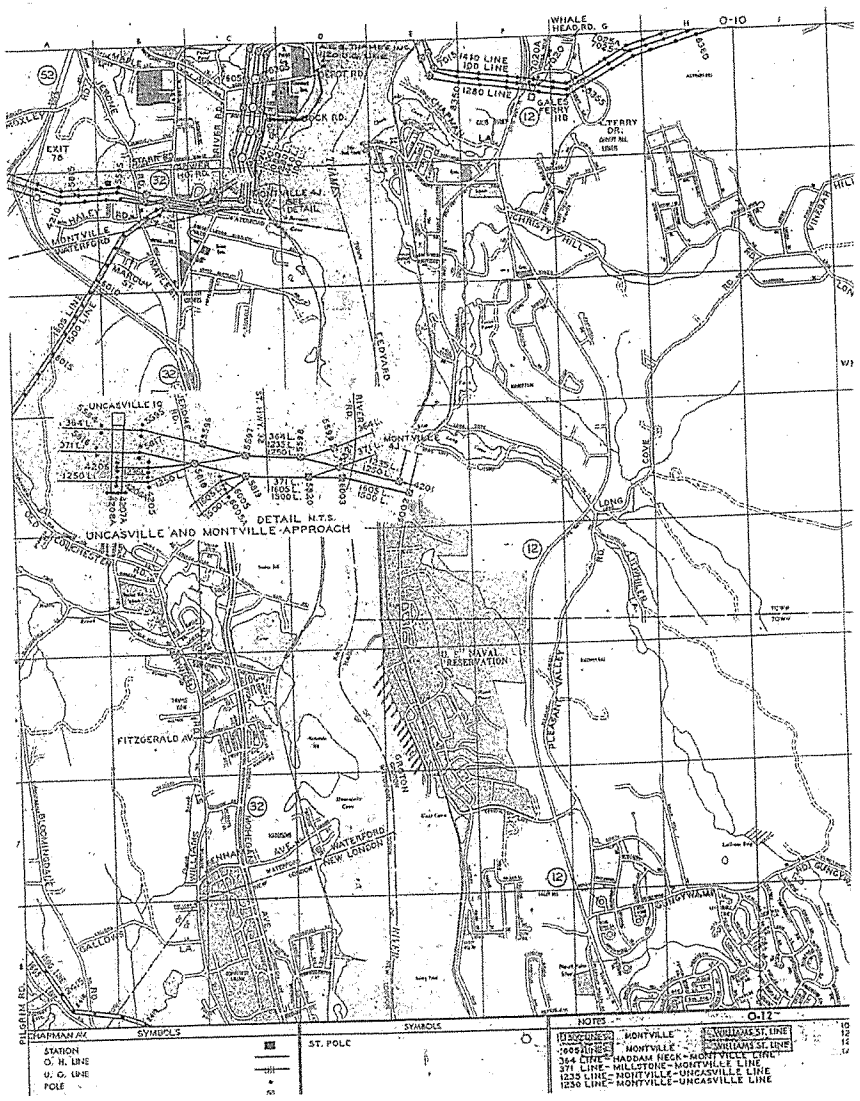
Agency	Telephone #	Person Notified	Contacted √ = yes	Time / Date	Comments
Internal Notifications					
NU-TG Manager • Lines • Substations • Field Const Mgt.	NU-net		☐		Call appropriate MGR's
NU- SOC	860-665-6400		☐		To report a release
CONVEX	800-296-0053		☐		For operational purposes
NU-TG Environmental	860-665-6664		☐		
NU-TG Maint Director	860-665-6196		☐		
NU-VP Project Eng & Maint.	860-665-2470		☐		
NU-Sr. VP Transmission	860-665-3315		☐		
NU-Corp Environmental	NU-net		☐		
NU-Corp Communications	NU-net		☐		
NU-Legal	NU-net		☐		
External Notifications					
Spill Reporting CT-DEEP	860-424-3338		☐		SOC to contact (all spills)
Spill Reporting MA-DEP >10 gallons	888-304-1133 or 617-556-1133		☐		SOC to contact
Local Fire/Police Response	911		☐		
National Response Center – releases to waterways	800-424-8802		☐		SOC to contact

Agency	Telephone #	Person Notified	Contacted √ = yes	Time / Date	Comments
Call Before You Dig-CT	800-922-4455		☐		As needed
MA/NH Dig Safe	888-344-7233		☐		As needed
SERC-CT	203-265-8205		☐		As needed (TG Enviro)
SERC-MA	508-820-2000		☐		As needed (TG Enviro)

APPENDIX D

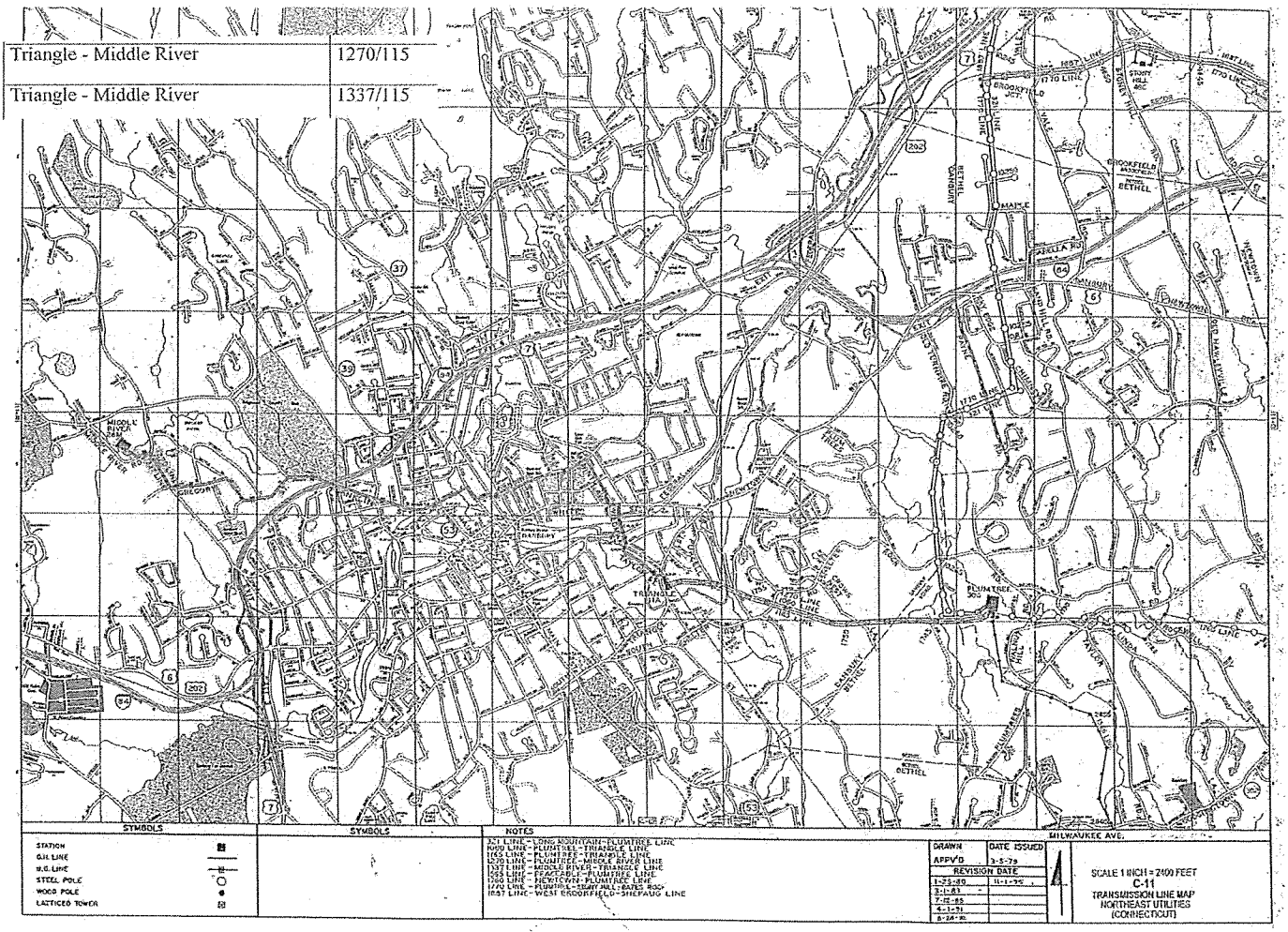
NU Line Maps

AES Thames - Montville Station	1120/115

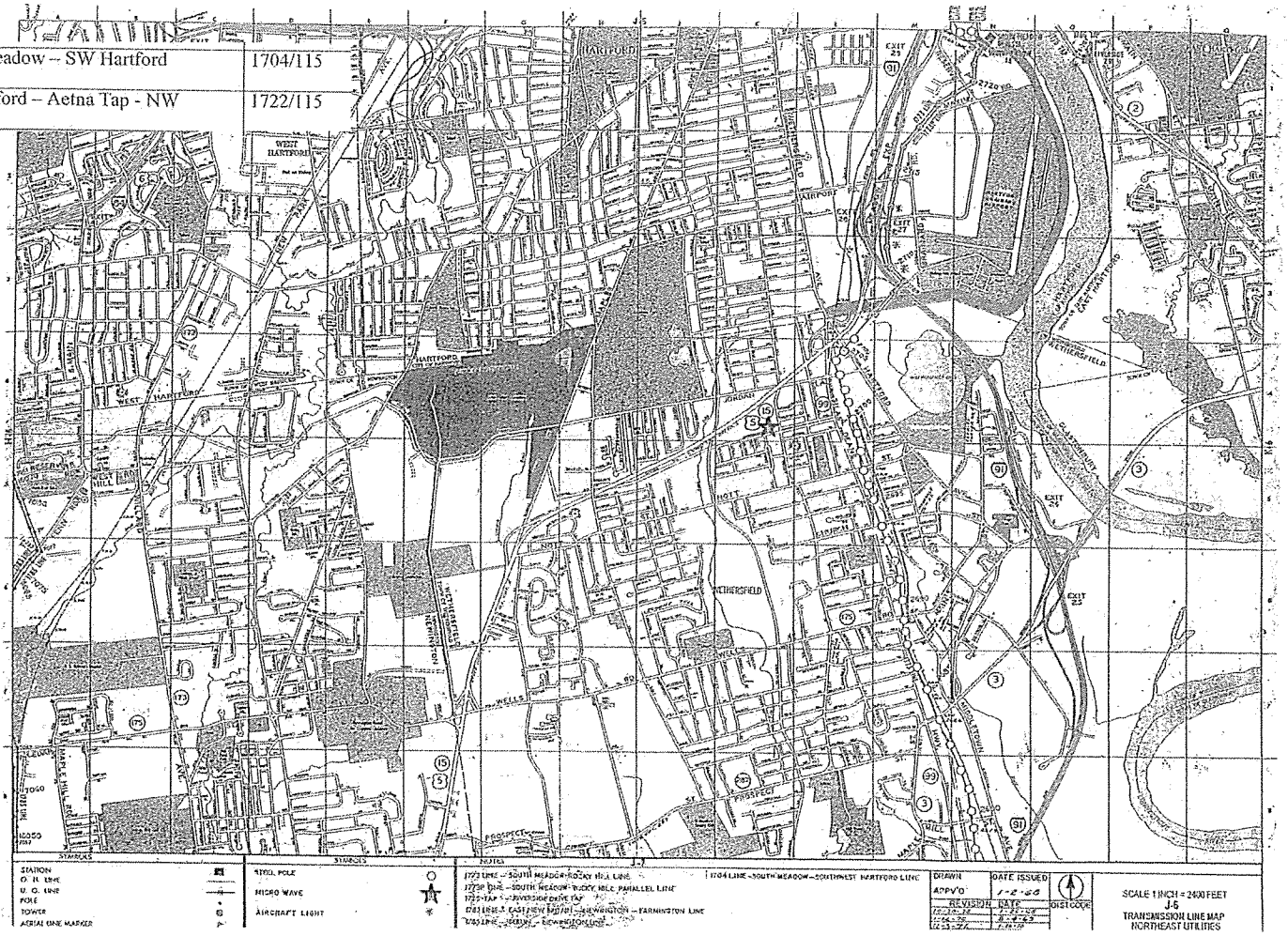


(2)

Triangle - Middle River	1270/115
Triangle - Middle River	1337/115



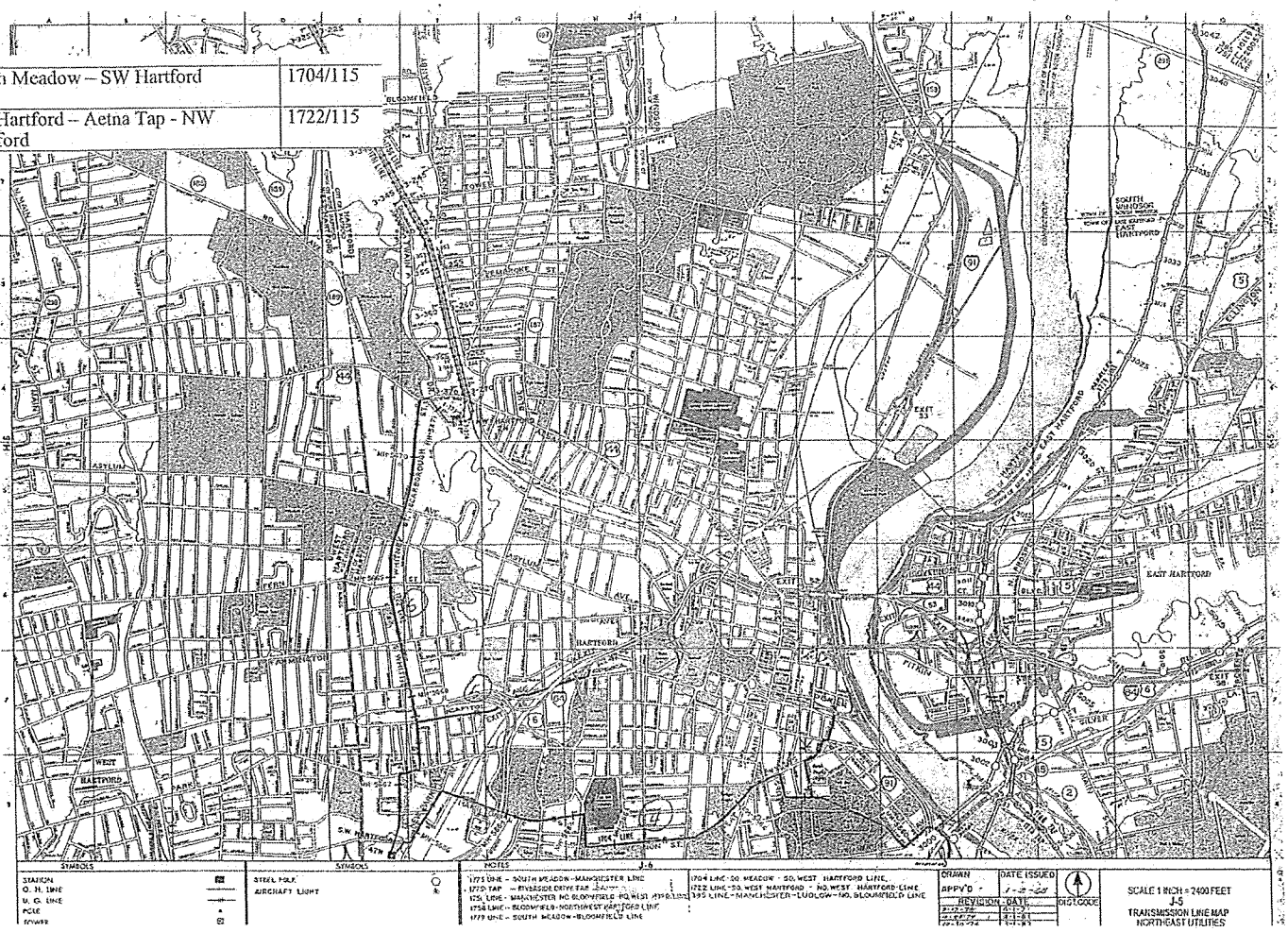
South Meadow – SW Hartford	1704/115
SW Hartford – Aetna Tap - NW Hartford	1722/115



(4)

South Meadow – SW Hartford	1704/115
SW Hartford – Aetna Tap - NW Hartford	1722/115

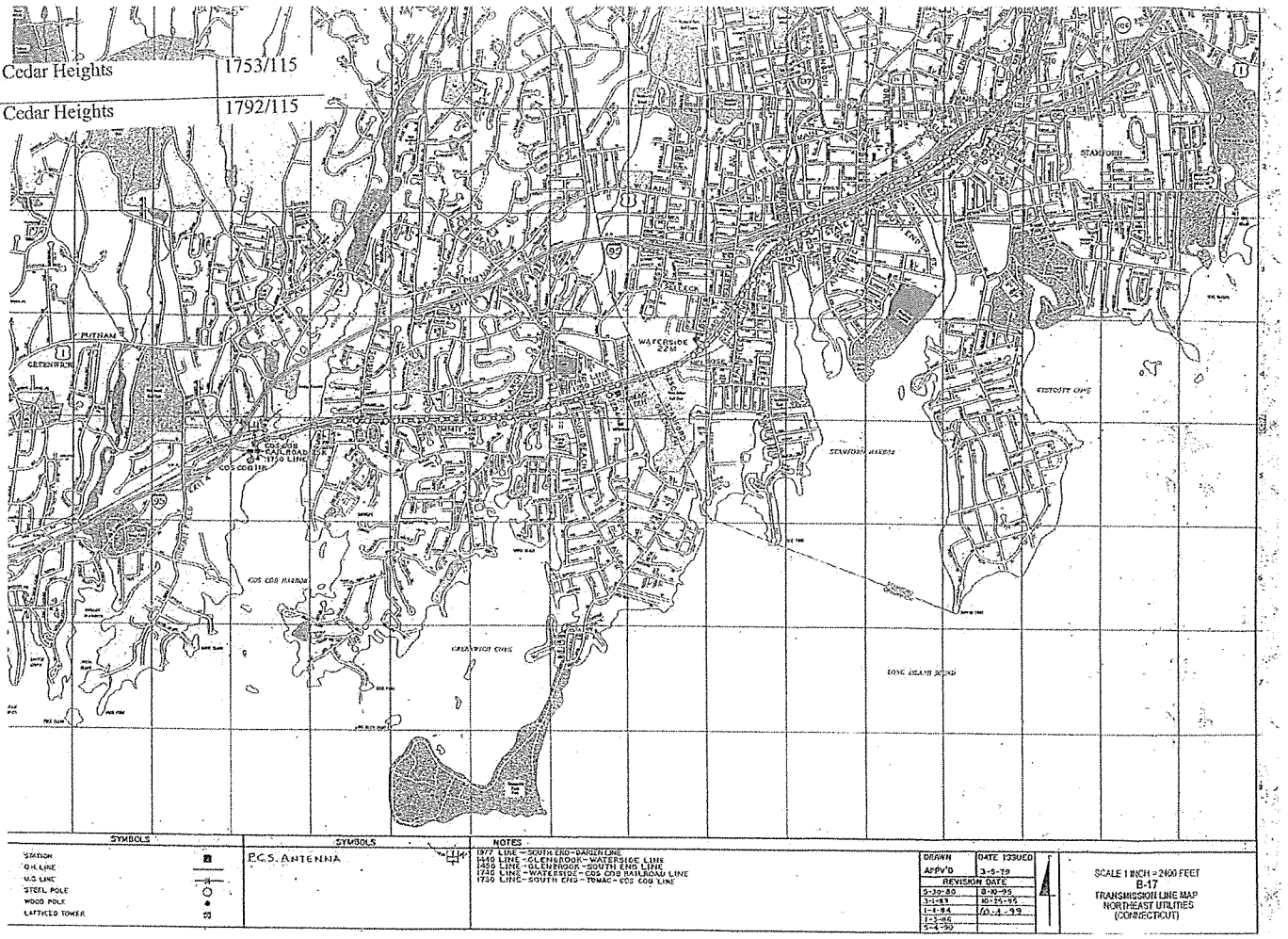
4 & 5



& EMPTY PIPE CABLES OIL REMOVED

Glenbrook - Cedar Heights	1753/115
Glenbrook - Cedar Heights	1792/115

(6)



SYMBOLS

STATION	
O.H. LINE	
U.G. LINE	
STEEL POLE	
WOOD POLE	
LATTICED TOWER	

SYMBOLS

P.C.S. ANTENNA

NOTES

1977 LINE – SOUTH END – DARIEN LINE
1449 LINE – GLENBROOK – WATERSIDE LINE
1459 LINE – GLENBROOK – SOUTH END LINE
1740 LINE – WATERSIDE – COS COB RAILROAD LINE
1730 LINE – SOUTH END – TOMAC – COS COB LINE

DRAWN	DATE 1230EO
APP'D	3-5-79
REVISION DATE	
5-30-80	8-10-95
3-1-83	10-25-95
1-1-84	10-4-99
1-1-86	
1-1-90	

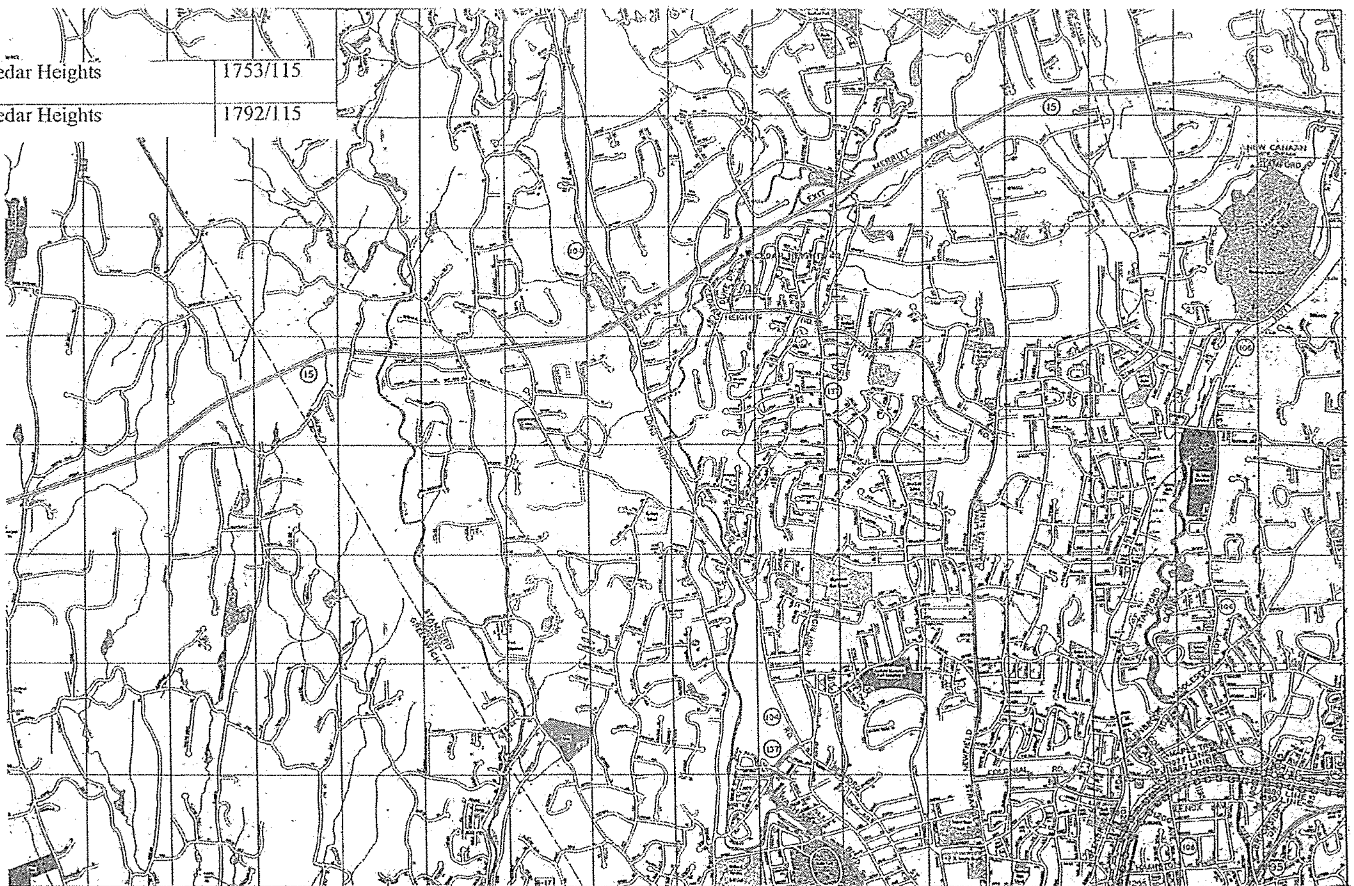
SCALE 1 INCH = 2400 FEET

B-17

TRANSMISSION LINE MAP
NORTHEAST UTILITIES
(CONNECTICUT)

6

Glenbrook - Cedar Heights	1753/115
Glenbrook - Cedar Heights	1792/115



SYMBOLS

STATION	■
OIL LINE	—
U.G. LINE	—‖—
STEEL POLE	○
WOOD POLE	●
LATTICED TOWER	⊠

SYMBOLS

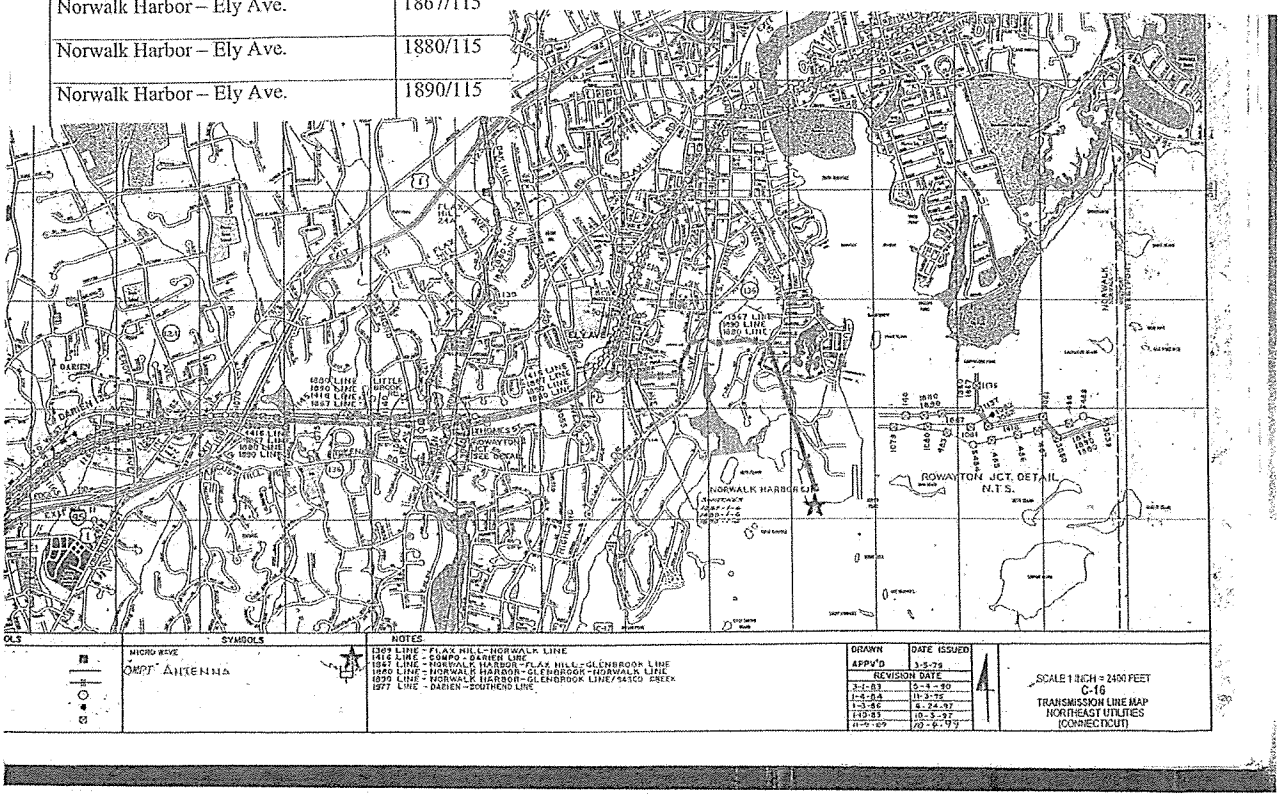
NOTES

1977 LINE – SOUTHEND – DARIEN LINE
1753 LINE – GLENBROOK – CEDAR HEIGHTS LINE
1792 LINE – GLENBROOK – CEDAR HEIGHTS LINE
1867 LINE – NORWALK HARBOR – FLAX HILL – GLENBROOK LINE
1880 LINE – NORWALK HARBOR – GLENBROOK – NORWALK LINE
1890 LINE – NORWALK HARBOR – GLENBROOK LINE

DRAWN	DATE ISSUED
APPV'D	3-5-79
REVISION	DATE
3-1-83	
1-3-86	
2-4-90	

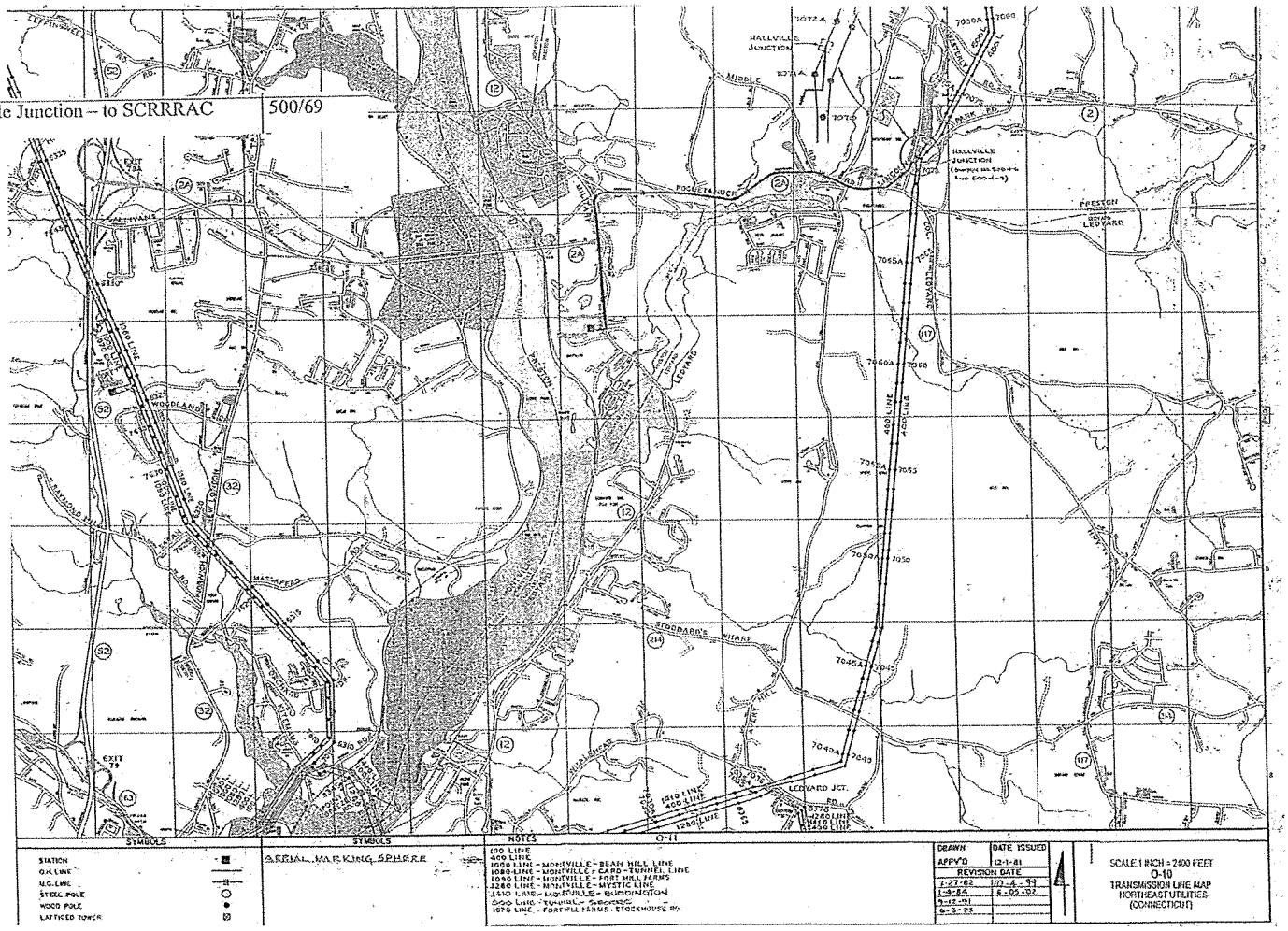
SCALE 1 INCH = 2400 FEET
B-16
TRANSMISSION LINE MAP
NORTHEAST UTILITIES
(CONNECTICUT)

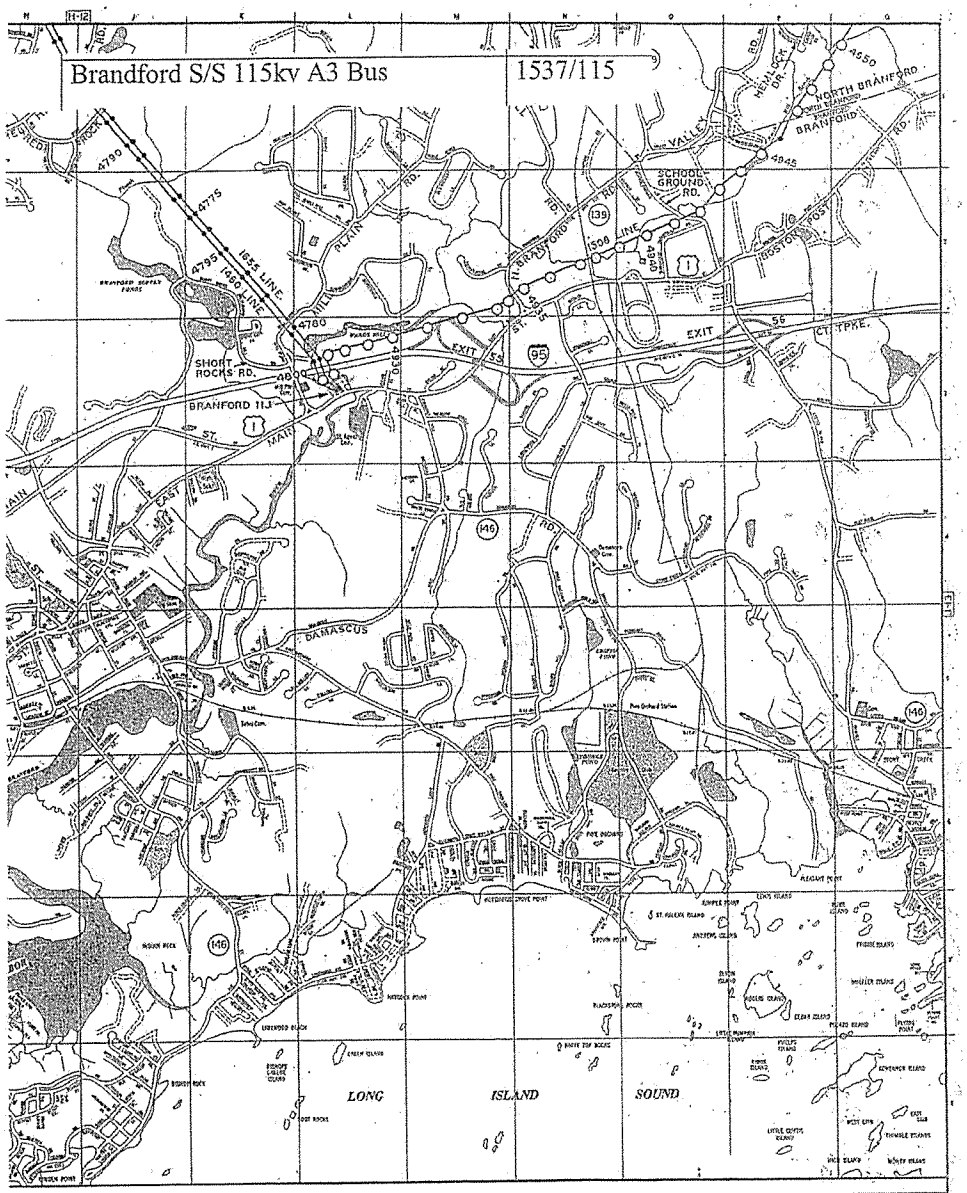
Norwalk Harbor – Ely Ave.	1867/115
Norwalk Harbor – Ely Ave.	1880/115
Norwalk Harbor – Ely Ave.	1890/115



#8

Hallville Junction – to SCRRRAC 500/69

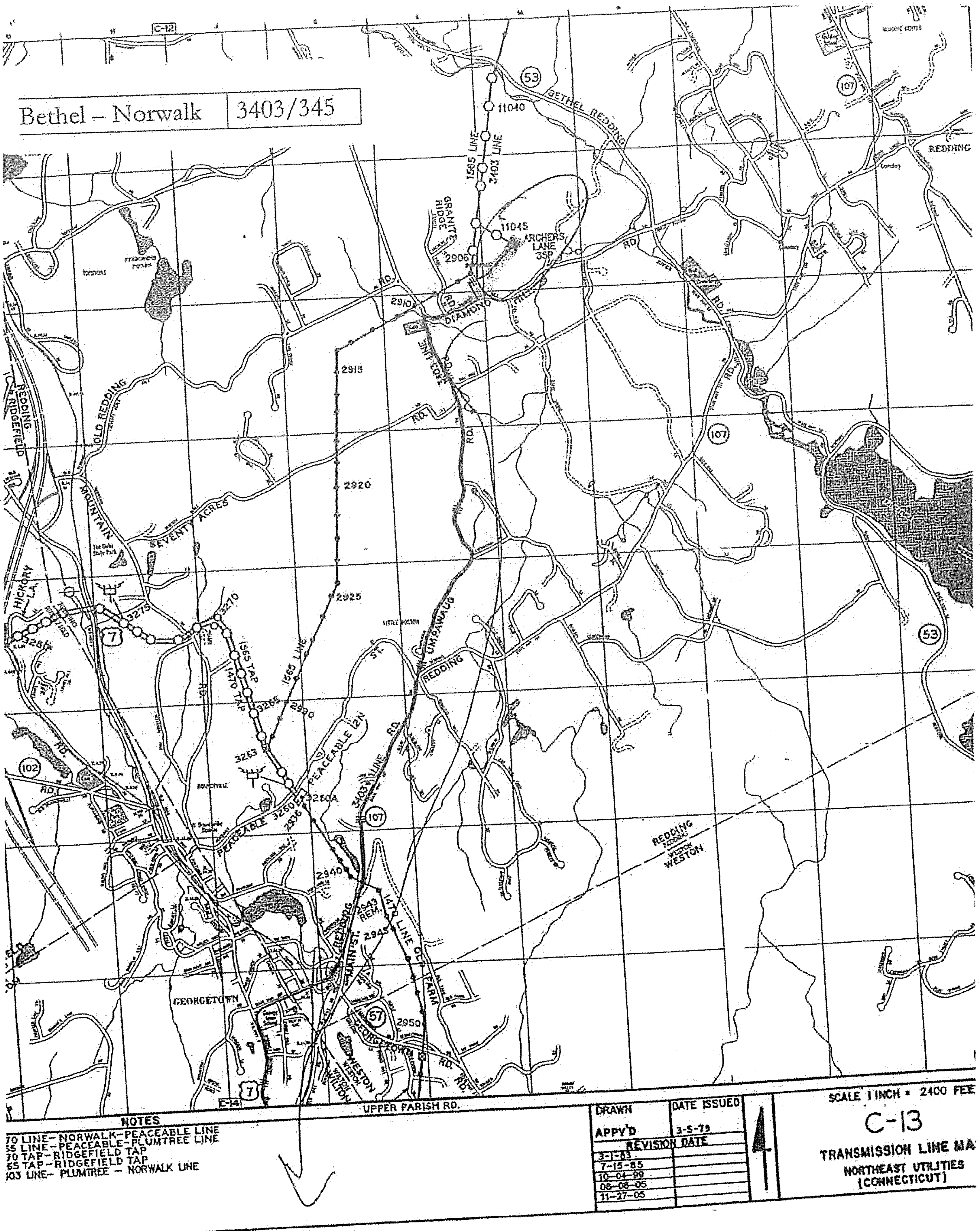


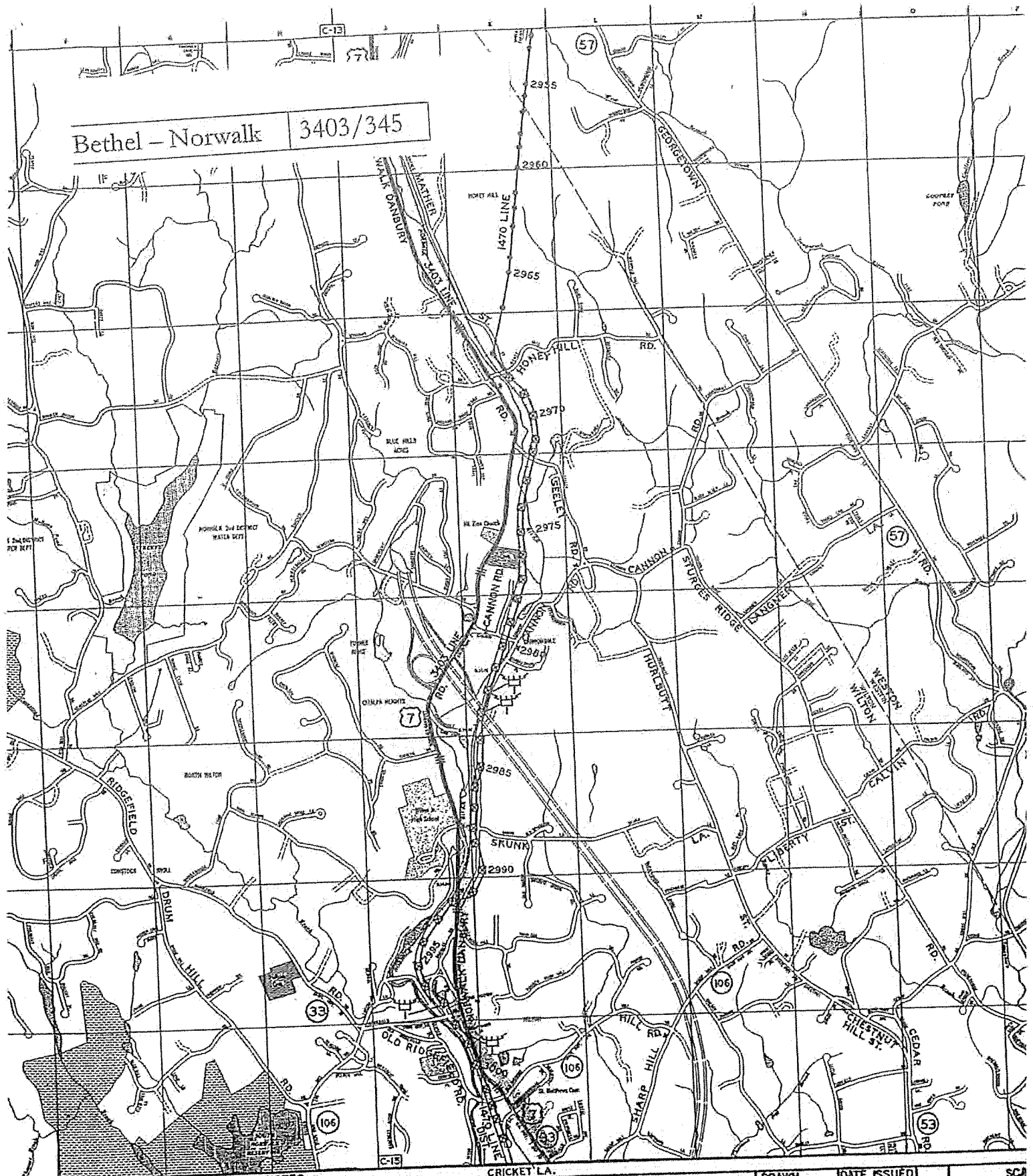


= BRANFORD LINE
REEN HILL LINE
EN – BRANFORD LINE

DRAWN	DATE ISSUED
APPV'D	10-3-80
REVISION DATE	
3-1-83	
12-14-99	

SCALE 1 INCH = 2400 FEET
H-13
TRANSMISSION LINE MAP
NORTHEAST UTILITIES
(CONNECTICUT)


Bethel – Norwalk
3403/345
C-12
BETHEL REDDING
11040
1565 LINE
3403 LINE
GRANITE RIDGE
11045
ARCHERS LANE
35P
2906
2910
DIAMOND
HILL
1565 LINE
2915
2920
2925
OLD REDDING
REDDING
RIDGEFIELD
SEVENTY ACRES
MOUNTAIN
HICKORY LA.
3275
3270
3286
1565 TAP
1470 TAP
3265
2930
1565 LINE
3263
3260
3260A
2936
3403 LINE
PEACEABLE
PEACEABLE ST.
UMPAWAUG
REDDING
REDDING
WESTON
2940
2945
2949 REM.
1470 LINE
OLD FARM
MAIN ST.
REDDING
GEORGETOWN
2950
GEORGETOWN RD.
WESTON
WILTON
UPPER PARISH RD.
E-14
53
107
102
7
57
NOTES
70 LINE- NORWALK-PEACEABLE LINE
65 LINE- PEACEABLE-PLUMTREE LINE
70 TAP- RIDGEFIELD TAP
65 TAP- RIDGEFIELD TAP
403 LINE- PLUMTREE – NORWALK LINE
DRAWN
APPV'D
DATE ISSUED
3-5-79
REVISION DATE
3-1-83
7-15-85
10-04-99
08-08-05
11-27-05
SCALE 1 INCH = 2400 FEE
C-13
TRANSMISSION LINE MA
NORTHEAST UTILITIES
(CONNECTICUT)



NOTES

1470 LINE–NORWALK–PEACEABLE LINE –RIDGEFIELD TAP
3403 LINE– PLUMTREE – NORWALK LINE

DRAWN	DATE ISSUED
APPV'D	3-3-79
REVISION DATE	
3-1-83	
10-04-99	
08-05-05	
11-28-05	

4

SCA

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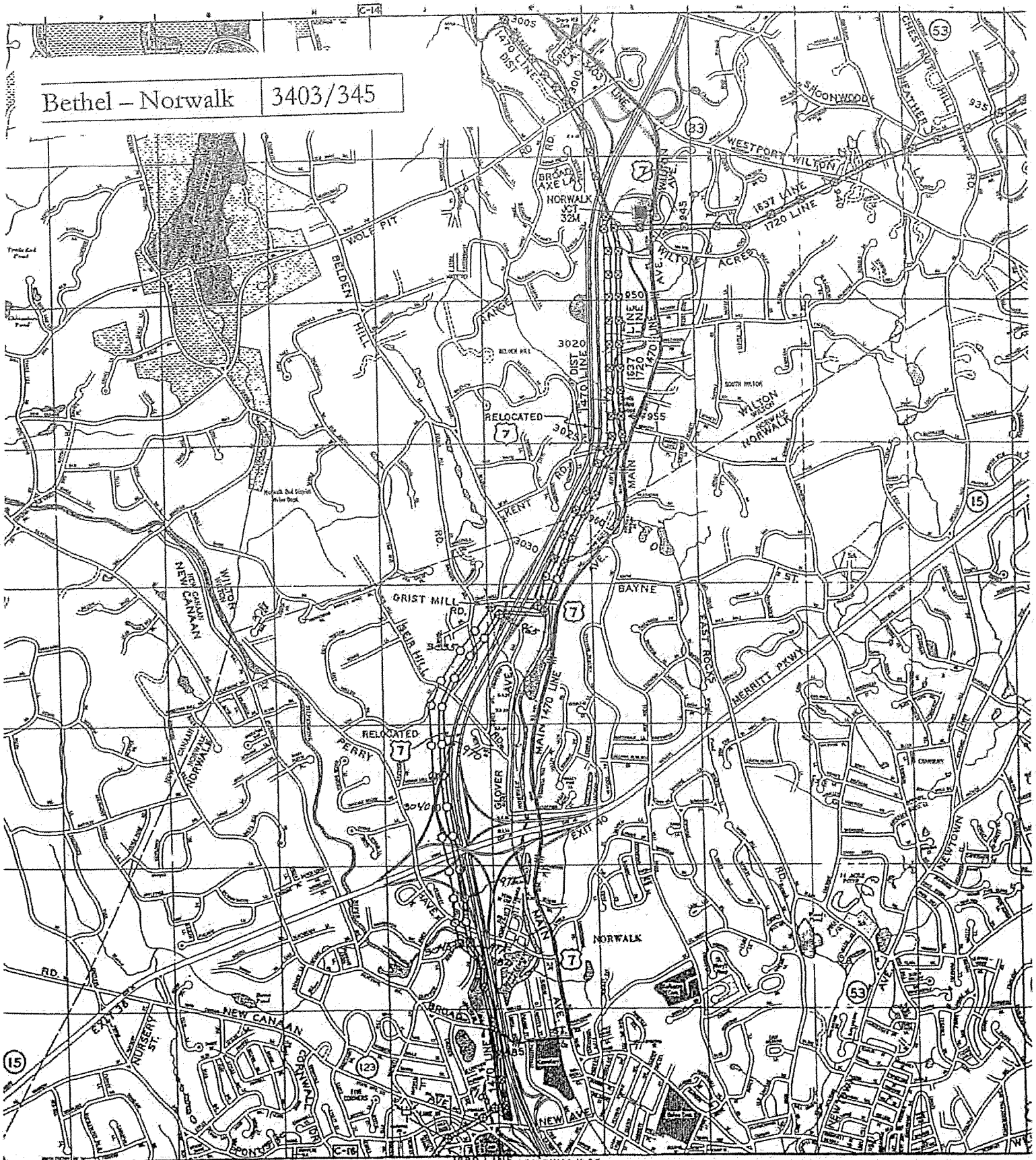


MBOLS

NOTES

1389 LINE-FLAX HILL-NORWALK LINE
1470 LINE-NORWALK-PEACEABLE LINE-RIDGEFIELD TAP
1637 LINE-NORWALK-WESTON LINE
1720 LINE-HAWTHORNE-NORWALK LINE
1880 LINE-NORWALK HARBOR-GLENBROOK-NORWALK LINE
3403 LINE- PLUMTREE – NORWALK LINE

DRAWN	DATE ISSUED
APPV'D	3-5-79
REVISION DATE	
3-1-83	
5-4-90	
5-7-90	
10-04-99	
11-28-05	

TF

Attachment 3

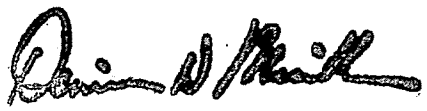
61-66
Rev 2-94

Office of the Secretary of the State of Connecticut

I, the Connecticut Secretary of the State, and keeper of the seal thereof, DO HEREBY CERTIFY, that

THE CONNECTICUT LIGHT AND POWER COMPANY

a Connecticut corporation, in compliance with section 16-230 of the Connecticut General Statutes, filed in this office on February 5, 2015, a certificate indicating that its combined paid-in capital and surplus was not less than five hundred thousand dollars ($500,000.00).



Secretary of the State

Date Issued: February 6, 2015

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Attachment 4

EVERSOURCE ENERGY

56 Prospect Street

Hartford, CT 06103

September 18, 2015

Re: Greenwich Substation and Line Project
Supplemental Notice to Owners of Property Abutting the Proposed, Alternate locations for the Greenwich Substation or Property Abutting Cos Cob Substation

Dear Neighbor:

As you know, Eversource Energy, as part of its efforts to improve the electric power delivery system in Greenwich, is seeking approval from the Connecticut Siting Council (Council) to construct and operate a proposed new substation and two new, underground 115-kV transmission lines that will interconnect the existing Cos Cob Substation to the new substation.

The proposed location for the new substation is 290 Railroad Avenue and the alternate proposed site is 281 Railroad Avenue. The proposed location, the alternate location for the new substation or the Cos Cob Substation property abuts your property.

On September 1, 2015, the Council held a field review, evidentiary hearing and public hearing in Greenwich. On October 6, 2015, the Council plans to hold a second evidentiary hearing at 11:00 a.m. at its offices at Ten Franklin Square, New Britain, CT 06051. Although the public hearing on September 1, 2015 was completed, there are remaining opportunities for your participation. Those opportunities include attending (but not presenting comments by speaking at) the Council's evidentiary hearings, as well as providing written comments during the time periods allowed by the Council.

If you would like more information concerning the Greenwich Substation and Line Project, please visit the Project website at www.Eversource.com and scroll down for the Transmission link. Or you may email us at TransmissionInfo@eversource.com or call the Transmission Information line at 1.800.793.2202. You may also visit the Council's website at www.ct.gov/csc and click on Pending Proceedings then scroll down for the Docket No. 461 link.

Sincerely,

Jackie Gardell

Jackie Gardell
Project Manager

Name	Mailing Address	Mailing Town	Mailing_State	Zip_Code
TIFFANY PROPERTIES & MANAGEMENT INC.	211 WEST STREET	WHITE PLAINS	NY	10605
RIDGEGREEN CORP C/O THOMAS F HARTCH	PO BOX 676	GREENWICH	CT	06830
JOZEFA DMITORWSKA ZYGMUNT	128 DARA DRIVE	COLCHESTER	CT	06415
JOHN A. & SHIRLEY M. VIESTA TRST	10120 NW 71 COURT	TAMARAC	FL	33321
TERESA ISABEL REAL	41 WOODLAND DRIVE	GREENWICH	CT	06830
BARRY GREENWICH LLC	162 GRASSY PLAIN STREET	BETHEL	CT	06801
NATIONAL RAILROAD PASSENGER CORPORATION C/O JOEL PAUL BERGER ET AL	42-08 BELL BOULEVARD	BAYSIDE	NY	11361
Town of Greenwich Office of First Selectman	101 FIELD POINT ROAD	GREENWICH	CT	06830
STATE OF CONNECTICUT FINANCE DEP	101 FIELD POINT ROAD	GREENWICH	CT	6830
BRUCE L & ANN MARGARET WARWICK	4 SOUND SHORE DRIVE, UNIT 1	GREENWICH	CT	06830
IGOR TULCHINSKY	30 ARCH STREET	RIVERSIDE	CT	06878
TDC JR FAMILY INVESTMENT LLC C/O CABOT-WELLINGTON LLC	70 FEDERAL STREET - 7TH FL	BOSTON	MA	02110
ALICE P MELLY & BENSLEY TRUSTEES	4 SOUND SHORE DRIVE, UNIT 4	GREENWICH	CT	06830
VJHC DEVELOPMENT CORP C/O MOTT & PRINCE MANAGEMENT INC	6 BOWERY, 6/F	NEW YORK	NY	10013
LILLIAN C ANDERSON REVOCABLE TRUST	PMB 8091, 6001 HIGHWAY A1A	INDIAN RIVER SHORES	FL	32963
ROBERT F FULLER REVOCABLE TRUST	4 SOUND SHORE DRIVE, UNIT 7	GREENWICH	CT	06830
GENSSLER ENTERPRISES LLLP	2602 JUNIPER COURT	PALM CITY	FL	06830
ROBERT H, JR & ROSLIE CLARK	521 FITH AVE - 36TH FL	NEW YORK	NY	10175
DAVID J & DONALD T MACNAUGHTON	30 MAPLE DR	NORTH CALDWELL	NY	07006

HENRY VOLQUARDEN	4 SOUND SHORE DRIVE, UNIT 11	GREENWICH	CT	06830
KELESHIAN INVESTMENTS LLC	4 SOUND SHORE DRIVE, UNIT 12	GREENWICH	CT	06830
HOLLIANN LLC	81217 OLD HIGHWAY	ISLAMORADA	FL	33036
JAMES A LASH & DEBORAH JONES	4 SOUND SHORE DRIVE, UNIT 15	GREENWICH	CT	06830
LUCY F GREENE TRUST C/O LUCY F GREEN	4 SOUND SHORE DRIVE, UNIT 15	GREENWICH	CT	06830
LYNDA M BRIGGS TRUST	4 SOUND SHORE DRIVE, UNIT 17	GREENWICH	CT	06830
JONATHAN P & LAURIE P NELSON, THE WATERFORD	4 SOUND SHORE DRIVE, UNIT 18	GREENWICH	CT	06830
DONALD C WAITE III LIVING TRUST	24 DOCKSIDE LANE -PMB #155	KEY LARGO	FL	33037
FRED G & REGINE LANGHAMMER	4 SOUND SHORE DRIVE, UNIT 19	GREENWICH	CT	06830
HEIDENREIGH REAL ESTATE INVESTMENTS LLC	4 SOUND SHORE DRIVE, UNIT 22	GREENWICH	CT	06830
PER & ASTRID HEIDENREIGH	4 SOUND SHORE DRIVE, UNIT 23	GREENWICH	CT	06830
NICHOLAS GRANITTO	34 CLIFFDALE ROAD	GREENWICH	CT	06831
JOSEPH GRANITTO	434 RIVERSVILLE ROAD	GREENWICH	CT	06831
ROBERT H, JR & ROSLIE CLARK	21 FIFTH AVENUE - 36TH FLOO	NEW YORK	NY	10175
THOMAS CIRILLO	SOUND SHORE DRIVE, UNIT 1	GREENWICH	CT	06830
212 WATERFORD LLC C/O PASCARELLA	675 STEAMBOAT ROAD	GREENWICH	CT	06830
DONALD CAMP SHROPSHIRE	SOUND SHORE DRIVE, UNIT 2	GREENWICH	CT	06830

Attachment 5

Lisa M. Cooper, C.P.A

Director of Transmission Rates and Revenue Requirements
Eversource Energy Service Company

107 Selden Street
Berlin, CT 06037

BACKGROUND:

Ms. Cooper has over 25 years of diversified experience in utility ratemaking, accounting and transmission business financial analyses. Ms. Cooper has testified before the Connecticut Public Utilities Regulatory Authority and Massachusetts Department of Public Utilities. She has submitted testimony and provided technical presentations at the Federal Energy Regulatory Commission. Ms. Cooper has several years of Public Accounting experience and is a CPA.

EXPERIENCE:

Eversource Energy - Berlin, CT **(11/13 - present)**

Director, Transmission Rates and Revenue Requirements

Responsible for the overall development of the transmission regulatory plan including the coordination and implementation of transmission revenue requirements and rates for CL&P, NSTAR, PSNH and WMECO. Overall responsibility for regulatory interfaces associated with all transmission rate related filings before the Connecticut, Massachusetts and New Hampshire state utility commissions, as well as the Federal Energy Regulatory Commission. Responsible for providing direction and guidance on the preparation and filing of various documents and exhibits related to transmission revenue requirements, rates and projects.

Eversource Energy (formerly Northeast Utilities) - Berlin, CT

Manager, Transmission Rates **(7/07- 10/13)**

- Responsible for the development of transmission regulatory plan for various issues which included the preparation and review of FERC filings and post-filing activities with respect to transmission rates.
- Responsible for developing and presenting to Senior FERC staff several transmission rate proposals.
- Responsible for providing direction and oversight to staff in the preparation, review and analysis of transmission revenue requirement calculations for CL&P, NSTAR, PSNH and WMECO along with associated development and support of related transmission compliance filings.
- Key contributor in NEPOOL and ISO-NE matters pertaining to transmission rates and effectively managed the PTO AC Rates Working Group as the Chair.
- Managed contract administration, wholesale customer communications and necessary negotiations which entailed the development of related settlement agreements;
- Developed billing processes and ensured all calculations were accurately prepared;
- Managed the preparation of transmission service revenues and distribution transmission expenses for the annual budget and five-year financial forecasts;
- Responsible for guidance and assistance to Transmission Business Unit for Regulatory Strategy and Compliance. Key contributor in update meetings with Transmission Management.
- Effectively managed staff of ten professionals by providing appropriate guidance and training.

Team Lead/Senior, Transmission Controllers Group **(5/02 – 6/07)**

Developed the filing strategy and transmission ratemaking for NU's filing to propose 50% CWIP in rate base for the SWCT projects and localized cost filing for B-N. Created and reviewed cost statements and Exhibits. Responsible for the overall message and transmission rate aspects of all testimony and the transmittal letters. Provided technical support for retail transmission trackers. Responsible for reviewing all transmission rate calculation for CL&P, PSNH and WMECO and associated billing, FERC Form 1 and 3-Q's, Journal entries, AFP's and UVL's. Provided technical

support to staff members related to accounting, contract and ratemaking issues. Coordinated Department work priorities.

Lisa M. Cooper, C.P.A

Director of Transmission Rates and Revenue Requirements
Eversource Energy Service Company

107 Selden Street
Berlin, CT 06037

Senior, Transmission Contracts **(6/99 – 4/02)**

Responsible for efficiently transitioning all transmission service billing from Wholesale Marketing to Transmission Planning and simplifying the process. Provided final sign-off on all monthly transmission service billing and payments and associated accounting. Provided transmission contract interpretation on revenue and billing issues, reported on actual versus budget revenue variances and performed financial analysis pertaining to transmission service agreements and transmission business financials.

Team Lead, Revenue Requirements – Transmission **(6/98 – 5/99)**

Responsible for calculating, filing, and supporting transmission rates in all regulatory jurisdictions. Provided transmission rate calculations required to comply with regulatory orders. Developed NU's transmission revenue requirements and prepared analyses to compare to other NEPOOL Participants. Responsible for the overall coordination of all transmission accounting and financial data responses. Provided general accounting and regulatory assistance including business planning, budgeting planning, budget and financial analyses. A member of the Business Planning Team which successfully developed the first stand-alone Transmission Business Plan.

Senior Accountant, Revenue Services **(11/94 – 5/98)**

Responsible for analyses and administration of various power supply contracts, joint owner agreements, and transmission formula rates. Provided financial expertise and analyses for various wholesale marketing contract negotiations, transmission rate filings and joint owner costs issues. Actively involved in various transmission filings with FERC, managing all financial filing requirements and responses to data requests. Streamlined the administration of various contacts by utilizing financial and ratemaking experience coupled with computer technology.

Senior Accountant/ Fuel Clause Analyst, Fuel Accounting and Recovery **(1/90 – 10/94)**

Responsible for all analyses and schedules required in the WMECO fuel charge and CL&P fuel clause filings. Testified before the Massachusetts DPU and the Connecticut DPUC. Prepared highly technical analyses of various power supply contract impacts on the fuel clauses and presented the results to senior management. Overall responsibility for the coordination of numerous prudence dockets at the DPUC. Developed very good working relationships with the Commission staff.

Haggett, Longobardi & Company (merged with CohnReznick) – Glastonbury, CT **(11/85 – 12/89)**
Manager/Senior

Responsible for managing audit and other financial statement engagements for corporations conducting business in manufacturing, environmental and geological services, construction, real estate, non-profit organizations, and investment firms. Also managed partnership and individual accounting and tax services. Responsibilities included analysis of and recommendation for improvements to accounting systems, correspondence and conferences with bankers, attorneys, and other professionals on behalf of clients, and general accounting assistance. Proficient in taxation, computer applications and general business acumen.

Lisa M. Cooper, C.P.A
Director of Transmission Rates and Revenue Requirements
Eversource Energy Service Company

107 Selden Street
Berlin, CT 06037

Northeast Savings, F.A. – Hartford, CT **(6/84 – 10/85)**
Staff Auditor

Responsibilities included research and planning of audit engagements, preparation of audit programs, preparation of reports to management outlining audit findings and suggested recommendations for improvement. Interaction with senior management, department and branch managers, and external auditors.

EDUCATION/ PROFESSIONAL ACHIEVEMENT:

University of Connecticut, Storrs, CT
Bachelor of Science in Accounting

Certified Public Accountant

PROFESSIONAL MEMBERSHIPS:

The American Institute of Certified Public Accountants
Toastmasters International