Town of Greenwich

Inland Wetlands and Watercourses Agency
Planning & Zoning Commission

Location Review

for the
Proposed Greenwich Substation
to be located at
290 Railroad Avenue
Greenwich, Connecticut

EVERSOURCE ENERGY

February 2015

Table of Contents

Figures

1.0 Introduction

The Connecticut Light and Power Company doing business as Eversource Energy ("Eversource" or the "Company") seeks to construct a new substation (referred to herein as the "Greenwich Substation" or "Substation") at 290 Railroad Avenue in Greenwich, Connecticut ("Town") for the purpose of improving the electric distribution system in Town. Siting of the Substation is subject to the jurisdiction of the Connecticut Siting Council ("Council") pursuant to Title 16, Chapter 277a of the Connecticut General Statutes, known as the Public Utility Environmental Standards Act ("PUESA") (Conn. Gen. Stat. §16-50g et seq.). Note that local wetlands and zoning commissions are provided an opportunity to participate in the Council's decision-making process with respect to the location of certain substations.

The Greenwich Substation is part of the Greenwich Substation and Line Project (the "Project"). In addition to the proposed Substation, the Project includes transmission supply lines between the new Substation and Cos Cob Substation. The location of these transmission supply lines is not subject to the local land use agency reviews that apply to a new substation. However, the Town has the opportunity to provide input regarding the transmission supply lines as part of the Council's process.

Under PUESA, Eversource must apply for and obtain from the Council a Certificate of Environmental Compatibility and Public Need ("Certificate") for the Project. As part of the Council's process, there are three important opportunities where local input is solicited. One opportunity is for the Greenwich Planning & Zoning Commission ("P&Z") and the Greenwich Inland Wetlands and Watercourses Agency ("IWWA") to review and comment on the proposed location of the Greenwich Substation. Another opportunity is the municipal consultation process, which takes place at least 60 days before an application for a Certificate can be filed with the Council, wherein Eversource will provide information in the form of a municipal consultation filing ("MCF") to the chief elected official, on the public need, the site selection process and the environmental effects of the Project, and meet with Town officials and the public to answer any questions and to discuss any concerns.

Thereafter, Eversource carefully evaluates feedback from the P&Z, the IWWC and the Town as part of its final development of the application for a Certificate. Once the application for a Certificate is filed, then as a third opportunity, the Council will hold a public hearing in Greenwich to solicit additional feedback from Town officials and the public. This process allows the Town to review and comment on the project in stages, as design details become more fully developed.

2.0 Description

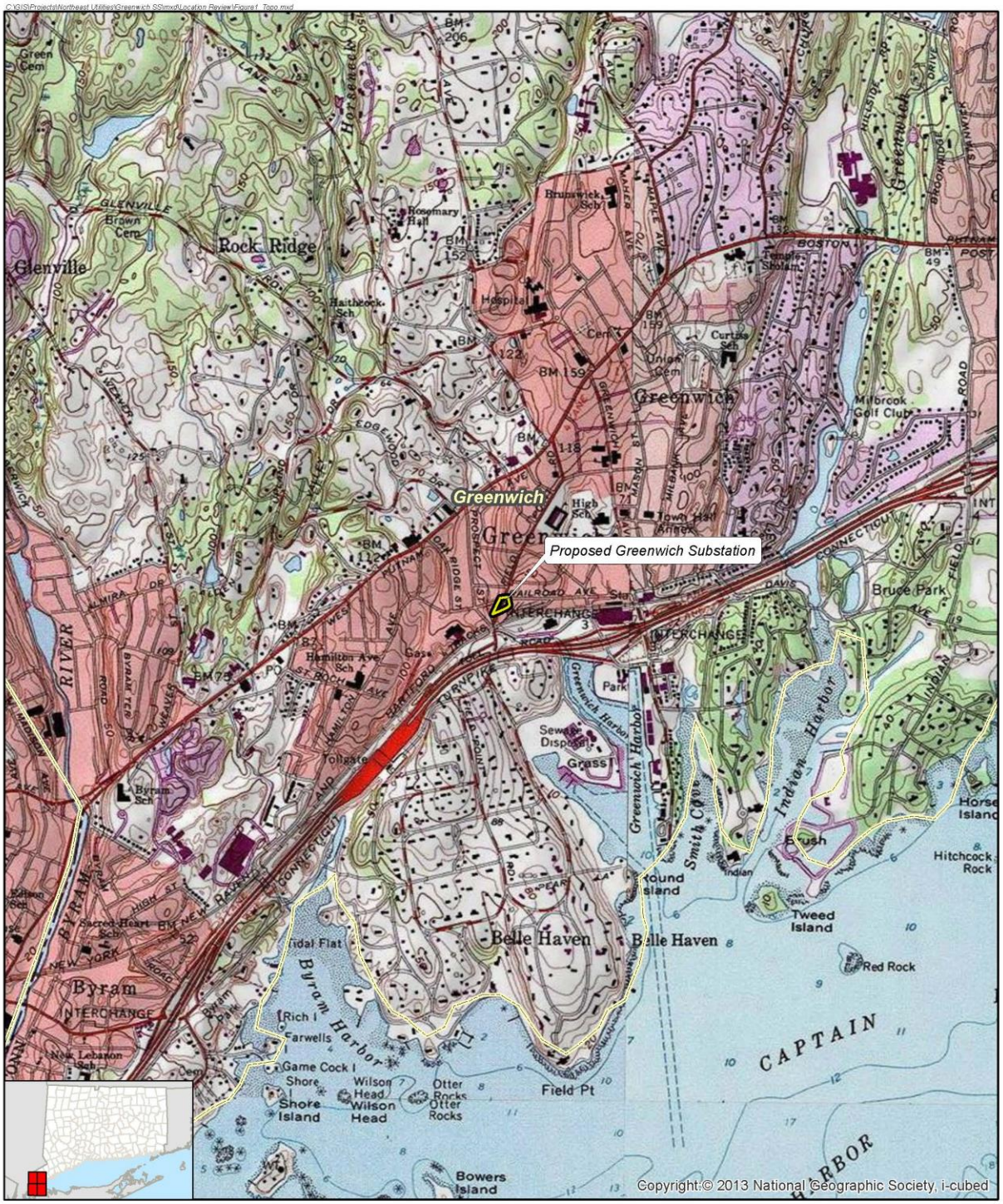
2.1 Purpose of the Project

The purpose of the Project is to provide immediate load relief to the electric distribution system in the Town of Greenwich by establishing a new bulk substation in Greenwich to avoid overloads on system equipment. This new source of electrical power – a new 115-kilovolt ("kV") bulk substation – would be located near the center of the customer electrical demand (or "load") that would be served by the new facility. Eversource's existing 115-kV bulk substation on Sound Shore Drive in the Cos Cob section of Greenwich ("Cos Cob Substation") is the foundation of the electric distribution system in Greenwich. Cos Cob Substation was constructed in 1964 to serve an electrical load much lower than what exists today. It represents the main source of bulk power for the 27.6-kV and 13.2-kV distribution systems that ultimately serve homes and businesses while also supplying power to other smaller, distribution substations in the Town. Cos Cob Substation requires immediate load relief. At projected load growth rates in certain contingency conditions, Cos Cob Station would reach its maximum capacity by 2017. Moreover, it is located too far east from downtown Greenwich, the concentration of customer demand, to reliably meet the Town's growing electricity needs.

Figure 1, *Site Location Map*, depicts the location of Eversource-controlled property at 290 Railroad Avenue.

Currently, Cos Cob Substation supplies power to three distribution-level (27.6-kV to 13.2-kV) substations (including Prospect Substation located on Railroad Avenue; Byram Substation located on Pemberwick Road; and, North Greenwich Substation on Old Mill Road), large commercial customers directly and the secondary network in downtown Greenwich. Cos Cob Substation also serves as a back-up power source to Mianus Substation, located on River Road Extension, and Tomac Substation, located on Tomac Avenue (near the municipal boundary with the City of Stamford).

The Company has modified Cos Cob Substation several times through additions and upgrades of equipment to increase its capacity to accommodate Greenwich customer demand growth. This resulted in temporarily postponing the need for a new substation. Not only is Cos Cob Substation quickly approaching the limit of its capacity, load relief is also needed at Prospect Substation, which is



Legend

- Subject Property Boundary
- Municipal Boundary

Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps, Glenville (1971) and Stamford (1984), CT, and Mamaroneck (1975) and Bayville, NY (1967)
Site is located on the Glenville, CT Quadrangle
Map Date: February 2015

1,000 500 0 1,000 Feet

Figure 1
Site Location Map
USGS Topographic Map

Proposed Greenwich Substation
290 Railroad Avenue
Greenwich, Connecticut

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currently served by Cos Cob Substation. In addition, certain contingency events currently can result in the overload of lines from Cos Cob Substation that serve distribution substations.

As part of its long-term planning process, the Company began implementing equipment upgrades in 2010 to strengthen the Town's distribution system. Even with the benefits from these upgrades, the Company concluded that a new 115-kV bulk substation near the center of customer load would ultimately be needed to address the future electricity demand in Greenwich. The other existing distribution substations in Greenwich, except for Byram Substation, would continue to serve customer load, but the new bulk substation would be the prime source of electrical power to feed the highest concentration of customer demand in the Town and would provide necessary relief to Cos Cob and Prospect Substations. In addition, development of a new bulk substation in Greenwich would enhance the reliability of the electric distribution system by supplying most circuits with another source of power (either as the primary or a backup source) from a different bulk substation, thus increasing system diversity in the area.

A new Greenwich bulk substation is a long-term solution. It will avoid the need to find additional short-term distribution measures to keep the system operational, beyond the numerous upgrades that the Company has implemented to date. These upgrades have allowed the electric power system in Greenwich to function until a long-term solution could be implemented. That time is now.

Given the time required to obtain siting approvals and to construct the Greenwich Substation, Eversource expects to have the new facility in service in 2017 so that it will provide the necessary load relief to Cos Cob Substation.

2.2 Location Description

Eversource proposes to construct the new Greenwich Substation at 290 Railroad Avenue in Greenwich (the "Selected Site" or "Property"), which consists of 0.81-acres and is improved with a commercial building and parking area. The Property is zoned as GB ("General Business") and is located within 100 feet of an active Metro-North Railroad ("MNRR") corridor and approximately 500 feet from Interstate 95.

The Property was leased in 1971 by the Company as a potential location for a future substation. This property lease (with future option to purchase) has provided the Company the flexibility to transition to company use of the property based on the timing of the need for distribution system improvements in Greenwich. Since 1971, the Company has subleased the Property to a commercial business subtenant. In accordance with the terms of its sublease, the Company has notified the current subtenant to vacate the Property so that the Greenwich Substation can be developed on the Selected Site.

For the following reasons, the Selected Site is well suited for a substation:

- The Selected Site is located within the customer load pocket.
- This Selected Site provides optimal connections to existing distribution feeders and affords two routes for distribution via Railroad Avenue and Field Point Road.
- There is direct access to the Property from Field Point Road and Railroad Avenue.
- The Property is currently developed with an existing commercial building and surrounded by other commercial properties and the railroad.
- The Property is approximately 200 feet east of Eversource's Prospect Substation, which is located on a parcel within the same zone and devoted to a similar use as that proposed.
- The Property has sufficient size and shape to accommodate a substation, is free of physical encumbrances that might otherwise hinder its development, and has direct access from two local roads.
- Construction and operation of a substation at the Selected Site would have minimal adverse effects on the environment.

2.3 Site Vicinity Characteristics

The Greenwich Substation would be located within a commercial area south of downtown Greenwich. Railroad Avenue and commercial properties are located north of the Selected Site, including a Company-owned property used for parking and storage. Residential areas are located farther to the north. The Company's former Greenwich Area Work Center and existing Prospect Substation are located across Field Point Road to the west. Commercial buildings are located east of the Selected Site. Commercial buildings and the MNRR corridor are located to the south.

The Selected Site is depicted in Figure 2, *Property Map*.

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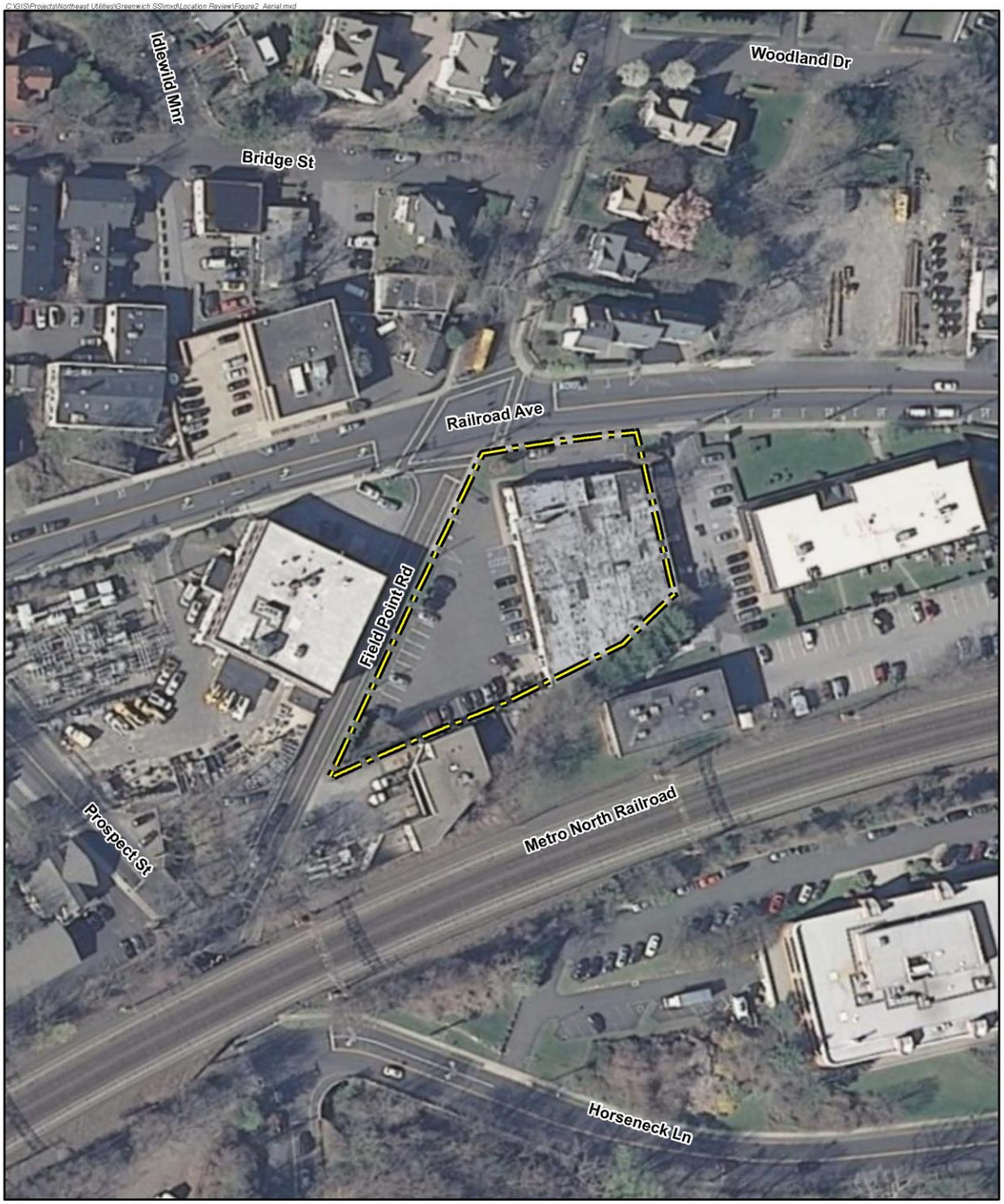

Legend

Subject Property Boundary

Figure 2
Property Map
Aerial Photograph

Proposed Greenwich Substation
290 Railroad Avenue
Greenwich, Connecticut

Base Map: 2012 Aerial Photograph (CTECO)
Map Scale:1 inch = 100 feet
Map Date: February 2015

100 50 0 100 Feet

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2.4 Proposed Activity

The Greenwich Substation would be supplied from two new 115-kV transmission supply lines originating from Cos Cob Substation on Sound Shore Drive. The two transmission supply lines would enter the Greenwich Substation via underground conduits and terminate at gas insulated switchgear equipment, which would be housed in a building along Railroad Avenue measuring approximately 120 feet by 50 feet and standing 35 feet tall. The Gas Insulated Substation ("GIS") building would house six (6) 115-kV circuit breakers and associated disconnect switches, protective relay and control equipment as well as the battery and charger associated with the transmission equipment. For GIS yards similar to that proposed in Greenwich, the Company typically uses a corrugated metal building enclosure and chain-link fence topped with three strands of barbed wire. Based on discussions with the Town, an alternate design has been proposed for this Project. The GIS building would include a concrete panel façade and the Substation yard would be surrounded by an eight-foot high, wrought iron-style fence for security.

In addition, the Substation yard would also be outfitted with three 115-kV circuit switchers with integral disconnect switches and three 60-Megavolt-Ampere ("MVA") power transformers that would step down the voltage from 115 kV to 13.2 kV. The three 60-MVA transformers would contain insulating (not containing PCBs) mineral oil. The transformers would be installed on foundations and each would have secondary containment sufficient to contain 110% of the volume of mineral oil in the transformer. Periodic inspections of the containment area would be performed by the Company personnel to verify proper functioning of the containment systems. One metal switchgear enclosure (measuring approximately 108 feet long, 24 feet wide and 14 feet tall) would also be installed to house the switching equipment, relaying and control equipment for the 13.2-kV distribution feeders. A 12-foot high pump house (50 feet long by 12 feet wide) that supports the high pressure fluid filled transmission cables would be placed in the southwest corner of the Site, adjacent to Field Point Road.

The Substation would be accessed by a new approximately 20-foot wide, gated entrance from Field Point Road. The Substation yard would be covered with a trap rock surface. Lighting would be installed within the Substation yard to facilitate work at night under emergency conditions and during inclement weather. The Substation would have low-level lighting for safety and security purposes consistent with the lighting in the area. Two 65-foot tall lightning masts would also be installed.

No portion of the Substation would be located within wetlands or watercourses and no components or structures would be situated within:

a) 100 feet measured horizontally from the boundary of any wetland or watercourse not located within any public water supply watershed;

b) 150 feet measured horizontally from the boundary of any wetland or watercourse, located within any public water supply watershed; or,

c) 200 feet measured horizontally from the mean high water mark of any public water supply reservoir.

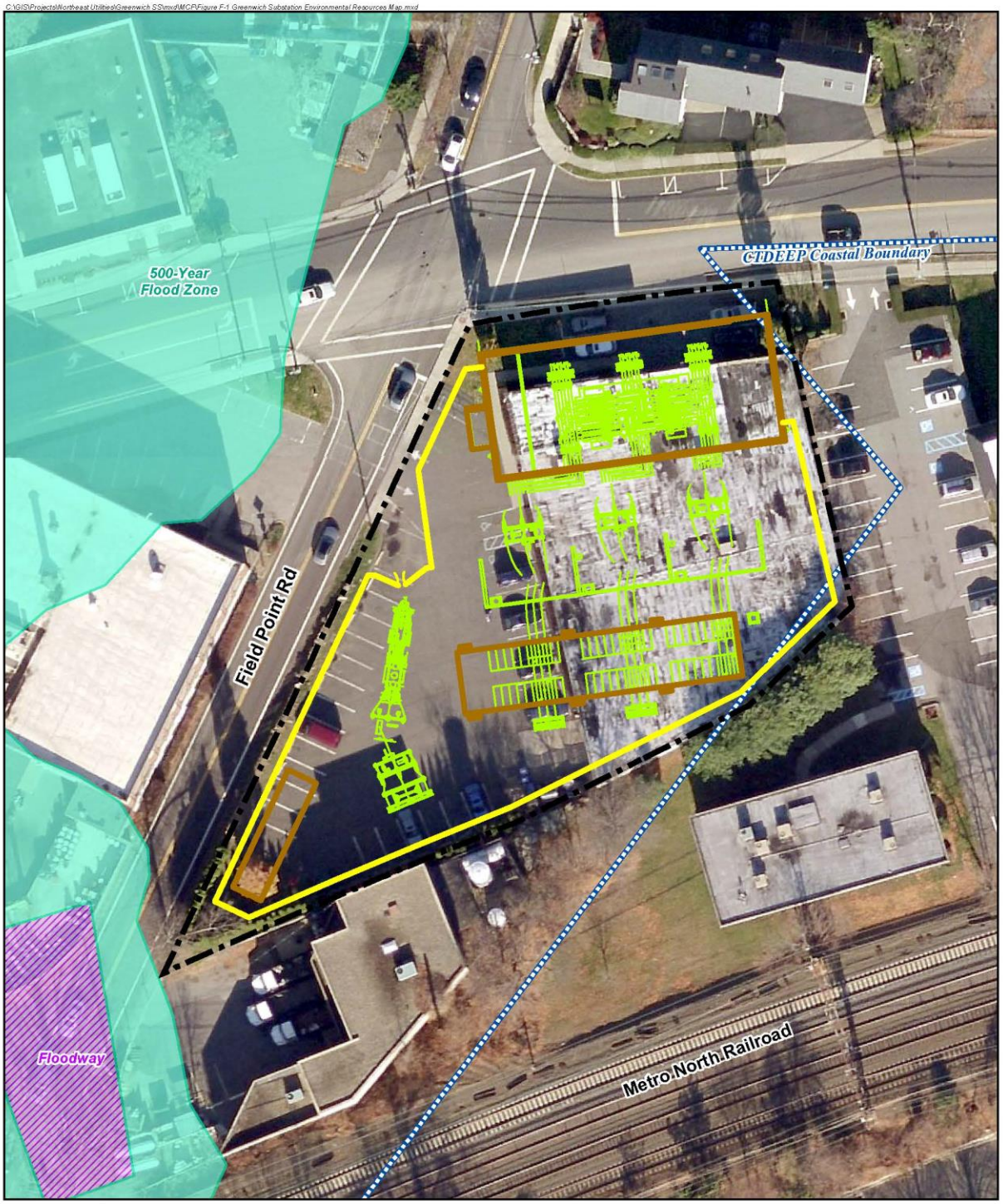
In addition, the Property is not located within either the 100-year or 500-year flood zones established by the Federal Emergency Management Agency ("FEMA") or within flood surge limits. Based on these design considerations and site features, the Greenwich Substation would have no adverse environmental impacts.

Construction would be expected to continue over a period of 12 to 18 months with the Greenwich Substation commencing service in the fourth quarter of 2017. The general construction activities for the Substation and transmission supply lines would include:

- Installing erosion and sedimentation control measures
- Constructing the new entrance to the Substation property
- Installing temporary security fencing for construction
- Removing the existing commercial building and paved parking lot
- Preparing the Selected Site (earthwork and grading) for construction
- Installing foundations, manholes, conduits and grounding grid
- Installing steel structures, bus and Substation equipment
- Building underground transmission supply lines, including excavations for duct banks (to house cables) splice vaults (to pull the cables through the duct banks)
- Spreading trap rock over the prepared grade
- Commissioning the Substation
- Completing restoration activities
- Removing erosion and sedimentation control measures

Figure 3, *Existing/Proposed Conditions Map*, depicts the proposed activity on the Property.

For GIS substation yards similar to that proposed in Greenwich, the Company typically uses a corrugated metal building enclosure and chain-link fence topped with three strands of barbed wire. Based on discussions with the Town, an alternate design has been incorporated for this Project. A depiction of the proposed Greenwich Substation is provided in Figure 4 (*Proposed Greenwich Substation Rendering*).



Legend

- Subject Property Boundary
- Proposed Fence
- Proposed Building
- Proposed Equipment Layout

**none within mapped area*

CTDEEP Coastal Boundary

FEMA Flood Zones

- 100-Year Flood Zone*
- 500-Year Flood Zone
- Floodway

N W E S

50 25 0 50 Feet

Base Map: 2010 Pictometry Imagery
Map Scale: 1 inch = 50 feet
Map Date: February 2015

Figure 3
Existing/Proposed Conditions Map

Proposed Greenwich Substation
290 Railroad Avenue
Greenwich, Connecticut

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Legend

Subject Property Boundary

Figure 4
Proposed Greenwich Substation Rendering

Proposed Greenwich Substation
290 Railroad Avenue
Greenwich, Connecticut

Base Map: 2012 Aerial Photograph (CTECO)
Map Scale:1 inch = 100 feet
Map Date: February 2015

N W E S

100 50 0 100 Feet

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3.0 Coastal Resources

Portions of the northeast and southeast corners of the Selected Site lie within the Coastal Boundary pursuant to the Connecticut Coastal Management Act ("CCMA"). In total, approximately 1,120 square feet ("sf") of the Property are located within the Coastal Boundary. No tidal or fresh water wetlands/watercourses or coastal resources are located on the Selected Site. Horseneck Brook is located west of the property across Field Point Road and flows southward via a culvert beneath the Company's property at 330 Railroad Avenue. Horseneck Brook is not tidally influenced in areas north of Interstate 95 (including the vicinity of the Selected Site). The Connecticut Department of Energy and Environmental Protection ("CT DEEP") surface water quality classification for Horseneck Brook is "A" for locations north of Interstate 95. Designated uses include potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply and other legitimate uses. Discharges are restricted to those from public or private drinking water treatment systems, dredging and dewatering, emergency and clean water discharges.

The Selected Site is not located within the 100- or 500-year flood zone of Horseneck Brook. The edge of the 500-year flood zone is located approximately 10 feet from the southwest corner of the Selected Site.[1] The activities associated with the construction and operation of the Substation would be located entirely outside of the 100- and 500-year flood zones and also the hurricane storm surge.[2]

3.1 Impacts

Project activities would include the demolition of an existing commercial structure and the construction of the Substation on the Property. A comprehensive stormwater management system would be designed in accordance with the CT DEEP's *2004 Connecticut Stormwater Quality Manual* to adequately treat the quantity and quality of stormwater generated during construction and when the Substation is in operation.

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[1] National Geodetic Vertical Datum of 1929; *FEMA Map*, Panel Number 09001C 0494G, revised July 8, 2013.

[2] According to CT DEEP Geographic Information System (GIS) data, based on *Worst case Hurricane Surge Inundation* areas for category 1 through 4 hurricanes striking the coast of Connecticut. Hurricane surge values were developed by the National Hurricane Center using the SLOSH (Sea Lake and Overland Surge from Hurricanes) Model to assist emergency management officials in hurricane preparedness and operations.

3.2 Coastal Consistency

Development of the Substation would not result in adverse impacts to coastal resources, as defined in the CCMA. The CCMA identifies eight potential adverse impacts to coastal resources. This section provides a definition of each adverse impact for each resource area and explains why construction and operation of the Substation would not adversely affect these resources.

1) *Degrading **water quality** of coastal waters by introducing significant amounts of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity.*

   During construction, erosion and sedimentation ("E&S") controls would be established and maintained in accordance with the CT DEEP Bulletin 34 *Connecticut Guidelines for Soil and Erosion and Sediment Control*, dated 2002. Construction activities associated with the proposed Substation are temporary and, with the appropriate E&S measures in place and maintained, are not expected to impact water quality. Throughout construction and operation of the Substation all stormwater generated at the Site would be adequately treated, both in quantity and quality, in accordance with the *2004 Connecticut Stormwater Quality Manual*. The existing development consists of a pre-1980s style stormwater management system that currently provides minimal stormwater quantity and quality treatment. The proposed Substation stormwater management system design would include appropriate levels of stormwater quantity and quality treatment through proper site planning and design with the selection of a variety of stormwater treatment practices to preserve pre-development hydrologic conditions and substantially reduce the average annual total suspended solids loadings. Therefore, with incorporation of these stormwater management principals, the Substation's construction and operation would not result in degradation of coastal water quality.

2) *Degrading **existing circulation patterns of coastal waters** by impacting tidal exchange or flushing rates, freshwater input, or existing basin characteristics and channel contours.*

   The Substation would be located on a parcel that is currently developed and outside of tidally-influenced areas and, as such, would not impact current drainage or circulation patterns of coastal waters.

3) *Degrading **natural erosion patterns** by significantly altering littoral transport of sediments in terms of deposition or source reduction.*

Because the Property does not border on Horseneck Brook or any other shoreline, the construction and operation of the Substation would not alter natural erosion patterns or affect littoral transport of sediments.

4) *Degrading natural or existing drainage patterns by significantly altering groundwater flow and recharge and volume of runoff.*

Drainage patterns would not be significantly altered by the construction and operation of the Substation. Considering that the Selected Site currently consists of a majority of impervious surface, construction of the proposed Substation would decrease the area of impervious surface with the application of a trap rock in the substation yard, which would improve existing drainage. As a result, there would be an increase in groundwater recharge and a reduction in the volume of stormwater to be managed.

5) *Increasing the hazard of **coastal flooding** by significantly altering shoreline configurations or bathymetry, particularly within high velocity flood zones.*

As the Property is outside of the 100-year and 500-year flood zones, development and operation of the Substation would not affect the shoreline configurations or bathymetry.

6) *Degrading **visual quality** by significantly altering the natural features of vistas and viewpoints.*

The Property is located approximately 1,000 feet from the nearest point of the shoreline and is located within a heavily developed commercial area. The MNRR and Interstate 95 transportation corridors are located between Greenwich Harbor and the Property and the general area currently includes substantial utility infrastructure. Therefore, development

and operation of the Substation would not degrade the visual quality of the natural features and viewpoints within the coastal zone.

7) *Degrading or destroying* ***essential wildlife, finfish or shellfish habitat*** *by significantly altering the composition, migration patterns, distribution, breeding or other population characteristics of the natural species or significantly altering the natural components of the habitat.*

The Property is currently entirely developed with impervious surfaces and does not contain any vegetated or open water habitat. Therefore, the proposed Substation would not degrade or destroy essential wildlife, finfish or shellfish habitat.

8) *Degrading* ***tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments*** *by significantly altering their natural characteristics or function.*

Development and operation of the Substation would not alter the natural characteristics of any coastal resource area as none exist on or adjacent to the Selected Site.

4.0 Alternatives Evaluated

Eversource considered environmental, engineering, community and economic factors in conducting its site searches for a potential substation site in Greenwich. The objective was to select from among those viable candidates the site that would be feasible, practicable, and capable of reliably meeting the Project objectives.

4.1 Location Selection Rationale

The Company's primary selection criteria for locating a new bulk substation are:

- Proximity to customer demand (or "load pocket");
- Proximity to existing distribution feeders;
- Proximity to existing transmission electrical circuits;
- Ease of access;
- Consistency with existing land-uses;
- Earthwork requirements;
- Suitability of a site to accommodate the substation; and,
- Minimizing effects on the environment.

In 2012 and 2013, the Company's Real Estate staff, aided by a local real estate broker, conducted site searches for a potential substation site in Greenwich. The search area boundaries were determined by the Company's Distribution Design group and encompassed the load pocket. The Company's owned and/or leased sites were also included in the search. New sites under 0.5 acres were rejected, as well as those parcels that did not have at least two sides with a minimum 150 feet property line depth (dimensions estimated to accommodate various substation design scenarios). One parcel mentioned by the Town during preliminary discussions was also considered. The Company's Real Estate staff conducted an additional site search in January 2014 to determine if any potential new candidate properties had become available.

Based on the candidate site information provided by Real Estate staff and a cross functional Site Selection Evaluation Team's (Team) review of these and other potential candidate sites within the Project Study Area, four substation location sites were ultimately identified for further consideration and were evaluated by the Team prior to 2014. No new feasible candidate sites resulted from the January 2014 site search.

In addition to the criteria introduced above, the Company also considered other relevant factors including construction complexities, timing and the ability to accommodate additional equipment in the future, if necessary.

4.2 Evaluated Site Locations

During its site screening process, the Team reviewed numerous properties and ultimately identified four potential site locations for further evaluation. For each of the four sites, the Company conducted a more detailed evaluation, assessing each site using the selection criteria listed above.

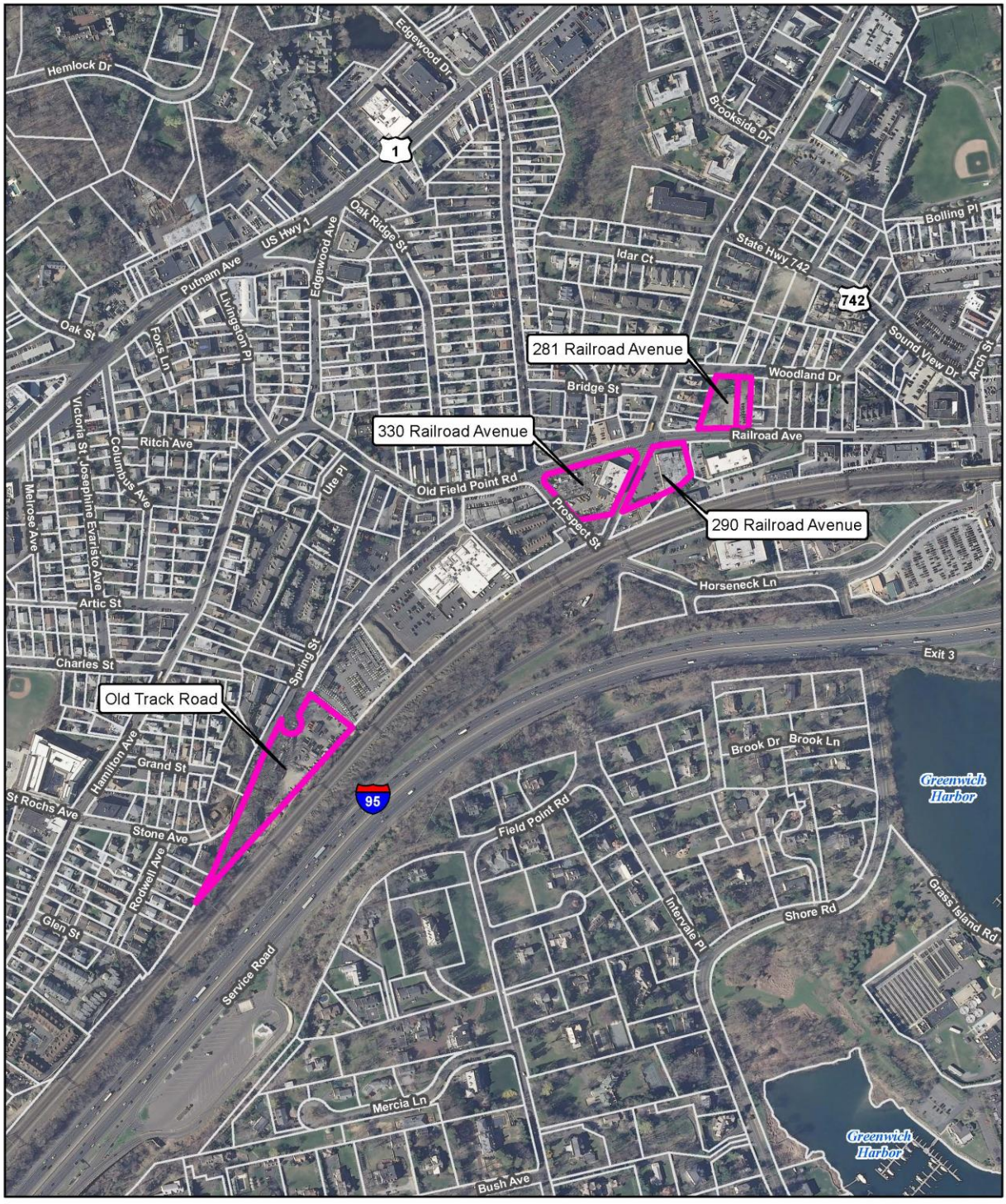
A summary of the four properties evaluated is provided below. They are depicted in Figure 5, *Alternate Sites Evaluated Map*.

4.2.1 290 Railroad Avenue; the Selected Site

This is a commercial property, zoned as General Business that the Company has held under a long standing lease (greater than 40 years). The Company has an option to buy the Property from the owner that may be exercised in the year 2021. The Company has determined that a substation could be built on this site using GIS technology.

Key features of this site are:

- This parcel is located within the customer load pocket.
- This Property provides optimal connections to existing distribution feeders and affords two routes for distribution via Railroad Avenue and Field Point Road.
- There is direct access from Field Point Road and Railroad Avenue.
- The Property is zoned General Business, is currently developed with an existing commercial building and surrounded by other commercial properties and the railroad.
- The diamond-shaped parcel is 0.81 acres in size, has no physical encumbrances and is capable of accommodating the necessary substation components.
- No wetlands or watercourses are located on the Property and it is located outside both the 100-year and 500-year flood zones. A small portion of the Property (1,120± sf) is located within the coastal boundary.



Legend

Alternate Sites Evaluated

Approximate Parcel Boundary (CTDEEP)

Base Map: 2012 Aerial Photograph (CTECO)
Map Scale:1 inch = 500 feet
Map Date: February 2015

300 150 0 300 Feet

Figure 5
Alternate Sites Evaluated Map

Proposed Greenwich Substation
290 Railroad Avenue
Greenwich, Connecticut

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Location summary - 290 Railroad Avenue: The Selected Site satisfies the need for proximity to the load pocket and to existing feeders. It is a commercially-zoned property that is surrounded by other commercial properties and transportation infrastructure so a substation on the Selected Site would be compatible with the existing land uses in the immediate vicinity. The Selected Site's size and shape are sufficient to properly configure the substation to fit within the Property boundaries and, after removal of the existing building, no physical encumbrances exist that would impede development. The Selected Site is level and would require minimal earthwork. No wetlands or watercourses exist on or are proximate to the Property and its distance from nearby residences would provide adequate buffer for noise emanating from substation equipment.

4.2.2 281 Railroad Avenue

This is a commercial property, zoned as General Business that is owned by Eversource and is currently used as a ground storage area for materials (pole yard) and previously for additional parking for personnel working at the former Greenwich Area Work Center, located across the street at 330 Railroad Avenue. The Company has determined that this site could be a viable candidate using GIS technology, however, the property size combined with the location and orientation of the substation equipment would likely cause the substation to exceed State and local noise regulations/ordinance at the property line. At a minimum, Eversource would need to acquire abutting properties to meet the applicable noise regulations.

Key features of this site are:

- This property is located within the customer load pocket.
- There are existing distribution feeders along Railroad Avenue. This property provides two routes for distribution feeder egress, via Railroad Avenue and Woodland Drive, respectively.
- There is direct access from Railroad Avenue and Woodland Drive.
- The property is owned by Eversource and is commercially developed. Commercial and residential properties are located on the east and west sides. Residential properties are located across Woodland Drive to the north.
- The property is level and there would be no major earthwork or clearing requirements for development on this property. The Company currently uses the property for surface storage and parking.

- This property is close to residences and an inadequate buffer currently exists for noise emanating from certain substation equipment.
- The property is 0.75 acre in size and encumbered by two utility easements;
- The combination of this property's current configuration and the existing utility encumbrances do not allow adequate space to accommodate a substation without the acquisition of additional properties.
- This property is located outside of the 100-year and 500-year flood zones, and no wetlands or watercourses are on the parcel.
- Locating a substation on this property could result in noise impacts to abutting and nearby residences.

Location Summary - 281 Railroad Avenue: This property is proximate to the load pocket and existing feeders, but is not the preferred location for a substation, as it would require purchasing additional property currently used for residential or commercial purposes to properly configure the facility and meet acceptable noise regulations. Being closer to residential neighbors than 290 Railroad Avenue, regardless of the acquisition of one or more abutting properties, development of this property with a substation would require substantial noise mitigation to adequately address sound levels. Depending on the final substation design, three to four additional properties would need to be acquired for sufficient noise attenuation from the substation transformers and to provide landscaping and additional screening from substation equipment. This site is being proposed as the alternate site because it meets most of the evaluation criteria and is an environmentally, technically and economically practicable alternative, as compared to the remaining sites evaluated.

4.2.3 330 Railroad Avenue

This commercial property, zoned as General Business is owned by the Company and currently includes the Company's former Greenwich Area Work Center building and the active Prospect Substation. The Company determined that this site was not a viable option for the new substation because it contains too many impediments that would impact Project cost and schedule, even if these constraints could be effectively managed. The site also has some constructability uncertainties that could put the Project schedule at risk. A majority of the site is located within the 500-year flood plain and would require additional design features to raise the substation elevation.

Key features of this site are:

- This property is located within the customer load pocket.
- There are existing distribution feeders along Railroad Avenue. This property provides two routes for distribution feeder egress, from Railroad Avenue and Prospect Street, respectively.
- There is direct access to this property from Field Point Road, Railroad Avenue and Prospect Street.
- The property is commercially developed with the Company's former Greenwich Area Work Center, which occupies the east side of the parcel and Prospect Substation, an existing distribution substation on the west side. The substation will not be transferred with the sale of the property and must remain in service during and after construction of the new Greenwich Substation. Two major obstacles exist on the parcel, including Horseneck Brook, which flows beneath the property within a 16-foot wide culvert, and a municipal sanitary sewer easement (containing a 15-inch sewer pipe) located adjacent to the Brook.
- The property is 1.27 acres in size and roughly triangular in shape. Although the former Greenwich Area Work Center building could be removed, nearly half of the property (approximately 0.6 acre) is currently unusable due to the presence of Prospect Substation, the Horseneck Brook culvert and the sewer pipe. In addition, several months of dismantling work would be required when compared to 290 Railroad Avenue because of the time necessary to relocate relaying equipment to Prospect Substation prior to demolition of the building.
- The property is bisected by Horseneck Brook. Built in 1934, the subgrade culvert that encloses the brook, which extends beneath a portion of the substation yard, is not designed to withstand the weights of heavy loads that would be required during construction. Access over the culvert would be essential during construction to move equipment into and out of the substation. Eversource could not install equipment foundations on top of the culvert, and no room would be available on the property for an alternate construction access. Permanent structural improvements (replacement or reinforcement) to the culvert would be required to allow for construction and for future access for maintenance and repairs. The culvert could be replaced, reinforced or left in place and bridged over. However, that activity would present significant challenges. Given the culvert's close proximity to the existing energized substation, work associated with the culvert would increase safety and reliability risks, limit access for emergency

response and extend the construction schedule to accommodate the staging of the work necessary to protect worker safety.

- In order to accommodate a new substation, the underground municipal sewer main would need to be relocated off the site before substation construction could commence.
- If the physical challenges could be designed around, the space constraints would necessitate long runs of overhead bus work (nearly three times the length required at 290 Railroad Avenue) and substantial support trusses. This arrangement would create additional clearance, safety and reliability concerns, especially during any work on the sewer or culvert, portions of which would be directly beneath the energized bus. In addition, it would increase cost.
- The parcel is located within the 500-year flood zone associated with Horseneck Brook.

Location Summary - 330 Railroad Avenue: Although this property is proximate to the load pocket and existing feeders, limited available space and other site constraints, including Horseneck Brook and the associated culvert, the municipal sewer main and the floodplain area would introduce development complexities that would create risks to the construction schedule and to the safe operation of a substation if left in place. Design elements could conceivably be incorporated to work around these physical impediments; however, development at this property would involve a significant amount of risk for constructing, operating and maintaining a new substation.

4.2.4 Old Track Road

This is a privately owned commercial property, zoned as General Business that was suggested by the Town as a potential substation location.

Key features of this site are:

- This parcel is located within the customer load pocket.
- The length of the distribution feeders would increase substantially because all of the feeders would have to be extended to this property.
- There is no direct access to public roads, so easements would be required for access/egress and for both distribution and transmission electrical conduits. Although Stone Avenue (northwest of the parcel) is a public road, Town ownership ends before abutting the Old Track Road property. Access via Stone Avenue would require purchasing land from the owner and access may not be feasible due to a significant elevation change

on that property. Similarly, Spring Street (to the northeast) is also a public road, but Town ownership ends before abutting the Old Track Road property.

- The property is generally level. There would be limited earthwork required.
- The parcel abuts a residential area with homes less than 100 feet away.
- The parcel is 2.49 acres in size, with adequate room for a substation on the easternmost portion of the property. The property is a narrow strip of land, triangular in shape, with the western half of the property being insufficient to properly configure a substation. There is an existing gas easement in favor of Connecticut Natural Gas extending across the property, further limiting the available space.
- The parcel is zoned commercial, but several residential homes are located immediately north of the property. The MNRR is located along the southern boundary of this parcel.
- The property is located outside flood zones, and no wetlands or watercourses are on or adjacent to the parcel.

Location Summary - Old Track Road: This property is proximate to the load pocket, but not to existing distribution feeders. Although this parcel is of sufficient size, there are limitations with the property because additional easements would be needed to use the privately-owned Old Track Road for access and installation of electrical conduits. In addition, this property is less favorable due to its proximity to residential housing to the north, as compared to the proposed Site. Future expansion of additional feeders would require extending the existing distribution system across the Horseneck Brook culvert, which would be costly.

4.2.5 111 West Putnam Avenue

During the continuing analysis of the Project, the Company reconsidered an additional property located at 111 West Putnam Avenue (Route 1) that had originally been dismissed.

Key features of this site are:

- This property is located within the customer load pocket.
- There are existing distribution feeders along Putnam Avenue. However, additional feeders would require reconfiguration for distribution to be supplied from the Route 1 area rather than Railroad Avenue.
- Direct access exists from Putnam Avenue and Dear Field Drive.

- The property is 0.71 acre in size and zoned commercial. North of the property is primarily residential.
- The site is level and no major earthwork or clearing activities would be required.
- The parcel abuts residential development and is located across the street from the Greenwich Public Library. There is insufficient space to create adequate visual and noise buffers.
- No wetlands or watercourses exist on the parcel. It is not located within a flood zone.
- This property has recently been developed with a City Bank branch office.

Location Summary - 111 West Putnam Avenue: Although this property is proximate to the load pocket, it is remote to the Railroad Avenue distribution feeders. Thus, Eversource would be required to reconfigure the distribution feeders originating from Prospect Substation, which would increase construction-related impacts. This parcel also abuts residential property and is directly across the street from the Greenwich Public Library. During the site evaluation process, this property was redeveloped by others and is no longer under consideration.

4.2.6 Conclusion

After completing the evaluation of these properties, the Company concluded that the parcel located at 290 Railroad Avenue best satisfied the selection criteria. The Selected Site fulfills the threshold electrical system criteria for proximity to the customer load pocket and to existing distribution feeders. Moreover, it meets land use criteria by supporting the installation of the Substation while minimizing potential adverse effects on the neighborhood and the environment. Based on the selection criteria and comparison of the sites within the study area, the Company selected 290 Railroad Avenue as the most appropriate location for the Greenwich Substation.

5.0 Project Contacts

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