



SOUTHWEST CONNECTICUT RELIABILITY PROJECT

DEVELOPMENT AND MANAGEMENT PLAN

for

NEW 115-kV TRANSMISSION LINE

VOLUME 1

CONSTRUCTION AND MITIGATION PROCEDURES

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Prepared by:

The Connecticut Light and Power Company doing business as Eversource Energy

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TABLE OF CONTENTS

VOLUME 1

1.	INTRODUCTION.....	1
1.1	Project Overview and Purpose of the Plan	1
1.2	Transmission Line Location and General Description	2
1.3	Organization of the D&M Plan.....	3
2.	REGULATORY APPROVALS AND CONSULTATIONS.....	13
2.1	Regulatory Approvals and Requirements	13
2.2	Consultations	13
3.	GENERAL CONSTRUCTION PROCEDURES	17
3.1	SUMMARY OF NEW TRANSMISSION LINE FACILITIES.....	17
3.2	Construction Management and Contact Information.....	18
3.3	Construction Field Offices, Contractor Yards, and Staging Areas	18
3.4	Construction Procedures	18
3.4.1	<i>General Construction Sequence.....</i>	<i>18</i>
3.4.2	<i>Clearing and Vegetation Removal</i>	<i>19</i>
3.4.3	<i>Access Roads and Work Pads</i>	<i>20</i>
3.4.4	<i>Foundations and Structure Installation</i>	<i>22</i>
3.4.5	<i>Conductor Installation</i>	<i>23</i>
3.4.6	<i>Cleanup and Restoration.....</i>	<i>23</i>
4.	CONSTRUCTION SCHEDULE, OUTAGES, AND WORK HOURS	27
4.1	Construction Schedule, Including Outages.....	27
4.2	Work Hours	28
5.	SPECIAL CONSTRUCTION PROTOCOLS AND PROCEDURES.....	29
5.1	Erosion and Sedimentation Control Plan.....	29
5.2	Water Resources	29
5.2.1	<i>Surface Water Resource Crossing Summary.....</i>	<i>29</i>
5.2.2	<i>Watercourse Crossings</i>	<i>30</i>
5.2.3	<i>Wetland Crossings.....</i>	<i>31</i>
5.2.4	<i>Wetland Invasive Species Control Plan</i>	<i>32</i>
5.2.5	<i>Wetland Restoration Plan</i>	<i>32</i>
5.2.6	<i>Flood Zones.....</i>	<i>32</i>
5.2.7	<i>Aquifer Protection.....</i>	<i>33</i>

5.2.8	<i>Drainage</i>	33
5.3	Protection Measures For State-Listed Species	33
5.4	Air Quality Protection (Minimization of Dust and Vehicle Idling Protocol)	34
5.4.1	<i>Dust Suppression and Anti-Tracking Pads</i>	34
5.4.2	<i>Construction Equipment: Idling vs. Warm-up during Cold Weather</i>	34
5.5	Procedures For Crossing Public Trails, Protected Open Space, and Recreational Areas	35
5.6	Soils and Materials Handling and Disposition.....	36
5.7	Lighting and Noise Mitigation.....	37
5.8	Site Access, Traffic Control and Construction Signs	37
5.9	Cultural Resources	38
5.10	Construction Equipment / Vehicle Washing and Cleaning	38
5.11	Utility Crossings	38
5.12	Methods to Prevent or Discourage Unauthorized Use of the ROW, Including ATVs	39
5.13	Winter Work, ROW Stabilization, and ROW Monitoring Protocol	39
5.14	Post-Construction EMF Monitoring Plan	40
5.15	Blasting Procedures	40
6.	PUBLIC REVIEW AND OUTREACH.....	41
6.1	Project Planning and D&M Plan	41
6.2	Public Outreach During Construction.....	41
7.	GLOSSARY OF TERMS	43

LIST OF TABLES

Table 1-1: D&M Plan Directory SWCT Reliability Project: New 115-kV
Transmission Line (Compliance with RCSA Sections
16-50j-60,-61 and -62, as amended through September 7,2012)4

Table 1-2: D&M Plan Directory of Docket No. 468 Decision and Order
Requirements SWCT Reliability Project Transmission Line.....9

Table 2-1: Permits, Reviews, and Approvals Required for the Project 14

Table 5-1: Public Trails, Recreational Areas, and Designated Open Space
along the Project ROW 35

LIST OF FIGURES

Figure 1-1: SWCT General Location Map.....2

APPENDIX

Appendix A: Post-Construction Electric and Magnetic Field Monitoring Plan

TABLE OF CONTENTS

VOLUME 2

MAPS AND DRAWINGS

Cross-Sections:	Key map and cross-sections (XS) 1-3 depicting the alignment of the new 115-kV transmission line within Eversource's ROW
Key Map:	U.S. Geological Survey 1"=2,000' (1:24,000) index map identifying the Project location
Mapsheets:	Mapsheets 1-13, 1"=100' maps showing the location of the new 115-kV transmission line, Plumtree Substation, Brookfield Junction, construction support sites, access roads, and work pads in relation to environmental features
Detail Sheets:	<ol style="list-style-type: none">1. Permitted Water Resource Impacts2. Water Resource Protocols (Wetlands Impact Avoidance and Minimization Measures, Watercourse and Waterbodies Impact Avoidance and Minimization Measures, Floodplain and Floodway Avoidance and Minimization Measures, Wetlands Restoration Plan, Wetland Invasive Species Control Plan)3. Rare Species Avoidance and Minimization Measures - Plant4. Rare Species Avoidance and Minimization Measures - Animal5. Erosion and Sedimentation Control Details6. Typical Structure Configurations7. Typical Foundation and Grounding Details8. Access Road Details9. Floodplain Compensation Details

TABLE OF CONTENTS

VOLUME 3

PROJECT-WIDE APPROVALS, PERMITS, AND BEST MANAGEMENT PRACTICES (APPLICABLE TO BOTH SUBSTATION AND TRANSMISSION LINE WORK)

Attachment A:	CONNECTICUT SITING COUNCIL: PROJECT-SPECIFIC INFORMATION
	A.1 The Council’s Decision and Order and Opinion for the Project (Docket No. 468)
	A.2 Project Environmental Inspection and Compliance Program
	A.2.1 Independent Environmental Consultant
	A.2.2 Eversource’s Environmental Compliance Program
	A.3 Required Notices and Reports to the Council Regarding the Project
	A.3.1 Required Notices to the Council: Start and Completion of Construction and Commencement of Site Operation
	A.3.2 Notices of Changes to the D&M Plans
	A.3.2.1 D&M Plan Changes Requiring Notice to the Council
	A.3.2.2 D&M Plan Change Approval Process
	A.3.2.3 D&M Plan Change Documentation and Reporting
	A.3.3 Reports
Attachment B:	VEGETATION CLEARING PLAN
Attachment C:	SPELL PREVENTION AND CONTROL PLAN
Attachment D:	SNOW REMOVAL AND DE-ICING PROCEDURES
Attachment E:	EVERSOURCE’S BEST MANAGEMENT PRACTICES MANUAL FOR MASSACHUSETTS AND CONNECTICUT (CONSTRUCTION AND MAINTENANCE ENVIRONMENTAL REQUIREMENTS), SEPTEMBER 2016
Attachment F:	CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION (CT DEEP) GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER AND DEWATERING WASTEWATERS ASSOCIATED WITH CONSTRUCTION ACTIVITIES, 2013

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1. INTRODUCTION

1.1 PROJECT OVERVIEW AND PURPOSE OF THE PLAN

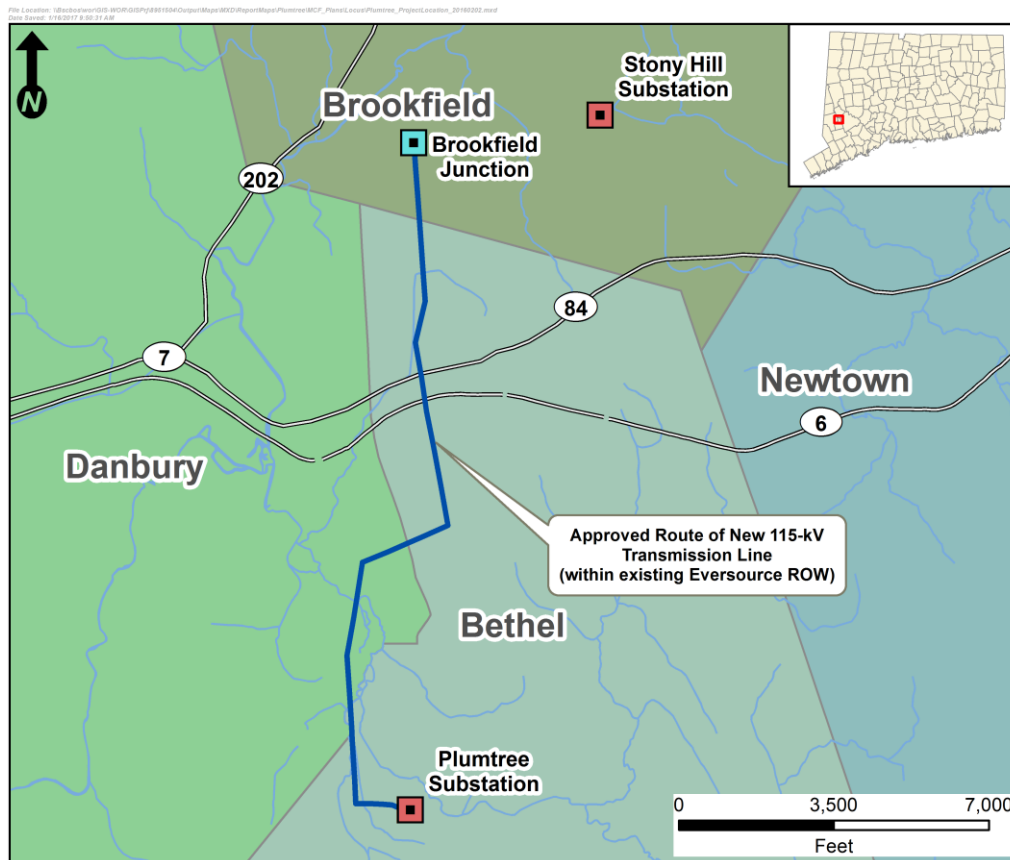
To bring the electric supply system in the Southwest Connecticut (SWCT) area and within the Housatonic Valley-Norwalk-Plumtree subarea of SWCT in particular into compliance with applicable national and regional reliability standards and criteria, The Connecticut Light and Power Company doing business as Eversource Energy (Eversource or the Company) will construct, operate, and maintain a new 115-kilovolt (kV) transmission line and related improvements to the electric system in Fairfield County, Connecticut. These improvements, referred to collectively as the Southwest Connecticut Reliability Project (Project; refer to Figure 1-1), will consist of the following:

- A new approximately 3.4-mile 115-kV overhead electric transmission line, to be located entirely within an existing Eversource right-of-way (ROW) extending between Eversource's Plumtree Substation in the Town of Bethel, through the eastern portion of the City of Danbury, to Brookfield Junction¹ in the Town of Brookfield. The new 115-kV line, which will be an extension of Eversource's existing 1887 Line, will parallel Eversource's existing overhead 321 (345-kV) and 1770 (115-kV) lines that presently occupy the ROW.
- Modifications within the existing, developed area of Eversource's Plumtree Substation to interconnect the 1887 Line extension to the transmission system.
- Modifications to Eversource's Stony Hill Substation (located in the Town of Brookfield), all within or adjacent to the substation and consisting of: (1) the connection of an existing 115-kV capacitor bank to a different bus; and (2) the reconfiguration of two existing overhead 115-kV lines, both of which presently connect to the substation, such that after modification, one of the lines will connect to Stony Hill Substation while the other will bypass the substation.

On June 29, 2016, Eversource submitted to the Connecticut Siting Council (Council or CSC) an Application for a Certificate of Environmental Compatibility and Public Need for the Project (Council Docket No. 468 or Certificate). After a public comment and evidentiary hearing, the Council approved the Project on November 10, 2016. Condition No. 2 of the Council's Decision and Order approving the Project requires that Eversource prepare a Development and Management (D&M) Plan for the Project, in compliance with Sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies (RCSA; *Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements*). Eversource elected to prepare one D&M Plan for the new transmission line and a separate D&M Plan for the substation modifications. This D&M Plan addresses all construction activities for the new 115-kV transmission line.

¹ A transmission system "junction" is a location where different transmission lines intersect.

Figure 1-1: SWCT General Location Map



1.2 TRANSMISSION LINE LOCATION AND GENERAL DESCRIPTION

The new, approximately 3.4-mile 115-kV transmission line will extend the existing 1887 Line, in an overhead configuration, from Eversource’s existing Plumtree Substation (located at 16 Walnut Hill Road in the Town of Bethel), through the eastern portion of the City of Danbury, to Brookfield Junction (located south of and adjacent to the Housatonic Railroad tracks and west of Vale Road in the Town of Brookfield). This new 115-kV line will be aligned adjacent to Eversource’s existing 321/1770 lines, which presently occupy Eversource’s ROW which ranges in width from 150 feet to 425 feet between Plumtree Substation and Brookfield Junction.

The entire route of the new 115-kV line (the 1887 Line extension) will be located within this long-established existing Eversource ROW. Approximately 2.2 miles of the new line will be located in the Town of Bethel, 0.9 mile will be located in the City of Danbury, and 0.3 mile will be within the Town of Brookfield.

The 1887 Line extension will be aligned generally on the eastern or southern portion of the ROW. No additional easements will be required for the Project, with the exception of off-ROW access road easements or agreements to facilitate construction and/or maintenance.

Within the Eversource ROW, the existing 1770 and 321 lines are supported together on double-circuit monopole structures, with the exception of lattice steel structures near Plumtree Substation. These structures typically are 150 feet in height. The new 115-kV transmission line will be supported predominantly on weathering steel monopole structures in a vertical configuration, with structure heights of between 95 and 135 feet above ground. However, along a 0.1-mile segment of ROW to the west of Plumtree Substation, the new line will be supported on four three-pole weathering steel structures in a horizontal configuration, each approximately 30 to 40 feet in height.

1.3 ORGANIZATION OF THE D&M PLAN

This D&M Plan consists of three volumes:

- **Volume 1** includes specific information relevant to the new 3.4-mile 115-kV line. The main text of Volume 1 (Sections 1 through 6) includes information and procedures that are pertinent to the transmission line, including regulatory requirements, general Project construction procedures and special plans, overall construction schedule, and public outreach. Table 1-1 summarizes each of the Council's D&M Plan requirements, pursuant to RCSA Sections 16-50j-60 through 16-50j-62. Table 1-2 identifies the requirements pertaining to the transmission line as contained in the Council's Decision and Order for the Project. For each D&M Plan requirement, Tables 1-1 and 1-2 either identify the location in this D&M Plan where the requirement is addressed or state why the requirement is not relevant to the new 115-kV line. Appendix A to Volume 1 provides a Post-Construction Electric and Magnetic Field Monitoring Plan.
- **Volume 2** consists of maps, plans, cross-sections, and detail sheets relevant to the construction of the new 115-kV line.
- **Volume 3** includes approvals, permits, and best management practices (BMPs) pertinent to all Project construction activities, including the new 115-kV transmission line and the modifications at Plumtree and Stony Hill substations. In particular, Volume 3 includes:
 - The Council's Decision and Order and Opinion for the Project (Attachment A.1), as well as Eversource's procedures for environmental compliance and notifications to the Council during the development of the Project, as required by the Council's regulations and Project-specific conditions (Attachments A.2 through A.4).
 - Vegetation Clearing Plan (Attachment B).
 - Spill Prevention and Control Plan (Attachment C).
 - Snow Removal and De-Icing Procedures (Attachment D).
 - Eversource's *Best Management Practices Manual for Massachusetts and Connecticut (Construction and Maintenance Environmental Requirements)*, September 2016 (*BMP Manual*; Attachment E).
 - Connecticut Department of Energy and Environmental Protection (CT DEEP) *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities*, 2013 (General Permit; Attachment F).

Table 1-1:
D&M Plan Directory SWCT Reliability Project: New 115-kV Transmission Line
(Compliance with RCSA Sections 16-50j-60,-61 and -62, as amended through September 7,2012)

RCSA Section	Description	D&M Plan (Section Reference, as Applicable)
16-50j-60	Requirements for a D&M Plan	
(a)	Purpose. The Council may require the preparation of full or partial D&M Plans for proposed energy facilities, modifications to existing energy facilities, or where the preparation of such a plan would help significantly in balancing the need for adequate and reliable utility services at the lowest reasonable cost to consumers with the need to protect the environment and the ecology of the state.	D&M Plans prepared for the Project.
(b)	When required. A partial or full D&M plan shall be prepared in accordance with this regulation and shall include the information described in RCSA Sections 16-50j-61 to 16-50j-62, inclusive, for any proposed energy facility for which the Council issues a certificate of environmental compatibility and public need, except where the Council provides otherwise at the time it issues the certificate. Relevant information in the Council’s record may be referenced.	This D&M Plan includes all information applicable to the construction of the new 115-kV transmission line.
(c)	Procedure for preparation. The D&M plan shall be prepared by the Certificate Holder or the owner or operator of the proposed facility or modification to an existing facility. The preparer may consult with the staff of the Council to prepare the D&M plan.	This D&M Plan was prepared by Eversource.
(d)	Timing of plan. The D&M plan shall be submitted to the Council in one or more sections, and the Council shall approve, modify, or disapprove each section of the plan not later than 60 days after receipt of it. If the Council does not act to approve, modify or disapprove the plan or a section thereof within 60 days after receipt of it, the plan shall be deemed approved. Except as otherwise authorized by the Council, no clearing or construction shall begin prior to approval of applicable sections of the D&M plan by the Council.	The D&M Plan will be provided to the Council in three Volumes.
16-50j-61	Elements of D&M Plan	
(a)	Key Map, 1”=2,000’ USGS topographic map	Volume 2
(b)	Plan Drawings, 1”=100’ or larger, and supporting documents, which shall contain the following information:	Volume 2
1.	Edges of the proposed site and any existing site contiguous to or crossing the site, portions of the site owned by the company in fee, and the identity of property owners of record of the portions of the site not owned by the company in fee	Volume 2
2.	Public roads and public land crossings or adjoining the site	Volume 2

RCSA Section	Description	D&M Plan (Section Reference, as Applicable)
3.	Approximate location of 50' contours along the site	Volume 2
4.	Probable location, type, and height of the proposed facility and components (including each new transmission structure, position of guys, description of foundations, and locations of any utility or other structures to remain on the site or to be removed)	Volume 2
5.	Probable points of access to the site, and the route and likely nature of access ways, including alternatives	Volume 2
6.	Edges of existing and proposed clearing areas, the type of proposed clearing along each part of the site, and the location and species identification of vegetation that would remain for aesthetic and wildlife value	Volume 2 maps; Volume 1 Section 3.4 and Volume 3, Attachment B- Vegetation Clearing Plan
7.	<p>Identification of sensitive areas and conditions within and adjoining the site, including but not limited to:</p> <ul style="list-style-type: none"> A. Wetland and watercourse areas regulated under CGS Chapter 440 and any locations where construction may create drainage problems B. Areas of high erosion potential C. Critical habitats or areas identified as having rare, endangered, or threatened, or special concern plant or animal species listed by the state or federal government D. Location of known underground utilities or resources to be crossed (electric line, fuel line, drainage systems and natural or artificial public or private water resources) E. Residences or businesses within or adjoining the site that may be disrupted during construction F. Significant environmental, historic and ecological features (significantly large or old trees, buildings, monuments, stone walls or features of local interest) 	<p>Volume 1, Section 5.2; Volume 2</p> <p>Not Applicable (N/A)</p> <p>Volume 1, Section 5.3; Volume 2</p> <p>Volume 2</p> <p>Volume 2</p> <p>Volume 1, Sections 5.2, 5.5, 5.9; Volume 2. (No significant historic features)</p>
(c)	Supplemental Information	
1.	Plans (if any) to salvage marketable timber, restore habitat and maintain snag trees within or adjoining the site	Volume 1, Section 3.4; Volume 3, Attachment B, Vegetation Clearing Plan
2.	All construction and rehabilitation procedures with reasonable mitigation that shall be taken to protect areas and conditions identified in 7(b), above, including but not limited to:	

RCSA Section	Description	D&M Plan (Section Reference, as Applicable)
	<p>A. Construction techniques at wetland and watercourse crossings</p> <p>B. S & E control and rehabilitation procedures, consistent with the CT Guideline for Soil Erosion and Sediment Control, as updated and amended for areas of high erosion potential</p> <p>C. Precautions and all reasonable mitigation measures to be taken in areas within or adjoining the site to minimize any adverse impacts of such actions or modifications endangered, threatened, or special concern plant or animal species listed by federal or state agencies and critical habitats that are in compliance with federal and state recommended standards and guideline, as amended</p> <p>D. Plans for modification and rehabilitation of surface, drainage, and other hydrologic features</p> <p>E. Plans for watercourse bank restoration in accordance with Chapter 440 of the C.G.S.</p> <p>F. Plans for the protection of historic and archaeological resources with review and comment from a state historic preservation officer of the CT Department of Economic and Community Development (DECD) or its successor agency</p>	<p>Volume 1, Section 5.2; Volume 2 maps / Detail Sheets; Volume 3, Attachment E (Eversource BMP Manual)</p> <p>Volume 1, Sections 3 and 5.1; Volume 2; Volume 3, Attachment E, BMP Manual</p> <p>Volume 1, Section 5.3; Volume 2</p> <p>Volume 1, Section 5.2; Volume 3, Attachment E, BMP Manual</p> <p>Volume 1, Section 5.2; Volume 2, Detail Sheets; Volume 3, Attachment E, BMP Manual</p> <p>Volume 1, Section 5.9 (no cultural resources associated with transmission facility sites)</p>
3.	Plans for the method and type of vegetation clearing and maintenance to be used within or adjacent to the site	Volume 1, Section 3.4 and Volume 3, Attachment B
4.	Location of public recreation areas or activities known to exist or being proposed in or adjacent to the site, together with copies of agreements between the company and public agencies authorizing the public recreation use of the site to the extent of the company's rights thereto.	Volume 1, Section 5.5; Volume 2 maps
5.	Plans for ultimate disposal of excess excavated material, stump removal, and periodic maintenance of the site	Volume 1, Section 5.6
6.	Locations of areas where blasting is anticipated	None anticipated; refer to Volume 1, Section 5.15
7.	Rehabilitation plans, including but not limited to reseeded and topsoil restoration	Volume 1, Section 3.4; Volume 3, Attachment E BMP Manual

RCSA Section	Description	D&M Plan (Section Reference, as Applicable)
8.	Contact information for the personnel of the contractor assigned to the project	To be provided after contract award
9.	Such site-specific information as the CSC may require	Refer to Table 1-2: List of requirements per Docket 468 Decision and Order and Opinion
(d)	<p>Notice A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, is submitted to the CSC</p>	Acknowledged
(e)	<p>Changes to the Plan The CSC may order changes to the D&M plan, including but not limited to vegetative screening, paint color, or fence design at any time during the preparation of the plan</p>	As applicable; refer to Volume 3, Attachment A.3 for discussion of Eversource’s Change Notice process
16-50j-62	Supplemental Reporting Requirements	
(a)	<p>Site Testing and Staging Areas The Certificate Holder, or facility owner or operator, shall provide the CSC with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M plan, the CSC may approve such use on terms as it deems appropriate.</p>	Volume 1, Section 3.3; Volume 2 identifies work pads for the transmission line construction. The locations of contractor yards and material staging areas will be identified by the contractor and submitted to the Council for review and approval prior to use, pursuant to the Change Notice process described in Volume 3, Attachment A.3.
(b)	Notice	
1.	<p>The Certificate Holder, or facility owner or operator, shall provide the CSC, in writing with a minimum of two weeks advance notice of the beginning of:</p> <ul style="list-style-type: none"> A. Clearing and access work in each successive portion of the site, and B. Facility construction in that same portion 	Acknowledged. Volume 3, Attachment A.3 summarizes notification procedures.
2.	<p>The Certificate Holder, or facility owner or operator, shall provide the CSC with advance written notice whenever a significant change of the approved D&M plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the CSC immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D&M plan shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> A. The location of wetland or watercourse crossing B. The location of an access way or structure in a regulated wetland or watercourse area 	Volume 3, Attachment A.3 includes Eversource’s D&M Plan change process

RCSA Section	Description	D&M Plan (Section Reference, as Applicable)
	<ul style="list-style-type: none"> C. The construction or placement of any temporary structures or equipment D. A change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures E. Utilization of additional mitigation measure, or elimination of mitigation measures. The CSC or its designee shall promptly review the changes and shall approve, modify, or disapprove the changes in accordance with subsection (d) of Section 16-50j-60 of the RCSA 	
3.	The Certificate Holder, or facility owner or operator, shall provide the CSC with a monthly construction progress report or a construction progress report at intervals determined by the CSC or its designee, indicating changes and deviations from the approved D&M Plan. The CSC may approve changes and deviations, request corrections, or require mitigation measures.	Acknowledged
4.	The Certificate Holder, or facility owner or operator, shall provide the CSC with written notice of completion of construction and site rehabilitation.	Acknowledged
(c)	<p>Final Report The Certificate Holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation. The report shall identify:</p>	
1.	All agreements with abutters or other property owners regarding special maintenance precautions	
2.	Significant changes of the D&M plan that were required because of property rights of underlying and adjoining owners for other reasons	
3.	The location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands	Acknowledged
4.	The location of areas where special planting and reseeded have been done	
5.	<p>The actual construction cost of the facility, including but not limited to the following costs:</p> <ul style="list-style-type: none"> A. Clearing and access B. Construction of the facility and associated equipment C. Rehabilitation; and D. Property acquisition for the site or access to the site 	
(d)	<p>Protective Order The Certificate Holder, or facility owner or operator, may file a motion for protective order pertaining to commercial or financial information related to the site or access to the site.</p>	Acknowledged

**Table 1-2:
D&M Plan Directory of Docket No. 468 Decision and Order Requirements
SWCT Reliability Project Transmission Line**

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
Condition Number	Decision and Order	
(1)	The Certificate Holder shall construct the proposed transmission line overhead along the proposed route and perform related Project improvements, as proposed, subject to modifications during final site design and approval of the D&M Plan for the Project.	D&M Plan, Volumes 1-3
(2)	<p>The Certificate Holder shall prepare a Development and Management (D&M) Plan for this Project that shall be in compliance with Sections 16-50j-60 through 16-50j-62 of the RCSA. The D&M Plan shall be served on the municipalities of Bethel, Danbury, and Brookfield for comment, and submitted to and approved by the Council prior to the commencement of facility construction. The D&M Plan shall include:</p> <p>a. Detailed site plans showing the placement of the transmission structures and associated work pads;</p> <p>b. Detailed site plans showing design and the location of temporary and permanent access roads, including provisions for narrower access roads where possible and identification of wider sections for use as designated passing areas;</p> <p>c. Detailed site plans for substation improvements;</p> <p>d. Identification and design of staging and equipment lay down areas, field office trailers, sanitary facilities, and parking;</p> <p>e. Identification of wetland and watercourse resources, related temporary and permanent construction impacts and methods to reduce such impacts;</p> <p>f. Details of ground disturbance;</p> <p>g. Vegetative clearing plan, including identification of areas of scrub-shrub habitat within the ROW that would be retained. Identify methods, including the use of seasonal restrictions where practical, to minimize environmental impacts related to vegetative clearing;</p>	<p>D&M Plan, Volumes 1-3</p> <p>D&M Plan, Volumes 1-3</p> <p>N/A. Refer to the Development and Management Plan for Modifications to the Plumtree and Stony Hill Substations Volume 2 Maps and Drawings</p> <p>Volume 2 maps (Contractor yard locations to be submitted to the Council separately)</p> <p>Volume 1, Sections 5.2 and 5.3; Volume 2 maps and Detail Sheets</p> <p>Volume 2</p> <p>Volume 1, Section 3.4; Volume 3, Attachment B</p>

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
	<p>h. An erosion and sediment control plan, consistent with the <i>2002 Connecticut Guideline for Soil Erosion and Sediment Control</i> as amended;</p> <p>i. Wetland restoration plan;</p> <p>j. Invasive species control plan;</p> <p>k. A schedule of construction hours;</p> <p>l. A blasting plan, if necessary;</p> <p>m. A spill prevention and countermeasures plan;</p> <p>n. An EMF Monitoring Plan; and,</p> <p>o. Plans to prevent post-construction the use of the ROW by all-terrain vehicles;</p>	<p>Volume 1, Section 5.1; Volume 2; Volume 3, Attachments E and F</p> <p>Volume 1, Section 5.2; Volume 2, Detail Sheet 2</p> <p>Volume 1, Section 5.2; Volume 2, Detail Sheet 2</p> <p>Volume 1, Section 4</p> <p>Volume 1, Section 5.15</p> <p>Volume 3, Attachment C</p> <p>Volume 1, Section 5.15, Volume 1, Appendix A</p> <p>Volume 1, Section 5.12</p>
(3)	<p>The Certificate Holder shall comply with the Department of Energy and Environmental Protection recommendations, or coordinate with the Department of Energy and Environmental Protection, for construction of the route in the area of endangered, threatened, or special concern species identified along the Project route. Include provisions for the spotted turtle, as State Species of Special Concern.</p>	<p>Volume 1, Section 5.4; Volume 2 Maps and Drawings including Detail Sheets 3 and 4</p>
(4)	<p>The Certificate Holder shall hire an independent environmental inspector, subject to Council approval, to monitor and provide bi-weekly reports to the Council regarding environmental compliance with the approved D&M Plan.</p>	<p>Volume 3, Attachment A.2</p>
(5)	<p>The Certificate Holder shall obtain necessary permits from the United States Army Corps of Engineers and the CT DEEP prior to the commencement of construction, in areas where said permits are required.</p>	<p>Volume 1, Section 2</p>
(6)	<p>The Certificate Holder shall conform to the Council's Best Management Practices for Electric and Magnetic Fields.</p>	<p>Project represents BMPs for EMF</p>
(7)	<p>The Certificate Holder shall comply with all future electric and magnetic field standards promulgated by State or federal regulatory agencies. Upon the establishment of any new standards, the facilities granted in this Decision and Order shall be brought into compliance with such standards.</p>	<p>Acknowledged</p>

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
(8)	The Certificate Holder shall provide to the Council an operating report within three months after the conclusion of the first year of operation of all facilities herein, and annually thereafter for a period of three years, with information relevant to the overall condition, safety, reliability, and operation of the new transmission line.	Acknowledged
(9)	Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within five years of the effective date of the Decision and Order, or within five years after all appeals to this Decision and Order have been resolved. Authority to monitor or modify the schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as practicable.	Acknowledged
(10)	Any request for extension of the time period referred to in Condition 9 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the municipalities of Bethel, Danbury, and Brookfield.	Acknowledged
(11)	This Certificate may be surrendered by the Certificate Holder upon written notification to the Council.	Acknowledged
(12)	In accordance with Section 16-50j-62 of the RCSA, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.	Acknowledged
(13)	The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under CGS §16-50v.	Acknowledged
(14)	This Certificate may be transferred in accordance with CGS §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under CGS §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide to the Council a written agreement as to the entity responsible for any quarterly assessment charges under CGS §16-50v(b)2 that may be associated with this facility.	Acknowledged

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2. REGULATORY APPROVALS AND CONSULTATIONS

2.1 REGULATORY APPROVALS AND REQUIREMENTS

This D&M Plan conforms to the specifications of Sections 16-50j-60 through 16-50j-62 of the RCSA (*Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements*); incorporates Eversource's commitments as contained in the record of the Council's Docket 468 regulatory process; and reflects adherence to the conditions of the Council's Certificate for the Project and other relevant, previously received or anticipated regulatory approvals. The federal and state permits and approvals needed for the Project are listed in Table 2-1. Volume 3 includes copies of the following:

- The Council's Decision and Order and Opinion for the Project (refer to Volume 3, Attachment A.1); and,
- The CT DEEP *General Permit*, which applies to the management of the discharge of stormwater and dewatering wastewaters from construction sites (Volume 3, Attachment F).

2.2 CONSULTATIONS

During the planning of the Project, Eversource consulted with representatives of the three municipalities traversed by the 115-kV transmission line, as well as with representatives of various state and federal agencies, including the U.S. Army Corps of Engineers (USACE), New England District; U.S. Fish and Wildlife Service (USFWS); CT DEEP; State Historic Preservation Office (SHPO), and Connecticut Department of Transportation (ConnDOT). In addition, Eversource communicated with municipal representatives, property owners along the transmission line ROW, and the interested public. During these discussions, Eversource provided information regarding the Project, including the D&M Plan process, the planned transmission line construction activities, and Eversource's outreach procedures and points-of-contact.

In accordance with Condition No. 2 of the Council's Decision and Order, Eversource issued a draft of this D&M Plan to the chief elected officials of Bethel, Danbury, and Brookfield. Eversource met with municipal representatives to review the draft D&M Plan. The final D&M Plan submitted to the Council also will be provided to these municipalities, as well as to all parties and intervenors on the service list for this docket. Additional information regarding Eversource's public outreach process is included in Section 6.

**Table 2-1:
Permits, Reviews, and Approvals Required for the Project**

Agency	Certificate, Permit, Review, Approval or Confirmation	Activity Regulated
FEDERAL		
USACE, New England District	Section 404 CWA: General Permit (Permit requires conformance with National Historic Preservation Act (NHPA), Section 106; see SHPO, below)	Discharge of dredge or fill material into waters of the U.S. (wetlands or watercourses)
U.S. Fish and Wildlife Service	Coordinates with USACE regarding endangered or threatened species	Activities that may affect federally-listed endangered or threatened species
U.S. Environmental Protection Agency	Provides input to USACE permit application review	Activities that may affect water, air, or other resources
Federal Aviation Administration (FAA)	Notice of Proposed Construction or Alteration	New transmission line structures are subject to the notice requirement outlined in 14 CFR Part 77. The FAA issued a “Determination of No Hazard to Air Navigation” for all Project structures.
CONNECTICUT		
Connecticut Siting Council	Certificate of Environmental Compatibility and Public Need (Docket 468, November 10, 2016; refer to Volume 3, Attachment A.1) D&M Plan approvals	General transmission line need, siting, construction, environmental compatibility, safety, and operation / maintenance and ROW management procedures
CT DEEP	401 Water Quality Certification	Conformance to Section 401 of the CWA and flood management certification
	<i>General Permit</i> (refer to Volume 3, Attachment F)	Stormwater management during construction
	Threatened, Endangered, and Special Concern Species	Approval of species-specific mitigation plans
SHPO	Concurrence with determination that Project will have no adverse effect on cultural resources	No cultural resources were found in the areas to be affected by Project construction and operation. Report regarding these conclusions submitted to SHPO.
CT DEEP Public Utilities Regulatory Authority	Approval pursuant to CGS Section 16-243	Method & Manner of Construction and Approval to Energize Line
ConnDOT	Encroachment permits	Transmission line crossings of state highways (US Route 6, Interstate 84)

Eversource consulted with federal and state agencies both as part of permitting efforts and as part of the preparation of resource-specific protection measures included in this D&M Plan. For example, Eversource coordinated with the CT DEEP and the USFWS regarding threatened and endangered species. No federally-listed species will be affected by the Project. The status of consultations with CT DEEP regarding State-listed species are summarized generally in Section 5 of this Volume; general measures proposed to avoid or minimize potential adverse effects to listed species are reflected in the Project construction plans (refer to Volume 2). However, in order to protect species habitat, details regarding specific locations of listed species within the Project area are not provided for public review.

In addition, as specified in the D&M Plan requirements (RCSA Section 16-50j-61(c)(2)(F)), Eversource consulted with representatives of the SHPO and involved Native American tribes² regarding the potential effects of the 115-kV transmission line on archaeological or historic resources. However, no cultural resource sites were identified within the areas proposed for transmission facility construction and therefore no mitigation is specified or required.

² Mohegan, Mashantucket Pequot, and Wampanoag Tribal Historic Preservation Offices.

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3. GENERAL CONSTRUCTION PROCEDURES

This section describes the typical construction procedures and plans for the new 115-kV transmission line. Sections 3.1 through 3.3 provide an overview of the transmission line facilities to be constructed, construction management, and contractor yards / staging areas required to support the transmission line construction. Section 3.4 discusses procedures for the construction of the new overhead 115-kV transmission line.

Additional special construction procedures, plans, or mitigation measures will be implemented to protect or minimize impacts to the public, environmental resources (e.g., water resources; threatened and special concern species), and public recreational areas. Such measures are described in Section 5, as well as in in Volume 2. The Volume 2 maps include site-specific information regarding the transmission line structure characteristics (i.e., structure number, type, height, finish, and foundation), environmental features along the ROW, property owners, construction work areas, and the locations where special resource protection measures will be implemented.

3.1 SUMMARY OF NEW TRANSMISSION LINE FACILITIES

The new, approximately 3.4-mile 115-kV transmission line, which will extend Eversource’s existing 1887 Line from Brookfield Junction into Plumtree Substation, will be supported on 28 new structures, identified by municipality as follows:

Municipality	New 115-kV Transmission Line Structure No.
Bethel	1000-1007, 1014-1023
Danbury	1008-1013
Brookfield	1024-1026

Approximately 3.3 miles of the new 115-kV transmission line will be installed on weathering steel monopoles, with a typical height of 95 to 135 feet. The proposed structure design and configuration for the new 115-kV line will be a combination of direct-buried and concrete drill shaft supported tubular steel monopoles in a vertical configuration. Self-supported vertical tubular steel monopoles (typically with drilled shaft foundations) will be used at angle points and as deadend structures.

The 0.1-mile segment of the ROW extending from the southwestern portion of Plumtree Substation to the west will be supported on four self-supported three-pole structures, with a typical height of approximately 30 to 40 feet. This structure design and configuration is required to accommodate multiple angles in the new line immediately outside Plumtree Substation and to better allow crossings of other transmission lines (i.e., the 1363, 1770, and 321 lines) that also connect to the substation.

3.2 CONSTRUCTION MANAGEMENT AND CONTACT INFORMATION

After Eversource awards construction contracts for the Project, but prior to the commencement of the contractors' on-site work on the new 115-kV transmission line, Eversource will provide the Council with contact information for the prime construction contractors, consisting of the names of the firms, primary contacts, corporate addresses, telephone numbers, and e-mails. Eversource representatives will be assigned to monitor construction activities, including adherence to safety, engineering requirements, and compliance with Project approvals and permits.

3.3 CONSTRUCTION FIELD OFFICES, CONTRACTOR YARDS, AND STAGING AREAS

To support the construction of the new transmission facilities, temporary contractor yards, field construction offices, and staging areas (including equipment and material staging sites, temporary storage areas, and laydown areas) will be required. These sites typically will be 2 to 5 acres.

The preferred locations for contractor yards, as well as temporary storage and staging sites, will be in the general vicinity of the ROW, including potentially on Eversource property. If Eversource property is not suitable, previously developed lands (e.g., parking lots, commercial/industrial sites) or vacant land will be considered.

The Project construction contractors will be responsible for identifying proposed locations for temporary contractor yards, field construction offices, and staging areas, and for entering into agreements with the property owners for the use of such sites during construction. In accordance with the Change Notice Approval Process (Volume 3, Attachment A.3), Eversource will submit the proposed locations of these construction support areas to the Council staff for review and approval prior to use.

3.4 CONSTRUCTION PROCEDURES

3.4.1 General Construction Sequence

Eversource will construct the new overhead transmission line facilities in several stages, some overlapping in time. The following summarizes the typical sequence of construction activities:

- Survey and stake the ROW boundaries (where necessary), vegetation clearing boundaries, and new structure locations.
- Mark the boundaries of previously-delineated wetlands and watercourses.
- Mark environmentally-sensitive areas to be avoided or otherwise protected (e.g., habitats for rare species).
- Establish construction field office and yards, typically including space for an office trailer, equipment storage and maintenance, sanitary facilities, and parking.
- Perform clearing and vegetation removal.
- Install erosion and sedimentation controls.
- Construct new temporary and permanent access roads and/or improve existing roads.

- Construct work pads and pulling pads.
- Prepare storage, staging and laydown areas to support the construction effort.
- Construct structure foundations and erect/assemble new structures.
- Install shield wires, lightning arresters, and conductors.
- Install structure grounding systems, including counterpoise (where needed).
- Remove temporary roads and construction debris and restore disturbed sites.
- Maintain temporary erosion and sediment controls until vegetation is re-established or disturbed areas are otherwise stabilized. Upon completion of sufficient revegetation and site stabilization, temporary erosion and sediment controls will be removed.

3.4.2 Clearing and Vegetation Removal

Prior to commencing the civil work, vegetation removal will be performed as described in the *Vegetation Clearing Plan* (refer to Volume 3, Attachment B). The Volume 2 maps identify vegetation clearing limits for construction along the ROW. Within these limits, tall-growing tree species will be removed to meet the established minimum vegetation clearances from the new transmission line conductors. Along presently un-managed portions of the ROW, the vegetation removal limits represent the “new edge of ROW vegetation management” as illustrated on the cross-section drawings provided in Volume 2.

Within the vegetation clearing limits for construction, other types of vegetation (e.g., shrubland, lawn, landscaping) also will be removed, as needed. As a result, some vegetation removal will be performed within presently managed portions of the ROW. Outside of the vegetation clearing limits shown on the Volume 2 maps, trees and herbaceous or low-growing scrub/shrub species will only be cleared as needed to facilitate Project construction activities along on- and off-ROW access roads. Further, after initial vegetation removal (particularly after the new conductors are installed), trees adjacent to cleared areas may need to be selectively removed or pruned to achieve required clearances from conductors.

Temporary erosion and sedimentation controls may be installed before vegetation removal, depending on site-specific characteristics. After vegetation removal, soil erosion and sedimentation controls typically will be installed around work limits (e.g., access roads, work pads) in or near wetlands, streams, and other water resources. (Refer to the typical drawings of erosion and sedimentation control measures in the *BMP Manual* and in Volume 2, Detail Sheet 5.

In addition, during this phase of construction, flagging, exclusion fencing, or other types of boundary markings will typically be installed, if necessary, to demarcate areas of restricted construction access or environmental resource sensitivity.

3.4.3 Access Roads and Work Pads

The Volume 2 maps illustrate the planned locations of access roads and work pads, including pulling pads, for the transmission line construction.

3.4.3.1 Access Roads

The public road network and access roads will provide the principal means for transporting equipment and material to the transmission line structure locations. In some areas, to avoid traversing along the ROW over difficult terrain or through sensitive environmental resources, access roads to the ROW will be developed across private property or across land owned by Eversource (“off-ROW access roads”). Eversource is currently working with property owners to secure rights for these off-ROW access roads.

To support the heavy construction equipment required to install 115-kV transmission line foundations and structures, all access roads must be sufficiently wide, with a stable base and grades that typically must be 10% or less. For this Project, access roads will typically have a 16-foot-wide travel way, with associated road shoulders of approximately 2 feet on either side. However, access road widths will vary depending on site-specific conditions (principally slope and presence of wetlands) and on factors such as the amount of grading (cutting and filling) required and on whether a particular section of road must accommodate equipment turning radii and/or equipment passing/turn-out locations. At intersections with public roads, access roads will typically be wider to accommodate equipment turning radii.

For the construction of the new 115-kV line, Eversource has minimized access roads along the ROW in residential and commercial areas to the extent practical. In certain locations, Eversource’s existing access roads for maintaining the 321/1770 lines that presently occupy the ROW will be upgraded and widened, as necessary, for use during the new transmission line construction. Access road improvements typically will include removing adjacent vegetation and widening roads as needed to provide the necessary travel width for heavy construction equipment.

Access roads in upland areas will likely be improved by installing clean processed rock and/or gravel. In some locations, particularly on steep slopes and at intersections with public roads, asphalt millings may be used to improve road stability and vehicle traction. Eversource also will require the construction contractors to use BMPs as warranted by site-specific conditions to maintain access road stability and minimize the potential for erosion and sedimentation.

Where access roads traverse streams or wetlands, special construction procedures will include the use of timber mats (or equivalent). Within and near wetlands and watercourses, erosion and sedimentation controls will be installed as necessary before the commencement of any improvements to or development of access roads.

In some areas along the ROW (i.e., Target store, Berkshire Corporate Park), access to transmission line structures will be via existing paved parking areas. The Volume 2 maps identify approximate access routes across these paved areas. However, access across the paved parking lots may be modified during construction, based on site-specific schedules for Project work and on Eversource’s additional coordination with the owners or managers of these areas.

Access roads located within manicured or otherwise improved residential, commercial, or industrial areas will typically be removed unless the landowner requests that they remain in place. Unless Eversource receives directions from the landowner to the contrary, access roads in other upland areas will be left in place to facilitate future transmission line maintenance work.

During construction, at points where access roads intersect public roads, Eversource's construction contractors will install signs as needed along the public roads specifying "construction work zone / entrance ahead" (or equivalent). Signs also will be installed at the access road entrances specifying that the roads are for construction purposes and are restricted from public use.

In addition, where access roads intersect public roads, rock aprons or equivalent will be installed to minimize tracking of dirt from the access road onto the public road as a result of construction vehicle movements. Public roads in the vicinity of access roads also will be periodically swept to remove dirt that is tracked from construction activities. (Refer also to Section 5.8.)

3.4.3.2 Work Pads

Work pads will be required at each transmission line structure location, at pulling sites, and at locations where temporary guard structures will be erected or boom trucks will be positioned during pulling. At transmission line structure locations, a work pad is required to stage structure components for final on-site assembly and to provide a safe, level base for the construction equipment used to install foundations and erect the structure. The size and dimensions of work pads will vary based on site-specific conditions; however, a typical working surface for a tangent structure pad will average about 100 feet by 100 feet and for a deadend structure will average about 200 feet by 100 feet.

Work pads in wetlands will be temporary, and will typically consist of timber mats or equivalent. Multiple layers of mats may be installed, depending on site-specific conditions.

A typical (upland) installation of a work pad at a structure location involves several steps, beginning with the removal of vegetation, if necessary. The work pad site then will be graded to create a level work area and, if necessary, the upper 3 to 6 inches of topsoil will be removed. The topsoil will be temporarily stockpiled within the ROW near the work pad. A rock base, which allows drainage, will be layered on top of filter fabric (if used). Additional layers of rock with dirt/rock fines will typically be placed directly over this rock base. Finally, a roller typically will be used to flatten and compact the pad.

Pulling work pads, which will be required in certain locations along the ROW for conductor and OPGW installation, typically will be 100 feet by 200 feet, but can be as large as 100 feet by 300 feet. Pulling work pads will be constructed using similar techniques to those described for the work pads at structure locations.

Temporary guard structures or boom trucks with "bat wings", which will be located at road and other crossings during conductor and OPGW installation, may require work pads of approximately 50 feet by 80 feet. An associated 16-20-foot-wide access road may be required, depending on the location.

Upon completion of the 115-kV line installation, all work pads or portions of work pads in wetlands will be removed and the affected wetland areas will be restored. Work pads at structure sites in uplands will remain in place, unless the landowner requests that they be removed. Work pads located within manicured or otherwise improved residential, commercial, or industrial areas will typically be removed and the affected areas restored unless the landowner requests that they remain.

Where work pads remain in place, topsoil removed from the work pad area and temporarily stockpiled nearby typically would be spread in upland areas of the ROW and re-seeded. Alternatively, excess topsoil may be removed from the ROW. In locations where gravel work pads will not remain, the rock base and fabric materials will be excavated and removed for appropriate off-site disposal or re-use.

3.4.4 Foundations and Structure Installation

3.4.4.1 Foundation Types and Excavation

The new transmission line structures will be either direct embedded or drilled shaft foundations (refer to the Volume 2 maps). The new tangent structures will typically be direct embedded; exceptions are the tangent structures that will be located in the FEMA 100-year floodplain or FEMA Regulatory Floodway (Floodway), which will have drilled shaft foundations. Angle and deadend structures also will typically have a drilled shaft foundation.

Excavations for line-structure foundations will be accomplished using mechanical excavators (drill rigs) and pneumatic hammers. At this time, blasting is not anticipated. However, if mechanical excavation is not successful, blasting would be required. In such case, a controlled drilling and blasting plan will be developed by a certified blasting contractor; the plan will conform to state and local regulations³. During non-working hours, fencing or other barricades will be placed around or over open foundation excavations.

Material excavated from the foundation areas will either be reused on-site or disposed of off-site in accordance with standard Eversource specifications and applicable regulatory requirements.

Where groundwater is encountered in excavations, the water will be pumped from the excavated area and discharged in accordance with site-specific conditions and applicable requirements. For example, the water may be discharged on-site into an appropriate sediment control basin or into a dewatering bag; pumped into a temporary fractionation (frac) tank and then discharged into the municipal stormwater system; or pumped into a tanker truck for disposal at appropriate wastewater treatment facilities. Residual silt/sediment collected at the bottom of the frac tanks will be disposed in appropriate upland areas within the ROW (not in wetlands, lawns, etc.) or at an appropriately designated disposal facility.

3.4.4.2 Structure Assembly

The new transmission line structures will be delivered to installation locations in sections, then assembled using a crane. Insulators, connecting hardware, lightning arresters, and conductor pulling blocks will be installed on most structures at this time.

³ Section 5.15 includes the basic elements of a blasting plan.

3.4.4.3 Structure Grounding

In addition to the natural grounding of the transmission line structures that is provided by their foundation contacts with the earth, a ground ring and ground rods will be buried around each foundation (refer to Volume 2, Detail Sheet 7). The ground ring will be installed after the completion of the foundation and the installation of the structure, but before shield wires are installed. Additionally, lightning arresters shall be installed on the new 115-kV transmission line structures as appropriate to provide additional protection. The lightning arresters shall be affixed to the transmission line structure with a chain and ground wire and will not increase the above ground structure height.

The need for and location of counterpoise or additional ground rods at specific structure sites will be determined based on soil resistivity and/or footing resistance testing, which will be performed as part of the construction process. Where required, counterpoise wires will extend longitudinally from the ground rings around the transmission line structures. Small equipment (e.g., a ditch witch, small excavator, or equivalent) will typically be used to bury the counterpoise wires; such equipment will excavate a narrow (approximately 12 inches wide) trench, into which the counterpoise wire will be fed. Ground rods, which may be used in conjunction with counterpoise, will typically be buried between or near the ground rings.

3.4.5 Conductor Installation

The installation of the overhead line conductors and shield wires will require the use of pulling and tensioning equipment, as well as reels of conductor, which will be positioned at the pulling work pads. The Volume 2 maps identify the locations of the pulling pads.

Helicopters may be used to install pulling ropes at the commencement of the conductor/shield-wire pulling process. To maintain clearance at road and other crossings during conductor and OPGW installation, temporary guard structures or boom trucks will be positioned beneath the lines, adjacent to the crossings. The planned locations of temporary pads to support such equipment are illustrated on the Volume 2 maps; boom trucks also may be positioned temporarily on road shoulders or within one lane of a public road. Eversource will coordinate with state and municipal highway authorities, as appropriate, regarding traffic control during pulling operations across roads.

The conductors will be pulled under tension to avoid contacting the ground and other objects. The remaining insulators and hardware will then be installed at angle and deadend structures. Finally, in accordance with industry standards and design specifications, the conductors and shield wires will be pulled to their design tensions and attached to the hardware. Linemen in bucket trucks typically perform this operation.

3.4.6 Cleanup and Restoration

ROW cleanup will include the removal of temporary access roads and temporary work pads, as well as construction debris (including erosion and sediment controls), signs, flagging, and fencing. Such materials will be removed from the ROW and will either be properly disposed of or otherwise repurposed. Some areas affected by construction will be re-graded as practical and stabilized by seeding or with gravel or paving, depending on the location.

Access roads and work pads that will remain in place may be re-graded as needed. Permanent on-ROW access roads, turning areas, and any excess shoulder areas will be pulled back to approximately 16 feet in width, unless required to remain due to grade. Access roads that had to be widened to accommodate construction equipment will be re-graded or otherwise restored (e.g., gravel road material will be removed) to achieve a width of approximately 16 feet, unless otherwise requested by the landowner. In some areas, topsoil may be spread and seeded over the gravel roads and pads.

All temporary access roads and temporary work pads will be removed from wetland areas and watercourse crossings, as well as from upland areas (including residential and commercial areas) as identified on the Volume 2 maps. After removal of the work pad and access road materials, the affected areas will be re-graded (back-bladed), if necessary, to match the approximate contours of the land outside the construction zone (refer to Volume 2, Detail Sheet 8). In some areas (e.g., slopes), construction activities affect localized topography such that original contours cannot be restored. In such situations, the affected areas will be stabilized as warranted based on site-specific conditions.

After grading, upland areas affected by construction will be seeded with the appropriate seed mix and fertilized, if necessary. Seed mix(es) will be selected by Eversource to provide a quick vegetative cover until vegetation recolonizes the ROW. In most locations along the ROW, shrub and herbaceous vegetative communities are expected to re-establish. In conjunction with the seeding, erosion and sedimentation controls (e.g., erosion control blankets, mulch) will be installed or maintained, as appropriate based on site-specific conditions and the time-of-year in which final grading is performed. Steep areas may be stabilized with bio-degradable, pre-made erosion and sedimentation control fabric containing seed, mulch, and fertilizer, or the equivalent. Temporary erosion and sedimentation controls will be left in place and maintained until final stabilization is achieved.

Where warranted to stabilize the ROW, permanent erosion and sedimentation controls, such as water diversion bars or crushed stone, will be installed.

Wetland areas affected by construction will be stabilized with annual rye grass, a wetland seed mix, or an equivalent mix (40 pounds/acre, unless standing water is present), which will serve to provide a temporary vegetative cover until wetland species become reestablished. No fertilizer, lime, or mulch will be applied in wetlands unless allowed per the Project's regulatory approvals from the USACE or CT DEEP.

Stone walls, if any, affected by construction will be rebuilt, unless the landowner requests otherwise. Flagging (or equivalent markers) denoting wetlands, streams, and other environmentally sensitive resource avoidance or protection areas will be maintained (and reflagged or marked as needed), typically until the completion of ROW restoration activities.

Restoration typically will be deemed successful, based on the effectiveness of stabilization measures (such as revegetation), as defined in accordance with Project-specific permits and certificates. When segments of the ROW are appropriately revegetated or otherwise stabilized, Eversource will remove temporary erosion controls.

In the long-term, vegetative species compatible with the use of the ROW for transmission line purposes are expected to regenerate naturally over time. Eversource will promote the re-growth of desirable species (i.e., native vegetation that is compatible with overhead transmission line operation) by implementing its standard vegetation management practices to control tall-growing trees and, where practicable, undesirable invasive species, thereby enabling native plants to dominate the ROW.

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4. CONSTRUCTION SCHEDULE, OUTAGES, AND WORK HOURS

4.1 CONSTRUCTION SCHEDULE, INCLUDING OUTAGES

The new 115-kV transmission line is scheduled for construction between January 2018 and the end of December 2018, however, the Project is currently evaluating whether the start of construction can be accelerated. Some ROW restoration activities could extend into the spring / early summer of 2019. Line outages will be required for the interconnection of the new 115-kV line at Plumtree Substation and Brookfield Junction. As currently planned, the general schedule for the construction of the new transmission line is as follows:

General Construction Dates*	Transmission Line and Related Line Modification Construction Activity
Quarter 1, 2018	Construction contracts awarded; establish material laydown yards and field offices, begin receiving materials. Contractor mobilization, commence vegetation clearing, access road and work pad installation.
Quarter 1, 2018 through Quarter 3, 2018	Perform construction (vegetation removal, access road/work pad installation, structure foundations, structure installation, conductor installation, ROW clean-up and restoration**, etc.), as summarized in Section 3.
Quarter 4, 2018	Connect the new 115-kV transmission line at Plumtree Substation and Brookfield Junction. Perform line testing, energization, continue ROW cleanup and restoration. Final ROW revegetation and verification of final stabilization pursuant to regulatory requirements could extend into Quarters 1 and 2 of 2019)

* Construction schedule is dependent on the receipt of D&M Plan approval from the Council and the acquisition of permits from CT DEEP and the USACE. The Project schedule may change in accordance with receipt of these approvals, as well as on approval of outage schedules.

**Where feasible, restoration may begin on some portions of the ROW when line installation work is completed.

During Project construction, outages, which must be coordinated with and approved by the Connecticut Valley Electric Exchange (CONVEX), will be required for certain construction activities, including cutovers into Plumtree Substation and the interconnection at Brookfield Junction. These outages are expected to occur in the third or fourth quarters of 2018.

After Eversource retains construction contractors for the Project and identifies and schedules the outages, a more specific construction schedule will be developed.

4.2 WORK HOURS

Construction work hours will typically be between 7:00 AM and 7:00 PM, six days per week (Monday through Saturday). During these hours, construction work will generate some noise, which will vary depending on the type of activity performed. Construction workers may arrive for work and leave work outside of these times.

Typical Construction Work Window: Monday-Saturday 7:00 AM-7:00 PM

However, certain activities will involve work during non-typical hours, in some cases on a continuous basis and/or on Sundays. The performance of these activities during non-typical work hours can be critical for completing the required tasks within the allowed outage durations and returning equipment to service as expeditiously as possible. Examples of such activities include: performing work during CONVEX approved outages; switching, testing, and commissioning; and, emergency work in support of storms or customer restoration.

In addition, during winter, snow plowing and de-icing activities (which will be performed pursuant to the plan included in Volume 3, Attachment D) will typically commence, when necessary, prior to 7 AM to ensure a safe environment for construction personnel prior to the start of the work day.

5. SPECIAL CONSTRUCTION PROTOCOLS AND PROCEDURES

Plans and procedures included in this section and in Volume 2 (as referenced in this section) apply to the 115-kV transmission line construction.

This section provides resource-specific protocols and procedures applicable to the construction of the new 115-kV transmission line; additional details are provided in Volume 2. Volume 3 includes standard BMPs, as well as plans and guidance applicable to Project-wide construction activities (e.g., *Vegetation Clearing Plan, Spill Prevention and Control Plan; Snow Removal and De-Icing Plan*).

5.1 EROSION AND SEDIMENTATION CONTROL PLAN

Eversource will install erosion and sedimentation control measures during transmission line construction to avoid or minimize the potential for surface water runoff, erosion, and sedimentation to occur outside of work limits. These measures will comply with the *2002 Connecticut Guideline for Erosion and Sediment Control (2002 Connecticut Guidelines for E&SC)*, as well as with Eversource's *BMP Manual* and CT DEEP and USACE permit conditions. Eversource's BMPs incorporate and are consistent with the *2002 Connecticut Guidelines for E&SC*. (Refer to the *BMP Manual* in Volume 3, Attachment E, p. 1-5 for a list of the guidance documents used in preparing Eversource's BMPs).

Volume 2 includes typical drawings regarding erosion and sedimentation control measures (refer to Detail Sheet 5). The Volume 2 maps also illustrate topography (2-foot contours).

Pursuant to CGS Section 22a-430b, construction activities, such as the Project, that will result in the disturbance of 1 or more total acres of land area must comply with the CT DEEP's *General Permit*; refer to Volume 3, Attachment F). Pursuant to the requirements of this *General Permit*, prior to the start of construction, Eversource will submit to CT DEEP a Registration Form and will prepare a *Stormwater Pollution Control Plan* for the Project.

5.2 WATER RESOURCES

5.2.1 Surface Water Resource Crossing Summary

As shown on the Volume 2 maps and summarized below, water resources (wetlands, watercourses) are located along the Project ROW. All crossings of water resources and other construction activities in wetlands and watercourses will be performed in accordance with the Council's requirements, the conditions of USACE and CT DEEP regulatory approvals, and Eversource's *BMP Manual*. In addition, Eversource will require construction contractors to follow the Project's *Water Resources Protocols (Protocols)*. These Protocols are included on Detail Sheet 2 in Volume 2.

Permitted water resource impacts as a result of Project construction are tabulated on Volume 2, Detail Sheet 1. The new 115-kV transmission line will:

- Extend across seven watercourses (four perennial, including East Swamp Brook and Limekiln Brook, and three intermittent) and one un-named pond, all in the Town of Bethel.
 - ✓ No new transmission line structures will be located in any watercourses or in the pond.
 - ✓ During construction, temporary access, involving the installation of timber mats (or equivalent), will be required across three of the seven watercourses: East Swamp Brook, an intermittent channel near Payne Road, and a stormwater channel.
- Require the following work within wetlands:
 - ✓ Forested vegetation will be removed within the new 115-kV conductor clearance zones and as otherwise required for construction (refer to the vegetation removal limits illustrated on the Volume 2 maps). Danger and hazard trees also will be removed as necessary. Temporary access routes, which will not necessarily be the same as temporary or permanent access roads used for other aspects of construction, will be required for clearing crews to cross and remove vegetation within wetlands. Approximately 2.6 acres of forested wetlands will be permanently converted to scrub-shrub wetland habitat.
 - ✓ Temporary access roads and work pads, comprised of timber mats, will be located in wetlands where no upland alternatives are available. Approximately 4.5 acres of wetlands will be temporarily affected by such construction activities.
 - ✓ In the large wetland complex (wetland W1, refer to the Volume 2 maps) associated with East Swamp Brook and Limekiln Brook, 11 new 115-kV structures will be installed, resulting in approximately 0.03 acre of permanent fill.

No permanent access roads along the ROW are presently located in wetlands, and no permanent access roads or work pads in wetlands will be installed as a result of the Project.

5.2.2 Watercourse Crossings

The Volume 2 maps identify the locations of watercourse crossings and indicate where temporary mat spans or equivalent will be installed along access roads. The construction techniques to be used at each water crossing will depend on site conditions at the time of construction and will be determined by Eversource representatives, working with construction contractor personnel. Any temporary crossings will be placed or sized to maintain water flows and avoid flooding. Appropriate erosion control measures will be deployed to avoid and/or minimize impacts at watercourse crossings.

The new transmission line will span all of the watercourses along the Project ROW. Further, Eversource has planned temporary access roads to avoid crossings of all but three of the seven watercourses along the ROW. The three temporary stream crossings will be of: East Swamp Brook (Stream S1, between Structures 1004 and 1005, refer to Volume 2, Mapsheet 2); an intermittent stream (Stream S4, between Structure 1013 and Payne Road); and, the stormwater conveyance channel (Stream S7, south of Structure 1021, refer to Volume 2, Mapsheet 11).

At these three stream crossings, temporary bridges consisting of timber mats or equivalent will be used. Temporary metal bridges will typically be installed only if timber mat spans cannot be effectively used,

given site-specific conditions at the time of construction. The Protocols listed in Volume 2, Detail Sheet 2 will apply to these water crossings. All temporary crossing materials will be removed following the completion of construction.

Work Pads. At one potential guard structure work pad along Payne Road in Danbury, the construction work pad may extend over a small watercourse. At this location, the work pad cannot be moved to avoid the small stream due to the terrain and the limited available space on the public road.

Eversource will use work pad construction techniques designed to maintain flow in this watercourse. Options, which will be determined depending on conditions at the time of construction, may include:

- Spanning the watercourse with timber mats used to create the construction work pad, or
- Installing a temporary culvert to carry stream flows beneath the work pad, which will then be constructed over the culvert.

5.2.3 Wetland Crossings

Project construction activities in wetlands will conform to the Protocols listed in Volume 2, Detail Sheet 2 and will include the following:

- **“Access routes” across Wetlands for Vegetation Clearing Equipment Only.** Where needed, temporary access routes across wetlands will be created and used only by the vegetation clearing crews and will be removed as clearing activities advance along the ROW. Clearing crews must be able to access areas where vegetation removal is required not only for construction activities, but also to remove trees within the clearance zones of the new 115-kV line conductors and, as necessary, to reach on- or off-ROW danger or hazard trees.

The location and type of access routes used for vegetation clearing within each wetland will be determined at the time of construction (based on site-specific conditions) by Eversource or Eversource’s representatives, in consultation with the Project clearing contractor. However, timber mats or corduroy roads (logs) are typical options. Vegetation clearing also may be performed when the ground is frozen, when less temporary equipment support is typically needed for work in wetlands. In wetland areas where timber mat access poses a challenge, vegetation clearing may be performed manually.

- **New Temporary Construction Access Roads through Wetlands.** New temporary construction access roads across wetlands will be established using timber mats, or equivalent. The construction access roads, which are illustrated on the Volume 2 maps, may not correspond to the temporary access routes for clearing crews described above. All temporary timber mat (or equivalent) access roads in wetlands will be removed in their entirety after construction.
- **Transmission Line Structure/Work Pads in Wetlands.** Eleven new transmission line structures (Structures 1000 – 1006; 1008, 1010 - 1012) will be located in wetland W1. To install these structures, timber mats will be used to create temporary work pads for construction support. In addition, the installation of one other new transmission line structure (Structure 1007), which will be situated in an upland area, will require a temporary work pad that will extend, in part, into wetland W1. This temporary work pad also will be constructed using timber mats or equivalent.

5.2.4 Wetland Invasive Species Control Plan

The seven wetlands traversed by the Project ROW all contain invasive species. During construction, Eversource will require its construction contractors to implement the wetland invasive species control BMPs included in Volume 2, Detail Sheet 2 and in the Eversource *BMP Manual* (Volume 3, Attachment E). These measures are designed to prevent the further spread of invasive species as a result of transmission line construction, and constitute the Project's invasive species control plan.

5.2.5 Wetland Restoration Plan

Eversource's plan for restoring the wetland areas affected by Project construction is provided in Volume 2, Detail Sheet 2.

5.2.6 Flood Zones

The new 115-kV transmission line will extend through 100-year flood zones, as designated by the Federal Emergency Management Agency (FEMA), associated with East Swamp Brook and Limekiln Brook. As illustrated on Volume 2 Mapsheets 1-6, from Plumtree Substation north to near Old Sherman Turnpike, 12 new structures (Structures 1000 – 1008 and 1010 – 1012) will be within the 100-year FEMA floodplain⁴. Of these 12 structures, five (Structures 1004, 1006 – 1008, and 1011) will be located within the mapped FEMA Regulatory Floodway (Floodway)⁵.

Eversource performed hydrologic / hydraulic modeling to assess the potential effects of the new transmission line structures on the flood storage capacity of the floodplain and Floodway. Based on these analyses, the structures would have a minimal effect of the functions of the floodplain / Floodway, causing a maximum increase of 0.0002 feet in the flood elevation. Eversource submitted the modeling analyses to CT DEEP and will coordinate with CT DEEP regarding mitigation, if any, for this elevation increase. The Floodplain Compensation Detail Grading Plan included in Volume 2 (Detail Sheet 9A) depicts the excavations proposed as mitigation for flood storage loss caused by the installation of 12 new structures in the 100-year floodplain and Floodway. The proposed grades are designed to excavate a specific volume of material at specific elevations in the overall landscape to compensate for flood storage loss of equivalent or similar elevations to each of the 12 new structures (see Detail Sheet 9B). All excavations for floodplain compensation purposes are situated on Eversource-owned property near Structure 1008.

No permanent increase in surface elevation of flood waters will occur within the FEMA 100-year floodplain or the Regulatory Floodway as a result of Project access road or work pad construction. Project activities in the floodplain and Floodway will be performed in accordance with CT DEEP requirements. After transmission line installation, work pads and access roads will be removed and the areas affected will be returned to grades at or below pre-existing contours. Alternatively, roads or work

⁴ The 100-year floodplain is defined by FEMA as an area that will be inundated by a flood event that has a 1% chance of occurring in any given year.

⁵ Regulatory Floodways are defined by FEMA as the channel of a river or other water course and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. The Floodway represents the areas with the deepest and fastest discharge rates during the 100-year flood event. The Floodway is collocated within the 100-year floodplain.

areas may be constructed at or below the existing grades and contours restored to an even grade following construction.

5.2.7 Aquifer Protection

The Project ROW does not cross and will not affect any Aquifer Protection Areas. The construction of the 115-kV transmission line will not adversely affect groundwater resources, including public water supplies or private groundwater wells.

During construction, Eversource will require its contractors to adhere to the procedures in its *BMP Manual* and Project-specific regulatory requirements regarding the storage and handling of any hazardous materials used during the work. Proper storage, secondary containment, and handling of potentially hazardous materials such as diesel fuel, motor oil, grease and other lubricants, will be required.

5.2.8 Drainage

Areas where existing surface drainage patterns could pose concerns during construction were noted during field constructability reviews of the Project ROW. To avoid or minimize erosion and sedimentation and to maintain hydrology and drainage patterns, Eversource will require its construction contractors to assess such areas and implement the BMPs as appropriate to site-specific situations. Eversource also will require its contractors to work in accordance with Eversource’s *BMP Manual* and the conditions in the CT DEEP *General Permit* that pertain to stormwater management and drainage (refer to Volume 3, Attachment F).

5.3 PROTECTION MEASURES FOR STATE-LISTED SPECIES ⁶

Based on a review of CT DEEP Natural Diversity Database (NDDDB) information, Project field studies⁷, and consultations with CT DEEP representatives, six state-listed species potentially occur within the Project area⁸:

Species Name	State Status
Wood turtle (<i>Glyptemys insculpta</i>)	Species of Special Concern
Eastern box turtle (<i>Terrapene carolina carolina</i>)	Species of Special Concern
Spotted turtle (<i>Clemmys guttata</i>)	Species of Special Concern
Brown thrasher (<i>Taxostoma rufum</i>)	Species of Special Concern
American kestrel (<i>Falco sparverius</i>)	Threatened
Hairy-fruited sedge (<i>Carex trichocarpa</i>)	Species of Special Concern

⁶ The Project will not affect the two federally-designated threatened species (both species are also listed as Connecticut endangered species) initially identified as having a potential to occur in the Project vicinity.

⁷ Two state-listed bird species have records of occurrence in the municipalities coinciding with the Project (including the substations). These species require field or scrub-shrub habitat typical of transmission line ROWs, but have not specifically been identified by NDDDB or field staff as occurring in the Project area.

⁸ Spotted turtle was not identified through consultations with NDDDB. However, the Condition No. 3 of the CSC’s Decision and Order for the Project requires consideration of the spotted turtle, whose habitat requirements overlap those of the wood turtle. Thus, BMPs and avoidance and minimization measures for these species are the same.

During construction, Eversource will implement protection strategies for these species as described on Volume 2, Detail Sheets 3 and 4, or as amended based on consultations with CT DEEP NDDDB⁹. These protection strategies, pending approval by CT DEEP, include a construction contractor awareness program and species-specific protection measures, which will depend on the season in which construction occurs in a particular species' habitat. Exact location information regarding state-listed species habitat along the Project ROW is not provided for public review, in compliance with confidentiality requirements pursuant to Eversource's agreement with CT DEEP NDDDB.

5.4 AIR QUALITY PROTECTION (MINIMIZATION OF DUST AND VEHICLE IDLING PROTOCOL)

5.4.1 Dust Suppression and Anti-Tracking Pads

To minimize short-term adverse effects to air quality during construction, access roads and staging areas will typically be graveled¹⁰ and may be watered, as necessary, to suppress fugitive dust emissions. Additionally, crushed stone aprons will be installed at all gravel or dirt access road entrances to public roadways, with the objective of minimizing tracking of soil onto the roadway. Paved roads at the intersection with Project access roads will be periodically swept, as necessary to remove excess dirt tracked onto the pavement from the ROW.

5.4.2 Construction Equipment: Idling vs. Warm-up during Cold Weather

Vehicle emissions will be limited by requiring contractors to properly maintain construction equipment and vehicles, and by minimizing the idling time of equipment and vehicles, including diesel construction equipment in accordance with regulatory standards. Idling requirements are as follows:

- Unnecessary construction equipment and vehicle idling expends fuel, increases costs, and causes air pollution. For the Project, pursuant to Connecticut requirements (RCSA 22a-174-18), the allowable idling time for vehicles of all kinds, including diesel construction equipment, is 3 minutes.
- Under winter work conditions (when the ambient temperature is below 20 degrees Fahrenheit) the following apply:
 - Construction equipment may require longer periods to warm up after overnight shut down or other extended periods of inactivity. Such "warm up" periods, as required to bring the equipment up to a safe operating temperature (as defined by the equipment manufacturer), are exempt from the idling time limit. However, most diesel engines take 3 minutes or less to warm up (contractors should consult the engine manufacturer's recommendations).
 - Construction equipment may have to idle for longer periods to operate defrosting or heating equipment to ensure the safety or health of the driver.

Note: "Idling" is defined as the period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function. Thus, "idling" does not apply to the use of certain types of mobile construction equipment (e.g., cranes, cement mixers) that may be stationary, but actively operating, at a work site.

⁹ CT DEEP NDDDB responded to Eversource's Request for NDDDB State-Listed Species Review on May 24, 2017. Consultations with NDDDB are ongoing.

¹⁰ Except where timber mats are used (e.g., at wetland crossings).

5.5 PROCEDURES FOR CROSSING PUBLIC TRAILS, PROTECTED OPEN SPACE, AND RECREATIONAL AREAS

Within Eversource’s existing ROW, the new 115-kV transmission line will cross or is aligned near several public recreational and open space areas as listed in Table 5-1 and illustrated on the Volume 2 maps. Eversource will consult with the owners or managers of each of the recreational and open space properties to discuss the Project, review the types of construction activities that will be performed on each property, and solicit input regarding the appropriate methods (if any) to be used during construction to minimize disruptions to the public while maintaining public safety. These consultations generally will address the following topics, as may be applicable to each property:

- Use and placement of construction warning signs.
- Pedestrian offset gates.
- Public safety (flagmen).
- Temporary trail re-routing or closure during certain construction activities.
- Trail and/or pavement protection from heavy construction equipment.
- Construction schedule.
- Schedule constraints, if any, for construction activities due to peak recreational use periods or site-specific activities (e.g., hunting season in the state forest).
- Regular correspondence and updates, including the use of the Project website to provide construction status and schedule information.
- Restoration of areas affected by construction.

Based on the consultations, Eversource will implement site-specific mitigation measures, as appropriate, for use during construction across the publicly-accessible recreational areas.

**Table 5-1:
 Public Trails, Recreational Areas, and Designated Open Space along the Project ROW**

Volume 2 (Map No.)	Parcel No. (Line List)	Proximity to ROW	Recreational/Scenic/Open Space Feature
1A, 1-2	407, Eversource Parcel	Crosses off-ROW access road and Plumtree Substation access road	Enchanted Trail (Bethel Land Trust) <i>(Crossings are on Eversource property)</i>
1, 2	406	Crosses	East Swamp WMA (CT DEEP)
2	404	Adjacent	East Swamp WMA (CT DEEP)
1A, 1, 2, 4	407, 405, 401	Adjacent and crosses	Land trust properties (Bethel Land Trust)
1	414	Adjacent	Bennett Memorial Park (Town of Bethel)
1-3	402	Crosses	Meckauer Park (Town of Bethel) <i>(ROW crosses undeveloped portions of the park property)</i>
3, 8	308, 226	Crosses	Unnamed protected open spaces (Town of Bethel)
9	222	Adjacent	Sky Edge Preserve (Bethel Land Trust)

5.6 SOILS AND MATERIALS HANDLING AND DISPOSITION

Eversource's construction contractors will be responsible for the proper handling and disposal of all excess soils, groundwater, recyclable materials, and other wastes generated during the construction process. The contractors also will be responsible for reporting and properly handling and disposing of contaminated soils and groundwater, if any is encountered or generated¹¹ during construction activities.

Excess excavated soil and groundwater (if encountered in structure foundation excavations) will be handled and disposed of in accordance with regulatory requirements (depending on the type of material) and Eversource's BMPs. Excess soil will be reused on-site where appropriate. Excess excavated soils will typically be spread along the ROW in upland locations, away from water resources, state-listed species habitats, agricultural areas, and residential or commercial land uses.

If groundwater is encountered in excavations, the water will be pumped from the excavated area and then will be discharged or disposed of based on site-specific conditions. For example, the water may be discharged to an upland area of the ROW in a location that would not result in a discharge to wetlands or watercourses; discharged on the ROW into an appropriate sediment control basin or filter bag; pumped into a temporary fractionation (frac) tank and then discharged into an appropriate upland area; or pumped into a tanker truck for disposal at appropriate upland sites or wastewater treatment facilities.

If polluted or contaminated soil or groundwater is encountered, it must be reported to Eversource and handled in accordance with the applicable regulatory requirements. If encountered, contaminated soils will be stockpiled on and covered by polyethylene sheeting. Sheeting used to cover the stockpile will be weighted to prevent the wind migration of contaminated dust. The materials will be tested to determine appropriate handling and disposition. Potentially contaminated groundwater, if encountered, will be addressed on a case-by-case basis and may involve pumping to a frac tank prior to off-site disposal or the use of other measures.

Recyclable materials will be removed from the ROW and transported off-site for appropriate re-use or salvage, pursuant to Eversource policies. General waste materials and debris other than soil and groundwater will be collected in receptacles at the work sites or in secured containers, either at designated locations along the ROW or at contractor staging areas or yards. Containers that are not removed or emptied at the end of the work day will be inspected regularly until removed for off-site disposal at approved, regulated waste disposal sites.

In no case will solid or liquid wastes (except for excess soil or groundwater, if appropriate) be buried or otherwise disposed of on the ROW or at contractor staging areas or yards.

¹¹ If any soil or groundwater contamination were caused by construction activities (e.g., a spill), it would be addressed pursuant to the procedures defined in the Spill Prevention and Control Plan (refer to Volume 3, Attachment C).

5.7 LIGHTING AND NOISE MITIGATION

The 115-kV transmission line construction activities will result in localized and short-term increases in ambient noise levels in the vicinity of work sites. Construction-related noise will occur as a result of the operation of equipment and vehicles, including vegetation removal equipment, jackhammers, drilling rigs and cranes. Helicopters may also be used to install transmission line components.

Other potential noise-generating activities may include blasting and the use of implosive connectors (for conductor installation). At this time, Eversource does not anticipate that blasting will be required or that implosive connectors will be used on the Project. If one or both of these techniques be needed, the procedures presented in Section 5.15 would apply to the preparation of appropriate site-specific plans.

Because noise attenuates with distance, the effects of construction-generated noise will depend on the noise source location in relation to noise receptors.

Noise impacts associated with construction will be minimal because the noise from construction will be relatively short-term and limited primarily to daylight hours (i.e., between 7 AM and 7 PM). In addition, Eversource will require its contractors to properly maintain mufflers on equipment and vehicles to minimize noise emissions.

Because the 115-kV transmission line construction work will be performed principally during daylight hours, temporary lighting is not expected to be required on a routine basis. If needed to accomplish specific tasks that cannot otherwise be suspended at nightfall, construction lighting will be focused on the targeted work areas and will have only a short-term and localized effect.

5.8 SITE ACCESS, TRAFFIC CONTROL AND CONSTRUCTION SIGNS

During construction, access to the Project ROW will be via the public road network. From the public road network, on- and off-ROW access roads will provide direct ingress/egress to construction work sites, as illustrated on the Volume 2 maps.

To minimize the potential for traffic issues during construction, Eversource will require its construction contractors to implement access and traffic control measures, working with representatives of the affected municipalities or the State. Such measures will include procedures for safe ingress and egress to the ROW and contractor yards for construction equipment and other vehicles and for informing the public of construction work zones. For example, along the public roads that intersect with on- or off-ROW access roads, signs will be erected to indicate the presence of construction work zones and flaggers or police personnel will be used to direct traffic, as needed.

Eversource's construction contractors will be responsible for posting and maintaining construction warning signs, in accordance with state and local requirements, along public roads in the vicinity of the work areas along the ROW. Signs will be consistent with the federal *Manual of Uniform Traffic Control*

Devices ([MUTCD], 2009 edition, as revised May 2012, or the latest version)¹². Flagmen and other traffic control measures may also be used as necessary.

5.9 CULTURAL RESOURCES

Based on the results of both research and field testing, no cultural resources (standing historic structures or archaeological sites) are located within the Project areas that would be affected by the new 115-kV transmission line construction. Thus, no special construction procedures are required for cultural resource site protection.

However, Eversource will brief Project construction contractor managers regarding the procedures to be followed should unanticipated potential cultural materials be discovered during construction. Specifically, construction personnel will be instructed to stop the task that resulted in the potential cultural resource discovery and inform Eversource. Construction work at the potential cultural resource discovery site will not resume until authorized by Eversource, after review and approval by a professional archaeologist retained by Eversource.

5.10 CONSTRUCTION EQUIPMENT / VEHICLE WASHING AND CLEANING

With the exception of concrete trucks, no construction equipment or vehicle washing will be allowed on the ROW. Concrete truck wash-out will be allowed only in designated upland locations, which will be identified by Eversource representatives, working with the Project contractor, to minimize the potential for off-site environmental impacts. All wash-out areas will include measures to control and contain wash-water and to collect the cement wash-off for off-site disposal.

Erosion and sedimentation controls deployed at wash-out areas will conform to the relevant provisions of the *2002 Connecticut Guidelines for E&SC* (as amended), Eversource's *BMP Manual*, and the CT DEEP's *General Permit* (refer to Volume 3, Attachments E and F).

As required pursuant to the wetland invasive species control BMPs (refer to Volume 2, Detail Sheet 2), construction vehicles, equipment, and mats also must be cleaned to prevent the transport of invasive wetland species. The cleaning protocol will typically involve the use of shovels, brooms, compressed air, or other methods to remove visible dirt from construction equipment, vehicles, and timber mats.

5.11 UTILITY CROSSINGS

Above-ground utilities and marked underground utilities are identified on the Volume 2 maps. Eversource's contractors will use "Call Before You Dig" to identify the locations of buried utilities in relation to any sub-surface work. Except for the crossing of a natural gas transmission pipeline ROW (parallel to Park Lawn Drive, Volume 2 Mapsheet 12), the known buried utilities traversed by the ROW are located within public roads. Project construction will not involve any excavation in the vicinity of known and identified underground utilities.

¹² Connecticut has adopted the federal MUTCDs.

5.12 METHODS TO PREVENT OR DISCOURAGE UNAUTHORIZED USE OF THE ROW, INCLUDING ATVS

Eversource's existing transmission line easements may restrict the types of activities that can be conducted within the ROW, and typically prohibit the construction of buildings, pools, and other structures. Eversource also has policies for addressing usage requests from property owners and other parties external to Eversource. These policies outline an evaluation process and provide guidance for allowing certain uses (driveways, parking lots, trails, etc.) where appropriate. Requests prohibited by the easement agreements, or otherwise posing safety, engineering, environmental, or other concerns are rejected.

Connecticut law prohibits the operation of ATVs on private land without the written permission of the landowner (CGS Section 14-387). Eversource does not grant permission to use ATVs on its properties or properties subject to its easements.¹³

Where Eversource holds an easement, as opposed to land ownership in fee, Eversource will seek landowner approval prior to installing fences, gates, etc. along the ROW unless the easement provides for such installation. Eversource will coordinate with landowners and agencies, as appropriate, to discourage unwarranted access onto and use of its ROW. Accordingly, Eversource will:

- Install signs warning the general public of the hazards posed by contact with the high voltage transmission line and indicating that it is unlawful to operate ATVs on private land without the written permission of the landowner; and,
- Consider, based on consultation with and approval of the landowner, the installation of fences, gates, barricades, berms, or vegetative screens to discourage access onto the ROW. The type of measure considered for a particular area will depend on site-specific conditions and landowner preferences.

Eversource will report unlawful ATV use on the Project ROW to the local police.

5.13 WINTER WORK, ROW STABILIZATION, AND ROW MONITORING PROTOCOL

Construction work in winter will minimize or avoid some adverse environmental impacts. Snow removal and the use of de-icing procedures at construction sites will be in accordance with the *Snow Removal and De-Icing Plan* (Volume 3, Attachment D).

If, after the installation of the new transmission line, some ROW clean-up or restoration work is completed too late in the season to initiate or complete permanent stabilization of disturbed areas (e.g., temporary staging areas that may require reseeding), temporary erosion and sedimentation controls will be left in place and augmented if necessary. These measures will be periodically inspected and maintained until permanent site stabilization can be completed.

¹³ Eversource contractors and employees may use ATVs for construction and maintenance activities.

All erosion and sedimentation control practices and over-winter monitoring will be in accordance with Eversource's *BMP Manual* and the CT DEEP's *General Permit*, as well as any relevant conditions of Project approvals from the Council, USACE, and CT DEEP.

5.14 POST-CONSTRUCTION EMF MONITORING PLAN

Pursuant to Condition 2(q) of the Council's Decision and Order, Eversource has prepared a post-construction electric and magnetic field monitoring plan for the 115-kV transmission line. This plan is included in Appendix A.

5.15 BLASTING PROCEDURES

Eversource does not anticipate that blasting or implosive connections will be used to install the transmission line facilities. However, if blasting were subsequently determined to be required to facilitate line construction, Eversource would retain a certified blasting specialist (blasting contractor licensed by the Connecticut Department of Emergency Services and Public Protection) to develop a site-specific blasting plan, in compliance with state and local regulations and Eversource guidelines. The plan would take into consideration local geologic conditions and the locations of nearby transmission line structures and other developments, as well as the performance of pre- and post-blast surveys of nearby properties, as necessary. The blasting plan would typically address the following:

- Location(s) along the ROW where blasting would be performed and general summary of work to be performed.
- List of permits required (e.g., from local Fire Marshals).
- Blasting schedule (days and hours per day).
- Safety meetings to be held prior to the performance of the blasting.
- Noise monitoring.
- Traffic control measures, as warranted.
- The blasting plan would be provided to the local Fire Marshals and to the Council for review and approval.

Prior to either blasting or implosive connector work, Eversource would conduct community outreach to inform local officials and the public about the planned work and about any pre- and post-work inspections, as necessary, of properties abutting the work sites. Typically, the construction contractor would arrange for pre- and post-work inspections of abutters' properties. Eversource would coordinate directly with municipal officials, including notifications to the local police and fire departments regarding the schedule for the work. In the unlikely event that there is damage to a property caused by the blasting, Eversource would compensate the property owner for the actual damage. Eversource will submit any site-specific blasting plan(s) to the Council pursuant to the "Project Change Approval Process" included in Volume 3, Attachment A.3 of this D&M Plan.

6. PUBLIC REVIEW AND OUTREACH

6.1 PROJECT PLANNING AND D&M PLAN

As part of the Project planning process, including the development of the Application to the Council and the D&M Plan, Eversource consulted with the officials of the towns of Bethel, Danbury, and Brookfield and provided opportunities for municipal representatives, other agencies, and the public to comment on the Project. Prior to the submission of this D&M Plan to the Council, Eversource also provided draft copies of the Plan to the three municipalities along the Project transmission line route for review and comment. Additionally, Eversource met with representatives from Bethel, Danbury and Brookfield to review the D&M Plans.

During meetings with municipal officials, Eversource provided information regarding the general transmission line construction process, including planned work hours and approximate schedule for start of construction. Project representatives reviewed the maps with Town officials and answered any questions they had about work planned to occur in their communities.

In conjunction with the submission of the D&M Plan to the Council, Eversource will post the filed D&M Plan on the Project website and will provide the filed D&M Plan to the municipalities of Bethel, Danbury and Brookfield and to the service list for the Project (Council Docket No. 468).

Eversource's Project website is accessible from the Eversource homepage (www.Eversource.com). From this homepage, a list of the Company's ongoing and proposed projects, including this Project, can be accessed by clicking the "About" tab and then the "Major Projects and Infrastructure" tab. Included on the website is an e-mail address (transmissioninfo@eversource.com) and a telephone number (800-793-2202) to contact Eversource for more Project information or to provide comments about the Project.

6.2 PUBLIC OUTREACH DURING CONSTRUCTION

Throughout the Project's planning process and the Council's siting processes, Eversource conducted extensive community outreach, including direct coordination and meetings with abutting property owners and municipal officials. In addition, Eversource held an open house regarding the Project during the Municipal Consultation phase of the siting process. Eversource will continue its outreach efforts throughout the Project's construction phase.

Eversource's Project information and email address are currently available via the website noted in Section 6.1. The website will continue to be available for residents, businesses, and other stakeholders to contact Project representatives throughout Project construction.

In addition, Eversource representatives will be available to brief residents and businesses affected by the Project construction activities and other interested stakeholders regarding the construction process, key construction stages and expected construction timeline. Project representatives will also contact adjacent and nearby residents and businesses to notify them of upcoming construction activities and will be available throughout the construction process to address any specific questions or concerns.

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7. GLOSSARY OF TERMS

TERM / ACRONYM	DEFINITION
Access Road:	A road that provides access into and out of the stations, staging areas, or ROW.
BMP:	Best Management Practice
BMP Manual:	Eversource's <i>Best Management Practices Manual for Massachusetts and Connecticut (Construction and Maintenance Environmental Requirements)</i> September 2016
Certificate:	Certificate of Environmental Compatibility and Public Need (from the Connecticut Siting Council)
CGS:	Connecticut General Statutes
Conductor:	A metallic wire, busbar, rod, tube or cable that serves as a path for electric current flow.
ConnDOT:	Connecticut Department of Transportation
Council or CSC:	Connecticut Siting Council
CWA:	Clean Water Act
CT DEEP:	Connecticut Department of Energy and Environmental Protection
Counterpoise:	Part of grounding system.
D&M Plan:	Development and Management Plan (required by the Connecticut Siting Council)
dBA:	Decibel, on the A-weighted scale.
Deadend Structure:	A line structure that is designed to have the capacity to hold the lateral strain of the conductor in one direction.
DECD:	Connecticut Department of Economic and Community Development
D&O	Decision and Order (Council approval of the Project)
Direct Embed:	Structure installation type in which the bottom section of each pole is placed in an excavated hole. Does not require the use of foundations or concrete. H-frame and guyed pole structures are typically direct embedded.
Docket 468:	Council Docket number for the application proceeding concerning the Project.
Drilled Shaft Foundation:	Structure foundation type involving the use of drilling rigs and pneumatic hammers to excavate an area for the structure foundation. Concrete is used for the foundation.
During Construction:	Construction refers to Project activities commencing with work site / staging area preparation through final restoration and site stabilization.
Electric Field:	Produced by voltage applied to conductors and equipment. The electric field is expressed in measurement units of volts per meter (V/m) or kilovolts per meter (kV/m); 1 kV/m is equal to 1,000 V/m.

TERM / ACRONYM	DEFINITION
Electric Transmission:	The facilities (69 kV+) that transport electrical energy from generating plants to distribution substations.
EMF:	Electric and magnetic fields.
Environmental Inspector:	Environmental scientist employed by Eversource to monitor the conformance of Project construction to the environmental requirements
EPA:	United States Environmental Protection Agency
Eversource:	Also “the Company ”: The Connecticut Light and Power Company doing business as Eversource Energy
Fault:	A failure (short circuit) or interruption in an electrical circuit.
FEMA:	Federal Emergency Management Agency
Frac Tank:	Fractionization tank, used to temporarily hold water pumped from Project excavations or otherwise used during Project construction activities
Grounding System:	Consists of ground rings, placed around transmission line poles and counterpoise as required.
Ground Wire:	Cable/wire used to connect wires and metallic structure parts to the earth. Sometimes used to describe the lightning shield wire.
H-Frame Structure:	A wood or steel structure constructed of two upright poles with a horizontal cross-arm and bracings.
Idling:	The period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function.
kV:	Kilovolt, equals 1,000 volts
kW:	Kilowatt, equals 1,000 watts
Lightning Shield Wire:	Electric cable located above conductors to prevent lightning from striking transmission circuit conductors.
Line:	A series of overhead transmission structures that support one or more circuits; or in the case of underground construction, a duct bank housing one or more cable circuits.
Magnetic Field:	Produced by the flow of electric currents; however, unlike electric fields, most materials do not readily block magnetic fields. The level of a magnetic field is commonly expressed as magnetic flux density in units called gauss (G), or in milligauss (mG), where 1 G = 1,000 mG.
MF:	Magnetic Field
MUTCD:	Manual of Uniform Traffic Control Devices
NAAQS:	National Ambient Air Quality Standards
NDDB:	Connecticut Natural Diversity Data Base (CT DEEP)
NRCS:	National Resources Conservation Service (U.S. Department of Agriculture)
NRHP:	National Register of Historic Places
NWI:	National Wetlands Inventory
OPGW:	Optical groundwire (a shield wire containing optical glass fibers for communication purposes)

TERM / ACRONYM	DEFINITION
PEM:	Palustrine emergent marsh (wetlands)
PFO:	Palustrine forested (wetlands)
Phases:	Transmission (and some distribution) AC circuits are comprised of three phases that have a voltage differential between them.
Project:	Southwest Connecticut Reliability Project
PSS:	Palustrine scrub-shrub (wetlands)
PUB:	Palustrine unconsolidated bottom (wetlands)
PURA:	Public Utilities Regulatory Authority (part of CT DEEP)
RCSA:	Regulations of Connecticut State Agencies
ROW:	Right-of-Way
Shield Wire:	See Lightning Shield Wire
SHPO:	State Historic Preservation Office (Connecticut)
SPCP:	Spill Prevention and Control Plan
SRHP:	State Register of Historic Places
Stormwater Pollution Control Plan:	A sediment and erosion control plan that also describes all the construction site operator's activities to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act.
Substation:	Part of the electric transmission system, a high-voltage electrical facility with a fenced-in yard containing switches, transformers, line-terminal structures, and other equipment enclosures and structures to regulate and distribute electrical energy, such as receiving power from a generating facility, changing voltage levels, limiting power surges, etc. Adjustments of voltage, monitoring of circuits and other service functions take place in this installation.
Terminal Structure:	Structure typically within a substation that ends a section of transmission line.
Transmission Line:	Any line operating at 69,000 or more volts.
USACE:	United States Army Corps of Engineers
USDA:	United States Department of Agriculture
USFWS:	United States Fish and Wildlife Service
USGS:	United States Geological Survey (U.S. Department of the Interior).
Vegetation Clearing:	Removal of forest vegetation. May also refer to mowing or cutting of scrub-shrub vegetation.
Watercourse:	Rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, public or private.
Wetland:	Is an area of land consisting of soil that is saturated with moisture, such as a swamp, marsh, or bog. CT DEEP and the USACE have formal definitions of state and federal jurisdictional wetlands, respectively.
XS:	Cross section (drawing)

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APPENDIX A

Post-Construction Electric and Magnetic Field Monitoring Plan

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I. INTRODUCTION AND PURPOSE

In accordance with the Connecticut Siting Council’s (Council’s) November 10, 2016 Decision and Order in Docket No. 468 (Condition 2(n)), Eversource Energy d/b/a The Connecticut Light and Power Company (Eversource or the Company) will implement the following post-construction electric and magnetic field (EMF) Monitoring Plan (Plan) for the Southwest Connecticut Reliability Project (the Project).

A primary purpose for EMF measurements near transmission lines is to make comparisons to levels predicted by calculations. This purpose is best served for an overhead transmission line by selecting post-construction measurement locations where conductor configurations and heights are typical and representative, and where few if any confounding field sources and objects exist.

A secondary purpose for such measurements can be to make comparisons between levels measured at points of interest before and after new line construction. However, those points of interest may not be at locations that best serve the primary purpose. Also, measurements of magnetic fields should not be so compared to predicted levels because power-flow circumstances can be significantly different at the times of these before and after measurements.

II. MONITORING LOCATIONS

The Company’s proposed monitoring locations for electric and magnetic fields along the Project right-of-way (ROW) are listed in Table 1. Two representative monitoring locations along the ROW in the towns of Danbury and Bethel were selected.

Attachment A.1 includes aerial photograph views of each of the two monitoring locations in relation to the ROW.

Table A.1
EMF Monitoring Locations for the Southwest Connecticut Reliability Project

Site	Municipality	Location Type	Location
1	Danbury	Spot	Lexington Meadows
2	Bethel	Line	Hearthstone Drive

The selected monitoring locations capture unique ROW configurations along the ROW. Additional considerations in location selection are as follows:

Measurement Location Characteristics

The Company chose one readily accessible monitoring location on either side of the existing overhead transmission lines along the line route.

At both of the monitoring locations listed in Table A.1, measurements will be made on Eversource's existing ROW, and not on nearby private property outside of the ROW, absent landowner approval, with the exception of in Lexington Meadows Condominiums (in the City of Danbury). In this area, a measurement will be taken at the closest portion of the cleared area to the ROW.

The measurement locations will include the Focus Areas as identified by the Company in Section 7 of its Application to the Council for a Certificate of Environmental Compatibility and Public Need (Docket 468).

To the extent possible, the Company chose measurement locations where: (1) line configurations and conductor heights are typical and representative; and (2) where possible, few if any confounding sources, such as local distribution lines, and objects are present other than the existing overhead transmission lines.

III. MEASUREMENTS FOR SPOT LOCATION

The Company will take a post-construction measurement of electric and magnetic fields at the listed spot location (i.e., near Lexington Meadows, refer to Table A.1) within 10 months of commencement of the operation of the new 115-kV line. At this location, the Company will measure electric and magnetic fields at a single spot. The measurement will be taken at an open space in the yard area most proximate to the transmission line ROW.

IV. MEASUREMENTS FOR LINE SEGMENTS

Within 10 months of commencement of the new 115-kV line operation, the Company will take a post-construction measurement of electric and magnetic fields at each of the locations identified in Table A.1.

For the location selected to meet the criteria identified in Section II that cross the ROW, the Company will measure electric and magnetic fields along a transect (i.e., profile) passing perpendicularly below sections of the new overhead 115-kV line, at the listed locations. The measurement path will extend to 25 feet from either side of the new transmission line.

V. MEASUREMENT INSTRUMENTATION AND RECORDING

The Company will record all electric and magnetic field measurements at a height of one meter (3.28 feet) above ground in accordance with the industry standard protocol for taking measurements near power lines (IEEE Std. 644-1994 [R2008], “*IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines*”).

The resultant magnetic field will be measured with a 3-axis, recording digital meter (EMDEX II). Electric fields will be measured with an E-Probe attachment accessory to the EMDEX II meter. This accessory enables the EMDEX II to make single-axis measurements of the electric field. Both the EMDEX II magnetic field meter and the E-probe accessory meet the IEEE instrumentation standard for obtaining valid and accurate field measurements at power line frequencies (IEEE Std. 1308-1994, “*IEEE Recommended Practice for Instrumentation: Specifications for Magnetic Flux Density and Electric Field Strength — 10 Hz to 3 kHz.*”) With this instrumentation, magnetic fields can be recorded continuously while walking and then plotted, whereas electric fields can be measured at spots and then recorded by hand in a data table and then plotted.

VI. REPORTING

Within 12 months of the in-service date of the new 115-kV line, the Company will provide to the Council a report on these measurements with “true-up” comparisons to predicted values.

“True-ups” are electric and magnetic field calculations that are based on site-specific conditions, including the actual conductor heights at a location at the time the measurement is made, current flows on the lines at the time the measurement is made, and the terrain. These calculations are then compared with the measurements taken at the location. True-up comparisons of measurements with calculations will be performed and reported for “Line” locations to demonstrate model accuracy

The report will also include aerial photographs from GoogleEarth™ to mark each measurement location. For each magnetic field measurement, the coincident transmission line currents, as recorded by the CONVEX SCADA system, will be noted and reported. Additionally, for each measurement location, the size of transmission line conductor types will be reported.

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ATTACHMENT A.1

AERIAL VIEWS OF EMF MONITORING LOCATIONS FOR THE SOUTHWEST CONNECTICUT RELIABILITY PROJECT

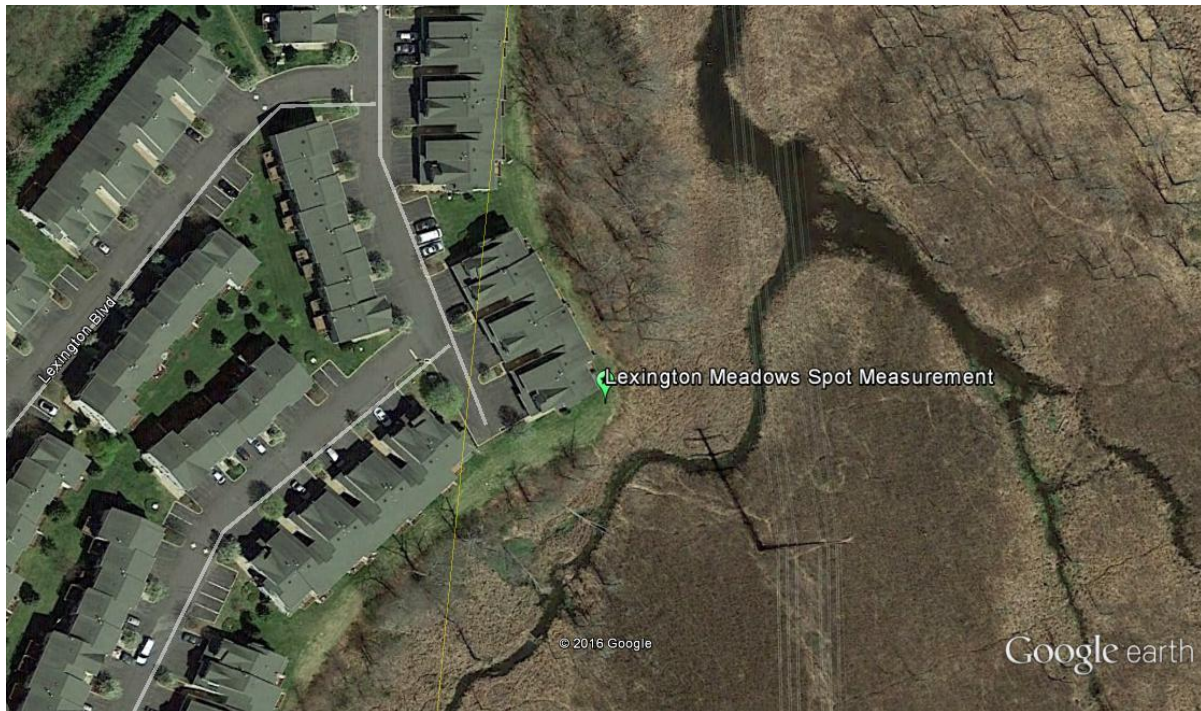


Figure A-1 – EMF Spot Measurement Location at Lexington Meadows, City of Danbury

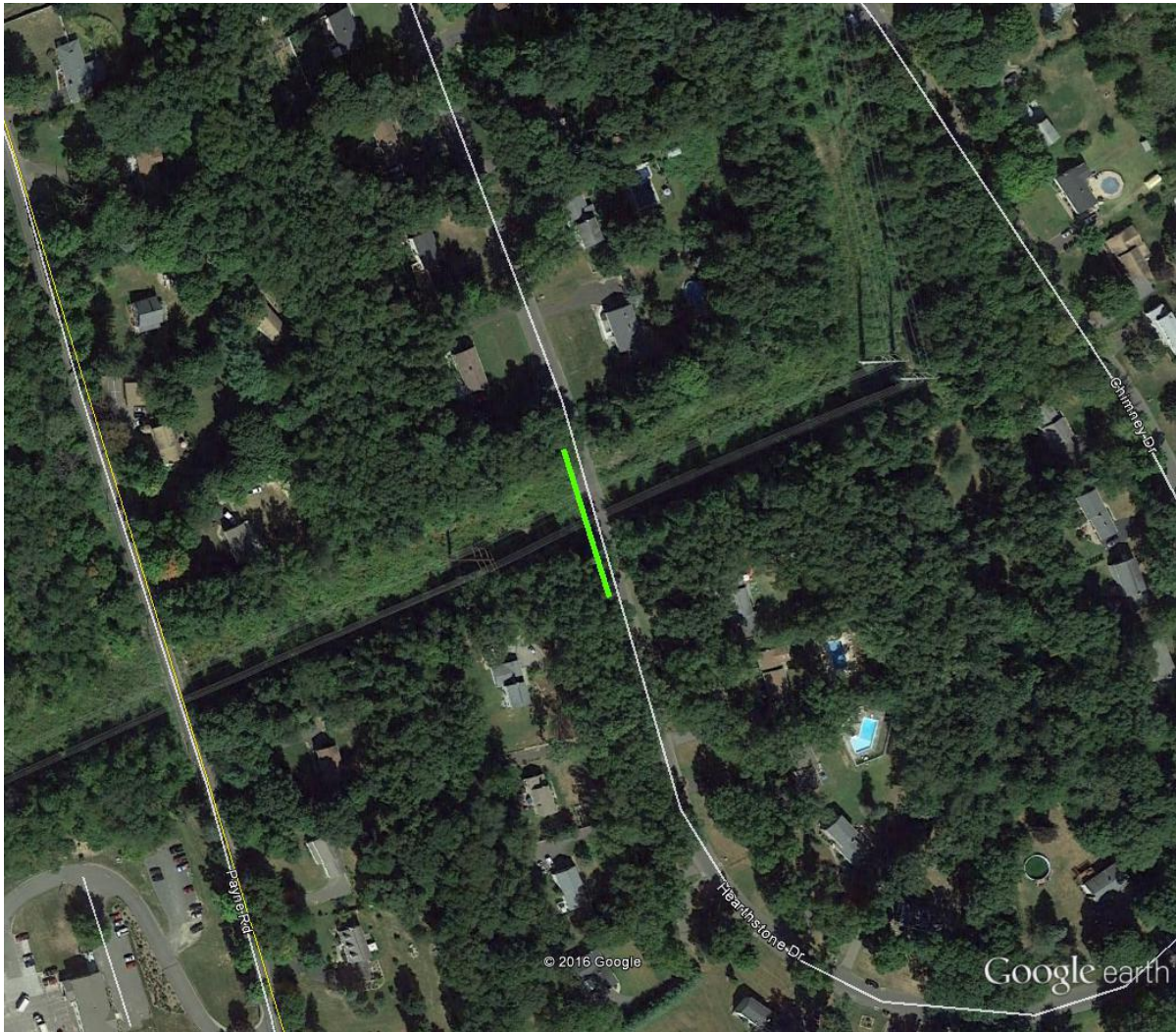


Figure A-2 – EMF Line Segment Measurement Location at Hearthstone Drive, Town of Bethel