



DEVELOPMENT & MANAGEMENT PLAN

for the

MILVON TO WEST RIVER RAILROAD TRANSMISSION LINE 115-kV REBUILD PROJECT

(Connecticut Siting Council Docket No. 508)

SEGMENT 1: ELMWEST SUBSTATION TO WEST RIVER SUBSTATION

**Cities of West Haven and New Haven
New Haven County, Connecticut**

VOLUME 1

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Prepared By:

THE UNITED ILLUMINATING COMPANY

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VOLUME 2: MAPS, DRAWINGS, AND RESOURCE SPECIFICATIONS

Transmission Line Engineering Drawings:	Index map of cross-sections and cross-sections for Segment 1
Key Map (Map Sheet Index):	U.S. Geological Survey 1"=2,000' (1:24,000) index map identifying the Segment 1 location and map sheets
Map Sheets:	1"=100' maps showing Segment 1 facilities
Substation Work Plans:	Elmwest Substation West River Substation
Other Specifications:	<p>Typical Details</p> <ol style="list-style-type: none"> 1. Erosion and Sedimentation Control Details 2. Construction Details (access roads in uplands and wetlands) <p>Structure Details</p> <ol style="list-style-type: none"> 1. Typical Structure Configurations Details 2. Typical Foundation & Grounding Details

VOLUME 3: PROJECT-WIDE PLANS

- ATTACHMENT A: BONNET DECOMMISSIONING PLAN
- ATTACHMENT B: EROSION AND SEDIMENT CONTROL PLAN
- ATTACHMENT C: VEGETATIVE CLEARING PLAN
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- ATTACHMENT O: D & M PLAN DIRECTORY

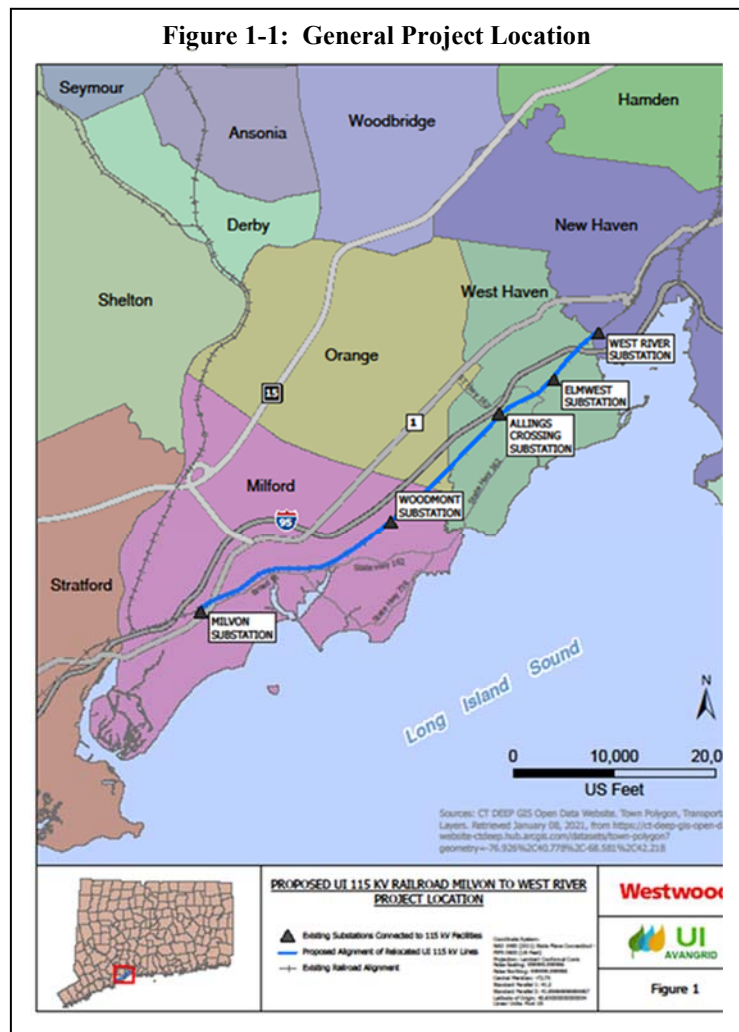
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1. INTRODUCTION

1.1 PROJECT OVERVIEW AND PURPOSE OF THE PLAN

The United Illuminating Company (UI or the Company) is rebuilding its existing single-circuit 115-kilovolt (kV) overhead lines that extend approximately 9.5 miles southwest-northeast within the Connecticut Department of Transportation's (CT DOT's) Metro-North Railroad (MNR) corridor between the Company's existing Milvon Substation (located in the City of Milford) and its existing West River Substation (located in the City of New Haven), all in New Haven County, Connecticut. The existing 115-kV lines, which extend along the CT DOT corridor through the southern portions of the cities of Milford, West Haven, and New Haven and the Town of Orange, are aligned on UI-owned lattice type extensions (referred to as "bonnets") located on top of both the northern and southern railroad catenary structure support columns. The CT DOT owns the corridor within which the MNR tracks are located. Figure 1-1 illustrates the general Project location.

Referred to as the **Milvon to West River Railroad Transmission Line 115-kV Rebuild Project (Project)**, UI will rebuild the transmission lines on new double- and single-circuit self-supporting steel monopoles, located mostly along the northern side of the railroad corridor. As part of the Project, UI also will connect the rebuilt 115-kV lines to five existing UI substations (Milvon, Woodmont, Allings Crossing, Elmwest, and West River substations: all located adjacent to the CT DOT corridor); install optical ground wire (OPGW) and shield wire on the rebuilt 115-kV lines; modify or remove certain existing transmission line structures situated along both the north and south sides of the MNR tracks (all within the CT DOT corridor); and decommission and



remove the existing 115-kV facilities from 339 bonnets on top of the railroad catenary structures.

When completed, the Project will enhance the reliability and resiliency of the electric transmission grid, both in Connecticut and regionally. The rebuilt 115-kV lines will meet current National Electrical Safety Codes (NESC) and UI standards and will be designed to withstand extreme weather conditions, such as hurricane Category 3 wind loads.

On February 28, 2022, UI submitted to the Connecticut Siting Council (CSC, Council) an Application for a Certificate of Environmental Compatibility and Public Need for the Project (Council Docket No. 508). After public meetings and evidentiary hearings, on August 19, 2022, the Council issued a Decision and Order approving the Project. The Decision and Order includes 11 Project-specific conditions. Condition No. 2 of the Council's Decision and Order requires that UI prepare a Development and Management (D&M) Plan (D&M Plan or Plan), in compliance with Sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies (RCSA).¹ Condition No. 2 also defined 15 specific plans, procedures, and other information (Conditions 2.a - 2.o) that must be included in the Project's D&M Plan.

Taking into consideration outage constraints, the results of coordination with CT DOT, and construction sequencing, UI will construct the Project in four separate segments between the five substations along the Project route. Table 1-1 identifies the four Project segments in the order in which each will be constructed.

Table 1-1: Project Construction Segments

Segment No.	Location (Substation to Substation)	Municipalities	Segment Length (Miles) ²
1	Elmwest to West River	New Haven, West Haven	1.28
2	Elmwest to Allings Crossing	West Haven, Orange, Milford	1.28
3	Milvon to Woodmont	Milford	4.05
4	Woodmont to Allings Crossing	Milford, West Haven	2.91

Along each segment, UI will rebuild the 115-kV lines, perform minor associated modifications to the substations, place the new facilities in service, and remove the existing UI facilities from the railroad

¹ The overall purpose of a D&M Plan is to provide construction details (such as plans, maps, and drawings) that define the methods and procedures to be used during the construction and operation/maintenance of energy facilities, balancing the need for adequate and reliable utility service with the protection of the environment.

² The existing and rebuilt 115-kV line mileages vary slightly, with the rebuilt transmission facilities (e.g., 1.28 miles along Segment 1) slightly longer than the existing lines atop the catenary structures (1.25 miles along Segment 1).

catenary structures prior to the initiation – in most cases – of extensive work activities on the next segment. Consistent with the construction of the Project in four different segments, UI has elected to prepare four separate segment-specific D&M Plans.

This D&M Plan is provided for Segment 1 of the Project: Elmwest Substation to West River Substation. The Segment 1 portion of the Project will rebuild approximately 1.25 miles of two UI transmission lines (the 88003A-2 and 89003B-2 lines, presently located on the northern and southern catenary support structures, respectively) and will include modifications to Elmwest Substation, located at 329 Elm Street in West Haven, and West River Substation, located at 255 Overpass Boulevard (near Ella T. Grasso Boulevard - State Route 10), in New Haven.

Figure 1-2 illustrates the general location of Segment 1. Along Segment 1, approximately 1.16 miles of the rebuilt 115-kV lines will be in West Haven, while 0.12 mile of the rebuilt lines will be in New Haven.

The D&M Plan conforms both to Condition 2 of the Council's Decision and Order and to 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*). Further, the Plan incorporates other Project-specific UI commitments contained in UI's Application to the CSC or UI's responses to the CSC during the Application review process.

The D&M Plan also reflects UI's agreement with CT DOT/MNR regarding activities within the railroad corridor, as well as commitments made in the Company's submissions to other Federal and State regulatory agencies, including the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), Connecticut Department of Energy and Environmental Protection (CT DEEP) and the State Historic Preservation Office (SHPO). In addition, the Plan reflects UI's standard protocols for transmission line construction, operation, and maintenance.

Figure 1-2: Location of Segment 1



1.2 ORGANIZATION OF THE D&M PLAN

The Segment 1 D&M Plan consists of three volumes:

- **Volume 1** describes the segment-specific Project facilities and provides information relevant to the Project work on Segment 1, including regulatory requirements, construction procedures, construction schedule and work hours, environmental resources and mitigation measures, and public outreach.
- **Volume 2** consists of Segment 1 maps and drawings, including cross-sections and aerial-based map sheets (at a scale of 1"=100') showing environmental resources, land uses, and the locations of both the existing railroad catenary structures/UI infrastructure to be removed and planned transmission line monopoles. Volume 2 also includes site plans for the modifications to Elmwest and West River substations, the Segment 1 Line List, and a tabulation of the planned monopole types, above ground monopole heights, and foundation type (direct embed or drilled shaft).
- **Volume 3** provides plans and other information (as required pursuant to Condition 2 of the CSC Decision and Order in Docket No. 508 or Sections 16-50j-60 through 16-50j-62 of the RCSA) that apply to the Project as a whole (i.e., all four construction Segments). The plans and procedures included in Volume 3 are:
 - Bonnet Decommissioning Plan
 - Erosion and Sediment Control Plan
 - Vegetative Clearing Plan
 - Restoration Plan
 - Spill Prevention and Control Plan
 - Wetland Invasive Species Control Plan
 - Post-Construction EMF Monitoring Plan
 - Snow Removal and De-Icing Procedures
 - Species Protection Plan
 - On-Site Environmental Inspection and Monitoring Plan
 - Procedures for Unanticipated Cultural Resource Discoveries
 - Materials Management Plan

Volume 3 also includes information regarding the notices to be provided to the CSC, identifies key UI Project personnel, and provides a D&M Plan Directory, which includes a checklist of the information in the Project D&M Plan related to the CSC requirements.

2. DESCRIPTION OF SEGMENT 1 PROJECT FACILITIES

2.1 Transmission Line Rebuilds and Modifications

New Monopoles: Locations and Specifications

Along the Segment 1 portion of the Project, UI's existing 88003A-2 and 89003B-2 115-kV lines are located on bonnets on top of both the northern and southern railroad support columns on 22 catenary structures (from Catenary Structure B1029 outside Elmwest Substation to Catenary Structure B1049 west of West River Substation).

UI will rebuild these two 115-kV lines on a total of 18 new double-circuit galvanized steel monopoles, located north of the MNR tracks and mostly within the CT DOT corridor (new monopoles P1030N to P1049N). In addition, to connect the rebuilt 115-kV lines to the Elmwest and West River substations (both located adjacent to the CT DOT corridor), UI will install:

- One single-circuit monopole (P1029ENS) and two double-circuit monopoles on UI or CT DOT property adjacent to Elmwest Substation (monopoles P1029ES, and P1030S); and
- Three single-circuit monopoles (two – P1049S and P1049ES - located south of the MNR tracks and one – P1049EN – located north of the MNR tracks) directly west of West River Substation.

Two additional monopoles (P1050NN and P1050NS) will be installed on UI property at West River Substation to support only OPGW. Table 2-1 summarizes the planned monopoles to be installed on Segment 1. The Volume 2 maps illustrate the locations of the UI infrastructure to be removed from the catenary structures and the monopoles that will be installed.

Table 2-1: Summary of Segment 1 115-kV Transmission Line Structures*

Municipality	Segment 1 Length (Approximate Miles)	Structure Configuration		
		Substation Connections	New Double-Circuit Monopole Structures (No.)	New Single-Circuit Monopole Structures (No.)
West Haven	1.16	Elmwest	19	1
New Haven	0.12	West River	1	3
Total	1.28	-	20	3

*Excludes the two monopoles that will support only OPGW at West River Substation.

The conductors on the new monopoles will be arranged vertically (refer to the cross-sections in Volume 2). In addition, the new monopole design includes braced post insulators, which will limit conductor movement and blowout. The new single and double-circuit, galvanized steel monopoles will be offset from the railroad catenary support columns based on clearances. This offset will vary based on location, but on average is 25 feet.

Along Segment 1, the tallest monopoles (>120 feet but <130 feet) are in West Haven between 1st Avenue and the Interstate 95 (I-95) crossing. These structures are designed as required to support the MNR electrical facilities as underbuilds and to allow the rebuilt 115-kV lines to effectively span the elevated I-95 overpasses. Table 2-2 identifies the monopoles to be installed along Segment 1, by configuration, height, and foundation type.

Table 2-2: Segment 1 Transmission Line Structures: Height, Configuration, and Foundation Type

STRUCTURE NO.	STRUCTURE CONFIGURATION	POLE LENGTH (FT)	FOUNDATION REVEAL ABOVE GROUND (FT)	STRUCTURE HEIGHT ABOVE GROUND (FT) (Pole length plus foundation reveal)	FOUNDATION TYPE
WEST HAVEN					
P1029ENS	Single-circuit deadend	70	1	71	Concrete drilled pier
P1029ES	Double-circuit deadend w/ davit arms	75	1.5	76.5	Concrete drilled pier
P1030S	Double-circuit deadend w/ davit arms	115	1	116	Concrete drilled pier
P1030N	Double-circuit deadend w/ davit arms	110	1	111	Concrete drilled pier
P1031N	Double-circuit tangent w/ braced posts	105	3	108	Concrete drilled pier
P1032N	Double-circuit tangent w/ braced posts	105	4.5	109.5	Concrete drilled pier
P1033N	Double-circuit tangent w/ braced posts	110	1	111	Concrete drilled pier
P1034N	Double-circuit tangent w/ braced posts	100	1	101	Concrete drilled pier
P1035N	Double-circuit tangent w/ braced posts	95	1	96	Concrete drilled pier
P1036N	Double-circuit tangent w/ braced posts	95	1	96	Concrete drilled pier
P1037N	Double-circuit deadend w/ davit arms	95	1	96	Concrete drilled pier

STRUCTURE NO.	STRUCTURE CONFIGURATION	POLE LENGTH (FT)	FOUNDATION REVEAL ABOVE GROUND (FT)	STRUCTURE HEIGHT ABOVE GROUND (FT) (Pole length plus foundation reveal)	FOUNDATION TYPE
P1038N	Double-circuit tangent w/ braced posts	125	1	126	Concrete drilled pier
P1039N	Double-circuit tangent w/ braced posts	130	1	131	Concrete drilled pier
P1039EN	Double-circuit tangent w/ braced posts	130	1.5	131.5	Concrete drilled pier
P1040N	Double-circuit tangent w/ braced posts	130	1	131	Concrete drilled pier
P1041N	Double-circuit deadend w/ davit arms	130	1	131	Concrete drilled pier
P1042N	Double-circuit tangent w/ braced posts	130	1	131	Concrete drilled pier
P1043N	Double-circuit deadend w/ davit arms	120	5	125	Concrete drilled pier
P1045N	Double-circuit tangent w/ braced posts	115	6	121	Concrete drilled pier
P1047N	DOUBLE-CIRCUIT TANGENT W/ BRACED POSTS	115	7	122	Concrete drilled pier
NEW HAVEN					
P1049N	Double-circuit deadend w/ davit arms	120	4	124	Concrete drilled pier
P1049EN	Single-circuit vertical tangent w/ braced posts	120	1	121	Concrete drilled pier
P1049S	Single-circuit deadend	120	3	123	Concrete drilled pier
P1049ES	Single-circuit vertical tangent w/ braced posts	120	1	121	Concrete drilled pier
P1050NN	OPGW only	75	Direct embed 20' in ground	55	Direct embed
P1050NS	OPGW only	65	Direct embed 21.5' in ground	43.5	Direct embed

Conductor and OPGW Specifications

The rebuilt 115-kV lines will consist of 1590 aluminum conductor steel supported (ACSS) “Lapwing” conductors and 0.583-inch 72 count fiber OPGW, which will act as the shield wire. Certain spans adjacent to Elmwest and West River substations will have a 7#7 Alumoweld shield wire either in addition to or in place of the OPGW. The new structures will be designed to support 2156 ACSS “Bluebird” conductors and to meet the clearance requirements for such conductors, should such a future conductor upgrade be required to accommodate growth or capacity needs in Connecticut or the region.

2.2 Substation Locations and Modifications

Elmwest Substation is a bulk 115-kV/13.8-kV facility located on a 1.1-acre UI property south of and adjacent to the CT DOT corridor in West Haven. West River Substation, which consists of two yards, is a bulk 115-kV switching station. The substation is situated on approximately 1.44 acres of UI-owned property located on both the north and south sides of the CT DOT railroad corridor in New Haven, adjacent to Overpass Boulevard, east of Ella T. Grasso Boulevard (State Route 10). A City of New Haven property abuts State Route 10 directly to the west of State Route 10.

The existing 115-kV transmission lines connect to both substations. For the Project, UI will perform modifications as required to connect the rebuilt 115-kV lines and new OPGW to both substations and to remove the existing infrastructure connections. This work will not require any permanent expansion to the existing fenced portion of either substation.

However, to maintain the existing 115-kV line substation connections, monopoles will be installed directly outside both Elmwest and West River substations, as required to correctly align the phases of different circuits to the existing line terminal switches in each substation yard. Table 2-3 summarizes the type and location of the monopoles to be installed adjacent to Elmwest and West Haven substations:

Table 2-3: Location of Monopoles to be Installed for Substation 115-kV Connections

Substation	No. of Monopoles	Location (N, S of MNR Tracks)
Elmwest	3 (total) 2 double-circuit; 1 single-circuit	South
West River	3 (total) 1 single-circuit 2 single-circuit	North South

Hardware modifications will be required on existing structures within and just outside each substation to accommodate the larger 1590 kcmil conductor size and the 7#7 Alumoweld shield wire, as well as the new OPGW and the associated OPGW fiber splice boxes.

Further, at both substations, new underground fiber optic cable will be installed to connect the fiber at the OPGW splice box (either located within the substation or at a steel monopole outside, but adjacent to, the substation fence) to the substation control enclosures.

In addition, two new direct embed monopoles (one with a height of 55 feet above ground and the other 43.5 feet above ground) will be installed within West River Substation to support the new OPGW.

Volume 2 includes schematic drawings of the planned modifications at Elmwest and West River substations.

2.3 Existing 115-kV Line Infrastructure to be Removed

Along Segment 1, UI will remove its existing 115-kV infrastructure (bonnets, related hardware, 115-kV line conductor, OPGW or shield wire) from a total of 32 catenary support columns. Of the 32 bonnets on these catenary support columns, 27 will be removed entirely and five will be cut down to approximately 4 feet, as needed to support a shield wire to protect the MNR signal and feeder wires.

Pursuant to its agreement with CT DOT, along Segment 1, UI will leave the existing bonnets in place on 10 catenary support columns in West Haven. Of these, nine are located on the southern catenary support columns and one is located on a northern catenary support column.

UI will transfer ownership of these bonnets to CT DOT. The bonnets on the southern catenary support columns will be used to support the existing UI shield wire, which will remain in place to protect the MNR signal and feeder wires. The bonnet on the northern catenary support column will be used to support a new shield wire to be installed to protect the MNR signal and feeder wires.

Table 2-4 summarizes the existing UI facilities to be removed or modified along Segment 1.

Table 2-4: Segment 1: Summary of Existing 115-kV Facilities to be Removed or Modified

Municipality	Length of Route (Approx. Miles)	Removal and Modification of Existing Facilities		
		Bonnets to be Removed from Catenary Support Structures (No.) ^a	Lattice Towers to be Removed or Modified (No.) ^c	Other Structures to be Removed or Modified (No.) ^d
West Haven	1.15	30	2	3
New Haven	0.10	2	0	0
TOTAL	1.25	32	2	3

Notes: (refer to the Volume 2 maps for specific structure locations)

- a) Number of catenary support columns on which the bonnets will be removed. Of these, five bonnets will be cut down to a shorter 4-foot height in order to support a shield wire to protect the MNR signal and feeder wires and 10 bonnets are expected to remain to support the existing UI shield wire, the ownership of which will be transferred to CT DOT.
- b) One existing lattice tower will be removed in full and one tower will be mostly removed with only the bottom section remaining to support the attached MNR communication + signal cables. The other two existing lattice towers, both on the south side of the MNR tracks, will remain.
- c) One structure, comprised of one steel W-flange, will be removed outside of Elmwest Substation. Portions of two structures comprised of three steel W-flanges will also be removed outside Elmwest Substation, with the full structures being removed when the Allings Crossing to Elmwest substation segment is built, as they support both Line 88003A-2 from Elmwest to West River substations and Line 88003A-3 from Allings Crossing to Elmwest substations. Due to this configuration, a temporary wood pole will have to be installed to act as a stub pole. The existing OPGW and Conductor attached to the ahead side (east side) of B1029N will act as a span guy, being detached from B1030N, transferred, and terminated at this temporary wood pole.

2.4 Other Facilities to be Removed

In addition to removing the existing 115-kV infrastructure described in Section 2.3, as part of the Segment 1 construction, UI will remove legacy (abandoned) CT DOT and UI facilities that are within the Project construction footprint.

Specifically, UI will remove 11 legacy CT DOT wood poles located along the northern portion of the CT DOT property in West Haven. These 20-to-30-foot tall wood poles, which must be removed to allow construction of the rebuilt 115-kV lines, were historically used to support railroad communications wires that were decommissioned many years ago; since then, the wood poles have been abandoned in place. In addition, as part of the Project, UI will remove three legacy CT DOT wood poles that are located along the southern portion of the railroad corridor in New Haven.

UI will also remove two abandoned steel W-flange structures located on either side of the West River, north of the MNR tracks. These structures were historically used to support an older configuration of the 115-kV transmission lines and must be removed to allow construction of rebuilt 115-kV lines.

Within the CT DOT corridor, UI will also remove an abandoned spur railroad track segment, which is located along the Project route in West Haven.

2.5 UI Permanent Easements

Along most of Segment 1, the rebuilt 115-kV lines will be aligned within CT DOT property or on UI property at Elmwest and West River substations. However, in certain areas, UI permanent easements, adjacent to the CT DOT property, are required to provide space to install the new monopoles and to maintain appropriate clearances from the 115-kV conductors, in accordance with NESC and UI standards.

Table 2-5 identifies the locations, by municipality and monopole number, of UI permanent easements for the rebuilt 115-kV lines; the Volume 2 aerial map sheets illustrate the locations of the UI permanent easements. No new permanent access roads will be required along Segment 1.

Table 2-5: Segment 1 Permanent Easement Locations, by Structure and Municipality

Municipality	Structures for which New Permanent Easement Required (by Total Number of Structures, Structure Number)		Approximate New Permanent UI Easement\ (Acres)
	Structures Located on CT DOT Property, but Requiring Easements on Adjacent Properties	Structures Outside of CT DOT Property	
West Haven	9 P1030N, P1031N, P1032N, P1033N, P1039N, P1039EN, P1040N, P1043N, P1045N	1 P1047N	2.27
New Haven	None	4 P1049N, P1049EN P1049S* & P1049ES* (City of New Haven property)	0.26
TOTAL	9	5	2.53

NOTES:

Structures located on south side of CT DOT corridor, on City of New Haven property.

All other structures listed will be located north of the MNR tracks, on the northern portion of the CT DOT corridor or adjacent to the CT DOT corridor.

3. CONSTRUCTION MANAGEMENT AND SUPPORT AREAS

3.1 Construction Management, Environmental Inspection, and Contractor Contact Information

UI will oversee all Segment 1 Project construction, monitoring the construction contractors' work for conformance to this D&M Plan, UI specifications, and any other applicable safety, engineering, and environmental requirements. The names and contact information for the key UI personnel who will be responsible for managing the overall Project are provided in Volume 3 of this D&M Plan (refer to Attachment N).

Volume 3 also details UI's procedures for monitoring the Segment 1 construction with respect to the D&M Plan and general environmental compliance. As described in the *On-Site Environmental Inspection and Monitoring Plan* (refer to Volume 3, Attachment J), UI will assign an environmental inspector to monitor the Segment 1 construction, as well as a Protected Species Specialist(s),³ who will be on-site as needed to train UI field personnel and the construction contractor's crews in implementing measures to protect State and Federal listed species in the Project area. (Refer to Volume 3, Attachment I for UI's Species Protection Plan for the Project.)

Prior to the commencement of construction on Segment 1 of the Project, UI will provide the Council with contact information for its prime construction contractor(s) for the segment. This information will include the contractor's name, manager assigned to the Project, corporate address, telephone number, and e-mail.

3.2 Contractor Yards and Construction Support Areas

To support the Segment 1 Project construction, a contractor yard / staging area will be required for material laydown and staging, parking for personal vehicles and contractor equipment, construction office trailers, and the temporary storage of the components of the existing 115-kV infrastructure that will be removed.

UI's primary contractor for Segment 1 will be responsible for identifying and establishing this staging area / contractor yard. UI will submit to the Council information about the location, size (acres), and intended

³ A Protected Species Specialist refers to an expert in the study of a particular State or Federal listed species that has been identified as potentially inhabiting portions of the Project area. For example, as part of the pre-construction planning for the Segment 1 work, UI retained a herpetologist to provide assistance in developing measures to avoid or mitigate potential impacts to certain species. UI anticipates that experts in other types of listed species may also be retained, as needed.

use of the yard and will seek Council approval for the use of the yard. UI's contractor will not be allowed to use the yard until Council approval is received.

In addition, UI will use portions of the Elmwest and West River substation properties to support the construction activities required to modify each facility to accommodate the rebuilt 115-kV lines and remove the existing 115-kV line infrastructure. Adjacent to Elmwest Substation in West Haven, UI also will use its approximately 1.6-acre property at 680 Campbell Avenue for laydown and staging; this laydown / staging area is illustrated on Mapsheet 1 in Volume 2.

The Segment 1 Project contractor yard / staging area is generally expected to be used to:

- Store Project construction materials, equipment, tools, fuel, and supplies (including conductors, insulators, hardware, poles and construction mats);
- Park construction vehicles and equipment, as well as the personal vehicles of construction personnel;
- Perform minor maintenance on construction equipment;
- Store and assemble transmission line structure components;
- If necessary, stage fractionization (frac) tanks for water storage or treatment prior to off-site discharge or disposal;
- Store temporarily the old transmission line components removed during the work (old structures, conductor, hardware and insulators) prior to off-site removal and/or disposal; and
- Refuel, if necessary, construction vehicles and equipment.

In addition, temporary office trailer(s), CONEX storage boxes, a generator (if necessary to provide power for on-site activities), and portable restrooms will be established at the contractor yard / staging area. As appropriate, erosion and sedimentation controls will be installed at the contractor yard / staging area; these controls will be maintained until the contractor completes the Project work and demobilizes from the yard.

4. TRANSMISSION LINE CONSTRUCTION PROCEDURES

UI will construct, operate, and maintain the rebuilt 115-kV transmission lines along Segment 1 in full compliance with the D&M Plan, the latest revisions of standards of the NESC, the Institute of Electrical and Electronic Engineers (IEEE) and the American National Standards Institute (ANSI); good utility practice; and UI's technical specifications, final Project engineering plans, and the conditions of State and Federal regulatory approvals obtained for the Project. In addition, the Segment 1 Project facilities will be constructed in accordance with the terms of UI's agreement with CT DOT, which specifies certain non-standard construction methods and schedules as needed to avoid or minimize conflicts with rail operations.

This section identifies the standard construction procedures that will apply to the Segment 1 work (Section 4.1) and then describes the special procedures that will be used to avoid or minimize impacts to environmental resources. In addition, UI's Project-wide plans, as detailed in Volume 3,⁴ will apply to the Segment 1 work.

4.1 Standard Construction Procedures

4.1.1 General Construction Sequence: Overview

As summarized in Table 4-1, UI will rebuild the Segment 1 transmission facilities in several stages, using specialized construction crews and involving multiple tasks with some overlapping in time.

4.1.2 Boundary Marking

Prior to the commencement of construction on Segment 1, UI survey crews and environmental resource experts will mark (or remark) the boundaries of resource areas along the CT DOT corridor and UI easements. The boundary markings will consist of colored flagging, exclusion fencing, stakes, or equivalent. The purpose of the markings will be to clearly demarcate sensitive environmental resource areas (including wetlands and watercourses), as well as the areas where vegetation is to be removed. In addition, UI survey crews also will survey and stake the locations of access roads, work pads, and new monopoles.

⁴ The Volume 3 plans applicable to Segment 1 construction include the Bonnet Decommissioning Plan (Attachment A), Erosion and Sediment Control Plan (Attachment B), Vegetative Clearing Plan (Attachment C), Restoration Plan (Attachment D), Spill Prevention and Control Plan (Attachment E), Wetland Invasive Species Control Plan (Attachment F), Snow Removal and De-icing Procedures (Attachment H), Species Protection Plan (Attachment I); On-Site Environmental Inspection and Monitoring Plan (Attachment J); Procedures for Unanticipated Cultural Resources Discoveries (Attachment K), and Materials Management Plan (Attachment L). No blasting will be required for the Segment 1 construction; hence, no blasting plan (per Condition 2.m of the CSC's Decision and Order in Docket No. 508) is required.

Table 4-1: General Project Construction Sequence⁵

TYPICAL PRE-CONSTRUCTION ACTIVITIES
<ul style="list-style-type: none"> Survey and stake construction work areas, including edge of CT DOT property and UI easement (where different) and proposed structure locations
<ul style="list-style-type: none"> Confirm and re-flag environmental resource areas (e.g., wetland and watercourse boundaries) or other sensitive areas to be avoided
<ul style="list-style-type: none"> Mark vegetation clearing limits
<ul style="list-style-type: none"> Locate and mark utilities
TYPICAL CONSTRUCTION ACTIVITIES
<ul style="list-style-type: none"> Establish laydown/material staging area(s) / contractor yard(s) to support the construction effort
<ul style="list-style-type: none"> Establish temporary erosion and sedimentation controls and exclusionary fencing as needed
<ul style="list-style-type: none"> Remove or mow vegetation, where necessary
<ul style="list-style-type: none"> Install temporary matting in wetlands and other areas per the Volume 2 maps; install temporary bridges to traverse small watercourses
<ul style="list-style-type: none"> Establish or upgrade access roads to new monopole sites
<ul style="list-style-type: none"> Install a temporary fence at Elmwest Substation and remove a section of the permanent fence to allow for larger work pads between the substation fence and the MNR tracks.
<ul style="list-style-type: none"> Remove abandoned CT DOT wood pole structures within Project construction areas. Remove abandoned steel W-flange structures located adjacent to the West River.
<ul style="list-style-type: none"> Create a level work pad at each monopole site, as well as at conductor pulling sites and, if necessary, at guard structure sites
<ul style="list-style-type: none"> Install new structure foundations and assemble/erect new structures
<ul style="list-style-type: none"> Replace existing conductor with new conductor associated with Lines 88003A-2 and 89003B-2 at and immediately adjacent to the West Rive Substation, east of Ella T. Grasso Boulevard in New Haven.
<ul style="list-style-type: none"> Install temporary All Dielectric Self-Supporting (ADSS) fiber so that existing OPGW can be removed without lengthy (more than 1 day) interruption to UI's fiber network.
<ul style="list-style-type: none"> Remove the existing 115-kV line facilities from the north side catenary structures (i.e., existing OPGW, shield wire, conductors, hardware, steel bonnets). Any existing lattice towers that are no longer required on the north side of the railroad tracks will also be removed. During this removal process, a temporary wood pole will be installed adjacent to existing structure B1030N. This wood pole will serve as stub pole. The existing OPGW and conductors will be disconnected from B1030N, transferred, and terminated at new pole P1030N via this temporary wood pole. This will allow B1029N to stay in place to continue to support the OPGW and 115kV conductors associated with the Allings Crossing to Elmwest Segment 2, Line 88003A-3 construction.
<ul style="list-style-type: none"> Install conductors, shield wire, and OPGW

⁵ The sequence of some Project construction activities may vary.

TYPICAL CONSTRUCTION ACTIVITIES (continued)
<ul style="list-style-type: none"> Install rebuilt 115-kV line connections to UI substations. This will include the removal of a portion of the existing W-flange structure associated with Line 88003A-2, located on the south side of the MNR tracks adjacent to Elmwest Substation. In addition, UI will remove the existing infrastructure on the south side catenary structures where necessary to allow the rebuilt 115-kV lines to be placed in service. This will include the removal of one W-Flange Structure adjacent to Elmwest Substation and bonnets immediately to the east of Elmwest Substation and immediately to the west of West River Substation.
<ul style="list-style-type: none"> Place the rebuilt 115-kV lines in service. Line 88003A-2 will be energized first, followed by Line 89003B-2 a few weeks thereafter.
<ul style="list-style-type: none"> Remove previously installed ADSS.
<ul style="list-style-type: none"> Re-establish the permanent fence at Elmwest Substation (in same location as the existing permanent fence) and remove the temporary fence. (<i>Note:</i> The temporary fence may remain in place to facilitate Segment 2 construction; if so, the permanent fence will be reestablished after the Segment 2 work at the substation is complete.)
<ul style="list-style-type: none"> Remove the existing 115-kV line facilities from the south side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). This activity will include establishing temporary construction access to and work pads at the locations of the facilities to be removed. Existing access, upgrades to existing access, or new access roads will be required.
<ul style="list-style-type: none"> Remove temporary construction access and work pads, along with associated matting and bridges
<ul style="list-style-type: none"> Perform final clean-up and restore/stabilize areas affected by construction to approximate pre-construction conditions (e.g., by seeding and re-vegetating as needed).
<ul style="list-style-type: none"> Maintain erosion and sedimentation controls until areas affected by construction are stabilized.

4.1.3 Vegetation Removal and Erosion/Sedimentation Controls

Vegetation Removal

The existing vegetation that must be removed along Segment 1 consists of a mix of tall shrubs and mature trees,⁶ along with low-growing herbaceous species. The Volume 2 maps illustrate the areas where mature trees must be removed along Segment 1.

Along Segment 1, existing vegetation will be removed from construction sites (including access roads and work pads) and as required both to provide access for construction equipment and to maintain clearance from the rebuilt 115-kV line conductors. As a result, vegetation clearing will be required along portions of both the north and south sides of the railroad corridor. UI's *Vegetative Clearing Plan* is provided in Volume 3, Attachment C. The procedures identified in this plan pertain to all vegetation clearing required for Segment 1.

⁶ Mature trees are defined herein to consist of tall-growing vegetation typically greater than 6 inches diameter breast height (dbh).

In certain areas, “danger trees” or “hazard trees”, which are trees deemed a potential risk to the overhead 115-kV lines, also may need to be trimmed or removed. Such danger or hazard trees, which could be situated on private property, would typically be identified after the rebuilt lines are installed. If danger or hazard tree trimming or removal is required, UI will coordinate as necessary with the affected property owner.

Erosion and Sediment Control

UI’s *Erosion and Sediment Control Plan* for the Project, which will be applied to all work on Segment 1, is presented in Volume 3, Attachment B. Temporary erosion and sedimentation controls (such as silt fence, straw bales, wattles, filter (silt) socks, etc.) will typically be installed where needed after initial vegetation removal and in advance of earth disturbance activities, such as grubbing, stump removal, and the establishment of access roads / work pads in or near water resources or near steep slopes.

All erosion and sedimentation controls will be installed and maintained in accordance with Project-specific and Connecticut requirements, including the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control (as amended); the 2004 Connecticut Stormwater Quality Manual; the Connecticut Department of Energy and Environmental Protection (CT DEEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (General Permit); and the Stormwater Pollution Control Plan (SWPCP) that UI developed for the Project, pursuant to the General Permit.

Erosion and sedimentation controls will be inspected and repaired or replaced as necessary until the areas affected by the Project are stabilized. Temporary erosion and sedimentation controls (e.g. silt fence, stakes) that are not biodegradable will be removed after Project work sites are deemed to be stabilized. UI will submit a Notice of Termination, per the General Permit, to CT DEEP, once final stabilization has been achieved for at least one full growing season (April through October) or two consecutive seeding seasons (April 1 through June 15 and August 15 through October 1) in all Project segments. (Refer to Volume 3, Attachment J for UI’s *On-Site Environmental Inspection and Monitoring Plan* for the Project.)

4.1.4 Access Roads and Work Pads

Access Roads

To access the Segment 1 work sites, UI will use a combination of public roads and proposed or existing access roads within or adjacent to the CT DOT railroad corridor. During Project construction, temporary access roads will be established both north and south of the MNR tracks in order to install the rebuilt

115-kV transmission line facilities and to remove the existing UI infrastructure from the railroad catenary support columns. No new permanent access roads will be required along Segment 1.⁷ The Volume 2 maps identify the Project access roads.

The access roads that will be used for Segment 1 construction will extend across pavement (e.g., parking lots), graveled areas, other uplands, and wetlands. With the exception of access roads that extend across paved areas and certain locations where existing graveled roads will be improved, UI will require the construction contractor to install timber mats (or equivalent) on all temporary access roads.

In general, the temporary access roads that UI will establish for the Project construction will be approximately 16 feet wide. However, in some areas, the access roads will be wider to accommodate equipment turning and passing or to account for safety and the existing terrain. Existing paved access is not expected to require significant upgrades. However, UI will improve existing gravel roads as necessary to support Project construction equipment; the gravel road improvements will typically be limited to a 16-foot-wide area.

To minimize or avoid the potential for soil to be tracked from Project work sites onto public roads, rock “aprons,” also known as track pads, or equivalent stabilization will be established at the entrances and exits to work sites from public roads.

Work Pads

Construction work pads will be required to install the new monopoles, as well as to remove the existing 115-kV facilities from the north and south catenary support structures and the existing structures (monopoles, lattice towers, W-flange structures) that will no longer be needed. These work pads, which will consist of gravel or timber construction mats (or equivalent), will be used to provide a safe, level base for construction equipment as well as to temporarily stage the materials used to install foundations and assemble the new monopoles or the materials removed from the CT DOT catenary structures. In addition, pulling pads will be required for conductor and OPGW installation.

⁷ One new permanent access road, located northwest of Elmwest Substation within Project Segment 2 in West Haven, will be used to provide construction ingress/egress to the temporary access required for the removal of the UI infrastructure from the northern catenary support columns directly east of new monopole P1028N. This permanent access road, which extends off Clark Street north of the CT DOT corridor, is depicted on Mapsheet 1 of the Volume 2 maps.

The dimensions of each work pad will vary based on location, the type of work that must be staged from the work pad, and the space available within or adjacent to the CT DOT railroad corridor. The Volume 2 maps illustrate the Segment 1 work pad locations and sizes.

In general, the typical work pad for installing a new monopole will be approximately 40 feet by 100 feet. In most areas, minimal grading is expected to be required to establish work pads.

Pads for conductor pulling will also be required at various locations along the 115-kV line route. These pull pads are expected to be approximately 40 feet by 300 feet.

In addition, temporary work pads will be required at the catenary structures on both sides of the CT DOT railroad corridor where UI's existing 115-kV facilities will be removed. On the north side of the MNR tracks, the same work pads used to install the new monopoles will, to the extent practical, also be used to stage the work required to remove the UI infrastructure from the northern catenary support columns. On the south side of the MNR tracks, work pads of approximately 40 feet by 60 feet will typically be required to remove the UI infrastructure from the southern catenary support columns. UI's *Bonnet Removal Plan* (refer to Volume 3, Attachment A) provides additional details regarding the bonnet removal process.

4.1.5 Foundation and Structure Installation

Foundation Installation

The new monopoles will be installed primarily on drilled pier foundations⁸. Along Segment 1, these foundations will range from 19-70 feet in depth, with the deepest foundations located within the West River wetland complex. However, the average depth of foundations on Segment 1 is approximately 40 feet. The depth of the foundations will depend on subsurface conditions, such as soil characteristics, depth to bedrock, and the type of structure. Spoils generated from the drilling process will be managed pursuant to the Project's *Materials Management Plan* (refer to Volume 3, Attachment L).

Auger drilling will be used to perform the excavations for the drilled pier foundations. The size of each excavation typically will be 6-10 feet in diameter. Temporary or permanent vibratory casings (or equivalent) or a slurry, may be used to provide soil support as needed to complete the excavation work and place concrete. The temporary casing may be removed from the pier foundations as concrete is placed or soon thereafter.

⁸ The two structures located in West River Substation which will support OPGW only, will be direct embedded.

For the installation of the new foundations within the CT DOT corridor, UI will coordinate with CT DOT/MNR to determine appropriate drilling methods to avoid any potential for impacts to the rail bed.

In locations where groundwater inflow is considered excessive and cannot be controlled via typical dewatering processes, concrete may be placed via a slurry displacement (tremie) method.

Once the foundation excavation is complete, steel reinforcing bars and an anchor bolt cage will be placed in the excavation and encased in concrete. The concrete will be conveyed from the mixer to the place of the final deposit by methods that will prevent the separation or loss of material. Any water displaced during the concrete pour will be managed according to the *Materials Management Plan*. Anticipated concrete washout areas at work sites are illustrated on the Volume 2 maps (refer also to Section 4.2.10).

Field tests of the concrete will be conducted regularly. In general, as an indication of other physical properties, the quality of the concrete being produced will be judged by the compressive strength developed within a given period.

Structure Assembly and Installation

After a structure foundation is in place and the concrete is cured, the steel transmission monopole will be assembled and erected. Structure components will be delivered to work pads and then assembled on site. Structures typically will not be erected on the concrete piers for a minimum of 28 calendar days after the concrete has been poured and until the compressive strength of the concrete has reached 4,500 pounds per square inch (psi). However, in certain locations, the structures can be installed prior to the 28-day typical minimum cure time, if the compressive strength of concrete has reached 4,500 psi.

The galvanized steel monopole structures will be either assembled on the ground and erected as a complete unit or assembled in pieces with a crane. Once a structure is erected and framed with the support insulators and hardware, it will be ready for the installation of the overhead lines. Conductor pulling blocks, which are a required tool to install the new OPGW, shield wires, and conductor, will also typically be installed at this time.

Structure Grounding

Each transmission line structure will be grounded prior to being energized to provide a path for the energy from lightning discharges to enter the earth and safely dissipate. The foundation of each transmission line structure will provide some natural grounding through contact with the surrounding earth. However, to

provide further protection, a minimum of two ground rods, and associated ground conductor, will be buried adjacent to each foundation. Typically, the ground rods will be installed after the completion of the foundation and before the installation of the structure. The need for and location of additional ground rods will be determined by the construction contractor.

In locations where the MNR signal and feeder wires will be underbuilt on the steel monopoles, a copper wire will be installed underground between the ground system of the monopole and the ground system of the nearest existing catenary structure.

4.1.6 Conductor and OPGW Installation

The installation of the overhead line conductors and OPGW will require the use of pulling and tensioning equipment, as well as reels of conductor, which will be positioned at temporary pulling work pads along the transmission line route. Helicopters may be used to install pulling ropes at the commencement of the conductor/OPGW pulling process.

To maintain clearance at road crossings during conductor and OPGW installation, temporary guard structures or boom trucks will be positioned adjacent to the crossings. The proposed locations of temporary pulling work pad and guard structure pads are illustrated on the Volume 2 maps.

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 strain and dead-end structures. Finally, the conductors and shield wires will be pulled to their design tensions and attached to the hardware. Linemen in bucket trucks will perform this operation.

4.1.7 Decommissioning and Removing Existing 115-kV Facilities

The existing UI facilities along Segment 1 to be removed from the railroad catenary structures or otherwise modified are listed in Table 2-4 and illustrated on the Volume 2 maps. UI's *Bonnet Decommissioning Plan*, included as Attachment A in Volume 3, describes the procedures that will be used to remove the existing UI infrastructure.

4.1.8 Removal of Abandoned Facilities (Wood Poles, W-Flange Structures, Railroad Spur)

Along Segment 1, UI will remove abandoned wood poles, W-flange structures, and railroad spurs (rail ties) that would otherwise interfere with the construction of the new 115-kV facilities. The work to remove these facilities will be coordinated with other Project activities and will generally be timed to maximize

construction efficiencies in the use of access roads and work pads. The abandoned facilities that will be removed are:

- **Legacy Wood Pole Removal:** UI will remove the 11 abandoned wood poles (which in the past supported railroad communications and signal wires) located north of the MNR tracks in West Haven. These wood poles will either be cut flush with the ground surface or pulled out of the ground, depending on location in upland or wetland areas. UI also will remove three abandoned wood poles located south of the MNR tracks along the CT DOT corridor in New Haven.
- **W-Flange Structures adjacent to the West River:** UI will remove the two abandoned steel W-flange structures – one on either side of the West River. These structures, which were used in the past to support a previous transmission line river crossing configuration, consist of H-frame-like steel components supported on concrete foundations. The steel components of the structures will be disassembled and the steel supports will be cut off flush with the concrete foundations. The foundations will be left in place.
- **Abandoned Rail Spur:** In accordance with discussions with CT DOT / MNR, UI will remove an abandoned rail spur located near proposed structure P1038N, west of 1st Avenue in West Haven.

All materials resulting from the removal of these facilities will be removed from the Project area and will be managed (e.g., recycled, disposed of) in accordance with UI's *Materials Management Plan*.

4.1.9 Cleanup and Restoration

Cleanup and restoration activities will include the removal from Project areas of construction debris, signs, flagging, and fencing, as well as temporary (i.e., timber mat or equivalent) work pads and access roads. Areas affected by Segment 1 construction will be restored and stabilized (e.g., seeded, graveled, repaved as necessary), in accordance with UI's Project *Restoration Plan* (refer to Volume 3, Attachment D) and the Project SWPCP.

To promote revegetation in undeveloped (i.e., not paved or graveled) upland areas affected by construction within the CT DOT corridor or on private properties, UI will apply a seed mix of low-growing species or, in some cases, a seed mix to promote pollinator habitat. The areas to be revegetated with a pollinator seed mix will not be located in the vicinity of the MNR catenary foundations and must be approved by UI, CT DOT or the affected property owner.

All temporary work pads and access roads will be removed from tidal and inland wetlands. Timber mat bridges (or equivalent) used to provide temporary construction access across small streams will similarly be removed.

Wetland areas affected by construction will be either allowed to revegetate naturally or reseeded with an appropriate wetland seed mix in accordance with applicable permits and Project plans. In areas within the conductor clearance zones, wetland vegetation will be managed to promote low-growing wetland species consistent with the operation of the overhead 115-kV lines.

Materials used to construct most work pads and all temporary access roads in upland areas also will be removed, unless otherwise specified by the landowner. Such materials will either be properly managed or otherwise re-purposed. In some areas, permanent gravel work pads and access roads will remain, for UI's use during transmission line maintenance.

In areas subject to erosion, temporary erosion and sedimentation controls will remain in place until permanent stabilization is achieved, pursuant to the requirements of the CT DEEP General Permit and the Project-specific SWPCP. The materials from the existing 115-kV facilities that will be dismantled and removed may be temporarily stockpiled at Project staging areas. Ultimately, these materials will be recycled or disposed of properly in accordance with UI's *Materials Management Plan*.

4.1.10 Commissioning

UI will energize the rebuilt 115-kV transmission lines and substation modifications in accordance with standard Company procedures. The schedule for energizing the Segment 1 rebuilt lines is included in Section 6.

4.2 Resource-Specific Construction Procedures

This section provides resource-specific protocols and procedures applicable to the Segment 1 construction, referencing or augmenting the Project-wide plans and procedures included in Volume 3.

4.2.1 Erosion and Sedimentation Control and Stormwater Management

The Segment 1 construction is expected to result in minimal temporary soil disturbance, mostly associated with the establishment of access roads, work pads, pull pads, and structure foundation drilling (refer to the Volume 2 maps). As described in the Project *Erosion and Sediment Control Plan*, UI will install and maintain erosion and sedimentation control measures during the construction to avoid or minimize the potential for surface water runoff, erosion, and sedimentation to occur outside of the work limits.

These measures will conform to the Project-specific SWPCP. Erosion and sediment controls will be monitored and inspected in accordance with the procedures described in UI's *On-Site Environmental Inspection and Monitoring Plan*.

4.2.2 Groundwater and Materials Management

Materials such as soil and groundwater encountered during the Segment 1 construction process will be managed and, as necessary, disposed of in accordance with the procedures described in the Project *Materials Management Plan*, which conforms to Connecticut's Solid Waste Management guidelines. UI will manage any soil to be reused in accordance with the Connecticut Remediation Standard Regulations (RSRs) or when necessary Federal guidelines.

Most soil will be direct loaded into the appropriate transportation means, however in cases where topsoil or spoil (if any) needs to be temporarily stockpiled at work sites, these materials will be contained within appropriate erosion and sediment controls (e.g., straw bales, silt fence) and may be covered with poly/plastic, pending off-site management. In areas where the characterization studies indicate that topsoil or spoil materials may be re-spread over work sites as part of restoration, stockpiles will be protected with temporary erosion and sediment controls and as appropriate, reseeded for temporary stabilization pursuant to the Project SWPCP.

Groundwater encountered during the construction of the rebuilt 115-kV lines will be dewatered in accordance with the procedures defined in the Project SWPCP and *Materials Management Plan*. The management of groundwater dewatered during the Project typically may include but will not be limited to the use of vacuum trucks and off-site management at an approved facility; temporary storage at Project work sites in fractionation (frac) tanks prior to off-site disposal; discharge to an upland area via applicably sized filter bag ; and/or discharge to sanitary sewers and/or surface waters, with treatment if required. All dewatering activities will be conducted in accordance with applicable local and/or State permitting requirements.

4.2.3 Water Resource Crossings

Except for areas in the vicinity of the West River in West Haven, the Segment 1 construction will be within upland areas along and near the CT DOT corridor. Although both the existing and rebuilt 115-kV lines span the West River (which forms the boundary between West Haven and New Haven), no work will be required in the river. No other streams will be crossed along Segment 1.

However, construction activities (vegetation clearing, legacy wood pole removal, temporary access roads, work pads) will be required in three inland wetlands (WH-W11, WH-W12, and WH-W13) and one tidal wetland (WH-TW1) in West Haven. In addition, three new monopoles (P1043N, P1045N, and P1047N) will be installed in wetland WH-W13. Except for WH-W11 (which is located directly west of I-95 along the south side of the CT DOT corridor), these wetlands are part of an extensive wetland complex that extends along both sides of the CT DOT corridor between I-95 and the West River. These wetlands have been historically affected by various development activities and presently are characterized by widespread invasive wetland species (e.g., *Phragmites australis*, Common Reed).

The Volume 2 maps illustrate the locations of these wetlands and construction work areas. Table 4-2 summarizes the impacts associated with the Project work activities in each wetland.⁹

Table 4-2: Summary of Segment 1 Impacts to Wetlands (City of West Haven)*

Volume 2 Map sheet No.	Wetland No.	Estimated Project Impact, by Type (Acres)			
		Temporary Impacts		Permanent Impacts	Permanent Change to Wetland Vegetation Type **
		Access Roads	Work Pads		
4	Wetland WH-W11	0.02	-	-	-
4-5	Wetland WH-W12	0.36	0.32	-	0.03
4-5	Wetland WH-W13	0.28	1.03	0.003 (pole foundation)	0.31
6	Tidal Wetland WH-TW1	-	0.01	-	-
Subtotal Inland Wetland Impacts		0.66	1.45	0.003	0.34
Subtotal Tidal Wetland Impacts		-	0.01	-	-
Total Wetland Impacts		0.66	1.46	0.003	0.34

* No wetlands in New Haven will be affected by Project construction activities.

**Refers to long-term change in wetland vegetation type (e.g., forested to shrub-scrub), but not a net reduction in wetland function or size.

During Project construction, UI will implement measures to protect wetlands. Accordingly, UI will install erosion and sediment controls, implement wetland invasive species control procedures, and perform environmental inspections, pursuant to the Project SWPCP, the General Permit, and the Project's *On-Site Environmental Inspection and Monitoring Plan* (refer to Volume 3, Attachment J). To minimize impacts to wetlands during the Project work, UI will:

⁹ The wetland impacts identified in Table 4-2 are based on final construction plans for Segment 1.

- Require Project construction contractors to perform work in water resource areas in conformance to the requirements of USACE and CT DEEP permits and the Council's conditions concerning construction activities in water resource area(s).
- Install appropriate erosion controls as needed to prevent or minimize the potential for sedimentation into wetlands. Use straw bales instead of hay bales to prevent the spread of non-wetland plant seeds.
- Implement procedures for petroleum product management to avoid or minimize the potential for spills into wetlands (e.g., to the extent possible, store petroleum products in uplands more than 50 feet from wetlands, refuel construction equipment, except for equipment that cannot be practically moved, in upland areas only).
- Cut forested wetland vegetation without removing stumps.
- Install timber construction mats (or equivalent) for access and work pads in wetlands.
- Stabilize affected wetland areas with temporary seeding or an appropriate wetland seed mix. Do not apply woodchip mulch and fertilizer within wetlands. Use straw as mulch for stabilization near wetlands, as necessary.

After the rebuilt lines are installed and the existing 115-kV facilities are removed from the railroad catenary structures, all temporary timber mats will be removed from wetlands, which then will be restored to pre-construction conditions to the extent practical.

4.2.4 Floodplains

In both West Haven and New Haven, Segment 1 will extend across portions of the 100-year floodplain associated with the West River, as identified by the Federal Emergency Management Agency (FEMA).¹⁰

As summarized in Table 4-3, five new monopoles will be located in the West River 100-year floodplain; three monopoles in West Haven and two monopoles in New Haven. No permanent access roads will be located in the West River floodplain.

¹⁰ Segment 1 does not cross any other FEMA floodplains.

Table 4-3: Monopoles within 100-Year West River Floodplain

Volume 2 Map sheet No.	Rebuilt Structure Number	Monopole Foundations: Estimated Above-Grade Impact Volume (CY)
West Haven		
4-5	P1043N	3.86
5	P1045N	3.59
5	P1047N	5.13
New Haven		
6	P1049N	3.34
6	P1049S	1.54

The alignment of the new monopoles within the West River floodplain cannot be avoided, due to the linear extent of the floodplain along the Project route. However, the loss of flood storage capacity in the floodplain will be negligible, compared to the total flood storage capacity of the West River drainage basin. As a result, the Segment 1 construction will not adversely affect flood dynamics and will not alter the West River floodplain or chances for flooding. UI will coordinate as necessary with CT DEEP regarding any further analyses of the Project's potential effects on floodplains, as well as the need for mitigation (if any) to compensate for the small amount of flood storage capacity impact in each of the affected floodplains.

In addition, each of the new monopoles in the West River floodplain is designed such that the reveal of each foundation has been increased to a level where the top of the foundation is located at least 1 foot above the FEMA 100-year flood elevation plus the 20-inch sea level rise projection (or a total of at least 32 inches above the currently projected FEMA 100-year flood elevation).

4.2.5 Protection Measures for Listed Species

To assess the potential for Federal or State listed species to inhabit the Project area, UI coordinated with the CT DEEP and the USFWS and received CT DEEP Natural Diversity Database (NDDDB) Determinations (No. 202073487 and No. 202209567) and an Official Species List Project Code (2023-0000170). UI will continue to consult with the CT DEEP, USFWS, and protected species specialists (i.e., experts in the study of a particular listed species) as necessary during Project construction.

To assure that construction contractors and other Project personnel are fully aware of the requirements for avoiding or minimizing potential impacts to listed species, UI has prepared and will distribute a *Species Protection Plan* (SPP) to all Project field personnel. The SPP, which is included as Attachment I in Volume 3, is applicable to all Project construction activities in listed species areas. The SPP provides resources for

identifying each sensitive species and describes the measures to be implemented during Project construction to protect each species. In addition to the SPP, UI will retain a Protected Species Specialist(s) to work with the Project's environmental inspector(s) and to provide contractor training regarding the listed species and the SPP (refer to Volume 3, Attachment J for additional information regarding environmental monitoring).

Segment 1 encompasses areas of potential habitat for certain species identified in the SPP and listed by CT DEEP or the USFWS as endangered, of Special Concern, or Monitored. The characteristics and habitat preferences of these species are summarized as follows:

- ***State Endangered Plant Species – Parker's pipewort – and State Special Concern Plant – Salt marsh bulrush:*** As its common name suggests, salt marsh bulrush grows in tidally influenced salt marshes. Parker's pipewort is found on sandy, silty, or muddy substrates in fresh or brackish-tidal river shores. Botanists familiar with these species conducted field surveys in September 2020 and 2021, when both plants were identifiable. The timing of the surveys coincided with the end of the flowering period of Parker's Pipewort and the fruiting period of the salt marsh bulrush (also referred to as the New England tuber-bulrush).

The September 2020 survey, focused on inspecting potential wetland habitats to document vegetative conditions during the late summer, to determine if suitable habitat exists to support Parker's pipewort and saltmarsh bulrush, and to evaluate whether Project construction would affect such potential habitat (if any). During the surveys, neither species was observed. Follow-up botanical surveys were conducted in September 2021 at these confirmed tidal wetland locations. Consistent with the prior surveys, neither plant species was found to be present in the Project area. Per CT DEEP's recommendation, no further surveys are required for these endangered plant species.

- ***State Special Concern – Northern Diamond-backed Terrapin:*** The northern diamondback terrapin is an estuarine species restricted to brackish waters along Connecticut's coastline. Tidal creeks, bays and marshes are used, with nesting occurring in friable sparsely vegetated upland areas adjacent to these habitats.

Northern diamond-backed terrapins require brackish tidal marshes for feeding and hibernation. They are most vulnerable during the nesting period (May through June), when females have to venture into the adjacent uplands to nest, traversing some of the most intensively developed portions of the State along the Long Island Sound shoreline. Rising sea levels, and encroachment of estuarine habitat driven by climate change, are of growing concern regarding the conservation of terrapins, which are special concern species in Connecticut. UI has and continues to work with State officials on the protection of this species within the Project area.

- ***State Special Concern - Eastern Box Turtle:*** Eastern box turtles approach their northeastern range limit in Connecticut inhabiting primarily the low-lying portions of the State below 500 feet, becoming increasingly scarce at higher elevations between 500-1,000 feet. Their core distribution occurs in the southern half of Connecticut, with a northward extension in the Central Connecticut Lowland into central Massachusetts. The eastern box turtle uses a mosaic of habitats seasonally including fields, shrublands, open and closed canopy wetlands, forests and habitat edges. During the spring and early summer months they favor early and late successional habitats, with a shift to

forested habitats during the late-summer and fall seasons. Nesting occurs in sparsely vegetated early successional habitat, with hibernation occurring almost exclusively in forested uplands. UI has and continues to work with State officials on the protection of this species within the Project area.

- **State Special Concern - Northern Leopard Frogs:**

- **Northern Leopard Frog (*Rana pipiens*):** The northern leopard frog is found in low elevation, open, grassy wetlands and floodplain forests primarily adjacent to riparian systems within the Connecticut and Housatonic river drainage basins. Populations also occur within extensive wetland habitats associated with large, naturally occurring lakes in the highlands of Litchfield County. The Danbury and Durham Meadows specimens mapped as the northern leopard frog in Klemens 1993:136 have been re-determined to be Atlantic coast leopard frogs, *Rana kauffeldi*, based on morphological analyses. The biogeographic distribution of the northern leopard frog in Connecticut is strongly correlated with glacial lake deposits.

Northern leopard frogs typically breed in seasonally-flooded early-successional wetlands including marshes and shrub swamps. These agile frogs are well-known for moving across the landscape, and during the summer months they are frequently observed in fields, lawns and other grassland habitats as well as floodplain forests adjacent to breeding wetlands.

Northern leopard frogs are easily confused with the more common and widespread pickerel frog from which they can be distinguished by their circular vs. rectangular dorsal spots, typical green vs. gold background color (although some leopard frogs have a gold/brown color), and the lack of a distinct yellow/orange wash of color on the underside of the thighs in adults. UI has and continues to work with State officials on the protection of this species within the Project area.

- **Atlantic Coast Leopard Frog (*Rana kauffeldi*):** This new species of leopard frog was recently described by Newman et al. (2012). Feinberg et al. (2014) and Schlesinger et al. (2018) conducted additional research defining this species range and genetic variation. The Atlantic coast leopard frog was identified using molecular and bio-acoustical analyses as well as some limited morphological differentiation. Central Connecticut is the northernmost extent of this species range, which is the Atlantic Coastal Plain, from the mid-Atlantic states northward through southeastern New York.

Based on molecular analyses of tissues collected from leopard frog populations across the State, coupled with springtime acoustical surveys, the current distribution of the Atlantic coast leopard frog is restricted to two extant sites in the lower Connecticut River valley in Middlesex County where it occurs sympatrically with the northern leopard frog (*R. pipiens*). In addition, morphological analyses of museum specimens representing populations now believed to be extirpated documented the presence of the Atlantic coast leopard frog at three other Connecticut sites (two in New Haven County and one in Fairfield County).

Populations of the Atlantic coast leopard frog appear to have significantly declined in the State, and the remaining extant sites represent disjunct populations within a previously more extensive northeastern range within Connecticut. Based on the number of populations and evidence of historic decline, the Atlantic coast leopard frog was recommended for listing as endangered by the CT-DEEP's Endangered Species Advisory Committee (2018). UI has and continues to work with State officials on the protection of this species within the Project area.

- ***State Monitored – Osprey:*** Osprey can be found in coastal areas and large inland lakes. According to CT DEEP, preferred natural nest sites are the tops of dead trees (snags) however, osprey adapt to available sites and have been known to nest on top of duck blinds, channel markers, roots of upturned trees, chimneys, school buildings, and utility poles.

In 2022, CT DEEP-recognized ornithologists conducted osprey nest surveys along the Project corridor, observing one nest in the between Elmwest and West River substations. Observations indicated that osprey were actively using the nest, which is located on an existing railroad catenary structure. Osprey are typically inactive in Connecticut during September through February, as they winter in southern regions.

- ***Federally Endangered – Northern Long-eared Bat:*** Northern long-eared bat can be found across the eastern and north central United States and in all Canadian provinces. Northern long-eared bat habitat includes tress, snags, caves, and mines. No known hibernacula for this species exists along the Project corridor. The USFWS officially reclassified the Northern Long-eared Bat from threatened to endangered status on March 31, 2023; in advance of that ruling, on March 21, 2023, the USFWS released a planning tool and interim guidance for assessing potential impacts to the bats from planned projects. The USFWS is expected to issue final guidance by April 2024. Applying the interim guidance, UI assessed the Project’s potential impacts to the Northern Long-eared Bat and determined that the Project area does not encompass likely habitat for the species; therefore, UI anticipates that the Project will have no adverse effect on Northern Long-eared Bat.

To avoid potential impacts to these species during Segment 1 construction, UI will implement the mitigation and protection measures described in the SPP and summarized in Table 4-4.

These measures reflect the recommendations and BMPs to protect the listed species in the Segment 1 Project area, as identified by the USFWS and CT DEEP. In addition, the mitigation and protection measures incorporate the recommendations of the herpetologist that UI commissioned to work with the Project team during the D&M Plan (pre-construction planning) process.

Table 4-4: Segment 1 Listed Species Protection Measures

GENERAL
<ul style="list-style-type: none"> • UI will train supervisory Project field personnel regarding listed species identification and protection measures and will require these supervisory personnel to train their field crews. • UI will retain a CT DEEP-recognized herpetologist to examine habitat areas for listed herptile species and to provide input regarding the deployment of BMPs to best protect the species. • UI will require the construction contractor to install exclusionary fencing (e.g. silt fence) around habitat areas.
MEASURES APPLICABLE TO WORK IN / NEAR SPECIES HABITAT
Parker's Pipewort and Salt marsh bulrush (Mitigation to be performed in areas of potential plant habitat)
<ul style="list-style-type: none"> • All structure replacements to occur outside of the mid-July through October blooming season. • Temporary construction matting will be used on all access roads and work pads (no gravel). • All timber from vegetation clearing (i.e., woodchips, slash) will be removed from potential plant habitat areas. • Any Parker's pipewort or Salt marsh bulrush identified must be reported to UI's representative, with the reported location and other information included on a special plant form that UI will submit to CT DEEP.
Eastern Box Turtle
<ul style="list-style-type: none"> • A CT DEEP recognized professional will be available as necessary to verify appropriate BMPs are implemented and to conduct targeted species sweeps, working with construction contractor personnel. • All staging areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals, and exclude them from reentry. • Special precautions will be taken to avoid degradation of any wetland habitats. • No wood chips will be spread in the active species areas; the use of gravel will be avoided to the extent feasible. • Any eastern box turtle identified must be removed from the active work site and reported to UI's representative, with data about the turtle observation recorded on a special animal form that UI will submit to CT DEEP. • Avoid heavy equipment use outside of the exclusionary fencing. • Minimize ground disturbance; manually cut trees along forest edges so as to fall away from watercourses.
Northern Leopard Frog and Atlantic Coast Leopard Frog (Mitigation to be performed in areas of potential frog habitat)
<ul style="list-style-type: none"> • Temporary construction matting will be used on all access roads and work pads. • No new gravel or hard surface shall be placed in any floodplain or alluvial marsh in typical habitat surrounding the West River. • Report any northern leopard frogs found in the Project area to UI's representative, providing the location of the species observation and other information. UI will submit information regarding the observation to CT DEEP.
Osprey
<ul style="list-style-type: none"> • Report any osprey sightings / nests to UI's representative. • Any nests or platforms within areas to be affected by Project construction will be removed during the inactive season before the start of construction in that area. UI will patrol the area during the following nest building season and will attempt to prevent osprey from rebuilding the nest if possible (due to construction). If a nest is nonetheless re-established within the work area, UI will seek a waiver from the CT DEEP Wildlife Division staff for Project construction. • Nests located outside of but within 300 feet of Project work areas will not be removed. UI will coordinate with CT DEEP Wildlife Division staff to obtain a waiver for the Project construction.
Northern Long Eared Bat*
<ul style="list-style-type: none"> • Based on current USFWS information, the Project area does not coincide with Northern Long-eared Bat habitat and thus the Project will have no effect on this species. • During construction, report Northern Long-eared Bat observations, if any, to UI's representative, who will coordinate with the Project's Protected Species Specialist(s) regarding further action. <p>*UI will review the final USFWS guidance regarding the Northern Long-eared Bat (anticipated by April 2024) and would modify protection measures to be implemented for this Project, if applicable.</p>

4.2.6 Air Quality Protection (Minimization of Dust and Vehicle Idling Protocol)

Vehicle/Equipment Idling Requirements

To minimize emissions from construction equipment and vehicles, UI will require Project contractors to properly maintain equipment and to adhere to Connecticut's anti-idling requirements (RCSA § 22a-174-18). Per Connecticut requirements, the allowable idling time for vehicles of all kinds, including diesel construction equipment, is 3 minutes. However, 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 is actively operating, at a work site.

Dust Minimization

Dust emissions will be controlled by applying water or equivalent substances to exposed soil on Project work sites, as necessary, per guidance provided in the SWPCP. To minimize tracking of dirt from Project construction areas onto paved roads, when used for construction access, crushed stone anti-tracking pads (or equivalent) will be installed as necessary.

4.2.7 Site Access, CT DOT Highway and Railroad Permits, and Traffic Control/Signs

During construction, access to the Segment 1 work sites will be via the public road network combined with the use of access roads either within or near the railroad corridor. No new permanent access roads will be required along Segment 1; however, as described in Section 4.1.4, one new permanent access road on Segment 2 will be used during Segment 1 construction to provide ingress/egress for the removal of UI infrastructure from the catenary structures located directly east of new monopole P1028N in West Haven).

UI has coordinated with CT DOT regarding the establishment of temporary access roads along the railroad corridor. For access roads located outside the CT DOT corridor, UI coordinated with the affected property

owners. The access roads that will be used to provide ingress/egress to construction work sites are illustrated on the Volume 2 maps.

Along Segment 1, the 115-kV transmission lines span I-95 and State Route 745 (1st Avenue) in West Haven, as well as State Route 10 (Ella T. Grasso Boulevard) in New Haven. UI's contractor will submit applications for encroachment permits to CT DOT for these state road crossings. The resulting CT DOT encroachment permits will include specifications for notifications to CT DOT, work hours, use of specific traffic controls, etc. The contractor will be required to adhere to all CT DOT road crossing requirements.¹¹

To avoid or minimize the potential for traffic issues on municipal roads during construction, UI's construction contractors will implement access and traffic control measures. Such measures will include procedures for maintaining safe ingress and egress to the CT DOT corridor or UI easement areas from public roads for construction equipment and other vehicles, including the use of properly-placed signs indicating the presence of construction work zones.

UI's construction contractor 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. Signs will be consistent with the latest version of the federal Manual of Uniform Traffic Control Devices ([MUTCD]).¹²

Flaggers or police personnel will be used to direct traffic, as needed. UI or its construction contractor will coordinate with representatives of New Haven and West Haven as needed to implement traffic management procedures specific to each local road crossing. For construction access off or work over state roads, the construction contractor will conform to the requirements of CT DOT's encroachment permits.

4.2.8 Cultural Resources

Based on cultural resource analyses commissioned by UI and reviewed by the SHPO, the Segment 1 construction will not adversely affect either standing historic structures or known archaeological sites. In the event that undocumented (buried) cultural materials are discovered during the Segment 1 construction, UI will implement the procedures described in the *Procedures for Unanticipated Cultural Resource Discoveries* included in Volume 3, Attachment K.

¹¹ If the work hours specified in the CT DOT encroachment permits differ from the expected work hours listed in Section 6, UI will inform the CSC, requesting a D&M Plan modification.

¹² Connecticut has adopted the federal MUTCDs.

4.2.9 Lighting and Noise Mitigation

Lighting

Because some of Segment 1 Project construction will occur in the winter (when some tasks may extend after nightfall) or otherwise will require performance during the night (e.g., near the MNR tracks where CT DOT work hours will apply; refer to Section 6), temporary lighting will be required at certain times to allow for the safe execution of work activities. However, such temporary lighting will be positioned to focus on work sites and thus will have only a short-term and localized effect.

Noise

Segment 1 extends through predominantly commercial and industrial areas in West Haven and New Haven, where the ambient sound environment is affected by trains operating along the CT DOT corridor, as well as traffic on I-95, 1st Avenue, State Route 10, and local roads, among other activities. Project work activities will cause short-term and localized increases in sounds typical of construction activities, particularly due to the operation of heavy equipment for tasks such as vegetation removal and structure foundation excavation. Noise will also be generated from helicopters, if used to install transmission line components.

However, such sound will be focused at and in the immediate vicinity of Project work sites along the CT DOT corridor. Moreover, noise will attenuate with distance. In addition, UI will require its construction contractors to properly maintain and muffle equipment and vehicles to minimize noise emissions.

4.2.10 Construction Equipment/Vehicle Washing

Except for concrete trucks, no construction equipment or vehicle washing will be allowed on Project work sites. Concrete truck wash-out will be allowed only in upland locations that must be selected to avoid or minimize the potential for impacts to environmental resources. All wash-out areas will include measures to control and contain wash-water and to collect the cement wash-off, such as in spin-off boxes, for off-site disposal. The Volume 2 aerial map sheets illustrate the anticipated location of concrete washout areas. Other cleaning will be limited to dry brushing of equipment as needed to minimize movement of impacted soils or invasive wetland species between work sites (refer to Volume 3, Attachments F and L).

Erosion and sedimentation controls deployed at wash-out areas will conform to the relevant provisions of the 2002 Connecticut Guideline for Soil Erosion and Sediment Control (as amended), the 2004 Connecticut Stormwater Quality Manual, the Project SWPCP, and the CT DEEP's General Permit for the Discharge of

Stormwater and Dewatering Wastewaters Associated with Construction Activities. (Refer also to the Project *Erosion and Sediment Control Plan*.)

4.2.11 Utility Crossings

Above-ground utilities along Segment 1 are identified on the Volume 2 maps. UI's contractors will use "Call Before You Dig" to identify the locations of buried utilities in relation to any sub-surface work. Project construction will not involve any excavation in the vicinity of underground utilities in public roads.

4.2.12 Methods to Prevent or Discourage Unauthorized Use of the ROW

CT DOT restricts access to the railroad corridor in general. If required along UI's new permanent easements for the rebuilt transmission lines, UI will coordinate with the individual landowners to obtain approval for installing appropriate barriers (e.g., fences, gates, boulders) as deterrents to unauthorized access. UI anticipates that such barriers may be installed, as necessary, where UI's new permanent easement intersects with public roads.

4.2.13 Winter Work

Various Segment 1 work activities will be conducted during the winter months. The removal of snow and ice from construction sites is critical to maintain a safe work environment. Snow removal and the use of de-icing procedures from Project access roads and work pads, will be performed to protect worker safety and in accordance with UI's *Snow Removal and De-icing Procedures*, which incorporates the CT DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots (refer to Volume 3, Attachment H).

5. SUBSTATION MODIFICATION CONSTRUCTION PROCEDURES

This section describes the construction procedures that will be required to connect the rebuilt 115-kV lines to the Elmwest and West River substations, as well as to remove the existing 115-kV line connections. Volume 2 includes detailed site plans that illustrate the installations/modifications to each substation.

The procedures described in Section 4 for the transmission line rebuild work also will apply, as relevant, to the Project modifications to the substations.

5.1 Elmwest Substation

All Project modifications at Elmwest Substation will be located within the substation's existing fenced area. The following activities will be performed to interconnect the rebuilt 115-kV lines to the substation:

- Install two underground ADSS fibers from new splice boxes located on new monopoles (located on the south side of the MNR tracks and outside, but adjacent to the substation fence) to existing control enclosure inside the substation fence.
- Remove existing shield wire, 115-kV conductors, and associated insulators and hardware from the substation termination structures.
- Install new insulators and hardware at the substation termination structures.
- Install new 115-kV conductors and shield wire.

However, to perform the required modifications at Elmwest Substation, UI will remove portions of the northwestern and northeastern substation fence. Along the northwestern portion of the substation, approximately 120 feet of temporary fence will be installed to the south of the permanent fence line; the fence will include a temporary 24-foot-wide swing gate to provide access to the substation. In addition, approximately 65 feet of temporary fence will be installed along the northeastern portion of the substation.

The temporary fences will maintain a secure perimeter around the substation equipment, while facilitating Project construction activities outside the temporary fence (i.e., the installation of the monopoles for the new 115-kV line connections to the substation and the removal of the old structures). The location of the temporary chain link fence is depicted on the Elmwest Substation site plan, as well as on Map Sheet 1 in Volume 2.

After the Segment 1 Project installation/removal work within and outside of the substation is complete, the temporary fence in the northeastern portion of the UI property may be removed and the permanent fence re-installed. However, the construction contractor may elect to leave the temporary fence in place to facilitate work on the Segment 2 portion of the Project (i.e., Allings Crossing Substation to Elmwest Substation). In either case - after the completion of either the Segment 1 or Segment 2 construction, the permanent fence will be replaced in the same location as the existing permanent fence, with the addition of a new 24-foot-wide permanent swing gate. The swing gate will be designed to allow ingress/egress for a mobile transformer.

The temporary fence in the northwest quadrant of Elmwest Substation will remain in place until the completion of the Project's Segment 2 construction. (UI anticipates that the Segment 2 construction will be completed in Q2 2025.¹³)

5.2 West River Substation

All Project modifications at West River Substation will be located within the substation's existing fenced area. The following activities will be performed to connect the rebuilt 115-kV lines to the substation and to remove the existing 115-kV facilities:

- Install two direct embedded poles (one in fenced in yard on the north side of the MNR tracks and one in the fenced in yard on the south side of the MNR tracks) to support OPGW only. OPGW will be installed between these monopoles.
- Install underground ADSS fiber from a new splice box to be located on the direct embedded pole located in the yard on the south side of the MNR tracks to the existing control enclosure inside the substation fence.
- Install underground ADSS fiber from a new splice box on existing structure B1050S (located on the south side of the MNR tracks and outside, but adjacent to the substation fence) to the existing control enclosure inside the substation fence.
- Remove the existing 115-kV conductors and associated insulators and hardware from the substation termination structures.
- Install new insulators and hardware at the substation termination structures.
- Install new 115-kV conductors.

¹³ Details regarding the Project's Segment 2 construction will be provided in Volume 1 of the Segment 2 D&M Plan.

6. CONSTRUCTION SCHEDULE AND WORK HOURS

6.1 Construction Schedule

Segment 1 is the first of the four Project segments to be constructed. UI’s schedule for the Segment 1 construction was designed to avoid conflicts with the CT DOT’s construction of planned modifications to I-95 in West Haven.

The transmission line rebuild work on Segment 1 is scheduled to begin in September 2023 and to extend over an estimated nine-month period (refer to Table 6-1). UI anticipates that the rebuilt 115-kV lines and substation modifications will be complete such that the new 115-kV facilities are expected to be in-service by the end of the second quarter of 2024.

Table 6-1: Segment 1 Construction Schedule

Activity	2023			2024			2025		
Contractor Mobilization									
Elmwest to West River									
Construction: Rebuild 115kV T-Lines									
New 115kV T-Lines in Service									
Removals: Existing Conductor, Bonnets, and Hardware									
ROW Restoration									

However, some construction activities will extend beyond the in-service date. For example, the removal of the UI infrastructure on the south side of the railroad catenary structures may extend into the summer of 2024. As a result, depending on weather patterns in the late summer-early winter of 2024, the full restoration of areas affected by construction (e.g., temporary access roads and work pads), particularly on the south side of the MNR tracks, may require additional time.

Final restoration (including final site stabilization via reseeding or other measures) may be performed as necessary in 2025. In addition, post-restoration inspections to document the effectiveness of site rehabilitation will be performed in accordance with the General Permit and Project-specific SWPCP; such inspections will extend into 2025. Based on the current Project schedule, full restoration is expected to be completed in the Fall of 2025.¹⁴

¹⁴ Pursuant to the CT DEEP General Permit, the Project will be considered complete after all post-construction measures are installed, cleaned, functioning, and inspected, and the site has achieved final stabilization for at least one full growing season (April – October) after the cessation of construction activities.

Outages will be required for the Project construction. Outages for the Project are generally expected to be from October 2023 through May 2024.

6.2 Work Hours

The work hours for the construction of Segment 1 reflect the results of UI's coordination with CT DOT and MNR, taking into consideration transmission line and rail outages. Work involving activities within the CT DOT rail corridor, particularly the removal of the existing 115-kV lines and bunnets from the catenary structures, will be scheduled to avoid or minimize conflicts with rail operations. Further, Project work hours will vary based on the location and type of construction activity being performed.

The Segment 1 construction hours are expected to be as summarized below.

1. **Hours for the Performance of Construction Work Offset from the Railroad Tracks and at Laydown/Material Staging Areas/Contractor Yards.** Typical work hours for the rebuilt 115-kV line construction will be from 7 AM to 7 PM, Monday through Saturday. These work hours will apply to locations where the new 115-kV monopoles will be offset from the railroad tracks, as well as to the laydown/material staging areas/contractor yard(s). Construction personnel may arrive and leave Project laydown/material storage areas and contractor yards outside of these hours as needed to prepare for construction (e.g., for meetings in office trailers, holding safety tailboards).
2. **Hours for the Construction of New Monopoles that Require Railroad Track Outages.** In locations where the new 115-kV monopoles will be in-line with the railroad catenary structures, close to the railroad tracks, track outages will be required. Such outages, which will be defined based on further consultations with CT DOT and MNR, typically will be during non-peak rail use times. As a result, in these areas, 115-kV line construction is expected to be limited to weekend or overnight periods. **The same hours will apply to work at the laydown/material staging areas/contractor yards required to support these activities.**
3. **Tasks Requiring 24/7 Work.** Certain construction tasks will require work on Sundays or beyond standard daily or nighttime work shifts, particularly when outages are required. For example, to connect the rebuilt 115-kV lines to the Elmwest and West River substations, certain transmission and/or distribution equipment will have to be taken temporarily out of service. UI has coordinated this work with CONVEX to obtain specific outage times. To complete such tasks as efficiently as possible with minimal service disruptions, work may have to be performed continuously (24 hours per day, for the number of days required).
4. **Non-Standard Work Hours at Laydown/Material Staging Areas/Contractor Yards.** The laydown/material storage area/contractor yards are required to support construction activities. As a result, yard work hours will be a function of the required work hours for different construction activities. For example, laydown/material staging areas/contractor yards must be available to support night-time removal of the 115-kV facilities and bunnets from the catenary structures, as well as day-time construction activities that involve standard work hours. As a result, depending on the specific construction tasks ongoing at a particular time, the Project laydown/material staging areas/contractor yards may operate on a 24 hours per day, 7 day per week basis.

5. **Hours for Work to Remove the Existing 115-kV Lines and Bonnets from Railroad Catenary Structures.** Work on the railroad catenary structures will involve track outages and will require specific work hours and restrictions, as defined by CT DOT/MNR. Such work, which will be subject to MNR conditions, may have to be performed seven days/week. The specific work hours that are expected to apply to activities on the CT DOT property involve night-time construction, as follows:
- Any work requiring MNR distribution outages will typically be performed between 9:30 AM and 3:30 PM or between 10:00 PM and 4:00 AM.
 - Any work requiring high rail access will typically be performed between 9:00 PM and 7:00 AM.
 - Work requiring the crossing of all railroad tracks will typically be performed between 10:00 PM and 5:00 AM, Friday through Sunday (actual working time is typically 2:00 AM to 4:00 AM).

7. PERMITS AND APPROVALS

As part of the overall Project planning process and/or during the preparation of this D&M Plan, UI coordinated with representatives of various regulatory agencies, including but not limited to municipal officials, CT DEEP, CT DOT/MNR, the SHPO, USFWS, and the USACE.¹⁵ In addition to authorization from the Council for the Project, UI has obtained approvals from other State and Federal agencies. At the Federal level, the Project must comply with the Clean Water Act (CWA), the Endangered Species Act, the National Historic Preservation Act and the Federal Aviation Act.

At the State level, along with compliance with the Council's requirements, UI has obtained Project-specific permits or approvals pertaining to water resources, stormwater management, flood management, threatened endangered and special concern species, along with cultural resources. UI also submitted to and received approval from the Connecticut Public Utilities Regulatory Authority (PURA) regarding the Method and Manner of Project construction, which was approved on January 11, 2023. In addition, UI coordinated with CT DOT regarding the construction and operation/maintenance of the 115-kV transmission lines within the railroad corridor, as well as regarding encroachment permits for Project work within or above State roads (I-95, State Routes 745 [1st Avenue] and 10).

In addition, in accordance with the Council's requirements, UI is providing a copy of this Segment 1 D&M Plan to the cities of New Haven and West Haven.

Table 7-1 summarizes the Project permits and/or approvals applicable to Segment 1, along with the status of each.

¹⁵ UI also coordinated with the Federal Aviation Administration (FAA); the FAA reviewed the heights of the new monopoles and issued Determinations of No Hazard (DNH) to aviation for all structures.

Table 7-1: Segment 1: Permits and Approvals

Shading = Segment1-specific permit/approval; all other permits/approvals apply Project-Wide.

Agency	Permit/Approval Required / Activity Regulated	Application Submitted or Consultation (Date)	Status
FEDERAL			
USACE	Clean Water Act Section 404 (inland and tidal water resource crossings); Pre-Construction Notification (PCN), General Permit 6A, 6B, and 18A	Consultation with USACE held on December 13, 2021; permits submitted November 1, 2022	Pending approval
USFWS	Consultation per Section 7 of the Endangered Species Act	iPac consultation submitted January 26, 2021, September 14, 2021, & October 3, 2022	To be resubmitted as necessary
US Coast Guard	Notification (West River crossing)		Notification requirements to be determined based upon construction methodologies.
FAA	Form 7460-1: Notice of Proposed Construction or Alternation	Consultation submitted by project segment: March 5, 2021, March 19, 2021, April 6, 2021, and May 11, 2021	Complete. No lighting or marking required per FAA DNHs. FAA coordination may be required for contractor cranes.
STATE			
CSC	Municipal Consultation Filing Certificate of Environmental Compatibility and Public Need under Conn. Gen. Stat. § 16-50(a)(1) Development and Management Plan: Separate Plan for each Project Construction segment	October 28, 2021 February 2022 Segment 1 D&M Plan (Volumes 1-3): April 2023	Complete. Approved August 18, 2022
CT DEEP • Land and Water Resources Division (LWRD) • NDDB	Water quality certification per Section 401 of the Federal Clean Water Act; pertains to inland and tidal water resource crossings. Tidal Wetlands Act: Certificate of Permission for Activities in Tidal Waters (per pre-app meeting with CT DEEP LWRD Staff) State threatened and endangered species; special concern species and significant natural communities' consultation, survey, and review	Submitted November 1, 2022 Submitted on March 2, 2023 Consultation submitted October 29, 2020; resubmitted September 28, 2022	Pending approval Pending approval Determination response letter from CT DEEP received December 27, 2020 and February 8, 2023

Agency	Permit/Approval Required / Activity Regulated	Application Submitted or Consultation (Date)	Status
<ul style="list-style-type: none"> • Stormwater & Dewatering • Bureau of Natural Resources, Wildlife Division • Coastal Management Program 	<p>General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-WPED-GP-015) and SWPCP</p> <p>General Permit for the Discharge of Groundwater Remediation Wastewater (DEEP-WPED-GP-027), if necessary, as part of materials handling and disposal.</p> <p>General Permit for Minor Coastal Structures (DEEP-OLISP-GP-2015-01) Installation of an Osprey Platform and Perch Pole authorized in Section 3(a)(3)</p> <p>Coastal Consistency certification to be incorporated into CT DEEP LWRD permit applications</p>	<p>General Permit and SWPCP submittal date anticipated Spring 2023</p> <p>Prior to construction, as necessary</p> <p>Consultation with DEEP LWRD on September 26, 2022</p> <p>See LWRD permit</p>	<p>Prior to construction, if required</p>
CT DEEP, PURA	Approval of Method and Manner of transmission line construction and energization per Conn. Gen. Stat. Section 16-243	Submitted December 13, 2022	Approved January 11, 2023 Docket No. 22-12-14
CT DOT	<p>Request for Letter of No Objection</p> <p>Encroachment permits for State highway crossings on Segment 1: I-95, State Route 745 (1st Avenue), State Route 10</p>	<p>Submitted February 24, 2023</p> <p>Anticipated submittal prior to Q1 2024</p>	In Progress
MNR	Right of Entry Permit	Full Construction Permit: Anticipated submittal Spring 2023	In Progress
SHPO	Cultural Resource Consultation under Conn. Gen. Stat. § 16-50l(e)	Request for consultation Submitted January 22, 2021; Phase IA Cultural Resources Report submitted September 10, 2021; Phase 1B Cultural Resources Report submitted December 20, 2021, Draft Memorandum of Understanding submitted to SHPO Q1 2023	SHPO correspondence received December 22, 2021 regarding the review of the Phase 1A and 1B reports. Awaiting final MOU from SHPO for mitigation for indirect visual impacts to historic resources in Milford.

8. PUBLIC REVIEW AND OUTREACH

In conjunction with the submission of this D&M Plan to the Council, UI will post the filed D&M Plan on the Project web site (UIRailroadTLineUpgrades.com) and will provide the D&M Plan to officials of West Haven and New Haven, as well as to those on the CSC and service list for the Project.

Throughout the construction process, UI outreach representatives will be available to brief residents and businesses affected by 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 reachable throughout the construction process to address any specific questions or concerns. UI outreach representatives also will notify municipal officials in advance of any planned use of helicopters during Project construction (the use of helicopters is at the construction contractors' discretion).

9. ACRONYMS AND GLOSSARY OF TERMS

Acronym	Description
115-kV:	115-kilovolts or 115,000 volts
Access Road	A road (permanent or temporary) that provides access to Project work sites or new monopoles
ACSS:	Aluminum Conductor Steel Supported, a common type of overhead conductor
ADSS:	All-dielectric self-supporting fiber
AGL:	Above Ground Level
ANSI:	American National Standards Institute
Application:	Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need (CSC Docket No. 508 for this Project)
BMP:	Best Management Practices
Certificate:	Certificate of Environmental Compatibility and Public Need (from the Connecticut Siting Council)
CJL:	Coastal Jurisdictional Line
CCMA:	Connecticut Coastal Management Act
CT DEEP:	Connecticut Department of Energy and Environmental Protection
CT DOT:	Connecticut Department of Transportation
CT DOT Corridor:	Property owned by CT DOT encompassing the railroad tracks and areas both north and south of the tracks
Conn. Gen. Stat.:	Connecticut General Statutes
Conductor:	A metallic wire, busbar, rod, tube or cable which serves as a path for electric current flow.
Construction:	Construction refers to Project activities commencing with work site/staging area preparation through final restoration and site stabilization.
CONVEX:	Connecticut Valley Exchange
Council (or CSC):	Connecticut Siting Council
Counterpoise:	Part of transmission line grounding system.
CWA:	Clean Water Act (Federal)
D&M Plan:	Development and Management Plan (required by the Connecticut Siting Council)
Deadend Structure:	A line structure that is designed to have the capacity to hold the lateral strain of the conductor in one direction.
dBa:	Decibel, on the A-weighted scale
dbh:	Diameter breast height (tree trunk measurement)
Direct Embed:	Transmission 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.
DNH:	Determination of No Hazard (FAA)
Drilled Shaft:	Transmission 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.
EMF:	Electric and magnetic field
EMF BMP Document:	Electric and Magnetic Fields Best Management Practices for the Construction of Electric Transmission Lines in Connecticut prescribed by the Connecticut Siting Council
FAA:	Federal Aviation Administration
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

Acronym	Description
General Permit (CT DEEP):	General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities
Grounding System:	Ground rings, placed around transmission line poles and counterpoise as required.
Idling:	The period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function.
IEEE:	Institute of Electrical and Electronics Engineers
ISO-NE:	Independent System Operator – New England
kV: kilovolt	Equals 1,000 volts
MNR:	Metro-North Railroad
MUTCD:	Manual of Uniform Traffic Control Devices
NDDB:	Connecticut Natural Diversity Data Base (CT DEEP)
NERC:	North American Electric Reliability Council, Inc. (initially, the National Electric Reliability Council)
NESC:	National Electrical Safety Code
NRCS:	Natural Resources Conservation Service (United States 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)
Permanent Easement:	Pertains to the transmission line structures, wire clearances, access, vegetation management, limitations on structures that can be placed on the easement (e.g., buildings, pools,), and protection from excavation, all as needed for UI's installation, maintenance, operation, and repair of the utility infrastructure
PURA:	Public Utilities Regulatory Authority (part of CT DEEP)
Project:	Milvon-West River Railroad Transmission Line 115-kV Rebuild Project
Project Area:	Collectively, the location of the work both within and north/south of the CT DOT corridor
RCSA:	Regulations of Connecticut State Agencies
ROW:	Right-of-way
SCADA:	Supervisory Control and Data Acquisition System
SF	Square Feet
SHPO:	Connecticut State Historic Preservation Office
SPP:	Species Protection Plan
SRHP:	State Register of Historic Places
SWPCP:	Stormwater Pollution Control Plan
Transmission Line:	Any electric line operating at 69,000 or more volts.
UI, Company:	The United Illuminating Company
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)
XS:	Cross-section (drawing)

