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**M. EXISTING ENVIRONMENT: UNDERGROUND LINE ROUTE
VARIATIONS FOR CONNECTICUT PORTION OF THE NORTH
BLOOMFIELD TO AGAWAM 345-kV LINE ROUTE AND CONNECTICUT
PORTION OF SOUTHERN ROUTE ALTERNATIVE FOR THE AGAWAM
TO LUDLOW 345-kV LINE ROUTE**

This section describes the existing environment along and in the vicinity of the alternative underground cable routes that have been identified as variations to portions of the proposed 12-mile overhead 345-kV GSRP line between the North Bloomfield Substation and the Connecticut/Massachusetts state border.

These underground line route variations, discussed in Sections M.1 through M.4, are:

- The Newgate Road Underground Line Route Variation
- State Route 168/187 Underground Line Route Variation
- 4.6-Mile In-ROW Underground Line Route Variation
- 3.6-Mile In-ROW Underground Line Route Variation

In addition, the section also characterizes the existing environment along the 5.4-mile segment of the Connecticut Portion of the Southern Route Alternative for the Agawam to Ludlow 345-kV Line Route that extends into Connecticut. As discussed in Section H, this route is not the preferred alignment for the Massachusetts portion of the GSRP; however, if the Massachusetts siting authorities approve this alignment, CL&P then would seek approval from the Siting Council to construct and operate the 5.4-mile portion of this alignment in Connecticut. Accordingly, Section M.5 provides baseline environmental information regarding both the 5.4-mile overhead 345-kV alignment for this route, as well as for an underground cable route variation that has been identified as an option to avoid the location of a new 345-kV overhead line near areas of dense residential development along a portion of the overhead route.

Aerial map sheets depicting the environmental characteristics along each of these alternative routes are included in Volumes 9 and 11.

No alternative routes were identified for the MMP because, as discussed in Section H, the proposed MMP will involve a circuit separation located entirely on CL&P's existing 2.2-mile ROW between Manchester Substation and Meekville Junction. Any routing options to the use of this existing ROW would necessarily involve the creation of a new transmission line corridor.¹

Information regarding the existing environmental conditions along all of these route options was collected using the same research, GIS data collection and mapping, and field methods as described in Section L.

M.1 NEWGATE ROAD UNDERGROUND LINE ROUTE VARIATION: EAST GRANBY/SUFFIELD

The Newgate Road Underground Line Route Variation would extend for about 6 miles, from Granby Junction (East Granby) to the intersection of the overhead ROW with Phelps Road (Suffield). This underground line route variation would replace a 4.6-mile section of proposed overhead 345-kV line (see Figure M-1). The underground line route variation would extend for approximately 4 miles in East Granby and 2 miles in Suffield. A key land-use feature passed by this variation would be Newgate Prison, which is listed on the National Register of Historic Places and also designated as a National Historic Landmark (a higher status because of its exceptional value to the entire country). In addition, the route would pass Viets Tavern, which is also listed on the National Register of Historic Places.

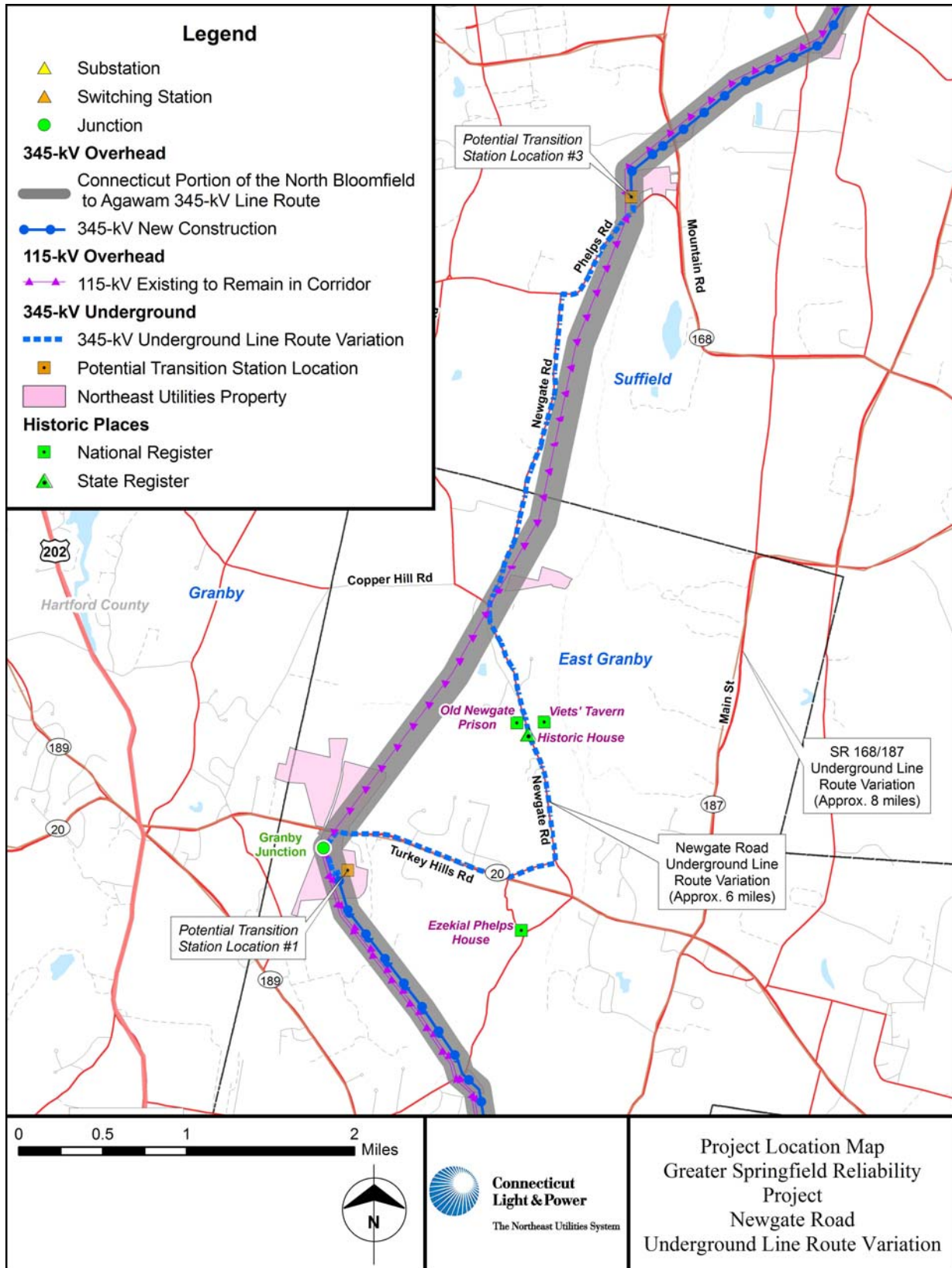
As illustrated on Figure M-1, along this variation, the underground cables would be installed within the existing overhead transmission line ROW for a short distance (approximately 1,000 feet) and then would

¹ Note: Underground variations to the 2.2-mile MMP also were not considered because the need for a continuous cable system trench/splice vaults and transition stations at either end of an underground route would require the disturbance to and development of additional land for utility purposes, causing substantially greater environmental effects than would occur if the overhead circuits were simply separated along the existing ROW as proposed.

be aligned within or near public roads (Turkey Hills Road/State Route 20, Newgate Road and Phelps Road.) Transition stations would be located adjacent and within the overhead ROW near Granby Junction and near Phelps Road, primarily on CL&P property, but also in part on private land that would have to be acquired for the Phelps Road transition station (approximately one acre).

Along the route, temporary and permanent easements from private landowners also may be required along segments of the route where the cables and/or splice vaults could not be placed within public road ROW (due to conflicts with pre-existing underground utilities).

Figure M-1 Newgate Road Underground Line Route Variation



M.1.1 Topography, Geology and Soils

Because of their proximity, the topography, soils, and geologic conditions along the Newgate Road Underground line route variations are generally the same as those described for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. The major difference between this underground line route variation and the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route is its placement underground in established public roadways. For that reason, depth to bedrock and depth to groundwater are important considerations. The details of both for each soil type are shown in Table L-1 in Section L.1.1.3. The depth to bedrock in the vicinity of the variation ranges from 20 inches below the surface to greater than 72 inches; the latter is applicable to the majority of soil types. The placement of this variation within roadways avoids the Rock Outcrop Complex soils category, except in areas where the underground duct bank and/or underground vaults would be relocated off-roadway where exposed ledge or shallow bedrock could be encountered. The depth to groundwater ranges from 1.5 feet to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet. Because the variation is within roadways, it is unlikely that groundwater would be closer than 1.5 feet to the surface, since the original roadway construction would have presumably involved the placement of fill to establish an elevated base. Deep excavations, however, for vault installations or to excavate a bore pit or pilot hole for a horizontal directional drill (trenchless technologies) may result in encountering shallow bedrock or a shallow groundwater table.

M.1.2 Water Resources

Although the underground variation would likely be located primarily within or adjacent to road ROW, it is possible that deviations from the paved ROW may be required. In addition, approximately 1,000 feet of the variation would be aligned underground, within CL&P's existing overhead transmission line ROW. As a result, streams and wetlands were delineated and mapped adjacent to the road ROW. Tables M-1 and M-2 list the water resources along Newgate Road Underground Line Route Variation. No vernal pools were identified immediately adjacent to this underground line route variation (See Volume 9 maps).

Similarly, this underground line route variation does not traverse the 100-year floodplain boundary of any streams, based on a review of the FEMA Flood Insurance Rate Maps.

M.1.2.1 Drainage Basins and Streams

The variation is located in the same drainage basins/watersheds as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Compared to the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, where all waterway crossings would be spanned, the Newgate Road Underground Line Route Variation crosses more developed areas, with fewer streams, and most of the streams traversed are small and channelized. In the vicinity of the Newgate Road Underground Line Route Variation, a total of 22 streams (14 perennial and eight intermittent) were identified. As illustrated in Volumes 9 and 11, *Aerial Photographs - 400 Scale*, and *Aerial Photographs - 100 Scale*, all of the watercourse crossings along the underground alternative are adjacent to or near existing road crossings.

**Table M -1. Streams Crossed Along the Newgate Road Underground Line Route
Variation**

Town	Series Number and Stream Name (if applicable)¹	CL&P Stream Number	Water Quality Classification/ Fisheries Information Where Applicable²	Type (P/I)³	Comments
East Granby	S01HF001UG	S10-103	A	I	Associated with W01HF003UG
East Granby	S01HF002UG	S10-104	A	I	Associated with W01HF004UG
East Granby	S01HF003UG	S10-106	A	I	Associated with W01HF005UG
East Granby	S01HF004UG	S10-105	A	P	Associated with W01HF006UG
East Granby	S01HF005UG	S10-107	A	I	Associated with W01HF007UG
East Granby	S01HF006UG	S10-108	A	P	Associated with W01HF012UG
East Granby	S01HF007UG	S10-109	A	P	Associated with W01HF009UG
East Granby	S05HD001UG	S11-119	A	P	Receives drainage from S05HD002 Unnamed stream
East Granby	S05HD002UG	S11-120	A	P	Discharges to S05HD001
East Granby	S05HD003UG	S11-121	A	I	Discharges to S05HD004 Unnamed stream
East Granby	S05HD004UG	S11-122	A	I	Receives drainage from S05HD003 Unnamed stream
East Granby	S05HD005UG	S11-123	A	P	Associated with W05HD001 Discharges to S006 Unnamed stream
East Granby	S05HD006UG	S11-124	A	P	Associated with W05HD002 Receives drainage from S005 Unnamed stream
Suffield	S05HD007UG	S11-126	A	I	Connected via culvert under Newgate Road to S008 Unnamed stream
Suffield	S05HD008UG	S11-125	A	I	Connected via culvert under Newgate Road to S007 Unnamed stream
Suffield	S05HD009UG	S11-127	A	P	Discharges to S010 under Newgate Road Unnamed stream

Town	Series Number and Stream Name (if applicable) ¹	CL&P Stream Number	Water Quality Classification/ Fisheries Information Where Applicable ²	Type (P/I) ³	Comments
Suffield	S05HD010UG	S11-128	A	P	Receives drainage from S009 Unnamed stream
Suffield	S05HD011UG	S11-129	A	P	Discharges to W05HD003 Unnamed stream
Suffield	S05HD012UG	S11-130	A	P	Discharges to S011 Unnamed stream
Suffield	S05HD013UG	S11-133	A	P	Discharges to S014 Unnamed stream
Suffield	S05HD014UG	S11-131	A	P	Receives drainage from S013 and Discharges to S015 Unnamed stream
Suffield	S05HD015UG	S11-132	A	P	Receives drainage from S014 Unnamed stream

1. Series Number and CL&P Number represent the same resource. Series Number refers to waterbody numbers designated during GPS Survey and in the ENSR reports (Volume 2) and illustrated on the aerial photographs in Volume 9. The CL&P Number refers to numbers designated for mapping conventions.

2. Data obtained from hard copy CT DEP map entitled Water Quality Classification, Connecticut River and Southcentral Coastal Basins, Adopted February 1993.

3. P=Perennial/I=intermittent (stream designations).

M.1.2.2 Wetlands

In the vicinity of the Newgate Road Underground Line Route Variation, a total of 13 wetlands were identified. No vernal pools were identified during field investigations. These wetlands are listed in Table M-2 (*List of Wetlands Along The Newgate Road Underground Line Route Variation.*)

Table M -2. List of Wetlands Along The Newgate Road Underground Line Route Variation

Wetland Series Number ¹	CL&P Wetland Number	Town	Wetland Class ²
W01HF003UG	W10-268	East Granby	PSS
W01HF004UG	W10-269	East Granby	PSS
W01HF005UG	W10-270	East Granby	PSS
W01HF006UG	W10-271	East Granby	PSS
W01HF007UG	W10-272	East Granby	PSS
W01HF008UG	W10-273	East Granby	PFO
W01HF009UG	W10-276	East Granby	PSS
W01HF010UG	W10-274	East Granby	PFO
W01HF012UG	W10-275	East Granby	PSS
W05HD001UG	W11-308	East Granby	PFO
W01HF003UG	W11-309	East Granby	PFO
W05HD003UG	W11-310	Suffield	PFO
W05HD004UG	W11-311	Suffield	PFO

1. Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;

2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO – Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland

M.1.2.3 Groundwater Resources and Public Water Supplies

Many of the residents of the Town of East Granby receive their water through private wells, and the Salmon Brook District and Aquarion Water Company supply groundwater to residents and businesses in the town center. The Connecticut Water Company provides water to the Town of Suffield from one of 90 groundwater sources and 20 reservoirs. Table L-3 in Section L summarizes Connecticut's Water Use Goals as identified by the CT DEP. The surface waters crossed by or in the vicinity of the Newgate Road Underground line route variation have been given a classification of Class A. The groundwater areas crossed by and/or in the vicinity of the Newgate Road Underground Line Route Variation have been classified as GB. No public wells, aquifer protection public supply wells, or Connecticut Aquifer Protection Areas are crossed by or within the vicinity of the Newgate Road Underground Line Route Variation. The approximate depth of water tables for each soil type in the vicinity of the variation is provided in Section L, Subsection L.1.1.3, Table L-1. In general, the depth to groundwater ranges from

1.5 feet to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet.

Because the variation is within roadways, it is unlikely that groundwater would be closer than 1.5 feet to the surface beneath the public roadway.

M.1.3 Biological Resources

The following sections discuss the vegetative and wildlife communities found along the underground variation. Because no vernal pools were identified along the Newgate Road Underground Line Route Variation, there are no amphibian breeding habitats to consider. In addition, CL&P consulted with the CT DEP concerning habitat for rare, threatened, and endangered species that may be affected during construction. In that consultation, detailed in Section L, it was decided that if construction was to occur within public roadway ROW, then no restrictions regarding rare, threatened, or endangered species would apply.

M.1.3.1 Vegetative Communities

The biological resources in the vicinity of the Newgate Road Underground Line Route Variation are similar to those identified for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route.

The underground line route variation is proposed for location within or adjacent to roadways. As a result, the vegetative communities near the variation are characteristic of those found along roads (that is, a mix of maintained lawns, mowed road shoulders, and – within the road setback – forested areas. In general, along the Turkey Hills Road portion of the variation in East Granby, the nearby vegetation is characterized by residential lawn and ornamental vegetation, interspersed with open forested land. To the northeast, the route follows the existing road network (Old Road) through a forested area. Continuing along Newgate Road, the variation crosses through rural areas characterized predominately by forested lands and residential areas with lawn/ornamental vegetation.

During the field surveys of the underground routes, ENSR identified a potential specimen red oak tree (approximately 9.5-foot diameter at breast height (DBH)) located at the intersection of Turkey Hills Road and Old Road, on the south side of Old Road. This oak tree may potentially qualify as a Connecticut Notable Tree or possibly a Connecticut Champion Tree. Established in 1985, the Notable Tree Project collects and distributes information about Connecticut's largest and most historic trees, both native and introduced. It is a volunteer enterprise sponsored by the Connecticut Botanical Society, The Connecticut College Arboretum, and the Connecticut Urban Forest Council.

Underground construction in the vicinity of the potential specimen tree identified by ENSR may adversely affect its root system and therefore the health of the tree. If this route were chosen, care would be taken to avoid major roots to the extent practical. However, it would be difficult to determine the extent of the root system beneath the road prior to excavation. Excavation activities, however, would occur beneath the drip line of the tree and would encounter the root systems.

M.1.3.2 Wildlife

The wildlife communities in the vicinity of the Newgate Road Underground Line Route Variation can be expected to be similar to those identified for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route.

M.1.4 Existing Land Use

M.1.4.1 Overall Land Use Patterns: Statutory Facilities

The Newgate Road Underground Line Route Variation begins near Granby Junction in East Granby and traverses east along Turkey Hills Road (State Route 20), which is bordered by homes. The variation diverges from State Route 20 at Old Road, and then continues north along Newgate Road, which is bordered predominantly by forested areas and several homes. In addition, the route follows Newgate Road past the Newgate Prison and a trailhead to the Newgate Wildlife Management Area (WMA.) Continuing in a northeasterly direction, the variation crosses the overhead transmission line west of

Woodledge Drive and east of Copper Hill Terrace. Newgate Road parallels the existing overhead transmission line, crossing the intersection of Newgate Road and Wyncairn Road and continues on to the north through areas that are predominantly forested with some residences. The variation continues east and then north along Phelps Road to an interconnection with the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route.

Overall, land uses adjacent to the route variation consist primarily of a mix of forested and agricultural lands, with some associated suburban/rural residential uses. There are groups of homes located along Turkey Hills Road and Newgate Road that the Council may determine to be a “residential area.” As of Summer 2008, there were no other potential “residential areas” and no private or public schools, licensed child day-care facilities, licensed youth camps, or public playgrounds along the route of the Newgate Road Underground Line Route Variation.

M.1.4.2 Residential Uses

Residential uses near the underground variation range from single-family, low-density residential developments to rural and agricultural areas. The aerial photographs in Volumes 9 and 11 provide further information about development in the vicinity of the variation.

M.1.4.3 Parks, Open Space, Recreational and Public Trust Lands

The Newgate Road Underground Line Route Variation traverses in the vicinity of several of the same recreational and scenic areas as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, including the Newgate WMA, Fox Run at Copper Hill Golf Course, the Suffield Sportsman’s Association, and the Spencer Woods WMA. However, near these areas, the underground variation would be located within or adjacent to existing public roadways.

M.1.5 Transportation Systems and Utility Crossings

The Newgate Road Underground Line Route Variation would be aligned within or adjacent to the state and local roads, including State Route 20, Old Road, and Newgate Road. Other roads that intersect the variation include Coppergate, Woodledge, and Copper Hill Road in East Granby, as well as Phelps Road in Suffield (refer to Volumes 9 and 11).

M.1.6 Cultural (Archaeological and Historic) Resources

The regional cultural resource information presented for the proposed overhead line route (Section L) also is applicable to the Newgate Road Underground Line Route Variation. In addition, however, the variation traverses near several National Registers of Historic Places (NRHP) sites, including Old Newgate Prison and Copper Mine. These significant cultural resources, which are described further in the *Historical and Archaeological Assessment of Connecticut Sections of the Connecticut Light & Power Company Greater Springfield Reliability Project* in Volume 3, include:

- Three poorly-defined Native American archaeological sites are known to occur within approximately one mile of the Newgate Road Underground Line Route Variation. All of these sites appear to be eligible for the NRHP.
- Three significant and closely-associated EuroAmerican resources, with above- and below ground components, are located very near or immediately adjacent to the variation along approximately 1000 feet of Newgate Road:
 - Old Newgate Prison and Copper Mine are listed on the NRHP and also designated as a National Historic Landmark (a higher status because of its exceptional value to the entire country). The Newgate Prison is nationally significant as the first prison in what became the United States operated by a state-level government. The prison operated from 1773-1782 and 1790-1827. Below the prison was the largest mine opened in the early 18th century.
 - Viets Tavern, listed on the NRHP.

- Viets Cemetery, used in 1777 and 1810 and subject to protection under C.G.S. Section 19a-315 as an ancient burying ground.

In the vicinity of these resources, the variation traverses areas where bedrock is very close to the surface. Some components at the prison site are structurally unstable and subject to potential effects of rock removal for underground construction.

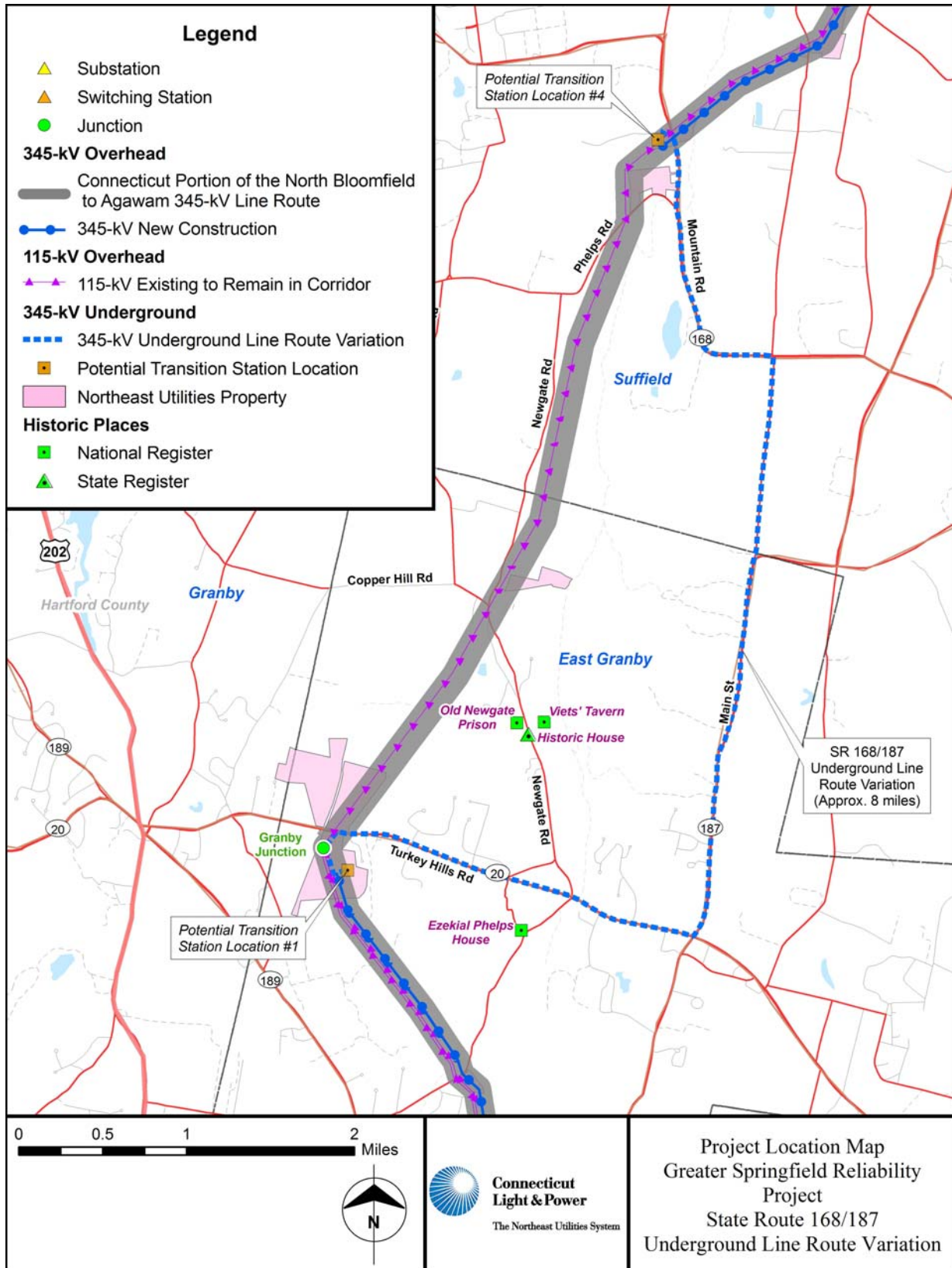
M.1.7 Air Quality

Air quality for the Newgate Road Underground Line Route Variation is generally the same as that found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and is described in Section L.

M.2 STATE ROUTE 168/187 UNDERGROUND LINE ROUTE VARIATION: EAST GRANBY/SUFFIELD

The State Route 168/187 Underground Variation would extend for about 8 miles, starting at Granby Junction, where the Newgate Road Underground Line Route Variation would also begin, but would end farther north, reconnecting to the proposed overhead transmission line ROW at the intersection of Mountain Road (Suffield) (see Figure M-2). The route variation would extend for approximately 5 miles in East Granby and 3 miles in Suffield. This variation would extend along Turkey Hills Road (State Route 20), North Main Street, South Stone Street (State Route 187), and Mountain Road (State Route 168).

Figure M-2 State Route 168/187 Underground Line Route Variation



M.2.1 Topography, Geology, and Soils

Because of their proximity, the topography, soils, and geologic conditions along the State Route 168/187 Underground Line Route Variation are generally the same as those described for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Similar to the discussion presented in Subsection M.1.1, the major difference between this variation and the proposed overhead line route is its placement underground in established public roadways. The depth to bedrock in the vicinity of the variation ranges from 20 inches below the surface to greater than 72 inches; the latter is applicable to the majority of soil types. The placement of this variation within roadways avoids the Rock Outcrop Complex soils category, except in areas where the underground duct bank and/or underground vaults would be relocated off-roadway where exposed ledge or shallow bedrock could be encountered. The depth to groundwater ranges from 1.5 feet to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet. Because the variation is within roadways, it is unlikely that groundwater would be closer than 1.5 feet to the surface, since the original roadway construction would have presumably involved the placement of fill to establish an elevated base. Deep excavations, however, for vault installations or to excavate a bore pit or pilot hole for a horizontal directional drill (trenchless technologies), may result in encountering shallow bedrock or a shallow groundwater table.

M.2.2 Water Resources

Although the underground line route variation would likely be located primarily within or adjacent to road ROW, it is possible that deviations from the paved ROW may be required. As a result, streams and wetlands were delineated and mapped adjacent to the road ROW. As illustrated in Table M-3 and Table M-4, a total of 16 water bodies and 42 wetlands were delineated along the State Route 168/187 Underground Line Route Variation.

M.2.2.1 Drainage Basins and Streams

In the vicinity of the State Route 168/187 Underground Line Route Variation, a total of 16 streams were crossed, including 12 perennial and four intermittent streams. A list of these streams along with their water quality designations can be found in Table M-3. The variation is located in the same drainage basins/watersheds as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. All overhead waterway crossings would be spanned; the underground variation crosses more developed areas where existing streams have been channelized and/or diverted through culverts by past roadway construction. Many of the streams that are traversed along the underground route generally are small and channelized. However, the narrow work corridor along the existing roadway would not preclude the option of open-trench excavation to cross the streams, and/or replacement of the existing culverts post-conduit installation. The State Route 168/187 Underground Line Route Variation crosses Muddy Brook, Holcomb Brook, Creamery Brook, Austin Brook, and Stony Brook. Of these watercourses, only Stony Brook is stocked with trout by CT DEP for recreational fishing in the vicinity of the variation. As illustrated in Volumes 9 and 11, *Aerial Photographs - 400 Scale*, and *Aerial Photographs - 100 Scale*, all of the watercourse crossings along the underground route variation are adjacent to or near existing road crossings. The approximate depth of water tables is provided in Section L, Subsection L.1.1.3, Table L-1.

Table M -3. Streams Crossed Along the State Route 168/187 Underground Line Route Variation

Town	Series Number and Stream Name (if applicable) ¹	CL&P Stream Number	Water Quality Classification/ Fisheries Information Where Applicable ²	Type (P/I) ³	Comments
East Granby	S01HF001UG/ Muddy Brook	S10-103	A	P	Associated with W01HF003UG
East Granby	S01HF002UG/ Muddy Brook	S10-104	A	P	Associated with W01HF004UG
East Granby	S01HF003UG/ /Muddy Brook	S10-106	A	P	Connected to S01HF004UG via culvert under Route 20
East Granby	S01HF004UG/ /Muddy Brook	S10-105	A	P	Associated with W01HF006UG

Town	Series Number and Stream Name (if applicable) ¹	CL&P Stream Number	Water Quality Classification/ Fisheries Information Where Applicable ²	Type (P/I) ³	Comments
East Granby	S01HF005UG	S10-107	A	I	Associated with W01HF007UG Unnamed stream
East Granby	S01HF006UG /Holcomb Brook	S10-108	A	P	Associated with W01HF012UG connected to S01HF009UG via culvert under Route 20
East Granby	S01HF007UG /Holcomb Brook	S10-109	A	P	Associated with W01HF009UG
East Granby	S01HF008UG /Creamery Brook	S10-111	A	P	Associated with W01HF019UG connected to S01HF009UG via culvert under Route 20
East Granby	S01HF009UG /Creamery Brook	S10-110	A	P	Associated with W01HF024
East Granby	S01HF010UG /Creamery Brook	S10-113	A	P	Associated with W01HF021UG and W01HF026UG connected via culvert under Route 187
East Granby	S01HF010aUG	S10-112	A	P	Creamery Brook
East Granby	S01HF011UG	S10-114	A	I	West side of Route 187 west of W01HF28UG Unnamed stream
East Granby	S01HF012UG /Austin Brook	S10-115	A	P	Associated with W01HF025UG connected to S01HF013UG via culvert under Route 187
East Granby	S01HF013UG /Stony Brook	S10-116	A	P	Associated with W01HF030UG
Suffield	S01HF014UG	S10-118	A	I	Associated with W01HF027UG connected to S01HF015UG via culvert under Route 168 Unnamed stream
Suffield	S01HF015UG	S10-117	A	I	Associated with W01HF034UG Unnamed stream

1. Series Number and CL&P Number represent the same resource. Series Number refers to waterbody numbers designated during GPS Survey and in the ENSR reports (Volume 2) and illustrated on the aerial photographs in Volume 9. The CL&P Number refers to numbers designated for mapping conventions.

2. Data obtained from hard copy CT DEP map entitled Water Quality Classifications, Connecticut River and Southcentral Coastal Basins, Adopted February 1993.

3. P = perennial / I = intermittent (stream designations).

M.2.2.2 Wetlands

In the vicinity of the State Route 168/187 Underground Line Route Variation, a total of 42 wetlands were identified. No vernal pools were identified. These wetlands are listed in Table M-4 (*List of Wetlands Along The State Route 168/187 Underground Line Route Variation*).

Table M -4. List of Wetlands Along the State Route 168/187 Underground Line Route Variation

Wetland Series Number ¹	Northeast Utilities Wetland Number	Town	Wetland Class ²	Comments
W01HF001	W9-244	East Granby	PSS/PFO	Ties to W01HF001
W01HF002	W9-245	East Granby	PSS/PFO	Ties to W07HF001
W01HF003UG	W10-268	East Granby	PFO	Associated with S01HF001UG
W01HF004UG	W10-269	East Granby	PFO	Associated with S01HF002UG
W01HF005UG	W10-270	East Granby	PEM	Associated with S01HF003UG
W01HF006UG	W10-271	East Granby	PEM/PFO	Associated with S01HF004UG
W01HF007UG	W10-272	East Granby	PFO	Associated with S01HF005UG
W01HF008UG	W10-273	East Granby	PFO	--
W01HF009UG	W10-276	East Granby	PEM	Associated with S01HF007UG
W01HF010UG	W10-274	East Granby	PFO	--
W01HF011UG	W10-279	East Granby	PEM	--
W01HF012UG	W10-275	East Granby	PSS	Associated with S01HF006UG
W01HF013UG	W10-280	East Granby	PFO	--
W01HF014UG	W10-277	East Granby	PFO	--
W01HF015UG	W10-282	East Granby	PFO	--
W01HF016UG	W10-278	East Granby	PEM	--
W01HF017UG	W10-285	East Granby	PSS	--
W01HF018UG	W10-281	East Granby	PSS/PEM	--
W01HF019UG	W10-286	East Granby	PEM	Associated with S02HF008UG
W01HF020UG	W10-283	East Granby	PFO	
W01HF021UG	W10-289	East Granby	PFO	Associated with S01HF010UG
W01HF022UG	W10-284	East Granby	PFO	--
W01HF023UG	W10-291	East Granby	PFO/PSS	--
W01HF024UG	W10-287	East Granby	PFO	Associated with S01HF009UG
W01HF025UG	W10-293	East Granby	PEM	Associated with S01HF012UG
W01HF026UG	W10-288	East Granby	PSS/PEM	Associated with S01UG010UG
W01HF027UG	W10-296	Suffield	PFO	Associated with S01HF014UG
W01HF028UG	W10-290	Suffield	PFO	--
W01HF029UG	W10-297	Suffield	PEM	--
W01HF030UG	W10-292	Suffield	PEM	Associated with S01HF013UG
W01HF031UG	W10-300	Suffield	PEM	--
W01HF032UG	W10-294	Suffield	PEM/OW	Man-made farm-pond
W01HF033UG	W10-301	Suffield	PSS/PFO	--
W01HF034UG	W10-295	Suffield	PFO	Associated with S01HF015UG
W01HF035UG	W10-303	Suffield	PFO	Associated with man-made drainage swale
W01HF036UG	W10-298	Suffield	PEM	Maintained wet meadow
W01HF037UG	W10-304	Suffield	PFO/PSS	--
W01HF038UG	W10-299	Suffield	PSS/PEM	--

Wetland Series Number ¹	Northeast Utilities Wetland Number	Town	Wetland Class ²	Comments
W01HF039UG	W10-305	Suffield	PFO	--
W01HF040UG	W10-302	Suffield	PFO	--
W01HF041UG	W10-306	Suffield	PSS	--
W01HF042UG	W10-307	Suffield	PFO	--

1. Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;
2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO – Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland

M.2.2.3 Groundwater Resources and Public Water Supplies

The public water supplies for the State Route 168/187 Underground Line Route Variation are the same as those for the Newgate Road Underground Line Route Variation and are described in Section M.1.2.3.

Table L-3 in Section L summarizes Connecticut's Water Use Goals as identified by the CT DEP. The majority of the surface waters crossed by or in the vicinity of the State Route 168/187 Underground Line Route Variation have been given a classification of A, and the groundwater areas have been classified as GB. No public wells, or Connecticut Aquifer Protection Areas are crossed by or within the vicinity of the proposed State Route 168/187 Underground Line Route Variation. The depth to groundwater ranges from 1.5 feet to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet. Because the variation is within roadways, it is unlikely that groundwater would be closer than 1.5 feet to the surface beneath the public roadway.

M.2.2.4 Flood Zones

FEMA, which classifies flood zones for insurance and floodplain management purposes, has prepared maps that designate certain areas according to the frequency of flooding. An area within the 100-year flood designation is expected to flood at least once every 100 years. The FEMA floodplain boundaries for watercourses along the route variation are depicted on the maps in Volume 11 *Aerial Photographs - 100 Scale*. The Route 168/187 Underground Line Route Variation traverses the 100-year flood boundary of Creamery Brook, Austin Brook, and Stony Brook.

M.2.3 Biological Resources

The following sections discuss the vegetative and wildlife communities found along the underground variation. Because no vernal pools were identified along the State Route 168/187 Underground Line Route Variation, there are no amphibian breeding habitats to consider. In addition, CL&P consulted with the CT DEP concerning habitat for rare, threatened, and endangered species that may be affected during construction. In that consultation, detailed in Section L, it was decided that if construction was to occur within public roadway ROW, then no restrictions regarding rare, threatened, or endangered species would apply.

M.2.3.1 Vegetative Communities

The vegetative communities in the vicinity of the State Route 168/187 Underground Line Route Variation are similar to those identified for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, except that the vegetative habitats along the road ROW are affected by road maintenance activities (e.g., mowing along road shoulders), as well as by proximity to residential areas that are characterized by maintained lawns and ornamental vegetation.

The State Route 168/187 Underground Line Route Variation begins near Granby Junction in East Granby and extends to the east along Turkey Hills Road, which is characterized by residential development interspersed with open forested land. It then continues to the north along State Route 187 and northwest along State Route 168 in a rural area characterized by forested areas and residences.

M.2.3.2 Wildlife Communities

The wildlife communities in the vicinity of the State Route 168/187 Underground Line Route Variation can be expected to be similar to those identified for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route.

M.2.4 Existing Land Use

M.2.4.1 Overall Land Use Patterns

The State Route 168/187 Underground Line Route Variation would commence north of Granby Junction in East Granby and would traverse in an easterly direction, along Turkey Hills Road (State Route 20), which in this area is bordered predominantly by residential and forested areas. The variation would diverge to the north from State Route 20, following North Main Street/State Route 187. The land use in this area is characterized by forested and agricultural areas, with limited residential neighborhoods. The variation would traverse past the East Granby Farms Recreation Area, a town park overseen by the East Granby Parks and Recreation Commission, and would continue along North Main Street/State Route 187 until crossing into Suffield. In Suffield, the variation would extend north along Stone Street before heading west along Mountain Road. The area surrounding Mountain Road is characterized predominantly by densely forested areas, along with some agricultural land. As Mountain Road bends to the north, it passes Sunrise Park, Sunrise Park Cub Scout Day Camp, Alcorn Wildlife Preserve, and Spencer Woods Wildlife Preserve before connecting with the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route.

Land uses adjacent to this route variation consist primarily of a mix of forested and suburban/rural residential uses. With respect to proximity to statutory facilities, at this time the variation traverses along roads that border residential areas, as well as near the camps and parks described above.

M.2.4.2 Residential Uses

Residential uses in the vicinity of the State Route 168/187 Underground Line Route Variation range from single-family, low-density residential developments to rural and agricultural areas. The aerial photographs in Volumes 9 and 11 provide further information about residential land use in the vicinity of the proposed variation.

M.2.4.3 Parks, Open Space, Recreation, and Public Trust Lands

The State Route 168/187 Underground Line Route Variation travels in the vicinity of several of the same recreational and scenic areas as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, including the Metacomet Trail, the Alcorn Wildlife Preserve, the East Granby Farms Recreation Area and the Spencer Woods Wildlife Preserve. In addition, the variation travels adjacent to Sunrise Park, which includes the Sunrise Park Scout Day Camp. Sunrise Park consists of land overseen by the Suffield Conservation Commission and offers passive recreational activities including walking trails and activities associated with White's Pond, located inside the park.

M.2.5 Transportation Systems and Utility Crossings

The State Route 168/187 Underground Line Route Variation would be aligned along and would intersect several state and local roads. In addition to State Route 168, these include State Routes 20 and 187, as well as Randall Avenue, Horseshoe Drive, Holcomb Street, Metacomet Drive, Center Street, and Creamery Brook in East Granby and Stone Street and Mountain Road in Suffield (refer to Volumes 9 and 11, *Aerial Photographs – 400 Scale and Aerial Photographs – 100 Scale*, and to Volume 9 *Overview of Route on USGS Map*).

M.2.6 Cultural (Archaeological and Historic) Resources

State Route 168/187 Underground Line Route Variation traverses near several NRHP sites, including:

- Four Native American archaeological sites are known to occur within approximately one mile of the Route 168/187 Underground Line Route Variation, all of which appear to be seasonal hunting or fishing sites used from Late Archaic to Woodland periods. One is approximately 400 feet from the underground route. None appear to be eligible for the NRHP.
- Two EuroAmerican archaeological sites have been reported adjacent to the underground route along Route 20 west of the center of East Granby, a tenant farmhouse and a cigar shop with related house. Both were determined eligible for, and one was listed on, the NRHP. Because of

on-going road reconstruction, the tenant farmhouse site was protected with fill, and the cigar shop/house was destroyed after archaeological mitigation.

- Two other significant historic resources were identified within approximately 500 feet of the route variation. A 500-foot distance from the underground route was considered, rather than 0.25 mile (as described for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route), because the underground facilities would be installed within or adjacent to roads and thus would have no potential for effects on historic resources outside of those in the immediate vicinity. (For example, the underground cable would not be visible after installation and thus would not affect the visual context of historic resources). The 500-foot distance was chosen to plan for any necessary protective measures against blasting effects. The resources include the large East Granby Historic District, listed on the NRHP, and the East Granby Center Cemetery which is part of the district and also subject to protection under C.G.S. Section 19a-315 as an ancient burying ground.

M.3 4.6-MILE IN-ROW UNDERGROUND LINE ROUTE VARIATION

This section describes the environmental features along the underground line route variation that would extend for 4.6 miles and would be placed within the same existing ROW as the Connecticut Portion of the Bloomfield to Agawam 345-kV line. Because this variation is a subsection of the overhead ROW, those sections that are the same as the GSRP route (i.e. noise, air quality, etc.), are not repeated in the following environmental description.

The underground line segment in this variation is an alternative to both the Newgate Road Underground Line Route Variation and the State Route 168/187 Line Route Variation discussed in the previous sections as it would essentially replace the same segment of overhead transmission lines. The 4.6-Mile In-ROW Underground Line Route Variation would begin at Granby Junction and extend north within the

existing overhead transmission line ROW to a transition station site that has been identified north of Phelps Road in Suffield.

M.3.1 Topography, Geology, and Soils

Because this variation would be placed within a section of the same existing overhead ROW as the Connecticut Portion of the North Bloomfield to Agawam 345-kV line ROW, the topography, geology, and soils found along both routes would be the same. The major difference with this variation is its placement underground in established overhead ROW. For that reason, depth to bedrock and depth to groundwater are important considerations. The details of both for each soil type are shown in Table L-1 in Section L.1.1.3. The depth to bedrock in the vicinity of the variation ranges from rock outcrop in which bedrock ranges from the surface to greater than 72 inches below the surface; the latter is applicable to the majority of soil types. The depth to groundwater ranges from 0.5 feet to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet.

M.3.2 Water Resources

The underground line route variation would be located within a section of the same existing overhead ROW as the Connecticut Portion of the North Bloomfield to Agawam 345-kV line. The watercourses and wetlands for this variation are therefore identical to those along the corresponding section of the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Table M-5 and M-6 list the water resources along 4.6-mile In-ROW Underground Line Route Variation.

M.3.2.1 Drainage Basins and Streams

The variation is located in the same drainage basins/watersheds as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. In the vicinity of the 4.6-mile In-ROW Underground Line Route Variation, a total of eight streams (three perennial and five intermittent) were identified. These watercourses are illustrated in Volumes 9 and 11, *Aerial Photographs - 400 Scale*, and *Aerial Photographs - 100 Scale*.

**Table M -5. Watercourses Traversed along the 4.6-Mile In-ROW Underground Line
Route Variation**

Municipality	Series Number ¹ and Name where Applicable	CL&P Stream Number	Water Quality / Fisheries Classification Where Applicable ²	Type (P or I) ³	Comments
East Granby	S01HF001A	S9-91	A	P	Associated with W01HF001
East Granby	S01HF001	S9-92	A	P	Associated with W01HF007
East Granby	S01HF002	S9-93	A	P	Associated with W01HF008
East Granby	S01HF003	S9-94	A	I	Associated with W01HF013
East Granby	S01HF004	S9-95	A	I	Associated with W01HF013
Suffield	S01HF005	S9-96	A	I	Associated with W01HF014
Suffield	S01HF006	S9-97	A	I	Associated with W01HF016
Suffield	S01HF007	S9-98	A	I	

1. Series Number and CL&P No. represent the same resource. Series Number refers to waterbody numbers designated during GPS Survey and in the ENSR reports (Volume 2) and illustrated on the aerial photographs in Volume 9. The CL&P Number refers to numbers designated for mapping conventions.

2. Data obtained from hard copy CT DEP map entitled Water Quality Classifications, Connecticut River and Southcentral Coastal Basins, Adopted February 1993.

3. P = perennial / I = intermittent (stream designations).

M.3.2.2 Wetlands

In the vicinity of the 4.6-mile In-ROW Underground Line Route Variation, a total of 18 wetlands were identified. These wetlands are listed in Table M-6 (*List of Wetlands along the 4.6-Mile In-ROW Underground Line Route Variation*).

Table M -6. List of Wetlands along the 4.6-Mile In-ROW Underground Line Route Variation

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Wetland Class ²
East Granby	W07HF001	W9-243	PSS
East Granby	W01HF001	W9-244	PFO/PSS
East Granby	W01HF002	W9-245	PFO
East Granby	W01HF003	W9-246	PFO/PEM
East Granby	W01HF004	W9-248	PSS/PFO
East Granby	W01HF005	W9-247	PEM
East Granby	W01HF006	W9-249	PSS/PFO
East Granby	W01HF007	W9-250	PSS/PFO
East Granby	W01HF008	W9-251	PFO
East Granby	W01HF009	W9-252	PEM
East Granby	W01HF010	W9-253	PFO/PEM
East Granby	W01HF011	W9-254	PEM/PSS
East Granby	W01HF012	W9-255	PEM/PSS
East Granby	W01HF013	W9-256	PEM/OW
East Granby/Suffield	W01HF014	W9-257	PFO/PEM
Suffield	W01HF015	W9-258	PFO
Suffield	W01HF016	W9-259	PFO/PSS
Suffield	W01HF017	W9-260	PSS/PFO

1. Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;

2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; OW = Open water.

M.3.2.3 Groundwater Resources and Public Water Supplies

Potable water along and adjacent to the 4.6-mile In-ROW Underground Line Route Variation is the same as found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. In general, the depth to groundwater ranges from 0.5 feet to over 6 feet below the surface, though the majority of soil types have a depth to groundwater of over 6 feet. Table L-1 in Section L.1.1.3 lists the specific depth to groundwater for each soil type.

M.3.3 Biological Resources

The vegetative and wildlife communities found along the 4.6-Mile In-ROW Underground Line Route Variation are the same as those found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. The variation traverses the same wildlife management areas as the GSRP route.

M.3.3.1 Amphibians

Amphibian breeding habitat for the 4.6-Mile In-ROW Underground Line Route Variation is the same as the corresponding section of the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Five vernal pools were found during field investigation, and they are listed in Table M-7.

Table M -7. Vernal Pool Habitat Associated with the 4.6-Mile In-ROW Underground Line Route Variation

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Observed Obligate Species ²
East Granby	W07HF001	W9-243	spotted salamander, wood frog
East Granby	W01HF001	W9-244	spotted salamander, wood frog
East Granby	W01HF006	W9-249	spotted salamander, fairy shrimp
East Granby	W01HF010	W9-253	wood frog
East Granby/Suffield	W01HF014	W9-257	Potential Vernal Pool (off of ROW)

¹: Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GSP Survey of wetlands. The CL&P wetland number was generated for mapping convention;

²: Vernal Pool Species observed confirming vernal pool/amphibian habitat.

M.3.3.2 Rare, Threatened and Endangered Species

Along the 4.6-Mile In-ROW Underground Line Route Variation are two state-listed species, the Eastern box turtle and the Eastern pearlshell mussel. See Section L.1.3.6 for a discussion of these species.

M.3.4 Existing Land Use

The 4.6-Mile In-ROW Underground Line Route Variation would begin near Granby Junction south of Turkey Hills Road and extend north passing the Newgate Wildlife Management Area, Metacomet Trail, the Farmington Valley Greenway, Suffield Sportsman's Association, Spenser Woods Wildlife Preserve,

and the Fox Run Golf Course. See Section L.1.4 for a description of these resources and a description of the land use along this section of ROW. The variation continues into Suffield and ends at a potential transition station site located north of Phelps Road.

M.4 3.6-MILE IN-ROW UNDERGROUND LINE ROUTE VARIATION

This section describes the environmental features along the underground variation that would extend for 3.6 miles and would be placed within the existing ROW. Because this variation is a subsection of the overhead ROW, those sections that are the same as the GSRP overhead line route (i.e. noise, air quality, etc.), are not repeated in the following environmental description.

The underground line segment in this variation is an alternative to the previously described 4.6-Mile In-ROW Underground Line Route Variation and was developed to reduce the wetland effects associated with the 4.6-Mile In-ROW Underground Line Route Variation. However, the 3.6-Mile In-ROW Underground Line Route Variation would also essentially replace the same segment of overhead transmission lines as the Newgate Road Underground Line Route Variation, the State Route 168/187 Underground Line Route Variation, and the 4.6-Mile In-ROW Underground Line Route Variation. The 3.6-Mile In-ROW Underground Line Route Variation would begin at a transition station approximately 0.8 miles south of Newgate Road and extend north within the existing overhead transmission line ROW to a transition station site that has been identified north of Phelps Road in Suffield.

M.4.1 Topography, Geology, and Soils

Because this variation would be placed within a section of the same existing overhead ROW as the Connecticut Portion of the North Bloomfield to Agawam 345-kV line route ROW, the topography, geology, and soils found along both routes would be the same. The major difference with this variation is its placement underground in established overhead ROW. For that reason, depth to bedrock and depth to groundwater are important considerations. The details of both for each soil type are shown in Table L-1

in Section L.1.1.3. The depth to bedrock in the vicinity of the variation ranges from rock outcrop in which bedrock ranges from the surface to greater than 72 inches below the surface; the latter is applicable to the majority of soil types. The depth to groundwater ranges from 0.5 feet to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet.

M.4.2 Water Resources

This underground variation would be located within a section of the same existing overhead ROW as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. The watercourses and wetlands for this variation are therefore identical to those along the corresponding section of the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. Tables M-8 and M-9 list the water resources along 4.6-Mile In-ROW Underground Line Route Variation.

M.4.2.1 Drainage Basins and Streams

The variation is located in same drainage basins/watersheds as the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. In the vicinity of the 3.6-Mile In-ROW Underground Line Route Variation, a total of seven streams (two perennial and five intermittent) were identified. These watercourse are illustrated in Volumes 9 and 11, *Aerial Photographs - 400 Scale*, and *Aerial Photographs - 100 Scale*.

**Table M -8. Watercourses Traversed along the 3.6-Mile In-ROW Underground Line
Route Variation**

Municipality	Series Number ¹ and Name where Applicable	CL&P Stream Number	Water Quality / Fisheries Classification Where Applicable ²	Type (P or I) ³	Comments
East Granby	S01HF001	S9-92	A	P	Associated with W01HF007
East Granby	S01HF002	S9-93	A	P	Associated with W01HF008
East Granby	S01HF003	S9-94	A	I	Associated with W01HF013
East Granby	S01HF004	S9-95	A	I	Associated with W01HF013
Suffield	S01HF005	S9-96	A	I	Associated with W01HF014
Suffield	S01HF006	S9-97	A	I	Associated with W01HF016
Suffield	S01HF007	S9-98	A	I	

1. Series Number and CL&P Number represent the same resource. Series Number refers to waterbody numbers designated during GPS Survey and in the ENSR reports (Volume 2) and illustrated on the aerial photographs in Volume 9. The CL&P Number refers to numbers designated for mapping conventions.

2. Data obtained from hard copy CT DEP map entitled Water Quality Classifications, Connecticut River and Southcentral Coastal Basins, Adopted February 1993.

3. P = perennial / I = intermittent (stream designations).

M.4.2.2 Wetlands

In the vicinity of the 3.6-Mile In-ROW Underground Line Route Variation, a total of 12 wetlands were identified. These wetlands are listed in Table M-9 (*List of Wetlands along the 3.6-Mile In-ROW Underground Line Route Variation*).

Table M -9. List of Wetlands along the 3.6-Mile In-ROW Underground Line Route Variation

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Wetland Class ²
East Granby	W01HF006	W9-249	PSS/PFO
East Granby	W01HF007	W9-250	PSS/PFO
East Granby	W01HF008	W9-251	PFO
East Granby	W01HF009	W9-252	PEM
East Granby	W01HF010	W9-253	PFO/PEM
East Granby	W01HF011	W9-254	PEM/PSS
East Granby	W01HF012	W9-255	PEM/PSS
East Granby	W01HF013	W9-256	PEM/OW
East Granby/Suffield	W01HF014	W9-257	PFO/PEM
Suffield	W01HF015	W9-258	PFO
Suffield	W01HF016	W9-259	PFO/PSS
Suffield	W01HF017	W9-260	PSS/PFO

1. Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;
2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO = Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland; OW = Open water.

M.4.2.3 Groundwater Resources and Public Water Supplies

Potable water along and adjacent to the 3.6-Mile In-ROW Underground Line Route Variation is the same as found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. In general, the depth to groundwater ranges from 0.5 feet to over 6 feet below the surface, though the majority of soil types have a depth to groundwater of over 6 feet. Table L-1 in Section L.1.1.3 lists the specific depth to groundwater for each soil type.

M.4.3 Biological Resources

The vegetative and wildlife communities found along the 3.6-Mile In-ROW Underground Line Route Variation are the same as those found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. The variation traverses the same wildlife management areas as the GSRP overhead line route.

M.4.3.1 Amphibians

Amphibian breeding habitat for the 3.6-Mile In-ROW Underground Line Route Variation is the same as the corresponding section of the Connecticut portion of the North Bloomfield to Agawam 345-kV Line Route. Three vernal pools were found during field investigation; these are listed in Table M-10.

Table M -10. Vernal Pool Habitat Associated with the 3.6-Mile In-ROW Underground Line Route Variation

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Observed Obligate Species ²
East Granby	W01HF006	W9-249	spotted salamander, fairy shrimp
East Granby	W01HF010	W9-253	wood frog
East Granby/Suffield	W01HF014	W9-257	Potential Vernal Pool (off of ROW)

¹: Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;

²: Vernal Pool Species observed confirming vernal pool/amphibian habitat.

M.4.3.2 Rare, Threatened and Endangered Species

Along the 3.6-Mile In-ROW Underground Line Route Variation are two state-listed species, the Eastern box turtle and the Eastern pearlshell mussel. See Section L.1.3.6 for a discussion of these species.

M.4.4 Existing Land Use

The 3.6-Mile In-ROW Underground Line Route Variation would begin at a potential transition station north of Turkey Hills Road and extend north passing the Newgate Wildlife Management Area, Metacomet Trail, the Farmington Valley Greenway, Suffield Sportsman's Association, Spencer Woods Wildlife Preserve, and the Fox Run Golf Course. See Section L.1.4 for a description of these resources and a description of the land use along this section of ROW. The underground variation continues into Suffield and ends at a potential transition station located north of Phelps Road.

M.5 CONNECTICUT PORTION OF MASSACHUSETTS SOUTHERN ROUTE ALTERNATIVE FOR THE AGAWAM TO LUDLOW 345-kV LINE ROUTE

M.5.1 Massachusetts Southern Route Alternative

This section describes the environmental features along the Connecticut Portion of the Massachusetts Southern Route Alternative for the Agawam to Ludlow 345-kV Line Route (overhead) in the towns of Enfield and Suffield, as well as an underground line variation to a portion of this overhead route in Enfield that has been identified as an option for aligning the route away from statutory facilities (Section M.5.2).

As described in Section H.6, the Connecticut Portion of the Massachusetts Southern Route Alternative would extend for approximately 5.4 miles in the municipalities of Suffield (1.1 mile) and Enfield (4.3 miles). The route would traverse the Connecticut River near the Connecticut/Massachusetts State border (which also forms the boundary between Suffield and Enfield). Along this alternative route in Connecticut, the proposed 345-kV line would be aligned overhead within an existing CL&P ROW (presently occupied by 115-kV facilities) that varies in width from approximately 280 to 385 feet.

M.5.1.1 Topography, Geology and Soils

The topography and geologic conditions along the Massachusetts Southern Route Alternative is somewhat different than what was observed for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route. While glaciolacustrine, glaciofluvial, eolian and organic deposits are present on both routes, the Massachusetts Southern Route Alternative is dominated by these materials, particularly eolian deposits, and lacks deposits of glacial till. The surficial geology along the proposed GSRP overhead line route has a large component of the latter. Surficial geologic deposits determine what types of soils can ultimately form in any given area. In addition, the Massachusetts Southern Alternative Route traverses lands at a lower elevation than the preferred route, as the landscape dips toward the

Connecticut River. The soil associations found along the Connecticut Portion of the Massachusetts Southern Route Alternative and an underground line variation are summarized in Table M-11.

Table M -11. General Characteristics of Soil Associations Along the Massachusetts Southern Route Alternative and Underground Variation

Map Unit Symbol	Parent Material	Hydric (Yes or No)	Depth to Bedrock (inches)	Depth to water Table (feet)
13 Walpole sandy loam	Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss	Yes	>72	1.0
21A Ninigret and Tisbury soils	coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	1.5
32A Haven and Enfield soils	coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	>6.0
34A Hartford sandy loam	gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	>6.0
36B Windsor loamy sand	eolian sands over sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	>6.0
36C Windsor loamy sand	eolian sands over sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	>6.0
36A Windsor loamy sand	eolian sands over sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	>6.0
82B Broadbrook silt loam	eolian deposits over coarse-loamy lodgment till derived from gneiss and/or schist and/or andstone and/or basalt	No	20-40	1.5-2.5
221A Ninigret-Urban land complex	coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	1.5-2.5
235B Penwood-Urban land complex	Sandy glaciofluvial deposits derived from sandstone and shale	No	>72	>6.0
236B Windsor-Urban land complex	eolian sands over sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss	No	>72	>6.0
304 Udorthents, loamy, very steep	Glaciolacustrine deposits	No	>72	4.5
305	Gravelly outwash	No	>72	2.0-4.5

Map Unit Symbol	Parent Material	Hydric (Yes or No)	Depth to Bedrock (inches)	Depth to water Table (feet)
Udorthents-Pits, complex, gravelly				
306 Udorthents-Urban land complex	Drift	No	>72	4.5
307 Urban land	Miscellaneous area			

Source: USDA Natural Resources Conservation Service, Soil Surveys of Hartford and Tolland Counties, CT, and Hampden County, MA

M.5.1.2 Water Resources

Field surveys of wetlands and water resources were conducted along the Massachusetts Southern Route Alternative using the same procedures (see Section L) as described for the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route.

M.5.1.2.1 Drainage Basins and Streams

Connecticut is divided geographically into eight major drainage basins/watersheds. The Massachusetts Southern Route Alternative ROW traverses portions of the Lower Connecticut River Basin. Within these basins, the Massachusetts Southern Route Alternative spans five perennial watercourses, the largest of which is the Connecticut River. The Connecticut River is New England's largest river ecosystem and was designated as one of the Nation's first American Heritage Rivers. The Connecticut River watershed encompasses over 11,000 square miles of wild, rural and urban lands in parts of Connecticut, Massachusetts, New Hampshire and Vermont. The river is utilized for a variety of purposes including recreation, aesthetics, boating, and fishing.

In addition, the Massachusetts Southern Route Alternative crosses the Four Mile Brook and Waterworks Brook. All of these watercourses, including the Connecticut River, are presently spanned by existing overhead transmission lines. A list of the watercourses crossed, along with their water quality classification, are included in Table M-12.

The Connecticut River is a designated watercourse within the CT DEP Stream Channel Encroachment Line (SCEL) program. The SCELs associated with the Connecticut River are spanned by existing CL&P overhead lines.

Table M -12. Streams Crossed Along the Massachusetts Southern Route Alternative

Town	Series Number and Stream Name (if applicable) ¹	CL&P Stream Number	Water Quality Classification/ Fisheries Information Where Applicable ²	Type (P/I) ³	Comments
Suffield	S04HD029 Four Mile Brook	S8-56	A	P	Associated with W04HD029
Suffield	S04HD008	S8-57	A	P	Associated with W04HD031
Suffield	S04HD009 Connecticut River	S8-58	B	P	Associated with W04HD034
Enfield	S04HD010	S8-59	A	P	Associated with W04HD035
Enfield	S04HD012 Waterworks Brook	S8-59A	A	P	Associated with W04HD038

1. Series Number and CL&P Number represent the same resource. Series Number refers to waterbody numbers designated in the ENSR reports (Volume 2) and illustrated on the aerial photographs in Volume 9, CL&P Number refers to numbers designated by CL&P for mapping conventions.

2. Data obtained from hard copy CT DEP map entitled Water Quality Classification, Connecticut River and Southcentral Coastal Basins, Adopted February 1993.

3. P=Perennial/I=intermittent (stream designations).

M.5.1.2.2 Wetlands

A total of 27 wetlands were identified along the Massachusetts Southern Route Alternative. Three confirmed vernal pools were identified. These wetlands are listed in Table M-13 (*List of Wetlands Along The Massachusetts Southern Route Alternative*).

Table M -13. List of Wetlands Along The Massachusetts Southern Route Alternative

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Wetland Class ²
Suffield/Agawam	W04HA026	W8-142	PEM/PFO
Suffield	W04HD027	W8-143	PEM/PFO
Suffield	W04HD028	W8-144	PSS/PFO
Suffield	W04HD029	W8-145	PSS/PFO
Suffield	W04HD030	W8-146	PEM
Suffield	W04HD031	W8-147	PFO
Enfield/Suffield	W04HD034	W8-148	PFO
Enfield	W04HD033	W8-150	PEM/PFO
Enfield	W04HA032	W8-149	PFO/PEM
Enfield	W04HD035	W8-151	PEM/PFO/PSS
Enfield	W04HD036	W8-152	PEM/PFO
Enfield	W04HD037	W8-152A	PEM/PFO
Enfield	W04HD039	W8-152B	PEM/PFO
Enfield	W04HD040	W8-152C	PSS/PFO
Enfield	W04HD041	W8-152D	PSS/PFO
Enfield	W04HD043	W8-152E	POW/PFO
Enfield	W04HD044	W8-152F	PFO
Enfield	W04HD045	W8-152G	PSS/PFO
Enfield	W04HD046	W8-152H	PEM/PSS
Enfield	W04HD047	W8-152I	PFO
Enfield	W04HD048	W8-152J	PEM/PFO
Enfield	W04HD049	W8-152K	PEM/PFO
Enfield	W04HD050	W8-152L	PEM
Enfield	W04HD053	W8152M	PEM/PFO
Enfield	W04HD054	W8-152N	PEM/PFO/PSS
Enfield	W04HD055	W8-152O	PFO/PSS
Enfield	W04HD056	W8-153	PEM/PFO/PSS

1. Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GSP Survey of wetlands. The CL&P wetland number was generated for mapping convention;

2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO – Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland

M.5.1.2.3 Groundwater Resources and Public Water Supplies

Table L-3 in Section L summarizes Connecticut's Water Use Goals. The Connecticut Water Company provides water to the municipalities of Enfield and Suffield from one of 90 groundwater sources and 20 reservoirs. The majority of the surface waters crossed by or in the vicinity of the Massachusetts Southern Route Alternative have been given a classification of A and others are currently classified as B. The groundwater areas crossed by and/or in the vicinity of the alternative route have been classified as GB.

The portion of the Massachusetts Southern Route Alternative that traverses the Town of Enfield, approximately 3.7 miles, is within a Connecticut Aquifer Protection District. See Section L.2.2.3 for a description of Connecticut's Aquifer Protection Program. The Town of Enfield is in the process of completing final aquifer protection mapping for the area associated with the Massachusetts Southern Route Alternative. The town has adopted protection regulations that are in accordance with the Connecticut statutes. Regulated activities which require a permit can be found in C.G.S. Section 22a-354i-5, and the best management practices for regulated activities are described in C.G.S. Section 22a-345i-9.

M.5.1.3 Flood Zones

The Massachusetts Southern Route Alternative traverses the 100-year flood boundaries, as designated by FEMA, of the Connecticut River, Four Mile Brook, and Waterworks Brook. These floodplain boundaries are depicted on the aerial alignment maps of the alternative (refer to Volume 9).

M.5.1.4 Biological Resources

M.5.1.4.1 Vegetative Communities

As illustrated on the Volume 9 maps, the existing ROW along which the Massachusetts Southern Route Alternative would be located traverses or is aligned near a variety of vegetative communities, ranging from forested floodplain areas along the Connecticut River, to forested uplands, agricultural areas, shrub-scrub areas, and suburban residential areas. The west side of the Connecticut River has very little forested floodplain and is mostly upland forest with a small strip of wetland immediately west of the river. On the east side of the river, the route traverses Longmeadow, Massachusetts for a brief stretch before entering Enfield, Connecticut. In this area, there is a larger tract of forested floodplain which contains rich habitat supporting several species, including Massachusetts state-listed plants. This habitat ends well before the route crosses back into Connecticut.

M.5.1.4.2 Fisheries

The Massachusetts Southern Route Alternative would span the Connecticut River, adjacent to existing CL&P overhead transmission lines. The Connecticut River watershed encompasses over 11,000 square miles of wild, rural and urban lands in parts of Connecticut, Massachusetts, New Hampshire and Vermont. The river is utilized for recreational fishing over its entire length in Connecticut. Though it is not stocked with any species, fisheries resources include large and smallmouth bass, trout, northern pike, and alewives/black herring.

The Connecticut River also contains shortnose sturgeon, Connecticut's only endangered fish species. Shortnose sturgeon are typically anadromous, migrating from the ocean to fresh water specifically to reproduce. However, of the two populations in the Connecticut River system (formed by the construction of dams), one is considered to be partially landlocked and the other is likely to be amphidromous, moving between fresh and salt water. Shortnose sturgeon reproduce in the spring. They broadcast their eggs in areas with rubble substrate. Once hatched, the young fish drift downstream and may eventually swim to brackish water.

The Massachusetts Southern Route Alternative also spans Four Mile Brook and Waterworks Brook. Neither of these watercourses are designated as stocked with any species by the CT DEP and they are not regulated fishery resources. Both watercourses are warm-water resources and can be expected to contain various species such as largemouth bass, white sucker, red-fin pickerel, creek chub and pumpkin seed.

M.5.1.4.3 Amphibians

Three confirmed vernal pools have been identified by field biologists during the spring 2008 surveys, and they are listed in Table M-14. The three locations are within the existing CL&P ROW. A summary of the survey methodology can be found in Section L.1.3.4 and a detailed account of the survey methodology as well as the results can be found in the *Inventory of Vernal Pools and Amphibian*

Breeding Habitats Along the Connecticut Portion of the Greater Springfield Reliability Project in
Volume 4.

**Table M -14. Vernal Pool Habitat Associated with the Massachusetts Southern Route
Alternative**

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Adjacent Tower Number	Observed Obligate Species ²
Enfield	W04HD035	W8-151	22023 to 22024	wood frog
Enfield	W04HD045	W8-152G	22043	Potential Vernal Pool
Enfield	W04HD55	W8-156A	22058	spotted salamander, wood frog

¹: Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;

²: Vernal Pool Species observed confirming vernal pool/amphibian habitat.

M.5.1.4.4 Rare, Threatened and Endangered Species

In November 2007, the U.S. Fish and Wildlife Service (US FWS) indicated that the project area is not within the vicinity of any federally protected threatened or rare species (See US FWS Consultation Letter and Response in Volume 4). With no federally-listed, threatened or endangered species or critical habitat under the jurisdiction of the US FWS, preparation of a Biological Assessment or further consultation with the US FWS under Section 7 of the Endangered Species Act is not required.

In conjunction with the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route, CL&P submitted a rare species request for the Massachusetts Southern Route Alternative. The CT DEP Natural Diversity Database, Environmental & Geographic Information Center (NDDDB) has indicated that there are four listed species associated with the Connecticut River. These species are the endangered Shortnose sturgeon (*Acipenser brevirostrum*), the endangered Bald Eagle (*Haliaeetus leucocephalus*), the threatened Riverine clubtail dragonfly (*Stylurus amnicola*), and the species of special concern Arrow clubtail dragonfly (*Stylurus spiniceps*). Because CL&P is not proposing any in-river construction

activities, the CT DEP is not overly concerned with issues associated with these species as they relate to the project activities. However, the CT DEP has stressed the importance of proper installation and maintenance of erosion and sediment controls, as well as maintaining an undisturbed riparian buffer zone to the subject waterbodies. These measures will ensure no adverse effects occur to riverine habitats.

M.5.1.5 Existing Land Use

M.5.1.5.1 Overall Land Use Patterns

The Massachusetts Southern Route Alternative would traverse the northeastern portion of the Town of Suffield and northern portions of the Town of Enfield. Land-use plans for both towns were reviewed, and land uses along and adjacent to the transmission line ROW within which the 345-kV line would be aligned were characterized.

As illustrated on the Volume 9 maps, extending southeast from the Connecticut/Massachusetts state border into Suffield, the Southern Route Alternative would follow an existing CL&P transmission ROW, traversing mostly agricultural lands. After crossing Mapleton Avenue, the route would span the Connecticut River. Immediately after crossing the river, the route would re-enter Massachusetts, traversing a small portion of Longmeadow, before diverging south again into the Town of Enfield. Continuing east across Campania Road, the route would be aligned near mainly forest and residential areas before crossing Interstate 91 and Enfield Street. After crossing Enfield Street, the route would continue to the east, traversing a forested area near various residential developments along and in the vicinity of Brainard Road. The route would span Maple Street and continue east near Mayfield Drive before crossing back into Massachusetts.

CL&P has determined that the Massachusetts Southern Route Alternative would be aligned near various residential subdivisions and other dwelling units (condominiums and apartment complexes) that could qualify as statutory facilities. At this time, certain other possible statutory facilities (e.g., schools,

licensed day-cares) have been identified near the Massachusetts Southern Route Alternative. These facilities are illustrated on the Volume 9 maps.

M.5.1.5.2 Parks, Open Space, Recreational and Public Trust Lands

The Massachusetts Southern Route Alternative would be in the vicinity of the St. Martha Church and School, Bright Horizons Family Solutions Daycare, and two home day-cares.

M.5.1.5.3 Residential Areas

Residential land uses in the vicinity of the Southern Route Alternative range from single-family, low-density residential developments to urban neighborhoods. The aerial photographs in Volumes 9 and 11 provide further information about residential land use in the vicinity of the proposed alternative.

M.5.1.5.4 Federal, State, and Local Use Plans/Future Land Use Development

The Town of Suffield's most recent Plan of Conservation and Development was published in 1999. Suffield's Plan strives to identify and preserve significant open space land. Suffield's Regional Plan of Development, which dates to 1978, states that "the goal and policy statements...were directed at encouraging a regional development pattern that provides the necessary balance between the man-made and natural environment, minimizing adverse effects on environmentally sensitive areas and scarce natural resources such as flood plains, wetlands, ridge lines, agriculture, forest land, and park lands." The Town of Suffield still follows these goals. Relative to the construction of new transmission lines, the 1999 plan stated that CL&P indicated that electrical supply lines for Suffield were adequate and that no plans for expansion were in place at that time. Therefore, the plan did not provide any stipulations or goals for transmission lines. Due to population and industrial growth in the region since 1999, the need to provide additional transmission services to the area has been established by CL&P.

The Town of Enfield Plan of Conservation and Development was last updated in 1998 and includes community goals of revitalizing older neighborhoods, protecting open space and farmland, ongoing

capital improvement and maintenance to supply sufficient service to meet the needs of Enfield. In addition, the land use plan seeks to allow development at suburban densities, but include a mix of residential, commercial, and industrial land uses.

A description of the Suffield land use plan as well as state land use plans can be found in Section L.1.5.

M.5.1.6 Transportation Systems and Utility Crossings

As listed in Table M-15, the Massachusetts Southern Route Alternative would traverse various state and local roads, as well as Interstate 91.

Table M -15. Road Crossings – Massachusetts Southern Route Alternative (Connecticut Only)

Road Name	Town	Road Type
Mapleton Avenue	Suffield	Highway
Interstate 91	Enfield	Federal
Enfield Street	Enfield	Highway
Bright Meadow Boulevard	Enfield	Local Road
Brainard Road	Enfield	Local Road
George Washington Road	Enfield	Local Road
Hampton Chase Road	Enfield	Local Road
Brainard Road	Enfield	Local Road
Maple Street/Route 192	Enfield	State
Mayfield Drive	Enfield	Local Road
Dartmoor	Enfield	Local Road
Dartmoor	Enfield	Local Road

M.5.1.7 Cultural (Archaeological and Historic) Resources

The recorded cultural resources located in the vicinity of the Connecticut Portion of the Massachusetts Southern Route Alternative include:

- Two Native American archaeological sites reported within approximately 1 mile of the Southern Route Alternative overhead line route, one a lone surface find and the other a cemetery which appears to have been located in Longmeadow, Massachusetts.
- State site files reported two EuroAmerican archaeological sites within approximately 1 mile of this route, the closest of which is 4,500 feet away. Neither has been determined eligible for the NRHP. Historical maps do not suggest other EuroAmerican sites within the corridor.

No significant historic resources are reported within approximately 0.25 mile of the Southern Route Alternative.

M.5.1.8 Air Quality

Air quality for the Massachusetts Southern Route Alternative is generally the same as that found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and is described in Section L.

M.5.1.9 Noise

Existing noise levels in the vicinity of the Massachusetts Southern Route Alternative are typical of the uses traversed – that is, a mix of more densely developed suburban residential areas, intermixed with rural land uses. See Section L for a discussion of noise levels as well as state regulations concerning noise.

M.5.2 Massachusetts State Route 220/Enfield Underground Line Route Variation

As described in Section H and illustrated on the Volume 9 maps, the Connecticut portion of the Massachusetts Southern Route Alternative, if aligned overhead along CL&P's existing ROW, would traverse residential neighborhoods in Enfield. Pursuant to the Siting Council procedures, CL&P has identified an underground cable variation to the overhead transmission configuration near these residential developments.

This underground variation would extend approximately 4.3 miles across the northern portion of the Town of Enfield, and would replace a 3.7-mile segment of the overhead Massachusetts Southern Route Alternative. This route would be located primarily within or adjacent to state and local public road ROW, except for a 0.4-mile segment that would traverse along the overhead transmission line ROW. A 345-kV line transition station is required whenever an underground cable segment of the line connects to an overhead section of the line. Such transition stations typically require an area approximately two to four fenced acres which CL&P may need to acquire.

The environmental features in the vicinity of this underground variation are generally the same as those summarized for the overhead route, except as further described below.

M.5.2.1 Topography, Geology, and Soils

The topography, soils, and geologic conditions along the Massachusetts State Route 220/Enfield Underground Line Route Variation are generally the same as those described for the Southern Route Alternative. The major difference between this variation and the overhead Massachusetts Southern Route Alternative is its placement underground in established public roadways. For that reason, depth to bedrock and depth to groundwater are important considerations. The details of both for each soil type are shown in Table M-11 in Section M.5.1.1. The depth to bedrock in the vicinity of the variation ranges from 20 inches below the surface to greater than 72 inches; the latter is applicable to the majority of soil types. The depth to groundwater ranges from 1 foot to over 6 feet, though the majority of soil types have a depth to groundwater of over 6 feet.

M.5.2.2 Water Resources

Although the underground variation would likely be located primarily within or adjacent to road ROW, it is possible that deviations from the paved ROW may be required. As a result, streams and wetlands were delineated and mapped adjacent to the road ROW. As illustrated in Table M-16 and Table M-17, a total

of three waterbodies and seven wetlands respectively were delineated along the Massachusetts State Route 220/Enfield Underground Line Route Variation.

M.5.2.2.1 Drainage Basins and Streams

The Massachusetts State Route 220/Enfield Underground Line Route Variation is located within the Lower Connecticut River drainage basin. For part of its length, this underground variation traverses the same ROW as the Southern Route Alternative. Where the underground variation traverses public roadways, the route is more developed and the streams are generally small and channelized. This underground variation would cross three perennial watercourses, the largest of which is Waterworks Brook. As illustrated in Volumes 9 and 11, *Aerial Photographs - 400 Scale*, and *Aerial Photographs - 100 Scale*, all of the watercourse crossings along the underground portion of the proposed route are adjacent to or near existing road crossings.

Table M -16. Streams Along the Massachusetts State Route 220/Enfield Underground Line Route Variation

Town	Series Number¹ and Name (if Applicable)	CL&P Stream Number	Water Quality / Fisheries Classification where applicable²	Type (P or I)³	Comments
Enfield	S01HF016UG Waterworks Brook	S8-59B	A	P	Associated with W01HF043UG
Enfield	S01HF017UG Waterworks Brook	S8-59C	A	P	Associated with W01HF046UG
Enfield	S04HD010	S8-59	A	P	Associated with W01HF044UG

1. Series Number and CL&P Number represent the same resource. Series Number refers to waterbody numbers designated during GPS Survey and in the ENSR reports (Volume 2) and illustrated on the aerial photographs in Volume 9. The CL&P Number refers to numbers designated for mapping conventions.

2. Data obtained from hard copy CT DEP map entitled Water Quality Classification, Connecticut River and Southcentral Coastal Basins, Adopted February 1993.

3. P=Perennial/I=intermittent (stream designations).

M.5.2.2.2 Wetlands

A total of 4 wetlands were identified. No vernal pools were found during field investigations. These wetlands are listed in Table M-17 (*List of Wetlands Along The Massachusetts State Route 220/Enfield Underground Line Route Variation*).

Table M -17. List of Wetlands Along The Massachusetts State Route 220/Enfield Underground Line Route Variation

Municipality	Wetland Series Number ¹	CL&P Wetland Number	Wetland Class ²
Enfield	W04HD035	W8-151	PEM/PFO/PSS
Enfield	W01HF043 UG	W8-151A	PEM
Enfield	W01HF046 UG	W8-152B	PFO
Enfield	W04HD050	W8-152L	PEM
Enfield	W04HD053	W8152M	PEM/PFO
Enfield	W04HD054	W8-152N	PEM/PFO/PSS
Enfield	W04HD055	W8-152O	PFO/PSS

1 Wetland series number and CL&P wetland number represent the same resource. The Wetland series number was generated by CL&P's environmental consultant (ENSR) during GPS Survey of wetlands. The CL&P wetland number was generated for mapping convention;

2. Wetlands classification according to Cowardin et al 1979; PEM = Palustrine Emergent Wetland; PFO – Palustrine Forested Wetland; PSS = Palustrine Scrub-Shrub Wetland

M.5.2.2.3 Groundwater Resources and Public Water Supplies

The groundwater resources and public water supplies are the same as those described for the Southern Route Alternative and are described in Section M.5.1.2.3. The depth to groundwater ranges from one foot to over six feet, though the majority of soil types have a depth to groundwater of over six feet.

The entire Massachusetts State Route 220/Enfield Underground Line Route Variation, approximately 4.3 miles, is within a Connecticut Aquifer Protection District. This is the same Aquifer Protection District as was described for the Southern Route Alternative.

M.5.2.2.4 Flood Zones

The Southern Route Alternative Underground Line Variation traverses the 100-year floodplain of Waterworks Brook. These FEMA floodplain boundaries are depicted on the maps in Volume 11, *Aerial Photographs - 100 Scale*.

M.5.2.3 Biological Resources

The following sections discuss the vegetative and wildlife communities found along the underground variation. Because no vernal pools were identified along the Massachusetts State Route 220/Enfield Underground Line Route Variation, there are no amphibian breeding habitats to consider. In addition, CL&P consulted with the CT DEP concerning habitat for rare, threatened, and endangered species that may be impacted during construction. In that consultation, detailed in Section L, it was decided that if construction was to occur within public roadway ROW, then no restrictions regarding rare, threatened, or endangered species would apply.

M.5.2.3.1 Vegetative Communities

The Massachusetts State Route 220/Enfield Underground Line Route Variation would be located predominately within or adjacent to existing public road ROW, which traverse developed areas. In general, the vegetation in the vicinity of the underground variation to the Massachusetts Southern Route Alternative is characteristic of developed urban and suburban areas (e.g., managed lawn and ornamental trees and shrubs).

M.5.2.3.2 Wildlife Communities

The wildlife communities in the vicinity of the Massachusetts State Route 220/Enfield Underground Line Route Variation can be expected to be those common to urban and suburban habitats.

M.5.2.4 Existing Land Use

M.5.2.4.1 Overall Land Use Patterns

The underground variation would be aligned primarily along residential streets within Enfield. In particular, the route would diverge from the overhead ROW to traverse along a residential street (Campania Road). The route would extend along Campania Road, as well as other residential streets, including Manning Road, Enfield Street, and Brainard Road. The underground variation would continue in an easterly direction through settled areas along Brainard Road until the overhead route crosses

Brainard Road. The underground variation would parallel the overhead route until connecting with Mayfield Drive just north of Maple Street. The route then would extend along Mayfield Drive before connecting back into the overhead route north of the Connecticut/Massachusetts border.

Other land uses along the underground variation include town-owned open space, the Prudence Crandall School, St. Martha Church and School, and Brainard Park. The park, for which Enfield has adopted a master plan, is town-owned and includes baseball fields, picnic areas, and walking trails. Further, the park is adjacent to additional municipal open space land.

M.5.2.4.2 Residential Areas

Residential land uses in the vicinity of the Massachusetts State Route 220/Enfield Underground Line Route Variation range from single-family, low-density residential developments to urban neighborhoods. The aerial photographs in Volumes 9 and 11 provide further information about residential areas in the vicinity of the Massachusetts State Route 220/Enfield Underground Line Route Variation.

M.5.2.4.3 Parks, Open Space, Recreation, and Public Trust Lands

The Southern Route Alternative Underground Line Variation travels within the roadway located in front of Town of Enfield-designated open space and Brainard Park.

M.5.2.5 Transportation Systems and Utility Crossings

The Massachusetts State Route 220/Enfield Underground Line Route Variation would be aligned along or would intersect several state and local roads (refer to the Volume 9 and Table M-18).

**Table M -18. Road Crossings – Massachusetts State Route 220/Enfield Underground
Line Route Variation**

Road Name¹	Town	Road Type
Kalish Avenue	Enfield	Local Road
Bernardino Avenue	Enfield	Local Road
Gammello Avenue	Enfield	Local Road
Campania Road	Enfield	Local Road
Stephen Drive	Enfield	Local Road
Campania Road	Enfield	Local Road
Catalina Drive	Enfield	Local Road
Manning Road	Enfield	Local Road
University Place	Enfield	Local Road
Dartmouth Street	Enfield	Local Road
Enfield Street/Route 5	Enfield	State
Fairlane Road	Enfield	Local Road
Lancer Drive	Enfield	Local Road
Interstate 91	Enfield	Federal
Brainard Road	Enfield	Local Road
Winding Lane	Enfield	Local Road
Glen Oak Drive	Enfield	Local Road
Varno Lane	Enfield	Local Road
George Washington Road	Enfield	Local Road
Brainard Road	Enfield	Local Road
Debbie Lane	Enfield	Local Road
Forest Drive	Enfield	Local Road
Forest Drive	Enfield	Local Road
Maple Street/Route 192	Enfield	State
Mayfield Drive	Enfield	Local Road
Mayfield Drive	Enfield	Local Road
Mayfield Drive	Enfield	Local Road
Dartmoor Road	Enfield	Local Road

1: Includes roadways that intersect the underground variation

M.5.2.6 Cultural (Archaeological and Historic) Resources

The recorded cultural resources located in the vicinity of the underground variation include the following:

- Two Native American archaeological sites are reported within approximately 1 mile of the Southern Route Alternative underground variation, one a lone surface find and the other a cemetery which appears to have been located in Longmeadow, Massachusetts.

- State site files reported two EuroAmerican archaeological sites within approximately 1 mile of this route, the closest of which is 4,000 feet away. Neither has been determined eligible for the NRHP, and one has been determined not eligible. Historical maps do not suggest other EuroAmerican sites within the corridor.

No significant historic resources are reported within approximately 500 feet of the Massachusetts State Route 220/Enfield Underground Line Route Variation.

M.5.2.7 Air Quality

Air quality for the Massachusetts State Route 220/Enfield Underground Line Route Variation is generally the same as that found along the Connecticut Portion of the North Bloomfield to Agawam 345-kV Line Route and is described in Section L.

M.5.2.8 Noise

Existing noise levels in the vicinity of the Massachusetts State Route 220/Enfield Underground Line Route Variation are typical of those found in urban and suburban residential areas. See Section L for a discussion of noise levels as well as state regulations concerning noise.