

Template of Stormwater Pollution Prevention Plan (SWPPP)

**for the Construction Activities
Associated with the**

**Massachusetts Portion of the Greater Springfield
Reliability Project**

in

**Agawam, Chicopee, Ludlow, Springfield, and West Springfield,
Massachusetts**

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Western Massachusetts Electric Company

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Section 1.0
INTRODUCTION

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) requires a National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from construction sites that disturb more than one acre of land or from smaller sites that are part of a larger, common plan of development. For the purposes of the NPDES program, construction activities are defined as clearing, excavating, grading, or other land disturbing activities.

In the Commonwealth of Massachusetts (Commonwealth), the EPA maintains authority over the NPDES program. Construction projects issued a certificate of permit coverage under EPA General Permit No. MAR100000 (Permit) are granted permission to discharge stormwater associated with construction activities into state waters. The Permit is issued pursuant to the Clean Water Act as amended (33 U.S.C. 1251 et. seq.). A copy of this Permit is located in Appendix F.

Coverage under this Permit is obtained by submitting a Notice of Intent (NOI) at least seven days prior to initiation of construction activities (a copy of the NOI is located in Appendix E). A Stormwater Pollution Prevention Plan (SWPPP) must be developed prior to submittal of the NOI. The SWPPP described herein establishes a plan to manage the quality of stormwater runoff from construction activities associated with the Greater Springfield Reliability Project (Project) for the Western Massachusetts Electric Company. This SWPPP has been developed in accordance with requirements and guidelines specified in Part 5 of the Permit. Stormwater control measures addressed in this SWPPP must also be consistent with requirements and procedures of state and local control measure and stormwater management plans, including Volume 2 and 3 of the Massachusetts Stormwater Handbook, which is published by the Massachusetts Department of Environmental Protection (MassDEP) under the authority of the Wetlands Protection Act and the Massachusetts Clean Waters Act.

The SWPPP must be revised whenever stormwater control measures are modified due to a change in design, construction method, operation, maintenance procedure, etc. Best Management Practices (BMPs) should be moved, added, or redesigned as necessary to control erosion and sedimentation to the maximum extent practicable.

The SWPPP was written with the assistance of and information from *Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites* (EPA, May 2007). This document is a guide

to be used by the on-site construction personnel to reduce soil erosion and to prevent sediment and potential on-site pollutants from leaving the site and entering wetlands or waters of the Commonwealth.

1.1 PROJECT DESCRIPTION AND LOCATION

The GSRP will establish a new 345-kV/115-kV “hub” west of the Connecticut River at WMECO’s existing Agawam Substation, where several 115-kV lines from the east, west, north and south presently connect, including lines which provide a supply point to the Springfield 115-kV system. The new 345-kV lines, connecting three substations (Ludlow, Agawam and North Bloomfield), will complete a loop between WMECO’s Ludlow Substation and CL&P’s North Bloomfield Substation, for the purpose of reinforcing the Springfield area transmission system. The new 345-kV lines proposed by WMECO as the Preferred Northern Route, will be constructed for 23 miles between WMECO’s Ludlow Substation in Ludlow and the Connecticut/Massachusetts border in Agawam, Massachusetts. Interconnected facilities in Connecticut will be constructed for 12 miles from the border with Massachusetts to the North Bloomfield Substation in Bloomfield, Connecticut. Substation and switching station modifications are also required in connection with the transmission line construction. Modifications will affect the Ludlow, Agawam, Chicopee, Orchard, Breckwood and Piper Substations, and the Shawinigan and South Agawam Switching Stations. In addition, in order to accommodate the new and updated transmission lines, WMECO will re-build its existing Fairmont Switching Station and will construct a new 115-kV switching station, to be called the Cadwell Switching Station, at WMECO’s East Springfield Service Center. Upgrades to existing 115-kV transmission lines, which will occur primarily along the same route as the proposed new Massachusetts 345-kV lines, will also be made to handle anticipated flows through the system. In addition, approximately four miles of 115-kV transmission line upgrades will occur along existing “spurs” or ROWs which intersect the Preferred Northern Route in three locations: Orchard Junction, Exit 6 Junction and East Springfield Junction. All of the 115-kV upgrades are being planned, and will be constructed with the new 345-kV lines, as integrated parts of a single transmission project.

Figure 1-1 is a map which shows the proposed improvements, including the switching stations and substations, and their location in the Greater Springfield area.

The Project will consist of the following components:

- 345-kV Facilities
 - Modify the 345-kV switchyard at the Ludlow Substation to connect the new Ludlow – Agawam 345-kV circuit, reconnect the existing 345-kV Ludlow – Carpenter Hill 301 circuit, reconnect the existing 345-kV Ludlow – Barbour Hill 3419 circuit, replace the

- existing two 345/115-kV, three-phase 600-MVA autotransformers with two new standard 345/115-kV, 600-MVA autotransformers (each employing three single-phase 200-MVA units), and install two new 345-kV 120-MVAR capacitor banks.
- Build a new 345-kV switchyard at the existing Agawam Substation to connect the new 345-kV Ludlow – Agawam circuit, the new 345-kV Agawam to North Bloomfield (Connecticut) circuit and two new 345/115-kV, 600-MVA autotransformers.
 - Build a new 345-kV circuit from Ludlow Substation to Agawam Substation, for approximately 16.7 miles, using two 1590 kcmil ACSR conductors per phase.
 - Build a new 345-kV circuit from Agawam Substation to the North Bloomfield (Connecticut) Substation, for approximately 18.0 miles (approximately 6.0 miles of which is in Massachusetts), using two 1590 kcmil ACSR conductors per phase.
 - 115-kV Facilities
 - Re-build the existing 115-kV Fairmont Switching Station at a nearby site to connect the existing circuits interconnecting at the station and the two additional 115-kV circuit segments from East Springfield Junction.
 - Build a new 115-kV switching station in the vicinity of the East Springfield Substation (Cadwell). The new Cadwell Switching Station will interconnect the 115-kV 1481, 1426, 1603, 5001 and 5002 circuits.
 - Re-build the 115-kV Ludlow – Shawinigan 1845 circuit, for approximately 6.2 miles, using two 1272-kcmil ACSR conductors per phase. This 115-kV circuit will share double-circuit structures with the new 345-kV Ludlow – Agawam circuit.
 - Re-build the 115-kV Ludlow – Cadwell (formally East Springfield) 1481 circuit, for approximately 7.3 miles, using two 795-kcmil ACSR conductors per phase. Where parallel, the 1481 and 1552 circuits will share double-circuit monopole structures, as will the 1481 and 1426 circuits.
 - Re-build the 115-kV Ludlow – Orchard 1552 circuit, for approximately 5.5 miles, using a single 1590-kcmil ACSR conductor per phase. Where parallel, the 1481 and 1552 circuits will share double-circuit monopole structures.
 - Re-build the 115-kV Orchard – Cadwell (formally East Springfield) 1426 circuit, for approximately 3.2 miles, using a single 1272-kcmil ACSR conductor per phase. Where parallel, the 1481 and 1426 circuits will share double-circuit monopole structures.
 - Re-build the 115-kV Shawinigan – Fairmont portions of the former 1254 circuit (to be designated circuit 1604), for approximately 5.0 miles, using two 1590-kcmil ACSR conductors per phase on single-circuit monopole structures.

- Re-build the 115-kV Cadwell (formally East Springfield) – Fairmont portions of the former 1723 circuit (to be designated circuit 1603), for approximately 5.3 miles, using two 1272-kcmil ACSR conductors per phase. The re-built circuit will share double-circuit structures with the new 345-kV Ludlow – Agawam circuit east of East Springfield Junction and with the 115-kV Fairmont to Chicopee 1602 circuit north of East Springfield Junction.
- Re-build the 115-kV Fairmont – Chicopee portions of the former 1254 circuit (to be designated circuit 1602), for approximately 2.4 miles, using a single 1272-kcmil ACSR conductor per phase. The re-built circuit will share double-circuit structures with the new 345-kV Ludlow – Agawam circuit west of East Springfield Junction and with the 115-kV Fairmont – Cadwell 1603 circuit north of East Springfield Junction
- Re-build the 115-kV Fairmont – Piper portions of the former 1723 circuit (to be designated circuit 1601), for approximately 5.9 miles, using a single 1590-kcmil ACSR conductor per phase on single-circuit monopole structures. An outcome of the above-described re-building of 115-kV circuits to Fairmont will be three monopole lines supporting sections of four two-terminal 115-kV circuits (1601, 1602, 1603 and 1604) between East Springfield Junction and Fairmont Switching Station. The 1602 and 1603 lines will share a common double-circuit monopole structure in this section.
- Re-build the 115-kV Piper – Agawam 1230 circuit, for approximately 3.6 miles, using a single 1590-kcmil ACSR conductor per phase. The circuit will be constructed on single-circuit monopole structures.
- Re-build the 115-kV Chicopee – Agawam 1314 circuit, for approximately 7.1 miles, using a single 1272-kcmil ACSR conductor per phase. The circuit will share double-circuit monopole structures with the new 345-kV Ludlow – Agawam circuit.
- Re-build the 115-kV Agawam – Silver – South Agawam 1782 circuit, for approximately 3.0 miles, using a single 1272-kcmil ACSR conductor per phase on single-circuit monopole structures.
- Re-build the 115-kV Agawam – Silver – South Agawam 1781 circuit, for approximately 3.0 miles, using a single 1272-kcmil ACSR conductor per phase. The circuit will share double-circuit monopole structures with the new 345-kV Agawam – North Bloomfield circuit.
- Re-configure the existing 115-kV transmission system between the South Agawam Switching Station and the Southwick Substation in western Massachusetts, forming a

- single South Agawam to Southwick 115-kV circuit 1768 with no connections to North Bloomfield Substation.
- Re-build the Agawam portion of the new 115-kV Southwick – South Agawam 1768 circuit, for approximately 2.5 miles, using a single 1590-kcmil ACSR conductor per phase. This portion of the circuit will share double-circuit monopole structures with the new 345-kV Agawam to North Bloomfield circuit.
 - Utilize the existing 115-kV line sections, for approximately 0.6 miles, between the new Cadwell Switching Station and the East Springfield Substation for two new Cadwell to East Springfield circuits. The new 115-kV 5001 circuit will utilize two 336-kcmil ACSR conductors per phase, and the new 115-kV 5002 circuit will utilize a single 1113-kcmil ACSR conductor per phase.
 - Leave normally open a 115-kV bus-tie circuit breaker at the Breckwood Substation to split the substation and install a circuit switcher to normally bypass the existing series reactor on the 1322 circuit. A portion of the distribution load served by Breckwood Substation will be fed radially by the 115-kV underground cable 1322 circuit from the East Springfield Substation. The other portion of the distribution load will be fed radially by the 115-kV underground 1433 circuit from the West Springfield Substation. The open bus-tie breaker will automatically close upon and during the outage of either 115-kV circuit.
 - Replace limiting circuit breakers and terminal equipment at the Agawam, Ludlow, and at Shawinigan Switching Station.

1.2 PROJECT OWNER AND OPERATOR

The Project owner and operator, Western Massachusetts Electric Company, will be the responsible entity for completing the Project. Their address and telephone number are:

Western Massachusetts Electric Company
174 Brush Hill Avenue
West Springfield, MA 01090-2010
413-785-5871

1.3 CERTIFICATIONS

By signing the Contractors' Certification Form (located near the front of this document, copy as needed), each contractor and subcontractor signifies that they have read, understand, and will adhere to the SWPPP before conducting any construction work that will result in a land disturbance. The signed certification

confirms that the permittee has notified the contractor or subcontractor that a SWPPP has been prepared for the Project and that they will perform the necessary actions that have been identified to comply with the SWPPP and the Permit. It may be necessary for the contractor to implement additional erosion control and pollution prevention measures that may not be indicated in this SWPPP to maintain compliance with the Permit.

1.4 STANDARD PERMIT CONDITIONS

This section discusses federal penalties for non-compliance with the Permit, as well as standard Permit conditions. The staff responsible for implementation of the SWPPP will be familiar with the requirements of the SWPPP and the Permit.

1.4.1 Duty to Comply with Permit Conditions

Issues regarding non-compliance with the Permit are overseen by the MassDEP. The permittee has a duty to comply with all Permit conditions as well as the Massachusetts Surface water Quality Standards (314 CMR 4.00) and the Massachusetts Clean Waters Act. Failure to comply with any Permit condition is a violation of the Clean Water Act and is grounds for enforcement action including fines, imprisonment, denial of Permit renewal application, revocation and reissuance, modification, or termination of coverage under this Permit.

1.4.2 Final Stabilization and Termination of Coverage

Final stabilization has been achieved when all soil disturbing activities at the site have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas. For those areas not covered by permanent structures, an equivalent permanent stabilization measure (such as the use of rip-rap, gabions, or geotextiles) will be employed. When all construction activities authorized by this Permit are complete and the site has achieved final stabilization, Permit coverage must be terminated. Permit coverage is terminated by submitting a Notice of Termination (NOT) to the EPA with 30 days after cessation of construction activities and final stabilization. A copy of the NOT form is included in Appendix H.

1.4.3 Retention of Records

The SWPPP will be maintained at the appropriate Project construction office from the date of Project initiation to the date of Project completion. Records will be maintained for dates when major grading occurs, construction activities temporarily or permanently cease, stabilization measures are initiated, and final stabilization is achieved (Record Log, Appendix C). The owner will retain the SWPPP for a

minimum period of three years from the Permit expiration or termination date. Records that must be retained include:

- The SWPPP and any amendments to the SWPPP
- A copy of the Permit, the signed and certified NOI submitted to EPA, and a copy of the letter from the EPA's Stormwater Notice Processing Center indicating that a complete NOI has been received
- All reports and actions required by this Permit, including a copy of the Construction Site Notice (Appendix G)
- All data used to complete the NOI
- All site inspection records
- All contractor's certifications
- Any clearance letters, from the U.S. Fish and Wildlife Service (FWS), Massachusetts Division of Fisheries and Wildlife (MDFW), Massachusetts Historical Commission (MHC), the U.S. Army Corps of Engineers (Corps), or any other agency providing clearance
- A copy of the NOT submitted to the EPA

Section 2.0
CONSTRUCTION ACTIVITIES AND SITE DESCRIPTION

2.0 CONSTRUCTION ACTIVITIES AND SITE DESCRIPTION

2.1 DESCRIPTION OF CONSTRUCTION ACTIVITIES

2.2 SEQUENCE OF MAJOR CONSTRUCTION ACTIVITIES

Prior to the commencement of construction, WMECO will complete pre-construction planning activities. In particular, WMECO will continue to consult with the municipalities, state agencies and federal agencies, and will conduct site-specific studies and surveys in order to design construction procedures for contractors that will minimize or avoid adverse effects to the environment and to the public. WMECO will construct the Project in several stages, some of which will overlap in time. During actual construction, certain work activities and sequences may vary, based on factors such as site-specific conditions, final Project designs, and the requirements of regulatory approvals.

Construction will typically consist of activities such as:

- Surveys to stake monumented line of corridor, ROW boundaries, and future structure locations
- Identification and marking wetland and watercourse boundaries
- Identification and marking areas of cultural resources areas of concern where avoidance or special procedures are required
- Identification and marking sensitive environmental resource areas to be avoided
- Establishment of field construction areas and preparation of staging and lay-down areas
- Preparation of ROWs (including the installation of erosion and sedimentation controls, removal of vegetation as needed, access road improvement/installation)
- Preparation of work areas (pads) at structure sites
- Excavation and installation of foundations and erection of new structures
- Installation of conductors and wires
- Removal of existing transmission line structures and associated conductors and wires
- Clean-up and restoration, including re-vegetation of disturbed sites

The following construction activities, materials, and equipment are generally expected to be involved in the construction of the overhead transmission lines on or adjacent to the existing or expanded transmission ROWs:

Construction Phase	Typical Equipment/Materials Required
Establish erosion and sediment controls	<ul style="list-style-type: none"> • Pickup and other small trucks
Clear for new access roads or improve existing roads	<ul style="list-style-type: none"> • flatbed truck • brush hog • bulldozer • bucket trucks for canopy trimming • wood chipper • Side booms, forklifts and cranes to handle materials
Construction of new access road or improve existing roads to provide a travel way of at least 15 to 20 feet in width	<ul style="list-style-type: none"> • bulldozer or front loader • Pickup or stake body trucks for culverts, etc. • dump trucks for crushed stone or gravel • pickups or stake-body trucks for culverts • mat installer for wetland mats • Roads may be wood, gravel, or matted; using culverts or crushed stone for wet areas; roads may be temporary or permanent. Roads must have sufficient width and capacity for heavy construction equipment, both over-the-road and off-road vehicles, including oversize tractor trailers. The need for access for flatbed trailers and concrete truck often determines the scope of access road improvements. Road grades must be negotiable for over-the-road trucks; 10 percent maximum, and less if wet weather or surface conditions provide traction problems. Vehicles with tracks or tires are used.
Preparation of staging and lay down areas if they are to be off the ROW	<ul style="list-style-type: none"> • Same equipment for access road construction will be used. • Establish field office trailers, sanitary facilities, and parking areas, as well locations for material and equipment storage.
Preparation of work area at sites of existing and new structures	<ul style="list-style-type: none"> • Same equipment • Reel trailers to haul out old conductors • Trucks to haul out old hardware • Flatbed trucks with a crane to remove structures • Trucks with welding equipment to cut steel supports or components • Dump trucks to haul smaller components
Restoration	<ul style="list-style-type: none"> • Pickup and other small trucks

- Typically, work at structure sites will be contained within the existing ROW. The same equipment is needed as for access road preparation and staging areas.
- Construction of new line structures – same equipment and material with addition of caissons for foundations, flatbed trucks for structure components, auger, excavator, cranes, other trucks for reinforcing rods, concrete trucks for structures requiring concrete pads or foundations, bucket trucks and hardware, conductor reels, and conductor pulling rigs. Dump trucks are needed for the foundation work if excess excavated material has to be removed from the

ROW. In wet conditions or if groundwater is encountered, the water is pumped to a temporary settling basin with erosion and sedimentation controls including geotextile fabric, silt fence, hay bales and crushed stone. As with all other activities, this would require EFSB approval and would have to comply with any applicable regulation.

- Removal of existing line structures – bucket trucks for dismantling existing lines, with reel trailers to capture and store old conductors, trucks to remove old hardware, flatbed truck with crane to remove structures, trucks with welding equipment to cut steel supports or components, stake or dump trucks to remove smaller components.
- Restoration – all debris is to be removed from the ROW for disposal; but brush may be piled, scattered, or chipped. Disturbed ground is back bladed to its preconstruction contours unless directed otherwise. If the work site is in an agricultural field, the soil can be decompacted by disking. Erosion controls are left in place until vegetation is established. Steep areas are stabilized with jute netting or pre-made erosion control fabric containing seed, mulch, and fertilizer. Access roads where culverts or crushed stone fords were installed will be left in place or removed as directed by the regulatory authorities in accordance with permit/certificate conditions.

2.3 SOILS

Table 2-1: Attributes of Soils Crossed by the Preferred “Northern” Route115-kV and 345-kV Facilities: CT/MA State Border to Ludlow

Map Unit Symbol / Map Unit Name1	Parent Material	Hydric (Yes or No)	Depth to Bedrock (inches)	Depth to water Table (feet)
32A Wareham loamy sand	Loose sandy glaciofluvial deposits	Yes	>60	0-1.5
254A/254B/254C/254D Merrimac fine sandy loam	Friable loamy eolian deposits over loose sandy and gravelly glaciofluvial deposits derived from granite and gneiss	No	>60	6
97B Suncook loamy fine sand	Sandy alluvium	No	>60	3-6
737 Terrace escarpments	Loose sandy glaciofluvial deposits derived from granite and gneiss	No	N/A	N/A
739C Urban land-Hinckley-Windsor association	Loose sandy and gravelly glaciofluvial deposits	No	N/A	N/A

Map Unit Symbol / Map Unit Name1	Parent Material	Hydric (Yes or No)	Depth to Bedrock (inches)	Depth to water Table (feet)
740D Urban land-Wethersfield-Paxton association	Friable coarse-loamy eolian deposits over dense coarse-loamy basal till derived from sandstone and shale.	No	20-36	1.5-2.5
52A Freetown muck	Highly decomposed herbaceous organic material	Yes	>60	0-1
256A Deerfield loamy fine sand	Loose sandy glaciofluvial deposits	No	>60	1.5-3
275A/275B Agawam fine sandy loam	Friable coarse-loamy eolian deposits over loose sandy glaciofluvial deposits derived from granite and gneiss	No	>60	6
260B Sudbury fine sandy loam	Friable loamy eolian deposits over loose sandy glaciofluvial deposits	No	>60	1.5-3
310B Woodbridge fine sandy loam	Friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from granite and gneiss	No	18-36	1.5-2.5
311B/311C/312B Woodbridge fine sandy loam	Friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from granite and gneiss	No	>60	1.5-2.5
327D Meckesville loam	Friable fine-loamy eolian deposits over dense silty lodgment till derived from sandstone and shale	No	18-30	2.5-3.0
417C Narragansett very fine sandy loam	Friable silty eolian deposits and/or friable loamy eolian deposits over loose sandy glaciofluvial deposits derived from granite and gneiss and/or friable sandy basal till derived from granite and gneiss	No	>60	>6
600 Pits, gravel	Loose sandy and gravelly glaciofluvial deposits derived from granite and gneiss	No	N/A	N/A
253C Hinckley loamy sand	Loose sandy and gravelly glaciofluvial deposits	No	>60	>6
255A/255B/255C/255D/255E Windsor loamy sand	Loose sandy glaciofluvial deposits	No	>60	>6
731A Enosburg loamy sand	Friable sandy glaciofluvial deposits over soft loamy glaciolacustrine deposits	Yes	>60	0-1

Map Unit Symbol / Map Unit Name1	Parent Material	Hydric (Yes or No)	Depth to Bedrock (inches)	Depth to water Table (feet)
718A Saco variant silt loam	Coarse-silty alluvium	Yes	>60	0-0.5
258B Amostown fine sandy loam	Friable sandy glaciofluvial deposits over hard silty glaciolacustrine deposits	No	>60	1.5-3.0
230B/230C Unadilla very fine sandy loam	Hard coarse-silty glaciolacustrine deposits	No	>60	--
225B Belgrade silt loam	Friable coarse-silty eolian deposits over soft coarse-silty glaciolacustrine deposits	No	>60	1.5-3.5
341B/341C/341D Broadbrook silt loam	Friable loamy eolian deposits and/or friable silty eolian deposits over dense loamy lodgment till derived from gneiss	No	>60	1.5-2.5
51A Swansea muck	Highly-decomposed herbaceous organic material over loose sandy and gravelly glaciofluvial deposits	Yes	>60	0-1
250C Pollux fine sandy loam	Friable coarse-loamy glaciofluvial deposits over hard silty glaciolacustrine deposits derived from granite and gneiss	No	>60	>6
259A/259C Carver loamy coarse sand	Loose sandy glaciofluvial deposits	No	>60	>6
95A Podunk fine sandy loam	Sandy alluvium	No	>60	1.5-3.0
602 Urban Land	Not Given	No	N/A	N/A
30A Raynham silt loam	Soft coarse-silty glaciolacustrine deposits	Yes	>60	0-2
1 Water	N/A	N/A	N/A	N/A
98A Winsooski silt loam	Coarse-silty alluvium	No	>60	1.5-3.0
6A Scarbaro fine sandy loam	Loose sandy glaciofluvial deposits	Yes	>60	
305B/305C	Friable coarse-loamy eolian deposits over dense coarse-loamy lodgment	No	>60	1.5-2.5

Map Unit Symbol / Map Unit Name ¹	Parent Material	Hydric (Yes or No)	Depth to Bedrock (inches)	Depth to water Table (feet)
Paxton fine sandy loam	till derived from granite and gneiss			
736A Scantic Variant	Soft silty clayey glaciolacustrine deposits	Yes	>60	0-1
276B Ninigret fine sandy loam	Friable coarse-silty eolian deposits over loose sandy and gravelly glaciofluvial deposits derived from granite and gneiss	No	>60	1.5-2.5
327C Meckesville loam	Friable fine-loamy eolian deposits over dense silty lodgment till derived from sandstone and shale	No	>60	2.5-4
340B/340C Broadbrook gravelly silt loam	Friable loamy eolian deposits and/or friable silty eolian deposits over dense loamy lodgment till derived from gneiss	No	20-26	1.5-2.5
738B Urban land-Hadley-Winooski association	Friable coarse-silty alluvium	No	>60	N/A

1: Soils with multiple map unit symbols refer to soils that occur on different slopes. All other soil characteristics are the same.

2.4 POTENTIAL POLLUTANTS

The primary pollutant sources on the construction site will be disturbed soils and subsequent surface water runoff. BMPs will be employed to control erosion and sedimentation, and are discussed in further detail in Section 3.0. Other potential pollutant sources include petroleum products needed for the construction equipment, fertilizers, paints, solvents, etc. BMPs for product-specific practices are discussed in Sections 4.0 and 5.0.

2.5 SITE MAPS AND DRAWINGS

The General Vicinity Map (Figure 1-1) is located on page 1-4 of this document. Erosion Plans and BMP Details are located in Appendices A and B, respectively.

2.6 RECEIVING WATERS

The Project area is located within three different watersheds: the Connecticut River Basin; the Chicopee River Basin, and the Westfield River Basin. The Chicopee River and Westfield River both discharge to the Connecticut River, which is the largest drainage system in New England. The Connecticut River

Basin spans 11,263 square miles and includes the states of Vermont, New Hampshire, Massachusetts, and Connecticut. This drainage basin covers approximately 2,728 square miles within Massachusetts and drains all or part of 45 municipalities within the Commonwealth.

A number of streams and rivers are crossed by the Preferred Northern Route and each is listed on the following Table 2-2.

Table 2-2: Watercourses Crossed by the Preferred Northern Route 115-kV and 345-kV Facilities: CT/MA State Border to Ludlow

Town	Series Number and Name (if Applicable)	Water Quality Class	Fisheries Class	Type (P or I)	Popular Name or other Comments
Agawam	S1-1	B	Warm Water	P	
Agawam	S1-2	B	Warm Water	P	
Agawam	S1-3	B	Warm Water	P	Still Brook
Agawam	S1-4	B	Warm Water	P	Philo Brook
Agawam	S1-5	B	Warm Water	P	
Agawam	S1-6	B	Warm Water	P	
Agawam	S1-7	B	Warm Water	P	Tarkill Brook
Agawam	S2-11	B	Warm Water	P	
Agawam	S2-9	B	Warm Water	P	
Agawam	S2-10	B	Warm Water	I	
Agawam	S2-12	B	Warm Water	P	Threemile Brook
Agawam	S2-15	B	Warm Water	P	
Agawam	S2-13	B	Warm Water	I	
Agawam	S3-16, 17	B	Warm Water	P	Westfield River
West Springfield	S3-18	B	Warm Water	P	
Agawam	S3-19	B	Warm Water	P	Silver Stream
West Springfield	S3-20	B	Warm Water	I	
West Springfield	S3-21	B	Warm Water	P	
West Springfield	S3-22	B	Warm Water	P	Piper Brook
West Springfield	S3-23A	B	Warm Water	I	Bagg Brook
West Springfield	S3-23	B	Warm Water	P	Bagg Brook
West Springfield	S3-24	B	Warm Water	I	Goldine Brook
West Springfield	S3-24	B	Warm Water	P	Goldine Brook

Town	Series Number and Name (if Applicable)	Water Quality Class	Fisheries Class	Type (P or I)	Popular Name or other Comments
West Springfield	S3-25	B	Warm Water	I	Schoolhouse Brook
West Springfield	S3-26	B	Coldwater	P	Schoolhouse Brook
Chicopee	S3-27	B	Warm Water	P	Schoolhouse Brook
Chicopee	S3-28	B	Warm Water	P	
Chicopee	S3-29	B	Warm Water	I	
Chicopee	S3-30	B	Warm Water	P	
Chicopee	S3-30A	N/A	N/A	N/A	Detention Basin
Chicopee	S3-30B	B	Warm Water	P	
Chicopee	S3-30C	B	Warm Water	P	Cooley Brook
Chicopee	S3-30D	N/A	N/A	N/A	Detention Basin
Chicopee	S3-31	B	Coldwater	P	
Ludlow	S3-35	B	Warm Water	I	
Ludlow	S3-36	B	Cold water	P	Fuller Brook
Ludlow	S3-37	B	Cold water	P	Fuller Brook
Ludlow	S3-37A	B	Warm Water	I	
Ludlow	S3-38	B	Cold water	P	Harris Brook
Ludlow	S3-39	B	Warm Water	P	Higher Brook
Ludlow	S3-39A	B	Warm Water	I	

The Massachusetts Surface Water Quality Standards and Classifications at 314 C.M.R. 4.00 designate the waters crossed by the Preferred Northern Route as Class B, High Quality Waters. The Connecticut River crossed by the Preferred Northern Route are designated as a Class B, Warm Water, CSO (waters identified as impacted by the discharge of combined sewer overflows).

The two largest watercourses crossed by the Preferred Northern Route are the Connecticut River (see: Aerial Mapsheet 05 of 15), and the Westfield River (see: Aerial Mapsheet 01 of 15). The Connecticut River is the largest river in New England, flowing south from the Connecticut Lakes in northern New Hampshire, along the border between New Hampshire and Vermont, through Western Massachusetts and central Connecticut into Long Island Sound at Old Saybrook, Connecticut. The Connecticut River is a habitat to several species of anadromous fish, including the American shad, American eel, Striped Bass and the Sea lamprey. The Westfield River in Massachusetts flows through Westfield and empties into the Connecticut River at West Springfield, Massachusetts. It has a 497 square mile drainage area consisting

of several tributaries. Running for a total of 78.1 miles, the river rises in the Berkshire Hills in the northwest of the state and flows generally southeastwardly to join the Connecticut River at West Springfield.

In addition to the rivers described above, the GSRP also crosses perennial streams and intermittent streams.

Section 3.0
BEST MANAGEMENT PRACTICES

3.0 BEST MANAGEMENT PRACTICES

3.1 EROSION AND SEDIMENT CONTROLS

Soil erosion and sediment controls are measures that are used to reduce the amount of soil particles that are carried from a land area and deposited in receiving waters. This section provides a general description of the most appropriate control measures proposed for the Project. The permittee's construction contractor(s) and their subcontractors will be responsible for amending the erosion and sediment controls in the SWPPP for their portion(s) of the Project. Based on field conditions at the time of construction, the contractors or subcontractors may adjust the locations and types of BMPs so that erosion and sedimentation are controlled to the maximum extent practicable. However, in no case will modifications to the SWPPP result in any less stringent erosion and sedimentation control measures than specified herein. Any revision to the SWPPP will be recorded on the Record of Revisions form; a copy of the form is located in Appendix C.

Several factors need to be considered when deciding on erosion control techniques. The application of the techniques in the field will be determined by the professional judgment of the permittee's field construction personnel and will depend on site-specific conditions. Factors that may be considered in selection of erosion and sediment controls for site-specific areas may include:

- Size of the area affected
- Type of proposed construction activities
- Soil type and texture
- Amount of rock
- Steepness and length of slope
- Amount of vegetative cover
- Proximity to watercourses or wetlands, particularly downslope from construction activities
- Date and intensity of the last major rain event
- Anticipated weather conditions and frozen ground

All applicable soil erosion and sediment control measures will be implemented in accordance with this SWPPP and the Permit prior to commencement of field construction activities. Measures will be maintained during and after the construction activity, until final stabilization of the soil is accomplished. Upon final stabilization of disturbed areas, all temporary soil erosion and sediment control measures will be removed.

3.2 STRUCTURAL CONTROL PRACTICES

Structural control practices divert flows from exposed soils, store water flow, or otherwise limit runoff from exposed areas of the site. Such practices may include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet

protection, rock outlet protection (rip-rap), reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. Some of these practices may be used as both temporary and permanent control measures. Structural control practices should be placed in upland areas to the degree practicable to prevent erosion and reduce sedimentation in lower elevation areas.

3.2.1 Temporary Erosion and Sediment Control Practices

Erosion and sediment control measures will be in place prior to the initiation of soil disturbing activities and will be maintained throughout construction. The contractor may need erosion control measures in other locations of the Project as work progresses to keep sediment from leaving the construction site. These measures will be determined by the contractor in the field; if measures are changed in the field, the SWPPP must be modified accordingly. All temporary erosion controls will be removed after the protected area is finally stabilized. The minimum temporary erosion and sediment control practices that will be used for the Project are discussed in the following sections.

3.2.1.1 Silt Fence Sediment Barriers

Silt fence will be used to intercept and retain sediment carried by sheet flow from disturbed areas and to prevent sediment runoff from the Project site. Silt fence will be placed perpendicular to the direction of water flow and as close to the contours as possible with the ends extending upslope. The devices will be placed downslope of disturbed areas where sheet or rill erosion would occur. Contractors must remove trapped sediment from a silt fence before the deposit reached 50 percent of the above-ground fence height. Location and installation details for silt fence are located in Appendices A and B, respectively. Silt fence will also be placed at appropriate locations around stockpiles.

3.2.1.2 Check Dams

As construction activities progress, it may be necessary to install temporary check dams in existing or construction-related channels and drainages to reduce stormwater velocities, filter concentrated flows, and limit the amount of sediment that travels downstream. Check dams are generally used in concentrated flow areas, such as ditches and swales. These barriers will be placed so that the elevation of the outside channel edge is higher than the top of the barrier in the middle of the channel. These check dams can consist of straw bales, trapped rock, Triangular Silt Dike™ or Georidge®. These devices must be maintained to remain effective and the sediment removed from behind the device on a regular basis. Location and installation details are located in Appendices A and B, respectively.

3.2.1.3 Wetland Matting

Depending on the season and current conditions, wetland matting may be required for construction activities within wetlands and to cross ditches and ponds to minimize disturbance. Wetland matting details are shown Appendix B.

3.2.2 Permanent Erosion and Sediment Control Practices

Permanent erosion and sediment control practices are those that will be left in place after construction is finished and the site is stabilized. Unpaved areas will be reseeded or landscaped according to recommended seeding plans after the last construction activity has been completed. The time period for soil areas to be without vegetative cover should be minimized to the extent practical.

3.3 STABILIZATION PRACTICES

Soil stabilization involves covering disturbed soils with grass, mulch, straw, geotextiles, trees, vines, or shrubs. Stabilization practices for exposed disturbed soils are extremely important while conducting construction activities. Vegetative cover serves to reduce the erosion potential by absorbing the energy of raindrops, promoting infiltration in lieu of runoff, and reducing the velocity of runoff. Stabilization measures shall be initiated as soon as practicable, but no more than 14 days after construction activities have temporarily or permanently ceased on any portion of the site. More information on seeding and mulching specifications is discussed in Section 3.5.

3.4 MAINTENANCE AND INSPECTIONS

All erosion and sediment control devices shall be installed pursuant to the specifications in the construction details located in Appendix B. They will be maintained so that they remain effective at all times.

Erosion and sediment control devices will be inspected by qualified personnel at least once every seven calendar days or at least once every 14 calendar days and within 24 hours of each 0.5-inch or greater rainfall event. A “walk through” inspection of the construction site is also recommended before anticipated storm events that could potentially yield a significant amount of runoff. During each inspection, the construction inspector will complete the Inspection and Maintenance Report Form located in Appendix C. This form will be copied and used as necessary. Ineffective temporary erosion control measures will be repaired or replaced before the next storm event or as soon as practicable. The permittee will immediately install additional temporary erosion control devices in any area deemed in need of protection.

If inspection results indicate a need to modify the SWPPP, the plan will be revised and implemented, as appropriate, within seven calendar days following the inspection. All modifications will be noted on the Record of Revisions form located in Appendix C. The inspection reports will identify any incidents of non-compliance with the Permit.

Following temporary or final stabilization, inspections must be conducted at least once a month. If construction has been halted due to frozen conditions, regular inspections are not mandatory until one month before the expected thaw. If vegetation establishment is not satisfactory, special steps to correct the problem will be implemented such as overseeding, mulching, sodding, or the use of erosion control blankets. Once a definable area of the construction site has been finally stabilized, no further inspection requirements apply to that area.

3.5 FINAL STABILIZATION AND CLEANUP

After final grading is complete, the disturbed areas that do not contain pavement, rip-rap, cobble, etc. will be permanently stabilized. Soil stabilization involves covering disturbed soils with grass, bark, mulch, straw, geotextiles fabric, trees, vines, or shrubs. Vegetative cover serves to reduce the erosion potential by absorbing the energy of raindrops, promoting infiltration in lieu of runoff, and reducing the velocity of runoff. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall also be permanently stabilized to prevent further erosion and sedimentation.

3.5.1 Seeding

The contractor will be responsible for labor, materials, tools, equipment, and other related items required for preparing ground, providing for sowing of seeds, fertilizing, mulching and top dressing, and other management practices required for erosion control and to achieve final stabilization. It will be the contractor's responsibility to make sure that the soil seedbed is not blown, washed, or otherwise removed from the site. The contractor will make repairs (including replacement of lost topsoil and mulch) to the seedbed preparation site in the event of heavy rain, wind, or other natural events that cause damage. When practicable, native plant species should be used for landscaping.

3.5.2 Fertilizer

Soil in areas of disturbance may need supplementation from fertilizer. Soil tests may be necessary to determine the most appropriate fertilizer for each location. Once applied, the fertilizer will be worked into the soil to limit exposure to stormwater. Fertilizer spills will be cleaned up immediately and will not be applied along or in a waterway.

3.5.3 Mulching

Mulching will be used in conjunction with both temporary and permanent seeding practices to enhance success by providing erosion protection prior to the onset of vegetative growth. Mulches enhance plant establishment by moderating soil temperatures and conserving moisture. After seeding, straw or hay mulch will be applied at a rate of two to three tons per acre on the disturbed areas. Other forms of mulch will be applied at a rate designated by the Project Engineer. Mulch will not be applied in wetlands, on lawns, and areas where hydro-mulch is used. Mulch will be anchored immediately after placement on steep slopes and stream banks. Mulch will be held in place by light discing, a very thin covering of topsoil, small brush, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the Project Engineer.

3.5.4 Topsoiling

Topsoil should be applied in areas where the subsoil or existing surface soil does not provide an adequate growth medium for the desired vegetation, where soil is too shallow to provide adequate rooting depth, or where the soil contains substances toxic to the desired vegetation. Topsoil shall be reasonably free from subsoil and stumps, roots, brush, stones, and clay lumps or similar objects.

3.5.5 Removal of Temporary Controls

Temporary erosion controls will be left in place until the Project site is stabilized with a uniform vegetative cover of 70 percent density of the native background vegetative cover on all unpaved areas. Following revegetation, the permittee will conduct periodic site visits to make sure that vegetation establishment is satisfactory. If sufficient vegetative cover has not been achieved, additional restoration measures will be implemented. Inspection results will be documented using the Inspection and Maintenance Report Form found in Appendix C.

All temporary soil erosion and sediment control measures will be removed and disposed of after final site stabilization is achieved and before submitting the NOT.

Section 4.0
GOOD HOUSEKEEPING

4.0 GOOD HOUSEKEEPING

4.1 MATERIAL HANDLING

All construction materials that pose a potential contamination threat to stormwater (e.g., petroleum products, solvents) will be managed to minimize exposure to stormwater. Materials will be kept in secure containers and be properly labeled. Copies of the Material Safety Data Sheets (MSDS) will be maintained on-site.

4.2 SOLID AND LIQUID WASTE DISPOSAL

Solid and liquid waste (including sediment, asphalt, concrete millings, floating debris, paper, plastic, fabric, and construction and demolition debris) will be disposed of properly and in accordance with all applicable disposal requirements. All waste material will be collected and stored in a secure container or removed from the Project site. The waste containers will be inspected regularly. No solid or liquid wastes will be disposed of on-site (e.g. buried, poured), but will be taken off-site for proper disposal.

4.3 HAZARDOUS WASTE

Any hazardous waste material will be disposed of in the manner specified by the manufacturer and by local, state, and federal regulations. Construction site personnel must be made aware of this requirement. Spill response procedures are located in Section 5.0.

4.4 SANITARY WASTE

Contractors and subcontractors must comply with all federal, state, and local sanitary sewer, portable toilet, or septic system regulations. Each contractor or subcontractor will provide sanitary facilities at the Project site throughout construction activities. The sanitary facilities should be used by all construction personnel and be serviced regularly.

4.5 NON-STORMWATER DISCHARGES

The following non-stormwater discharges are eligible for authorization under this Permit:

- Fire hydrant flushings
- Water used to control dust
- Potable water including uncontaminated water line flushings
- Routine external building and vehicle wash down that does not use detergents
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
- Uncontaminated air conditioning or compressor condensate, ground water or spring water, and excavation dewatering
- Foundation or footing drains where flows are not contaminated with process materials such as solvents
- Landscape irrigation

4.6 VEHICLE WASHING

Vehicle washing will not be conducted on-site or on other sites of active construction. If vehicle washing is required, a designated area will be selected where runoff can be contained and properly disposed. Sediment tracked from the construction site must be removed at a frequency sufficient to prevent off-site impacts. If concrete trucks are necessary, they will not be allowed to wash out or discharge surplus concrete or drum wash to wetlands or waters of the Commonwealth.

4.7 WATER SOURCE

Water used to establish and maintain grass, to control dust, and for other construction purposes must originate from a public water supply or private well approved by the Commonwealth or local health department. Any portable water used must adhere to local and state water standard regulations.

Section 5.0
SPILL PREVENTION AND CONTROL PLAN

5.0 SPILL PREVENTION AND CONTROL PLAN

This section comprises the Spill Prevention and Control Plan (SPCP), which describes measures to prevent, control, and minimize impacts from a spill of a hazardous, toxic, or petroleum substance during construction of the proposed Project. This plan identifies the potentially hazardous materials to be used during this Project, describes the transport, storage, and disposal procedures for these substances, and outlines the procedures to be followed in the event of a spill of a contaminating or toxic substance.

As per 40 CFR 112, a Spill Prevention Control and Countermeasures Plan (SPCC) must be prepared if the construction site will have 1,320 gallons of above ground storage capacity (or 42,000 gallons in underground storage not regulated by UST rules) or more in 55-gallon-sized (or larger) containers. This would include any temporary tanks or fueling trucks used to “store” petroleum on-site. The truck would be subject to the SPCC Plan rules when parked on the construction site and used for “storage.”

If, at any time, a subcontractor’s cumulative above ground storage capacity on-site exceeds 1,320 gallons, the subcontractor shall maintain a certified SPCC Plan (40 CFR 112).

5.1 MATERIAL MANAGEMENT PRACTICES

Properly managing materials on the construction site will greatly reduce the potential for stormwater pollution of materials. Good housekeeping, along with proper use and storage of construction materials, form the basis for proper management of potentially hazardous materials.

5.1.1 Good Housekeeping

The proper use of materials and equipment along with the use of general common sense greatly reduce the potential for contaminating stormwater runoff. The following is a list of good housekeeping practices to be used during the Project:

- Hazardous materials, chemicals, fuels, oils, and fueling of construction equipment shall not be stored within 100 feet of any stream bank, wetland, water supply well, spring, or other waterbody
- Every effort will be made to store the minimum amount of hazardous materials on-site
- Materials stored on-site will be stored in a neat, orderly manner in appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in original containers with the original manufacturer’s label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used before disposing of the container
- Manufacturer’s recommendations for proper use and disposal of a product will be followed
- If surplus product must be disposed of, manufacturer’s or local and state recommended methods for proper disposal will be followed

5.1.2 Non-Petroleum Products

Due to the chemical makeup of specific products, certain handling and storage procedures are required to promote the safety of handlers and prevent the possibility of pollution. Care shall be taken to follow all directions and warnings for products used on the site. All pertinent information can be found on the MSDS for each product. The MSDS will be kept on-site.

5.1.3 Petroleum Products

On-site vehicles will be monitored for leaks and receive regular maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Preferably, the containers will be stored in a covered truck or trailer that provides secondary containment for the products.

Bulk storage tanks having a capacity of greater than 55 gallons will be provided with secondary containment. Containment can be provided by a temporary earthen berm or other means. After each rainfall event, the contractor shall inspect the contents of the secondary containment area for excess water. If no sheen is visible, the collected water can be pumped to the ground in a manner that does not cause scouring. If any sheen is present, it must be treated prior to discharging the water. Otherwise, the contaminated water must be transported and disposed off-site in accordance with local, state, and federal requirements.

Bulk fuel or lubricating oil dispensers shall not have a self-locking mechanism that allows for unsupervised fueling. Fueling operations shall be observed to immediately detect and contain spills.

No waste oil or other petroleum-based products will be disposed of on-site (e.g. buried, poured, etc.), but shall be taken off-site for proper disposal.

5.2 SPILL CONTROL AND CLEANUP

In addition to the material management practices discussed previously, the following spill control and cleanup practices will be adhered to prevent stormwater pollution in the event of a spill:

1. Personnel on-site will be made aware of cleanup procedures and the location of spill cleanup equipment.
2. Spills will be contained and cleaned up immediately after discovery.
3. Manufacturer methods for spill cleanup of a material will be followed as described on the material's MSDS.
4. Materials and equipment needed for cleanup procedures will be kept readily available on the site, either at an equipment storage area or on contractor's trucks; equipment to be kept on the site will include, but not be limited to, brooms, dust pans, shovels, granular absorbents, sand, saw dust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.

5. Toxic, hazardous or petroleum product spills required to be reported by regulation will be documented to the appropriate federal, state, and local agencies.
6. Spills will be documented and a record of the spills will be kept with this SWPPP.

The federal reportable spill quantity for petroleum products is defined in 40 CFR 110 as any oil spill that:

1. Violates applicable water quality standards.
2. Causes a film or sheen upon or discoloration of the water surface or adjoining shoreline.
3. Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

The Federal reportable spill quantities for hazardous materials are listed in 40 CFR, Part 302.4, in the table entitled "List of Hazardous Substances and Reportable Quantities." A procedure for determining a reportable spill is included in Appendix D, along with a copy of the Spill Report Form to be completed as the result of a reportable spill.

Immediately after receiving notice of a reportable spill, the contractor's superintendent will contact _____ at (____) ____-____, the local fire department, and the following authorities:

Federal:

National Response Center: 1-800-424-8802

State:

MassDEP Emergency Response Section: 1-888-304-1133

Within seven calendar days of knowledge of a release, the following must be submitted to the EPA:

1. Description of the release, including the date of the spill, the type of material, and the estimated amount of spill.
2. Explanation of why the spill happened.
3. Description of the steps taken to prevent and control future spills.