Appendix F – Soil Erosion / Sedimentation Control and Revegetation Plan
Appendix F

Soil Erosion / Sedimentation Control and Revegetation Plan

1990 Line Structure Replacement Project Development and Management Plan

115-kV Overhead Transmission Line Watertown, Waterbury, Middlebury, Oxford & Monroe, Connecticut

June 2013

Submitted to:
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Submitted by:
The Connecticut Light and Power Company
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Berlin, CT 06037
# Appendix F

## Soil Erosion / Sedimentation Control and Revegetation Plan

### Table of Contents

1. **SOIL EROSION AND SEDIMENTATION CONTROL AND REVEGETATION PLAN**

2. **DESCRIPTION OF MAJOR CONSTRUCTION ACTIVITY**

   2.1 Sequence of Major Activities
   2.2 Clearing
   2.3 Grading
   2.4 Removal of Tree Stumps, Rock/Boulders
   2.5 Drilling of Foundations
   2.6 Installation

3. **SOIL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES**

   3.1 Pre-Construction Meeting
   3.2 Wetlands and Watercourses
      3.2.1 Equipment Crossings
   3.3 Erosion and Sediment Control
   3.4 Clearing
   3.5 Structural Stormwater Controls
      3.5.1 Temporary Erosion and Sediment Control Practices
      3.5.2 Permanent Erosion and Sediment Control
      3.5.3 Soil Stabilization Practices
   3.6 Monitoring/Reporting
   3.7 Final Stabilization and Cleanup
      3.7.1 Seeding
      3.7.2 Fertilizer
      3.7.3 Mulching
      3.7.4 Topsoil
      3.7.5 Removal of Temporary Controls
   3.8 Inadvertent Disturbance Off ROW

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Soil Erosion / Sedimentation Control and Revegetation Plan

1990 Transmission Line Structure Replacement Project
1.0 **SOIL EROSION AND SEDIMENTATION CONTROL AND REVEGETATION PLAN**

CL&P’s objective is to minimize the potential for erosion and sedimentation during construction and to effectively restore the work areas and other disturbed areas. CL&P will meet these objectives by implementing the erosion and sediment control measures contained in this section. These erosion and sediment control measures will serve as minimum standards during construction of the Project. In general, the measures are designed to minimize erosion and sedimentation by:

- minimizing the quantity and duration of soil exposure;
- protecting areas of critical concern during construction by redirecting and reducing the velocity of runoff;
- installing and maintaining erosion and sediment control measures during construction;
- establishing vegetation where required as soon as possible following final grading; and
- inspecting the work areas and maintaining erosion and sediment controls as necessary until final stabilization and inspection are achieved.

It is CL&P’s responsibility for ensuring that all contractors implement and maintain erosion and sediment control measures during construction. This plan includes erosion and sediment control techniques that apply to all areas of construction, expands on the impact minimization associated with clearing, grading, ditching, installation, backfilling and restoration phases and discusses the use of construction safety precautions.

2.0 **DESCRIPTION OF MAJOR CONSTRUCTION ACTIVITY**

Replacement of existing structures and construction of the overhead electric transmission line consists of several phases: clearing, grading, foundation drilling, new structure installation, and restoration.

2.1 **Sequence of Major Activities**

The following is a brief list of the construction activities for the work related to structure replacement and overhead transmission work for the Project and the order in which they will occur:

1. Installation of erosion and sediment controls around sensitive resources and access points.
2. Clearing of vegetation.
3. Installation of additional erosion and sediment control devices immediately after surface disturbance activities.
4. Establishment of access roads.

5. Grading at structure locations, including tree stump removal, if necessary.

6. Installation of temporary erosion control measures.

7. Installation of foundations (dewatering of foundation excavation, as necessary).

8. Installation of new structures.

9. Installation of conductors.


11. Removal of existing structures.

12. Restoration and revegetation of work areas, incorporating permanent erosion and sediment control measures. Temporary control measures will be maintained until final cleanup is complete.

13. Installation of permanent restoration measures including seeding, mulching, and fertilization.

### 2.2 Clearing

Clearing activity methods are as follows:

- ROW boundaries will be clearly flagged in the field before commencement of clearing activities.
- Stemmed vegetation such as brush, shrubs, and trees shall be removed at or near the ground surface to allow the root systems to remain intact.
- When pruning is necessary, it shall be conducted as follows:
  - Cuts shall be smooth,
  - Branch collars shall not be cut (i.e., cuts should be made immediately in front of the branch collar),
  - Large, heavy branches shall be precut on the underside to prevent splitting or peeling, and
  - Climbing spurs shall not be used.
- Trees shall be cut to grade within the non-paved work area.
- Trees and limbs will not be permitted to fall into wetlands or watercourses, where possible.
• Brush may be piled at the edge of the work area to provide additional runoff protection or hauled to an approved location.

• Chips may be left on the workspace with the Construction Representative’s approval if placement does not inhibit revegetation.

• Chips will not be left in wetlands or stockpiled in such a location that they may be transported into wetlands.

2.3 Grading

When existing topography and/or terrain does not permit crews and equipment to operate safely and does not provide access or an effective work area, grading may be required. Extensive grading is not anticipated to be required for the Project.

2.4 Removal of Tree Stumps, Rock/Boulders

In upland areas, stumps, rocks/boulders, etc. can be removed across the entire width of the construction workspace; however, in wetlands, stumps will be removed only if they are in a structure foundation location. Stumps creating construction constraints or safety concerns may require removal from under a work pad or on a side slope. Stumps may be chipped in upland areas. Grindings will be removed from the wetlands to the maximum extent practicable.

2.5 Drilling of Foundations

To prepare for the installation of the concrete foundations, holes must be drilled into the ground. In cases where the proposed foundations are located in rock, rock drilling may be required. Temporary erosion control barriers will be installed around spoil piles and spoil will be stored at least 100 feet from waterbodies and 50 feet from wetlands, where possible.

2.6 Installation

Transmission line structures will be transported and unloaded in the general vicinity of their proposed location. Once the foundation holes are drilled, the foundations will be constructed. The foundations consist of re-enforced concrete with an above-grade bolting system. Excavations may require dewatering as a result of precipitation or groundwater. Contractors are responsible for obtaining appropriate dewatering permits through CT DEEP.

Once the foundations are cured (1-4 weeks), the transmission line structures will be erected and bolted securely to the foundation. After all the structures are erected, the electric cables will be strung via pulley system from designated pulling areas.
3.0 SOIL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES

3.1 Pre-Construction Meeting

Prior to the start of activities, a pre-clearing meeting will be held between CL&P, the contractor, and other agents who have responsibility and authority for the implementation, operation, monitoring and maintenance of the erosion and sediment (E&S) controls. The meeting agenda should include a review of plans, permit conditions, the sequence and schedules for construction, site restrictions, (including cultural and state-listed species), and other special needs. The meeting shall also be used to identify any modifications needed to the construction sequence or amendments needed to the controls. An additional pre-construction meeting shall be held following the winter break and prior to resuming the project activities.

Limits of clearing should be flagged in the field and wetland boundaries will be marked prior to the start of activities.

3.2 Wetlands and Watercourses

The contractor will protect and minimize potential effects on wetlands by:

- Avoiding construction in and around wetlands and limiting the amount of equipment and construction activities near wetlands to reduce disturbances.
- Limiting grading to the amount necessary to provide a safe workspace.
- Restoring any disturbed wetlands to their original configurations and contours.
- Permanently stabilizing upland areas near wetlands as soon as practical after backfilling.
- Inspecting the ROW periodically during and after construction and repairing any erosion control or restoration features until permanent revegetation is successful.

Additional workspace at wetland crossings will be minimized and located at least 50 feet from the edge of the wetland where topographic conditions permit. No refueling of construction vehicles will occur within 100 feet of any wetland resource area. The setbacks from watercourses and wetlands will be clearly marked in the field before the start of construction. Fuels and lubricating oils will not be stored within 100 feet of a wetland or watercourse boundary.

3.2.1 Equipment Crossings

Measures will include the use of construction mats laid adjacent to and across wetlands and watercourses, flume pipes covered by fill material (clean gravel or crushed stone) or portable bridges as approved by the EI.
3.2.1.1 Clearing/Grading

- The construction of the equipment crossings will use one of the following:
  - construction mats with or without flume(s), or
  - clean rock fill and flume(s), or
  - a Flexi-float or portable bridge.

- Equipment bridges will be maintained to prevent soil from entering wetlands and watercourses.

- If more than one-week will pass between the time when the area is cleared and when the pipe is installed, the clearing crew may:
  - Leave a 10-foot vegetative strip on either side of the wetland or watercourse (excluding the equipment crossing). Trees greater than 15 feet in height or 4 inches in diameter may be removed from the vegetative strip at the time of initial clearing; or
  - Install sediment barriers at the top of the stream bank, if no vegetative strip is left.

3.2.1.2 Cleanup/Restoration

- Wetland and watercourse banks will be stabilized and temporary sediment barriers will be installed within 24 hours of completing the crossing.

- Equipment crossings will be left in place if they will be needed for access during seeding. They will be removed if 1) more than one month will pass between final cleanup/grading and the beginning of initial permanent seeding and 2) appropriate alternative access is available.

- Jute thatching or other erosion control material will be used to stabilize stream banks as necessary.

- Banks of wetlands and watercourses disturbed during construction shall be restored in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as well as applicable approvals from the CT DEEP and the USACE. Trees and/or shrub species selected for use in the restoration shall be native and provide habitat components for existing fisheries as well as resident and migratory wildlife.

3.3 Erosion and Sediment Control

In order to give the contractor some flexibility, the plans show approximate locations and types of erosion control barriers. It is the contractor’s responsibility to respond to changing site conditions and provide additional controls within the project limits to prevent the removal and transportation of sediment off site and to resource areas. 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 extent practicable. However, in no case will modifications to the Plan result in any less stringent erosion and sediment control measures than specified herein.

Several factors need to be considered when deciding on erosion and sediment 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,
- Type and texture of soil,
- Amount of rock present,
- Steepness and length of slope,
- Amount of vegetative cover,
- Proximity and direction to watercourses or wetlands,
- Date and intensity of the last major rain event, and/or
- Anticipated weather conditions and ground conditions.

Table 3-1 summarizes the principal soil associations, as identified by USDA NRCS, in the general vicinity of the Project.
Table 1: Soil Mapping Units Along the 1990 Line Structure Replacement Project

<table>
<thead>
<tr>
<th>Soil Mapping Unit</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Section</strong></td>
<td></td>
</tr>
<tr>
<td>Agawam fine sandy loam, 3 to 8 percent slopes</td>
<td>0.36</td>
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<tr>
<td>Canton and Charlton soils, 3 to 8 percent slopes</td>
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<tr>
<td>Canton and Charlton soils, 8 to 15 percent slopes</td>
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<tr>
<td>Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky</td>
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<tr>
<td>Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky</td>
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</tr>
<tr>
<td>Charlton-Urban land complex, 3 to 8 percent slopes</td>
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<tr>
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</tr>
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<td>Saco silt loam</td>
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<td>Soil Mapping Unit</td>
<td>Percentage</td>
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<td>----------------------------------------------------------------------------------</td>
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<td>Urban land-Charlton-Chatfield complex, rocky, 3 to 15 percent slopes</td>
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<td><strong>Main Section Total</strong></td>
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<tr>
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<tr>
<td>Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky</td>
<td>9.70</td>
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<tr>
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<td>Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony</td>
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<tr>
<td>Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony</td>
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<td>Paxton-Urban land complex, 15 to 25 percent slopes</td>
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<td>Ridgebury, Leicester, and Whitman soils, extremely stony</td>
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<tr>
<td><strong>Baldin Section Total</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
3.4 Clearing

Except for the short segment of expanded ROW near Oxford Airport, the Project would not require ROW expansion or any additional vegetation clearing in the Main Section. No ROW expansion is needed for the Baldwin Section; however, additional clearing will be necessary within CL&P's existing ROW. Some vegetation will be removed within the existing ROW as follows:

- to clear overgrowth at the base of existing structures and from the locations for the new structures, providing unobstructed access;
- to remove off-ROW hazard trees;
- to provide access between existing access roads and new structure locations; and
- to maintain required North American Electric Reliability Corporation clearances.

The Project will require tree removal in some areas for the replacement of poles and wires. Clearing will be limited to the extent necessary for safe construction and reliable operation of the transmission facilities. This will result in permanent conversion of areas of forested wetlands to scrub-shrub or emergent wetlands and forested uplands to shrub lands or grasslands. Trees will be cleared with mechanized equipment and chain saws as necessary. Wood will be chipped on site and chips may be used for erosion control. Wood chips will not be placed in wetlands.

The use of heavy machinery could result in ruts, and uncontrolled removal of vegetation could lead to erosion. Unanticipated failure of erosion and sediment controls could result in sedimentation. Any locations along the ROW where steep, rocky features occur will be at an increased risk of erosion and clearing will have to be performed carefully. Techniques which will minimize soil disturbance and erosion will be used during clearing. This includes cutting trees but leaving stumps and roots in place in areas that do not require grading. Trees in wetlands should be approached from either side of the crossing and skidding should be avoided when feasible. Low growing shrubs will be preserved where possible. Where the transmission corridor crosses streams and brooks, vegetation along the stream bank will be selectively cut to preserve desirable streamside vegetation for habitat enhancement, shading, bank stabilization, and erosion and sediment control.

3.5 Structural Stormwater Controls

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 out protection (riprap), 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.

As with the erosion and sediment controls, it is the contractor’s responsibility to respond to changing site conditions and provide additional controls within the project limits to prevent the removal and transportation of sediment off site and to resource areas.

Structural stormwater controls are discussed in the following section.

### 3.5.1 Temporary Erosion and Sediment Control Practices

Erosion and sediment control measures will be in place prior to the initial soil-disturbing activities and will be maintained throughout construction. These controls may be installed in phases if clearing activities damage controls or control installation is limited due to existing vegetation. Areas where controls are anticipated have been called out on the Plan Drawings, but the Contractor may need erosion control measures in other locations of the Project to ensure sediment is not leaving the construction site. All temporary erosion controls will be removed after the disturbed area is stabilized. The minimum temporary erosion control and sediment control practices that will be used for the Project include; temporary construction entrances and access roads, water bars/terraces, sediment barriers, check dams, wetland matting, concrete washout, erosion control blankets, dewatering, storm drain inlet protection, and mulching/seeding.

#### 3.5.1.1 Temporary Construction Entrances and Access Roads

Temporary construction entrances will be installed as necessary and maintained throughout the Project’s duration. The Contractor will not make any arrangements with landowners to use, change, or improve private access roads or property beyond those specified on the drawings.

Stabilized construction access will be installed to minimize the sediment amount transported onto a public road surface or other paved area by equipment or vehicles exiting the construction site. The following actions will be followed:

- Water bars will be installed on steep slopes along access roads, as needed;
- Side ditches, if required to provide drainage, will be excavated parallel to the road;
- Where access roads cross intermittent drainages, culverts or pipe flumes will be installed as necessary to maintain existing drainage patterns. Clean stone/rock will be used to improve the surface of access roads for stabilization and/or rutting protection;
- If open water crossings are required, an equipment bridge will be used;
- Access roads will be restored to pre-construction condition, as feasible, unless specified otherwise by the landowner or Project and approved by applicable permits;
• If subsoils are unstable, construction mats may be required. These materials will be removed during clean up; and,
• Erosion control barriers will be installed, inspected, and maintained as required at the edge of access roads, where necessary, to prevent siltation of ponds, wetlands or other adjacent waterbodies.

3.5.1.2 Water Bars/Terraces

Water bars/terraces will be used as a temporary channel to divert water from the construction site to a well-vegetated area. If a well-vegetated area is unavailable, erosion control barriers will be installed at the limit of the construction workspace at the outlet of the water bar. Water bars will be installed diagonally across the work area as needed. A temporary channel will be excavated and a compacted berm will be created adjacent to the channel or ridge of compacted soil. The water bars will not prohibit safe passage and will be maintained and repaired at the end of each day. Recommended water bar spacing is provided in the following table:

Table 2: Water Bar Spacing

<table>
<thead>
<tr>
<th>% Slope of Roadway</th>
<th>Spacing (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>400</td>
</tr>
<tr>
<td>2%</td>
<td>245</td>
</tr>
<tr>
<td>5%</td>
<td>125</td>
</tr>
<tr>
<td>10%</td>
<td>78</td>
</tr>
<tr>
<td>15%</td>
<td>58</td>
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</table>

3.5.1.3 Sediment Barriers

Sediment barriers (e.g., hay bale, geotextile silt fence, turbidity curtain) will be used to intercept and retain sediment carried by sheet flow from disturbed areas during construction activities to prevent sediment runoff from the Project site. Erosion control barriers should be placed at specific locations that include:

• At the outlet of a water bar when existing vegetation is not adequate to control erosion;
• Along banks of waterbodies between the workspace and waterbody after clearing;
• Downslope of any stockpiled soil in the vicinity of waterbodies and vegetated wetlands;
• At sideslope and downslope boundaries of the construction area where runoff is not otherwise directed by a water bar;
• Between wetlands and adjacent to disturbed upland areas, and as necessary, to prevent siltation of ponds, wetlands, or other waterbodies adjacent to or downslope of the work areas;
• At the edge of the construction workspace as needed to contain soil sediment; and,
• To be inspected on a daily basis in areas of active construction or equipment operation, on a weekly basis in areas with no construction or equipment operation and within 24 hours of a storm event that is 0.1 inch or greater.

Silt fencing may be needed in other project site locations as work progresses to keep sediment from leaving the construction site. All silt fences will be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches one third of the fence height. These repairs will be made within 24 hours of discovery or as soon as field conditions allow access. A sufficient supply of silt fences will be maintained on-site for emergency use and maintenance.

The silt fence diversion barrier may be removed as soon as the construction areas down slope have been permanently stabilized. The silt fence will remain in place over the winter, if necessary, and will be inspected and repaired prior to resuming the activities in the spring.

Straw/hay bales may be used in place of or in addition to soil fences. A sufficient supply of straw/hay bales will be stockpiled on-site for emergency use and maintenance. If straw/hay bales are used, they will be installed and maintained as follows:

• Straw/hay bales will be anchored in place with at least two 2-inch diameter stakes;
• Bindings on bales will be horizontal; and
• Bales will be replaced if damaged.

### 3.5.1.4 Check Dams

As construction activities progress, it may be necessary to install temporary check dams in existing or construction-related channels and drainages. This will reduce stormwater velocities, filter concentrated flows, and limit the amount of sediment traveling downstream. Check dams are generally used in concentrated flow areas, such as ditches and swales. These barriers will be placed so that 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.

### 3.5.1.5 Wetland Matting

Operators crossings wetland with vehicles and other equipment may harm water quality, alter the water flow, and damage habitat. To protect wetlands, the best strategy is to avoid or go around them. In areas where it has been permitted to cross wetlands, temporary crossing methods will be used to minimize impacts. Wetland matting details are provided in the Plan Drawings.
3.5.1.6 Concrete Washout

Concrete washout systems are typically used to contain washout water when chutes and hoppers are rinsed following delivery of concrete to the construction site. These washout systems are implemented to reduce the discharge of pollutants associated with concrete washout waste through consolidation of solids and retention of liquids. They will be located at least 100 feet from any creeks, wetlands, ditches, or storm drains/manmade conveyance systems. Excess concrete should be removed when the washout system reaches 50 percent of its design capacity. Excess concrete will be taken off-site for disposal and will not be disposed of or left on the ROW.

3.5.1.7 Erosion Control Blanket

An erosion control blanket is an organic or synthetic mulch incorporating a polypropylene, natural fiber or similar netting material. It can be used on slopes and in concentrated flow channels to prevent erosion by protecting the soil from rainfall impact, overland water flow, concentrated runoff, and wind. Staples, pins, or stakes should be used to prevent movement or displacement of the blanket. Erosion control blankets should be used with caution in certain areas as the blanket netting may pose a threat to certain wildlife species that may become entangled in the netting.

3.5.1.8 Filter Sock or Straw Wattles

Staked filter socks/straw wattles can be placed at regular intervals across steep slopes as check dams or “terraces” to slow velocity and filter sediments as an alternative to stake haybales in areas where haybale installation is difficult due to terrain.

Any accumulated sediment will be removed from the barriers before the deposit reaches 50 percent of the height (or before it reaches a lower height based on manufacturer’s specifications.)

Following construction, filter sock barriers may be left in place to decompose. However, filter socks/straw wattles should be sliced open so as not to hinder the movements of wildlife, including the Eastern box turtle or wood turtle.

3.5.1.9 Dewatering Activity

If groundwater is encountered during excavation of structure foundations, the water will be pumped from the excavated areas and discharged in accordance with applicable local and state requirements. Project guidelines will be followed throughout the Project site on how to properly handle and manage soil and groundwater excavated during proposed site activities. Depending on regulatory authorizations, the water may:

- Be discharged directly into municipal storm water catch basins;
- Be pumped first to a temporary fractionization (frac) tank and then discharged to the municipal storm water system;
- Be pumped into a tanker truck for disposal at appropriate wastewater treatment facilities located outside of the Project area; or
- Be pumped into filter bags and detention basins until sediment settles out.

Residual silt/sediment collected at the bottom of the frac tanks will be disposed off-site at an appropriately designated disposal facility. Proper catch-basin inlet protection will be installed at catch basin grates to prevent construction generated soil and debris from entering the existing roadway stormwater systems.

### 3.5.1.10 Vehicle Washing

Vehicle washing will not be conducted on the ROW or other sites of active construction. If vehicle washing is required, a designated area will be selected where runoff can be contained and properly disposed of. Engine degreasing and vehicle maintenance will not be allowed on the ROW or other active construction sites. Sediment tracked from the construction site must be removed at a frequency sufficient to prevent off-site impacts.

### 3.5.1.11 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 CT DEEP or local health department. Any portable water used must adhere to local and state water standard regulations.

### 3.5.1.12 Construction Staging/Storage Areas

Five temporary storage, staging and laydown areas will be needed to support construction. Areas used to support construction will have proper erosion and sediment control as previously described in Section 2.0 of this Plan.

### 3.5.1.13 Storm Drain Inlet Protection

Storm drain inlet protection will be installed at existing culvert locations where significant quantities of runoff are concentrated. The culvert inlet protection will be inspected after each rainfall and repaired as necessary. All sediment will be removed when sediment accumulates to one-half the original design depth of the storm drain inlet protection.
3.5.1.14 Seeding for Temporary Stabilization

If construction delays will exceed 30 calendar days, temporary seeding measures should be taken within seven (7) calendar days. A quick germinating plant, such as annual ryegrass, should be planted using the same seeding practices used for long-term stabilization.

3.5.2 Permanent Erosion and Sediment Control

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 according to recommended seeding plans after the last construction activity has been completed. The time period for reseeding should be minimized to the extent practicable to ensure areas are not left without vegetative cover.

3.5.3 Soil 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 rainfall, 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 seven (7) days after construction activities have temporarily or permanently ceased on any portion of the site. Seeding and mulching recommendations are provided in Section 3.6.

3.6 Monitoring/Reporting

- CL&P will file quarterly activity reports with the appropriate authorities documenting problems, including those identified by landowners, and corrective actions taken for 2 years following construction.
- CL&P will conduct follow-up inspections after the first and second growing seasons after seeding to monitor the success of revegetation. In upland areas, revegetation will be considered successful if vegetative cover is sufficient to prevent erosion of soils disturbed in the workspace. Sufficient vegetation coverage is defined as a uniform 70%. If sufficient vegetative cover has not been achieved after two full growing seasons, additional restoration measures will be implemented. Erosion control devices shall be removed upon successful stabilization and revegetation of disturbed areas.
- CL&P will implement one or more of the following measures in cooperation with the landowner, if warranted or required, to control off-road vehicles:
  a. post and maintain, as necessary, appropriate signage;
  b. installation of a locking gate with fencing to prevent bypassing;
  c. installation of a slash and timber barrier, a pipe barrier, or boulders across the ROW.
3.7 Final Stabilization and Cleanup

Since the project will not result in new impervious surface and is best characterized as the conversion from one vegetative cover type to another or to pervious access roads, the concern for post-construction runoff of pollutants is minimal. A post-construction stormwater management system has not been designed in the typical sense. The main post-construction concern will be additional erosion due to the steep, rocky slopes. The main focus of the controls is to establish robust vegetative cover before the end of the project, to eliminate run-off over exposed soils.

After final construction is complete, the disturbed areas not containing pavement, riprap, cobble, etc. will be permanently stabilized. Soil stabilization involves covering disturbed soils with grass, bark, mulch, straw, geotextile fabric, trees, vines, or shrubs. Vegetative cover reduces the erosion potential by absorbing the energy of rainfall, 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.

Once construction activity is complete in an area, it shall be stabilized with permanent seed and mulch within seven (7) days. The construction shall be timed so that all activities are complete and all areas are permanently seeded and stabilized no later than October 31st. This allows for the establishment of sufficient vegetative cover before the end of the growing season. After the entire site has reached at least 70% vegetative cover, the silt fence shall be removed and any remaining accumulated sediment will be cleaned from the controls and traps.

3.7.1 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 ensure 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 causing damage. When practicable, native plant species should be used for any landscaping activities.

3.7.2 Fertilizer

Soil in areas of disturbance may need supplementation with 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 stormwater exposure. Fertilizer spills will be cleaned up immediately. Fertilizers will not be applied along or in a waterway.
3.7.3 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 or three tons per acre on the disturbed areas. Other forms of mulch will be applied at a rate designated by Project specifications. Mulch will not be applied in wetlands, on lawns, nor 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 where necessary.

3.7.4 Topsoil

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.

3.7.5 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% density of the native background vegetative cover on all unpaved areas. Following revegetation, the permittee will conduct periodic site visits to verify vegetation establishment is satisfactory. If sufficient vegetative cover has not been achieved, then additional restoration measures will be implemented.

3.8 Inadvertent Disturbance Off ROW

- CL&P will restrict all activities to the permitted construction work areas. However, under extreme circumstances, such as while working on steep slopes in slippery conditions, and while grading on steep side hills, some inadvertent disturbance may occur outside of these areas. In the event that inadvertent disturbance occurs, the following procedures will be implemented:
  - The operator or foreman will immediately report the occurrence to the EI or Construction Representative. The EI will then notify the Construction Representative who will notify the appropriate CL&P personnel.
  - The conditions that caused the disturbance will be evaluated, and the Construction Representative and the EI will determine whether work at the site can continue under those conditions.
  - The nature of the disturbance will be evaluated and corrective actions taken as deemed necessary by the Construction Representative and the EI. Such measures may include
immediate re-contouring and seeding of the disturbed site, and/or installation of erosion control devices to contain the disturbance.

- CL&P will notify the landowner and appropriate agencies of the disturbance.