

## **Appendix D**

### **Soil Handling and Dewatering Plan**

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**SOIL HANDLING AND DEWATERING PLAN**

**STAMFORD RELIABILITY CABLE PROJECT**

**The Connecticut Light & Power Company**

**SEPTEMBER 11, 2013**



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## 1.0 INTRODUCTION

This *Soil Handling and Dewatering Plan* (“Plan”) addresses the Stamford Reliability Cable Project (“Project”). The Connecticut Light and Power Company (“CL&P”) retained Weston and Sampson to conduct a characterization study of the soil and groundwater excavation spoils (“Excess Material”) that will be encountered during the construction of the underground transmission line portion of the Project for planning purposes. This Plan has three primary components:

- Corridor review for potential sources of contamination and obtain state records identifying past spills;
- Document field observations and analytical results obtained from soil and groundwater samples in the vicinity of the above-referenced sites and at regular spacing along the proposed transmission line route; and
- Provide requirements for the proper identification, handling, storage, testing, and disposal of Excess Materials.

### 1.1 SPECIAL CONDITIONS AND NOTICE

The identification, handling, storage, testing and disposal of Excess Materials shall be conducted in accordance with this Plan, the D&M Plan, and all law, including local, state, and federal safety and environmental regulations, requirements and guidelines including the Connecticut Department of Energy and Environmental Protection (“CTDEEP”) Remediation Standard Regulations (“RSR”) and [Guidance for Utility Company Excavation](http://dep.state.ct.us/wtr/remediation/utilitycomp.htm) (<http://dep.state.ct.us/wtr/remediation/utilitycomp.htm>), as the same may be amended from time to time. In complying with this Plan, Contractor shall use its best efforts to protect workers and the public and avoid schedule delays.

#### 1.1.1 Reliability of Data

Contractor shall acknowledge, by such use of data contained in this Plan, and addenda, if any, that the data presented in this Plan (and addenda) is a representative, but not a comprehensive, description of subsurface conditions that may be encountered. The data contained in this Plan is a representative description of the observed subsurface conditions along the transmission line route as of the date of the sampling. Due to the nature of subsurface conditions, Contractor

shall not be entitled to fully rely on the data contained herein, but will use it as a guide in conjunction with appropriate field screening and laboratory confirmation techniques to field verify soil and groundwater classifications assigned herein.

### **1.1.2 Analytical Data Provided**

Weston and Sampson prepared a Subsurface Investigation Report detailing sampling processes and associated analytical tables. This report is located in Appendix A of this Plan. A complete electronic copy of the original laboratory data reports and tabulated data is available on compact disc upon request.

## **1.2 PURPOSE OF PLAN**

The purpose of this Plan is the following:

1. Provide and define a taxonomy of terms that may be used to describe soil and groundwater media impacted by varying types and concentrations of naturally and non-naturally occurring substances;
2. Summarize potential sources of constituents that may have impacted soil and groundwater to be generated during construction of the duct bank, splice vaults, and appurtenances;
3. Present soil and groundwater analytical data obtained for the purpose of characterization;
4. Provide limited information regarding the depth of rock encountered, where observed;
5. Identify soil disposal requirements and reuse options; and
6. Identify nature of observed groundwater impacts.

## **1.3 ORGANIZATION OF THIS PLAN**

Section 1.0 provides the general purpose of this Plan and special conditions applicable to the use of the data contained herein.

Section 2.0 provides background information regarding previous work conducted and defines material classifications and the restrictions associated with each classification.

Section 3.0 provides the potential sources of impacts that were identified in the Phase I Corridor Study, and provide the field data, and soil analytical data obtained in the Phase II Characterization Study and Phase III Geotechnical Survey. In addition, the estimated quantities and applicable soil classifications are provided for the soil that will be excavated during construction.

Section 4.0 will provide the groundwater analytical data of the Phase II Characterization Study and Phase III Geotechnical Survey and the applicable classification of groundwater that will be generated during construction.

Section 5.0 provides a summary of material handling requirements. This section includes requirements regarding general health and safety, training, notification, soil and groundwater management practices, transportation of Excess Materials, and construction impact mitigation.

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## **2.0 BACKGROUND AND FIELD INVESTIGATION**

The Connecticut Light and Power Company proposes to construct and operate a new 115-kilovolt ("kV") underground transmission line, extending approximately 1.5 miles between CL&P's Glenbrook and South End Substations in Stamford, and to make related improvements to both substations.

This Project would strengthen the reliability of the electric transmission system serving the Stamford-Greenwich Sub-area, eliminate violations of national reliability standards that occur today, address increasing demand for electricity from the City of Stamford's robust economic development efforts and be an important part of a long-range plan for improving the electric transmission system in the Stamford-Greenwich Sub-area.

### **2.1 PHASE I – CORRIDOR STUDY**

The Corridor Study consisted of two specific tasks, conducting a windshield survey and obtaining an environmental database search report for the proposed transmission line route. The purpose of the corridor study is to provide pertinent information on potentially high-risk environmental properties bordering and/or upgradient to the proposed transmission line route, and to identify documented releases along the transmission line route. The Corridor Study was needed to recognize data gaps from the Phase II and III work. The geotechnical boring locations did not take into account proximity to off-site properties of environmental concern, and there was considerable spacing (gaps) between some of the geotechnical boring locations. The results of the corridor study were used to guide Weston & Sampson on the placement of additional soil borings proposed for Phase II.

#### Windshield Survey

The windshield survey consisted of driving the preferred and alternate transmission line routes end-to-end to visually observe surrounding properties of increased environmental risk based on observed usage (e.g. gas stations, industrial properties, dry cleaners, etc.) The survey identified several noteworthy properties along and near the proposed transmission line route, but in general, the southwestern end of the proposed transmission line route, and the northeastern end of the proposed route along Lincoln Ave, East Main and North State Street possessed several parcels of increased environmental risk.

#### Environmental Database Report

Weston & Sampson retained Environmental Data Resources, Inc. (“EDR”) of Milford, Connecticut to perform an on-line corridor search of applicable State and Federal environmental databases to supplement findings from the windshield survey. A copy of the database report is available upon request. The results of the database search identified several noteworthy properties along and near the proposed cable route, but in general, the southwestern end of the proposed cable route, and the northeastern end of the proposed route along Lincoln Ave, East Main and North State Street possessed several parcels of increased environmental risk.

The southwestern end of the proposed transmission line route contains two parcels of particular environmental concern, currently known as 1 and 2 Dock Street. Both sites are included on several noteworthy environmental databases including the Environmental Protection Agency’s (“EPA”) Brownfield’s database, the voluntary cleanup program database, the State Hazardous Waste Site (“SHWS”) inventory, and the Leachate and Waste Water Discharge Inventory database. The 1 Dock Street site has documented petroleum-impacted soil from former coal gasification plant activities, an engineered cap is in place across much of the site, and a deed restriction (Environmental Land Use Restriction) is planned for the capped area. The 2 Dock Street site also has documented petroleum-impacted soil from past Underground Storage Tanks (“UST”) releases and fill material issues.

The results of the corridor study revealed the southwestern end of the proposed transmission line route, and the northeastern end of the proposed route as areas where additional testing was needed.

## **2.2 PHASE II – GEOPROBE BORINGS**

Weston & Sampson used a truck-mounted Geoprobe® 6600 operated by New England Geotech, LLC (“NEG”) on April 19 and 24, 2013. Eleven Geoprobe® soil borings were advanced throughout the cable route project area, with borings being focused primarily at the southwestern end and northeastern end of the proposed route. Geoprobe® borings GP-1 through GP-3 were advanced towards the eastern end of the corridor, borings GP-4 through GP-7 towards the middle and boring GP-8 through GP-11 towards the western end of the corridor. Groundwater grab samples were retrieved from Geoprobe® borings GP-1 and GP-3. The location of the soil borings are depicted in Appendix A on Figures 2 through 4.

The soil borings were generally completed to a depth of 16.0 feet below ground surface (“ft bgs”). Refusal was encountered at boring locations GP-2 and GP-10 at depths of 15.0 ft bgs and 13.0 ft bgs respectively. Additionally, a brick/clay pipe was encountered at approximately 8.0 ft bgs at boring GP-9, therefore this hole was abandoned. Groundwater was encountered in each of the borings at depths ranging from 7.0 ft to 14.0 bgs.

For the groundwater grab samples retrieved from Geoprobe® borings GP-1 and GP-3, 1-inch ID Schedule 40, polyvinyl chloride (“PVC”) screen were placed into the bore holes to sufficient depths to intercept the static water level in the borings. Tubing was subsequently placed inside the PVC pipe and attached to a peristaltic pump. Groundwater grab samples were collected using the peristaltic pump.

Soils were consistent with observations noted during Phase III. Alternating layers of gray and brown fine to medium grained sand with varying amounts of silt and gravel were noted in the borings. Fill material consisting of reddish fine to coarse sand, silt and gravel were observed at a select few boring locations. Organic (peat)-like soil was observed in borings GP-7 and GP-8 at depths ranging from 11.0 ft bgs to 16.0 ft bgs. No Photoionization Detector (“PID”) readings above background (0.0 ppm) were observed in any of the borings/samples advanced/collected during this Phase of investigation. Geoprobe® boring logs documenting subsurface conditions are included in Appendix A.

The same soil sampling rationale and collection methods utilized during Phase III were also used during this phase of the project. A duplicate sample (DUP-2) was also collected from GP-2 for QA/QC. The soil and groundwater samples were stored on ice and shipped under proper chain-of-custody protocols to Con-Test for chemical analysis. A total of twelve soil samples were collected, one from each of the eleven boring locations and the one duplicate sample. All soil samples were analyzed for the same parameters as outlined in Phase II. A subset of these samples, GP-2, GP-7, GP-10 and DUP-2 (hereinafter referred to as the “disposal parameter subset”) were also analyzed for additional waste disposal parameters, including:

- Leachable RCRA 8 Metals via the Toxicity Precipitate Leaching Procedure (TCLP);
- Total Petroleum Hydrocarbons (ETPH);
- Total cyanide;
- Reactive cyanide;
- Reactive sulfide;
- Flashpoint;
- pH; and
- Conductivity.

The two grab groundwater samples collected from Geoprobe® borings GP-1 and GP-3 were analyzed for the following parameters listed on the General Permit:

- PCBs;
- Pesticides;
- VOCs;
- SVOCs
- Total metals (Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Hexavalent Chromium, Cobalt, Copper, Lead, Magnesium, Mercury, Nickel, Selenium, Silver, Titanium, Tin, Vanadium and Zinc);
- ETPH;
- Total Oil and Grease;
- Herbicides;
- Total Cyanide; and
- Amenable Cyanide.

### **2.3 PHASE III GEOTECHNICAL SURVEY**

CL&P retained Clarence-Welti Associates, Inc. (“CWA”) to complete fourteen geotechnical soil borings located along the preferred and alternate cable routes. The location of the geotechnical borings are depicted in Appendix A on Figures 2 through 4. The boring locations were selected by CL&P and were designated B-1 through B-11, B-8A, B-9A and B-10A. CWA completed the borings using hollow stem auger drilling techniques on January 26, January 28<sup>th</sup> through January 31<sup>st</sup> and March 14, 2013. Weston & Sampson personnel were present during the geotechnical soil borings to observe soil conditions and collect environmental soil samples. Preparations were made to collect groundwater during the geotechnical drilling activities if groundwater was encountered within the anticipated soil construction depth (6-10 ft bgs). However, groundwater was not sampled during Phase III because it was encountered in many of the boring locations at depths ranging from 9.5 ft to 15.0 ft bgs, which approaches or surpasses the anticipated soil construction depth.

The geotechnical soil borings were completed to depths ranging from 17.0 ft bgs to 37.0 ft bgs. Completion depths for each boring were determined in the field by CWA and CL&P. Auger refusal was encountered in borings B-4 and B-9 at depths of 12.5 ft bgs and 4.0 ft bgs, respectively. CL&P approved the reduced completion depth for boring B-4, but requested CWA to off-set and re-drill the boring (designated boring B-9A).

In general, soils across the Project route consisted of alternating layers of gray and brown fine to medium sand with varying amounts of silt and gravel. Soils transitioned to coarse-grained sand with an increased amount of gravel and less silt with depth. Fill material consisting of dark brown fine to coarse sand with some silt and trace amounts of gravel was encountered in

borings B-2, B-3 and B-6 through B-10 at a thickness ranging from 3.0 ft to 12.0 ft. The fill in borings B-5, B-6, B-8A and B-9 had noticeable brick, wood, cinders and concrete. CWA's boring logs are available on request.

Soil samples retained for laboratory analysis were collected within the portion of the soil column matching the anticipated soil construction depth (6-10 ft bgs), which exhibited elevated PID readings (if any), and/or which exhibited visual/olfactory evidence of a release. In the absence of elevated PID readings or visual/olfactory evidence of a release, representative samples of different soil strata encountered across the transmission line route were collected.

No visual or olfactory evidence of a release was observed in any of the fourteen geotechnical soil borings. A calibrated PID was used to screen soil retrieved via split spoon samplers for the presence of volatile organic compounds (VOCs). No PID readings above background (0.0 ppm) were observed in the geotechnical soil borings or in any of the soil samples retained for laboratory analysis.

A total of fourteen soil samples were submitted for laboratory analysis from the geotechnical soil borings. One sample was collected from each of the geotechnical soil borings except for boring B-9A. A blind duplicate soil sample, designated DUP-1, was also collected from boring B-8A (1-4 ft) for quality assurance/quality control (QA/QC) purposes. The soil samples were stored on ice and shipped under proper chain-of-custody protocols to CL&P's subcontracted environmental testing laboratory Con-Test Laboratory (Con-Test) for chemical analysis. Con-Test is a state-certified laboratory located in East Longmeadow, Massachusetts. The fourteen soil samples were analyzed for the following parameters:

- Polychlorinated Biphenyls (PCBs);
- Extractable Total Petroleum Hydrocarbons (ETPH);
- VOCs;
- Pesticides;
- Semi-volatile Organic Compounds (SVOCs); and
- Total Resource Conservation and Recovery Act (RCRA) 8 Metals.

Soil sample B-6 was also analyzed for total hexavalent chromium, total trivalent chromium, pH and oxygen reduction potential (ORP) based on the reported total chromium concentration for this sample.

## 2.4 GROUNDWATER CLASSIFICATIONS

Select terms are identified herein and explained in their regulatory context to ensure consistent interpretation of the results contained within this Plan. Classifications are assigned to groundwater in all areas of the State of Connecticut. These assignments are based on both the use or potential use as well as known or presumed quality. The individual water quality classifications are GAA, GA, GB, and GC, in order of decreasing quality. In general, the classifications are as follows:

- GAA – existing or proposed sources of groundwater that are suitable for drinking without treatment;
- GA – potential sources of groundwater that are suitable for drinking without treatment;
- GB – existing sources of agricultural and industrial production groundwater but presumed not suitable for drinking without treatment based on historical urban/industrial use; and
- GC – groundwater that has been demonstrated to be not suitable for drinking; specific discharge requirements may apply.

According to the CTDEEP, over 90% of the State of Connecticut is classified at the highest levels of protection, as suitable for drinking without treatment; approximately 6% of the land area is classified as GB; and a very small area of the state is classified as GC.

Chemical analysis may demonstrate the presence of naturally occurring substances in concentrations exceeding background levels and/or detectable levels of other (i.e. non-naturally occurring) substances in groundwater of any classification. Such groundwater is referred to as impaired or impacted groundwater. Where identified herein or observed during construction, impacted groundwater must be containerized and discharged in accordance with applicable permits.

Groundwater quality beneath the transmission line route is classified as GB by the CTDEEP. This classification indicates that water is not suitable for direct human consumption without treatment. The 1.5-mile cable route and the 0.25-mile alternate route is not located in an Aquifer Protection Area.

## **2.5 SOIL**

### **2.5.1 Soil Classified as Clean**

A classification of clean refers to soil for which existing subsurface data indicates the media is not impacted with naturally occurring substances in concentrations exceeding background levels and/or detectable levels of other (i.e. non-naturally occurring) substances for which the media was analyzed. The CTDEEP does not place special management or disposal requirements on soil classified as clean; however, CL&P will limit the reuse of soil that has been classified clean, if proposed, for such purposes as commercial fill or road base material.

### **2.5.2 Soil Classified as Polluted**

A classification of polluted refers to soil that has been impacted by a release of a substance at a concentration above both a statistically derived background concentration and the analytical limit of detection for such a substance but does not exceed the lower of the regulatory concentrations listed in the RSRs for the following:

1. Direct exposure criteria (I/C DEC) for industrial or commercial properties;
2. Pollutant mobility criteria (GA/GAA PMC) for areas where groundwater is classified as GA or GAA; and
3. Pollutant mobility criteria (GB PMC) for areas where groundwater is classified as GB

CL&P limits the reuse of soil classified as polluted for such purposes as commercial fill or road base material. All other applicable CTDEEP requirements regarding the use/reuse of polluted and treated soil are applicable. Refer to the Regulations of Connecticut State Agencies (RCSA) Section 22a-133k-1 through 3, inclusive, and other requirements regarding use/reuse of polluted and/or treated soil.

### **2.5.3 Soil Classified as Impacted**

A classification of Impacted refers to soil that contains concentrations of a substance that exceeds the lower of the regulatory concentrations listed in the RSRs for the following:

1. Direct exposure criteria (I/C DEC) for industrial or commercial properties;
2. Pollutant mobility criteria (GA/GAA PMC) for areas where groundwater is classified as GA or GAA; and

3. Pollutant mobility criteria (GB PMC) for areas where groundwater is classified as GB.

Although not anticipated, soil classified as a hazardous waste may be encountered. Hazardous waste which refers, in general, to soil that is impacted with a federally listed hazardous waste(s) or is characteristically hazardous due to ignitability, corrosivity, reactivity, toxicity. Refer to the federal hazardous waste regulations (Title 40 Code of Federal Regulations (CFR) Parts 260-279 and Part 124) and Section 22a-449(c) of the Connecticut General Statutes (CGS) and Section 22a-449(c)-1.01 of the Regulations of Connecticut State Agencies (RCSA) for complete definitions of hazardous waste.

A soil sample is interpreted to be representative of potentially hazardous waste if the detected concentration is greater than 20 times the allowable toxicity characteristic leaching procedure (TCLP) limit. Based on the data presented herein, CL&P does not anticipate that hazardous waste will be encountered during construction.

Off-Site reuse, as defined by the CTDEEP (see above), of soil classified as contaminated is prohibited by the CTDEEP. However, "reuse" as daily cover or pre-contour landfill cap material is a viable disposal option. Refer to the RCSA 22a-133k-1 through 3, inclusive, and other requirements regarding soil use/reuse.

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### 3.0 SOIL DATA AND CLASSIFICATION

#### 3.1 EARTHWORK AND BASIS FOR VOLUME ESTIMATES

General earthwork activities include open trench construction for the installation of the duct bank and associated splice vaults. The majority of the duct bank will be installed using cut and cover trenching techniques. The duct bank excavation will measure approximately four-feet wide by six-feet deep in cross section. Three splice vault excavations will measure approximately 13-feet wide, 30-feet long, and 13-feet deep. The volume units provided in this Plan were calculated based on these dimensions.

Soil Type	Approximate Cubic Yards of Excess Soil
Clean	1,700 cubic yards
Polluted	6,300 cubic yards
Impacted	1,000 cubic yards
Impacted at 1 Dock Street	500 cubic yards

#### 3.2 ANALYTICAL RESULTS DISCUSSION

##### 3.2.1 Potential Sources of Impacts

The EDR Report is summarized in Appendix A and it identifies the potential sources of contamination. The EDR is available upon request. As referenced above, the southwestern end of the proposed transmission line route contains two parcels of particular environmental concern, currently known as 1 and 2 Dock Street. Both sites are included on several noteworthy environmental databases including the Environmental Protection Agency's ("EPA") Brownfield's database, the voluntary cleanup program database, the State Hazardous Waste Site ("SHWS") inventory, and the Leachate and Waste Water Discharge Inventory database.

##### 3.2.1.1 Soil Analytical Results

Soil analytical results from Phase II and Phase III are included in Appendix A. A summary of soil results organized by constituent type is presented below.

**PCBs:** PCB-1260 was detected in soil sample B-10A at a concentration of 0.20 milligrams per kilogram (mg/kg). No other PCB aroclors were detected in this sample; therefore 0.20 mg/kg also represents the total PCB concentration for this soil sample. The PCB concentration does not exceed the RES DEC or I/C DEC. Sample B-10A was collected from inside the South End 1G substation. PCBs were not detected above laboratory detection limits in any of the remaining soil samples analyzed.

**Pesticides:** The pesticide 4,4-DDT was detected in soil samples B-5, B-10A and B-11 at concentrations of 0.0053 mg/kg, 0.022 mg/kg and 0.011 mg/kg, respectively. There currently is no criteria established for 4,4-DDT. Pesticides were not detected above the laboratory detection limits in any of the other soil samples analyzed.

**VOCs:** Four VOCs, benzene, naphthalene, tetrachloroethylene and/or toluene were detected in soil samples B-2, B-5, B-8A, B-9, B-11, GP-1, GP-2, DUP-1 and DUP-2. A complete summary of the detected VOCs and their respective concentrations is included in Table 1. None of the detected VOC concentrations exceed applicable criteria. VOCs were not detected above laboratory detection limits in any of the remaining soil samples.

**SVOCs:** Up to eighteen SVOCs were detected in soil samples B-3, B-5, B-8A, B-9, B-10, B-10A, B-11, GP-1, GP-2, GP-7, GP-10, DUP-1 and DUP-2. A complete summary of the SVOCs detected in each soil sample and their respective concentrations are presented in Table 1. Soil samples B-5, B-10A, B-11, GP-1 and GP-10 exhibit select compounds at concentrations exceeding the RES DEC, I/C DEC and/or GA PMC. No RSR exceedences were documented in soil samples B-3, B-8A, B-9, B-10, GP-2, GP-7, DUP-1 and DUP-2 which contained SVOC detections. Soil samples B-1, B-2, B-4, B-6, B-7, B-8, GP-3 through GP-6, GP-8, GP-9, and GP-11 did not exhibit any SVOC detections.

**ETPH:** ETPH was detected in all fourteen soil samples (includes B-1 through B-11, B-8A, B-9A, B-10A and DUP-1) retained from the geotechnical drilling activities, and in eight out of twelve soil samples (GP-1, GP-2, GP-6 through GP-10 and DUP-2) retained from the Geoprobe® drilling activities. Reported concentrations ranged from 15 mg/kg in samples B-6, B-7 and GP-8 to 1,000 mg/kg at B-11. Soil samples B-11 and GP-10 exhibit elevated ETPH concentrations that exceed the RES DEC. Soil samples GP-3 through GP-5 and GP-11 did not exhibit any ETPH detections.

**Total RCRA 8 Metals:** Total arsenic, barium, cadmium, chromium, lead, mercury and silver were detected in the soil samples collected along the proposed cable route. A complete summary of the total metal compounds detected and their respective concentrations are presented in Table 1. Soil samples B-10A and GP-10 contained total lead concentrations that exceed the RES DEC. No other soil samples exhibited elevated total metal concentrations that exceed applicable RSR criteria.

Soil sample B-6 was analyzed for hexavalent and trivalent chromium concentrations because the total chromium concentration for this sample was 120 mg/kg, which exceeds the RES DEC or I/C DEC for hexavalent chromium. Soil sample B-6 was also analyzed for pH and ORP because determining the concentrations of both chromium species also requires analysis for pH and ORP. The results of the analyses revealed the hexavalent and trivalent chromium

concentrations were 0.17 mg/kg and 120 mg/kg, respectively, and the levels are below the RES DEC or I/C DEC.

**TCLP (Leachable) RCRA 8 Metals:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed detectable concentrations of leachable barium in all four soil samples and leachable lead in two samples. Leachable barium was detected at concentrations ranging from 0.31 milligrams per liter (mg/l) to 0.57 mg/l, and leachable lead was detected in soil samples GP-7 and GP-10 at concentrations of 1.5 mg/l and 0.36 mg/l respectively. Both samples with leachable lead detections (GP-7 and GP-10) exceed the GB PMC. No samples with the leachable barium detections exceed the GB PMC.

**TPH:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed detectable concentrations of TPH in all four soil samples ranging from 56 mg/kg to 670 mg/kg. The TPH concentration in soil sample GP-10 exceeds the RES DEC, but the concentrations in the remaining three samples (GP-2, DUP-2, GP-7) do not exceed the GB PMC.

**Total Cyanide:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed detectable concentrations of total cyanide in one sample GP-10. The reported concentration was 3.0 mg/kg, and it does not exceed the RES DEC or I/C DEC. The remaining the three soil samples comprising the “*disposal parameter subset*” did not have detections above the laboratory method detection limit.

**Reactive Cyanide:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed no detection above the laboratory detection limits for any of the samples.

**Reactive Sulfide:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed no detection above the laboratory detection limits for any of the samples.

**Ignitability / Flashpoint:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed flashpoint values on all four samples were greater than 212° Fahrenheit (100° Celsius). Materials with a flashpoint of less than 200° Fahrenheit (93.3° Celsius) but greater than 140° Fahrenheit (60° Celsius) are defined as combustible by the United States Department of Transportation (US DOT).

**pH:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed pH values ranging from 6.9 at GP-7 to 8.2 at GP-10. Materials with a pH less than 2.0 or greater than 12.5 are defined as corrosive hazardous materials by the US DOT.

**Conductivity:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed conductivity values ranging from 12 micro ohms per centimeter ( $\mu\text{mho/cm}$ ) at GP-2 to 34  $\mu\text{mho/cm}$  at GP-10.

### 3.2.1.2 Groundwater Analytical Results

Groundwater analytical results are included in Appendix A. A summary of groundwater results organized by constituent type is presented below.

**PCBs:** PCBs were not detected above the laboratory method detection limit in either groundwater sample.

**Pesticides:** Pesticides were not detected above the laboratory method detection limit in either groundwater sample.

**VOCs:** VOCs were not detected above the laboratory method detection limit in either groundwater sample.

**SVOCs:** SVOCs were not detected above the laboratory method detection limit in either groundwater sample.

**Total Metals:** Total arsenic, barium, chromium, cobalt, lead, nickel and/or magnesium were detected in the groundwater samples. A complete summary of the total metal compounds detected and their respective concentrations are presented in Table 2. None of the detected total metal concentrations exceed regulatory criteria set forth in the RSRs or the CTDEEP's *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer* (reissued February 15, 2008).

**ETPH:** ETPH was not detected above the laboratory method detection limit in either groundwater sample.

**Total Oil and Grease:** Oil and grease was not detected above the laboratory method detection limit in either groundwater sample.

**Herbicides:** Herbicides were not detected above the laboratory method detection limit in either groundwater sample.

**Total Cyanide:** Total cyanide was not detected above the laboratory method detection limit in either groundwater sample.

**Amenable Cyanide:** Amenable cyanide was not detected above the laboratory method detection limit in either groundwater sample.

## **4.0 MATERIAL HANDLING**

The majority of the duct bank will be installed using cut and cover techniques. Where cut and cover trenching is not permitted or impractical (railroad, etc.), appropriate trenchless techniques will be implemented. Trenchless techniques will likely include excavation of bore and receiving pits. It is anticipated that Excess Materials will either be stockpiled immediately adjacent to the excavations (within the boundaries of the temporary construction right-of-way) or placed in a dump truck for immediate transport off-Site for disposal or staging at a storage area. It is anticipated excavated soil will not be reused in the trench and will be brought to an off-site facility for disposal.

### **4.1 HEALTH AND SAFETY, TRAINING, AND OTHER REQUIREMENTS**

Contractor shall prepare and implement a detailed Site Health and Safety Plan (SHSP). The SHSP shall be completed in accordance with 29 CFR Section 1910.120(b) and shall include, but not be limited to, detailed hazard analyses for each major work item and provisions to address any and all impacted Excess Material, including management of soil gases and vapors, particularly in the are of Dock Street. Contractor shall be responsible for the health and safety of its own employees and are required to prepare and implement their own SHSPs.

All Contractor and Subcontractor personnel (including supervisors) involved in excavation and Excess Material handling activities shall attend, at Contractor's sole cost and expense, a minimum of twenty four (24) hours of OSHA training as outlined in 29 CFR Section 1910.120(e)(4). In addition, Contractor will designate a person(s) as "Competent Person" as defined by OSHA 29 CFR Section 1926.650 and will ensure that the designated "Competent Person" is present on-Site during the completion of all excavation work. Personnel responsible for excavation of Excess Material classified as contaminated shall also be trained and certified in accordance with the OSHA 40-hour HAZWOPER program (29 CFR Section 1910.120).

All process material, equipment and personal protective equipment required for working with material that is determined to be Level C-Modified hazardous substance (29 CFR Section 1910.120) will be listed in the SHSP, and will be provided by Contractor, at Contractor's sole cost and expense.

## **4.2 SOIL MANAGEMENT**

It is the intent of CL&P that the Phase II and Phase III presented in this Plan will be used to determine the appropriate disposal facility.

### **4.2.1 Material Segregation**

Where Excess Material has been classified as polluted or impacted, Contactor will not be required to segregate potentially non-impacted or clean overburden; however, Contractor shall segregate Excess Material classified as polluted from Excess Material classified as impacted. This condition may be waived in such cases where Excess Material classified as polluted or impacted are being transported to the same disposal facility and that disposal facility has provided written acceptance for such mixtures of Excess Material.

### **4.2.2 Stockpile Management**

Excess Material that is to be staged or stockpiled on unpaved surfaces will be placed on a minimum 6-mil plastic sheeting. If the Excess Material is to remain on the ground surface beyond the end of the work day during which it was generated, the stockpile(s) will be covered with secured 6-mil plastic sheeting, at a minimum. Furthermore, the stockpile will be surrounded with a berm constructed with clean soil, straw bales, or silt fence to reduce runoff. While remaining on-site, the stockpiles will be checked daily by Contractor to verify they are adequately covered. Contractor shall repair and/or replace covers as needed.

At Contractor's option, Contractor may establish and then shall maintain, at Contractor's sole cost and expense, one or more qualified and suitable staging area for the interim placement of all solid Excess Material pending transportation to an off-Site disposal facility. At least fifteen (15) business days before the commencement of any excavation, Contractor shall identify the proposed staging area for CL&P's review and approval. Contractor shall not commence excavating until after Contractor has obtained such approval from CL&P. In connection with such establishment of the staging area after CL&P approval, Contractor shall:

- Identify, design, create (including the procurement of all necessary permitting) and maintain the staging area for all solid Excess Material, in all cases in full compliance with applicable Law; and
- Establish such staging area in a timely manner to ensure that the volume of material can be accommodated and the staging area does not, due to insufficient capacity, adversely affect trenching activities and/or the schedule.

In addition to establishing the approved staging the Contractor shall maintain, manage and operate the staging area in accordance with this Plan and applicable Law. Without limiting the generality of the foregoing, Contractor shall:

- Ensure that proper soil and erosion control and leak containment measures are in place at the staging area;
- Transport Excess Material to the staging area, and load and unload all Excess Material arriving at and departing from the staging area. Contractor shall provide origin tickets (by truckload prior to leaving the construction area) for Excess Material. Loading manifests or tickets (copies of which shall be maintained by Contractor) shall be generated at the staging area for each shipment of Excess Material. Copies of the loading manifests and loading tickets shall be provided to CL&P on a monthly basis (or more frequently if requested by CL&P) to enable a fully traceable document trail to be maintained;
- Cover and manage stockpiles as previously described in this Plan;
- Manage and arrange for the storage of all Excess Material in the staging area, including the segregation (in manner that avoids cross-contamination and establishes reasonable quantities for testing and disposal purposes) of (i) Excess Material that, based on the Phase II/III Data in this Plan and/or Contractor's supplemental data, if any, is determined to be non-impacted and possesses no suspect characteristics or other causes for concern; (ii) any Excess Material that is classified as polluted or impacted based on the Phase II/III Data provided in this Plan and/or Contractor's supplemental field analysis, if any; and (iii) Excess Material that Contractor plans to reuse, subject to the restrictions contained herein, the Technical Specifications, and applicable Law, as backfill at the Site or at an CL&P-approved off-Site location;
- Arrange for and cause the supplemental testing, if any, of Excess Material, as required for proposed, alternate disposal facilities; and
- Maintain storage area housekeeping, all in accordance with this Plan, the D&M Plan, and applicable Law.

All soil management activities shall be conducted in accordance with the above requirements. Contractor shall also review the CTDEEP *Contaminated Soil and/or Sediment Management General Permit*, and comply with the requirements therein. If future versions of this permit are finalized, Contractor shall comply with requirements therein. Refer to Appendix B for copy of the General Permit.

#### **4.2.3 Disposal**

As Contractor may propose different excavation techniques that will result in varying trench/excavation profiles, this Plan does provide estimated quantities of Excess Material by volume. Contractor shall provide estimated quantities with its submitted bid as per the bid form.

##### **4.2.3.1 Planned Disposal Facilities**

The Phase II/III Data provided in this Plan will dictate the method of and location for disposal of Excess Material to be generated during construction unless actual conditions encountered during excavation dictate different management and/or disposal or unless supplemental testing is required by the CL&P-approved disposal facilities (described below). If, after receiving and reviewing the Phase II Characterization Data provided in this Plan, the planned disposal facilities require supplemental in-situ data, CL&P will collect, at CL&P's cost and expense, such data prior to excavation, to the extent possible.

##### **4.2.3.2 Contractor-Proposed Alternate Disposal Facilities**

CL&P requires that Contractor assume that all Excess Material (soil) will be transported and disposed of in accordance with the information provided above (in this Section 4). However, CL&P will consider alternative disposal facilities, if proposed by Contractor. Final approval of facilities must be obtained from CL&P prior to initiation of Site Work. Furthermore, all Excess Material (soil) must be managed and disposed of within the constraints specified for each soil classification (refer to Section 2.5). CL&P reserves the right to approve or reject any alternate disposal facility proposed by Contractor.

Given the above referenced restrictions, it is anticipated that Contractor-proposed alternates may include the reuse of soil classified as clean and polluted as commercial fill, road base, or daily cover/pre-contour cap material at alternate landfill facilities. Contractor must obtain permission from CL&P prior to transporting any Excess Material to a proposed alternate disposal facility or reuse site. If an alternate disposal facility proposed by Contractor requires supplemental data, Contractor shall conduct, at Contractor's sole cost and expense, field



analyses of the excavated and/or in-situ Excess Materials in accordance with the requirements identified by the proposed alternate disposal facility. If Contractor's field analysis indicates that any Excess Material must be reclassified from its current designation of clean, polluted, or impacted (based on pre-trenching screening and/or field indication during excavation), Contractor, shall:

- Ensure safety and health of all workers and the public;
- Immediately notify CL&P (including an indication of the location of such discovery); and
- Manage the Excess Material in accordance with the classification assigned by CL&P based on the additional information/data submitted by Contractor.

#### **4.2.3.3 Supplemental Testing**

If supplemental testing is required and the supplemental analytical data indicates that certain Excess Material is classified clean, Contractor may reuse such Excess Material at Contractor's sole cost and expense or dispose of such material in accordance with the requirements contained herein for Excess Material classified as polluted. If reuse is selected, Contractor must obtain and furnish documentation described in the previous section.

If the supplemental testing indicates that certain Excess Material is impacted and such conclusion conflicts with information provided in this Plan, except to the extent that Excess Material becomes contaminated due to any act or omission of Contractor, Contractor shall manage the Excess Material as contaminated, unless otherwise agreed to in writing by CL&P.

#### **4.2.3.4 Disposal Records and Documentation**

CL&P shall be designated as the generator of any Excess Material transferred to a disposal facility except in such cases where Excess Material was not previously classified as polluted or impacted and has come to require management as and/or be classified as polluted or impacted as a direct result of any act or omission of Contractor. In such cases, Contractor shall, at its sole cost and expense, be designated as generator and pay for transportation and disposal of such Excess Material.

Any such disposal and designation of CL&P as the generator shall not impair, affect or otherwise prejudice CL&P's rights of whatever nature against the State of Connecticut, any municipality or other CL&P of the underlying property (or Persons responsible for the

contamination thereof), including a claim for reimbursement for such disposal costs. In all cases, if Contractor elects to use an alternate disposal facility or is required to supplement the Phase II and III Characterization Data provided in this Plan for either a pre-approved disposal facility or an approved alternate disposal facility, Contractor shall obtain a written statement from the treatment and/or disposal facility acknowledging acceptance of such Excess Material and the testing associated therewith. Contractor shall deliver each such original, executed statement to CL&P.

Contractor, with CL&P's cooperation, shall prepare and process, and will provide CL&P with copies of all filings and other documentation required in connection with the disposal of Excess Material.

#### **4.3 MANAGEMENT OF LIQUID MATERIALS**

It is the intent of this Plan that groundwater shall be managed and discharged to surface water directly or via storm water systems in accordance with the CTDEEP *General Construction Dewatering Permit* if possible. If treatment is needed prior to discharge, Contractor may use a CTDEEP *General Permit for Remediation Wastewater* or other applicable permit(s) for discharge to storm or sanitary systems. As a last resort, water may be transported off-Site for disposal.

Contractor will be responsible for the management of all forms of liquid Excess Materials, including the following:

- Estimate groundwater yield;
- Obtain applicable discharge permits;
- Size, provide, and operate required water handling and treatment equipment; and
- Collect influent/effluent samples and report results, as required by law.

##### **4.3.1 Dewatering**

Prior to the commencement of excavation, Contractor shall prepare a Dewatering Plan for liquid forms of Excess Material and submit it for review by CL&P. The Dewatering Plan will describe the necessary state and local municipal approvals, notification, screening tests, treatment, and water disposal practices that will apply and/or be implemented. Contractor shall be responsible for the design, installation, and operation of the temporary construction dewatering systems.

The intent of Section 4.3 of this Plan is to establish the minimum groundwater management practices that should be included in the Dewatering Plan. These practices include conveyance and storage in temporary settlement tanks staged within the temporary construction right-of-way or in a nearby, secured area. If additional controls are needed for controlling suspended solids, Contractor will supply bag filters, sand filters, flocculants, etc. Where chemical constituents are present at concentrations that exceed applicable discharge limits, Contractor will provide a suitable means of treatment prior to discharge. Contractor will obtain discharge permits from applicable authorities for discharge to local surface water bodies, storm water utilities, sanitary sewer systems, etc.

Additional details on dewatering can be found in Appendix C – City of Stamford Water Pollution Control Authority (WPCA) Miscellaneous Discharge Permit and Appendix D- Dewatering Specifications.

#### **4.3.2 Discharge**

All collected water shall be discharged in accordance with the requirements of the applicable permits. Contractor shall:

- Ensure safety and health of all workers and the public;
- Obtain any necessary federal, state and/or local permits for any storage, treatment, discharge and/or disposal;
- Arrange for and cause the storage of the subject liquid forms of Excess Material;
- Coordinate, collect, and analyze water samples in accordance with applicable discharge permits; and
- Arrange for and cause the discharge of the collected liquid Excess Material in accordance with this Plan, the D&M Plan, and applicable permits and Law.

Contractor shall solely bear the costs of dewatering and discharge for all liquid Excess Materials that do not require pre-treatment prior to discharge.

In such case that on-Site treatment is needed prior to discharge or that off-Site disposal is the only appropriate response, Contractor shall provide and operate suitable treatment technologies to treat the collected water and subsequently, Contractor shall collect and analyze samples (in

batches if required by applicable permits) prior to discharge to demonstrate compliance with applicable permit discharge limitations or Contractor shall transport and dispose of the collected water at an CL&P-approved off-Site disposal facility. Treated batches of water will not be discharged until analytical results are received to confirm the discharge permit limitations can be met.

CL&P shall be designated as the generator of any form of liquid Excess Material transferred to a disposal facility unless such Excess Material is disposed of due to any act or omission of Contractor. In such case, Contractor shall be designated as the generator of the subject Liquid Excess Material. Designation of CL&P as the generator shall not impair, affect or otherwise prejudice CL&P's rights of whatever nature against the State of Connecticut, any municipality or other CL&P of the underlying property (or Persons responsible for the contamination thereof), including a claim for reimbursement for such disposal costs. In all cases, Contractor shall obtain a written statement from the treatment and/or disposal facility acknowledging acceptance of such liquid forms of Excess Material and the testing associated therewith. Contractor shall deliver each such original, executed statement to CL&P. At Contractor's sole cost and expense, Contractor, with CL&P's cooperation, shall prepare and process and will provide CL&P with copies of all filings and other documentation required in connection with the disposal of impacted liquid form of Excess Material.

#### **4.4 TRANSPORTATION**

##### **4.4.1 General Requirements**

Transportation of Excess Material will be completed using properly licensed drivers and trucks. All trucks will have proper placards and meet all applicable state and federal Department of Transportation (DOT) requirements. All truck loads will be inspected and tires will be cleaned prior to leaving the Site. Loads will be appropriately covered using tarps or equivalent covers before leaving the site. In the event a tarp rips or comes loose, the truck will stop and the tarp will be repaired or replaced. If the tarp is not repairable, the truck will not be moved until a new tarp can be obtained and placed on the truck.

If hazardous wastes are encountered, Contractor shall use a licensed hazardous waste transporter. The necessary documents, including the uniform hazardous waste manifests, will be completed and accompany each truck driver to the disposal facility. Each driver will also carry a Material Safety Data Sheet (MSDS) that describes the nature and concentrations of the wastes. These documents will be immediately accessible in case of an emergency.

Trucks carrying non-hazardous material, regardless of whether the material is classified as clean, polluted, or impacted, will also carry proper documentation, including bills of lading or manifests.

#### **4.4.2 Transportation Routes**

Contractor shall coordinate planned transportation routes with local, state, and federal authorities, as applicable. Where required, Contractor shall also notify the local emergency planning commissions (LEPC) or other similarly authorized Governmental Authorities prior to commencement of any transportation involving hazardous wastes.

### **4.5 CONSTRUCTION IMPACT MITIGATION MEASURES**

#### **4.5.1 Dust Control**

Contractor shall develop and implement a Dust Control Plan. Construction activities will be completed so as to minimize the creation and dispersion of dust, including the following measures:

- Apply water while excavating, loading, and backfilling as needed;
- Limit vehicle speeds on unpaved or debris covered portions of the Site;
- Minimize drop heights while excavating or loading; and
- Stockpile best management practices previously described.

#### **4.5.2 Equipment Decontamination**

If Contractor vehicles and construction equipment contact materials classified as polluted or contaminated, then Contractor shall clean the equipment prior to leaving the work area. Decontamination may be achieved with dry methods such as brushing, scraping, or vacuuming. If the dry methods are not effective, wet methods such as steam cleaning or pressure washing may be employed. If such options are used, Contractor shall be required to collect and appropriately manage the wash water generated during the decontamination activities. Wash water management methods may include on-Site treatment and discharge or hauled away for off-Site disposal. Waste materials generated during decontamination will be stored within the temporary construction right-of-way in appropriate containers or as stockpiles managed as previously described. Samples of the waste materials will be collected and analyzed prior to discharge or hauled away to confirm the proposed/selected disposal method is appropriate.

### **4.5.3 Storm Water Pollution Control Measures**

The Contractor will follow the requirements of the Storm Water Pollution Control Plan.

\* \* \* \*



**APPENDIX A**

**Weston and Sampson Subsurface Investigation Report**



**Stamford Reliability  
Cable Project  
Stamford,  
Connecticut**

REVISED Subsurface  
Investigation Report

August 2013



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## EXECUTIVE SUMMARY

Weston & Sampson Engineers, Inc. (Weston & Sampson), on behalf of The Connecticut Light & Power Company (CL&P), performed a Subsurface Investigation (SI) in support of the Stamford Reliability Cable Project which extends from the South End 1G Substation northeasterly towards the Glenbrook 1K Substation in Stamford, Connecticut. The project corridor consists of a 1.5-mile preferred 115-kV underground transmission cable route and a 0.25-mile alternate 115-kV underground transmission cable route which traverses through a mix of residential, commercial, and industrial areas. The majority of the routes are along paved roadways with the exception of a small segment of the alternate route that cuts across the northern property boundary of two private properties known as 1 Dock Street and 2 Dock Street.

Weston & Sampson did not perform this investigation for verification and sign-off by a Connecticut Licensed Environmental Professional (LEP); however all fieldwork was performed in accordance with the following performance standards: the Remediation Standard Regulations (RSRs) established by the Connecticut Department of Energy and Environmental Protection (CTDEEP), the CTDEEP's September 2007 Site Characterization Guidance Document (SCGD), and the Significant Environmental Hazard Condition Notification Statute established by the CTDEEP.

The SI study was performed to determine the absence or presence of regulated compounds in soil and/or groundwater that may have resulted from releases of oil and/or hazardous substances from surficial roadway releases, off-site properties or fill material. Additionally, results of this study will be used to determine soil management options and provide analytical data if construction dewatering is needed. The activities conducted as part of the SI study were completed in a three-phase approach. Phase I included the advancement of fourteen geotechnical borings with associated environmental soil sampling. Phase II included a corridor study of the proposed conduit route and alternate route to identify off-site properties of environmental concern. Phase III included the advancement of eleven Geoprobe<sup>®</sup> soil borings with associated soil and groundwater sampling.

Conclusions drawn from the SI study are presented below:

- The alternate route that cuts across the northern property boundary of 1 Dock Street will impact a previously installed engineered cap consisting of flexible membrane liner (FML) and geocomposite drainage media. The same site will also have an Environmental Land Use Restriction (ELUR) imposed on a portion of the property; however, the ELUR has not yet been filed with CTDEEP or with municipal land records;
- The corridor study identified parcels of environmental concern near the southwestern and northeastern sections of the proposed conduit route and alternate route;
- Fill material consisting of sand, silt and gravel mixed with urban fill materials such as brick, cinders, wood and/or concrete were observed at varying depths throughout the geotechnical and Geoprobe<sup>®</sup> boring locations;
- Photoionization Detector (PID) readings above background (0.0 parts per million [ppm]) were not observed at any of the boring locations; and
- The soil analytical results revealed the presence of both non-naturally and naturally occurring compounds including polychlorinated biphenyls (PCBs), pesticides, volatile organic-compounds (VOCs), semi-volatile organic compounds (SVOCs), extractable

total petroleum hydrocarbons (ETPH), total petroleum hydrocarbons (TPH), total and leachable metals in soils throughout the project corridor.

Three categories of soil were identified throughout the work site. They include:

1. Impacted soils, which are soils exceeding applicable CTDEEP soil cleanup criteria, exist at boring locations B-5, B-10A, B-11, GP-1, GP-7 and GP-10. Exceedences were noted for SVOCs, ETPH, TPH, total lead and leachable lead. Impacted soils above 12 feet (ft) beneath the ground surface (bgs) are also expected at boring location B-11 even though the analytical data doesn't support this classification because the soil sample was collected 12-14 ft bgs, and nearby samples B-11 and GP-10 portray *impacted soils* at shallower depths. *Impacted soils* will require proper handling and off-site disposal at a permitted disposal facility. If *impacted soils* are temporarily staged for off-site disposal, the CTDEEP *General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)* may apply depending on the volume of soil stockpiled.
2. Polluted soils, which are soils exhibiting non-naturally occurring chemical compounds at concentrations below applicable CTDEEP soil cleanup criteria, exist at boring locations B-1 through B-4, B-6 through B-10, GP-2, GP-6, GP-8 and GP-9. Contaminants include PCBs, ETPH, VOC, SVOC, TPH and/or pesticides. *Polluted soils* will require proper handling, though they do not require off-site disposal. These soils can be transported to NUSCO's vendor for soil staging and reuse (e.g. True Blue).
3. Clean soils, which are soils exhibiting only naturally occurring chemical compounds at concentrations below applicable CTDEEP soil cleanup criteria, exist at boring locations GP-3, GP-4, and GP-5. *Clean soils* will require proper handling in order to avoid being combined with polluted or impacted soils. These soils do not require off-site disposal, and can be transported to NUSCO's vendor for soil staging and reuse (e.g. True Blue).

The groundwater analytical results for GP-1 and GP-3, which encompasses the northeastern end of the cable route, revealed the water in these areas was relatively clean with detections noted for naturally-occurring metals. There were no detections for non-naturally occurring compounds including VOC, SVOCs, or petroleum hydrocarbons. The reported metal concentrations did not exceed CTDEEP RSR criteria or effluent limitations in the CTDEEP's *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer*.

Aside from the sample locations GP-1 and GP-3, groundwater quality was not evaluated elsewhere along the proposed cable route because water was not encountered within the specified soil disturbance depth.

Based on the summary and conclusions noted above, Weston & Sampson recommends the following:

- Soil generated from the Stamford Reliability Cable Project should be managed in accordance with the three soil categories (*Impacted Soil*, *Polluted Soil*, and *Clean Soil*) described in the preceding section. A plan showing the three soil categories superimposed over the proposed cable route is provided as Figure 5. These soils can be transported to NUSCO's vendor for soil staging and reuse (e.g. True Blue). As previously stated, *impacted soils* will require proper handling and off-site disposal at a permitted disposal facility. Additionally, if impacted and/or polluted soils are temporarily staged off-site prior to disposal/reuse, the provisions of the CTDEEP's *General Permit*

for *Contaminated Soil and/or Sediment Management (Staging and Transfer)* may apply depending on the volume of soil stockpiled;

- If the 0.25-mile alternate route were incorporated into the final route design, it will affect a property (1 Dock Street) that recently had installed an engineered cap, and will eventually have an ELUR filed for the property on city land records. Engineering and construction oversight services will be needed to facilitate repair to the liner and proper management of impacted soils to permitted disposal facilities. Legal counsel will also be needed to discuss subordination agreements related to the ELUR;
- If dewatering were needed for the northeastern end of the cable route around borings GP-1 and GP-3 and there were no obvious signs of contamination (e.g. oily sheen) in the dewatering wastewaters, we believe the water discharge could be managed under the CTDEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities*; and
- If dewatering were needed for the remainder of the project corridor where groundwater data wasn't obtained, two options exist. Option 1 includes conducting additional testing of the groundwater in order to characterize water quality and determine which CTDEEP permit would apply for the dewatering. Option 2 includes having the contractor assume the water is contaminated and treat the dewatering discharge in accordance with the CTDEEP's *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer*. This approach requires completion of a permit registration, submission to CTDEEP, and pre-approval from the local publically-operated treatment works (POTW). There also is a permit fee of \$500 for filing the registration. Weston & Sampson does not feel managing the dewatering discharge per the CTDEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* is a viable option based on the limited testing performed to date, the GB groundwater classification for the project area, the urban setting for the project area, and information contained in the EDR database search report.

## **1. INTRODUCTION AND BACKGROUND**

### **1.1 Introduction**

Weston & Sampson Engineers, Inc. (Weston & Sampson), on behalf of CL&P, performed an SI study in support of the Stamford Reliability Cable Project. The purpose of the SI was to assess soil and groundwater conditions and confirm the presence or absence of a release(s) of regulated compounds within the construction corridor. Additionally, the SI study will aid in the determination of soil management options and provide analytical data for construction dewatering purposes, if necessary.

Weston & Sampson did not perform this investigation for verification and sign-off by a Connecticut Licensed Environmental Professional (LEP); however all fieldwork was performed in accordance with the following performance standards: the Remediation Standard Regulations (RSRs) established by the Connecticut Department of Energy and Environmental Protection (CTDEEP), the CTDEEP's September 2007 Site Characterization Guidance Document (SCGD), and the Significant Environmental Hazard Condition Notification Statute established by the CTDEEP.

### **1.2 Project Location and Description**

The project consists of the installation of 1.5-miles of 115-kV underground transmission cable commencing at the South End 1G Substation and extending northeasterly to the Glenbrook 1K Substation. A 0.25-mile alternate route was also incorporated into this assessment that commences at the South End 1G Substation, extends along Pacific Street, crosses through the northern portion of two private properties known as 1 Dock Street and 2 Dock Street, and then traverses northerly along Canal Street before tying into the preferred cable route extending along South State Street. See Figure 1 Project Corridor Layout Plan – 115-kV Route Options. The 1.5-mile cable route and the 0.25-mile alternate route will be referred to hereinafter throughout this report as “cable route.”

The proposed cable route will be encased in concrete at depths ranging from 6-10 ft bgs. Three proposed cable vaults measuring 24-feet long by 10-feet wide and 10-feet deep will also be installed along the corridor. The project traverses through a mix of residential, commercial and industrial areas.

### **1.3 Geology**

According to the “Bedrock Geological Map of the Connecticut,” (Rodgers, 1985), the bedrock underlying the project corridor is described as the Pumpkin Ground Member of the “Harrison Gneiss Formation.” This formation consists of gray to spotted, medium to coarse-grained foliated gneiss. Bedrock/ledge was not encountered at any of the boring locations.

According to the “Surficial Materials Map of the Connecticut,” (Stone et al., 1992), the surficial geology underlying the project corridor is described as a mixture of sand and gravel and artificial fill. Artificial fill is earth materials and manmade materials that have been artificially emplaced, and are principally found along the coast.

### **1.4 Groundwater Classification**

Groundwater quality beneath the cable route is classified as GB by the CTDEEP. This classification indicates that water is not suitable for direct human consumption without treatment. The 1.5-mile cable route and the 0.25-mile alternate route is also not located in an Aquifer Protection Area.

## **1.5 Hydrogeology**

The site topography throughout the cable route is generally flat with little relief. Based on the regional topography, groundwater in the surrounding area flows to the south toward Long Island Sound.



## 2. REGULATORY FRAMEWORK

### 2.1 Remediation Standard Regulations

The CTDEEP has developed the Remediation Standard Regulations (RSRs), Sections 22a-133k-1 through 3 of the Regulations of the Connecticut State Agencies (RCSA), that specify the allowable levels of regulated compounds in soil and groundwater for both GA (groundwater presumed drinkable without treatment) and GB (presumed unsuitable for drinking without treatment) groundwater classification areas. The RSRs are typically used for all sites undergoing environmental investigations as a baseline to evaluate a site's potential environmental liability. However, the project area, to the best of our understanding, is not obligated to meet numeric criteria established in the RSRs because it is not entered into any type of CTDEEP remedial program, there is no CTDEEP enforcement action (i.e. Notice of Violation, Consent Order, etc.) being taken against any portions of the project, and none of the soil or groundwater data compiled as part of this assessment triggers any reportable condition pursuant to the CTDEEP's Significant Environmental Notification Statute (CGS 22a-6U). Because of these circumstances, the project technically is not required at this time to comply with the RSRs nor is remediation of soil or groundwater required. However, while the RSRs do not apply to this project, Weston & Sampson utilized the same level of care as if the project did qualify to ensure all potential release areas were identified.

#### 2.1.1 Soil Criteria

The RSRs define two criteria that apply to soil: the Direct Exposure Criteria (DEC) and the Pollutant Mobility Criteria (PMC). The DEC defines the maximum level of regulated compounds allowed in soil to a depth of 15 feet below ground surface (bgs) without posing a threat due to direct human exposure, while the PMC sets the maximum level of regulated compounds allowed in soil above the water table without posing a threat to groundwater quality. Each criterion is further divided into two categories; the DEC is based upon Site usage (i.e. Residential or Industrial/Commercial use), while the PMC is based on the groundwater classification (i.e. GA/GAA or GB). The project area is located in a GB groundwater classification area and therefore would be required to meet the GB PMC.

The Residential DEC must be met if a Site is to be used for residential purposes. The CTDEEP and the RSRs define "residential activity" to include any activity related to a residence or dwelling, or to a school, hospital, day care center, playground, or outdoor recreation area. If a Site or property is not to be used for residential purposes, then the Industrial/Commercial DEC may be met if an Environmental Land Use Restriction (ELUR) is filed for the Site. The ELUR would limit the Site to only industrial or commercial usage. The project meets the definition of industrial/commercial.

The DEC does not apply if soil meets the definition of "inaccessible," and the PMC does not apply if soil meets the definition of "environmentally isolated." In either case, an ELUR is required.

Soil can be rendered "inaccessible" if the impacted soil is covered by four feet of clean fill (non-polluted material), or covered by two feet of clean fill and a minimum of three inches of asphalt, or covered by a building or other permanent structure. Soils that are isolated beneath a building or other impermeable structure may be considered "environmentally isolated", such that with the use of an ELUR, the PMC does not apply. Pavement is not considered impermeable and cannot be used to render soil environmentally isolated.

Additionally, the RSRs provide certain exceptions and variances with regard to polluted fill when specific criteria are met for the Site. Moreover, the RSRs also provide several self-implementing options for assessment and remediation of regulated compounds in soil.

### 2.1.2 Groundwater Criteria

The RSRs define one criterion, the Surface Water Protection Criteria (SWPC) that applies to groundwater in GB groundwater areas. The SWPC applies to impacted groundwater that is discharging to a surface water body, including wetlands, streams, rivers, ponds, lakes, and Long Island Sound. One standard has been set for all surface water bodies, regardless of quality classification. The SWPC specifies the levels of compounds allowable in groundwater just prior to discharging into surface water. For sites without surface water nearby, compliance with the SWPC is based on the average plume concentration across the Site. The RSRs also allow the evaluation of an alternative SWPC, based on available dilution in the receiving water body. The SWPC was used to evaluate whether or not impacted groundwater may be encountered during construction.

## 2.2 Other Criteria

Groundwater samples collected as part of the SI study were also compared to discharge effluent criteria established in the CTDEEP's *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer* (reissued February 15, 2008). This criteria was used to evaluate whether or not GB groundwater quality (e.g. impacted groundwater) along the cable route could exceed effluent limits requiring pre-treatment and/or a CTDEEP discharge permit.

### 3. FIELD INVESTIGATION

#### 3.1 Project Approach

The SI study was completed in a three-phased approach to coincide with other planned engineering activities (geotechnical drilling) coordinated by CL&P, and to adequately characterize soil and groundwater throughout the cable route project area. Phase I included corridor studies of the proposed transmission line route and alternate route to identify bordering and/or upgradient properties of environmental concern. Phase II included the advancement of eleven Geoprobe<sup>®</sup> soil borings with associated soil and groundwater sampling. Phase III included the advancement of fourteen geotechnical borings with associated environmental soil sampling along the proposed cable route.

#### 3.2 Phase I- Corridor Study

The corridor study consisted of two specific tasks, conducting a windshield survey and obtaining an environmental database search report for the proposed cable route. The purpose of the corridor study is to provide pertinent information on potentially high risk environmental properties bordering and/or upgradient to the proposed cable route, and to identify documented releases along the cable route. The corridor study was needed because of recognized data gaps from the Phase I work. The geotechnical boring locations did not take into account proximity to off-site properties of environmental concern, and there was considerable spacing (gaps) between some of the geotechnical boring locations. The results of the corridor study were used to guide Weston & Sampson on the placement of additional soil borings proposed for Phase III.

##### 3.2.1 Windshield Survey

The windshield survey consisted of driving the preferred and alternate cable routes end-to-end to visually observe surrounding properties of increased environmental risk based on observed usage (e.g. gas stations, industrial properties, dry cleaners, etc.) The survey identified several noteworthy properties along and near the proposed cable route, but in general, the southwestern end of the proposed cable route, and the northeastern end of the proposed route along Lincoln Ave, East Main and North State Street possessed several parcels of increased environmental risk.

##### 3.2.2 Environmental Database Report

Weston & Sampson retained Environmental Data Resources, Inc. (EDR) of Milford, Connecticut to perform an on-line corridor search of applicable State and Federal environmental databases to supplement findings from the windshield survey. A copy of the database report is included as Appendix B. The results of the database search identified several noteworthy properties along and near the proposed cable route, but in general, the southwestern end of the proposed cable route, and the northeastern end of the proposed route along Lincoln Ave, East Main and North State Street possessed several parcels of increased environmental risk.

The southwestern end of the proposed cable route contains two parcels of particular environmental concern, currently known as 1 and 2 Dock Street. Both sites are included on several noteworthy environmental databases including the EPA's Brownfield's database, the voluntary cleanup program database, the State Hazardous Waste Site (SHWS) inventory, and the Leachate and Waste Water Discharge Inventory database. The 1 Dock Street site has documented petroleum-impacted soil from former coal gasification plant activities, an engineered cap is in place across much of the site, and a

deed restriction (ELUR) is planned for the capped area. The 2 Dock Street site also has documented petroleum-impacted soil from past UST releases and fill material issues.

The results of the corridor study revealed the southwestern end of the proposed cable route, and the northeastern end of the proposed route as areas where additional testing was needed.

### 3.3 Phase II – Geoprobe Borings

Weston & Sampson mobilized to the Site a truck-mounted Geoprobe® 6600 operated by New England Geotech, LLC (NEG) on April 19 and 24, 2013. Eleven Geoprobe® soil borings were advanced throughout the cable route project area, with borings being focused primarily at the southwestern end and northeastern end of the proposed route. Geoprobe® borings GP-1 through GP-3 were advanced towards the eastern end of the corridor, borings GP-4 through GP-7 towards the middle and boring GP-8 through GP-11 towards the western end of the corridor. Groundwater grab samples were retrieved from Geoprobe® borings GP-1 and GP-3. The location of the soil borings are depicted on Figures 2 through 4.

The soil borings were generally completed to a depth of 16.0 feet bgs. Refusal was encountered at boring locations GP-2 and GP-10 at depths of 15.0 ft bgs and 13.0 ft bgs respectively. Additionally, a brick/clay pipe was encountered at approximately 8.0 ft bgs at boring GP-9, therefore this hole was abandoned. Groundwater was encountered in each of the borings at depths ranging from 7.0 ft to 14.0 bgs.

For the groundwater grab samples retrieved from Geoprobe® borings GP-1 and GP-3, 1-inch ID Schedule 40, polyvinyl chloride (PVC) screen were placed into the bore holes to sufficient depths to intercept the static water level in the borings. Tubing was subsequently placed inside the PVC pipe and attached to a peristaltic pump. Groundwater grab samples were collected using the peristaltic pump.

Soils were consistent with observations noted during Phase III. Alternating layers of gray and brown fine to medium grained sand with varying amounts of silt and gravel were noted in the borings. Fill material consisting of reddish fine to coarse sand, silt and gravel were observed at a select few boring locations. Organic (peat)-like soil was observed in borings GP-7 and GP-8 at depths ranging from 11.0 ft bgs to 16.0 ft bgs. No PID readings above background (0.0 ppm) were observed in any of the borings/samples advanced/collected during this Phase of investigation. Geoprobe® boring logs documenting subsurface conditions are included in Appendix A.

The same soil sampling rationale and collection methods utilized during Phase III were also used during this phase of the project. A duplicate sample (DUP-2) was also collected from GP-2 for QA/QC. The soil and groundwater samples were stored on ice and shipped under proper chain-of-custody protocols to Con-Test for chemical analysis. A total of twelve soil samples were collected, one from each of the eleven boring locations and the one duplicate sample. All soil samples were analyzed for the same parameters as outlined in Phase I. A subset of these samples, GP-2, GP-7, GP-10 and DUP-2 (hereinafter referred to as the “*disposal parameter subset*”) were also analyzed for additional waste disposal parameters, including:

- Leachable RCRA 8 Metals via the Toxicity Precipitate Leaching Procedure (TCLP);
- Total Petroleum Hydrocarbons (ETPH);
- Total cyanide;
- Reactive cyanide;

- Reactive sulfide;
- Flashpoint;
- pH; and
- Conductivity.

The two grab groundwater samples collected from Geoprobe® borings GP-1 and GP-3 were analyzed for the following parameters listed on the General Permit:

- PCBs;
- Pesticides;
- VOCs;
- SVOCs
- Total metals (Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Hexavalent Chromium, Cobalt, Copper, Lead, Magnesium, Mercury, Nickel, Selenium, Silver, Titanium, Tin, Vanadium and Zinc);
- ETPH;
- Total Oil and Grease;
- Herbicides;
- Total Cyanide; and
- Amenable Cyanide.

### **3.4 Phase III – Geotechnical Borings**

CL&P retained Clarence-Welti Associates, Inc. (CWA) to complete fourteen geotechnical soil borings by NUSCO located along the preferred and alternate cable routes. The location of the geotechnical borings are depicted on Figures 2 through 4. The boring locations were selected by CL&P – Transmission Group and were designated B-1 through B-11, B-8A, B-9A and B-10A. CWA completed the borings using hollow stem auger drilling techniques on January 26, January 28<sup>th</sup> through January 31<sup>st</sup> and March 14, 2013. Weston & Sampson personnel were present during the geotechnical soil borings to observe soil conditions and collect environmental soil samples. Preparations were made to collect groundwater during the geotechnical drilling activities if groundwater was encountered within the anticipated soil construction depth (6-10 ft bgs). However, groundwater was not sampled during Phase 1 because it was encountered in many of the boring locations at depths ranging from 9.5 ft to 15.0 ft bgs, which approaches or surpasses the anticipated soil construction depth.

The geotechnical soil borings were completed to depths ranging from 17.0 ft bgs to 37.0 ft bgs. Completion depths for each boring were determined in the field by CWA and CL&P. Auger refusal was encountered in borings B-4 and B-9 at depths of 12.5 ft bgs and 4.0 ft bgs, respectively. CL&P approved the reduced completion depth for boring B-4, but requested CWA to off-set and re-drill the boring (designated boring B-9A).

In general, soils across the project route consisted of alternating layers of gray and brown fine to medium sand with varying amounts of silt and gravel. Soils transitioned to coarse-grained sand with an increased amount of gravel and less silt with depth. Fill material consisting of dark brown fine to coarse sand with some silt and trace amounts of gravel was encountered in borings B-2, B-3 and B-6 through B-10 at a thickness ranging from 3.0 ft to 12.0 ft. The fill in borings B-5, B-6, B-8A and B-9 had noticeable brick, wood, cinders and concrete. CWA's boring logs are included in [Appendix A](#).

Soil samples retained for laboratory analysis were collected within the portion of the soil column

matching the anticipated soil construction depth (6-10 ft bgs), which exhibited elevated photoionization detector (PID) readings (if any), and/or which exhibited visual/olfactory evidence of a release. In the absence of elevated PID readings or visual/olfactory evidence of a release, representative samples of different soil strata encountered across the cable route were collected.

No visual or olfactory evidence of a release was observed in any of the fourteen geotechnical soil borings. A calibrated PID was used to screen soil retrieved via split spoon samplers for the presence of volatile organic compounds (VOCs). No PID readings above background (0.0 ppm) were observed in the geotechnical soil borings or in any of the soil samples retained for laboratory analysis.

A total of fourteen soil samples were submitted for laboratory analysis from the geotechnical soil borings. One sample was collected from each of the geotechnical soil borings except for boring B-9A. A blind duplicate soil sample, designated DUP-1, was also collected from boring B-8A (1-4 ft) for quality assurance/quality control (QA/QC) purposes. The soil samples were stored on ice and shipped under proper chain-of-custody protocols to CL&P's subcontracted environmental testing laboratory Con-Test Laboratory (Con-Test) for chemical analysis. Con-Test is a state-certified laboratory located in East Longmeadow, Massachusetts. The fourteen soil samples were analyzed for the following parameters:

- Polychlorinated Biphenyls (PCBs);
- Extractable Total Petroleum Hydrocarbons (ETPH);
- VOCs;
- Pesticides;
- Semi-volatile Organic Compounds (SVOCs); and
- Total Resource Conservation and Recovery Act (RCRA) 8 Metals.

Soil sample B-6 was also analyzed for total hexavalent chromium, total trivalent chromium, pH and oxygen reduction potential (ORP) based on the reported total chromium concentration for this sample.

## 4. ANALYTICAL RESULTS DISCUSSION

### 4.1 Soil Analytical Results

Soil analytical results from Phase II and Phase III are summarized in Table 1 and the laboratory analytical reports are included in [Appendix C](#). A summary of soil results organized by constituent type is presented below.

**PCBs:** PCB-1260 was detected in soil sample B-10A at a concentration of 0.20 milligrams per kilogram (mg/kg). No other PCB aroclors were detected in this sample; therefore 0.20 mg/kg also represents the total PCB concentration for this soil sample. The PCB concentration does not exceed the RES DEC or I/C DEC. Sample B-10A was collected from inside the South End 1G substation. PCBs were not detected above laboratory detection limits in any of the remaining soil samples analyzed.

**Pesticides:** The pesticide 4,4-DDT was detected in soil samples B-5, B-10A and B-11 at concentrations of 0.0053 mg/kg, 0.022 mg/kg and 0.011 mg/kg, respectively. There currently is no criteria established for 4,4-DDT. Pesticides were not detected above the laboratory detection limits in any of the other soil samples analyzed.

**VOCs:** Four VOCs, benzene, naphthalene, tetrachloroethylene and/or toluene were detected in soil samples B-2, B-5, B-8A, B-9, B-11, GP-1, GP-2, DUP-1 and DUP-2. A complete summary of the detected VOCs and their respective concentrations is included in Table 1. None of the detected VOC concentrations exceed applicable criteria. VOCs were not detected above laboratory detection limits in any of the remaining soil samples.

The VOC concentrations detected in the duplicate soil samples generally compared well to the parent samples.

**SVOCs:** Up to eighteen SVOCs were detected in soil samples B-3, B-5, B-8A, B-9, B-10, B-10A, B-11, GP-1, GP-2, GP-7, GP-10, DUP-1 and DUP-2. A complete summary of the SVOCs detected in each soil sample and their respective concentrations are presented in Table 1. Soil samples B-5, B-10A, B-11, GP-1 and GP-10 exhibit select compounds at concentrations exceeding the RES DEC, I/C DEC and/or GA PMC. No RSR exceedences were documented in soil samples B-3, B-8A, B-9, B-10, GP-2, GP-7, DUP-1 and DUP-2 which contained SVOC detections. Soil samples B-1, B-2, B-4, B-6, B-7, B-8, GP-3 through GP-6, GP-8, GP-9, and GP-11 did not exhibit any SVOC detections.

The SVOC concentrations detected in the duplicate soil samples generally compared well to the parent samples.

**ETPH:** ETPH was detected in all fourteen soil samples (includes B-1 through B-11, B-8A, B-9A, B-10A and DUP-1) retained from the geotechnical drilling activities, and in eight out of twelve soil samples (GP-1, GP-2, GP-6 through GP-10 and DUP-2) retained from the Geoprobe® drilling activities. Reported concentrations ranged from 15 mg/kg in samples B-6, B-7 and GP-8 to 1,000 mg/kg at B-11. Soil samples B-11 and GP-10 exhibit elevated ETPH concentrations that exceed the RES DEC. Soil samples GP-3 through GP-5 and GP-11 did not exhibit any ETPH detections.

The ETPH concentrations detected in the duplicate soil samples generally compared well to the parent samples.

**Total RCRA 8 Metals:** Total arsenic, barium, cadmium, chromium, lead, mercury and silver were detected in the soil samples collected along the proposed cable route. A complete summary of the total metal compounds detected and their respective concentrations are presented in Table 1. Soil samples B-10A and GP-10 contained total lead concentrations that exceed the RES DEC. No other soil samples exhibited elevated total metal concentrations that exceed applicable RSR criteria.

Soil sample B-6 was analyzed for hexavalent and trivalent chromium concentrations because the total chromium concentration for this sample was 120 mg/kg, which exceeds the RES DEC or I/C DEC for hexavalent chromium. Soil sample B-6 was also analyzed for pH and ORP because determining the concentrations of both chromium species also requires analysis for pH and ORP. The results of the analyses revealed the hexavalent and trivalent chromium concentrations were 0.17 mg/kg and 120 mg/kg, respectively, and the levels are below the RES DEC or I/C DEC.

The total metal concentrations detected in the duplicate soil samples generally compared well with the parent samples.

**TCLP (Leachable) RCRA 8 Metals:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed detectable concentrations of leachable barium in all four soil samples and leachable lead in two samples. Leachable barium was detected at concentrations ranging from 0.31 milligrams per liter (mg/l) to 0.57 mg/l, and leachable lead was detected in soil samples GP-7 and GP-10 at concentrations of 1.5 mg/l and 0.36 mg/l respectively. Both samples with leachable lead detections (GP-7 and GP-10) exceed the GB PMC. No samples with the leachable barium detections exceed the GB PMC.

The TCLP metal concentrations detected in the duplicate soil sample generally compared well with the parent sample.

**TPH:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed detectable concentrations of TPH in all four soil samples ranging from 56 mg/kg to 670 mg/kg. The TPH concentration in soil sample GP-10 exceeds the RES DEC, but the concentrations in the remaining three samples (GP-2, DUP-2, GP-7) do not exceed the GB PMC.

The TPH concentrations detected in the duplicate soil sample generally compared well with the parent sample.

**Total Cyanide:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed detectable concentrations of total cyanide in one sample GP-10. The reported concentration was 3.0 mg/kg, and it does not exceed the RES DEC or I/C DEC. The remaining the three soil samples comprising the “*disposal parameter subset*” did not have detections above the laboratory method detection limit.

**Reactive Cyanide:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed no detection above the laboratory detection limits for any of the samples.



**Reactive Sulfide:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed no detection above the laboratory detection limits for any of the samples.

**Ignitability / Flashpoint:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed flashpoint values on all four samples were greater than 212° Fahrenheit (100° Celsius). Materials with a flashpoint of less than 200° Fahrenheit (93.3° Celsius) but greater than 140° Fahrenheit (60° Celsius) are defined as combustible by the United States Department of Transportation (US DOT).

**pH:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed pH values ranging from 6.9 at GP-7 to 8.2 at GP-10. Materials with a pH less than 2.0 or greater than 12.5 are defined as corrosive hazardous materials by the US DOT.

**Conductivity:** This analysis was performed on the “*disposal parameter subset*,” and the results revealed conductivity values ranging from 12 micro ohms per centimeter ( $\mu\text{mho/cm}$ ) at GP-2 to 34  $\mu\text{mho/cm}$  at GP-10.

#### 4.2 Groundwater Analytical Results

Groundwater analytical results are summarized in Table 2 and the laboratory analytical reports are included in [Appendix D](#). A summary of groundwater results organized by constituent type is presented below.

**PCBs:** PCBs were not detected above the laboratory method detection limit in either groundwater sample.

**Pesticides:** Pesticides were not detected above the laboratory method detection limit in either groundwater sample.

**VOCs:** VOCs were not detected above the laboratory method detection limit in either groundwater sample.

**SVOCs:** SVOCs were not detected above the laboratory method detection limit in either groundwater sample.

**Total Metals:** Total arsenic, barium, chromium, cobalt, lead, nickel and/or magnesium were detected in the groundwater samples. A complete summary of the total metal compounds detected and their respective concentrations are presented in Table 2. None of the detected total metal concentrations exceed regulatory criteria set forth in the RSRs or the CTDEEP’s *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer* (reissued February 15, 2008).

**ETPH:** ETPH was not detected above the laboratory method detection limit in either groundwater sample.

**Total Oil and Grease:** Oil and grease was not detected above the laboratory method detection limit in either groundwater sample.

**Herbicides:** Herbicides were not detected above the laboratory method detection limit in either groundwater sample.

**Total Cyanide:** Total cyanide was not detected above the laboratory method detection limit in either groundwater sample.

**Amenable Cyanide:** Amenable cyanide was not detected above the laboratory method detection limit in either groundwater sample.

## 5. SUMMARY, CONCLUSIONS & RECOMMENDATIONS

### 5.1 Summary and Conclusions

Weston and Sampson has performed this SI study in support of the Stamford Reliability Cable Project which extends from the South End 1G Substation northeasterly towards the Glenbrook 1K Substation in Stamford, Connecticut. The project corridor consists of a 1.5-mile preferred 115-kV underground transmission cable route and a 0.25-mile alternate 115-kV underground transmission cable route which traverses through a mix of residential, commercial, and industrial areas. The majority of the routes are along paved roadways with the exception of a small segment of the alternate route than cuts across the northern property boundary of two private properties known as 1 Dock Street and 2 Dock Street.

The SI study was performed to determine the absence or presence of regulated compounds in soil and/or groundwater that may have resulted from releases of oil and/or hazardous substances from surficial roadway releases, off-site properties or fill material. Additionally, results of this study will be used to determine soil management options and provide analytical data if construction dewatering is needed. The activities conducted as part of the SI study were completed in a three-phase approach. Phase II included the advancement of eleven Geoprobe® soil borings with associated soil and groundwater sampling. Phase III included the advancement of fourteen geotechnical borings with associated environmental soil sampling. Phase II included a corridor study of the proposed conduit route and alternate route to identify off-site properties of environmental concern.

Conclusions drawn from the SI study are presented below:

- The alternate cable route that cuts across the northern property boundaries of 1 and 2 Dock Street will likely intersect documented contamination in subsurface soils. At the 1 Dock Street parcel, there also is a previously installed engineered cap consisting of flexible membrane liner (FML) and geocomposite drainage media. The same site will also have an Environmental Land Use Restriction (ELUR) imposed on a portion of the property; however, the ELUR has not yet been filed with CTDEEP or with municipal land records. We are not aware of an equivalent cap or a deed restriction in place at the 2 Dock Street parcel;
- The corridor study identified parcels of environmental concern near the southwestern and northeastern sections of the proposed conduit route and alternate route;
- Fill material consisting of sand, silt and gravel mixed with urban fill materials such as brick, cinders, wood and/or concrete were observed at varying depths throughout the geotechnical and Geoprobe® boring locations;
- Photoionization Detector (PID) readings above background (0.0 parts per million [ppm]) were not observed at any of the boring locations; and
- The soil analytical results revealed the presence of both non-naturally and naturally occurring compounds including polychlorinated biphenyls (PCBs), pesticides, volatile organic-compounds (VOCs), semi-volatile organic compounds (SVOCs), extractable total petroleum hydrocarbons (ETPH), total petroleum hydrocarbons (TPH), total and leachable metals in soils throughout the project corridor.

Three categories of soil were identified throughout the work site. They include:

1. Impacted soils, which are soils exceeding applicable CTDEEP soil cleanup criteria, exist at boring locations B-5, B-10A, B-11, GP-1, GP-7 and GP-10. Exceedences were noted for SVOCs, ETPH, TPH, total lead and leachable lead.

*Impacted soils* shallower than 12 ft bgs are also expected at boring location B-11 even though the analytical data doesn't support this classification because the soil sample was collected 12-14 ft bgs, and nearby samples B-11 and GP-10 depict *impacted soils* at shallower depths. *Impacted soils* will require proper handling and off-site disposal at a permitted disposal facility. If *impacted soils* are temporarily staged for off-site disposal, the CTDEEP *General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)* may apply depending on the volume of soil stockpiled.

2. *Polluted soils*, which are soils exhibiting non-naturally occurring chemical compounds at concentrations below applicable CTDEEP soil cleanup criteria, exist at boring locations B-1 through B-4, B-6 through B-10, GP-2, GP-6, GP-8 and GP-9. Contaminants include PCBs, ETPH, VOC, SVOC, TPH and/or pesticides. *Polluted soils* will require proper handling, though they do not require off-site disposal. These soils can be transported to NUSCO's vendor for soil staging and reuse (e.g. True Blue). If *polluted soils* are temporarily staged at an off-site location prior to receipt at True Blue's soil management facility, the CTDEEP *General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)* may apply depending on the volume of soil stockpiled.
3. *Clean soils*, which are soils exhibiting only naturally occurring chemical compounds at concentrations below applicable CTDEEP soil cleanup criteria, exist at boring locations GP-3, GP-4, and GP-5. *Clean soils* will require proper handling in order to avoid being combined with polluted or impacted soils. These soils do not require off-site disposal, and can be transported to NUSCO's vendor for soil staging and reuse.

The groundwater analytical results for GP-1 and GP-3, which encompasses the northeastern end of the cable route, revealed the water in these areas was relatively clean with detections noted for naturally-occurring metals. There were no detections for non-naturally occurring compounds including VOC, SVOCs, or petroleum hydrocarbons. The reported metal concentrations did not exceed CTDEEP RSR criteria or effluent limitations in the CTDEEP's *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer*.

Aside from the sample locations GP-1 and GP-3, groundwater quality was not evaluated elsewhere along the proposed cable route because water was not encountered within the specified soil disturbance depth.

## 5.2 Recommendations

Based on the summary and conclusions noted above, Weston & Sampson recommends the following:

- Soil generated from the Stamford Reliability Cable Project should be managed in accordance with the three soil categories (*Impacted Soil*, *Polluted Soil*, and *Clean Soil*) described in the preceding section. A plan showing the three soil categories superimposed over the proposed cable route is provided as Figure 5. These soils can be transported to NUSCO's vendor for soil staging and reuse (e.g. True Blue). As previously stated, *impacted soils* will require proper handling and off-site disposal at a permitted disposal facility. Additionally, if impacted and/or polluted soils are temporarily staged off-site prior to disposal/reuse, the provisions of the CTDEEP's *General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)* may apply depending on the volume of soil stockpiled;
- If the 0.25-mile alternate route were incorporated into the final route design, it will affect a property (1 Dock Street) that recently had installed an engineered cap, and will

eventually have an ELUR filed for the property on city land records. Engineering and construction oversight services will be needed to facilitate repair to the liner and proper management of impacted soils to permitted disposal facilities. Legal counsel will also be needed to discuss subordination agreements related to the ELUR;

- If dewatering were needed for the northeastern end of the cable route around borings GP-1 and GP-3 and there were no obvious signs of contamination (e.g. oily sheen) in the dewatering wastewaters, we believe the water discharge could be managed under the CTDEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities*; and
- If dewatering were needed for the remainder of the project corridor where groundwater data wasn't obtained, two options exist. Option 1 includes conducting additional testing of the groundwater in order to characterize water quality and determine which CTDEEP permit would apply for the dewatering. Option 2 includes having the contractor assume the water is contaminated and treat the dewatering discharge in accordance with the CTDEEP's *General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer*. This approach requires completion of a permit registration, submission to CTDEEP, and pre-approval from the local publically-operated treatment works (POTW). There also is a permit fee of \$500 for filing the registration. Weston & Sampson does not feel managing the dewatering discharge per the CTDEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* is a viable option based on the limited testing performed to date, the GB groundwater classification for the project area, the urban setting for the project area, and information contained in the EDR database search report.

## **6. LIMITATIONS**

This report was prepared exclusively for the use of the Northeast Utilities Services Company, and its subsidiaries including The Connecticut Light & Power Company. The findings provided by Weston & Sampson in this report are based solely on the information reported in this document. Future investigations, and/or information that were not available to Weston & Sampson at the time of the investigation, may result in a modification of the findings stated in this report.

Should additional information become available concerning the project corridor or neighboring properties which could directly impact the project corridor in the future, that information should be made available to Weston & Sampson for review so that, if necessary, conclusions presented in this report may be modified. The conclusions of this report are based on conditions observed by Weston & Sampson personnel at the time of the investigation, information provided by NUSCO, and samples collected and analyzed on the dates shown or stated in this report. This report has been prepared in accordance with generally accepted engineering and geological practices. No other warranty, express or implied, is made.

## 7. REFERENCES

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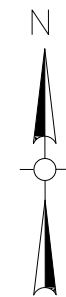
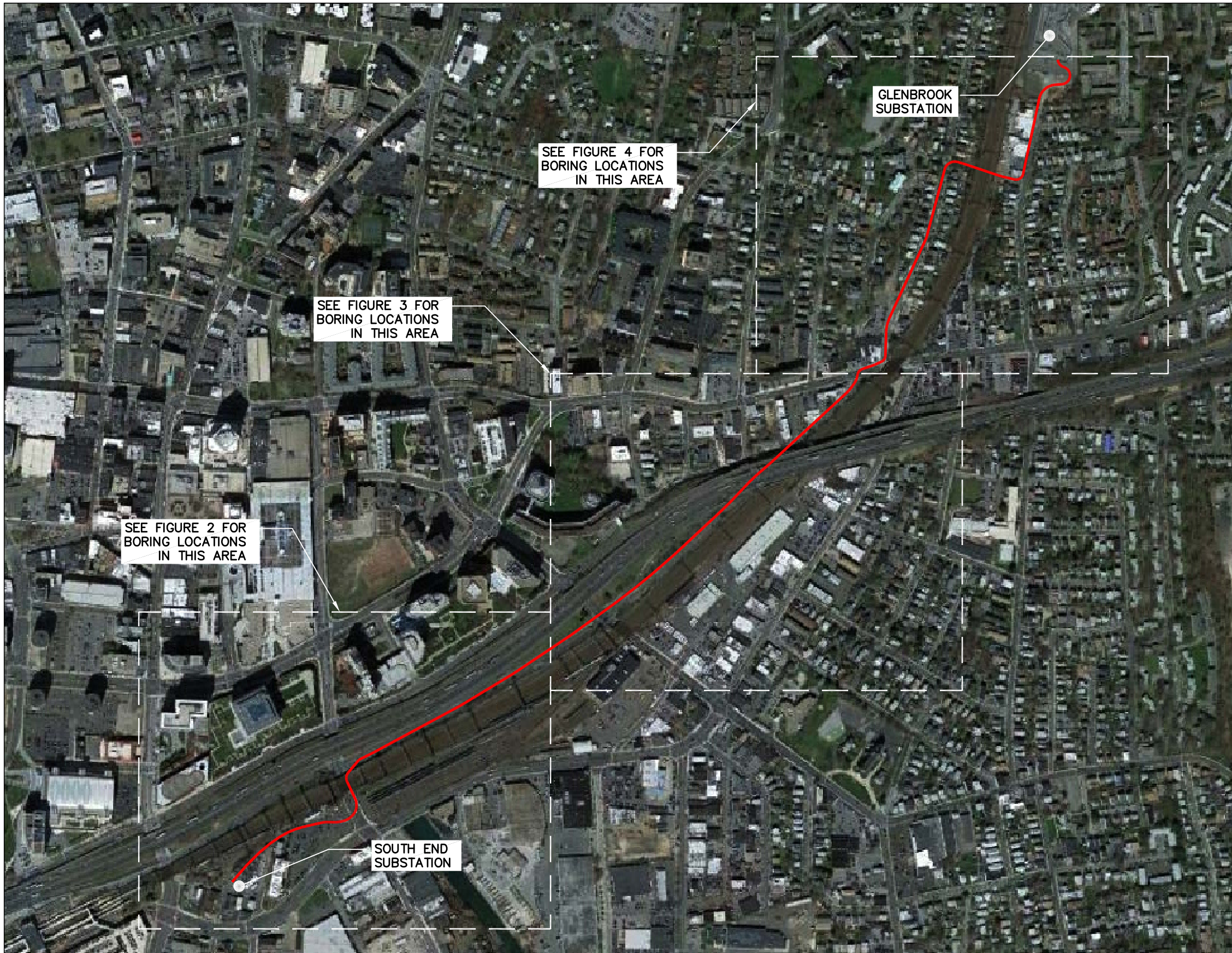
Connecticut Department of Energy & Environmental Protection, 1996. Remediation Standard Regulations, January 31, 1996.

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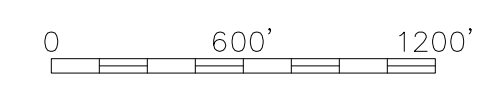
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## FIGURES





SCALE: 1" = 600'



**LEGEND**

— PREFERRED 115-kV ROUTE

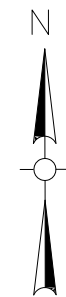
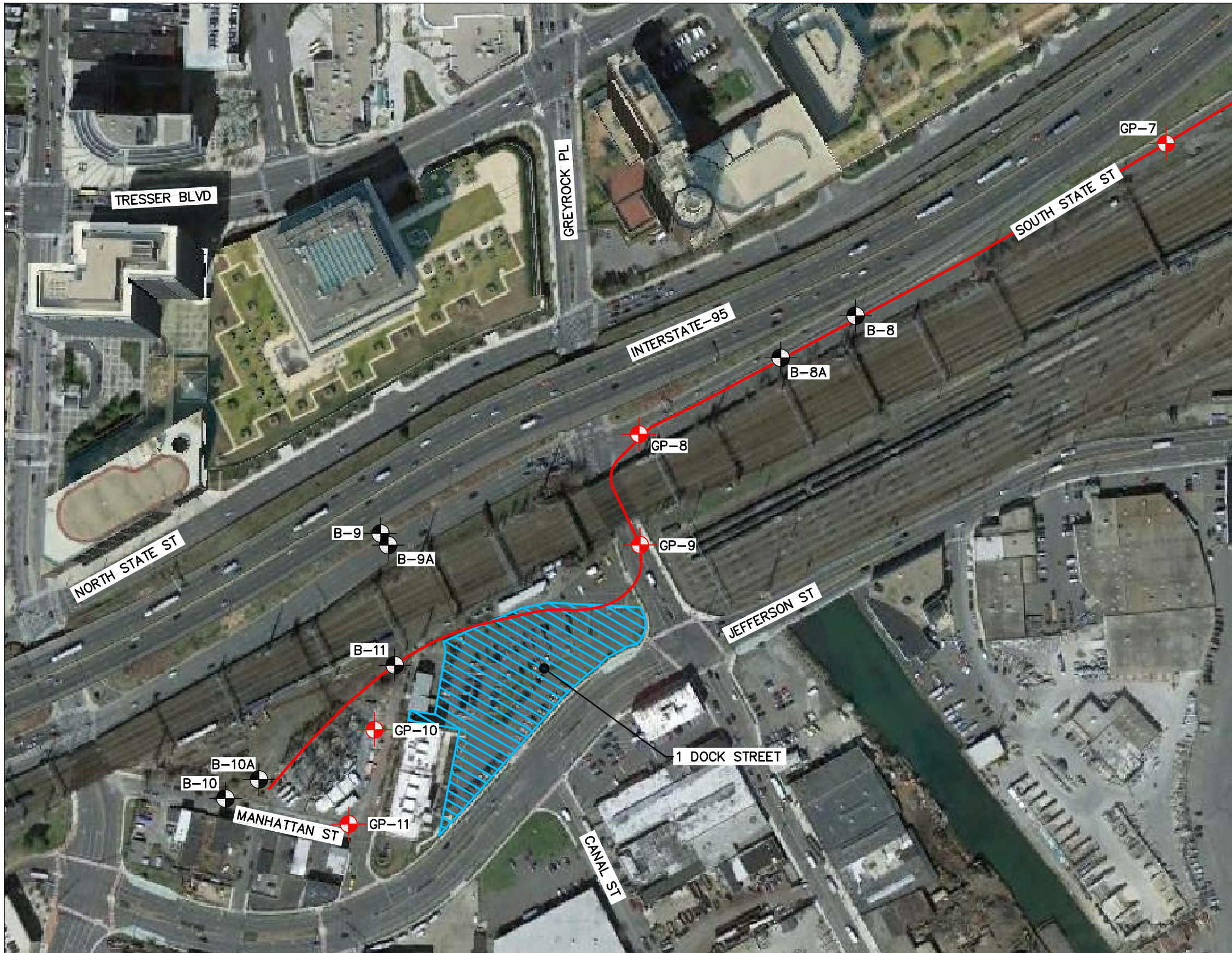
**NOTE:**

SAMPLE LOCATION PLAN DERIVED FROM GOOGLE EARTH IMAGING AND AECOM FIGURE 3 TITLED "STAMFORD RELIABILITY CABLE PROJECT, 115-kV ROUTE OPTIONS, GLENBROOK TO SOUTH END SUBSTATION, SURVEY AERIAL MAP" FOR THE CONNECTICUT LIGHT AND POWER COMPANY.

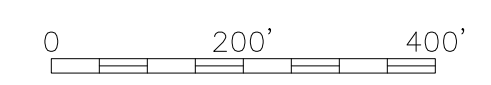
**FIGURE 1**  
 THE CONNECTICUT LIGHT AND POWER COMPANY  
 STAMFORD RELIABILITY CABLE PROJECT  
 STAMFORD, CT  
 PROJECT CORRIDOR LAYOUT PLAN  
 115-kV ROUTE OPTIONS

AUGUST 2013 SCALE: AS SHOWN





SCALE: 1" = 200'



**LEGEND**

- B-1 GEOTECH BORING LOCATION
- GP-2 GEOPROBE BORING LOCATION
- PREFERRED 115-kV ROUTE
- ENGINEERED CAP

**NOTE:**

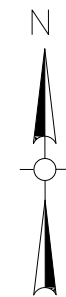
SAMPLE LOCATION PLAN DERIVED FROM GOOGLE EARTH IMAGING AND AECOM FIGURE 3 TITLED "STAMFORD RELIABILITY CABLE PROJECT, 115-kV ROUTE OPTIONS, GLENBROOK TO SOUTH END SUBSTATION, SURVEY AERIAL MAP" FOR THE CONNECTICUT LIGHT AND POWER COMPANY.

**FIGURE 2**  
**THE CONNECTICUT LIGHT AND POWER COMPANY**  
**STAMFORD RELIABILITY CABLE PROJECT**  
**STAMFORD, CT**  
**BORING AND SAMPLE**  
**LOCATION PLAN**

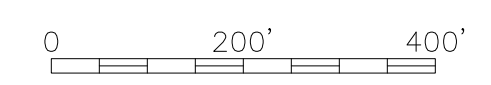
AUGUST 2013

SCALE: AS SHOWN





SCALE: 1" = 200'



**LEGEND**

- B-1 GEOTECH BORING LOCATION
- GP-2 GEOPROBE BORING LOCATION
- PREFERRED 115-kV ROUTE

**NOTE:**

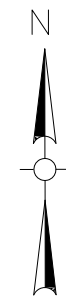
SAMPLE LOCATION PLAN DERIVED FROM GOOGLE EARTH IMAGING AND AECOM FIGURE 3 TITLED "STAMFORD RELIABILITY CABLE PROJECT, 115-kV ROUTE OPTIONS, GLENBROOK TO SOUTH END SUBSTATION, SURVEY AERIAL MAP" FOR THE CONNECTICUT LIGHT AND POWER COMPANY.

**FIGURE 3**  
**THE CONNECTICUT LIGHT AND POWER COMPANY**  
**STAMFORD RELIABILITY CABLE PROJECT**  
**STAMFORD, CT**  
**BORING AND SAMPLE**  
**LOCATION PLAN**

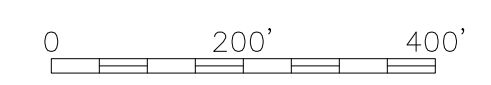
AUGUST 2013

SCALE: AS SHOWN









SCALE: 1" = 200'



**LEGEND**

- B-1  GEOTECH BORING LOCATION
- GP-2  GEOPROBE BORING LOCATION
- GP-1  GEOPROBE BORING AND TEMPORARY WELL LOCATION
-  PREFERRED 115-kV ROUTE

**NOTE:**

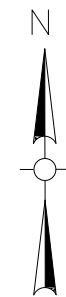
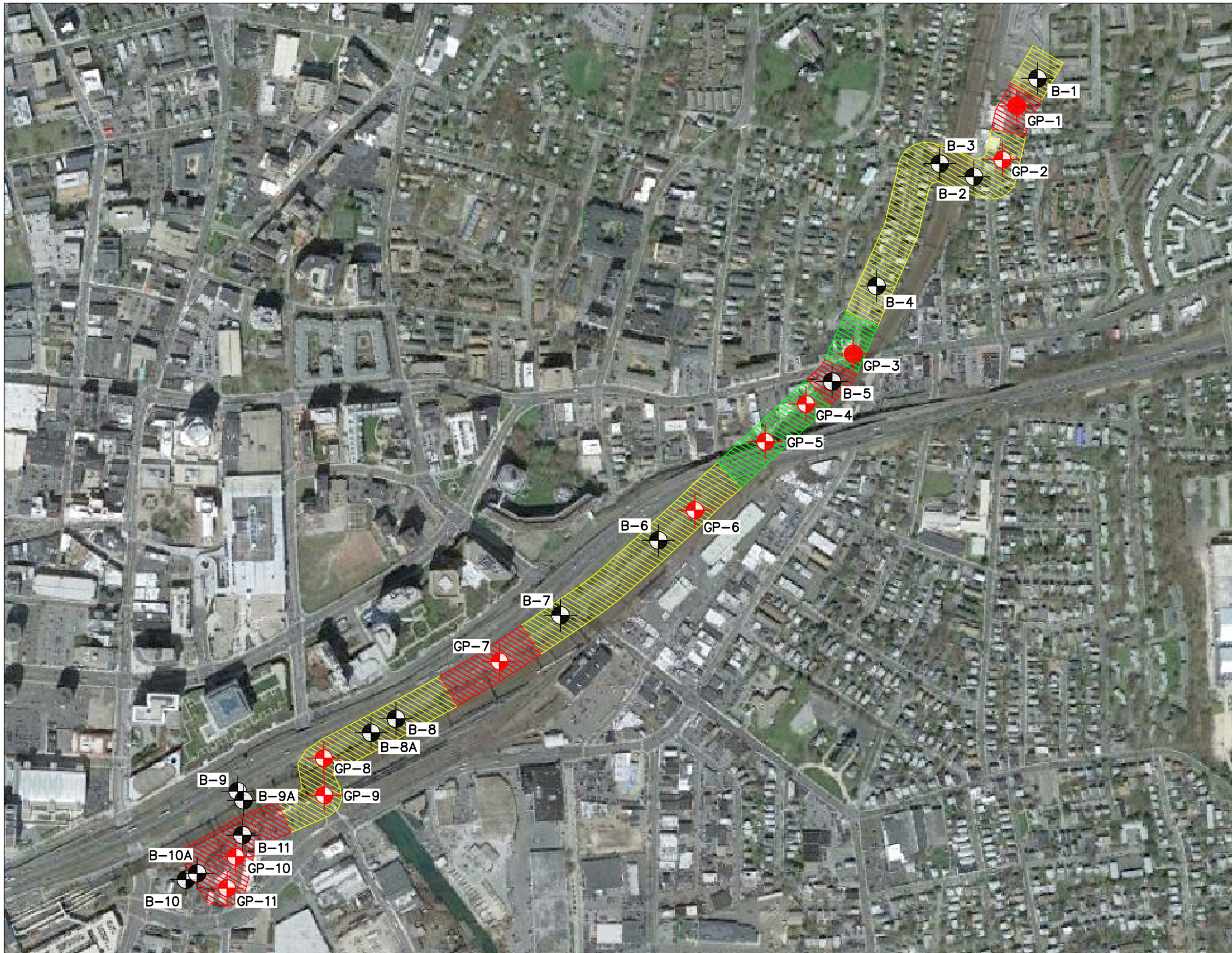
SAMPLE LOCATION PLAN DERIVED FROM GOOGLE EARTH IMAGING AND AECOM FIGURE 3 TITLED "STAMFORD RELIABILITY CABLE PROJECT, 115-kV ROUTE OPTIONS, GLENBROOK TO SOUTH END SUBSTATION, SURVEY AERIAL MAP" FOR THE CONNECTICUT LIGHT AND POWER COMPANY.

**FIGURE 4**  
**THE CONNECTICUT LIGHT AND POWER COMPANY**  
**STAMFORD RELIABILITY CABLE PROJECT**  
**STAMFORD, CT**  
**BORING AND SAMPLE**  
**LOCATION PLAN**

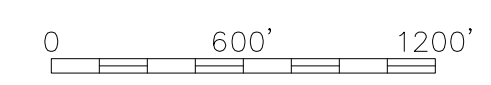
AUGUST 2013

SCALE: AS SHOWN





SCALE: 1" = 600'



**LEGEND**

- B-1 GEOTECH BORING LOCATION
- GP-2 GEOPROBE BORING LOCATION
- GP-1 GEOPROBE BORING AND TEMPORARY WELL LOCATION
- CLEAN SOIL
- POLLUTED SOIL
- IMPACTED SOIL

**NOTE:**

SAMPLE LOCATION PLAN DERIVED FROM GOOGLE EARTH IMAGING AND AECOM FIGURE 3 TITLED "STAMFORD RELIABILITY CABLE PROJECT, 115-KV ROUTE OPTIONS, GLENBROOK TO SOUTH END SUBSTATION, SURVEY AERIAL MAP" FOR THE CONNECTICUT LIGHT AND POWER COMPANY.

**FIGURE 5**  
**THE CONNECTICUT LIGHT AND POWER COMPANY**  
**STAMFORD RELIABILITY CABLE PROJECT**  
**STAMFORD, CT**  
**SOIL MANAGEMENT PLAN**

AUGUST 2013

SCALE: AS SHOWN



## TABLES

**TABLE 1  
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
STAMFORD CABLE PROJECT  
STAMFORD, CONNECTICUT  
JANUARY-APRIL 2013**

SAMPLE LOCATION	B-1 <sup>5</sup>	B-2 <sup>5</sup>	B-3 <sup>5</sup>	B-4 <sup>5</sup>	B-5 <sup>4</sup>	B-6 <sup>5</sup>	B-7 <sup>5</sup>	REMEDIATION STANDARD REGULATIONS <sup>1</sup>		
	SAMPLE DEPTH (feet below ground surface)	0.0-2.0	2.0-4.0	1.0-3.0	7.0-9.0	0.0-2.0	5.0-7.0	7.0-9.0	RES DEC	I/C DEC
DATE SAMPLED	1/29/2013	1/30/2013	1/30/2013	1/28/2013	1/28/2013	1/28/2013	1/28/2013			
WORK ORDER NO.	13A0748	13A0790	13A0790	13A0715	13A0715	13A0715 / 13B0256	13A0715			
PARAMETER (Units) <sup>2</sup>										
<b>Polychlorinated Biphenyls by EPA method 8082A (mg/kg)</b>										
PCB-1260	<0.11	<0.11	<0.12	<0.11	<0.11	<0.11	<0.10	1	10	--
Total PCBs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	10	--
<b>Organochloride Pesticides by EPA method 8081B (mg/kg)</b>										
4,4-DDT	<0.0043	<0.0044	<0.0047	<0.0045	<b>0.0053</b>	<0.0044	<0.0042	NE	NE	NE
<b>Volatile Organic Compounds by EPA method 8260C (mg/kg)</b>										
Benzene	<0.0011	<0.0010	<0.0010	<0.0012	<0.0015	<0.0013	<0.0011	21	200	0.2
Naphthalene	<0.0023	<0.0020	<0.0020	<0.0024	<b>0.0040</b>	<0.0026	<0.0022	NE	NE	NE
Tetrachloroethylene	<0.0011	<b>0.0031</b>	<0.0010	<0.0012	<0.0015	<0.0013	<0.0011	12	110	1
Toluene	<0.0011	<0.0010	<0.0010	<0.0012	<0.0015	<0.0013	<0.0011	500	1,000	67
<b>Semivolatile Organic Compounds by EPA method 8270D (mg/kg)</b>										
Acenaphthene	<0.18	<0.19	<0.41	<0.19	<b>0.22</b>	<0.19	<0.18	NE	NE	NE
Acenaphthylene	<0.18	<0.19	<0.41	<0.19	<b>0.35</b>	<0.19	<0.18	1,000	2,500	84
Anthracene	<0.18	<0.19	<0.41	<0.19	<b>0.70</b>	<0.19	<0.18	1,000	2,500	400
Benzo(a)anthracene	<0.18	<0.19	<0.41	<0.19	<b>2.1</b>	<0.19	<0.18	1	7.8	1
Benzo(a)pyrene	<0.18	<0.19	<b>0.51</b>	<0.19	<b>1.9</b>	<0.19	<0.18	1	1	1
Benzo(b)fluoranthene	<0.18	<0.19	<b>0.79</b>	<0.19	<b>2.2</b>	<0.19	<0.18	1	7.8	1
Benzo(g,h,i)perylene	<0.18	<0.19	<b>0.59</b>	<0.19	<b>1.6</b>	<0.19	<0.18	NE	NE	NE
Benzo(k)fluoranthene	<0.18	<0.19	<0.41	<0.19	<b>0.86</b>	<0.19	<0.18	8.4	78	1
Bis(2-ethylhexyl)phthalate	<0.36	<0.38	<0.82	<0.38	<b>0.41</b>	<0.37	<0.36	44	410	11
Carbazole	<0.18	<0.19	<0.41	<0.19	<b>0.32</b>	<0.19	<0.18	NE	NE	NE
Chrysene	<0.18	<0.19	<b>0.55</b>	<0.19	<b>2.0</b>	<0.19	<0.18	NE	NE	NE
Dibenz(a,h)anthracene	<0.18	<0.19	<0.41	<0.19	<b>0.41</b>	<0.19	<0.18	NE	NE	NE
Fluoranthene	<0.18	<0.19	<b>0.89</b>	<0.19	<b>3.9</b>	<0.19	<0.18	1,000	2,500	56
Fluorene	<0.18	<0.19	<0.41	<0.19	<b>0.24</b>	<0.19	<0.18	1,000	2,500	56
Indeno(1,2,3-cd)pyrene	<0.18	<0.19	<b>0.59</b>	<0.19	<b>1.8</b>	<0.19	<0.18	NE	NE	NE
Naphthalene	<0.18	<0.19	<0.41	<0.19	<b>0.22</b>	<0.19	<0.18	1,000	2,500	56
Phenanthrene	<0.18	<0.19	<0.41	<0.19	<b>2.4</b>	<0.19	<0.18	1,000	2,500	40
Pyrene	<0.18	<0.19	<b>0.96</b>	<0.19	<b>3.9</b>	<0.19	<0.18	1,000	2,500	40
<b>Extractable Total Petroleum Hydrocarbons by CT method (mg/kg)</b>	<b>200</b>	<b>38</b>	<b>120</b>	<b>91</b>	<b>270</b>	<b>15</b>	<b>15</b>	500	2,500	2,500
<b>Total RCRA 8 Metals by EPA methods 6010C / 7471B (mg/kg)</b>										
Arsenic	<2.6	<2.6	<2.9	<2.6	<2.8	<2.6	<2.6	10	10	--
Barium	<b>78</b>	<b>60</b>	<b>110</b>	<b>49</b>	<b>64</b>	<b>250</b>	<b>59</b>	4,700	140,000	--
Cadmium	<0.26	<0.26	<b>0.38</b>	<0.26	<b>0.41</b>	<0.26	<0.26	34	1,000	--
Chromium	<b>19</b>	<b>19</b>	<b>21</b>	<b>15</b>	<b>13</b>	<b>120</b>	<b>20</b>	--	--	--
Hexavalent Chromium	NA	NA	NA	NA	NA	<b>0.17</b>	NA	100	100	--
Trivalent Chromium	NA	NA	NA	NA	NA	<b>120</b>	NA	3,900	51,000	--
Lead	<b>7.7</b>	<b>11</b>	<b>52</b>	<b>5.1</b>	<b>130</b>	<b>5.9</b>	<b>15</b>	400	1,000	--
Mercury	<0.027	<0.027	<b>0.48</b>	<0.028	<b>0.19</b>	<0.028	<0.026	20	610	--
Silver	<b>1.2</b>	<0.52	<b>0.65</b>	<0.52	<0.55	<0.52	<b>0.84</b>	340	10,000	--
<b>TCLP RCRA 8 Metals by EPA methods 6010C / 7470A (mg/L)</b>										
Barium	NA	NA	NA	NA	NA	NA	NA	--	--	10
Lead	NA	NA	NA	NA	NA	NA	NA	--	--	0.15
<b>Total Petroleum Hydrocarbons by EPA method 8100 modified (mg/kg)</b>										
TPH (as Diesel)	NA	NA	NA	NA	NA	NA	NA	500	2,500	2,500
<b>Total Cyanide by method 9014 (mg/kg)</b>	NA	NA	NA	NA	NA	NA	NA	1,400	41,000	NE
<b>Reactive Cyanide by method 9014 (mg/kg)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Reactive Sulfide by method 9030A (mg/kg)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Flashpoint by method 1010 (degrees Fahrenheit)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>pH by method 9045C (standard units)</b>	NA	NA	NA	NA	NA	7.3 <sup>7</sup>	NA	NE	NE	NE
<b>Conductivity by method 2510B (µmho/cm)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Oxygen/Reduction Potential by method 2510B (mV)</b>	NA	NA	NA	NA	NA	49 <sup>7</sup>	NA	NE	NE	NE
<b>Total Solids by method 2540G (%)</b>	92.8	88.9	82.8	87.8	86.8	90.0	94.4	NE	NE	NE

R:\NUSCO\Stamford - Cable Project (Trans Group)\Table\Soil Analytical Table - REV#3.xls\Soil Summary

**NOTES:**

- Analytical results compared to Connecticut Remediation Standard Regulations (January 1996; revised October 2007).
- Only compounds that were detected are provided in this table. For a complete list of analytes refer to laboratory report.
- Cable Project is located within a GB groundwater area.
- Soil is characterized as "Impacted"
- Soil characterized as "Polluted"
- Soil is characterized as "Clean"
- Analyses were performed outside specified hold-times.

\*\* = Criteria is based upon detection limit  
 mg/kg = milligrams per kilogram  
 mg/l = milligrams per liter  
 µmho/cm = micro ohms per centimeter  
 Mv - millivolts  
 NE = Not Established by DEEP  
**BOLD** = compound detected at that concentration.

BDL = Below Detection Limit  
 GB PMC = Pollutant Mobility Criteria for GB Groundwater Areas  
 RES DEC = Residential Direct Exposure Criteria  
 I/C DEC = Industrial/Commercial Direct Exposure Criteria  
 -- = Not Applicable  
 TCLP = Toxicity Characteristic Leaching Procedure


 = Exceeds RES DEC  
 = Exceeds RES DEC and I/C DEC  
 = Exceeds GB PMC  
 = Exceeds GB PMC and RES DEC  
 = Exceeds RES DEC, I/C DEC and GB PMC

TABLE 1 (Cont.)  
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
STAMFORD CABLE PROJECT  
STAMFORD, CONNECTICUT  
JANUARY-APRIL 2013

SAMPLE LOCATION	B-8 <sup>5</sup>	B-8A <sup>5</sup>	DUP-1 / Duplicate of B-8A <sup>5</sup>	B-9 <sup>5</sup>	B-10 <sup>5</sup>	B-10A <sup>4</sup>	B-11 <sup>4</sup>	REMEDIATION STANDARD REGULATIONS <sup>1</sup>		
	5.0-9.0	1.0-4.0		1.0-2.0	2.0-4.0	0.5-1.0	3.0-5.0	RES DEC	I/C DEC	GB PMC <sup>3</sup>
SAMPLE DEPTH (feet below ground surface)	5.0-9.0	1.0-4.0		1.0-2.0	2.0-4.0	0.5-1.0	3.0-5.0			
DATE SAMPLED	1/26/2013	1/26/2013	1/26/2013	1/26/2013	1/31/2013	3/14/2013	3/14/2013			
WORK ORDER NO.	13A0697	13A0697	13A0697	13A0697	13A0845	13C0440	13C0440			
PARAMETER (Units) <sup>2</sup>										
<b>Polychlorinated Biphenyls by EPA method 8082A (mg/kg)</b>										
PCB-1260	<0.11	<0.10	<0.10	<0.11	<0.12	<b>0.20</b>	<0.11	1	10	--
Total PCBs	BDL	BDL	BDL	BDL	BDL	<b>0.20</b>	BDL	1	10	--
<b>Organochloride Pesticides by EPA method 8081B (mg/kg)</b>										
4,4-DDT	<0.0045	<0.0042	<0.0041	<0.0042	<0.0049	<b>0.022</b>	<b>0.011</b>	NE	NE	NE
<b>Volatile Organic Compounds by EPA method 8260C (mg/kg)</b>										
Benzene	<0.0018	<b>0.0028</b>	<b>0.0020</b>	<0.0018	<0.0015	<0.0012	<b>0.014</b>	21	200	0.2
Naphthalene	<0.0037	<0.0037	<0.0038	<b>0.0042</b>	<0.0030	<0.0023	<0.0021	NE	NE	NE
Tetrachloroethylene	<0.0018	<0.0018	<0.0019	<0.0018	<0.0015	<0.0012	<0.0010	12	110	1
Toluene	<0.0018	<b>0.0039</b>	<0.0019	<b>0.030</b>	<0.0015	<0.0012	<b>0.0037</b>	500	1,000	67
<b>Semivolatile Organic Compounds by EPA method 8270D (mg/kg)</b>										
Acenaphthene	<0.19	<0.18	<0.18	<0.18	<0.21	<0.38	<0.74	NE	NE	NE
Acenaphthylene	<0.19	<0.18	<0.18	<0.18	<0.21	<b>0.61</b>	<0.74	1,000	2,500	84
Anthracene	<0.19	<0.18	<0.18	<0.18	<0.21	<b>0.80</b>	<b>0.93</b>	1,000	2,500	400
Benzo(a)anthracene	<0.19	<b>0.45</b>	<b>0.33</b>	<b>0.21</b>	<b>0.57</b>	<b>6.2</b>	<b>5.9</b>	1	7.8	1
Benzo(a)pyrene	<0.19	<b>0.49</b>	<b>0.36</b>	<b>0.19</b>	<b>0.46</b>	<b>6.1</b>	<b>9.1</b>	1	1	1
Benzo(b)fluoranthene	<0.19	<b>0.58</b>	<b>0.46</b>	<b>0.23</b>	<b>0.86</b>	<b>8.6</b>	<b>12</b>	1	7.8	1
Benzo(g,h,i)perylene	<0.19	<b>0.36</b>	<b>0.20</b>	<0.18	<b>0.47</b>	<b>2.2</b>	<b>4.1</b>	NE	NE	NE
Benzo(k)fluoranthene	<0.19	<b>0.23</b>	<0.18	<0.18	<b>0.31</b>	<b>3.4</b>	<b>4.4</b>	8.4	78	1
Bis(2-ethylhexyl)phthalate	<0.38	<0.35	<0.35	<0.36	<0.42	<0.76	<1.5	44	410	11
Carbazole	<0.19	<0.18	<0.18	<0.18	<0.21	<0.38	<0.74	NE	NE	NE
Chrysene	<0.19	<b>0.43</b>	<b>0.31</b>	<b>0.21</b>	<b>0.68</b>	<b>5.8</b>	<b>5.4</b>	NE	NE	NE
Dibenz(a,h)anthracene	<0.19	<0.18	<0.18	<0.18	<0.21	<b>0.83</b>	<b>1.9</b>	NE	NE	NE
Fluoranthene	<0.19	<b>0.68</b>	<b>0.40</b>	<b>0.37</b>	<b>0.88</b>	<b>11</b>	<b>5.4</b>	1,000	2,500	56
Fluorene	<0.19	<0.18	<0.18	<0.18	<0.21	<0.38	<0.74	1,000	2,500	56
Indeno(1,2,3-cd)pyrene	<0.19	<b>0.40</b>	<b>0.23</b>	<0.18	<b>0.50</b>	<b>3.2</b>	<b>5.5</b>	NE	NE	NE
Naphthalene	<0.19	<0.18	<0.18	<0.18	<0.21	<b>0.42</b>	<0.74	1,000	2,500	56
Phenanthrene	<0.19	<b>0.27</b>	<0.18	<b>0.25</b>	<b>0.22</b>	<b>4.1</b>	<b>3.1</b>	1,000	2,500	40
Pyrene	<0.19	<b>0.74</b>	<b>0.39</b>	<b>0.35</b>	<b>1.1</b>	<b>6.9</b>	<b>3.1</b>	1,000	2,500	40
<b>Extractable Total Petroleum Hydrocarbons by CT method (mg/kg)</b>	<b>46</b>	<b>130</b>	<b>130</b>	<b>210</b>	<b>110</b>	<b>410</b>	<b>1,000</b>	500	2,500	2,500
<b>Total RCRA 8 Metals by EPA methods 6010C / 7471B (mg/kg)</b>										
Arsenic	<2.8	<2.4	<2.5	<2.6	<3.0	<2.8	<2.7	10	10	--
Barium	<b>45</b>	<b>82</b>	<b>92</b>	<b>72</b>	<b>220</b>	<b>100</b>	<b>93</b>	4,700	140,000	--
Cadmium	<0.28	<0.24	<0.25	<0.26	<b>0.72</b>	<b>0.95</b>	<b>0.83</b>	34	1,000	--
Chromium	<b>19</b>	<b>22</b>	<b>25</b>	<b>24</b>	<b>26</b>	<b>20</b>	<b>17</b>	100	100	--
Hexavalent Chromium	NA	NA	NA	NA	NA	NA	NA	100	100	--
Trivalent Chromium	NA	NA	NA	NA	NA	NA	NA	3,900	51,000	--
Lead	<b>12</b>	<b>28</b>	<b>31</b>	<b>11</b>	<b>200</b>	<b>590</b>	<b>180</b>	400	1,000	--
Mercury	<0.028	<b>0.059</b>	<b>0.064</b>	<0.026	<b>0.92</b>	<b>0.55</b>	<b>0.21</b>	20	610	--
Silver	<b>0.57</b>	<b>0.70</b>	<b>0.51</b>	<b>0.74</b>	<0.60	<0.55	<0.54	340	10,000	--
<b>TCLP RCRA 8 Metals by EPA methods 6010C / 7470A (mg/L)</b>										
Barium	NA	NA	NA	NA	NA	NA	NA	--	--	10
Lead	NA	NA	NA	NA	NA	NA	NA	--	--	0.15
<b>Total Petroleum Hydrocarbons by EPA method 8100 modified (mg/kg)</b>										
TPH (as Diesel)	NA	NA	NA	NA	NA	NA	NA	500	2,500	2,500
<b>Total Cyanide by method 9014 (mg/kg)</b>	NA	NA	NA	NA	NA	NA	NA	1,400	41,000	NE
<b>Reactive Cyanide by method 9014 (mg/kg)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Reactive Sulfide by method 9030A (mg/kg)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Flashpoint by method 1010 (degrees Fahrenheit)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>pH by method 9045C (standard units)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Conductivity by method 2510B (µmho/cm)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Oxygen/Reduction Potential by method 2510B (mV)</b>	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Total Solids by method 2540G (%)</b>	88.2	95.6	95.7	95.0	80.0	89.8	91.9	NE	NE	NE

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NOTES:

- Analytical results compared to Connecticut Remediation Standard Regulations (January 1996; revised October 2007).
- Only compounds that were detected are provided in this table. For a complete list of analytes refer to laboratory report.
- Cable Project is located within a GB groundwater area.
- Soil is characterized as "Impacted"
- Soil characterized as "Polluted"
- Soil is characterized as "Clean"

\*\* = Criteria is based upon detection limit  
mg/kg = milligrams per kilogram  
mg/l = milligrams per liter  
µmho/cm = micro ohms per centimeter  
Mv - millivolts  
NE = Not Established by DEEP  
**BDL** = compound detected at that concentration.

BDL = Below Detection Limit  
GB PMC = Pollutant Mobility Criteria for GB Groundwater Areas  
RES DEC = Residential Direct Exposure Criteria  
I/C DEC = Industrial/Commercial Direct Exposure Criteria  
-- = Not Applicable  
TCLP = Toxicity Characteristic Leaching Procedure


 = Exceeds RES DEC  
= Exceeds RES DEC and I/C DEC  
= Exceeds GB PMC  
= Exceeds GB PMC and RES DEC  
= Exceeds RES DEC, I/C DEC and GB PMC



TABLE 1 (Cont.)  
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
STAMFORD CABLE PROJECT  
STAMFORD, CONNECTICUT  
JANUARY-APRIL 2013

SAMPLE LOCATION	GP-1 <sup>4</sup>	GP-2 <sup>5</sup>	DUP-2 / Duplicate of GP-2 <sup>5</sup>	GP-3 <sup>6</sup>	GP-4 <sup>6</sup>	GP-5 <sup>6</sup>	GP-6 <sup>6</sup>	REMEDIATION STANDARD REGULATIONS <sup>1</sup>		
	1.0-3.0	4.0-6.0		6.0-8.0	8.0-10.0	10.0-12.0	12.0-14.0	RES DEC	I/C DEC	GB PMC <sup>3</sup>
SAMPLE DEPTH (feet below ground surface)	4/19/2013	4/19/2013	4/19/2013	4/19/2013	4/19/2013	4/19/2013	4/19/2013			
DATE SAMPLED	13D0837	13D0837	13D0837	13D0837	13D0837	13D0837	13D0837			
WORK ORDER NO.	PARAMETER (Units) <sup>2</sup>									
<b>Polychlorinated Biphenyls by EPA method 8082A (mg/kg)</b>										
PCB-1260	<0.12	<0.12	<0.12	<0.10	<0.11	<0.11	<0.12	1	10	--
Total PCBs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1	10	--
<b>Organochloride Pesticides by EPA method 8081B (mg/kg)</b>										
4,4-DDT	<0.0048	<0.0048	<0.0048	<0.0041	<0.0043	<0.0046	<0.0048	NE	NE	NE
<b>Volatile Organic Compounds by EPA method 8260C (mg/kg)</b>										
Benzene	<0.0011	<b>0.0069</b>	<b>0.0081</b>	<0.00075	<0.00086	<0.0011	<0.0015	21	200	0.2
Naphthalene	<0.0023	<0.0023	<0.0021	<0.0015	<0.0017	<0.0022	<0.0031	NE	NE	NE
Tetrachloroethylene	<b>0.0018</b>	<0.0011	<0.0010	<0.00075	<0.00086	<0.0011	<0.0015	12	110	1
Toluene	<0.0011	<b>0.0013</b>	<b>0.0016</b>	<0.00075	<0.00086	<0.0011	<0.0015	500	1,000	67
<b>Semivolatile Organic Compounds by EPA method 8270D (mg/kg)</b>										
Acenaphthene	<0.20	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	NE	NE	NE
Acenaphthylene	<b>0.66</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1,000	2,500	84
Anthracene	<b>1.3</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1,000	2,500	400
Benzo(a)anthracene	<b>2.8</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1	7.8	1
Benzo(a)pyrene	<b>2.6</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1	1	1
Benzo(b)fluoranthene	<b>3.0</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1	7.8	1
Benzo(g,h,i)perylene	<b>0.90</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	NE	NE	NE
Benzo(k)fluoranthene	<b>1.1</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	8.4	78	1
Bis(2-ethylhexyl)phthalate	<0.40	<0.40	<0.41	<0.35	<0.36	<0.39	<0.42	44	410	11
Carbazole	<0.20	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	NE	NE	NE
Chrysene	<b>2.8</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	NE	NE	NE
Dibenz(a,h)anthracene	<b>0.28</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	NE	NE	NE
Fluoranthene	<b>4.1</b>	<b>0.27</b>	<b>0.28</b>	<0.17	<0.18	<0.19	<0.21	1,000	2,500	56
Fluorene	<b>0.63</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1,000	2,500	56
Indeno(1,2,3-cd)pyrene	<b>1.2</b>	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	NE	NE	NE
Naphthalene	<0.20	<0.20	<0.20	<0.17	<0.18	<0.19	<0.21	1,000	2,500	56
Phenanthrene	<b>4.9</b>	<b>0.26</b>	<b>0.25</b>	<0.17	<0.18	<0.19	<0.21	1,000	2,500	40
Pyrene	<b>4.7</b>	<b>0.28</b>	<b>0.30</b>	<0.17	<0.18	<0.19	<0.21	1,000	2,500	40
<b>Extractable Total Petroleum Hydrocarbons by CT method (mg/kg)</b>										
	<b>360</b>	<b>72</b>	<b>91</b>	<10	<11	<12	<b>270</b>	500	2,500	2,500
<b>Total RCRA 8 Metals by EPA methods 6010C / 7471B (mg/kg)</b>										
Arsenic	<2.9	<3.0	<2.9	<2.5	<2.6	<2.9	<2.9	10	10	--
Barium	<b>160</b>	<b>61</b>	<b>68</b>	<b>31</b>	<b>43</b>	<b>16</b>	<b>63</b>	4,700	140,000	--
Cadmium	<b>0.95</b>	<0.30	<0.29	<0.25	<0.26	<0.29	<b>0.42</b>	34	1,000	--
Chromium	<b>21</b>	<b>17</b>	<b>17</b>	<b>9.8</b>	<b>8.7</b>	<b>6.2</b>	<b>12</b>	100	100	--
Hexavalent Chromium	NA	NA	NA	NA	NA	NA	NA	100	100	--
Trivalent Chromium	NA	NA	NA	NA	NA	NA	NA	3,900	51,000	--
Lead	<b>280</b>	<b>8.4</b>	<b>7.1</b>	<b>4.0</b>	<b>6.8</b>	<b>2.3</b>	<b>71</b>	400	1,000	--
Mercury	<b>0.053</b>	<0.029	<0.030	<0.025	<0.026	<0.029	<b>0.32</b>	20	610	--
Silver	<5.8	<5.9	<5.9	<4.9	<5.2	<5.8	<5.8	340	10,000	--
<b>TCLP RCRA 8 Metals by EPA methods 6010C / 7470A (mg/L)</b>										
Barium	NA	<b>0.34</b>	<b>0.31</b>	NA	NA	NA	NA	--	--	10
Lead	NA	<0.010	<0.010	NA	NA	NA	NA	--	--	0.15
<b>Total Petroleum Hydrocarbons by EPA method 8100 modified (mg/kg)</b>										
TPH (as Diesel)	NA	<b>56</b>	<b>80</b>	NA	NA	NA	NA	500	2,500	2,500
<b>Total Cyanide by method 9014 (mg/kg)</b>										
	NA	<0.50	<0.57	NA	NA	NA	NA	1,400	41,000	NE
<b>Reactive Cyanide by method 9014 (mg/kg)</b>										
	NA	<4.0	<3.9	NA	NA	NA	NA	NE	NE	NE
<b>Reactive Sulfide by method 9030A (mg/kg)</b>										
	NA	<20	<20	NA	NA	NA	NA	NE	NE	NE
<b>Flashpoint by method 1010 (degrees Fahrenheit)</b>										
	NA	> 212 °F	> 212 °F	NA	NA	NA	NA	NE	NE	NE
<b>pH by method 9045C (standard units)</b>										
	NA	7.3	7.1	NA	NA	NA	NA	NE	NE	NE
<b>Conductivity by method 2510B (µmho/cm)</b>										
	NA	12	13	NA	NA	NA	NA	NE	NE	NE
<b>Oxygen/Reduction Potential by method 2510B (mV)</b>										
	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE
<b>Total Solids by method 2540G (%)</b>										
	83.7	83.7	83.2	96.4	93.9	85.9	81.0	NE	NE	NE

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NOTES:

- Analytical results compared to Connecticut Remediation Standard Regulations (January 1996; revised October 2007).
- Only compounds that were detected are provided in this table. For a complete list of analytes refer to laboratory report.
- Cable Project is located within a GB groundwater area.
- Soil is characterized as "Impacted"
- Soil characterized as "Polluted"
- Soil is characterized as "Clean"

\*\* = Criteria is based upon detection limit  
mg/kg = milligrams per kilogram  
mg/l = milligrams per liter  
µmho/cm = micro ohms per centimeter  
Mv - millivolts  
NE = Not Established by DEEP  
**BOLD** = compound detected at that concentration.

BDL = Below Detection Limit  
GB PMC = Pollutant Mobility Criteria for GB Groundwater Areas  
RES DEC = Residential Direct Exposure Criteria  
I/C DEC = Industrial/Commercial Direct Exposure Criteria  
-- = Not Applicable  
TCLP = Toxicity Characteristic Leaching Procedure


 = Exceeds RES DEC  
= Exceeds RES DEC and I/C DEC  
= Exceeds GB PMC  
= Exceeds GB PMC and RES DEC  
= Exceeds RES DEC, I/C DEC and GB PMC

TABLE 1 (Cont.)  
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
STAMFORD CABLE PROJECT  
STAMFORD, CONNECTICUT  
JANUARY-APRIL 2013

SAMPLE LOCATION	GP-7 <sup>4</sup>	GP-8 <sup>5</sup>	GP-9 <sup>5</sup>	GP-10 <sup>4</sup>	GP-11 <sup>6</sup>	REMEDIATION STANDARD REGULATIONS <sup>1</sup>		
	14.0-16.0	12.0-15.0	2.0-4.0	4.0-6.0	12.0-14.0	RES DEC	I/C DEC	GB PMC <sup>3</sup>
SAMPLE DEPTH (feet below ground surface)	14.0-16.0	12.0-15.0	2.0-4.0	4.0-6.0	12.0-14.0			
DATE SAMPLED	4/19/2013	4/24/2013	4/24/2013	4/24/2013	4/24/2013			
WORK ORDER NO.	13D0837	13D0987	13D0987	13D0987	13D0987			
PARAMETER (Units) <sup>2</sup>								
<b>Polychlorinated Biphenyls by EPA method 8082A (mg/kg)</b>								
PCB-1260	<0.13	<0.12	<0.11	<0.11	<0.11	1	10	--
Total PCBs	BDL	BDL	BDL	BDL	BDL	1	10	--
<b>Organochloride Pesticides by EPA method 8081B (mg/kg)</b>								
4,4-DDT	<0.0050	<0.0048	<0.0045	<0.0045	<0.0044	NE	NE	NE
<b>Volatile Organic Compounds by EPA method 8260C (mg/kg)</b>								
Benzene	<0.0017	<0.00086	<0.0010	<0.00090	<0.0011	21	200	0.2
Naphthalene	<0.0034	<0.0017	<0.0020	<0.0018	<0.0022	NE	NE	NE
Tetrachloroethylene	<0.0017	<0.00086	<0.0010	<0.00090	<0.0011	12	110	1
Toluene	<0.0017	<0.00086	<0.0010	<0.00090	<0.0011	500	1,000	67
<b>Semivolatile Organic Compounds by EPA method 8270D (mg/kg)</b>								
Acenaphthene	<0.21	<0.21	<0.19	<0.38	<0.18	NE	NE	NE
Acenaphthylene	<0.21	<0.21	<0.19	<0.38	<0.18	1,000	2,500	84
Anthracene	<0.21	<0.21	<0.19	1.4	<0.18	1,000	2,500	400
Benzo(a)anthracene	0.39	<0.21	<0.19	5.8	<0.18	1	7.8	1
Benzo(a)pyrene	0.41	<0.21	<0.19	7.4	<0.18	1	1	1
Benzo(b)fluoranthene	0.76	<0.21	<0.19	7.8	<0.18	1	7.8	1
Benzo(g,h,i)perylene	0.38	<0.21	<0.19	3.5	<0.18	NE	NE	NE
Benzo(k)fluoranthene	0.28	<0.21	<0.19	3.0	<0.18	8.4	78	1
Bis(2-ethylhexyl)phthalate	<0.42	<0.41	<0.38	<0.76	<0.37	44	410	11
Carbazole	<0.21	<0.21	<0.19	0.81	<0.18	NE	NE	NE
Chrysene	0.56	<0.21	<0.19	5.3	<0.18	NE	NE	NE
Dibenz(a,h)anthracene	<0.21	<0.21	<0.19	1.3	<0.18	NE	NE	NE
Fluoranthene	0.58	<0.21	<0.19	5.2	<0.18	1,000	2,500	56
Fluorene	<0.21	<0.21	<0.19	0.56	<0.18	1,000	2,500	56
Indeno(1,2,3-cd)pyrene	0.45	<0.21	<0.19	4.1	<0.18	NE	NE	NE
Naphthalene	<0.21	<0.21	<0.19	0.63	<0.18	1,000	2,500	56
Phenanthrene	0.36	<0.21	<0.19	4.3	<0.18	1,000	2,500	40
Pyrene	0.55	<0.21	<0.19	6.2	<0.18	1,000	2,500	40
<b>Extractable Total Petroleum Hydrocarbons by CT method (mg/kg)</b>								
	83	15	120	640	<11	500	2,500	2,500
<b>Total RCRA 8 Metals by EPA methods 6010C / 7471B (mg/kg)</b>								
Arsenic	4.0	<2.8	<2.7	<2.7	<2.6	10	10	--
Barium	150	50	37	100	170	4,700	140,000	--
Cadmium	0.42	<0.28	<0.27	0.32	<0.26	34	1,000	--
Chromium	26	15	19	16	9.7	100	100	--
Hexavalent Chromium	NA	NA	NA	NA	NA	100	100	--
Trivalent Chromium	NA	NA	NA	NA	NA	3,900	51,000	--
Lead	350	3.3	28	430	3.6	400	1,000	--
Mercury	1.6	<0.030	0.11	0.19	<0.027	20	610	--
Silver	<0.62	<0.57	<0.55	<0.54	<0.52	340	10,000	--
<b>TCLP RCRA 8 Metals by EPA methods 6010C / 7470A (mg/L)</b>								
Barium	0.51	NA	NA	0.57	NA	--	--	10
Lead	1.5	NA	NA	0.36	NA	--	--	0.15
<b>Total Petroleum Hydrocarbons by EPA method 8100 modified (mg/kg)</b>								
TPH (as Diesel)	72	NA	NA	670	NA	500	2,500	2,500
<b>Total Cyanide by method 9014 (mg/kg)</b>								
	<0.48	NA	NA	3.0	NA	1,400	41,000	NE
<b>Reactive Cyanide by method 9014 (mg/kg)</b>								
	<4.0	NA	NA	<3.9	NA	NE	NE	NE
<b>Reactive Sulfide by method 9030A (mg/kg)</b>								
	<20	NA	NA	<20	NA	NE	NE	NE
<b>Flashpoint by method 1010 (degrees Fahrenheit)</b>								
	> 212 °F	NA	NA	> 212 °F	NA	NE	NE	NE
<b>pH by method 9045C (standard units)</b>								
	6.9	NA	NA	8.2	NA	NE	NE	NE
<b>Conductivity by method 2510B (µmho/cm)</b>								
	22	NA	NA	34	NA	NE	NE	NE
<b>Oxygen/Reduction Potential by method 2510B (mV)</b>								
	NA	NA	NA	NA	NA	NE	NE	NE
<b>Total Solids by method 2540G (%)</b>								
	79.8	82.2	88.0	89.4	91.7	NE	NE	NE


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NOTES:

- Analytical results compared to Connecticut Remediation Standard Regulations (January 1996; revised October 2007).
- Only compounds that were detected are provided in this table. For a complete list of analytes refer to laboratory report.
- Cable Project is located within a GB groundwater area.
- Soil is characterized as "Impacted"
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\*\* = Criteria is based upon detection limit  
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TCLP = Toxicity Characteristic Leaching Procedure

 = Exceeds RES DEC  
= Exceeds RES DEC and I/C DEC  
= Exceeds GB PMC  
= Exceeds GB PMC and RES DEC  
= Exceeds RES DEC, I/C DEC and GB PMC

**TABLE 2  
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS<sup>4</sup>  
STAMFORD CABLE PROJECT  
STAMFORD, CONNECTICUT  
APRIL 2013**

SAMPLE LOCATION	GP-1	GP-3	TRIP BLANK	REMEDIA- TION STANDARD REGULATIONS (RSRs) <sup>1</sup>	CTDEEP GENERAL PERMIT (GW REMEDIATION WASTEWATER TO MUNICIPAL SEWERS) - EFFLUENT CRITERIA <sup>1</sup>
DATE SAMPLED	4/19/2013	4/19/2013	4/19/2013		
LABORATORY WORK ORDER NO.	13D0837	13D0837	13D0837	SWPC	
<b>PARAMETER (Units)<sup>2</sup></b>					
<b>Polychlorinated Biphenyls by EPA method 8082A (mg/l)</b>					
Total PCBs	BDL	BDL	NA	0.5	1.0
<b>Organochloride Pesticides by EPA method 8081B (mg/l)</b>	BDL	BDL	NA	CS	CS
<b>Volatile Organic Compounds by EPA method 8260C (mg/l)</b>					
Total VOCs	BDL	BDL	BDL	CS	5.0
<b>Semivolatile Organic Compounds by EPA method 8270D (mg/l)</b>					
Total BNA's (Excluding Phenols & PAHs)	BDL	BDL	NA	CS	2.0
Total Phenols	BDL	BDL	NA	CS	1.0
Total PAHs	BDL	BDL	NA	CS	0.5
Total Phthalate Esters	BDL	BDL	NA	CS	2.0
<b>Total Metals by EPA methods 200.7 / 7470A / SM 3500-Cr B (mg/l)</b>					
Arsenic	<b>0.0021</b>	<0.0020	NA	0.004	0.1
Barium	<b>0.12</b>	<b>0.44</b>	NA	NE	5.0
Chromium	<b>0.014</b>	<b>0.017</b>	NA	NE	1.0
Hexavalent Chromium	<0.0040	<0.0040	NA	0.110	0.1
Cobalt	<0.0050	<b>0.0060</b>	NA	NE	2.0
Lead	<0.0050	<b>0.0093</b>	NA	0.013	0.1
Nickel	<b>0.025</b>	<0.025	NA	0.880	1.0
Magnesium	<b>0.0044</b>	<b>0.018</b>	NA	NE	50
<b>CT ETPH</b>	<0.075	<0.075	NA	NE	NE
<b>Total Oil &amp; Grease by EPA method 1664A (mg/l)</b>	<1.4	<1.4	NA	NE	100
<b>Herbicides by EPA method 8151A (mg/l)</b>	BDL	BDL	NA	NE	CS
<b>Total Cyanide by EPA method 335.4 (mg/l)</b>	<0.010	<0.010	NA	0.052	0.6
<b>Amenable Cyanide by OIA-1677 (mg/l)</b>	<0.010	<0.010	NA	NE	0.1

R:\NUSCO\Stamford - Cable Project (Trans Group)\Table\Groundwater Analytical Results - DRAFT.xls\Sheet1 | groundwater Analytical Results - DRAFT.xls\Sheet1

**NOTES:**

1. Regulatory Criteria obtained from Appendix A: Toxic and Hazardous Pollutants and Their Maximum Concentrations of the General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer. Regulatory criteria provided for comparison purposes only.
2. Only compounds that were detected are provided in this table. For a complete list of analytes refer to laboratory report.
3. Identified as a chlorinated VOC.
4. Groundwater samples were collected for screening purposes only. Although detected concentrations of compounds are below applicable criteria, it does not preclude the pre-treatment of treatment of discharge wastewaters.

NA = Not Analyzed

NE = Not Established

mg/l = milligrams per liter

CS = Compound Specific

**BOLD** = compound detected at that concentration.

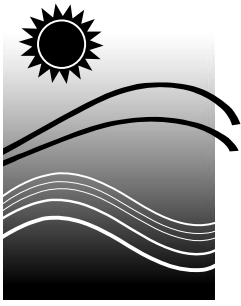
VOC = Volatile Organic Compound

SVOC = Semivolatile Organic Compound

= exceeds General Permit Maximum Criteria

**APPENDIX B**

**General Permit for Contaminated Soil and/or Sediment Management**



Connecticut Department of  
**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

# **General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)**

**Re-Issuance Date: September 12, 2011  
Expiration Date: September 11, 2013**

Bureau of Materials Management and Compliance Assurance  
Engineering and Enforcement Division  
79 Elm Street, Hartford, CT 06106-5127  
860-424-3372  
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*Affirmative Action/Equal Opportunity Employer*

# General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)

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# General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)

## Section 1. Authority

This general permit is issued under the authority of sections 22a-133z and 22a-208a of the Connecticut General Statutes.

## Section 2. Definitions

As used in this general permit:

“*Activity*” means the process of staging, temporarily storing, or transferring, contaminated soil and/or sediment at an authorized site (Staging, Transfer and/or Temporary Storage Area).

“*Approval of registration*” means an approval of registration issued under this general permit.

“*Aquifer Protection Area*” (*APA*) means aquifer protection area as defined in section 22a-354h of the General Statutes.

“*Authorized activity*” means any activity authorized by this general permit.

“*Commissioner*” means the commissioner as defined by section 22a-2(b) of the General Statutes.

“*Contaminated soil and/or sediment*” means treated or untreated soil and/or sediment affected by a known or suspected release and determined, or reasonably expected to contain substances exceeding Residential Direct Exposure Criteria or GA Pollutant Mobility Criteria, as these terms are defined in section 22a-133k-1 of the Regulations of Connecticut State Agencies.

“*Day*” means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

“*Department*” means the Department of Energy and Environmental Protection.

“*Disposal*” means disposal as defined in section 22a-207(6) of the General Statutes.

“*Facility*” means transfer station as defined in section 22a-207(10) of the General Statutes.

“*Facility storage*” means the combined volume of all contaminated soil and/or sediment stored at the facility at any single point in time.

“*Facility throughput*” means the combined weight of all contaminated soil and/or sediment and incidental excavation waste introduced into or leaving the facility during a specified period of time.

*“Hazardous waste”* means hazardous waste as identified or listed as hazardous wastes in accordance with section 3001 of the Federal Resource Conservation Recovery Act of 1976 (42 USC section 6901) and section 22a-449(c)-101 of the Regulations of Connecticut State Agencies.

*“Incidental excavation waste”* means any material other than soil, sediment, or other material that does not meet the definition of clean fill as defined in section 22a-209-1 of the Regulations of Connecticut State Agencies generated during excavation activities.

*“Individual permit”* means a permit issued to a named permittee under section 22a-208a of the General Statutes.

*“Permittee”* means a person who is authorized by this general permit to stage, transfer, and temporarily store contaminated soil and/or sediment.

*“Person”* means person as defined by section 22a-2(c) of the General Statutes.

*“Registrant”* means a person who files a registration pursuant to Section 4 of this general permit.

*“Registration”* means a registration form filed with the commissioner pursuant to Section 4 of this general permit.

*“Release”* means release as defined in section 22a-133k-1(a) of the Regulations of Connecticut State Agencies.

*“Sediment”* means sediment as defined in section 22a-133k-1(a) of the Regulations of Connecticut State Agencies.

*“Site”* means geographically contiguous property on which an authorized activity takes place or on which an activity for which authorization is sought under this general permit is proposed to take place. Non-contiguous properties owned or leased by the same person and connected by a right-of-way, which such person controls, shall be deemed the same site.

*“Soil”* means soil as defined in section 22a-133k-1(a) of the Regulations of Connecticut State Agencies.

*“Solid waste”* means solid waste as defined in section 22a-207 of the General Statutes.

*“Solid waste facility”* means solid waste facility as defined in section 22a-207 of the General Statutes.

*“Staging” and/or “Storage”* means the holding of a solid waste not in transit for a temporary period of time, at the end of which the solid waste is recycled, disposed, or stored elsewhere.



### **Section 3. Authorization Under This General Permit**

#### **(a) Eligible Activities**

Provided the requirements of subsection (b) of this section are satisfied, this general permit authorizes the staging, transfer, and temporary storage of contaminated soil and/or sediment for a period not to exceed two years. This general permit applies only to activities conducted on land.

Note: This general permit *does not* authorize the treatment (reduction of contaminants via physical removal, dilution, chemical stabilization, etc.) of or any specific reuse of contaminated soil and/or sediment.

#### **(b) Requirements for Authorization**

This general permit authorizes the activities listed in subsection (a) of this section provided:

##### **(1) Registration**

- (A) Except as provided in Sections 4(a)(1) and 4(a)(3) of this general permit, a completed registration with respect to such activity has been filed with the commissioner.
- (B) Except as provided in Sections 4(a)(1) and 4(a)(2) of this general permit, a completed registration with respect to such activity has been filed with the commissioner and the commissioner has issued an approval of registration with respect to such activity.

##### **(2) Coastal Area Management**

Such activity is consistent with all applicable goals and policies in section 22a-92 of the General Statutes and will not cause adverse impacts to coastal resources as defined in section 22a-93 of the General Statutes.

##### **(3) Endangered and Threatened Species**

Such activity does not threaten the continued existence of any species listed pursuant to section 26-306 of the General Statutes as endangered or threatened and will not result in the destruction or adverse modification of habitat essential to such species.

##### **(4) Aquifer Protection**

Such activity shall not be conducted within an Aquifer Protection Area except for the staging and/or temporary storage of less than 10,000 cubic yards of contaminated soil and/or sediment at the site of origin (see Section 4(a)(2) of this general permit for additional registration requirements that apply in such instances).

(5) Stream Channel Encroachment

Such activity shall not create an obstruction or hindrance riverward of Stream Channel Encroachment Lines that will have an adverse effect on the flood heights, flood carrying and water capacity of the waterways and floodplains.

(6) Flood Management

Such activity shall be consistent with all applicable standards and criteria established in sections 25-68d(b) of the General Statutes and sections 25-68h-1 through 25-68h-3, inclusive, of the Regulations of Connecticut State Agencies.

(c) ***Geographic Area***

This general permit applies throughout the State of Connecticut.

(d) ***Effective Date and Expiration Date of this General Permit***

This general permit is effective on the date it is issued by the commissioner and expires two (2) years from such date of issuance.

(e) ***Effective Date and Expiration Date of Authorization***

- (1) For an ***activity that is exempt from the requirement to file a registration as specified in Section 4(a)(1) of this general permit***, such activity is authorized by this general permit on the date the general permit becomes effective *or* on the date the staging, transfer and temporary storage activities commence, *whichever is later* and expires two years from such date *or* on the date this general permit expires, *whichever is sooner*.
- (2) For an ***activity that is required to file a registration as specified in Section 4(a)(2) of this general permit***, such activity is authorized by this general permit on the date the commissioner receives a completed registration with respect to such activity and expires two years from the date the staging, transfer and temporary storage activities commence *or* on the date this general permit expires, *whichever is sooner*.
- (3) For an ***activity that is required to file a registration and obtain an approval of registration as specified in Section 4(a)(3) of this general permit***, such activity is authorized by this general permit on the date the commissioner issues an approval of registration with respect to such activity and expires two years from the date the staging, transfer and temporary storage activities commence *or* on the date this general permit expires, *whichever is sooner*.

(f) ***Revocation of an Individual Permit***

If an activity meets the requirements of authorization of this general permit and such activity is presently authorized by an individual permit, the existing individual permit may be revoked by the commissioner upon a written request by the permittee. If the commissioner revokes such individual permit in writing, such revocation shall take effect on the effective date of authorization of such activity by this general permit.

(g) ***Issuance of an Individual Permit***

If after the commissioner approves a registration under this general permit, the commissioner issues an individual permit authorizing the same activity authorized by such general permit approval, such general permit approval shall become null and void on the date such individual permit is issued.

**Section 4. Registration Requirements**

(a) ***Registration Requirements for Contaminated Soil and/or Sediment Staging, Transfer, and Temporary Storage Areas***

All activities authorized under this general permit must be conducted ***in less than two years***. If an activity requiring a registration as listed below is anticipated to exceed the two year time period, such activity must have its registration renewed.

(1) Who Does NOT Need to File a Registration

Any person who stages and/or temporarily stores **greater than 10 cubic yards but less than 1,000 cubic yards** of contaminated soil and/or sediment **at the site of excavation**, does not need to file a registration with the commissioner provided such activities are conducted in accordance with the operating conditions of Sections 5(a) and 5(b) *and* all other applicable conditions of this general permit.

Note: If such an activity is located in an Aquifer Protection Area, the local municipal Aquifer Protection Agency shall be notified in writing of such activity.

(2) Who Must File a Registration

(A) Any person seeking authorization under this general permit to conduct the following activities in an area that *is not located* in an Aquifer Protection Area, shall file with the commissioner, 1) a registration form which meets the requirements of Section 4 of this general permit and 2) the applicable fee.

- Stage and/or temporarily store **greater than or equal to 1,000 cubic yards and less than or equal to 10,000 cubic yards at any one time** of contaminated soil and/or sediment **at the site of excavation for a period exceeding 45 days in duration**.
- Transfer, stage, and/or temporarily store **greater than 10 cubic yards and less than or equal to 10,000 cubic yards at any one time** of contaminated soil and/or sediment **at a site other than the site of excavation** from which the soil and/or sediment originated.

(B) Any person seeking authorization under this general permit to stage and/or temporarily store **greater than 1,000 cubic yards and less than or equal to 10,000 cubic yards at any one time** of contaminated soil and/or sediment **at the site of excavation for a period exceeding 45 days in duration**, and which subject site *is located* in an Aquifer Protection Area,

shall file with the commissioner, 1) a registration form which meets the requirements of Section 4 of this general permit and 2) the applicable fee. Such person shall also notify in writing, the local municipal Aquifer Protection Agency.

(3) Who Must Obtain an Approval of Registration

Any person seeking authorization under this general permit to conduct the following activities in an area that *is not located* in an Aquifer Protection Area, shall file with the commissioner, 1) a registration form which meets the requirements of Section 4 of this general permit and 2) the applicable fee *and* shall obtain an approval of registration by the commissioner.

- Stage and/or temporarily store **greater than 10,000 cubic yards at any one time** of contaminated soil and/or sediment **at the site of excavation for a period exceeding 45 days in duration.**
- Transfer, stage, and/or temporarily store **greater than 10,000 cubic yards at any one time** of contaminated soil and/or sediment at a site other than the site of excavation from which the soil and/or sediment originated.

(4) Summary of Registration Requirements

Location	Facility Storage	Activity	Required Action
*On Site	Greater than 10 cy but less than 1,000 cy	Staging and/or storage	Comply with General Permit. No Registration.
*On Site	Greater than 1,000 cy but less than 10,000 cy	Staging and/or storage	Comply with General Permit and File a Registration.
On Site; not in an APA	Greater than 10,000 cy	Staging and/or storage	Comply with General Permit and Obtain an Approval of Registration.
Off Site; not in an APA	Greater than 10 cy but less than 10,000 cy	Transfer, staging, and/or storage	Comply with General Permit and File a Registration.
Off Site; not in an APA	Greater than 10,000 cy	Transfer, staging, and/or storage	Comply with General Permit and Obtain an Approval of Registration.

***\* If the activity will be located in an Aquifer Protection Area (APA), the local municipal Aquifer Protection Agency must be notified in writing.***

(b) ***Scope of Registration***

Any person shall register each activity, by site, for which such person seeks authorization under this general permit on a separate registration form that meets the requirements of Section 4 of this general permit.

(c) **Contents of Registration**

(1) **Registration Fees**

- (A) A fee shall be submitted along with a registration form for any registration. A registration shall not be deemed complete and no activity shall be authorized by this general permit unless the fee has been paid in full.
- (i) All activities requiring a **registration** pursuant to Section 4(a)(2) of this general permit: **\$250.00**
  - (ii) All activities requiring a **renewal of registration** pursuant to Section 4(a)(2) of this general permit: **\$250.00**
  - (iii) All activities requiring an **approval of registration** pursuant to Section 4(a)(3) of this general permit: **\$1,500.00**
  - (iv) All activities requiring a **renewal of an approval of registration** pursuant to Section 4(a)(3) of this general permit: **\$750.00**

**Note:** In accordance with section 22a-6(b) of the General Statutes, the fee for municipalities is fifty percent (50%) of the fee listed above.

- (B) The registration fee shall be paid by check or money order payable to the **Department of Energy and Environmental Protection**.
- (C) The registration fees are non-refundable.

(2) **Registration Form**

A registration shall be filed on a form prescribed and provided by the commissioner and shall include the following:

- (A) Legal name, address, and telephone number of the registrant. If the registrant is an entity transacting business in Connecticut, and is required to register with the Connecticut Secretary of the State, provide the exact name as registered with the Connecticut Secretary of the State.
- (B) Legal name, address, and telephone number of the owner of the property on which the subject activity is to occur.
- (C) Legal name, address, and telephone number of the registrant's attorney or other representative, if applicable.
- (D) Legal name, address, and telephone number of any consultant(s) or engineer(s) retained by the registrant to prepare the registration.
- (E) Location of the site with respect to which the registration is submitted.

- (F) Anticipated date of commencement of the subject contaminated soil and/or sediment staging, transfer, and temporary storage activities.
- (G) An 8 1/2" by 11" copy of the relevant portion or a full-sized original of a United States Geological Survey (USGS) quadrangle map, with a scale of 1:24,000, showing the exact location of the site and the area within a one-mile radius of the site. Identify the quadrangle name and number on such copy.
- (H) A registration requiring an approval, pursuant to Section 4(a)(3) of this general permit, must also include the following plans and documents, prepared in accordance with Section 4(c)(3) of this general permit:
  - (i) a Facility Site Plan,
  - (ii) a Facility Description,
  - (iii) a Facility Operations and Management Plan.
- (I) A renewal of registration must provide the following additional information: status of the project, an explanation of why the project needs a renewal of registration, and the anticipated remaining duration of the activities being conducted.
- (J) The signature of the registrant and of the individual or individuals responsible for actually preparing the registration, each of whom shall certify in writing as follows:

“I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute. I certify that this general permit registration is complete and accurate on forms as prescribed by the commissioner without alteration of their text.”

(3) **Required Plans and Documents for Registrations Requiring an Approval**

The following plans and documents shall be prepared and submitted to the department by those registrants **requiring an approval** issued by the commissioner pursuant to Section 4(a)(3) of this general permit. Such plans and documents shall be prepared in accordance with the following, be available at the site of the subject facility and be maintained for review upon request by the Department.

(A) Facility Site Plan

The facility site plan shall provide a clear and detailed presentation of all topographical and man-made features at the subject facility site. The facility site plan shall also include a drawing showing the layout of the facility. The map or drawing(s) must, at a minimum show the following:

- (i) map scale (scale must be at least 1 in. = 100 ft.);
- (ii) map date;
- (iii) a meridian arrow showing north;
- (iv) contour sufficient to show surface water flow;
- (v) property boundaries of the site.

(B) Facility Description

The facility description must include a detailed description of the facility including the nature and purpose of the excavation activities from which the contaminated soil will originate.

(C) Facility Operations and Management (O&M) Plan

The Facility Operation and Management Plan shall include at a minimum: a Soil Management Plan (that describes how the facility will track, sample, and maintain adequate separation between individual stockpiles of soil during characterization procedures), an Emergency and Preparedness Plan, and a description of the inspection and maintenance procedures for the subject Staging, Transfer, and/or Temporary Storage Area.

(4) **Revision of Required Plans and Documents for Registrations Requiring an Approval**

Whenever any significant or substantial facility or operational change is planned, the permittee shall update the Facility Site Plan, the Facility Description, and the Facility Operation and Management Plan as applicable for the subject facility. Such plans and documents shall be updated prior to making such changes to the facility and shall be submitted to the commissioner for the commissioner's review. The updated plans and documents shall be available at the site of the subject facility and shall be maintained for review upon request by the Department.

For the purpose of this subsection, 'significant or substantial' means any change to the facility that results in a new soil management configuration (i.e. the addition of new storage cells or pile staging areas) or results in a need for the maintenance of additional soil tracking information on the facility operational log.

(d) ***Where to File a Registration and Other Related Documents***

- (1) A registration shall be filed with the commissioner at the following address:

CENTRAL PERMIT PROCESSING UNIT  
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION  
79 ELM STREET  
HARTFORD, CT 06106-5127

- (2) In addition to filing a registration with the commissioner, the registrant shall provide at the same time written notification to the chief elected official of the municipality and, if applicable pursuant to Section 4(a)(2)(B) of this general permit, to the municipal Aquifer Protection Agency, in which the subject facility is or will be located.

**(e) *Additional Information***

The commissioner may require a registrant to submit additional information, which the commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

**(f) *Action by Commissioner***

- (1) The commissioner may reject without prejudice a registration if the commissioner determines that it does not satisfy the requirements of Section 4(c) of this general permit or more than thirty (30) days have elapsed since the commissioner requested that the registrant submit additional information or the required fee and the registrant has not submitted such information or fee. Any registration refiled after such a rejection shall be accompanied by the fee specified in Section 4(c)(1) of this general permit.
- (2) The commissioner may disapprove a registration if the commissioner finds that the subject activity is inconsistent with the requirements for authorization under Section 3 of this general permit, or for any other reason provided by law.
- (3) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity may not lawfully be conducted or maintained without the issuance of an individual permit.
- (4) The commissioner may approve a registration with reasonable conditions. If the commissioner approves a registration with conditions, the permittee shall be bound by such conditions as if they were a part of this general permit.
- (5) Rejection, disapproval, or approval of a registration shall be in writing.

**Section 5. Conditions of This General Permit**

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, the permittee shall ensure that activities authorized by this general permit are conducted in accordance with the following general conditions of Section 5(a) and the applicable specific conditions of Sections 5(b) and 5(c) of this general permit.



(a) **General Operating Conditions for Staging, Transfer, and/or Temporary Storage Areas**

- (1) The permittee shall design, operate, maintain and repair the Staging, Transfer, and/or Temporary Storage Area in conformance with the requirements of this general permit.
- (2) The permittee shall maintain a communications system capable of summoning fire, police, and/or other emergency service personnel.
- (3) Unless exempt from the requirement to file a registration as specified in Section 4(a)(1) of this general permit, the permittee shall post and maintain a sign that is visible from a distance of at least 25 feet at the Staging, Transfer, and/or Temporary Storage Area entrance identifying, at the minimum, the name of the permittee, a contact phone number, the hours of operation, and the phrase 'Temporary Soil Staging Area'.
- (4) The permittee shall take appropriate measures to prevent unauthorized entry onto the stockpiles. Appropriate control measures may be accomplished through the use of fences, gates, or other natural or artificial barriers.
- (5) The permittee shall operate the Staging, Transfer, and/or Temporary Storage Area such that the receipt, unloading and processing, if applicable, of contaminated soil and/or sediment does not occur for periods longer than that which is consistent with the local zoning requirements, if applicable, of the municipality where the activity is occurring.
- (6) During all periods of operation of the Staging, Transfer, and/or Temporary Storage Area, the permittee shall have sufficient personnel on site to inspect contaminated soil and/or sediment for the presence of incidental excavation wastes and materials and for any suspect contaminated soil and/or sediment that may contain hazardous wastes. The permittee shall comply with the following management standards regarding wastes:

(A) **Allowed Wastes and Materials**

This general permit authorizes only the management of contaminated soil and/or sediment, in the Staging, Transfer, and/or Temporary Storage Area.

(B) **Non Authorized Wastes and Materials**

This general permit does not authorize the management of materials or wastes other than contaminated soil and/or sediment. Management of contaminated soil and/or sediment that either contains or is considered to be hazardous waste is not authorized by this general permit.

(C) **Non Authorized Activities**

This general permit does not authorize the treatment (including but not limited to blending and/or mixing) of soil or sediment for the expressed purpose of diluting contaminants.

(D) **Incidental Excavation Waste**

Incidental excavation waste shall be: (1) separated to the satisfaction of the receiving facility or to an extent that renders the contaminated soil and/or sediment suitable for its intended reuse; (2) isolated and temporarily stored in a safe manner prior to off-site transport; and (3) disposed at a facility lawfully authorized to accept such waste. The maximum amount of incidental excavation waste stored at the Staging, Transfer, and/or Temporary Storage Area shall be as follows:

- (i) **Less than or equal to 10,000 cubic yards of contaminated soil and/or sediment** - No more than 100 cubic yards of incidental excavation waste shall be stored at any one time.
- (ii) **Greater than 10,000 cubic yards of contaminated soil and/or sediment** - No more than 1,000 cubic yards of incidental excavation waste shall be stored at any one time.

(E) **Hazardous Waste**

Hazardous waste inadvertently received at the Facility shall be: (1) promptly sorted, separated, and isolated; (2) recorded in the Site Operating Log required by Section 5(c)(1) of this general permit; and (3) managed in accordance with the conditions contained within section 22a-449(c)-100 through 119 of the Regulations of Connecticut State Agencies (Hazardous Waste Management Regulations).

- (7) The permittee shall at all times take reasonable precautions to control fugitive dust emissions and odors in accordance with section 22a-174-18 and section 22a-174-23, respectively of the Regulations of Connecticut State Agencies.

(b) ***Specific Operating Conditions for Staging, Transfer, and/or Temporary Storage Areas***

- (1) **Erosion Controls.** The permittee shall place the soil stockpiles on a surface sufficiently impervious to prevent or minimize the transfer or infiltration of contaminants from the soil stockpiles to the ground and shall also securely cover any stockpiles of soil when the Staging, Transfer and/or Temporary Storage Area is not in use with an impervious material such as a tarp or other equivalent material to control and minimize storm water run-on and run-off. Soil stockpiles shall be covered at the end of each operating day or at any time that the Staging, Transfer and/or Temporary Storage Area is unattended by the permittee. Run-on/run-off controls shall be consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
- (2) **Dust Controls.** The permittee shall minimize wind erosion and dust transport from the stockpiles and the travel areas of the Staging, Transfer and/or Temporary Storage Area by ensuring that all necessary dust controls (tarps, dust suppressants, routine street sweeping, etc.) are implemented and maintained at all times during periods of operation.

- (3) **Anti-Tracking.** The permittee shall employ anti-tracking measures (street sweepers, anti-tracking pads, etc.) at the Staging, Transfer and/or Temporary Storage Area to ensure that vehicles that have entered the Staging, Transfer and/or Temporary Storage Area do not track soils from the Staging, Transfer and/or Temporary Storage Area onto a public roadway at any time. Construction entrance anti-tracking pads shall be constructed in a manner that is consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.
- (4) **Characterization.** The permittee shall characterize each soil stockpile staged at the Staging, Transfer and/or Temporary Storage Area prior to transporting such stockpile for soil reuse or disposal. The permittee shall analyze soil obtained from representative samples collected from the media such that the permittee can reasonably determine whether such media does or does not exceed any applicable analytical performance standard (such as the Remediation Standard Regulations or a receiving facility's acceptance criteria). The permittee shall ensure that physical separation is maintained between previously sampled soil stockpiles (by means of concrete walls, aisle space, etc.) while awaiting the results of soil sample analyses. The permittee shall ensure that an independent laboratory certified by the Connecticut Department of Public Health for chemical testing performs the soil sample analyses used to characterize the soil.
- (5) **Storage Cell/Pile Capacity and Placement.** Unless otherwise approved in writing by the commissioner as part of a site specific soil management plan, the permittee shall ensure that individual contaminated soil and/or sediment storage piles do not exceed a volume of 1,000 cubic yards and are maintained with a minimum distance of 12 feet from any property line (unless the stockpiles are staged at the site of excavation).
- (6) **Transporter Practices.** The permittee shall instruct the transporters of contaminated soil and/or sediment of best management practices for the transportation of such soil (proper tarping of hauling dump bodies, removing loose material from dump body, etc.).
- (7) **Queuing and Idling of Transport Vehicles.** The permittee shall: (a) control all traffic related to the operation of the facility in such a way as to mitigate the queuing of vehicles off-site and excessive or unsafe traffic impact in the area where the facility is located; and (b) ensure that except as allowed in section 22a-174-18(b)(3)(C) of the Regulations of Connecticut State Agencies, trucks are not left idling for more than three (3) consecutive minutes.

(c) ***Record Keeping Requirements***

- (1) **Site Operating Log.** Unless exempt from the requirement to file a registration as specified in Section 4(a)(1) of this general permit, the permittee shall maintain a Site Operating Log for the duration of the authorized activities. The Site Operating Log shall include up-to-date records that clearly identify the origin of each soil stockpile placed at the Staging, Transfer and/or Temporary Storage Area; indicate the date such soils are received at the Staging, Transfer

and/or Temporary Storage Area; list the specific Staging, Transfer and/or Temporary Storage Area storage cell, if applicable; indicate the date such soils are transported from the Staging, Transfer and/or Temporary Storage Area; and, indicate the final disposition (i.e. transportation to a soil processing facility or placement on the land) of such soils.

(2) **Records Retention.** Unless exempt from the requirement to file a registration as specified in Section 4(a)(1) of this general permit, the permittee shall maintain an up-to-date record of its operating activities during the entire operational period of the Staging, Transfer and/or Temporary Storage Area. At a minimum, the operating record shall include:

- (A) Any initial site characterization data and information and a summary of the Contaminants of Concern (COCs) identified;
- (B) The location of excavation activities where soils were generated and subsequently transported to the Staging, Transfer and/or Temporary Storage Area for additional sampling and characterization;
- (C) An accounting of the total facility throughput including the quantity of soil (expressed in tons or cubic yards) shipped to and stored at the Staging, Transfer and/or Temporary Storage Area during sampling and characterization procedures;
- (D) A statement describing each of the soil reuse, or disposal sites (facility name, location, and address) utilized and an accounting of the quantity of soil (expressed in tons or cubic yards) shipped to each;
- (E) Certifications, site maps, the site operating log, and either a complete set of the soil sampling test results or a complete set of soil sampling summary tables, and;
- (F) Any other data or documents required by this authorization.

The permittee shall retain the operating record at its place of business for a period of at least three years following the expiration of this permit and shall make such records available for review by the commissioner or the commissioner's designee upon request.

## **Section 6. General Conditions**

### **(a) *Reliance on Registration***

When evaluating a registration, the commissioner relies on information provided by the registrant. If such information proves to be false or incomplete, the authorization issued under this general permit may be suspended or revoked in accordance with law, and the commissioner may take any other legal action provided by law.

**(b) *Duty to Correct and Report Violations***

Upon learning of a violation of a condition of this general permit, the permittee shall immediately take all reasonable action to determine the cause of such violation, correct such violation and mitigate its results, prevent further such violation, and report in writing such violation and such corrective action to the commissioner within five (5) days of the permittee's learning of such violation. Such report shall be certified in accordance with Section 6(d) of this general permit.

**(c) *Duty to Provide Information***

If the commissioner requests any information pertinent to the authorized activity or to determine compliance with this general permit, the permittee shall provide such information in writing within thirty (30) days of such request. Such information shall be certified in accordance with Section 6(d) of this general permit.

**(d) *Certification of Documents***

Any document, including but not limited to any notice, which is submitted to the commissioner under this general permit shall be signed, as applicable, by the registrant or the permittee in accordance with section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

“I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.”

**(e) *Date of Filing***

For purposes of this general permit, the date of filing with the commissioner of any document is the date such document is received by the commissioner.

**(f) *False Statements***

Any false statement in any information submitted pursuant to this general permit may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.

**(g) *Correction of Inaccuracies***

Within fifteen (15) days after the date a permittee becomes aware of a change in any of the information submitted pursuant to this general permit, becomes aware that any such information is inaccurate or misleading, or that any relevant information has been omitted, such permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the commissioner. Such information

shall be certified in accordance with Section 6(d) of this general permit. The provisions of this subsection shall apply both while a request for approval of registration is pending and after the commissioner has approved such request.

**(h) *Transfer of Authorization***

A registration or an approval of registration under this general permit is transferable only in accordance with the provisions of section 22a-60 of the General Statutes.

**(i) *Other Applicable Law***

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

**(j) *Other Rights***

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

## **Section 7. Commissioner's Powers**

**(a) *Abatement of Violations***

The commissioner may take any action provided by law to abate a violation of this general permit, including the commencement of proceedings to collect penalties for such violation. The commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the commissioner by law.

**(b) *General Permit Revocation, Suspension, or Modification***

The commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify it to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) ***Filing of an Individual Permit Application***

If the commissioner notifies a permittee in writing that such permittee must obtain an individual permit to continue lawfully conducting the activity authorized by this general permit, the permittee may continue conducting such activity only if the permittee files an application for an individual permit within thirty (30) days of receiving the commissioner's notice. While such application is pending before the commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. Nothing herein shall affect the commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued Date: September 12, 2011

YVONNE BOLTON  
Bureau Chief  
Bureau of Materials Management and  
Compliance Assurance

This is a true and accurate copy of the general permit executed on September 12, 2011 by the Department of Energy and Environmental Protection.

**APPENDIX C**

**City of Stamford WPCA Miscellaneous Discharge Permit**





**MISCELLANEOUS DISCHARGE PERMIT**  
**TO PUBLIC SEWERS**

1. ANY DIRECT OR INDIRECT DISCHARGE TO THE CITY OF STAMFORD PUBLIC SEWERS SHALL BE PERMITTED ONLY BY THE EXECUTIVE DIRECTOR OR HIS/HER DESIGNEE.
2. THE WATER DISCHARGE PERMITS AND [GENERAL PERMITS](#) SHALL BE SOUGHT FROM THE STATE OF CONNECTICUT, DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION.

LOCAL APPROVAL BY THE STAMFORD WPCA FOR RECEIVING THE DISCHARGED WATER IS GRANTED ON THE ABOVE APPLICATIONS.

FOR CERTAIN DISCHARGES:

- (1) IN ACCORDANCE WITH CHAPTER 446K OF THE CONNECTICUT GENERAL STATUTES, AS AMENDED, A PERMIT FROM THE COMMISSIONER OF ENVIRONMENTAL PROTECTION IS REQUIRED PRIOR TO THE INITIATION OF A DISCHARGE OF ANY OF THE FOLLOWING WASTEWATERS TO A PUBLIC SEWER.
    - (a) INDUSTRIAL WASTEWATER OF ANY QUANTITY
    - (b) DOMESTIC SEWAGE IN EXCESS OF 5,000 GALLONS PER DAY THROUGH ANY INDIVIDUAL BUILDING SEWER TO A PUBLIC SEWER.
  - (2) A POTENTIAL DISCHARGER MUST SUBMIT A PERMIT APPLICATION TO THE DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION NOT LATER THAN 90 DAYS PRIOR TO THE ANTICIPATED DATE OF INITIATION OF THE PROPOSED DISCHARGE.
3. ALL DISCHARGES DIRECTLY OR INDIRECTLY SHALL BE CHARGED A USAGE FEE BASED ON THE PREVAILING RATE PER EACH ONE HUNDRED (100 CCF) CUBIC FEET DISCHARGED.

THE APPLICANT SHALL ON DAILY BASIS, ACCURATELY DOCUMENT AND REPORT THE ESTIMATED QUANTITY OF DISCHARGE.

**4. ALL DISCHARGES DIRECTLY OR INDIRECTLY TO THE PUBLIC SEWERS SHALL CONFORM TO CITY OF STAMFORD ORDINANCE AS HEREUNDER**

**Sec. 200-32. Use of public sewers.**

- A. The owner(s) of all houses, buildings or properties used for human occupancy, employment, recreation or other purposes situated within the City of Stamford and abutting on any street, alley or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the City of Stamford, shall, at the option of the WPCA and at the owner's(s') expense, be required to install a building lateral to connect their building drain to the public sewer in accordance with the provisions of this article, within one hundred eighty (180) days after the date of official notice to do so, provided, however, that such requirement shall not be imposed on any house, building, or property within the sewer avoidance area.
  
- B. It shall be unlawful for any person to construct or repair any privy, privy vault, septic tank, cesspool or other facility intended for the disposal of sewage if public sewers are available.

**Sec. 200-33. Building laterals and connections.**

- A. No unauthorized person(s) shall uncover, make any connections with or opening into, use, alter, repair or disturb any public sewer or appurtenance thereof.
  
- B. The Executive Director of the WPCA shall establish criteria consistent with the provisions of [section 200-33](#), herein, for connection to the public sewer system. Any person proposing a new discharge into the public sewer system or a substantial change in the volume or character of pollutants that are being discharged into the public sewer system shall notify the Executive Director at least 45 days prior to the proposed change or connection and must obtain approval from the Executive Director prior to such discharge. The Executive Director may waive the forty-five-day requirement in the case of an emergency. No discharge to a sanitary sewer shall be allowed without a permit or other authorization issued by the WPCA.
  
- C. Unless otherwise provided herein, connections to the public sewer system shall only be allowed from properties, buildings or facilities that are outside of the sewer avoidance area. Any connection from a property, building, or facility inside the sewer avoidance area shall be considered a private lateral, regardless of line ownership, responsibility or maintenance.

- D. In addition to any other approvals that may be required, connections to the public sewer system from facilities, or properties inside the sewer avoidance area shall require two-thirds approval of the Board of the WPCA, the approval of the Planning Board and a three-quarters approval of the Board of Representatives, which three-quarters shall not be less than two-thirds of the entire membership of the Board of Representatives.
- (1) Before such approvals shall be granted, the applicant shall provide specifications regarding current and future properties, buildings, and facilities that shall be connected, the approximate square footage of such facilities, and the anticipated amount and nature of septic flow. No increase in the square footage or amount of wastewater flow, or material change in the nature of the wastewater flow, as determined by the Executive Director of the WPCA or the Board of the WPCA, shall be permitted without additional approval. No connection to any other properties, buildings, or facilities, building not included in such specifications shall be permitted without additional approval.
  - (2) Any violation of the use of a private lateral shall be remedied within 120 days after notice by the WPCA. If any violation is not remedied then, upon notice by the WPCA, the City of Stamford shall revoke any and all building, occupancy, zoning exception, or other permits pertaining to the use of the properties using the private lateral.
  - (3) Connections within the sewer avoidance area that exist prior to the enactment of this Chapter, including connections with the sewer system of the Town of Darien and the connection to Northeast School, shall not require approval for continued operation. Further, the proposed connection to the Aquarion Water Treatment Plant at 149 Lakeside Drive shall not require approval for connection and operation. However, any material change in the amount or nature of wastewater flow of such connection, as determined by the Executive Director of the WPCA or the Board of the WPCA, shall require approval as provided herein.
- E. A person intending to connect a building drain from his property to the public sewer shall first obtain a permit to connect from the Chief Building Official and the WPCA. The application shall be made on forms provided by the Chief Building Official and the WPCA, and it shall be accompanied by a sketch or plan showing the proposed installation in sufficient detail to enable the Chief Building Official and the WPCA Executive Director or his or her designee to determine that the proposed installation meets the requirements of this regulation and other applicable specifications, codes and laws. The application shall

be signed by the owner of the premises to be served or his authorized agent and by the qualified contractor who has been chosen to perform the work of installing and connecting the building drain to the public sewer. Upon approval of the application and plan, a permit shall be issued to have the work performed by the stated contractor. In the event that the premises change ownership before the work is completed, or if another contractor is chosen to perform or finish the work, the original permit shall become void, and a new permit must be obtained by the new parties in interest. No permit to connect shall be issued unless and until the WPCA issues an approval to discharge the waste. A permit to connect shall not be deemed to negate the need for a discharge permit.

- F. A connection to the public sewer shall be made only after said connection has been approved by the Chief Building Official of the City of Stamford in order to ensure that minimum standards of construction are met for the installation.
- G. Permits to connect to the public sewer may be revoked or annulled by the Executive Director of the WPCA for noncompliance with the criteria established in accordance with the provisions of Subsection B through and including E above and [section 200-34](#) hereof. The Executive Director of the WPCA shall send notice of a revocation or annulment of a permit to the permittee by certified mail. The permittee may appeal such revocation or annulment to the Board of Directors in accordance with appeal and hearing procedures enacted by the WPCA.
- H. Existing building laterals may be used in connection with new buildings only when they are found, on examination and test by the Chief Building Official, to meet all requirements of this article.
- I. The size, slope, alignment, materials of construction of a building lateral and the methods to be used in excavating, placing of the pipe, jointing, testing and backfilling the trench and connection of the building lateral to the public sewer shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the WPCA and the City of Stamford. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the ASTM and WPCF Manual of Practice No. 9 shall apply.

- J. The Chief Building Official shall copy the Executive Director of the WPCA on all permits and correspondences concerning connecting to the public sewer.
- K. The Executive Director of the WPCA shall have the power to reject any extension of the public sewer system, and any private sewer line or extension intended to discharge into the public sewer system.

**Sec. 200-34. Discharge limitations regarding the use of public sewers.**

- A. No person shall discharge or cause to be discharged any polluted or unpolluted waters such as stormwater, groundwater, roof runoff, subsurface drainage or cooling water to any sanitary sewer, unless they have received a permit therefore by the State of Connecticut Department of Environmental Protection and/or the WPCA, and have been assessed a user charge pursuant to [section 200-29](#) of this chapter.
- B. Unless otherwise permitted pursuant to section 200-34A., above, stormwater and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers and discharged to a watercourse in accordance with all applicable state and federal laws and regulations.
- C. No user shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation or performance of the WPCF. These general prohibitions apply to all such users of a WPCF whether or not the user is subject to National Categorical Pretreatment Standards or any other federal or state pretreatment standards or requirements. A user shall not contribute the following substances to any WPCF:
  - (1) Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or be injurious in any other way to the WPCF or to the operation of the WPCF. At no time shall two successive readings on an explosion hazard meter at the point of discharge into the sewage collection system (or at any point in the system) be more than 5% nor any single reading over 10% of the lower explosive limit (LEL) of the meter.
  - (2) Solids or viscous substances which may cause obstruction to the flow in a sewer or other interference with the operation of the WPCF, including substances such as, but not limited to, grease, garbage with particles greater than 1/2 inch in any dimension, animal guts or tissues, paunch, manure, bones, hair, hides or

fleshings, entrails, whole blood, feathers, ashes, cinders, sand, spent lime, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, wood, plastics, gas, tar, asphalt residues, residues from refining or processing of fuel or lubricating oil, mud or glass grinding or polishing wastes.

- (3) Any sewage having a pH lower than 5.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment and personnel of the WPCF. The upper limit of pH for any industrial wastewater discharge shall be established under the discharger's state discharge permit.
- (4) Any sewage containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals or plant life, create a toxic effect in the receiving waters of the WPCF or to exceed the limitation set forth in a categorical pretreatment standard. A toxic pollutant shall include but not be limited to any pollutant identified pursuant to Section 307(a) of the Act.
- (5) Any noxious or malodorous sewage, gases or solids which either singly or by interaction with other sewage are sufficient to prevent entry into the public sewers for their maintenance and repair.
- (6) Any sewage which, by interaction with other sewage in the public sewer, releases obnoxious gases, forms suspended solids which interfere with the collection system or creates a condition which may be deleterious to structures and treatment processes or which may cause the effluent limitations of the WPCF's NPDES permit to be exceeded.
- (7) Any substance which may cause the WPCF's effluent or any other product of the WPCF, such as residues, sludges or scums, to be unsuitable for reclamation process where the WPCA is pursuing a reuse and reclamation program. In no case shall a substance discharged to the WPCF cause the facility to be in noncompliance with sludge use or disposal criteria, guidelines or regulations developed under Section 405 of the Act, any criteria, guidelines or regulations affecting sludge use or disposal developed pursuant to the Resource Conservation and Recovery Act, Clean Air Act, the Toxic Substances Control Act or state criteria applicable to the sludge management method being used.
- (8) Any substance which will cause a WPCF to violate its NPDES permit or the receiving water quality standards.

(9) Sewage containing substances which are not amenable to treatment or reduction by the wastewater treatment process employed, or are amenable to treatment only to such degree that the Water Pollution Control Facility effluent cannot meet the limits stipulated in the City of Stamford's NPDES permit.

E. The following described substances, materials, waters or waste shall be limited in discharges to public sewers to concentrations or quantities which will not harm either the sewers or the Water Pollution Control Facility, will not have an adverse effect on the receiving stream, or will not otherwise endanger public property or constitute a nuisance. The Commissioner may set lower limitations if more severe limitations are necessary to meet the water quality standards of the receiving stream. The limitations or restrictions on materials or characteristics of sewage discharged to the public sewer are as follows:

- (1) Sewage having a temperature higher than 150° F. (65° C.)
- (2) Sewage containing fat, wax, grease, petroleum or mineral oil, whether emulsified or not, in excess of 100 mg/l with floatable oil not to exceed 20 mg/l or containing substances which may solidify or become viscous at temperatures between 32° F. and 150° F. (0° C. and 65° C.).
- (3) Any garbage that has not been properly shredded (see section [200-16](#)). Garbage grinders may be connected to sanitary sewers from homes, hotels, institutions, restaurants, hospitals, catering establishments or similar places where garbage originates from the preparation of food in kitchens for the purpose of consumption on the premises or when served by caterers.
- (4) Any sewage containing odor-producing substances exceeding limits which may be established by the Commissioner.
- (5) Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Commissioner in compliance with all applicable state and federal regulations.
- (6) Materials which exert or cause:
  - (a) Unusual concentration of inert suspended solids (such as, but not limited to, sodium chloride and sodium sulfate).
  - (b) Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).
  - (c) Unusual BOD, chemical oxygen demand, nitrogen containing compounds or chlorine demand in such quantities as to constitute a significant load on the Water Pollution Control Facility.

- (d) Unusual volume of flow or concentrations of wastes constituting a "slug" as defined in [section 200-16](#)
- (e) Overflow from holding tanks or other receptacles storing organic wastes.
- (f) Sewage with a concentration of pollutants in excess of the following limits:

Pollutant	Concentration: parts/million(mg/l)
Arsenic as As	0.05
Barium as Ba	5.0
Boron as B	5.0
Cyanides as CN (amendable)	0.1
Fluoride as F	20
Chromium (total)	1.0
Chromium (Cr + 6)	0.1
Magnesium as Mg	100
Manganese as Mn	5.0
Copper as Cu	1.0
Zinc as Zn	1.0
Cadmium	0.1
Lead	0.1
Tin	2.0
Silver	0.1
Mercury	0.01
Nickel	1.0

Note: All metals are to be measured as total metals.

F. Permit for certain discharges.

(1) In accordance with Chapter 446k of the Connecticut General Statutes, as amended, a permit from the Commissioner of Environmental Protection is required prior to the initiation of a discharge of any of the following wastewaters to a public sewer.

- (c) Industrial wastewater of any quantity
- (d) Domestic sewage in excess of 5,000 gallons per day through any individual building sewer to a public sewer.



- (2) A potential discharger must submit a permit application to the Department of Environmental Protection not later than 90 days prior to the anticipated date of initiation of the proposed discharge.

G. Review by Commissioner.

- (1) If any sewage which contains the substances or possesses the characteristics enumerated in this section of this article, and which in the judgment of the Commissioner may have a deleterious effect upon the wastewater facilities, processes, equipment or receiving waters, or which otherwise may create a hazard to life or constitute a public nuisance, the Commissioner may in accordance with Section 22a-430 of the Connecticut General Statutes, as amended:
  - (a) Reject the discharge of the wastes:
  - (b) Require pretreatment to an acceptable condition for discharge to the public sewers; and
  - (c) Require control over the quantities and rate of discharge.
- (2) If the Commissioner permits the pretreatment or equalization of waste flows, the design and installation of the equipment shall be subject to the review and approval of the Commissioner subject to the requirements of all applicable codes, ordinances and laws

H. The Executive Director of the WPCA shall have the right to reject the discharge of any wastes or require more stringent effluent limitations than required by the user's Section 5-54i permit, the decisions of the Commissioner notwithstanding.

I. Grease, oil and gross particle separators shall be provided when, in the opinion of the Commissioner, they are necessary for the proper handling of sewage containing floatable grease in excessive amounts, as specified in Section 5.4(b), or any flammable wastes, sand or other harmful substances; except that such separators shall not be required for private living quarters or dwelling units. All separators shall be of a type and capacity approved by the Commissioner and shall be located as to be readily and easily accessible for cleaning and inspection. In the maintaining of these separators, the owner(s) shall be responsible for the proper removal and disposal by appropriate means of the captured material and shall maintain records of the dates and means of disposal, which are subject to review by the Commissioner. Any removal and hauling of the collected materials shall be performed by a waste disposal firm which possesses a valid permit from the Commissioner under Section 22a-422 of the Connecticut General Statutes, as amended.

- J. Where pretreatment or flow-equalizing facilities are provided or required for any sewage, they shall be maintained continuously in satisfactory and effective operation by the owner(s) at his expense.
- K. When required by the Commissioner, the owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable structure together with such necessary meters and other appurtenances in the building sewer to facilitate observations, sampling and measurement of the wastes. Such structure, when required, shall be accessible and safely located and shall be constructed in accordance with plans approved by the Commissioner. The sampling structure shall be located at a point along the industrial waste stream where a representative sample of the industrial wastewater may be obtained prior to its being diluted by domestic sewage in the building sewer. The structure shall be installed by the owner at his expense and shall be maintained by him so as to be safe and accessible at all times.
- L. All industries discharging into a public sewer shall perform such monitoring of their discharge as required by the Commissioner in any state discharge permit issued pursuant to Section 22a-430 of the Connecticut General Statutes, as amended, including, but not limited to, installation, use and maintenance of monitoring equipment, keeping records and reporting the results to the Commissioner. Such records shall be made available upon request of the Commissioner or the Executive Director.
- M. All measurements, tests and analyses of the characteristics of sewage to which reference is made in this article shall be determined in accordance with the latest edition of Standard Methods for Examination of Water and Wastewater, published by the American Public Health Association. Sampling methods, location, times, durations and frequencies are to be determined on an individual basis subject to the stipulations and general conditions of the discharger's state discharge permit.
- N. No statement contained in this article shall be construed as preventing any special agreement or arrangement between the City of Stamford and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the City of Stamford for treatment provided that such agreements do not contravene any requirements of existing state or federal regulations and are compatible with any user charge and industrial cost recovery system in effect.
- O. Upon the promulgation of the federal categorical pretreatment standard for a particular industrial subcategory, the federal standard, if more stringent than

limitations imposed under this article for sources in that subcategory, shall supersede the limitations imposed under this article.

- P. No user shall increase the use of process water in an attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in the federal categorical pretreatment standards, or in any specific pollutant limitations that may be developed by the Commissioner.
- Q. Each user shall provide protection from accidental discharge of prohibited materials or other substances regulated by this article. Facilities to prevent accidental discharge of prohibited materials shall be provided and maintained at the owner or user's own cost and expense. The Commissioner may require that plans showing facilities and operating procedures be submitted for review and approval prior to construction of the facilities.
- (1) Within five days following an accidental discharge, the user shall submit to the Executive Director and the Commissioner a detailed written report describing the cause of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage or other liability which may be incurred as a result of damage to the WPCF, fish kills, aquatic plants or any other damage to persons or property; nor shall such notification relieve the user of any fines, civil penalties or other liability which may be imposed by this article or other applicable law.
  - (2) A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees whom to call in the event of a dangerous discharge. Employers shall ensure that all employees are advised of the emergency notification procedure.

**Sec. 200-35. Protection from damage.**

No unauthorized person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment which is a part of the sewage collection system or Water Pollution Control Facility. Any person who commits a violation of this section shall be liable and responsible for any and all costs incurred as a result of such damage, including without limitation reasonable attorney's fees and expenses.

**APPENDIX D**

**Dewatering Specifications**

**SECTION 22175  
DEWATERING**

**PART 1 – GENERAL**

**1.01 SCOPE**

- A. Dewatering, depressurizing, draining and maintaining trenches, shaft excavations, structural excavations and foundation beds in a stable condition, and controlling ground water conditions for tunnel excavations.
- B. Protecting work against surface runoff
- C. Disposing of removed water
- D. The pipe jacking shall also be in compliance with the Metro-North Railroad Pipeline Occupancy Specification. If there are any conflicts with section 22175 and the Metro-North Railroad Pipeline Occupancy Specification, the Metro-North Railroad Pipeline Occupancy Specification shall govern.
- E. The proposed treatment system should include the use of equalization (frac) tank(s) and bag filters for primary solids controls, followed by carbon polishing using granular activated carbon (GAC) canisters to ensure a clean discharge. The treatment system shall be metered to track discharge flow volumes.

**1.02 RELATED DOCUMENTS**

- A. Drawings and general provision of the Contract apply to this section.

**1.03 REFERENCES**

- A. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12-inch Drop.
- B. Federal Regulations, 29 CFR Part 1926, Standards-Excavation, Occupational Safety and Health Administration (OSHA).
- C. Federal Register 40 CFR Part 122, EPA Administered Permit Programs (NPDES), Storm Water Discharge.

**1.04 DEFINITIONS**

- A. Ground water control includes both dewatering and depressurization of water-bearing soil layers.
  - 1. Dewatering includes lowering the water table and intercepting seepage that would otherwise emerge from slopes or bottoms of excavations, or into tunnels

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and shafts, and disposing of removed water. The intent of dewatering is to increase stability of tunnel excavations and excavated slopes; prevent dislocation of material from slopes or bottoms of excavations; reduce lateral loads on sheeting and bracing; improve excavating and hauling characteristics of excavated material; prevent failure of heaving of the bottom of excavations; and to provide suitable conditions for placement of backfill materials and construction of structures and other installations.

2. Depressurization includes reduction in piezometric pressure within strata not controlled by dewatering alone, as required to prevent failure of heaving of excavation bottom or instability of tunnel excavations.
- B. Excavation drainage includes keeping excavation free of surface and seepage water.
- C. Surface drainage includes use of temporary drainage ditches and dikes and installation of temporary culverts and sump pumps with discharge lines as required to protect the work from any source of surface water.
- D. Equipment and instrumentation for monitoring and control of the ground water control system includes piezometers and monitoring wells, and devices, such as flow meters, for observing and recording flow rates.

**PART 2 - PRODUCT**

**2.01 EQUIPMENT AND MATERIALS**

- A. Equipment and materials are at the option of the Contractor as necessary to achieve desired results for dewatering. Selected equipment and materials are subject to review of Northeast Utilities Service Company through submittals as indicated herein.
- B. Eductors, well points, deep wells or sock drains, where used, must be furnished, installed and operated by an experienced contractor regularly engaged in ground water control system design, installation and operation.
- C. All equipment must be in good repair and operating order.
- D. Sufficient standby equipment and materials shall be kept available to ensure continuous operation, where required.

**PART 3 - EXECUTION**

**3.01 PERFORMANCE REQUIREMENTS**

- A. Conduct subsurface investigations to identify ground water conditions and to provide parameters for design, installation and operation of ground water control systems.

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- B. Design a ground water control system where open excavations will be affected by ground water entry or where ground water may result to excavation instability. Design a ground water control system, compatible with requirements of Federal Regulations 29 CFR Part 1926 to produce the following results:
1. Effectively reduce the hydrostatic pressure affecting open excavations or the pipe jacking operation.
  2. Develop a substantially dry and stable subgrade for subsequent construction operations.
  3. Preclude damage to adjacent properties, buildings, structures, utilities installed facilities and other work.
  4. Prevent the loss of fines, seepage, boils, quick condition, or softening of the foundation strata.
  5. Maintain stability of sides and bottom of excavations.
- C. Provided ground water control systems may include single-stage or multiple-stage well point systems, eductor and ejector-type systems, deep wells, sock drains or combinations of these equipment types.
- D. Provide drainage of seepage water and surface water, as well as water from any other source entering the excavation. Excavation drainage may include placement of drainage materials, such as crushed stone and filter fabric, together with sump pumping.
- E. Provide ditches, berms, pumps and other methods necessary to divert and drain surface water from excavation and other work areas.
- F. Locate ground water control and drainage systems so as not to interfere with utilities, construction operations, adjacent properties, or adjacent water wells.
- G. Assume sole responsibility for ground water control systems and for any loss of damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the ground water control operations. Modify ground water control systems or operations if they cause or threaten to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells, or affect potentially contaminated areas. Repair damage caused by ground water control systems or resulting from failure of the system to protect property as required.
- H. Provide an adequate number of piezometers installed at the proper locations and depths as required to provide meaningful observations of the conditions affecting the excavation, adjacent structures, and water wells.
- I. Provide environmental monitoring wells installed at the proper locations and depths as required to provide adequate observations of hydrostatic conditions and possible

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contaminant transport from contamination sources into the work area or into the ground water control system.

3.02 SUBMITTALS

- A. Contractor to obtain a CTDEEP General Permit for the Discharge of Groundwater Remediation Wastewater to Sanitary Sewers and submit a Ground Water and surface Water Control Plan for review by Northeast Utilities Service Company prior to start of any field work. Contractor shall submit a plan to include the following:
1. Results of subsurface investigation and description of the extent and characteristics of water bearing layers subject to ground water control.
  2. Names of equipment suppliers and installation subcontractors.
  3. A description of proposed ground water control systems indicating arrangement, location, depth and capacities of system components, installation details and criteria, and operation and maintenance procedures.
  4. A description of proposed monitoring and control system indicating depths and locations of piezometers and monitoring wells, monitoring installation details and criteria, type of equipment and instrumentation with pertinent data and characteristics.
  5. A description of proposed filters including types, sizes, capacities and manufacturer's application recommendations.
  6. Design calculations demonstrating adequacy of proposed systems for intended applications. Define potential area of influence of ground water control operation near contaminated areas.
  7. Operating requirements, including piezometric control elevations for dewatering and depressurization.
  8. Excavation drainage methods including typical drainage layers, sump pump application and other necessary means.
  9. Surface water control and drainage installation
  10. Proposed methods and locations for disposing of removed water that include the water being discharged to municipal sewers via the CTDEEP's General Permit for the Discharge of Groundwater Remediation Wastewater to Sanitary Sewers.
  11. Revise the Ground Water and Surface Water Control Plan as required to accommodate field conditions and changes to the work.
- B. Submit the following records upon completed initial installation:



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1. Installation and development reports for well points, eductors, deep wells and sock drains.
  2. Installation reports and baseline readings for piezometers and monitoring wells.
  3. Baseline analytical test data of water from monitoring wells.
  4. Initial flow rates.
- C. Submit the following records on a weekly basis during operations:
1. Records of flow rates and piezometric elevations obtained during monitoring of dewatering and depressurization.
  2. Maintenance records for ground water control installations, piezometers and monitoring wells.

**3.03 ENVIRONMENTAL REQUIREMENTS**

- A. Comply with requirements of agencies having jurisdiction.
- B. If a drilling fluid additive is required for installing the ground water control system, use only approved organic polymers. Do not use bentonitic drilling fluid. Before installing well screens, replace drilling fluid in hole with clean drilling fluid, or dilute with clear water.
- C. Development of Wells and Control Piezometer
1. Within 24-hours after installation, pump dewatering wells and control piezometers for not less than 30 minutes.
  2. Start development within 12-hours after pumping. Surge well, while simultaneously pumping or airlifting until the amount of material deposited at bottom of the well in one cycle becomes less than 0.2 feet. After surging is completed, pump well until discharge is clear.
  3. After pumping completed, if the well is producing sand or filter material in excess of 5 ppm, resurge and pump well again.
  4. Wells that continue to produce an amount of sand or filter material in excess of 5 ppm after 6 hours of pumping shall be abandoned if directed by Northeast Utilities Service Company at no additional cost to Northeast Utilities Service Company.

**3.04 GROUND WATER CONTROL**

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- A. Perform a subsurface investigation by boring as necessary to identify water bearing layers, piezometric pressures, and soil parameters for design and installation of ground water control systems. Perform pump tests, if necessary to determine the draw down characteristics of the water bearing layers. The results shall be presented in the Ground Water and surface Water Control Plan.
- B. Provide labor, material, equipment, techniques and methods to lower, control and handle ground water in a manner compatible with construction methods and site conditions. Monitor effectiveness of the installed system and its effect on adjacent property.
- C. Install, operate, and maintain ground water control systems in accordance with the Ground Water and surface Water Control Plan. Notify the Northeast Utilities Service Company in writing of any changes made to accommodate field conditions and changes to the work. Provide revised drawings and calculations with such notification.
- D. Provide for continuous system operation, including nights, weekends and holidays. Arrange for appropriate backup if electrical power is the primary energy source for dewatering system.
- E. Monitor operations to verify that the system lowers ground water piezometric levels at a rate required to maintain a dry excavation resulting in a stable subgrade for prosecution of subsequent operations.
- F. Where hydrostatic pressures in confined water bearing layers exist below excavation, depressurize those zones to eliminate risk of uplift or other instability of excavation or installed works. Allowable piezometric elevations shall be defined in the Ground Water and Surface Water Control Plan.
- G. Remove ground water control installations.
  - 1. Remove pumping system components and piping when ground water control is no longer required.
  - 2. Remove monitoring wells when directed by Northeast Utilities Service Company.
  - 3. Grout abandoned well and piezometer holes. Fill piping that is not removed with cement-bentonite grout or cement-sand grout.
- H. During backfilling, dewatering may be reduced to maintain water level a minimum of 5 feet (1.5m) below prevailing level of backfill. However, do not allow that water level to result in uplift pressures in excess of 80 percent of downward pressure produced by weight of structure or backfill in place. Do not allow water levels to rise into cement-stabilized sand until at least 48-hours after placement.
- I. Provide a uniform diameter for each pipe drain run constructed for dewatering. Remove pipe drain when it has served its purpose. If removal of pipe is impractical, provide grout connections at 50-foot (15m) intervals and fill pipe with cement-bentonite grout or cement-sand grout when pipe is removed from service.

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- J. Extent of construction ground water control for structures with a permanent perforated underground drainage system may be reduced, such as units designed to withstand hydrostatic uplift pressure. Provide a means of draining the affected portion of underground system, including standby equipment. Maintain drainage system during operations and remove it when no longer required.
- K. Remove system upon completion of construction or when dewatering and control of surface or ground water is no longer required.
- L. Compact backfill to not less than 95 percent of the maximum dry density in accordance with ASTM D 698 or as required under Section 22140 – Earthwork.

**3.05 REQUIREMENTS FOR EDUCTOR, WELL POINTS, DEEP WELLS OR SOCK DRAINS**

- A. For aboveground piping in ground water control system, include a 12-inch (0.3 m) minimum length of clear, transparent piping between every eductor well or well point and discharge header so that discharge from each installation can be visually monitored.
- B. Install sufficient piezometers or monitoring wells to show that all trench or shaft excavations in water bearing materials are predrained prior to excavation. Provide separate piezometers for monitoring of dewatering and for monitoring of depressurization. Install piezometers and monitoring wells for tunneling as appropriate for Contractor's selected method of work.
- C. Install piezometers or monitoring wells not less than one week in advance of beginning the associated excavation.
- D. Dewatering may be omitted for portions of pipe jacking or other excavations, but only where auger borings and piezometers or monitoring wells show that soil is predrained by an existing system such that the criteria of the ground water control plan are satisfied.
- E. Replace installations that produce noticeable amounts of sediments after development.
- F. Provide additional ground water control installations, or change the methods, in the event that the installations according to the ground water control plan does not provide satisfactory results based on the performance criteria defined by the plan and by the specification. The Contractor shall submit a revised plan for approval.

**3.06 EXCAVATION DRAINAGE**

- A. Contractor may use excavation drainage methods if necessary to achieve well-drained conditions. The excavation drainage may consist of a layer of crushed stone and filter fabric, and sump pumping in combination with sufficient wells for ground water control to maintain stable excavation and backfill conditions.

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3.07 MAINTENANCE AND OBSERVATION

- A. Conduct daily maintenance and observation of piezometers or monitoring wells while the ground water control installations or excavation drainage are operating in an area or seepage into pipe jack or shafts is occurring. Keep system in good condition.
- B. Replace damaged and destroyed piezometers or monitoring wells with new piezometers or wells as necessary to meet observation schedule.
- C. Cut off piezometers or monitoring wells in excavation areas where piping is exposed, only as necessary to perform observation as excavation proceeds. Continue to maintain and make observations, as specified.
- D. Remove and grout piezometers inside or outside the excavation area when ground water control operations are complete. Remove and grout monitoring wells when directed by Northeast Utilities Service Company.

3.08 MONITORING AND RECORDING

- A. Monitor and record average flow rate of operation for each deep well, or for each wellpoint or eductor header used in dewatering system. Also monitor and record water level and ground water recovery. These records shall be obtained daily until steady conditions are achieved and twice weekly thereafter.
- B. Observe and record elevation of water level daily as long as ground water control system is in operation, and weekly thereafter until the work is completed or piezometers or wells are removed, except when Northeast Utilities Service Company determines that more frequent monitoring and recording are required. Comply with Northeast Utilities Service Company direction for increased monitoring and recording and take measures as necessary to ensure effective dewatering for intended purpose.

3.09 SURFACE WATER CONTROL

- A. Intercept surface water and divert it away from excavations through use of dikes, ditches, curb walls, pipes, sumps or other approved means. The requirement includes temporary works required to protect adjoining properties from surface drainage caused by construction operations.
- B. Divert surface water and seepage water into sumps and pump it into drainage channels or storm drains, when approved by governmental authorities having jurisdiction. Provide controls as required by such governmental authorities.

END OF SECTION 22175

