



Phase II Environmental Site Assessment Former Beaton and Corbin Factory Site Southington, Connecticut

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PHASE II ENVIRONMENTAL SITE ASSESSMENT


**FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT**

**EPA TARGETED BROWNFIELDS ASSESSMENT TASK ORDER NO. 069
EPA CONTRACT NUMBER EP-W-07-098
TETRA TECH PROJECT NUMBER 03599**

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LIST OF ACRONYMS

AST	above ground storage tank
BGS	below ground surface
CTDEP	Connecticut Department of Environmental Protection
DPT	direct push technology
ELUR	Environmental Land Use Restriction
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
Etech	Etech Environmental Solutions, Inc.
GA	groundwater area
GA/GAA PMC	Groundwater Classification GA/GAA Pollutant Mobility Criteria
GB PMC	Groundwater Classification GB Pollutant Mobility Criteria
GPC	Groundwater Protection Criteria
GPS	global positioning system
I/C DEC	Industrial/Commercial Direct Exposure Criteria
I/CVC	Industrial/Commercial Volatilization Criteria
ID	inner diameter
MADEP	Massachusetts Department of Environmental Protection
NPDES	National Pollutant Discharge Elimination System
OD	outer diameter
OHM	oil and hazardous materials
PCB	polychlorinated biphenyl
PID	photo-ionization detector
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RDEC	Residential Direct Exposure Criteria
RSR	Remediation Standards and Regulations
RVC	Residential Volatilization Criteria
SVOC	Semi-Volatile Organic Compound
SWPC	Surface Water Protection Criteria
TBA	Targeted Brownfields Assessment
TCA	1,1,1-trichloroethane
TCE	trichloroethene
Tetra Tech	Tetra Tech, Inc.
TPH	total petroleum hydrocarbons
USCS	Universal Soil Classification System

UST	Underground Storage Tank
VOCs	volatile organic compounds

1.0 BACKGROUND

At the request of the U.S. Environmental Protection Agency (EPA), Region I under Contract No. EP-W-07-098, Etech, Environmental and Safety Solutions, Inc. (Etech) completed a Phase II Environmental Site Assessment (ESA) at the Former Beaton and Corbin Site (the Site) located at 318 North Main Street in the town of Southington Connecticut (Figure 1-1). The Etech team, including Tetra Tech, Inc. (Tetra Tech), performed this Phase II ESA under Targeted Brownfields Assessment (TBA) Task Order No. 016. This Draft Phase II ESA Report presents a summary of the findings of the ESA field investigation, recommendations, and cost estimates for further action.

1.1 REPORT OBJECTIVES

The purpose of this ESA was to investigate the Site for the presence of oil and hazardous materials (OHM) in soils and groundwater. This Draft ESA report presents the results of the field investigation and provides recommendations and order-of-magnitude cost estimates for future actions to support the reuse of the Site for commercial development.

1.2 SITE DESCRIPTION

The Beaton & Corbin Factory Site is located at 318 North Main Street Southington, CT. The site is approximately 1.75 acres in size. It is bordered to the North by Chapman Road and to the East by Main Street. Records show that the site was used by Aetna Match Company to manufacture matches on the site during the late 1800s. The Beaton and Corbin Manufacturing Company inhabited the site around 1900 to 1989. Beaton and Corbin manufactured ceiling and floor plates and plumbing fittings and fixtures. Beaton and Corbin's operations also included metal machining and metal plating. Currently the property is abandoned with no current use.

The features on the site include the area or footprint were a 25,000 square foot main factory building that was destroyed by a fire in the early 2000s. The original building of the site was located on the northernmost rectangular footprint, which is to date covered with construction debris that presumably remains from demolition. The southern portion of the main building was added on to the original building between 1934 and 1951. Most of the addition is currently exposed concrete slab. There are 3 wood-framed buildings that are present on the site and are in very poor condition.

The area that surrounds the site is consists of residential and commercial properties. Wastes generated during the Beaton & Corbin Factory operations included metal hydroxide plating sludge, other plating wastes, and degreasing/machining oils. Reports of these waste materials said they were disposed of in

two lagoons in the southwest portion of the site. Five storage tanks were historically utilized on site. Contaminants identified above regulatory criteria during historical site assessments have included volatile organic compounds (VOCs), petroleum hydrocarbons, chromium, and nickel. The site is located in a Groundwater Area (GA). Groundwater Classification GA refers to an area designated for potential drinking water supply, fish and wildlife habitat, recreational use, or agricultural and industrial supply. Contaminants in soils could be transported via erosion through overland flow or through drainage features along the west side of property. Soil contaminants could leach into groundwater, which flows off-site to the southwest. With this comes the concern that contaminants in groundwater could migrate down gradient into the Quinnipiac River or some down gradient water supply wells.

1.3 SITE BACKGROUND

The former Beaton & Corbin Factory was occupied in 1893. Previous to this the site was the Atena Match Company which manufactured matchboxes. The Beaton & Corbin was a manufacturing facility for floor and ceiling plates, plumbers' tubular brass, tubular parts and assemblies to contract specifications. The metals used included copper, brass, carbon steel, stainless steel, and aluminum. Potential sources of contamination on the site include 2 lagoons on the property and 5 storage tanks that were historically utilized on site. Figure 1-2 shows the features and layout of the site.

During production, wastes generated during site operations included metal hydroxide plating sludge, other plating wastes, and degreasing/machining oils. These materials were reportedly disposed of in the two lagoons in the southwest portion of the site. Five storage tanks were historically utilized on site reportedly contained oil gasoline liquid wastes, chemical raw materials (bulk fluids). Contaminants identified above regulatory criteria during historical site assessments have included VOCs, petroleum hydrocarbons, chromium, and nickel. The west end of the main factory building, location of plating shop during the early years of the facility has contaminants present in soil. Interior degreasing area, southern portion of main building formerly utilized for degreasing operations. Solvent and fuel oil storage tanks were formerly located along the south wall of this wing of the building. Waste Water Treatment and Discharge Pipe Area, with associated catch basin to the west of the main building has contaminants present in soil. The north side of building, former location of loading dock, transformer pad, and exhaust vents has contaminants present in soils. The loading dock area on south side of building also has contaminants present in soil.

1.4 PREVIOUS INVESTIGATIONS

The following section details the available previous investigations conducted at the Beaton and Corbin Site.

1.4.1 1987 Fuss & O'Neill Groundwater Report

On May 4, 1984, the State of Connecticut Order (HM-168) requested Beaton & Corbin to comply with all waste handling procedures and facilities, to close all surface impoundments with the State's Hazardous Waste Management Regulations, and install a groundwater monitoring system.

A groundwater monitoring system was installed in July, 1984. A summary of the historical analytical data is shown in Table 1-1. As the attached data shows, the groundwater quality on site had been impacted by dissolved metals including chromium, nickel, barium, copper, and zinc. The highest concentrations of chromium, 0.34 mg/l and 0.37 mg/l were seen in monitoring wells 100 and 101, located downgradient from the former sludge lagoon.

In September of 1987, Fuss & O'Neill reviewed groundwater analytical data for the Beaton & Corbin site to determine the source of the chromium contamination in monitor wells 100 and 101. They concluded the contamination source may be due to the sludge the lagoon, the National Pollutant Discharge Elimination System (NPDES) discharge receiving stream which received discharge from Beaton & Corbin and other area industries, or a combination of each.

The contaminated monitoring wells were located immediately downgradient of the lagoon, which made the lagoon the most obvious source. Low concentrations of chromium reported in sludge toxicity tests indicated that the leachate produced by the sludge would travel to the monitoring wells approximately 50 feet downgradient with little to no dilution. Fuss and O'Neill concluded that it was likely that there was an additional source of chromium contamination in addition to the sludge lagoon.

The NPDES discharged a small water course which flowed past monitoring wells 100 and 101, prior to discharging to the Quinnipiac River. The flow in this water course was primarily the results of discharges from the Beaton and Corbin site and other area industries. During dry periods, this water course likely recharged the area groundwater which may have affected the water quality at monitoring wells 100 and 101.

Fuss & O'Neill concluded that the source of the chromium contamination at monitor wells 100 and 101 was most likely due to a combination of sources relating to both the sludge lagoon and the permitted NPDES discharge.

1.4.2 1988 HRP Associates Site Assessment Report

In March 1988, HRP Associates, Inc. prepared a Phase I ESA that documented the background on the Beaton & Corbin site (HRP, 1988). The summary of the visual inspection included:

- A minor amount of oil-stained dirt at the compressor discharge outlet on the north side of the factory;
- Water from the brass annealing quench baths on the first floor was leaking from the baths, through the floorboards, and into the basement and onto the basement floor;
- Green (nickeliferous) wastewater was observed to be leaking from the pump connected to the settling tank in the waste treatment area;
- Various liquids has leaked from horizontal drums into the concrete confining area of the chemical storage crib;
- A green (nickeliferous) spill has occurred next to the exterior 2,500 gallon holding tank. The source of the spill was apparently a 55 gallon drum, one quarter full of green sludge, that had overturned;
- Minor oil stains around the compressor;
- Green stains from the plating operations on the concrete floor of the plating shop. Similar stains on the ramp leading down to the basement and on the eastern portion of the basement floor;
- The sink in the plating laboratory was reportedly connected to the sanitary sewer, and any reagents disposed in the sink would be considered a liquid waste discharge;
- In the recent past, ongoing discharge of effluent waste water occurred from the treatment facility to the catch basins which discharged into drainage ditch. The drainage ditch discharged into the Quinnipiac River. Discharge was not occurring at the time of the site inspection;
- The area between the fence and the west end of the factory buildings, near the boiler room, appeared to consist of artificial fill; and
- Aerial photographs indicated a second sludge lagoon, that is buried, immediately east of the closed sludge lagoon.

1.4.3 1996 Diversified Environmental Services Subsurface Investigation

May 1996, the Diversified Environmental Services (DES) conducted a subsurface investigation on the site that encompassed the installation of 10 shallow hand auger borings, 13 solid borings from 6 to 10' deep, and installation of 7 groundwater monitoring wells from 15 to 17' deep. Results of the soil analysis indicated concentrations of trichloroethene (TCE) above applicable soil standards in SB-4 on the southern side of the manufacturing building around the area of the 750- gallon 1,1,1-trichloroethane (TCA) above

ground storage tank (AST), as well as, concentrations of total petroleum hydrocarbons (TPH) above applicable soil standards in SB-3 collected from the vicinity of the fuel oil AST (Table 1-2).

1.4.4 1996 Weston Solutions Preliminary Assessment/Site Investigation

In June 1996, Roy F. Weston performed a Preliminary Assessment/Site investigation on behalf of the USEPA that entailed collection of 10 surface soil samples (S001-S010) and 1 liquid sample (W001) from a discharge basin that were submitted for analysis of VOCs, cyanide and metals. In addition, 8 samples (F01-F08) were collected from within the building and submitted for analysis of asbestos (F01 only), metals, cyanide and VOCs (F08 only). The results of the analysis conducted revealed elevated concentrations of metals and VOCs in the soils on the west side of the site. Analytical tables and asbestos results were not located during the historical document file review.

1.4.5 1997 OHM Remediation Services Removal Action

In August 1997, OHM Remediation Services disassembled the plating line and conducted a hazardous waste removal for the USEPA. They removed materials such as wood flooring from under the plating line, waste materials from plating vats, tanks and floors and plating line vats. 66 55-gallon drums and 8 55-gallon drums of debris were generated and shipped off site as caustic, lead and wastewater treatment sludge wastes.

1.4.6 2002 Diversified Environmental Services Phase III Report

From December 2001 to March 2002, DES performed a subsurface investigation that consisted of resampling of onsite monitoring wells, installation of 28 hand auger borings, installation of seven groundwater monitoring wells and sampling of the wells.

Six soil samples contained concentrations of trichloroethylene and tetrachloroethylene above the CTDEP PMC. The VOC impacted soil was located inside the southern portion of the buildings in the area of the former degreasing operation, on the southern side of the building in the area of the former solvent storage area, and on the western side of the building. It was estimated that there was 650 tons of VOC impacted soil on the western and southern sides of the building and 120 tons of VOC impacted soil inside the building under the concrete building floor and footing.

Five soil samples were submitted for analysis of RCRA 8 metals. Soil samples SB-114, SB-117, and SB-118 contained concentrations of SPLP chromium above the CTDEP PMC for SPLP chromium. Soil samples SB-114 and SB-118 contained concentrations of nickel above the CTDEP RDEC. The metals

impacted soil was located in two separate areas on the western side of the building in the area of the wastewater treatment and discharge pipe and in the buried sludge lagoon on the southern portion of the property. It was estimated that 1000 tons of metals impacted soil was on the property, including the materials in the sludge lagoon on the southern portion of the property.

The results of the groundwater analysis detected concentrations of VOCs in all of the groundwater samples collected with the exception of MW-100. Trichloroethylene was detected in ten of the monitoring wells at concentrations ranging from 6 µg/l in MW-101 to 250 µg/l in MW-202, which were all above the CTDEP GPC of 5 µg/l. Total chromium was detected in five of the groundwater samples ranging from 48 µg/l in MW-202 to 307 µg/l in MW-205, which were all above the 20 µg/l GPC for chromium. DES concluded that two groundwater plume appeared to be originating on the northwestern and western portions of the property. The plume on the northern portion of the property contained VOC, ETPH, and metals. The plume of the western portion of the property contained VOCs and metals. Both of the plumes appeared to extend in a southwesterly direction on the site and appeared to go off-site.

1.5 AREAS OF KNOWN OR SUSPECTED CONTAMINATION

Potential sources of contamination on the site are summarized in the table below:

Former Beaton & Corbin Factory Site			
No.	Potential Source Area	Location/Description	Contaminants of Concern
1	Location of plating shop during the early years of the facility.	West end of the main factory building.	VOCs
2	Interior degreasing area	Southern portion of main building formerly utilized for degreasing operations. Solvent and fuel oil storage tanks were formerly located along the south wall of this wing of the building.	VOCs, petroleum hydrocarbons
3	Waste Water Treatment and Discharge Pipe Area	With associated catch basin to the west of the main building.	Lead, chromium, nickel
4	Former location of loading dock, transformer pad, and exhaust vents	North side of building	Petroleum hydrocarbons
5	Loading dock area	South side of building	VOCs
6	Sludge lagoons	South side of building	chromium and nickel
7	Former storage tanks	Includes 10,000-gallon fuel oil tank in west portion of site, 1,000-gallon gasoline tank near storage shed, and	VOCs, petroleum hydrocarbons

Former Beaton & Corbin Factory Site			
No.	Potential Source Area	Location/Description	Contaminants of Concern
		a 2,500-gallon "liquid waste" tank to the west of the main building.	

VOCs- Volatile Organic Compounds

1.6 OVERVIEW OF ESA ACTIVITIES

The purpose of the ESA is to determine the nature and extent of OHM at the Site. This Draft ESA report presents the results of the field investigation performed by Etech in November 2010 and provides recommendations and order-of-magnitude cost estimates for future site re-use.

2.0 FIELD INVESTIGATIONS

This section provides a summary of the field investigations performed by Etech as part of this ESA. Field investigations were performed during the period from November 28, 2011 to December 1, 2011. The purpose of the November 2011 field investigation was to determine the presence of OHM in soils and groundwater at the Site. The field investigation was performed in accordance with the EPA-approved Brownfields Program Quality Assurance Project Plan Addendum (Addendum 1) City of Southington, dated September 2011.

2.1 SOIL SAMPLING DIRECT PUSH TECHNOLOGY (DPT)

During the November 2011 field investigation, Etech advanced 15 soil borings (SB128 through SB133, SB200A, and SB301 through SB308) using DPT drilling methods to approximately 8 to 16 feet below ground surface (bgs). Six soil borings (SB304, SB307, SB306, SB305, SB308, and SB200A) were completed as 1-inch outer diameter (O.D.) monitoring wells (MW301 through MW305, and MW200A, respectively).

2.1.1 Subsurface Soil Sampling

During the November 2011 investigation soil samples were collected from 15 soil borings (SB128 through SB133, SB200A, and SB301 through SB308) at continuous 2-foot depth intervals from the ground surface to the groundwater table (encountered at approximately 6 to 10 feet bgs), using a 4-foot long 2.0-inch interior diameter (I.D.) sampler with acetate liner. Two-foot intervals were sampled below the water table for soil classification purposes only. Immediately upon collection, each soil sample was field-screened for organic vapors using the Massachusetts Department of Environmental Protection (MADEP) Jar Headspace Technique (MADEP Policy WSC-97).

Physical characteristics of all soil samples were described using the Universal Soil Classification System (USCS) and recorded on Boring Log sheets together with jar headspace readings. Boring Logs are contained in Appendix A.

One soil sample each from soil borings, with the exception of SB305, were submitted for laboratory analysis. The soil samples were selected for laboratory analysis based on jar headspace readings or, in the absence of positive headspace readings, visual/olfactory evidence of contamination. If no visual/olfactory evidence of contamination was noted, the sample intersecting the groundwater table was selected for laboratory analysis. White and green granular material was encountered in soil boring

SB305 from 2- to 3- feet bgs, and an additional sample of this material was submitted for laboratory analysis.

The selected soil samples were submitted to the laboratory for the following analyses:

- Volatile organic compounds (VOCs),
- Semi-volatile organic compounds (SVOCs), and
- RCRA 8 metals

A total of seventeen soil samples were analyzed for these constituents (including one field duplicate). Chain-of-Custody Forms are contained in Appendix B.

2.1.2 Monitoring Well Construction and Development

As part of the November 2011 field investigation, soil borings SB304, SB307, SB306, SB305, SB308, and SB200A were completed as monitoring wells MW301 through MW305, and MW200A, respectively. Monitoring wells were constructed of 1-inch O.D. Schedule 40 polyvinyl chloride (PVC) pipe. Well screens were 10-feet in length, with a slot size of 0.010-inch. All well screens were fitted with a PVC end plug. Initial determination of the depth to groundwater was made by visual observation of soil moisture content in the samples recovered from the soil borings.

A sand filter pack was placed in each borehole to a depth of approximately 2 feet above the top of the well screen. A 2-foot thick bentonite seal was placed above the filter pack. Clean sand was used to backfill the borehole around the riser pipe. MW200A and MW302 were completed as flush-mount wells with an 8-inch diameter road box and 1-foot diameter concrete surface seal. MW301 and MW303 through M305 were completed as above-ground wells with approximately 3-foot tall steel protective casings surrounded by 1-foot diameter concrete surface seals. Well risers were fitted with lockable expandable well caps. Monitoring well depth ranged from 13 feet bgs (MW-301) to 16 feet bgs (MW-302). Details pertaining to well construction for each monitoring well are documented on the monitoring well construction log sheets contained in Appendix C.

After installation, each well was developed by pumping until visually clear per the QAPP. Well development data sheets are contained in Appendix D.

2.2 MEASUREMENT OF SURFACE AND GROUNDWATER ELEVATIONS

Depth to groundwater was measured at each monitoring well during the November 2011 field investigation. Groundwater measurements were made prior to beginning groundwater sample collection.

2.3 COLLECTION OF GROUNDWATER SAMPLES

During the November 2011 field investigation, groundwater samples were collected from each of the six newly installed monitoring wells, and two existing onsite monitoring wells, MW06 and MW25, in accordance with the procedure outlined in EPA's Low Stress ("low flow") Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (EPA SOP No. GW 001).

The well purge water was containerized in a 55-gallon drum and staged on the Site pending waste characterization analysis. Groundwater samples were picked up at the site by a laboratory representative for transportation to the lab for analysis of VOCs, SVOCs, and RCRA 8 metals. Low Flow Groundwater Sample Log Sheets are contained in Appendix E. Chain of Custody Forms are contained in Appendix B.

2.4 SURVEY OF SITE FEATURES

Horizontal locations of soil borings and monitoring wells were determined using Global Positioning System (GPS) survey equipment during the November 2011 field investigation.

3.0 APPLICABLE REGULATORY STANDARDS

The CTDEP has developed risk-based numerical criteria for the remediation of polluted soil and groundwater. These criteria were promulgated in the CTDEP Remediation Standard Regulations (RSRs) (CTDEP, January 1996) and in the most recent revision of the Comprehensive List of Approved Additional Polluting Substances Criteria and Alternate Criteria list of Additional Polluting Substances (CTDEP, October 24, 2005). These criteria are numerical threshold concentrations for selected environmental contaminants (termed “polluting substances”) below which soil and groundwater are considered sufficiently remediated to be protective of human health and the environment.

3.1 RSR SOIL CRITERIA

Criteria for soils are segregated into two major categories. Direct Exposure Criteria (DEC) were developed for direct exposure to soils and have been subdivided into criteria specific for residential and industrial/commercial (I/C) site activities and uses (RDEC and I/CDEC, respectively). Pollutant Mobility Criteria (PMC) were developed to protect groundwater from substances leaching from contaminated soil and have been subdivided into criteria for GAA/GA and GB groundwater areas (GA/GAA PMC and GB PMC, respectively).

The DEC applies to accessible soil when the contaminant is a substance other than polychlorinated biphenyls (PCB). The RSRs consider inaccessible soil to be at a depth of more than 4 feet bgs if unpaved, or more than 2 feet bgs if paved with 3 or more inches of bituminous concrete or concrete. Environmentally isolated soil is that soil located beneath an existing building or other permanent structure. If soil is inaccessible or environmentally isolated due to being beneath pavement or a structure, then an Environmental Land Use Restriction (ELUR) is required to maintain the pavement, building, other structure or any conditions that maintains the soil’s inaccessibility or environmental isolation.

3.2 RSR GROUNDWATER CRITERIA

Criteria for groundwater are segregated into three major categories. Groundwater Protection Criteria (GPC) have been developed for GAA, and GA groundwater. Surface Water Protection Criteria (SWPC) have been developed for discharges of contaminated groundwater plumes into surface water bodies (including rivers, lakes, ponds, streams, intermittent streams, and wetlands). Volatilization Criteria (VC) have been developed for migration of VOC vapors from contaminated groundwater into overlying buildings. The VC has been subdivided into criteria specific to residential (RVC) and industrial/commercial (I/CVC) site activities. Sites that are remediated to meet the I/CVC criteria require an ELUR that restricts the property to commercial or industrial uses.

3.3 REGULATORY CRITERIA APPLICABLE TO THE SITE

The former use of the site, and its zoning designation is for industrial/ commercial use and the I/C DEC and VC soil and groundwater criteria would apply to soil and groundwater contamination. Since groundwater in the vicinity of the Site has been rated use class GA, the GA/GAA PMC are applicable to soils. Groundwater criteria applicable to the Site include the SWPC and the I/CVC.

Alternate criteria for soil DEC and PMC and groundwater VC can be developed subject to CTDEP approval. Exemptions from VC may be obtained for parcels where no building is constructed or if CTDEP-approved indoor air monitoring program and volatile substance control measures have been implemented at a building on the parcel.

Exemption from groundwater protection criteria may be approved by CTDEP if it is technically impractical to remediate polluting substances to background or if compliance with the applicable criteria is technically impracticable as determined using the *Guidance for Evaluating the Technical Impracticability of Groundwater Restoration* USEPA Directive No. 9234.2-25 issued September 1993 (USEPA, September 1993). The presence of dense non-aqueous phase liquids (DNAPL) at a site can often render groundwater restoration technically impracticable.

4.0 FIELD INVESTIGATION RESULTS

This section presents the results of the field investigations described in Section 2.0, and provides a comparison of soil and groundwater sample laboratory analytical results to the site-applicable regulatory standards discussed in Section 3.0.

4.1 ANALYTICAL DATA VALIDATION AND VERIFICATION METHODS

Data validation procedures performed included checking chain-of-custody records for accuracy and completeness of sampling, shipping, analysis, and reporting. The Chain-of-Custody Forms and Data Validation memoranda are contained in Appendix B.

4.2 SITE GEOLOGY AND HYDROGEOLOGY

This section discusses information on Site geology and hydrogeology that was obtained during the ESA investigation.

4.2.1 Site Geology

This section discusses site geological conditions determined from review of published information and field observations.

4.2.1.1 Bedrock Geology

Bedrock beneath the site has been mapped as the New Haven Arkose, lower member. This rock unit consists of interbedded grayish-orange-pink to very pale orange conglomerate arkose and greyish red to dark-reddish-brown siltstone (HRP, 1998).

4.2.1.2 Surficial Geology

Soils on site consist primarily of brown or dark brown medium- to coarse-grained sand with medium gravel or silt in certain areas. A 2-foot layer of ash and dark soil was observed at the ground surface to the west of the main building (MW-206 area).

4.2.1.3 Field Observations

Inspection of soil samples collected from the Site during the ESA investigation indicated that majority of the subsurface soil was a brown fine to medium-grained sand with trace to some silt and grey gravel. In

the soil sample collected from soil boring SB305, at the 2- to 4-foot bgs interval, five inches of white granular material and three inches of green granular material were observed. A sample of the material was submitted for laboratory analysis. Soil boring logs are contained in Appendix A. Soil boring locations are depicted on Figure 4-1.

Jar headspace field-screening using a photoionization detector (PID) indicated low concentrations of organic vapors (less than 5.0 parts per million volume [ppmv]) in the soil samples collected from borings SB128, SB131, SB133, SB200A, SB302, SB303, SB305, SB306, SB307, and SB308. Jar headspace field-screening of soil samples collected from borings SB129, SB130, SB301, and SB304 detected low to moderate concentrations (1.2 to 61.3 ppmv) of organic vapors. Headspace screening results of soil samples are listed on the boring logs in Appendix A, and are summarized in Table 4-1.

4.2.2 Site Hydrogeology

Depths to groundwater measured in the eight on-site monitoring wells on December 1, 2011 ranged from 5.01 feet bgs at MW06 to 9.75 feet bgs at MW303. Based on limited onsite groundwater elevations, the general direction of groundwater flow was determined to be to the southwest, toward the Quinnipiac River.

4.3 SOIL SAMPLE ANALYTICAL RESULTS

Soil samples collected from borings SB128 through SB132, SB200A, and SB301 through SB308 were analyzed for VOCs, SVOCs, and RCRA 8 metals. Analytical results reported the presence of VOCs, SVOCs, and RCRA 8 metals. A summary of soil analytical results is presented in Table 4-2. OHM compounds detected in soil samples at concentrations exceeding applicable regulatory criteria are summarized in Sections 4.3.1 and 4.3.2. Soil boring locations including exceedances of CTDEP regulatory criteria are depicted on Figure 4-1.

The laboratory reporting limit for ethylene dibromide of 160 µg/kg, in the soil sample collected from boring SB301 at the 6-to 8-foot bgs depth interval exceeded the 67 µg/kg and CTDEP I/DEC criterion the 10 µg/kg CTDEP GA PMC criterion. The laboratory reporting limit for trichloroethene of 160 µg/kg, in the soil sample collected from boring SB301 at the 6-to 8-foot bgs depth interval exceeded the 100 µg/kg CTDEP GA PMC criterion. These compounds were not detected during the laboratory analysis. However the laboratory reporting limits were above the respective CTDEP criteria. Ethylene dibromide has been historically used as a gasoline additive to leaded gasoline and as a pesticide. Due to the historical operations at the site, it is unlikely that ethylene dibromide is a contaminant of concern and analysis of soil using a lower reporting limit would not likely result in exceedances of CTDEP criteria. The reporting

limit in boring SB301 for trichloroethene above the GA PMC criterion was a laboratory dilution, which resulted in a detection limit of ten times the normal detection limit. Limited data validation was performed on the laboratory samples as required in the EPA approved QAPP. A more extensive data validation would result in an analysis of laboratory dilutions and most likely the reporting limit of trichloroethene in boring SB301 would be below CTDEP criterion. Therefore, trichloroethene is not a contaminant of concern at soil boring SB301.

4.3.1 OHM Compounds Exceeding CTDEP Industrial/Commercial Direct Exposure Criteria

This section summarizes OHM compounds that were detected in one or more soil samples at concentrations exceeding the CTDEP I/C DEC. Chromium was the only contaminant detected exceeding the CTDEP I/C DEC. See Table 4-2.

4.3.1.1 Total Metals

- Total chromium in the soil sample collected from boring SB305 at the 2- to 3-foot bgs depth interval (9,700 mg/kg) exceeded the 100 mg/kg I/C DEC criterion for hexavalent chromium and was below the 15,000 mg/kg I/C DEC for trivalent chromium. CTDEP has not established I/C DEC criterion for total chromium.

4.3.2 OHM Compounds Exceeding CTDEP GA Pollutant Mobility Criteria

This section summarizes OHM compounds that were detected in one or more samples at concentrations equal to or exceeding GA PMC. These contaminants included trichloroethene only. GA PMC for metals as based on TCLP or SPLP analysis, which was not performed as part of the ESA, therefore comparison of total metals to the GA PMC is not appropriate.

4.3.2.1 Volatile Organic Compounds

- Trichloroethene, in the soil samples collected from borings SB132 at the 10-to -12-foot depth interval (470 µg/kg) and SB133 at the 0-to -2-foot bgs depth interval (130 µg/kg) exceeded the 100 µg/kg CTDEP GA PMC criterion.

4.4 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples collected from monitoring wells MW06, MW25, MW200A, and MW301 through MW305 were analyzed for VOCs, SVOCs, and RCRA 8 metals. Analytical results detected the presence

of VOCs and metals in groundwater. A summary of groundwater analytical results is presented in Table 4-3. Monitoring wells locations including exceedances of CTDEP regulatory criteria are depicted on Figure 4-2.

The laboratory reporting limit for ethylene dibromide of 1.0 µg/l, in the all groundwater samples collected exceeded the 0.05 µg/L CTDEP GPC criterion. This compound was not detected during the laboratory analysis. However the laboratory reporting limit was above the respective CTDEP criteria. Ethylene dibromide has been historically used as a gasoline additive to leaded gasoline and as a pesticide. Due to the historical operations at the site, it is unlikely that ethylene dibromide is a contaminant of concern and analysis of groundwater using a lower reporting limit would not likely result in exceedances of CTDEP criterion.

The laboratory reporting limit for hexachlorobutadiene of 4.0 µg/l, in the groundwater sample collected from monitoring well MW303 exceeded the 0.45 µg/L CTDEP GPC criterion. This compound was not detected during the laboratory analysis. However the laboratory reporting limit was above the respective CTDEP criteria. Hexachlorobutadiene is used as a solvent primarily. Previous groundwater sampling events at the site have not detected hexachlorobutadiene, therefore it is unlikely that hexachlorobutadiene is a contaminant of concern in groundwater.

The laboratory reporting limit for benzo(a)anthracene of 0.29 µg/l, in the all groundwater samples collected exceeded the 0.06 µg/L CTDEP GPC criterion. The laboratory reporting limit for benzo(b)fluoranthene of 0.29 µg/l, in the all groundwater samples collected exceeded the 0.08 µg/L CTDEP GPC criterion. The laboratory reporting limit for dibenzo(a,h)anthracene of 0.44 µg/l, in the all groundwater samples collected exceeded the 0.2 µg/L CTDEP GPC criterion. The laboratory reporting limit for indeno(1,2,3-cd)pyrene of 0.44 µg/l, in the all groundwater samples collected exceeded the 0.2 µg/L CTDEP GPC criterion. The laboratory reporting limit for phenanthrene of 0.20 µg/l, in the all groundwater samples collected exceeded the 0.077 µg/L CTDEP SWPC criterion. These polycyclic aromatic hydrocarbons (PAHs) were not detected during laboratory analysis. PAHs are lipophilic, meaning they mix more easily in oil than water. Because of these properties, PAHs in the environment are primarily found in soil, sediment, and oily substances, as opposed to groundwater. Analysis for SVOCs in groundwater with a lower reporting limit would most likely result in non-detection of these compounds. Therefore, it is unlikely that PAHs are a contaminant of concern in groundwater.

4.4.1 OHM Compounds Exceeding CTDEP Groundwater Protection Criteria

This section summarizes OHM compounds that were detected in one or more groundwater samples at concentrations exceeding the CTDEP GPC. These contaminants include VOCs and chromium. See Table 4-3.

4.4.1.1 Volatile Organic Compounds

- Trichloroethene, in the groundwater samples collected from monitoring wells MW06, MW302, MW303, and MW305 exceeded the 5 µg/l CTDEP GPC criterion.
- Vinyl chloride, in the groundwater sample collected from monitoring well MW06 exceeded the 2 µg/l CTDEP GPC criterion.

4.4.1.2 Total Metals

- Chromium, in the groundwater samples collected from monitoring wells MW302, MW303, and MW305 exceeded the 100 µg/l CTDEP GPC criterion.

4.4.2 **OHM Compounds Exceeding CTDEP Surface Water Protection Criteria**

No compounds were detected that exceeded the CTDEP SWPC.

4.4.3 **OHM Compounds Exceeding CTDEP Volatilization Criteria**

This section summarizes OHM compounds that were detected in one or more groundwater samples at concentrations exceeding the CTDEP I/CVC. These contaminants include vinyl chloride. See Table 4-3.

4.4.3.1 Volatile Organic Compounds

- Vinyl chloride, in the groundwater sample collected from monitoring well MW06 exceeded the 2 µg/l CTDEP I/CVC criterion.

5.0 SUMMARY AND CONCLUSIONS

This section summarizes the findings of the ESA investigation, and presents conclusions regarding the nature and extent of soil and groundwater contamination at the Site.

5.1 SITE BACKGROUND SUMMARY

The Beaton & Corbin Factory Site is located at 318 North Main Street Southington, CT. The site is approximately 1.75 acres in size. It is bordered to the North by Chapman Road and to the East by Main Street. Records show that the site was used by Aetna Match Company to manufacture matches on the site during the late 1800s. The Beaton and Corbin Manufacturing Company inhabited the site around 1900 to 1989. Beaton and Corbin manufactured ceiling and floor plates and plumbing fittings and fixtures. Beaton and Corbin's operations also included metal machining and metal plating. Currently the property is abandoned with no current use.

The features on the site include the area or footprint were a 25,000 square foot main factory building that was destroyed by a fire in the early 2000s. The original building of the site was located on the northernmost rectangular footprint, which is to date covered with construction debris that presumably remains from demolition. The southern portion of the main building was added on to the original building between 1934 and 1951. Most of the addition is currently exposed concrete slab. There are 3 wood-framed buildings that are present on the site and are in very poor condition.

The area that surrounds the site is consists of residential and commercial properties. Wastes generated during the Beaton & Corbin Factory operations included metal hydroxide plating sludge, other plating wastes, and degreasing/machining oils. Reports of these waste materials said they were disposed of in two lagoons in the southwest portion of the site. Five storage tanks were historically utilized on site. Contaminants identified above regulatory criteria during historical site assessments have included VOCs, petroleum hydrocarbons, chromium, and nickel. The site is located in a Groundwater Area (GA). Contaminants in soils could be transported via erosion through overland flow or through drainage features along the west side of property. Soil contaminants could leach into groundwater, which flows off-site to the southwest. With this comes the concern that contaminants in groundwater could migrate down gradient into the Quinnipiac River or some down gradient water supply wells.

The former use of the site, and its zoning designation is for industrial/ commercial use. Therefore, the I/C DEC and VC soil and groundwater criteria would apply to soil and groundwater contamination. Since groundwater in the vicinity of the Site has been rated use class GA, the GA PMC are applicable to soils. Groundwater criteria applicable to the Site include the GA GPC, SWPC and the I/CVC.

Alternate criteria for soil DEC and PMC and groundwater VC can be developed subject to CTDEP approval. Exemptions from VC may be obtained for parcels where no building is constructed or if CTDEP-approved indoor air monitoring program and volatile substance control measures have been implemented at a building on the parcel and an Environmental land use restriction is placed on the property to ensure that the appropriate land use is maintained and that any control measures remain operational.

5.2 SUMMARY OF ESA INVESTIGATION RESULTS

This section summarizes the findings of the ESA investigation, including OHM detected in sampled media, and RSR criteria that were exceeded in those media. Soil boring and monitoring well locations sampled during this investigation are depicted on Figure 4-1.

5.2.1 Soils

Inspection of soil samples collected from the Site during the ESA investigation indicated that majority of the subsurface soil was a brown fine to medium-grained sand with trace to some silt and grey gravel. In the soil sample collected from soil boring SB305, at the 2- to 4-foot bgs interval, five inches of white granular material and three inches of green granular material were observed. The green granular material coincides with high concentration of chromium detection during laboratory analysis. The green granular nature of the soil is most likely due to chromium (III) oxide. A sample of the material was submitted for laboratory analysis. Soil boring logs are contained in Appendix A. Soil boring locations and exceedances are depicted on Figure 4-1.

Jar headspace field-screening of soil samples collected from the Site indicated the following organic vapor concentrations:

- Low concentrations (less than 5 ppmv) in the soil samples collected from borings SB128, SB131, SB133, SB200A, SB302, SB303, SB305, SB306, SB307, and SB308; and
- Low to moderate concentrations (1.2 to 61.3 ppmv) in soil samples collected from borings SB129, SB130, SB301, and SB304.

Headspace screening results are summarized in Table 4-1 and are listed on the boring logs in Appendix A.

5.2.1.1 OHM Detected in “Accessible” Soils at Concentrations Exceeding RSR Criteria

The following compounds were detected in “accessible” soils (0- to 4-foot bgs depth interval) collected from the Site at concentrations that exceeded I/C DEC:

Metals:

- Chromium in boring SB305 (9700 mg/kg; I/C DEC 100 mg/kg).

The following compounds were detected in “accessible” soils at concentrations that exceeded GA PMC:

Volatile Organic Compounds:

- Trichloroethene in boring SB133 (130 µg/kg; GA PMC 100 µg/kg).

5.2.1.2 OHM Detected in “Inaccessible” Soils at Concentrations Exceeding RSR Criteria

The following were detected in “inaccessible” soils at concentrations that exceeded GA PMC:

Volatile Organic Compounds:

- Trichloroethene in boring SB132 (470 µg/kg; GA PMC 100 µg/kg).

5.2.2 Groundwater

Depths to groundwater measured in the eight on-site monitoring wells on December 1, 2011 ranged from 5.01 feet bgs at MW06 to 9.75 feet bgs at MW303. The general direction of groundwater flow is southwest, toward the Quinnipiac River based on limited onsite groundwater elevations. GA groundwater standards are applicable to the Site. Monitoring well locations and exceedances are depicted on Figure 4-2.

The following compounds were detected in groundwater at concentrations that exceeded GPC:

Volatile Organic Compounds:

- Trichloroethene in monitoring wells MW06 (38 µg/l), MW302 (78 µg/l), MW303 (160 µg/l), and MW305 (48 µg/l) (GPC 2 µg/l).
- Vinyl chloride in monitoring well MW06 (2.3 µg/l; GPC 2 µg/l).

Metals:

- Chromium in monitoring wells MW302 (510 µg/l), MW303 (190 µg/l), and MW305 (2,100 µg/l) (GPC 100 µg/l).

The following compounds were detected in groundwater at concentrations that exceeded I/CVC:

Volatile Organic Compounds:

- Vinyl chloride in monitoring well MW06 ((2.3 µg/l; GPC 2 µg/l).

5.3 CONCLUSIONS

The high concentration of chromium, detected in boring SB305, located within the former buried sludge bed in the southwest area of the site is consistent with metals contamination detected during the 2004 DES subsurface investigation. The VOC impacted soil in borings SB132 and SB133 were located south of the building foundation. The 2004 DES subsurface investigation detected VOC contamination in soil in the southern portion of the building in the area of the former degreasing operation and on the southern side of the building in the area of the former solvent storage area. This is also consistent with the ESA soil results. Borings were not advanced below the building foundation, as part of the ESA, however, based on the 2004 DES subsurface investigation; it is assumed that the VOC contaminated soil extends below the foundation. DES estimated that 1,000 tons of metals impacted soil was on the property, including the materials in the sludge lagoon on the southern portion of the property. Additional soil delineation would be required to fully quantify the extent of VOC and metals contamination.

Groundwater contamination consists of trichloroethene in monitoring wells MW06, MW302, MW303, and MW305, vinyl chloride in monitoring wells MW06, and chromium in monitoring wells MW302, MW303, and MW305. All monitoring wells are located on the western and southwestern side of the building foundation. In the 1987 Fuss & O'Neill groundwater report, they concluded that the groundwater quality on site had been impacted by dissolved metals including chromium, nickel, barium, copper, and zinc. The ESA groundwater analytical results only found exceedances for chromium in groundwater at the site.

Groundwater monitoring results in the Fuss & O'Neill report were reported while the facility was still operational, therefore, the reduction in metals concentrations may be due to natural attenuation since the closure of the facility. In the 2004 Subsurface Investigation, DES concluded that two groundwater plumes appeared to be originating on the northwestern and western portions of the property. The plume on the northern portion of the property contained VOC, ETPH, and metals. The plume of the western portion of the property contained VOCs and metals. Both of the plumes appeared to extend in a southwesterly direction on the site and appeared to go off-site. Monitoring well MW302, installed as part of the ESA, is located downgradient and off-site and contained trichloroethene at a concentration of 160 µg/l which was above the CTDEP GPC of 2 µg/l for trichloroethene and chromium at a concentration of 190 µg/l which was above the CTDEP GPC of 100 µg/l for chromium. Groundwater flow is in a southwesterly direction towards the Quinnipiac River. VOC and metals groundwater contamination appears to be isolated to the western and southwestern side of the building and following groundwater flow offsite towards the Quinnipiac River. Additional downgradient monitoring wells should be installed to assess the extent of the off-site groundwater plume and if it is impacting the Quinnipiac River.

6.0 RECOMMENDATIONS

This section presents recommendations for further actions that should be taken at the Site to facilitate its beneficial reuse. Collection of additional soil and groundwater samples from the Site is recommended to help determine the horizontal and vertical extent of contamination and quantify VOC and metals impacted soil quantities. Additional actions include removal of building debris, demolition of remaining structures, and delineation of the extent of offsite groundwater contamination. Estimates of soil quantities, building debris, and demolition quantities are estimated based on available information and should not be used for design purposes.

6.1 ADDITIONAL SOIL AND GROUNDWATER SAMPLE COLLECTION AND ANALYSIS

The sampling and analysis of soil and groundwater performed at the site by Etech should be considered an initial investigation that is equivalent to a Phase II investigation under the CTDEP Draft Site Characterization Guidance Document (Guidance Document, CTDEP, 2000), since the level of effort required to completely evaluate the vertical and horizontal extent of soil and groundwater, which is required by the Guidance Document to demonstrate that a Site has been remediated according to the RSRs, is beyond the scope of this ESA investigation.

Etech detected soil contamination exceeding applicable RSR criteria in samples of accessible and inaccessible soil collected from soil borings SB132, SB133, SB134, SB301, and SB305. The locations of these borings are depicted on Figure 4-1. Recommended soil boring and soil sample collection and analysis are as follows:

- Three shallow (0 to 4 feet bgs) soil borings and collection of samples of accessible soils in the vicinity of the former acid/solvent storage area and soil borings SB132 and SB133. Two samples should be collected per boring. These samples should be analyzed for VOCs;
- Two deep (0 to 12 feet bgs) soil borings in the vicinity of the former acid/solvent storage area and soil boring SB132 and SB133. Four soil samples from above the water table should be analyzed for VOCs. Groundwater monitoring wells should be installed in these borings and groundwater samples collected for VOC analysis;
- Three shallow (0 to 4 feet bgs) soil borings and collection of samples of accessible soils in the vicinity of the former buried sludge lagoon and soil boring SB305. Two samples per boring should be collected. These samples should be analyzed for metals;

- Two deep (0 to 12 feet bgs) soil borings and collection of samples of accessible soils in the vicinity of soil boring SB305. Four soil samples should be collected. These samples should be analyzed for VOCs;
- Groundwater sampling round for the eight existing onsite monitoring wells for VOC, SVOC, and metals analysis.

Costs for drilling, monitoring well installation, labor and analysis associated with these recommendations are presented in Section 7.0. If this investigation does not completely delineate the extent of soil and groundwater contamination, additional investigation may be required to close data gaps.

6.2 PHASE III REPORT

The CTDEP guidance document requires that a Phase III report achieve the following objectives:

- A description of each release areas
- Result in an understanding of Site environmental conditions that control migrations of substances from the release environmental receptors
- Describe the extent of soil and groundwater contamination in three dimensions
- Describe how the distribution of contamination may change with time
- Describe the effect the distribution of contamination may have on human health and the environment;
- Describe how environmental conditions associated with each release related to RSTR criteria
- Develop an understanding of the affected environmental system sufficiently to develop remedial options;
- Provide the data and rationale necessary to support conclusions.

The Phase III report should also further expand on the Conceptual Site Model developed in Phases I and II. The following elements should be incorporated into the CSM:

- Soil characterization data, including the location and nature of artificial fills and delineation of soil horizons that may affect pollution migration;
- Groundwater hydrostratigraphy and hydrogeology including delineation of vertical flow and flow along preferential pathways;
- The surface character of the site as it may affect recharge or potential migration of volatile gases;
- The groundwater regional setting and potential influenced of flow direction

- Other environmental media that may be affected by the release;
- The nature of the pollutants identified at the Site including the solubility, volatility, degradability, breakdown products, and transport mechanisms;
- Potential migration pathways cross medial transfer and preferential pathways migration
- Potential receptors including humans, biota, surface water, water supply wells and basements of buildings.

The Guidance Document requires that the Phase III report present the environmental data as a whole. The presentation should address how the data validates the hypothesis of the CSM regarding the environmental fate of the released pollutants. Typical elements of a Phase III report are as follows:

- The Environmental setting and identified releases discussed in the context of the CSM;
- A brief summary of investigation objectives activities and protocols;
- Presentation of data and identification of the extent of pollution for each release and each environmental medium including maps, cross sections and summary tables;
- Data evaluation and discussion of the consistency of data in terms of the CSDM, with identification of assumptions and rational for conclusions;
- Conclusions regarding site environmental conditions, with delineation of pollution exceeding applicable criteria and recommendations for remedial action as appropriate;
- Appendices with supporting data and field notes.

6.3 SOIL REMOVAL AND OFFSITE DISPOSAL

In the 2004 Subsurface Investigation, DES estimated that 1,000 tons of metals impacted soil was on the property, including the materials in the sludge lagoon on the southern portion of the property. Further delineation described in Section 6.1 is required to more accurately quantify this total number. As part of the soil removal, it is recommended that the catch basin and discharge line be removed and capped to prevent residual metals contamination inside from being released. Toxicity Leaching Characteristic Procedure (TCLP) samples would be required to determine if the soil is hazardous and requires disposal at a RCRA Subtitle C facility or is non-hazardous and may be disposed of offsite at a RCRA Subtitle D facility.

6.4 BUILDING DEBRIS REMOVAL AND BUILDING DEMOLITION

For the site to be redeveloped as commercial/industrial space, it is recommended that the building debris currently located on the building foundation due to the building fire (brick, concrete, wood, metal debris) be removed and disposed of offsite. An asbestos and lead paint survey of the material should be

conducted to determine if there is asbestos-containing materials (ACM) and/or lead paint present due to the age of the building. If no ACM or lead paint are present, the material may be approved for offsite disposal as construction debris. If ACM or lead paint are present, offsite at an appropriate facility (based on concentrations, quantities, etc.) will be required.

Due to the poor condition of the three storage sheds, and the concrete block house southwest of the building foundation, it is recommended that they be demolished and disposed offsite as well. The 10,000 gallon above ground fuel oil tank in the concrete block house will need to be emptied and cleaned prior to removal for offsite disposal.

6.5 OFFSITE GROUNDWATER MONITORING WELL INSTALLATION

Due to the high concentration of trichloroethene and chromium in the off-site, downgradient monitoring well MW302, two additional offsite monitoring wells should be installed. The two monitoring wells should be installed southwest of monitoring well MW302 following the southwesterly groundwater flow direction towards the Quinnipiac River. Monitoring well MW302 and the two newly installed monitoring wells should be sampled for VOCs and metals.

7.0 PRELIMINARY COST ESTIMATES

Etech developed the following preliminary “order-of-magnitude” cost estimates for implementing the recommendations presented in Section 6.0. The proposed and/or recommended investigations and associated cost estimates may change if additional information on the nature and extent of contamination at the Site becomes available. It is noted that these estimates should not be interpreted as precise costs for procuring consulting services. For order of magnitude cost estimating purposes, 1,000 tons of soil excavation and offsite disposal was used. Pricing for offsite disposal at both a RCRA Subtitle C and D facility area presented. For cost estimating purposes, 3,000 tons of building debris was used, including the demolished outbuildings. “Order-of-magnitude” estimates costs for implementing each of the considered remedial action alternatives are as follows:

Estimated Cost for Phase III Investigation and Report:	\$98,600
Estimated Cost for Soil Removal (RCRA Subtitle C):	\$482,000
Estimated Cost for Soil Removal (RCRA Subtitle D):	\$302,000
Estimated Cost for Building Demolition and Disposal (construction debris):	\$149,500
Estimated Cost for Building Demolition and Disposal (ACM/lead painting containing):	\$269,500
Estimate Cost for Offsite Monitoring Well Installation/Sampling:	\$12,200
 Total Order-of-Magnitude Cost Range:	 \$562,300 - \$862,300

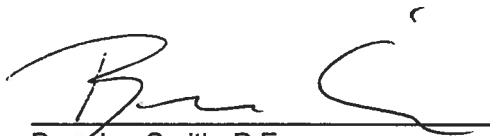
Determination if soil is hazardous (RCRA Subtitle C) or non-hazardous (RCRA Subtitle D) and if building debris contains ACM/lead paint or not will be determined by waste characterization samples and asbestos/lead paint survey. Both costs are presented above for comparison purposes. Tables 7-1 provide a more detailed summary of estimated costs for implementing the recommended additional investigation activities. Additional details to support the “order-of-magnitude” cost estimates for the recommendations are presented in Appendix F.

8.0 QUALIFICATIONS AND STATEMENT OF ENVIRONMENTAL PROFESSIONAL

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR Section 312.10.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

The Qualifications of the Environmental Professional or Professionals who conducted the Phase II Environmental Site Assessment are set out on Appendix G attached hereto.

A handwritten signature in black ink, appearing to read 'Brandon Smith', is written over a horizontal line.

Brandon Smith, P.E.
Project Manager

TABLES

TABLE 1-1
SUMMARY OF FUSS O'NEILL 1987 GROUNDWATER STUDY
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 1 OF 3

Sample Location				MW100											
Sample Collection Date				7/84	10/84	1/85	4/85	10/85	1/86	4/86	7/86	10/86	1/87	4/87	7/87
	Reporting														
Parameter	Units	GWPC	SWPC												
Metals															
Arsenic	mg/l	0.05	0.004	0.05 U	0.05 U	0.05 U	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium	mg/l	1	NC	0.16	0.37	2.5	0.05	0.14	0.1	0.06	0.16	0.22	0.01 U	0.10 U	0.10 U
Cadmium	mg/l	0.005	0.006	0.01 U	0.02	0.003 U	0.001 U	0.001 U	0.001	0.01 U	0.01 U	0.01 U	0.01	0.01 U	0.01 U
Chromium	mg/l	0.05	0.11	0.16	0.26	0.34	0.14	0.19	0.15	0.01 U	0.02	0.01	0.04	0.13	0.05
Copper	mg/l	1.3	0.048	0.14	0.05	0.59	0.04	0.007	0.003	0.17	0.08	0.11	0.16	0.01 U	0.01
Iron	mg/l	NC	NC	0.02 U	12.4	192	0.09	0.22	0.24	0.28	0.68	2.16	0.03 U	0.03 U	0.03 U
Lead	mg/l	0.015	0.013	0.01 U	0.05	0.3	0.01 U	0.01 U	0.01 U	0.01	0.01 U	0.02	0.01 U	0.01 U	0.01
Mercury	mg/l	0.002	0.0004	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Nickel	mg/l	0.1	0.88	0.02	0.09	0.73	0.004 U	0.02	0.008	0.01 U	0.01	0.01 U	0.01	0.02	0.01 U
Silver	mg/l	0.036	0.012	0.01 U	0.003 U	0.006	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	mg/l	5	0.123	0.1	0.14	0.51	0.008	0.004	0.005	0.01 U	0.06	0.11	0.07	0.26	0.37
Cyanide	mg/l	0.2	0.052	NA	0.02	0.02	0.02	0.29	0.02	0.1	0.17	0.01 U	0.12	0.01 U	0.09

Notes:

mg/l - milligrams per liter

GWPC - CTDEP Groundwater Protection Criteria

SWPC - CTDEP Surface Water Protection Criteria

TABLE 1-1
SUMMARY OF FUSS O'NEILL 1987 GROUNDWATER STUDY
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 2 OF 3

Sample Location				MW101											
Sample Collection Date				7/84	10/84	1/85	4/85	10/85	1/86	4/86	7/86	10/86	1/87	4/87	7/87
	Reporting														
Parameter	Units	GWPC	SWPC												
Metals															
Arsenic	mg/l	0.05	0.004	0.05 U	0.05 U	NA	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium	mg/l	1	NC	0.16	0.12	0.03	0.04	0.11	0.09	0.14	0.24	0.12	0.01 U	0.10 U	0.01 U
Cadmium	mg/l	0.005	0.006	0.01 U	0.001	0.003 U	0.001 U	0.001 U	0.001	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chromium	mg/l	0.05	0.11	0.15	0.27	0.27	0.22	0.37	0.29	0.01 U	0.01 U	0.01 U	0.03	0.22	0.14
Copper	mg/l	1.3	0.048	0.1	0.04	0.08	0.01	0.01	0.002	0.32	0.16	0.17	0.28	0.01 U	0.01 U
Iron	mg/l	NC	NC	0.02 U	0.59	8.36	0.18	0.07	0.32	0.08	0.16	0.89	0.03 U	0.03 U	0.03 U
Lead	mg/l	0.015	0.013	0.01 U	0.05	0.03 U	0.01	0.01	0.01	0.06	0.01	0.03	0.01 U	0.01 U	0.01 U
Mercury	mg/l	0.002	0.0004	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.002	0.001 U
Nickel	mg/l	0.1	0.88	0.01 U	0.01 U	0.02	0.005	0.01 U	0.009	0.01	0.01	0.01 U	0.01	0.01 U	0.02
Silver	mg/l	0.036	0.012	0.01 U	0.003 U	0.004 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U	0.01 U	0.01 U	0.02	0.01 U
Zinc	mg/l	5	0.123	0.13	0.08	0.14	0.01	0.004	0.04	0.02	0.08	0.02	0.05	0.09	0.19
Cyanide	mg/l	0.2	0.052	0.002	0.01 U	0.06	0.01 U	0.15	0.03	0.02	0.03	0.01 U	0.03	0.01 U	0.04

Notes:

mg/l - milligrams per liter

GWPC - CTDEP Groundwater Protection Criteria

SWPC - CTDEP Surface Water Protection Criteria

TABLE 1-1
SUMMARY OF FUSS O'NEILL 1987 GROUNDWATER STUDY
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 3 OF 3

Sample Location				MW102											
Sample Collection Date				7/84	10/84	1/85	4/85	10/85	1/86	4/86	7/86	10/86	1/87	4/87	7/87
Parameter	Reporting	Units	GWPC	SWPC											
Metals															
Arsenic	mg/l	0.05	0.004	0.05 U	0.05 U	NA	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium	mg/l	1	NC	0.1	0.13	0.17	0.03	0.09	0.07	0.09	0.13	0.09	0.01 U	0.10 U	0.84
Cadmium	mg/l	0.005	0.006	0.01 U	0.001 U	0.003 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chromium	mg/l	0.05	0.11	0.01 U	0.02	0.27	0.006	0.004	0.002	0.01 U	0.01 U	0.03	0.03	0.01 U	0.02
Copper	mg/l	1.3	0.048	0.08	0.03	0.08	0.02	0.01	0.003	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1
Iron	mg/l	NC	NC	0.02 U	2.55	8.36	0.09	0.05	0.02	0.08	0.1	0.19	0.03 U	0.06	0.07
Lead	mg/l	0.015	0.013	0.03	0.04 U	0.03 U	0.01 U	0.01 U	0.01 U	0.01	0.01 U	0.04	0.01 U	0.01 U	0.01
Mercury	mg/l	0.002	0.0004	0.002 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Nickel	mg/l	0.1	0.88	0.01 U	0.01	0.03	0.004 U	0.01 U	0.006	0.01	0.01	0.01 U	0.01	0.01 U	0.01 U
Silver	mg/l	0.036	0.012	0.01 U	0.003 U	0.004 U	0.001 U	0.001 U	0.001 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	mg/l	5	0.123	0.03	0.07	0.02	0.02	0.01	0.02	0.06	0.11	0.09	0.03	0.06	0.11
Cyanide	mg/l	0.2	0.052	0.002	0.05	0.001 U	0.001 U	0.1	0.05	0.01 U	0.05	0.01 U	0.03	0.17	0.12

Notes:

mg/l - milligrams per liter

GWPC - CTDEP Groundwater Protection Criteria

SWPC - CTDEP Surface Water Protection Criteria

TABLE 1-2
SUMMARY OF 1996 DIVERSIFIED ENVIRONMENTAL SERVICES SUBSURFACE INVESTIGATION
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 1 OF 4

Sample ID				SB-100	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107	SB-108
Sample Interval (feet)				0-2	0-2	6-Apr	0-2	0-2	0-2	2-4	2-4	0-2
Comments												
Parameter	Reporting											
	Units	I/C DEC	GA PMC									
Volatile Organic Compounds												
Trichloroethene	mg/kg	520	0.1	0.034	0.13	0.065	0.022	0.016	NS	NS	NS	9.3
Tetrachloroethylene	mg/kg	110	0.1	0.034	0.42	1.7	0.027	0.043	NS	NS	NS	1.3
Metals												
SPLP Chromium	mg/l	NC	0.05	NS	NS	NS	NS	NS	NS	NS	NS	NS
SPLP Lead	mg/l	NC	0.015	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

mg/Kg - milligrams per kilogram

I/C DEC - CTDEP Industrial/Commerical Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

NS - not sampled

ND - not detected

TABLE 1-2
SUMMARY OF 1996 DIVERSIFIED ENVIRONMENTAL SERVICES SUBSURFACE INVESTIGATION
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 2 OF 4

Sample ID				SB-109	SB-111	SB-112	SB-113	SB-114	SB-115	SB-116	SB-117	SB-118
Sample Interval (feet)				0-2	0-2	4-6	4-6	0-2	4-6	2-4	0-2	0-2
Comments												
Parameter	Reporting											
	Units	I/C DEC	GA PMC									
Volatile Organic Compounds												
Trichloroethene	mg/kg	520	0.1	0.071	0.11	0.15	ND	NS	NS	NS	NS	NS
Tetrachloroethylene	mg/kg	110	0.1	ND	ND	ND	ND	NS	NS	NS	NS	NS
Metals												
SPLP Chromium	mg/l	NC	0.05	NS	NS	NS	NS	0.052	0.007	0.028	0.113	0.187
SPLP Lead	mg/l	NC	0.015	NS	NS	NS	NS	0.022	ND	0.008	0.051	ND

Notes:

mg/Kg - milligrams per kilogram

I/C DEC - CTDEP Industrial/Commercial Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

NS - not sampled

ND - not detected

TABLE 1-2
SUMMARY OF 1996 DIVERSIFIED ENVIRONMENTAL SERVICES SUBSURFACE INVESTIGATION
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 3 OF 4

Sample ID				SB-119	SB-120	SB-121	SB-122	SB-123	SB-124	SB-125	SB-126	SB-127
Sample Interval (feet)				0-2	4-6	4-6	0-2	0-2	0-2	0-2	0-2	0-2
Comments												
Parameter	Reporting											
	Units	I/C DEC	GA PMC									
Volatile Organic Compounds												
Trichloroethene	mg/kg	520	0.1	NS	NS	NS	NS	NS	NS	NS	0.13	ND
Tetrachloroethylene	mg/kg	110	0.1	NS	NS	NS	NS	NS	NS	NS	ND	ND
Metals												
SPLP Chromium	mg/l	NC	0.05	NS	NS	NS	NS	NS	NS	NS	NS	NS
SPLP Lead	mg/l	NC	0.015	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

mg/Kg - milligrams per kilogram

I/C DEC - CTDEP Industrial/Commerical Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

NS - not sampled

ND - not detected

TABLE 1-2
SUMMARY OF 1996 DIVERSIFIED ENVIRONMENTAL SERVICES SUBSURFACE INVESTIGATION
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 4 OF 4

Sample ID				MW-202	MW-206
Sample Interval (feet)				10-12	7-9
Comments					
	Reporting				
Parameter	Units	I/C DEC	GA PMC		
Volatile Organic Compounds					
Trichloroethene	mg/kg	520	0.1	0.078	0.01
Tetrachloroethylene	mg/kg	110	0.1	ND	NS
Metals					
SPLP Chromium	mg/l	NC	0.05	NS	NS
SPLP Lead	mg/l	NC	0.015	NS	NS

Notes:

mg/Kg - milligrams per kilogram

I/C DEC - CTDEP Industrial/Commerical Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

NS - not sampled

ND - not detected

TABLE 4-1
SUMMARY OF ORGANIC VAPORS DETECTED BY JAR HEADSPACE SCREENING
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT

Organic Vapor Concentration (ppmv)															
Depth (bgs)	Boring SB128	Boring SB129	Boring SB130	Boring SB131	Boring SB132	Boring SB133	Boring SB200A	Boring SB301	Boring SB302	Boring SB303	Boring SB304	Boring SB305	Boring SB306	Boring SB307	Boring SB308
0-2	1.4	10.7	7.4	0.6	11.5	0.8	0.3	1.2	0.8	0.4	2.0	1.1	2.1	0.5	0.8
2-4	0.6	19.1	1.7	0.6	23.5	0.7	0.7	3.7	0.3	1.5	NR	0.6	NR	NR	0.7
4-6	NR	4.6	30	1.2	5.1	0.5	0.8	2.1	0.2	0.1	18	0.9	0.6	0.4	0.8
6-8	NR	1.6	27	NR	3.3	0.4	0.5	61.3	0.9	1.0	17	0.4	0.7	0.2	0.5
8-10	0.8	1.5	54	1.4	3.6	EOB	0.4	EOB	1.2	0.8	17.6	0.5	0.8	5.1	0.8
10-12	0.4	1.5	26	1.8	25.3		0.7		0.6	0.7	4.5	2.0	3.3	1.7	0.8
12-14	EOB	EOB	EOB	1.6	EOB		EOB		EOB	EOB	EOB	EOB	EOB	EOB	EOB
14-16				1.4											
16-18				EOB											

Notes:

bgs – below ground surface

ppmv – parts per million by volume

NR - No Recovery

EOB - End of Boring

TABLE 4-2
SOIL ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 1 OF 5

Sample ID				BC-SO-SB128-0002	BC-SO-SB129-0204	BC-SO-SBDUP01	BC-SO-SB130-0810
Sampled By							
Sample Collection Date				11/28/2011	11/28/2011	11/28/2011	11/28/2011
Sample Interval							
Comments							
	Reporting						
Parameter	Units	I/C DEC	GA PMC				
Volatile Organic Compounds							
Trichloroethene	ug/Kg	520000	100	74	5.6	3.5	31
Metals							
Chromium	mg/Kg	100	NA*	12	6	7.2	25

Notes:

mg/Kg - milligrams per kilogram

ug/Kg - micrograms per kilogram

* - GA PMC for metals is based on SPLP analysis, which was not performed as part of the ESA.

I/C DEC - CTDEP Industrial/Commercial Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

TABLE 4-2
SOIL ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 2 OF 5

Sample ID				BC-SO-SB131-1012	BC-SO-SB132-1012	BC-SO-SB133-0002	BC-SO-SB200A-0406
Sampled By							
Sample Collection Date				11/28/2011	11/28/2011	11/28/2011	11/29/2011
Sample Interval							
Comments							
	Reporting						
Parameter	Units	I/C DEC	GA PMC				
Volatile Organic Compounds							
Trichloroethene	ug/Kg	520000	100	10	470	130	< 2.6
Metals							
Chromium	mg/Kg	100	NA*	22	17	7.9	6

Notes:

mg/Kg - milligrams per kilogram

ug/Kg - micrograms per kilogram

* - GA PMC for metals is based on SPLP analysis, which was not performed as par

I/C DEC - CTDEP Industrial/Commerical Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

TABLE 4-2
SOIL ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 3 OF 5

Sample ID				BC-SO-SB301-0608	BC-SO-SB302-0810	BC-SO-SB303-0204	BC-SO-SB304-0406
Sampled By							
Sample Collection Date				11/28/2011	11/28/2011	11/28/2011	11/29/2011
Sample Interval							
Comments							
Reporting							
Parameter	Units	I/C DEC	GA PMC				
Volatile Organic Compounds							
Trichloroethene	ug/Kg	520000	100	< 160	< 2.4	< 2.7	< 2.0
Metals							
Chromium	mg/Kg	100	NA*	16	14	9.8	44

Notes:

mg/Kg - milligrams per kilogram

ug/Kg - micrograms per kilogram

* - GA PMC for metals is based on SPLP analysis, which was not performed as par

I/C DEC - CTDEP Industrial/Commerical Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

TABLE 4-2
SOIL ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 4 OF 5

Sample ID				BC-SO-SB305-0203	BC-SO-SB305-1012	BC-SO-SB306-1012	BC-SO-SB307-0810
Sampled By							
Sample Collection Date				11/29/2011	11/29/2011	11/29/2011	11/29/2011
Sample Interval							
Comments							
	Reporting						
Parameter	Units	I/C DEC	GA PMC				
Volatile Organic Compounds							
Trichloroethene	ug/Kg	520000	100	< 3.2	< 2.2	12	10
Metals							
Chromium	mg/Kg	100	NA*	9700	79	19	36

Notes:

mg/Kg - milligrams per kilogram

ug/Kg - micrograms per kilogram

* - GA PMC for metals is based on SPLP analysis, which was not performed as per

I/C DEC - CTDEP Industrial/Commercial Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

TABLE 4-2
SOIL ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 5 OF 5

Sample ID				BC-SO-SB308-1012
Sampled By				
Sample Collection Date				11/29/2011
Sample Interval				
Comments				
	Reporting			
Parameter	Units	I/C DEC	GA PMC	
Volatile Organic Compounds				
Trichloroethene	ug/Kg	520000	100	4.9
Metals				
Chromium	mg/Kg	100	NA*	21

Notes:

mg/Kg - milligrams per kilogram

ug/Kg - micrograms per kilogram

* - GA PMC for metals is based on SPLP analysis, which was not performed as par

I/C DEC - CTDEP Industrial/Commerical Direct Exposure Criteria

GA PMC - CTDEP Groundwater Classification GA Pollutant Mobility Criteria

TABLE 4-3
GROUNDWATER ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 1 OF 3

Sample ID					BC-GW-MW06-120111	BC-GW-MWDUP01-120111	BC-GW-MW25-120111
Sample Location					MW06	MW06	MW25
Sample Collection Date					12/1/2011	12/1/2011	12/1/2011
Identifier					Field Duplicate	Field Duplicate	
Parameter	Reporting Units	GWPC	SWPC	I/C VC			
Volatiles Organic Compounds							
Trichloroethene	ug/L	5	2340	540	38	32	1 U
Vinyl chloride	ug/L	2	15750	2	2.3	2	0.5 U
Metals							
Chromium	ug/L	100	NC	NC	8.9	8.5	5 U

Notes:

ug/L - micrograms per liter

NC = Criteria has not been established

GWPC - CTDEP Groundwater Protection Criteria

SWPC - CTDEP Surface Water Protection Criteria

I/C VC - CTDEP Industrial/Commerical Volitization Criteria

U - Concentration below laboratory detection limit

TABLE 4-3
GROUNDWATER ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 2 OF 3

Sample ID					BC-GW-MW200A-120111	BC-GW-MW301-120111	BC-GW-MW302-120111
Sample Location					MW200A	MW301	MW302
Sample Collection Date					12/1/2011	12/1/2011	12/1/2011
Identifier							
Parameter	Reporting Units	GWPC	SWPC	I/C VC			
Volatiles Organic Compounds							
Trichloroethene	ug/L	5	2340	540	1 U	1 U	78
Vinyl chloride	ug/L	2	15750	2	0.5 U	0.5 U	0.5 U
Metals							
Chromium	ug/L	100	NC	NC	5 U	24	510

Notes:

ug/L - micrograms per liter

NC = Criteria has not been established

GWPC - CTDEP Groundwater Protection Criteria

SWPC - CTDEP Surface Water Protection Criteria

I/C VC - CTDEP Industrial/Commerical Volitization Criteria

U - Concentration below laboratory detection limit

TABLE 4-3
GROUNDWATER ANALYTICAL RESULTS EXCEEDING CTDEP CRITERIA
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT
PAGE 3 OF 3

Sample ID					BC-GW-MW303-120111	BC-GW-MW304-120111	BC-GW-MW305-120111
Sample Location					MW303	MW304	MW305
Sample Collection Date					12/1/2011	12/1/2011	12/1/2011
Identifier							
Parameter	Reporting Units	GWPC	SWPC	I/C VC			
Volatiles Organic Compounds							
Trichloroethene	ug/L	5	2340	540	160	1 U	48
Vinyl chloride	ug/L	2	15750	2	5 U	0.5 U	0.5 U
Metals							
Chromium	ug/L	100	NC	NC	190	5 U	2100

Notes:

ug/L - micrograms per liter

NC = Criteria has not been established

GWPC - CTDEP Groundwater Protection Criteria

SWPC - CTDEP Surface Water Protection Criteria

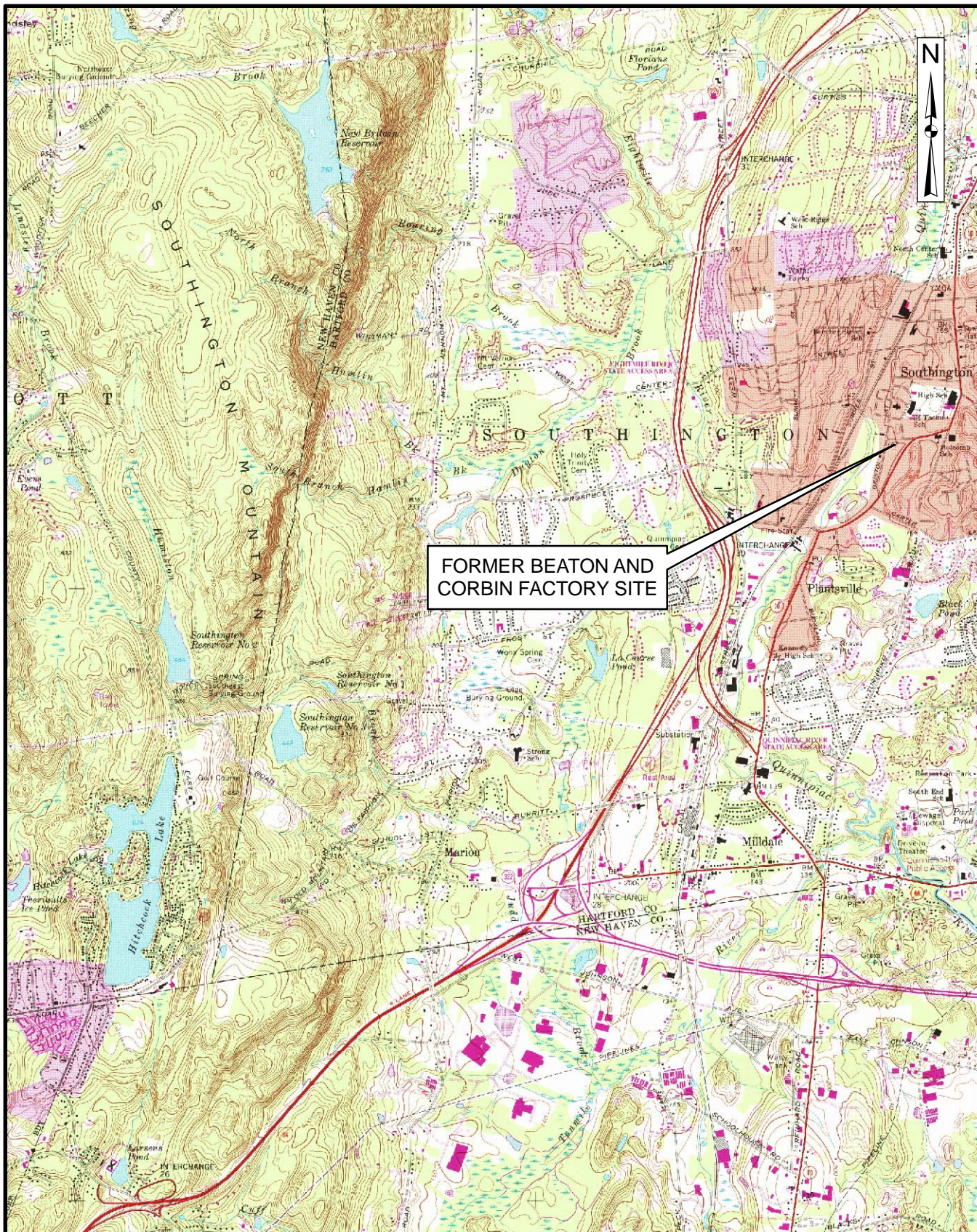
I/C VC - CTDEP Industrial/Commerical Volitization Criteria

U - Concentration below laboratory detection limit

TABLE 7-1
ORDER-OF-MAGNITUDE COST ESTIMATE
ENVIRONMENTAL SITE ASSESSMENT
FORMER BEATON AND CORBIN FACTORY SITE
SOUTHINGTON, CONNECTICUT

COST SUMMARY TABLE - PHASE III INVESTIGATION (costs rounded to nearest \$100)	
Total Cost for Phase III Investigation	\$98,600
Total Cost for Soil Removal and Disposal (RCRA Subtitle C)	\$482,000
Total Cost for Soil Removal and Disposal (RCRA Subtitle D)	\$302,000
Total Cost for Building Debris Removal and Disposal (Construction Debris)	\$149,500
Total Cost for Building Debris Removal and Disposal (ACM/Lead Paint Containing)	\$269,500
Total Cost for Building Debris Removal and Disposal (ACM/Lead Paint Containing)	\$12,200

FIGURES



TETRA TECH

SITE LOCATION
FORMER BEATON AND CORBIN FACTORY SITE
US EPA – BROWNFIELDS
SOUTHINGTON, CT

SCALE
AS NOTED

FILE

G:\...SOUTHINGTON_LOCUS.MXD

REV

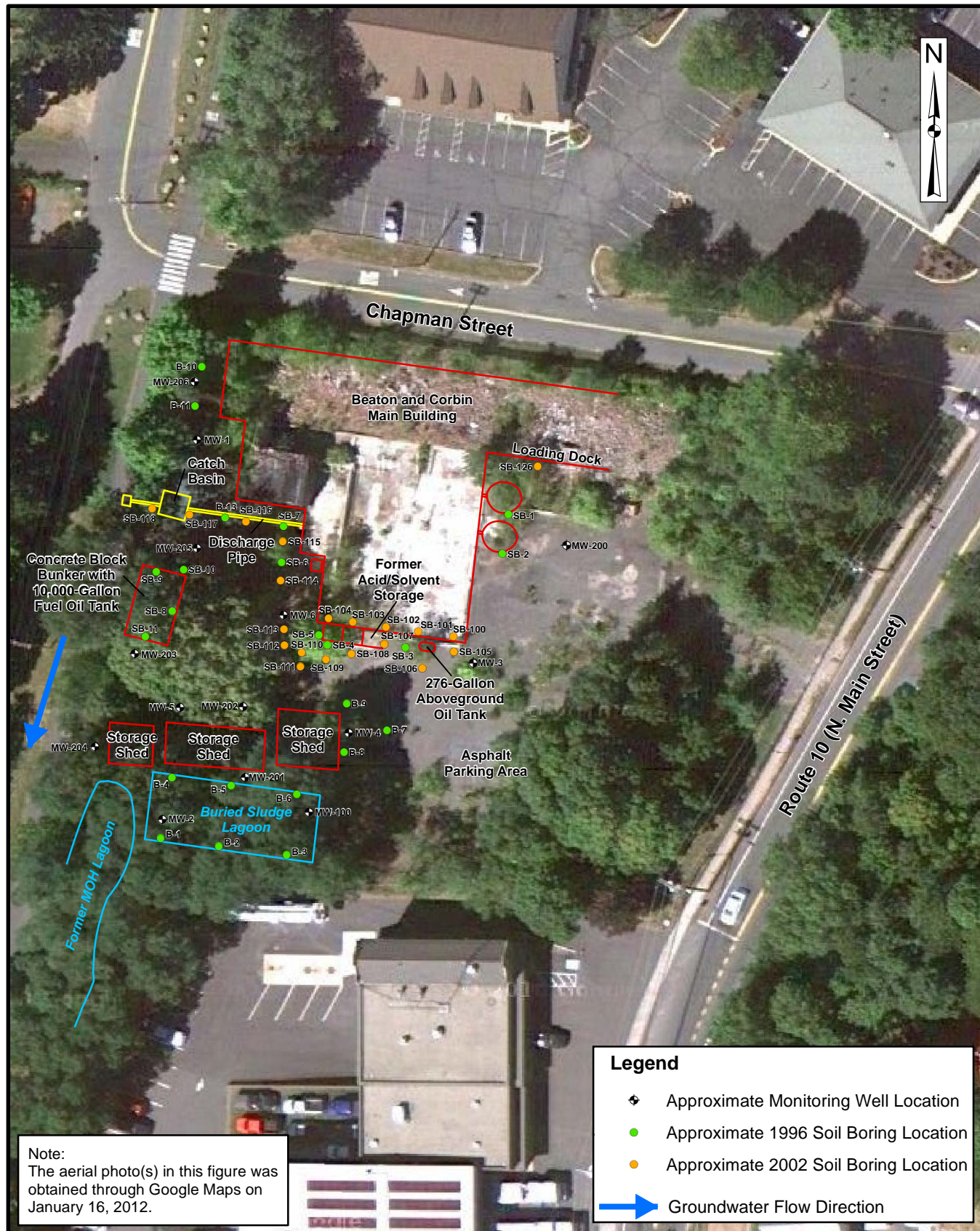
DATE

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01/16/12

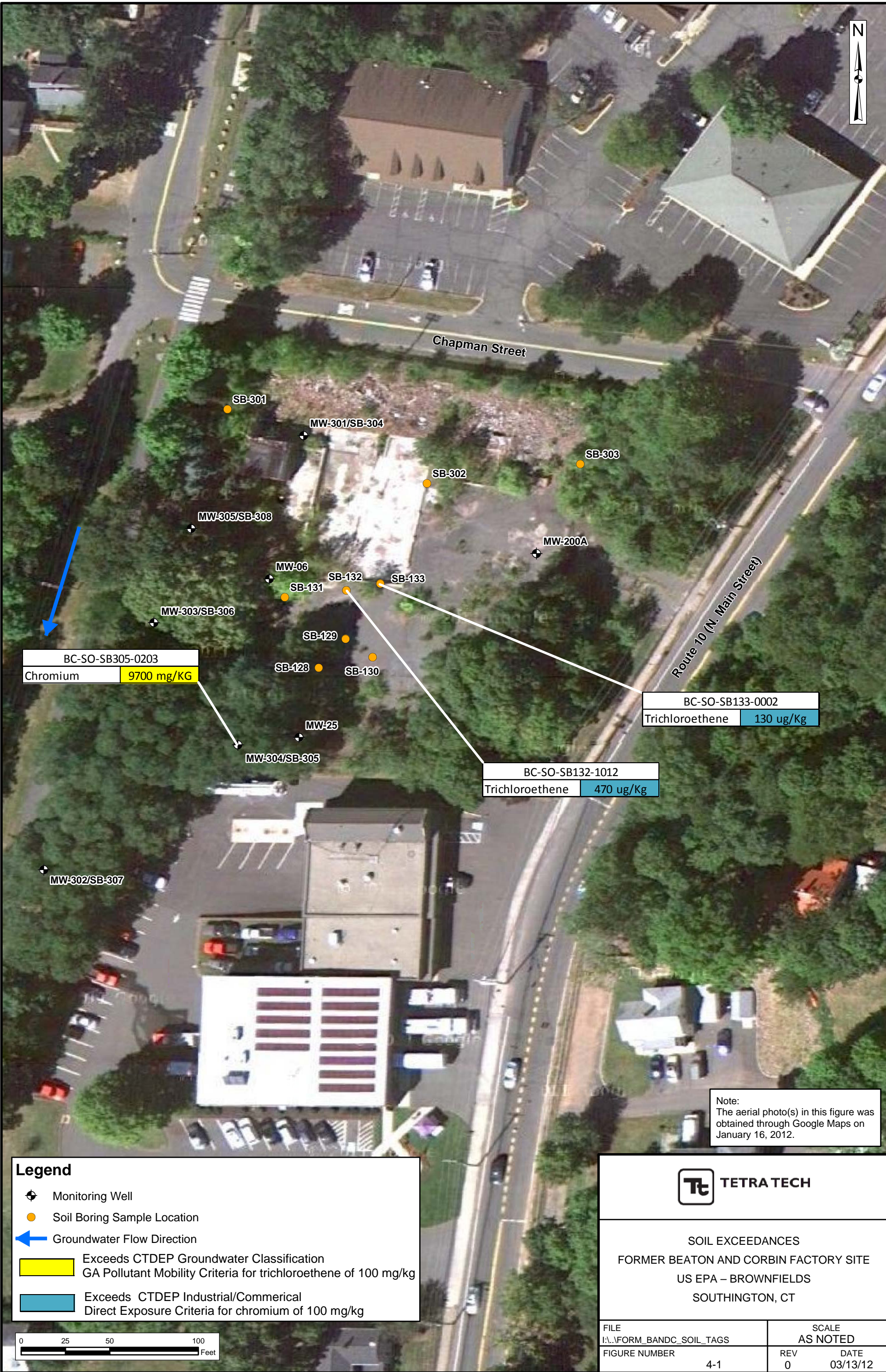
FIGURE NUMBER

1-1



HISTORICAL SAMPLE LOCATIONS
FORMER BEATON AND CORBIN FACTORY SITE
US EPA – BROWNFIELDS
SOUTHINGTON, CT

SCALE AS NOTED	
FILE	
I:\FORM_BANDC_GW_FLOW.MXD	
REV	DATE
0	03/12/12
FIGURE NUMBER	
1-2	



Chapman Street

Route 10 (N. Main Street)

BC-SO-SB305-0203	
Chromium	9700 mg/KG

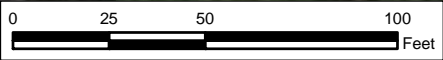
BC-SO-SB133-0002	
Trichloroethene	130 ug/Kg

BC-SO-SB132-1012	
Trichloroethene	470 ug/Kg

Note:
The aerial photo(s) in this figure was
obtained through Google Maps on
January 16, 2012.

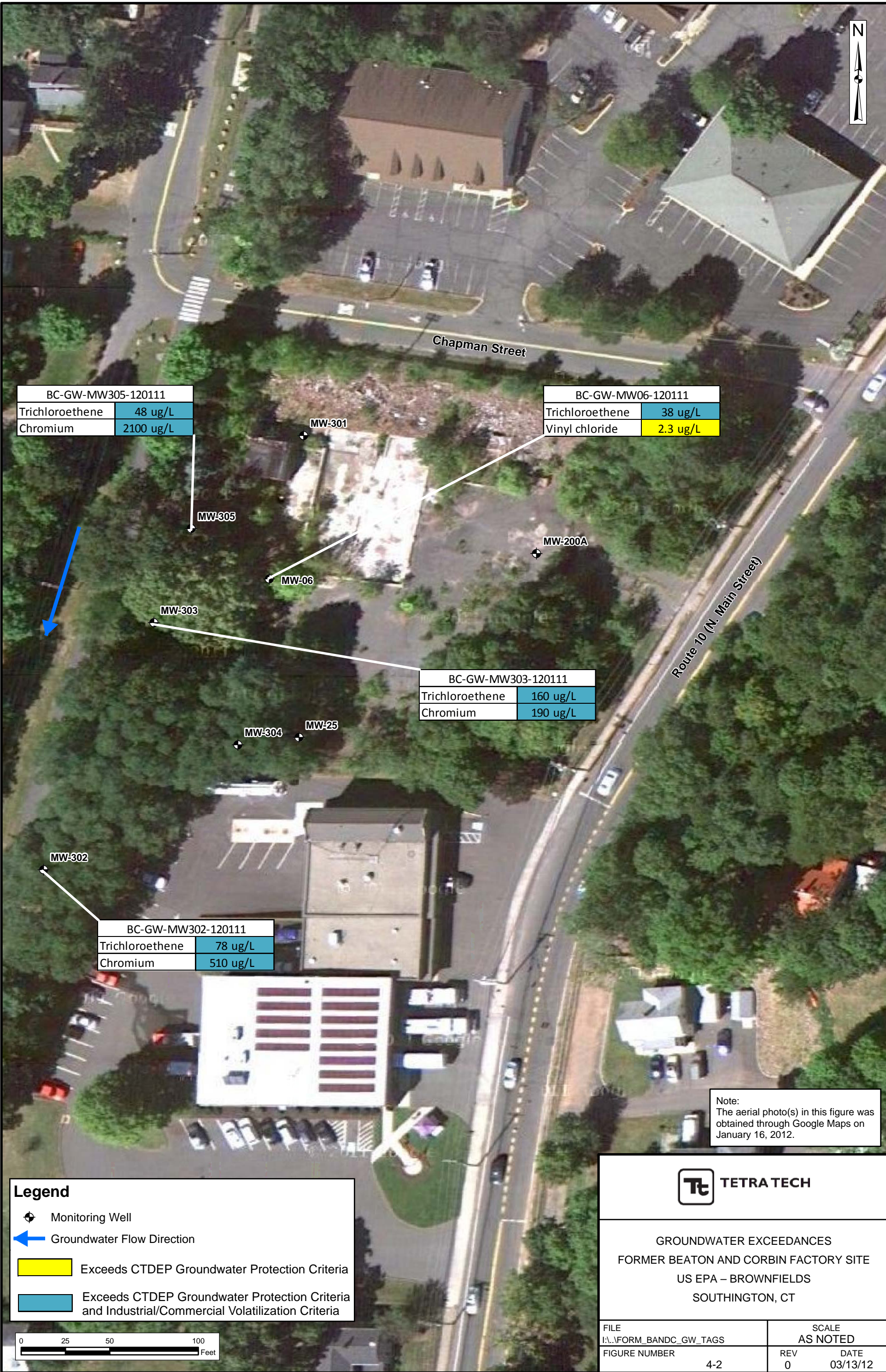
Legend

- Monitoring Well
- Soil Boring Sample Location
- Groundwater Flow Direction
- Exceeds CTDEP Groundwater Classification
GA Pollutant Mobility Criteria for trichloroethene of 100 mg/kg
- Exceeds CTDEP Industrial/Commerical
Direct Exposure Criteria for chromium of 100 mg/kg



SOIL EXCEEDANCES
FORMER BEATON AND CORBIN FACTORY SITE
US EPA – BROWNFIELDS
SOUTHINGTON, CT

FILE	SCALE
I:\FORM_BANDC_SOIL_TAGS	AS NOTED
FIGURE NUMBER	REV DATE
4-1	0 03/13/12



REFERENCES

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