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FIELD TASK WORK PLAN
FOR
AMERBELLE TEXTILES
VERNON, CONNECTICUT

Revision 1

NON- SUPERFUND
TARGETED BROWNFIELDS ASSESSMENTS

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Field Task Work Plan for Amerbelle Textiles, Vernon, CT: Non-Superfund Targeted Brownfields Assessments (Note: Approval page is for sampling and analytical components of the Field Task Work Plan)
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1.0 INTRODUCTION

Metcalf & Eddy, Inc. (M&E) has prepared this Field Task Work Plan (FTWP) for the Amerbelle Textiles site located in Vernon, Tolland County, Connecticut. The FTWP has been prepared in accordance with EPA's Statement of Work; M&E's Work Plan for conducting Non-Superfund Targeted Brownfields Assessments (TBA), Work Assignment No. 155-SIBZ-0100, under EPA's Response Action Contract (RAC) (M&E, 2004a); and the EPA-approved *Generic Quality Assurance Project Plan for Non-Superfund Targeted Brownfields Assessments, Various New England Locations, December 2004, Revision 01, RFA 04266* (M&E, 2004b)..

To support the TBA for this property, this plan has been developed to incorporate the necessary components of a work plan and cost estimate, a site-specific Sampling and Analysis Plan (SAP), and a site-specific Health and Safety Plan (HASP). This plan contains the following sections:

2.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

The site description and background information presented herein were originally presented in the Phase I and Phase II Environmental Site Assessments (ESA) prepared by GeoDesign, Inc. for Murtha Cullina, LLP (GeoDesign, 2004a and 2004b). These two assessments were provided to the Town of Vernon by Murtha Cullina to support the town's TBA application, and they were subsequently provided electronically (PDF format) to M&E by the Town of Vernon point of contact (POC), Mr. Laurence Shaffer. The figures included in this FTWP are based on the figures originally prepared by GeoDesign. Data tables prepared by GeoDesign for their Phase II ESA are reproduced in Appendix A. A site visit was also conducted by the EPA Project Manager, two M&E representatives, and representatives of the Town of Vernon and employees of Amerbelle Textiles LLC on September 8, 2004. During the site visit the descriptions presented by GeoDesign were confirmed, additional photos were taken, and the Amerbelle Textiles environmental compliance consultant and town representatives described the work performed by GeoDesign. They also expressed their ideas regarding supplemental investigation work they were interested in having performed under the TBA work assignment, to help fill the data gaps that had been identified by GeoDesign (HIDVC, 2004).

The Amerbelle site was owned and operated by the Amerbelle Corporation (a different entity than Amerbelle Textiles LLC). The Amerbelle Corporation was in arrears in its sewer payments to the town, and was prepared to close their Vernon operations and declare bankruptcy in November 2003. To help preserve the dyeing business and its 107 jobs for the town, the town enlisted the Hockanum Industrial Development and Venture Corporation (HIDVC) to work with Amerbelle Corporation to transfer the property. The HIDVC is a non-profit corporation established by the Town of Vernon to take ownership of industrial properties within the town that have closed or are in danger of closing, and assist the town in maintaining productive uses of such sites. The site is currently owned by the HIDVC (HIDVC, 2004).

The town and the HIDVC identified an individual with knowledge of the business (Mr. Douglas Rimsky), who was also one of Amerbelle Corporation's main customers, to take over operation of the business. Amerbelle Textiles LLC (owner Mr. Douglas Rimsky) is currently leasing the site from HIDVC and has expressed an interest in purchasing the property, including all land, buildings, and equipment, but has concerns regarding the site's environmental condition and potential liability. The Phase I and Phase II ESAs produced by GeoDesign helped address these concerns, but some data gaps remained that led the town to apply for an EPA Targeted Brownfields Assessment grant. The town and HIDVC are hopeful that the TBA will address remaining environmental concerns and allow for the transfer of the property from HIDVC to Amerbelle Textiles LLC. For the time being, HIDVC intends to continue leasing the property to Amerbelle Textiles LLC and textile dyeing and finishing operations are continuing (HIDVC, 2004).

2.1 Site Location and Description

The Amerbelle property is located at 104 East Main Street in Vernon, Tolland County, Connecticut (Figure 1). The site consists of a northern parcel and a southern parcel. Both parcels are occupied by various buildings and are separated by Brooklyn Street (Figure 2). Current operations include dyeing and treatment of fabrics that are subsequently converted into products such as wedding gowns, automobile convertible tops, and other specialty fabrics (HIDVC, 2004).

Metals. Certain metals were detected in site soil and/or groundwater at levels exceeding Connecticut RSR criteria for direct exposure (soil) or surface water protection (groundwater). The metals may be related to the presence of ash on site, as noted in the Phase II assessment report. The leachability of the metals via Synthetic Precipitation Leaching Procedure was not evaluated during the Phase II investigation. It is planned that the TBA investigation will include total metals mass analyses for soil samples, and selection of a subset of the soil samples for the SPLP metals extraction/analysis based on the results of the metals mass analyses. Groundwater samples will also be analyzed for total metals. The analyte list will be the Connecticut RSR list of metals, consistent with the Phase II investigation.

Aniline. Aniline, a dye-related compound, was analyzed but was not detected in soil or groundwater during the Phase II investigation. The laboratory selected to perform SVOC analyses for the TBA investigation has confirmed that it will be possible for them to quantitate aniline using this analysis. The work order issued to the laboratory will request quantitation of aniline along with the SVOCs routinely reported that are regulated under the Connecticut RSR. The SVOC analyte list also includes several substituted aniline compounds.

Formaldehyde. Formaldehyde was analyzed in soil and groundwater samples during the Phase II investigation using EPA SW-846 Method 8315. Formaldehyde was not detected in the groundwater samples. It was detected in two soil samples at concentrations of 17 mg/kg and 9.3 mg/kg. There are no Connecticut RSR criteria for formaldehyde, but EPA Region 9 has established a residential soil Preliminary Remediation Goal (PRG) for formaldehyde of 9,200 mg/kg and an industrial soil PRG of 100,000 mg/kg (EPA Region 9, 2004). Because the concentrations of formaldehyde detected are orders of magnitude below these PRGs, the TBA investigation analytical plan does not include sampling and analysis for formaldehyde.

Benzidine. Benzidine is a SVOC that is similar to aniline and is related to dye manufacturing and use, although its use is now banned in the United States except for very limited purposes. The GeoDesign Phase II investigation included benzidine as part of their Method 8270 SVOC analyte list, and benzidine was not detected. However, the reporting limit for benzidine by Method 8270 is greater than risk-based screening values for this compound, such as the Region 9 Preliminary Remediation Goals for soil and water. Benzidine is not regulated under the Connecticut RSR. At the recommendation of the EPA's Quality Assurance Chemist, separate analyses for benzidine, using a method with a lower reporting limit than Method 8270 (Method 605), will be performed under the TBA investigation. The groundwater samples will be analyzed by Method 605. Soil samples may also be analyzed by Method 605 if there is visual evidence of soil contamination in the samples.

PCBs. During the GeoDesign Phase II investigation, the PCB transformer area was inspected and a soil sample was collected for PCB analysis using EPA SW-846 Method 8082. No PCBs were detected at a reporting limit of 400 ug/kg for each of the Aroclors. The TBA investigation analytical plan does not include additional sampling and analysis for PCBs.

Table 2 presents the proposed soil and/or groundwater samples and analyses for each of the six proposed boring/well locations identified on Figure 3. Collection of a groundwater sample from existing well AM-7, with analysis for metals, is also included as noted in Table 1 because of exceedances of Surface Water Protection Criteria for arsenic and copper that were reported during the Phase II assessment (GeoDesign, 2004b).

The budget and schedule assumptions for the soil boring/well program are presented in Section 3.0. Details regarding the analytical program and report preparation are also discussed in Section 3.0.

Table 2. Summary of Proposed Sampling Locations and Analyses

Sample Location (see Figure 3)	Parameters (1)						
	VOC	SVOC	Benzidine	ETPH	RSR Metals	SPLP - PAHs	SPLP - RSR Metals
SURFACE SOIL (maximum of 4 feet below surface grade):							
1	x	x	See (2)	x	x	See (3)	See (3)
2	No soil samples at this location - well installation only						
3	x	x		x	x		
4	x	x		x	x		
5	x	x		x	x		
6	x	x		x	x		
Subtotal:	5	5	1	5	5	3	3
SUBSURFACE SOIL (>4 feet below surface grade, to refusal depth - assumed to be bedrock):							
1	x	x	See (2)	x	x	See (3)	See (3)
2	No soil samples at this location - well installation only						
3	x	x		x	x		
4	x	x		x	x		
5	x	x		x	x		
6	x	x		x	x		
Subtotal:	5	5	1	5	5	3	3
Total Soil:	10	10	2	10	10	6	6
GROUNDWATER:							
1	x	x	x	x	x	N/A	N/A
2	x	x	x	x	x	N/A	N/A
3	x	x	x	x	x	N/A	N/A
4	x	x	x	x	x	N/A	N/A
5	x	x	x	x	x	N/A	N/A
6	x	x	x	x	x	N/A	N/A
AM-7			x		x	N/A	N/A
Total Water:	6	6	7	6	7	N/A	N/A

NOTES:

(1) - Samples for VOC analyses will be grab samples from within the depth interval stated. Other soil analyses will generally be composite samples of soils over the stated depth interval, unless field observations (odors, staining, high PID readings) lead the field team to collect a grab sample or otherwise reduce the interval over which soil is composited. Because bedrock occurs at relatively shallow depths below ground surface across the site, it is anticipated that the first composite sample will consist of soil from just below pavement to no more than 4 feet below grade, and that the second composite sample will consist of the interval that either crosses the water table, or is the last sample interval collected before refusal occurs.

(2) To be collected only if visual contamination is observed in soil. Total of 2 assumed for budgeting purposes.

(3) SPLP quantities/locations are contingent on mass analysis results for PAHs and metals. For budgeting purposes it is assumed that 1/3 of samples will be selected for SPLP.

VOC - Volatile Organic Compounds, including Tentatively Identified Compounds

SVOC - Semivolatile Organic Compounds (includes PAHs, aniline, and Tentatively Identified Compounds)

ETPH - Extractable Total Petroleum Hydrocabons

PAHs - Polynuclear Aromatic Hydrocarbons

RSR Metals - Metals regulated under the Connecticut Remediation Standard Regulations: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium (total), Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc.

SPLP - Synthetic Precipitation Leaching Procedure with analysis for PAHs and/or metals: as determined by review of mass analysis results for SVOCs and RSR metals. For comparison of results to Connecticut RSR - Pollutant Mobility Criteria.

N/A - Not Applicable

3.0 TECHNICAL APPROACH

The work assignment is set up to accommodate the performance of TBAs at multiple sites. The TBA work assignment as described in EPA's Statement of Work (SOW) consists of two main technical tasks:

Task 1 - Project Planning and Support
Task 2 - Generic Brownfields Site

Task 1 provides for the overall administration and management of the work assignment. Task 2 provides for conducting technical work for TBAs at individual sites. Under the work assignment, each TBA site that is identified and selected by EPA is incorporated into the assignment as it is assigned to M&E. As directed by EPA, each site will be assigned a sequential number at the task level. The Amerbelle Textiles site has been assigned to M&E as Task 5.

3.1 Technical Approach Overview

The following sections provide descriptions of the activities required to conduct the TBA for the site. The technical approach for this site is based on EPA's SOW; the Phase I and Phase II reports discussed in Section 2.0 (GeoDesign, 2004a and 2004b); and a site visit conducted by M&E on September 8, 2004.

3.2 Site-Specific Objectives and Summary of Work

The primary objective for this site is to conduct a site investigation to supplement the previous investigation performed by GeoDesign, to help fill the data gaps identified by GeoDesign and facilitate the transfer of the site from the HIVDC to the owner of Amerbelle Textiles LLC. The data gaps and proposed investigation plan were presented in Table 1.

3.3 Technical Tasks and Budgets

The technical approach for the site follows EPA's SOW and includes four subtasks:

Subtask 5.1 - Background Review, Site Visit, and Field Task Work Plan
Subtask 5.2 - Site Investigation
Subtask 5.3 - Sample Analysis and Data Usability Review
Subtask 5.4 - Draft and Final Reports and Task Close Out

Subtasks 5.2, 5.3, and 5.4 include budget for the work still to be conducted; i.e., the site investigation; analysis of samples and data validation; and preparation of the draft and final Targeted Brownfields Assessment reports. Subtask 5.1 covers the work completed to date to research the site; hold a site visit, communicate with the EPA Work Assignment Manager (WAM) and town representatives, and prepare this Field Task Work Plan. Portions of this subtask are already completed, while others are ongoing as described below.

3.3.1 Background Review, Phase I ESA, Site Visit, and Field Task Work Plan (Subtask 5.1). This subtask includes collection and review of background information (including the Phase I and Phase II Reports), an initial site visit, and preparation of the Field Task Work Plan. Generally, TBAs include the preparation of an ASTM Phase I Environmental Site Assessment (Phase I). However, a Phase I report for the Amerbelle Textiles site was completed by GeoDesign in 2004 and therefore M&E will not complete a Phase I for the Amerbelle Textiles site. Instead, M&E has used the previous Phase I and Phase II reports by GeoDesign as a basis for development of the Field Task Work Plan.

Background Review. The collection and review of background information has been completed. A review of the Phase I and Phase II was conducted and a site visit by M&E was conducted to develop the Field Task Work Plan for the site.

Site Visit. The site visit has been completed. A site walk over was conducted by M&E on September 8, 2004 (with two M&E staff in attendance with the EPA WAM and town and Amerbelle Textiles LLC representatives), to inspect the site conditions and observe potential areas of concern.

Field Task Work Plan. This effort involves preparation and submittal of the FTWP and cost estimate. The FTWP incorporates the standard work plan and cost estimate information with the necessary components of the site-specific SAP and site-specific SHP. The Generic-TBA QAPP (M&E, 2004b) and Generic-TBA HASP (M&E, 2004b) describe a number of field, sampling, and analytical activities that are anticipated to be conducted as part of the overall TBA work assignment. Only information specific to the site such as the types and numbers of samples and analyses to be collected, field operations and data processing procedures to be followed, modifications to existing procedures, or the addition of new procedures are presented in this plan. The budget for this effort represents actual costs to produce the draft FTWP, plus an assumed cursory level of effort to address technical comments on the FTWP from the EPA WAM, the EPA Quality Assurance (QA) chemist, and the town POCs. It is assumed that revisions to the cost estimate will not be needed to address the technical comments.

3.3.2 Site Investigation (Subtask 5.2). This subtask describes the field and sampling activities that will be undertaken in support of accomplishing the objectives developed for the site. The field investigation activities will consist of the following:

- Collection and analysis of surface and subsurface soil samples from soil borings
- Groundwater monitoring well installation and sampling and analysis

The proposed investigation and sampling locations are shown on Figure 3. Boring locations were selected to attempt to fill data gaps from the Phase II investigation as described in Table 1. One particular location where a boring/well could not be installed because of subsurface utilities was selected for further investigation using vacuum excavation to avoid damage to utilities. Vacuum excavation uses vacuum to gently remove soil to clear boreholes below the level of utilities in an area. High pressure water or air is used to first dislodge the soil for easy removal by the vacuum system. The vacuum excavation tool creates a hole not much larger than a standard borehole. Holes can be backfilled using the soil collected in the vacuum truck upon completion of the borehole, if a monitoring well is not going to be installed at the location.

Locations where wells were installed by GeoDesign, but were later found to be dry, will be attempted again. Bedrock coring will be used if needed to allow installation of a well. Proposed locations may be adjusted following a site visit to mark locations for utility clearance (Call Before You Dig) and discuss accessibility of locations with the vacuum excavation and drilling subcontractor.

Site-specific details relevant to the field and sampling activities at the site are described in this section. Additional field and sampling procedures are discussed in Section 4.0 which also refers to the QAPP developed for the non-Superfund TBA work assignment (M&E, 2004b). It is assumed that EPA and the town POC will be responsible for notification of Amerbelle Textiles LLC representatives (and neighboring property owners, should the town POC deem this necessary), and arrangement of access to the site. No work will be scheduled without prior consultation with Amerbelle Textiles LLC to avoid any disruptions to ongoing dyeing operations at the site. The point of contact through which work will be coordinated is Mr. John Donlan, who is representing Amerbelle Textiles LLC regarding the TBA investigation and who has provided comments on the Field Task Work Plan Revision 0. Work will be scheduled through Mr. Donlan

and his comments on the Field Task Work Plan Revision 0 have been incorporated into this Revision 1. Mr. Donlan will also be present at the pre-bid site visit for potential drilling subcontractors (see below) and will advise on access to proposed drilling locations and alternative locations of interest to Amerbelle Textiles LLC, should one or more of the currently proposed locations prove infeasible.

The following subcontracted services will be required as part of this subtask:

- Vacuum excavation in locations where utilities are suspected
- Drilling and rock coring for soil sampling and groundwater monitoring well installation
- Directly-subcontracted analytical laboratories
- Investigative Derived Waste (IDW) disposal

The costs estimated for each of the subcontracted services are included as part of this subtask. However, the budget for procurement and management of subcontracted services is not included as it is provided as part of Subtask 1.4 for the overall work assignment (M&E, 2004a).

The budget assumptions for anticipated fieldwork activities are described in the following subsections. The level-of-effort and number of field days is estimated assuming fair weather conditions. However, modifications and adjustment of the field assumptions may occur as a result of site conditions or weather limitations or access issues, in which case the EPA WAM will be notified.

Pre-Field and Post-Field Activities. As part of this subtask, pre- and post-field work activities, including mobilization and demobilization efforts, have been budgeted based on the types of field and sampling activities. Costs have also been included for a limited amount of daily communication between the M&E WAM and field personnel and the EPA WAM and/or town POC during fieldwork. Pre-field work consists of the following: a pre-bid site visit with M&E, Amerbelle Textiles LLC representative Mr. John Donlan, and potential drilling/vacuum excavation subcontractors to evaluate accessibility of locations; marking boring locations in advance of drilling for utility clearance; coordination and planning/scheduling of daily fieldwork, subcontractors, and laboratory services; preparation of field-related paperwork (field log books, sampling sheets, sample labels, and chain-of-custodies), equipment (including sample container preparation) and vehicle mobilization, and field team travel to/from the site. Post-field work consists of equipment and vehicle demobilization and post-field paperwork, including preparation of boring logs and well installation logs for inclusion in the TBA site investigation report. A field team meeting prior to the event is also budgeted. Taken together, pre- and post-field activities are budgeted for an approximate medium level of effort.

Vacuum Excavation. The drilling subcontractor will be tasked with providing vacuum excavation equipment to pre-excavate and clear the proposed boring location in Brooklyn Street prior to drilling, because of complex subsurface utilities in this area (including town sewer and Amerbelle utilities). The vacuum excavation equipment will also be used in other areas of the site if recommended by Amerbelle Textiles LLC representatives to avoid subsurface utilities related to the manufacturing facility. For budgeting purposes it is assumed that the vacuum excavation equipment will be needed for one field day (up to 8 hours, plus 4 hours for travel to/from site), and that the equipment will be provided and operated by a drilling subcontractor that will be selected by M&E using a competitive bidding process. An M&E geologist will oversee the vacuum excavation effort. Soil samples will not be collected from soil excavated using vacuum excavation. The soil cuttings will be backfilled to the excavations as much as possible, with any excess to be containerized in 55-gallon drums for later off-site disposal as IDW. M&E will arrange for IDW disposal as described in a subsequent section. Borings will be advanced below the depth of vacuum excavation using hollow-stem auger equipment until refusal, followed by rock coring until five feet below the water table or to a maximum of 15 feet, whichever occurs first. A well will be installed across the water table. Well installation is discussed further below. For budgeting purposes it is

assumed that one location (Location 2 on Figure 3) will utilize vacuum excavation and rock coring, and that this location will not include the collection of soil samples.

Soil Characterization and Sampling. At boring locations where vacuum excavation is not required, soil sampling will be performed for the purpose of soil characterization and description, and submittal of samples for off-site laboratory analyses to evaluate the presence of soil contamination. The budget is based on performance of five soil borings to a maximum depth of 10 feet below ground surface using hollow-stem auger (HSA) drilling equipment with continuous split-spoon sample collection until refusal (or until 10 feet below ground surface, whichever occurs first), followed by rock coring where needed to encounter the water table, up to a maximum of 15 feet of coring (for a total maximum borehole depth of 25 feet). See section on Monitoring Well Installation for further details on well construction.

It is assumed that the borings will be completed in six 10-hour long field days by two persons (including travel and installation of 2-inch wells in the borings; see next section). One person will be dedicated to identifying the order of sample collection, overseeing the drill rig operator, decontamination of equipment, and preparing sample descriptions. A second person will field screen and homogenize soil samples, label them, and package them for shipment to off-site laboratories. One half-hour per field day is budgeted for the M&E WAM to communicate with the field team and assist in selecting samples for off-site laboratory analysis, and/or adjusting boring locations based on field data. Budget for the M&E WAM to communicate with the EPA WAM has been previously budgeted under Task 1; hence additional budget for such communication is not included under this task.

M&E's approach will be to collect samples in two-foot intervals continuously to refusal (or 10 feet bgs), field screen samples visually and with a photoionization detector (PID) for the presence of VOCs, and submit selected samples for off-site laboratory analysis. The analytical budget is based on the submittal of two soil sample sets from each boring location for off-site laboratory analysis (see Table 2). Samples from the locations with the greatest evidence of contamination will be packaged for off-site analyses (based on visual and PID evidence of contamination such as the presence of oils, fill materials, and elevated PID readings). If there is a lack of distinguishable evidence in varying interval depths, then samples will be collected from the surface soil (0 to 4 feet interval) and from the groundwater table interval or interval just prior to refusal (bedrock).

For soil, proposed laboratory analyses include VOCs, SVOCs (including aniline), CT ETPH, and the CT RSR metals (mass analysis). VOC and SVOC analyses will include Tentatively Identified Compounds. SVOC analyses will include aniline as a target compound. If gross contamination that may be dye-related (that is, staining) is visually observed in a soil sample, a sample for benzidine analysis will also be collected. Selected samples will be identified for SPLP analyses for metals and PAHs (a subset of the SVOCs), based on the results of the SVOC and metals mass analyses

Sample container, preservation, and holding time requirements for all proposed analyses are presented in Table 3.

Table 3.
Sample Container, Preservation, and Holding Time Requirements

Analysis/Parameter	Containers (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/analysis)
Soil Samples			
VOCs (SW-846 Method 5035/8260B)	2 * 40 mL preweighed VOA vial w/water and stir bar; 1 * 40 mL preweighed VOA vial with methanol; 1 * 4 oz glass jar (for % moisture determination)	water (low level); methanol (high level); 4 ± 2°C	low level: analyze in 48 hours or freeze to -7° C and analyze in 14 days; high level: 14 days
SVOCs (SW-846 Method 8270C)	8 oz amber glass jar with Teflon cap	4 ± 2°C	14 days/40 days
ETPH (Connecticut method)	8 oz amber glass jar with Teflon cap	4 ± 2°C	14 days/40 days
Benzidine (EPA Method 605)	8 oz amber glass jar with Teflon cap	4 ± 2°C	7 days/7 days
CT RSR Metals (SW-846 methods)	250 mL glass or plastic container	4 ± 2°C	6 months (all but mercury); 28 days for mercury
Synthetic Precipitation Leaching Procedure - PAHs (SW-846 Method 1312 for SPLP extraction)	8 oz amber glass jar with Teflon cap[1]	4 ± 2°C	Field collection to 1312 extraction - 14 days; 1312 extraction to preparative extraction - 7 days; prep. extraction to analysis - 40 days
Synthetic Precipitation Leaching Procedure - Metals (SW-846 Method 1312 for SPLP extraction)	250 mL glass or plastic container[1]	4 ± 2°C	Field collection to 1312 extraction; and extraction to analysis - 180 days (all but mercury); 28 days for mercury
Groundwater Samples			
VOCs (SW-846 Method 5035/8260B)	2 * 40 mL VOA vials	1:1 HCl to pH <2; 4° C (no bubbles)	14 days
SVOCs (SW-846 Method 8270C)	2 * 1 liter amber glass jar with Teflon cap or liner	4 ± 2°C	7 days/40 days
Benzidine (EPA Method 605)	2 * 1 liter amber glass jar with Teflon cap or liner	4 ± 2°C (see Note 2)	7 days/7 days
ETPH (Connecticut DEP method)	2 * 1 liter amber glass jar with Teflon cap or liner	1:1 HCl to pH <2; 4 ± 2° C	7 days/40 days
CT RSR Metals (SW-846 methods)	500 mL glass or plastic container	1:1 HNO_3 to pH < 2; 4 ± 2°C	6 months (all but mercury); 28 days for mercury

Notes:

[1] SPLP samples do not need separate bottles-samples will be taken from metal and ETPH sample bottles.

[2] When 1,-2-diphenylhydrazine may be present, adjustment of the pH to 4.0±0.2 with sulfuric acid is also required to prevent rearrangement of the compound to form benzidine. However, its presence is very unlikely, even if it had been used at the site in the past, because it is unstable and once in water or exposed to air it reacts within minutes.

Method References

SW-846: Test Methods for Evaluating Solid Wastes, Third Edition, Update 3, U.S.EPA, December 1996.

CTDEP Method for Extractable Total Petroleum Hydrocarbons

List of CT RSR Metals: antimony, arsenic, barium, beryllium, cadmium, chromium (total), copper, lead, mercury, nickel, selenium, silver, thallium, vanadium, zinc.

Monitoring Well Installation. M&E plans to install six groundwater monitoring wells across the site, at the same locations at which borings are conducted. The purpose of the well network is to evaluate overall groundwater quality and groundwater flow direction, and also possibly reveal the presence of releases that may have impacted groundwater, but that might have gone undetected during the Phase II assessment because of areas where the water table is within the rock (into which wells could not be installed at that time). The budget for well installation is included in the budget for soil borings described above.

Monitoring wells will be constructed of two-inch ID, schedule 40, flush-joint threaded, poly vinyl chloride (PVC) riser pipe with a locking expansion plug. In general, monitoring wells will be constructed with the well screen spanning the water table surface, 2 feet above and 5 to 8 feet below the water table. A filter pack of clean silica sand will be placed in the annular space between the well screen and the borehole wall. For wells that penetrate into bedrock, a bentonite grout seal will be placed across the overburden/bedrock interface to seal the overburden from the bedrock. The purpose of the seal is to prevent creation of a conduit to the rock via the well, should there be a release to the overburden in the future. The scope of work to be issued to potential drilling subcontractors will describe well installation in further detail and will be shared with Amerbelle Textiles LLC (Mr. John Donlan) at the pre-bid drillers site visit.

Each well will be completed with a flush-to-grade road box, or alternatively, will be completed with a standpipe and locking well cap if preferred by Amerbelle Textiles LLC. The latter approach may be used for wells installed in interior locations, as added protection against a surface release possibly migrating into or along the sides of a well. Decisions as to how each well will be completed will be coordinated through Mr. John Donlan, the Amerbelle Textiles LLC representative for the TBA investigation. The monitoring wells will be developed by M&E by pumping the well to remove fine-grained particles and until groundwater field parameters (pH, temperature, conductivity, and turbidity) stabilize. Drilling and sampling tools will be steam-cleaned between each boring, to minimize the possibility of cross-contamination.

After all the wells are installed and developed, water levels will be obtained from wells to assess groundwater flow directions. Survey equipment will be used to record relative elevations. The wells will also be surveyed using a GPS device to record the locations. The M&E field team will perform the survey.

Well Abandonment. It is not known at this time whether the TBA investigation-installed wells will remain in place, or if Amerbelle Textiles LLC will request that one or more wells be abandoned in place to further reduce the potential for possible future surface releases to impact a well and migrate to bedrock. The decision regarding whether to abandon the wells will be made by the EPA WAM in consultation with M&E and Amerbelle Textiles LLC. If no groundwater contamination is detected in any of the TBA-installed wells, it is likely that the EPA WAM will direct that they be abandoned in place upon request from Amerbelle Textiles LLC. Should the EPA WAM direct abandonment, he will prepare an amended scope of work for the site that directs M&E to procure a subcontractor to mobilize to the site to abandon the wells. Abandonment would involve removal of the road box or standpipe, PVC casing, and well screen, grouting of the hole, and finishing with a cement plug at the ground surface. The current scope of work for the site does not include costs for well abandonment because it is not known at this time whether abandonment will be recommended, and if so, which (if not all) of the six TBA-installed wells will be abandoned.

Groundwater Sampling. USEPA low flow sampling methods as described in *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*, (USEPA, 1996a) and the Generic-TBA QAPP (M&E, 2004b) will be used to collect the groundwater

samples. Prior to sampling, wells will be checked for petroleum products using an oil/water interface probe, and depth to water measurements will be taken using the oil/water probe or an electronic water level measuring tape. Wells will be purged and samples will be collected at a low rate using a variable speed pump (peristaltic pump) or bladder pump. The following groundwater quality parameters will be measured in the field: pH, specific conductance (µS/cm), temperature (°C), oxidation reduction potential (mv), turbidity (NTU), and dissolved oxygen (mg/L). If groundwater quality parameters do not stabilize, samples will be collected after one hour of purging at a rate that does not cause drawdown. Groundwater field measurements will be recorded on field logs. New Teflon-lined tubing will be used at each well. At the conclusion of sampling, depth to bottom will be measured and recorded. Sampling and analysis quantities for groundwater are presented in Table 2.

The budget for groundwater sampling assumes that the 7 wells (six new and one existing, AM-7) can be sampled by two persons in four 10-hour field days, including travel. The budgeted laboratory analyses consist of VOCs, SVOCs, benzidine, ETPH, and CT RSR metals.

IDW Removal and Disposal. Several types of IDW may be generated during the site investigation that potentially require off-site disposal including soil from vacuum excavation/drilling and sampling activities, decontamination fluids, and wastewater from monitoring well development and sampling. Wastes generated during the field investigation will be disposed of in accordance with the *Guide to Management of Investigation-Derived Wastes* (USEPA, 1992) and the Generic-TBA QAPP (M&E, 2004b) and Generic-TBA HASP (M&E 2005). It is anticipated that some IDW will need to be collected into labeled, DOT approved, 55-gallon drums, which will be temporarily stored on the site at a secure location to be specified by Amerbelle Textiles. Soil cuttings and groundwater will be returned to the site when possible in accordance with the Generic-TBA QAPP and the guidelines in Section 4. Soil will be used to backfill borings unless grossly contaminated, and groundwater will be recharged back to the site unless grossly contaminated or in a paved/indoor area. Field clothes, paper towels, excess sample jars, and other solid trash will be disposed as non-hazardous solid waste.

For cost estimating purposes, it is assumed that five drums of solid IDW and two drums of liquid IDW will require off-site disposal. It is also assumed that analytical data from environmental samples collected during the site investigation will be sufficient to characterize the drum contents and that additional testing by the disposal subcontractor will not be needed prior to removal. It is anticipated that the removal operations can be overseen by one M&E field representative within one six-hour visit (including travel).

3.3.3 Sample Analysis and Data Usability Review (Subtask 5.3). Included as part of this subtask is budget for analysis of samples collected as part of Subtask 5.2, as well as budget for technical effort necessary for coordination and oversight of analytical services and sample management. Also included is the effort for limited Quality Control (QC) review/validation of laboratory data and evaluation of laboratory data usability.

Sample Analysis. The samples anticipated to be collected and submitted for off-site laboratory analyses are summarized in Table 4, including field-collected QC samples and analysis quantities for both soil and groundwater. Samples will be analyzed using directly-subcontracted laboratories and SW-846 or CTDEP methods. The directly-subcontracted analytical budget is based on a 21-day turn-around time for laboratory data report delivery and the bids for analytical services obtained under Work Assignment No. 155 to replace services formerly provided by the EPA Contract Laboratory Program.

Table 4.

Estimated Quantities: Field Samples and Quality Control Samples

Analysis/Parameter	Locations/ Field Samples	Field-Collected QC Samples [1]				Total Samples
		Trip Blanks	Field Duplicates	MS	MSD or MD	
Soil Samples						
ETPH (CTDEP method)	10	0	1	0	0	11
VOCs (SW-846 Method 5035/8260)	10	3	1	1	1	16
SVOCs (SW-846 Method 8270)	10	0	1	1	1	13
Benzidine (EPA Method 605)	3	0	0	0	0	3
CT RSR Metals* (SW-846 methods)	10	0	1	1	1	13
SPLP PAHs (SW-846, Method 1312 extraction)	6	0	1	0	0	7
SPLP Metals (SW-846, Method 1312 extraction)	6	0	1	0	0	7
Groundwater Samples						
ETPH (CTDEP method)	6	0	1	0	0	7
VOCs (MCP and SW-846, Method 5035/8260)	6	2	1	1	1	11
SVOCs (MCP and SW-846, Method 8270)	6	0	1	1	1	9
Benzidine (EPA Method 605)	6	0	1	0	0	7
CT RSR Metals* (SW-846 methods)	7	0	1	1	1	10

NOTES:

1. Trip blank quantities are based on the estimated number of collection days and the estimated number of coolers being shipped. All other field QC sample quantities are estimated assuming that one SDG package (typically) will be provided for approximately every 20 field samples submitted to a laboratory. Project-specific MS/MSD or MS/MD will be requested once for each matrix, where applicable.

* The CT RSR Metals are: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium (total), Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc.

Directly-Subcontracted Methods:
SW-846: Test Methods for Evaluating Solid Wastes, Third Edition, Update 3, U.S.EPA, December 1996.
CTDEP Method for Extractable Total Petroleum Hydrocarbons

MS - Matrix Spike
MSD - Matrix Spike Duplicate (applies to VOC, SVOC analyses)
MD - Matrix Duplicate (applies to metals analyses)
QC - Quality Control

The lowest cost, directly-subcontracted laboratory qualified to perform all the analyses for this particular site will be selected to perform the work, provided the laboratory has capacity to perform the analyses during the time frame the field work commences. Evaluation of bids indicates that the lowest-cost laboratory for this particular suite of analyses (except for benzidine) is Mitkem Corporation of Warwick, Rhode Island. The Mitkem laboratory Standard Operating Procedures (SOPs) for the analyses have been submitted to EPA under separate cover. Should there be a need to select a different laboratory or combination of laboratories upon execution of the work, SOPs for the alternate laboratory will be requested and provided to EPA before the field effort commences. For benzidine (Method 605), the laboratory is Southwest Research Institute (SWRI), San Antonio, Texas.

Coordination of Analytical Services. The costs estimated for this effort include 1) coordination with the directly-subcontracted laboratories to arrange analytical services and 2) overseeing the directly-subcontracted analytical services specific to the site. The cost estimate also includes budget for the M&E Project Chemist to communicate with the directly-subcontracted laboratories to discuss analytical, shipping, or other technical issues or concerns that may arise and to provide problem resolution. Costs for subcontract management of the directly-subcontracted laboratories are included as part of Subtask 1.4 for the overall work assignment (M&E, 2004a).

Coordination with EPA Sample Management Personnel. The tracking of samples submitted for directly-subcontracted analyses from the field, to the laboratory, through receipt of data by M&E is considered part of this subtask. Costs have been included for logging in sample-specific information and each Sample Delivery Group (SDG) data package for tracking of sample data once laboratory reports are received. The cost estimate assumes that approximately 100 off-site laboratory samples (including field QC samples, see Table 4) will be logged for tracking and information purposes.

Data Validation. M&E will conduct a limited QC review/validation of all directly-subcontracted laboratory analytical data, however, it is assumed that no formal Tier level of validation as specified in EPA Region I guidelines (U.S. EPA, 1996b) will be conducted. Instead, costs have been estimated to perform a limited QC review/modified Tier II-like validation for each of the SDG packages. The limited review/validation will consist of completing Tier II-like forms only for applicable criteria parameters, assessing data usability, and summarizing the results in an abbreviated Tier II-like letter report that will be appended to the final TBA report (Subtask 5.4). Laboratory data forms will be marked up to indicate any validation qualifications that supersede laboratory qualifiers. The M&E data reviewers will also examine laboratory data forms for Tentatively Identified Compounds from VOC and SVOC analyses to evaluate whether any dye-related TICs may have been detected. The marked-up forms will be attached to the respective Tier II-like letter report. The format of the Tier II-like letter report was agreed to by Ms. Vicki Maynard of OEME and the M&E RAC lead chemist in January 2001.

The costs for this task have been estimated assuming the directly-subcontracted laboratory SDG packages will be received and tracked through validation based on the anticipated number of samples being collected and parameters being analyzed (Table 4), for an estimated maximum of 12 SDGs. An approximate medium plus cursory level of effort is budgeted for data validation, and a cursory level of effort is budgeted for coordination of analytical services and sample tracking. An additional low level of effort has been added specifically for coordination with the benzidine laboratory and validation of the benzidine data.

3.3.4 Draft and Final Reports and Task Close Out (Subtask 5.4). This subtask includes: preparation of a draft report including data screening; a technical meeting to discuss the draft report; issuance of a final report; and close out of site files.

Draft Report. The field and analytical data collected as part of the site investigation will be evaluated and compared to the results of the previous Phase II investigation (GeoDesign, 2004). Prior to evaluation, the data will be compiled into tables. The technical effort to compile data is estimated for the analytical data based on the projected number of sample and analysis quantities (Table 4). The data will be compared to the Connecticut RSR criteria applicable to the site (residential and industrial/commercial for soil, and GB for groundwater). It is assumed that only available Connecticut RSR criteria will be used, and that development of additional standards or comparison with other sources of values will not be conducted. Groundwater elevations measured in the wells to be installed under Subtask 5.2 will be used to determine the groundwater flow direction, and the results will be plotted on a site plan.

The draft TBA report for the site will also be prepared as part of this subtask. The report will briefly describe the field, sampling, and analytical activities performed as well as site conditions and other important site observations. The report will present in a brief and concise manner the findings of the field and analytical data and the results of the hydrogeological and contamination evaluations such that data can be used in support of the risk screening and development of remedial alternatives, should remediation be indicated.

For estimating purposes, it is assumed that the draft report text will be brief, no more than 20 pages, and that information and data will be summarized and presented in tabulated and graphical formats. Analytical data will only be tabulated for detected laboratory results. Laboratory and field data forms will be appended to the report. A high level of technical effort has been estimated for completing data compilation and tabulation, data evaluation, and preparation of the draft report including recommendations for additional assessment (if necessary) and order-of-magnitude cost estimates for remediation (if necessary). The level of effort includes evaluation of up to two alternatives for soil remediation.

Technical Meeting. Upon request from the EPA WAM and the Town of Vernon, M&E will attend a technical meeting at the town to discuss the findings and conclusions drawn in the report, as well as to discuss the approach for development of further site assessment requirements, potential remedial alternatives, and associated cost estimates. The cost estimate includes a low level of effort (LOE) for two M&E staff to prepare for and attend a site meeting and for follow up phone discussions.

Final Report. A final report will be prepared after a review period of 1 month from delivery of the report to the EPA and town POC, and following the technical meeting. It is anticipated that the comments will be limited and that minimal technical effort will be required to address them. A cursory level of technical effort is assumed to finalize the report.

Task Close Out. At the completion of technical work for the site, M&E will perform close-out activities, which will consist of preparing a list of all documents and transferring documents to EPA or to M&E's archiving company, as directed by the EPA WAM. No financial reports will be produced or submitted to EPA until the close-out of the overall TBA work assignment.

M&E's project files for this assignment will be reviewed to identify any correspondence and project documents that need to be inventoried and/or returned to EPA. Documents that are typically returned include original materials such as field logbooks and photographs that have not been previously submitted to EPA. Materials that are not typically returned include telecons, internal memoranda, correspondence to EPA, and documents already submitted to EPA. For estimating purposes, it is assumed that M&E will not have a large amount of file materials that require return to EPA.

4.0 FIELD INVESTIGATION AND SAMPLING AND ANALYSIS PROGRAM

The primary objectives for the TBA being conducted at this site are described in Section 3.2. The field investigation procedures, analytical methods, and data collection, validation, and reporting procedures described in the *Generic QAPP for Non-Superfund Targeted Brownfields Assessments, Various New England Locations, Revision 01* (M&E, 2004b) largely meet the objectives. Section 3.3 of this plan further defined the technical requirements that are specific to conducting the TBA for the site, such as the types and numbers of samples and analyses as well as site-specific modifications to existing procedures or the addition of new procedures.

4.1 Field and Sampling Procedures

The field and sampling activities that will be conducted at the site (Section 3) are listed below along with the title of the applicable Standard Operating Procedures (SOPs) from the Generic QAPP, Appendix C. Additional information or required modifications to the SOPs are described in the table that follows.

Field or Sampling Activity*	Generic-TBA Standard Operating Procedure Title**	Modifications to the SOP(s) or Additional Site-Specific Requirements
SOIL PROCEDURES		
Vacuum Excavation for Utility Clearance	None. Vacuum Excavation to be performed by Subcontractor.	Do not collect soil samples from soil excavated by vacuum excavation. Instruct Subcontractor to backfill holes to the degree possible, and deposit excess excavated material into 55-gallon drum that Subcontractor will provide. Once location is cleared, drilling and sampling will commence as described in Soil Boring and Sampling Procedures, below.
Subsurface Investigation and Soil Sampling	Soil Boring and Sampling Procedures (Split-Spoon Method) *M&E RAC Contract Standard Operating Procedure No. 1: Jar Headspace Screening Procedure for Total Volatile Organic Compounds*	Collect continuous soil samples to refusal or 10 feet below ground surface. Record visual observations and PID readings (that is, scans of the soil core prior to disturbance of the core) for every two-foot split-spoon sample. Segregate top 4 feet ("surface soil," per CTDEP definition) from each boring location and handle separately, where applicable (not applicable to Vacuum Excavation locations – this soil shall not be sampled). If PID scan or visual observation does not indicate contamination in any part of split-

Field or Sampling Activity*	Generic-TBA Standard Operating Procedure Title**	Modifications to the SOP(s) or Additional Site-Specific Requirements
		spoon, collect VOC sample from approximate mid point, prior to compositing the split-spoon contents. Also collect jar headspace sample from same location in the split-spoon. If there is field evidence of contamination, select that portion of interval for VOC and headspace sample. Composite remainder of split-spoon and conduct jar headspace screening on each split-spoon collected. Collect samples for remaining analyses from the 2 intervals with highest jar headspace PID readings or visual evidence of contamination. If no readings or visual evidence, collect samples from the surface soil interval (0 to 4 feet) and the interval that intersects the water table or is just above refusal (assumed bedrock) if no water is encountered. Only if there is visual evidence of contamination, collect soil sample jar for benzidine analysis in addition to the analyses to be performed for all locations. Collect soil samples for lab analyses in the following order: VOCs, SVOCs, benzidine (only if visual evidence of contamination), ETPH, and CT RSR metals.
GROUNDWATER PROCEDURES:		
Groundwater Monitoring Well Installation and Development	Monitoring Well Installation (with Standard Drilling Rig) – Overburden Wells, Bedrock Wells Monitoring Well Development Procedures	10-foot screen size across the groundwater table; 2-inch diameter PVC well casing; flush-mounted with road box. Development can be considered complete if development criteria (volume removal or stability of field parameters) are not met, but if one hour of purging has been conducted or 3 well volumes have been removed (whichever comes first).
Groundwater Elevation (Water Level) Measurements	Groundwater Elevation Monitoring and Product Monitoring Measurements	None

Field or Sampling Activity*	Generic-TBA Standard Operating Procedure Title**	Modifications to the SOP(s) or Additional Site-Specific Requirements
Groundwater Sampling	*M&E RAC Contract Standard Operating Procedure No. 005: Low Stress Groundwater Sampling Procedures*	Allow wells to equilibrate a minimum of 72 hours after development before sampling. Initiate sampling by pumping well according to procedure until turbidity is less than 25 NTU, and field parameters have stabilized. If 25 NTU cannot be reached within 1 hour, collect samples and field-filter the sample for metals analysis. Do not field filter any other samples. Sample collection order: VOCs, SVOCs, benzidine, ETPH, and CT RSR metals
YSI Meter Calibration	*M&E RAC Contract Standard Operation Procedure No. 004: Field Calibration of YSI Water Quality Meter*	Three-point calibration with pH 4, 7, and 10
Turbidimeter Calibration	*M&E RAC Contract Standard Operating Procedure No. 14: Calibration and Operation of the DRT-15CE Portable Turbidimeter*	None
SUPPORT PROCEDURES		
PID Calibration (for health and safety monitoring and jar headspace screening)	*M&E RAC Contract Standard Operating Procedure No. 11: Calibration of the PE Photovac 2020 Photoionization Air Monitor*	Use 10.2 eV lamp. Zero instrument with ambient air. Use 100 ppmv isobutylene calibration gas and Tedlar gas bag. Set Response Factor to 1.0 and record results in ppm (v/v) as isobutylene.
Site Surveying (Well Locations and Elevations)	None	Tape measure to obtain relative locations of site/property boundaries, buildings, and field investigation locations. Surveyor's level and rod survey to provide relative well elevations. Use GPS instrumentation also to record boring positions.
GENERAL PROCEDURES		
Preservation Methods	Preservation Methods	Refer to Table 3 for Site-Specific Analyses and Preservation Requirements

Field or Sampling Activity*	Generic-TBA Standard Operating Procedure Title**	Modifications to the SOP(s) or Additional Site-Specific Requirements
Decontamination Procedures	Decontamination Procedures	Drill rig: Decontaminate split-spoon samplers between uses according to procedure for bowls and spoons outlined below. All down-hole equipment should be decontaminated using a steam cleaner between holes if gross contamination (free product) is encountered in the soil, prior to first use, and prior to demobilization from the site. Soil Sampling Bowls and Spoons: Bring sufficient numbers of bowls and spoons to site so that decon once per day will be sufficient, if possible. Hexane rinse is not required unless gross contamination is encountered. Nitric acid rinse shall be omitted to avoid generation of IDW. Use detergent/tap water, rinse with tap water, rinse with isopropyl alcohol, and final rinse with deionized ultrafiltered (DIUF) water. Peristaltic Pumps and Tubing: Use new dedicated Teflon tubing for each well. Pump decontamination is not required since the pump itself does not contact the sample. Bladder Pumps: After washing submersible components, disassemble and replace used bladder with new bladder for each well. YSI Flow cell: Do not use soap or solvents. Tap water rinse followed by DIUF rinse.

Field or Sampling Activity*	Generic-TBA Standard Operating Procedure Title**	Modifications to the SOP(s) or Additional Site-Specific Requirements
Disposal of Investigation-Derived Wastes	Disposal of Investigation-Derived Wastes	For soil borings not completed as wells, backfill excess soil into hole, compact, and grout if necessary to fill void. For borings completed as wells, place excess soil into labeled 55-gallon drum. Label drum lid with boring location IDs, contents ("Soil"), and date. Well development water and purge water from groundwater sampling shall be discharged next to the well from which it was generated at the end of each field day for wells outdoors in unpaved areas, unless gross contamination (NAPL or sheen) is observed or PID screening indicates levels greater than 10 ppmv. In the latter case, containerize the water in a 55-gallon drum and label drum lid with well IDs, contents ("Groundwater"), and date. Water from wells indoors or in paved areas shall be containerized also as described above. Aqueous decontamination washwater shall be discharged back to the site away from traffic areas and in a location where it will readily recharge back to the ground. No aqueous discharges shall be made to paved areas, storm/sewer drains, or surface waters. Used solvents (hexane, isopropyl alcohol) or nitric acid must be drummed for later disposal, if present. Use of hexane and nitric acid are not anticipated for this project. It is expected that residual liquid isopropyl alcohol will not be present because of its high volatility. Field clothes (tyvek, gloves), paper towels, poly sheeting, tubing, and excess sample jars and foil (e.g., from jar headspace screening) are considered non-hazardous solid waste and are disposed of as general trash. Sample jars must be emptied of soil before disposal of the jars.

Field or Sampling Activity*	Generic-TBA Standard Operating Procedure Title**	Modifications to the SOP(s) or Additional Site-Specific Requirements
Shipping Protocols	Shipping Protocols	Packaging and shipping of methanol-preserved samples in excepted quantities (Appendix C of protocol) shall be used for VOC soil samples.

* - Refer to Section 3 for technical approach and investigation requirements
** - Appendix C of the Generic-TBA QAPP,(M&E, 2004b)

4.2 Sampling and Analysis Program

The number of samples being collected during each of the field activities specified is presented in Table 4. The analyses and numbers of samples, along with the number and types of field QC samples that will be collected, are also presented in Table 4.

4.3 Project Action Levels

The action levels for directly-subcontracted laboratory analyses will be the CT RSR criteria applicable to the site. For soil samples the applicable criteria are: Residential and Industrial/Commercial Direct Exposure Criteria and Pollutant Mobility Criteria for GB groundwater areas. For groundwater samples the applicable criteria are Residential and Industrial/Commercial Volatilization Criteria and Surface Water Protection Criteria. The directly-subcontracted laboratories will use SW-846 methods or CTDEP methods (in the case of petroleum hydrocarbons), as defined in Appendix B of the Generic-TBA QAPP for Non-Superfund TBAs, Revision 01 (M&E, 2004b). CTDEP has taken into account the reporting limits routinely attainable by SW-846 methods as part of their process for establishing RSR criteria. Hence, specialized methods beyond those defined in Appendix B of the Generic QAPP are not considered to be necessary to evaluate site soil and groundwater with respect to CT RSR criteria. The exception to this is benzidine, which is not regulated under the CT RSR and is not included in Appendix B of the Generic QAPP. For this analyte, EPA Method 605 is being used because it is able to attain lower reporting limits than Method 8270, which is the method used during the previous investigation (GeoDesign, 2004b). Benzidine was not detected in soil or groundwater during the previous investigation.

4.4 Health and Safety Program

The health and safety information and requirements specific for the site are based on the proposed site investigation activities (Section 3) and are presented in Appendix B. Both Appendix B and the Generic Site Health and Safety Plan for non-Superfund Brownfields Targeted Site Assessments (M&E, 2005) shall be reviewed by site personnel prior to the start of activities. The signature sheet in Appendix B shall be signed by all personnel entering the exclusion or contamination reduction zones.

5.0 DOCUMENT PRODUCTION AND DISTRIBUTION

Several technical deliverables are required for this TBA site on a subtask-by-subtask basis. The documents submitted will be considered drafts until approved by the EPA WAM or comments are received from EPA and revisions made based on the comments. Following necessary revisions, re-submittal and approval will determine finalization of the documents.

SUMMARY OF MAJOR SUBMITTALS

Deliverables	No. of Copies*	Submittal to EPA (calendar Days/weeks)	EPA Review Period/Submittal of Comments to M&E (business days/weeks)
SUBTASK 5.1: Draft Field Task Work Plan and Cost Estimate	4	September 19, 2005	Four weeks after receipt of Draft Field Task Work Plan
Final Field Task Work Plan	4	October 17, 2005	Not applicable
Phase I Environmental Site Assessment	N/A	N/A	Completed by others
SUBTASK 5.4: Draft TBA Report	2	To be determined	4 weeks after receipt
Final TBA Report	2	To be determined	EPA approval upon receipt
Work Assignment Close-Out Report		30 days after notification from EPA	Not applicable

*Distribution provided in text; ** As distributed under the M&E RAC Program Administrative Work Assignment

FTWPs/Cost Estimates will be submitted to the EPA Contracting Officer and Project Officer. One bound copy will be submitted to the Contracting Officer, while one bound and one unbound copy will be submitted to the Project Officer. One double-sided and bound copy of each FTWP/CE and technical deliverable will be submitted to the EPA WAM. If requested, electronic files containing the text in and tables will also be submitted in PDF format. The EPA Project Officer will receive a copy of the submittal letter for each technical deliverable listed above. In addition, one double-sided, bound copy of draft and final documents (excluding cost estimates) will be submitted to the town POC and the MADEP Brownfields coordinator for the Western Region.

Draft FTWPs are submitted to the EPA Quality Assurance Chemist for the TBA program concurrently with submittal to the EPA WAM and town POC. The EPA Quality Assurance Chemist also receives copies of the laboratory SOPs for the directly-subcontracted laboratories likely to be used for the project, under separate cover. If the identified laboratories need to be changed because of capacity or scheduling issues, the EPA WAM and the EPA Quality Assurance Chemist will be notified and new laboratory SOPs will be provided.

6.0 WORK SCHEDULE

Schedules for the field work and deliverables will be established in accordance with the SOW and coordination with EPA, the town POC, and subcontractors. It is anticipated that the field activities described in this plan can commence in early November 2005 and be concluded within 4 weeks following commencement, depending on weather. The anticipated field schedule is based on EPA approval of the final FTWP and availability of M&E-procured subcontractors. IDW disposal will not take place until laboratory data are received that can be used to characterize the IDW for off-site disposal.

No. of Field Day(s) and Schedule	Activity
1 (prior to field work)	Meeting with potential vacuum excavation and drilling subcontractors to inspect site and drill rig access areas; marking of boring locations for Call Before You Dig clearance
6 (approximately one week after utility clearance)	Vacuum excavation, drilling and soil sampling; monitoring well installation and development
4 (the week following drilling)	Survey (GPS and elevations); water levels; monitoring well sampling
1 (approximately one month after field event is completed)	IDW disposal

7.0 FIELD EQUIPMENT AND SUPPLIES

The major equipment rentals anticipated for conducting the field work for this TBA site are listed on Table 5. M&E will coordinate the purchasing and rental of all equipment for the field work.

Table 5. List of Field Equipment Rentals

Quantity	Item Description	Est. # of Periods	Rental Periods
Health & Safety Instrumentation			
2	Photoionization Detector	2	week
General - All Purpose			
2	Walkie Talkies	2	week
1	Cellular Phone	2	week
Field Work/Sampling Instrumentation/Equipment			
1	Surveyor's Transit / Level	1	week
1	Ground Positioning System	1	week
2	Water Level Indicator	2	week
1	Oil/Water Interface Probe	2	week
2	Turbidimeter	2	week
2	pH/Temperature Meter	2	week
2	Conductivity Meter	2	week
2	Flow-Thru Cell Meter	2	week
3	Peristaltic Pumps	2	week
3	Marine Batteries	2	week
1	Barometer	2	week
1	Electronic Balance	1	week

8.0 REFERENCES

Connecticut Department of Environmental Protection, 1986. *Water Quality Characteristics Map of Connecticut, Thames River, Pawtucket River, and Southeast Coastal Basins.* 1986.

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GeoDesign. 2004b. *Phase II Environmental Assessment. Amerbelle Corporation, 104 East Main Street, Vernon, Connecticut.* Prepared for Mark R. Sussman and Murtha Cullina, LLP, Hartford, Connecticut, February 2004.

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APPENDIX A

SELECTED TABLES AND FIGURES FROM PHASE I AND II REPORTS (GeoDesign, 2004)

The 1.5-acre northern parcel is occupied by an approximately 42,700 square-foot mill complex. The mill complex to the north of Brooklyn Street is comprised of Buildings Nos. 1 through 9, 11, and 13 (see Figure 2). Buildings Nos. 3 and 11 are approximately five stories tall and Building No. 4 is four stories tall. The remaining buildings are one to two stories. These buildings are primarily constructed of mortar, stone, and brick. Several locations have crawl spaces and/or half-story areas (GeoDesign, 2004a).

The northern parcel mill complex currently houses solvent and latex-based textile coating operations, the company's industrial boiler systems, and storage areas. In addition to the manufacturing and boiler operations, these latter buildings also house a QC laboratory, various administrative offices, and the operations of Challenge Sailcloth, a tenant at the site (GeoDesign, 2004a).

The property is supplied with heat from two large industrial boilers located in the northern central portion of the property. The boilers are each authorized to burn either natural gas or used oil fuel. Natural gas is piped to the facility. The used fuel oil is stored in two 18,000-gallon aboveground storage tanks (ASTs) that are located inside a concrete containment structure that is fully-covered by a prefabricated metal building enclosure. Four oil-filled transformers are located outdoors inside a fenced enclosure, just to the east of the fuel oil tanks. One large transformer is marked as non-PCB containing. Three smaller transformers are indicated to contain PCBs (GeoDesign, 2004a).

The 2.7-acre southern parcel is occupied by an approximately 54,500 square-foot two-story brick building (Building No. 14) which currently houses textile dyeing and finishing operations. Building No. 14 was constructed in 1956. Building No. 14 adjoins an approximately 3,000 square foot 4-story building (Building No. 12) that was constructed between 1885 and 1892. Building No. 12 currently houses the maintenance shop and is used for storage. The parcel is adjoined by residential properties to the south; Grove Street and Paper Mill Pond to the east; Brooklyn Street to the north; and Cedar Street to the west (GeoDesign, 2004a).

A small dam of the Hockanum River is the Amerbelle property and forms Paper Mill Pond across Grove Street to the east of the site. From Grove Street, the Hockanum River flows through Amerbelle's site, in a raceway constructed beneath Buildings Nos. 14, 7, and 5. The river flows from the southeast corner to the north-central portion of the site, discharging to American Mill Pond, then continuing to the southwest, ultimately joining the Connecticut River. The raceway was constructed when the Hockanum River was first used to supply power to the textile mills (GeoDesign, 2004a).

The ground surface of the site slopes downwards from the south to the north with an overall topographic relief of approximately 80 feet. Based on regional topography, geology, and drainage considerations, the migration of groundwater beneath the site is expected to be controlled by the shallow elevation of the bedrock surface, the presence of the historic canal, and other historic drainage features. The bedrock surface is anticipated to be irregular but to generally slope downward towards the northwest (GeoDesign, 2004a).

The Surficial Materials Map of Connecticut (USGS, 1992) indicates that the site is underlain by sand and gravel overlying sand. The map stated, "Sand & gravel is generally less than 20-feet thick, horizontally bedded, and overlies thicker inclined layers of sand (deltaic deposits)." Just west of the site, the map indicates "thin till." The thin till was described as generally less than 10-15 feet thick and includes areas of bedrock outcrop where the till is absent (GeoDesign, 2004a).

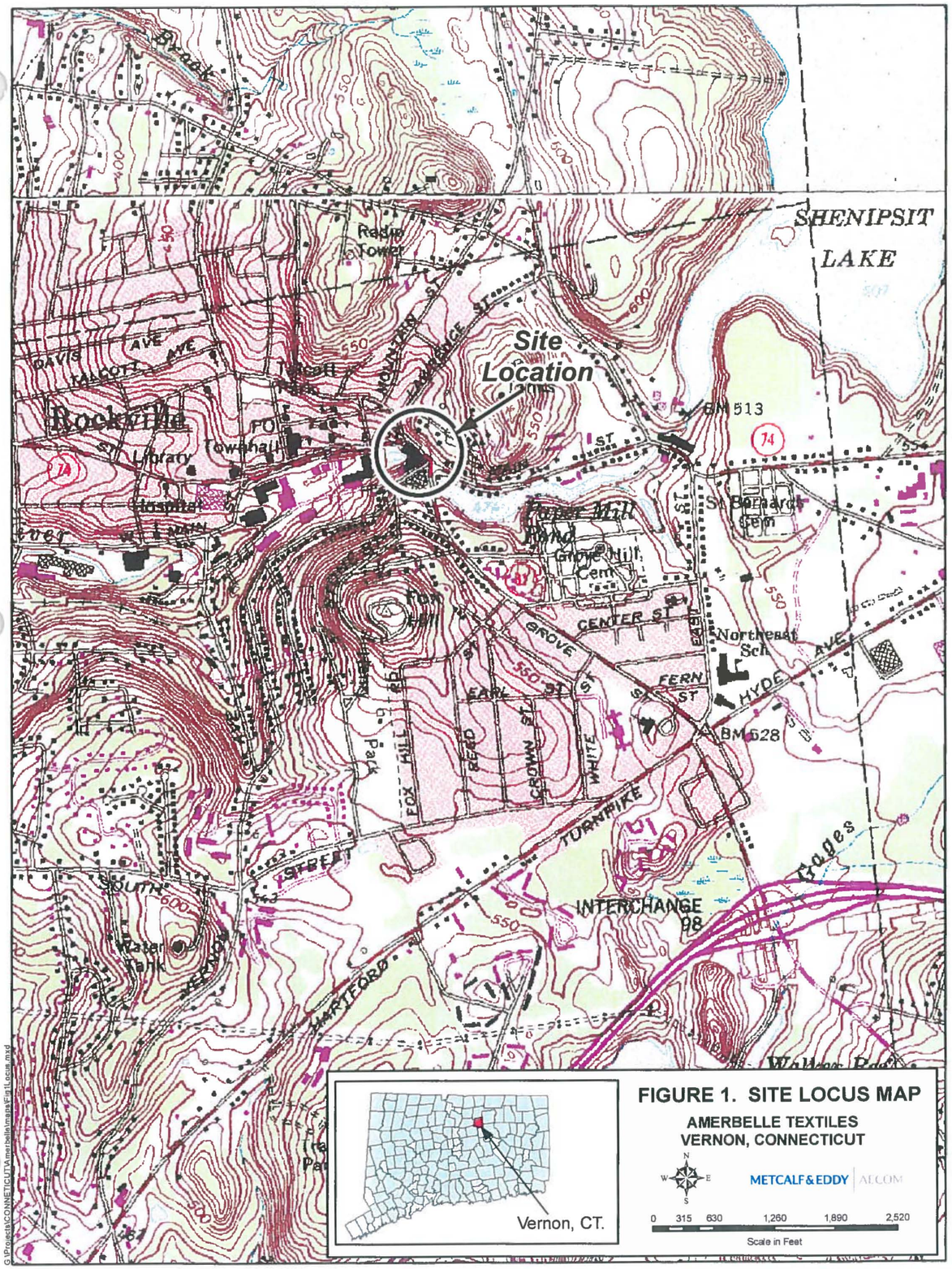


FIGURE 1. SITE LOCUS MAP

AMERBELLE TEXTILES
VERNON, CONNECTICUT

METCALF & EDDY | AECOM

G:\Projects\CONNECTICUT\Amerbelle\Intake\FigLocus.mxd

CEDAR STREET

STRAGGUS BROOK

COMPACTING DUMPSTER

WASTEWATER PH NEUTRALIZATION TANKS (Aboveground)

TOWN INSTALLED MONITORING WELL

TEXTILE STORAGE

LOADING DOCK

DYE MIXING ROOM

Stainless Steel Wastewater Collection Sump (Sub-Slab)

JET DYEING

BEAM DYEING

JIG DYEING

BROOKLYN STREET

N/F HOWARD A. FROMSON

CHAIN LINK FENCE

STEEP WOODED SLOPE

HAZARDOUSE WASTE STORAGE AREA

AMERICAN MILL POND

ORGANIC COATING MIXING

LOADING DOCK

ORGANIC COATING STORAGE

NO.1

NO.2

LATEX STORAGE

NO.13

LATEX COATING

2-18,000 GAL ABOVEGROUND OIL TANKS (COVERED/CONTAINED)

GENERAL STORAGE

NO.3

SOLVENT COATERS

RACEWAY

ABOVEGROUND TANK (NOT USED)

PERMITTED COOLING WATER DISCHARGE

NO.5

GENERAL STORAGE

NO.4

PAVEMENT

N/F DANIEL MANAGEMENT INC. (WAREHOUSE)

NO.6

BOILER STACK

BOILER ROOM

SKY WAY

WASTE OIL STORAGE

NO.7

LOADING DOCK

CONCRETE DECK

PAVEMENT

NO.8

PROCESS WATER TREATMENT OPERATIONS/STORAGE

PROCESS WATER HOLDING TANK

LOADING DOCK

NO.9

STORAGE OF 55-GALLON CONTAINERS

NO.11

SKY WAY

NO.12

MAINTENANCE/ MACHINE SHOP

EAST MAIN STREET

STREET

50,000 GAL. FUEL OIL UNDERGROUND TANK (ABOVE)

FORMER UNDERGROUND XYLENE TANKS (REMOVED 1983)

5,000 GAL.

5,000 GAL.

LOADING DOCK

10,000 GAL. FORMER AMMONIA (EMPTY)

10,000 GAL. WATER (NOT USED)

15,000 GAL. WATER

TEXTILE DYEING BUILDING NO.14

PCB TRANSFORMERS

NON-PCB TRANSFORMER

TEXTILE FINISHING

LOADING DOCK

N/F JOAN B. SIMON

CHAIN LINK FENCE

N/F DONALD P. BERGER

FINISH CHEMICAL STORAGE

TEXTILE STORAGE AND HANDLING

RACEWAY

GROVE STREET

PAPER MILL POND

FORMER GASOLINE STATION

NOTES:
BASE MAP PROVIDED BY GARDNER & PETERSON ASSOCIATES, ENTITLED " PLAN OF LAND PROPOSED FOR AMERBELLE CORPORATION, VERNON, CT." DATED 3-17-95. ORIGINAL SCALE 1" =40'.

SOURCES:
Plan of Land -- Rockville , Conn. owned by The Estate of Lafayette Kearney Scale 1 In.= 40' ft. August 28, 1944. Merrill & Sears Civil Engineers Springfield -- Mass.

Lands of M.T. Stevens + Sons Co. Hockanum Mills. Rockville, Conn. New England Property. Surveyed Sept. 1934, Scale-- 40 feet = 1 inch. C.H. Benarch, Surveyor.

ACAD FILE No. M:\CL\553\003\SITE PLAN.DWG

REV. No.	DESCRIPTION	BY	DATE

GEODESIGN INCORPORATED
GEOTECHNICAL ENGINEERS • ENVIRONMENTAL CONSULTANTS
984 SOUTHFORD ROAD • MIDDLEBURY, CONNECTICUT 06762
TELEPHONE (203)758-8264 FACSIMILE (203)758-8267

SCALE IN FEET
1"= 60'
0' 30' 60' 120'

SITE PLAN
AMERBELLE CORPORATION
104 EAST MAIN STREET
VERNON, CONNECTICUT

DRAWN BY: SMC
REVIEWED BY: TFC

PROJECT No.
553-003

FIGURE No.
2

According to the Bedrock Geology of the Rockville Quadrangle (State Geological and Natural History Survey of Connecticut, 1955), the Glastonbury Gneiss underlies the site. The Glastonbury Gneiss is described as a gray, medium to coarse-grained, well-foliated gneiss. The bedrock is exposed in the northwestern portion of the site where the raceway discharges to the American Mill Pond (GeoDesign, 2004a).

The Water Quality Classifications Map of Connecticut, Thames River, Pawcatuck River, and Southeast Coastal Basin (CTDEP, 1986), indicated the groundwater underlying the site is classified as GB. This classification indicates an area in which groundwater is known or presumed to be affected in quality by historic intense, urban, commercial, and industrial development. Areas having GB groundwater are presumed to be provided with municipal water supply services (GeoDesign, 2004a).

From *The Atlas of the Public Water Supply Sources & Drainage Basins of Connecticut* (1982), the Rockville Quadrangle indicates that the site is located within the Connecticut Major Basin, the Hockanum Regional Basin, and the Hockanum River Sub-basin; No water supply sources were indicated within a one-half mile radius of the site (GeoDesign, 2004a).

2.2 Site History and Use

The Amerbelle property is occupied by numerous buildings. The mill buildings were constructed between 1865 and 1869 by Albert Dart, a local blacksmith who developed several mills in the area. Textile dyeing and finishing operations have been the main activity at the site since that time (GeoDesign, 2004a).

At least two separate companies occupied the original mill buildings which make up the present site. The White Manufacturing Company and then J.J. Regan manufactured cotton yarn and gingham cloth in what are now Buildings No. 1, 3, 4, and 5 until approximately 1909. The Rose Silk Company (for a very short time) and then Belding Brothers Silk Thread Mill occupied Buildings No. 8, 9, and 11. Belding Brothers Silk Mill operated at the site from approximately 1868 through 1927 and took over the J. J. Regan portions of the site (northwestern corner) in 1909. The property was reportedly vacant between 1927 and 1936. From 1936 through 2003, the site has been occupied by American Dyeing Corporation, which subsequently changed its name to Amerbelle Corporation (GeoDesign, 2004a). Amerbelle Corporation operated until April 19, 2005, when the property was transferred to the Hockanum Industrial Development and Venture Corporation and the dyeing business was turned over to Amerbelle Textiles LLC (see Section 2.0). The business continues to operate as a tenant of HIDVC under the name Amerbelle Textiles LLC.

Present dyeing operations are located in Building No. 14 which was constructed in 1956. Belding Brothers dyeing operations are believed to have been in Building No. 8. The dyeing operations of American Dyeing Corporation and Amerbelle Corporation were reported to have been performed in Building No. 11 prior to the construction of Building No. 14 (GeoDesign, 2004a).

Amerbelle Textiles LLC currently operates at the site as a "commission dye house." The company performs dyeing, coating, and finishing of synthetic and blend fabrics for textile converters. Bales of nylon or polyester fabrics, typically linen-white in appearance, are received into the facility from the Greige Mills that weave the fabric. Within Amerbelle's facility, the fabric is typically scoured, bleached, and dyed. Following the dyeing process, the fabric is typically processed through calendars to tighten the weave. The fabric is then further processed by application of latex or solvent-based coating and/or a water-based finish solution. Following lay-up and inspection, the fabric is packaged and shipped either to the customer or to the next step in the textile converting process (GeoDesign, 2004a).

Amerbelle's dyeing and finishing operations are conducted inside Building No. 14. Dye chemicals and

dye stuffs are measured out and prepared for use in an area of the "Dye House" located in the northwest corner of Building No. 14 (Figure 2, Dye Mixing Room area). The dye chemicals and dye stuffs are then delivered out to the Dye House floor for use in three different types of dyeing processes: beam dyeing, jig dyeing, and jet dyeing. Finishes are applied to fabrics in the "Finish Department" located at the eastern end of Building No. 14. Finishes are applied by whole fabric immersion in a water-based finish solution. Finishes impart physical attributes to the fabric such as water-repellency or flame retardance. Finishes can also be applied to impart anti-microbial or anti-static properties to a fabric. Finish chemicals are measured out and prepared for use in an area in the southeast portion of Building No. 14. Finish chemicals are then applied to fabric at the feed ends of five finish "tenter frame" machines. The fabric is then dried in gas-fired drying ovens (GeoDesign, 2004a).

Amerbelle's dyeing and finishing operations consume large quantities of water, for process use and for non-contact cooling. Amerbelle's water needs are largely met by withdrawing water on-site from the Hockanum River. Hockanum River water is pumped from the raceway and then processed through bag filters for use as non-contact cooling water, and through a combination of sand filters and bag filters for use as process water. Filtered water for process use is stored in several aboveground tanks and then pumped to the various dyeing and finishing machines. The water is batch mixed with dye chemicals, dye stuffs, and finish chemicals at the individual dyeing machines and finishing frames and applied to the fabric (GeoDesign, 2004a).

After processing, batches of dye, finish, and rinse wastewaters are discharged to a network of concrete floor trenches and sumps in Building No. 14. All of the wastewater is eventually conveyed to a stainless steel in-ground collection sump, located in the western portion of the building. From here, the wastewater is pumped to two 7,500-gallon aboveground stainless steel neutralization tanks for pH adjustment. Approximately 150,000 gallons to 200,000 gallons of dyeing and finishing wastewater is discharged to the sanitary sewer per day, in accordance with a state-issued sewer discharge permit (GeoDesign, 2004a).

Filtered river water is used for non-contact cooling in "cooling cans" located at the ends of the finish tenter frames and at the ends of the coating lines. Non-contact cooling water is also used in five water-cooled air compressors. The non-contact cooling water is discharged back into the Hockanum River at the northwestern portion of the site, in accordance with a National Pollution Discharge Elimination System (NPDES) permit issued by the state. Current flows of non-contact cooling water average about 200,000 gallons per day (gpd) (GeoDesign, 2004a).

Much smaller amounts of river water and "city" water are used for contact cooling, for laboratory use, for equipment maintenance, and for sanitary purposes. A total of approximately 2,000 gpd of process and sanitary wastewater are discharged to the sanitary sewer following use as boiler blowdown, floor washing, compressor condensate, quality control laboratory operations, and sanitary use (GeoDesign, 2004a).

Amerbelle's "Coating Department" is located indoors on the north side of Brooklyn Street (see Figure 2, Latex Coating and Solvent Coaters). Amerbelle operates one coating line for applying water-based "latex" coatings and two coating lines for applying solvent-based coatings. Solvent emissions from the two solvent coating lines are directed to a gas-fired thermal oxidizer or "incinerator" to accomplish destruction of volatile organic compounds (VOCs) prior to discharge to the environment, in accordance with a state-issued air emission permit (GeoDesign, 2004a).

Coatings are applied to one side of the fabric using knife-coating operations. The coated fabrics then enter drying ovens that are heated by natural gas (for the latex coater) or by air-to-air heat exchangers (for the two solvent coating lines). The air-to-air heat exchangers draw heat from the exhaust gases leaving Amerbelle's gas-fired thermal oxidizer. Amerbelle's coatings are either solvent-based or water-

based, and include acrylics, acrylic and urethane blends, urethanes, and silicones. Amerbelle's solvent-based coatings typically contain toluene (40-45%), isopropyl alcohol (10-15%) and methyl ethyl ketone (2 to 3%) as the principal solvents. Coatings are typically applied to impart physical attributes such as custom pigmenting, breathable waterproofing, flame retardant properties, or anti-microbial or non-ravel properties (GeoDesign, 2004a).

Small amounts of wastewater generated by the clean-out of equipment used to mix and apply the latex coatings are discharged to the sanitary sewer in accordance with a state-issued discharge permit. Small amounts of waste generated by the clean-out of equipment used to mix and apply the solvent coatings are collected and disposed off-site as a hazardous waste (GeoDesign, 2004a).

After dyeing, coating and finishing, fabrics are subjected to inspection on the second floor of Building No. 14. Stains and marks on the fabric are removed by an airbrush applicator using trichloroethylene (TCE). Approximately three to nine gallons of TCE are used per month in this process. No waste TCE is generated (GeoDesign, 2004a).

A maintenance shop located within Building No. 12 performs typical maintenance functions including welding, minor machining (turning, milling, grinding), and electrical repair. A small mineral spirits parts cleaner is located here for maintenance department use. A second small parts cleaner is located in the boiler department in Building No. 5. The parts cleaner uses a citrus-based fluid (GeoDesign, 2004a).

A quality control laboratory is located on the second floor of Building 8. This lab conducts a variety of dyeing and finishing tests on fabric samples. The QC lab also performs dry clean testing on fabric samples and employs the chlorinated solvent perchloroethylene (PCE, also known as tetrachloroethylene). One to three gallons of PCE are used per month in this process. Waste PCE is accumulated and shipped off-site as a hazardous waste (GeoDesign, 2004a).

Challenge Sailcloth is a tenant at the site and occupies portions of Buildings Nos. 8, 9, and 11. Challenge Sailcloth is also a customer of Amerbelle, and markets and distributes sail cloth which has been coated by Amerbelle. According to interviews performed by GeoDesign, Challenge Sailcloth does not use or store oils or hazardous materials as part of their operation. No such materials were observed during the site visits by GeoDesign (GeoDesign, 2004a) or by M&E and EPA on September 8, 2004.

Land in the general vicinity of the site currently consists of mostly residential properties. An automobile repair facility is located to the southeast, across Grove Street and east Main. Several light industrial/commercial buildings are located along the eastern side of Paper Mill Pond southeast of the site (GeoDesign, 2004a).

The mill building located at the northeast corner of the site is known as Daniel's Warehouse and is believed to have an industrial history similar to Amerbelle's. The building is believed to be currently used primarily for storage. Anocoil Corporation is located approximately 500-feet to the north and downgradient of the site. Anocoil manufactures lithographic plates for the commercial printing industry (GeoDesign, 2004a).

2.3 Site Features and Utilities

The site is occupied by various buildings as described in Sections 2.1 and 2.2. The property is supplied with heat from two large industrial boilers located in the northern central portion of the property. The boilers are each authorized to burn either natural gas or specification used oil fuel. Natural gas is piped to the facility. The specification used fuel oil is stored in two 18,000-gallon ASTs that are located inside a concrete containment structure that is fully-covered by a prefabricated metal building enclosure. Four oil-

filled transformers are located outdoors inside a fenced enclosure, just to the east of the fuel oil tanks. One large transformer is marked as non-PCB containing. Three smaller transformers are indicated to contain PCBs (GeoDesign, 2004a).

A small dam of the Hockanum River is on the Amerbelle property and forms Paper Mill Pond across Grove Street to the east of the site. From Grove Street, the Hockanum River flows through Amerbelle's site, in a raceway constructed beneath Buildings Nos. 14, 7, and 5. The river flows from the southeast corner to the north-central portion of the site. The raceway was constructed when the Hockanum River was first used to supply power to the textile mills (GeoDesign, 2004a).

2.4 Environmental Studies and Information

According to the GeoDesign Phase I, no environmental investigations occurred at the property prior to the 2004 Phase I investigation. GeoDesign conducted extensive file review as part of the Phase I. This included reviews of the following: Sanborn Fire Insurance Maps, historical facility map, aerial photographs, facility file information obtained from Amerbelle, and file reviews at the town offices (Tax Assessor's Office, Clerk's Office, Health Department, Building and Zoning Department, Sewer Department, and Fire Department) and Connecticut Department of Environmental Protection (CTDEP). GeoDesign also reviewed an Environmental Data Resources, Inc. (EDR) report for the property.

Phase I field activities conducted by GeoDesign included a review of available file information and determination of potential areas of environmental concern at the property. The file review identified former USTs in two areas: one area at the current location of the fuel oil ASTs, and another area south of Building 14 (former xylene USTs; see Figure 2).

The two steel 20,000 gallon USTs formerly located in the fuel oil AST area were used to store fuel oil of various types and were removed in 1989. No documentation was found that summarized the condition of the tanks upon removal or the condition of the subgrade, but Amerbelle located analytical reports that appear to be from tank closure soil samples, showing a maximum TPH concentration of 150 mg/kg. Amerbelle also located a letter to CTDEP documenting approval from the town of Manchester landfill to dispose of excavated soil there. From these records it is inferred that contaminated soil was excavated and removed from the site prior to installation of the ASTs in the same area.

The former xylene USTs were of steel construction and were removed in 1993. No records were located by GeoDesign indicating post-excavation soil sampling or oversight of the tank removal by the town fire marshal or other regulatory agency. Amerbelle personnel indicated to GeoDesign that there are no known USTs on site at the present time.

The Recognized Environmental Conditions identified in the GeoDesign Phase I, including the former UST locations, are presented in Appendix A (see figure extracted from the GeoDesign report), and are also summarized on Table 1.

GeoDesign conducted Phase II activities to address selected potential areas of concern identified during Phase I activities. During Phase II, GeoDesign performed eleven soil borings and completed five of the borings as monitoring wells. The locations are shown on Figure 2. Soil samples were collected and four of the five wells were sampled (one, AM-5, was not sampled because it was found to be dry when the sampling team attempted to sample it). The remaining wells were sampled over a period of several days due to lack of groundwater recharge. The data summary tables from the Phase II are reproduced in Appendix A. The boring logs from the GeoDesign Phase II are also included in Appendix A.

Table 1. Summary of Phase I & II Assessments, Data Gaps, and Proposed TBA Investigation Locations

Summary of GeoDesign Phase I and Phase II Assessments (GeoDesign, 2004)						TBA Investigation and Rationale		
Recognized Environmental Condition/Location	Rationale for Listing	Associated Phase II Investigation Location	Depths of auger refual (feet bgs)	Phase II Analytical Results Summary		Remaining Data Gaps	Proposed TBA Investigation Locations	Boring/Well Location ID (see M&E (Figure 3)
				Soil	Groundwater			
Former USTs located south of Building 14 (3,000 gal and 5,000 gal xylene)	Underground xylene tanks were removed without reported closure confirmation soil sampling.	AM-3	15.0	ETPH at 240 mg/kg (3-5 ft)	No Detections of Note	Groundwater flow direction not known due to complex subsurface (bedrock, raceway) and no wells in bedrock. Possible release may have gone undetected.	Install additional wells site-wide (including bedrock, see below) to obtain additional information on site groundwater flow.	see below
Loading dock on south side of Building 14	Potential for chemical spills during loading/unloading	None	N/A	N/A	N/A	None. Evidence of surface releases (if any) is likely obliterated due to paving and vehicle activity in this area.	No activity	N/A
Loading dock on west end of Building 14	Potential for chemical spills during loading/unloading. This dock is located nearest the dye and finishing chemical room and wastewater treatment area.	AM-2	5.5	No sample	No well	Groundwater could not be sampled (auger refusal before groundwater was encountered, so no well was installed).	Install well in area (with rock coring as needed to reach water table). Collect soil samples during boring installation. Sample well.	1
Northwest corner of Building 14	Location where dye-colored water was observed in the ground during sewer line installations in 1997. This is also the area where seeps of discolored liquid were observed coming from an exhaust vent and cracks in the foundation.	AM-2	5.5	No sample	No well	Groundwater could not be sampled (auger refusal before groundwater was encountered). Complex utilities in Brooklyn Street prevented installation of well in street. Town well installation details not available but it is likely it is set in sewer pipeline bedding and not natural material.	Install well in street (with rock coring if needed). Use vacuum extraction to remove soil until below utilities, then advance hole using drill rig. Sample well. No soil samples proposed because of need for vacuum extraction to avoid utility damage.	2
		AM-8	4.0	Formaldehyde at 17 mg/kg (3-4 ft); traces EX	No well			
		W-1 (town well)	N/A	N/A	Zn > SWPC			
Wastewater conveyance trenches in Building 14	Concrete erosion and chemical attack was visible on the surface of the visible areas of concrete. The sub-slab trench network is extensive.	AM-8	4.0	Formaldehyde at 17 mg/kg; traces EX	No well	Groundwater could not be sampled (auger refusal before groundwater was encountered).	Attempt installation of bedrock well in Building 14 to evaluate potential for releases to subsurface. Collect soil samples during boring installation. Sample well.	3
		AM-9	12.0	None	No well			
		AM-10	7.2	No sample	No well			
		AM-11	6.5	Formaldehyde at 9.3 mg/kg (5-6 ft)	No well			
Southeast corner of Building 14	Location where a bridge contractor identified dye-colored liquid in 1995 and adjacent to location of process water overflows.	AM-9	12.0	None	No well	Groundwater could not be sampled (auger refusal before groundwater was encountered).	Attempt installation of bedrock well in Building 14 to evaluate potential for releases to subsurface. Collect soil samples during boring installation. Sample well.	3

Table 1. Summary of Phase I & II Assessments, Data Gaps, and Proposed TBA Investigation Locations

Summary of GeoDesign Phase I and Phase II Assessments (GeoDesign, 2004)						TBA Investigation and Rationale		
Recognized Environmental Condition/Location	Rationale for Listing	Associated Phase II Investigation Location	Depths of auger refual (feet bgs)	Phase II Analytical Results Summary		Remaining Data Gaps	Proposed TBA Investigation Locations	Boring/Well Location ID (see M&E (Figure 3)
				Soil	Groundwater			
Building 12	Maintenance/Machine Shop	None	N/A	N/A	N/A	None. Surface releases may have taken place but significant releases to subsurface not suspected.	No Activity	N/A
Slope west of Bldgs. 1 and 2	Location of reported dye-colored water seepage (1994) and observed solid waste debris.	AM-4	19.5	ETPH at 360 mg/kg (3-5 ft); Pb at 438 mg/kg (5-7 ft)	No Detections of Note	Area not accessible. AM-4 would potentially show groundwater contamination migrating from Building 2 area, if present.	No Activity	N/A
Building 13	Latex coating operations	None	N/A	N/A	N/A	None. Releases possible but not suspected; area not accessible.	No Activity	N/A
Building 2 loading dock	Potential for chemical spills during loading/unloading	AM-4	19.5	ETPH at 360 mg/kg (3-5 ft); Pb at 438 mg/kg (5-7 ft)	No Detections of Note	Extent of soil contamination is unknown. AM-4 result does not exceed CT RSR.	No Activity; see below for Bldgs. 1 & 2	N/A
ings 1 and 2	Storage of flammable solvents and mixing of coatings	AM-4	19.5	ETPH at 360 mg/kg (3-5 ft); Pb at 438 mg/kg (5-7 ft)	No Detections of Note	Well downgradient of buildings is not available. Extent of soil contamination is unknown.	Attempt installation of bedrock well in vicinity of boring AM-6. Collect soil samples and groundwater samples.	4
		AM-6	8.5	ETPH at 770 mg/kg (5-6 ft bgs)	No well			
Building 3	Downgradient of solvent coating/ former storage area	AM-6	8.5	ETPH at 770 mg/kg (5-6 ft bgs)	No well	Downgradient well not available. Extent of soil contamination is unknown.	Attempt installation of bedrock well in vicinity of boring AM-6. Collect soil samples and groundwater samples.	4
Building 7	Solvent Coaters	None	N/A	N/A	N/A	Located above raceway. Releases (if any) likely entered raceway and river.	No Activity	N/A
Area east of Building 13	Two 18,000 gallon fuel oil ASTs where oil releases have occurred	AM-1	12.3	ETPH at 920 mg/kg (1-3 ft); As at 122 mg/kg (3-5 ft)	No Detections of Note	Tanks currently contained. AM-1 potentially downgradient but raceway complicates groundwater flow. Extent of soil contamination is unknown.	Attempt soil boring/well installation in vicinity of AM-1. Collect soil and groundwater samples.	5
South of Building 7	Four transformers (3 PCB-containing)	PCB Surface Soil Sample (S-1)	N/A	No PCBs detected	N/A	None	No Activity	N/A
Building 7 Loading Dock	Potential for chemical spills during loading/unloading	AM-1	12.3	ETPH at 920 mg/kg (1-3 ft); As at 122 mg/kg (3-5 ft)	No Detections of Note	Extent of soil contamination is unknown.	Attempt soil boring/well installation in vicinity of AM-1. Collect soil and groundwater samples.	5

Table 1. Summary of Phase I & II Assessments, Data Gaps, and Proposed TBA Investigation Locations

Summary of GeoDesign Phase I and Phase II Assessments (GeoDesign, 2004)						TBA Investigation and Rationale		
Recognized Environmental Condition/Location	Rationale for Listing	Associated Phase II Investigation Location	Depths of auger refual (feet bgs)	Phase II Analytical Results Summary		Remaining Data Gaps	Proposed TBA Investigation Locations	Boring/Well Location ID (see M&E (Figure 3)
				Soil	Groundwater			
Building 9	Former dye storage	AM-1	12.3	ETPH at 920 mg/kg (1-3 ft); As at 122 mg/kg (3-5 ft)	No Detections of Note	Extent of soil contamination in unknown.	Attempt soil boring/well installation in vicinity of AM-1. Collect soil and groundwater samples.	5
Building 8	Former Belding Bros. Dye House	None	N/A	N/A	N/A	No direct evidence of releases	No Activity	N/A
Building 11	Reported location of former Amerbelle dye operations and present chemical storage	AM-7	11.0	ETPH at 83 mg/kg (3-5 ft)	As and Cu > SWPC	Source of As and Cu is unknown. Address with additional groundwater sampling and possible derivation of alternate SWPC.	Re-sample AM-7 for metals and compare to other groundwater sample results site wide. Consider deriving alternate SWPC.	all new wells
Building 11 loading dock	Potential for chemical spills during loading/unloading	AM-5	12.8	None	Well dry	Groundwater not sampled; well dry	Attempt soil boring/well installation in vicinity of AM-5. Collect soil and groundwater samples.	6
Across Grove Street from Building 14	Former gasoline station located across Grove Street southeast of site	None	N/A	N/A	N/A	Not known if releases occurred at former gas station and migrated onto site	No Activity (TBA is restricted to site property). On-site wells will be sampled for petroleum-related compounds (BTEX, ETPH).	all new wells

Notes:

N/A - not applicable
CT RSR - Connecticut Remediation Standard Regulations
SWPC - Surface Water Protection Criteria (Connecticut Remediation Standard Regulations)
EX - Ethylbenzene and Xylenes
As - Arsenic
Cu - Copper
Pb - Lead
Zn - Zinc
ETPH - Extractable Total Petroleum Hydrocarbons (CTDEP method)
No Detection of Note - No organic compounds were detected and no metals were detected in excess of CT RSR criteria

References:

GeoDesign, Inc. 2004. Phase I Environmental Site Assessment.
GeoDesign, Inc. 2004. Phase II Environmental Site Assessment.

2.5 Summary of Areas and Contaminants of Concern

Table 1 presents a summary of the Recognized Environmental Conditions identified by GeoDesign in the Phase I ESA (see figure in Appendix A), the associated Phase II Environmental Assessment investigation location (borings and/or wells), and the contaminants of note that were detected (as summarized from results presented in the tables in Appendix A). Remaining data gaps and proposed TBA investigation locations are also described and the locations are shown on Figure 3. The Phase II Environmental Assessment report (GeoDesign, 2004b) noted that it was difficult to access many locations to install borings and wells because of underground utilities and building/equipment locations. It was also noted that for several potential well locations, a well could not be installed because the water table was below the bedrock surface. During the September 8, 2004 site visit by M&E and EPA, these conditions were discussed and it was agreed that TBA efforts would focus on installation of additional wells (in bedrock as needed), and gaining access to areas not previously sampled because of subsurface utilities. Six locations are proposed to install additional wells site-wide, investigate locations where soil contamination was encountered during the Phase II, and install wells where subsurface utilities had previously precluded installation. Vacuum excavation will be used to avoid utility damage at the Brooklyn Street location (location 2 on Figure 3), and a drill rig with rock coring capability will be used so that wells can be installed in the rock as needed.

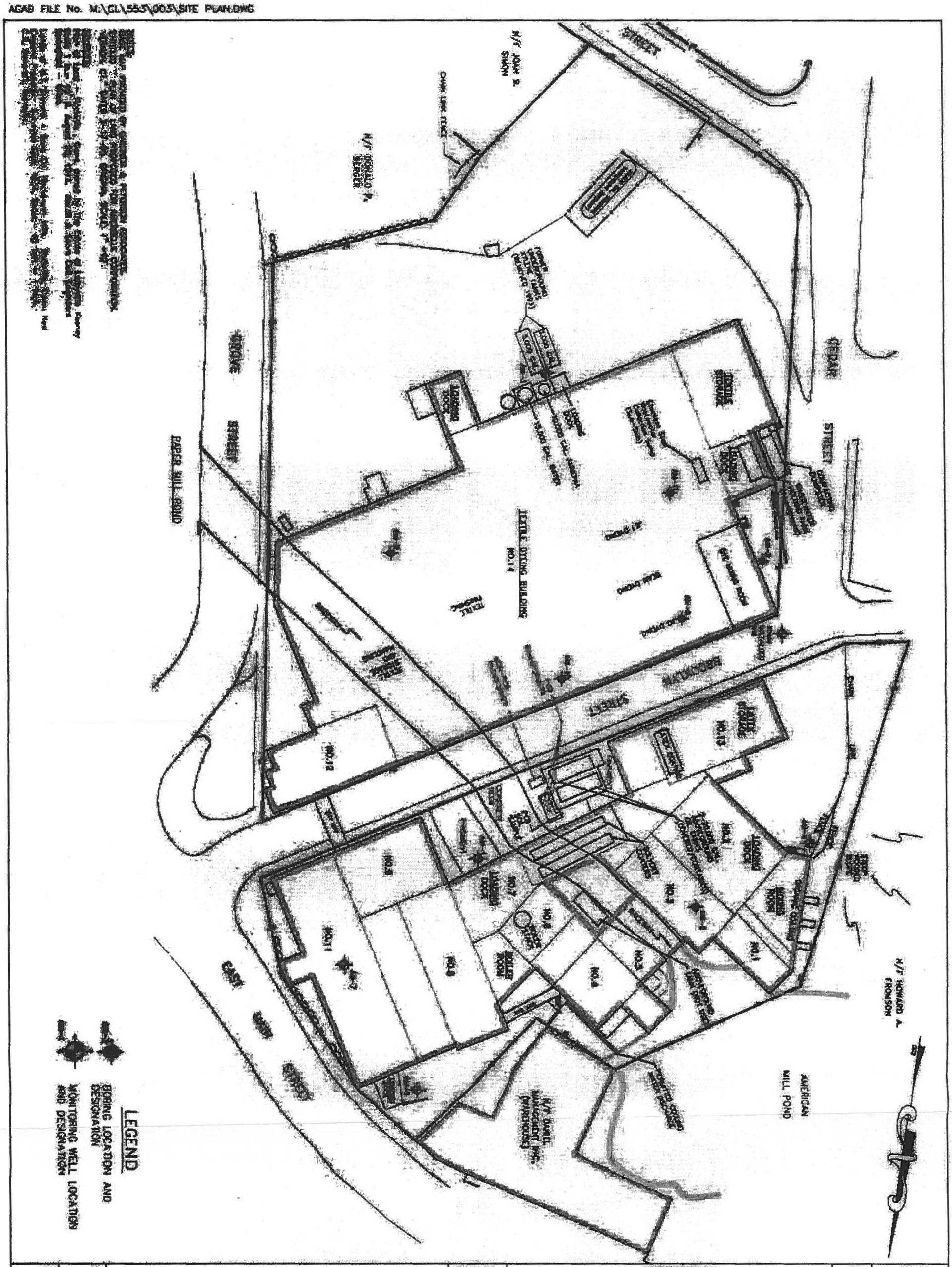
The contaminants of potential concern that GeoDesign analyzed for during the Phase II investigation included VOCs, semivolatile organic compounds (SVOCs), petroleum hydrocarbons, metals, and two chemicals related to the dyeing business (formaldehyde and aniline). The Phase II analyses included reporting of Tentatively Identified Compounds (TICs) with the intent of possibly identifying other dye-related chemicals not typically reported for VOC and SVOC analyses, should they have been present in soil or groundwater.

VOCs. Very low levels of petroleum-related VOCs were detected in soil and groundwater during the Phase II investigation. Although detected levels were very low, the heavy use of solvents at the site suggests that VOCs remain contaminants of concern and additional sampling and analysis is warranted.

SVOCs. No SVOCs were detected in the samples collected during the Phase II investigation. However, these compounds remain contaminants of concern because of their presence in dyeing chemicals. Polynuclear Aromatic Hydrocarbons (PAHs) are a subset of the SVOCs that may also be present due to their association with petroleum and ash, both of which may be present in site soil. Additional soil and groundwater sampling and analyses for SVOCs are recommended for the TBA investigation. For soil samples in which PAHs are detected at mass concentrations above Connecticut Remediation Standard Regulations (RSR) Pollutant Mobility Criteria, the Synthetic Precipitation Leaching Procedure (SPLP) may also be performed to evaluate whether the PAHs encountered in soil have the potential to leach to groundwater. The total mass results for PAHs and metals will be used to select which samples will undergo SPLP extraction/analysis.

Petroleum Hydrocarbons. Extractable Total Petroleum Hydrocarbon (ETPH) analyses were performed during the Phase II investigation, and concentrations exceeding Connecticut residential direct exposure criteria were reported at two locations. Detections were present at several other soil sample locations and also in groundwater samples. Oils are used extensively at the site. ETPH analyses are recommended for both soil and groundwater as part of the TBA investigation.

ACAD FILE No. M:\CL\553\003\SITE PLAN.DWG



REV. No.	DESCRIPTION	BY	DATE

SITE PLAN
AMERBELLE CORPORATION
104 EAST MAIN STREET
VERNON, CONNECTICUT

SCALE IN FEET
1" = 60'
0' 30' 60' 120'

GEORESEARCH INCORPORATED
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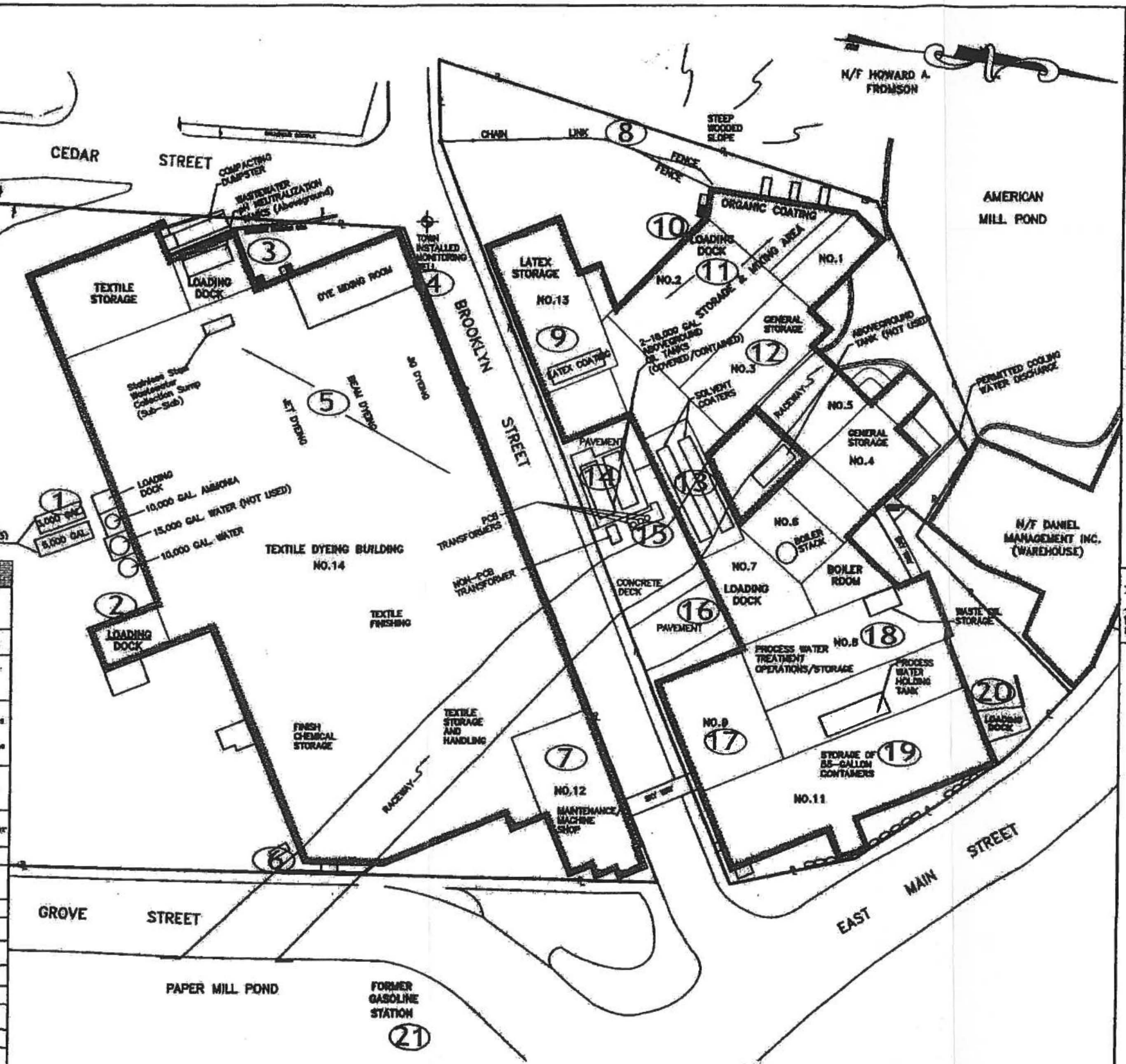
DRAWN BY: SMG
REVIEWED BY: TFC

PROJECT No. 553-003

FIGURE No. 2

No.	REC Location	Description for Listing
1	Former underground tanks located south of Bldg. 14 (3,000-gal & 5,000-gal. xylene)	Underground xylene tanks were removed without reported closure confirmation soil sampling
2	Loading dock on south side of Bldg. 14	Potential for chemical spills during loading/unloading
3	Loading dock on west end of Bldg. 14	Potential for chemical spills during loading/unloading. This dock is located nearest the dye and finishing chemical room and wastewater treatment area.
4	Northwest corner of Bldg. 14	Location where dye-colored water was observed in the ground during sewer line installations in 1997. This is also the area where seeps of discolored liquid were observed coming from an exhaust vent and cracks in the foundation.
5	Wastewater conveyance trenches in Bldg. 14	Concrete erosion and chemical attack of sub-slab wastewater conveyance trenches. The sub-slab trench network is extensive.
6	Southeast corner of Bldg. 14	Location where a bridge contractor identified dye-colored in 1995 and adjacent to location of process water overflows.
7	Building 12	Maintenance/ Machine Shop
8	Slope west of Bldgs. 1 and 2	Location of reported dye-colored water seeping from embankment and observed solid waste debris.
9	Building 13	Latex coating operations
10	Building 2 loading dock	Potential for chemical spills during loading/unloading
11	Buildings 1 & 2	Storage of flammable solvents and mixing of coatings.
12	Building 3	Deegreasing of solvent coating / former storage area
13	Building 7	Solvent Coaters
14	Area west of Bldg. 13	Two 12,000-gal fuel oil ASTs where oil releases have occurred
15	South of Bldg. 7	Four drip/former (3 PCB containing)
16	Bldg. 7 Loading Dock	Potential for chemical spills during loading/unloading
17	Building 9	Former Dye Storage
18	Building 8	Former Boiling Area. Dye House
19	Building 11	Reported location of former Amerbelle dye operations and present chemical storage
20	Bldg. 11 Loading Dock	Potential for chemical spills during loading/unloading
21	Across Grove Street from Bldg. 14	Former gasoline station located across Grove Street southeast of the site



LEGEND

(8) – LOCATION OF RECOGNIZED ENVIRONMENTAL CONDITION (REC)

DESIGNATION

BASE MAP PROVIDED BY GARDNER & PETERSON ASSOCIATES, ENTITLED "PLAN OF LAND PREPARED FOR AMERBELLE CORPORATION, VERNON, CT." DATED 3-17-98. ORIGINAL SCALE: 1" =40'.

SOURCES
Plan of Land – Rockville, Conn. owned by The Estate of Lafayette Kenney Scale 1 in. = 40 ft. August 25, 1944. Sheet 1 Town Civil Engineers Springfield – Mass.

Lands of U.T. Stevens + Sons Co. (Hockanum Mills, Rockville, Conn. New England Property. Surveyed Sept. 1939, Scale– 40 feet = 1 inch. C.E. Bennett, Surveyor.

ACAD FILE No. M:\GL\553\003\SITE PLAN.DWG

REV. No.	DESCRIPTION	DATE	BY

GEOPRECISION INCORPORATED
GEOSCIENCE, ENGINEERING & ENVIRONMENTAL CONSULTANTS
964 SOUTHFORD ROAD • MIDDLEBURY, CONNECTICUT 06762
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SCALE IN FEET
1" = 60'
0' 30' 60' 120'

RECOGNIZED ENVIRONMENTAL CONDITIONS
AMERBELLE CORPORATION
104 EAST MAIN STREET
VERNON, CONNECTICUT

DRAWN BY: SMC
REVIEWED BY: TFC

PROJECT No.
553–003

FIGURE No.
3

BORING LOCATION RATIONALE
Phase II Environmental Site Assessment
Amerbelle Corporation
104 East Main Street
Vernon, CT

Boring Designation	Location	Rationale
AM-1	Loading dock on the south side of Building 7.	Area of chemical loading/unloading
AM-2	Near northwest corner of Building 14 and Dye Mixing Room	Near Building No. 14 Dye Mixing Room, loading dock and near location where dye water had been encountered by town
AM-3	South side of Building No. 14, near loading dock	Former location of 3,000-gallon & 5,000-gallon underground xylene storage tanks (removed in 1993 without closure sampling).
AM-4	Southwest corner of Building No. 1	Adjacent to Building 2 loading/unloading dock and the Organic Coating/Mixing room in Building 1
AM-5	Building Exterior, Building No. 11 Loading Dock	Area of chemical loading/unloading
AM-6	Building Interior, Building No. 3	Interior storage location within an old portion of the mill
AM-7	Building Interior, Building No. 11	In an area identified as the dyehouse prior to construction of Building 14
AM-8	Building Interior, Building No, 14, Jig Dyeing area	Area of Jig Dyeing machines and wastewater conveyance trenches
AM-9	Building Interior, Building No. 14, textile finishing area	Textile finishing area – location of finish frames and finishing chemical storage
AM-10	Building Interior, Building No. 14, textile finishing area	Inferred to be downgradient of several dyeing and finishing operations, assuming groundwater flow towards the canal
AM-11	Building Interior, Building No. 14, wastewater collection sump area	Located adjacent to wastewater conveyance trenches and the main collection sump

TABLE 1
SOIL ANALYTICAL RESULTS SUMMARY
AMERBELLE CORPORATION
104 EAST MAIN STREET
VERNON, CONNECTICUT

Analyte	Sample Designation and Result (mg/kg)														Remediation Criteria (mg/kg)		
	AM-1/ 3.5'	AM-2/ 3.5'	AM-3/ 3.5'	AM-3/ 5.5'	AM-4/ 3.5'	AM-4/ 5.5'	AM-5/ 3.5'	AM-5/ 9-11.5'	AM-6/ 5.5'	AM-7/ 3.5'	AM-8/ 3.5'	AM-9/ 5.5'	AM-11/ 1.5'	AM-11/ 5.5'	R-DEC	I/C-DEC	GB-PMC[2]
Volatile Organic Compounds and TICs																	
2,2,3,3-tetramethyl-Butane	NT	NT	ND	NT	ND	NT	NT	ND	0.26 (J)	NT	ND	ND	ND	ND	NE	NE	NE
2,2,5,5-tetramethyl-Hexane	NT	NT	ND	NT	0.37 (J)	NT	NT	0.15 (J)	ND	NT	ND	ND	ND	ND	NE	NE	NE
2,2-dimethyl-Hexane	NT	NT	0.19 (J)	NT	ND	NT	NT	ND	ND	NT	ND	ND	ND	ND	NE	NE	NE
Cyclohexane	NT	NT	ND	NT	0.29 (J)	NT	NT	ND	ND	NT	ND	ND	ND	ND	NE	NE	NE
Ethylbenzene	NT	NT	< 0.18	NT	< 0.18	NT	NT	< 0.14	< 0.21	NT	0.35	< 0.2	< 0.13	< 0.17	500	1,000	10
Methyl isobutyl ketone (MIBK)	NT	NT	< 1	NT	< 1	NT	NT	< 1	< 1	NT	< 0.36	< 0.4	< 0.26	< 0.34	500	1,000	14
Toluene	NT	NT	< 0.18	NT	0.42	NT	NT	< 0.14	< 0.21	NT	< 0.18	< 0.2	< 0.13	< 0.17	500	1,000	67
Total Xylenes	NT	NT	< 0.18	NT	< 0.18	NT	NT	< 0.14	< 0.21	NT	2.2	< 0.2	< 0.13	< 0.17	500	1,000	20
Semi-Volatile Organic Compounds and TICs																	
TICs	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	NT	NT	ND			
Extractable Total Petroleum Hydrocarbons																	
ETPH	920	NT	240	NT	360	NT	< 10	NT	770	83	NT	< 10	NT	NT	500	2,500	2,500
Miscellaneous Organic Compounds																	
Aniline	NT	NT	NT	NT	NT	NT	NT	NT	NT	< 0.33	< 0.33	NT	NT	< 0.33	NE	NE	NE
Formaldehyde	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	17	NT	NT	9.3	NE	NE	NE
Total Metal Elements																	
Arsenic	3.97	122	NT	2.35	NT	5.63	NT	NT	NT	2.04	1.93	2.36	NT	1.93	10	10	NA
Barium	92	48.2	NT	43.9	NT	76.6	NT	NT	NT	114	113	60.5	NT	61.2	4,700	140,000	NA
Chromium	12.6	8.51	NT	11.8	NT	22.9	NT	NT	NT	16.4	28.4	15	NT	19.3	100[3]	100[3]	NA
Copper	20.1	19.7	NT	11.3	NT	27.1	NT	NT	NT	33.7	19.8	16.1	NT	15.1	2,500	76,000	NA
Lead	15.3	32.8	NT	20.8	NT	438	NT	NT	NT	40.3	13	28.5	NT	5.11	500	1,000	NA
Mercury	< 0.1	< 0.1	NT	< 0.1	NT	0.3	NT	NT	NT	0.11	< 0.1	< 0.1	NT	< 0.1	20	610	NA
Nickel	11.5	2.29	NT	7.41	NT	12.8	NT	NT	NT	8.66	12	8.42	NT	9.64	1,400	7,500	NA
Silver	0.762	< 0.5	NT	< 0.5	NT	< 0.5	NT	NT	NT	< 0.5	< 0.5	< 0.5	NT	< 0.5	340	10,000	NA
Zinc	26.8	15.4	NT	49.6	NT	73.4	NT	NT	NT	49	43.7	32.8	NT	22.4	20,000	610,000	NA

LEGEND:
NT = Not Tested
NE = None Established
ND = Not Detected
NA = Not Applicable
TICs = Tentatively Identified Compounds
J = J value indicates an estimated concentration that is below the quantification limit, but is present.
R-VC = Residential Volatilization Criteria
I/C-VC = Industrial/Commercial Volatilization Criteria
GB-PMC = Pollutant Mobility Criteria - GB Area

NOTES:
1. In general, only detected compounds are reported. Refer to the analytical data sheets for all analytes and detection limits.
2. The Pollutant Mobility Criteria for metal elements in soil can not be directly applied to mass analysis (total) results.
3. This standard assumes the more stringent DEC for hexavalent chromium.
4. Bolded data indicates exceedance of an applicable remediation standard.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERBELLE CORPORATION
104 EAST MAIN STREET
VERNON, CONNECTICUT

Analyte	Sample Designation and Result (ug/l)					Remediation Criteria (ug/l)		
	AM-1	AM-3	AM-4	AM-7	W-1	R-VC	I/C-VC	SWPC
Volatile Organic Compounds and TICs								
Chloroethane	<5	<5	<5	<5	120	12,000(2)	29,000(2)	NE
Dimethyl Formamide (DMF)	<1000	<1000	<1000	<1000	<1000	NE	NE	NE
Methyl isobutyl ketone (MIBK)	<10	<10	<10	<10	<10	13,000(2)	50,000	NE
Semi-Volatile Organic Compounds and TICs								
1,4-Dichlorobenzene	NT	NT	NT	NT	14	1,400(2)	3,400(2)	26,000
1-[4-(2-benzoxazolyl) 1H-Pyrrole-2,5-dione	NT	NT	NT	NT	54	NE	NE	NE
1-methoxy-4-octyl-Benzene	NT	NT	NT	NT	52	NE	NE	NE
2-Nonylphenol	NT	NT	NT	NT	120	NE	NE	NE
4-(2,2,4-trimethylpentyl)-Phenol	NT	NT	NT	NT	80	NE	NE	NE
4-chloro-2-(trifluoromethyl) Benzenamine	NT	NT	NT	NT	26	NE	NE	NE
4-Nonylphenol	NT	NT	NT	NT	130	NE	NE	NE
Aniline	<10	<10	<10	<10	<10	NE	NE	NE
Bis(2-ethylhexyl)phthalate	NT	NT	NT	NT	11	NE	NE	59
dodecyl-Phenol	NT	NT	NT	NT	190	NE	NE	NE
dodecyl-Phenol	NT	NT	NT	NT	210	NE	NE	NE
Fluoranthene	NT	NT	NT	NT	13	NE	NE	3,700
Formaldehyde	<100	<100	<100	<100	<100	NE	NE	NE
nonyl-Phenol	NT	NT	NT	NT	91	NE	NE	NE
Pyrene	NT	NT	NT	NT	12	NE	NE	110,000
Extractable Petroleum Hydrocarbons								
ETPH	<100	<100	260	590	1100	NE	NE	NE
Dissolved Metals								
Arsenic	<4	<4	<4	**11**	4	NE	NE	4
Barium	38	41	48	12	10	NE	NE	NE
Chromium	<1	<1	<1	2	1	NE	NE	110
Copper	2	2	3	**82**	28	NE	NE	48
Lead	<1	<1	<1	8	1	NE	NE	13
Nickel	<2	3	3	<2	41	NE	NE	880
Zinc	4	9	5	9	**171**	NE	NE	123

LEGEND:
NT = Not Tested
NE = None Established
TICs = Tentatively Identified Compounds
R-VC = Residential Volatilization Criteria
I/C-VC = Industrial/Commercial Volatilization Criteria
SWPC = Surface Water Protection Criteria

NOTES:
1. In general, only detected compounds are reported. Refer to the analytical data sheets for all analytes and detection limits.
2. Denotes the Proposed VC Standard (March 2003)
3. Bolded data indicates exceedance of remedial standard.

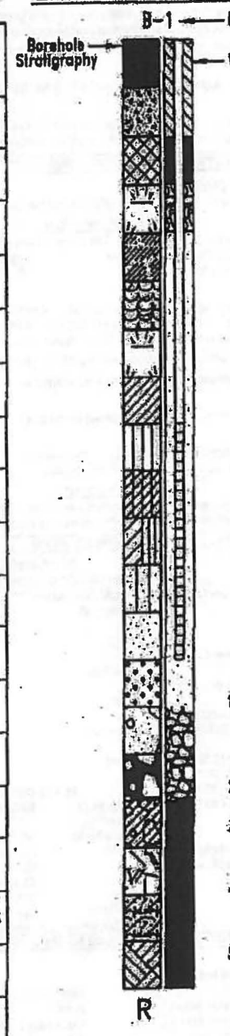
BORING LOGS

APPENDIX 2

STRATIGRAPHY SYMBOLS

SYMBOLS	TYPICAL DESCRIPTIONS OF PREDOMINENT MATERIAL TYPE
	ASPHALT
	CONCRETE
	FILL
	TOPSOIL
	SUBSOIL
	ORGANIC SILT OR CLAY WITH SHELLS
	PEAT
	CLAY
	SILT
	CLAY/SILT MIXTURE
	CLAY/SILT/SAND MIXTURE
	SILT/SAND MIXTURE
	POORLY-GRADED SAND
	WELL-GRADED SAND
	SAND/GRAVEL MIXTURE
	BOULDERS AND/OR COBBLES
	GLACIAL TILL
	DECOMPOSED BEDROCK
	SANDSTONE
	BEDROCK

EXPLANATION OF BORING



WELL SYMBOLS

SYMBOLS	TYPICAL DESCRIPTIONS
	CEMENT SEAL: 1 PIPE
	BENTONITE SEAL: 1 PIPE
	SLOUGH BACKFILL: 1 PIPE
	FILTER PACK: 1 PIPE
	SLOTTED PIPE WITH FILTER PACK: 1 PIPE
	FILTER PACK AT BOTTOM OF HOLE
	SLOUGH AT BOTTOM OF HOLE
	BENTONITE AT BOTTOM OF HOLE

Notes:

1. Data concerning the various strata have been interpreted at boring locations only. The stratigraphy between borings may vary from that shown, and may transition more gradually within borings.
2. For strata details, see Report and boring logs appended to this report.
3. Numbers displayed beside boring(s) represent SPT "N" values corresponding to their respective sampling interval.
4. Where coring was performed, numbers displayed beside boring(s) represent Recovery and RQD values corresponding to their respective sampling interval.
5. "R" corresponds to refusal of sampler, casing and/or roller bit at bottom of boring.

Groundwater Observations (where applicable)

▽ Water Level Reading at time of drilling.

▼ Water Level Reading after completing drilling.

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SUBSURFACE PROFILE LEGEND

EXPLANATION OF THE FORM - BORING LOG

The following provides an explanation of the various fields on the Boring Log form.

BORING LOG HEADING

Project and Boring Details
Within the upper portion of the Boring Log, details with regards to the Project Name and Location, Boring Number, and GeoDesign's file number are provided. In addition, within the upper section of the Boring Log, the Drilling Company's name, and their representative, together with the name of GeoDesign's representative, are presented. Details with regards to the dates when the boring was drilled, its coordinates or other location references and the corresponding surface elevation may also be provided. Where applicable, the Datum used is provided in the text of the Report.

Casing and Sampler
This section provides a summary of the typical size of samplers and casings used, together with the type of drilling rig. See below for a description of samplers.

Groundwater Observations
Water levels typically indicated on the Boring Log are levels measured in the boring at the times indicated. In permeable materials, the indicated levels may reflect the location of groundwater. In low permeability soils and/or due to effects of the casing, the accurate determination of groundwater levels may not be possible with only short term observations.

CENTRAL PORTION OF BORING LOG

DEPTH
This column gives the depth scale of the boring, in feet or meters.

CASING BLOWS
Indicates the number of blows per foot (0.3 m) required to advance the casing, using a 136 kg (300-pound) hammer.

SAMPLE INFORMATION
The initial columns provide the sample number, sample type, penetration, recovery and sample depth. The Sample Type Coding is as follows:

A - Auger Sample	PS- Undisturbed Piston - 3" (76 mm)	SSL - Large Split-Barrel - 3" (76 mm)	V - Vane Test
C - Core - Diamond Bit - NX double tube, unless otherwise noted.	SS - Split-Barrel (Split-Spoon)	ST - Shelby Tube - 3" (76 mm)	

Blows / 6 inch (0.15 meter) Interval
Representative soil samples were obtained in the boring by split-barrel sampling procedures in general accordance with ASTM D 1586. The split-barrel sampling procedure utilizes a standard 51 mm (2") outside diameter split-barrel sampler that is driven into the bottom of the boring with a 63.5 kg (140-pound) hammer falling a distance of 0.76 m (30"). The number of blows required to advance the sampler in 0.15 m (6") increments is recorded as part of the Standard Penetration Test (SPT). These values are indicated at their depth of occurrence.

The number of blows required to advance the split-barrel sampler the middle two - 0.15 m (6") increments of a 0.61 m (24") penetration is recorded as the Standard Penetration Resistance Value ("N").

Where the sampler advanced by Weight of Rods or Weight of Hammer, the designation WOR and WOH, respectively, was used. In the case of PS or ST samples, the designation PUSH was used.

Coring Time
This column provides the rate in minutes at which the core barrel was advanced into the bedrock (or boulder) in one foot (0.3 m) intervals.

PID Reading - Where Applicable
This column provides results for samples which were screened in the field with a photoionization detector for the presence of volatile organic compounds (including certain petroleum constituents) calibrated relative to benzene in air standard.

Moisture Content (%) - Where Applicable
This column provides moisture content determination results for the samples tested.

SAMPLE DESCRIPTION
This column provides a description of the soil and bedrock units, based on visual observation of the samples, sometimes in conjunction with field and laboratory tests. Each sample was generally described according to the following classification and terminology. In general, description of the soil units followed the Burmister classification system.

SOIL PROPERTIES & DESCRIPTIONS

TEXTURE*

Component	Size (mm)
CLAY	< 0.002 mm
SILT	< #200 Sieve (0.075 mm)
SAND	#200 to #4 Sieve (0.075 mm to 4.75 mm)
Fine	#200 to #40 Sieve (0.075 mm to 0.425 mm)
Medium	#40 to #10 Sieve (0.425 mm to 2.00 mm)
Coarse	#10 to #4 Sieve (2.00 mm to 4.75 mm)
GRAVEL	#4 Sieve to 3 in (4.75 mm to 76 mm)
Fine	#4 Sieve to 3/4 in (4.75 mm to 19 mm)
Coarse	3/4 in to 3 in (19 mm to 76 mm)
COBBLES	3 in to 12 in (76 mm to 305 mm)
BOULDERS	> 12 in (305 mm)

COMPOSITION

Principal Component in Upper Case i.e. >50%
CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS

Minor Component Upper and Lower Case i.e.<50%
Clay, Sil, Sand, Gravel, Cobbles, Boulders

DESCRIPTIVE ADJECTIVE	PERCENTAGE REQUIREMENT
trace	<10 %
little	10 - 20 %
some	20 - 35 %
and	35 - 50 %

MOISTURE CONDITION

Dry	Absence of moisture, dusty
Moisture	Damp but no visible water
Wet	Visible free water

COHESIVE SOILS

ESTIMATED CONSISTENCY CLASSIFICATION ***	"N" Value
Very Soft	< 2
Soft	2 - 4
Medium	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	> 30

COHESIONLESS SOILS

ESTIMATED COMPACTNESS DESCRIPTION ***	"N" Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

*** empirical relationship

PLASTICITY - Burmister

Degree of Plasticity	Soil Type	Smallest Diameter of Thread**
Non-Plastic	SILT	None
Slight	Clayey SILT	1/4" (6 mm)
Low	SILT & CLAY	1/8" (3 mm)
Medium	CLAY & SILT	1/16" (1.6 mm)
High	Silty CLAY	1/32" (0.8 mm)
Very High	CLAY	1/64" (0.4 mm)

** moisture at or near optimum

STRUCTURE

Stratified:	>6 mm (1/4")
Laminated:	< 6 mm (1/4")
Parting:	0 to 1.6 mm (1/16")
Seam:	1.6 to 13 mm (1/2")
Layer:	13 to 305 mm (12")
Stratum:	> 305 mm (12")

*Textural classification as determined by sieve and hydrometer analyses

BEDROCK PROPERTIES & DESCRIPTIONS

RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
Recovery is defined as the length of core obtained expressed as a percentage of the total length cored.

RQD is defined as the total length of sound core pieces, 4 inches (100 mm) or greater in length, excluding drilling breaks, expressed as a percentage of the total length cored. RQD provides an indication of the integrity of the rock mass and relative extent of seams and bedding planes.

Classification	RQD %
Very Poor Quality	0 - 25
Poor Quality	25 - 50
Fair Quality	50 - 75
Good Quality	75 - 90
Excellent Quality	90 - 100

HARDNESS

TYPICAL ROCK TYPES		Moh's Hardness Scale
Hard	Cannot be scratched with knife	> 5.5
Moderately Hard	Can scratch with knife but not fingernail	5.5 - 2.5
Soft	Can be scratched with fingernail	< 2.5
SANDSTONE		
Well Cemented	Capable of scratching a knife blade	5.5 - 2.5
Cemented	Can be scratched with knife	< 2.5
Poorly Cemented	Can be broken apart easily with fingers	

WEATHERING

Fresh	No visible signs of weathering
Slightly Weathered	Slight discoloration of parent material in joints and seams
Moderately Weathered	Less than 35% of rock material is decomposed. Fresh or discolored rock is present.
Highly Weathered	More than 35% of rock material is decomposed. Fresh or discolored rock is present.
Extremely Weathered	All rock material is decomposed to soil. Rock mass structure may still be intact.

SPACING OF DISCONTINUITIES

Bedding	Jointing	Spacing (inches)	Spacing (mm)
Very Thick Bedded	Very Wide	>80	>2000
Thick Bedded	Wide	24 - 80	600 - 2000
Medium Bedded	Moderate	8 - 24	200 - 600
Thin Bedded	Close	2.4 - 8	60 - 200
Very Thin Bedded	Very Close	0.8 - 2.4	20 - 60
Laminated	Shattered	0.24 - 0.8	6 - 20
Thinly Laminated	Fissured	<0.24	<6

When classification of rock materials has been estimated from disturbed samples, core samples and petrographic analysis may reveal other rock types.

SYMBOL
This column provides a graphical representation of the soil and bedrock units, and inferred geological contacts. See Subsurface Profile Legend.

STRATA DESCRIPTION (ELEVATION/DEPTH)
This column gives the elevation and depth of inferred geological contacts together with a general description of the respective soil and bedrock units. Stratification lines represent approximate boundaries between material types, transitions may be gradual.

BORING LOG FOOTER

The lower portion of the log provides additional drilling notes within the Remarks section together with additional General Notes.

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-1
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 22, 2004 Date Finished: January 22, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	4.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Truck	
Hammer Type:		

Groundwater Observations

Date	Depth (ft)	Elev. (ft)	Notes
1/22/04	11.8		In auger
1/29/04	10.3		

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description: Classification System:	Well Log
													1.0 Asphalt & Basecoarse			
		1	SS	24.0	18.0	1.0	15	18	45	63		ND	Fill		Very dense, brown/black fine to coarse SAND and GRAVEL, trace Silt (ash fragments and slag)	
		2	SS	24.0	13.0	3.0	29	30	16	18		ND			Dense, brown/yellow/gray (banded) fine to coarse SAND, little fine Gravel, trace Silt	
5													5.0			
		3	SS	24.0	14.0	5.0	10	6	7	8		ND	Sand & Gravel		Medium dense, red/brown fine to medium SAND, little fine to coarse Gravel, little Silt	
		4	SS	24.0	4.0	7.0	7	7	7	5		ND			Medium dense, red/brown fine to medium SAND, little fine to coarse Gravel, little Silt	
10		5	SS	15.0	10.0	9.0	3	1	100/3"			ND	9.0 Sand & Silt		Very dense, brown fine to medium SAND, some Silt, trace fine to coarse Gravel (wet) (N, rock in tip)	
													10.3 ▼ Bedrock			
													12.3 ▼ Bottom of Exploration at 12.3 ft			
15																
20																
25																
30																

Remarks:
Spoon refusal at 10.3 feet; HSA refusal at 10.9 feet; solid stem auger refusal at 12.3 feet below ground.
Installed 2" PVC well screen 7 to 12 feet below ground; Sand 5 to 12 feet below grade, bentonite chips 3 to 5 feet below ground, auger cuttings backfill, finished with curb box and cement collar.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportion Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And =35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-1

BORING LOG PID 12/15/03 LOGS.GPJ GEODESIGN.PID.GDT 2/23/04

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Geotechnical Engineers and Environmental Consultants
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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-2
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 22, 2004 Date Finished: January 22, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	4.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Truck	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description: Classification System:
													Asphalt & Base coarse Sand		
		1	SS	24.0	18.0	1.0	30	22	18	11		ND			Dense, red/brown fine to coarse SAND, some fine to coarse Gravel, trace Silt
		2	SS	24.0	14.0	3.0	10	8	14	16		ND			Medium dense, red/brown fine to medium SAND, little Silt
5													5.0		
		3	SS	3.0	1.0	5.0	100/3"					ND	Bedrock Bottom of Exploration at 5.3 ft		Very dense, gray fine to medium SAND and GRAVEL, trace Silt (weathered rock)
10															
15															
20															
25															
30															

Remarks: Spoon refusal at 5.3 feet, solid stem auger refusal at 5.5 feet below ground. Backfilled with cuttings and cemented over hole with asphalt.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportion Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-2

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-3
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 22, 2004 Date Finished: January 22, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	4.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Truck	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 1/29/04	12.7		
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description: Classification System:	Well Log
													1.0 Asphalt & Basecoarse (FILL) Sand & Gravel			
		1	SS	3.0	3.0	1.0	100/3"					ND			Very dense, red/brown fine to coarse SAND and GRAVEL, little Silt	
		2	SS	24.0	4.0	3.0	5	4	3	3		0.2			Loose, red/brown fine to coarse SAND and GRAVEL, little Silt	
5																
		3	SS	24.0	14.0	5.0	3	3	3	4		ND			Loose, red/brown fine to coarse SAND, little fine to coarse Gravel, little Silt	
		4	SS	24.0	1.0	7.0	7	7	6	5		ND			Medium dense, no recovery (Brick piece in tip of spoon)	
10		5	SS	24.0	1.0	9.0	4	3	3	5		ND			Loose, no recovery (Rock in tip of spoon)	
		6	SS	24.0	3.0	11.0	6	9	14	15		ND	13.0 ▼		Medium dense, brown fine to coarse SAND, little fine to coarse Gravel, little Silt (wet)	
		7	SS	19.0	16.0	13.0	9	10	13	50/1"		0.1	Sand 15.0		Medium dense, brown fine to medium SAND, little Silt, trace fine Gravel (wet) (w. Bedrock in tip of spoon)	
15													Bottom of Exploration at 15.0 ft			
20																
25																
30																

Remarks:
Spoon refusal at 1 foot; solid stem augered through to 3 feet below ground (possible cobble).
Spoon refusal at 14.7 feet, Hollow Stem Auger refusal at 15 feet below ground.
Installed 2" PVC well screen from 14.5 to 9.5 feet below ground. Sand pack from 14.5 to 8 feet below ground, bentonite chips from 8 to 6 feet below ground, auger cuttings to 1 foot, curb box, cement collar 1 to 0 feet.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-3

BORING LOG PID 12/MSB; LOGS.GPJ GEODESIGN.PID.GDT 2/23/04

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-4
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 22, 2004 Date Finished: January 22, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	4.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Truck	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 1/29/04	18.1		
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Strata Description	Symbol	Sample Description: Classification System:	Well Log
													1.0	Asphalt & Basecoarse			
		1	SS	24.0	3.0	1.0	50/3"					ND		FILL Sand & Gravel		Very dense, brown fine to coarse SAND and GRAVEL, little Silt	
		2	SS	24.0	5.0	3.0	2	2	1	2		0.3				Loose, dark brown/black fine to coarse SAND, little fine Gravel, little Silt	
5		3	SS	24.0	6.0	5.0	3	2	2	9		0.1				Loose, brown/black fine to coarse SAND and GRAVEL, little Silt (ash fragments/slag)	
		4	SS	24.0	8.0	7.0	6	7	9	10		0.1				Medium dense, red/brown fine to coarse SAND, some fine Gravel, little Silt	
10		5	SS	24.0	13.0	9.0	11	13	19	19		ND				Dense, red/brown fine to coarse SAND, trace fine to coarse Gravel, trace Silt	
		6	SS	24.0	14.0	11.0	20	24	25	12		ND	11.0	Silty Sand & Gravel		Dense, red/brown fine to coarse SAND and GRAVEL, little Silt	
		7	SS	24.0	15.0	13.0	12	14	15	15		ND				Dense, red/brown fine to coarse SAND and GRAVEL, little Silt	
15		8	SS	24.0	3.0	15.0	24	16	16	15		ND				Dense, red/brown fine to coarse SAND and GRAVEL, little Silt	
		9	SS	24.0	17.0	17.0	12	10	24	35		ND	▼			Dense, brown fine to medium SAND, little fine Gravel, little Silt (wet)	
20		10	SS	1.0	1.0	19.0	100/1"					ND	19.5	Bottom of Exploration at 19.5 ft		Very dense, light brown fine to medium SAND, little Silt (weathered bedrock)	
25																	
30																	

Remarks: Spoon refusal at 19.1 feet; HSA refusal at 19.5 feet below ground.
Installed 2" PVC well screen from 19 to 9 feet below ground, sand pack 19 to 7.5 feet below ground, bentonite chips 7.5 to 5.5 feet below ground, auger cuttings to ground surface and flush mount curb box with cement collar.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a hexane in air standard. N.D. = None Detected; N.R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codes: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-4

BORING LOG PID 12151903. LOGS.GPJ. GEODESIGN PID.GDT 2/23/04

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-5
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 22, 2004 Date Finished: January 22, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	H.S.A.	SS
I.D.:	4.25 in.	1.38 in.
Hammer Wt.:	NA	140 lbs
Hammer Fall:	NA	30 in.
Rig Type:	Truck	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼ 1/29/04	Dry		
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows/6 inch Interval: 0-6	6-12	12-18	18-24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:	Well Log
													1.0 Asphalt & Basecoarse			
		1	SS	24.0	14.0	1.0	85	33	10	7		0.1	Silty Sand		Dense, brown fine to coarse SAND and GRAVEL, little Silt	
		2	SS	24.0	12.0	3.0	3	3	3	3		0.2			Loose, brown fine to medium SAND, some fine Gravel, little Silt	
5		3	SS	24.0	10.0	5.0	3	2	2	3		0.1			Loose, brown fine to medium SAND, some fine Gravel, little Silt	
		4	SS	24.0	2.0	7.0	3	4	5	5		0.1			Loose, brown fine to medium SAND, some fine Gravel, little Silt (gravel in tip of spoon)	
10		5	SS	24.0	12.0	9.0	3	2	4	5		0.3	10.0 Bedrock		Loose, brown fine to medium SAND, trace fine Gravel, trace Silt	
		6	SS	24.0	7.0	11.0	8	6	7	100/3"		0.1	12.5 Bottom of Exploration at 12.8 ft		Medium dense, gray fine to coarse GRAVEL, some fine to medium Sand, little Silt (wet)	
15																
20																
25																
30																

Remarks: Split spoon and HSA refusal at 12.8 feet.
2" PVC well installed 12.5 to 7.5 feet, sand pack 12.5 to 5.5, bentonite chips 5.5 to 3.5, auger cuttings to ground surface, curb box and cement collar.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual

Boring No.: AM-5

BORING LOG PID 12/19/03 LOGS.GPJ GEODESIGN PID.GDT 2/23/04

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-6
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 23, 2004 Date Finished: January 23, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	S.S.A.	
I.D.:	4.0 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	Skid	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description
		1				0.0						ND	1.0 Slab		Classification System: Brown fine to medium SAND, some Silt, little fine to coarse Gravel (between & under slabs)
													1.8 Slab		
													2.8 Sand & Gravel		
5													5.0 Slab		
		2				5.0						0.6	6.0 Sand & Gravel (Cobbles)		
		3				6.0						0.4			
		4				7.0						0.3	8.5 Possible Bedrock Bottom of Exploration at 8.5 ft		
10															
15															
20															
25															
30															

Remarks:
SSA grinding (possible Slab) from 1 to 1.8 feet, 2.1 to 2.8 feet, and 5 to 6 feet. Difficult drilling 6 to 8 feet, grinding at 8.5 feet (possible bedrock).
Attempted to see down hole with light, hole collapsed to 6 feet below ground.
Samples obtained off SSA flights.
Abandoned hole with bentonite chips and cement surface seal.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene/in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codes: A = Auger; C = Core; CuGrab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-6

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-7
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 23, 2004 Date Finished: January 23, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	S.S.A	
I.D.:	4.0 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	Skid	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
1/29/04	8.0		

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:	Well Log
													Concrete Slab Sand & Gravel (Cobbles)			
						3.0						0.1			Brown fine to medium SAND, little fine to coarse Gravel, little Silt	
5																
						7.0						0.1	▼			
10						10.0						0.1	11.0			
													Bottom of Exploration at 11.0 ft			
15																
20																
25																
30																

Remarks

Concrete slab approximately 0.5 feet thick.
Samples obtained off of SSA flights.
Difficult drilling throughout boring due to possible cobbles.
Hole collapsed to 9.5 feet before well installation.
Installed 2" PVC well at 9.5 to 4.5 feet, sand pack 9.5 to 3.0 feet. Bentonite chips 3 to 1 feet, concrete seal.

Notes: 1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-7

BORING LOG PID 12/19/03 LOGS.GPJ GEODESIGN PID.GDT 2/23/04

GEODESIGN INCORPORATED
Geotechnical Engineers and Environmental Consultants
984 Southford Road
Middlebury, Connecticut 06762
Telephone: 203-758-8836 Fax: 203-758-8842

BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-8
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TEC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 31, 2004 Date Finished: January 31, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	S.S.A	
I.D.:	4.0 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	Skid	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation (feet)	Symbol	Sample Description
													SLAB		Classification System:
													SAND, GRAVEL (COBBLES)		
		1				3.0						3.9	4.0		Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
5													Bottom of Exploration at 4.0 ft		
10															
15															
20															
25															
30															

Remarks

Concrete slab approximately 0.5 feet thick.
Difficult drilling 1 foot to 4 feet below grade (cobbles).
SSA Refusal at 4 feet below grade (possible bedrock).
Samples obtained from SSA flights.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene-in-air standard. N.D. = None Detected; N. R. = Not Recorded; N/A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Codes: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%, Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-8

BORING LOG PID 12/1/03 LOGS.GPJ GEODESIGN PID.GDT 2/23/04

GEODESIGN INCORPORATED
Geotechnical Engineers and Environmental Consultants
984 Southford Road
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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-9
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 31, 2004 Date Finished: January 31, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	S.S.A	
I.D.:	4.0 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	Skid	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
													SLAB		
													SAND, GRAVEL (COBBLES)		
						3.0						0.2			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
5															
						5.0						1.4			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
						7.0						0.7			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
10															
						10.0						0.1			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
													12.0 Bottom of Exploration at 12.0 ft		
15															
20															
25															
30															

Remarks:
Concrete slab approximately 0.42 feet thick.
SSA Refusal at 12 feet (possible bedrock).
Samples obtained from SSA flights.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N.R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; C=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types. Transitions may be gradual.

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-10
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 31, 2004 Date Finished: January 31, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	S.S.A	
I.D.:	4.0 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	Skid	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
													SLAB		
						1.0						0.4	SAND & GRAVEL (COBBLES)		Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
						3.0						0.2			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
5						5.0						0.3			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
													7.2		
													Bottom of Exploration at 7.2 ft		
10															
15															
20															
25															
30															

Remarks:
Concrete slab approximately 0.5 feet thick.
SSA Refusal at 7.2 feet below grade (possible bedrock).
Samples obtained from flights of SSA.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C = Core; G=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = 1-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-10

BORING LOG PID 12/19/03 LOGS.GPJ GEODESIGN PID.GDT 2/23/04

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BORING LOG

Project Name

Amerbelle Corporation

Vernon, CT

Boring No.: AM-11
Page No.: 1 of 1
File No.: 553-003.0
Checked By: TFC

Boring Company: New England Boring Contractors
Foreman: Mike St. John
GeoDesign Rep.: Alan Colwell
Date Started: January 31, 2004 Date Finished: January 31, 2004
N. Coordinate: E. Coordinate:
Ground Surface Elevation (feet):
Station: Offset: ft

	Casing:	Sampler:
Type:	S.S.A	
I.D.:	4.0 in.	in.
Hammer Wt.:	NA	
Hammer Fall:	NA	
Rig Type:	Skid	
Hammer Type:		

Groundwater Observations			
Date	Depth (ft)	Elev. (ft)	Notes
▼			
▼			
▼			
▼			

Depth (ft)	Casing Blows/ft	Sample Information: Number	Type	Penetration (inches)	Recovery (inches)	Depth (ft)	Blows / 6 inch Interval: 0 - 6	6 - 12	12 - 18	18 - 24	Coring Time (min./ft)	PID Reading (ppm)	Strata Description: Depth & Elevation(feet)	Symbol	Sample Description: Classification System:
													SLAB		
						1.0						3.8	SAND/GRAVEL (COBBLES)		Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
						3.0						1.4			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
5															
						5.0						4.4			Red-brown fine to medium SAND, little Silt, little fine to coarse Gravel
						6.0						0.5	6.5		Gray-brown fine to medium SAND, little Silt, little fine to coarse Gravel
													Bottom of Exploration at 6.5 ft		
10															
15															
20															
25															
30															

Remarks:
Concrete slab approximately 0.5 feet thick.
SSA Refusal at 6.5 feet (possible bedrock).
Samples obtained from SSA flights.

Notes:
1) Soil Samples screened in the field using a Thermal Environmental Systems Model 580S Photoionization Detector. The meter was calibrated relative to a benzene in air standard. N.D. = None Detected; N. R. = Not Recorded; N.A. = Not Applicable; O.R. = Out of Range
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made. A.C. = After coring; N.R. = Not Recorded.
3) Sample Type Coding: A = Auger; C= Core; O=Grab; PS = Piston Sampler; SS = Split Barrel (Split Spoon); ST = Shelby Tube; V = Vane; WOR = Weight of Rod
4) Proportions Used: Trace = (-10%; Little = 10-20%; Some = 20-35%; And = 35-50%
5) Stratification lines represent approximate boundary between material types, transitions may be gradual.

Boring No.: AM-11

APPENDIX B

SITE SPECIFIC
HEALTH AND SAFETY
SUMMARY

(not included in EPA copies per EPA request)

APPENDIX B

SITE SPECIFIC
HEALTH AND SAFETY
SUMMARY

(not included in EPA copies per EPA request)