

**PHASE III  
SUBSURFACE INVESTIGATION REPORT**

**20 Station Road  
Brookfield, Connecticut**

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## 1.0 INTRODUCTION

This report summarizes data collected during a Phase III subsurface investigation performed at 20 Station Road in Brookfield, Connecticut. The work was performed on October 25, and November 6, 2001 by Diversified Environmental Services, Inc. (DES), at the request of Mr. Edward McCarty. The site was investigated in response to Order SRD 113 issued by the Connecticut Department of Environmental Protection (CTDEP). A Scope of Study was prepared by DES and submitted to the CTDEP on September 7, 2000. The Scope of Study was approved on November 7, 2000.

### 1.1 Background

The site has been used for residential and commercial purposes since its development in 1945. Prior to that the site was used as farmland. A dry cleaner was located on-site during the 1960s and 1970s and was located in the northwest portion of the site building. Virgin dry cleaning solvent, tetrachloroethylene (PCE) was stored in unknown quantities and waste PCE was reportedly stored in two 55-gallon subgrade steel drums that were installed at an unknown date. These steel drums were piped together and reportedly tied into the dry cleaning machine.

The site building is heated by liquefied propane (LP) and electricity. The building was formerly heated by fuel oil. The heating oil was formerly stored in a 275-gallon aboveground storage tank (AST) and 550-gallon AST located on the north side of the building. The 275-gallon AST was removed in March 1997 and the 550-gallon AST is still located on-site and not used. Heating oil was also formerly stored in a 550-gallon UST located on the west side of the building. In November 1998 the UST was removed from the subject site. Soil samples were collected from the UST grave and submitted for analysis of total petroleum hydrocarbons (TPH) by EPA Method 418.1 and volatile organic compounds (VOC) by EPA Method 8260. The results of the analysis showed elevated levels of benzene, toluene, ethyl benzene and xylenes (BTEX) constituents above applicable soil standards. In addition, a sample of liquid was collected from within the UST which contained BTEX constituents. Duplicate samples collected by the CTDEP indicated the presence of PCE in the soil above the Pollutant Mobility Criteria (PMC).

The site previously used an on-site septic system for sewage disposal which is located on the northeastern side of the building. The leaching fields were reportedly located on the northeast side of the building. In 1997, the septic tank and four associated dry wells were removed with a subsequent connection to the sanitary sewer system. The on-site septic system had been used for sewage disposal from the date of construction until the connection to the sanitary sewer system.

In June 1998, the CTDEP collected a water sample from a tap at the site. Laboratory analysis showed a concentration of PCE of 150 micrograms per liter (ug/l) and trichloroethylene (TCE) of 10 ug/l. A granular activated carbon (GAC) filtration system was subsequently installed at the site and water samples were collected by the CTDEP after water passed through the filtration system and were submitted for laboratory testing of VOCs. The results indicated non-detectable concentrations of halogenated VOCs after passing through the treatment system.

In addition to the 20 Station Road property, water samples collected from approximately 27 residences and businesses located to the west have been collected since March 1998 to monitor the presence of VOCs in the drinking water. Approximately ten of these properties have had elevated levels of halogenated and/or aromatic VOCs in their drinking water supply. GAC filtration systems have been installed at these residences.

In April 1998, the CTDEP Water Management Bureau installed a total of eight borings on the subject site using its Geoprobe SES. Bedrock was encountered at depths of 8 to 11 feet below ground surface (fbgs). The borings were finished with 0.75" piezometers ranging in depth from 8 to 11 fbgs. Groundwater samples were collected from the piezometers and field screened with a Photovac GC PID. Results of the field screening indicated levels of chlorinated solvents ranging from 1.4 parts per billion (ppb) to 140,000 ppb (GP- 7) in the groundwater samples and 120 ug/l to 1,700 ug/l (GP- 7) in the soil samples. In addition, water samples were collected from the potable wells, sumps, tanks and sludge seeps and soil samples were collected from a tank grave and floor sump. The samples were submitted to the State of Connecticut Department of Health (CTDOH) laboratory for analysis of VOCs by EPA Method 624. The results of the analysis indicated the highest concentrations of PCE were in the groundwater collected from GP-8 (48,000 ug/l), located just to the north of the former dry cleaning tenant space, and in the PCE UST (1,617,500,000 ug/l). The PCE UST is one of the subgrade 55 gallon drums located in the northwestern portion of the building that was used to collect waste PCE.

In November 2000, DES performed a subsurface investigation that consisted of the installation of twenty-two soil borings, seven of which were finished with groundwater monitoring wells and sixteen shallow borings beneath the former dry cleaning tenant space. A total of 120 soil samples, two surface water samples, two potable well samples and seven groundwater samples were collected during the investigation. Thirty of the soil samples were submitted to a laboratory for analysis of VOCs by EPA Method 8260 and two for ETPH. All of the surface water and groundwater samples were submitted for analysis of VOCs by EPA Method 8260, with one groundwater sample for ETPH. The two potable well samples were submitted for analysis of VOCs by EPA Method 524.2. The results of the soil analysis indicated three of the soil samples collected from beneath the former dry cleaning tenant space, contained concentrations of PCE above the PMC of 0.1 mg/kg for PCE but below the RDEC of 12 mg/kg for PCE. PCE was detected in 3 of the other sub floor samples (SB-6 (2-4), SB-10 (2-4) and SB-16 (0-2)) below the RDEC and PMC. The remaining sub floor soil samples contained concentrations of VOCs below laboratory detection limits. Two soil samples collected immediately to the north of the dry cleaning tenant space contained concentrations of PCE which were above the PMC but below the RDEC. The remaining soil samples collected from the exterior of the property contained concentrations of VOCs below laboratory detection limits or applicable standards. The results of the groundwater analysis showed concentrations of PCE in monitoring wells MW-4 and MW-5, located to the west and northwest of the former dry cleaning tenant space, of 4,800 ug/l and 5,900 ug/l, respectively which are above the GPC (5 ug/l), RVC (1500 ug/l) and SWPC (88 ug/l). PCE was also detected in MW-6 and MW-7, located to the north and northwest of the former dry cleaning tenant space, at concentrations of 23 ug/l and 6 ug/l which are above the GPC but below the RVC and SWPC. The remainder of the groundwater samples contained concentrations of PCE below applicable groundwater standards or laboratory detection limits. Monitoring wells MW-2, and MW-4 through MW-7 contained concentrations of other chlorinated solvents commonly seen in the dechlorination process of PCE above the respective groundwater standards (GPC and RVC). The analytes included trichloroethylene, 1,1,1-trichloroethane, 1,2-dichloroethylene, 1,1-dichloroethane, chloroethane and vinyl chloride. The two water samples collected from the on-site potable wells contained concentrations of PCE and TCE that exceeded the respective MCL and GPC for those compounds. Four other VOCs were detected below the laboratory detection limits or the MCL and GPC. No VOCs were detected in either of the surface water samples collected from the wetlands on the northern portion of the property. A copy of the DES November 2000 Phase II Subsurface Investigation Report is included in Appendix B.

## 1.2 Scope of Work

The Scope of the Work was designed to investigate the degree and extent of soil and groundwater contamination at the site identified during previous investigations and the potential impact on the environment to areas off-site. This work was performed in accordance with current CTDEP sampling requirements, standard industry practices and the November 7, 2000 CTDEP approved Scope of Study. The following tasks were performed as part of this subsurface investigation.

- The installation of six (6) soil borings, finished with groundwater monitoring wells. Monitoring well MW-1a, MW-3a, MW-8, MW-9 and MW-10 were finished with two inch groundwater monitoring wells. Monitoring well MW-11 was finished with a four inch groundwater monitoring well.
- Split spoon soil samples were collected at five foot intervals and screened for visual characterization and on-site volatile organic vapor screening. The borings were installed on the west side of the property to identify the western edge of the plume, one boring (MW-11) was installed immediately to the west of the building to evaluate the presumed highest concentrations of PCE in the groundwater and two wells (MW-1a and MW-3a) were installed to replace two damaged wells.
- Four soil samples were selected based on field screening and analyzed for volatile organic compounds (VOC) by EPA method 8260. Ten groundwater samples were analyzed for VOCs by EPA Method 8260.

## 1.3 Purpose of the Report

The field investigation was initiated by Edward McCarty, in response to DEP Order No. SRD-113, issued on September 20, 1999, and a June 2001 CTDEP letter indicating Section B.1.e of the Order was not satisfied. A copy of Order SRD-113 and the CTDEP letter are included in Appendix C.

## 1.4 Limitations

The author of this report, DES of Milldale, Connecticut, hereby gives notice that any statement of opinion contained in this report prepared by DES shall not be construed to create any warranty or representation that the real property on which the investigation was conducted is free of pollution or complies with any or all applicable regulatory or statutory requirements; or that the property is fit for any particular purpose. Unless otherwise indicated in this report, no attempt was made to check on the compliance of present or past owners of the site with Federal, State, or Local laws and regulations. The conclusions presented in this report were based on the services described, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the client. Any person or entity considering the use, acquisition or other involvement or activity concerning the property shall be solely responsible for determining the adequacy of the property for any and all uses for which that person or entity shall use the property. Any person or entity considering the use, acquisition or other involvement of activity concerning the property which is the subject of this report should enter into any use, occupation, acquisitions or the like on sole reliance upon any representation of and on its own personal investigation of such property, and not in reliance upon any representation of DES regarding such property, the character, quality of value thereof. DES has performed this investigation in a professional manner using that degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. DES

shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld or not fully disclosed at the time the evaluation was performed.

## **2.0 PROPERTY INFORMATION**

### **2.1 Location and Setting**

The site consists of a two-story residential and commercial building and a storage shed situated on approximately 2.31 acres of land and is located at 20 Station Road in Brookfield, Connecticut. The site location is illustrated in Figure 1, Site Location Map. This figure represents the appropriate United States Geological Service (USGS) Danbury, Connecticut Quadrangle topographic map. A site plan illustrating the current site layout is presented in Figure 2, Site Layout Map. Figures 1 and 2 are included in Appendix A.

### **2.2 Surface Water and Groundwater Classification**

The nearest major surface water body to the 20 Station Road property in Brookfield, Connecticut, is the Still River located 0.25 miles to the east. The Still River has been classified by the CTDEP as class B surface water body. According to the CTDEP Water Quality Standards (April, 1987), Class B surface water bodies are identified by the CTDEP as bodies of water that are known or are presumed to meet Water Quality Criteria which include: recreational use, fish and wildlife habitat, agriculture and industrial supply and other legitimate uses, including navigation.

The Limekiln Brook is located 0.4 miles to the west. Limekiln Brook has not been assigned a classification therefore defaults to an A surface water quality classification. According to the CTDEP Water Quality Standards (April, 1987), Class A surface water bodies are identified by the CTDEP as bodies of water that are known or are presumed to meet Water Quality Criteria which include: potential drinking water supply, recreational use, fish and wildlife habitat, agriculture and industrial supply and other legitimate uses, including navigation. Wetlands have been delineated on the northern portion of the site.

The site is located in an area that has been assigned a "GA" groundwater classification by the CTDEP. GA classification groundwaters are described as within the area of influence of private and potential public water supply wells. The water is presumed suitable for direct human consumption without the need for treatment.

## **3.0 FIELD INVESTIGATION**

### **3.1 Boring Installation**

The borings were installed by Seaboard Environmental Drilling of West Springfield, Massachusetts on October 25, 2001, as directed by DES. Five borings, finished with two inch diameter groundwater monitoring wells were installed using a 4.25 inch hollow stem auger drill rig. One boring finished was installed using a 6 inch diameter hollow stem auger drill rig and was finished with a four-inch groundwater monitoring well. Soil samples were collected using a 24 inch split spoon sampling apparatus driven with a 140 pound hammer over a 24 inch drop. Sample locations are shown on Figure 3, Sample Location Map, included in Appendix A.

Before the collection of each sample, the sampling equipment was decontaminated to prevent any potential cross contamination and migration of analytes between samples. The decontamination

procedure consisted of double washing with a non-phosphate detergent, rinsing with tap water, and final rinsing with distilled water.

### **3.2 Soil Sampling Locations**

The sampling locations were selected based on the results of the analysis detailed in the DES February 2001 Phase II Subsurface Investigation report. The locations were also selected based on groundwater flow direction determined in that investigation.

#### **3.2.1 Monitoring Well Reinstallation**

Locations MW-1a and MW-3a were located in the area of the former monitoring wells MW-1 and MW-3 on the eastern and central portions of the site, respectively. The soils encountered consisted of medium gravel and brown medium to coarse grained sand. The sampling equipment was refused at approximately 8 feet below the ground surface (fbgs) at both locations and was presumed to be bedrock. Water was encountered at 5 fbgs. No odor or staining was observed in any of the soil samples collected. The wells were finished with 2 inch diameter monitoring wells that were installed to a depth of 8 fbgs. Well construction consisted of 5 feet of screen and 3 feet of riser with filter sand in the annular space and a bentonite seal two feet above the screen. The wells were secured with flush mount well caps that were set in concrete.

#### **3.2.2 Former Dry Cleaning Tenant Space**

Locations MW-8, MW-9 and MW-10 were installed on the western property boundary. The soils encountered consisted of medium gravel and brown medium to coarse grained sand. The sampling equipment was refused at approximately 8 fbgs at MW-8 and MW-10, and 9 fbgs at MW-9 and was presumed to be bedrock. Water was encountered at approximately 6 fbgs. No odor or staining was observed in any of the soil samples collected. Wells MW-8 and MW-10 were finished with 2 inch diameter monitoring wells that were installed to depths of 8 fbgs. Well construction consisted of 5 feet of screen and 3 feet of riser with filter sand in the annular space and a bentonite seal two feet above the screen. Well MW-9 was finished with 2 inch diameter monitoring well that was installed to depths of 9 fbgs. Well construction consisted of 5 feet of screen and 4 feet of riser with filter sand in the annular space and a bentonite seal two feet above the screen. The wells were secured with a flush mount well cap that was set in concrete.

Location MW-11 was installed to the west of the former building in the paved parking area. The soils encountered consisted of medium gravel and brown medium to coarse grained sand. The sampling equipment was refused at approximately 5 fbgs at two locations to the south of the final installation location. The depth of the final boring location was 7.3 fbgs. Water was encountered at 6 fbgs. No odor or staining was observed in any of the soil samples collected. The well was finished with a 4 inch diameter monitoring well that was installed to a depth of 7.3 fbgs. Well construction consisted of 5 feet of screen and 2.3 feet of riser with filter sand in the annular space and a bentonite seal two feet above the screen. The well was secured with a flush mount well cap that was set in concrete.

### **3.3 Soil Sample Screening**

Each soil sample collected was screened on-site using a photoionization detector (PID) that was calibrated on-site using 101 ppm isobutylene calibration gas. A PID is an instrument capable of detecting organic vapors that may be indicative of contamination. It is a field screening instrument and is not capable of providing absolute values for compounds. Screening protocol consisted of

adding approximately two ounces of soil to a new dedicated ziplock bag and the temperature was allowed to equilibrate to approximately 70 degrees F. The organic vapor screening was then conducted using a MicroTip Model 2020 PID fitted with a 11.7 e.V. lamp. Ten soil samples were screened. Soil sample MW-11 (0-2) was the only sample that contained a registered response above background at 4.2 parts per million (ppm). The remainder of the soil samples registered a response of 0 ppm.

### 3.4 Groundwater Table Elevation Measurements

Depth to groundwater measurements were recorded at monitoring wells MW-1a through MW-11 on November 6, 2001 prior to purging and sampling activities. A water level probe was lowered into each well until the groundwater surface was encountered. Measurements were recorded relative to the top of the well casing. MW-4 was determined to be dry at 4.45 fbs. The casing was later surveyed with an assumed reference datum. The piezometric surface elevations were calculated by subtracting the depth to groundwater from the surveyed top of casing elevations. At the time of measurement, the groundwater flow direction at the site was determined to be in a northwesterly direction with northerly and westerly components. The groundwater contour map for November 6, 2001 is presented on Figure 4, included in Appendix A. The groundwater elevation data is shown on Table 2 below.

**Table 2**  
**November 6, 2001 Groundwater Elevation Data**  
**20 Station Road, Brookfield, Connecticut**

Location	Relative Elevation	Depth to Groundwater	Groundwater Table Elevation
Reference Point	100.00	-	-
MW-1a	99.40	7.70	91.70
MW-2	99.88	10.75	89.13
MW-3a	98.67	7.97	90.70
MW-4	99.15	Dry	-
MW-5	98.47	6.43	92.04
MW-6	97.95	6.58	91.37
MW-7	98.50	6.87	91.63
MW-8	97.33	7.50	89.83
MW-9	98.32	8.55	89.77
MW-10	99.11	7.27	91.84
MW-11	99.47	6.7	92.77

NOTE: Relative Elevation of Wells is to the Top of the Casing

### 3.5 Groundwater Sample Collection

Groundwater samples were collected from monitoring wells MW-1a through MW-3a and MW-5 through MW-11 by DES in accordance with company Standard Operating Procedures and standard industry practices on November 6, 2001. Using the total depth of the wells and depth to water measurement, the volume of standing water in each well was calculated. Each well was purged of five well volumes with dedicated polyethylene bailer prior to collection of a representative groundwater sample. The groundwater samples were collected using the same dedicated equipment used to purge the wells to ensure that cross contamination did not occur. Two 40-milliliter vials (preserved with hydrochloric acid) were completely filled with groundwater from each monitoring well.

The time, location and sample number were recorded on the sample container with indelible ink and on the accompanying chain of custody form, maintained in a chilled environment and delivered to York Analytical Laboratories, Inc. (York) of Stamford, Connecticut.

#### 4.0 LABORATORY ANALYSIS

##### 4.1 Laboratory Analytical methods

Based on the results of the PID screening and interval location (relative to the groundwater table elevation), DES submitted soil samples MW-8 (5'-7'), MW-9 (5'-7'), MW-10 (5'-7') and MW-11 (0'-2') and all of the groundwater samples to York for analysis of VOCs via EPA Method 8260 with MTBE. The soil samples were submitted for analysis on October 7, 2001 and the groundwater samples were submitted for analysis on November 7, 2001. Holding times were observed for all analysis performed. A copy of the laboratory analytical reports are provided in Appendix D.

##### 4.2 CTDEP Remediation Standard Regulations

The analytical results for the soil samples were compared to the Residential Direct Exposure Criteria (RDEC) and the "GA" Pollutant Mobility Criteria (PMC) established in Section 22a-133k-2 of the Remediation Standard Regulations (RSRs).

The analytical results for the groundwater samples were compared to the Groundwater Protection Criteria (GPC) for "GA" classified groundwater areas, Residential Volatilization Criteria (RVC) and the Surface Water Protection Criteria (SWPC) established in Section 22a-133k-3 of the RSRs.

##### 4.2.1 Results of Soil Analysis

The results of the soil analysis indicated samples MW-10 (5'-7') and MW-11 (0'-2') contained 0.005 milligrams per kilogram (mg/kg) and 0.21 mg/kg, respectively, of tetrachloroethylene (PCE). The concentration of PCE in MW-11 (0'-2') exceeded the PMC of 0.1 mg/kg for PCE but was well below the RDEC for PCE of 12 mg/kg. The concentration of PCE in MW-10 (5'-7') was below the RDEC and PMC for PCE.

No other VOCs were detected in the soil samples above laboratory detection limits. A tabular summary of the VOC soil analytical data is shown below on Table 3.

**Table 3**  
**Summary of Soil Analytical Data (detections only)**  
**20 Station Road, Brookfield, Connecticut**

Parameter	Sample Designation				Standard	
	MW-8 (5-7)	MW-9 (5-7)	MW-10 (5-7)	MW-11 (0-2)	RDEC	PMC
Tetrachloroethylene	ND	ND	0.005	0.21	12	0.1

NOTE: All Units in Milligrams Per Kilogram (mg/kg) = Parts Per Million (ppm)  
RDEC = Residential Direct Exposure Criteria  
PMC = Pollutant Mobility Criteria  
Bold = Exceedance  
ND = Below Laboratory Detection Limits

#### 4.2.2 Results of Groundwater Analysis

The results of the groundwater analysis showed concentrations of PCE in all of the groundwater samples collected from the monitoring wells, with the exception of MW-2 and MW-3a, ranging from 2 ug/l in MW-1 to 8500 ug/l in MW-5. Six of the wells (MW-5, MW-6 and MW-8 through MW-11) contained concentration of PCE above the GPC of 5 ug/l for PCE. Four of the wells (MW-5, MW-6, MW-10 and MW-11) contained concentrations of PCE above the SWPC for PCE of 88 ug/l. Two of the wells (MW-5 and MW-11) contained concentrations of PCE above the RVC of 1500 ug/l for PCE.

Trichloroethylene (TCE) was detected in MW-5, MW-6, MW-9, MW-10 and MW-11 at concentrations of 530 ug/l, 240 ug/l, 7 ug/l, 42 ug/l and 230 ug/l, respectively, which are all above the GWPC of 5 ug/l for TCE. The concentrations of TCE in MW-5, MW-6 and MW-11 exceeded the RVC of 219 ug/l. All of the concentrations of TCE were below the SWPC of 2340 for TCE.

Cis 1,2-Dichloroethylene was detected in all of the groundwater monitoring wells, with the exception of MW-1a, MW-2 and MW-3a ranging from 1 ug/l in MW-7 to 270 ug/l in MW-5. The concentrations of cis-1,2-Dichloroethylene in MW-5, MW-6 and MW-11 exceeded the GPC of 70 ug/l. No RVC or SWPC has been established for cis-1,2-Dichloroethylene.

Monitoring well MW-5 contained 130 ug/l of chloroform which is above the GPC of 6 ug/l for chloroform but below the RVC (14100 ug/l) and SWPC (287 ug/l) for chloroform. MTBE was detected in MW-2 at 1 ug/l which is below the groundwater standards for MTBE. A tabular summary of the groundwater analytical is presented on Table 4 below. PCE concentrations in groundwater are shown on Figure 6, included in Appendix A.

**Table 4**  
**Summary of Groundwater Analytical Data (detections only)**  
 20 Station Road, Brookfield, Connecticut

Parameter	Sample Designation					Standard		
	MW-1	MW-2	MW-5	MW-6	MW-7	GPC	RVC	SWPC
Tetrachloroethylene	2	ND	8500	110	2	5	1500	88
Trichloroethylene	ND	ND	530	240	ND	5	219	2340
c-1,2-Dichloroethylene	ND	ND	270	230	1	70	NE	NE
Chloroform	ND	ND	130	ND	ND	6	14100	287
MTBE	ND	1	ND	ND	ND	70	50000	NE

NOTE: All Units in Micrograms Per Liter (ug/l) = Parts Per Billion (ppb)  
 PMC = Pollutant Mobility Criteria  
 RVC = Residential Volatilization Criteria

SWPC = Surface Water Protection Criteria  
 Bold = Exceedance  
 ND = Below Laboratory Detection Limits

Table 4 (continued)

Parameter	Sample Designation				Standard		
	MW-8	MW-9	MW-10	MW-11	GPC	RVC	SWPC
Tetrachloroethylene	9	9	820	4800	5	1500	88
Trichloroethylene	ND	7	42	230	5	219	2340
c-1,2-Dichloroethylene	3	6	44	73	70	NE	NE
Chloroform	ND	ND	ND	ND	6	14100	287
MTBE	5	ND	ND	ND	70	50000	NE

NOTE: All Units in Micrograms Per Liter (ug/l) = Parts Per Billion (ppb)  
 PMC = Pollutant Mobility Criteria  
 RVC = Residential Volatilization Criteria

SWPC = Surface Water Protection Criteria  
 Bold = Exceedance  
 ND = Below Laboratory Detection Limits

## 5.0 SUMMARY, CONCLUSIONS, and RECOMMENDATIONS

### 5.1 Summary

The property consists of a two-story residential and commercial building and a storage shed on 2.31 acres of land. A dry cleaner operated on-site during the 1960s and 1970s and reportedly stored waste dry cleaning solvents in two subgrade 55-gallon drums located beneath the northwest portion of the building. On September 20, 1999, the CTDEP issued DEP Order No. 113 to investigate the extent of soil, groundwater and surface water on-site and the potential impact to areas off-site from the former dry cleaning operation.

The site building is heated by liquefied propane (LP) and electricity. The building was formerly heated by fuel oil. The heating oil was formerly stored in a 275-gallon AST and 550-gallon AST located on the north side of the building. The 275-gallon AST was removed in March 1997 and the 550-gallon AST is still located on-site and not used. Heating oil was also formerly stored in a 550-gallon UST located on the west side of the building. In November 1998 the 550-gallon fuel oil UST was removed from the subject site. Soil samples were collected from the UST grave and submitted for analysis of TPH by EPA Method 418.1 and VOCs by EPA Method 8260. The results of the analysis showed elevated concentrations of BTEX constituents above applicable soil standards. In addition, a sample of liquid was collected from within the UST which contained BTEX constituents. Duplicate samples collected by the CTDEP indicated the presence of tetrachloroethylene in the soil and groundwater above soil and groundwater standards.

The site previously used an on-site septic system for sewage disposal which is located on the northeastern side of the building. The leaching fields were reportedly located to the northeast of the building. The septic tank and four associated dry wells were removed with a subsequent connection to the sanitary sewer system. The on-site septic system had been used for sewage disposal from the date of construction until the connection to the sanitary sewer system.

Potable well samples have been collected from approximately 27 residences and businesses located to the west of the site since March 1998 to monitor for the presence of VOCs in the drinking water. Approximately ten of these properties have had elevated concentrations of halogenated and/or aromatic VOCs in their drinking water supply. GAC filtration systems have been installed at these residences.

In April 1998, the CTDEP installed a total of eight borings using its Geoprobe SES. Bedrock was encountered at depths of 8 to 11 feet below ground surface. The borings were finished with piezometers ranging in depth from 8 to 11 fbg. Groundwater samples were collected from the piezometers and field screened with a Photovac GC PID. Results of the field screening indicated levels of chlorinated solvents ranging from 1.4 parts per billion (ppb) to 140,000 ppb (GP- 7) in the groundwater samples and 120 ppb to 1,700 ppb (GP- 7) in the soil samples. In addition, water samples were collected from the potable wells, sumps, tanks and sludge seeps and soil samples were collected from a tank grave and floor sump. The samples were submitted to the CTDOH laboratory for analysis of VOCs by EPA Method 624. The results of the analysis indicated the highest concentrations of PCE were in the groundwater collected from GP-8 (48,000 ug/l), located to the north of the former dry cleaning tenant space, and in the PCE UST (1,617,500,000 ug/l). The PCE UST is one of the subgrade 55 gallon drums located in the northwestern portion of the building that was used to collect waste PCE.

In November 2000, DES performed a subsurface investigation that consisted of the installation of twenty-two soil borings, seven of which were finished with groundwater monitoring wells and sixteen shallow borings beneath the former dry cleaning tenant space. A total of 120 soil samples, two surface water samples, two potable well samples and seven groundwater samples were collected during the investigation. Thirty of the soil samples were submitted to a laboratory for analysis of VOCs by EPA Method 8260 and two for ETPH. All of the surface water and groundwater samples were submitted for analysis of VOCs by EPA Method 8260, with one groundwater sample for ETPH. The two potable well samples were submitted for analysis of VOCs by EPA Method 524.2. The results of the soil analysis indicated three of the soil samples collected from beneath the former dry cleaning tenant space, contained concentrations of PCE above the PMC of 0.1 mg/kg for PCE but below the RDEC of 12 mg/kg for PCE. PCE was detected in 3 of the other sub floor samples (SB-6 (2-4), SB-10 (2-4) and SB-16 (0-2)) below the RDEC and PMC. The remaining sub floor soil samples contained concentrations of VOCs below laboratory detection limits. Two soil samples collected immediately to the north of the dry cleaning tenant space contained concentrations of PCE which were above the PMC but below the RDEC. The remaining soil samples collected from the exterior of the property contained concentrations of VOCs below laboratory detection limits or applicable standards. The results of the groundwater analysis showed concentrations of PCE in monitoring wells MW-4 and MW-5, located to the west and northwest of the former dry cleaning tenant space, of 4,800 ug/l and 5,900 ug/l, respectively which are above the GPC (5 ug/l), RVC (1500 ug/l) and SWPC (88 ug/l). PCE was also detected in MW-6 and MW-7, located to the north and northwest of the former dry cleaning tenant space, at concentrations of 23 ug/l and 6 ug/l which are above the GPC but below the RVC and SWPC. The remainder of the groundwater samples contained concentrations of PCE below applicable groundwater standards or laboratory detection limits. Monitoring wells MW-2, and MW-4 through MW-7 contained concentrations of other chlorinated solvents commonly seen in the dechlorination process of PCE above the respective groundwater standards (GPC and RVC). The analytes included trichloroethylene, 1,1,1-trichloroethane, 1,2-dichloroethylene, 1,1-dichloroethane, chloroethane and vinyl chloride. The two water samples collected from the on-site potable wells contained concentrations of PCE and TCE that exceeded the respective MCL and GPC for those compounds. Four other VOCs were detected below the laboratory detection limits or the MCL and GPC. No VOCs were detected in either of the surface water samples collected from the wetlands on the northern portion of the property.

DES installed a total of six soil borings, finished with groundwater monitoring wells and collected a total of ten soil samples during this investigation. Four of the soil samples and all of the groundwater samples were submitted to a laboratory for analysis of VOCs by EPA Method 8260

with MTBE. The concentration of PCE in soil sample MW-11 (0'-2') exceeded the PMC of 0.1 mg/kg for PCE but was well below the RDEC for PCE of 12 mg/kg. This soil sample was collected to the west of the former dry cleaning tenant space. None of the other soil samples contained concentrations of PCE or other VOCs above applicable soil standards or laboratory detection limits. The results of the groundwater analysis showed concentrations of PCE in all of the groundwater samples collected from the monitoring wells, with the exception of MW-2 and MW-3a, ranging from 2 ug/l to 8500 ug/l. Six of the wells (MW-5, MW-6 and MW-8 through MW-11) contained concentration of PCE above the GPC of 5 ug/l for PCE. Four of the wells (MW-5, MW-6, MW-10 and MW-11) contained concentrations of PCE above the SWPC for PCE of 88 ug/l. Two of the wells (MW-5 and MW-11) contained concentrations of PCE above the RVC of 1500 ug/l for PCE. TCE was detected in MW-5, MW-6, MW-9, MW-10 and MW-11 at concentrations of 530 ug/l, 240 ug/l, 7 ug/l, 42 ug/l and 230 ug/l, respectively, which are all above the GWPC of 5 ug/l for TCE. The concentrations of TCE in MW-5, MW-6 and MW-11 exceeded the RVC of 219 ug/l. Cis-1,2-Dichloroethylene was detected in all of the groundwater monitoring wells, with the exception of MW-1a, MW-2 and MW-3a ranging from 1 ug/l to 270 ug/l. The concentrations of cis-1,2-Dichloroethylene in MW-5, MW-6 and MW-11 exceeded the GPC of 70 ug/l. Monitoring well MW-5 contained 130 ug/l of chloroform which is above the GPC of 6 ug/l for chloroform but below the RVC (14100 ug/l) and SWPC (287 ug/l) for chloroform. The highest HVOC concentrations in the groundwater are located immediately to the west and northwest, downgradient, of the former dry cleaning tenant space.

Groundwater was determined to be flowing in a northwesterly direction with northerly and westerly flow components. The areal extent of the groundwater contamination extends off of the western property line, and is shown on Figure 6.

## 5.2 Conclusions

According to investigation activities and site data, PCE impacted soil exists under the northwest portion of the building in the former dry cleaning tenant space and appear to be a continuing source of contamination. The soil needs to be remediated to applicable soil standards to remain in place and prevent any further degradation of the groundwater. This can be done through removal of the drums and excavation of the soil with the installation of a sub slab venting system.

PCE impacted soil is also located immediately to the north and west of the former dry cleaning tenant space and is shown on Figure 7. This soil should be excavated and transported off-site for disposal. Post remedial groundwater monitoring will need to be conducted to determine the effectiveness of remediation and to be in compliance with the RSRs.

The groundwater in the shallow aquifer (MW-5, MW-6 and MW-8 through MW-11 located to the west and northwest of the former dry cleaning tenant space) contains concentrations of PCE that exceeds applicable groundwater standards by orders of magnitude. Other halogenated compounds commonly seen in the dechlorination process of PCE were detected above standards. The plume extends to the western property boundary and migrates off-site. Hydraulic containment of the plume should be maintained to prevent further migration of the contamination. Contaminated groundwater in the shallow and deep portions of the bedrock aquifer should be remediated to applicable groundwater standards through the use of a groundwater pump and treat technology.

### 5.3 Recommendations

Based on the scope of work performed, DES recommends the following for the chlorinated solvent contamination identified during the soil and groundwater investigation at the 20 Station Road property on in Brookfield, Connecticut:

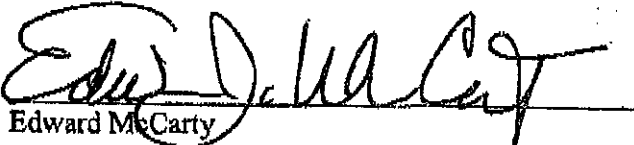
- Removal of the 55-gallon drums and any impacted soil encountered in the former dry cleaning tenant space to limit/reduce the continued source impact. The soil and drums should be transported off-site for disposal and confirmation soil samples should be collected from beneath the native soil beneath the drums after removal.
- Excavation of the PCE contaminated soil to the north and west of the former dry cleaning tenant space and transportation off-site for disposal via thermal treatment. Excavation should be performed during the seasonal low water table to enable removal of the greatest amount of impacted soil. Confirmation soil samples should be collected from the excavation to determine if all PCE impacted soils have been removed from the site.
- Install a sub slab active venting system beneath the former dry cleaning tenant space to allow volatilization of the VOCs to the exterior of the building. The concrete floor in that room should be sealed with an epoxy coating to prevent chemical migration into the building from the sub slab contamination. An indoor air quality monitoring program should be conducted to determine compliance with indoor air quality standards during operation of the sub slab venting system.
- The installation of a groundwater pump and treat remediation system. The remediation system should consist of an extraction well in the shallow aquifer. One or more (#1 and/or #2) of the on-site private water supply wells should be converted to extraction wells. The extraction wells should be operated to provide hydraulic containment of the plume as well as pump the contaminated groundwater to a treatment system.
- A quarterly groundwater monitoring program should be implemented to determine the effectiveness of the remediation system and compliance with the RSRs.
- Prepare a Remedial Action Plan with Remediation Options and Cost Estimates, along with a proposed schedule for installation, operation and groundwater monitoring; to comply with requirements of Section B.1.e of Order SRD-113.

20 Station Road  
Brookfield, Connecticut  
DES Project No. 1275

## 6.0 CERTIFICATION

### 6.1 Respondents

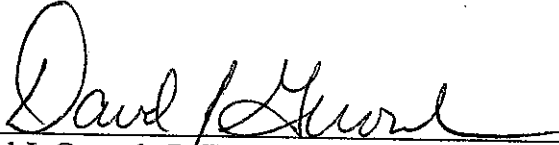
"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statements made in this document or its attachments may be punishable as a criminal offense."

  
Edward McCarty

June 7 02  
Date

**6.2 Consultant**

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statements made in this document or its attachments may be punishable as a criminal offense."



David J. Gworek, P.E., L.E.P

6/11/02

Date



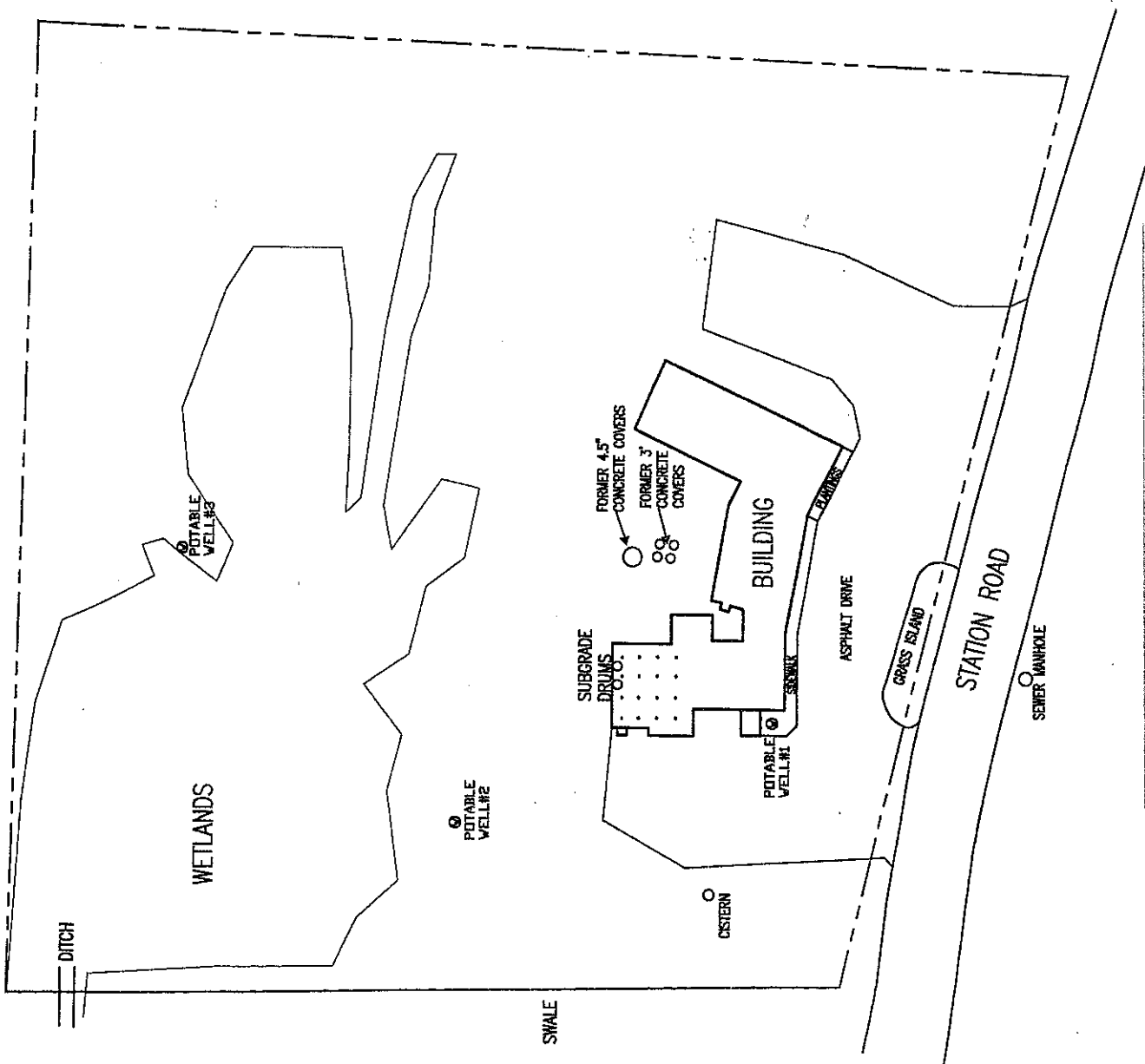


FIGURE 2 SITE LAYOUT MAP

McCARTY  
20 STATION ROAD  
BROOKFIELD, CT

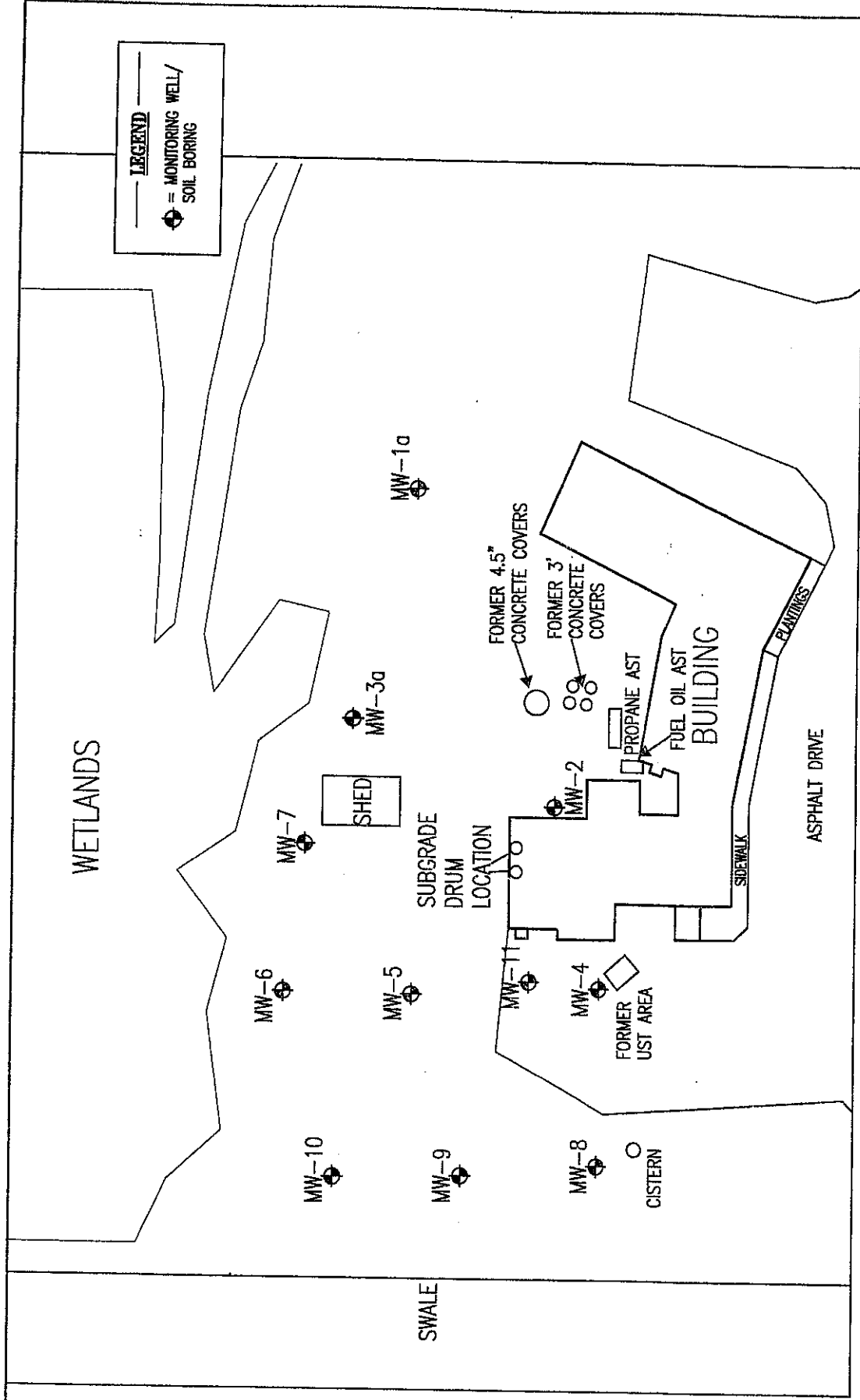


NOT TO SCALE

diversified environmental services, inc.  
1100 Main Street, Suite 200, Brookfield, CT 06005  
(404) 281-8828 Fax (404) 281-8829



DRN: JDG	CHD BY:	SHEET: 1:3	8/00
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<div> <div>diversified environmental services, inc.</div> <div>1700 Meriden-Pasadenbury Turnpike, PO Box 337, Meriden, CT 06457</div> <div>(800) 821-8850 Fax (860) 431-9900</div> </div>		<p>NOT TO SCALE</p>				<p>FIGURE 3 MONITORING WELL LOCATION MAP</p>	
		<p>McCARTY</p> <p>20 STATION ROAD</p> <p>BROOKFIELD, CT</p>					
		<p>DRW: BCM</p>	<p>CHD BY: DJG</p>	<p>SHEET: 1:1</p>	<p>12/01</p>		

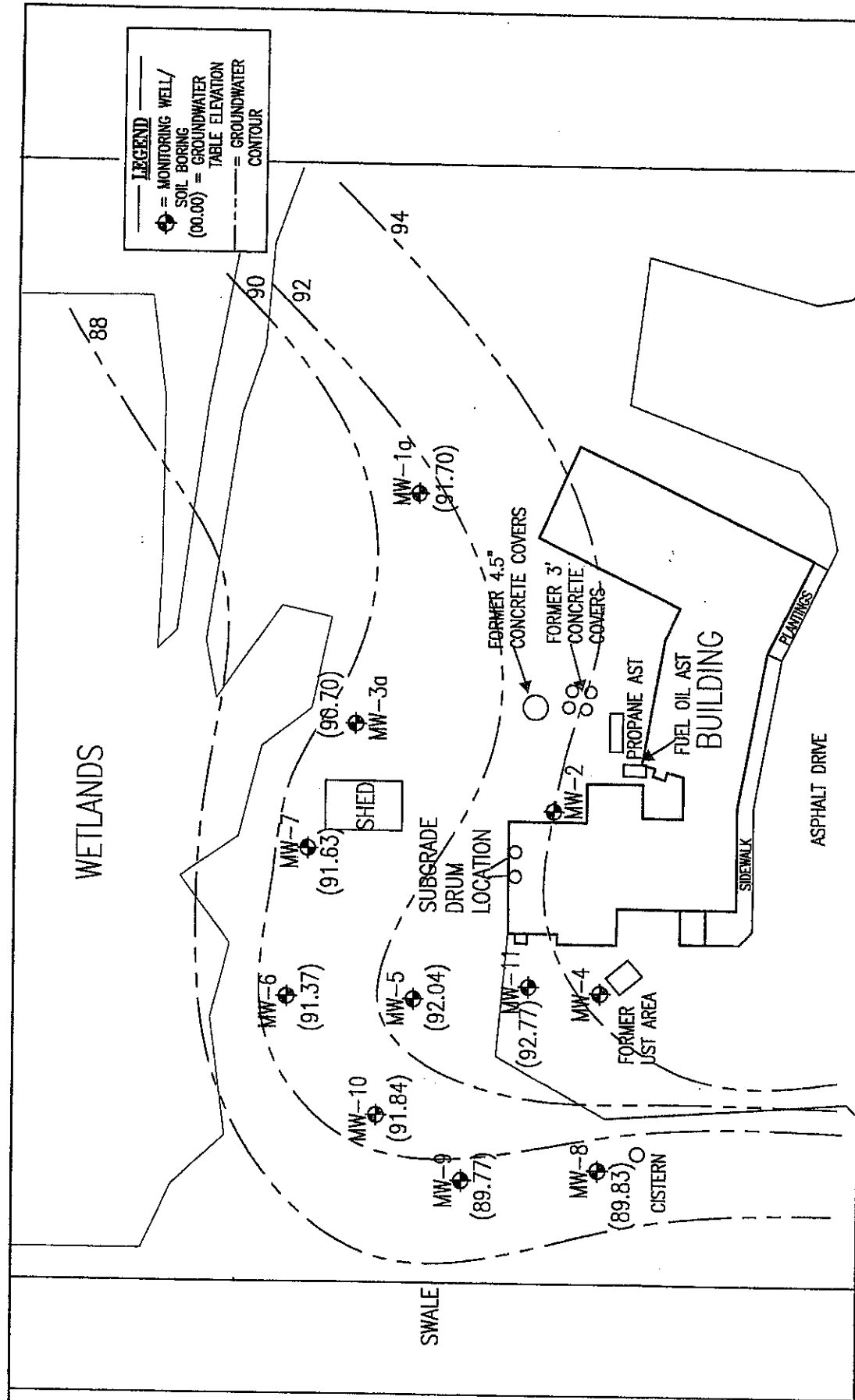


FIGURE 4 11/6/01 GROUNDWATER CONTOUR MAP



**McCARTY**  
**20 STATION ROAD**  
**BROOKFIELD, CT**

NOT TO SCALE

DRW: BCM	CHD BY: DJG	SHEET: 1:1	12/01
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**diversified environmental services, inc.**  
 1755 Main Street, Suite 307, Middletown, CT 06457  
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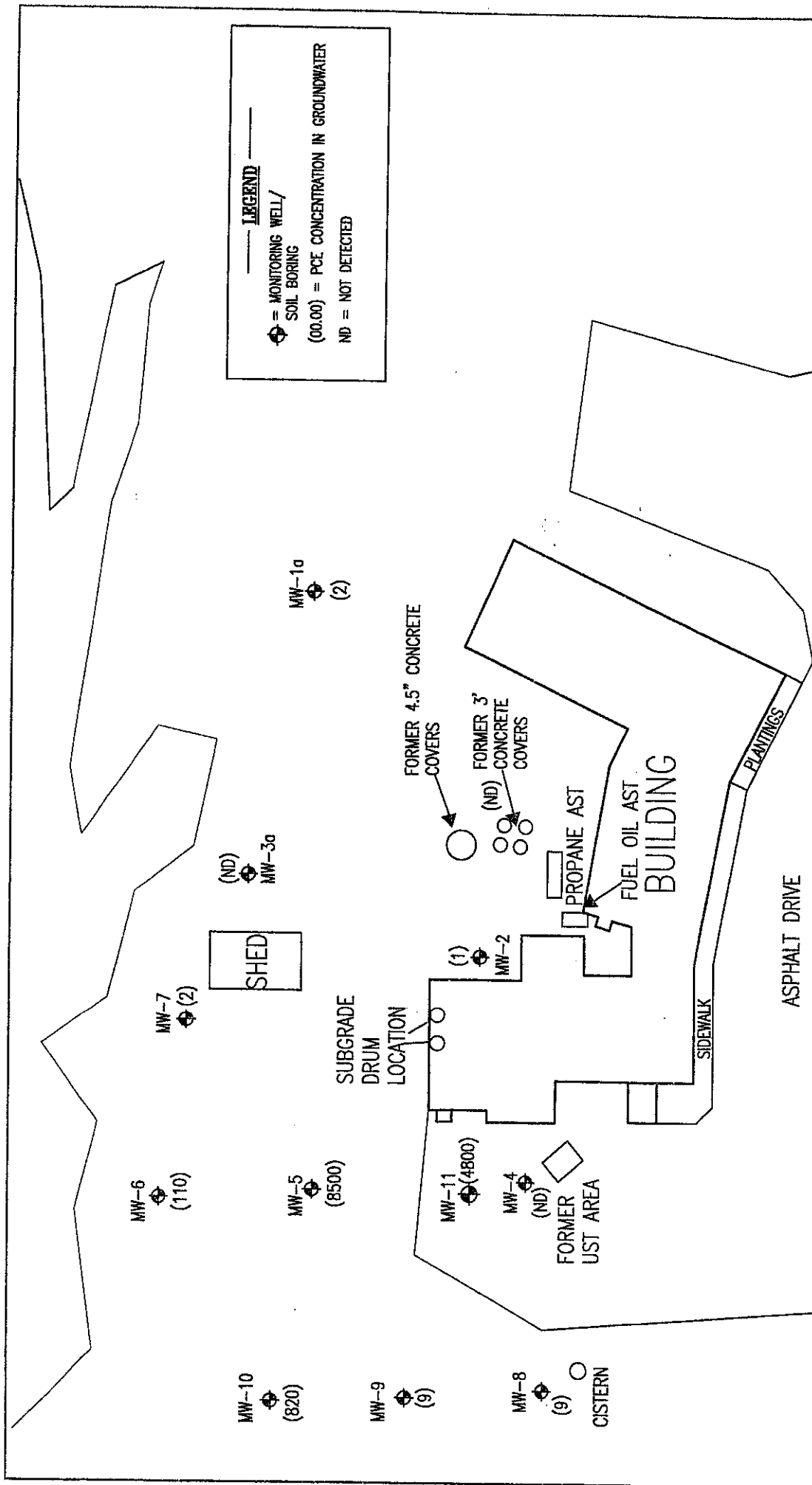


FIGURE 5 PCE CONCENTRATIONS IN GROUNDWATER



**McCARTY**  
**20 STATION ROAD**  
**BROOKFIELD, CT**

**NOT TO SCALE**

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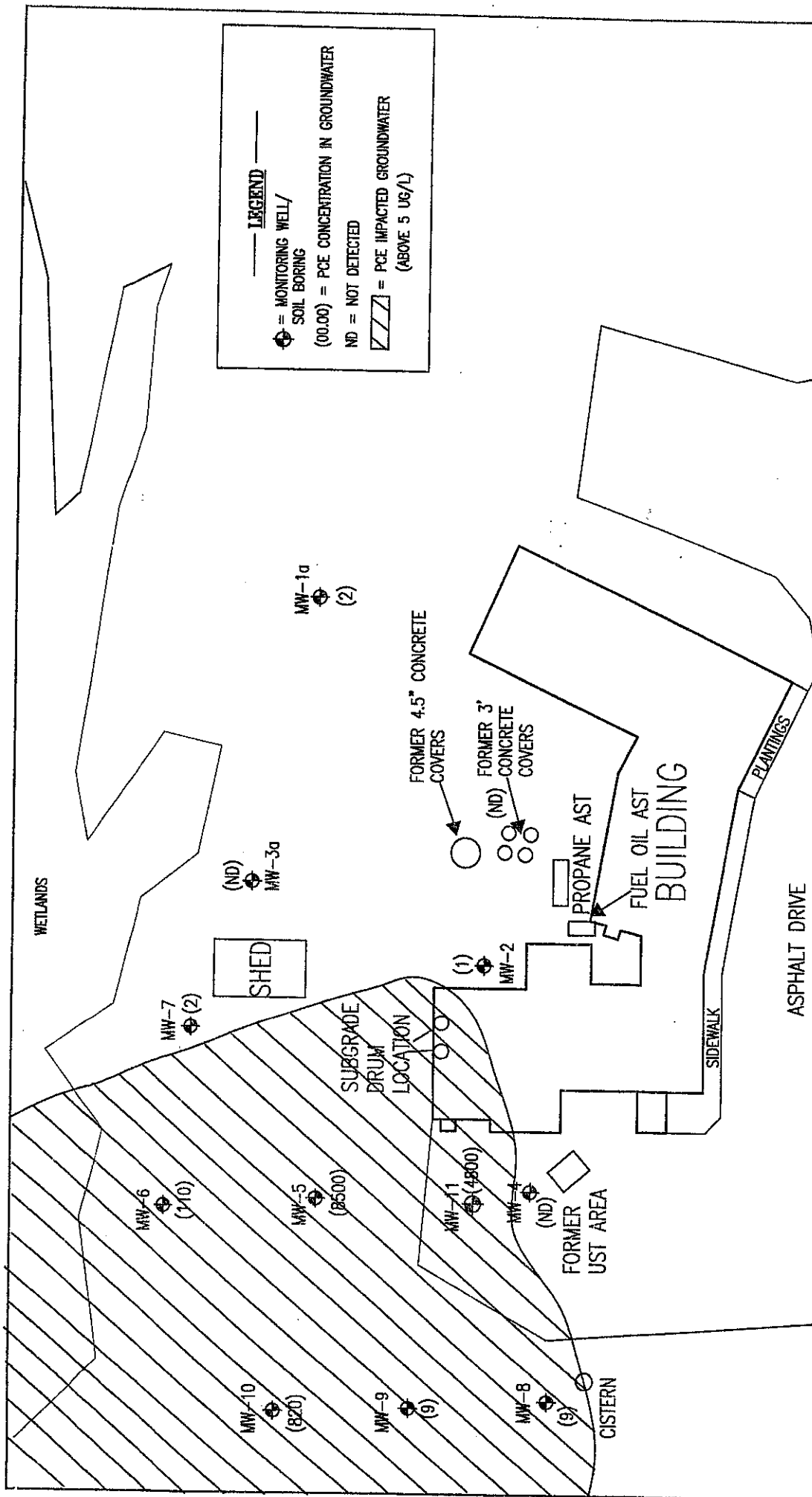


FIGURE 6 AREAL EXTENT OF PCE  
IMPACTED GROUNDWATER



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12/01

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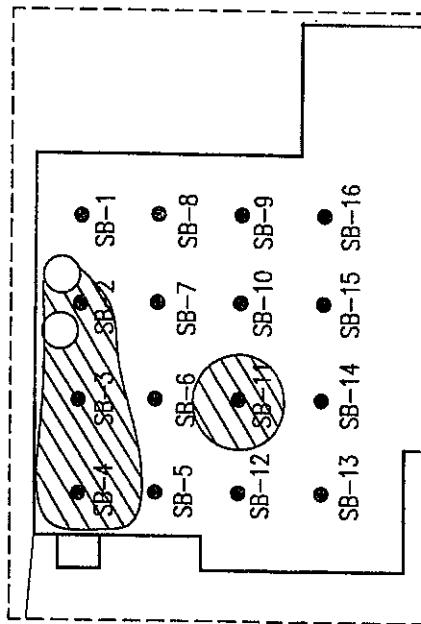
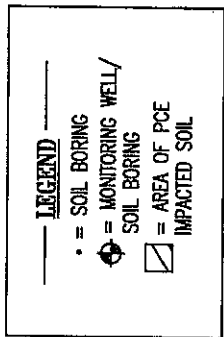
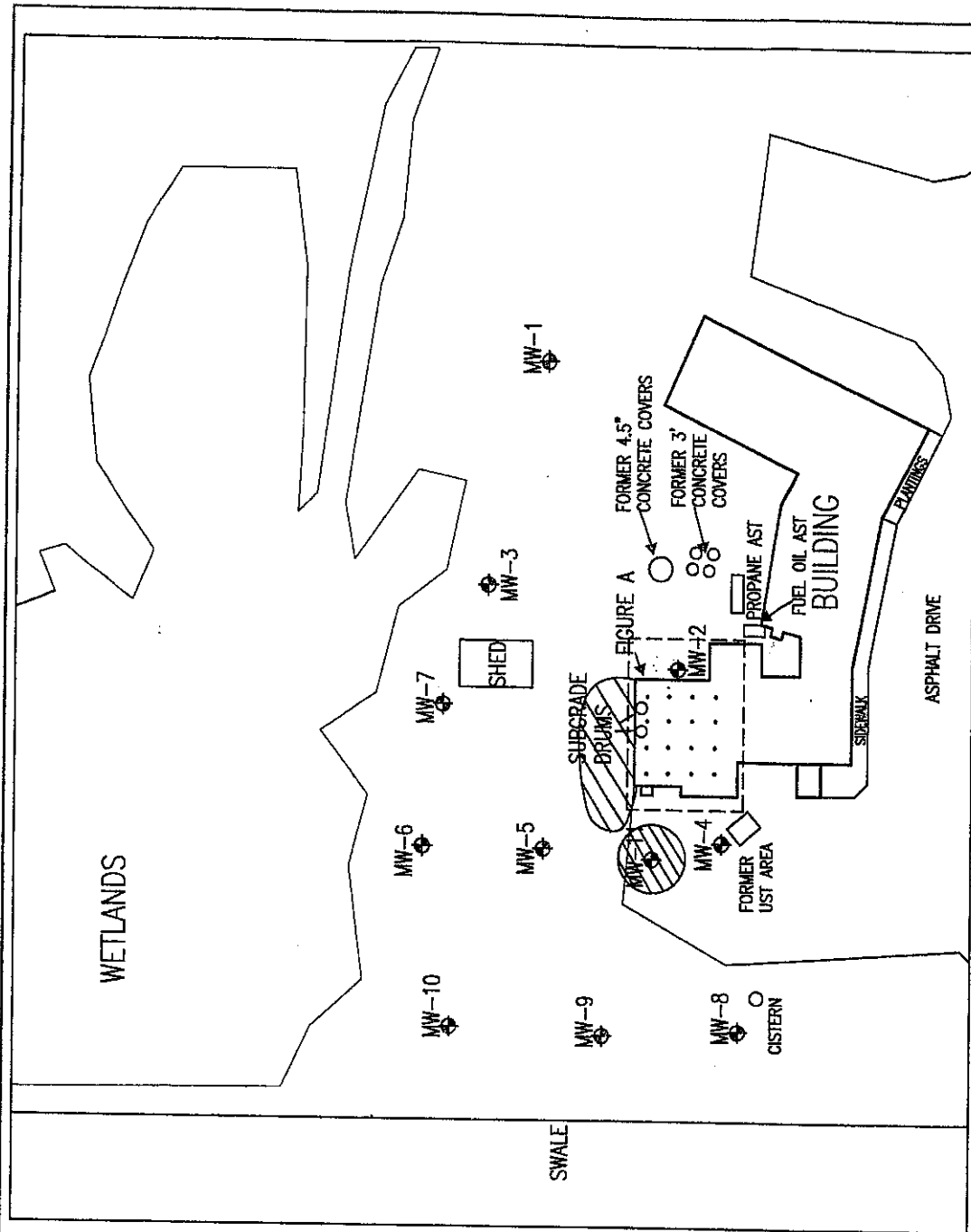


FIGURE A

FIGURE 7 PCE IMPACTED SOIL

**McCARTY**  
**20 STATION ROAD**  
**BROOKFIELD, CT**



NOT TO SCALE

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## **Appendix B**

**PHASE II  
SUBSURFACE INVESTIGATION REPORT**

**20 Station Road  
Brookfield, Connecticut**

Prepared for:

Mr. Edward McCarty  
20 Station Road  
Brookfield, Connecticut

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DES Project No. 1275

February 2001

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## 1.0 INTRODUCTION

This report summarizes data collected during a Phase II subsurface investigation performed at 20 Station Road in Brookfield, Connecticut. The work was performed in December of 2000, by Diversified Environmental Services, Inc. (DES), at the request of Mr. Edward McCarty. The site was investigated in response to Order SRD 113 issued by the Connecticut Department of Environmental Protection (CTDEP). A Scope of Study was prepared by DES and submitted to the CTDEP on September 7, 2000. The Scope of Study was approved on November 7, 2000.

### 1.1 Background

The site has been used for residential and commercial purposes since its development in 1945. Prior to that the site was used as farmland. A dry cleaner was located on-site during the 1960s and 1970s and was located in the northwest portion of the site building. Virgin dry cleaning solvent, tetrachloroethylene (PCE) was stored in unknown quantities and waste PCE was reportedly stored in two 55-gallon subgrade steel drums that were installed at an unknown date. These steel drums were piped together and reportedly tied into the dry cleaning machine.

The site building is heated by liquefied propane (LP) and electricity. The building was formerly heated by fuel oil. The heating oil was formerly stored in a 275-gallon aboveground storage tank (AST) and 550-gallon AST located on the north side of the building. The 275-gallon AST was removed in March 1997 and the 550-gallon AST is still located on-site and not used. Heating oil was also formerly stored in a 550-gallon UST located on the west side of the building. In November 1998 the UST was removed from the subject site. Soil samples were collected from the UST grave and submitted for analysis of total petroleum hydrocarbons (TPH) by EPA Method 418.1 and volatile organic compounds (VOC) by EPA Method 8260. The results of the analysis showed elevated levels of benzene, toluene, ethyl benzene and xylenes (BTEX) constituents above applicable soil standards. In addition, a sample of liquid was collected from within the UST which contained BTEX constituents. Duplicate samples collected by the CTDEP indicated the presence of tetrachloroethylene in the soil above the Pollutant Mobility Criteria (PMC).

The site previously used an on-site septic system for sewage disposal which is located on the northeastern side of the building. The leaching fields were reportedly located on the northeast side of the building. In 1997, the septic tank and four associated dry wells were removed with a subsequent connection to the sanitary sewer system. The on-site septic system had been used for sewage disposal from the date of construction until the connection to the sanitary sewer system.

In June 1998, the CTDEP collected a water sample from a tap at the site. Laboratory analysis showed a concentration of PCE of 150 micrograms per liter (ug/l) and trichloroethylene (TCE) of 10 ug/l. A granular activated carbon (GAC) filtration system was subsequently installed at the site and water samples were collected by the CTDEP after water passed through the filtration system and were submitted for laboratory testing of VOCs. The results indicated non-detectable levels of halogenated VOCs after passing through the treatment system.

In addition to the 20 Station Road property, water samples collected from approximately 27 residences and businesses located to the west have been collected since March 1998 to monitor the presence of VOCs in the drinking water. Approximately ten of these properties have had elevated levels of halogenated and/or aromatic VOCs in their drinking water supply. GAC filtration systems have been installed at these residences.

In April 1998, the CTDEP Water Management Bureau installed a total of eight borings on the subject site using its Geoprobe SES. Bedrock was encountered at depths of 8 to 11 feet below ground surface (fbgs). The borings were finished with 0.75" piezometers ranging in depth from 8 to 11 fbgs. Groundwater samples were collected from the piezometers and field screened with a Photovac GC PID. Results of the field screening indicated levels of chlorinated solvents ranging from 1.4 parts per billion (ppb) to 140,000 ppb (GP- 7) in the groundwater samples and 120 micrograms per liter (ug/l) to 1,700 ug/l (GP- 7) in the soil samples. In addition, water samples were collected from the potable wells, sumps, tanks and sludge seeps and soil samples were collected from a tank grave and floor sump. The samples were submitted to the State of Connecticut Department of Health (CTDOH) laboratory for analysis of VOCs by EPA Method 624. The results of the analysis indicated the highest concentrations of PCE were in the groundwater collected from GP-8 (48,000 ug/l), located just to the north of the former dry cleaning tenant space, and in the PCE UST (1,617,500,000 ug/l). The PCE UST is one of the subgrade 55 gallon drums located in the northwestern portion of the building that was used to collect waste PCE.

## 1.2 Scope of Work

The Scope of the Work is designed to investigate the degree and extent of soil, groundwater and surface water at the site and the potential impact on the environment to areas off-site. This work was performed in accordance with current CTDEP sampling requirements, standard industry practices and the November 7, 2000 CTDEP approved Scope of Study. The following tasks were performed as part of the subsurface investigation.

- The installation of twenty-two (22) soil borings, seven (7) of the borings were converted into two inch diameter monitoring wells, approximately five feet below the groundwater table. Continuous split spoon soil samples were collected and screened for visual characterization and on-site volatile organic vapor screening. Boring locations were as follows:
  - a) Five in the former septic tank, leaching field and dry well area, one converted to a groundwater monitoring well
  - b) Fifteen in the area around the former dry cleaning tenant space, five converted to groundwater monitoring wells
  - c) Two in the former underground storage tank area (also west of the former dry cleaning tenant space), one converted to a groundwater monitoring well
- The collection of sixteen (16) sub floor soil samples five feet on center in the former dry cleaning tenant space (current workshop) at two foot intervals to a terminal depth of four feet.
- The collection of two surface water samples from the wetlands on the north side of the property and two water samples from the on-site potable wells.

Thirty soil samples were selected based on field screening and analyzed for volatile organic compounds (VOC) by EPA method 8260 and two soil samples were submitted for analysis of extractable total petroleum hydrocarbons (ETPH). Seven groundwater samples and two surface water samples were analyzed for VOCs by EPA Method 8260. Groundwater sample MW-4 was also submitted for analysis of ETPH. The samples collected from the potable wells were analyzed for VOCs by EPA Method 524.2.

### **1.3 Purpose of the Report**

The field investigation was initiated by Edward McCarty, in response to DEP Order No. SRD-113, issued on September 20, 1999, to provide a study of soil and groundwater quality on the site and to determine the extent of contamination from the former on-site dry cleaner. A copy of Order SRD-113 is included in Appendix B.

### **1.4 Limitations**

The author of this report, DES of Milldale, Connecticut, hereby gives notice that any statement of opinion contained in this report prepared by DES shall not be construed to create any warranty or representation that the real property on which the investigation was conducted is free of pollution or complies with any or all applicable regulatory or statutory requirements; or that the property is fit for any particular purpose. Unless otherwise indicated in this report, no attempt was made to check on the compliance of present or past owners of the site with Federal, State, or Local laws and regulations. The conclusions presented in this report were based on the services described, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the client. Any person or entity considering the use, acquisition or other involvement or activity concerning the property shall be solely responsible for determining the adequacy of the property for any and all uses for which that person or entity shall use the property. Any person or entity considering the use, acquisition or other involvement of activity concerning the property which is the subject of this report should enter into any use, occupation, acquisitions or the like on sole reliance upon any representation of and on its own personal investigation of such property, and not in reliance upon any representation of DES regarding such property, the character, quality of value thereof. DES has performed this investigation in a professional manner using that degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. DES shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld or not fully disclosed at the time the evaluation was performed.

## **2.0 PROPERTY INFORMATION**

### **2.1 Location and Setting**

The site consists of a two-story residential and commercial building and a storage shed situated on approximately 2.31 acres of land and is located at 20 Station Road in Brookfield, Connecticut. The site location is illustrated in Figure 1, Site Location Map. This figure represents the appropriate United States Geological Service (USGS) Danbury, Connecticut Quadrangle topographic map. A site plan illustrating the current site layout is presented in Figure 2, Site Layout Map, included in Appendix A.

### **2.2 Surface Water and Groundwater Classification**

The nearest major surface water body to the 20 Station Road property in Brookfield, Connecticut, is the Still River located 0.25 miles to the east. The Still River has been classified by the CTDEP as class B surface water body. According to the CTDEP Water Quality Standards (April, 1987), Class B surface water bodies are identified by the CTDEP as bodies of water that are known or are presumed to meet Water Quality Criteria which include: recreational use, fish and wildlife habitat, agriculture and industrial supply and other legitimate uses, including navigation.

The Limekiln Brook is located 0.4 miles to the west. Limekiln Brook has not been assigned a

classification therefore defaults to an A surface water quality classification. According to the CTDEP Water Quality Standards (April, 1987), Class A surface water bodies are identified by the CTDEP as bodies of water that are known or are presumed to meet Water Quality Criteria which include: potential drinking water supply, recreational use, fish and wildlife habitat, agriculture and industrial supply and other legitimate uses, including navigation. Wetlands have been delineated on the northern portion of the site.

The site is located in an area that has been assigned a "GA" groundwater classification by the CTDEP. GA classification groundwaters are described as within the area of influence of private and potential public water supply wells. The water is presumed suitable for direct human consumption without the need for treatment.

### **3.0 FIELD INVESTIGATION**

#### **3.1 Boring Installation**

The borings were installed by Seaboard Environmental Drilling of West Springfield, Massachusetts on December 7 and 8, 2000, as directed by DES. A total of twenty-two borings, seven finished with two inch diameter groundwater monitoring wells (designated B for boring and MW for monitoring well) were installed using a 4.25 inch hollow stem auger drill rig. Soil samples were collected using a 24 inch split spoon sampling apparatus driven with a 140 pound hammer over a 24 inch drop.

Sixteen shallow borings (designated SB for shallow boring) were installed using an electric rotary hammer drill with a 2 inch diameter concrete drill bit and a 1.5 inch diameter by six inch stainless steel hand auger beneath the concrete floor in the former dry cleaning tenant space. Sample locations are shown on Figure 3, Sample Location Map, included in Appendix A.

Before the collection of each sample, the sampling equipment was decontaminated to prevent any potential cross contamination and migration of analytes between samples. The decontamination procedure consisted of double washing with a non-phosphate detergent, rinsing with tap water, and final rinsing with distilled water.

#### **3.2 Soil Sampling Locations**

The sampling locations were selected based on the information observed during a site inspection, information provided by Mr. McCarty and the 1998 CTDEP investigation sample locations. The sampling locations included the following: the former septic system and leaching field area located on the northeast side of the property, the former dry cleaning tenant space formerly located in the northwest portion of the building and the former fuel oil underground storage tank located on the west side of the building.

##### **3.2.1 Former Septic System**

Locations B-1, B-2 and MW-1 were located in the former septic system leaching fields. The soils encountered consisted of medium gravel and brown medium to coarse grained sand. The sampling equipment was refused at approximately 8 feet below the ground surface (fbgs) to 14 fbgs and was presumed to be bedrock. Water was encountered at 4 fbgs. No odor or staining was observed in any of the soil samples collected. MW-1 was finished with a 2 inch diameter monitoring well that was installed to a depth of 10 fbgs. Well construction consisted of 8 feet of screen and 2 feet of

riser with filter sand in the annular space and a bentonite seal two feet above the screen. The well was secured with a flush mount well cap that was set in concrete.

Locations B-3 and B-4 were located to the east and west, respectively, of the former septic tank and dry well area. The soils encountered consisted of gray-brown medium to coarse grained sand. The sampling equipment was refused at approximately 9.5 fbs and 10 fbs, respectively, and prevented advancement of any additional soil sampling. Water was encountered at 4 fbs. No odor or staining was observed in any of the soil samples collected.

### **3.2.2 Former Dry Cleaning Tenant Space**

Borings B-5 through B-7 and B-9 through B-16 were located to the north, northwest, northeast and east of the former dry cleaning tenant space. Monitoring wells MW-2 and MW-3, and MW-5 through MW-7 (converted from B-12) were installed to the north, northwest, northeast and east of the former dry cleaning tenant space. The soils encountered during drilling consisted of brown medium to coarse grained sand. The sampling equipment was refused at approximately 8 fbs to 14 fbs and prevented advancement of any additional soil sampling at each location. Water was encountered at 2 fbs to 4 fbs. Boring B-11 (2-4) contained a gray staining and slight odor. The remainder of the samples did not contain any noticeable odor or staining.

The monitoring wells were finished with 2 inch diameter PVC monitoring wells that were installed to depths of 7 fbs to 9 fbs. Well construction consisted of at least five feet of screening below and two feet of screening above the water table with filter sand in the annular space around the well and a bentonite seal two feet above the screen (with the exception of MW-3 where groundwater was too shallow to screen above the water table). The wells were secured with flush mount well caps that were set in concrete.

### **3.2.3 Former Fuel Oil UST**

Two borings, MW-4 and B-8, were installed on the north and south ends, respectively, of the former 550-gallon fuel oil UST and downgradient from the former dry cleaning tenant space location. The soils encountered consisted of gray brown medium to coarse grained sand. The sampling equipment was refused at approximately 8 fbs and prevented advancement of any additional soil sampling. Water was encountered at 2.5 fbs in each location. A slight petroleum odor and staining was observed in B-8 (2-4). No odor or staining was observed in remainder of the soil samples collected. MW-4 was finished with a 2 inch diameter monitoring well that was installed to a depth of 8 fbs. Well construction consisted of 7 feet of screen and 1 foot of riser with filter sand in the annular space around the well and a bentonite seal two feet above the screen. The well was secured with a flush mount well cap that was set in concrete.

### **3.2.4 Sub Floor Sampling**

Sixteen sub floor locations (SB-1 through SB-16) were installed inside the building in the area of the former dry cleaner. Two inch diameter holes were drilled through the concrete slab using an electric rotary hammer drill, and soil samples were collected at two foot intervals to a total depth of 4 fbs, using a 1.5 inch diameter by 6 inch stainless steel hand auger.

The soils encountered consisted of gray-brown coarse sand with some clay. Samples SB-4 (2-4) and SB-11 (2-4) contained a mild solvent odor and slight staining. No odor or staining was observed in any of the other soil samples collected. Groundwater was encountered beneath the slab at a depth of 2 fbs.

### 3.3 Soil Sample Screening

Each soil sample collected was screened on-site using a photoionization detector (PID) that was calibrated daily on-site using 101 ppm isobutylene calibration gas. A PID is an instrument capable of detecting organic vapors that may be indicative of contamination. It is a field screening instrument and is not capable of providing absolute values for compounds. Screening protocol consisted of adding approximately two ounces of soil in a new dedicated ziplock bag and the temperature was allowed to equilibrate to approximately 70 degrees F. The organic vapor screening was then conducted using a MicroTip Model 2020 PID fitted with a 11.7 e.V. lamp. Thirty-one samples contained detectable PID readings above background concentrations ranging from 0.8 ppm in sample B-9 (0-2) to 461 ppm in sample SB-4 (2-4). A summary of the PID readings are shown below on Table 1.

**Table 1**  
**Summary of PID Readings, 20 Station Road, Brookfield, CT**

Sample Designation	Interval	PID Response (ppm)	Sample Designation	Interval	PID Response (ppm)	Sample Designation	Interval	PID Response (ppm)
B-1	0-2	0	B-9	0-2	0.8	SB-12	0-2	0
B-1	2-4	0	B-9	2-4	1.2	SB-12	2-4	187
B-1	4-6	0	B-10	0-2	2.6	SB-13	0-2	1.1
B-1	6-8	0	B-10	2-4	2.4	SB-13	2-4	0
B-2	0-2	0	B-10	4-6	2.8	SB-14	0-2	3.0
B-2	2-4	0	B-11	0-2	1.4	SB-14	2-4	0
B-2	4-6	0	B-11	2-4	3.7	SB-15	0-2	0
B-2	6-8	0	B-13	0-2	0	SB-15	2-4	0
B-2	8-10	0	B-13	2-4	0	SB-16	0-2	176
B-2	10-12	0	B-13	4-6	0	SB-16	2-4	0
B-2	12-14	0	B-14	0-2	0	MW-1	0-2	0
B-3	0-2	0	B-14	2-4	0	MW-1	2-4	0
B-3	2-4	0	B-14	4-6	0	MW-1	4-6	0
B-3	4-6	0	B-14	6-8	0	MW-1	6-8	0
B-3	6-8	0	B-15	0-2	0	MW-1	8-10	0
B-4	0-2	0	B-15	2-4	0	MW-2	0-2	0
B-4	2-4	0	B-16	0-2	0	MW-2	2-4	0
B-4	4-6	0	B-16	2-4	0	MW-2	4-6	0
B-4	6-8	0	SB-1	0-2	0	MW-2	6-8	0
B-4	8-10	0	SB-1	2-4	74	MW-2	8-10	0
B-5	0-2	0	SB-2	0-2	0	MW-2	10-12	0
B-5	2-4	0	SB-2	2-4	131	MW-2	12-14	0
B-5	4-6	0	SB-3	0-2	190	MW-3	0-2	0
B-5	6-8	0	SB-3	2-4	177	MW-3	2-4	0
B-5	8-10	0	SB-4	0-2	0	MW-3	4-6	0
B-5	10-12	0	SB-4	2-4	461	MW-3	6-8	0
B-5	12-14	0	SB-5	0-2	0	MW-3	8-10	0
B-6	0-2	0	SB-5	2-4	122	MW-4	0-2	0
B-6	2-4	0	SB-6	0-2	192	MW-4	2-4	0
B-6	4-6	0	SB-6	2-4	192	MW-4	4-6	0
B-7	0-2	0	SB-7	0-2	0	MW-4	6-8	0
B-7	2-4	0	SB-7	2-4	156	MW-5	0-2	0
B-7	4-6	0	SB-8	0-2	0	MW-5	2-4	0
B-7	6-8	0	SB-8	2-4	88.7	MW-5	4-6	0
B-7	8-10	0	SB-9	0-2	0	MW-6	0-2	1.6
B-7	10-12	0	SB-9	2-4	196	MW-6	2-4	1.1
B-8	0-2	0	SB-10	0-2	124	MW-6	4-6	0
B-8	2-4	5.0	SB-10	2-4	404	MW-7	0-2	0
B-8	4-6	3.3	SB-11	0-2	284	MW-7	2-4	0
B-8	6-8	0.9	SB-11	2-4	412	MW-7	4-6	0

NOTE: NR = No Recovery From Sampling Apparatus

### 3.4 Groundwater Table Elevation Measurements

Depth to groundwater measurements were recorded at monitoring wells MW-1 through MW-7 on December 26, 2000 prior to purging and sampling activities. A water level probe was lowered into each well until the groundwater surface was encountered. Measurements were recorded relative to the top of the well casing. The casing was later surveyed with an assumed reference datum. The piezometric surface elevations were calculated by subtracting the depth to groundwater from the surveyed top of casing elevations. At the time of measurement, the groundwater flow direction at the site was determined to be in a westerly direction. The groundwater contour map for December 26, 2000 is presented on Figure 4, included in Appendix A. The groundwater elevation data is shown on Table 2 below.

**Table 2**  
**December 26, 2000 Groundwater Elevation Data**  
**20 Station Road, Brookfield, Connecticut**

Location	Relative Elevation	Depth to Groundwater	Groundwater Table Elevation
Reference Point	100.00	-	-
MW-1	100.14	2.25	97.89
MW-2	99.88	2.47	97.41
MW-3	97.82	0.21	97.61
MW-4	99.15	2.74	96.41
MW-5	98.47	2.29	96.18
MW-6	97.95	1.65	96.30
MW-7	98.50	1.54	96.96

NOTE: Relative Elevation of Wells is to the Top of the Casing

### 3.5 Groundwater Sample Collection

Groundwater samples were collected from monitoring wells MW-1 through MW-7 by DES in accordance with company Standard Operating Procedures and standard industry practices. Using the total depth of the wells and depth to water measurement, the volume of standing water in each well was calculated. Each well was purged of five well volumes with dedicated polyethylene bailer prior to collection of a representative groundwater sample. Purgewater was stored in a 55-gallon drum pending off-site disposal. The groundwater samples were collected using the same dedicated equipment used to purge the wells to ensure that cross contamination did not occur. Two 40-milliliter vials (preserved with hydrochloric acid) were completely filled with groundwater from each monitoring well. In addition, one 1-liter amber glass jar was collected from MW-4, the well located in the former UST area.

The time, location and sample number were recorded on the sample container with indelible ink and on the accompanying chain of custody form, maintained in a chilled environment and delivered to York Analytical Laboratories, Inc. (York) of Stamford, Connecticut.

### 3.6 Surface Water Sampling

Two surface water samples were collected from the wetlands on the northern portion of the property. Sample SW-1 was collected from the surface water in the western portion of the wetlands and SW-2 was collected from the central portion of the wetlands.

The samples were collected directly from the surface water directly into new 40 milliliter VOAs (preserved with hydrochloric acid), lined with teflon septa. The time, location and sample number were recorded on the sample container with indelible ink and on the accompanying chain of custody form, maintained in a chilled environment and delivered to York.

### **3.7 Potable Well Sampling**

DES collected water samples from the two on-site potable bedrock wells. Note that potable well #2 was reported as being out of service and was not sampled since it could not be accessed during this sampling event. The tap after the pressure tank for potable well #1 and potable well #3 (before the water treatment system for potable well #3) was allowed to run for ten minutes. The samples (PW-1 and PW-3) were collected directly into new 40 milliliter VOAs (preserved with hydrochloric acid), lined with teflon septa. The time, location and sample number were recorded on the sample container with indelible ink and on the accompanying chain of custody form, maintained in a chilled environment until delivery to York.

## **4.0 LABORATORY ANALYSIS**

### **4.1 Laboratory Analytical methods**

Based on the results of the PID screening and interval location (relative to the groundwater table elevation), DES submitted soil samples B-1 (2-4), B-2 (2-4), B-3 (2-4), B-4 (2-4), B-5 (2-4), B-6 (2-4), B-7 (2-4), B-8 (2-4), B-9 (2-4), B-10 (2-4), B-11 (2-4), B-13 (2-4), B-14 (2-4), B-15 (2-4), B-16 (2-4), SB-1 (2-4), SB-3 (0-2), SB-4 (2-4), SB-6 (2-4), SB-10 (2-4), SB-11 (2-4), SB-13 (0-2), SB-16 (0-2), MW-1 (2-4), MW-2 (2-4), MW-3 (2-4), MW-4 (0-2), MW-5 (2-4), MW-6 (0-2) and MW-7 (2-4) to York on December 11 and 27, 2000 for analysis of VOCs by EPA Method 8260. Samples B-8 (2-4) and MW-4 (2-4) were also submitted for analysis of ETPH.

DES submitted all of the groundwater and surface water samples to York for analysis of VOCs via EPA Method 8260. In addition, groundwater sample MW-4 was submitted for analysis of ETPH. The potable well samples were submitted for analysis of VOCs by EPA Method 524.2. The groundwater, surface water and potable well samples were submitted to York on December 27, 2000. Holding times were observed for all analysis performed. A copy of the laboratory analytical reports are provided in Appendix D.

### **4.2 CTDEP Remediation Standard Regulations**

The analytical results for the soil samples were compared to the Residential Direct Exposure Criteria (RDEC) and the "GA" Pollutant Mobility Criteria (PMC) established in Section 22a-133-k-2 of the Remediation Standard Regulations (RSRs).

The analytical results for the groundwater samples were compared to the Groundwater Protection Criteria (GPC) for "GA" classified groundwater areas, Residential Volatilization Criteria (RVC) and the Surface Water Protection Criteria (SWPC) established in Section 22a-133-k-3 of the RSRs. The results of the analysis for the water samples collected from the potable wells were compared to the Connecticut Water Quality Standards Maximum Concentration Limits (MCL), as well as the GPC, RVC and SWPC.

#### 4.2.1 Results of Soil Analysis

The results of the soil analysis indicated samples SB-3 (0-2), SB-4 (2-4), and SB-11 (2-4), collected from beneath the former dry cleaning tenant space, contained 1.6 milligrams per kilogram (mg/kg), 0.11 mg/kg and 12 mg/kg, respectively, of tetrachloroethylene (PCE). These concentrations are all above the PMC of 0.1 mg/kg for PCE. Samples SB-3 (0-2) and SB-4 (2-4) were below the RDEC of 12 mg/kg for PCE. The concentration of PCE in SB-11 (2-4) was 12 mg/kg which is equal to the RDEC threshold. PCE was detected in 3 (SB-6 (2-4), SB-10 (2-4) and SB-16 (0-2)) of the other sub floor samples below the RDEC and PMC.

Samples B-15 (2-4) and B-16 (2-4) collected immediately to the north of the dry cleaning tenant space contained 0.26 mg/kg and 0.43 mg/kg, respectively, of PCE which are above the PMC (0.1 mg/kg) but below the RDEC (12 mg/kg). Five of the other samples collected from the exterior borings contained concentrations of PCE below the soil standards for PCE. The remainder of the samples contained concentrations of PCE below laboratory detection limits.

Trichloroethylene was detected in sample SB-11 (2-4) and B-15 (2-4), collected from beneath and to the north of the former dry cleaning tenant space, at concentrations of 0.018 mg/kg and 0.009 mg/kg which are below the 56 mg/kg RDEC and the 0.1 mg/kg PMC. Cis 1,2-Dichloroethylene was detected in sample B-15 (2-4) at a concentration of 0.009 mg/kg which is below the 500 mg/kg RDEC and the 1.4 mg/kg PMC.

Samples SB-3 (0-2) and SB-4 (2-4), collected from beneath the former dry cleaning tenant space, contained 0.008 mg/kg of 1,2,4-trimethylbenzene which are well below the RDEC (500 mg/kg) and PMC (7 mg/kg) for 1,2,4-trimethylbenzene. Sample SB-11 (2-4) contained 0.018 mg/kg of 1,2,4-trimethylbenzene which is below the RDEC and PMC for 1,2,4-trimethylbenzene.

Naphthalene was detected in samples SB-3 (0-2) and SB-4 (2-4), collected from beneath the former dry cleaning tenant space, at concentrations of 0.039 mg/kg and 0.008 mg/kg which are below the RDEC (1000 mg/kg) and PMC (5.6 mg/kg) for naphthalene. Isopropyltoluene, tert-Butylbenzene and p-isopropyltoluene were detected in samples B-15 (2-4) and B-16 (2-4), below the respective RDEC and PMC. The remainder of the samples contained concentrations of VOCs below laboratory detection limits.

Samples B-8 (2-4) and MW-4 (0-2), collected from the former UST area, contained 75 mg/kg and 260 mg/kg of ETPH which are below the RDEC and PMC, both 500 mg/kg. A tabular summary of the ETPH and VOC soil analytical data is shown below on Table 3. PCE concentrations in soil are shown on Figure 5, included in Appendix A.

**Table 3**  
**Summary of Soil Analytical Data (detections only)**  
**20 Station Road, Brookfield, Connecticut**

Parameter	Sample Designation									Standard	
	B-7 (2-4)	B-8 (2-4)	B-9 (2-4)	B-10 (2-4)	B-14 (2-4)	B-15 (2-4)	B-16 (2-4)	MW-4 (0-2)	MW-4 (2-4)	RDEC	PMC
ETPH	NA	75	NA	NA	NA	NA	NA	NA	260	500	500
Tetrachloroethylene	0.068	ND	0.008	0.034	0.005	0.26	0.43	0.015	NA	12	0.1
Trichloroethylene	ND	ND	ND	ND	ND	0.009	ND	ND	NA	56	0.1
cis 1,2-Dichloroethylene	ND	ND	ND	ND	ND	0.009	ND	ND	NA	500	1.4
Isopropylbenzene	ND	ND	ND	ND	ND	0.036	0.05	ND	NA	500	0.6
tert-Butylbenzene	ND	ND	ND	ND	ND	0.017	0.012	ND	NA	500	1.4
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	NA	500	7
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	NA	1000	5.6
p-Isopropyltoluene	ND	ND	ND	ND	ND	0.006	ND	ND	NA	NE	1.4

**Table 3 (continued)**

Parameter	Sample Designation							
	SB-3 (0-2)	SB-4 (2-4)	SB-6 (2-4)	SB-10 (2-4)	SB-11 (2-4)	SB-16 (0-2)	RDEC	PMC
ETPH	NA	NA	NA	NA	NA	NA	500	500
Tetrachloroethylene	1.6	0.11	0.012	0.024	12.0	0.12	12	0.1
Trichloroethylene	ND	ND	ND	ND	0.018	ND	56	0.1
cis 1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	500	1.4
Isopropylbenzene	ND	ND	ND	ND	ND	ND	500	0.6
tert-Butylbenzene	ND	ND	ND	ND	ND	ND	500	1.4
1,2,4-Trimethylbenzene	0.008	0.008	ND	ND	0.018	ND	500	7
Naphthalene	0.039	0.008	ND	ND	ND	ND	1000	5.6
p-Isopropyltoluene	ND	ND	ND	ND	ND	ND	NE	1.4

NOTE: All Units in Milligrams Per Kilogram (mg/kg) = Parts Per Million (ppm)  
 RDEC = Residential Direct Exposure Criteria  
 PMC = Pollutant Mobility Criteria  
 Bold = Exceedance  
 ND = Below Laboratory Detection Limits  
 NA = Not Analyzed for that Parameter  
 NE = No Established Standard

#### 4.2.2 Results of Groundwater Analysis

The results of the groundwater analysis showed concentrations of PCE in monitoring wells MW-4 and MW-5, located to the west and northwest of the former dry cleaning tenant space, of 4,800 ug/l and 5900 ug/l, respectively which are above the GPC (5 ug/l), RVC (1500 ug/l) and SWPC (88 ug/l). PCE was also detected in MW-6 and MW-7, located to the north and northwest of the former dry cleaning tenant space, at concentrations of 23 ug/l and 6 ug/l which are above the GPC but below the RVC and SWPC. The remainder of the groundwater samples contained concentrations of PCE below applicable groundwater standards or laboratory detection limits.

Monitoring wells MW-2, and MW-4 through MW-7 contained concentrations of the other chlorinated solvents commonly seen in the dechlorination process of PCE above the respective

groundwater standards. Trichloroethylene (TCE) was detected in MW-4 and MW-5 at concentrations of 160 ug/l and 690 ug/l, respectively, above the GPC of 5 ug/l and RVC of 219 ug/l (MW-5 only). Both of the concentrations were below the SWPC. Cis 1,2-dichloroethylene was detected in MW-5 at a concentration of 380 ug/l which is above the GPC of 70 ug/l. No RVC or SWPC have been established for cis 1,2-dichloroethylene. Vinyl chloride was detected in MW-4, MW-5, MW-6 and MW-7 at concentrations of 19 ug/l, 10 ug/l, 72 ug/l and 5 ug/l, respectively, which are above the GPC and RVC, both 2 ug/l. No SWPC has been established for vinyl chloride. No other VOCs were detected in any of the other groundwater samples above laboratory detection limits or applicable groundwater standards. A tabular summary of the groundwater analytical is presented on Table 4 below. PCE concentrations on groundwater are shown on Figure 6, included in Appendix A.

**Table 4**  
**Summary of Groundwater Analytical Data (detections only)**  
**20 Station Road, Brookfield, Connecticut**

Parameter	Sample Designation							Standard		
	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-11	GPC	RVC	SWPC
ETPH	NA	NA	ND	NA	NA	NA	NA	100	NE	NE
Tetrachloroethylene	ND	1	4800	5900	23	6	ND	5	1500	88
Trichloroethylene	ND	ND	160	690	1	ND	ND	5	219	2340
1,1,1-Trichloroethane	9	ND	ND	ND	ND	ND	ND	200	20400	62000
c-1,2-Dichloroethylene	ND	ND	ND	380	61	ND	11	70	NE	NE
t-1,2-Dichloroethylene	ND	ND	ND	3	2	ND	ND	100	NE	NE
1,1-Dichloroethane	1	ND	ND	ND	ND	ND	ND	70	34600	NE
1,1-Dichloroethylene	ND	ND	1	2	ND	ND	ND	7	1	96
Chloroethane	ND	ND	ND	ND	1	ND	ND	NE	NE	NE
Vinyl Chloride	ND	ND	19	10	72	5	ND	2	2	15750
1,4-Dichlorobenzene	5	ND	ND	ND	ND	ND	ND	75	50000	26000
Toluene	ND	ND	1	ND	ND	ND	ND	1000	23500	4000000
MTBE	ND	ND	ND	ND	ND	ND	ND	70	50000	NE

NOTE: All Units in Micrograms Per Liter (ug/l) = Parts Per Billion (ppb)  
 PMC = Pollutant Mobility Criteria  
 RVC = Residential Volatilization Criteria

SWPC = Surface Water Protection Criteria  
 Bold = Exceedance  
 ND = Below Laboratory Detection Limits

#### 4.2.3 Results of Potable Well Analysis

The samples collected from PW-1 and PW-3 contained 11 ug/l and 122.1 ug/l of PCE, respectively, which are above the MCL of 5 ug/l. Trichloroethylene was also detected in PW-1 and PW-3 at concentrations of 700 ug/l and 138 ug/l, respectively, which are above the MCL of 5 ug/l. Four other VOCs plus MTBE were detected below the respective MCL or laboratory detection limits. A tabular summary of the potable well analysis is included on Table 5 below.

**Table 5**  
**Summary of Potable Well Water Analysis**  
**20 Station Road, Brookfield, Connecticut**

Parameter	Sample Designation		MCL
	PW-1	PW-3	
Tetrachloroethylene	11	122.1	5
Trichloroethylene	700	138	5
1,2-Dichloroethylene	ND	2.6	70
1,2-Dichlorobenzene	ND	1.9	600
1,3-Dichlorobenzene	ND	2	-
1,4-Dichlorobenzene	ND	1.6	75
MTBE	ND	9	-

Note: All Units in Micrograms Per Liter (ug/l)  
 ND = Below Laboratory Detection Limits  
 - No MCL Established

#### 4.2.4 Results of Surface Water Analysis

The results of the surface water sample analysis indicated that all concentrations of VOCs were below laboratory detection limits.

### 5.0 SUMMARY, CONCLUSIONS, and RECOMMENDATIONS

#### 5.1 Summary

The property consists of a two-story residential and commercial building and a storage shed on 2.31 acres of land. A dry cleaner operated on-site during the 1960s and 1970s and reportedly stored waste dry cleaning solvents in two subgrade 55-gallon drums located beneath the northwest portion of the building. On September 20, 1999, the CTDEP issued DEP Order No. 113 to investigate the extent of soil, groundwater and surface water on-site and the potential impact to areas off-site from the former dry cleaning operation.

The site building is heated by liquefied propane (LP) and electricity. The building was formerly heated by fuel oil. The heating oil was formerly stored in a 275-gallon aboveground storage tank (AST) and 550-gallon AST located on the north side of the building. The 275-gallon AST was removed in March 1997 and the 550-gallon AST is still located on-site and not used. Heating oil was also formerly stored in a 550-gallon UST located on the west side of the building. In November 1998 the 550-gallon fuel oil UST was removed from the subject site. Soil samples were collected from the UST grave and submitted for analysis of TPH by EPA Method 418.1 and VOCs by EPA Method 8260. The results of the analysis showed elevated concentrations of benzene, toluene, ethyl benzene and xylenes (BTEX) constituents above applicable soil standards. In addition, a sample of liquid was collected from within the UST which contained BTEX constituents. Duplicate samples collected by the CTDEP indicated the presence of tetrachloroethylene in the soil and groundwater above soil and groundwater standards.

The site previously used an on-site septic system for sewage disposal which is located on the northeastern side of the building. The leaching fields were reportedly located to the northeast of the building. The septic tank and four associated dry wells were removed with a subsequent connection to the sanitary sewer system. The on-site septic system had been used for sewage disposal from the date of construction until the connection to the sanitary sewer system.

Potable well samples have been collected from approximately 27 residences and businesses located to the west of the site since March 1998 to monitor for the presence of VOCs in the drinking water. Approximately ten of these properties have had elevated levels of halogenated and/or aromatic VOCs in their drinking water supply. GAC filtration systems have been installed at these residences.

In April 1998, the CTDEP installed a total of eight borings using its Geoprobe SES. Bedrock was encountered at depths of 8 to 11 feet below ground surface. The borings were finished with piezometers ranging in depth from 8 to 11 fbs. Groundwater samples were collected from the piezometers and field screened with a Photovac GC PID. Results of the field screening indicated levels of chlorinated solvents ranging from 1.4 parts per billion (ppb) to 140,000 ppb (GP- 7) in the groundwater samples and 120 ppb to 1,700 ppb (GP- 7) in the soil samples. In addition, water samples were collected from the potable wells, sumps, tanks and sludge seeps and soil samples were collected from a tank grave and floor sump. The samples were submitted to the CTDOH laboratory for analysis of VOCs by EPA Method 624. The results of the analysis indicated the highest concentrations of PCE were in the groundwater collected from GP-8 (48,000 ug/l), located to the north of the former dry cleaning tenant space, and in the PCE UST (1,617,500,000 ug/l). The PCE UST is one of the subgrade 55 gallon drums located in the northwestern portion of the building that was used to collect waste PCE.

DES installed a total of twenty-two soil borings, seven of which were finished with groundwater monitoring wells and sixteen interior shallow borings and collected a total of 120 soil samples, two surface water samples, two potable well samples and seven groundwater samples. Thirty of the soil samples were submitted to a laboratory for analysis of VOCs by EPA Method 8260 and two for ETPH. All of the surface water and groundwater samples were submitted for analysis of VOCs by EPA Method 8260, with one groundwater sample for ETPH. The two potable well samples were submitted for analysis of VOCs by EPA Method 524.2.

The results of the soil analysis indicated samples SB-3 (0-2), SB-4 (2-4), and SB-11 (2-4), collected from beneath the former dry cleaning tenant space, contained 1.6 milligrams per kilogram (mg/kg), 0.11 mg/kg and 12 mg/kg, respectively of tetrachloroethylene (PCE). These concentrations are all above the PMC of 0.1 mg/kg for PCE but below the RDEC of 12 mg/kg for PCE. PCE was detected in 3 of the other sub floor samples (SB-6 (2-4), SB-10 (2-4) and SB-16 (0-2)) below the RDEC and PMC. Relatively low concentrations of 1,2,4-trimethylbenzene and naphthalene were detected in two of the other soil samples below applicable soil standards. The remaining sub floor soil samples contained concentrations of VOCs below laboratory detection limits.

Samples B-15 (2-4) and B-16 (2-4) collected immediately to the north of the dry cleaning tenant space contained 0.26 mg/kg and 0.43 mg/kg, respectively, of PCE which are above the PMC (0.1 mg/kg) but below the RDEC (12 mg/kg). The remaining soil samples collected from the exterior of the property contained concentrations of VOCs below laboratory detection limits or applicable standards.

The results of the groundwater analysis showed concentrations of PCE in monitoring wells MW-4 and MW-5, located to the west and northwest of the former dry cleaning tenant space, of 4,800 ug/l and 5900 ug/l, respectively which are above the GPC (5 ug/l), RVC (1500 ug/l) and SWPC (88 ug/l). PCE was also detected in MW-6 and MW-7, located to the north and northwest of the former dry cleaning tenant space, at concentrations of 23 ug/l and 6 ug/l which are above the GPC but below the RVC and SWPC. The remainder of the groundwater samples contained

concentrations of PCE below applicable groundwater standards or laboratory detection limits. Monitoring wells MW-2, and MW-4 through MW-7 contained concentrations of other chlorinated solvents commonly seen in the dechlorination process of PCE above the respective groundwater standards (GPC and RVC). The analytes included trichloroethylene (TCE), 1,1,1-trichloroethane, 1,2-dichloroethylene, 1,1-dichloroethane, chloroethane and vinyl chloride.

The two water samples collected from the on-site potable wells contained concentrations of PCE and TCE that exceeded the respective MCL and GPC for those compounds. Four other VOCs were detected below the laboratory detection limits or the MCL and GPC. No VOCs were detected in either of the surface water samples collected from the wetlands on the northern portion of the property.

## 5.2 Conclusions

According to investigation activities and site data, PCE impacted soil exists under the northwest portion of the building in the former dry cleaning tenant space and appears to be a continuing source of contamination. The drums are still in the ground. The soil needs to be remediated to applicable soil standards to remain in place and prevent any further degradation of the groundwater. This can be done through removal of the drums and excavation of the soil with the installation of a sub slab venting system. It is estimated that approximately 10 cubic yards of contaminated soil needs to be removed from beneath the northwest portion of the structure. The sub slab venting system appears to be the most unobtrusive and cost effective method for remediation of the soil.

PCE impacted soil is also located immediately to the north of the former dry cleaners (area of borings B-15 and B-16). This soil should be excavated and transported off-site for disposal. It is estimated that approximately 25 cubic yards of soil needs to be excavated (shown on Figure 7). Post remedial groundwater monitoring will need to be conducted to determine the effectiveness of remediation and to be in compliance with the RSRs.

The groundwater in the shallow aquifer (MW-4 and MW-5, located to the west and northwest of the former dry cleaning tenant space) contains concentrations of PCE that exceeds applicable groundwater standards by orders of magnitude. Other halogenated compounds commonly seen in the dechlorination process of PCE were detected above standards. Further delineation of the groundwater in the shallow aquifer needs to be conducted to determine the location of the highest concentrations of PCE contamination and the most effective remedial option for the groundwater on-site.

Concentrations of PCE and TCE were detected in the potable well samples above their respective MCLs. Aromatic halogenated compounds and MTBE were also detected in the samples below their respective MCL. The chlorinated solvent impact to the groundwater is presumably from the former on-site dry cleaning operation and the MTBE may be from the leaking underground storage tank sites located approximately 0.1 miles to the east of the site. The drinking water from the on-site wells are treated with a granular activated carbon filtration system and quarterly monitoring is conducted by the CTDEP. Off-site wells have been impacted and GAC filtration systems have been installed by the CTDEP where needed. Quarterly monitoring and filter maintenance is also conducted at these locations.

No VOCs were detected in either of the surface water samples collected from the wetlands on the northern portion of the property.

### 5.3 Recommendations

Based on the scope of work performed, DES recommends the following for the chlorinated solvent contamination identified during the soil and groundwater investigation at the 20 Station Road property on in Brookfield, Connecticut:

- Removal of the 55-gallon drums and any impacted soil encountered in the northeastern portion of the former dry cleaning tenant space as soon as possible to limit/reduce the continued source impact. The soil and drums should be transported off-site for disposal and confirmation soil samples should be collected from beneath the native soil beneath the drums after removal.
- Excavation of the PCE contaminated soil to the north of the former dry cleaning tenant space and transportation off-site for disposal via thermal treatment. Excavation should be performed during the seasonal low water table to enable removal of the greatest amount of impacted soil. Confirmation soil samples should be collected from the excavation to determine if all PCE impacted soils have been removed from the site.
- Install a sub slab active venting system beneath the former dry cleaning tenant space to allow volatilization of the VOCs detected during the investigation. The concrete floor in that room should be sealed with an epoxy coating to prevent chemical migration into the building from the sub slab contamination. An indoor air quality monitoring program should be conducted to determine compliance with indoor air quality standards during operation of the sub slab venting system.
- The installation of four additional overburden groundwater monitoring wells on the western property boundary and in the area of B-9 to delineate the horizontal extent of chlorinated solvent contamination on-site. The wells should be surveyed to the existing groundwater monitoring well network and sampled to determine compliance with the RSRs. After the first round of groundwater monitoring has been completed, DES would be able to evaluate the most effective remedial options for the shallow aquifer and determine the necessity for treatment of the deeper aquifer that could be done utilizing the existing bedrock wells on-site. A groundwater monitoring program should be implemented on-site to determine the effectiveness of remediation and compliance with the RSRs.

## 6.0 CERTIFICATION

### 6.1 Respondents

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statements made in this document or its attachments may be punishable as a criminal offense."

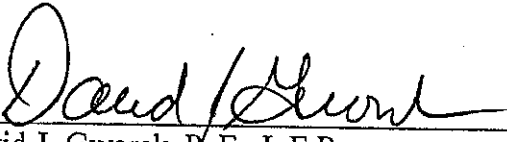
  
Edward McCarty

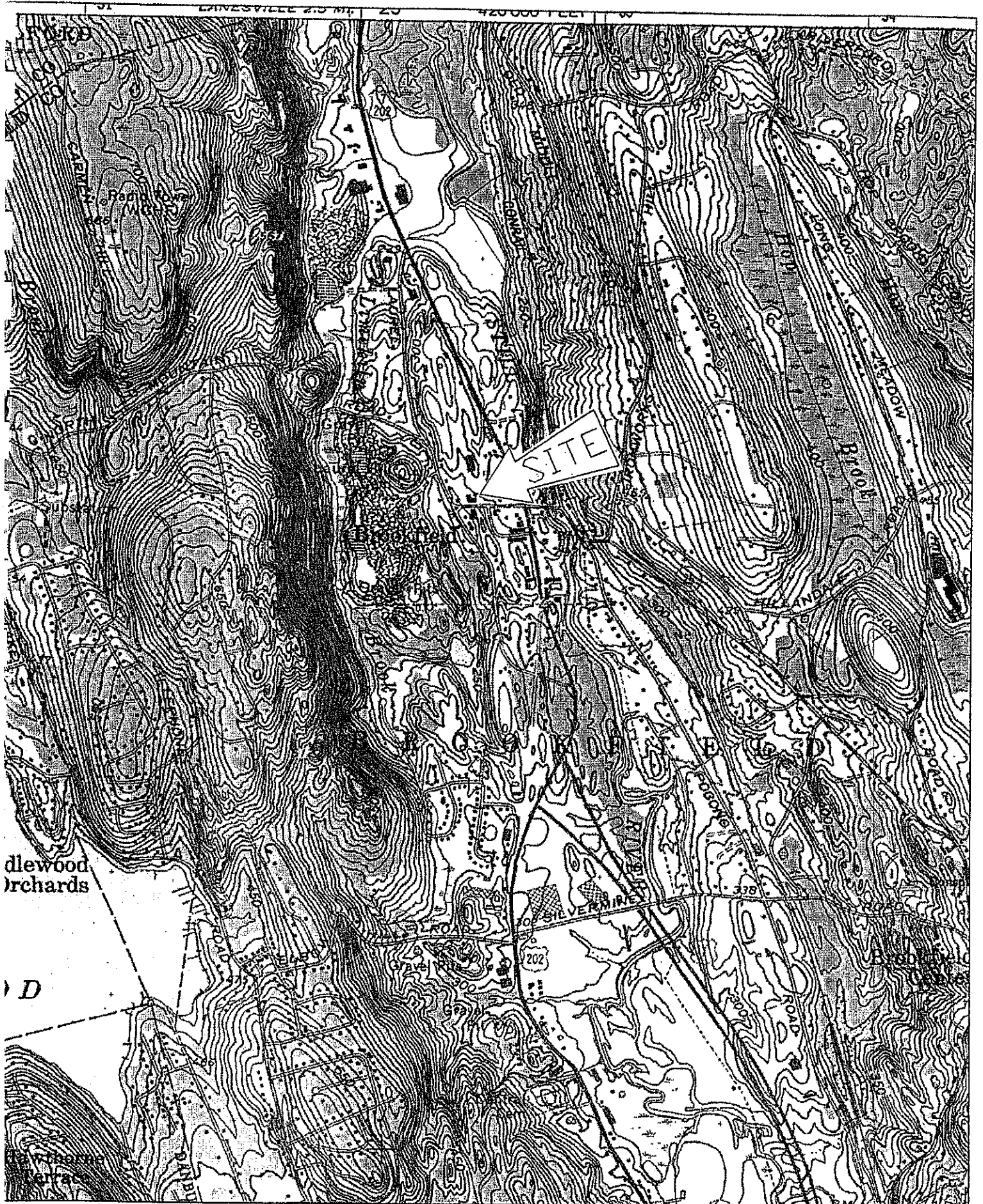
Feb 6 2001

Date

## 6.2 Consultant

"I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statements made in this document or its attachments may be punishable as a criminal offense."

  
\_\_\_\_\_  
David J. Gworek, P.E., L.E.P.  
  
2/6/01  
\_\_\_\_\_  
Date



Name: DANBURY  
Date: 8/25/100  
Scale: 1 inch equals 1538 feet

Location: 041° 28' 42.2" N 073° 24' 43.3" W  
Caption: Figure 1  
Site Location  
20 Station Road

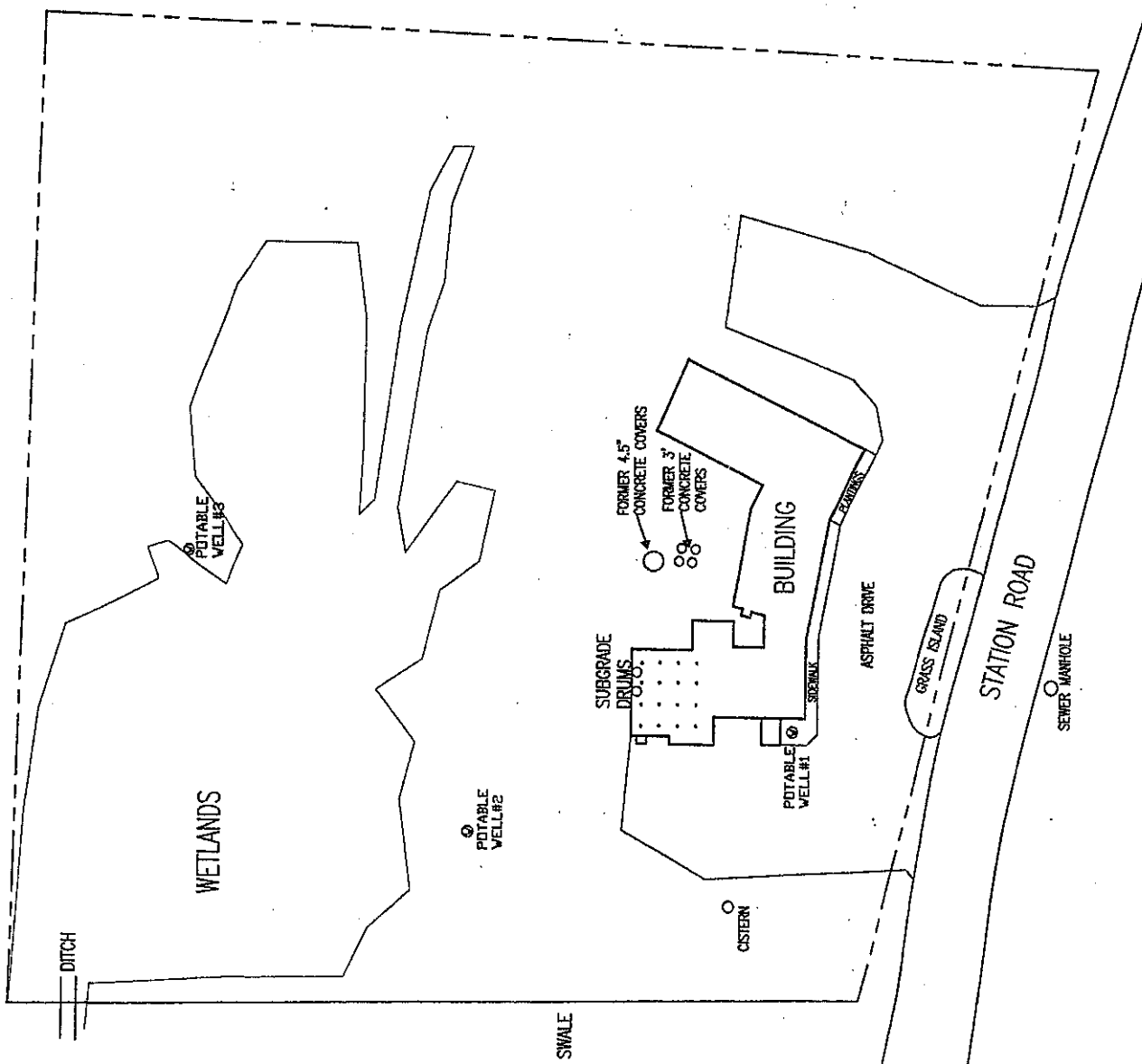


FIGURE 2 SITE LAYOUT MAP

McCARTY  
20 STATION ROAD  
BROOKFIELD, CT



NOT TO SCALE

DRW: JDG CHD BY: SHEET: 1-3 8/00

diversified environmental services, inc.  
1000 WEST 10TH AVENUE, SUITE 100, DENVER, CO 80202  
(303) 733-0000 FAX: (303) 733-0001



**LEGEND**

- = SOIL VAPOR GAS POINT
- ⊕ = SOIL BORING
- ⊕ = MONITORING WELL/ SOIL BORING
- ◆ = SURFACE WATER SAMPLE

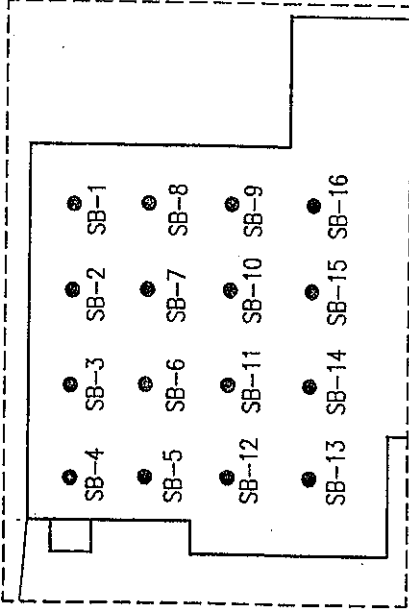


FIGURE A

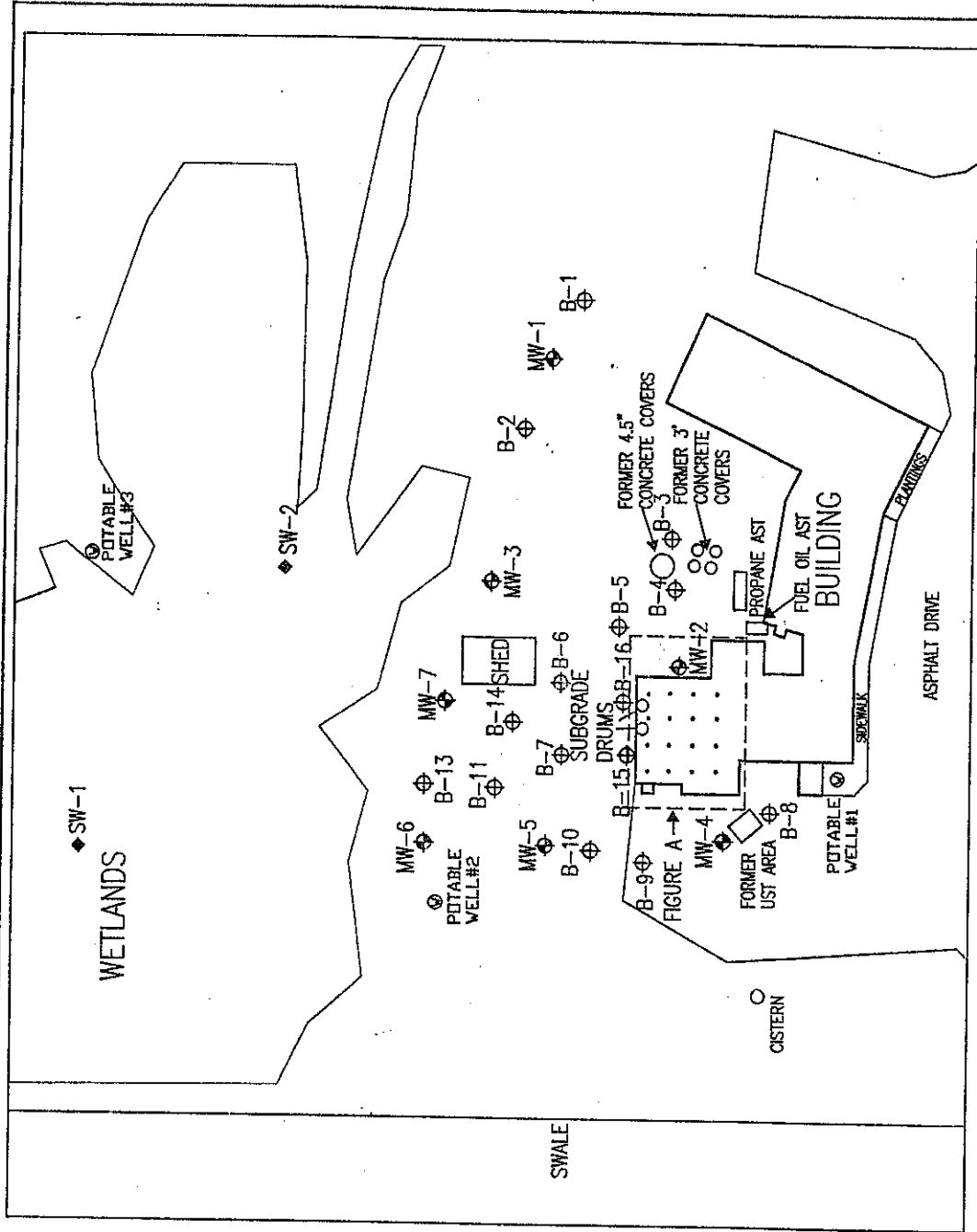
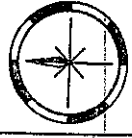


FIGURE 3 SAMPLE LOCATION MAP

**McCARTY**  
**20 STATION ROAD**  
**BROOKFIELD, CT**



NOT TO SCALE

DRW: JDC	CHD BY: BCM	SHEET: 1:1	12/00
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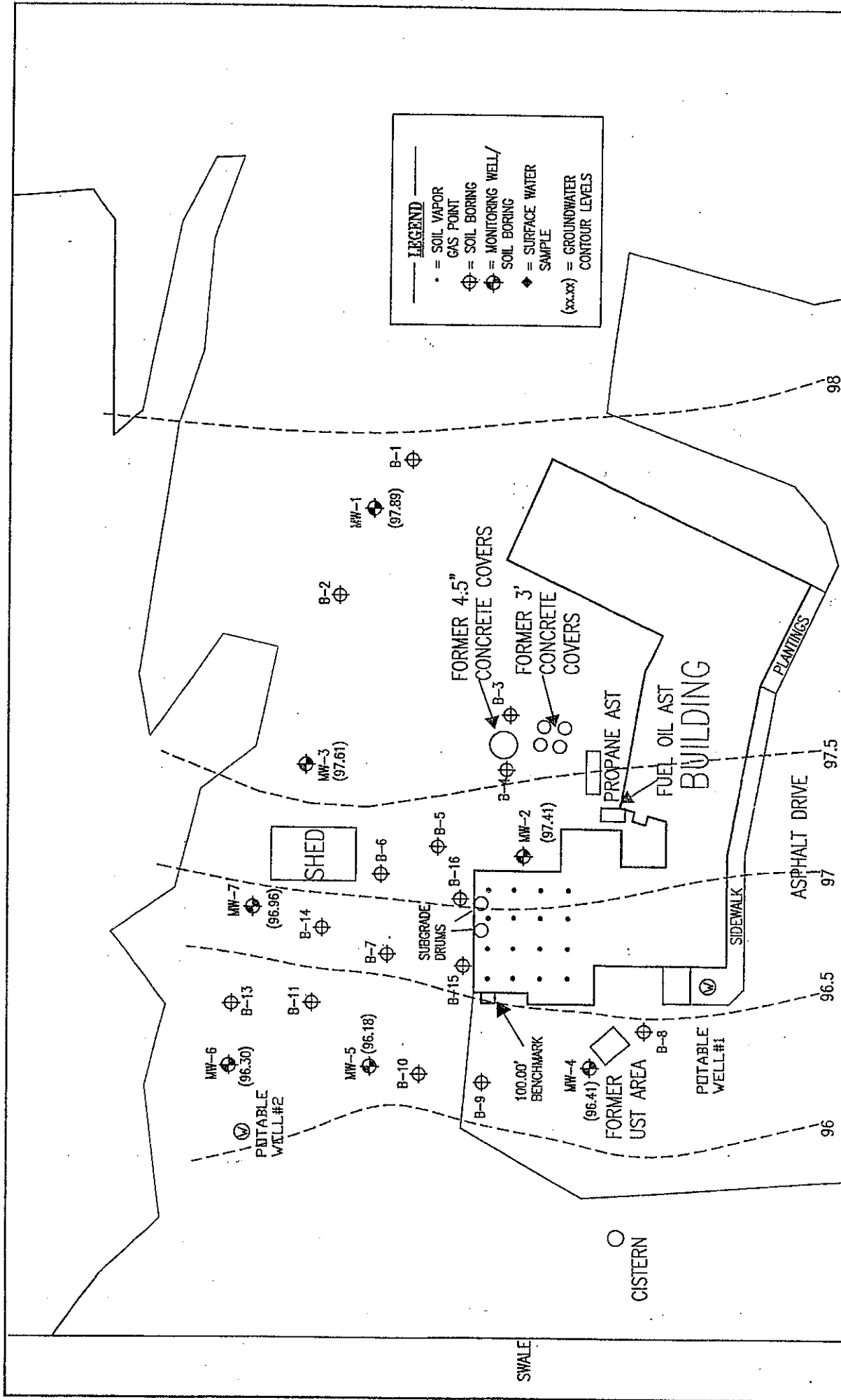


FIGURE 4 GROUNDWATER CONTOUR MAP

**MCCARTY**  
**20 STATION ROAD**  
**BROOKFIELD, CT**



NOT TO SCALE

DRW: JDC CHD BY: BCM SHEET: 1:1 12/00

**ES** diversified environmental services, inc.  
 1755 Meriden-Torrence Turnpike, PO Box 337, Milford, CT 06457  
 (860) 621-3830 Fax (860) 621-5006

**LEGEND**

- = SOIL VAPOR GAS POINT
- ⊕ = SOIL BORING
- ⊕ = MONITORING WELL/ SOIL BORING
- (x.x) = PCE CONCENTRATIONS IN SOIL (mg/kg)
- NA = NOT ANALYZED
- ND = NOT DETECTED

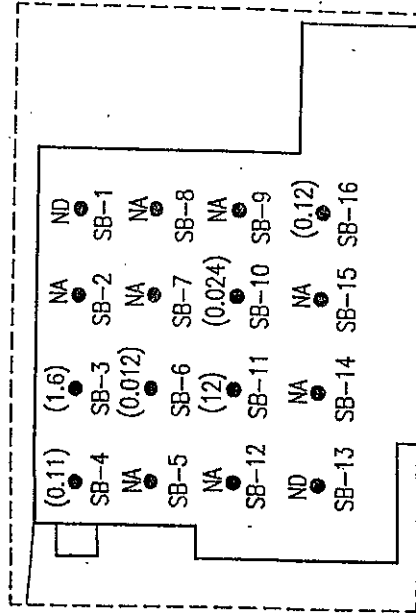


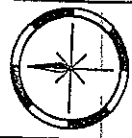
FIGURE A

FIGURE 5 PCE CONCENTRATIONS IN SOIL

**McCARTY**

**20 STATION ROAD**

**BROOKFIELD, CT**



NOT TO SCALE

DRW: JDG CHD BY: BCM SHEET: 1:1 1/01

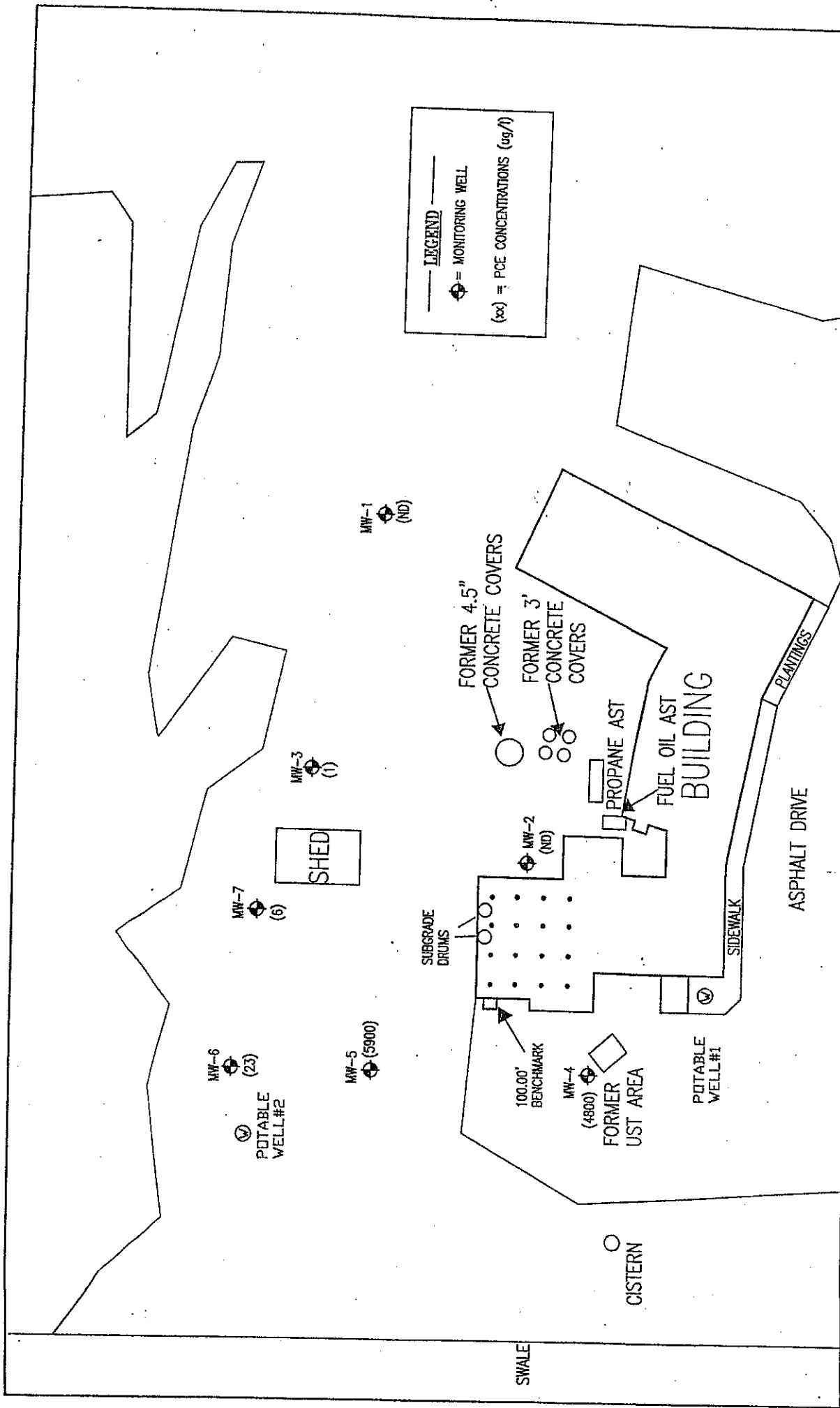


FIGURE 6 PCE CONCENTRATIONS IN GROUNDWATER

**McCARTY**  
**20 STATION ROAD**  
**BROOKFIELD, CT**



NOT TO SCALE

1/01

CHD BY: BCM SHEET: 1:1

DRW: JDC

**ES** diversified environmental services, inc.  
 1750 North Main Street, Suite 307, Middletown, CT 06457  
 (860) 421-3000 Fax (860) 421-9000

**LEGEND**

- = SOIL VAPOR GAS POINT
- ⊕ = SOIL BORING
- ⊕ = MONITORING WELL/ SOIL BORING
- ◆ = SURFACE WATER SAMPLE
- ▨ = AREA OF POE IMPACTED SOIL

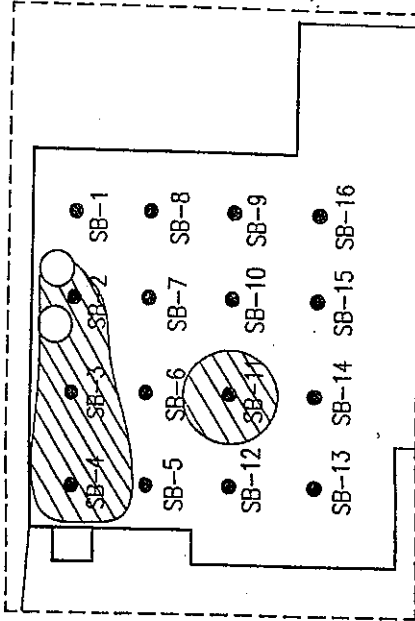


FIGURE A

FIGURE 7 PCE IMPACTED SOIL

**McCARTY**

**20 STATION ROAD**

**BROOKFIELD, CT**



NOT TO SCALE

DRW: JDC CHD BY: BCM SHEET: 1:1 12/00

## Appendix C



STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



STATE OF CONNECTICUT

V.

EDWARD McCARTY

AND

MONIQUE McCARTY

CONSENT ORDER

- A. With the agreement of Edward and Monique McCarty ("Respondents"), the Commissioner of Environmental Protection ("the Commissioner") finds:
1. Respondents are the owners of property located at 20 Station Road in Brookfield, Connecticut ("the site"), more fully described in a deed which is recorded on page 389 of volume 317 of the Town of Brookfield land records as lot #53, on map #DO7 in the Town of Brookfield Tax Assessor's office.
  2. Underground storage tanks containing tetrachloroethene (PCE) are located at the site.
  3. On-site soil and groundwater and off-site groundwater are polluted with volatile organic compounds including but not limited to PCE.
- B. With the agreement of Respondents, the Commissioner, acting under Sections 22a-6, 22a-424, 22a-425, 22a-427, 22a-430 and 22a-432 orders Respondents as follows:
1. a. On or before thirty (30) days after issuance of this consent order Respondents shall retain one or more qualified consultants acceptable to the Commissioner to prepare the documents and implement or oversee the actions required by this consent order and shall, by that date, notify the Commissioner in writing of the identity of such consultants. Respondents shall retain one or more qualified consultants acceptable to the Commissioner until this consent order is fully complied with, and, within ten days after retaining any consultant other than one originally identified under this paragraph, Respondents shall notify the Commissioner in writing of the identity of such other consultant. Respondents shall submit to the Commissioner a description of a consultant's education, experience and training which is relevant to the work required by this consent order within ten days after a request for such a description. Nothing in this paragraph shall preclude the Commissioner from finding a previously acceptable consultant unacceptable.

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- b. On or before 45 days after issuance of this consent order, Respondents shall submit for the Commissioner's review and written approval a scope of study for an investigation of the soil, groundwater and surface water contamination at the site and the potential impact on the environment both on-site and off-site, including but not limited to the existing and potential extent and degree of soil, ground water and surface water pollution. Such scope of study shall include at least the proposed location and depths of ground water monitor wells and soil and surface water sampling, a proposed sampling and analytical program including at least the parameters to be tested, proposed sampling and analytical methods, and quality assurance and quality control procedures, and a schedule for conducting the investigation.
- c. If the investigation carried out under an approved scope of study does not fully characterize the extent and degree of soil, surface water and ground water pollution to the satisfaction of the Commissioner, additional investigation shall be performed in accordance with a supplemental plan and schedule approved in writing by the Commissioner. Unless otherwise specified in writing by the Commissioner, the supplemental plan and schedule shall be submitted for the Commissioner's review and written approval on or before thirty days after notice from the Commissioner that they are required.
- d. Respondents shall perform the investigation and other actions specified in the approved scope of study and in any approved supplemental plan(s) in accordance with the approved schedule(s) but in no event shall the investigation be completed any later than sixty (60) days after the Commissioner's approval of the scope of study required by paragraph B.1.b. of this consent order, or any supplemental plan(s), unless another schedule is approved in writing by the Commissioner. Respondents shall notify the Commissioner of the date and time of installation of monitoring wells and of each soil and water sampling event at least five full business days prior to such installation or sampling.
- e. Except as may be provided in the investigation schedule approved by the Commissioner, on or before thirty (30) days after the approved date for completion of the investigation, Respondent shall submit for the Commissioner's review and written approval a comprehensive and thorough report which describes in detail the investigation performed; defines the existing and potential extent and degree of soil, surface water and ground water pollution which is on, is emanating from or has emanated from the site; and evaluates the alternatives for remedial

actions to abate such pollution in accordance with the Regulations of Connecticut State Agencies, Section 22a-133k, including but not limited to soil removal, groundwater treatment and any alternative specified by the Commissioner; states in detail the most expeditious schedule for performing each alternative, and lists all permits and approvals required for each alternative including but not limited to any permits required under sections 22a-32, 22a-42a, 22a-342, 22a-361, 22a-368 or 22a-430 of the Connecticut General Statutes; proposes a preferred alternative with supporting justification therefor; and proposes a detailed program and schedule to perform the preferred remedial actions, including but not limited to a schedule for applying for and obtaining all permits and approvals required for such remedial actions. The schedule shall provide for completion of all approved remedial actions as soon as possible. Such report shall also include but not be limited to a soil, surface water and ground water monitoring program to determine the degree to which the approved remedial actions have been effective, and a schedule for performing the approved monitoring program.

- f. When the Commissioner sends notice to a Respondent of a decision approving or disapproving the remedial action proposed by Respondent, the Commissioner shall send a copy of such notice to each intervenor and each party at its last known address. On or before twenty (20) days after such notice, Respondent or any aggrieved intervenor or party may submit a request for an administrative hearing on that decision. The Commissioner shall provide at least fifteen (15) days notice of the date of such hearing to the Respondent and all intervenors and parties. The hearing shall be limited solely to the remedial action to be performed, and the person challenging the decision of the Commissioner shall have the burden of going forward and of persuasion that the Commissioner's decision was clearly erroneous. The hearing officer may affirm, modify or reverse the decision, and may either specify the remedial action which the Respondent must perform or direct the Respondent to correct deficiencies in its proposal and submit a corrected proposal by a specified date for the review and written approval of the Commissioner. Failure to request a hearing in accordance with this paragraph or failure to participate in such hearing shall constitute a waiver of the Respondent's right to contest the Commissioner's decision.
- g. Unless another deadline is specified in writing by the Commissioner, on or before sixty (60) days after approval of the report described in paragraph B.1.e, Respondent shall submit for the Commissioner's review and written approval contract plans and specifications for the

approved remedial actions, a revised list of all permits and approvals required for such actions and a revised schedule for applying for and obtaining such permits and approvals and submit applications for all permits and approvals for such actions. Respondent shall use best efforts to obtain all required permits and approvals.

- h. Respondents shall perform the approved remedial actions in accordance with the approved schedule(s), and within fifteen days of completing such actions, shall certify to the Commissioner in writing that the actions have been completed as approved.
- i. Respondents shall perform the approved monitoring program to determine the effectiveness of the remedial actions in accordance with the approved schedule(s). Respondents shall notify the Commissioner of the date and time of each soil or water sampling event at least five full business days before such event. If the approved remedial actions do not result in the prevention and abatement of soil, surface water and ground water pollution to the satisfaction of the Commissioner, additional remedial actions and measures for monitoring and reporting on the effectiveness of those actions shall be performed in accordance with a supplemental plan and schedule approved in writing by the Commissioner. Unless otherwise specified in writing by the Commissioner, the supplemental plan and schedule shall be submitted for the Commissioner's review and written approval on or before thirty days after notice from the Commissioner that they are required.
- j. On a schedule established by the Commissioner or, if no such schedule is established, on a quarterly basis beginning no later than ninety days after initiation of the approved remedial actions or, as applicable, supplemental remedial actions, Respondents shall submit for the Commissioner's review and written approval a report describing the results to date of the monitoring program to determine the effectiveness of the remedial actions.
- k. Respondents may request that the Commissioner approve, in writing, revisions to any document approved hereunder in order to make such document consistent with law or for any other appropriate reason.

2. Progress reports. On or before the last day of March, June, September and December of each year after issuance of this consent order, and continuing until all actions required by this consent order have been completed as approved and to the satisfaction of the Commissioner, Respondents shall submit a progress report to the Commissioner describing the actions which Respondents have taken to comply with this consent order to date.

3. Full compliance. Respondents shall not be considered in full compliance with this consent order until all actions required by this consent order have been completed as approved and to the satisfaction of the Commissioner, and all soil, surface water and ground water pollution which is on, is emanating from or emanated from Respondent's property described in paragraph A.1. of this consent order and their sources have been abated to the satisfaction of the Commissioner.
4. Sample analyses. All sample analyses which are required by this consent order and all reporting of such sample analyses shall be done by a laboratory certified by the Connecticut Department of Public Health for such analyses. All sampling and sample analyses performed under this consent order shall be performed in accordance with procedures specified or approved in writing by the Commissioner or, if no such procedures have been specified or approved, in accordance with 40 CFR part 136. Unless otherwise specified by the Commissioner in writing, the value of each parameter shall be reported to the analytical detection limit, as defined in Section 22a-133k-1 of the Regulations of Connecticut State Agencies.
5. Approvals. Respondents shall use best efforts to submit to the Commissioner all documents required by this consent order in a complete and approvable form. If the Commissioner notifies the Respondents that any document or other action is deficient, and does not approve it with conditions or modifications, it is deemed disapproved, and Respondents shall correct the deficiencies and resubmit it within the time specified by the Commissioner or, if no time is specified by the Commissioner, within thirty days of the Commissioner's notice of deficiencies. In approving any document or other action under this consent order, the Commissioner may approve the document or other action as submitted or performed or with such conditions or modifications as the Commissioner deems necessary to carry out the purposes of this consent order. Nothing in this paragraph shall excuse noncompliance or delay.
6. Definitions. As used in this consent order, "Commissioner" means the Commissioner or an agent of the Commissioner.
7. Dates. The date of submission to the Commissioner of any document required by this consent order shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under this consent order, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in this consent order, the word "day" as used in this consent order means calendar day. Any document

or action which is required by this consent order to be submitted or performed by a date which falls on a Saturday, Sunday or a Connecticut or federal holiday shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or Connecticut or federal holiday.

8. Notification of noncompliance. In the event that the Respondents become aware that they did not or may not comply, or did not or may not comply on time, with any requirement of this consent order or of any document required hereunder, Respondents shall immediately notify the Commissioner and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the Commissioner, Respondents shall state in writing the reasons for the noncompliance or delay and propose, for the review and written approval of the Commissioner, dates by which compliance will be achieved, and Respondents shall comply with any dates which may be approved in writing by the Commissioner. Notification by Respondents shall not excuse noncompliance or delay, and the Commissioner's approval of any compliance dates proposed shall not excuse noncompliance or delay unless specifically so stated by the Commissioner in writing.
9. Certification of documents. Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this consent order shall be signed by the Respondents and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense."
10. Noncompliance. This consent order is a final order of the Commissioner with respect to the matters addressed herein, and is nonappealable and immediately enforceable. Failure to comply with this consent order may subject Respondents to an injunction and penalties under Chapters 439, and 445 or 446k of the Connecticut General Statutes.
11. False statements. Any false statement in any information submitted pursuant to this consent order may be punishable as a criminal offense under Section 22a-438 or 22a-131a of the Connecticut General Statutes or, in accordance with Section 22a-6, under Section 53a-157b of the Connecticut General Statutes.

12. Notice of transfer; liability of Respondents and others. Until Respondents have fully complied with this consent order, Respondents shall notify the Commissioner in writing no later than fifteen days after transferring all or any portion of the operations which are the subject of this consent order, the site or the business, or obtaining a new mailing or location address. Respondents's obligations under this consent order shall not be affected by the passage of title to any property to any other person or municipality. Any future owner of the site may be subject to the issuance of an order from the Commissioner.
13. Commissioner's powers. Nothing in this consent order shall affect the Commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of any permit issued by the Commissioner. If at any time the Commissioner determines that the actions taken by Respondents pursuant to this consent order have not fully characterized the extent and degree of pollution or have not successfully abated or prevented pollution, the Commissioner may institute any proceeding to require Respondents to undertake further investigation or further action to prevent or abate pollution.
14. Respondents's obligations under law. Nothing in this consent order shall relieve Respondents of other obligations under applicable federal, state and local law.
15. No assurance by Commissioner. No provision of this consent order and no action or inaction by the Commissioner shall be construed to constitute an assurance by the Commissioner that the actions taken by Respondents pursuant to this consent order will result in compliance or prevent or abate pollution.
16. Access to site. Any representative of the Department of Environmental Protection may enter the site without prior notice for the purposes of monitoring and enforcing the actions required or allowed by this consent order.
17. No effect on rights of other persons. This consent order shall neither create nor affect any rights of persons who or municipalities which are not parties to this consent order.
18. Notice to Commissioner of changes. Within fifteen days of the date Respondents becomes aware of a change in any information submitted to the Commissioner under this consent order, or that any such information was inaccurate or misleading or that any relevant information was omitted,

Respondents shall submit the correct or omitted information to the Commissioner.

19. Submission of documents. Any document required to be submitted to the Commissioner under this consent order shall, unless otherwise specified in writing by the Commissioner, be directed to:

Mr. Jonathan P. Goldman  
Department of Environmental Protection  
Water Management Bureau  
Permitting, Enforcement and Remediation Division  
79 Elm Street  
Hartford, Connecticut 06106-5127

20. Joint and several liability. Respondents shall be jointly and severally liable for compliance with this consent order.

Respondents consent to the issuance of this consent order without further notice. The undersigned certifies that he is fully authorized to enter into this consent order and to legally bind the Respondent to the terms and conditions of the consent order.

9/20/99  
DATE

Edward J. McCarty  
Edward McCarty

9/20/99  
DATE

Monique McCarty  
Monique McCarty

10/20/99  
DATE

Arthur J. Rocque, Jr.  
Arthur J. Rocque, Jr.  
Commissioner

ORDER NO. SRD 113  
TOWN OF BROOKFIELD  
LAND RECORDS

CERTIFIED TO BE A TRUE COPY  
CONNECTICUT DEPARTMENT OF  
ENVIRONMENTAL PROTECTION

NAME: Mary Susan Fogel  
TITLE: 8  
DATE: 10/25/99

Received 11/10/00 DJH



STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
APPROVAL



Edward McCarty  
20 Station Road  
Brookfield, Connecticut 06804

November 7, 2000

Re: 20 Station Road,  
Brookfield, Connecticut

Dear Mr. McCarty:

The Department of Environmental Protection, Bureau of Water Management has reviewed the submittal entitled Scope of Study for a Remedial Investigation at 20 Station Road, Brookfield, Connecticut dated September 2, 2000. The scope was prepared by Diversified Environmental Services, Inc. on your behalf, pursuant to step B.1.b of Consent Order No. SRD-113.

The scope of study describes investigative activities to evaluate the degree, nature, and extent of contamination including monitoring well installation, soil borings and soil/groundwater sampling and analysis. Recommendations for additional investigation and/or alternative remedial response actions based on analysis of the data obtained from the investigation will be provided in the investigation summary report.

The above correspondence is hereby approved.

Nothing in this approval shall affect the Commissioner's authority to institute any proceeding or take any other action to prevent or abate pollution, to recover costs and natural resource damages, and to impose penalties for violations of law including but not limited to violations of any permit issued by the Commissioner. If at any time the Commissioner determines that the approved actions have not fully characterized the extent, degree and nature of the pollution on-site the Commissioner may institute any proceeding to require further action. This approval relates only to pollution or contamination identified in the above referenced work plan.

This approval does not relieve any person of his or her obligations under applicable federal, state and local law.

If you have any questions regarding this matter, please contact Jonathan Goldman at (860) 424-3785.

Sincerely,

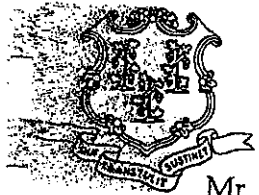
Michael J. Harder  
Director  
Bureau of Water Management  
Permitting, Enforcement and Remediation  
Division

cc: Michael McCarthy, Brookfield Sanitarian  
David Gworek, DES

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STATE OF CONNECTICUT  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Mr. Edward McCarty  
20 Station Road  
Brookfield, Connecticut 06804

June 22, 2001

Re: McCarty Property  
20 Station Road, Brookfield, Connecticut

Dear Mr. McCarty:

The Permitting, Enforcement and Remediation Division of the Bureau of Water Management has reviewed the report entitled "Phase II Subsurface Investigation Report, 20 Station Road, Brookfield, Connecticut" ("Remedial Investigation Report") prepared by Diversified Environmental Services, Inc. and dated February 2001. The Remedial Investigation Report was submitted as required by Consent Order Number SRD-113 issued to Edward and Monique McCarty.

The Department concurs with the findings and recommendations of the Remedial Investigation Report in accordance with paragraph B.1.e of Consent Order Number SRD-113. This does not complete work required by paragraph B.1.e of Consent Order Number SRD-113. A Remedial Action Plan, a schedule for the remediation of the site and a post monitoring plan approved by the Commissioner are required prior to approval of paragraph B.1.e of Consent Order Number SRD-113.

Nothing in this approval shall affect the Commissioner's authority to institute any proceeding, or take any action to prevent or abate pollution, to recover costs and natural resource damages, and to impose penalties for violations of law. If at any time the Commissioner determines that the approved actions have not fully characterized the extent and degree of pollution or have not successfully abated or prevented pollution, the Commissioner may institute any proceeding, or take any action to require further investigation or further action to prevent or abate pollution. This approval relates only to pollution or contamination identified in the above referenced report.

In addition, nothing in this approval shall relieve any person of his or her obligation under applicable federal, state and local law.

If you have any questions regarding this approval, please call me at (860) 424-3793.

Sincerely,

Harold A. Bobowicz, Sanitary Engineer 2  
Permitting, Enforcement and Remediation Division

cc: David Gworek, Diversified Environmental Services, Inc.

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## **Appendix D**

# YORK

ANALYTICAL LABORATORIES, INC.

ONE RESEARCH DRIVE  
(203)325-1371

STAMFORD, CT 06906  
FAX (203)357-0166

## Fax Transmittal Cover Sheet

This transmittal is being sent to:

Name

DAVE GWOREK

Company

DIVERSIFIED ENVIRON. SVCS.

Fax Number

860/621-9609

This transmittal is being sent from:

Name

LAURIE ROGERS

Date & Time

11/14/01

Reference

# 1275

This transmittal is 12 page(s), including this cover sheet

01110186

If problems with this transmission contact the sender at 203-325-1371

# Technical Report

prepared for

**Diversified Environmental Serv.**  
1755 Meriden-Waterbury Tpk.  
P.O. Box 337  
Milldale, CT 06467  
Attention: Bryce McMinn

Report Date: 11/2/2001  
*Re: Client Project ID: #1275 / Ed McCarty*  
York Project No.: 01100663

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ONE RESEARCH DRIVE

STAMFORD, CT 06906

(203) 325-1371

FAX (203) 357-0166

Page 1 of 5

PAGE 02

YORK ANALYTICAL LABS

2033251371

11/02/2001 10:36

Report Date: 11/2/2001  
 Client Project ID: #1275 / Ed McCarty  
 York Project No.: 01100663

**Diversified Environmental Serv.**  
 1755 Meriden-Waterbury Tpk.  
 P.O. Box 337  
 Milldale, CT 06467  
 Attention: Bryce McMinn

## Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 10/26/01. The project was identified as your project "#1275/Ed McCarty".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

## Analysis Results

Client Sample ID			MW-8 (5'-7')		MW-9 (5'-7')	
York Sample ID			01100663-01		01100663-02	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE soil	SW846-8260	ug/Kg	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,1-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1,2,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,2-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethylene			Not detected	5.0	Not detected	5.0
1,1-Dichloropropylene			Not detected	5.0	Not detected	5.0
1,2,3-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,3-Trichloropropane			Not detected	5.0	Not detected	5.0
1,2,3-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2-Dibromo-3-chloropropane			Not detected	5.0	Not detected	5.0
1,2-Dibromoethane			Not detected	5.0	Not detected	5.0
1,2-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,2-Dichloroethane			Not detected	5.0	Not detected	5.0

**YORK**

Client Sample ID			MW-8 (5'-7')		MW-9 (5'-7')	
York Sample ID			01100663-01		01100663-02	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	5.0	Not detected	5.0
1,2-Dichloropropane			Not detected	5.0	Not detected	5.0
1,3,5-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,3-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,3-Dichloropropane			Not detected	5.0	Not detected	5.0
1,4-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1-Chlorohexane			Not detected	5.0	Not detected	5.0
2,2-Dichloropropane			Not detected	5.0	Not detected	5.0
2-Chlorotoluene			Not detected	5.0	Not detected	5.0
4-Chlorotoluene			Not detected	5.0	Not detected	5.0
Benzene			Not detected	5.0	Not detected	5.0
Bromobenzene			Not detected	5.0	Not detected	5.0
Bromochloromethane			Not detected	50	Not detected	50
Bromodichloromethane			Not detected	50	Not detected	50
Bromoform			Not detected	5.0	Not detected	5.0
Bromomethane			Not detected	50	Not detected	50
Carbon tetrachloride			Not detected	5.0	Not detected	5.0
Chlorobenzene			Not detected	5.0	Not detected	5.0
Chloroethane			Not detected	5.0	Not detected	5.0
Chloroform			Not detected	50	Not detected	50
Chloromethane			Not detected	50	Not detected	50
cis-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Dibromochloromethane			Not detected	5.0	Not detected	5.0
Dibromomethane			Not detected	5.0	Not detected	5.0
Dichlorodifluoromethane			Not detected	5.0	Not detected	5.0
Ethylbenzene			Not detected	5.0	Not detected	5.0
Hexachlorobutadiene			Not detected	5.0	Not detected	5.0
Isopropylbenzene			Not detected	5.0	Not detected	5.0
Methyl tert-butyl ether (MTBE)			Not detected	5.0	Not detected	5.0
Methylene chloride			Not detected	5.0	Not detected	5.0
Naphthalene			Not detected	5.0	Not detected	5.0
n-Butylbenzene			Not detected	5.0	Not detected	5.0
n-Propylbenzene			Not detected	5.0	Not detected	5.0
o-Xylene			Not detected	5.0	Not detected	5.0
p- & m-Xylenes			Not detected	5.0	Not detected	5.0
p-Isopropyltoluene			Not detected	5.0	Not detected	5.0
sec-Butylbenzene			Not detected	5.0	Not detected	5.0
Styrene			Not detected	5.0	Not detected	5.0
tert-Butylbenzene			Not detected	5.0	Not detected	5.0
Tetrachloroethylene			Not detected	5.0	Not detected	5.0
Toluene			Not detected	5.0	Not detected	5.0
trans-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Trichloroethylene			Not detected	5.0	Not detected	5.0
Trichlorofluoromethane			Not detected	5.0	Not detected	5.0
Vinyl chloride			Not detected	50	Not detected	50

**YORK**

Client Sample ID			MW-10 (5'-7')		MW-11 (0-2')	
York Sample ID			01100663-03		01100663-04	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE soil	SW846-8260	ug/Kg	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,1-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1,2,2-Tetrachloroethane			Not detected	5.0	Not detected	5.0
1,1,2-Trichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethane			Not detected	5.0	Not detected	5.0
1,1-Dichloroethylene			Not detected	5.0	Not detected	5.0
1,1-Dichloropropylene			Not detected	5.0	Not detected	5.0
1,2,3-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,3-Trichloropropane			Not detected	5.0	Not detected	5.0
1,2,3-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trichlorobenzene			Not detected	5.0	Not detected	5.0
1,2,4-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,2-Dibromo-3-chloropropane			Not detected	5.0	Not detected	5.0
1,2-Dibromoethane			Not detected	5.0	Not detected	5.0
1,2-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,2-Dichloroethane			Not detected	5.0	Not detected	5.0
1,2-Dichloroethylene (Total)			Not detected	5.0	Not detected	5.0
1,2-Dichloropropane			Not detected	5.0	Not detected	5.0
1,3,5-Trimethylbenzene			Not detected	5.0	Not detected	5.0
1,3-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1,3-Dichloropropane			Not detected	5.0	Not detected	5.0
1,4-Dichlorobenzene			Not detected	5.0	Not detected	5.0
1-Chlorohexane			Not detected	5.0	Not detected	5.0
2,2-Dichloropropane			Not detected	5.0	Not detected	5.0
2-Chlorotoluene			Not detected	5.0	Not detected	5.0
4-Chlorotoluene			Not detected	5.0	Not detected	5.0
Benzene			Not detected	5.0	Not detected	5.0
Bromobenzene			Not detected	5.0	Not detected	5.0
Bromochloromethane			Not detected	5.0	Not detected	5.0
Bromodichloromethane			Not detected	50	Not detected	50
Bromoform			Not detected	50	Not detected	50
Bromomethane			Not detected	5.0	Not detected	5.0
Carbon tetrachloride			Not detected	50	Not detected	50
Chlorobenzene			Not detected	5.0	Not detected	5.0
Chloroethane			Not detected	5.0	Not detected	5.0
Chloroform			Not detected	5.0	Not detected	5.0
Chloromethane			Not detected	50	Not detected	50
cis-1,3-Dichloropropylene			Not detected	50	Not detected	50
Dibromochloromethane			Not detected	5.0	Not detected	5.0
Dibromomethane			Not detected	5.0	Not detected	5.0
Dichlorodifluoromethane			Not detected	5.0	Not detected	5.0
Ethylbenzene			Not detected	5.0	Not detected	5.0
Hexachlorobutadiene			Not detected	5.0	Not detected	5.0
Isopropylbenzene			Not detected	5.0	Not detected	5.0
Methyl tert-butyl ether (MTBE)			Not detected	5.0	Not detected	5.0
Methylene chloride			Not detected	5.0	Not detected	5.0
Naphthalene			Not detected	5.0	Not detected	5.0
n-Butylbenzene			Not detected	5.0	Not detected	5.0

**YORK**

Client Sample ID			MW-10 (5'-7')		MW-11 (0-2')	
York Sample ID			01100663-03		01100663-04	
Matrix			SOIL		SOIL	
Parameter	Method	Units	Results	MDL	Results	MDL
n-Propylbenzene			Not detected	5.0	Not detected	5.0
o-Xylene			Not detected	5.0	Not detected	5.0
p- & m-Xylenes			Not detected	5.0	Not detected	5.0
p-Isopropyltoluene			Not detected	5.0	Not detected	5.0
sec-Butylbenzene			Not detected	5.0	Not detected	5.0
Styrene			Not detected	5.0	Not detected	5.0
tert-Butylbenzene			Not detected	5.0	Not detected	5.0
Tetrachloroethylene			Not detected	5.0	Not detected	5.0
Toluene			5	5.0	210	5.0
trans-1,3-Dichloropropylene			Not detected	5.0	Not detected	5.0
Trichloroethylene			Not detected	5.0	Not detected	5.0
Trichlorofluoromethane			Not detected	5.0	Not detected	5.0
Vinyl chloride			Not detected	50	Not detected	50

Units Key:

For Waters/Liquids: mg/L = ppm ; ug/L = ppb

For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

### Notes for York Project No. 01100663

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that no analyses reported herein were subcontracted to another laboratory.

Approved By:

Robert Q. Bradley  
Managing Director

Date: 11/2/2001

**YORK**

## CHAIN OF CUSTODY

**York Analytical Laboratories, Inc**  
One Research Drive  
Stamford, CT 06906  
(203) 357-1371 - Fax (203) 357-0166

ANALYSIS REQUESTED

[illegible]

# Technical Report

prepared for

**Diversified Environmental Serv.**  
1755 Meriden-Waterbury Tpk.  
P.O. Box 337  
Milldale, CT 06467  
Attention: Bryce McMinn

Report Date: 11/14/2001  
*Re: Client Project ID: #1275/Ed McCarty*  
York Project No.: 01110186

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Report Date: 11/14/2001  
 Client Project ID: #1275/Ed McCarty  
 York Project No.: 01110186

**Diversified Environmental Serv.**  
 1755 Meriden-Waterbury Tpk.  
 P.O. Box 337  
 Milldale, CT 06467  
 Attention: Bryce McMinn

## Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 11/07/01. The project was identified as your project "#1275/Ed McCarty".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

## Analysis Results

Client Sample ID			MW-1		MW-2	
York Sample ID			01110186-01		01110186-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE water	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,1-Dichloropropylene			Not detected	1	Not detected	1
1,2,3-Trichlorobenzene			Not detected	1	Not detected	1
1,2,3-Trichloropropane			Not detected	1	Not detected	1
1,2,3-Trimethylbenzene			Not detected	1	Not detected	1
1,2,4-Trichlorobenzene			Not detected	1	Not detected	1
1,2,4-Trimethylbenzene			Not detected	1	Not detected	1
1,2-Dibromo-3-chloropropane			Not detected	1	Not detected	1
1,2-Dibromoethane			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1

**YORK**

Client Sample ID			MW-1		MW-2	
York Sample ID			01110186-01		01110186-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3,5-Trimethylbenzene			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,3-Dichloropropane			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2,2-Dichloropropane			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzene			Not detected	1	Not detected	1
Bromobenzene			Not detected	1	Not detected	1
Bromochloromethane			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	1	Not detected	1
Carbon tetrachloride			Not detected	1	Not detected	1
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	1	Not detected	1
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Ethylbenzene			Not detected	1	Not detected	1
Hexachlorobutadiene			Not detected	1	Not detected	1
Isopropylbenzene			Not detected	1	Not detected	1
Methyl tert-butyl ether (MTBE)			Not detected	1	1	1
Methylene chloride			Not detected	1	Not detected	1
Naphthalene			Not detected	1	Not detected	1
n-Butylbenzene			Not detected	1	Not detected	1
n-Propylbenzene			Not detected	1	Not detected	1
o-Xylene			Not detected	1	Not detected	1
p- & m-Xylenes			Not detected	1	Not detected	1
p-Isopropyltoluene			Not detected	1	Not detected	1
sec-Butylbenzene			Not detected	1	Not detected	1
Styrene			Not detected	1	Not detected	1
tert-Butylbenzene			Not detected	1	Not detected	1
Tetrachloroethylene			2	1	Not detected	1
Toluene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	1	Not detected	1

**YORK**

Client Sample ID			MW-3		MW-5	
York Sample ID			01110186-03		01110186-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE water	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	25
1,1,1-Trichloroethane			Not detected	1	110	25
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	25
1,1,2-Trichloroethane			Not detected	1	Not detected	25
1,1-Dichloroethane			Not detected	1	Not detected	25
1,1-Dichloroethylene			Not detected	1	120	25
1,1-Dichloropropylene			Not detected	1	Not detected	25
1,2,3-Trichlorobenzene			Not detected	1	Not detected	25
1,2,3-Trichloropropane			Not detected	1	Not detected	25
1,2,3-Trimethylbenzene			Not detected	1	Not detected	25
1,2,4-Trichlorobenzene			Not detected	1	Not detected	25
1,2,4-Trimethylbenzene			Not detected	1	Not detected	25
1,2-Dibromo-3-chloropropane			Not detected	1	Not detected	25
1,2-Dibromoethane			Not detected	1	Not detected	25
1,2-Dichlorobenzene			Not detected	1	Not detected	25
1,2-Dichloroethane			Not detected	1	Not detected	25
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	25
1,2-Dichloropropane			Not detected	1	270(cis-)	25
1,3,5-Trimethylbenzene			Not detected	1	Not detected	25
1,3-Dichlorobenzene			Not detected	1	Not detected	25
1,3-Dichloropropane			Not detected	1	Not detected	25
1,4-Dichlorobenzene			Not detected	1	Not detected	25
1-Chlorohexane			Not detected	1	Not detected	25
2,2-Dichloropropane			Not detected	1	Not detected	25
2-Chlorotoluene			Not detected	1	Not detected	25
4-Chlorotoluene			Not detected	1	Not detected	25
Benzene			Not detected	1	Not detected	25
Bromobenzene			Not detected	1	Not detected	25
Bromochloromethane			Not detected	1	Not detected	25
Bromodichloromethane			Not detected	1	Not detected	25
Bromoform			Not detected	1	Not detected	25
Bromomethane			Not detected	1	Not detected	25
Carbon tetrachloride			Not detected	1	Not detected	25
Chlorobenzene			Not detected	1	Not detected	25
Chloroethane			Not detected	1	Not detected	25
Chloroform			Not detected	1	Not detected	25
Chloromethane			Not detected	1	130	25
cis-1,3-Dichloropropylene			Not detected	1	Not detected	25
Dibromochloromethane			Not detected	1	Not detected	25
Dibromomethane			Not detected	1	Not detected	25
Dichlorodifluoromethane			Not detected	1	Not detected	25
Ethylbenzene			Not detected	1	Not detected	25
Hexachlorobutadiene			Not detected	1	Not detected	25
Isopropylbenzene			Not detected	1	Not detected	25
Methyl tert-butyl ether (MTBE)			Not detected	1	Not detected	25
Methylene chloride			Not detected	1	Not detected	25
Naphthalene			Not detected	1	Not detected	25
n-Butylbenzene			Not detected	1	Not detected	25

**YORK**

Client Sample ID			MW-3		MW-5	
York Sample ID			01110186-03		01110186-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
n-Propylbenzene			Not detected	1	Not detected	25
o-Xylene			Not detected	1	Not detected	25
p- & m-Xylenes			Not detected	1	Not detected	25
p-Isopropyltoluene			Not detected	1	Not detected	25
sec-Butylbenzene			Not detected	1	Not detected	25
Styrene			Not detected	1	Not detected	25
tert-Butylbenzene			Not detected	1	Not detected	25
Tetrachloroethylene			Not detected	1	8500	25
Toluene			Not detected	1	Not detected	25
trans-1,3-Dichloropropylene			Not detected	1	Not detected	25
Trichloroethylene			Not detected	1	530	25
Trichlorofluoromethane			Not detected	1	Not detected	25
Vinyl chloride			Not detected	1	Not detected	25

Client Sample ID			MW-6		MW-7	
York Sample ID			01110186-05		01110186-06	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE water	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	5.0	Not detected	1
1,1,1-Trichloroethane			Not detected	5.0	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	5.0	Not detected	1
1,1,2-Trichloroethane			Not detected	5.0	Not detected	1
1,1-Dichloroethane			Not detected	5.0	Not detected	1
1,1-Dichloroethylene			Not detected	5.0	Not detected	1
1,1-Dichloropropylene			Not detected	5.0	Not detected	1
1,2,3-Trichlorobenzene			Not detected	5.0	Not detected	1
1,2,3-Trichloropropane			Not detected	5.0	Not detected	1
1,2,3-Trimethylbenzene			Not detected	5.0	Not detected	1
1,2,4-Trichlorobenzene			Not detected	5.0	Not detected	1
1,2,4-Trimethylbenzene			Not detected	5.0	Not detected	1
1,2-Dibromo-3-chloropropane			Not detected	5.0	Not detected	1
1,2-Dibromoethane			Not detected	5.0	Not detected	1
1,2-Dichlorobenzene			Not detected	5.0	Not detected	1
1,2-Dichloroethane			Not detected	5.0	Not detected	1
1,2-Dichloroethylene (Total)			230(cis-)	5.0	1(cis-)	1
1,2-Dichloropropane			Not detected	5.0	Not detected	1
1,3,5-Trimethylbenzene			Not detected	5.0	Not detected	1
1,3-Dichlorobenzene			Not detected	5.0	Not detected	1
1,3-Dichloropropane			Not detected	5.0	Not detected	1
1,4-Dichlorobenzene			Not detected	5.0	Not detected	1
1-Chlorohexane			Not detected	5.0	Not detected	1
2,2-Dichloropropane			Not detected	5.0	Not detected	1
2-Chlorotoluene			Not detected	5.0	Not detected	1
4-Chlorotoluene			Not detected	5.0	Not detected	1
Benzene			Not detected	5.0	Not detected	1
Bromobenzene			Not detected	5.0	Not detected	1
Bromochloromethane			Not detected	5.0	Not detected	1
Bromodichloromethane			Not detected	5.0	Not detected	1

**YORK**

Client Sample ID			MW-6		MW-7	
York Sample ID			01110186-05		01110186-06	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Bromoform			Not detected	5.0	Not detected	1
Bromomethane			Not detected	5.0	Not detected	1
Carbon tetrachloride			Not detected	5.0	Not detected	1
Chlorobenzene			Not detected	5.0	Not detected	1
Chloroethane			Not detected	5.0	Not detected	1
Chloroform			Not detected	5.0	Not detected	1
Chloromethane			Not detected	5.0	Not detected	1
cis-1,3-Dichloropropylene			Not detected	5.0	Not detected	1
Dibromochloromethane			Not detected	5.0	Not detected	1
Dibromomethane			Not detected	5.0	Not detected	1
Dichlorodifluoromethane			Not detected	5.0	Not detected	1
Ethylbenzene			Not detected	5.0	Not detected	1
Hexachlorobutadiene			Not detected	5.0	Not detected	1
Isopropylbenzene			Not detected	5.0	Not detected	1
Methyl tert-butyl ether (MTBE)			Not detected	5.0	Not detected	1
Methylene chloride			Not detected	5.0	Not detected	1
Naphthalene			Not detected	5.0	Not detected	1
n-Butylbenzene			Not detected	5.0	Not detected	1
n-Propylbenzene			Not detected	5.0	Not detected	1
o-Xylene			Not detected	5.0	Not detected	1
p- & m-Xylenes			Not detected	5.0	Not detected	1
p-Isopropyltoluene			Not detected	5.0	Not detected	1
sec-Butylbenzene			Not detected	5.0	Not detected	1
Styrene			Not detected	5.0	Not detected	1
tert-Butylbenzene			Not detected	5.0	Not detected	1
Tetrachloroethylene			110	5.0	2	1
Toluene			Not detected	5.0	Not detected	1
trans-1,3-Dichloropropylene			Not detected	5.0	Not detected	1
Trichloroethylene			240	5.0	Not detected	1
Trichlorofluoromethane			Not detected	5.0	Not detected	1
Vinyl chloride			Not detected	5.0	Not detected	1

Client Sample ID			MW-8		MW-9	
York Sample ID			01110186-07		01110186-08	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE water	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,1-Dichloropropylene			Not detected	1	Not detected	1
1,2,3-Trichlorobenzene			Not detected	1	Not detected	1
1,2,3-Trichloropropane			Not detected	1	Not detected	1
1,2,3-Trimethylbenzene			Not detected	1	Not detected	1
1,2,4-Trichlorobenzene			Not detected	1	Not detected	1
1,2,4-Trimethylbenzene			Not detected	1	Not detected	1

**YORK**

Client Sample ID			MW-8		MW-9	
York Sample ID			01110186-07		01110186-08	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dibromo-3-chloropropane			Not detected	1	Not detected	1
1,2-Dibromoethane			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			3(cis-)	1	6(cis-)	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3,5-Trimethylbenzene			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,3-Dichloropropane			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2,2-Dichloropropane			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzene			Not detected	1	Not detected	1
Bromobenzene			Not detected	1	Not detected	1
Bromochloromethane			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	1	Not detected	1
Carbon tetrachloride			Not detected	1	Not detected	1
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	1	Not detected	1
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Ethylbenzene			Not detected	1	Not detected	1
Hexachlorobutadiene			Not detected	1	Not detected	1
Isopropylbenzene			Not detected	1	Not detected	1
Methyl tert-butyl ether (MTBE)			5	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Naphthalene			Not detected	1	Not detected	1
n-Butylbenzene			Not detected	1	Not detected	1
n-Propylbenzene			Not detected	1	Not detected	1
o-Xylene			Not detected	1	Not detected	1
p- & m-Xylenes			Not detected	1	Not detected	1
p-Isopropyltoluene			Not detected	1	Not detected	1
sec-Butylbenzene			Not detected	1	Not detected	1
Styrene			Not detected	1	Not detected	1
tert-Butylbenzene			Not detected	1	Not detected	1
Tetrachloroethylene			9	1	9	1
Toluene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	7	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	1	Not detected	1

**YORK**

Client Sample ID			MW-10		MW-11	
York Sample ID			01110186-09		01110186-10	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8260+MTBE water	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	10	Not detected	50
1,1,1-Trichloroethane			Not detected	10	Not detected	50
1,1,2,2-Tetrachloroethane			Not detected	10	Not detected	50
1,1,2-Trichloroethane			Not detected	10	Not detected	50
1,1-Dichloroethane			Not detected	10	Not detected	50
1,1-Dichloroethylene			Not detected	10	Not detected	50
1,1-Dichloropropylene			Not detected	10	Not detected	50
1,2,3-Trichlorobenzene			Not detected	10	Not detected	50
1,2,3-Trichloropropane			Not detected	10	Not detected	50
1,2,3-Trimethylbenzene			Not detected	10	Not detected	50
1,2,4-Trichlorobenzene			Not detected	10	Not detected	50
1,2,4-Trimethylbenzene			Not detected	10	Not detected	50
1,2-Dibromo-3-chloropropane			Not detected	10	Not detected	50
1,2-Dibromoethane			Not detected	10	Not detected	50
1,2-Dichlorobenzene			Not detected	10	Not detected	50
1,2-Dichloroethane			Not detected	10	Not detected	50
1,2-Dichloroethylene (Total)			44(cis-)	10	73(cis-)	50
1,2-Dichloropropane			Not detected	10	Not detected	50
1,3,5-Trimethylbenzene			Not detected	10	Not detected	50
1,3-Dichlorobenzene			Not detected	10	Not detected	50
1,3-Dichloropropane			Not detected	10	Not detected	50
1,4-Dichlorobenzene			Not detected	10	Not detected	50
1-Chlorohexane			Not detected	10	Not detected	50
2,2-Dichloropropane			Not detected	10	Not detected	50
2-Chlorotoluene			Not detected	10	Not detected	50
4-Chlorotoluene			Not detected	10	Not detected	50
Benzene			Not detected	10	Not detected	50
Bromobenzene			Not detected	10	Not detected	50
Bromochloromethane			Not detected	10	Not detected	50
Bromodichloromethane			Not detected	10	Not detected	50
Bromoform			Not detected	10	Not detected	50
Bromomethane			Not detected	10	Not detected	50
Carbon tetrachloride			Not detected	10	Not detected	50
Chlorobenzene			Not detected	10	Not detected	50
Chloroethane			Not detected	10	Not detected	50
Chloroform			Not detected	10	Not detected	50
Chloromethane			Not detected	10	Not detected	50
cis-1,3-Dichloropropylene			Not detected	10	Not detected	50
Dibromochloromethane			Not detected	10	Not detected	50
Dibromomethane			Not detected	10	Not detected	50
Dichlorodifluoromethane			Not detected	10	Not detected	50
Ethylbenzene			Not detected	10	Not detected	50
Hexachlorobutadiene			Not detected	10	Not detected	50
Isopropylbenzene			Not detected	10	Not detected	50
Methyl tert-butyl ether (MTBE)			Not detected	10	Not detected	50
Methylene chloride			Not detected	10	Not detected	50
Naphthalene			Not detected	10	Not detected	50
n-Butylbenzene			Not detected	10	Not detected	50
n-Propylbenzene			Not detected	10	Not detected	50
o-Xylene			Not detected	10	Not detected	50

**YORK**

Client Sample ID			MW-10		MW-11	
York Sample ID			01110186-09		01110186-10	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
p- & m-Xylenes			Not detected	10	Not detected	50
p-Isopropyltoluene			Not detected	10	Not detected	50
sec-Butylbenzene			Not detected	10	Not detected	50
Styrene			Not detected	10	Not detected	50
tert-Butylbenzene			Not detected	10	Not detected	50
Tetrachloroethylene			820	10	4800	50
Toluene			Not detected	10	Not detected	50
trans-1,3-Dichloropropylene			Not detected	10	Not detected	50
Trichloroethylene			42	10	230	50
Trichlorofluoromethane			Not detected	10	Not detected	50
Vinyl chloride			Not detected	10	Not detected	50

Client Sample ID			Trip Blank	
York Sample ID			01110186-11	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8260+MTBE water	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	1
1,1,1-Trichloroethane			Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1
1,1,2-Trichloroethane			Not detected	1
1,1-Dichloroethane			Not detected	1
1,1-Dichloroethylene			Not detected	1
1,1-Dichloropropylene			Not detected	1
1,2,3-Trichlorobenzene			Not detected	1
1,2,3-Trichloropropane			Not detected	1
1,2,3-Trimethylbenzene			Not detected	1
1,2,4-Trichlorobenzene			Not detected	1
1,2,4-Trimethylbenzene			Not detected	1
1,2-Dibromo-3-chloropropane			Not detected	1
1,2-Dibromoethane			Not detected	1
1,2-Dichlorobenzene			Not detected	1
1,2-Dichloroethane			Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1
1,2-Dichloropropane			Not detected	1
1,3,5-Trimethylbenzene			Not detected	1
1,3-Dichlorobenzene			Not detected	1
1,3-Dichloropropane			Not detected	1
1,4-Dichlorobenzene			Not detected	1
1-Chlorohexane			Not detected	1
2,2-Dichloropropane			Not detected	1
2-Chlorotoluene			Not detected	1
4-Chlorotoluene			Not detected	1
Benzene			Not detected	1
Bromobenzene			Not detected	1
Bromochloromethane			Not detected	1
Bromodichloromethane			Not detected	1
Bromoform			Not detected	1
Bromomethane			Not detected	1

**YORK**

Client Sample ID			Trip Blank	
York Sample ID			01110186-11	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Carbon tetrachloride			Not detected	1
Chlorobenzene			Not detected	1
Chloroethane			Not detected	1
Chloroform			Not detected	1
Chloromethane			Not detected	1
cis-1,3-Dichloropropylene			Not detected	1
Dibromochloromethane			Not detected	1
Dibromomethane			Not detected	1
Dichlorodifluoromethane			Not detected	1
Ethylbenzene			Not detected	1
Hexachlorobutadiene			Not detected	1
Isopropylbenzene			Not detected	1
Methyl tert-butyl ether (MTBE)			Not detected	1
Methylene chloride			Not detected	1
Naphthalene			Not detected	1
n-Butylbenzene			Not detected	1
n-Propylbenzene			Not detected	1
o-Xylene			Not detected	1
p- & m-Xylenes			Not detected	1
p-Isopropyltoluene			Not detected	1
sec-Butylbenzene			Not detected	1
Styrene			Not detected	1
tert-Butylbenzene			Not detected	1
Tetrachloroethylene			Not detected	1
Toluene			Not detected	1
trans-1,3-Dichloropropylene			Not detected	1
Trichloroethylene			Not detected	1
Trichlorofluoromethane			Not detected	1
Vinyl chloride			Not detected	1

**Units Key:**

For Waters/Liquids: mg/L = ppm ; ug/L = ppb

For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

**Notes for York Project No. 01110186**

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that no analyses reported herein were subcontracted to another laboratory.

Approved By: \_\_\_\_\_

*Robert Q. Bradley*

Robert Q. Bradley  
Managing Director

Date: 11/14/2001

**YORK**