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# COMPREHENSIVE SITE ASSESSMENT REPORT

FOR THE

FORMER SQUARE DEAL PACKAGE STORE  
636 ROBESON STREET  
FAYETTEVILLE, NORTH CAROLINA 28305  
CUMBERLAND COUNTY

CES PROJECT NO. 97140

PREPARED FOR

MR. WILLIAM T. SANDERS  
2 SCOTCH BONNETT LANE  
WRIGHTSVILLE BEACH, NORTH CAROLINA 28480

SEPTEMBER 25, 2003

VOLUME I

CLARK



ENVIRONMENTAL SERVICES, P.C.

# CLARK ENVIRONMENTAL SERVICES, P.C.

POST OFFICE BOX 10136  
WILMINGTON, NC 28404-0136  
{910} 602-3900



## LETTER OF TRANSMITTAL

TO:

North Carolina Department of
Environment and Natural Resources
Division of Waste Management
Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, NC 28301-5043

DATE: 10/03/03	PROJECT NO. 97140
ATTENTION: Mr. James Brown	
RE: Former Square Deal Package Store	

WE ARE SENDING YOU  ATTACHED \_\_\_\_\_ UNDER SEPARATE COVER \_\_\_\_\_ OTHER (SPECIFY), SHIPPED VIA UPS 2-DAY MAIL THE FOLLOWING:

NO. COPIES	DATE	DESCRIPTION
1	09/25/03	Comprehensive Site Assessment Report

THESE ITEMS ARE TRANSMITTED AS CHECKED BELOW:

FOR APPROVAL  FOR YOUR USE  AS REQUESTED  FOR REVIEW/COMMENT

REMARKS/COMMENTS:

Should you have any questions or require additional information, please contact this office.

COPY TO: Mr. William T. Sanders, w/enc's.  
Mr. R. Paul Clark, P.G., President, CES, w/o enc's.

SIGNATURE: Debi Miller

# COMPREHENSIVE SITE ASSESSMENT REPORT

FOR THE

**FORMER SQUARE DEAL PACKAGE STORE  
636 ROBESON STREET  
FAYETTEVILLE, NORTH CAROLINA 28305  
CUMBERLAND COUNTY**

**CES PROJECT NO. 97140**

**SEPTEMBER 25, 2003**

**INCIDENT NUMBER: 3726**

**FACILITY ID NUMBER: 0-012303**

**LATITUDE: 35° 2' 38" NORTH**

**LONGITUDE: 78° 53' 40" WEST**

**SITE RANKING: INTERMEDIATE (SURFACE WATER WITHIN 500 FEET)**

**LAND USE CLASSIFICATION: RESIDENTIAL**

**UST OWNER/OPERATOR:**

MR. WILLIAM T. SANDERS

2 SCOTCH BONNETT LANE

WRIGHTSVILLE BEACH, NORTH CAROLINA 28480

(910) 256-3876

**CURRENT PROPERTY OWNER:**

MR. WILLIAM T. SANDERS

2 SCOTCH BONNETT LANE

WRIGHTSVILLE BEACH, NORTH CAROLINA 28480

(910) 256-3876

**CONSULTANT:**

CLARK ENVIRONMENTAL SERVICES, P.C.

POST OFFICE BOX 10136

WILMINGTON, NORTH CAROLINA 28404

(910) 602-3900



## RELEASE INFORMATION:

A RELEASE WAS DETECTED AT THIS SITE DURING CLOSURE ACTIVITIES PERFORMED IN SEPTEMBER 1997. THE RELEASE IS PRESUMED TO BE ASSOCIATED WITH THE UNDERGROUND STORAGE TANKS. THE CAUSE OF THE RELEASE AND QUANTITY RELEASED ARE UNKNOWN.

**PREPARED BY:**

CLARK ENVIRONMENTAL SERVICES, P.C.

WILMINGTON, NORTH CAROLINA



## EXECUTIVE SUMMARY:

The retail motor fuels outlet, located at the subject property ceased operations approximately six years ago. On September 25, 1997, THH Services performed closure activities of ten underground storage tanks (USTs) at the site. Soil and groundwater contamination, in excess of state action levels, were identified during closure assessment activities and a *UST Closure Report (GW/UST 12) and Initial Abatement Measures and Site Check Report*, prepared by Clark Environmental Services, P. C. (CES) and dated December 10, 1997, was submitted to NCDENR, Division of Waste Management, Fayetteville Regional Office.

In accordance with state requirements, follow-up limited site assessment investigations were conducted and a *Limited Site Assessment Report* (CES, June 8, 2000) was prepared and submitted which documented groundwater contamination at levels in excess of 15A NCAC 2L (groundwater) and 15A NCAC 2B (surface water) standards. Thereafter, the UST Section issued a request that comprehensive site assessment activities be conducted.

The well survey indicated that there were no supply wells utilized for any purpose found within 1,000 feet of the source area. A municipal water supply system services the site (currently unoccupied) and the adjacent properties. Per discussions with the city of Fayetteville Public Utilities engineer, two water lines are located along Robeson Street across from the site. Storm water drop inlets are located adjacent to and across from the site, along Robson Street, and these lines are reportedly composed of reinforced concrete. A sanitary sewer line extends under a portion of the former dispenser island, and a sanitary sewer line also extends along Robeson Street, across from the site. The sanitary sewer manways appear to be constructed of brick, and the lines are reportedly composed of clay or PVC. It is believed that the sanitary sewer line may act as a conduit for preferential plume migration away from the subject property; thus, several down gradient delineation monitoring wells were installed adjacent to this utility. All of the sanitary sewer manholes at and adjacent to the site (a total of five) were opened and checked for evidence of impact (i.e, odor, sheen, etc.). None of these sanitary sewer manways showed evidence of impact.

At the time of this investigation, a designated wellhead protection area, as defined in 42 USC 330h-7(e), is not reported to exist within 1,500 feet of the source area. The most important aquifers in Cumberland County are the Late Cretaceous Black Creek Formation, and surficial deposits, locally. The land use in the surrounding area is predominantly commercial and residential, though there has previously been light industrial activity onsite and at some adjoining properties.

The horizontal extent of soil contamination was addressed through the collection and analyses of eleven soil samples obtained during the current investigation. Laboratory analysis of these samples detected hydrocarbon contamination at levels in excess of the Soil-To-Groundwater Maximum Soil Contaminant Concentrations (MSCCs). Based on sampling conducted to date, it appears that soil contamination in excess of applicable MSCCs has been mostly delineated. CES was denied access to the adjacent property, beyond SB12.

The horizontal and vertical extent of groundwater contamination was addressed through the installation and sampling of a total of twenty monitoring wells (MW1 - MW20) and two telescoping wells (T1 and T2). A number of wells contained concentrations of target contaminants in excess of 15A NCAC 2L groundwater standards for various compounds. It is noted that the laboratory results for groundwater samples obtained at several monitoring wells documented the presence of multiple dissolved compounds which are not believed to be related to petroleum fuel. Trace amounts of free product were previously detected during one site check: MW1 contained trace amounts of gasoline; MW7 contained trace amounts of diesel). It is noted that no product has been measured at either well before or after that monitoring event. Laboratory results for one upgradient monitoring well suggest a possible second source of petroleum contaminants. Two surface water sampling points were also established in the nearby creek. No target contaminants were detected in the surface water samples.

Based on groundwater measurements taken during this and prior investigations, a potential for downward vertical groundwater flow may be present. In order to address this possibility, a second telescoping well was installed downgradient to the site across Robeson Street. It also appears that the groundwater flow direction and the contaminant plume geometry, are oriented eastward toward the nearby creek, which is believed to be a discharge area for the surficial aquifer.

It is recommended that this report be submitted to the NCDENR and upon its review, complete additional assessment activities, if deemed necessary. Whereas no evidence of impact to nearby receptors is readily apparent, these potential receptors should be periodically monitored. Given the elevated concentrations of contaminants at several source area monitoring wells, a *Corrective Action Plan* to address soil and groundwater contamination should be prepared.

## TABLE OF CONTENTS

	<u>PAGE</u>
1.0 SITE HISTORY AND SOURCE CHARACTERIZATION	1
2.0 METHODS OF INVESTIGATION	2
3.0 RECEPTOR INFORMATION	3
4.0 REGIONAL GEOLOGY AND HYDROGEOLOGY	5
5.0 SITE GEOLOGY AND HYDROGEOLOGY	6
6.0 SOIL SAMPLING RESULTS	7
7.0 GROUNDWATER SAMPLING RESULTS	8
8.0 FREE PRODUCT INVESTIGATION/RECOVERY	9
9.0 HYDROGEOLOGIC INVESTIGATION/AQUIFER PROPERTIES	9
10.0 SURFACE WATER SAMPLING RESULTS	9
11.0 DISCUSSION	10
12.0 CONCLUSIONS AND RECOMMENDATIONS	12
13.0 LIMITATIONS	13

### **LIST OF TABLES**

TABLE 1	ADJACENT PROPERTY INFORMATION
TABLE 2	UST SYSTEM INFORMATION
TABLE 3	MONITORING WELL CONSTRUCTION INFORMATION
TABLE 4	POTENTIOMETRIC HEAD ELEVATION DATA
TABLE 5	SUMMARY OF SOIL SAMPLING RESULTS
TABLE 6	SUMMARY OF GROUNDWATER AND SURFACE WATER SAMPLING RESULTS
TABLE 7	SUMMARY OF LIBRARY SEARCH COMPOUNDS

### **LIST OF FIGURES**

FIGURE 1	TOPOGRAPHIC VICINITY MAP
FIGURE 2	SITE MAP
FIGURE 3	TAX MAP
FIGURE 4	POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 10/17/01
FIGURE 5	POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 08/12/02
FIGURE 6	POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 03/26/03
FIGURE 7	POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 08/04/03
FIGURE 8	SITE MAP DEPICTING ESTIMATED HORIZONTAL EXTENT OF SOIL CONTAMINATION EXCEEDING SOIL-TO-GROUNDWATER MSCCS



- FIGURE 9 SITE MAP DEPICTING ESTIMATED HORIZONTAL EXTENT OF GROUNDWATER CONTAMINATION EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS, BASED ON 03/26/03 AND 08/04/03 SAMPLING RESULTS
- FIGURE 10 SITE MAP DEPICTING LOCATIONS OF CROSS-SECTIONS A-A' AND B-B'
- FIGURE 11 HYDROGEOLOGIC CROSS-SECTION A-A' DEPICTING ESTIMATED EXTENT OF SOIL AND GROUNDWATER CONTAMINATION
- FIGURE 12 HYDROGEOLOGIC CROSS-SECTION B-B' DEPICTING ESTIMATED EXTENT OF SOIL AND GROUNDWATER CONTAMINATION

### **LIST OF APPENDICES**

- APPENDIX I STANDARD METHODS
- APPENDIX II BORING LOGS, WELL CONSTRUCTION RECORDS, AND AS-BUILT WELL DETAILS
- APPENDIX III SOIL LABORATORY ANALYSES AND CHAIN OF CUSTODY FORMS
- APPENDIX IV SAMPLING RECORDS, LABORATORY ANALYSES, AND CHAIN-OF-CUSTODY FORMS
- APPENDIX V HISTORICAL GROUNDWATER PLUME MAP
- APPENDIX VI AQUIFER TEST DATA
- APPENDIX VII MATERIAL SAFETY DATA SHEETS
- APPENDIX VIII REFERENCES



# COMPREHENSIVE SITE ASSESSMENT REPORT

FOR THE

## FORMER SQUARE DEAL PACKAGE STORE FAYETTEVILLE, NORTH CAROLINA

CES PROJECT NO. 97140

SEPTEMBER 25, 2003

### 1.0 SITE HISTORY AND SOURCE CHARACTERIZATION:

#### 1.1 PURPOSE AND AUTHORIZATION:

The purpose of this report is to satisfy requirements under 15A NCAC 2L, Section .0115 (g) and 15A NCAC 2N .0706. This report also responds to the Notice of Regulatory Requirement (NORR), dated July 7, 2000, issued by NCDENR, DWM, UST Section.

The collection of data and preparation of this report were authorized by Mr. William T. Sanders, of Wrightsville Beach, North Carolina.

#### 1.2 LOCATION:

The former Square Deal Package Store (herein referred to as the site) is located at 636 Robeson Street, near the intersection of Commerce Street and Robeson Street, within the city limits of Fayetteville, North Carolina, in Cumberland County (**Figure 1**). **Figure 2** is a site map depicting the subject property, former underground storage tank (UST) areas, monitoring well locations, and other pertinent features.

The area in the vicinity of the site is primarily characterized by commercial and residential development. **Table 1** provides a summary of adjacent property ownership information and corresponds to numeration on **Figure 3**, which is a copy of the applicable portion of the tax map in the vicinity of the site.

#### 1.3 UNDERGROUND STORAGE TANK DATA:

UST information is summarized in **Table 2**, UST System Information.

1.4 UNDERGROUND STORAGE TANK OWNERSHIP:

Mr. William T. Sanders  
2 Scotch Bonnett Lane  
Wrightsville Beach, North Carolina 28480

1.5 SUMMARY OF SITE HISTORY:

On September 25, 1997, THH Services performed closure activities on ten underground storage tanks (USTs) at the site. Two tank pit excavations were required to remove the USTs. During tank removal activities, approximately 467 tons of petroleum contaminated soil was removed from the two tank pit excavations. Soil and groundwater contamination, in excess of state action levels, were identified during closure assessment activities and an *UST Closure Report (GW/UST 12) and Initial Abatement Measures and Site Check Report*, written by Clark Environmental Services, P. C. (CES) and dated December 10, 1997, was submitted to NCDENR, Division of Waste Management, Fayetteville Regional Office.

In accordance with state requirements, the UST Section issued a "Notice of Regulatory Requirements" (NORR), dated February 7, 2000, requesting that limited site assessment (LSA) activities be conducted. A report entitled *Limited Site Assessment Report* dated June 8, 2000) was prepared and submitted.

On the basis of information contained in the *LSA*, the UST Section ranked the site "intermediate risk" and classified the land use as "residential". The intermediate classification is based on the fact that surface water exists within 500 feet of the source area of contamination. A NORR, dated July 7, 2000, was issued by the UST Section requiring that a comprehensive site assessment (CSA) investigation be completed. The report herein was written to satisfy the *CSA* reporting requirements.

2.0 **METHODS OF INVESTIGATION:**

The existence and extent of soil contamination has been addressed during previous investigations through the collection of soil samples from previously installed monitoring wells MW2, MW3, and MW4, and soil borings SS1 and SS2. During the current CSA investigation twelve additional soil borings (SB1-SB12) were advanced and soil samples were analyzed using appropriate methods.

The horizontal and vertical extent of dissolved groundwater contamination was assessed through the installation and sampling of a total of twenty shallow monitoring wells and two "deep" (telescoping) wells. The potential for impact to the nearby Blounts Creek was assessed through the procurement of surface water samples from two surface water sampling locations, SW1 and SW2. Monitoring well locations, top of casing elevations, and other site

features were surveyed. Aquifer properties were characterized through evaluation of data from surveying, groundwater levels measurements, and performing short term recovery tests. A 1,000-foot radius water supply well survey update was also performed during this investigation.

Standard Methods used for conducting investigations are provided in **Appendix I**. Boring logs for soil samples, and boring logs, as-built well details, and well construction records for MW5 through MW20, T1, and T2 are contained in **Appendix II**. **Appendix III** includes soil laboratory results and chain of custody forms, **Appendix IV** contains sampling records, laboratory analyses, and chain of custody forms. **Appendix V** contains a historical contaminant plume map using some of the initial laboratory results prior to the installation of delineation monitoring wells. Recovery test data and calculations are provided in **Appendix VI**. Material Safety Data Sheets are provided in **Appendix VII**. References are included in **Appendix VIII**.

### 3.0 **RECEPTOR INFORMATION:**

Potential receptors, including subsurface utilities, are discussed herein. **Figure 2** is a site map depicting the location of nearby utilities and other site features. **Figure 3** is a tax map showing the location of nearby properties. **Table 1** lists nearby property ownership information.

#### 3.1 WATER SUPPLY WELLS:

A door-to-door well survey within 1,000 feet of the site was performed during this investigation and no water supply wells were documented, which is consistent with information obtained during the previous *LSA*.

#### 3.2 PUBLIC WATER SUPPLIES:

All potable water for the site and surrounding properties is supplied by the city of Fayetteville Public Works Commission (PWC). The municipal water is derived from the Cape Fear River. According to Heidi Maylay of the PWC Engineering Department, water supply wells are not used to supply water to the public system.

Two water lines extend down along Robeson Street; these are 4-inch and 6-inch water mains composed of either PVC or ductile iron. According to Ms. Maylay, the exact composition of the water lines in the immediate area is not known, due to the numerous changes and repairs that have taken place during the existence of the system. Water lines in the area are reportedly buried to an approximate depth of three feet below ground surface (BGS).

### 3.3 SURFACE WATER / STORMWATER SEWER SYSTEM:

Several storm water drop inlets are located adjacent to and across from the site, along Robeson Street, and are composed of reinforced concrete pipe. **Figure 2** depicts the depths and flow directions of these inlets.

The nearest surface water to the site is Blounts Creek, located about 200 feet east/southeast of the site, which ultimately discharges northward into the Cape Fear River. NCDENR, Division of Water Quality (DWQ), has assigned a classification of C for Blounts Creek. The C classification is generally provided for fresh waters which are suitable for secondary recreation, aquatic life propagation and survival, fishing and wildlife.

### 3.4 WELLHEAD PROTECTION AREAS:

At the time of this investigation, a designated wellhead protection area, as defined in 42 USC 330h-7(e), reportedly does not exist within 1,500 feet of the source area.

### 3.5 DEEP AQUIFERS IN THE COASTAL PLAIN PHYSIOGRAPHIC REGION:

Major deep aquifer systems in the area of the site include the Cretaceous Black Creek Formation and the Cretaceous (upper) Cape Fear Formation. Fayetteville, North Carolina is located near the regional contact between the two formations, with the underlying Cape Fear Formation being exposed west of the Black Creek Formation.

The Black Creek Formation is composed chiefly of thinly layered gray to black clay, interlayered with gray to tan sands which are interpreted as being of lagoonal and marine origin. Black Creek sediments contain a large amount of organic material, particularly lignitized wood. Glauconite and shell fragments are also common (Coble and Winner, 1989).

The Cape Fear Formation is characterized by sand and clay layers up to fifteen feet thick. The upper aquifer of the Cape Fear Formation is a distinct hydrologic unit from the lower part of the Cape Fear Formation, and the two units generally can be distinguished by a difference in hydraulic head. The upper aquifer thickens eastward from approximately ten feet thick at the western boundary near the Fall Line to approximately 500 feet thick in central Tyrell County (Winner, M. D., and Coble R. W., U.S. Geological Survey Professional Paper 1404-I, 1996).

The older sediments of the lower section of the Cape Fear Formation pinch out at some distance east of the site location. In some areas, the sediments of the upper Cape Fear Formation lie unconformably over crystalline basement rocks.

### 3.6 SUBSURFACE STRUCTURES / SANITARY SEWER SYSTEM:

A seven-foot deep sanitary sewer line extends under a portion of the former dispenser island and a separate section of line is constructed parallel to the southern edge of Robeson Street. The onsite manway at the former dispenser island was opened and checked for signs of impact, such as odor and sheen. The manway appeared to be constructed of brick and the lines are reportedly composed of clay or PVC. The manhole at the traffic island was also opened and checked for signs of impact. No evidence of impact was observed in either manway.

Given that groundwater exists between approximately two and six feet BGS onsite, the sewer lines which are positioned beneath the water table are likely in contact with the groundwater contaminant plume. These lines and associated backfill could locally affect groundwater flow and contaminant transport. Three additional sanitary sewer manways, located beyond the subject site, were also opened and checked for evidence of impact. No evidence of odor or sheen was observed.

An underground telephone line and fiber optic line run along the southside of Robeson Street. The depth of these utilities is unknown. **Figure 2** shows the approximate locations of these subsurface structures.

### 3.7 LAND USE:

According to the city of Fayetteville Planning Department, the zoning status of the property and immediate surrounding area is industrial (M-2). Other properties in the surrounding area are zoned C-3 (Heavy Commercial). Residences and businesses exist along Robeson Street and on Commerce Street.

### 3.8 OWNERS AND OCCUPANTS:

**Table 1** provides a list of adjacent property ownership information, and numeration therein corresponds to **Figure 3**, which is a copy of the applicable portion of the tax map for the area.

## 4.0 REGIONAL GEOLOGY AND HYDROGEOLOGY:

The subject property is located within the Atlantic Coastal Plain Physiographic Region. According to the 7.5 minute (Fayetteville Quadrangle) USGS topographic map of the vicinity, the site is situated approximately 100 feet above mean sea level (**Figure 1**).

In general, the subsurface of the Coastal Plain consists of a series of eastward-dipping sedimentary beds ranging from Cretaceous to Tertiary in age, lying nonconformably on a PreCambrian-Cambrian basement complex. The basement complex consists of schist,

gneiss, granite, and metamorphosed volcanic rocks typical of rocks that outcrop in the Piedmont Province (LeGrande, Harry, E., Groundwater Bulletin Number 1, 1960). Lying nonconformably on the basement complex is the Cretaceous Cape Fear (Upper and Lower) Formation. The Cape Fear Formation consists of lenticular beds of clay and sand. The sand beds range from fine to very coarse and contain varying amounts of clay. The clay is predominantly light gray or red and often sandy. Unconformably overlying the Cape Fear is the Cretaceous Black Creek Formation. The Black Creek Formation consists of carbonaceous, glauconitic sands interbedded with black plastic clays and thin impure limestone lenses. Across the county, the older deposits are covered by sands and sandy clays of Recent age.

## 5.0 SITE GEOLOGY AND HYDROGEOLOGY:

### 5.1 DESCRIPTION OF SHALLOW SUBSURFACE GEOLOGY:

The shallow subsurface of the site is typified by clay, sandy clay, and sand layers, as described in the boring logs contained in **Appendix II**.

### 5.2 GROUNDWATER OCCURRENCE:

The shallow monitoring wells are generally screened from 2 to 13 feet below grade at a depth to intersect the shallow groundwater table. The depth to groundwater in the shallow wells ranges from approximately 2 feet to 6 feet below ground surface (BGS) depending on location and period of measurement. The deep zone wells (T1 and T2) are screened from 25 to 30 feet BGS and the depth to water is generally one to three feet lower in these wells when compared with nearby shallow wells. Well construction information is contained in **Table 3** and groundwater level measurements are contained in **Table 4**.

### 5.3 GROUNDWATER FLOW DIRECTION:

Based on measurements obtained on October 17, 2001, August 12, 2002, March 26 and August 4, 2003 the general horizontal groundwater flow direction is oriented to the east/southeast (**Figures 4-7**) toward Blounts Creek. This is generally consistent with topographic map contours and prior potentiometric surface contour maps which are on file at the DWM. It is noted that an arbitrary benchmark elevation of 500 feet above sea level is utilized on these maps.

### 5.4 VERTICAL MOVEMENT:

Based on available information, the potential for downward vertical groundwater flow is generally indicated, although some data sets do not display this trend consistently. Based on water level measurements taken on October 17, 2001, March 26, 2003 and August 4, 2003, the potentiometric surface elevation in the "deep"

zone, telescoping well T1 was 0.05 feet lower, 3.54 feet lower and 1.8 feet lower, respectively, than the potentiometric surface obtained from nearest shallow well, MW1. However, based on water level measurements taken on August 12, 2002, the potentiometric surface elevation in T1 was 0.09 feet higher than the potentiometric measurement obtained from MW1. It is notable that the depth to water in all shallow wells was significantly greater on that date than other measuring dates, likely a reflection of an extended period of no rainfall in the region. Thus, the downward potential may yet exist on that date, despite the measurements taken at that time.

For the “deep” zone, telescoping well T2, the potential for downward vertical groundwater flow is also generally indicated when water level data is compared with measurements obtained at the two nearest shallow wells, MW11 and MW15. On March 26, 2003, the potentiometric surface elevation at T2 was 4.28 feet lower when compared with the water level data at MW11, and 2.59 feet lower than that measured at MW15. Similar to the observations discussed above, on August 12, 2002, the potentiometric surface elevation at T2 was only 0.48 feet lower when compared with measurements taken at MW11, and the potentiometric surface at T2 was 4.26 feet higher when compared with the water level at MW15. Again, the vertical downward potential may exist on that date, but it is not comparably reflected by the measurements due to the lowered water table in the surficial aquifer.

On the basis of the observations discussed above, it is concluded that a downward potential exists and that the differences in magnitude are likely related to differential recharge due to precipitation events.

## 6.0 SOIL SAMPLING RESULTS:

Soil samples obtained during the LSA investigation were obtained at depths of one to 2.5 feet. The samples were analyzed using EPA Methods 8260 and 8270, and MADEP Methods VPH and EPH (**Table 5**). The laboratory results verified the existence of soil contamination in excess of Soil-To-Groundwater MSCCs.

On October 11, 2001, CES personnel advanced six soil borings (SB1-SB6) in the vicinity of the former tank pits and dispenser island (see **Figure 5**). The soil samples were taken at depths of two to four feet and submitted to a North Carolina certified laboratory for analyses using EPA Methods 8260 and 8270 and MADEP EPH and VPH (**Table 5**). Laboratory results indicate that petroleum contamination in excess of Soil-To-Groundwater MSCCs was found at four of the soil sampling locations (SB1, SB2, SB3 and SB5).

On August 12, 2002, CES personnel advanced four additional delineation soil borings (SB7-SB10) (**Figure 5**). The soil samples were taken at two to four feet BGS onsite and four to six feet BGS offsite and submitted to a North Carolina certified laboratory for analyses using EPA Methods 8260 and 8270 and MADEP EPH and VPH (**Table 5**). Laboratory results

indicate that petroleum contamination in excess of Soil-To-Groundwater MSCCs was found at two of the soil sampling locations (SB7 and SB8).

On March 27, 2003, CES personnel advanced two additional delineation soil borings (SB11-SB12) (**Figure 5**). The soil samples were taken at one to 1.5 feet BGS and submitted to a North Carolina certified laboratory for analyses using EPA Methods 8260 and 8270 and MADEP EPH and VPH (**Table 5**). Laboratory results indicate that petroleum contamination in excess of Soil-To-Groundwater MSCCs was found at one of the soil sampling locations (SB12). No additional soil borings were advanced due to having been denied access to the adjoining property adjacent to SB12. It is further noted that numerous exploratory borings were installed along the length of the sanitary sewer pipe route at the property across from the site, in order to evaluate the utility route as a potential preferential pathway. No odors or other evidence of plume migration were indicated along this sewer route.

**Appendix II** contains boring logs for the recent soil borings and **Appendix III** contains laboratory results and chain of custody forms for soil samples obtained during the current investigation.

#### 7.0 GROUNDWATER SAMPLING RESULTS:

Sixteen additional monitoring wells (MW5 - MW20) and two telescoping wells were installed as part of comprehensive assessment activities. On October 17, 2001, groundwater samples were collected from MW1 - MW10 and T1. On August 12, 2002, groundwater samples were collected from MW11-MW16 and T2. Both sets of samples were submitted to a North Carolina certified laboratory for analyses using EPA Methods 6210 and 625 plus the tentative identification of the ten most prominent non-targeted chromatographic peaks (ten peaks), MADEP Methods VPH and EPH, and standard method 3030C for lead.

On March 26, 2003, groundwater samples were collected from MW1-MW19, T1, and T2. On August 4, 2003, groundwater samples were collected from MW20. The second round of samples for MW1-MW16, T1, and T2 were submitted for analyses using EPA Method 602 plus MTBE, DIPE, and naphthalene; whereas the samples for MW17-20 were analyzed using EPA Methods 6210 and 625 plus ten peaks, MADEP Methods VPH and EPH, and standard method 3030C for lead.

The analytical results indicate that several monitoring wells contained concentrations of petroleum contamination in excess of 15A NCAC 2L standards. No compounds were detected in excess of gross contamination levels (GCLs) during this assessment. The elevated concentration levels for several compounds in the groundwater sample results for upgradient MW18 suggest a possible second source of petroleum contaminants in that direction. **Table 6** provides a summary of water sample results as compared to regulatory standards. **Appendix IV** contains sampling records, laboratory results, and chain of custody forms for the CSA sampling events.

It is noted that groundwater samples MW1, MW2, MW3, MW6, MW9, MW11, MW12, MW18, and T2 reveal evidence of compounds not ordinarily associated with petroleum fuel, including 1,2-dichloroethane, 1,2-dichloropropane, tetrachloroethene (PCE), trichloroethene (TCE), chlorobenzonitrile, 4,4'-DDT, dichlorobenzamide, dichlorobenzonitrile, ethoprophos, and tetrahydronaphthalene (Table 6). In addition, several non targeted, non-petroleum related compounds were identified in the chromatograms of samples analyzed using EPA Method 625 (Table 7 and Appendix IV).

#### 7.1 HORIZONTAL EXTENT:

Based on analytical data it appears that the horizontal extent of the shallow dissolved petroleum contaminant plume has been delineated. Figure 9 depicts the estimated horizontal extent of current groundwater contamination exceeding 15A NCAC 2L groundwater standards. Appendix V contains a historical plume map based on samples collected during these initial phases of the CSA investigation.

#### 7.2 VERTICAL EXTENT:

The vertical extent of groundwater contamination was addressed through the installation and sampling of two telescoping wells (T1 and T2) and a review of potentiometric data. Given the presence of low concentrations of benzene at T1, the vertical extent of the contaminant plume does not appear to be delineated, as shown in Figures 11 and 12.

#### 8.0 FREE PRODUCT INVESTIGATION/RECOVERY:

Trace amounts of free product (in MW1, gasoline; and MW7, diesel) were encountered during this investigation on August 12, 2002; the presence of product was not observed during any other monitoring event.

#### 9.0 SURFACE WATER SAMPLING RESULTS:

Surface water samples were taken on March 26 and August 4, 2003, at the surface water sampling points, SW1 and SW2, respectively. The samples were submitted to a North Carolina certified laboratory for analyses using EPA Methods 6210 and 625 plus ten peaks, MADEP Methods EPH and VPH, and standard method 3030C for lead. No compounds were detected above laboratory detection limits.

#### 10.0 HYDROGEOLOGIC INVESTIGATION/AQUIFER PROPERTIES:

On August 12, 2002, CES personnel performed short-term aquifer tests on shallow monitoring wells MW2, MW9, MW7, and the telescoping well T1. The wells were pumped using a Grundfos® Redi-Flo2 Pump with variable frequency drive, and data was compiled using a Hermit, Model SE 1000C, environmental data logger.

Each of the wells was pumped at a constant rate, until the groundwater elevation within the well remained somewhat stable. Once this condition was observed, the data logger was activated, the pump was deactivated and recovery data was recorded. In addition, data obtained during the drawdown of each well was recorded for observation. All drawdown tests were analyzed according to the Jacob Straight-Line Method utilizing Hydro-Tests (Version 1.0) Software. All recovery tests were analyzed according to the Bouwer and Rice Method utilizing Hydro-Tests (Version 1.0) Software. The resulting hydraulic conductivity values were used to calculate the groundwater flow velocity estimates in the surficial aquifer.

The average hydraulic conductivity for the shallow zone was calculated to be 0.534 ft/dy and the average groundwater flow velocity was calculated to be 0.052 ft/dy. A hydraulic gradient of 0.033 feet per foot and an effective porosity of 0.34 were utilized in estimating the average groundwater flow velocity.

The average hydraulic conductivity for the deep zone was calculated to be 0.075 ft/dy and the average groundwater flow velocity was calculated to be 0.003 ft/dy. A hydraulic gradient of 0.015 feet per foot and an effective porosity of 0.39 were utilized in estimating the average groundwater flow velocity. Aquifer test data and calculations are provided in **Appendix VI**.

#### **11.0 DISCUSSION:**

The following presents a discussion of the immediate and long-term potential for harmful effects to human life and other environmental receptors, based on information collected to date. The information presented is limited to findings made during this study, and draws upon extrapolations and assumptions which are based upon varying degrees of confidence. Therefore, while it is useful to employ such information for various purposes, it is not intended that this information be utilized to represent a complete knowledge of conditions or possible scenarios which may be better understood through long-term monitoring. Therefore, the scope of this exposure assessment is purposely narrow and summarized. The findings of this investigation present a scenario where an end-product group of refined petroleum (gasoline, diesel, and kerosene) has been released into the shallow soils and groundwater in a Coastal Plain hydrogeological environment. Although petroleum hydrocarbons have been widely utilized as fuel for various purposes in human society, the overall health effects to man and other life forms from the exposure to such are not completely understood.

The documented contamination is composed of gasoline, diesel, and kerosene. Generally, these products consist primarily of a spectrum of hydrocarbon compounds which are volatile and semi-volatile in nature. Some of them are aromatic and chemically corrosive to many organic-based materials. Several compounds which have been the subject of toxicological studies are commonly used as regulatory basis for determining the extent of contamination. One compound, benzene, has been identified by the United States Environmental Protection

Agency (US EPA) as a carcinogen. Many compounds have not been individually studied in detail with regard to health effects within the food chain.

#### 11.1 SOIL CONTAMINATION:

The UST Section has determined the site to be categorized as an intermediate risk and to have a residential land use classification. Soil contamination in excess of applicable Soil to Groundwater MSCCs exists at the site, and it appears to have been mostly delineated (except in the direction where access was denied). Based on the risk based corrective action rules, soils at the site should be remediated to levels below Soil-To-Groundwater MSCCs; however it is noted that groundwater is measured between 2 and 5 feet BGS and this may affect perceived soil contamination in areas outside original source areas. In addition, the concentration of compounds exceeding the Soil to Groundwater MSCCs exist at low concentrations.

#### 11.2 GROUNDWATER CONTAMINATION:

Potential receptors of concern which have been identified as possible pathways for contaminant migration and exposure include: the public water supply system, the nearby storm sewer system, the sanitary sewer system, and the telephone and fiber optic lines.

##### 11.2.1 Public Water Supply/Water Lines:

In the event that groundwater contamination were to come in contact with the municipal water lines, the danger imposed by this scenario would be the possible erosion of the water line gaskets or glued joints by hydrocarbon constituents, and the possibility of the water supply becoming impacted. Given that the water mains are reportedly at depths generally above the static water table most of the year, the dangers stated are possible, yet they are unlikely to occur. However, monitoring of this system is recommended.

##### 11.2.2 Surface Water/Storm Sewer:

In the event that groundwater contamination were in contact with the storm sewer lines, the danger imposed by this scenario would be possible accumulation of hydrocarbon vapors resulting in an explosion risk, or ultimate impact to downgradient surface waters at the discharge point. There are storm drain lines located downgradient. Periodic inspection of the system should be performed and, if evidence of impacts are noted, sampling is recommended.

During periods of high water table conditions, these structures and their associated backfill are believed to intersect the water table, and, therefore, could locally affect groundwater flow and contaminant transport.

#### 11.2.3 Sanitary Sewer:

In the event that groundwater contamination is in contact with the sanitary sewer line, the danger imposed by this scenario is that vapors could accumulate and could become an explosion risk if concentrations were sufficiently high, and also such concentrations may create an impediment to the treatment plant operation, which relies on the proliferation of bacteria. Sewer lines are believed to exist within and downgradient of the plume. Periodic monitoring of this system is recommended.

During periods of high water table conditions, these structures and their associated backfill are believed to intersect the water table, and, therefore, could locally affect groundwater flow and contaminant transport.

#### 11.2.4 Other Subsurface Structures:

There are several other utility lines (telephone and fiber optic) near the site, in positions located downgradient to the plume. The depth of burial for these lines is unknown. The backfill material surrounding these lines could potentially serve as a transport pathway for groundwater flow and contaminant migration.

### 12.0 CONCLUSIONS AND RECOMMENDATIONS:

Removal of the USTs was completed during September 1997. Soil samples collected in the former tank area (collected from between two and four feet BGS) indicate the presence of contamination exceeding Soil-To-Groundwater MSCC. It appears that the horizontal extent of soil contamination has been mostly delineated. Given the shallow depth of groundwater and the fact that clean backfill soil was placed into the two former tank pits during the 1997 tank closure, the widespread removal of soil contamination outside of source areas may not be cost effective. Removal of contaminated soil in the former dispenser island areas may be desired to eliminate secondary source material in that area; however, it is noted that transecting utility lines may impede excavation activities.

The extent of groundwater contamination has been delineated horizontally in the shallow zone and appears to be fairly extensive in area. Nearby receptors do not appear to be in immediate danger of becoming impacted. Periodic monitoring is recommended through closure to ensure no adverse impacts occur. There appears to be a source for compounds not ordinarily associated with fuel petroleum, as well as an upgradient second source of petroleum compounds in that areas of the property. Material Safety data sheets for petroleum compounds detected at the site are included in **Appendix VII**.

It is herein recommended that this report be submitted to UST Section, Fayetteville Regional Office. Upon approval, it is likely that the preparation of a *Corrective Action Plan* to address site contamination will be required. Interim monitoring, as well as monitoring during corrective action implementation, is recommended.

**13.0 LIMITATIONS:**

Information obtained and presented as part of this investigation is based on available data in an effort to understand and/or correct an existing or potential problem. The validity of any resulting conclusions is limited by methodological constraints and by the lack of a statistically significant number of data points. There is no warranty, expressed or implied, that additional or new information and/or additional measures will not be required to ultimately solve the problem. Additionally, Clark Environmental Services, P.C. assumes no responsibility for the validity of subjective or interpolated interpretations, whether or not implied or indicated, although an attempt is made to qualify such.

**TABLES**



**TABLE 1  
 ADJACENT PROPERTY INFORMATION  
 FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC  
 INCIDENT NO. 3726, FACILITY I.D. NO. 0-012303  
 CES PROJECT NO. 97140**

TAX MAP PARCEL NO.	OWNER'S NAME	ADDRESS	ADJACENT TO SITE (Y/N)	WELL ON SITE (Y/N)
2107	JIMMIE AND MARY HOOKS	707 WEISS AVENUE FAYETTEVILLE, NC. 28305-5619	Y	N
2371	ANNIE MAE GRAHAM	804 ISLEY STREET FAYETTEVILLE, NC. 28305-5518	Y	N
3338	CHARLES W. BILLINGS	PO BOX 1821 FAYETTEVILLE, NC. 28305-1821	Y	N
3482	ANDREW DANIEL O'QUINN	PO BOX 53832 FAYETTEVILLE, NC. 28305-3832	Y	N
3508	WILLIAM T. SANDERS	2 SCOTCH BONNETT LANE WRIGHTSVILLE BEACH, NC 28480	Y	N
4019	1. JOHN STEWMAN 2. LOUISE STEWMAN	2814 FLINTWOOD STREET CHARLOTTE, NC 28226	Y	N
4424	ANDREW DANIEL O'QUINN	PO BOX 53832 FAYETTEVILLE, NC. 28305-3832	Y	N
4475	ANDREW DANIEL O'QUINN	PO BOX 53832 FAYETTEVILLE, NC. 28305-3832	Y	N
5685	WILLIAMS AUTO	PO BOX 41136 FAYETTEVILLE, NC. 28309-1136	Y	N
6741	1. BERTHA WALKER 2. WILHELMENA MCKINNON	633 ROBESON STREET FAYETTEVILLE, NC. 28305	Y	N
7713	NCDOT	558 GILLESPIE STREET FAYETTEVILLE, NC. 28301	Y	N
7993	OLIVE INVESTMENTS	1039 ROBESON STREET FAYETTEVILLE, NC. 28305	Y	N
9021	WILLIAM T. SANDERS	2 SCOTCH BONNETT LANE WRIGHTSVILLE BEACH, NC 28480	Y	N
9790	OLIVE INVESTMENTS	1039 ROBESON STREET FAYETTEVILLE, NC. 28305	Y	N



**TABLE 2**  
**UST SYSTEM INFORMATION**  
**FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC**  
**INCIDENT NO. 3726, FACILITY I.D. NO. 0-012303**  
**CES PROJECT NO. 97140**

UST ID Number	Product	Capacity (gallons)	Date Installed	Date Permanently Closed (P), or Still in Use (C)	Was Release Associated With UST System? (Y/N)
1	GASOLINE	5,000	05/09/74	09/25/97 (P)	Y
2	DIESEL	6,000	05/08/76	09/25/97 (P)	Y
3	DIESEL	2,000	05/08/76	09/25/97 (P)	Y
4	KEROSENE	2,000	05/10/71	09/25/97 (P)	Y
5	GASOLINE	2,500	01/01/64	09/25/97 (P)	Y
6	UNKNOWN	3,000	UNKNOWN	09/25/97 (P)	Y
7	GASOLINE	4,000	05/09/74	09/25/97 (P)	Y
8	GASOLINE	4,000	01/01/64	09/25/97 (P)	Y
9	GASOLINE	2,000	01/01/64	09/25/97 (P)	Y
10	DIESEL	2,000	01/01/64	09/25/97 (P)	Y



**TABLE 3  
MONITORING WELL CONSTRUCTION INFORMATION  
FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC  
INCIDENT NO. 3726, FACILITY I.D. NO. 0-012303  
CES PROJECT NO. 97140**

WELL ID	DATE INSTALLED	WELL CASING LENGTH (ft)	SCREENED INTERVAL (ft BGS)	BOTTOM OF WELL (ft BGS)	TOP OF CASING ELEVATION (ft)
MW1	03/14/00	2.7	2.7 to 12.7	12.7	500.36
MW2	03/27/00	2.5	2.5 to 12.5	12.5	499.64
MW3	03/27/00	2.5	2.5 to 12.5	12.5	499.34
MW4	03/27/00	2.5	2.5 to 12.5	12.5	499.74
MW5	10/10/01	2	2 to 12	12.0	500.79
MW6	10/10/01	2	2 to 12	12.0	499.33
MW7	10/10/01	2	2 to 12	12.0	498.89
MW8	10/10/01	2	2 to 12	12.0	499.81
MW9	10/11/01	2	2 to 12	12.0	499.44
MW10	10/11/01	2	2 to 12	12.0	499.11
MW11	07/11/02	5	3 to 13	13.0	500.00
MW12	07/11/02	3	3 to 13	13.0	499.91
MW13	07/11/02	5	3 to 13	13.0	502.00
MW14	07/12/02	3	3 to 13	13.0	500.10
MW15	07/12/02	5	3 to 13	13.0	498.69
MW16	07/15/02	3	3 to 13	13.0	498.65
MW17	03/25/03	4	1.5 to 10.5	10.5	496.07
MW18	03/25/03	2	2 to 12	12.0	500.88
MW19	03/25/03	1.5	1.5 to 11.5	11.5	501.08
MW20	08/04/03	2	2 to 12	12.0	494.64
T1	10/10/01	20 (4"), 25 (2")	25 to 30	30.0	500.50
T2	07/11/02	20 (4"), 25 (2")	25 to 30	30.0	496.37
SW1	03/26/03	NA	NA	NA	493.73
SW2	08/04/03	NA	NA	NA	490.61

Notes:

1. ft BGS represents feet below ground surface
2. All elevations are from an arbitrary assumed benchmark elevation of 500.00'
3. NA represents not applicable



**TABLE 4**  
**POTENTIOMETRIC HEAD ELEVATION DATA**  
**FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC**  
**INCIDENT NO. 3726, FACILITY I.D. NO. 0-012303**  
**CES PROJECT NO. 97140**

WELL ID	DATE	TOP OF CASING ELEVATION	DEPTH TO WATER FROM TOP OF CASING	FREE PRODUCT THICKNESS	POTENTIOMETRIC HEAD ELEVATION
MW1	03/15/00	500.36	4.18	0	496.18
MW1	03/28/00	500.36	3.64	0	496.72
MW1	10/17/01	500.36	5.50	0	494.86
MW1	08/12/02	500.36	5.88	trace	494.48
MW1	03/26/03	500.36	2.58	0	497.78
MW1	08/04/03	500.36	2.17	0	498.19
MW2	03/28/00	499.64	2.02	0	497.62
MW2	10/17/01	499.64	5.04	0	494.60
MW2	08/12/02	499.64	5.50	0	494.14
MW2	03/26/03	499.64	1.47	0	498.17
MW2	08/04/03	499.64	1.13	0	498.51
MW3	03/28/00	499.34	4.06	0	495.28
MW3	10/17/01	499.34	6.01	0	493.33
MW3	08/12/02	499.34	6.61	0	492.73
MW4	03/28/00	499.74	3.29	0	496.45
MW4	10/17/01	499.74	5.80	0	493.94
MW4	08/12/02	499.74	6.27	0	493.47
MW4	03/26/03	499.74	2.73	0	497.01
MW4	08/04/03	499.74	2.63	0	497.11
MW5	10/17/01	500.79	5.78	0	495.01
MW5	08/12/02	500.79	6.07	0	494.72
MW5	03/26/03	500.79	2.37	0	498.42
MW5	08/04/03	500.79	1.97	0	498.82
MW6	10/17/01	499.33	4.49	0	494.84
MW6	08/12/02	499.33	4.86	0	494.47
MW6	03/26/03	499.33	1.34	0	497.99
MW6	08/04/03	499.33	0.84	0	498.49
MW7	10/17/01	498.89	4.61	0	494.28
MW7	08/12/02	498.89	4.56	trace	494.33
MW7	03/26/03	498.89	1.40	0	497.49
MW7	08/04/03	498.89	1.03	sheen	497.86
MW8	10/17/01	499.81	6.72	0	493.09
MW8	08/12/02	499.81	7.30	0	492.51
MW8	03/26/03	499.81	4.19	0	495.62
MW8	08/04/03	499.81	3.91	0	495.90
MW9	10/17/01	499.44	6.41	0	493.03
MW9	08/12/02	499.44	6.81	0	492.63
MW9	03/26/03	499.44	4.48	0	494.96
MW9	08/04/03	499.44	4.11	0	495.33
MW10	10/17/01	499.11	7.76	0	491.35
MW10	08/12/02	499.11	8.49	0	490.62
MW10	03/26/03	499.11	5.81	0	493.30
MW10	08/04/03	499.11	5.28	0	493.83



**TABLE 4**  
**POTENTIOMETRIC HEAD ELEVATION DATA**  
**FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC**  
**INCIDENT NO. 3726, FACILITY I.D. NO. 0-012303**  
**CES PROJECT NO. 97140**

WELL ID	DATE	TOP OF CASING ELEVATION	DEPTH TO WATER FROM TOP OF CASING	FREE PRODUCT THICKNESS	POTENTIOMETRIC HEAD ELEVATION
MW11	08/12/02	500.00	9.64	0	490.36
MW11	03/26/03	500.00	5.84	0	494.16
MW11	08/04/03	500.00	5.26	0	494.74
MW12	08/12/02	499.91	5.64	0	494.27
MW12	03/26/03	499.91	2.15	0	497.76
MW12	08/04/03	499.91	1.91	0	498.00
MW13	08/12/02	502.00	7.93	0	494.07
MW13	03/26/03	502.00	4.33	0	497.67
MW13	08/04/03	502.00	3.76	0	498.24
MW14	08/12/02	500.10	7.71	0	492.39
MW14	03/26/03	500.10	6.22	0	493.88
MW14	08/04/03	500.10	5.87	0	494.23
MW15	08/12/02	498.69	12.22	0	486.47
MW15	03/26/03	498.69	5.37	0	493.32
MW15	08/04/03	498.69	9.43	0	489.26
MW16	08/12/02	498.65	10.65	0	488.00
MW16	03/26/03	498.65	8.58	0	490.07
MW16	08/04/03	498.65	8.55	0	490.10
MW17	03/26/03	496.07	9.27	0	486.80
MW17	08/04/03	496.07	8.84	0	487.23
MW18	03/26/03	500.88	1.77	0	499.11
MW18	08/04/03	500.88	1.36	0	499.52
MW19	03/26/03	501.08	5.88	0	495.20
MW19	08/04/03	501.08	5.64	0	495.44
MW20	08/04/03	494.64	7.85	0	486.79
T1	10/17/01	500.50	5.59	0	494.91
T1	08/12/02	500.50	6.11	0	494.39
T1	03/26/03	500.50	6.26	0	494.24
T1	08/04/03	500.50	4.11	0	496.39
T2	08/12/02	496.37	6.49	0	489.88
T2	03/26/03	496.37	5.64	0	490.73
SW1	03/27/03	493.73	7.90	0	485.83
SW1	08/04/03	493.73	7.50	0	486.23
SW2	08/04/03	490.61	4.25	0	486.36

- Notes:
1. All elevations are from an arbitrary assumed benchmark elevation of 500.00'
  2. All units are feet unless otherwise noted



**TABLE 5  
SUMMARY OF SOIL SAMPLING RESULTS  
FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC  
INCIDENT NO. 3726, FACILITY ID NO. 0-012303  
CES PROJECT NO. 97140**

ANALYTICAL METHOD			8260B																	8270					MADEP VPH/EPH						
SAMPLE ID	DATE COLLECTED	SAMPLE DEPTH (ft BGS)	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	MXRE	DIPE	NAPHTHALENE	ACETONE	N-BUTYLBENZENE	SEC-BUTYLBENZENE	TERT-BUTYLBENZENE	1,2-DIBROMO-3-CHLOROPROANE	1,4-DICHLORO-2-BUTENE (trans)	1,3-DICHLOROPROPENE (trans)	ISOPROPYL BENZENE	4-ISOPROPYLTOLUENE	N-PROPYLBENZENE	STYRENE	1,2,4-TRIMETHYLBENZENE	1,3,5-TRIMETHYLBENZENE	FLUORENE	2-METHYLNAPHTHALENE	NAPHTHALENE	PHENANTHRENE	PYRENE	C5-C8 ALIPHATICS	C9-C18 ALIPHATICS	C19-C36 ALIPHATICS	C9-C22 AROMATICS
			RESIDENTIAL MSCC	INDUSTRIAL/COMMERCIAL MSCC	SS1	SS2	MW2	MW3	MW4	SB1	SB2	SB3	SB4	SB5	SB6	SB7	SB8	SB9	SB10	SB11	SB12										
SOIL-TO-GROUNDWATER MSCC			0.0056	7	0.24	5	0.92	0.37	0.58	3	4	3	3	NS	NE	0.0009	2	NE	2	2.24	8	7	44	3	0.58	60	286	72	3,255	*	34
RESIDENTIAL MSCC			22	3,200	1,560	32,000	156	156	63	1,564	156	156	156	NS	NE	4	1,564	NE	156	3,218	782	782	620	63	63	469	469	939	9,386	93,860	469
INDUSTRIAL/COMMERCIAL MSCC			200	82,000	40,000	200,000	4,088	4,088	1,635	40,880	4,088	4,088	4,088	NS	NE	33	40,880	NE	4,088	81,760	20,440	20,440	16,400	1,635	1,635	12,264	12,264	24,528	245,280	**	12,264
SS1	03/14/00	2.5	<0.0057	<0.0057	<0.0057	<0.0167	<0.0057	<0.0057	0.01	<0.057	0.0092	<0.0057	<0.0057	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	0.012	<0.0057	<0.35	<0.35	<0.35	<0.35	<0.35	<0.05	<10.05	<10	<10.05
SS2	03/14/00	2.5	<11	<11	16	125	<11	<11	33	<270	<11	<11	<11	<53	<53	<11	<11	<11	<11	<11	76	43	1.3	5	4	2.4	1.8	450	6,900	1,500	1,340
MW2	03/27/00	2.5	<0.0059	<0.0059	<0.0059	<0.0179	<0.0059	<0.0059	<0.0059	<0.059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.36	<0.36	<0.36	<0.36	<0.36	<0.05	<10.05	<10	<10.05
MW3	03/27/00	2	<0.0062	<0.0062	<0.0062	<0.0182	<0.0062	<0.0062	<0.0062	<0.062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.37	<0.37	<0.37	<0.37	<0.37	<0.05	<10.05	<10	<10.05
MW4	03/27/00	2	<0.015E	11E	19E	185	<0.015E	<0.015E	46E	<3.8	<0.015E	4E	48E	4.5E	26E	1.9E	4.9E	2.4E	20E	4.9E	190	60	<0.64	29	23	<0.64	<0.64	110	2,500	<10	662
SB1	10/11/01	2 TO 4	0.021	<0.0056	0.15	0.02	<0.0056	<0.0056	0.16	0.12	0.17	0.0056	<0.0056	<0.0056	<0.0056	0.014	<0.0056	0.058	<0.0056	<0.0056	0.015	<0.32	2	1.5	<0.32	<0.32	<10	47	<10	14	
SB2	10/11/01	2 TO 4	0.32	4	2.2	12.8	<0.056E	<0.056E	2.8	<1.4E	0.72	<0.056E	<0.056E	<0.28E	<0.28E	<0.056E	0.31	0.084E	1	<0.056E	8	3	<0.36	0.74	0.85	<0.36	<0.36	630	1,100	<10	450
SB3	10/11/01	2 TO 4	0.31E	0.91E	14	55.36E	<0.92E	<0.92E	7.6	<2.3E	4	0.68	<0.92E	<0.46E	<0.46E	<0.92E	1	0.71E	5.8	<0.92E	42	13	<0.35	2	1.1	<0.35	<0.35	2,000	2,246	11	578
SB4	10/11/01	2 TO 4	<0.059	<0.059	0.2	0.34	<0.059	<0.059	0.071	<1.5E	0.081	<0.059	<0.059	<0.29	<0.29	<0.059	<0.059	<0.059	0.11	<0.059	0.71	0.22	<0.35	<0.35	<0.35	<0.35	<0.35	<10	<10	<10	<10
SB5	10/11/01	2 TO 4	0.16	<0.057E	1	0.79	<0.057E	<0.057E	2.4	<1.4E	0.96	0.39	<0.057E	<0.28E	<0.28E	<0.057E	0.28	0.31	0.99	<0.057E	4	0.28	0.33	6	2.2	0.68	<0.33	850	1,737	14	482
SB6	10/11/01	2 TO 4	<0.0058	<0.0058	<0.0058	<0.0178	<0.0058	<0.0058	<0.0058	<0.058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.36	<0.36	<0.36	<0.36	<0.36	<10	34	<10	<10
SB7	08/12/02	2 TO 4	<0.056E	<0.056E	2.6	1.1	<0.056E	<0.056E	2	<0.056E	0.6	0.16	<0.056E	<0.28E	<0.28E	<0.056E	0.33	0.14	1.6	<0.056E	2.5	<0.056E	<0.33	1.7	1.3	<0.33	<0.33	180	273	<10	47
SB8	08/12/02	2 TO 4	<0.055	<0.055	<0.055	<0.165	<0.055	<0.055	0.18	<0.055	<0.055	0.082	<0.055	<0.27	<0.27	<0.055	<0.055	0.084	0.21	<0.055	1.7	0.3	<0.34	0.67	<0.34	<0.34	<0.34	80	290	<10	41
SB9	08/12/02	2 TO 4	<0.0057	<0.0057	<0.0057	<0.0167	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.36	<0.36	<0.36	<0.36	<0.36	<10	<20	<10	<20
SB10	08/12/02	4 TO 6	<0.0058	<0.0058	<0.0058	<0.0178	<0.0058	<0.0058	<0.0058	<0.058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.35	<0.35	<0.35	<0.35	<0.35	<10	<20	<10	<20
SB11	03/27/03	1 TO 2	<0.006	<0.006	<0.006	<0.018	<0.006	<0.006	<0.006	<0.06	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.36	<0.36	<0.36	<0.36	<0.36	<10	<20	<10	<20
SB12	03/27/03	1 TO 2	<0.11	<0.11	0.29	1.2	<0.11	<0.11	0.7	<2.9	<0.11	0.13	<0.11	<0.57	<0.57	<0.11	<0.11	0.17	0.37	<0.11	3.8	1.6	<0.35	4.5	1.9	<0.35	<0.35	15	97	380	67

Notes:

1. Results reported in milligrams per kilogram (mg/kg)
2. ft BGS represents feet below ground surface
3. MSCC represents maximum soil contamination concentration
4. Bold represents concentrations in excess of Soil-To-Groundwater MSCCs
5. C<sub>9</sub>-C<sub>18</sub> concentration represents the total of C<sub>9</sub>-C<sub>12</sub> and C<sub>9</sub>-C<sub>18</sub> aliphatics from the VPH and EPH analyses, respectively
6. C<sub>9</sub>-C<sub>22</sub> concentration represents the total of C<sub>9</sub>-C<sub>10</sub> and C<sub>11</sub>-C<sub>22</sub> aromatics from the VPH and EPH analyses, respectively
7. \* represents compounds that are considered immobile
8. \*\* represents health based level > 100% concentration





TABLE 7  
SUMMARY OF LIBRARY SEARCH COMPOUNDS  
FORMER SQUARE DEAL PACKAGE STORE, FAYETTEVILLE, NC  
FACILITY ID NO. 0-012303, INCIDENT NO. 3726  
CES PROJECT NO. 97140

CONTAMINANT OF CONCERN		CHLOROBENZONITRILE	4,4'-DDT	DICHLOROBENZAMIDE	2,6-DICHLOROBENZAMIDE	DICHLOROBENZONITRILE	DIETHYLBENZENE	DIMETHYLBENZENE (XYLENES)	DIMETHYLNAPHTHALENE	ETHOPROPHOS	ETHYL-BENZOIC ACID	ETHYL-DIMETHYLBENZENE	ETHYLMETHYLBENZENE	INDANE	1-METHYLNAPHTHALENE	2-METHYLNAPHTHALENE	METHYL-PROPYLBENZENE	SQUALANE	TETRAHYDRONAPHTHALENE	TETRAMETHYLBENZENE	TRIMETHYLBENZENE	
WELL ID	DATE COLLECTED																					
15A NCAC 2L STANDARD		NS	0.1	NS	NS	NS	NS	530	NS	NS	28,000	NS	NS	NS	NS	28	70	NS	NS	NS	NS	350
GROSS CONTAMINATION LEVEL		NE	NE	NE	NE	NE	NE	87,500	NE	NE	1,450,000	NE	NE	NE	NE	12,500	8,500	NE	NE	NE	NE	25,000
MW1	03/15/00	ND	ND	ND	ND	ND	ND	<b>2,260</b>	ND	ND	ND	<b>120</b>	<b>770</b>	<b>240</b>	ND	ND	<b>150</b>	ND	ND	ND	ND	<b>1,410</b>
MW1	10/17/01	ND	ND	ND	ND	ND	ND	<b>2,700</b>	ND	ND	ND	<b>380</b>	<b>2,170</b>	<b>500</b>	ND	<b>240</b>	ND	ND	ND	ND	ND	<b>2,200</b>
MW2	03/28/00	ND	ND	<b>50</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW2	10/17/01	ND	ND	ND	<b>62</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW3	03/28/00	<b>45.7</b>	ND	<b>160</b>	ND	ND	ND	ND	ND	<b>540</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW3	10/17/01	<b>40</b>	ND	ND	<b>120</b>	<b>14</b>	ND	ND	<b>47.1</b>	<b>580</b>	ND	ND	ND	ND	ND	ND	8.2	ND	ND	ND	ND	ND
MW4	03/28/00	ND	ND	ND	ND	ND	ND	<b>3,560</b>	ND	ND	360	ND	<b>1,700</b>	ND	ND	ND	260	ND	ND	ND	ND	<b>3,410</b>
MW4	10/17/01	ND	ND	ND	ND	ND	<b>670</b>	<b>6,300</b>	ND	ND	ND	ND	<b>6,100</b>	<b>1,000</b>	ND	ND	ND	ND	ND	ND	ND	<b>5,200</b>
MW5	10/17/01	ND	ND	ND	ND	ND	ND	7.8	11	ND	ND	ND	<b>9.3</b>	ND	<b>16</b>	<b>21</b>	<b>13</b>	ND	ND	ND	ND	ND
MW6	10/17/01	ND	ND	ND	ND	ND	<b>170</b>	ND	ND	ND	ND	<b>54</b>	ND	ND	ND	ND	<b>146</b>	ND	ND	ND	ND	110
MW7	10/17/01	ND	ND	ND	ND	ND	<b>100</b>	ND	<b>133</b>	ND	ND	<b>66</b>	<b>183</b>	<b>120</b>	<b>93</b>	<b>120</b>	ND	ND	ND	ND	ND	<b>370</b>
MW8	10/17/01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>73</b>	<b>87</b>	<b>200</b>	ND	ND	ND	ND	ND	ND	110	260
MW9	10/17/01	ND	ND	<b>130</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW10	10/17/01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>61.2</b>	ND	<b>150</b>	<b>11</b>	ND	ND	ND	ND	ND	ND	ND
MW11	08/12/02	ND	ND	<b>63</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW12	08/12/02	<b>34</b>	ND	<b>140</b>	ND	ND	ND	76	<b>39</b>	<b>450</b>	ND	<b>49</b>	<b>66</b>	ND	<b>130</b>	<b>170</b>	ND	ND	<b>29</b>	ND	ND	ND
MW13	08/12/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW14	08/12/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW15	08/12/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW16	08/12/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW17	03/26/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW18	03/26/03	ND	<b>190</b>	ND	ND	ND	ND	<b>1,380</b>	ND	<b>320</b>	ND	ND	<b>220</b>	ND	<b>290</b>	<b>630</b>	ND	ND	ND	ND	ND	<b>750</b>
MW19	03/26/03	ND	ND	ND	ND	ND	ND	12.5	ND	ND	ND	ND	<b>4.3</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW20	08/04/03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T1	10/17/01	ND	ND	ND	ND	ND	ND	67	ND	ND	ND	ND	<b>78</b>	ND	ND	ND	ND	ND	ND	ND	ND	63
T2	08/12/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

1. Results reported in micrograms per liter. Concentrations for library search compounds are estimated (see note on laboratory results)
2. Bold represents concentrations in excess of 15A NCAC 2L standards
3. ND represents that the compound was not one of the ten most prominent peaks detected during the library search for that sample
4. NE represents no level has been established by the Department
5. NS represents narrative standard per 15A NCAC 2L .0202 c.
6. 15A NCAC 2L standards include interim groundwater standards
7. The standards for trimethylbenzene are the lower for the two isomers for which there are standards



**FIGURES**



# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

N

SCALE: 1" = 1000'

PROJECT LOCATION

## FAYETTEVILLE QUADRANGLE

NORTH CAROLINA - CUMBERLAND CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
PHOTO REVISED - 1987

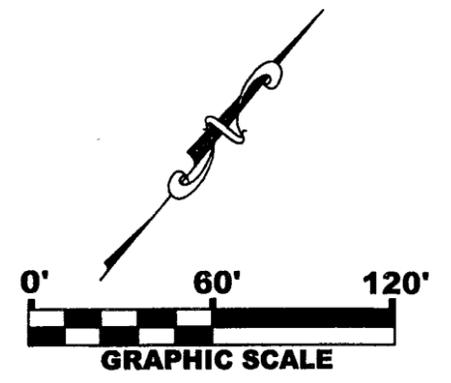
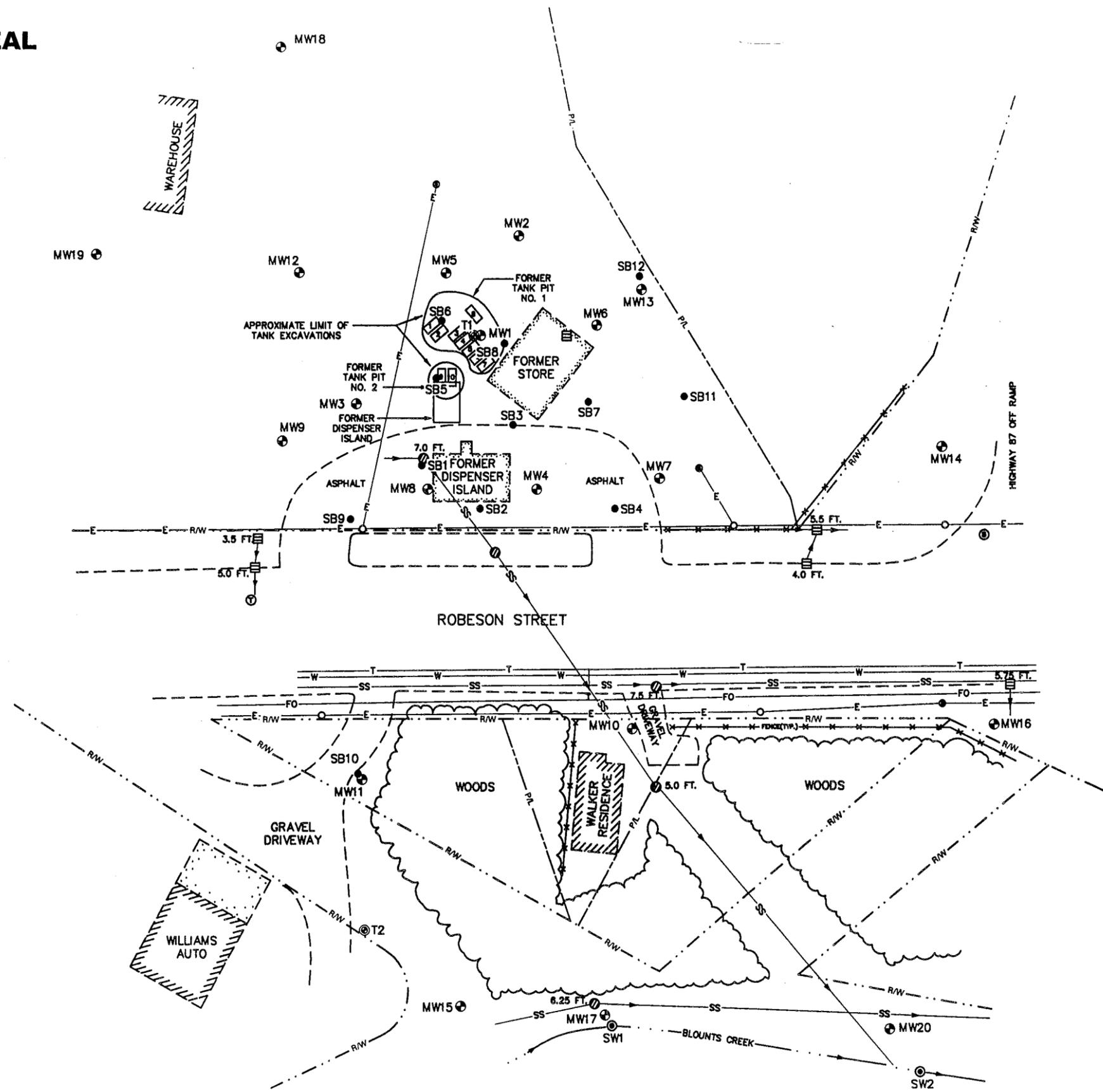
TOPOGRAPHIC  
VICINITY MAP

FIGURE 1



# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

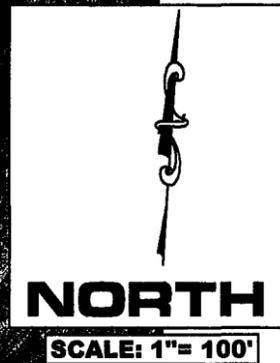


- LEGEND**
- ⊕ MONITORING WELL
  - ⊙ TELESCOPING WELL
  - ▲ ASSUMED BENCHMARK
  - POWER POLE
  - LIGHT POLE
  - ⊗ SANITARY SEWER MANHOLE
  - ⊕ STORM DRAIN MANHOLE
  - ⊕ TELEPHONE MANWAY
  - ▭ STORM DRAIN
  - E- POWER LINE
  - SS- SANITARY SEWER LINE
  - W- WATER LINE
  - T- STORM DRAIN LINE
  - FO- FIBER OPTIC LINE
  - ⊙ SURFACE WATER SAMPLING POINT
  - SOIL BORING

SITE MAP  
FIGURE 2

# SQUARE DEAL PACKAGE STORE

WILMINGTON, NC  
CES PROJECT NO. 97140



FORMER SQUARE  
DEAL FACILITY

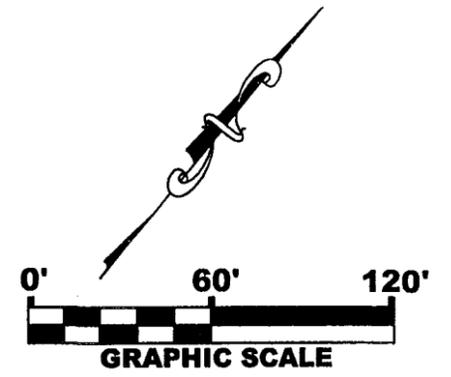
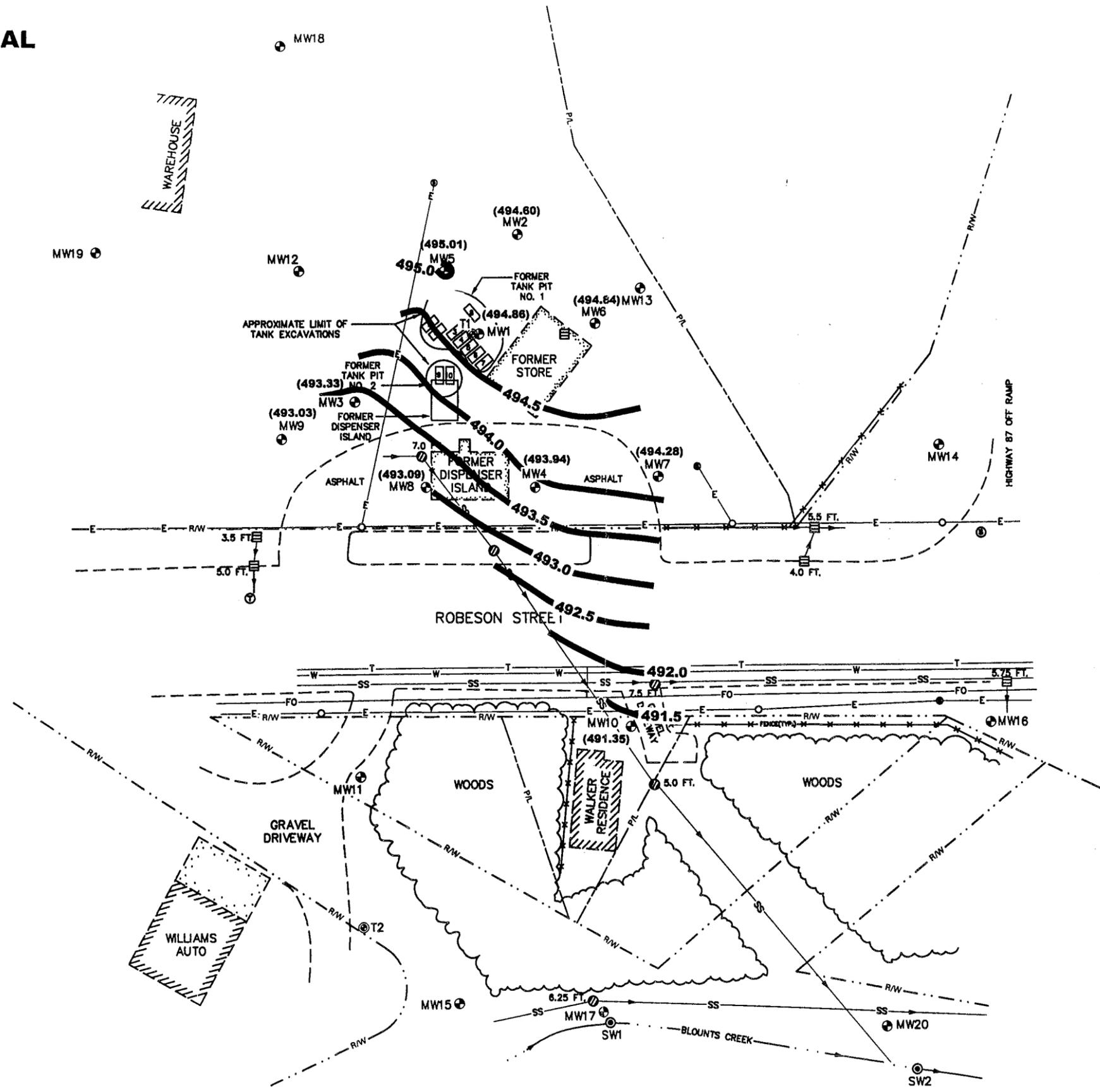
BLOUNTS CREEK

NOTE:  
AERIAL PHOTOGRAPH DATED 1995  
OBTAINED FROM CUMBERLAND  
COUNTY TAX DEPARTMENT

TAX MAP  
FIGURE 3

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



- LEGEND**
- ⊕ MONITORING WELL
  - ⊙ TELESCOPING WELL
  - ▲ ASSUMED BENCHMARK
  - POWER POLE
  - LIGHT POLE
  - ⊗ SANITARY SEWER MANHOLE
  - ⊕ STORM DRAIN MANHOLE
  - ⊕ TELEPHONE MANWAY
  - ▭ STORM DRAIN
  - E- POWER LINE
  - SS- SANITARY SEWER LINE
  - W- WATER LINE
  - T- STORM DRAIN LINE
  - FO- FIBER OPTIC LINE
  - ⊙ SURFACE WATER SAMPLING POINT

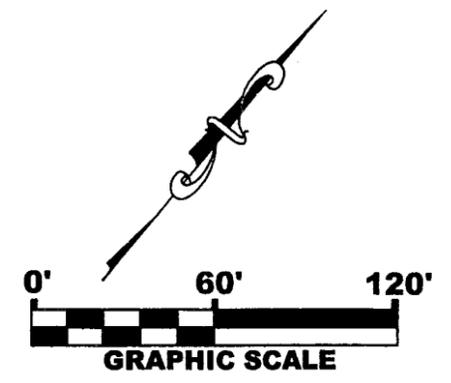
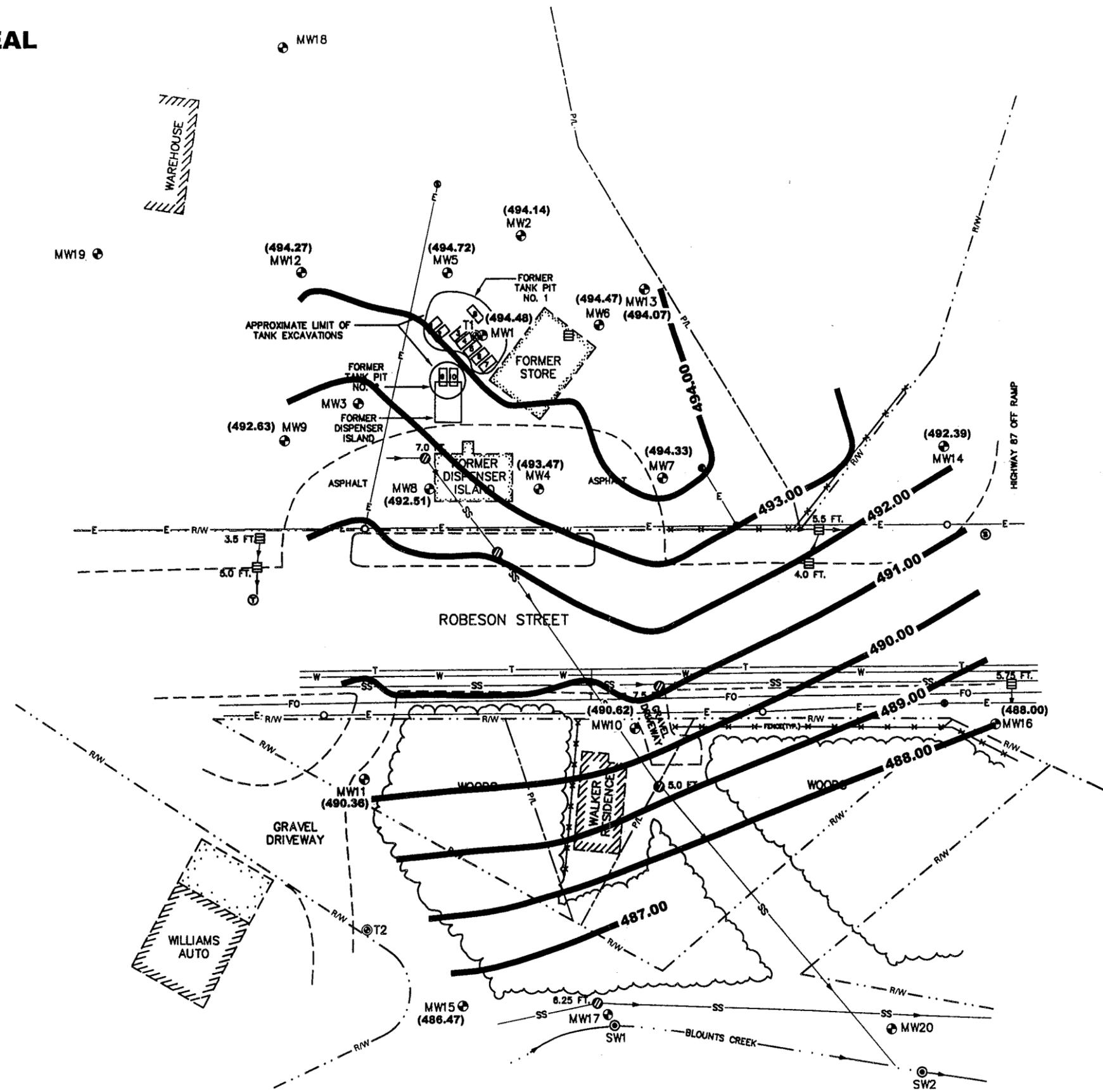
- NOTES:**
- 1) ALL ELEVATIONS ARE BASED ON AN ASSUMED BENCHMARK ELEVATION OF 500.00 FT.
  - 2) POTENTIOMETRIC SURFACE CONTOUR INTERVAL = 0.5 FT.
  - 3) T1 NOT UTILIZED IN CONTOURING. (MW11-MW20 AND T2 NOT YET INSTALLED)
  - 4) CREEK AND UTILITY POSITIONS APPROXIMATE.

POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 10-17-01

FIGURE 4

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



- LEGEND
- ⊕ MONITORING WELL
  - ⊙ TELESCOPING WELL
  - ▲ ASSUMED BENCHMARK
  - POWER POLE
  - LIGHT POLE
  - ⊗ SANITARY SEWER MANHOLE
  - ⊕ STORM DRAIN MANHOLE
  - ⊕ TELEPHONE MANWAY
  - ▤ STORM DRAIN
  - E- POWER LINE
  - SS- SANITARY SEWER LINE
  - W- WATER LINE
  - T- STORM DRAIN LINE
  - FO- FIBER OPTIC LINE
  - ⊙ SURFACE WATER SAMPLING POINT

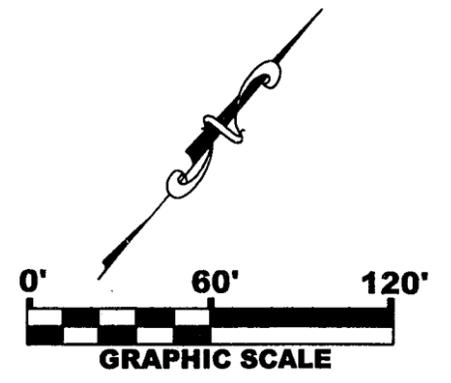
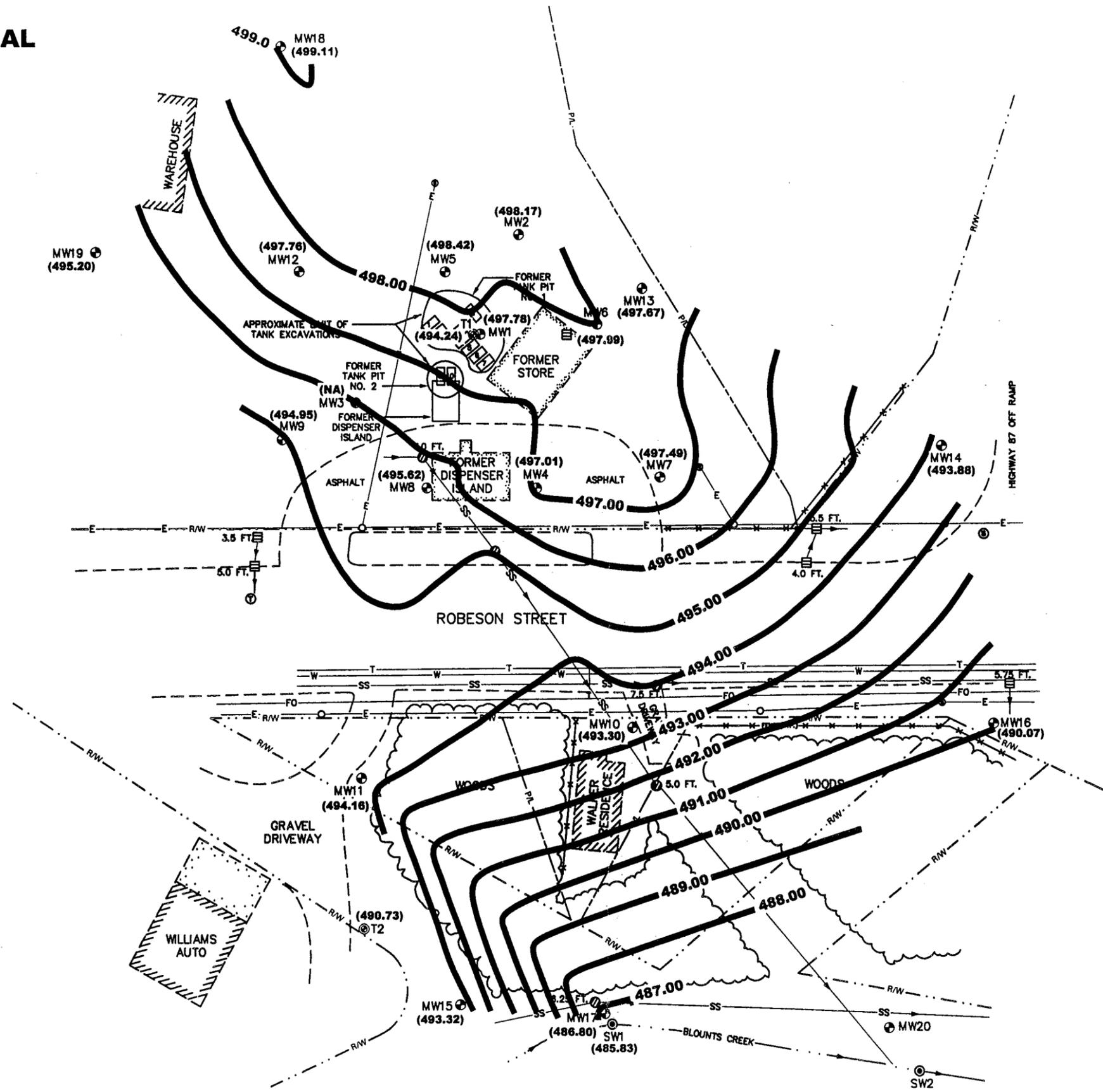
- NOTES:
- 1) ALL ELEVATIONS ARE BASED ON AN ASSUMED BENCHMARK ELEVATION OF 500.00 FT.
  - 2) POTENTIOMETRIC SURFACE CONTOUR INTERVAL = 1.0 FT.
  - 3) T1 NOT UTILIZED IN CONTOURING. (MW17-MW20 AND T2 NOT YET INSTALLED)
  - 4) CREEK AND UTILITY POSITIONS APPROXIMATE.

POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 08/12/02

FIGURE 5

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



- LEGEND
- ⊕ MONITORING WELL
  - ⊙ TELESCOPING WELL
  - ▲ ASSUMED BENCHMARK
  - POWER POLE
  - LIGHT POLE
  - ⊗ SANITARY SEWER MANHOLE
  - ⊙ STORM DRAIN MANHOLE
  - ⊕ TELEPHONE MANWAY
  - ⊞ STORM DRAIN
  - E- POWER LINE
  - SS- SANITARY SEWER LINE
  - W- WATER LINE
  - T- STORM DRAIN LINE
  - FO- FIBER OPTIC LINE
  - ⊙ SURFACE WATER SAMPLING POINT

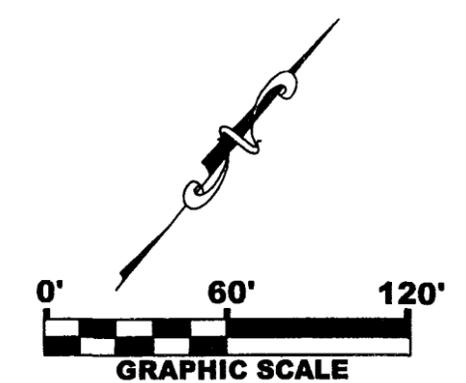
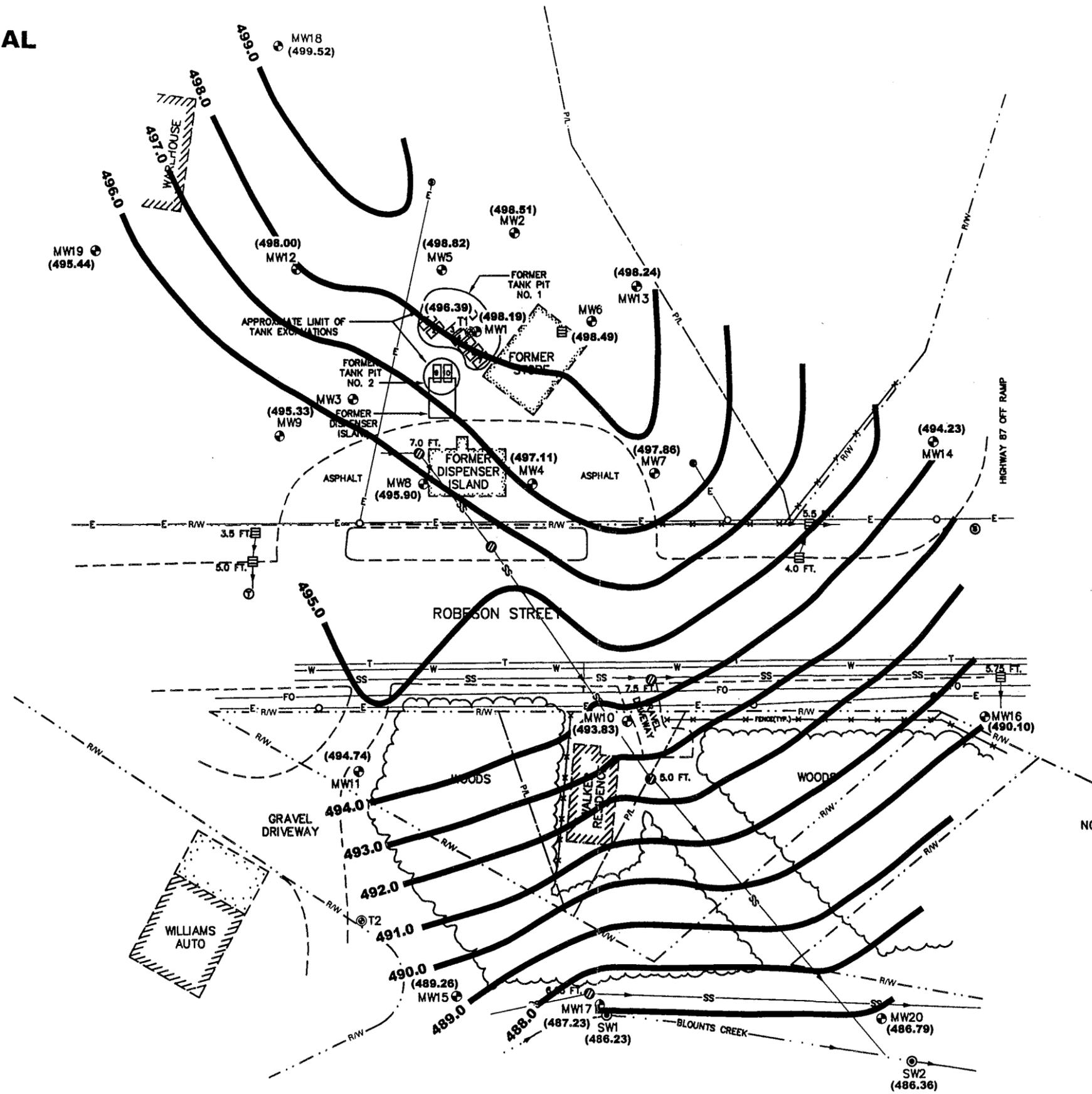
- NOTES:
- 1) ALL ELEVATIONS ARE BASED ON AN ASSUMED BENCHMARK ELEVATION OF 500.00 FT.
  - 2) POTENTIOMETRIC SURFACE CONTOUR INTERVAL = 1.0 FT.
  - 3) T1 NOT UTILIZED IN CONTOURING. (MW20 NOT YET INSTALLED)
  - 4) CREEK AND UTILITY POSITIONS APPROXIMATE.

POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 03/26/03

FIGURE 6

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



- LEGEND
- ⊕ MONITORING WELL
  - ⊙ TELESCOPING WELL
  - ▲ ASSUMED BENCHMARK
  - POWER POLE
  - LIGHT POLE
  - ⊗ SANITARY SEWER MANHOLE
  - ⊕ STORM DRAIN MANHOLE
  - ⊕ TELEPHONE MANWAY
  - ▭ STORM DRAIN
  - E- POWER LINE
  - SS- SANITARY SEWER LINE
  - W- WATER LINE
  - T- STORM DRAIN LINE
  - FO- FIBER OPTIC LINE
  - ⊙ SURFACE WATER SAMPLING POINT

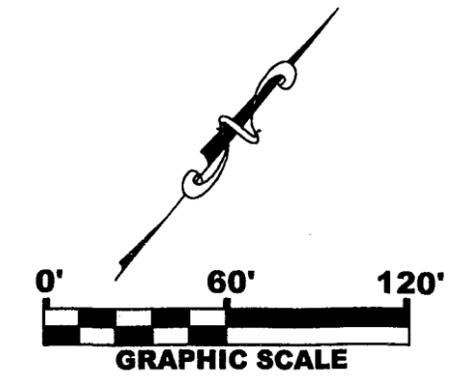
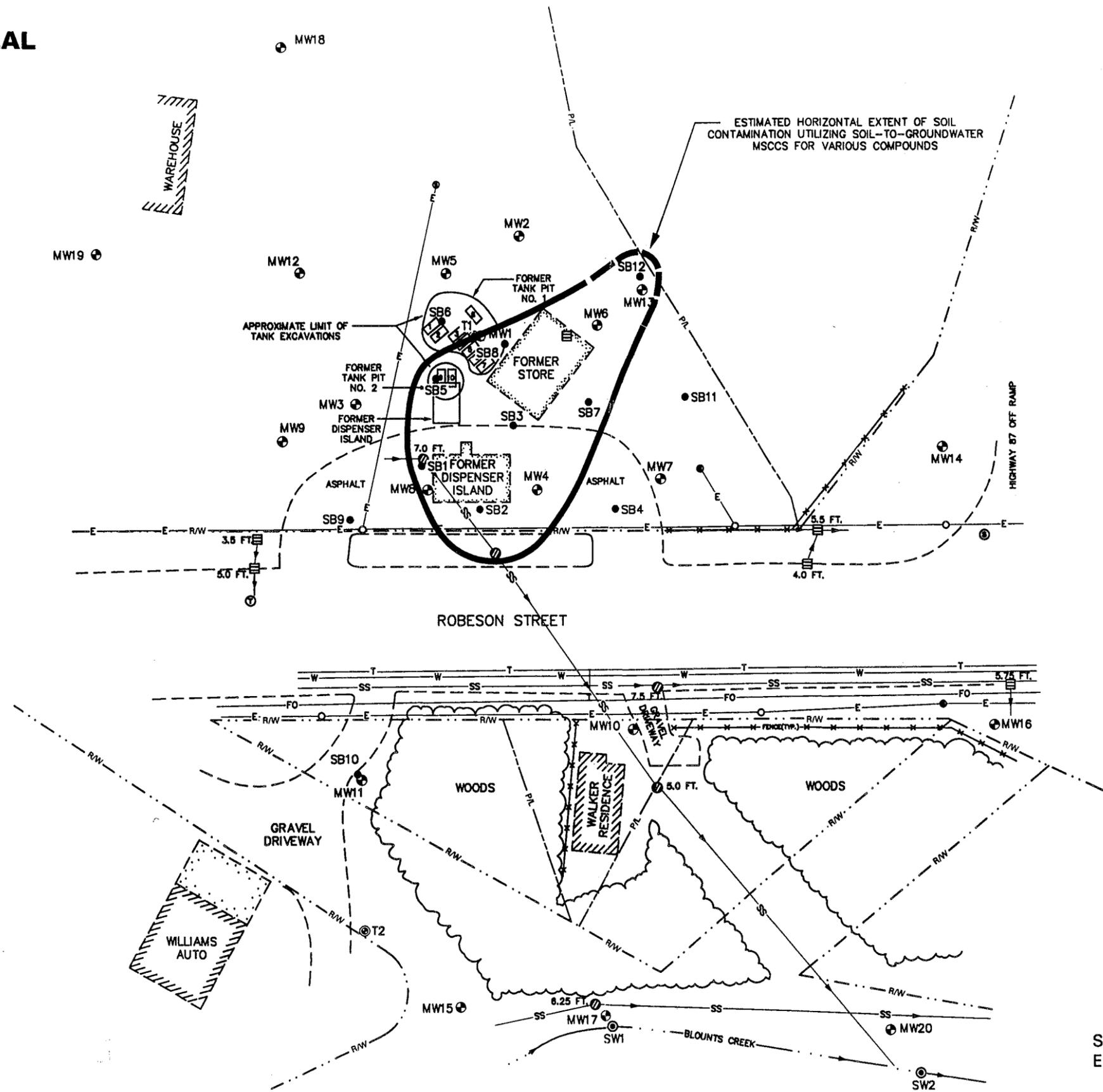
- NOTES:
- 1) ALL ELEVATIONS ARE BASED ON AN ASSUMED BENCHMARK ELEVATION OF 500.00 FT.
  - 2) POTENTIOMETRIC SURFACE CONTOUR INTERVAL = 1.0 FT.
  - 3) T1 AND T2 NOT UTILIZED IN CONTOURING.
  - 4) CREEK AND UTILITY POSITIONS APPROXIMATE.

POTENTIOMETRIC SURFACE CONTOUR MAP BASED ON MEASUREMENTS TAKEN ON 08/04/03

FIGURE 7

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



- LEGEND**
- ⊕ MONITORING WELL
  - ⊙ TELESCOPING WELL
  - ▲ ASSUMED BENCHMARK
  - POWER POLE
  - LIGHT POLE
  - ⊗ SANITARY SEWER MANHOLE
  - ⊕ STORM DRAIN MANHOLE
  - ⊕ TELEPHONE MANWAY
  - ▬ STORM DRAIN
  - E- POWER LINE
  - SS- SANITARY SEWER LINE
  - W- WATER LINE
  - T- STORM DRAIN LINE
  - FO- FIBER OPTIC LINE
  - ⊙ SURFACE WATER SAMPLING POINT
  - SOIL BORING

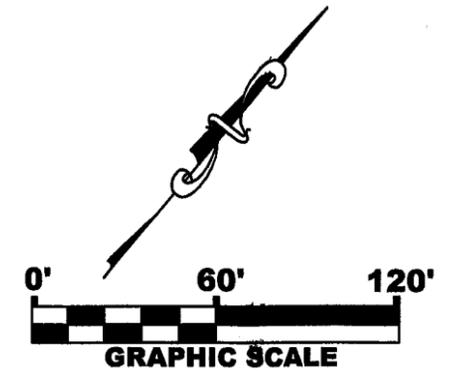
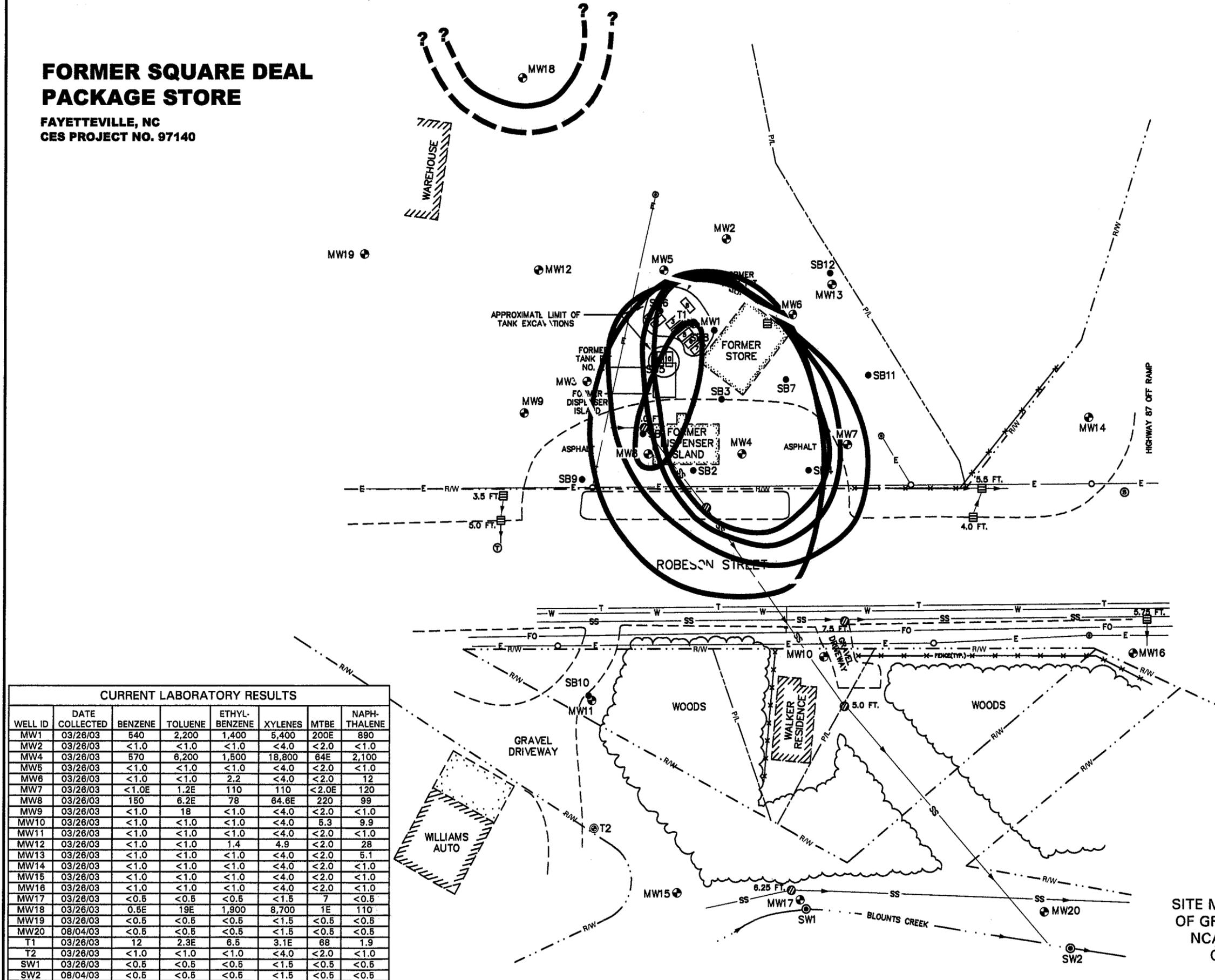
**NOTE:**  
REFER TO TABLE 5 FOR A SUMMARY OF ANALYTICAL RESULTS.

SITE MAP DEPICTING ESTIMATED HORIZONTAL EXTENT OF SOIL CONTAMINATION EXCEEDING SOIL-TO-GROUNDWATER MSCCS

FIGURE 8

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



### LEGEND

- ⊕ MONITORING WELL
- ⊙ TELESCOPING WELL
- ▲ ASSUMED BENCHMARK
- POWER POLE
- LIGHT POLE
- ⊗ SANITARY SEWER MANHOLE
- ⊕ STORM DRAIN MANHOLE
- ⊕ TELEPHONE MANWAY
- ≡ STORM DRAIN
- E- POWER LINE
- SS- SANITARY SEWER LINE
- W- WATER LINE
- T- STORM DRAIN LINE
- FO- FIBER OPTIC LINE
- ⊙ SURFACE WATER SAMPLING POINT
- SOIL BORING

- ▬ ESTIMATED HORIZONTAL EXTENT OF BENZENE EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS
- ▬ ESTIMATED HORIZONTAL EXTENT OF TOLUENE EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS
- ▬ ESTIMATED HORIZONTAL EXTENT OF ETHYLBENZENE EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS
- ▬ ESTIMATED HORIZONTAL EXTENT OF XYLENES EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS
- ▬ ESTIMATED HORIZONTAL EXTENT OF MTBE EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS
- ▬ ESTIMATED HORIZONTAL EXTENT OF NAPHTHALENE EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS

### NOTES:

- 1) T1 AND T2 NOT USED IN CONTOURING
- 2) CONTOUR DASHED WHERE INFERRED
- 3) RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)
- 4) E REPRESENTS AN ESTIMATED CONCENTRATION, SEE LABORATORY REPORT
- 5) HISTORICAL CONTAMINANT PLUME MAP UTILIZING INITIAL LABORATORY DATA PROVIDED IN APPENDIX V

CURRENT LABORATORY RESULTS							
WELL ID	DATE COLLECTED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	MTBE	NAPHTHALENE
MW1	03/26/03	540	2,200	1,400	5,400	200E	890
MW2	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
MW4	03/26/03	570	6,200	1,500	18,800	64E	2,100
MW5	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
MW6	03/26/03	<1.0	<1.0	2.2	<4.0	<2.0	12
MW7	03/26/03	<1.0E	1.2E	110	110	<2.0E	120
MW8	03/26/03	150	6.2E	78	64.6E	220	99
MW9	03/26/03	<1.0	18	<1.0	<4.0	<2.0	<1.0
MW10	03/26/03	<1.0	<1.0	<1.0	<4.0	5.3	9.9
MW11	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
MW12	03/26/03	<1.0	<1.0	1.4	4.9	<2.0	28
MW13	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	5.1
MW14	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
MW15	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
MW16	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
MW17	03/26/03	<0.5	<0.5	<0.5	<1.5	7	<0.5
MW18	03/26/03	0.5E	19E	1,900	8,700	1E	110
MW19	03/26/03	<0.5	<0.5	<0.5	<1.5	<0.5	<0.5
MW20	08/04/03	<0.5	<0.5	<0.5	<1.5	<0.5	<0.5
T1	03/26/03	12	2.3E	6.5	3.1E	68	1.9
T2	03/26/03	<1.0	<1.0	<1.0	<4.0	<2.0	<1.0
SW1	03/26/03	<0.5	<0.5	<0.5	<1.5	<0.5	<0.5
SW2	08/04/03	<0.5	<0.5	<0.5	<1.5	<0.5	<0.5

SITE MAP DEPICTING ESTIMATED HORIZONTAL EXTENT OF GROUNDWATER CONTAMINATION EXCEEDING 15A NCAC 2L GROUNDWATER STANDARDS BASED ON 03/26/03 AND 08/04/03 SAMPLING RESULTS

FIGURE 9

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

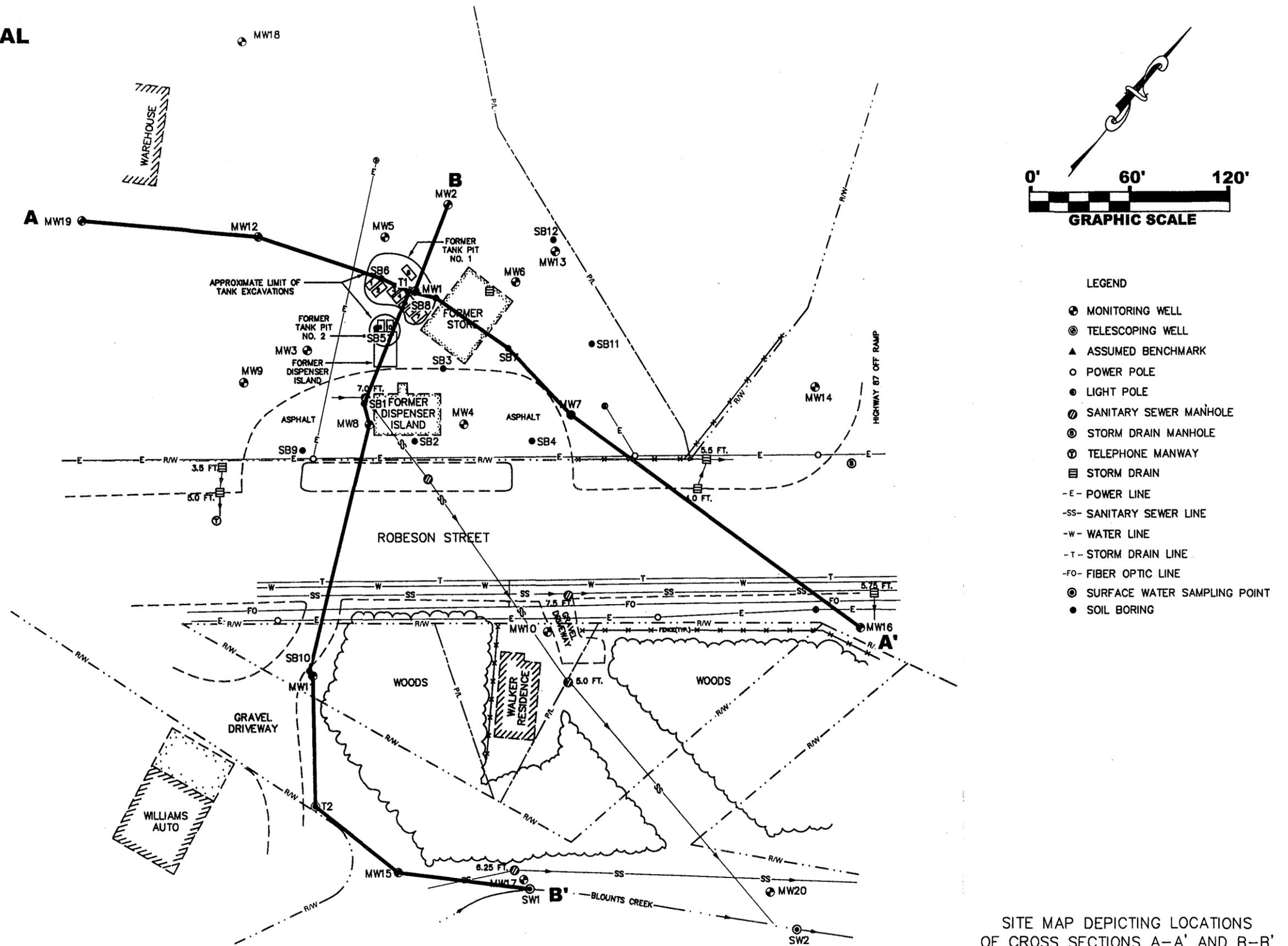


FIGURE 10

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

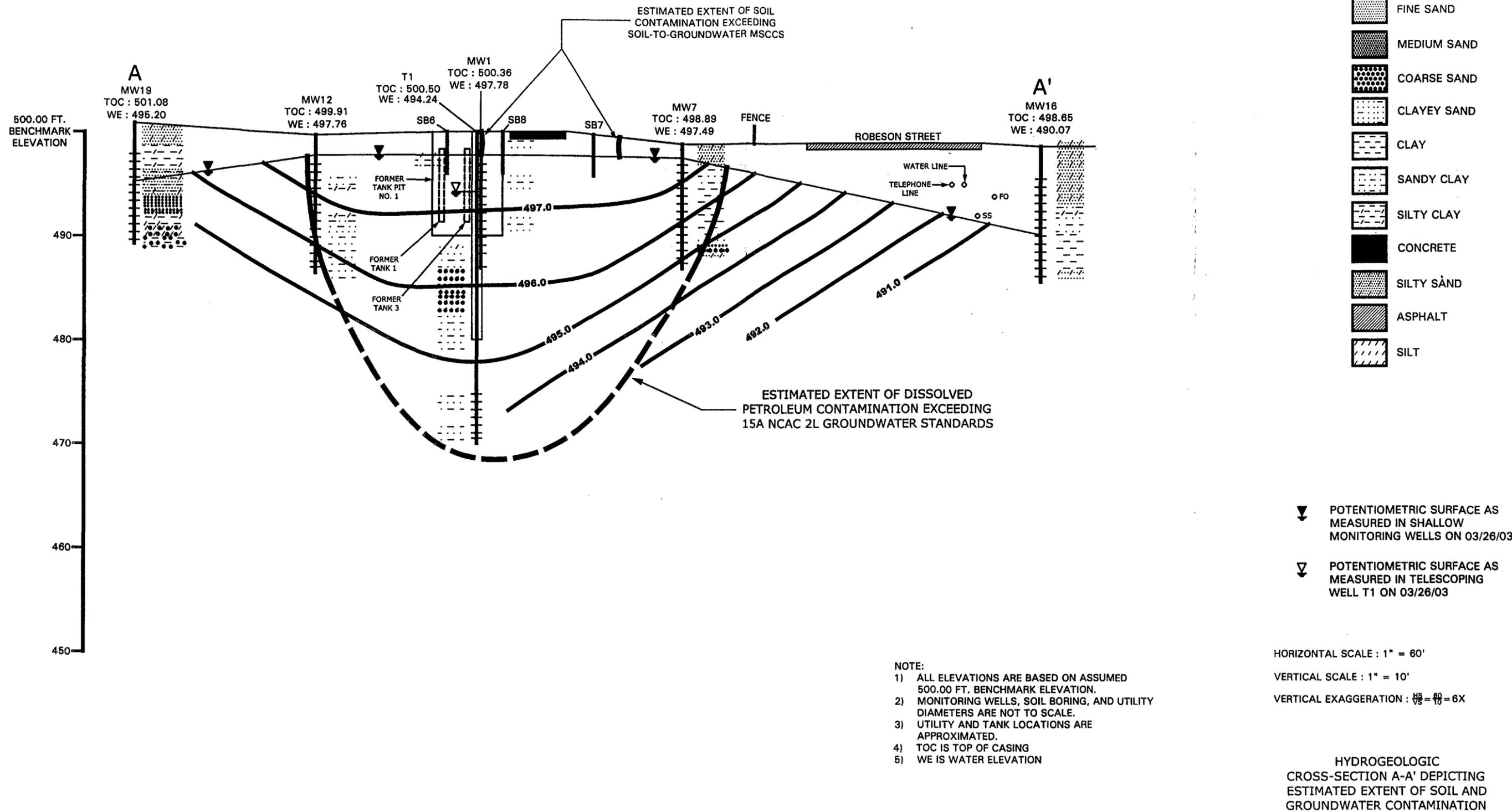


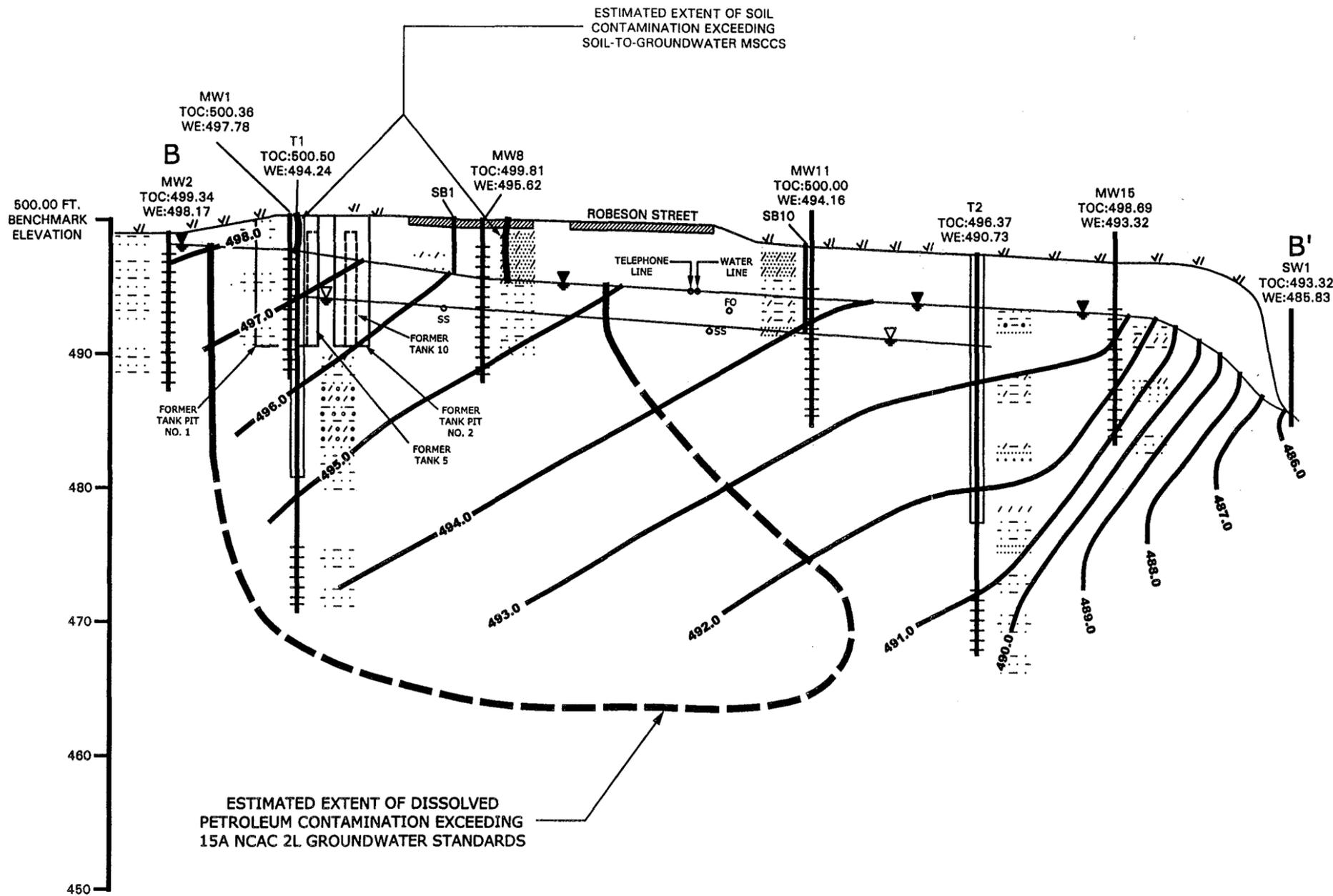
FIGURE 11

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

## LEGEND

-  FINE SAND
-  MEDIUM SAND
-  COARSE SAND
-  CLAYEY SAND
-  CLAY
-  SANDY CLAY
-  SILTY CLAY
-  CONCRETE
-  SILTY SAND
-  ASPHALT
-  SILT



-  POTENTIOMETRIC SURFACE AS MEASURED IN SHALLOW MONITORING WELLS ON 03/26/03
-  POTENTIOMETRIC SURFACE AS MEASURED IN TELESCOPING WELLS T1 AND T2 ON 03/26/03

HORIZONTAL SCALE : 1" = 60'  
 VERTICAL SCALE : 1" = 10'  
 VERTICAL EXAGGERATION :  $\frac{60}{10} = 6X$

- NOTES:
- 1) ALL ELEVATIONS ARE BASED ON ASSUMED 500.00 FT. BENCHMARK ELEVATION.
  - 2) DIAMETERS OF MONITORING WELLS, SOIL BORINGS, AND UTILITIES ARE NOT TO SCALE.
  - 3) UTILITY AND TANK PIT LOCATIONS ARE APPROXIMATED.
  - 4) TOC IS TOP OF CASING.
  - 5) WE IS WATER ELEVATION.

HYDROGEOLOGIC  
 CROSS-SECTION B-B' DEPICTING  
 ESTIMATED EXTENT OF SOIL AND  
 GROUNDWATER CONTAMINATION

FIGURE 12

**APPENDICES**



**STANDARD METHODS FOR CONDUCTING  
SUBSURFACE ENVIRONMENTAL INVESTIGATIONS**

**1.0 DATA COLLECTION:**

**1.1 PROJECT BACKGROUND:**

Historical information relevant to comprehensive subsurface investigation is generated through a wide spectrum of potential sources. Those most often utilized as credible sources include, but are not limited to, the following:

- 1.1.1 Correspondence and/or conversations with clients, regulatory officials and attorneys;
- 1.1.2 Regulatory mandates;
- 1.1.3 Pre-existing reports and other technical data;
- 1.1.4 Public records;
- 1.1.5 Documented eyewitness accounts;
- 1.1.6 Site reconnaissance.

**1.2 POTENTIAL RECEPTOR SURVEYS:**

Potential plume receptor data is generated on a site-specific basis. The scope of information is based upon the intended level of investigation. The availability of data is dependent, to differing degrees, upon the existence and accuracy of public and private record keeping, and on property ingress and egress. Generally, an attempt is made to facilitate a reasonable determination of possible environmental impacts in the context of the investigation being conducted, with the goal of adequate and appropriate site assessment and corrective action planning. Potential receptors are identified and surveyed/evaluated in the context of individual relevance and/or regulatory mandate or guidance.

**1.3 SITE SURVEYS:**

Physical surveys are utilized in the development of a horizontal and vertical project database. The data is often used to construct maps, to assist in making hydrogeologic determinations, and to aid in corrective action planning.

1.3.1 Horizontal Control:

Horizontal survey data is compiled using a possible combination of methods. Usually standard field and computational methods are employed. However, existing survey maps and/or photogrammetric techniques may be utilized, or a combination of existing data and field generated information may be used.

1.3.2 Vertical Control:

Vertical survey data is utilized primarily for establishing hydrogeologic control, and for evaluating topographic characteristics when necessary. The datum plane is generally assumed, except as otherwise noted. Assumed benchmarks are generally chosen to correspond with the approximate ground level, and vertical control is generally carried to an accuracy of +/- 0.01'.

1.4 **DRILLING/HAND AUGERING AND MONITORING WELL/RECOVERY WELL/PIEZOMETER INSTALLATION:**

Drilling, hand augering and subsurface installations are accomplished in accordance with site-specific requirements, regulatory requirements and feasibility considerations. The method employed at a specific site is tailored to the situation. Prior to any drilling or well construction activities, all necessary permits are obtained in accordance with federal, state and local requirements. All applicable licensing and bonding requirements are also fulfilled prior to beginning any work. Any boreholes purposely conducted at off-site locations are previously permitted through ingress/egress agreements with affected property owners or their agents.

1.4.1 Drilling Methods:

The following drilling methods are utilized:

1.4.1.1 Hand Augering:

Hand augering is commonly employed where economically, scientifically and/or situationally feasible. Hand augers typically produce 3" to 5" holes.

1.4.1.2 Auger Drilling:

Auger drilling is most often utilized in subsurface investigations. A truck or trailer mounted rig is usually employed and continuous five foot auger

flights of varying configurations are used to produce the borehole. Sampling is often accomplished through hollow stem type augers. Auger selection is based on site-specific requirements.

1.4.1.3 Rotary Drilling:

Air or mud rotary drilling may be utilized for special applications where necessary or appropriate. Rotary drilling is usually preferred and often utilized for telescoping well installations.

1.4.1.4 Other Drilling Methods:

Other methods such as coring, cable tool, truck mounted bucket augering, hammer drilling, and reverse rotary are not commonly utilized except under special circumstances.

1.4.2 Decontamination:

Drilling tools are thoroughly cleaned between boreholes to prevent cross-contamination. Depending upon site-specific circumstances, cleaning methods may include steam cleaning, detergent wash, nitric acid rinsing and deionized water or analyte free water rinsing.

1.4.3 Soil Sample Collection/Borehole Monitoring:

Typically, soil samples are retrieved using a split-spoon device at five foot intervals. Cuttings and penetration rates are continuously monitored and additional samples are taken when appropriate. Grab samples may be obtained utilizing clean sampling equipment, new latex gloves, and are containerized in sealable plastic bags. The samples are then allowed to volatilize for approximately ten minutes prior to field screening. Composite samples may be obtained and a complete description of the collection procedure is recorded in the field book.

1.4.4 Well Installation:

Wells/piezometers are typically constructed utilizing threaded PVC casing and screen. Glues and cements are not used. Stainless steel or Teflon materials may also be used if site-specific conditions dictate.

Filter packs are selected to be compatible with screen slot characteristics. Bentonite is utilized to seal the borehole above the filter pack and grout is used to fill the remaining annulus. Well diameter and protective covers are chosen specific to site conditions. Well construction records are prepared from field notes. A well tag is affixed to the well head and includes the project name, driller's license number, borehole number, date of installation, total depth, casing depth, well diameter, screened-, sand-, bentonite-, and grout-interval and static water level. The well is secured with a locking cap.

1.4.5 Well Development:

Under appropriate circumstances, wells are developed by overpumping, surging or bailing. Any contaminated development water is temporarily stored on-site for proper disposal. For large volumes of contaminated water, other site-specific arrangements may be made. Sampling is conducted a minimum of 24 hours following well installation and development.

1.4.6 Boring Logs:

All boreholes are logged for geological properties. Boring logs include the project name, hole number, date of boring and on-site geologist's name. Soil classification, soil description, relative wetness and photoionization detection readings are recorded for all split-spoon and grab samples obtained to total depth.

1.5 HYDROGEOLOGIC DATA:

Many methods are utilized for obtaining hydrogeologic data. Those methods most commonly utilized are as generally described below:

1.5.1 Regional Framework:

Information relating to the regional geological scope are generally compiled from existing published literature; however, previous technical reports, unpublished reports and personal communications with qualified Geologists may also be utilized.

1.5.2 Site Characteristics:

Most site information is generated through investigations on-site, although previous work proximal to the area of investigation may also be utilized. Borehole descriptions are important for making

interpretations with respect to contacts, lithostratigraphic gradations, facies changes, fractures, faults, cleavage and diagenetic porosity and permeability modifications. Geophysical methods may also be employed.

### 1.5.3

#### Groundwater Measurements:

Groundwater measurements include physical and chemical qualitative and quantitative parameters. There are many procedures for making groundwater determinations in the field, including, but not limited to, those listed below:

##### 1.5.3.1 Water Well Levels:

Water levels are primarily measured using pre-cleaned probes or tapes in conjunction with water and gas finding pastes. Measurements are usually made to an accuracy of +/- 0.01'. Floating products are measured and a specific gravity determination is made for each product type. A specific gravity adjustment is then used to calculate true hydraulic grade. Well measurements are combined with vertical survey data to calculate relative groundwater elevations. Transducers, bubbler lines or other methods may also be used under special circumstances to make water level measurements. All water level measuring equipment is decontaminated prior to measuring subsequent wells.

##### 1.5.3.2 Aquifer Tests:

Various aquifer tests may be utilized to characterize aquifer parameters. These tests may include, but are not limited to, pumping tests, slug tests, recovery tests, tracer tests, specific capacity tests, laboratory permeability tests, sieve and pipette analyses and drawdown tests. Vertical gradients are usually characterized through nested well configurations. Other methods, including fracture tracing, geophysical logging and resistivity surveys may be utilized on a site-specific basis.

1.5.3.3 Chemical Data:

Chemical data may be field measured using organic analyzers, pH meters or litmus paper, specific conductance meters, thermometers or other equipment.

1.6 CONTAMINATION DATA:

1.6.1 Collection Methods:

Depending upon the nature of contamination, many methods are utilized to collect information. The following are the most commonly utilized methods; however, the list is not inclusive:

- 1.6.1.1 Direct thickness measurements of phase (gravity) separated components.
- 1.6.1.2 Laboratory analyses of free phase products.
- 1.6.1.3 Specific gravity measurements of free phase products.
- 1.6.1.4 Field vapor or headspace analysis.
- 1.6.1.5 Laboratory analysis of vapor, soil and groundwater.
- 1.6.1.6 Visual observations.
- 1.6.1.7 Field analytical procedures including: temperature, conductance, pH, etc.
- 1.6.1.8 Geophysical methods.

1.6.2 Field Screening:

Field screening of soil samples is performed to determine the extent of soil contamination and to help direct the placement of permanent monitoring wells by providing relative contamination levels. Freshly retrieved samples are containerized, sealed and allowed to volatilize for a brief period prior to monitoring. Vapor readings are obtained from headspace within the container. All field measurements are recorded and reported in relevant reports.

A photoionization detector (PID) is utilized to conduct field screening. The instrument is routinely calibrated for measuring the suspected contaminant by following the manufacturer's instructions to insure proper functioning of the PID. The calibration procedure involves utilizing a pressurized tank of a sample gas (benzene equivalent) of known concentration which should produce a projected reading at a given intake pressure. At the recommended pressure, the PID is adjusted to the manufacturer's specified reading.

**1.6.3 Field Sampling for Laboratory Analyses:**

Field sampling methods are generally in accordance with the 1986 EPA SOP and QA Manual and state guidance documents. Duplicate samples are obtained during all major site investigations. Rigorous cleaning procedures are adhered to and quality control blanks are utilized. All sampling equipment is thoroughly cleaned and rinsed between boreholes. Sample containers are new, laboratory-prepared and are never reused by field personnel. Chain of custody is documented throughout the sample handling process and included with all laboratory reports. State licensed laboratories will be utilized. Generally, sampling procedures are as follows:

**1.6.3.1 Products:**

Pure product samples are refrigerated and shipped to the analytical laboratory.

**1.6.3.2 Soil:**

Soil samples are obtained utilizing pre-cleaned equipment, and quickly containerized. Samples are then immediately refrigerated and shipped to the analytical laboratory.

**1.6.3.3 Surface Water:**

Grab samples are obtained with the sampler facing the upstream direction, if in a flowing body of water. Samples are refrigerated and shipped to the analytical laboratory.

**1.6.3.4 Vapor:**

Vapor samples are obtained utilizing either carbon

tubes in conjunction with a calibrated pump, Tedlar bags, or by using a glass syringe. Samples are refrigerated and shipped to an analytical laboratory.

#### 1.6.3.5 Water Supply Wells:

Water supply wells are difficult to properly purge and sample due to several factors including:

- A) availability of accurate construction records;
- B) inaccessibility;
- C) attached appurtenances such as tanks, treatment systems, etc.;
- D) agitation from pumping; and/or
- E) analyte-incompatible construction materials.

Generally, an attempt is made to obtain samples from as close to the wellhead as possible, and to completely purge the well and any attached equipment such as holding or pressure tanks. Also, prior to actual sample collection, flow is slowed to a trickle to minimize agitation. If possible, the sample is taken directly from the well using a bailer.

#### 1.6.3.6 Monitoring Wells:

Monitoring wells are sampled according to a standard procedure, as follows:

- A) A total storage volume is calculated for each well.
- B) Three volumes are removed using a bailer or purging pump. If the well dries up during bailing, a minimum of one volume is removed.
- C) Samples are labeled.

- D) Samples are refrigerated and immediately preserved and/or containerized in accordance with protocol.
- E) Sampling records are completed.
- F) Chain of custody records are completed.
- G) A travel blank will be utilized. It will originate at the laboratory and will remain with all samples until returning to the laboratory.
- H) Samples are promptly shipped to the analytical laboratory.

## 1.7 CONSTRUCTION DATA:

Site conditions may warrant additional intrusions, excavations or construction to evaluate or remediate known or potential hazards at the site. All construction work will be conducted under the direct supervision of a senior technician or project manager. An as-built system survey will depict site constructions.

### 1.7.1 Excavations:

Access to excavations will be limited by use of traffic cones, lighted barricades, caution tape or some other apparatus. Open excavations will be backfilled promptly.

### 1.7.2 Electrical Equipment:

Choice of electrical equipment will be dependent on intended use and site-specific characteristics. Access to such equipment will be limited by the construction of a barricade or fenced enclosure.

### 1.7.3 Health and Safety Plan:

Personnel will carry a site-specific Health and Safety Plan to the site during every site visit.

## 2.0 DATA COMPILATION/EVALUATION:

Data is compiled and evaluated in accordance with generally accepted industry standards, which are summarized as follows:

**2.1 BACKGROUND DATA:**

Background information is utilized to develop an historical perspective relating to the identification of all potential sources or contributors.

**2.2 RECEPTOR DATA:**

Receptor information is evaluated with regard to the potential for past, current and future environmental impact.

**2.3 SURVEY DATA:**

Horizontal survey data is reduced and utilized in the development of site maps for use as a framework to provide a spacial context. Vertical survey data is utilized to provide a vertical datum for hydrogeologic and topographic characterizations. A licensed surveyor may be utilized to conduct the initial comprehensive survey and subsequent surveys may be conducted by the contractor.

**2.4 DRILLING DATA:**

Drilling information is compiled and presented in boring logs. The information is utilized for hydrogeologic characterizations.

**2.5 WELL CONSTRUCTION:**

Well construction information is utilized in the development of as-built well details and/or other well construction records and evaluated in terms of depths and screen settings as they relate to hydrogeologic and contaminant characteristics.

**2.6 CONTAMINATION/LABORATORY ANALYSES DATA:**

Laboratory and other analyses data are utilized in the development of maps, calculations, models and other constructions and are used in developing and monitoring corrective actions.

**2.7 GEOLOGICAL/HYDROGEOLOGICAL DATA:**

Geological and hydrogeological data are used for developing maps, calculations and other constructions as they relate to making characterizations and developing and monitoring corrective actions.

**APPENDIX II**

**BORING LOGS, WELL CONSTRUCTION RECORDS, AND AS-BUILT WELL DETAILS**





































CLARK ENVIRONMENTAL SERVICES, INC.  
BORING LOG

PROJECT NAME: Former Square Deal Package Store  
LOCATION: Fayetteville, NC  
CES PROJECT NO: 97140

BORING/WELL NO.: T2  
DATE: 07/10-11/02  
LOGGED BY: G. Henderson

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
4	6	Split spoon; 2 feet of return; moderate yellowish brown (10YR 5/4) hard sandy CLAY for 1 inch; then light olive gray (5Y 5/2) CLAY for 0.5 inches; then dark yellowish orange (10YR 6/6) fine to coarse clayey SAND for 4 inches; then yellowish gray (5Y 7/2) fine SAND for 7 inches; then CLAY with some pebbles; then fine SAND, wet	20	NO ODOR	0.5
9	11	Split spoon; 2 feet of return; dusky yellowish brown (10YR 2/2) silty, soft, organic, peaty CLAY; wet	HP	NO ODOR	0
14	16	Split spoon; 2 feet of return; dusky yellowish brown (10YR 2/2) clayey SILT for 1.2 feet; then dusky yellowish brown (10YR 2/2) and dark yellowish orange (10YR 6/2) interlayered fine SAND with some wood fragments for 7 inches; then dark yellowish orange (10YR 6/2) medium SAND; wet; set casing at 20 feet	HP	NO ODOR	0
18	20	Split spoon; 2 feet of return; dusky yellowish brown (10YR 2/2) SILT with wood fragments for 5 inches; then light gray (N7) slightly sandy hard CLAY with some grayish red (5R 4/2) mottling; wet	54	NO ODOR	0
20	22	Split spoon; 2 feet of return; dusky yellowish brown (10YR 2/2) soft sandy CLAY for 7 inches; then fine SAND for 2 inches; then hard sandy CLAY	65	NO ODOR	0
24	26	Split spoon; 2 feet of return; pale green (10G 6/2) very sandy, hard, micaceous CLAY; wet	NM	NO ODOR	0
27	29	Split spoon; 2 feet of return; greenish gray (5G 6/1), very sandy, slightly micaceous, very hard CLAY; moist	151	NO ODOR	0.5
30	32	Split spoon; 2 feet of return; greenish gray (5G 6/1), very sandy, slightly micaceous, very hard CLAY; moist	NM	NO ODOR	0.5

NOTES:

1. HP represents hydraulic push
2. NM represents not measured
3. Split spoons are logged from the top of the spoon to the bottom of the spoon
4. All contacts between different lithologies within a split spoon are gradational unless otherwise stated



**CLARK ENVIRONMENTAL SERVICES, INC.  
BORING LOG**

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 10:35 am

BORING/WELL NO.: SB1  
 DATE: 10/11/01  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
2	4	Medium beige gray silty SAND, medium beige gray fine sandy CLAY with some orange staining	--	Yes	150

REMARKS: NA

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 4:50 pm

BORING/WELL NO.: SB2  
 DATE: 10/11/01  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
2	4	Light beige silty SAND, medium reddish brown silty SAND, orange brown silty SAND, medium gray brown silty SAND, rust colored silty SAND	--	Yes	170

REMARKS: NA

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 5:18 pm

BORING/WELL NO.: SB3  
 DATE: 10/11/01  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
2	4	Medium gray silty SAND, medium gray clayey SAND, medium gray medium slightly silty SAND, medium gray slightly fine sandy CLAY	--	Yes	60

REMARKS: NA



**CLARK ENVIRONMENTAL SERVICES, INC.  
BORING LOG**

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 5:45 pm

BORING/WELL NO.: SB4  
 DATE: 10/11/01  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
2	4	Medium beige very sandy CLAY, medium gray sandy CLAY with some black staining, light gray CLAY with orange staining	--	--	14

REMARKS: NA

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 5:55 pm

BORING/WELL NO.: SB5  
 DATE: 10/11/01  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
2	4	Medium gray fine sandy CLAY with some black staining, medium gray silty medium SAND, moist	--	Yes	120

REMARKS: NA

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 6:10 pm

BORING/WELL NO.: SB6  
 DATE: 10/11/01  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
2	4	Orange silty SAND with some light gray CLAY with black staining lenses, orangy gray silty SAND, medium gray slightly sandy CLAY	--	--	2

REMARKS: NA



**CLARK ENVIRONMENTAL SERVICES, INC.  
BORING LOG**

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 13:09

BORING/WELL NO.: SB7  
 DATE: 08/12/02  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
0	4	Asphalt; then light olive gray (5Y 6/1) fine sandy CLAY, moist	--	Yes	9.5

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 13:34

BORING/WELL NO.: SB8  
 DATE: 08/12/02  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
0	4	Pale yellowish brown (10YR 6/2) silty fine SAND, moist; then light olive gray (5Y 5/2) CLAY	--	Yes	7

REMARKS: NA

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 15:17

BORING/WELL NO.: SB9  
 DATE: 08/12/02  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
0	4	Dark yellowish brown (10YR 5/6) silty fine SAND; then dark yellowish brown (10YR 4/2) sandy CLAY; then dark yellowish orange (10YR6/6) slightly clayey fine SAND; then yellowish olive gray slightly sandy CLAY	--	--	28

REMARKS: NA



**CLARK ENVIRONMENTAL SERVICES, INC.  
BORING LOG**

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 15:43

BORING/WELL NO.: SB10  
 DATE: 08/12/02  
 LOGGED BY: G. Henderson  
 DEPTH: 2-4 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
0	4	Dark yellowish brown (10YR 4/2) sandy CLAY; followed by dark yellowish orange (10YR 6/6) sandy CLAY; then CLAY	--	--	17

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140  
 TIME: 17:10

BORING/WELL NO.: SB11  
 DATE: 08/12/02  
 LOGGED BY: G. Henderson  
 DEPTH: 4-6 feet

DEPTH (ft.)		DESCRIPTION	BLOW COUNT	VAPOR SURVEY	
FROM	TO			ODOR	HNU (ppm)
0	7	Moderate to dark yellowish brown (10YR 4/3) silty fine SAND; followed by sandy CLAY; followed by light olive gray (5Y 6/1) silty CLAY; followed by medium gray (N5) silty fine SAND; moist at ~6 feet, wet at ~7 feet	--	--	5

REMARKS: NA



**CLARK ENVIRONMENTAL SERVICES, INC.  
BORING LOG**

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140

BORING NO.: SB11  
 DATE: 03/27/03  
 LOGGED BY: G. Henderson

DEPTH (ft.)		DESCRIPTION	VAPOR SURVEY	
FROM	TO		ODOR	HNU (ppm)
0	2	Dark yellowish brown (10YR 4/2) silty, fine SAND with some angular pebbles; then olive gray (5Y 3/2) sandy SILT, wet	No Odor	0
2	3	Yellowish gray (5Y 7/2) silty, clayey SAND		

PROJECT NAME: Former Square Deal Package Store  
 LOCATION: Fayetteville, NC  
 CES PROJECT NO: 97140

BORING/WELL NO.: SB12  
 DATE: 03/27/03  
 LOGGED BY: G. Henderson

DEPTH (ft.)		DESCRIPTION	VAPOR SURVEY	
FROM	TO		ODOR	HNU (ppm)
0	2	Dusky yellowish brown (10YR 3/2) silty, clayey, fine SAND; then moderate yellowish brown (10YR 4/3) silty, fine SAND	Strong Odor	85

REMARKS: NA

















WELL CONSTRUCTION RECORD

CES Project No 97140

MW12

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) John Neal CERTIFICATION # 2799

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, P.C. PHONE # (919) 602-3900

STATE WELL CONSTRUCTION PERMIT# WM06-0033 ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use

2. WELL LOCATION: Nearest Town: Fayetteville County Cumberland 636 Robeson St. (Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting [ ] Ridge [ ] Slope [ ] Valley [x] Flat (check appropriate box)

Latitude/longitude of well location 35° 2' 38" N, 78° 53' 40" W (degrees/minutes/seconds)

3. OWNER: William T. Sanders Address 2 Scotch Bonnett Lane (Street or Route No.) Wrightsville Beach, NC 28480 (City or Town State Zip Code) (919)-256-3876 Area code- Phone number

Latitude/longitude source: [ ] GPS [x] Topographic map (check box)

Table with columns DEPTH (From, To) and DRILLING LOG (Formation Description). Includes handwritten 'See Attached' in the log column.

4. DATE DRILLED 7-11-02 5. TOTAL DEPTH: 13 FT. 6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x] 7. STATIC WATER LEVEL Below Top of Casing: ± 7 FT. (Use "+" if Above Top of Casing) 8. TOP OF CASING IS ~0 FT. Above Land Surface\* \*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118. 9. YIELD (gpm): NA METHOD OF TEST NA 10. WATER ZONES (depth): Surficial

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type NA Amount NA 12. CASING: Wall Thickness From 0 To 3 Ft. 2 in SCH40 PVC 13. GROUT: Depth Material Method From 0 To 0.5 Ft. Gravel/Cement/Grout In-place From 0.5 To 1 Ft. Bentonite In-place 14. SCREEN: Depth Diameter Slot Size Material From 3 To 13 Ft. 2 in 0.010 in PVC 15. SAND/GRAVEL PACK: Depth Size Material From 1 To 13 Ft. Coarse Sand

See Attached

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Signature of John E. Wood

SIGNATURE OF PERSON CONSTRUCTING THE WELL

7-17-02

DATE

Submit the original to the Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

GW-1 REV 07/2001

WELL CONSTRUCTION RECORD

CES Project No 97140

MW12

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) John Wood CERTIFICATION # 2799
WELL CONTRACTOR COMPANY NAME Clark Environmental Services, P.C. PHONE # (919) 602-3900
STATE WELL CONSTRUCTION PERMIT# WM06-0033 ASSOCIATED WQ PERMIT# (if applicable) (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ]
Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use \_\_\_\_\_

2. WELL LOCATION:

Nearest Town: Fayetteville County Cumberland
636 Robeson St.
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
[ ] Ridge [ ] Slope [ ] Valley [x] Flat
(check appropriate box)

Latitude/longitude of well location
35° 2' 38" N, 78° 53' 40" W
(degrees/minutes/seconds)

3. OWNER: William T. Sanders
Address 2 Scotch Bonnett Lane
(Wrightsville Beach, NC 28480)
City or Town State Zip Code
(910)-256-3876
Area code- Phone number

Latitude/longitude source: [ ] GPS [x] Topographic map
(check box)

Table with columns: DEPTH (From, To), DRILLING LOG (Formation Description). Includes handwritten 'See Attached'.

4. DATE DRILLED 7-11-02
5. TOTAL DEPTH: 13 FT.
6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x]
7. STATIC WATER LEVEL Below Top of Casing: ± 7 FT.
(Use "+" if Above Top of Casing)
8. TOP OF CASING IS ~ 0 FT. Above Land Surface\*
\*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0118.
9. YIELD (gpm): NA METHOD OF TEST NA
10. WATER ZONES (depth): Surficial

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type NA Amount NA
12. CASING: Wall Thickness
From 0 To 3 Ft. 2 in SCH 40 PVC
13. GROUT: Depth Material Method
From 0 To 0.5 Ft. Gravel/Cement/Grout In-place
From 0.5 To 1 Ft. Bentonite In-place
14. SCREEN: Depth Diameter Slot Size Material
From 3 To 13 Ft. 2 in 0.010 in PVC
15. SAND/GRAVEL PACK: Depth Size Material
From 1 To 13 Ft. Coarse Sand

See Attached

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Signature: John E. Wood

7-17-02

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

MW13

**WELL CONSTRUCTION RECORD** CES Project No. 97140

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) John Wood CERTIFICATION # 2799

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, P.C. PHONE # (410) 602-3900

STATE WELL CONSTRUCTION PERMIT# WM 06-0033 ASSOCIATED WQ PERMIT# \_\_\_\_\_  
(if applicable) (if applicable)

1. WELL USE (Check Applicable Box): Residential  Municipal/Public  Industrial  Agricultural   
Monitoring  Recovery  Heat Pump Water Injection  Other  If Other, List Use \_\_\_\_\_

2. WELL LOCATION:

Nearest Town: Fayetteville County Lumberland  
636 Robeson St.  
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting  
 Ridge  Slope  Valley  Flat  
(check appropriate box)

Latitude/longitude of well location  
35° 2' 38" N, 78° 53' 40" W  
(degrees/minutes/seconds)

3. OWNER:

Address 2 Scotch Bennett Lane  
(Street or Route No.)  
Wrightsville Beach, NC 28480  
City or Town State Zip Code  
(910)-256-3876  
Area code- Phone number

Latitude/longitude source:  GPS  Topographic map  
(check box)

DEPTH DRILLING LOG  
From To Formation Description

4. DATE DRILLED 7-11-02

5. TOTAL DEPTH: 15 FT.

6. DOES WELL REPLACE EXISTING WELL? YES  NO

7. STATIC WATER LEVEL Below Top of Casing: ± 9 FT.  
(Use "+" if Above Top of Casing)

8. TOP OF CASING IS ~ 2 FT. Above Land Surface\*

\*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C.0118.

9. YIELD (gpm): NA METHOD OF TEST NA

10. WATER ZONES (depth): Surficial

Table with 2 columns: DEPTH (From, To) and DRILLING LOG (Formation Description). The table is mostly empty, with the handwritten text "See Attached" written across the middle rows.

11. DISINFECTION: Type NA Amount NA

12. CASING: Wall Thickness

From	To	Depth	Diameter	or Weight/Ft.	Material
0	3	Ft.	2 in	SCH 40	PVC

13. GROUT: Depth Material Method

From	To	Depth	Material	Method
0	0.5	Ft.	Gravel/Cement/Grout	In-place
0.5	1	Ft.	Bentonite	In-place

14. SCREEN: Depth Diameter Slot Size Material

From	To	Depth	Diameter	Slot Size	Material
3	13	Ft.	2 in.	0.010 in.	PVC

15. SAND/GRAVEL PACK: Depth Size Material

From	To	Depth	Size	Material
1	13	Ft.	Coarse	Sand

16. REMARKS: \_\_\_\_\_

**LOCATION SKETCH**  
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

See Attached

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

John E. Wood  
SIGNATURE OF PERSON CONSTRUCTING THE WELL

7-17-02  
DATE

WELL CONSTRUCTION RECORD

CES Project No. 97140

MW14

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) John Wood CERTIFICATION # 2799

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, PC. PHONE # (910) 602-3900

STATE WELL CONSTRUCTION PERMIT# WM06-0033 ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use

2. WELL LOCATION:

Nearest Town: Fayetteville County Cumberland
636 Robeson St.
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
[ ] Ridge [ ] Slope [ ] Valley [x] Flat
(check appropriate box)

Latitude/longitude of well location
35° 2' 38" N, 78° 53' 40" W
(degrees/minutes/seconds)

3. OWNER: William T. Sanders
Address 2 Scotch Bonnett Lane
Wrightsville Beach, NC 28480
(910)-256-3876
Area code- Phone number

Latitude/longitude source: [ ] GPS [x] Topographic map
(check box)

DEPTH DRILLING LOG
From To Formation Description

4. DATE DRILLED 7-12-02
5. TOTAL DEPTH: 13 FT.
6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x]
7. STATIC WATER LEVEL Below Top of Casing: ± 7 FT.
8. TOP OF CASING IS ~0 FT. Above Land Surface\*
9. YIELD (gpm): NA METHOD OF TEST NA
10. WATER ZONES (depth): Surficial

Table with columns for DEPTH (From, To) and DRILLING LOG (Formation Description). Includes handwritten note 'See Attached'.

11. DISINFECTION: Type NA Amount NA
12. CASING: Wall Thickness
13. GROUT: Depth Material Method
14. SCREEN: Depth Diameter Slot Size Material
15. SAND/GRAVEL PACK: Depth Size Material

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

See Attached

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Signature of John E. Wood

SIGNATURE OF PERSON CONSTRUCTING THE WELL

7-17-02
DATE



WELL CONSTRUCTION RECORD

CES Project No. 97140

MW16

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) John Wood CERTIFICATION # 2799

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, P.L. PHONE # (910) 602-3900

STATE WELL CONSTRUCTION PERMIT# WM06-0033 ASSOCIATED WQ PERMIT# (if applicable) (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use \_\_\_\_\_

2. WELL LOCATION:

Nearest Town: Fayetteville County Cumberland
636 Robeson St.
(Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting
[ ] Ridge [ ] Slope [ ] Valley [x] Flat
(check appropriate box)

Latitude/longitude of well location
35° 2' 38" N, 78° 53' 40" W
(degrees/minutes/seconds)

3. OWNER: William T. Sanders
Address 2 Scotch Bennett Lane
(Wrightsville Beach, NC 28480)
(910) 256-3876
Area code- Phone number

Latitude/longitude source: [ ] GPS [x] Topographic map
(check box)

DEPTH DRILLING LOG
From To Formation Description

4. DATE DRILLED 7-15-02
5. TOTAL DEPTH: 13 FT.
6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x]
7. STATIC WATER LEVEL Below Top of Casing: ± 7 FT.
8. TOP OF CASING IS ~ 0 FT. Above Land Surface\*
9. YIELD (gpm): NA METHOD OF TEST NA
10. WATER ZONES (depth): Surficial

See Attached

11. DISINFECTION: Type NA Amount NA

12. CASING: Wall Thickness
From 0 To 3 Ft. 2 in SCH 40 PVC

LOCATION SKETCH
Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

13. GROUT: Depth Material Method
From 0 To 0.5 Ft. Gravel/Cement/grout In-place
From 0.5 To 1 Ft. bentonite In-place

See Attach

14. SCREEN: Depth Diameter Slot Size Material
From 3 To 13 Ft. 2 in. 0.010 in. PVC

15. SAND/GRAVEL PACK:
From 1 To 13 Ft. Coarse Sand

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

John E. Wood
SIGNATURE OF PERSON CONSTRUCTING THE WELL

7-17-02
DATE

MW17

WELL CONSTRUCTION RECORD CES Project No. 97140

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Frank Beecher CERTIFICATION # 3225

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, PC PHONE # (910) 792-9639

STATE WELL CONSTRUCTION PERMIT# WM06-0033 ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use \_\_\_\_\_

2. WELL LOCATION: Nearest Town: Fayetteville County Cumberland Robeson Street (Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting [ ] Ridge [ ] Slope [x] Valley [ ] Flat (check appropriate box)

Latitude/longitude of well location 35° 2' 38" N, 78° 53' 40" W (degrees/minutes/seconds)

3. OWNER: William T. Sanders Address 2 Scotch Bennett Lane (Street or Route No.) Wrightsville Beach, NC 28480 (City or Town State Zip Code) (910)-256-3876 Area code- Phone number

Latitude/longitude source: [ ] GPS [x] Topographic map (check box)

Table with columns: DEPTH (From, To), DRILLING LOG (Formation Description). Includes handwritten entry 'See Attached'.

4. DATE DRILLED 03/25/03

5. TOTAL DEPTH: 10.5 FT.

6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x]

7. STATIC WATER LEVEL Below Top of Casing: ± 9 FT. (Use "+" if Above Top of Casing)

8. TOP OF CASING IS ~ 2.0 FT. Above Land Surface\* \*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C.0118.

9. YIELD (gpm): NA METHOD OF TEST NA

10. WATER ZONES (depth): Surficial

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type NA Amount NA

12. CASING: Wall Thickness From +2 To 1.5 Ft. Diameter 2 in. Material SCH 40 PVC

13. GROUT: Depth Material Method From 0 To 0.2 Ft. Gravel/cement/grout In-place From 0.2 To 0.6 Ft. Bentonite In-place

See Attached

14. SCREEN: Depth Diameter Slot Size Material From 1.5 To 10.5 Ft. 2 in. 0.010 in. PVC

15. SAND/GRAVEL PACK: Depth Size Material From 0.6 To 10.5 Ft. Coarse Sand

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Handwritten signature: Frank Beecher

Handwritten date: 4.4.03

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

MW18

WELL CONSTRUCTION RECORD CES Project No. 97140

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Frank Beecher CERTIFICATION # 3225

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, PC PHONE # (910) 792-9639

STATE WELL CONSTRUCTION PERMIT# \_\_\_\_\_ ASSOCIATED WQ PERMIT# \_\_\_\_\_ (if applicable) (if applicable)

1. WELL USE (Check Applicable Box): Residential  Municipal/Public  Industrial  Agricultural  Monitoring  Recovery  Heat Pump Water Injection  Other  If Other, List Use \_\_\_\_\_

2. WELL LOCATION: Nearest Town: Fayetteville County Cumberland Robeson Street (Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting  Ridge  Slope  Valley  Flat (check appropriate box) Latitude/longitude of well location 35° 2' 38" N, 78° 53' 40" W (degrees/minutes/seconds)

3. OWNER: William T. Sanders Address 2 Scotch Bennett Lane (Street or Route No.) Wrightsville Beach, NC 28480 (City or Town State Zip Code) (910) 256-3876 Area code- Phone number

Latitude/longitude source:  GPS  Topographic map (check box)

Table with columns: DEPTH (From, To), DRILLING LOG (Formation Description). Includes handwritten entry 'See Attached'.

4. DATE DRILLED 03/25/03 5. TOTAL DEPTH: 12.0 FT. 6. DOES WELL REPLACE EXISTING WELL? YES  NO  7. STATIC WATER LEVEL Below Top of Casing: ± 2 FT. (Use "+" if Above Top of Casing) 8. TOP OF CASING IS ~0 FT. Above Land Surface\* \*Top of casing terminated at/ or below land surface requires a variance in accordance with 15A NCAC 2C .0118. 9. YIELD (gpm): NA METHOD OF TEST NA 10. WATER ZONES (depth): Surficial

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type NA Amount NA 12. CASING: Wall Thickness From 0 To 2 Ft. 2 in SCH 40 PVC 13. GROUT: Depth Material Method From 0 To 0.5 Ft. Gravel/cement/grout In-place From 0.5 To 1 Ft. Bentonite In-place 14. SCREEN: Depth Diameter Slot Size Material From 2 To 12 Ft. 2 in. 0.010 in. PVC 15. SAND/GRAVEL PACK: Depth Size Material From 1 To 12 Ft. coarse Sand

See Attached

16. REMARKS: \_\_\_\_\_

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Frank Beecher

SIGNATURE OF PERSON CONSTRUCTING THE WELL

4.4.03

DATE

MW19

WELL CONSTRUCTION RECORD CES Project No. 97140

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Frank Beecher CERTIFICATION # 3225

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, PC PHONE # (910) 792-9639

STATE WELL CONSTRUCTION PERMIT# (if applicable) ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use

2. WELL LOCATION: Nearest Town: Fayetteville County Cumberland Robeson Street (Street Name, Number, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting [ ] Ridge [ ] Slope [ ] Valley [x] Flat (check appropriate box) Latitude/longitude of well location 35° 2' 38" N, 78° 53' 40" W (degrees/minutes/seconds)

3. OWNER: William T. Sanders Address 2 Scotch Bennett Lane (Street or Route No.) Wrightsville Beach, NC 28480 (City or Town State Zip Code) (910) 256-3876 (Area code- Phone number)

Latitude/longitude source: [ ] GPS [x] Topographic map (check box)

Table with columns: DEPTH (From, To), DRILLING LOG (Formation Description). Includes handwritten entry 'See Attached'.

4. DATE DRILLED 03/25/03
5. TOTAL DEPTH: 11.5 FT.
6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x]
7. STATIC WATER LEVEL Below Top of Casing: 16 FT. (Use "+" if Above Top of Casing)
8. TOP OF CASING IS 0 FT. Above Land Surface\* (\*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C .0112.)
9. YIELD (gpm): NA METHOD OF TEST NA
10. WATER ZONES (depth): Surficial

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type NA Amount NA
12. CASING: Wall Thickness
From 0 To 1.5 Ft. 2 in SCH 40 PVC
13. GROUT: Depth Material Method
From 0 To 0.7 Ft. Gravel/cement/grout In-place
From 0.7 To 1 Ft. Bentonite In-place
14. SCREEN: Depth Diameter Slot Size Material
From 1.5 To 11.5 Ft. 2 in. 0.010 in. PVC
15. SAND/GRAVEL PACK: Depth Size Material
From 1 To 11.5 Ft. Coarse Sand

See Attached

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Frank Beecher

4.4.03

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

MW20

WELL CONSTRUCTION RECORD CES Project No. 97140

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Joseph J. Blanke CERTIFICATION # 2066

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, PC PHONE # (910) 602-3900

STATE WELL CONSTRUCTION PERMIT # WM 06-0033 ASSOCIATED WQ PERMIT # (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use \_\_\_\_\_

2. WELL LOCATION: Nearest Town: Fayetteville County Cumberland Robeson Street (Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting [ ] Ridge [ ] Slope [x] Valley [ ] Flat (check appropriate box)

Latitude/longitude of well location 35° 2' 38" N, 78° 53' 40" W (degrees/minutes/seconds)

3. OWNER: William T. Sanders Address 2 Scotch Bennett Lane (Street or Route No.) Wrightsville Beach, NC 28480 (City or Town State Zip Code) (910)-256-3576 (Area code- Phone number)

Latitude/longitude source: [ ] GPS [x] Topographic map (check box)

Table with columns: DEPTH (From, To), DRILLING LOG (Formation Description). Includes handwritten entry 'See Attached'.

4. DATE DRILLED 08/04/03

5. TOTAL DEPTH: 12.0 FT

6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x]

7. STATIC WATER LEVEL Below Top of Casing: 18.0 FT. (Use "+" if Above Top of Casing)

8. TOP OF CASING IS ~0 FT. Above Land Surface\* \*Top of casing terminated at/or below land surface requires a variance in accordance with 15A NCAC 2C.0118.

9. YIELD (gpm): NA METHOD OF TEST NA

10. WATER ZONES (depth): Surficial (2-12 FT.)

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

11. DISINFECTION: Type NA Amount NA

12. CASING: Wall Thickness From 0 To 2 Ft. 2 in. SCH40 PVC

13. GROUT: Depth Material Method From 0 To 0.5 Ft. Gravel/cement/grout In-place From 0.5 To 1.0 Ft. bentonite In-place

14. SCREEN: Depth Diameter Slot Size Material From 2 To 12 Ft. 2 in. 0.010 in. PVC

15. SAND/GRAVEL PACK: Depth Size Material From 1.0 To 12.0 Ft. Coarse Sand

See Attached

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Signature of Joseph J. Blanke DATE 9/17/03 SIGNATURE OF PERSON CONSTRUCTING THE WELL DATE



T2

WELL CONSTRUCTION RECORD

CES Project No. 97140

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) John Wood CERTIFICATION # 2799

WELL CONTRACTOR COMPANY NAME Clark Environmental Services, PC PHONE # (910) 602-3900

STATE WELL CONSTRUCTION PERMIT# WM06-0033 ASSOCIATED WQ PERMIT# (if applicable)

1. WELL USE (Check Applicable Box): Residential [ ] Municipal/Public [ ] Industrial [ ] Agricultural [ ] Monitoring [x] Recovery [ ] Heat Pump Water Injection [ ] Other [ ] If Other, List Use

2. WELL LOCATION: Nearest Town: Fayetteville County Cumberland 705 Robeson St. (Street Name, Numbers, Community, Subdivision, Lot No., Zip Code)

Topographic/Land setting [ ] Ridge [ ] Slope [ ] Valley [x] Flat (check appropriate box)

Latitude/longitude of well location 35° 2' 38" N, 78° 53' 40" W (degrees/minutes/seconds)

3. OWNER: William T. Sanders Address 2 Scotch Bennett Lane Wrightsville Beach, NC 28480 (910)-256-3876

Latitude/longitude source: [ ] GPS [x] Topographic map (check box)

DEPTH DRILLING LOG From To Formation Description

4. DATE DRILLED 7/10-11/02 5. TOTAL DEPTH: 30 FT. 6. DOES WELL REPLACE EXISTING WELL? YES [ ] NO [x] 7. STATIC WATER LEVEL Below Top of Casing: ± 7 FT. 8. TOP OF CASING IS 20 FT. Above Land Surface\* 9. YIELD (gpm): NA METHOD OF TEST NA 10. WATER ZONES (depth): Surficial

Table with columns for DEPTH (From, To) and DRILLING LOG (Formation Description). Includes handwritten entry 'See Attached'.

11. DISINFECTION: Type NA Amount NA

12. CASING: Wall Thickness or Weight/Ft. Material From 0 To 20 Ft. 4 in SCH 40 PVC From 0 To 25 Ft. 2 in SCH 40 PVC

LOCATION SKETCH Show direction and distance in miles from at least two State Roads or County Roads. Include the road numbers and common road names.

13. GROUT: Depth Material Method From 0 To 21 Ft. neat Cement Grout Tremmie From 21 To 23 Ft. Bentonite In-place

See Attached

14. SCREEN: Depth Diameter Slot Size Material From 25 To 30 Ft. 2 in. 0.010 in. PVC

15. SAND/GRAVEL PACK: Depth Size Material From 23 To 30 Ft. Course Sand

16. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER

Signature of John E. Wood

SIGNATURE OF PERSON CONSTRUCTING THE WELL

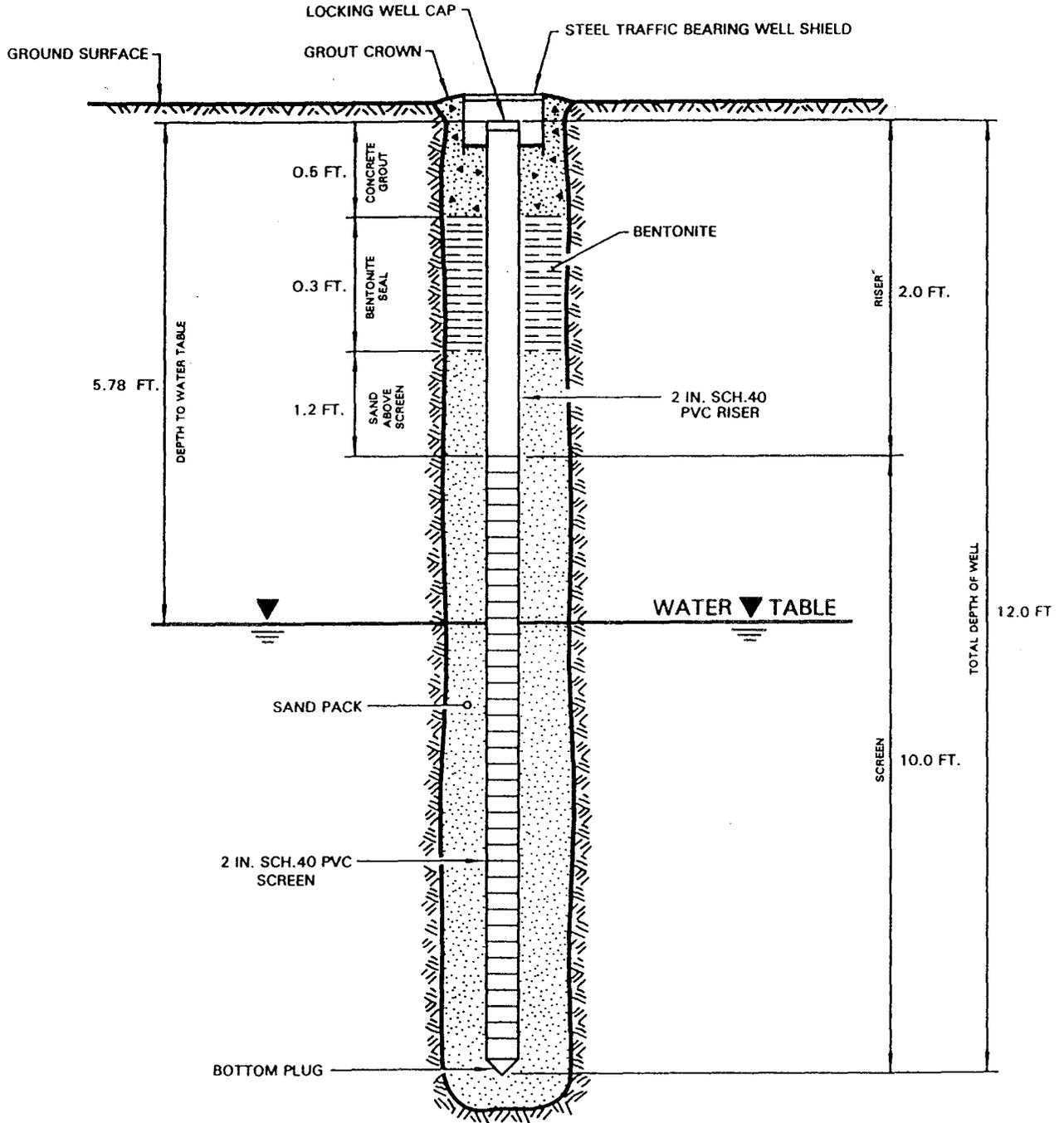
7-17-02

DATE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW5



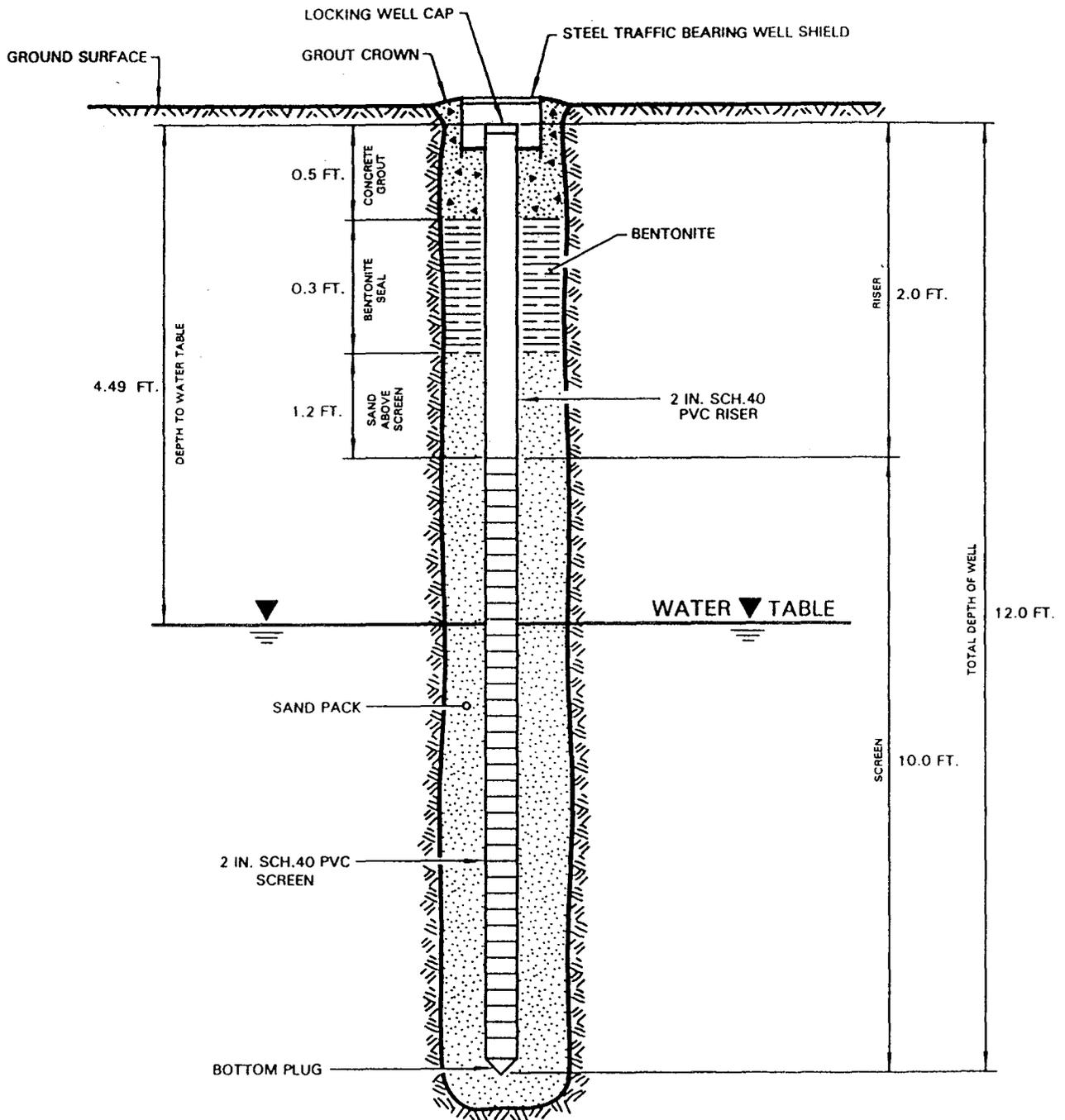
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW6



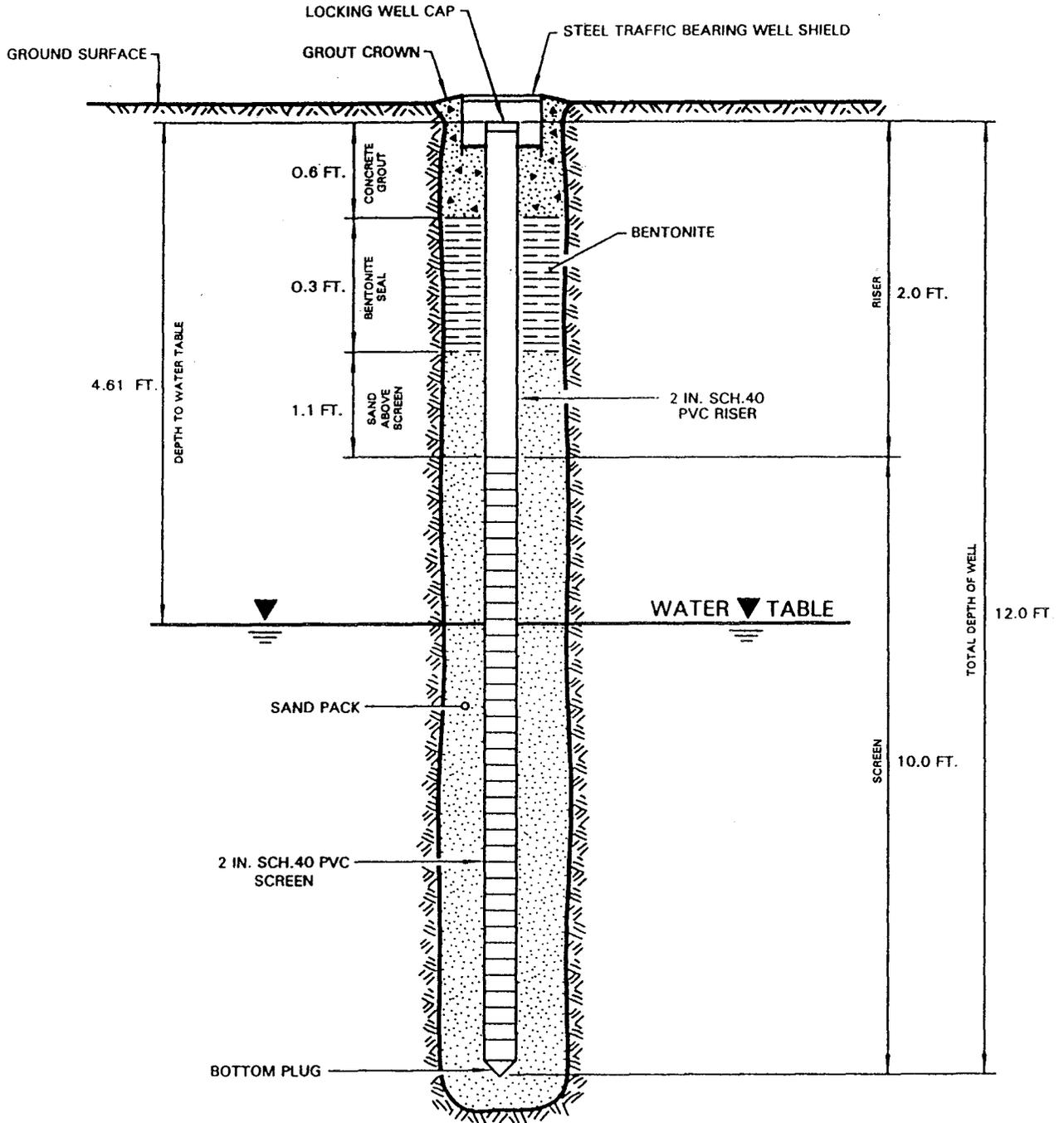
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW7



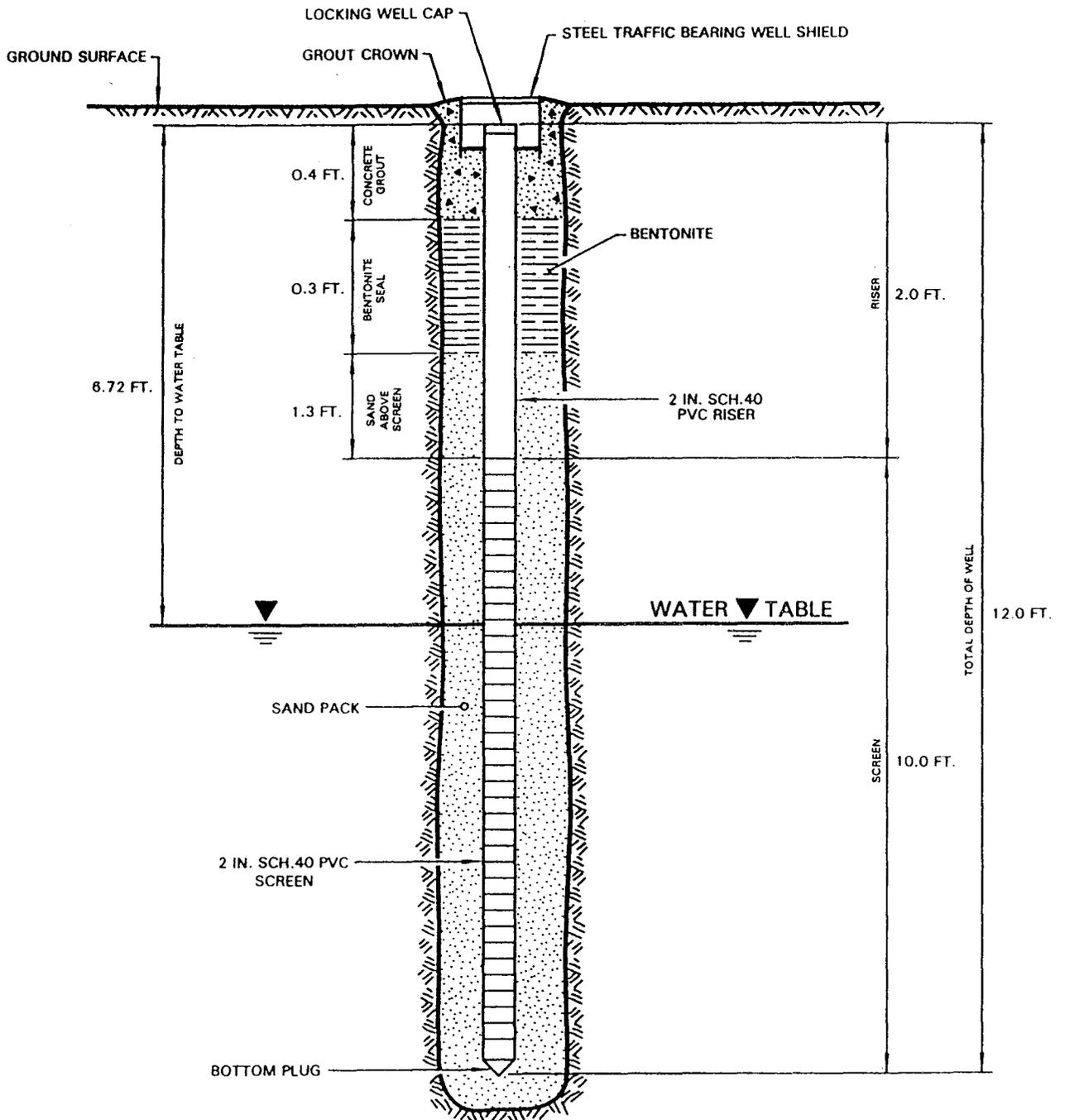
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW8



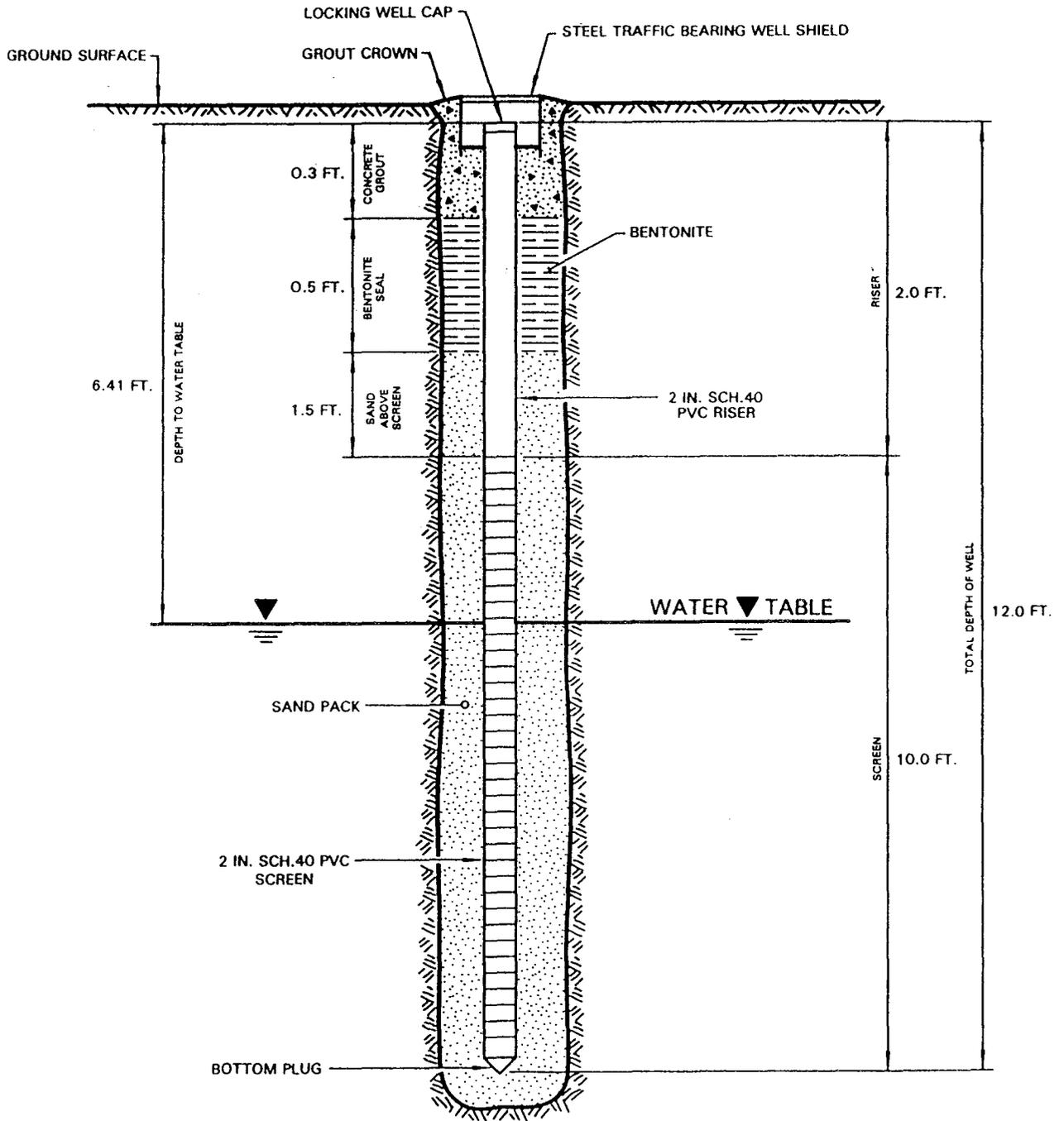
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW9



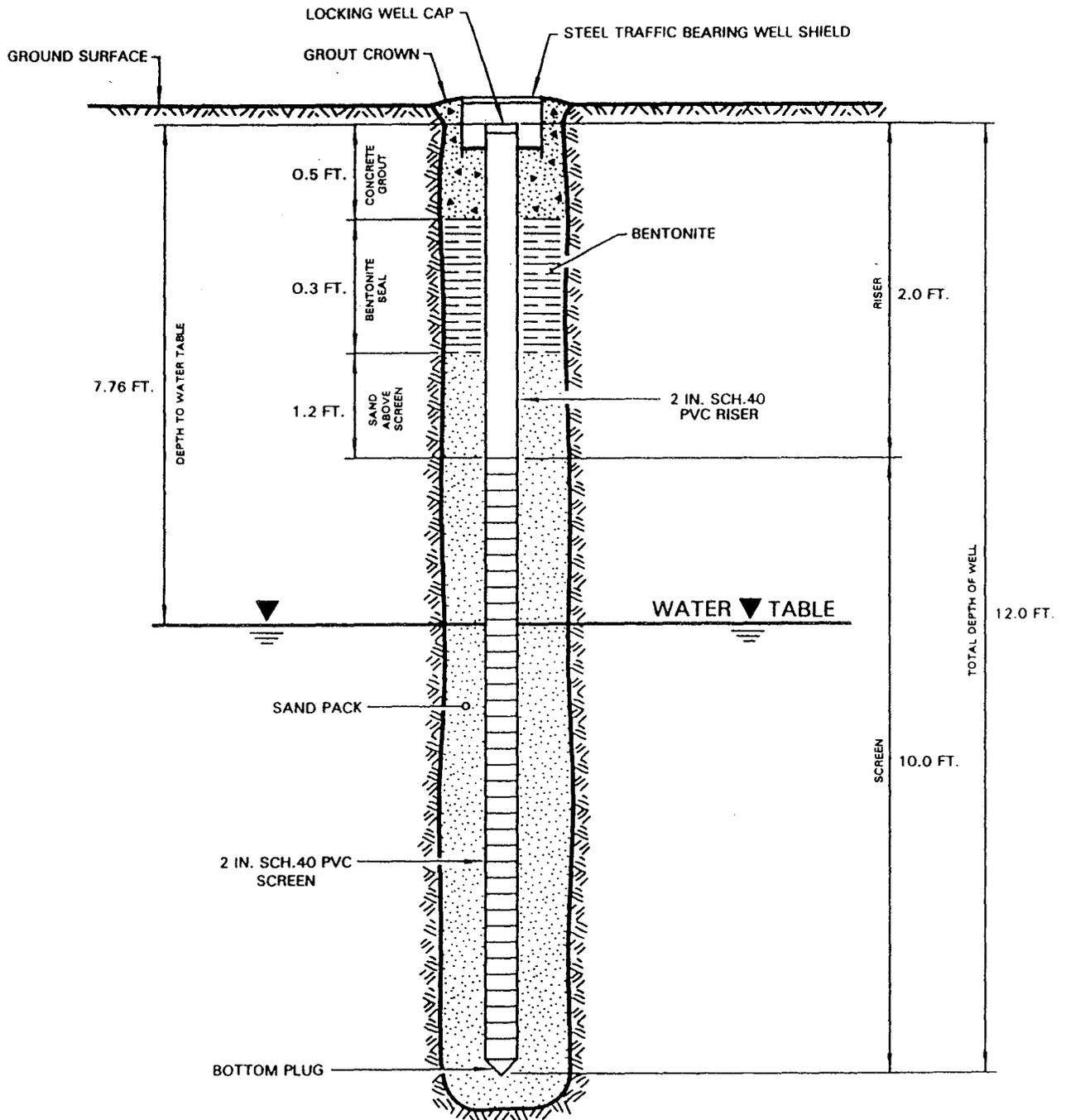
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW10



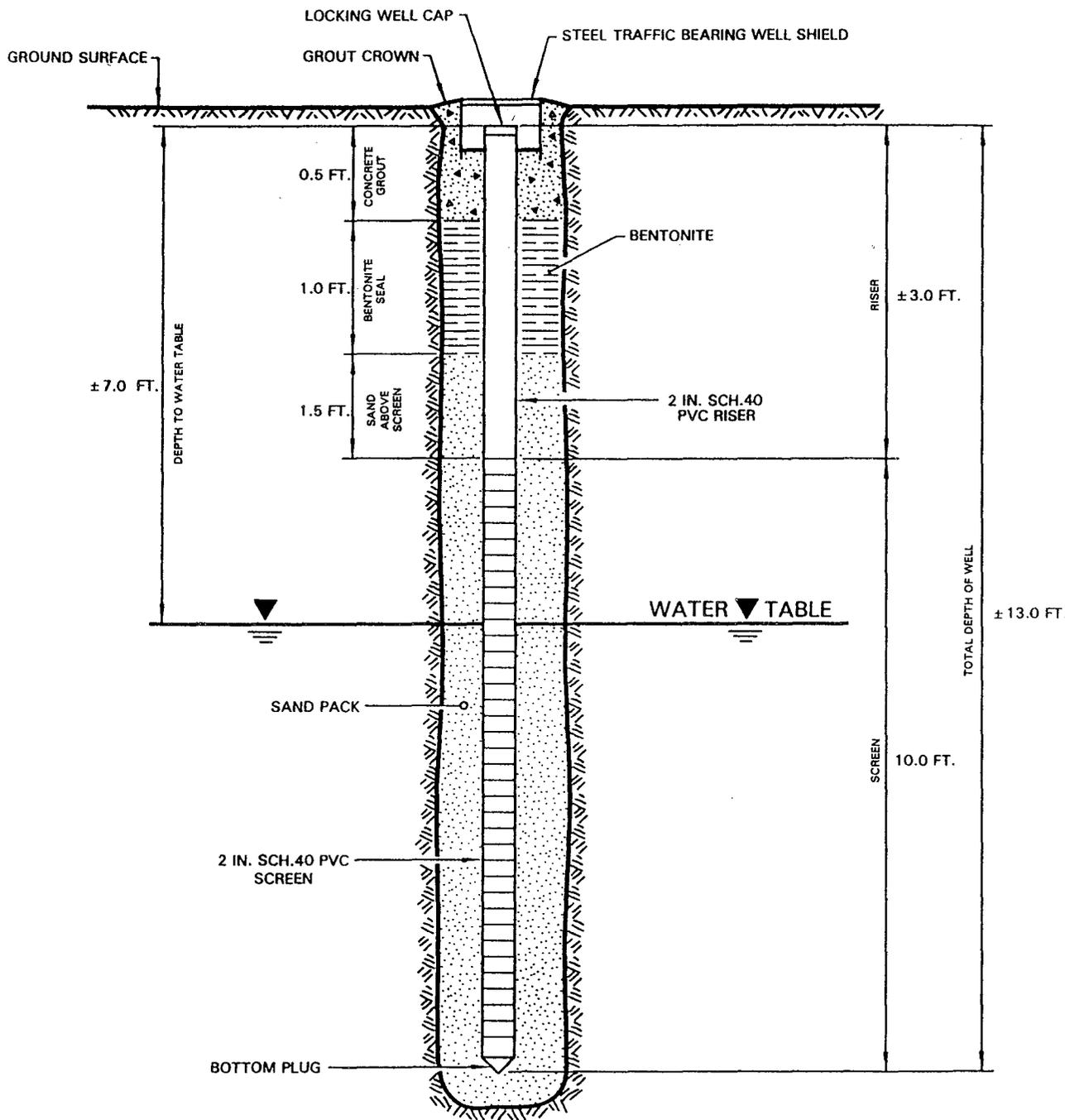
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW11



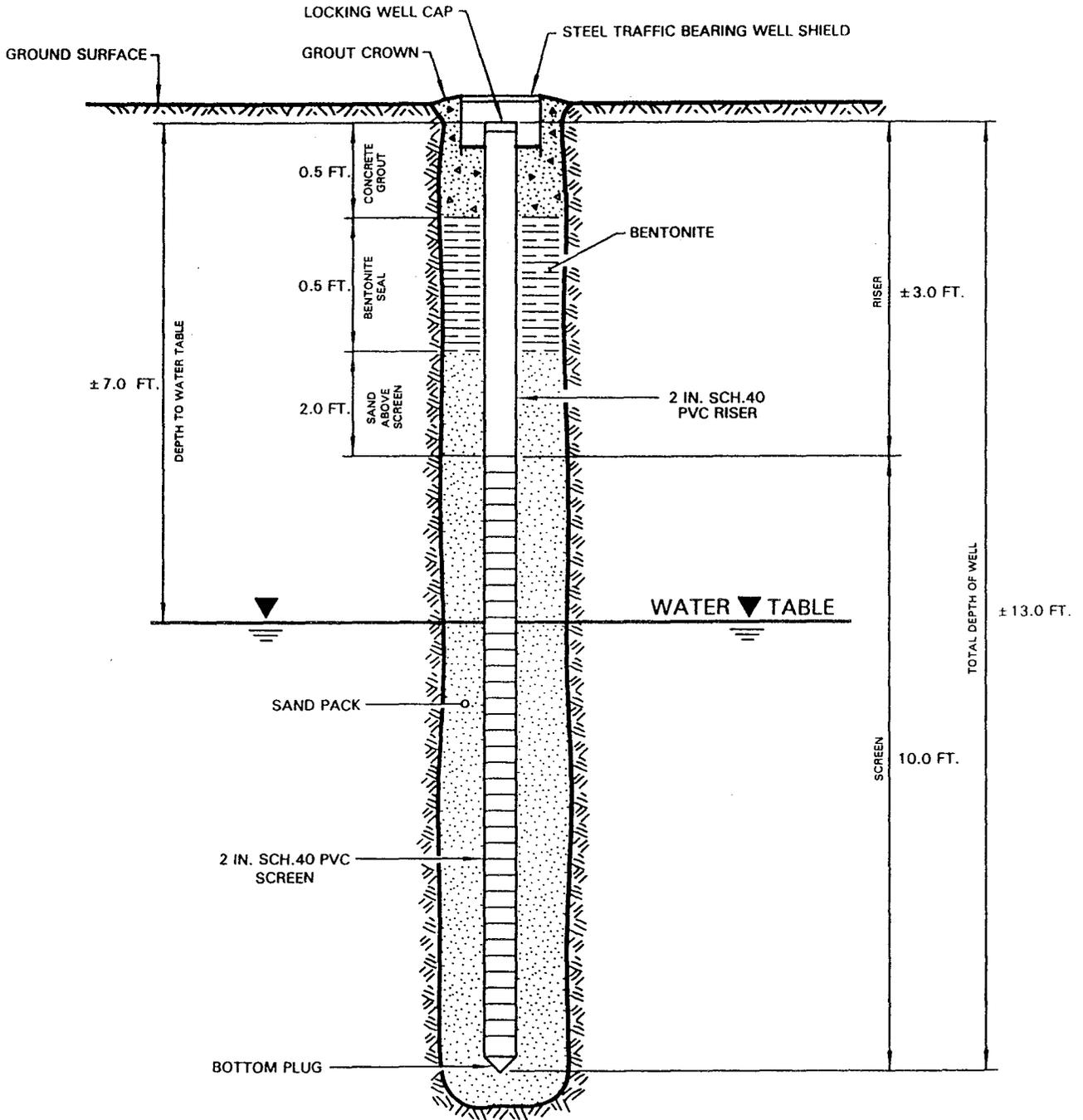
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW12

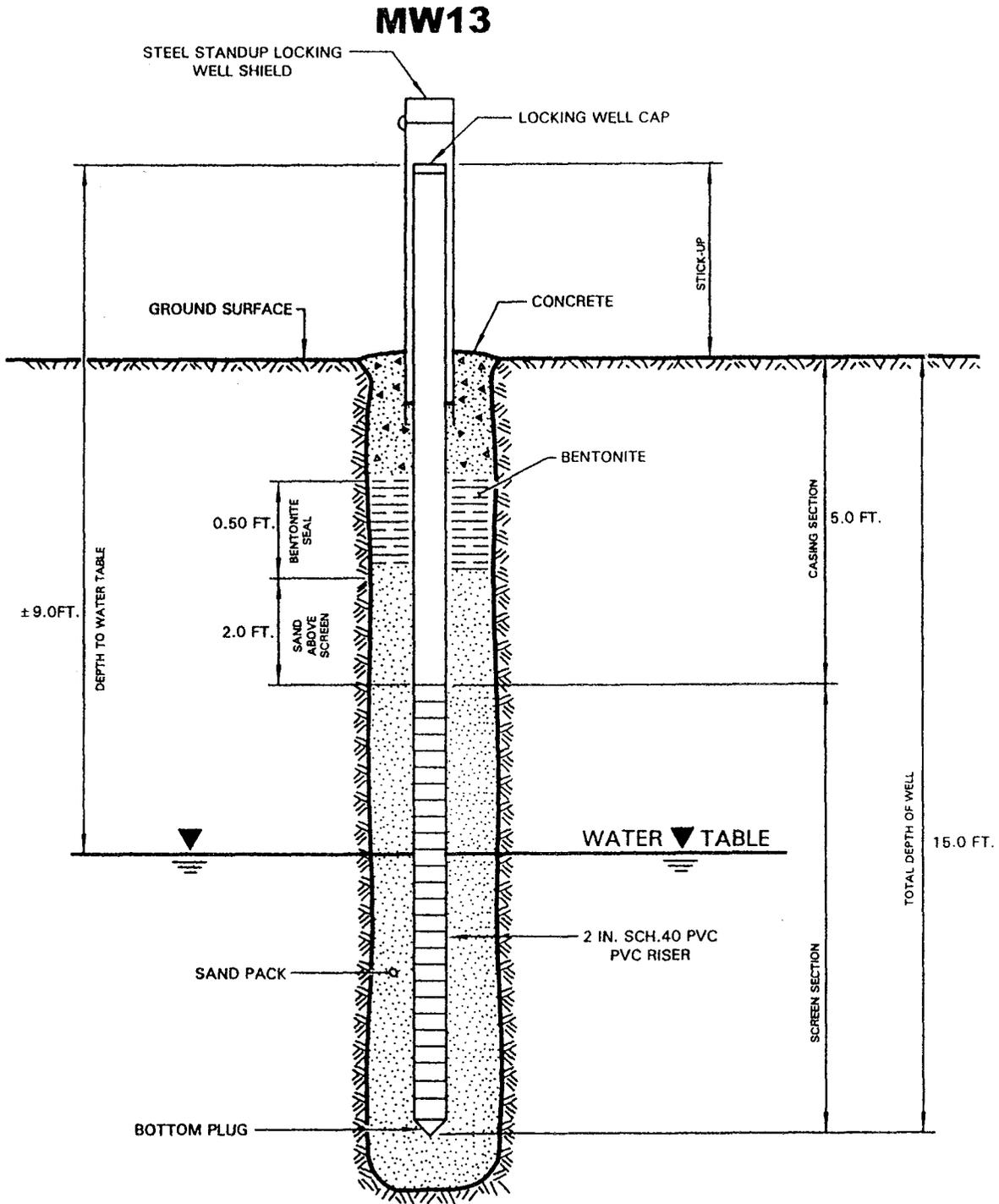


## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140



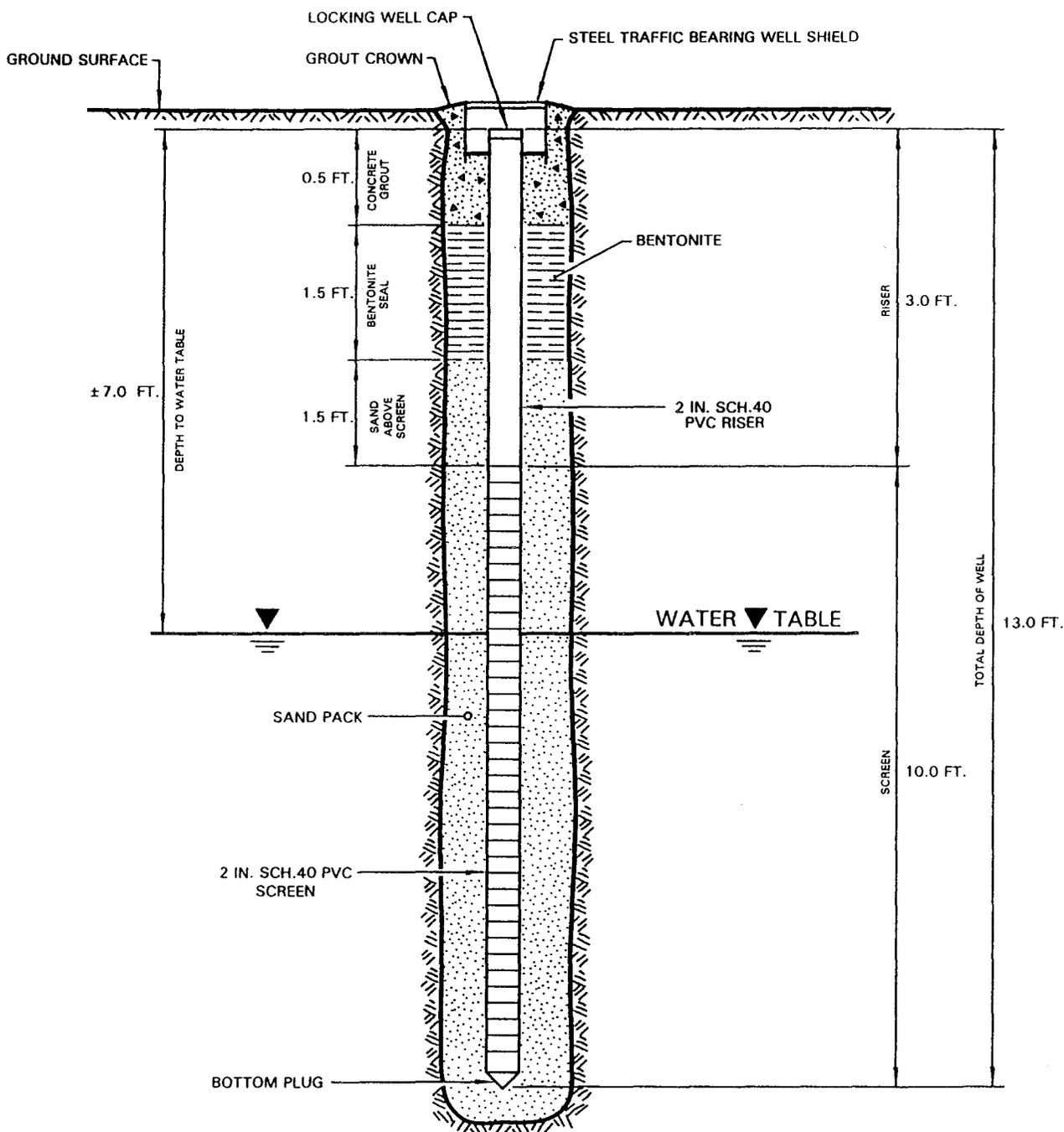
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW14



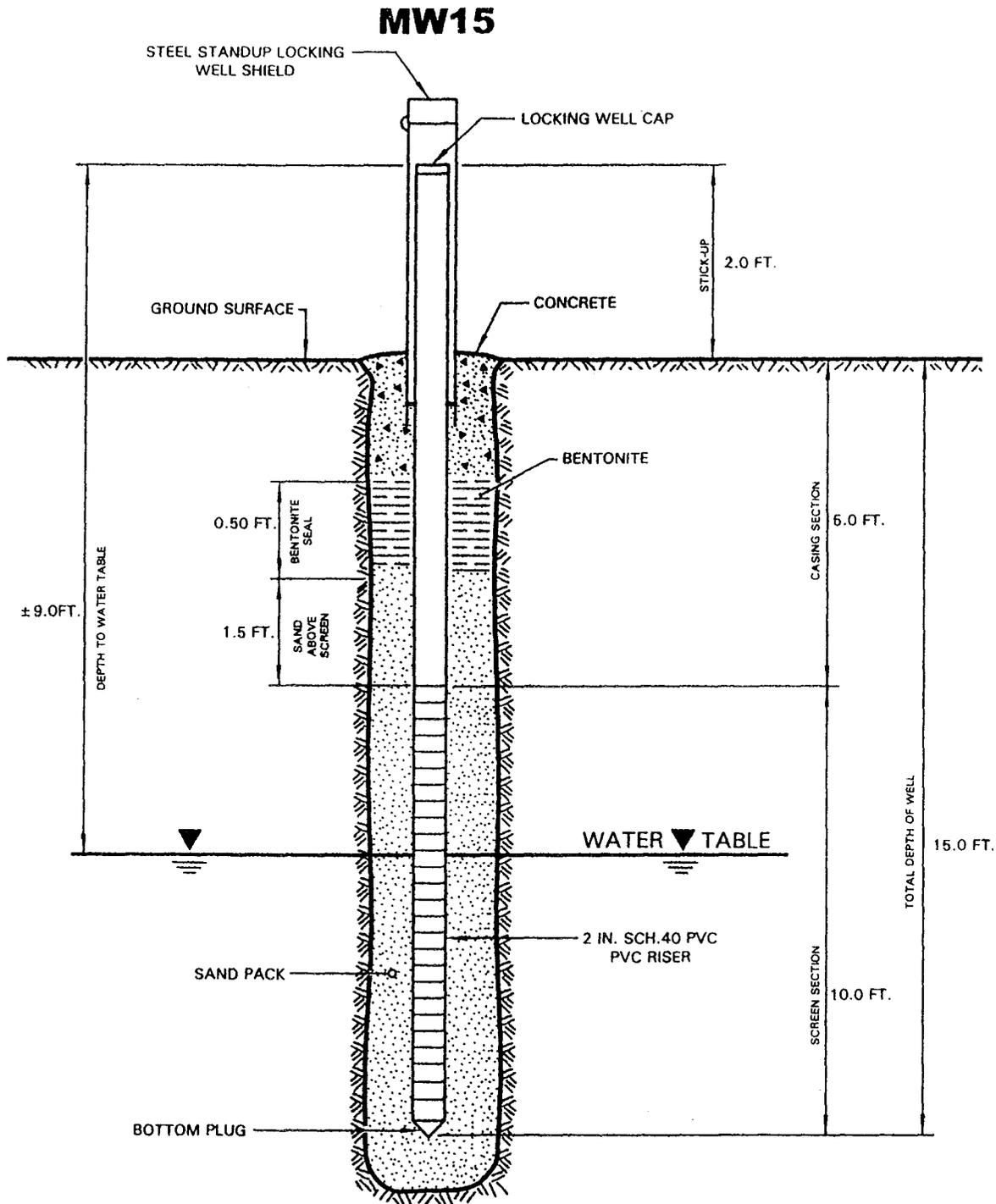
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FILE

FAYETTEVILLE, NC  
CES PROJECT NO.97140



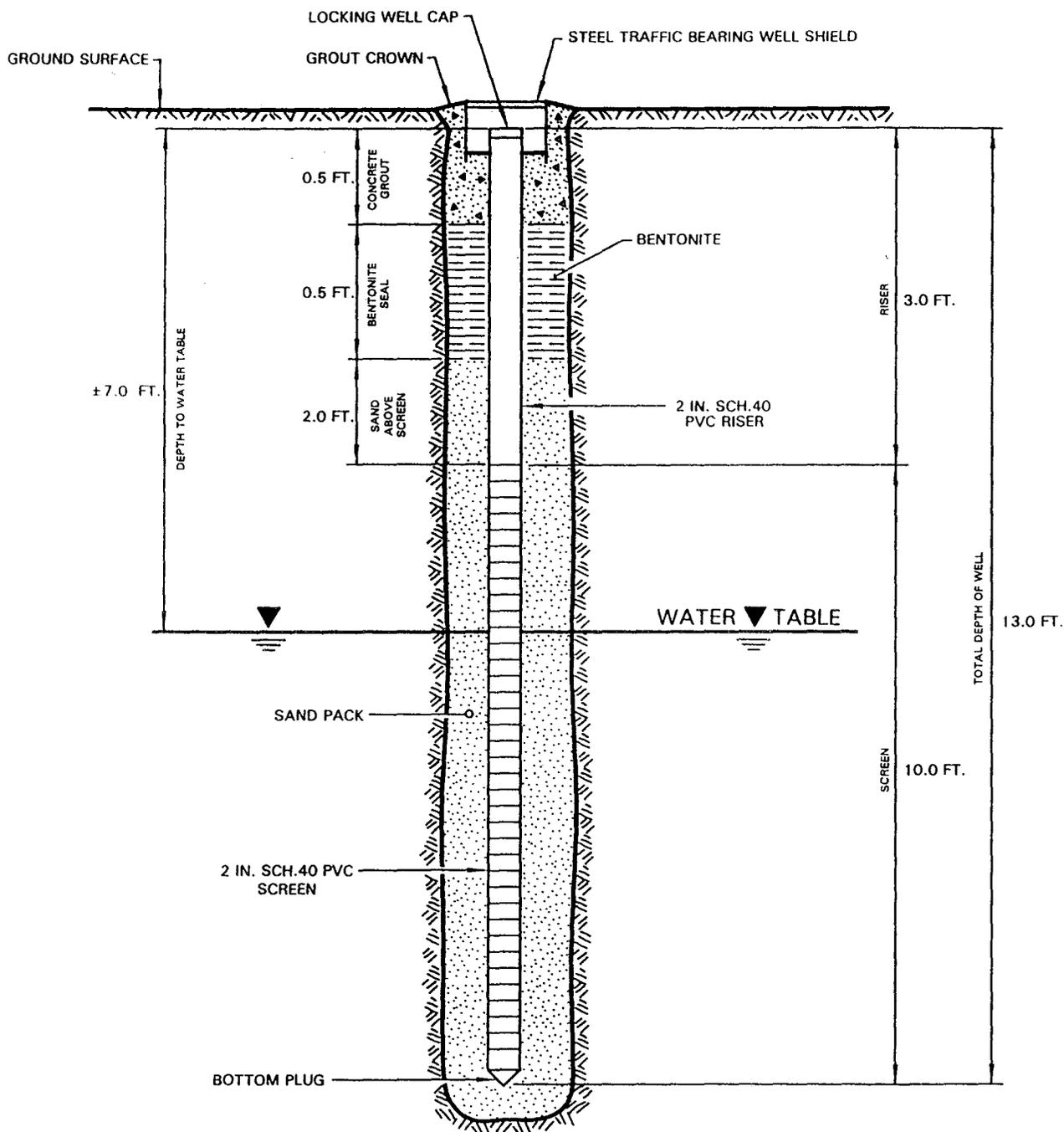
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NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## MW16

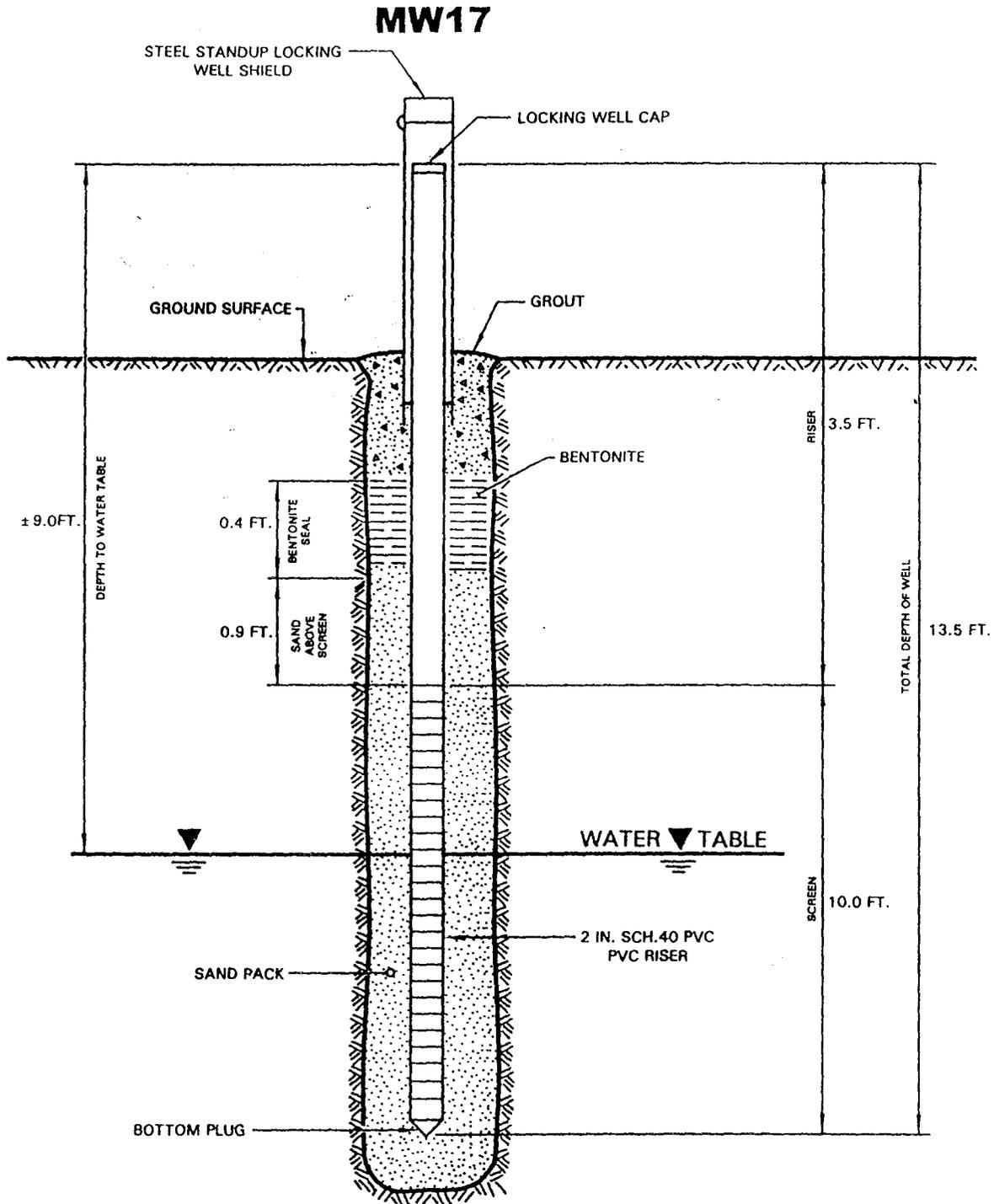


## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140



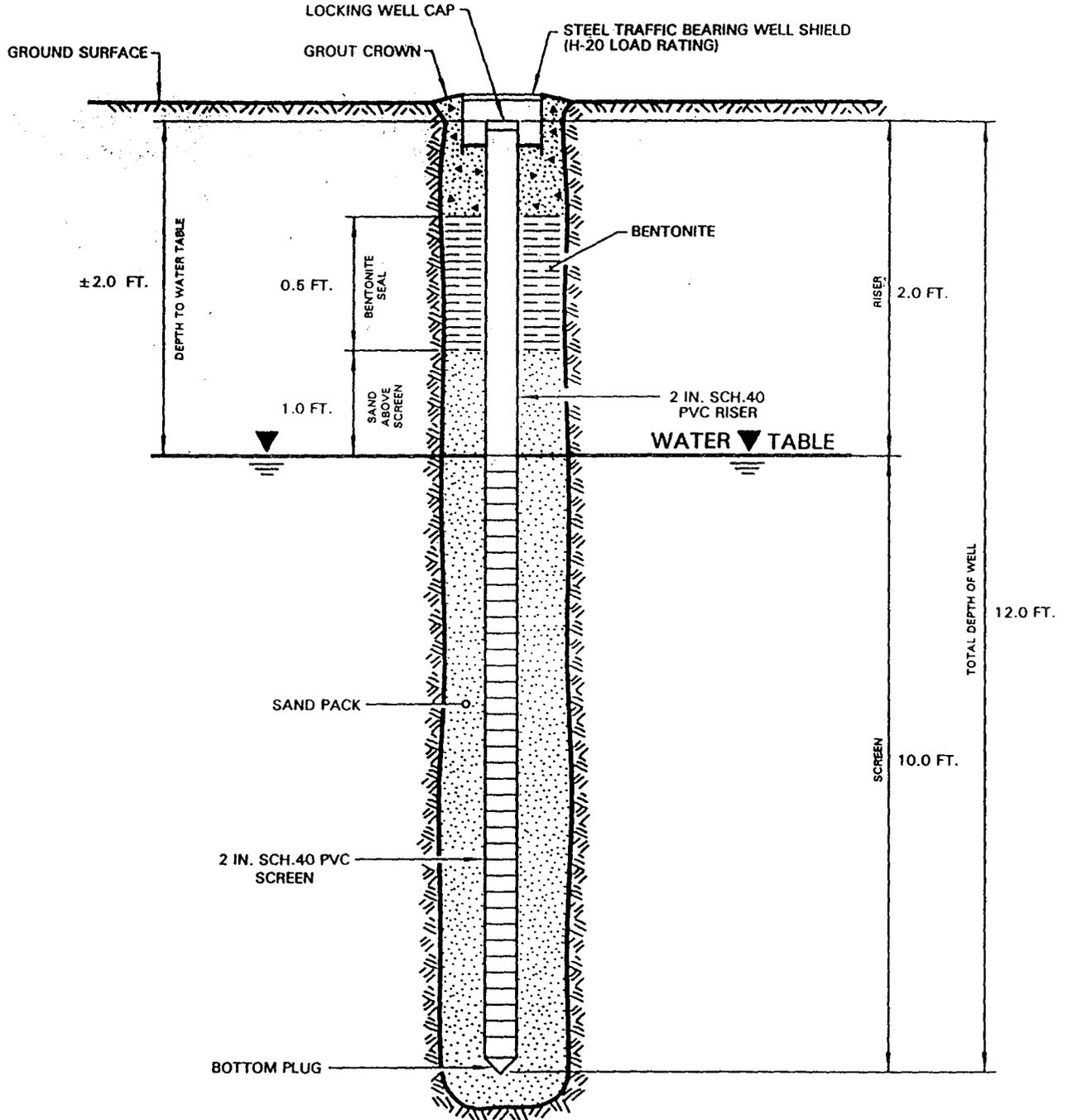
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

## MW18



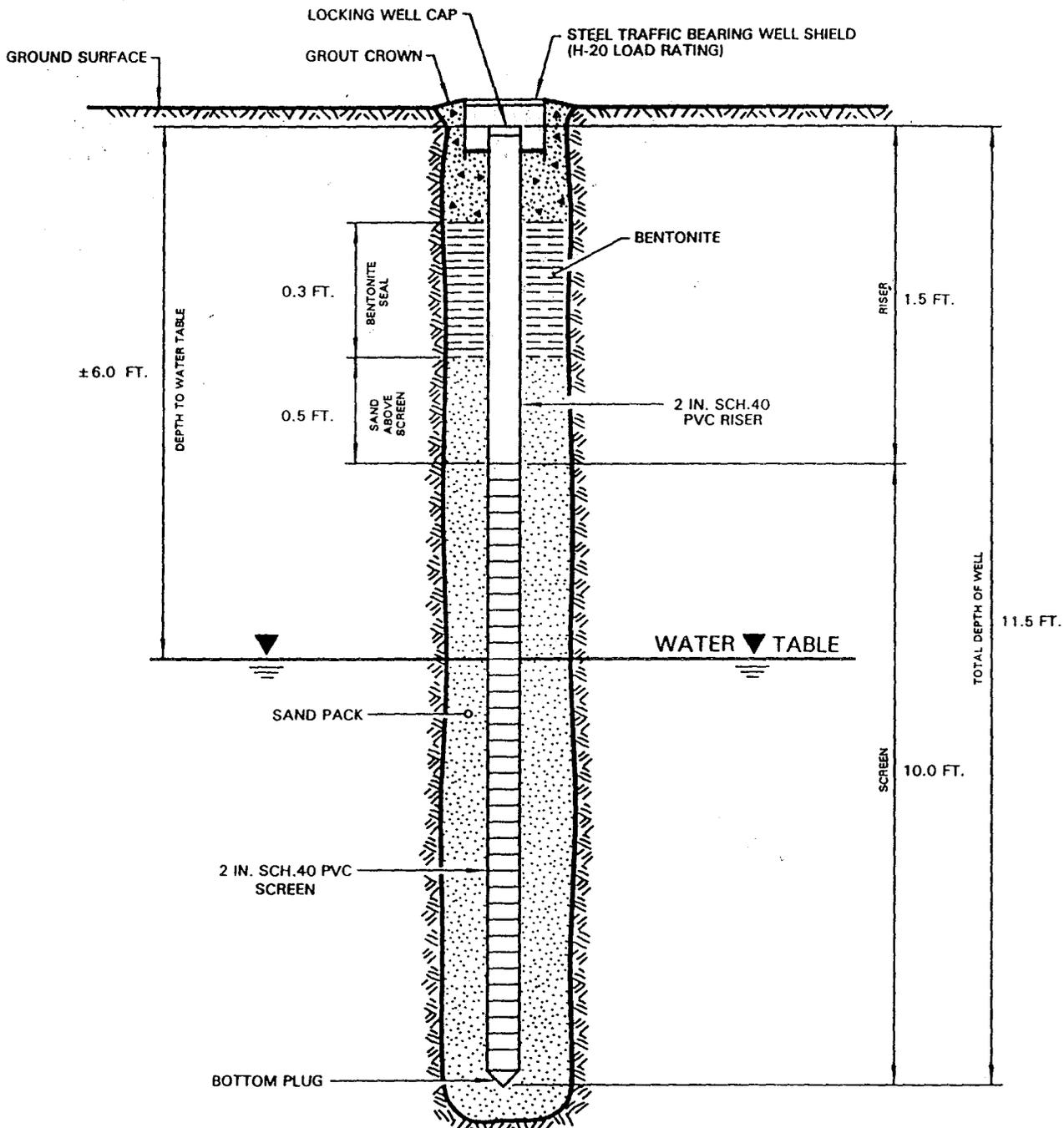
### AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

## MW19



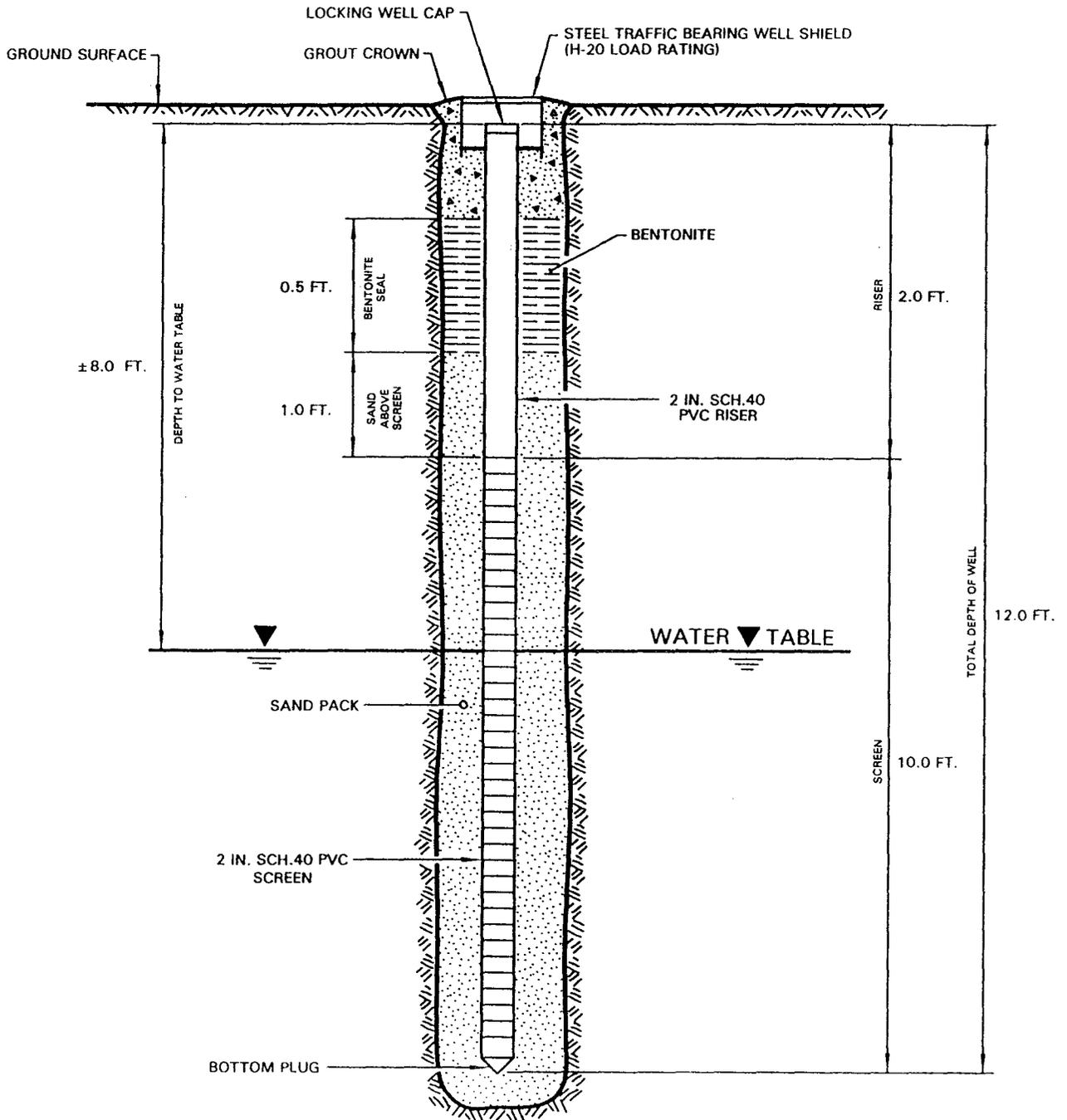
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO. 97140

## MW20



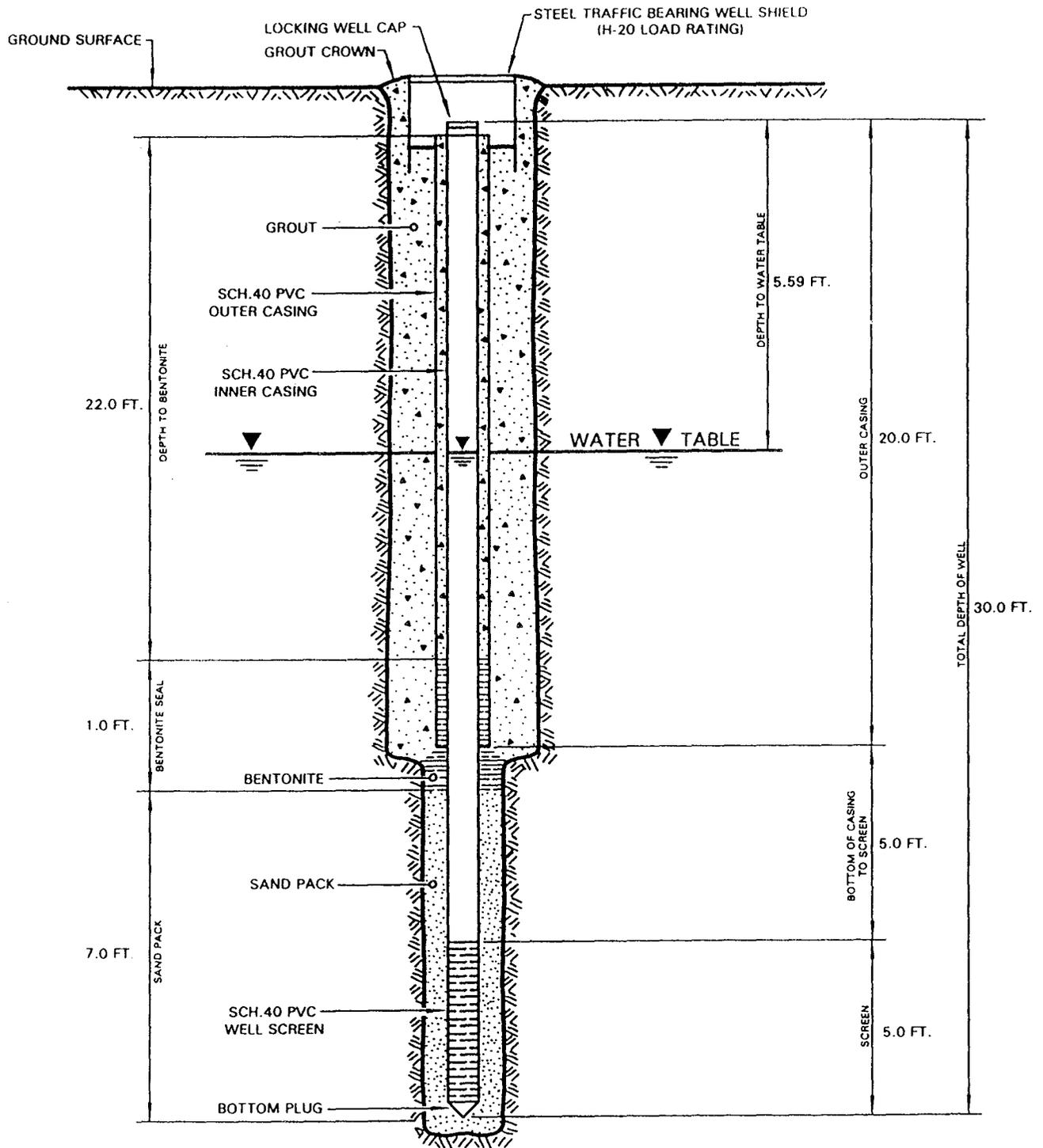
## AS-BUILT MONITORING WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

T1



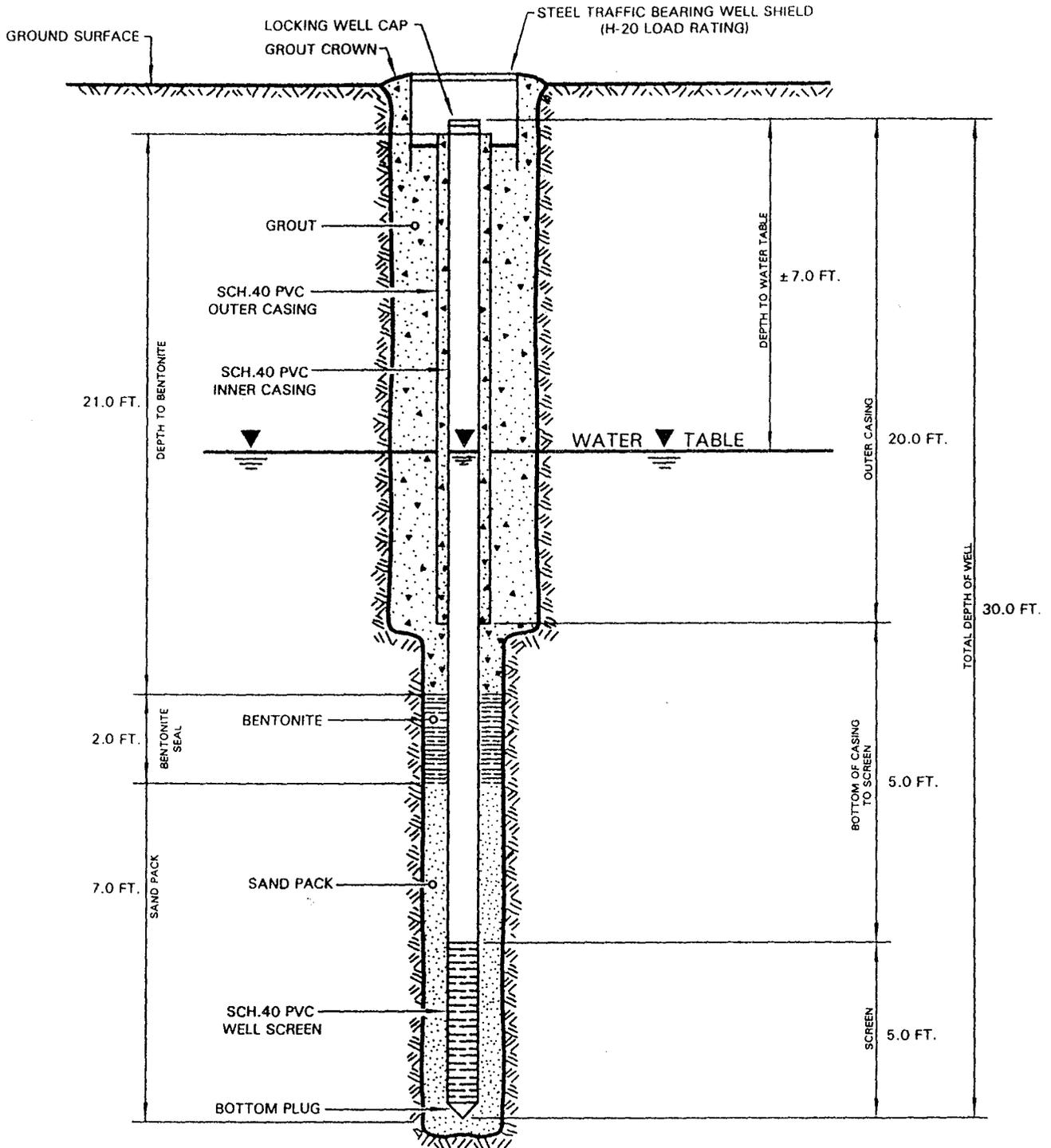
## TELESCOPING WELL WELL DETAIL

NOT TO SCALE

# FORMER SQUARE DEAL PACKAGE STORE

FAYETTEVILLE, NC  
CES PROJECT NO.97140

## T2



## TELESCOPING WELL WELL DETAIL

NOT TO SCALE

**APPENDIX III**

**SOIL LABORATORY ANALYSES AND CHAIN OF CUSTODY FORMS**



Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB1  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29408  
 Lab Project ID: G211-1313  
 Matrix: Soil

%Solids: 90.1

Date Analyzed: 10/16/01  
 Analyzed By: RNP  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	56	120
Acrolein	110	BQL
Acrylonitrile	110	BQL
Benzene	5.6	21
Bromobenzene	5.6	BQL
Bromochloromethane	5.6	BQL
Bromodichloromethane	5.6	BQL
Bromoform	5.6	BQL
Bromomethane	5.6	BQL
2-Butanone	28	BQL
n-Butylbenzene	5.6	17
sec-Butylbenzene	5.6	5.6
tert-Butylbenzene	5.6	BQL
Carbon disulfide	5.6	BQL
Carbon tetrachloride	5.6	BQL
Chlorobenzene	5.6	BQL
Chloroethane	5.6	BQL
Chloroform	5.6	BQL
Chloromethane	5.6	BQL
2-Chlorotoluene	5.6	BQL
4-Chlorotoluene	5.6	BQL
Dibromochloromethane	5.6	BQL
1,2-Dibromo-3-chloropropane	5.6	BQL
Dibromomethane	5.6	BQL
1,2-Dibromoethane (EDB)	5.6	BQL
1,2-Dichlorobenzene	5.6	BQL
1,3-Dichlorobenzene	5.6	BQL
1,4-Dichlorobenzene	5.6	BQL
trans-1,4-Dichloro-2-butene	5.6	BQL
1,1-Dichloroethane	5.6	BQL
1,1-Dichloroethene	5.6	BQL
1,2-Dichloroethane	5.6	BQL
cis-1,2-Dichloroethene	5.6	BQL
trans-1,2-dichloroethene	5.6	BQL
1,2-Dichloropropane	5.6	BQL
1,3-Dichloropropane	5.6	BQL
2,2-Dichloropropane	5.6	BQL
1,1-Dichloropropene	5.6	BQL
cis-1,3-Dichloropropene	5.6	BQL
trans-1,3-Dichloropropene	5.6	BQL
Dichlorodifluoromethane	5.6	BQL
Diisopropyl ether (DIPE)	5.6	BQL
Ethylbenzene	5.6	150
Hexachlorobutadiene	5.6	BQL
2-Hexanone	5.6	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB1  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29408  
 Lab Project ID: G211-1313

Date Analyzed: 10/16/01  
 Analyzed By: RNP  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 1

Matrix: Soil %Solids: 90.1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.6	BQL
Isopropylbenzene	5.6	14
4-Isopropyltoluene	5.6	BQL
Methylene chloride	22	BQL
4-Methyl-2-pentanone	5.6	BQL
Methyl-tert-butyl ether (MTBE)	5.6	BQL
Naphthalene	5.6	160
n-Propyl benzene	5.6	58
Styrene	5.6	BQL
1,1,1,2-Tetrachloroethane	5.6	BQL
1,1,2,2-Tetrachloroethane	5.6	BQL
Tetrachloroethene	5.6	BQL
Toluene	5.6	BQL
1,2,3-Trichlorobenzene	5.6	BQL
1,2,4-Trichlorobenzene	5.6	BQL
Trichloroethene	5.6	BQL
1,1,1-Trichloroethane	5.6	BQL
1,1,2-Trichloroethane	5.6	BQL
Trichlorofluoromethane	5.6	BQL
1,2,3-Trichloropropane	5.6	BQL
1,2,4-Trimethylbenzene	5.6	BQL
1,3,5-Trimethylbenzene	5.6	15
Vinyl chloride	5.6	BQL
m-,p-Xylene	11	20
o-Xylene	5.6	BQL

Surrogate Spike Recoveries	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Compound			
Bromofluorobenzene	50	46.9	94
1,2-Dichloroethane-d4	50	54.0	108
Toluene-d8	50	49.1	98

Comments:

All results are corrected for dilution.

Reviewed by: 

## Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB1

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29408

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 90.1

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acenaphthene	320	BQL
Acenaphthylene	320	BQL
Anthracene	320	BQL
Benzo[a]anthracene	320	BQL
Benzo[a]pyrene	320	BQL
Benzo[b]fluoranthene	320	BQL
Benzo[g,h,i]perylene	320	BQL
Benzo[k]fluoranthene	320	BQL
Bis(2-chloroethoxy)methane	320	BQL
Bis(2-chloroethyl)ether	320	BQL
Bis(2-chloroisopropyl)ether	320	BQL
Bis(2-ethylhexyl)phthalate	320	BQL
4-bromophenyl phenyl ether	320	BQL
Butylbenzylphthalate	320	BQL
4-Chloroaniline	320	BQL
2-Chloronaphthalene	320	BQL
4-Chlorophenyl phenyl ether	320	BQL
Chrysene	320	BQL
Di-n-Butylphthalate	320	BQL
Di-n-octylphthalate	320	BQL
Dibenzo[a,h]anthracene	320	BQL
Dibenzofuran	320	BQL
1,2-Dichlorobenzene	320	BQL
1,3-Dichlorobenzene	320	BQL
1,4-Dichlorobenzene	320	BQL
3,3'-Dichlorobenzidine	640	BQL
Diethylphthalate	320	BQL
Dimethylphthalate	320	BQL
2,4-Dinitrotoluene	320	BQL
2,6-Dinitrotoluene	320	BQL
Fluoranthene	320	BQL
Fluorene	320	BQL
Hexachlorobenzene	320	BQL
Hexachlorobutadiene	320	BQL
Hexachlorocyclopentadiene	640	BQL
Hexachloroethane	320	BQL
Indeno(1,2,3-c,d)pyrene	320	BQL
Isophorone	320	BQL
2-Methylnaphthalene	320	1700
N-Nitrosodi-n-propylamine	320	BQL

**Results for Semivolatile Base/Neutral Extractables**

by GCMS 8270

Client Sample ID: SB1

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29408

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 90.1

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
N-Nitrosodiphenylamine	320	BQL
Naphthalene	320	1500
2-Nitroaniline	320	BQL
3-Nitroaniline	320	BQL
4-Nitroaniline	320	BQL
Nitrobenzene	320	BQL
Phenanthrene	320	BQL
Pyrene	320	BQL
1,2,4-Trichlorobenzene	320	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.4	94
Nitrobenzene-d5	10	10.0	100
4-Terphenyl-d14	10	10.3	103

**Comments:**

Results are corrected for %solids and dilution where applicable.

**Flags:**

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

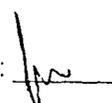
Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB1
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/11/01
Date Analyzed	10/18/01
Dry Weight	90
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	26 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	110
Surrogate % Recovery - FID	120

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1313-29408

Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark Environmental

Project Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB1
Sample Matrix	Soil
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/16/01
Date Analyzed	10/25/01
Dry Weight	90.1
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	21 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	14 (mg/Kg)
Aliphatic Surrogate % Recovery	83
Aromatic Surrogate % Recovery	73
Fractionation Surrogate 1 % Recovery	30

**Comments:**

\* = Excludes any surrogates or internal standards.

Lab info: G211-1313-29408

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

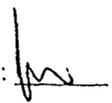
by GCMS 8260B/5035

Client Sample ID: SB2  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29409  
 Lab Project ID: G211-1313  
 Matrix: Soil

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 250

%Solids: 89.1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	7000	BQL
Acrolein	28000	BQL
Acrylonitrile	28000	BQL
Benzene	280	320
Bromobenzene	280	BQL
Bromochloromethane	280	BQL
Bromodichloromethane	280	BQL
Bromoform	280	BQL
Bromomethane	280	BQL
2-Butanone	7000	BQL
n-Butylbenzene	280	720
sec-Butylbenzene	280	BQL
tert-Butylbenzene	280	BQL
Carbon disulfide	280	BQL
Carbon tetrachloride	280	BQL
Chlorobenzene	280	BQL
Chloroethane	280	BQL
Chloroform	280	BQL
Chloromethane	280	BQL
2-Chlorotoluene	280	BQL
4-Chlorotoluene	280	BQL
Dibromochloromethane	280	BQL
1,2-Dibromo-3-chloropropane	1400	BQL
Dibromomethane	280	BQL
1,2-Dibromoethane (EDB)	280	BQL
1,2-Dichlorobenzene	280	BQL
1,3-Dichlorobenzene	280	BQL
1,4-Dichlorobenzene	280	BQL
trans-1,4-Dichloro-2-butene	1400	BQL
1,1-Dichloroethane	280	BQL
1,1-Dichloroethene	280	BQL
1,2-Dichloroethane	280	BQL
cis-1,2-Dichloroethene	280	BQL
trans-1,2-dichloroethene	280	BQL
1,2-Dichloropropane	280	BQL
1,3-Dichloropropane	280	BQL
2,2-Dichloropropane	280	BQL
1,1-Dichloropropene	280	BQL
cis-1,3-Dichloropropene	280	BQL
trans-1,3-Dichloropropene	280	BQL
Dichlorodifluoromethane	1400	BQL
Diisopropyl ether (DIPE)	280	BQL
Ethylbenzene	280	2200
Hexachlorobutadiene	280	BQL
2-Hexanone	1400	BQL

Reviewed by: 

**PARADIGM ANALYTICAL LABORATORIES, INC.**

**Results for Volatiles**

by GCMS 8260B/5035

Client Sample ID: SB2  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29409  
 Lab Project ID: G211-1313

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 250

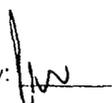
Matrix: Soil      %Solids: 89.1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	280	BQL
Isopropylbenzene	280	310
4-Isopropyltoluene	280	BQL
Methylene chloride	1400	BQL
4-Methyl-2-pentanone	1400	BQL
Methyl-tert-butyl ether (MTBE)	280	BQL
Naphthalene	280	2800
n-Propyl benzene	280	1300
Styrene	280	BQL
1,1,1,2-Tetrachloroethane	280	BQL
1,1,2,2-Tetrachloroethane	280	BQL
Tetrachloroethene	280	BQL
Toluene	280	4000
1,2,3-Trichlorobenzene	280	BQL
1,2,4-Trichlorobenzene	280	BQL
Trichloroethene	280	BQL
1,1,1-Trichloroethane	280	BQL
1,1,2-Trichloroethane	280	BQL
Trichlorofluoromethane	280	BQL
1,2,3-Trichloropropane	280	BQL
1,2,4-Trimethylbenzene	280	8400
1,3,5-Trimethylbenzene	280	2500
Vinyl chloride	280	BQL
m-,p-Xylene	560	8900
o-Xylene	280	3900

Surrogate Spike Recoveries	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Compound			
Bromofluorobenzene	10	9.8	98
1,2-Dichloroethane-d4	10	8.6	86
Toluene-d8	10	10.1	101

**Comments:**

All results are corrected for dilution.

Reviewed by: 

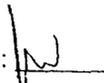
PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS Screening

Client Sample ID: SB2	Date Analyzed: 10/17/01
Client Project ID: Square Deal 97140	Analyzed By: EKR
Lab Sample ID: 29409	Date Collected: 10/11/01
Lab Project ID: G211-1313	Date Received: 10/12/01
Matrix: Soil	%Solids: 89.1
	Dilution: 50

The following data was generated from a GC/MS screening run, not a certified method. The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	1400	BQL
Acrolein	5600	BQL
Acrylonitrile	5600	BQL
Bromobenzene	56	BQL
Bromochloromethane	56	BQL
Bromodichloromethane	56	BQL
Bromoform	56	BQL
Bromomethane	56	BQL
2-Butanone	1400	BQL
sec-Butylbenzene	56	BQL
tert-Butylbenzene	56	BQL
Carbon disulfide	56	BQL
Carbon tetrachloride	56	BQL
Chlorobenzene	56	BQL
Chloroethane	56	BQL
Chloroform	56	BQL
Chloromethane	56	BQL
2-Chlorotoluene	56	BQL
4-Chlorotoluene	56	BQL
Dibromochloromethane	56	BQL
1,2-Dibromo-3-chloropropane	280	BQL
Dibromomethane	56	BQL
1,2-Dibromoethane (EDB)	56	BQL
1,2-Dichlorobenzene	56	BQL
1,3-Dichlorobenzene	56	BQL
1,4-Dichlorobenzene	56	BQL
trans-1,4-Dichloro-2-butene	280	BQL
1,1-Dichloroethane	56	BQL
1,1-Dichloroethene	56	BQL
1,2-Dichloroethane	56	BQL
cis-1,2-Dichloroethene	56	BQL
trans-1,2-dichloroethene	56	BQL
1,2-Dichloropropane	56	BQL
1,3-Dichloropropane	56	BQL
2,2-Dichloropropane	56	BQL
1,1-Dichloropropene	56	BQL
cis-1,3-Dichloropropene	56	BQL
trans-1,3-Dichloropropene	56	BQL
Dichlorodifluoromethane	280	BQL
Diisopropyl ether (DIPE)	56	BQL
Hexachlorobutadiene	56	BQL
2-Hexanone	280	BQL

Reviewed by: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS Screening

Client Sample ID: SB2  
Client Project ID: Square Deal 97140  
Lab Sample ID: 29409  
Lab Project ID: G211-1313

Date Analyzed: 10/17/01  
Analyzed By: EKR  
Date Collected: 10/11/01  
Date Received: 10/12/01  
Dilution: 50

Matrix: Soil      %Solids: 89.1

The following data was generated from a GC/MS screening run, not a certified method.  
The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	56	BQL
4-Isopropyltoluene	56	84
Methylene chloride	280	BQL
4-Methyl-2-pentanone	280	BQL
Methyl-tert-butyl ether (MTBE)	56	BQL
Styrene	56	BQL
1,1,1,2-Tetrachloroethane	56	BQL
1,1,2,2-Tetrachloroethane	56	BQL
Tetrachloroethene	56	BQL
1,2,3-Trichlorobenzene	56	BQL
1,2,4-Trichlorobenzene	56	BQL
Trichloroethene	56	BQL
1,1,1-Trichloroethane	56	BQL
1,1,2-Trichloroethane	56	BQL
Trichlorofluoromethane	56	BQL
1,2,3-Trichloropropane	56	BQL
Vinyl chloride	56	BQL

Comments:

All results are corrected for dilution.

Reviewed by: 

## Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB2

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29409

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 89.1

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acenaphthene	360	BQL
Acenaphthylene	360	BQL
Anthracene	360	BQL
Benzo[a]anthracene	360	BQL
Benzo[a]pyrene	360	BQL
Benzo[b]fluoranthene	360	BQL
Benzo[g,h,i]perylene	360	BQL
Benzo[k]fluoranthene	360	BQL
Bis(2-chloroethoxy)methane	360	BQL
Bis(2-chloroethyl)ether	360	BQL
Bis(2-chloroisopropyl)ether	360	BQL
Bis(2-ethylhexyl)phthalate	360	BQL
4-bromophenyl phenyl ether	360	BQL
Butylbenzylphthalate	360	BQL
4-Chloroaniline	360	BQL
2-Chloronaphthalene	360	BQL
4-Chlorophenyl phenyl ether	360	BQL
Chrysene	360	BQL
Di-n-Butylphthalate	360	BQL
Di-n-octylphthalate	360	BQL
Dibenzo[a,h]anthracene	360	BQL
Dibenzofuran	360	BQL
1,2-Dichlorobenzene	360	BQL
1,3-Dichlorobenzene	360	BQL
1,4-Dichlorobenzene	360	BQL
3,3'-Dichlorobenzidine	710	BQL
Diethylphthalate	360	BQL
Dimethylphthalate	360	BQL
2,4-Dinitrotoluene	360	BQL
2,6-Dinitrotoluene	360	BQL
Fluoranthene	360	BQL
Fluorene	360	BQL
Hexachlorobenzene	360	BQL
Hexachlorobutadiene	360	BQL
Hexachlorocyclopentadiene	710	BQL
Hexachloroethane	360	BQL
Indeno(1,2,3-c,d)pyrene	360	BQL
Isophorone	360	BQL
2-Methylnaphthalene	360	740
N-Nitrosodi-n-propylamine	360	BQL

**Results for Semivolatile Base/Neutral Extractables**

by GCMS 8270

Client Sample ID: SB2

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29409

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 89.1

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
N-Nitrosodiphenylamine	360	BQL
Naphthalene	360	850
2-Nitroaniline	360	BQL
3-Nitroaniline	360	BQL
4-Nitroaniline	360	BQL
Nitrobenzene	360	BQL
Phenanthrene	360	BQL
Pyrene	360	BQL
1,2,4-Trichlorobenzene	360	BQL

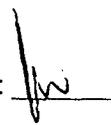
Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.7	97
Nitrobenzene-d5	10	10.2	102
4-Terphenyl-d14	10	10.7	107

**Comments:**

Results are corrected for %solids and dilution where applicable.

**Flags:**

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

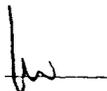
Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB2
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/11/01
Date Analyzed	10/18/01
Dry Weight	89
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	630 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	1100 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	450 (mg/Kg)
Surrogate % Recovery - PID	120
Surrogate % Recovery - FID	100

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1313-29409

Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark Environmental

Project Name: Square Deal 97140

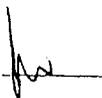
Sample Information and Analytical Results	
Sample Identification	SB2
Sample Matrix	Soil
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/16/01
Date Analyzed	10/18/01
Dry Weight	89.1
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	89
Aromatic Surrogate % Recovery	87

### Comments:

\* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G211-1313-29409

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

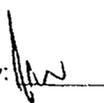
by GCMS 8260B/5035

Client Sample ID: SB3  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29410  
 Lab Project ID: G211-1313  
 Matrix: Soil

%Solids: 86.8

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 800

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	23000	BQL
Acrolein	92000	BQL
Acrylonitrile	92000	BQL
Benzene	920	BQL
Bromobenzene	920	BQL
Bromochloromethane	920	BQL
Bromodichloromethane	920	BQL
Bromoform	920	BQL
Bromomethane	920	BQL
2-Butanone	23000	BQL
n-Butylbenzene	920	4100
sec-Butylbenzene	920	BQL
tert-Butylbenzene	920	BQL
Carbon disulfide	920	BQL
Carbon tetrachloride	920	BQL
Chlorobenzene	920	BQL
Chloroethane	920	BQL
Chloroform	920	BQL
Chloromethane	920	BQL
2-Chlorotoluene	920	BQL
4-Chlorotoluene	920	BQL
Dibromochloromethane	920	BQL
1,2-Dibromo-3-chloropropane	4600	BQL
Dibromomethane	920	BQL
1,2-Dibromoethane (EDB)	920	BQL
1,2-Dichlorobenzene	920	BQL
1,3-Dichlorobenzene	920	BQL
1,4-Dichlorobenzene	920	BQL
trans-1,4-Dichloro-2-butene	4600	BQL
1,1-Dichloroethane	920	BQL
1,1-Dichloroethene	920	BQL
1,2-Dichloroethane	920	BQL
cis-1,2-Dichloroethene	920	BQL
trans-1,2-dichloroethene	920	BQL
1,2-Dichloropropane	920	BQL
1,3-Dichloropropane	920	BQL
2,2-Dichloropropane	920	BQL
1,1-Dichloropropene	920	BQL
cis-1,3-Dichloropropene	920	BQL
trans-1,3-Dichloropropene	920	BQL
Dichlorodifluoromethane	4600	BQL
Diisopropyl ether (DIPE)	920	BQL
Ethylbenzene	920	14000
Hexachlorobutadiene	920	BQL
2-Hexanone	4600	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

**PARADIGM ANALYTICAL LABORATORIES, INC.**

**Results for Volatiles**

by GCMS 8260B/5035

Client Sample ID: SB3  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29410  
 Lab Project ID: G211-1313  
 Matrix: Soil

%Solids: 86.8

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 800

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	920	BQL
Isopropylbenzene	920	1400
4-Isopropyltoluene	920	BQL
Methylene chloride	4600	BQL
4-Methyl-2-pentanone	4600	BQL
Methyl-tert-butyl ether (MTBE)	920	BQL
Naphthalene	920	7600
n-Propyl benzene	920	5800
Styrene	920	BQL
1,1,1,2-Tetrachloroethane	920	BQL
1,1,2,2-Tetrachloroethane	920	BQL
Tetrachloroethene	920	BQL
Toluene	920	BQL
1,2,3-Trichlorobenzene	920	BQL
1,2,4-Trichlorobenzene	920	BQL
Trichloroethene	920	BQL
1,1,1-Trichloroethane	920	BQL
1,1,2-Trichloroethane	920	BQL
Trichlorofluoromethane	920	BQL
1,2,3-Trichloropropane	920	BQL
1,2,4-Trimethylbenzene	920	42000
1,3,5-Trimethylbenzene	920	13000
Vinyl chloride	920	BQL
m-,p-Xylene	1800	55000
o-Xylene	920	BQL

Surrogate Spike Recoveries	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Compound			
Bromofluorobenzene	10	8.9	89
1,2-Dichloroethane-d4	10	8.8	88
Toluene-d8	10	10.5	105

**Comments:**

All results are corrected for dilution.

Reviewed by: 

**PARADIGM ANALYTICAL LABORATORIES, INC.**

**Results for Volatiles**

by GCMS Screening

Client Sample ID: SB3  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29410  
 Lab Project ID: G211-1313

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 80

Matrix: Soil      %Solids: 86.8

The following data was generated from a GC/MS screening run, not a certified method.  
 The data, while qualitatively correct, provides only estimated concentrations.

<b>Compound</b>	<b>Quantitation Limit (ug/KG)</b>	<b>Result (ug/KG)</b>
Acetone	2300	BQL
Acrolein	9200	BQL
Acrylonitrile	9200	BQL
Benzene	92	<b>310</b>
Bromobenzene	92	BQL
Bromochloromethane	92	BQL
Bromodichloromethane	92	BQL
Bromoform	92	BQL
Bromomethane	92	BQL
2-Butanone	2300	BQL
sec-Butylbenzene	92	<b>680</b>
tert-Butylbenzene	92	BQL
Carbon disulfide	92	BQL
Carbon tetrachloride	92	BQL
Chlorobenzene	92	BQL
Chloroethane	92	BQL
Chloroform	92	BQL
Chloromethane	92	BQL
2-Chlorotoluene	92	BQL
4-Chlorotoluene	92	BQL
Dibromochloromethane	92	BQL
1,2-Dibromo-3-chloropropane	460	BQL
Dibromomethane	92	BQL
1,2-Dibromoethane (EDB)	92	BQL
1,2-Dichlorobenzene	92	BQL
1,3-Dichlorobenzene	92	BQL
1,4-Dichlorobenzene	92	BQL
trans-1,4-Dichloro-2-butene	460	BQL
1,1-Dichloroethane	92	BQL
1,1-Dichloroethene	92	BQL
1,2-Dichloroethane	92	BQL
cis-1,2-Dichloroethene	92	BQL
trans-1,2-dichloroethene	92	BQL
1,2-Dichloropropane	92	BQL
1,3-Dichloropropane	92	BQL
2,2-Dichloropropane	92	BQL
1,1-Dichloropropene	92	BQL
cis-1,3-Dichloropropene	92	BQL
trans-1,3-Dichloropropene	92	BQL
Dichlorodifluoromethane	460	BQL
Diisopropyl ether (DIPE)	92	BQL
Hexachlorobutadiene	92	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS Screening

Client Sample ID: SB3  
Client Project ID: Square Deal 97140  
Lab Sample ID: 29410  
Lab Project ID: G211-1313  
Matrix: Soil

%Solids: 86.8

Date Analyzed: 10/17/01  
Analyzed By: EKR  
Date Collected: 10/11/01  
Date Received: 10/12/01  
Dilution: 80

The following data was generated from a GC/MS screening run, not a certified method.  
The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
2-Hexanone	460	BQL
Iodomethane	92	BQL
4-Isopropyltoluene	92	710
Methylene chloride	460	BQL
4-Methyl-2-pentanone	460	BQL
Methyl-tert-butyl ether (MTBE)	92	BQL
Styrene	92	BQL
1,1,1,2-Tetrachloroethane	92	BQL
1,1,2,2-Tetrachloroethane	92	BQL
Tetrachloroethene	92	BQL
Toluene	92	910
1,2,3-Trichlorobenzene	92	BQL
1,2,4-Trichlorobenzene	92	BQL
Trichloroethene	92	BQL
1,1,1-Trichloroethane	92	BQL
1,1,2-Trichloroethane	92	BQL
Trichlorofluoromethane	92	BQL
1,2,3-Trichloropropane	92	BQL
Vinyl chloride	92	BQL
o-Xylene	92	360

Comments:

All results are corrected for dilution.

Reviewed by: 

## Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB3

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29410

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 86.8

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acenaphthene	350	BQL
Acenaphthylene	350	BQL
Anthracene	350	BQL
Benzo[a]anthracene	350	BQL
Benzo[a]pyrene	350	BQL
Benzo[b]fluoranthene	350	BQL
Benzo[g,h,i]perylene	350	BQL
Benzo[k]fluoranthene	350	BQL
Bis(2-chloroethoxy)methane	350	BQL
Bis(2-chloroethyl)ether	350	BQL
Bis(2-chloroisopropyl)ether	350	BQL
Bis(2-ethylhexyl)phthalate	350	BQL
4-bromophenyl phenyl ether	350	BQL
Butylbenzylphthalate	350	BQL
4-Chloroaniline	350	BQL
2-Chloronaphthalene	350	BQL
4-Chlorophenyl phenyl ether	350	BQL
Chrysene	350	BQL
Di-n-Butylphthalate	350	BQL
Di-n-octylphthalate	350	BQL
Dibenzo[a,h]anthracene	350	BQL
Dibenzofuran	350	BQL
1,2-Dichlorobenzene	350	BQL
1,3-Dichlorobenzene	350	BQL
1,4-Dichlorobenzene	350	BQL
3,3'-Dichlorobenzidine	700	BQL
Diethylphthalate	350	BQL
Dimethylphthalate	350	BQL
2,4-Dinitrotoluene	350	BQL
2,6-Dinitrotoluene	350	BQL
Fluoranthene	350	BQL
Fluorene	350	BQL
Hexachlorobenzene	350	BQL
Hexachlorobutadiene	350	BQL
Hexachlorocyclopentadiene	700	BQL
Hexachloroethane	350	BQL
Indeno(1,2,3-c,d)pyrene	350	BQL
Isophorone	350	BQL
2-Methylnaphthalene	350	1900
N-Nitrosodi-n-propylamine	350	BQL

## Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB3

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29410

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 86.8

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
N-Nitrosodiphenylamine	350	BQL
Naphthalene	350	1100
2-Nitroaniline	350	BQL
3-Nitroaniline	350	BQL
4-Nitroaniline	350	BQL
Nitrobenzene	350	BQL
Phenanthrene	350	BQL
Pyrene	350	BQL
1,2,4-Trichlorobenzene	350	BQL

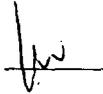
Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.9	89
Nitrobenzene-d5	10	9.7	97
4-Terphenyl-d14	10	9.5	95

**Comments:**

Results are corrected for %solids and dilution where applicable.

**Flags:**

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark Environmental

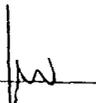
Project Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB3
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/11/01
Date Analyzed	10/18/01
Dry Weight	87
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	2000 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	2200 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	560 (mg/Kg)
Surrogate % Recovery - PID	130
Surrogate % Recovery - FID	110

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1313-29410

Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB3
Sample Matrix	Soil
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/16/01
Date Analyzed	10/25/01
Dry Weight	86.8
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	46 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	11 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	18 (mg/Kg)
Aliphatic Surrogate % Recovery	83
Aromatic Surrogate % Recovery	44
Fractionation Surrogate 1 % Recovery	27

## Comments:

- \* = Excludes any surrogates or internal standards.  
 Low surrogate confirmed by duplicate analysis.

Lab info: G211-1313-29410

Reviewed By: W

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB4  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29411  
 Lab Project ID: G211-1313  
 Matrix: Soil

%Solids: 85.4

Date Analyzed: 10/16/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 50

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	1500	BQL
Acrolein	5900	BQL
Acrylonitrile	5900	BQL
Benzene	59	BQL
Bromobenzene	59	BQL
Bromochloromethane	59	BQL
Bromodichloromethane	59	BQL
Bromoform	59	BQL
Bromomethane	59	BQL
2-Butanone	1500	BQL
n-Butylbenzene	59	81
sec-Butylbenzene	59	BQL
tert-Butylbenzene	59	BQL
Carbon disulfide	59	BQL
Carbon tetrachloride	59	BQL
Chlorobenzene	59	BQL
Chloroethane	59	BQL
Chloroform	59	BQL
Chloromethane	59	BQL
2-Chlorotoluene	59	BQL
4-Chlorotoluene	59	BQL
Dibromochloromethane	59	BQL
1,2-Dibromo-3-chloropropane	290	BQL
Dibromomethane	59	BQL
1,2-Dibromoethane (EDB)	59	BQL
1,2-Dichlorobenzene	59	BQL
1,3-Dichlorobenzene	59	BQL
1,4-Dichlorobenzene	59	BQL
trans-1,4-Dichloro-2-butene	290	BQL
1,1-Dichloroethane	59	BQL
1,1-Dichloroethene	59	BQL
1,2-Dichloroethane	59	BQL
cis-1,2-Dichloroethene	59	BQL
trans-1,2-dichloroethene	59	BQL
1,2-Dichloropropane	59	BQL
1,3-Dichloropropane	59	BQL
2,2-Dichloropropane	59	BQL
1,1-Dichloropropene	59	BQL
cis-1,3-Dichloropropene	59	BQL
trans-1,3-Dichloropropene	59	BQL
Dichlorodifluoromethane	290	BQL
Diisopropyl ether (DIPE)	59	BQL
Ethylbenzene	59	200
Hexachlorobutadiene	59	BQL
2-Hexanone	290	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB4  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29411  
 Lab Project ID: G211-1313  
 Matrix: Soil

%Solids: 85.4

Date Analyzed: 10/16/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 50

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	59	BQL
Isopropylbenzene	59	BQL
4-Isopropyltoluene	59	BQL
Methylene chloride	290	BQL
4-Methyl-2-pentanone	290	BQL
Methyl-tert-butyl ether (MTBE)	59	BQL
Naphthalene	59	71
n-Propyl benzene	59	110
Styrene	59	BQL
1,1,1,2-Tetrachloroethane	59	BQL
1,1,2,2-Tetrachloroethane	59	BQL
Tetrachloroethene	59	BQL
Toluene	59	BQL
1,2,3-Trichlorobenzene	59	BQL
1,2,4-Trichlorobenzene	59	BQL
Trichloroethene	59	BQL
1,1,1-Trichloroethane	59	BQL
1,1,2-Trichloroethane	59	BQL
Trichlorofluoromethane	59	BQL
1,2,3-Trichloropropane	59	BQL
1,2,4-Trimethylbenzene	59	710
1,3,5-Trimethylbenzene	59	220
Vinyl chloride	59	BQL
m,p-Xylene	120	340
o-Xylene	59	BQL

Surrogate Spike Recoveries	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Compound			
Bromofluorobenzene	10	10.4	104
1,2-Dichloroethane-d4	10	10.5	105
Toluene-d8	10	10.3	103

Comments:

All results are corrected for dilution.

Reviewed by: 

## Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB4

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29411

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 85.4

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acenaphthene	350	BQL
Acenaphthylene	350	BQL
Anthracene	350	BQL
Benzo[a]anthracene	350	BQL
Benzo[a]pyrene	350	BQL
Benzo[b]fluoranthene	350	BQL
Benzo[g,h,i]perylene	350	BQL
Benzo[k]fluoranthene	350	BQL
Bis(2-chloroethoxy)methane	350	BQL
Bis(2-chloroethyl)ether	350	BQL
Bis(2-chloroisopropyl)ether	350	BQL
Bis(2-ethylhexyl)phthalate	350	BQL
4-bromophenyl phenyl ether	350	BQL
Butylbenzylphthalate	350	BQL
4-Chloroaniline	350	BQL
2-Chloronaphthalene	350	BQL
4-Chlorophenyl phenyl ether	350	BQL
Chrysene	350	BQL
Di-n-Butylphthalate	350	BQL
Di-n-octylphthalate	350	BQL
Dibenzo[a,h]anthracene	350	BQL
Dibenzofuran	350	BQL
1,2-Dichlorobenzene	350	BQL
1,3-Dichlorobenzene	350	BQL
1,4-Dichlorobenzene	350	BQL
3,3'-Dichlorobenzidine	700	BQL
Diethylphthalate	350	BQL
Dimethylphthalate	350	BQL
2,4-Dinitrotoluene	350	BQL
2,6-Dinitrotoluene	350	BQL
Fluoranthene	350	BQL
Fluorene	350	BQL
Hexachlorobenzene	350	BQL
Hexachlorobutadiene	350	BQL
Hexachlorocyclopentadiene	700	BQL
Hexachloroethane	350	BQL
Indeno(1,2,3-c,d)pyrene	350	BQL
Isophorone	350	BQL
2-Methylnaphthalene	350	BQL
N-Nitrosodi-n-propylamine	350	BQL

**Results for Semivolatile Base/Neutral Extractables**

by GCMS 8270

Client Sample ID: SB4  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29411  
 Lab Project ID: G211-1313

Date Collected: 10/11/2001  
 Date Received: 10/12/2001  
 Date Analyzed: 10/23/2001  
 Analyzed By: MRC  
 Dilution: 1

Matrix: Soil                      %Solids: 85.4

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
N-Nitrosodiphenylamine	350	BQL
Naphthalene	350	BQL
2-Nitroaniline	350	BQL
3-Nitroaniline	350	BQL
4-Nitroaniline	350	BQL
Nitrobenzene	350	BQL
Phenanthrene	350	BQL
Pyrene	350	BQL
1,2,4-Trichlorobenzene	350	BQL

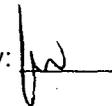
Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.9	79
Nitrobenzene-d5	10	8.2	82
4-Terphenyl-d14	10	9.6	96

**Comments:**

Results are corrected for %solids and dilution where applicable.

**Flags:**

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

 Client Name: Clark Environmental

 Project Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB4
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/11/01
Date Analyzed	10/18/01
Dry Weight	85
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	100
Surrogate % Recovery - FID	100

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1313-29411

 Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark Environmental

Project Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB4
Sample Matrix	Soil
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/16/01
Date Analyzed	10/18/01
Dry Weight	85.4
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	110
Aromatic Surrogate % Recovery	96

**Comments:**

\* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G211-1313-29411

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

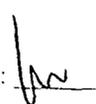
by GCMS 8260B/5035

Client Sample ID: SB5  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29412  
 Lab Project ID: G211-1313

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 100

Matrix: Soil %Solids: 88.0

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	2800	BQL
Acrolein	11000	BQL
Acrylonitrile	11000	BQL
Benzene	110	160
Bromobenzene	110	BQL
Bromochloromethane	110	BQL
Bromodichloromethane	110	BQL
Bromoform	110	BQL
Bromomethane	110	BQL
2-Butanone	2800	BQL
n-Butylbenzene	110	960
sec-Butylbenzene	110	380
tert-Butylbenzene	110	BQL
Carbon disulfide	110	BQL
Carbon tetrachloride	110	BQL
Chlorobenzene	110	BQL
Chloroethane	110	BQL
Chloroform	110	BQL
Chloromethane	110	BQL
2-Chlorotoluene	110	BQL
4-Chlorotoluene	110	BQL
Dibromochloromethane	110	BQL
1,2-Dibromo-3-chloropropane	570	BQL
Dibromomethane	110	BQL
1,2-Dibromoethane (EDB)	110	BQL
1,2-Dichlorobenzene	110	BQL
1,3-Dichlorobenzene	110	BQL
1,4-Dichlorobenzene	110	BQL
trans-1,4-Dichloro-2-butene	570	BQL
1,1-Dichloroethane	110	BQL
1,1-Dichloroethene	110	BQL
1,2-Dichloroethane	110	BQL
cis-1,2-Dichloroethene	110	BQL
trans-1,2-dichloroethene	110	BQL
1,2-Dichloropropane	110	BQL
1,3-Dichloropropane	110	BQL
2,2-Dichloropropane	110	BQL
1,1-Dichloropropene	110	BQL
cis-1,3-Dichloropropene	110	BQL
trans-1,3-Dichloropropene	110	BQL
Dichlorodifluoromethane	570	BQL
Diisopropyl ether (DIPE)	110	BQL
Ethylbenzene	110	1400
Hexachlorobutadiene	110	BQL
2-Hexanone	570	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

**PARADIGM ANALYTICAL LABORATORIES, INC.**

**Results for Volatiles**

by GCMS 8260B/5035

Client Sample ID: SB5  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29412  
 Lab Project ID: G211-1313

Date Analyzed: 10/17/01  
 Analyzed By: EKR  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 100

Matrix: Soil      %Solids: 88.0

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	110	BQL
Isopropylbenzene	110	280
4-Isopropyltoluene	110	310
Methylene chloride	570	BQL
4-Methyl-2-pentanone	570	BQL
Methyl-tert-butyl ether (MTBE)	110	BQL
Naphthalene	110	2400
n-Propyl benzene	110	990
Styrene	110	BQL
1,1,1,2-Tetrachloroethane	110	BQL
1,1,2,2-Tetrachloroethane	110	BQL
Tetrachloroethene	110	BQL
Toluene	110	BQL
1,2,3-Trichlorobenzene	110	BQL
1,2,4-Trichlorobenzene	110	BQL
Trichloroethene	110	BQL
1,1,1-Trichloroethane	110	BQL
1,1,2-Trichloroethane	110	BQL
Trichlorofluoromethane	110	BQL
1,2,3-Trichloropropane	110	BQL
1,2,4-Trimethylbenzene	110	3900
1,3,5-Trimethylbenzene	110	280
Vinyl chloride	110	BQL
m-,p-Xylene	230	790
o-Xylene	110	BQL

<b>Surrogate Spike Recoveries</b>			
Compound	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Bromofluorobenzene	10	9.9	99
1,2-Dichloroethane-d4	10	8.6	86
Toluene-d8	10	10.3	103

**Comments:**

All results are corrected for dilution.

Reviewed by: 

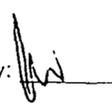
## Results for Volatiles

by GCMS Screening

Client Sample ID: SB5	Date Analyzed: 10/17/01
Client Project ID: Square Deal 97140	Analyzed By: EKR
Lab Sample ID: 29412	Date Collected: 10/11/01
Lab Project ID: G211-1313	Date Received: 10/12/01
Matrix: Soil	Dilution: 50
%Solids: 88.0	

The following data was generated from a GC/MS screening run, not a certified method.  
The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	1400	BQL
Acrolein	5700	BQL
Acrylonitrile	5700	BQL
Bromobenzene	57	BQL
Bromochloromethane	57	BQL
Bromodichloromethane	57	BQL
Bromoform	57	BQL
Bromomethane	57	BQL
2-Butanone	1400	BQL
tert-Butylbenzene	57	BQL
Carbon disulfide	57	BQL
Carbon tetrachloride	57	BQL
Chlorobenzene	57	BQL
Chloroethane	57	BQL
Chloroform	57	BQL
Chloromethane	57	BQL
2-Chlorotoluene	57	BQL
4-Chlorotoluene	57	BQL
Dibromochloromethane	57	BQL
1,2-Dibromo-3-chloropropane	280	BQL
Dibromomethane	57	BQL
1,2-Dibromoethane (EDB)	57	BQL
1,2-Dichlorobenzene	57	BQL
1,3-Dichlorobenzene	57	BQL
1,4-Dichlorobenzene	57	BQL
trans-1,4-Dichloro-2-butene	280	BQL
1,1-Dichloroethane	57	BQL
1,1-Dichloroethene	57	BQL
1,2-Dichloroethane	57	BQL
cis-1,2-Dichloroethene	57	BQL
trans-1,2-dichloroethene	57	BQL
1,2-Dichloropropane	57	BQL
1,3-Dichloropropane	57	BQL
2,2-Dichloropropane	57	BQL
1,1-Dichloropropene	57	BQL
cis-1,3-Dichloropropene	57	BQL
trans-1,3-Dichloropropene	57	BQL
Dichlorodifluoromethane	280	BQL
Diisopropyl ether (DIPE)	57	BQL
Hexachlorobutadiene	57	BQL
2-Hexanone	280	BQL
Iodomethane	57	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

Page 1 of 2

Results for Volatiles

by GCMS Screening

Client Sample ID: SB5	Date Analyzed: 10/17/01
Client Project ID: Square Deal 97140	Analyzed By: EKR
Lab Sample ID: 29412	Date Collected: 10/11/01
Lab Project ID: G211-1313	Date Received: 10/12/01
Matrix: Soil	%Solids: 88.0
	Dilution: 50

The following data was generated from a GC/MS screening run, not a certified method. The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Methylene chloride	280	BQL
4-Methyl-2-pentanone	280	BQL
Methyl-tert-butyl ether (MTBE)	57	BQL
Styrene	57	BQL
1,1,1,2-Tetrachloroethane	57	BQL
1,1,2,2-Tetrachloroethane	57	BQL
Tetrachloroethene	57	BQL
Toluene	57	BQL
1,2,3-Trichlorobenzene	57	BQL
1,2,4-Trichlorobenzene	57	BQL
Trichloroethene	57	BQL
1,1,1-Trichloroethane	57	BQL
1,1,2-Trichloroethane	57	BQL
Trichlorofluoromethane	57	BQL
1,2,3-Trichloropropane	57	BQL
Vinyl chloride	57	BQL
o-Xylene	57	BQL

Comments:

All results are corrected for dilution.

Reviewed by: 

## Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB5

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29412

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 88.0

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acenaphthene	330	BQL
Acenaphthylene	330	BQL
Anthracene	330	BQL
Benzo[a]anthracene	330	BQL
Benzo[a]pyrene	330	BQL
Benzo[b]fluoranthene	330	BQL
Benzo[g,h,i]perylene	330	BQL
Benzo[k]fluoranthene	330	BQL
Bis(2-chloroethoxy)methane	330	BQL
Bis(2-chloroethyl)ether	330	BQL
Bis(2-chloroisopropyl)ether	330	BQL
Bis(2-ethylhexyl)phthalate	330	BQL
4-bromophenyl phenyl ether	330	BQL
Butylbenzylphthalate	330	BQL
4-Chloroaniline	330	BQL
2-Chloronaphthalene	330	BQL
4-Chlorophenyl phenyl ether	330	BQL
Chrysene	330	BQL
Di-n-Butylphthalate	330	BQL
Di-n-octylphthalate	330	BQL
Dibenzo[a,h]anthracene	330	BQL
Dibenzofuran	330	BQL
1,2-Dichlorobenzene	330	BQL
1,3-Dichlorobenzene	330	BQL
1,4-Dichlorobenzene	330	BQL
3,3'-Dichlorobenzidine	660	BQL
Diethylphthalate	330	BQL
Dimethylphthalate	330	BQL
2,4-Dinitrotoluene	330	BQL
2,6-Dinitrotoluene	330	BQL
Fluoranthene	330	BQL
Fluorene	330	330
Hexachlorobenzene	330	BQL
Hexachlorobutadiene	330	BQL
Hexachlorocyclopentadiene	660	BQL
Hexachloroethane	330	BQL
Indeno(1,2,3-c,d)pyrene	330	BQL
Isophorone	330	BQL
2-Methylnaphthalene	330	6000
N-Nitrosodi-n-propylamine	330	BQL

**Results for Semivolatile Base/Neutral Extractables**  
by GCMS 8270

Client Sample ID: SB5	Date Collected: 10/11/2001
Client Project ID: Square Deal 97140	Date Received: 10/12/2001
Lab Sample ID: 29412	Date Analyzed: 10/23/2001
Lab Project ID: G211-1313	Analyzed By: MRC
Matrix: Soil                      %Solids: 88.0	Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
N-Nitrosodiphenylamine	330	BQL
Naphthalene	330	2200
2-Nitroaniline	330	BQL
3-Nitroaniline	330	BQL
4-Nitroaniline	330	BQL
Nitrobenzene	330	BQL
Phenanthrene	330	680
Pyrene	330	BQL
1,2,4-Trichlorobenzene	330	BQL

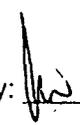
Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.3	93
Nitrobenzene-d5	10	9.8	98
4-Terphenyl-d14	10	9.8	98

**Comments:**

Results are corrected for %solids and dilution where applicable.

**Flags:**

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

 Client Name: Clark Environmental

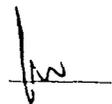
 Project Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB5
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/11/01
Date Analyzed	10/18/01
Dry Weight	88
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	850 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	1700 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	460 (mg/Kg)
Surrogate % Recovery - PID	130
Surrogate % Recovery - FID	100

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1313-29412

 Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

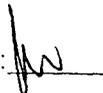
Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB5
Sample Matrix	Soil
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/16/01
Date Analyzed	10/25/01
Dry Weight	88
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	37 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	14 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	22 (mg/Kg)
Aliphatic Surrogate % Recovery	59
Aromatic Surrogate % Recovery	61
Fractionation Surrogate 1 % Recovery	45

## Comments:

\* = Excludes any surrogates or internal standards.

Lab info: G211-1313-29412

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

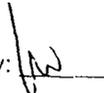
by GCMS 8260B/5035

Client Sample ID: SB6  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 29413  
 Lab Project ID: G211-1313

Date Analyzed: 10/16/01  
 Analyzed By: RNP  
 Date Collected: 10/11/01  
 Date Received: 10/12/01  
 Dilution: 1

Matrix: Soil %Solids: 86.0

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Acetone	58	BQL
Acrolein	120	BQL
Acrylonitrile	120	BQL
Benzene	5.8	BQL
Bromobenzene	5.8	BQL
Bromochloromethane	5.8	BQL
Bromodichloromethane	5.8	BQL
Bromoform	5.8	BQL
Bromomethane	5.8	BQL
2-Butanone	29	BQL
n-Butylbenzene	5.8	BQL
sec-Butylbenzene	5.8	BQL
tert-Butylbenzene	5.8	BQL
Carbon disulfide	5.8	BQL
Carbon tetrachloride	5.8	BQL
Chlorobenzene	5.8	BQL
Chloroethane	5.8	BQL
Chloroform	5.8	BQL
Chloromethane	5.8	BQL
2-Chlorotoluene	5.8	BQL
4-Chlorotoluene	5.8	BQL
Dibromochloromethane	5.8	BQL
1,2-Dibromo-3-chloropropane	5.8	BQL
Dibromomethane	5.8	BQL
1,2-Dibromoethane (EDB)	5.8	BQL
1,2-Dichlorobenzene	5.8	BQL
1,3-Dichlorobenzene	5.8	BQL
1,4-Dichlorobenzene	5.8	BQL
trans-1,4-Dichloro-2-butene	5.8	BQL
1,1-Dichloroethane	5.8	BQL
1,1-Dichloroethene	5.8	BQL
1,2-Dichloroethane	5.8	BQL
cis-1,2-Dichloroethene	5.8	BQL
trans-1,2-dichloroethene	5.8	BQL
1,2-Dichloropropane	5.8	BQL
1,3-Dichloropropane	5.8	BQL
2,2-Dichloropropane	5.8	BQL
1,1-Dichloropropene	5.8	BQL
cis-1,3-Dichloropropene	5.8	BQL
trans-1,3-Dichloropropene	5.8	BQL
Dichlorodifluoromethane	5.8	BQL
Diisopropyl ether (DIPE)	5.8	BQL
Ethylbenzene	5.8	BQL
Hexachlorobutadiene	5.8	BQL
2-Hexanone	5.8	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

Results for Volatiles

by GCMS 8260B/5035

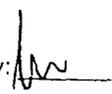
Client Sample ID: SB6	Date Analyzed: 10/16/01
Client Project ID: Square Deal 97140	Analyzed By: RNP
Lab Sample ID: 29413	Date Collected: 10/11/01
Lab Project ID: G211-1313	Date Received: 10/12/01
Matrix: Soil	Dilution: 1
%Solids: 86.0	

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
Iodomethane	5.8	BQL
Isopropylbenzene	5.8	BQL
4-Isopropyltoluene	5.8	BQL
Methylene chloride	23	BQL
4-Methyl-2-pentanone	5.8	BQL
Methyl-tert-butyl ether (MTBE)	5.8	BQL
Naphthalene	5.8	BQL
n-Propyl benzene	5.8	BQL
Styrene	5.8	BQL
1,1,1,2-Tetrachloroethane	5.8	BQL
1,1,2,2-Tetrachloroethane	5.8	BQL
Tetrachloroethene	5.8	BQL
Toluene	5.8	BQL
1,2,3-Trichlorobenzene	5.8	BQL
1,2,4-Trichlorobenzene	5.8	BQL
Trichloroethene	5.8	BQL
1,1,1-Trichloroethane	5.8	BQL
1,1,2-Trichloroethane	5.8	BQL
Trichlorofluoromethane	5.8	BQL
1,2,3-Trichloropropane	5.8	BQL
1,2,4-Trimethylbenzene	5.8	BQL
1,3,5-Trimethylbenzene	5.8	BQL
Vinyl chloride	5.8	BQL
m-,p-Xylene	12	BQL
o-Xylene	5.8	BQL

Surrogate Spike Recoveries	Spike Added (ug/KG)	Surrogate Result (ug/KG)	%Rec
Compound			
Bromofluorobenzene	50	47.0	94
1,2-Dichloroethane-d4	50	58.4	117
Toluene-d8	50	48.3	97

Comments:

All results are corrected for dilution.

Reviewed by: 

**Results for Semivolatile Base/Neutral Extractables**  
by GCMS 8270

Client Sample ID: SB6

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29413

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 86.0

Dilution: 1

<b>Compound</b>	<b>Quantitation Limit (ug/KG)</b>	<b>Result (ug/KG)</b>
Acenaphthene	360	BQL
Acenaphthylene	360	BQL
Anthracene	360	BQL
Benzo[a]anthracene	360	BQL
Benzo[a]pyrene	360	BQL
Benzo[b]fluoranthene	360	BQL
Benzo[g,h,i]perylene	360	BQL
Benzo[k]fluoranthene	360	BQL
Bis(2-chloroethoxy)methane	360	BQL
Bis(2-chloroethyl)ether	360	BQL
Bis(2-chloroisopropyl)ether	360	BQL
Bis(2-ethylhexyl)phthalate	360	BQL
4-bromophenyl phenyl ether	360	BQL
Butylbenzylphthalate	360	BQL
4-Chloroaniline	360	BQL
2-Chloronaphthalene	360	BQL
4-Chlorophenyl phenyl ether	360	BQL
Chrysene	360	BQL
Di-n-Butylphthalate	360	BQL
Di-n-octylphthalate	360	BQL
Dibenzo[a,h]anthracene	360	BQL
Dibenzofuran	360	BQL
1,2-Dichlorobenzene	360	BQL
1,3-Dichlorobenzene	360	BQL
1,4-Dichlorobenzene	360	BQL
3,3'-Dichlorobenzidine	720	BQL
Diethylphthalate	360	BQL
Dimethylphthalate	360	BQL
2,4-Dinitrotoluene	360	BQL
2,6-Dinitrotoluene	360	BQL
Fluoranthene	360	BQL
Fluorene	360	BQL
Hexachlorobenzene	360	BQL
Hexachlorobutadiene	360	BQL
Hexachlorocyclopentadiene	720	BQL
Hexachloroethane	360	BQL
Indeno(1,2,3-c,d)pyrene	360	BQL
Isophorone	360	BQL
2-Methylnaphthalene	360	BQL
N-Nitrosodi-n-propylamine	360	BQL

Results for Semivolatile Base/Neutral Extractables

by GCMS 8270

Client Sample ID: SB6

Date Collected: 10/11/2001

Client Project ID: Square Deal 97140

Date Received: 10/12/2001

Lab Sample ID: 29413

Date Analyzed: 10/23/2001

Lab Project ID: G211-1313

Analyzed By: MRC

Matrix: Soil

%Solids: 86.0

Dilution: 1

Compound	Quantitation Limit (ug/KG)	Result (ug/KG)
N-Nitrosodiphenylamine	360	BQL
Naphthalene	360	BQL
2-Nitroaniline	360	BQL
3-Nitroaniline	360	BQL
4-Nitroaniline	360	BQL
Nitrobenzene	360	BQL
Phenanthrene	360	BQL
Pyrene	360	BQL
1,2,4-Trichlorobenzene	360	BQL

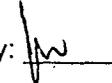
Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.5	95
Nitrobenzene-d5	10	10.1	101
4-Terphenyl-d14	10	10.2	102

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

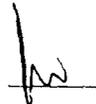
Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB6
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/11/01
Date Analyzed	10/18/01
Dry Weight	86
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	34 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	110
Surrogate % Recovery - FID	120

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1313-29413

Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark Environmental

Project Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB6
Sample Matrix	Soil
Date Collected	10/11/01
Date Received	10/12/01
Date Extracted	10/16/01
Date Analyzed	10/18/01
Dry Weight	86
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	93
Aromatic Surrogate % Recovery	89

**Comments:**

\* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G211-1313-29413

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB7  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50741  
 Lab Project ID: G211-1449  
 Matrix: Soil

Date Analyzed: 8/22/02  
 Analyzed By: RNP  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 100

%Solids: 89.4

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	2.8	BQL
Acrolein	11	BQL
Acrylonitrile	11	BQL
Benzene	0.11	BQL
Bromobenzene	0.11	BQL
Bromochloromethane	0.11	BQL
Bromodichloromethane	0.11	BQL
Bromoform	0.11	BQL
Bromomethane	0.11	BQL
2-Butanone	2.8	BQL
n-Butylbenzene	0.11	0.6
sec-Butylbenzene	0.11	0.16
tert-Butylbenzene	0.11	BQL
Carbon disulfide	0.11	BQL
Carbon tetrachloride	0.11	BQL
Chlorobenzene	0.11	BQL
Chloroethane	0.11	BQL
Chloroform	0.11	BQL
Chloromethane	0.11	BQL
2-Chlorotoluene	0.11	BQL
4-Chlorotoluene	0.11	BQL
Dibromochloromethane	0.11	BQL
1,2-Dibromo-3-chloropropane	0.56	BQL
Dibromomethane	0.11	BQL
1,2-Dibromoethane (EDB)	0.11	BQL
1,2-Dichlorobenzene	0.11	BQL
1,3-Dichlorobenzene	0.11	BQL
1,4-Dichlorobenzene	0.11	BQL
trans-1,4-Dichloro-2-butene	0.56	BQL
1,1-Dichloroethane	0.11	BQL
1,1-Dichloroethene	0.11	BQL
1,2-Dichloroethane	0.11	BQL
cis-1,2-Dichloroethene	0.11	BQL
trans-1,2-dichloroethene	0.11	BQL
1,2-Dichloropropane	0.11	BQL
1,3-Dichloropropane	0.11	BQL
2,2-Dichloropropane	0.11	BQL
1,1-Dichloropropene	0.11	BQL
cis-1,3-Dichloropropene	0.11	BQL
trans-1,3-Dichloropropene	0.11	BQL
Dichlorodifluoromethane	0.56	BQL
Diisopropyl ether (DIPE)	0.11	BQL
Ethylbenzene	0.11	2.6
Hexachlorobutadiene	0.11	BQL
2-Hexanone	0.56	BQL

Reviewed by: 

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB7  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50741  
 Lab Project ID: G211-1449  
 Matrix: Soil

%Solids: 89.4

Date Analyzed: 8/22/02  
 Analyzed By: RNP  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 100

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Iodomethane	0.11	BQL
Isopropylbenzene	0.11	0.33
4-Isopropyltoluene	0.11	0.14
Methylene chloride	0.56	BQL
4-Methyl-2-pentanone	0.56	BQL
Methyl-tert-butyl ether (MTBE)	0.11	BQL
Naphthalene	0.11	2
n-Propyl benzene	0.11	1.6
Styrene	0.11	BQL
1,1,1,2-Tetrachloroethane	0.11	BQL
1,1,2,2-Tetrachloroethane	0.11	BQL
Tetrachloroethene	0.11	BQL
Toluene	0.11	BQL
1,2,3-Trichlorobenzene	0.11	BQL
1,2,4-Trichlorobenzene	0.11	BQL
Trichloroethene	0.11	BQL
1,1,1-Trichloroethane	0.11	BQL
1,1,2-Trichloroethane	0.11	BQL
Trichlorofluoromethane	0.11	BQL
1,2,3-Trichloropropane	0.11	BQL
1,2,4-Trimethylbenzene	0.11	2.5
1,3,5-Trimethylbenzene	0.11	BQL
Vinyl chloride	0.11	BQL
m-,p-Xylene	0.22	1.1
o-Xylene	0.11	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
Compound			
Bromofluorobenzene	0.0100	0.0102	102
1,2-Dichloroethane-d4	0.0100	0.0095	95
Toluene-d8	0.0100	0.0103	103

Comments:

All results are corrected for dilution.

Reviewed by: WQ

Results for Volatiles  
by GCMS Screening

Client Sample ID: SB7	Date Analyzed: 8/21/02
Client Project ID: 97140-Sq. Deal	Analyzed By: RNP
Lab Sample ID: 50741	Date Collected: 8/12/02
Lab Project ID: G211-1449	Date Received: 8/14/02
Matrix: Soil	%Solids: 89.4
	Dilution: 50

The following data was generated from a GC/MS screening run, not a certified method. The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	1.4	BQL
Acrolein	5.6	BQL
Acrylonitrile	5.6	BQL
Benzene	0.056	BQL
Bromobenzene	0.056	BQL
Bromochloromethane	0.056	BQL
Bromodichloromethane	0.056	BQL
Bromoform	0.056	BQL
Bromomethane	0.056	BQL
2-Butanone	1.4	BQL
tert-Butylbenzene	0.056	BQL
Carbon disulfide	0.056	BQL
Carbon tetrachloride	0.056	BQL
Chlorobenzene	0.056	BQL
Chloroethane	0.056	BQL
Chloroform	0.056	BQL
Chloromethane	0.056	BQL
2-Chlorotoluene	0.056	BQL
4-Chlorotoluene	0.056	BQL
Dibromochloromethane	0.056	BQL
1,2-Dibromo-3-chloropropane	0.28	BQL
Dibromomethane	0.056	BQL
1,2-Dibromoethane (EDB)	0.056	BQL
1,2-Dichlorobenzene	0.056	BQL
1,3-Dichlorobenzene	0.056	BQL
1,4-Dichlorobenzene	0.056	BQL
trans-1,4-Dichloro-2-butene	0.28	BQL
1,1-Dichloroethane	0.056	BQL
1,1-Dichloroethene	0.056	BQL
1,2-Dichloroethane	0.056	BQL
cis-1,2-Dichloroethene	0.056	BQL
trans-1,2-dichloroethene	0.056	BQL
1,2-Dichloropropane	0.056	BQL
1,3-Dichloropropane	0.056	BQL
2,2-Dichloropropane	0.056	BQL
1,1-Dichloropropene	0.056	BQL
cis-1,3-Dichloropropene	0.056	BQL
trans-1,3-Dichloropropene	0.056	BQL
Dichlorodifluoromethane	0.28	BQL
Diisopropyl ether (DIPE)	0.056	BQL
Hexachlorobutadiene	0.056	BQL
2-Hexanone	0.28	BQL

Reviewed by: MA

**Results for Volatiles**  
by GCMS Screening

Client Sample ID: SB7	Date Analyzed: 8/21/02
Client Project ID: 97140-Sq. Deal	Analyzed By: RNP
Lab Sample ID: 50741	Date Collected: 8/12/02
Lab Project ID: G211-1449	Date Received: 8/14/02
Matrix: Soil	%Solids: 89.4
	Dilution: 50

The following data was generated from a GC/MS screening run, not a certified method. The data, while qualitatively correct, provides only estimated concentrations.

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Iodomethane	0.056	BQL
Methylene chloride	0.28	BQL
4-Methyl-2-pentanone	0.28	BQL
Methyl-tert-butyl ether (MTBE)	0.056	BQL
Styrene	0.056	BQL
1,1,1,2-Tetrachloroethane	0.056	BQL
1,1,2,2-Tetrachloroethane	0.056	BQL
Tetrachloroethene	0.056	BQL
Toluene	0.056	BQL
1,2,3-Trichlorobenzene	0.056	BQL
1,2,4-Trichlorobenzene	0.056	BQL
Trichloroethene	0.056	BQL
1,1,1-Trichloroethane	0.056	BQL
1,1,2-Trichloroethane	0.056	BQL
Trichlorofluoromethane	0.056	BQL
1,2,3-Trichloropropane	0.056	BQL
1,3,5-Trimethylbenzene	0.056	BQL
Vinyl chloride	0.056	BQL
o-Xylene	0.056	BQL

**Comments:**

All results are corrected for dilution.  
Lower dilution not analyzed due to high non-target concentrations.

Reviewed by: Ma

**Results for Semivolatiles**  
by GCMS 8270

Client Sample ID: SB7  
Client Project ID: 97140-Sq. Deal  
Lab Sample ID: 50741  
Lab Project ID: G211-1449  
Matrix: Soil

%Solids: 89.4

Date Collected: 8/12/2002  
Date Received: 8/14/2002  
Date Analyzed: 8/20/2002  
Analyzed By: MRC  
Dilution: 1

<b>Compound</b>	<b>Quantitation Limit (mg/KG)</b>	<b>Result (mg/KG)</b>
Acenaphthene	0.33	BQL
Acenaphthylene	0.33	BQL
Anthracene	0.33	BQL
Benzo[a]anthracene	0.33	BQL
Benzo[a]pyrene	0.33	BQL
Benzo[b]fluoranthene	0.33	BQL
Benzo[g,h,i]perylene	0.33	BQL
Benzo[k]fluoranthene	0.33	BQL
Benzoic Acid	0.67	BQL
Bis(2-chloroethoxy)methane	0.33	BQL
Bis(2-chloroethyl)ether	0.33	BQL
Bis(2-chloroisopropyl)ether	0.33	BQL
Bis(2-ethylhexyl)phthalate	0.33	BQL
4-bromophenyl phenyl ether	0.33	BQL
Butylbenzylphthalate	0.33	BQL
4-Chloroaniline	0.33	BQL
4-Chloro-3-methylphenol	0.33	BQL
2-Chloronaphthalene	0.33	BQL
2-Chlorophenol	0.33	BQL
4-Chlorophenyl phenyl ether	0.33	BQL
Chrysene	0.33	BQL
Di-n-Butylphthalate	0.33	BQL
Di-n-octylphthalate	0.33	BQL
Dibenzo[a,h]anthracene	0.33	BQL
Dibenzofuran	0.33	BQL
1,2-Dichlorobenzene	0.33	BQL
1,3-Dichlorobenzene	0.33	BQL
1,4-Dichlorobenzene	0.33	BQL
3,3'-Dichlorobenzidine	0.67	BQL
2,4-Dichlorophenol	0.33	BQL
Diethylphthalate	0.33	BQL
2,4-Dimethylphenol	0.33	BQL
Dimethylphthalate	0.33	BQL
4,6-Dinitro-2-methylphenol	1.7	BQL
2,4-Dinitrophenol	1.7	BQL
2,4-Dinitrotoluene	0.33	BQL
2,6-Dinitrotoluene	0.33	BQL
Fluoranthene	0.33	BQL
Fluorene	0.33	BQL
Hexachlorobenzene	0.33	BQL

Results for Semivolatiles

by GCMS 8270

Client Sample ID: SB7  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50741  
 Lab Project ID: G211-1449  
 Matrix: Soil

Date Collected: 8/12/2002  
 Date Received: 8/14/2002  
 Date Analyzed: 8/20/2002  
 Analyzed By: MRC  
 Dilution: 1

%Solids: 89.4

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Hexachlorobutadiene	0.33	BQL
Hexachlorocyclopentadiene	0.67	BQL
Hexachloroethane	0.33	BQL
Indeno(1,2,3-c,d)pyrene	0.33	BQL
Isophorone	0.33	BQL
2-Methylnaphthalene	0.33	1.7
2-Methylphenol	0.33	BQL
3- & 4-Methylphenol	0.33	BQL
N-Nitrosodi-n-propylamine	0.33	BQL
N-Nitrosodiphenylamine	0.33	BQL
Naphthalene	0.33	1.3
2-Nitroaniline	0.33	BQL
3-Nitroaniline	0.33	BQL
4-Nitroaniline	0.33	BQL
Nitrobenzene	0.33	BQL
2-Nitrophenol	0.33	BQL
4-Nitrophenol	1.7	BQL
Pentachlorophenol	1.7	BQL
Phenanthrene	0.33	BQL
Phenol	0.33	BQL
Pyrene	0.33	BQL
1,2,4-Trichlorobenzene	0.33	BQL
2,4,5-Trichlorophenol	0.33	BQL
2,4,6-Trichlorophenol	0.33	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	6.0	60
2-Fluorophenol	10	8.8	88
Nitrobenzene-d5	10	5.0	50
Phenol-d6	10	7.2	72
2,4,6-Tribromophenol	10	5.1	51
4-Terphenyl-d14	10	9.4	94

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: WV

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark Environmental

Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB7
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/12/02
Date Analyzed	08/16/02
Dry Weight	89
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	180 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	250 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	23 (mg/Kg)
Surrogate % Recovery - PID	95
Surrogate % Recovery - FID	89

\* Option 1 = Established fill line on soil, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil  
 \*\* Excludes any surrogates or internal standards

## EPH (Aliphatics/Aromatics) Results

by MDEP EPH

Client Name: Clark Environmental

Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB7
Sample Matrix	Soil
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/19/02
Date Analyzed	08/23/02
Dry Weight	89.4
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	23 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	24 (mg/Kg)
Aliphatic Surrogate % Recovery	90
Aromatic Surrogate % Recovery	79
Fractionation Surrogate 1 % Recovery	120

## Comments:

\* Recovered by surrogates or internal standards

## Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB8

Date Analyzed: 8/22/02

Client Project ID: 97140-Sq. Deal

Analyzed By: RNP

Lab Sample ID: 50742

Date Collected: 8/12/02

Lab Project ID: G211-1449

Date Received: 8/14/02

Matrix: Soil

%Solids: 91.2

Dilution: 50

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	1.4	BQL
Acrolein	5.5	BQL
Acrylonitrile	5.5	BQL
Benzene	0.055	BQL
Bromobenzene	0.055	BQL
Bromochloromethane	0.055	BQL
Bromodichloromethane	0.055	BQL
Bromoform	0.055	BQL
Bromomethane	0.055	BQL
2-Butanone	1.4	BQL
n-Butylbenzene	0.055	BQL
sec-Butylbenzene	0.055	0.082
tert-Butylbenzene	0.055	BQL
Carbon disulfide	0.055	BQL
Carbon tetrachloride	0.055	BQL
Chlorobenzene	0.055	BQL
Chloroethane	0.055	BQL
Chloroform	0.055	BQL
Chloromethane	0.055	BQL
2-Chlorotoluene	0.055	BQL
4-Chlorotoluene	0.055	BQL
Dibromochloromethane	0.055	BQL
1,2-Dibromo-3-chloropropane	0.27	BQL
Dibromomethane	0.055	BQL
1,2-Dibromoethane (EDB)	0.055	BQL
1,2-Dichlorobenzene	0.055	BQL
1,3-Dichlorobenzene	0.055	BQL
1,4-Dichlorobenzene	0.055	BQL
trans-1,4-Dichloro-2-butene	0.27	BQL
1,1-Dichloroethane	0.055	BQL
1,1-Dichloroethene	0.055	BQL
1,2-Dichloroethane	0.055	BQL
cis-1,2-Dichloroethene	0.055	BQL
trans-1,2-dichloroethene	0.055	BQL
1,2-Dichloropropane	0.055	BQL
1,3-Dichloropropane	0.055	BQL
2,2-Dichloropropane	0.055	BQL
1,1-Dichloropropene	0.055	BQL
cis-1,3-Dichloropropene	0.055	BQL
trans-1,3-Dichloropropene	0.055	BQL
Dichlorodifluoromethane	0.27	BQL
Diisopropyl ether (DIPE)	0.055	BQL
Ethylbenzene	0.055	BQL
Hexachlorobutadiene	0.055	BQL
2-Hexanone	0.27	BQL

Reviewed by: Ma

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB8  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50742  
 Lab Project ID: G211-1449  
 Matrix: Soil

%Solids: 91.2

Date Analyzed: 8/22/02  
 Analyzed By: RNP  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 50

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Iodomethane	0.055	BQL
Isopropylbenzene	0.055	BQL
4-Isopropyltoluene	0.055	0.084
Methylene chloride	0.27	BQL
4-Methyl-2-pentanone	0.27	BQL
Methyl-tert-butyl ether (MTBE)	0.055	BQL
Naphthalene	0.055	0.18
n-Propyl benzene	0.055	0.21
Styrene	0.055	BQL
1,1,1,2-Tetrachloroethane	0.055	BQL
1,1,2,2-Tetrachloroethane	0.055	BQL
Tetrachloroethene	0.055	BQL
Toluene	0.055	BQL
1,2,3-Trichlorobenzene	0.055	BQL
1,2,4-Trichlorobenzene	0.055	BQL
Trichloroethene	0.055	BQL
1,1,1-Trichloroethane	0.055	BQL
1,1,2-Trichloroethane	0.055	BQL
Trichlorofluoromethane	0.055	BQL
1,2,3-Trichloropropane	0.055	BQL
1,2,4-Trimethylbenzene	0.055	1.7
1,3,5-Trimethylbenzene	0.055	0.3
Vinyl chloride	0.055	BQL
m-,p-Xylene	0.11	BQL
o-Xylene	0.055	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
Compound			
Bromofluorobenzene	0.0100	0.0102	102
1,2-Dichloroethane-d4	0.0100	0.0094	94
Toluene-d8	0.0100	0.0106	106

Comments:

All results are corrected for dilution.  
 Lower dilution not analyzed due to high non-target concentrations.

Reviewed by: 

**Results for Semivolatiles**  
by GCMS 8270

Client Sample ID: SB8  
Client Project ID: 97140-Sq. Deal  
Lab Sample ID: 50742  
Lab Project ID: G211-1449  
Matrix: Soil

%Solids: 91.2

Date Collected: 8/12/2002  
Date Received: 8/14/2002  
Date Analyzed: 8/21/2002  
Analyzed By: MRC  
Dilution: 1

<b>Compound</b>	<b>Quantitation Limit (mg/KG)</b>	<b>Result (mg/KG)</b>
Acenaphthene	0.34	BQL
Acenaphthylene	0.34	BQL
Anthracene	0.34	BQL
Benzo[a]anthracene	0.34	BQL
Benzo[a]pyrene	0.34	BQL
Benzo[b]fluoranthene	0.34	BQL
Benzo[g,h,i]perylene	0.34	BQL
Benzo[k]fluoranthene	0.34	BQL
Benzoic Acid	0.69	BQL
Bis(2-chloroethoxy)methane	0.34	BQL
Bis(2-chloroethyl)ether	0.34	BQL
Bis(2-chloroisopropyl)ether	0.34	BQL
Bis(2-ethylhexyl)phthalate	0.34	BQL
4-bromophenyl phenyl ether	0.34	BQL
Butylbenzylphthalate	0.34	BQL
4-Chloroaniline	0.34	BQL
4-Chloro-3-methylphenol	0.34	BQL
2-Chloronaphthalene	0.34	BQL
2-Chlorophenol	0.34	BQL
4-Chlorophenyl phenyl ether	0.34	BQL
Chrysene	0.34	BQL
Di-n-Butylphthalate	0.34	BQL
Di-n-octylphthalate	0.34	BQL
Dibenzo[a,h]anthracene	0.34	BQL
Dibenzofuran	0.34	BQL
1,2-Dichlorobenzene	0.34	BQL
1,3-Dichlorobenzene	0.34	BQL
1,4-Dichlorobenzene	0.34	BQL
3,3'-Dichlorobenzidine	0.69	BQL
2,4-Dichlorophenol	0.34	BQL
Diethylphthalate	0.34	BQL
2,4-Dimethylphenol	0.34	BQL
Dimethylphthalate	0.34	BQL
4,6-Dinitro-2-methylphenol	1.7	BQL
2,4-Dinitrophenol	1.7	BQL
2,4-Dinitrotoluene	0.34	BQL
2,6-Dinitrotoluene	0.34	BQL
Fluoranthene	0.34	BQL
Fluorene	0.34	BQL
Hexachlorobenzene	0.34	BQL

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: SB8  
Client Project ID: 97140-Sq. Deal  
Lab Sample ID: 50742  
Lab Project ID: G211-1449  
Matrix: Soil

%Solids: 91.2

Date Collected: 8/12/2002  
Date Received: 8/14/2002  
Date Analyzed: 8/21/2002  
Analyzed By: MRC  
Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Hexachlorobutadiene	0.34	BQL
Hexachlorocyclopentadiene	0.69	BQL
Hexachloroethane	0.34	BQL
Indeno(1,2,3-c,d)pyrene	0.34	BQL
Isophorone	0.34	BQL
2-Methylnaphthalene	0.34	0.67
2-Methylphenol	0.34	BQL
3- & 4-Methylphenol	0.34	BQL
N-Nitrosodi-n-propylamine	0.34	BQL
N-Nitrosodiphenylamine	0.34	BQL
Naphthalene	0.34	BQL
2-Nitroaniline	0.34	BQL
3-Nitroaniline	0.34	BQL
4-Nitroaniline	0.34	BQL
Nitrobenzene	0.34	BQL
2-Nitrophenol	0.34	BQL
4-Nitrophenol	1.7	BQL
Pentachlorophenol	1.7	BQL
Phenanthrene	0.34	BQL
Phenol	0.34	BQL
Pyrene	0.34	BQL
1,2,4-Trichlorobenzene	0.34	BQL
2,4,5-Trichlorophenol	0.34	BQL
2,4,6-Trichlorophenol	0.34	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.1	71
2-Fluorophenol	10	8.4	84
Nitrobenzene-d5	10	5.4	54
Phenol-d6	10	7.4	74
2,4,6-Tribromophenol	10	6.1	61
4-Terphenyl-d14	10	9.1	91

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: W2

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark Environmental

Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB8
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/12/02
Date Analyzed	08/16/02
Dry Weight	91
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	80 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	270 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	23 (mg/Kg)
Surrogate % Recovery - PID	83
Surrogate % Recovery - FID	77

\* Option 1 = Established fill line on vial. Option 2 = Sampling Device/Brand. or Option 3 = Field weight of soil  
 \*\* C<sub>5</sub>-C<sub>10</sub> = Surrogates or internal standards.

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark Environmental

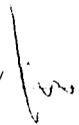
Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB8
Sample Matrix	Soil
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/19/02
Date Analyzed	08/23/02
Dry Weight	91.2
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	20 (mg/Kg)
C <sub>19</sub> -C <sub>30</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>17</sub> Aromatics*	19 (mg/Kg)
Aliphatic Surrogate % Recovery	88
Aromatic Surrogate % Recovery	91
Fractionation Surrogate 1 % Recovery	120

## Comments:

\* include any surrogates or internal standards

Phone: 6211-3449-50742

Reviewed By 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB9  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50744  
 Lab Project ID: G211-1449  
 Matrix: Soil

%Solids: 87.8

Date Analyzed: 8/21/02  
 Analyzed By: EKR  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	0.057	BQL
Acrolein	0.11	BQL
Acrylonitrile	0.11	BQL
Benzene	0.0057	BQL
Bromobenzene	0.0057	BQL
Bromochloromethane	0.0057	BQL
Bromodichloromethane	0.0057	BQL
Bromoform	0.0057	BQL
Bromomethane	0.0057	BQL
2-Butanone	0.028	BQL
n-Butylbenzene	0.0057	BQL
sec-Butylbenzene	0.0057	BQL
tert-Butylbenzene	0.0057	BQL
Carbon disulfide	0.0057	BQL
Carbon tetrachloride	0.0057	BQL
Chlorobenzene	0.0057	BQL
Chloroethane	0.0057	BQL
Chloroform	0.0057	BQL
Chloromethane	0.0057	BQL
2-Chlorotoluene	0.0057	BQL
4-Chlorotoluene	0.0057	BQL
Dibromochloromethane	0.0057	BQL
1,2-Dibromo-3-chloropropane	0.0057	BQL
Dibromomethane	0.0057	BQL
1,2-Dibromoethane (EDB)	0.0057	BQL
1,2-Dichlorobenzene	0.0057	BQL
1,3-Dichlorobenzene	0.0057	BQL
1,4-Dichlorobenzene	0.0057	BQL
trans-1,4-Dichloro-2-butene	0.0057	BQL
1,1-Dichloroethane	0.0057	BQL
1,1-Dichloroethene	0.0057	BQL
1,2-Dichloroethane	0.0057	BQL
cis-1,2-Dichloroethene	0.0057	BQL
trans-1,2-dichloroethene	0.0057	BQL
1,2-Dichloropropane	0.0057	BQL
1,3-Dichloropropane	0.0057	BQL
2,2-Dichloropropane	0.0057	BQL
1,1-Dichloropropene	0.0057	BQL
cis-1,3-Dichloropropene	0.0057	BQL
trans-1,3-Dichloropropene	0.0057	BQL
Dichlorodifluoromethane	0.0057	BQL
Diisopropyl ether (DIPE)	0.0057	BQL
Ethylbenzene	0.0057	BQL
Hexachlorobutadiene	0.0057	BQL
2-Hexanone	0.0057	BQL

Reviewed by: ME

**PARADIGM ANALYTICAL LABORATORIES, INC.**

**Results for Volatiles**

by GCMS 8260B/5035

Client Sample ID: SB9  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50744  
 Lab Project ID: G211-1449  
 Matrix: Soil                      %Solids: 87.8

Date Analyzed: 8/21/02  
 Analyzed By: EKR  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Iodomethane	0.0057	BQL
Isopropylbenzene	0.0057	BQL
4-Isopropyltoluene	0.0057	BQL
Methylene chloride	0.023	BQL
4-Methyl-2-pentanone	0.0057	BQL
Methyl-tert-butyl ether (MTBE)	0.0057	BQL
Naphthalene	0.0057	BQL
n-Propyl benzene	0.0057	BQL
Styrene	0.0057	BQL
1,1,1,2-Tetrachloroethane	0.0057	BQL
1,1,2,2-Tetrachloroethane	0.0057	BQL
Tetrachloroethene	0.0057	BQL
Toluene	0.0057	BQL
1,2,3-Trichlorobenzene	0.0057	BQL
1,2,4-Trichlorobenzene	0.0057	BQL
Trichloroethene	0.0057	BQL
1,1,1-Trichloroethane	0.0057	BQL
1,1,2-Trichloroethane	0.0057	BQL
Trichlorofluoromethane	0.0057	BQL
1,2,3-Trichloropropane	0.0057	BQL
1,2,4-Trimethylbenzene	0.0057	BQL
1,3,5-Trimethylbenzene	0.0057	BQL
Vinyl chloride	0.0057	BQL
m-,p-Xylene	0.011	BQL
o-Xylene	0.0057	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
Compound			
Bromofluorobenzene	0.0500	0.0485	97
1,2-Dichloroethane-d4	0.0500	0.0498	100
Toluene-d8	0.0500	0.0502	100

**Comments:**

All results are corrected for dilution.

Reviewed by: 

**Results for Semivolatiles**  
by GCMS 8270

Client Sample ID: SB9  
Client Project ID: 97140-Sq. Deal  
Lab Sample ID: 50744  
Lab Project ID: G211-1449  
Matrix: Soil

%Solids: 87.8

Date Collected: 8/12/2002  
Date Received: 8/14/2002  
Date Analyzed: 8/21/2002  
Analyzed By: MRC  
Dilution: 1

<b>Compound</b>	<b>Quantitation Limit (mg/KG)</b>	<b>Result (mg/KG)</b>
Acenaphthene	0.36	BQL
Acenaphthylene	0.36	BQL
Anthracene	0.36	BQL
Benzo[a]anthracene	0.36	BQL
Benzo[a]pyrene	0.36	BQL
Benzo[b]fluoranthene	0.36	BQL
Benzo[g,h,i]perylene	0.36	BQL
Benzo[k]fluoranthene	0.36	BQL
Benzoic Acid	0.72	BQL
Bis(2-chloroethoxy)methane	0.36	BQL
Bis(2-chloroethyl)ether	0.36	BQL
Bis(2-chloroisopropyl)ether	0.36	BQL
Bis(2-ethylhexyl)phthalate	0.36	BQL
4-bromophenyl phenyl ether	0.36	BQL
Butylbenzylphthalate	0.36	BQL
4-Chloroaniline	0.36	BQL
4-Chloro-3-methylphenol	0.36	BQL
2-Chloronaphthalene	0.36	BQL
2-Chlorophenol	0.36	BQL
4-Chlorophenyl phenyl ether	0.36	BQL
Chrysene	0.36	BQL
Di-n-Butylphthalate	0.36	BQL
Di-n-octylphthalate	0.36	BQL
Dibenzo[a,h]anthracene	0.36	BQL
Dibenzofuran	0.36	BQL
1,2-Dichlorobenzene	0.36	BQL
1,3-Dichlorobenzene	0.36	BQL
1,4-Dichlorobenzene	0.36	BQL
3,3'-Dichlorobenzidine	0.72	BQL
2,4-Dichlorophenol	0.36	BQL
Diethylphthalate	0.36	BQL
2,4-Dimethylphenol	0.36	BQL
Dimethylphthalate	0.36	BQL
4,6-Dinitro-2-methylphenol	1.8	BQL
2,4-Dinitrophenol	1.8	BQL
2,4-Dinitrotoluene	0.36	BQL
2,6-Dinitrotoluene	0.36	BQL
Fluoranthene	0.36	BQL
Fluorene	0.36	BQL
Hexachlorobenzene	0.36	BQL

Results for Semivolatiles

by GCMS 8270

Client Sample ID: SB9  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50744  
 Lab Project ID: G211-1449  
 Matrix: Soil

%Solids: 87.8

Date Collected: 8/12/2002  
 Date Received: 8/14/2002  
 Date Analyzed: 8/21/2002  
 Analyzed By: MRC  
 Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Hexachlorobutadiene	0.36	BQL
Hexachlorocyclopentadiene	0.72	BQL
Hexachloroethane	0.36	BQL
Indeno(1,2,3-c,d)pyrene	0.36	BQL
Isophorone	0.36	BQL
2-Methylnaphthalene	0.36	BQL
2-Methylphenol	0.36	BQL
3- & 4-Methylphenol	0.36	BQL
N-Nitrosodi-n-propylamine	0.36	BQL
N-Nitrosodiphenylamine	0.36	BQL
Naphthalene	0.36	BQL
2-Nitroaniline	0.36	BQL
3-Nitroaniline	0.36	BQL
4-Nitroaniline	0.36	BQL
Nitrobenzene	0.36	BQL
2-Nitrophenol	0.36	BQL
4-Nitrophenol	1.8	BQL
Pentachlorophenol	1.8	BQL
Phenanthrene	0.36	BQL
Phenol	0.36	BQL
Pyrene	0.36	BQL
1,2,4-Trichlorobenzene	0.36	BQL
2,4,5-Trichlorophenol	0.36	BQL
2,4,6-Trichlorophenol	0.36	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	6.4	64
2-Fluorophenol	10	7.8	78
Nitrobenzene-d5	10	6.1	61
Phenol-d6	10	7.1	71
2,4,6-Tribromophenol	10	5.8	58
4-Terphenyl-d14	10	10.8	108

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: WMA

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark Environmental

Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB9
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/12/02
Date Analyzed	08/15/02
Dry Weight	88
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>1</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	80
Surrogate % Recovery - FID	96

\* Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil  
 \*\* Includes any surrogates or internal standards

Lab Info: (6211-1449-50744

Reviewed By 

EPH (Aliphatics/Aromatics) Results

by MOEP-EPH

Client Name: Clark Environmental

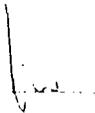
Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB9
Sample Matrix	Soil
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/19/02
Date Analyzed	08/20/02
Dry Weight	87.8
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>30</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	87
Aromatic Surrogate % Recovery	49

Comments:

- \* Recovery based on surrogates or internal standards
- \* Samples did not require fractionation

Lab No: 05211-1439-50744

Reviewed By 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB10  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50745  
 Lab Project ID: G211-1449  
 Matrix: Soil

%Solids: 85.6

Date Analyzed: 8/21/02  
 Analyzed By: EKR  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	0.058	BQL
Acrolein	0.12	BQL
Acrylonitrile	0.12	BQL
Benzene	0.0058	BQL
Bromobenzene	0.0058	BQL
Bromochloromethane	0.0058	BQL
Bromodichloromethane	0.0058	BQL
Bromoform	0.0058	BQL
Bromomethane	0.0058	BQL
2-Butanone	0.029	BQL
n-Butylbenzene	0.0058	BQL
sec-Butylbenzene	0.0058	BQL
tert-Butylbenzene	0.0058	BQL
Carbon disulfide	0.0058	BQL
Carbon tetrachloride	0.0058	BQL
Chlorobenzene	0.0058	BQL
Chloroethane	0.0058	BQL
Chloroform	0.0058	BQL
Chloromethane	0.0058	BQL
2-Chlorotoluene	0.0058	BQL
4-Chlorotoluene	0.0058	BQL
Dibromochloromethane	0.0058	BQL
1,2-Dibromo-3-chloropropane	0.0058	BQL
Dibromomethane	0.0058	BQL
1,2-Dibromoethane (EDB)	0.0058	BQL
1,2-Dichlorobenzene	0.0058	BQL
1,3-Dichlorobenzene	0.0058	BQL
1,4-Dichlorobenzene	0.0058	BQL
trans-1,4-Dichloro-2-butene	0.0058	BQL
1,1-Dichloroethane	0.0058	BQL
1,1-Dichloroethene	0.0058	BQL
1,2-Dichloroethane	0.0058	BQL
cis-1,2-Dichloroethene	0.0058	BQL
trans-1,2-dichloroethene	0.0058	BQL
1,2-Dichloropropane	0.0058	BQL
1,3-Dichloropropane	0.0058	BQL
2,2-Dichloropropane	0.0058	BQL
1,1-Dichloropropene	0.0058	BQL
cis-1,3-Dichloropropene	0.0058	BQL
trans-1,3-Dichloropropene	0.0058	BQL
Dichlorodifluoromethane	0.0058	BQL
Diisopropyl ether (DIPE)	0.0058	BQL
Ethylbenzene	0.0058	BQL
Hexachlorobutadiene	0.0058	BQL
2-Hexanone	0.0058	BQL

Reviewed by: Ma

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB10  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50745  
 Lab Project ID: G211-1449

Date Analyzed: 8/21/02  
 Analyzed By: EKR  
 Date Collected: 8/12/02  
 Date Received: 8/14/02  
 Dilution: 1

Matrix: Soil %Solids: 85.6

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Iodomethane	0.0058	BQL
Isopropylbenzene	0.0058	BQL
4-Isopropyltoluene	0.0058	BQL
Methylene chloride	0.023	BQL
4-Methyl-2-pentanone	0.0058	BQL
Methyl-tert-butyl ether (MTBE)	0.0058	BQL
Naphthalene	0.0058	BQL
n-Propyl benzene	0.0058	BQL
Styrene	0.0058	BQL
1,1,1,2-Tetrachloroethane	0.0058	BQL
1,1,2,2-Tetrachloroethane	0.0058	BQL
Tetrachloroethene	0.0058	BQL
Toluene	0.0058	BQL
1,2,3-Trichlorobenzene	0.0058	BQL
1,2,4-Trichlorobenzene	0.0058	BQL
Trichloroethene	0.0058	BQL
1,1,1-Trichloroethane	0.0058	BQL
1,1,2-Trichloroethane	0.0058	BQL
Trichlorofluoromethane	0.0058	BQL
1,2,3-Trichloropropane	0.0058	BQL
1,2,4-Trimethylbenzene	0.0058	BQL
1,3,5-Trimethylbenzene	0.0058	BQL
Vinyl chloride	0.0058	BQL
m-,p-Xylene	0.012	BQL
o-Xylene	0.0058	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
Compound			
Bromofluorobenzene	0.0500	0.0486	97
1,2-Dichloroethane-d4	0.0500	0.0486	97
Toluene-d8	0.0500	0.0493	99

Comments:

All results are corrected for dilution.

Reviewed by: WV

## Results for Semivolatiles

by GCMS 8270

Client Sample ID: SB10

Client Project ID: 97140-Sq. Deal

Lab Sample ID: 50745

Lab Project ID: G211-1449

Matrix: Soil

%Solids: 85.6

Date Collected: 8/12/2002

Date Received: 8/14/2002

Date Analyzed: 8/21/2002

Analyzed By: MRC

Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acenaphthene	0.35	BQL
Acenaphthylene	0.35	BQL
Anthracene	0.35	BQL
Benzo[a]anthracene	0.35	BQL
Benzo[a]pyrene	0.35	BQL
Benzo[b]fluoranthene	0.35	BQL
Benzo[g,h,i]perylene	0.35	BQL
Benzo[k]fluoranthene	0.35	BQL
Benzoic Acid	0.7	BQL
Bis(2-chloroethoxy)methane	0.35	BQL
Bis(2-chloroethyl)ether	0.35	BQL
Bis(2-chloroisopropyl)ether	0.35	BQL
Bis(2-ethylhexyl)phthalate	0.35	BQL
4-bromophenyl phenyl ether	0.35	BQL
Butylbenzylphthalate	0.35	BQL
4-Chloroaniline	0.35	BQL
4-Chloro-3-methylphenol	0.35	BQL
2-Chloronaphthalene	0.35	BQL
2-Chlorophenol	0.35	BQL
4-Chlorophenyl phenyl ether	0.35	BQL
Chrysene	0.35	BQL
Di-n-Butylphthalate	0.35	BQL
Di-n-octylphthalate	0.35	BQL
Dibenzo[a,h]anthracene	0.35	BQL
Dibenzofuran	0.35	BQL
1,2-Dichlorobenzene	0.35	BQL
1,3-Dichlorobenzene	0.35	BQL
1,4-Dichlorobenzene	0.35	BQL
3,3'-Dichlorobenzidine	0.7	BQL
2,4-Dichlorophenol	0.35	BQL
Diethylphthalate	0.35	BQL
2,4-Dimethylphenol	0.35	BQL
Dimethylphthalate	0.35	BQL
4,6-Dinitro-2-methylphenol	1.7	BQL
2,4-Dinitrophenol	1.7	BQL
2,4-Dinitrotoluene	0.35	BQL
2,6-Dinitrotoluene	0.35	BQL
Fluoranthene	0.35	BQL
Fluorene	0.35	BQL
Hexachlorobenzene	0.35	BQL

Results for Semivolatiles

by GCMS 8270

Client Sample ID: SB10  
 Client Project ID: 97140-Sq. Deal  
 Lab Sample ID: 50745  
 Lab Project ID: G211-1449  
 Matrix: Soil

%Solids: 85.6

Date Collected: 8/12/2002  
 Date Received: 8/14/2002  
 Date Analyzed: 8/21/2002  
 Analyzed By: MRC  
 Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Hexachlorobutadiene	0.35	BQL
Hexachlorocyclopentadiene	0.7	BQL
Hexachloroethane	0.35	BQL
Indeno(1,2,3-c,d)pyrene	0.35	BQL
Isophorone	0.35	BQL
2-Methylnaphthalene	0.35	BQL
2-Methylphenol	0.35	BQL
3- & 4-Methylphenol	0.35	BQL
N-Nitrosodi-n-propylamine	0.35	BQL
N-Nitrosodiphenylamine	0.35	BQL
Naphthalene	0.35	BQL
2-Nitroaniline	0.35	BQL
3-Nitroaniline	0.35	BQL
4-Nitroaniline	0.35	BQL
Nitrobenzene	0.35	BQL
2-Nitrophenol	0.35	BQL
4-Nitrophenol	1.7	BQL
Pentachlorophenol	1.7	BQL
Phenanthrene	0.35	BQL
Phenol	0.35	BQL
Pyrene	0.35	BQL
1,2,4-Trichlorobenzene	0.35	BQL
2,4,5-Trichlorophenol	0.35	BQL
2,4,6-Trichlorophenol	0.35	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	5.7	57
2-Fluorophenol	10	6.2	62
Nitrobenzene-d5	10	5.0	50
Phenol-d6	10	5.8	58
2,4,6-Tribromophenol	10	4.4	44
4-Terphenyl-d14	10	10.3	103

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: W

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark Environmental

Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB10
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/12/02
Date Analyzed	08/15/02
Dry Weight	86
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	78
Surrogate % Recovery - FID	92

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil  
 \*\* = Excludes any surrogates or internal standards

Lab Info: (621) 1449-5074

Reviewed By

EPH (Aliphatics/Aromatics) Results

by MDEP EPH

Client Name: Clark Environmental

Project Name: 97140-Sq. Deal

Sample Information and Analytical Results	
Sample Identification	SB10
Sample Matrix	Soil
Date Collected	08/12/02
Date Received	08/14/02
Date Extracted	08/19/02
Date Analyzed	08/20/02
Dry Weight	85.6
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>10</sub> -C <sub>20</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	98
Aromatic Surrogate % Recovery	90

Comments:

- \* Includes any surrogates or internal standards.
- \* Sample did not require fractionation

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

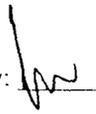
by GCMS 8260B/5035

Client Sample ID: SB11  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 66733  
 Lab Project ID: G211-1543  
 Matrix: Soil

Date Analyzed: 4/2/03  
 Analyzed By: EKR  
 Date Collected: 3/27/03  
 Date Received: 3/28/03  
 Dilution: 1

%Solids: 84.0

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	0.06	BQL
Acrolein	0.12	BQL
Acrylonitrile	0.12	BQL
Benzene	0.006	BQL
Bromobenzene	0.006	BQL
Bromochloromethane	0.006	BQL
Bromodichloromethane	0.006	BQL
Bromoform	0.006	BQL
Bromomethane	0.006	BQL
2-Butanone	0.03	BQL
n-Butylbenzene	0.006	BQL
sec-Butylbenzene	0.006	BQL
tert-Butylbenzene	0.006	BQL
Carbon disulfide	0.006	BQL
Carbon tetrachloride	0.006	BQL
Chlorobenzene	0.006	BQL
Chloroethane	0.006	BQL
2-Chloroethyl vinyl ether	0.006	BQL
Chloroform	0.006	BQL
Chloromethane	0.006	BQL
2-Chlorotoluene	0.006	BQL
4-Chlorotoluene	0.006	BQL
Dibromochloromethane	0.006	BQL
1,2-Dibromo-3-chloropropane	0.006	BQL
Dibromomethane	0.006	BQL
1,2-Dibromoethane (EDB)	0.006	BQL
1,2-Dichlorobenzene	0.006	BQL
1,3-Dichlorobenzene	0.006	BQL
1,4-Dichlorobenzene	0.006	BQL
trans-1,4-Dichloro-2-butene	0.006	BQL
1,1-Dichloroethane	0.006	BQL
1,1-Dichloroethene	0.006	BQL
1,2-Dichloroethane	0.006	BQL
cis-1,2-Dichloroethene	0.006	BQL
trans-1,2-dichloroethene	0.006	BQL
1,2-Dichloropropane	0.006	BQL
1,3-Dichloropropane	0.006	BQL
2,2-Dichloropropane	0.006	BQL
1,1-Dichloropropene	0.006	BQL
cis-1,3-Dichloropropene	0.006	BQL
trans-1,3-Dichloropropene	0.006	BQL
Dichlorodifluoromethane	0.006	BQL
Diisopropyl ether (DIPE)	0.006	BQL
Ethylbenzene	0.006	BQL
Hexachlorobutadiene	0.006	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

**PARADIGM ANALYTICAL LABORATORIES, INC.**

**Results for Volatiles**

by GCMS 8260B/5035

Client Sample ID: SB11  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 66733  
 Lab Project ID: G211-1543  
 Matrix: Soil

Date Analyzed: 4/2/03  
 Analyzed By: EKR  
 Date Collected: 3/27/03  
 Date Received: 3/28/03  
 Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
2-Hexanone	0.006	BQL
Iodomethane	0.006	BQL
Isopropylbenzene	0.006	BQL
4-Isopropyltoluene	0.006	BQL
Methylene chloride	0.024	BQL
4-Methyl-2-pentanone	0.006	BQL
Methyl-tert-butyl ether (MTBE)	0.006	BQL
Naphthalene	0.006	BQL
n-Propyl benzene	0.006	BQL
Styrene	0.006	BQL
1,1,1,2-Tetrachloroethane	0.006	BQL
1,1,2,2-Tetrachloroethane	0.006	BQL
Tetrachloroethene	0.006	BQL
Toluene	0.006	BQL
1,2,3-Trichlorobenzene	0.006	BQL
1,2,4-Trichlorobenzene	0.006	BQL
Trichloroethene	0.006	BQL
1,1,1-Trichloroethane	0.006	BQL
1,1,2-Trichloroethane	0.006	BQL
Trichlorofluoromethane	0.006	BQL
1,2,3-Trichloropropane	0.006	BQL
1,2,4-Trimethylbenzene	0.006	BQL
1,3,5-Trimethylbenzene	0.006	BQL
Vinyl chloride	0.006	BQL
m-,p-Xylene	0.012	BQL
o-Xylene	0.006	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
<b>Compound</b>			
Bromofluorobenzene	0.0500	0.0487	97
1,2-Dichloroethane-d4	0.0500	0.0564	113
Toluene-d8	0.0500	0.0504	101

**Comments:**

All results are corrected for dilution.

Reviewed by: 

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: SB11

Client Project ID: Square Deal 97140

Lab Sample ID: 66733

Lab Project ID: G211-1543

Matrix: Soil

%Solids: 84.0

Date Collected: 3/27/2003

Date Received: 3/28/2003

Date Analyzed: 4/3/2003

Analyzed By: MRC

Dilution: 1

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acenaphthene	0.36	BQL
Acenaphthylene	0.36	BQL
Anthracene	0.36	BQL
Benzo[a]anthracene	0.36	BQL
Benzo[a]pyrene	0.36	BQL
Benzo[b]fluoranthene	0.36	BQL
Benzo[g,h,i]perylene	0.36	BQL
Benzo[k]fluoranthene	0.36	BQL
Benzoic Acid	0.71	BQL
Bis(2-chloroethoxy)methane	0.36	BQL
Bis(2-chloroethyl)ether	0.36	BQL
Bis(2-chloroisopropyl)ether	0.36	BQL
Bis(2-ethylhexyl)phthalate	0.36	BQL
4-bromophenyl phenyl ether	0.36	BQL
Butylbenzylphthalate	0.36	BQL
4-Chloroaniline	1.8	BQL
4-Chloro-3-methylphenol	0.36	BQL
2-Chloronaphthalene	0.36	BQL
2-Chlorophenol	0.36	BQL
4-Chlorophenyl phenyl ether	0.36	BQL
Chrysene	0.36	BQL
Di-n-Butylphthalate	0.36	BQL
Di-n-octylphthalate	0.36	BQL
Dibenzo[a,h]anthracene	0.36	BQL
Dibenzofuran	0.36	BQL
1,2-Dichlorobenzene	0.36	BQL
1,3-Dichlorobenzene	0.36	BQL
1,4-Dichlorobenzene	0.36	BQL
3,3'-Dichlorobenzidine	0.71	BQL
2,4-Dichlorophenol	0.36	BQL
Diethylphthalate	0.36	BQL
2,4-Dimethylphenol	0.36	BQL
Dimethylphthalate	0.36	BQL
4,6-Dinitro-2-methylphenol	1.8	BQL
2,4-Dinitrophenol	1.8	BQL
2,4-Dinitrotoluene	0.36	BQL
2,6-Dinitrotoluene	0.36	BQL
Fluoranthene	0.36	BQL
Fluorene	0.36	BQL
Hexachlorobenzene	0.36	BQL

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: SB11  
Client Project ID: Square Deal 97140  
Lab Sample ID: 66733  
Lab Project ID: G211-1543  
Matrix: Soil

Date Collected: 3/27/2003  
Date Received: 3/28/2003  
Date Analyzed: 4/3/2003  
Analyzed By: MRC  
Dilution: 1

%Solids: 84.0

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Hexachlorobutadiene	0.36	BQL
Hexachlorocyclopentadiene	0.71	BQL
Hexachloroethane	0.36	BQL
Indeno(1,2,3-c,d)pyrene	0.36	BQL
Isophorone	0.36	BQL
2-Methylnaphthalene	0.36	BQL
2-Methylphenol	0.36	BQL
3- & 4-Methylphenol	0.36	BQL
N-Nitrosodi-n-propylamine	0.36	BQL
N-Nitrosodiphenylamine	0.36	BQL
Naphthalene	0.36	BQL
2-Nitroaniline	0.36	BQL
3-Nitroaniline	1.8	BQL
4-Nitroaniline	1.8	BQL
Nitrobenzene	0.36	BQL
2-Nitrophenol	0.36	BQL
4-Nitrophenol	1.8	BQL
Pentachlorophenol	1.8	BQL
Phenanthrene	0.36	BQL
Phenol	0.36	BQL
Pyrene	0.36	BQL
1,2,4-Trichlorobenzene	0.36	BQL
2,4,5-Trichlorophenol	0.36	BQL
2,4,6-Trichlorophenol	0.36	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.4	84
2-Fluorophenol	10	8.3	83
Nitrobenzene-d5	10	8.2	82
Phenol-d6	10	8.1	81
2,4,6-Tribromophenol	10	7.3	73
4-Terphenyl-d14	10	10.4	104

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB11
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	03/27/03
Date Received	03/28/03
Date Extracted	03/27/03
Date Analyzed	04/01/03
Dry Weight	84
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	91
Surrogate % Recovery - FID	110

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G211-1543-66733

Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB11
Sample Matrix	Soil
Date Collected	03/27/03
Date Received	03/28/03
Date Extracted	03/31/03
Date Analyzed	04/02/03
Dry Weight	84
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	89
Aromatic Surrogate % Recovery	88

**Comments:**

- \* = Excludes any surrogates or internal standards.  
Sample did not require fractionation.

Lab info: G211-1543-66733

Reviewed By: 

## Results for Volatiles

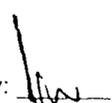
by GCMS 8260B/5035

Client Sample ID: SB12  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 66734  
 Lab Project ID: G211-1543  
 Matrix: Soil

Date Analyzed: 4/3/03  
 Analyzed By: JTF  
 Date Collected: 3/27/03  
 Date Received: 3/28/03  
 Dilution: 100

%Solids: 87.7

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	2.9	BQL
Acrolein	11	BQL
Acrylonitrile	11	BQL
Benzene	0.11	BQL
Bromobenzene	0.11	BQL
Bromochloromethane	0.11	BQL
Bromodichloromethane	0.11	BQL
Bromoform	0.11	BQL
Bromomethane	0.11	BQL
2-Butanone	2.9	BQL
n-Butylbenzene	0.11	BQL
sec-Butylbenzene	0.11	0.13
tert-Butylbenzene	0.11	BQL
Carbon disulfide	0.11	BQL
Carbon tetrachloride	0.11	BQL
Chlorobenzene	0.11	BQL
Chloroethane	0.11	BQL
2-Chloroethyl vinyl ether	0.57	BQL
Chloroform	0.11	BQL
Chloromethane	0.11	BQL
2-Chlorotoluene	0.11	BQL
4-Chlorotoluene	0.11	BQL
Dibromochloromethane	0.11	BQL
1,2-Dibromo-3-chloropropane	0.57	BQL
Dibromomethane	0.11	BQL
1,2-Dibromoethane (EDB)	0.11	BQL
1,2-Dichlorobenzene	0.11	BQL
1,3-Dichlorobenzene	0.11	BQL
1,4-Dichlorobenzene	0.11	BQL
trans-1,4-Dichloro-2-butene	0.57	BQL
1,1-Dichloroethane	0.11	BQL
1,1-Dichloroethene	0.11	BQL
1,2-Dichloroethane	0.11	BQL
cis-1,2-Dichloroethene	0.11	BQL
trans-1,2-dichloroethene	0.11	BQL
1,2-Dichloropropane	0.11	BQL
1,3-Dichloropropane	0.11	BQL
2,2-Dichloropropane	0.11	BQL
1,1-Dichloropropene	0.11	BQL
cis-1,3-Dichloropropene	0.11	BQL
trans-1,3-Dichloropropene	0.11	BQL
Dichlorodifluoromethane	0.57	BQL
Diisopropyl ether (DIPE)	0.11	BQL
Ethylbenzene	0.11	0.29
Hexachlorobutadiene	0.11	BQL

Reviewed by: 

Flags: BQL = Below Quantitation Limit

N.C. Certification #481 S.C. Certification #99029

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GCMS 8260B/5035

Client Sample ID: SB12  
 Client Project ID: Square Deal 97140  
 Lab Sample ID: 66734  
 Lab Project ID: G211-1543  
 Matrix: Soil

%Solids: 87.7

Date Analyzed: 4/3/03  
 Analyzed By: JTF  
 Date Collected: 3/27/03  
 Date Received: 3/28/03  
 Dilution: 100

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
2-Hexanone	0.57	BQL
Iodomethane	0.11	BQL
Isopropylbenzene	0.11	BQL
4-Isopropyltoluene	0.11	0.17
Methylene chloride	0.57	BQL
4-Methyl-2-pentanone	0.57	BQL
Methyl-tert-butyl ether (MTBE)	0.11	BQL
Naphthalene	0.11	0.7
n-Propyl benzene	0.11	0.37
Styrene	0.11	BQL
1,1,1,2-Tetrachloroethane	0.11	BQL
1,1,2,2-Tetrachloroethane	0.11	BQL
Tetrachloroethene	0.11	BQL
Toluene	0.11	BQL
1,2,3-Trichlorobenzene	0.11	BQL
1,2,4-Trichlorobenzene	0.11	BQL
Trichloroethene	0.11	BQL
1,1,1-Trichloroethane	0.11	BQL
1,1,2-Trichloroethane	0.11	BQL
Trichlorofluoromethane	0.11	BQL
1,2,3-Trichloropropane	0.11	BQL
1,2,4-Trimethylbenzene	0.11	3.8
1,3,5-Trimethylbenzene	0.11	1.6
Vinyl chloride	0.11	BQL
m-,p-Xylene	0.23	1.2
o-Xylene	0.11	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
Compound			
Bromofluorobenzene	0.0100	0.0094	94
1,2-Dichloroethane-d4	0.0100	0.0095	95
Toluene-d8	0.0100	0.0101	101

Comments:

All results are corrected for dilution.

Reviewed by: 



Results for Semivolatiles  
by GCMS 8270

Client Sample ID: SB12  
Client Project ID: Square Deal 97140  
Lab Sample ID: 66734  
Lab Project ID: G211-1543  
Matrix: Soil

Date Collected: 3/27/2003  
Date Received: 3/28/2003  
Date Analyzed: 4/3/2003  
Analyzed By: MRC  
Dilution: 1

%Solids: 87.7

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Hexachlorobutadiene	0.35	BQL
Hexachlorocyclopentadiene	0.71	BQL
Hexachloroethane	0.35	BQL
Indeno(1,2,3-c,d)pyrene	0.35	BQL
Isophorone	0.35	BQL
2-Methylnaphthalene	0.35	4.5
2-Methylphenol	0.35	BQL
3- & 4-Methylphenol	0.35	BQL
N-Nitrosodi-n-propylamine	0.35	BQL
N-Nitrosodiphenylamine	0.35	BQL
Naphthalene	0.35	1.9
2-Nitroaniline	0.35	BQL
3-Nitroaniline	1.8	BQL
4-Nitroaniline	1.8	BQL
Nitrobenzene	0.35	BQL
2-Nitrophenol	0.35	BQL
4-Nitrophenol	1.8	BQL
Pentachlorophenol	1.8	BQL
Phenanthrene	0.35	BQL
Phenol	0.35	BQL
Pyrene	0.35	BQL
1,2,4-Trichlorobenzene	0.35	BQL
2,4,5-Trichlorophenol	0.35	BQL
2,4,6-Trichlorophenol	0.35	BQL

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.3	83
2-Fluorophenol	10	8.8	88
Nitrobenzene-d5	10	10.7	107
Phenol-d6	10	9.0	90
2,4,6-Tribromophenol	10	10.2	102
4-Terphenyl-d14	10	9.6	96

Comments:

Results are corrected for %solids and dilution where applicable.

Flags:

BQL = Below Quantitation Limit.

Reviewed By: 

## VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Clark EnvironmentalProject Name: Square Deal 97140

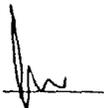
Sample Information and Analytical Results	
Sample Identification	SB12
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	03/27/03
Date Received	03/28/03
Date Extracted	03/27/03
Date Analyzed	04/01/03
Dry Weight	88
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	15 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	33 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	89
Surrogate % Recovery - FID	170***

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

\*\*\*= High surrogate recovery due to matrix interference

Lab Info: G211-1543-66734

Reviewed By: 

## EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Clark EnvironmentalProject Name: Square Deal 97140

Sample Information and Analytical Results	
Sample Identification	SB12
Sample Matrix	Soil
Date Collected	03/27/03
Date Received	03/28/03
Date Extracted	03/31/03
Date Analyzed	04/04/03
Dry Weight	87.7
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	64 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	380 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	67 (mg/Kg)
Aliphatic Surrogate % Recovery	48
Aromatic Surrogate % Recovery	59
Fractionation Surrogate 1 % Recovery	100

## Comments:

\* = Excludes any surrogates or internal standards.

Lab info: G211-1543-66734

Reviewed By: 

## EPH Laboratory Reporting Form

## Calibration and QA/QC Information

Initial Calibration Date: 04/05/01

## Calibration Ranges and Limits

Range	MDL		ML		RL	
	(mg/Kg)	( $\mu\text{g/L}$ )	(mg/Kg)	( $\mu\text{g/L}$ )	(mg/Kg)	( $\mu\text{g/L}$ )
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

## Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	( $\mu\text{g/L}$ )	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	7.0	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	3.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 10/22/01

## Calibration Check

Range	Levels		RPD
	( $\mu\text{g/mL}$ )	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-4.6
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-5.5
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	9.0

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 04/05/01

Calibration Ranges and Limits

Range	MDL (µg/L)		ML (µg/L)		RL (µg/L)	
	(mg/Kg)		(mg/Kg)		(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	7.0	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	3.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 10/29/01

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-6.9
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-11.8
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	7.5

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 04/05/01

**Calibration Ranges and Limits**

Range	MDL		ML		RL	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

**Calibration Concentration Levels**

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	7.0	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	3.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 10/30/01

**Calibration Check**

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-2.4
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-6.9
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	9.3

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

## EPH Laboratory Reporting Form

## Calibration and QA/QC Information

Initial Calibration Date: 04/05/01

## Calibration Ranges and Limits

Range	MDL (µg/L)		ML (µg/L)		RL (µg/L)	
	(mg/Kg)		(mg/Kg)		(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

## Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	7.0	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	3.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 10/18/01

## Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-6.8
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-5.5
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	8.0

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

## EPH Laboratory Reporting Form

## Calibration and QA/QC Information

Initial Calibration Date: 04/05/01

## Calibration Ranges and Limits

Range	MDL		ML		RL	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

## Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	7.0	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	3.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 10/25/01

## Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-6.7
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-5.4
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	9.3

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

## Attachment 2

## VPH Laboratory Reporting Form

## Calibration and QA/QC Information

FID Initial Calibration Date: 10/17/01PID Initial Calibration Date: 10/17/01

## Calibration Ranges and Limits

Range	MDL		ML		RL	
	( $\mu\text{g/L}$ )	(mg/Kg)	( $\mu\text{g/L}$ )	(mg/Kg)	( $\mu\text{g/L}$ )	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	2.4	0.12	7.5	0.38	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	1.3	0.065	4.0	0.21	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.025	1.6	0.08	100	10

## Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	( $\mu\text{g/L}$ )	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	1.0	Linear Regression
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	18.7	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	0.994	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 10/17/01

## Calibration Check

Range	Levels		RPD
	( $\mu\text{g/L}$ )	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	24.5
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	23.1
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	8.5

MDL = Method Detection Limit

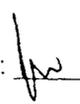
ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: 

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 10/17/01      PID Initial Calibration Date: 10/17/01

**Calibration Ranges and Limits**

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	2.4	0.12	7.5	0.38	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	1.3	0.065	4.0	0.21	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.025	1.6	0.08	100	10

**Calibration Concentration Levels**

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	1.0	Linear Regression
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	18.7	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	0.994	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 10/18/01

**Calibration Check**

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	22.6
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	21.4
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	8.8

MDL = Method Detection Limit  
 ML = Minimum Limit  
 RL = Reportable Limit

RPD = Relative Percent Difference  
 %RSD = Percent Relative Standard Deviation  
 CCC = Correlation Coefficient of Curve

Reviewed By: 

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 10/23/01 PID Initial Calibration Date: 10/23/01

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	2.4	0.12	7.5	0.38	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	1.3	0.065	4.0	0.21	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.025	1.6	0.08	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	1.0	Linear Regression
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	0.979	Linear Regression
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	0.959	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 10/25/01

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	-12.3
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	-1.3
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	-6.3

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: MA

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 10/23/01 PID Initial Calibration Date: 10/23/01

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	2.4	0.12	7.5	0.38	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	1.3	0.065	4.0	0.21	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.025	1.6	0.08	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	1.0	Linear Regression
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	0.979	Linear Regression
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	0.959	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 10/23/01

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	5.0
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	7.5
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	-4.3

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: MDA



VPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 08/04/02 PID Initial Calibration Date: 08/04/02

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>6</sub> -C <sub>8</sub> Aliphatics	9.3	0.41	29.4	1.3	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	7.9	0.3	25.2	0.97	100	10
C <sub>6</sub> -C <sub>10</sub> Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>6</sub> -C <sub>8</sub> Aliphatics	20	2	3.6	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	13.6	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>6</sub> -C <sub>10</sub> Aromatics	32.5	3.25	6.4	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Recalibration Check Date: 08/22/02

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>6</sub> -C <sub>8</sub> Aliphatics	200	20	6.0
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	18.6
Aromatics	325	32.5	10.4

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reporting Limit

RPD = 15 Percent Relative Difference

RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By 

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date 08/04/02 PID Initial Calibration Date 08/04/02

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	2.4	0.12	7.5	0.38	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	1.3	0.065	4.0	0.21	100	10
C <sub>7</sub> -C <sub>10</sub> Aromatics	0.5	0.025	1.6	0.08	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>1</sub> -C <sub>20</sub> Aliphatics	20	2	3.6	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>1</sub> -C <sub>12</sub> Aliphatics	15	1.5	13.6	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>1</sub> -C <sub>1</sub> Aromatics	32.5	3.25	6.4	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date 08/15/02

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>1</sub> -C <sub>1</sub> Aliphatics	200	20	1.6
C <sub>1</sub> -C <sub>1</sub> Aliphatics	150	15	14.8
C <sub>1</sub> -C <sub>1</sub> Aromatics	325	32.5	2.2

MDL = Method Detection Limit  
ML = Method Limit  
RL = Reportable Limit

RPD = Relative Percent Difference  
%RSD = Percent Relative Standard Deviation  
CCC = Correlation Coefficient of Curve

Reviewed By 

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date 08/16/02

Calibration Ranges and Limits

Range	MDL	(µg/L)	ML	(µg/L)	RL	(µg/L)
	(mg/Kg)		(mg/Kg)		(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	6.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.3	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	0.4	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date 08/17/02

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	2.4
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	16.2
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	0.8

MDL = Minimum Detection Limit  
ML = Minimum Limit  
RL = Reportable Limit

RPD = Relative Percent Difference  
%RSD = Percent Relative Standard Deviation  
CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date 08/16/02

Calibration Ranges and Limits

Range	MDL (mg/Kg)	(µg/L)	ML (mg/Kg)	(µg/L)	RL (mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	(mg/Kg)	%RSD or CCC	Method of Quantitation
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	6.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.3	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	0.4	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date 08/19/02

Calibration Check

Range	Levels (µg/mL)	(mg/Kg)	RPD
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	1.2
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	8.6
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	6.5

- MDL = Minimum Detectable Limit
- ML = Minimum Level
- RL = Reportable Limit
- RPD = Relative Percent Difference
- RSD = Percent Relative Standard Deviation
- CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date 08/16/02

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>11</sub> -C <sub>18</sub> Aliphatics	0.06	1	6.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.3	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	0.4	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date 08/20/02

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>11</sub> -C <sub>18</sub> Aliphatics	0.6	10	-18.5
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-5.8
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	-8.8

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reporting Limit

RPD = Relative Percent Difference

RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Calibration

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 08/16/02

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	2	0.3	6.5	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1	0.3	3.1	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.5	0.6	8	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	6.70	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.3	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	0.4	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 08/21/02

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	0.3
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-1.6
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	-8.8

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 08/19/02

Calibration Ranges and Limits

Range	MDL (µg/L)		ML (mg/Kg)		RL (mg/Kg)	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	2.60	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	3.2	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	7.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 08/22/02

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-1.9
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	6.3
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	2.7

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 08/19/02

Calibration Ranges and Limits

Range	MDL (µg/L)		ML (mg/Kg)		RL (µg/L)	
	(mg/Kg)		(mg/Kg)		(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	2.60	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	3.2	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.12	2	7.2	Calibration Factor
	0.3	5		
	0.6	10		
	1.2	20		
	2.4	40		

Calibration Check Date: 08/23/02

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	3.4
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	10.3
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.2	20	8.3

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/26/02 PID Initial Calibration Date: 12/26/02

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	9.3	0.41	29.4	1.3	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	7.9	0.3	25.2	0.97	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	4.0	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	12.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	11.3	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 04/03/03

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	3.5
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	16.5
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	5.2

MDL = Method Detection Limit

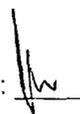
ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: 

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/26/02 PID Initial Calibration Date: 12/26/02

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	9.3	0.41	29.4	1.3	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	7.9	0.3	25.2	0.97	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	4.0	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	12.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	11.3	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 04/01/03

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	6.2
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	13.3
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	6.2

MDL = Method Detection Limit

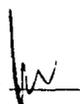
ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: 

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/19/03

**Calibration Ranges and Limits**

Range	MDL		ML		RL	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

**Calibration Concentration Levels**

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.00	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	2.4	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	1.3	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 04/04/03

**Calibration Check**

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	8.7
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	6.9
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	5.3

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/19/03

**Calibration Ranges and Limits**

Range	MDL (µg/L)		ML (mg/Kg)		RL (µg/L)	
	(mg/Kg)		(mg/Kg)		(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

**Calibration Concentration Levels**

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.00	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	2.4	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	1.3	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 04/02/03

**Calibration Check**

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-6.1
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	2.5
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	1.0

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/19/03

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	5.00	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	2.4	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	1.3	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 04/10/03

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	2.8
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	6.0
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	2.5

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 08/08/03 PID Initial Calibration Date: 08/08/03

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	9.3	0.41	29.4	1.3	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	7.9	0.3	25.2	0.97	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	16.8	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	15.8	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	0.994	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 08/08/03

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	80	8	-13.3
C <sub>9</sub> -C <sub>12</sub> Aliphatics	60	6	-5.0
C <sub>9</sub> -C <sub>10</sub> Aromatics	130	13	11.2

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: mll

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 07/21/03

Calibration Ranges and Limits

Range	MDL (µg/L)		ML (mg/Kg)		RL (µg/L)	
	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	0.40	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	1.3	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	1	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 08/08/03

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	-1.0
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-15.3
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	-20.1

MDL = Method Detection Limit  
 ML = Minimum Limit  
 RL = Reportable Limit

RPD = Relative Percent Difference  
 %RSD = Percent Relative Standard Deviation  
 CCC = Correlation Coefficient of Curve

Client: Clark Environmental Services Square Deal  
 Project ID: 97140  
 Address: Wilmington, NC  
 Address: \_\_\_\_\_  
 Quote #: \_\_\_\_\_  
 Contact: Ginny  
 Phone: 602-3900  
 Fax: 602-3975

Date: 10-12-01  
 Turnaround: Standard  
 Job Number: \_\_\_\_\_  
 P.O. Number: 97140101201071

Report To: \_\_\_\_\_  
 Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives			Analyses				Comments: Please specify any special reporting requirements	
				None	MeOH	Sod Dis.	8260	8270	EP4	UP4		
SB1	10-11	10:35	Soil	X				X	X			G211-1313
↓	↓	↓	↓		X					X		
SB2		4:50		X		X	X	X	X			
↓	↓	↓	↓		X		X			X		
SB3		5:18		X		X	X	X	X			
↓	↓	↓	↓		X		X			X		
SB4		5:45		X		X	X	X	X			
Relinquished By		Date	Time	Received By		Date	Time	Temperature	State Certification Requested			
<i>[Signature]</i>		10-12-01	9:20	<i>[Signature]</i>		10/12/01	0920	air c	NC _____ SC _____ Other _____			
SEE REVERSE FOR TERMS AND CONDITIONS												

Client: Clark Environmental Services Project ID: 977140 <sup>Squire Deal</sup>

Date: 10-18-01

Report To: \_\_\_\_\_

Address: Wilmington, NC

Contact: Ginny

Turnaround: Standard

Address: \_\_\_\_\_

Phone: 602-3900

Job Number: \_\_\_\_\_

Quote #: \_\_\_\_\_

Fax: 602-3975

P.O. Number: 97740101801071

Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives			Analyses							Comments: Please specify any special reporting requirements			
				None	HCl	HNO <sub>3</sub>	625+10	6210D	VPH	EPT	Pb, 3030C						
MW1	10-17-01	2:36	GW	X			X										G211-1318
↓	↓	↓	↓		X			X	X	X							
↓	↓	↓	↓			X					X						
MW2		2:54		X			X										
↓	↓	↓	↓		X			X	X	X							
↓	↓	↓	↓			X					X						
MW3		3:12		X			X										
↓	↓	↓	↓		X			X	X	X							
↓	↓	↓	↓			X					X						
MW4	↓	3:29	↓	X			X										
Relinquished By		Date	Time	Received By			Date	Time	Temperature	State Certification Requested							
<i>[Signature]</i>		10-18-01	9:45	<i>[Signature]</i>			10/18/01	0945	62°C	NC _____ SC _____ Other _____							
													SEE REVERSE FOR TERMS AND CONDITIONS				

Client: Clark Environmental Services Square Deal  
 Project ID: 97140

Date: 10-18-01

Report To: \_\_\_\_\_

Address: Wilmington, NC

Contact: Ginny

Turnaround: Standard

Address: \_\_\_\_\_

Phone: 602-3900

Job Number: \_\_\_\_\_

Quote #: \_\_\_\_\_

Fax: 602-3975

P.O. Number: 97140101801071

Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives			Analyses						Comments: Please specify any special reporting requirements			
				None	HCl	HNO <sub>3</sub>	625+10	6210D	VPH	EPH	Pb, 3030C					
MW4	10-17-01	3:29	GW		X			X	X	X						G211-1318
↓	↓	↓	↓			X					X					
MW5		4:02		X			X									
↓	↓	↓	↓		X			X	X	X						
↓	↓	↓	↓			X					X					
MW6		4:18		X			X									
↓	↓	↓	↓		X			X	X	X						
↓	↓	↓	↓			X					X					
MW7		4:36		X			X									
↓	↓	↓	↓		X			X	X	X						
Relinquished By		Date	Time	Received By			Date	Time	Temperature	State Certification Requested						
<u>[Signature]</u>		10-18-01	9:45	<u>[Signature]</u>			10/18/01	0945	mic	NC _____ SC _____ Other _____						
										SEE REVERSE FOR TERMS AND CONDITIONS						

**PARADIGM ANALYTICAL LABORATORIES, INC.**

2627 Northchase Parkway SE, Wilmington, NC 28405

Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC#

Page 3 of 4

Client: Clark Environmental Services Project ID: 97140  
 Address: Wilmington, NC Contact: Ginny  
 Address: \_\_\_\_\_ Phone: 602-3900  
 Quote #: \_\_\_\_\_ Fax: 602-3975

Date: 10-18-01 Report To: \_\_\_\_\_  
 Turnaround: Standard  
 Job Number: \_\_\_\_\_  
 P.O. Number: 97140101801071 Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives			Analyses							Comments: Please specify any special reporting requirements			
				None	HCl	HNO <sub>3</sub>	625+10	6210D	VPH	EPH	Pb 3030C						
MW7	10-17-01	4:36	GW			X						X					G211-1318
MW8		4:51		X			X										
↓		↓			X			X	X								
↓		↓				X					X						
MW9		5:06		X			X										
↓		↓			X			X	X	X							
↓		↓				X					X						
MW10		3:49		X			X										
↓		↓			X			X	X	X							
↓		↓				X					X						
Relinquished By		Date	Time	Received By			Date	Time	Temperature	State Certification Requested							
<i>[Signature]</i>		10-18-01	4:45	<i>[Signature]</i>			10/18/01	0945	on ice	NC _____ SC _____ Other _____							
													SEE REVERSE FOR TERMS AND CONDITIONS				

Client: Clark Environmental Services Project ID: 97140-Square Deal

Date: 8-14-02

Report To: \_\_\_\_\_

Address: Wilmington, NC

Contact: Ginny

Turnaround: Standard

Address: \_\_\_\_\_

Phone: 602-3400

Job Number: \_\_\_\_\_

Quote #: \_\_\_\_\_

Fax: 602-3975

P.O. Number: 97140081402071

Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives			Analyses				Comments: Please specify any special reporting requirements	
				Sodium Bisulfate	Methanol	Ice	8260	VPH	8270	EPH		
SB7	8-12-02	1:09	Soil	X	X	X	X	X	X	X		6211-1449  Cancel per Ginny ID changed Per Ginny 8/15/02 BN
SB8		1:34										
<del>SB9</del>		3:17										
<del>SB10 SB9</del>		3:43										
SB11 SB10		5:10										

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
<i>[Signature]</i>	8-14-02	9:02	<i>[Signature]</i>	8/14/02	0902	on ice 10, 7, 0.28	NC _____ SC _____ Other _____

SEE REVERSE FOR TERMS AND CONDITIONS

527 Northchase Parkway SE, Wilmington, NC 28405

Chain-of Custody Record & Analytical Request

Phone: (910)-350-1903 FAX: (910)-350-1557

Client: Clark Environmental Services, PC Project ID: 97140 <sup>Square Deal</sup>  
 Address: Wilmington, NC Contact: Ginny Date: 3-28-03 Report To: \_\_\_\_\_  
 Address: \_\_\_\_\_ Phone: 602-3900 Turnaround: Standard Job Number: \_\_\_\_\_  
 Note #: \_\_\_\_\_ Fax: 602-3975 P.O. Number: 97140032803071 Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives			Analyses										Comments: Please specify any special reporting requirements					
				HCl	Ice		602 + MTE DIP NAP															
NW1	3-26-03	11:30	GW	X	X		X															6211-1543
NW2		11:45																				
<del>NW3</del>																						
NW4		12:00																				
NW5		12:10																				
NW6		12:25																				
NW7		12:37																				
NW8		13:05																				
NW9		14:22																				
NW10		14:32																				

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
	3-28-03	8:45	Jiffany C. Pat	3/28/03	8:45	5.8, 2.1°C	NC _____ SC _____ Other _____

SEE REVERSE FOR TERMS AND CONDITIONS

Client: Clark Environmental Services, PC Project ID: 97140  
 Address: Wilmington, NC Contact: Ginny  
 Address: \_\_\_\_\_ Phone: 602-3960  
 Quote #: \_\_\_\_\_ Fax: 602-3975

Date: 3-28-03 Report To: \_\_\_\_\_  
 Turnaround: Standard  
 Job Number: \_\_\_\_\_  
 P.O. Number: 97140032803071 Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives				Analyses							Comments: Please specify any special reporting requirements		
				Methanol	Sodium Bisulfate	HCl	HNO <sub>3</sub>	6210D	602+MGT RIB	VPH	EPH	<del>3260B</del>	8260B	8270		625+10	3030C Pb
NW11	3-26-03	15:10	GW			X		X									Take Pb samples from 625+10 bottles
NW12		13:40															
NW13		13:17															
NW14		14:08															
NW15		14:51															
NW16		14:32															
NW17		15:20					X	X	X	X		X	X	X		625+10 on MW-17, 18, 19. do not run 8270 on 17, 18, 19 per Ginny 3/28/03	
NW18		12:08															
NW19		12:40															
SB11	3-27-03	9:26	Soil	X	X				X	X		X	X				

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
	3-28-03	8:45	Jeffery C. Patz	3/28/03	8:45	5.8, 2.18	NC _____ SC _____ Other _____

SEE REVERSE FOR TERMS AND CONDITIONS

Client: Clark Environmental Services <sup>Square Deal</sup> Project ID: 97140  
 Address: Wilmington, NC Contact: Ginny  
 Address: \_\_\_\_\_ Phone: 602-3900  
 Quote #: \_\_\_\_\_ Fax: 602-3975

Date: 3-28-03 Report To: \_\_\_\_\_  
 Turnaround: Standard  
 Job Number: \_\_\_\_\_  
 P.O. Number: 9714032803071 Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives				Analyses							Comments: Please specify any special reporting requirements		
				Methanol	Sodium Disulfate	HCl	Ice	8260B	827D	EPH	VP4	6210D	625+10	602 r MPE MAPP		3030 Pb	
SB12	3-27-03	9:58	Soil	X	X		X	X	X	X							
SW1	3-26-03	16:35	Water			X	↓			X	X	X	X		X		Take Pb sample from 625+10 bottle
T1	↓	13:56	GW			↓	↓						X				
T2	↓	13:45	↓			↓	↓						↓				

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
	3-28-03	8:45	Jeffery C. Parks	3/28/03	8:45	5.8, 2.1°C	NC _____ SC _____ Other _____

SEE REVERSE FOR TERMS AND CONDITIONS

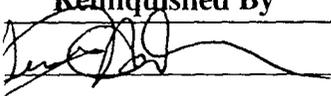
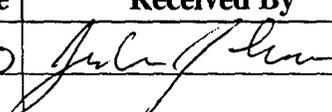
Client: Clark Environmental Service  
 Address: Wilmington, NC  
 Address: \_\_\_\_\_  
 Note #: \_\_\_\_\_

Project ID: Square Deal 97140  
 Contact: Ginny  
 Phone: 602-3900  
 Fax: 602-3975

Date: 8-5-03  
 Turnaround: Standard  
 Job Number: \_\_\_\_\_  
 P.O. Number: 97140080503071

Report To: \_\_\_\_\_  
 Invoice To: \_\_\_\_\_

Sample ID	Date	Time	Matrix	Preservatives				Analyses					Comments: Please specify any special reporting requirements	
				HCl	HNO <sub>3</sub>	Ice		62107	625+10	VPH	EPH	3030C, Pb		
NW20	8-4-03	16:12	Water	X	X	X		X	X	X	X	X		Please include narrative  G211-1608
SW2	8-4-03	16:08	↓	↓	↓		↓	↓	↓	↓	↓	↓		

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
	8-5-03	9:00		8/5/03	0900	outside (-30C)	NC _____ SC _____ Other _____
							SEE REVERSE FOR TERMS AND CONDITIONS